




Three-phase Hybrid Inverter

5 kW 6 kW 8 kW 10 kW 12 kW



User Manual
Version 2.0

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Notice

Due to product version upgrades or other reasons, the content of the document may be subject to periodic updates, unless otherwise agreed, the document content cannot replace the safety precautions in the product label or user manual.

All descriptions in the documentation are intended solely as guidelines for usage.

Scope of Validity

This manual is an integral part of Three-phase Hybrid Inverter. It describes the installation, electrical connection, commissioning, maintenance and troubleshooting of the product. Please read it carefully before operating.

This manual is valid for the following inverter models:

- HI-3P5K-H-Y1
- HI-3P6K-H-Y1
- HI-3P8K-H-Y1
- HI-3P10K-H-Y1
- HI-3P12K-H-Y1

Model Description

HI - 3P5K - H - Y1

1 2 3 4 5

- | | | |
|----------|-----------------------|--|
| 1 | Product Type | "HI" refers to Hybrid Inverter. |
| 2 | Grid Type | "3P" refers to Three Phase. |
| 3 | Rated Power | "5K" refers to the rated output power of 5 kW. |
| 4 | Battery Type | "H" refers to High voltage battery. |
| 5 | Version Number | "Y1" refers to the first version. |

Target Group

Only for professionals who are familiar with local regulations, standards and electrical systems, and who have received professional training and knowledge of this product.

Symbol Description

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

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

Change History

Version 2.0 (13/09/2024)

Updated the logo of the brand

Updated the template and content

Version 1.0 (08/03/2024)

Initial release

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The safety information contained in this document must be followed at all times when operating the equipment.

NOTICE

The inverter has been designed and tested in strict accordance with safety regulations. However, being an electrical equipment, it is crucial to adhere to the relevant safety instructions before any operation. Failure to operate the equipment properly may result in severe injuries or property damage. Please ensure you follow all safety guidelines diligently.

1.1 General Safety

NOTICE

- Due to product version upgrades or other reasons, the document content will be subject to periodic updates, unless there is a special agreement, the document content cannot replace the label on the product. All descriptions in the documentation are intended solely as guidelines for usage.
- Please carefully read this document to fully understand the product and precautions before installing the appliance.
- All operations of the equipment must be conducted by professional and qualified electrical technicians who are familiar with the relevant standards and safety specifications of the project location.
- When operating the inverter, it is essential to use insulating tools and wear personal protective equipment to ensure personal safety. Contact electronic devices requires wearing electrostatic gloves, electrostatic bracelets, anti-static clothing, etc. to protect the inverter from electrostatic damage.
- Any equipment damage or personal injury caused by failure to install, use and configure the inverter in accordance with the requirements of this document or the corresponding user manual is not the responsibility of the equipment manufacturer. For more information of product warranty, please visit the official website: <https://www.yienergy.com/en>.

1.2 PV String Safety

DANGER!

Please use the DC terminal supplied with the box to connect the inverter DC cable. The use of other DC terminal can lead to serious consequences, and any resulting damage to the equipment will not be covered by the equipment manufacturer.



WARNING!

- Ensure that the PV modules and bracket system are well grounded.
- After the completing DC cable connection, please ensure that the cables are securely and correctly connected.
- Use a multi-meter to measure the positive and negative poles of the DC cable to verify correct polarity and no reverse connections. Ensure that the voltage is within the permissible range. Do not connect the same PV string to multiple inverters, otherwise it may cause damage to the inverter.

1.3 Inverter Safety



WARNING!

- Ensure that the voltage and frequency of the grid connection meet the inverter grid connection specifications.
- It is recommended to add protection devices such as circuit breakers or fuses on the AC side of the inverter, and the specifications of the protection devices should be greater than 1.25 times the rated current of the AC output of the inverter.
- The protective ground wire of the inverter must be securely connected to ensure that the impedance between the neutral wire and the ground wire is less than 10 Ω .
- Copper core cable is recommended for AC output cable, if aluminum wire is required, a copper aluminum transition terminal is required for wiring.
- In case a single inverter overloaded event, the inverter can be automatically restarted. If it happens multiple times, the inverter restart time will be extended, to restart the inverter promptly, you can restart the inverter immediately through the App.
- If the photovoltaic system is not equipped with batteries, do not use the BACK-UP function. Otherwise, the manufacturer shall not be liable for related risks.



DANGER!

- Avoid bearing any load on the bottom terminal of the inverter during installation to prevent terminal damage.
- After installation, ensure the labels and warning signs on the inverter are clearly visible, it is forbidden to cover, deface or damage them.

1.4 Battery Safety



WARNING!

- The battery used with the inverter must be approved by the inverter manufacturer. The lists of approved batteries can be obtained through the official website.
- Before equipment installation, carefully read the user manual corresponding to the battery to understand the products and precautions. Strictly follow the requirements outlined in the battery user manual.
- If the battery is fully discharged, ensure that you charge the battery following the guidelines specified in the corresponding model's battery user manual.
- Battery current may be affected by some factors such as temperature, humidity, weather conditions, etc., which could result in current limiting and affect the load capacity.
- When connecting the DC cable, use a multi-meter to verify correct polarity, and ensure that the voltage falls within the permissible range.
- Do not connect one battery pack to multiple inverters, as it may cause damage to the inverter.

1.5 Personal Requirements



NOTICE

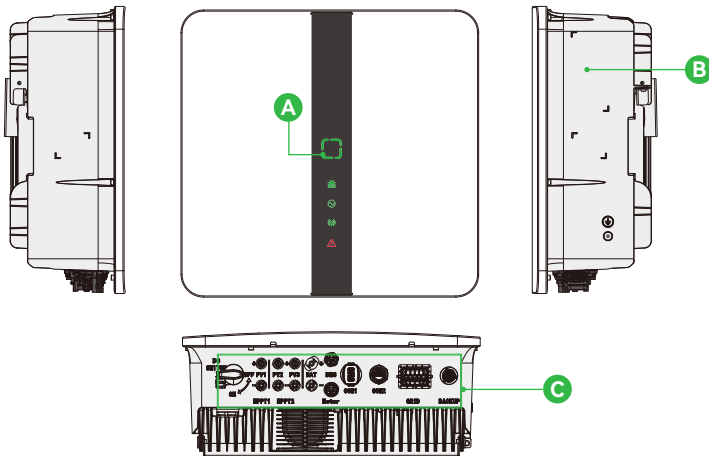
- The personnel responsible for equipment installation and maintenance must receive comprehensive training, understand all necessary safety precautions, and be capable of performing all operations correctly.
- Installation, operation, maintenance, replacement of equipment or parts is permitted to be conducted by qualified professionals or trained personnel only.

2.1 System Description

System Overview

The inverter regulates and optimizes the energy flow in photovoltaic systems through an integrated energy management system. The electricity generated by the photovoltaic system can be used by the load, stored in the battery, and also exported to the grid.

2.2 Appearance



- A** LED panel Including indicators, indicate the status of inverter.
- B** Nameplate Nameplate clearly identifies the device type, serial number, specific DC/AC parameters, certification, etc.
- C** Electrical connection area Including PV terminals, battery terminals, AC terminals, communication terminals, etc.

Figure 2-1 Appearance

2.3 Supported Power Grid

The inverter supports the following power grid types. For the grid types with N lines, the N voltage to ground needs to be less than 10 V.

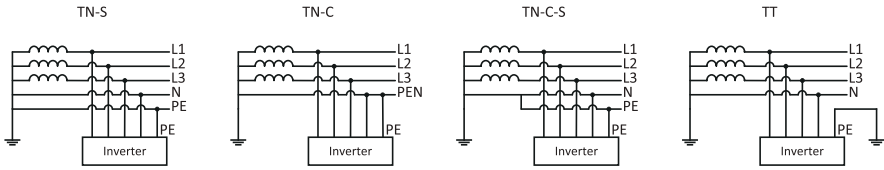




Figure 2-2 Power Grid

2.4 Symbols on the Label and Inverter

Table 2-1 Symbols

Symbol	Description
	CE Mark.
	Grounding point.
	High-temperature hazard. Do not touch the product under operation to avoid being burnt.
	HIGH VOLTAGE HAZARD Disconnect all incoming power and turn off the product before working on it.
	Potential risks exist. Wear proper Personnel Protective Equipment before any operations.
	Read through the user manual before any operations.
	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.
	Delayed discharge. Wait 5 minutes after power off until the components are completely discharged.

2.5 Nameplate

 Product:Hybrid Inverter Model :HI-3P12K-H-Y1	
PV Input	Max.Input Voltage:1000 Vd.c. MPPT Range:200-950 Vd.c. Max.Input Current:14/28 Ad.c. Max.Short-circuit Current:17/34 Ad.c.
Battery	Voltage Range:170-600 Vd.c. Maximum Current:30 Ad.c. Type:Li-ion
On-grid	Output Nominal Voltage:400/380 V, 3L/N/PE Nominal Operating Frequency:50/60 Hz Output Rated Power:12 kW Max.Output Apparent Power:12 kVA Max.Output Current:17.4 A Max.Input Apparent Power:16 kVA Max.Input Current:24.2 A
Back-up	Output Nominal Voltage:400/380 V, 3L/N/PE Nominal Operating Frequency:50/60 Hz Output Rated Power:12 kW Max.Output Apparent Power:16 kVA(10s)
Others	Power Factor: ~1.0.8(lagging)-0.8(leading) Operating Temperature:-25~+60 °C Inverter Topology:Transformerless Enclosure:IP66 Protection Class:I OVC AC III/DC II
	
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Yinergy Digital Power Technology (Zhejiang) Co., Ltd. www.yinergy-solar.com Building 4&5, No.161, Yuancheng Road, Qiantang District Hangzhou, Zhejiang P.R.China	

- A** YINERGY trademark, product type, and product model
- B** Technical data
- C** Safety symbols and certification marks
- D** Serial number and contact information

Figure 2-3 Nameplate

2.6 Working Principle

2.6.1 Circuit Diagram

The inverter unit converts DC into AC that meets the requirements of the power grid and feeds it into the power grid. The principle design of inverter is shown in the figure below:

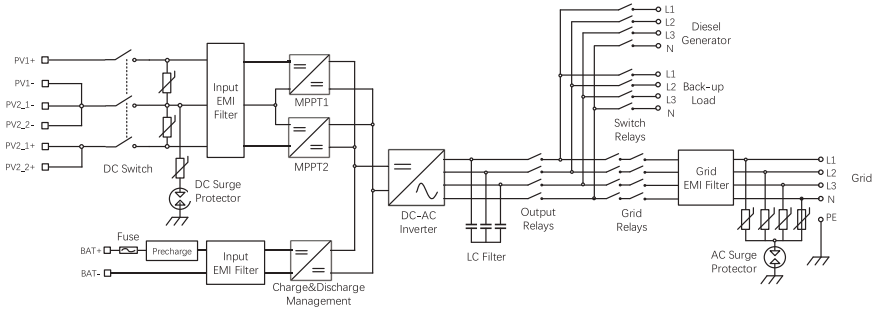


Figure 2-4 Circuit Diagram

2.6.2 Application Schemes

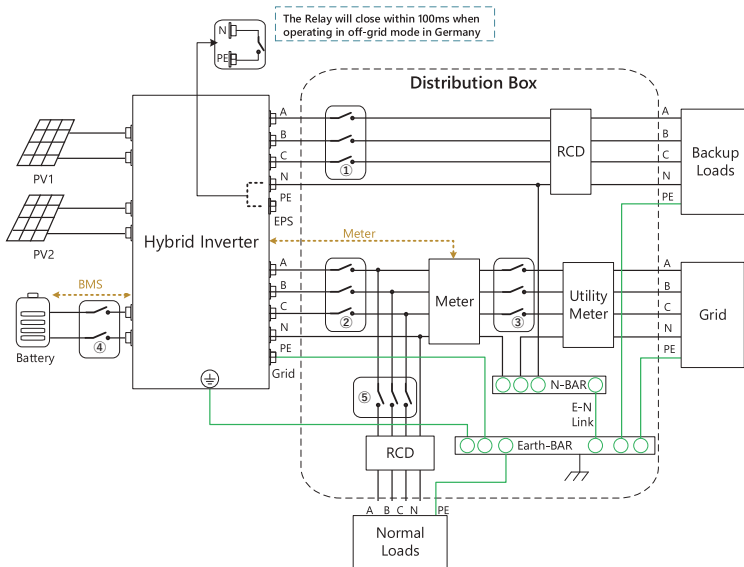


Figure 2-5 Application Scheme

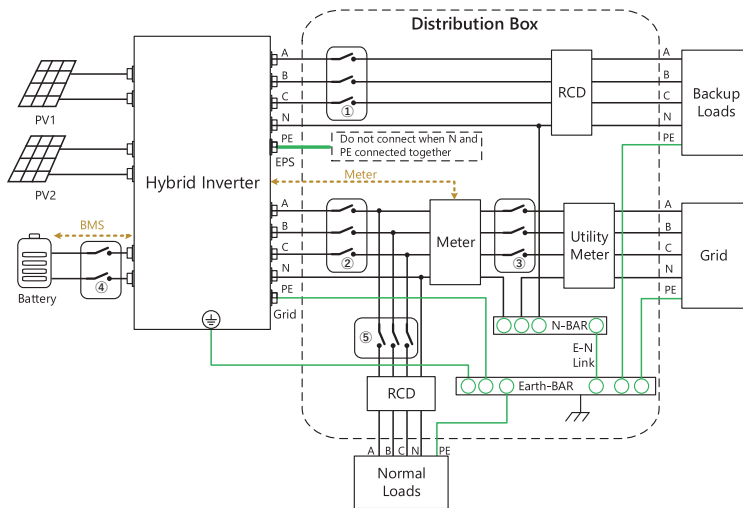


Figure 2-6 Application Scheme

The accessories ① ~ ⑤ above are suggested as follows:

Model	①	②	③	④	⑤
HI-3P5K-H	16 A/230 V AC Breaker	20 A/230 V AC Breaker	Main Breaker	25 A/600 V DC Breaker	Depends on Loads
HI-3P6K-H	16 A/230 V AC Breaker	25 A/230 V AC Breaker	Main Breaker	25 A/600 V DC Breaker	Depends on Loads
HI-3P8K-H	20 A/230 V AC Breaker	32 A/230 V AC Breaker	Main Breaker	40 A/600 V DC Breaker	Depends on Loads
HI-3P10K-H	25 A/230 V AC Breaker	32 A/230 V AC Breaker	Main Breaker	40 A/600 V DC Breaker	Depends on Loads
HI-3P12K-H	25 A/230 V AC Breaker	32 A/230 V AC Breaker	Main Breaker	40 A/600 V DC Breaker	Depends on Loads

2.7 Working Mode

Economic Mode

NOTICE

- Economic models can only be used when local laws and regulations are met, such as whether the power grid is allowed to charge the battery or whether the battery is allowed to discharge and sell to the power grid. If not, do not use this mode.
- It is recommended to use economic mode in scenarios when the peak-valley electricity price varies a lot..

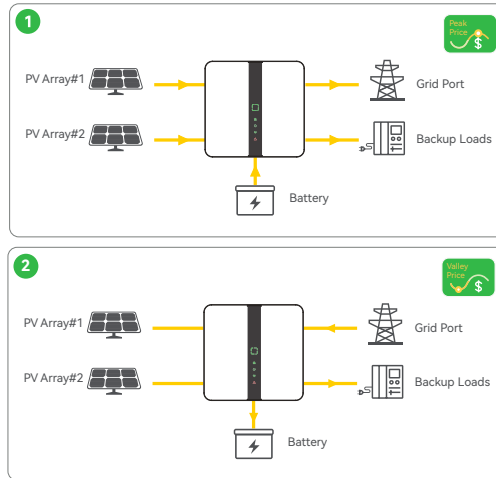


Figure 2-7 Economic Mode

In economic mode, the discharge and charging time of the battery should be preset according to the peak and valley electricity prices.

During peak electricity prices, the battery will discharge power to the load. Conversely, during valley electricity prices, the battery will be charged from the grid.

Self-Consumption Mode

i 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.

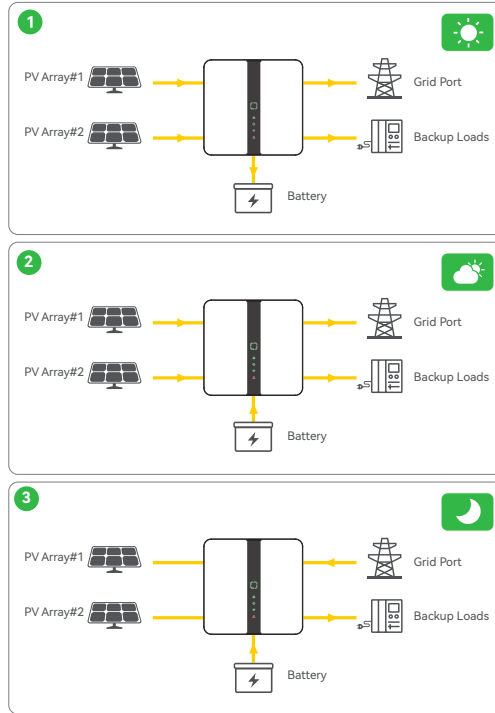


Figure 2-8 Self-Consumption Mode

In the self-consumption mode, solar power prioritizes supplying power to the load, with any excess power used for battery charging, then the remaining power will be feed back into the grid (or limited if necessary).

When there is no solar power generation at night, batteries are used to supply power to the load. Once the battery power is insufficient, the grid supplies power to the loads.

Back-up Mode

NOTICE

- In Back-up mode, you can set different battery SOC values for grid-tied and off-grid status. When the power grid is cut off, 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-tied 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 grid.

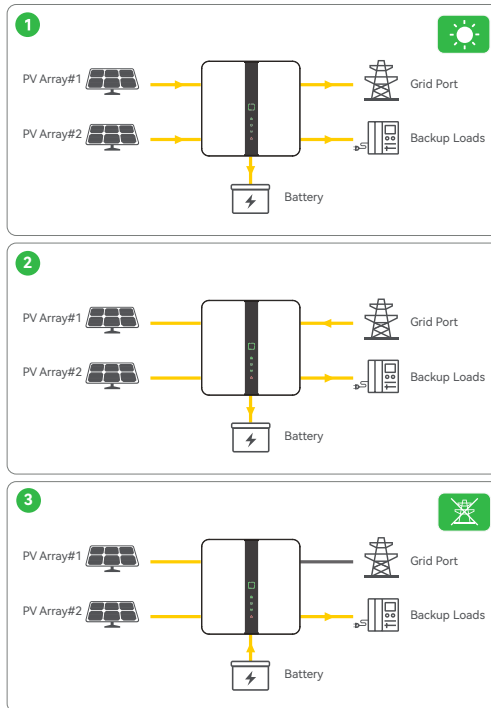


Figure 2-9 Back-up Mode

In the back-up mode, the battery is charged by both the PV system and the grid, and is always kept in a relatively high state of charge (SOC).

When the power generated by the PV system is sufficient, it charges the battery as priority, and the excess power charges the load, the remaining power will be sold to the grid. In case grid abnormality, the inverter will switch to off-grid mode and the battery will supply power to the important load / backup loads. Once the battery power is insufficient, the grid supplies power to the loads.

Off-grid Mode

NOTICE

- The PV energy storage system (ESS) is not suitable for powering life-sustaining medical devices. It cannot guarantee backup power in all circumstances.
- The hybrid inverter supports EPS with a switching time is less than 10ms. However, the EPS function may fail to start if the important load capacity exceeds the rated power of the inverter.

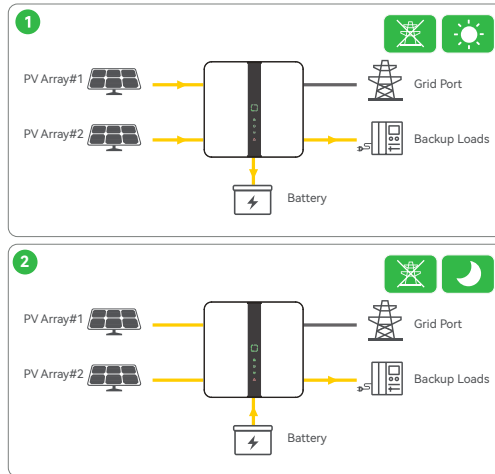


Figure 2-9 Off-Grid Mode

When the grid is off, system will automatically switch to EPS mode. In this mode, system supply emergency power from PV or battery tow support the backup loads, and in this mode, battery is required to balance the power difference of loads and PV.

3.1 System Overview

New PV + ESS

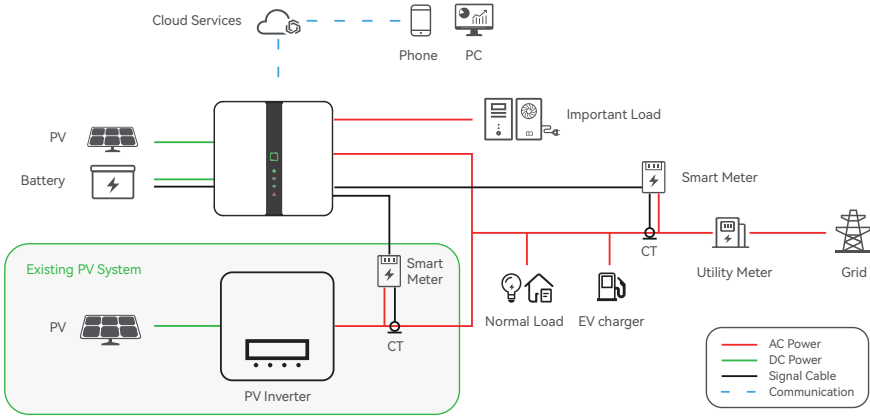


Figure 3-1 New PV + ESS

Retrofitting the Existing PV System

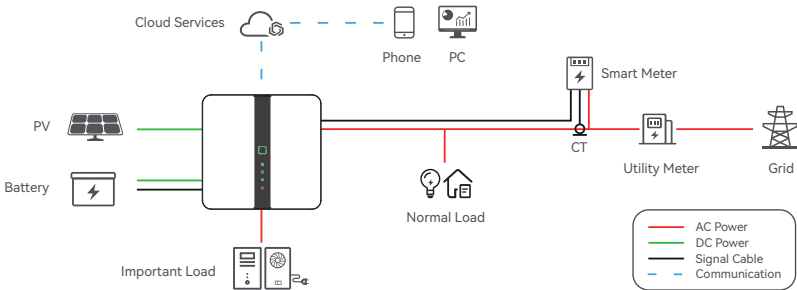


Figure 3-2 Retrofitting the Existing PV System

The AC terminal of the PV inverter and the GRID terminal of the hybrid inverter are to be connected in parallel. The smart meter of existing PV system and the smart meter in series with utility meter shall be connected to hybrid inverter to achieve system energy management. And PV inverter need to communicate with hybrid inverter to achieve anti-inverse flow function, otherwise, this function will be limited.

If the inverter is not put into use immediately, the transportation and storage requirements need to be met:

Transportation

- Observe the caution signs on the packaging of inverter before transportation.
- Pay attention to the weight of the inverter. Carry the inverters by the required number of personnel as specified by local regulations.(gross/net weight of Three-phase Hybrid Inverter: 34/28.5 kg)
- Wear protective gloves when carrying the equipment by hand to prevent injuries.
- When lifting up the inverter, hold the bottom position of the carton. Keep the inverter horizontal in case of falling down.

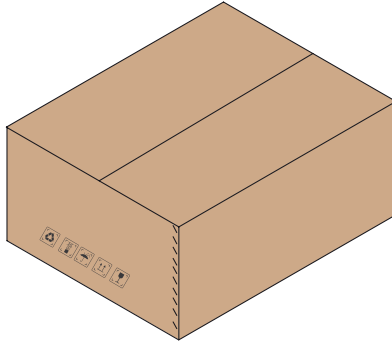


Figure 4-1 Caution Signs on the Packaging

Storage

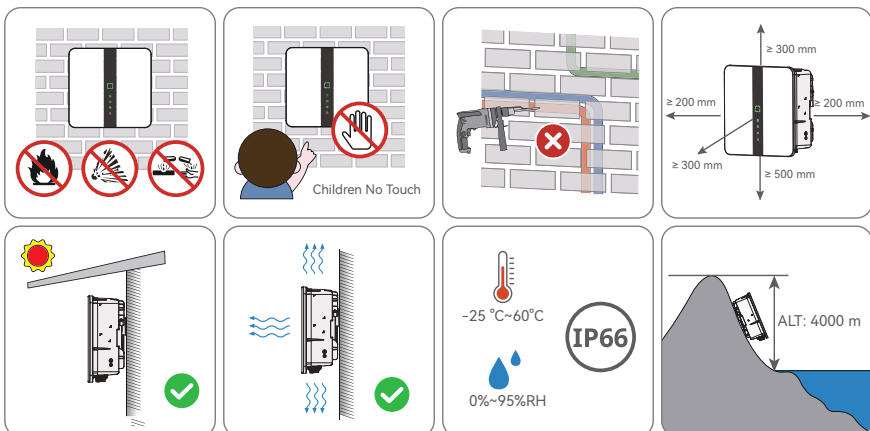
- The inverter must be stored indoors.
- Do not remove the original packaging material and check the outer packaging material regularly.
- The storage temperature should be between -40°C and $+70^{\circ}\text{C}$. The relative humidity should be between 0%RH and 100%RH.
- Stack the inverter in accordance with the caution signs on the inverter carton to prevent their falling down and device damage. Do not place it upside down.

5.1 Selection of Installation Location

The installation location selected for the inverter is quite critical in the aspect of the guarantee of machine safety, service life and performance. It has the IP66 ingress protection, which allows it to be installed outdoor. The installation position shall be convenient for wiring connection, operation and maintenance.

5.2 Environment Requirement

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 4000 m.
9. Install the equipment away from electromagnetic interference.

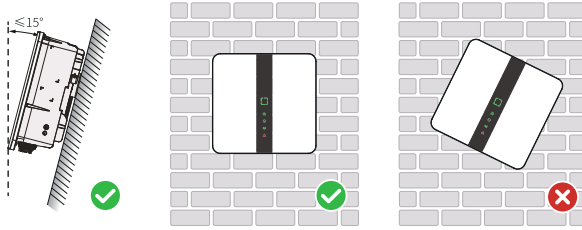


5.3 Installation Carrier Requirement

1. The mounting structure must be non-flammable and fire resistance.
2. Please ensure that the installation structure is solid enough to support the weight of inverter.
3. When the equipment is running, it will emit vibration, please do not install it on a structure with poor sound insulation, so as to avoid disturbing the residents of the living area by the noise during the equipment working.

5.4 Installation Angle Requirement

1. Install the inverter vertically or with a maximum back tilt of 15 degrees to facilitate heat dissipation.
2. Do not install the inverter in forward tilted, excessive back tilted, side tilted, horizontal, or upside-down positions.



5.5 Tools Requirement

Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site. The following tools must all comply with regulatory requirements.



5.6 Additionally Required Materials

Table 5-1 Additionally Required Wires

No.	Cable	Type	Outer Diameter	Cross Section
1	PV cable	Outdoor multi-core copper wire cable Complying with 1,000 V and 30 A standard	6~9 mm	4~6 mm ²
2	Battery cable	Complying with 1,000 V and 30 A standard	6~9 mm	4~6 mm ²
3	Communication cable	Shielded twisted pair	4.5~6 mm	2×(0.5~1.0) mm ²
		CAT 5E outdoor shielded network cable	4.5~6 mm	8×0.2 mm ²
4	AC cable *	Grid	13~18 mm	4~6 mm ²
		Backup	14~17.5 mm	4~6 mm ²
5	Additional grounding cable *	Outdoor single-core copper wire cable	The same as that of the PE wire in the AC cable	

* If local regulations have other requirements for cables, set the cable specification according to the local regulations.

The factors that affect cable selection include rated current, cable type, routing mode, ambient temperature, and maximum expected line loss.

The cabling distance between the battery and the inverter should be less than 10 m. and within 5 m is recommended.

6.1 Unpacking

Before signing for the product, please check the following in detail:

- Check the outer packaging for any signs of damage, such as deformation, holes, cracks or other signs that may cause damage to the equipment inside the box, if any damage is found, do not open the package and contact your dealer.
- Verify that the inverter model is correct, if there is any discrepancy, do not open the package and contact your dealer.
- Check whether the type and quantity of deliverables are correct and whether the appearance is damaged. In case of damage, please contact your dealer.

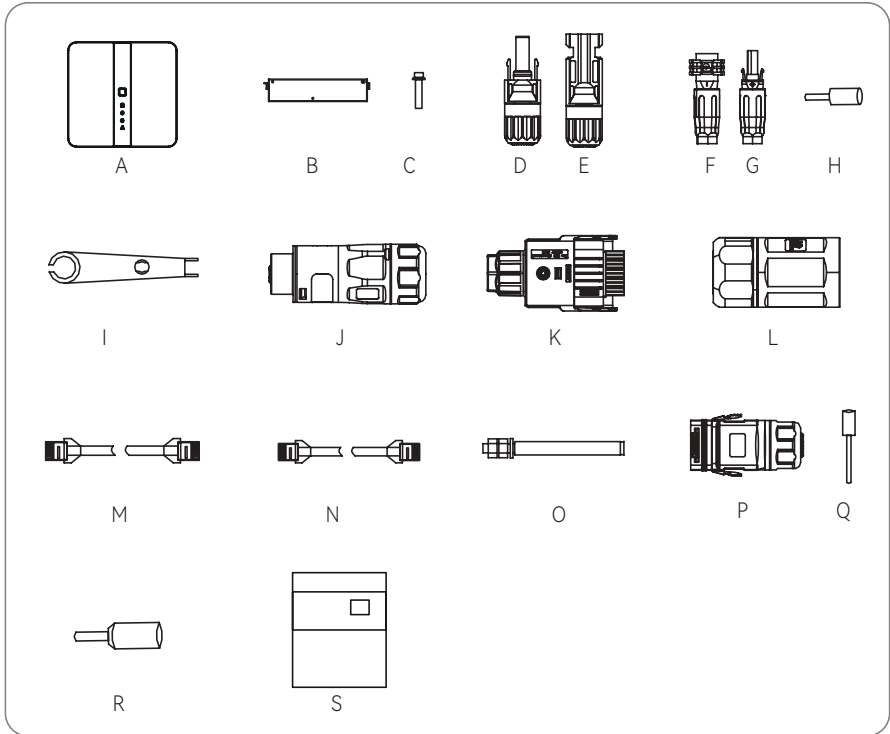
6.2 Scope of Delivering



WARNING!

- For electrical connections, please use the terminal provided with the package, any damage to the device caused by the use of connectors of incompatible models will not be covered under the warranty.

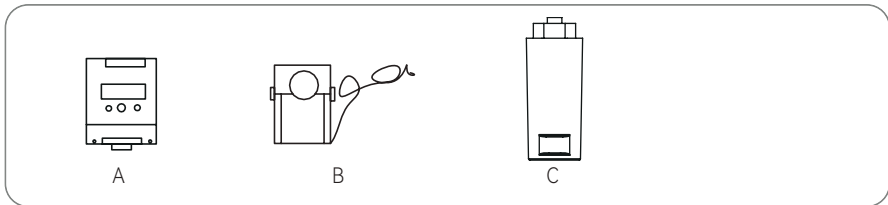
Inverter



Item	Description	Quantity
A	Inverter	1 pc
B	Bracket	1 pc
C	M4 Setscrew	2 pcs
D	Positive PV Connector	3 pcs
E	Negative PV Connector	3 pcs
F	Positive Battery Connector	1 pc

Item	Description	Quantity
G	Negative Battery Connector	1 pc
H	End Terminals	4 pcs
I	PV Disassembly Tool	2 pcs
J	Back Up Connector AC 5 Pin	1 pc
K	Grid Connector AC 5 Pin	1 pc
L	RJ45 Connector	2 pcs
M	Meter Network Cable	1 pc
N	Battery Network Cable	1 pc
O	M6 Expansion Screws	2 pcs
P	Communication Box	1 pc
Q	Communication Terminals	22 pcs
R	AC Terminals	5 pcs
S	Documents	/

Accessory Box



Item	Description	Quantity
A	Smart Meter	1 pc
B	CT	3 pc
C	DTS, Optional (Wi-Fi, Ethernet, 4G)	1 pc

**WARNING!**

- When carrying out transportation, turnover, installation and other operations, adhere to the laws and regulations and relevant standards of the country and region where it is located.
- Do not use the wiring terminals and ports at the bottom to support any weight of the inverter.
- Before installation, the inverter needs to be transported to the installation site. In order to avoid personal injury or equipment damage during the handling, please pay attention to the following.
- Please follow the weight guidelines of the equipment and assign appropriate personnel to avoid the equipment exceeding the weight range that the human body can carry, thereby preventing injuries the personnel.
- Please wear safety gloves to avoid injuries
- Please ensure that the equipment is balanced during handling to avoid falling.

**NOTICE**

- When drilling holes, avoid the water pipes and power cables buried in the wall.
- When drilling holes, wear goggles and dust masks to avoid dust entering your respiratory tract or getting into your eyes
- Prepare an DC switch lock suitable for the lock hole diameter ($\varnothing 5$ mm).
- Prepare an anti-theft lock suitable for the lock hole diameter ($\varnothing 8$ mm).

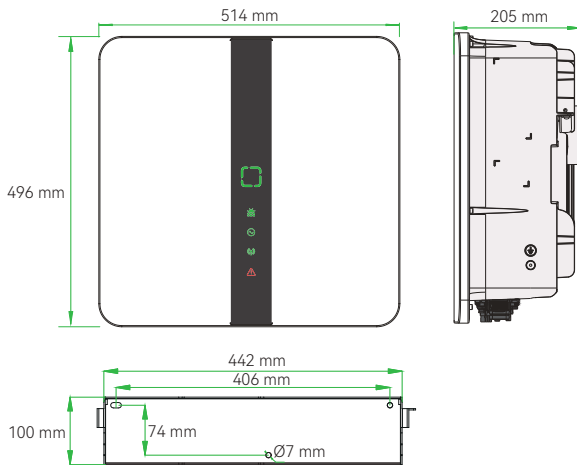
7.1 Dimensions of Mounting

Figure 7-1 Dimensions

7.2 Installation Procedures

Step 1: Align the bracket horizontally on the wall and mark the position of the drill holes.

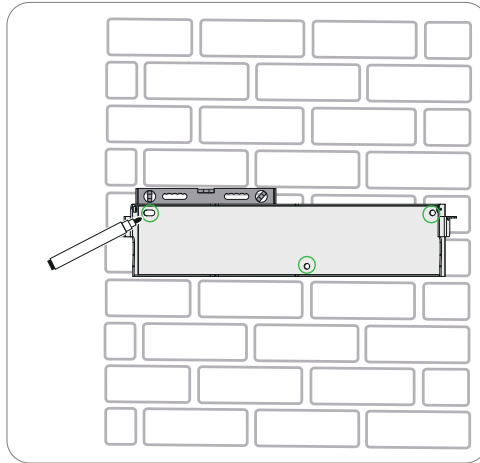


Figure 7-2 Marking Holes

Step 2: Set the bracket aside and drill holes with $\varnothing 8$ drill bit. The depth of the holes should be between 65–75 mm.

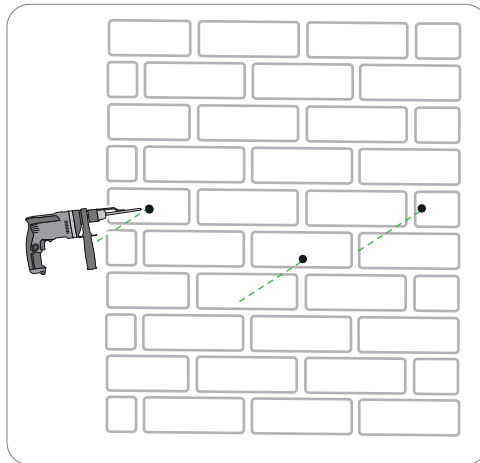


Figure 7-3 Drilling Holes

Step 3: Knock the expansion screws into the holes and secure the bracket to the wall with screws by torque wrench.

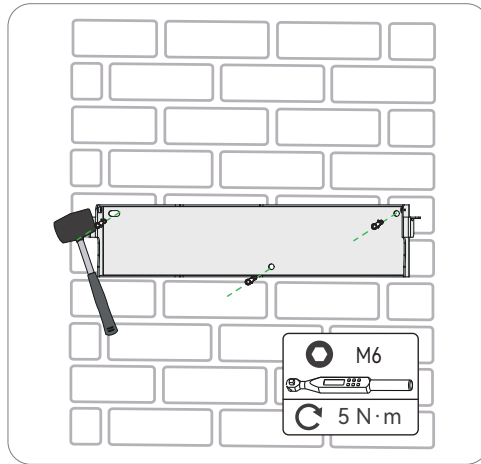


Figure 7-4 Insert Screws

Step 4: Lift the inverter by the handles and hang it on the bracket. The buckle on the bracket must be hooked into the keyways of the inverter. And then remove the handles.

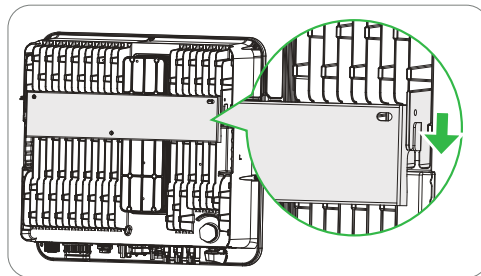


Figure 7-5 Hang the Inverter

Step 5: Secure the inverter to the bracket with M4 screw.

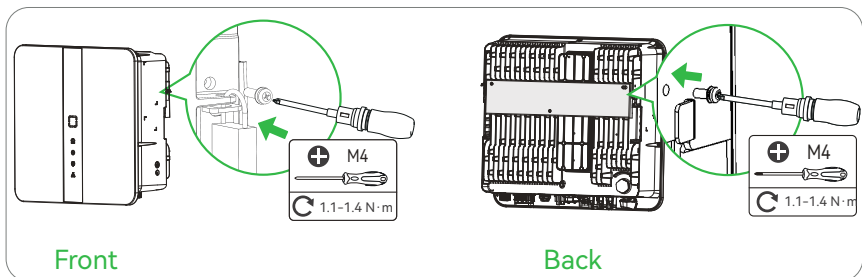


Figure 7-6 Secure the Inverter

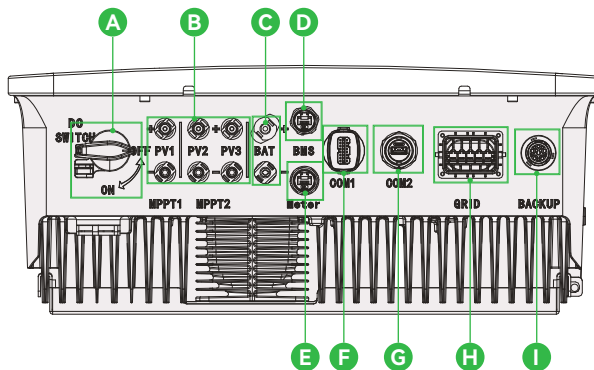
DANGER!

- All operations, cables and component specifications used in the electrical connection process must comply with local laws and regulations.
- Before making the electrical connection, please disconnect the DC switch and AC output switch of the inverter to ensure that the equipment is powered off. It is strictly forbidden to operate with electricity, to avoid risks of electric shock.
- Same kind of cables should be tied together and keep them separate from different types of cables, it is forbidden to entangle or cross each other.
- If the cable is subjected to excessive tension, it may cause poor wiring, please reserve a certain length of the cable when wiring, and then connect it to the inverter wiring port.
- When crimping the terminal block, please ensure that the cable conductor part is in full contact with the terminal block. Do not crimp the cable insulation skin together with the terminal block to prevent unreliable connections, equipment malfunction, or heat generation that could lead to damage to the inverter's terminal block.

NOTICE

- When making electrical connections, wear personal protective equipment such as safety shoes, protective gloves, and insulating gloves as required.
- Only professionals are allowed to perform electrical connection-related operations.
- The cable colors in the graphics in this article are for reference only. Specific cable specifications must comply with local regulatory requirements.

8.1 Terminals of Inverter



- | | |
|--------------------------------------|-----------------------------------|
| A DC Switch | F Communication 1 terminal |
| B PV connection terminal | G Communication 2 terminal |
| C Battery connection terminal | H Grid connection terminal |
| D BMS terminal | I Back-up terminal |
| E Meter terminal | |

Figure 8-1 Terminals of Inverter

8.2 Grounding Connection

The inverter must be grounded reliably. The connection point has been labeled with the following label: We recommend that the inverter is earthed to a nearby ground point.

WARNING!

- The protective ground of the chassis shell cannot replace the protective ground wire of the AC output port, ensure that both protective ground wires are reliably connected when wiring.
- When multiple inverters are used, ensure that the protective grounding points of all inverter chassis housings are equipotential connected.
- Please use your own protective ground wire, recommended specifications: Outdoor single core copper wire, Conductor cross-sectional area: 4~6 mm².

Step 1: Strip the insulation of conductor by wire stripper. Stripping length of 4~6 mm² wire is L1+2 mm.

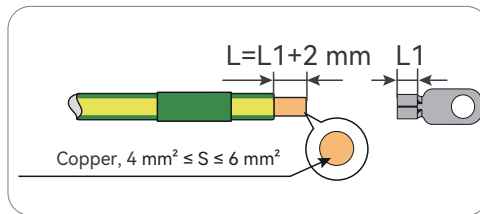


Figure 8-2 Stripping the PE Cable

Step 2: Pull the heat-shrink tubing over the PE cable and insert the stripped section into the OT terminal.

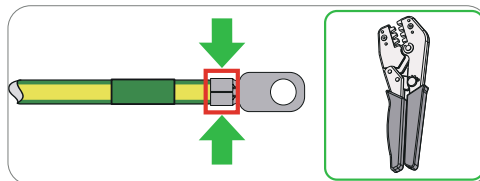


Figure 8-3 Crimping the Cable

Step 3: Use a heat gun to shrink it so that it can be firmly contacted with the terminal.

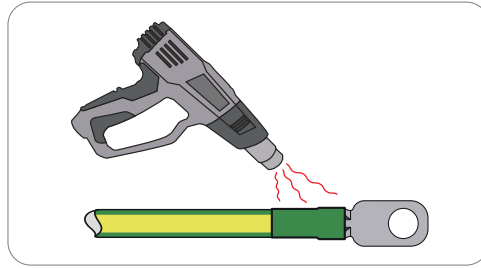


Figure 8-4 Shrinking the Tubing

Step 4: Connect the PE cable to the inverter and secure it with the original screw (Torque: 1.5~2 N·m).

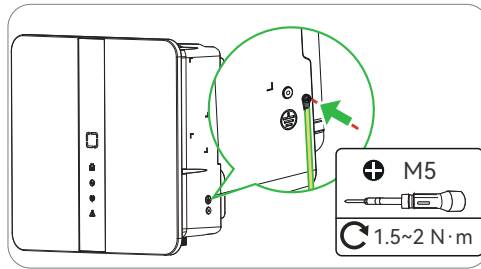


Figure 8-5 Securing the PE Cable

8.3 AC Connection



WARNING!

- It is prohibited to connect loads between the inverter and the AC switch directly connected to the inverter.
- In order to ensure that the inverter and the grid can be safely disconnected from the grid in the event of an abnormal situation, please connect the AC breaker on the AC side of the inverter. Multiple inverters cannot be connected to one AC breaker. Please choose the appropriate AC breaker according to local regulations.
- The inverter integrates a residual current monitoring unit, and when the inverter detects a leakage current greater than the allowable value, it will quickly disconnect from the grid.
- When the inverter is powered on, the BACK-UP AC port is live, if you need to perform maintenance on the BACK-UP load, please make sure the BACK-UP load circuit breaker is disconnected or the inverter is powered down, otherwise it may cause electric shock.



WARNING!

- Ensure that the AC wire exactly matches the "L1", "L2", "L3", "N", and grounding ports of the AC terminal when wiring. The inverter may be damaged if the cables are connected to the wrong terminal.
- Please ensure that the wire core is fully inserted into the terminal hole and is not exposed.
- Make sure the cable connections are tight to prevent overheating of the terminal block during device operation, which could lead to device damage.
- When connecting AC cables, it is recommended to connect the BACK-UP cable first and then the ON-GRID cable.

1. Choose whether to install RCD equipment according to local laws and regulations. The inverter can be externally connected with Type A RCD (residual current monitoring device) for protection when the DC component of the leakage current exceeds the limit.

2. RCD reference specification is 30 mA.

On Grid

Step 1: Prepare a Grid cable (five-core wire) and strip the insulation of L1, L2, L3, N and the grounding conductor.

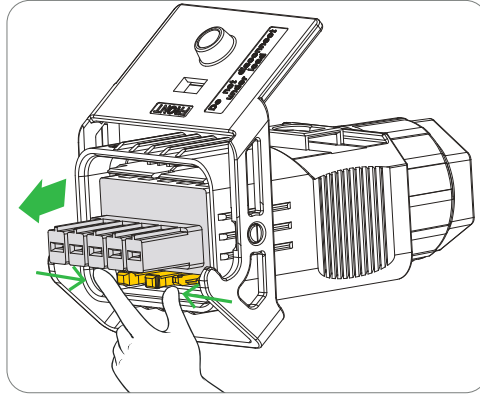


Figure 8-6 Open the Connector

Step 2: Disassemble the AC connector as below. Remove rubber plugs based on the actual wire diameter.

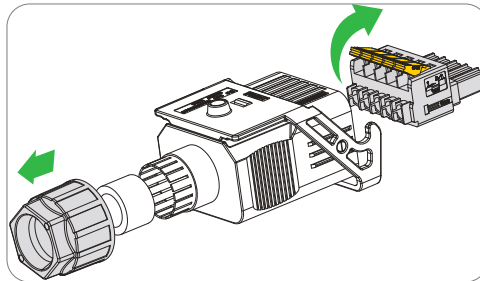


Figure 8-7 Disassembling the AC Connector

Step 3: Thread the Grid cable through swivel nut and connector enclosure in sequence.

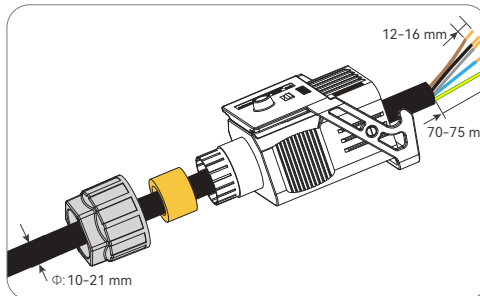


Figure 8-8 Threading the Grid cable

Step 4: Insert the conductors L1, L2, L3, N, and grounding conductor into the ferrules. Use crimping tool for ferrules to crimp it. Make sure the conductors are correctly assigned and firmly seated in the ferrules.

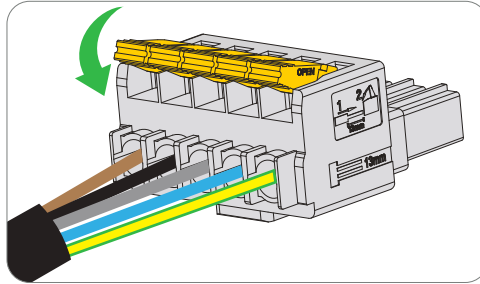


Figure 8-9 Stripping the end of cable and crimping it

Step 5: Insert the crimped conductors L1, L2, L3, N, and grounding conductor into the terminal block according to the labeling and tighten the terminal block screws.

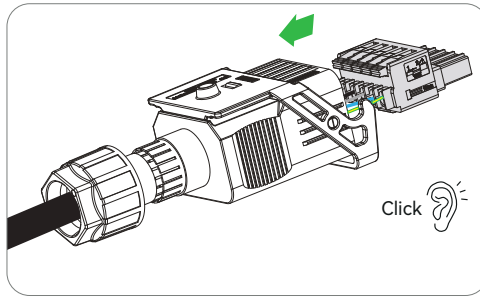


Figure 8-10 Assembling the AC Connector

Step 6: Disassemble the AC connector as below. Remove rubber plugs based on the actual wire diameter.

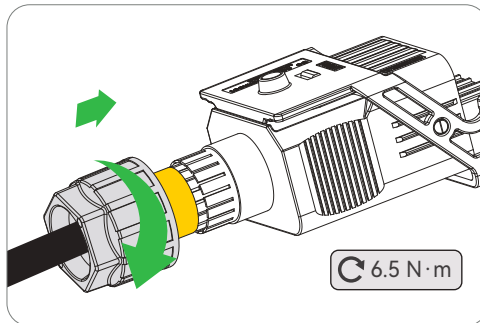


Figure 8-11 Disassembling the AC Connector

Step 7: Plug the assembled AC connectors into Grid terminal.

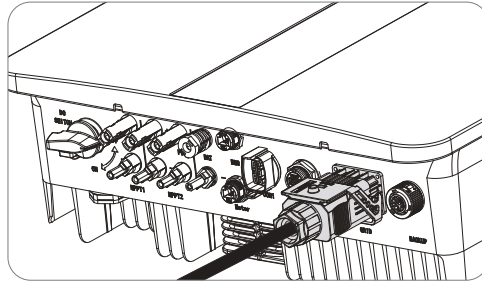


Figure 8-12 Plug the AC Connector

Off Grid

Step 1: Prepare a EPS cable (five-core copper wire) and strip the insulation of the EPS as below. Remove the cable padding inside the insulation.

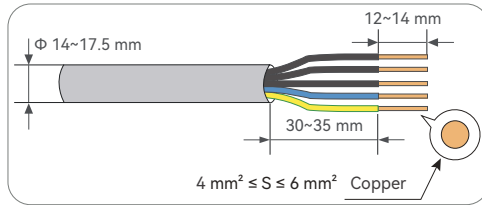


Figure 8-13 Stripping the Cable

Step 2: Disassemble the AC connector as below. Remove rubber plugs based on the actual wire diameter.

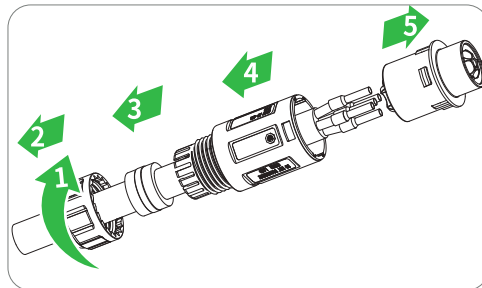


Figure 8-14 Disassembling the AC Connector

Step 3: Insert the crimped conductors L, N, and grounding conductor into the terminal block according to the labeling and tighten the terminal block screws.

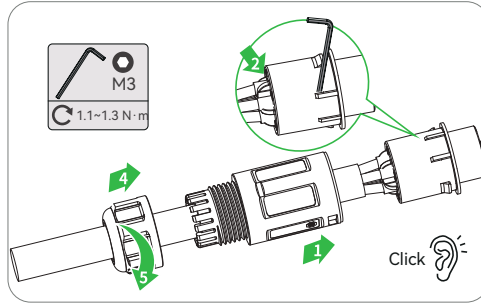


Figure 8-15 Assembling the AC Connector

Step 4: Remove the AC terminal caps and plug the assembled AC connectors into EPS terminal.

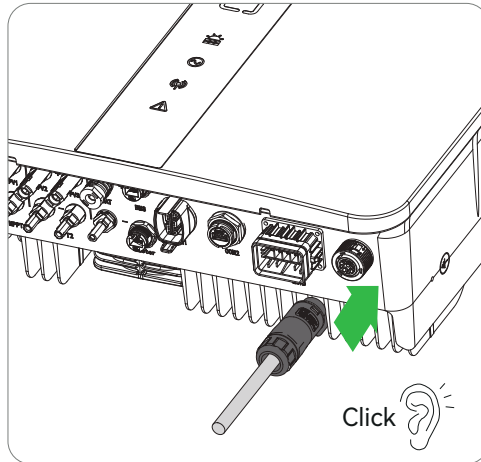


Figure 8-16 Installing the AC Connector to Inverter

8.4 PV Connection

DANGER!

- Do not connect the same PV string to multiple inverters, as it may cause damage.
- Before connecting the PV string to the inverter, please confirm the following information, otherwise it may cause permanent damage to the inverter, and in severe cases, it may cause fire, and lead to harm to personnel and property.
- Please make sure that the maximum short-circuit current and maximum input voltage of each MPPT are within the allowable range of the inverter.
- Make sure that the connection polarity of the PV string is correct.

WARNING!

- The PV string output does not support grounding, before connecting the PV string to the inverter, please ensure that the minimum insulation resistance of the PV string to ground meets the minimum insulation resistance.
- After the DC cable connection is completed, please ensure that is tight.
- Use a multimeter to measure the positive and negative poles of the DC cable to ensure that the positive and negative poles are correct and that there are no reverse connection. And ensure the voltage is within the permissible range.

Strip approx. 7~8 mm of the cable insulation.

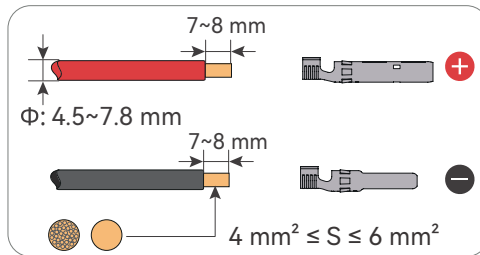


Figure 8-17 Stripping the PV Cable

- Step 1:** Insert the stripped cable into the PV pin contact. Ensure that the stripped cable and the PV pin contact are of the same polarity. Crimp it with crimping tool for PV terminal.

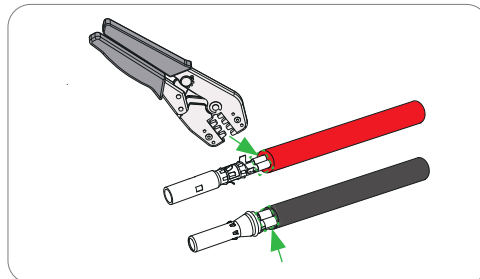


Figure 8-18 Inserting the PV pin contact and Crimping the terminal

Step 2: Thread the PV cable through swivel nut and insert the cable into the PV connector until a "Click" is heard. Gently pull the cable backward to ensure firm connection. Tighten the swivel nut clockwise. Verify that the PV connectors have the correct polarity before connection.

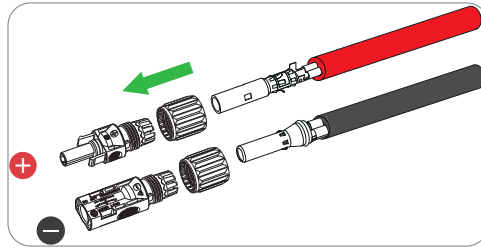


Figure 8-19 Threading the PV cable

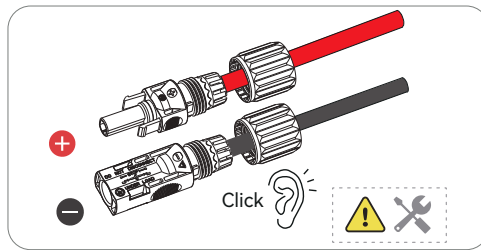


Figure 8-20 Securing the PV cable

Step 3: Use a multimeter to measure the positive and negative voltage of the assembled PV connectors. Make sure the open circuit voltage does not exceed the input limit of 550 V.

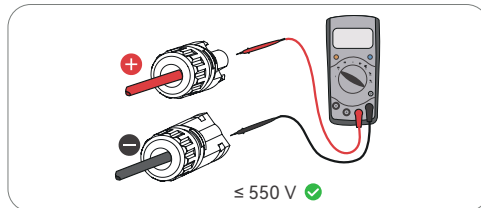


Figure 8-21 Measuring the Voltage of PV Connectors

Step 4: Remove the PV terminals caps and connect the assembled PV connectors to corresponding terminals until there is an audible "Click". The PV+ on the string side must be connected to the PV+ on the inverter side, and the PV- on the string side must be connected to the PV- on the inverter side.

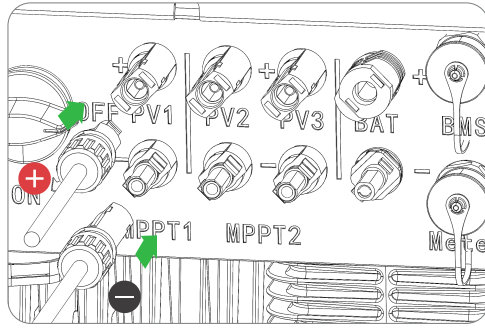


Figure 8-22 Connecting the PV cable

8.5 Battery Connection

DANGER!

- The battery used with the inverter needs to be approved by the inverter manufacturer. The lists of approved batteries can be obtained through the official website.
- Before connecting the PV string to the inverter, please confirm the following information, otherwise it may cause permanent damage to the inverter, and in severe cases, it may cause fire, and lead to harm to personnel and property.
- When the inverter is running, it is prohibited to connect and disconnect the battery cable, as illegal operation may cause the risk of electric shock.
- Do not connect the same battery pack to multiple inverters, as this may cause damage to the inverter.
- When connecting the battery cable, use an insulating tool to prevent accidental electric shock or short circuit of the battery.
- Please make sure that the battery open circuit voltage is within the allowable range of the inverter.
- A DC switch is required between the inverter and the battery.

WARNING!

- After completing the DC cable connection, please ensure that the cable connection is tight.
- Use a multimeter to measure the positive and negative poles of the DC cable to ensure that the positive and negative poles are correct and that there are no reverse connection. And ensure the voltage is within the permissible range.

Step 1: Strip approx. L1+2 mm of the cable insulation.

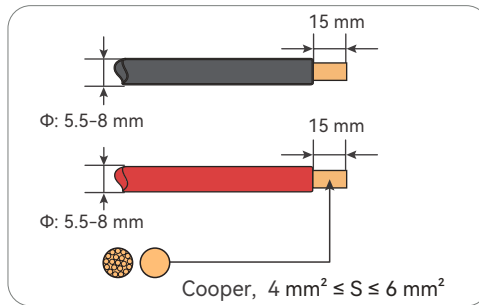


Figure 8-23 Stripping the Battery Cable

Step 2: Open the spring.

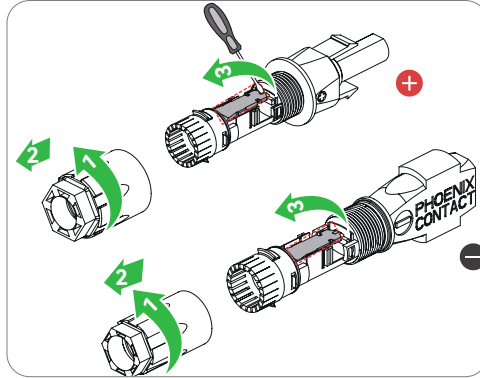


Figure 8-24 Open the Spring

Step 3: Disassemble the connector.

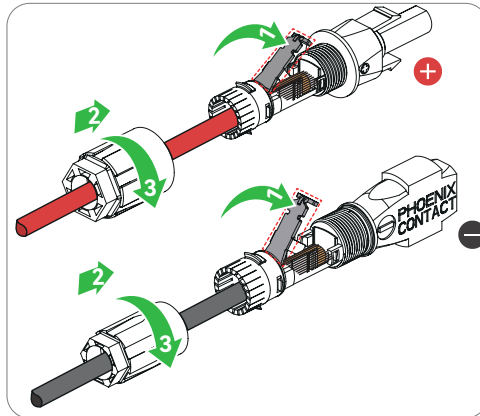


Figure 8-25 Disassemble the connector

Step 4: Carefully insert the stripped wire with twisted litz wires all the way in. The litz wire ends have to be visible in the spring.

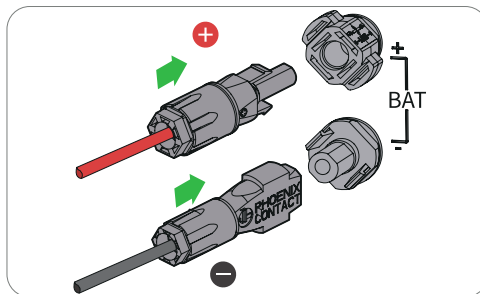


Figure 8-26 Insert the Wire

Step 5: Connect the assembled battery connectors to corresponding terminals.

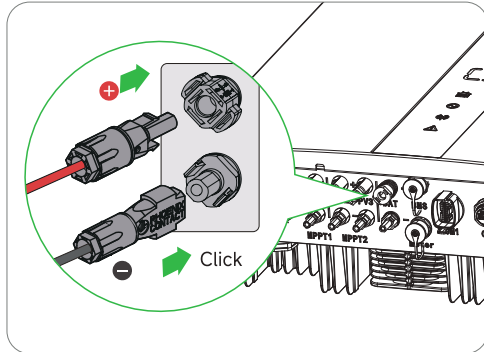


Figure 8-27 Connecting the battery Connector

8.6 Communication Connection

i 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.

COM 1 Connection

Step 1: Loosen the swivel nut and pull out the sealing plugs. Keep them still in the cable support sleeve if you choose not to connect the cable.

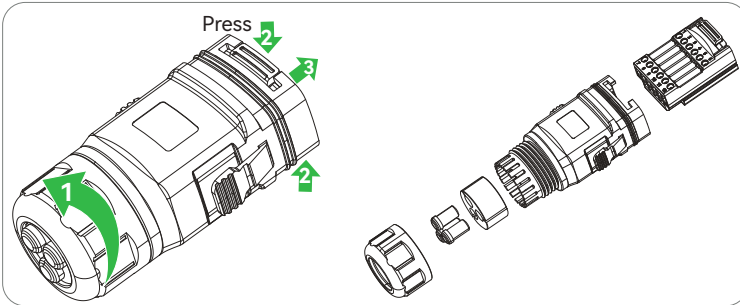


Figure 8-28 Disassembling the Connector

Step 2: Strip approx.8 mm of the cable insulation. Insert the conductors into the 6-pin terminal block and tighten the terminal screws. (torque: 1.5 N·m.) Ensure that the conductors are firmly seated in the terminal.

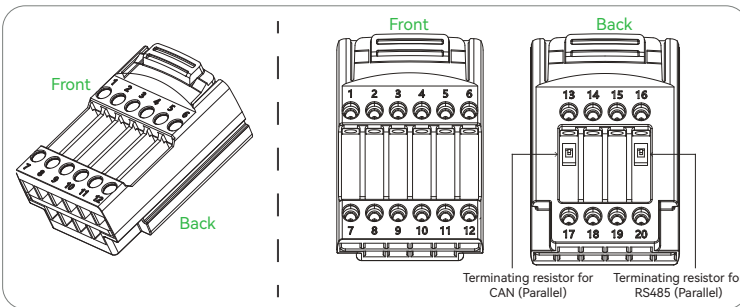


Figure 8-29 Connecting to 6-pin Terminal Block

Step 3: Connect the assembled communication cable into the COM 1 terminal. Lightly pull the cable backward to confirm tight insertion and then install the connector back.

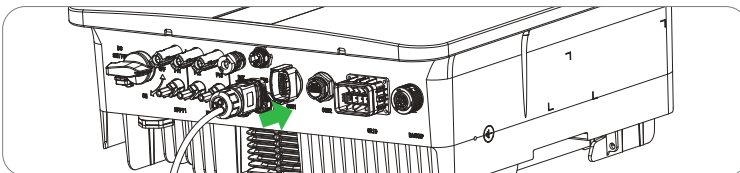


Figure 8-30 Connecting to the Inverter

Table 8-2 Communication Connections PIN

No.	PIN Description	Function	Description
1	DO1 +	Dry Contact	It is used to connect dry contact signals and realize functions such as load control, earth fault alarm, and generator control.
2	DO1 -		
3	DO2 +	Dry Contact	
4	DO2 -		
5	FB_CTR_B	Dry Contact	
6	FB_CTR_A		
7	DRM 1/5	DRED	DRED (Demand Response Enabling Device): Provides a DRED signal control port to meet the DERD certification requirements of Australia and other regions. For better use, suggest use CAT 5E outdoor shielded network cable for DRM connection. Pin7-Blue White, Pin8-Blue, Pin9- Green White, Pin10-Green, Pin11-Brown White, Pin12-Brown.
8	DRM 2/6		
9	DRM 3/7		
10	DRM 4/8		
11	COM/DRM0		
12	REF/GEN		
13	NC	NC	No connection.
14	NC		
15	NC		
16	NC		
17	CAN_L	CAN	For parallel operation.
18	CAN_H		
19	RS485_A	RS485	For parallel operation and debug.
20	RS485_B		

COM 2 Connection

The inverter supports connecting to a mobile phone or Web interface through Wi-Fi or 4G communication module to set device-related parameters, view equipment operation information, error information, and timely understand the system status.

Step 1: Assemble the datalogger.

Step 2: Plug the datalogger to the inverter.

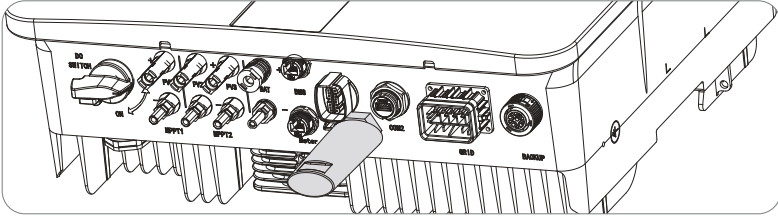


Figure 8-31 Installing a Logger

8.7 BMS, Smart Meter and CT Connection

BMS

Step 1: Anti-clockwise loosen the swivel nut and pull out the sealing plugs. Keep them still in the cable support sleeve if you choose not to connect the cable.

Step 2: Thread the cable through the swivel nut, cable support sleeve, and connector enclosure in sequence.

Step 3: Install the network cables to BMS of cable fixture.

Step 4: Connect the assembled connector to BMS terminal. Make sure the cable fixture part is well inserted into the slot of terminal. You will hear an audible "Click" if it is connected securely. Lightly pull the cable backward for double check its connection.

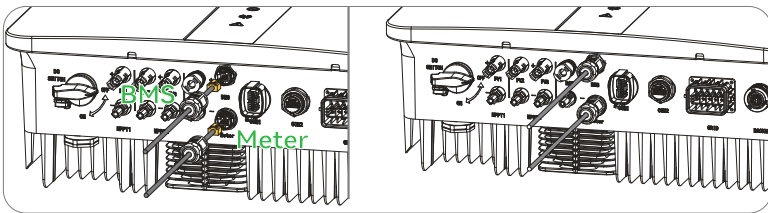


Figure 8-32 BMS and Meter Connection

Meter & CT

The inverter should work with an electric meter or current transformer (CT for short) to monitor household electricity usage. The electricity meter or CT can transmit the relevant electricity data to the inverter or platform.

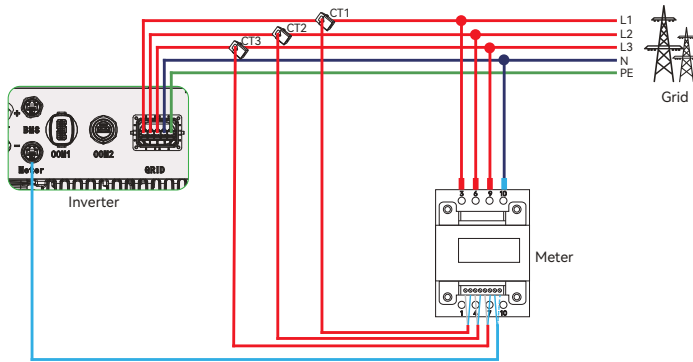


CAUTION!

Smart meters must be authorized by our company. Unauthorized meter and CT may be incompatible with the inverter, resulting in damage to the inverter and working mode malfunction. Yinerogy will not be responsible for the impact caused by the use of other appliances.

NOTICE

- The meter and CT are shipped with the inverter, the relevant parameters have been preset at the factory, please do not modify the relevant parameters of the meter and CT.
- Each inverter needs to be connected to a separate meter, do not connect multiple inverters to the same meter.
- Make sure that CT is connected to the phase line, CT1 is connected to L1, CT2 is connected to L2, and CT3 is connected to L3.
- Please connect CT according to the indicated direction of the meter, if it is reversed, the CT reverse fault will be reported.
- The length of the CT cable distributed with the inverter is 3 m or 5 m, please install the meter and CT reasonably according to the actual situation.



NOTICE

- Do not place the CT on the N wire or ground wire.
- Do not put CT on the N line and L line at the same time.
- Do not place the CT on the side where the arrow points to the inverter.
- Do not place the CT on non-insulated wires.
- It is recommended to wrap the CT clip around in circles with insulating tape.

For wire meter connection, insert another side of the communication cable into meter. For CT connection, connect the other side to CT.

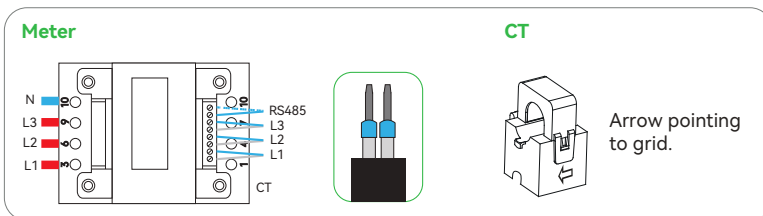


Figure 8-33 Meter and CT

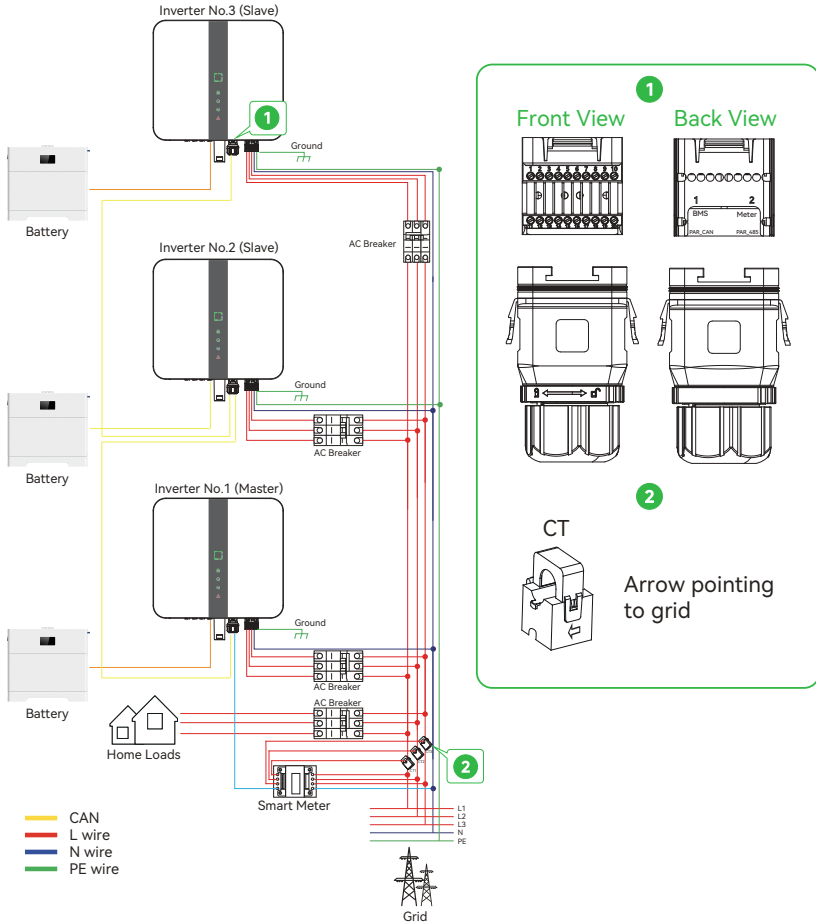
Table 8-3 PIN of Meter

PIN	PIN Description	Description
3	L1	L1/L2/L3/N connect to grid to detect power grid voltage and obtain electricity.
6	L2	
9	L3	
10	N	
13	L1 IA* terminal	To detect the L1 phase current and direction.
14	L1 IA terminal	
16	L2 IB* terminal	To detect the L2 phase current and direction.
17	L2 IB terminal	
19	L3 IC* terminal	To detect the L3 phase current and direction.
21	L3 IC terminal	
24	RS485_A	Communicate to meter.
25	RS485_B	

8.8 Parallel Connection

Parallel Communication

The inverter provides an on-grid parallel function. 4 inverters can be maximally connected. In the system, one inverter will be set as the "master inverter" which controls every other "slave inverter" in the system. The inverter that connects to the meter will automatically be selected as the Master.



WARNING!

The hybrid parallel system is extremely complex and a large amount of cables need to be connected, therefore it is strongly required that **every cable must be connected according to correct line sequence (L-L, N-N, PE-PE)**, otherwise any small misoperation may cause the system running failed.

Wiring Operation

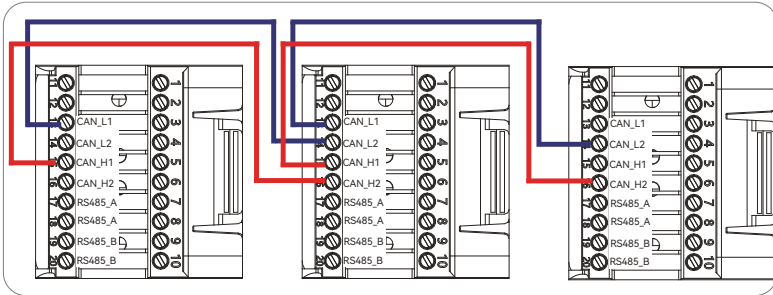
i NOTICE

Before operation, please make sure that the inverter meets the following conditions,

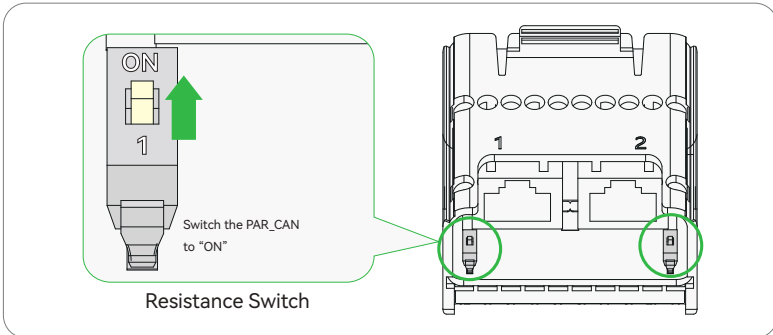
1. The software version of all inverters is the same;
2. The same type and quantity of batteries connected to all inverters are better.

Step 1: Connect all inverters' communication together by connecting network cables between CAN ports.

- Use standard network cables for CAN-CAN connection.
- Use network cable to connect master inverter CAN2 port and slave 1 inverter CAN1 port, and connect slave 1 inverter CAN2 port and slave2 inverter CAN1 port.
- Use network cable to connect master inverter meter port and meter.



Step 2: Turn on the power of the entire system, find the first inverter and the last slave in the parallel system, then set the resistance switch to "ON".



How to Remove Parallel System

If one inverter wants to exit from this parallel system, please disconnect all the network cables on the CAN port.

Parallel Control Function

There are two conditions once master inverter has some error and stop working,

1. Power Errors: The master's errors do not affect the operation of the slave devices, and the network system remains functional.
2. Communication Faults: Can cause the slave devices to stop working.

Overall system will be running according to master inverter's setting parameters, and most setting parameters of slave inverter will be kept but not be cancelled.

9.1 Check before Power-on

Serial	Checklist
1	The inverter installed firmly that easily for operation and maintenance.
2	All lines, including PE, PV, Battery, AC and communication, are connected correctly and firmly.
3	The cable bundling complies with the wiring requirements, is properly distributed, and free from damage.
4	Ensure that a waterproof cover is installed for unused wire holes.
5	Ensure that the used wire holes have been sealed.
6	Verify that the voltage and frequency of installed location meet the grid-tied requirement.

9.2 Powering on the System

Before turning on the AC switch between the inverter and the grid, use a multimeter to check that the AC voltage is within the allowed range.

Step 1: Turn on the AC circuit breaker on the ON-GRID side of the inverter.

Step 2: Turn on the AC circuit breaker on the BACK-UP side of the inverter.

Step 3: Turn on the energy storage circuit breaker between the inverter and the battery.

Step 4: Turn on the DC switch of the inverter.

NOTICE

Please set the inverter parameters first via YiCloud app to ensure its normal operation. For details, please refer to **8.2.1 Setting Inverter Parameters via YiCloud App**.

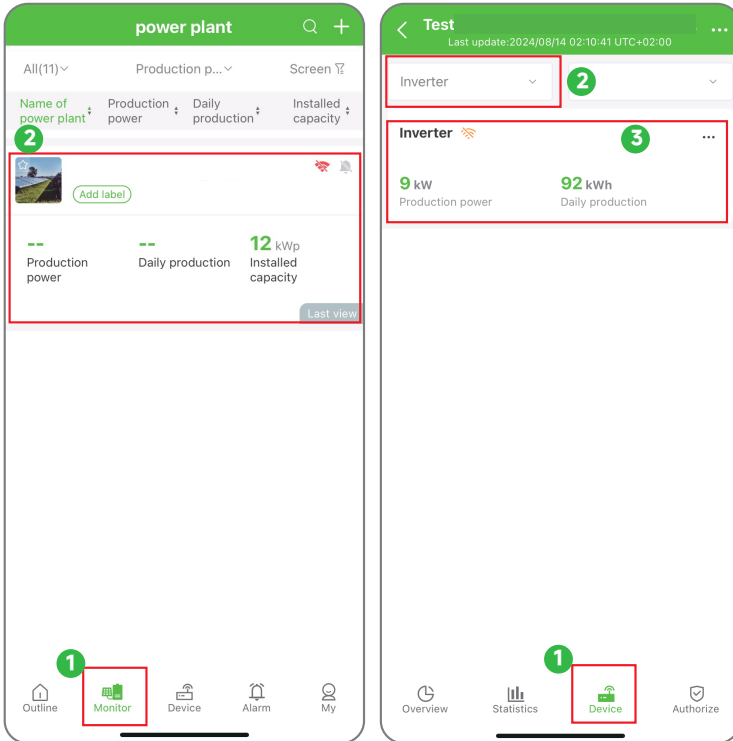
Step 5: Send a system check command on the APP (optional).

Step 6: Observe the LEDs to check the inverter operating status.

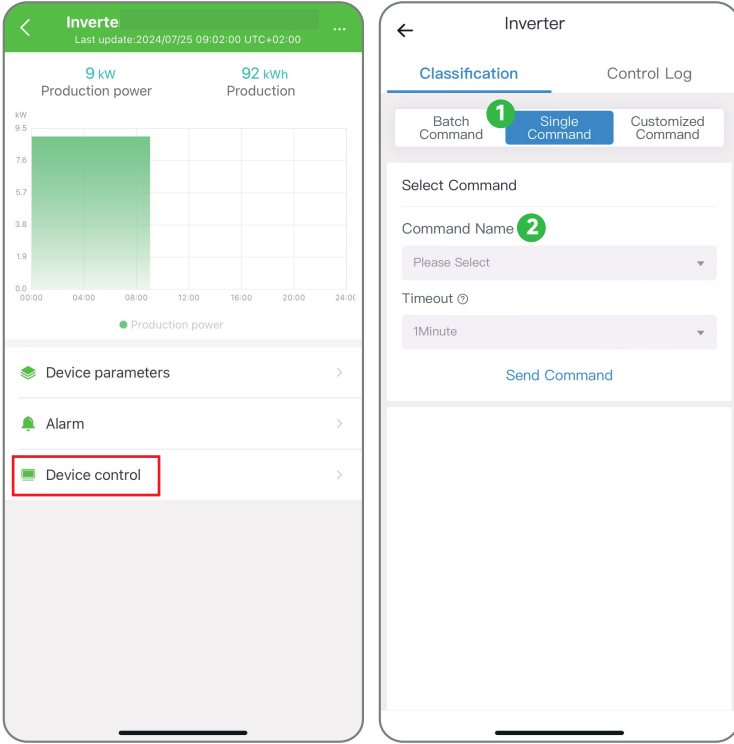
9.2.1 Setting Inverter Parameters via YiCloud App

Step 1: Log in to the YiCloud app. On the **Monitor** screen, find your own power plant.

Step 2: Select **Device**, choose **Inverter** in the drop-down list. Find your inverter in the table.

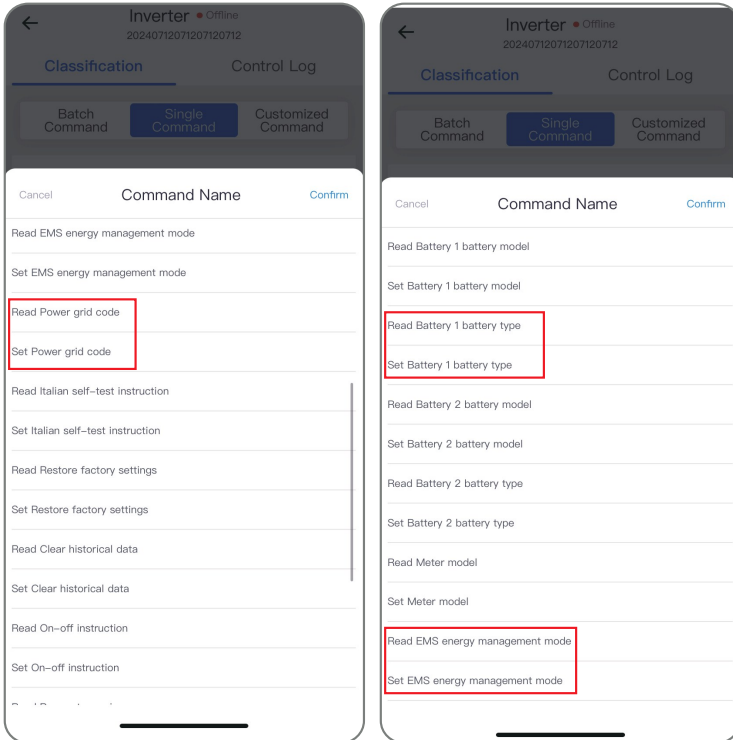


Step 3: Select certain Inverter, then **Device Control > Single Command**. The Command name is displayed.



Step 4: Select **Set Power Grid**, and select the corresponding Country's name or Country Code.

You can also **Set Battery Type** and **Set EMS Energy Management Mode** through selecting the corresponding commands in the list, and then set the **Inputs**.



Step 5: Click **Send Command**.

10.1 Introduction of LED

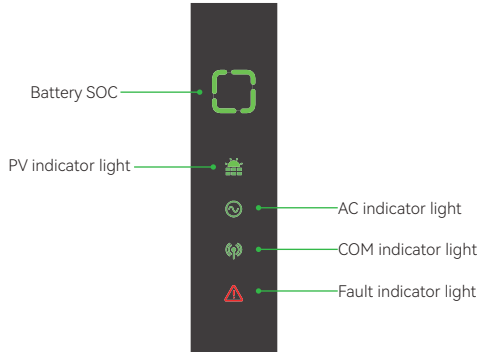











Figure 10-1 LED Panel

Table 10-1 LED Description

LED	Indicator	Status	Description
		LED indicator on	PV is generating power
PV		LED indicator blink1	PV power is low ($\leq 30\%$ rated power)
		LED indicator off	PV is not working
		LED indicator on	Grid is active and connected
AC		LED indicator blink1	Grid is disconnected but EPS is on
		LED indicator off	Grid is disconnected and EPS is off
		LED indicator on	Both BMS and meter communication are OK
COM		LED indicator blink1	BMS communication is OK; meter communication fails
		LED indicator blink2	BMS communication fails; meter communication is OK
		LED indicator off	Both BMS and meter communications are fails

LED	Indicator	Status	Description
FAULT		Red LED indicator on	A fault has occurred
		Red LED indicator blink1	RCM or IRD fault
		Off	No fault
SOC		Full LED indicators on	Battery SOC is 75%~100%
		3/4 LED indicators on	Battery SOC is 50%~75%
		2/4 LED indicators on	Battery SOC is 25%~50%
		1/4 LED indicator on	Battery SOC is 10%~25%
		1/4 LED indicator blink1	Battery SOC is below 10%
		Full LED indicators off	Battery is disconnected / not active

NOTICE

- Blink1 means on for 0.5 s and then off for 0.5 s, blink2 means on for 0.5 s and then off for 1 s.

11.1 Introduction of YiCloud

YiCloud provides customers with a platform that can monitor Yinergy inverter data and set it remotely. You can log in to your user account at any time through a personal computer, IOS or Android device to view real-time monitoring data or historical data, and perform remote settings as needed.

11.2 Operation on YiCloud App

11.2.1 Downloading and Installing App

Select and scan the QR code below to download YiCloud APP. In addition, you can search with the key word YiCloud in Apple Store or Google Play to download it.



Android & IOS

Figure 11-1 QR Code

11.3 Operation on YiCloud Web

Open a browser and enter globalhome.yinergy.com to complete registration, login, add sites and other related operations according to the guidelines of user guide.

A web registration form with three tabs: 'E-mail' (selected), 'Phone', and 'Username'. It contains an 'E-mail' input field, a 'Password' input field with a visibility toggle, a 'Please swipe right to verify' button with a right-pointing arrow, a 'Forgot Password?' link, and a 'Login' button. A 'Register' link is located at the bottom right of the form.

Figure 11-2 YiCloud Web

12.1 Power off



DANGER!

- While operating and maintaining the inverter, please turn it off for processing. Operating the equipment with power may cause damage to the inverter or cause a risk of electric shock.
- After the inverter is powered off, it will take a certain amount of time for internal components to discharge. Please wait until the equipment is fully discharged according to the required label time requirements. Do not connect one PV array to multiple inverter, it may cause damage of inverter.

Step 1: Send a shutdown command on the App.

Step 2: Turn off the AC circuit breaker on the ON-GRID side of the inverter.

Step 3: Turn off the AC circuit breaker on the BACK-UP side of the inverter.

Step 4: Turn off the energy storage circuit breaker between the inverter and the battery.

Step 5: Turn off the DC switch of the inverter.

12.2 Troubleshooting

Please follow the methods below for troubleshooting. If the troubleshooting method cannot solve the issue, please contact the after-sales service center.

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

1. Inverter information, such as serial number, software version, equipment installation time, fault occurrence time, fault occurrence frequency, etc.
2. The installation environment of the equipment, such as weather conditions, presence of obstructed or shadows on the components, etc. It is recommended to provide photos, videos, and other files as auxiliaries to assist in analyzing problems.

No.	Fault Name	Fault Reason	Solutions
1	Grid off	<ul style="list-style-type: none"> • Power grid outage. • The AC line or AC switch is disconnected. 	<ul style="list-style-type: none"> • The alarm will automatically disappear after the power supply of the power grid is restored. • Check if the AC circuit or AC switch is disconnected.

No.	Fault Name	Fault Reason	Solutions
2	Grid over voltage protect	The grid voltage is higher than the allowable range, or the duration of high voltage exceeds the set value for high voltage crossing	<ul style="list-style-type: none"> • If it occurs accidentally, it may be due to a short-term abnormality in the power grid. After detecting that the power grid is normal, the inverter will resume normal operation without manual intervention. • If it occurs frequently, please check if the grid voltage is within the allowable range. <ul style="list-style-type: none"> • If the grid voltage exceeds the allowable range, please contact the local power operator. • If the grid voltage is within the allowable range, it is necessary to modify the inverter grid over voltage protection point, HVRT, or turn off the grid over voltage protection function with the consent of the local power operator. • If it cannot be restored for a long time, please check whether the AC side circuit breaker and output cable are connected properly.
3	Grid under voltage protect	The grid voltage is below the allowable range, or the duration of low voltage exceeds the set value of low voltage crossing.	The cable bundling complies with the wiring requirements, is properly distributed, and free from damage.

No.	Fault Name	Fault Reason	Solutions
4	Grid over frequency protect	The power grid is abnormal, and the actual frequency of the power grid is higher than the local power grid standard requirements.	<ul style="list-style-type: none"> • If it occurs accidentally, it may be due to a short-term abnormality in the power grid. After detecting that the power grid is normal, the inverter will resume normal operation without manual intervention. • If it occurs frequently, please check if the grid frequency is within the allowable range. <ul style="list-style-type: none"> • If the grid frequency exceeds the allowable range, please contact the local power operator. • If the grid frequency is within the allowable range, it is necessary to modify the inverter grid over frequency protection point or turn off the grid over frequency protection function with the consent of the local power operator.
5	Grid under frequency protect	The power grid is abnormal, and the actual frequency of the power grid is lower than the local power grid standard requirements.	<ul style="list-style-type: none"> • If it occurs accidentally, it may be due to a short-term abnormality in the power grid. After detecting that the power grid is normal, the inverter will resume normal operation without manual intervention. • If it occurs frequently, please check if the grid frequency is within the allowable range. <ul style="list-style-type: none"> • If the grid frequency exceeds the allowable range, please contact the local power operator. • If the grid frequency is within the allowable range, it is necessary to modify the inverter grid under frequency protection point or turn off the grid under frequency protection function with the consent of the local power operator.

No.	Fault Name	Fault Reason	Solutions
6	Grid frequency shift protection	The power grid is abnormal, and the actual frequency change rate of the power grid does not comply with local power grid standards.	<ul style="list-style-type: none"> • If it occurs accidentally, it may be due to a short-term abnormality in the power grid. After detecting that the power grid is normal, the inverter will resume normal operation without manual intervention. • If it occurs frequently, please check if the power grid frequency is within the allowable range. <ul style="list-style-type: none"> • If the grid frequency exceeds the allowable range, please contact the local power operator. • If the power grid frequency is within the allowable range, please contact your dealer or after-sales service center.
7	Anti-island protection	The power grid has been disconnected, and due to the presence of loads, the grid voltage has been maintained. According to safety regulations and protection requirements, the grid connection has been stopped.	<ul style="list-style-type: none"> • Confirm if the power grid is disconnection. • Contact your dealer or after-sales service center.
8	Low voltage ride through (LVRT) fault	The power grid is abnormal, and the time for abnormal power grid voltage exceeds the time specified by LVRT.	<ul style="list-style-type: none"> • If it occurs accidentally, it may be due to a short-term abnormality in the power grid. After detecting that the power grid is normal, the inverter will resume normal operation without manual intervention.
9	High voltage ride through (HVRT) fault	The power grid is abnormal, and the time for abnormal power grid voltage exceeds the time specified by HVRT.	<ul style="list-style-type: none"> • If it occurs frequently, please check whether the power grid frequency is within the allowable range. If not, please contact the local power operator; if so, please contact your dealer or after-sales service center.

No.	Fault Name	Fault Reason	Solutions
10	Ground fault circuit interrupter (GFCI) Protection	The input insulation impedance to ground decreases during the operation of the inverter.	<ul style="list-style-type: none"> If it occurs accidentally, it may be caused by an accidental abnormality in the external circuit. After the fault is cleared, normal operation will resume without manual intervention. If it occurs frequently or cannot be restored for a long time, please check if the insulation impedance of the photovoltaic string to the ground is too low.
11	Direct current injection (DCI) Protection	The DC component of the inverter output current is higher than the safety regulations or the machine's default allowable range.	<ul style="list-style-type: none"> If the abnormality is caused by an external fault (such as power grid abnormality, frequency abnormality, etc.), the inverter will automatically resume normal operation after the fault disappears, without manual intervention. If the alarm occurs frequently and affects the normal power generation of the power plant, please contact your dealer or after-sales service center.
12	Low insulation impedance	<ul style="list-style-type: none"> The photovoltaic string is short circuited to the protective ground. The installation environment of the photovoltaic string is relatively humid for a long time and the insulation of the line to the ground is poor. 	<ul style="list-style-type: none"> Check the impedance of the photovoltaic string to the protective ground. If the resistance value is greater than 50k Ω, it is normal. If the resistance value is less than 50k Ω, please investigate the short circuit point and rectify it. Check if the protective ground wire of the inverter is correctly connected. If it is confirmed that the impedance is indeed lower than the default value in a rainy and cloudy environment, please reset the "insulation impedance protection point" via APP.

No.	Fault Name	Fault Reason	Solutions
13	Abnormal system grounding	<ul style="list-style-type: none"> The protective ground wire of the inverter is not connected. When the output of the photovoltaic string is grounded, the AC output cables L and N of the inverter are reversed. 	<ul style="list-style-type: none"> Please confirm if the protective ground wire of the inverter is not connected properly. If the output of the photovoltaic string is grounded, please confirm whether the AC output cables L and N of the inverter are reversed.
14	Internal communication disconnection	<p>Frame format error</p> <ul style="list-style-type: none"> Parity error Can bus offline Hardware CRC verification error When sending (receiving), the control bit is set to receive (sending) Transfer to units that are not allowed 	Disconnect the AC output side switch and DC input side switch, after 5 minutes, connect the AC output side switch and DC input side switch. If the fault persists, please contact your dealer or after-sales service center.
15	Abnormal AC sensor	Abnormal sampling of AC sensor	Disconnect the AC output side switch and DC input side switch, after 5 minutes, connect the AC output side switch and DC input side switch. If the fault persists, please contact your dealer or after-sales service center.
16	Abnormal Leakage current sensor	Abnormal sampling of leakage current sensor	Disconnect the AC output side switch and DC input side switch, after 5 minutes, connect the AC output side switch and DC input side switch. If the fault persists, please contact your dealer or after-sales service center.
17	Abnormal relay	<ul style="list-style-type: none"> Abnormal relay (relay short circuit) Abnormal control circuit Abnormal AC measurement wiring (i.e. virtual connection or short circuit phenomenon) 	Disconnect the AC output side switch and DC input side switch, after 5 minutes, connect the AC output side switch and DC input side switch. If the fault persists, please contact your dealer or after-sales service center.

No.	Fault Name	Fault Reason	Solutions
18	Chamber over temperature	<ul style="list-style-type: none"> The installation position of the inverter is not ventilated The ambient temperature is too high and exceeds 60 °C Abnormal operation of internal fan 	<ul style="list-style-type: none"> Check whether the ventilation at the installation location of the inverter is good and whether the ambient temperature exceeds the maximum allowable ambient temperature range. If there is no ventilation or the ambient temperature is too high, please improve its ventilation and heat dissipation conditions. If the ventilation and ambient temperature are normal, please contact your dealer or after-sales service center.
19	Bus over voltage	<ul style="list-style-type: none"> PV voltage is too high Abnormal inverter BUS voltage sampling 	Disconnect the AC output side switch and DC input side switch, and after 5 minutes, close the AC output side switch and DC input side switch. If the fault persists, please contact your dealer or after-sales service center.
20	PV input over voltage	The photovoltaic array configuration is incorrect, too many photovoltaic panels in series.	Check the series configuration of the corresponding photovoltaic array string to ensure that the open circuit voltage of the string is not higher than the maximum working voltage of the inverter.
21	PV continuous hardware over current	<ul style="list-style-type: none"> Incorrect photovoltaic array configuration. Hardware damage 	Disconnect the AC output side switch and DC input side switch, after 5 minutes, connect the AC output side switch and DC input side switch. If the fault persists, please contact your dealer or after-sales service center.
22	PV continuous software over current	<ul style="list-style-type: none"> Incorrect photovoltaic array configuration Hardware damage 	Disconnect the AC output side switch and DC input side switch, after 5 minutes, connect the AC output side switch and DC input side switch. If the fault persists, please contact your dealer or after-sales service center.

12.3 Maintenance

Regular maintenance is required for the inverter. The table below lists the operational maintenance for expressing the optimum device performance. More frequent maintenance service is needed in the worse work environment. Please make records of the maintenance.



WARNING!

- Only qualified person can perform the maintenance for the inverter.
- Only use the spare parts and accessories approved by Yinergy for maintenance.

12.3.1 Removing the Inverter



WARNING!

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

Step 1: Disconnect all electrical connections of the inverter, including DC line, AC line, communication line, communication module, and protective ground wire.

Step 2: Remove the inverter from the mounting bracket.

Step 3: Remove the mounting bracket.

Step 4: Properly store the inverter. If the inverter will be used in the future, ensure that the storage conditions meet the specified requirements.

12.3.2 Scrap Inverter

When the inverter cannot continue be used and needs to be scrapped, please dispose of the inverter according to the electrical waste disposal requirements of the country/region where the inverter is located.

The inverter cannot be treated as household waste.

12.3.3 Maintenance Routines

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
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
General status of inverter	Check if there is any damage on the inverter. Check if there is any abnormal sound when the inverter is running.	Once 6 months

13 Technical Data

Make Life Better

• PV Input

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Max. Input Power [W]	7500	9000	12000	15000	15000
Max. Input Voltage [V]	1000				
Rated Input Voltage [V]	650				
Start-up Input Voltage [V]	180				
MPPT Operating Voltage Range [V]	200 - 950				
Max. Input Current per MPPT [A]	14	14	14	14 / 28	14 / 28
Max. Short-circuit Current per MPPT [A]	17	17	17	17 / 34	17 / 34
No. of MPP Trackers	2				
No. of Strings per MPP Tracker	1	1	1	1 / 2	1 / 2

• AC Output (On Grid)

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Rated Output Power [W]	5000	6000	8000	10000	12000
Max. Output Apparent Power [VA]	5500	6600	8800	11000	12000
Max. Output Current [A]	8.3	10	13.3	16.7	17.4
Power Factor	-1 (Adjustable from 0.8 leading to 0.8 lagging)				
Total Harmonic Distortion, THDi	< 3%				

• AC Input (On Grid)

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Max. Input Apparent Power [VA]	12000	12000	16000	16000	16000
Rated Grid Voltage [V]	3L / N / PE, 380 / 400				
Rated Grid Frequency [Hz]	50 / 60				
Max. Input Current [A]	18.2	18.2	24.2	24.2	24.2

• Battery

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Battery Type	Li-ion				
Battery Voltage Range [V]	170 - 600				
Max. Charge / Discharge Current [A]	20 / 20	20 / 20	30 / 30	30 / 30	30 / 30
Rated Power [W]	5000	6000	8000	10000	10000
Communication Interface	CAN, RS485				
Compatible Battery Brand	Sunwoda, Pylontech, CESC				

• Backup Output (Off Grid)

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Rated Output Power [W]	5000	6000	8000	10000	12000
Peak Output Apparent Power, 10s [VA]	10000	12000	16000	16000	16000
Switch Time [ms]	< 10				
Rated Grid Voltage [V]	3L / N / PE, 380 / 400				
Rated Grid Frequency [Hz]	50 / 60				
Max. Output Current [A]	8.3	10	13.3	16.7	17.4
Total Harmonic Distortion, THDv	< 3%				

- Efficiency

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Max. Efficiency			98.0%		
Euro Weighted Efficiency			97.3%		
Max. Battery Discharge Efficiency			97.0%		

- Protection & Feature

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
DC Reverse Polarity Protection			Yes		
PV String Current Monitoring			Yes		
Insulation Resistor Monitoring			Yes		
Residual Current Monitoring			Yes		
Anti-islanding Protection			Yes		
AC Overcurrent Protection			Yes		
AC Short-circuit Protection			Yes		
AC Overvoltage Protection			Yes		
DC Circuit			Yes		
Pollution Degree			III		
Surge Protection Device, SPD			DC Type II / AC Type III		
Arc Fault Circuit Interrupter, AFCI			Optional		
Rapid Shutdown, RSD			Optional		

- General Data

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Dimensions (W x H x D Bare Machine) [mm]			514 x 496 x 205		
Net Weight [kg]			28.5		
Installation			Wall-mounted		
Operation Temperature [°C]			-25 ~ +60 (> 45 Derating)		
Operation Humidity			0~95% RH, No Condensing		
Protection Degree			IP66		
Max. Operating Altitude [m]			4000		
Cooling Method			Natural Convection		
Noise Emission [dB]			< 40		
Topology			Transformerless		
Display			LED Indicators; APP		
Signal Input and Output			DRM, 1 x DI, 2 x DO		
Standby Consumption [W]			< 15		

- Standard Compliance

Model	HI-3P5K-H-Y1	HI-3P6K-H-Y1	HI-3P8K-H-Y1	HI-3P10K-H-Y1	HI-3P12K-H-Y1
Grid Regulation	EN 50549-1, VDE-AR-N 4105, DIN VDE V0124 -100, TOR Generator Type A, NA/EEA-NE7-CH2020, AS/NZS 4777.2, G98, G99, CEI 0-21, PPDS Anne x 4, NC fg P TPIREE				
Safety Regulation	IEC/EN 62109-1, IEC/EN 62109-2				
EMC	IEC/EN 61000-6-1, IEC/EN 61000-6-3				



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