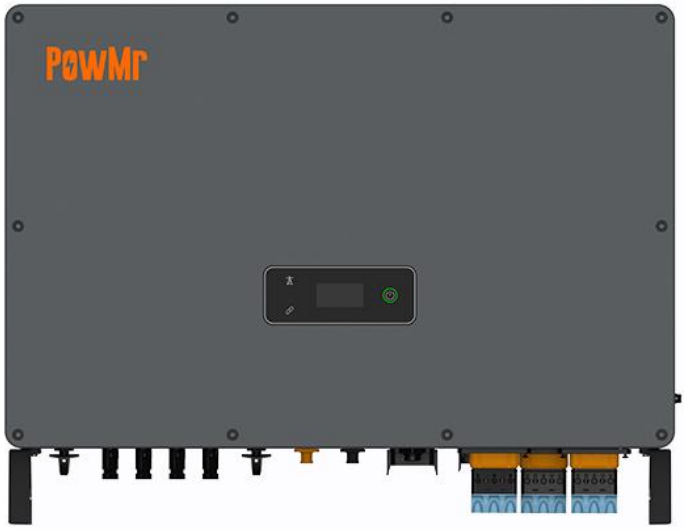
Product Type

SOLXPOW X4-25/30/36/40/50K

SOLXPOW X4P-40/50K



PowMr

HYBRID INVERTER

User Manual

Important Safety Instructions

Please save these instructions for future use!

⚠ Read all of the instructions and cautions in the manual before beginning the installation!

- Before installation, please read this manual carefully and follow the instructions in this manual strictly.
- Installers need to undergo professional training or obtain electrical related professional qualification certificates.
- When installing, do not open the front cover of the inverter. Apart from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to inverters and annulment of the warranty.
- All electrical installations must conform to local electrical safety standards.
- If the inverter needs maintenance, please contact the local designated personnel for system installation and maintenance.
- To use this inverter for power generation needs the permission of the local power supply authority.
- The temperature of some parts of the inverter may exceed 60° C during operation. To avoid being burnt do not touch the inverter during operation. Let it cool before touching it.
- When exposed to sunlight, the PV array generates dangerous high DC voltage. Please operate according to our instructions, or it will result in danger to life.
- When wiring the lithium battery terminals, please disconnect the breaker or switch of the lithium battery in case of a physical injury caused by the high voltage.

Inverter Storage

- Do not dispose of the original packing case. It is recommended to store the device in the original packing case when the device is decommissioned.
- The storage temperature and humidity should be in the range of -30℃ and+ 60℃, and less than 90%, respectively.
- If a batch of inverters needs to be stored, the height of each pile should be no more than 6 levels.

Symbols On the Inverter

Symbol	Description
	To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end-users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.
	Please read the instructions carefully before installation.
	Do not touch any internal parts of the inverter being disconnected from the mains, battery and PV input for 10 minutes.
	CE mark, the inverter complies with the requirements of the applicable CE guidelines.
	Danger. Risk of electric shock!
	The surface is hot during operation and do not touch.
	Additional grounding point.
	TÜV mark of conformity.

Table of Contents

1 About This Manual

This manual is an integral part of PowMr SOLXPOW X4 series single-phase high-voltage hybrid inverters (hereinafter referred to as the inverter). It mainly introduces the assembly, installation, electrical connection, debugging, maintenance and troubleshooting of the products.
All or part of the products, services or features described in this document may not be within the scope of purchase. This document serves only as a guide to use, and all statements, information and recommendations in this document do not constitute any express or implied guarantee.

1.1 How To Use This Manual

Before installing and using inverters, please read this manual carefully, understand the safety information and be familiar with the functions and characteristics of inverters.
The manual content of subsequent versions of the inverter may be subject to change. The latest manual can be found at www.powmr.com.

1.2 Target Groups

This manual is applicable to electrical installers with professional qualifications and end-users, who should have the following skills:
① Training for installation and commissioning of the electrical system, as well as dealing with hazards.
② Knowledge of the manual and other related documents.
③ Knowledge of the local regulations and directives.

1.3 Symbols

Important instructions contained in this manual should be followed during installation, operation and maintenance of the inverter. They will be highlighted by the following symbols.

DANGER	Indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazard with a medium level of risk that, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a situation that, if not avoided, could result in equipment or property damage, data loss, equipment performance degradation.
NOTE	Indicates additional information, emphasized contents or tips that may be helpful, e.g., to help you solve problems or save time.

1.4 Statement

Our company has the right not to undertake quality assurance in any of the following circumstances:

- Damages caused by improper transportation.
- Damages caused by incorrect storage, installation or use.
- Damages caused by installation and use of equipment by non-professionals or untrained personnel.
- Damages caused by failure to comply with the instructions and safety warnings in this document.
- Damages of running in an environment that does not meet the requirements stated in this document.
- Damages caused by operation beyond the parameters specified in applicable technical specifications.
- Damages caused by unauthorized disassembly, alteration of products or modification of software codes.
- Damages caused by abnormal natural environment (force majeure, such as lightning, earthquake, fire, storm, etc.).
- Any damages caused by the process of installation and operation which don't follow the local standards and regulations.
- Products beyond the warranty period.

2 Product Description

2.1 Product Introduction

The SOLXPOW X4 series inverter is also known as hybrid inverter or storage inverter, which is mainly used to combine the PV array, lithium battery, loads and power grid to realize intelligent power management and dispatching.

2.1.1 Models

The PowMr SOLXPOW X4 series hybrid inverter includes 7 models which are listed below: SOLXPOW X4-25K, SOLXPOW X4-30K, SOLXPOW X4-36K, SOLXPOW X4-40K, SOLXPOW X4-50K, SOLXPOW X4P-40K, SOLXPOW X4P-50K.

2.2 System Introduction

The hybrid solar system is usually composed of the PV array, hybrid inverter, lithium battery, loads and power grid.

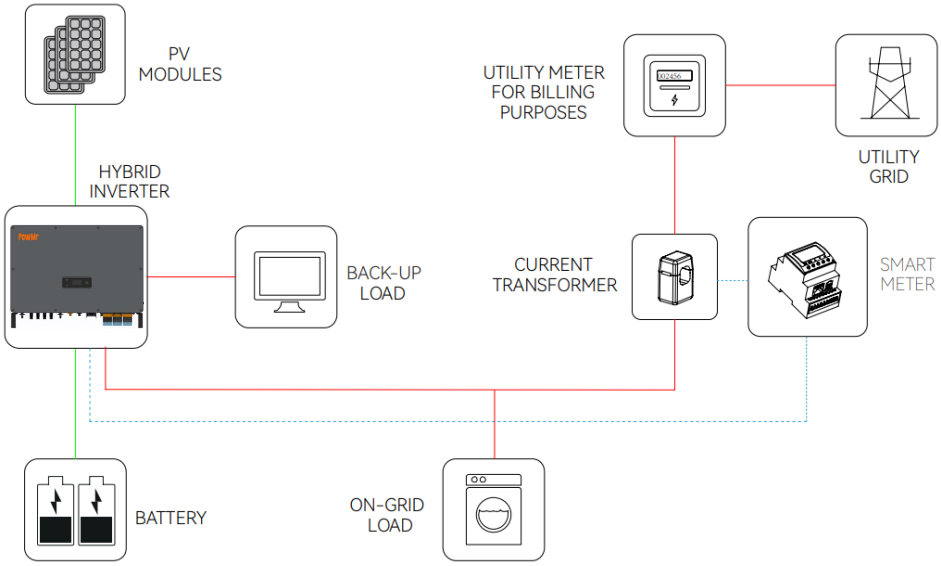


Figure 2-1 Schematic diagram of hybrid system

NOTICE

- The system is not suitable for supplying life-sustaining medical devices. It cannot guarantee backup power in all circumstances.

The applicable grid types for the SOLXPOW X4 series are TN-S, TN-C, TN-C-S and TT. When applied to the TT grid, the voltage of N to PE suggests less than 30V.

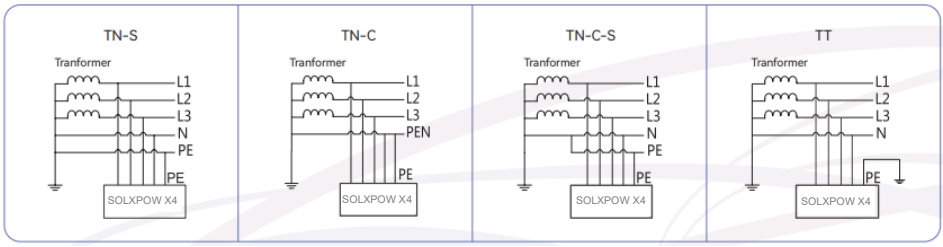


Figure 2-2 Applicable grid types

2.3 Product Features

- Dual capabilities for both off-grid and grid-tied operation.
- Up to 50kW power output, enabling expanded energy storage.
- High efficiency of up to 98.8%.
- 2/4 MPP trackers with a maximum of 30A/60A photovoltaic input per tracker, achieving a total maximum PV input power of 75kW.
- Supports a maximum charge/discharge current of 100A.
- Wide battery voltage range from 140V to 750V.
- IP65 certified for high water and dust protection, suitable for both indoor and outdoor use.
- Supports parallel operation of up to 10 inverters.
- Plug-and-play terminals for convenient and rapid wiring.
- OLED display and app for configuration and data management.
- Equipped with a WiFi module for remote communication via a mobile app.
- Provides various protection functions, including DC reverse polarity protection, battery input reverse protection, insulation resistance protection, surge protection, and more.

2.4 Appearance

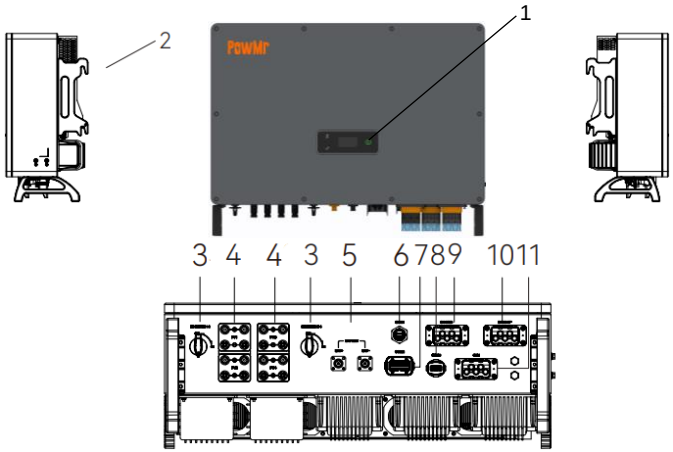


Figure 2-3 Inverter Appearance

Wiring terminals are at the bottom of the inverter, as shown in the table below.

Item	Terminal	Note
1	Display and LED panel	Display the operation information and working states of the inverter.
2	Hanger	Used to hang the inverter on the wall-mounting bracket.
3	DC switch	Used to safely disconnect the DC circuit.
4	DC input terminal	PV connector (SOLXPOW X4-25~50K 8 pairs/ SOLXPOW X4P-40~50K 6 pairs)
5	Battery input terminal	Battery connector
6	COM1 port	WiFi/LAN/4G module connector
7	COM2 port	Meter/BMS/RS485/DRED/DO Connector
8	COM3 port	DO/0-10V AO/4-20mA AO Connector
9	On-grid output terminal	Used for On-grid output cable connection
10	Back-up output terminal	Used for Back-up output cable connection
11	Generator input terminal	Generator connector(This function is temporarily unavailable. Please contact PowMr if necessary)

2.5 Indicator

Figure 2-4 Inverter display interface

Item	Indicator	Status		Description
1	Grid Indicator	Off	Grid lost.	
		Slow flashing	Inverter detected grid but not running in on-grid mode.	
		Always on	Inverter works in on-grid mode.	
2	Communication Indicator	Green	Always on	The inverter communication is running normally
		Green	Flashing	The inverter communicates with EMS or Master inverter through RS485 or CAN.
		Orange	Always on	The inverter isn't communicating with PowMr smart meter.
		Red	Always on	The inverter isn't communicating with the BMS.
3	Display	Display off to save power, press the button to wake up the display.		
5	Button	Switch display information and set parameters by short press or long press.		

3 Installation

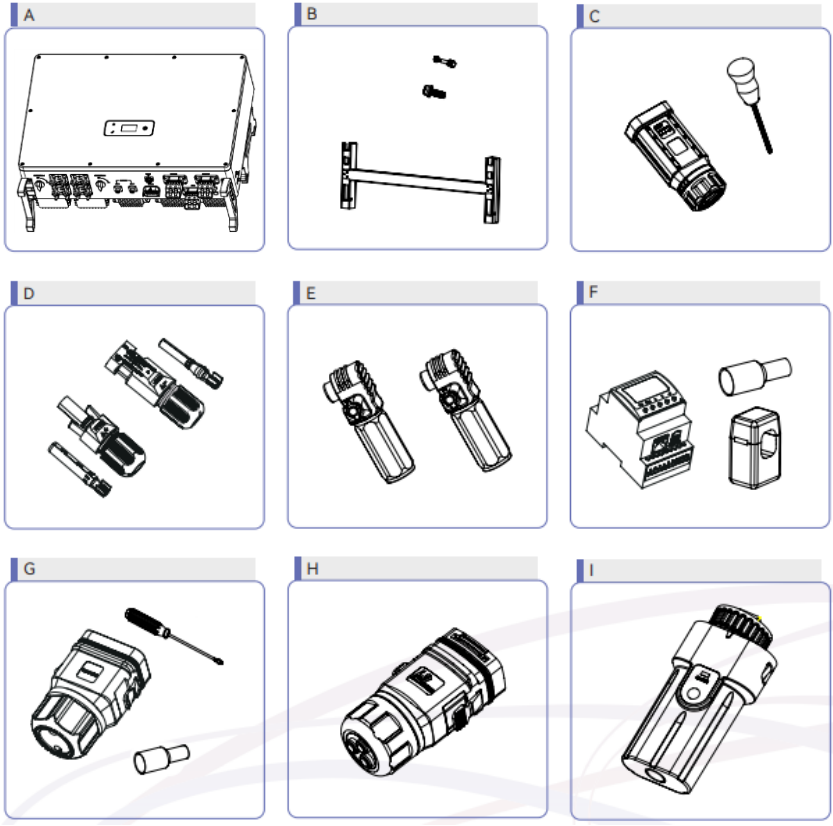
3.1 Unpacking and Storage

The device is thoroughly tested and strictly inspected before delivery. Nonetheless, damage may still occur during shipping. For this reason, please conduct a thorough inspection after receiving the device.

Contact PowMr or the transport company in case of any damage or incompleteness, and provide photos to facilitate services.

3.2 Packing List

The package of the inverter includes the following accessories. Please check whether the accessories in the packing box are complete when receiving the goods.



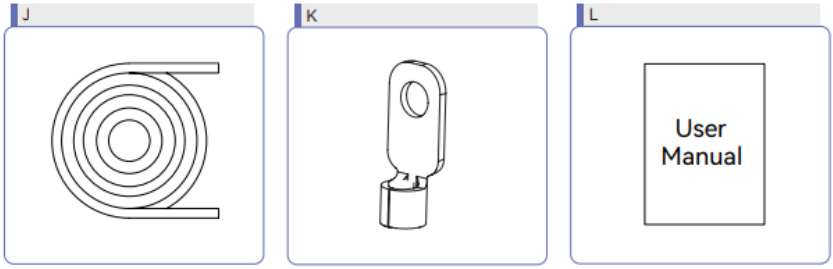


Figure 3-1 Packing list

Item	Name and Quantity
A	Inverter (1pcs)
B	Inverter bracket (1pcs), Bolt assembly (4pcs), M6 screws (2pcs)
C	AC connector set (3 pcs)
D	PV terminal (SOLXPOW X4 8 pairs)
E	Battery terminal (1 pairs)
F	Meter with 3 CTs (1pcs)
G	COM2 connector set (1pcs)
H	COM3 connector set (1pcs)
I	Monitoring device (1pcs)
J	10m meter communication cable (1pcs), 3m battery communication cable (1pcs)
K	PE terminal(1pcs)
L	User guide

3.3 Location

The SOLXPOW X4 series inverters are designed with IP65 protection enclosure for indoor and outdoor installations. When selecting an inverter installation location, the following factors should be considered:

1. The wall on which the inverters mounted must be able to withstand the weight of the inverter.
2. The inverter needs to be installed in a well-ventilated environment.
3. Do not expose the inverter directly to strong sunlight to prevent excessive temperature operation. The inverter should be installed in a place with shelter to prevent direct exposure to sunlight and rain.
4. Install the inverter at eye level for easy inspection of screen data and further maintenance.
5. The ambient temperature of the inverter installation location should be between -30℃ and 60℃.
6. The surface temperature of the inverter may reach up to 75℃. To avoid risk of burns, do not touch the inverter while it's operating and inverter must be installed out of reaching of children.

3.3.1 Installation location

Select an optimal mounting location for safe operation, long service life and expected performance.

1. The inverter with protection rating IP65 can be installed both indoors and outdoors.
2. Install the inverter at a place convenient for electrical connection, operation, and maintenance.

Figure 3-2 Recommended installation location

WARNING

- Do not put flammable and explosive articles around the inverter.

3.3.2 Installation Spacing

Reserve enough clearance around the inverter to ensure sufficient space for heat dissipation.

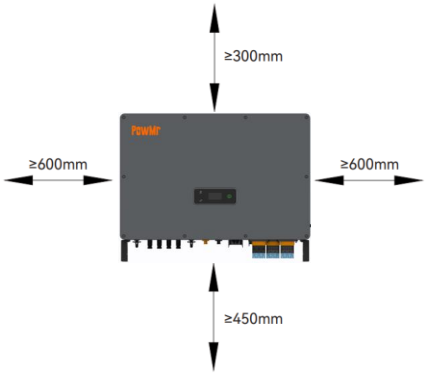


Figure 3-3A Spacing for installing an inverter

In case of multiple inverters, reserve specific clearance between the inverters.

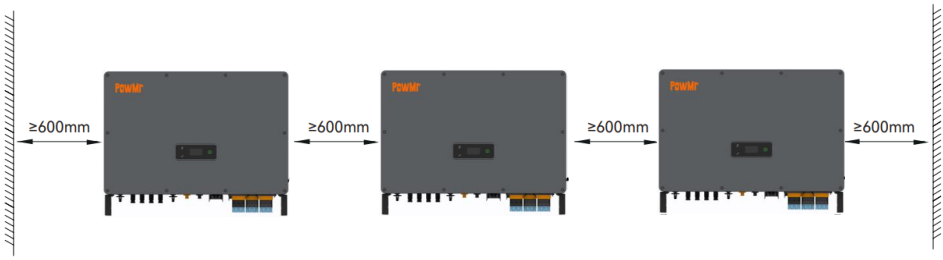


Figure 3-3B Spacing for installing multiple inverters

When installing inverters back-to-back, the distance between every two inverters should be at least 600 mm.

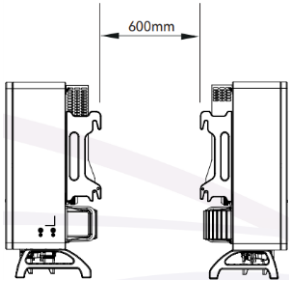


Figure 3-3C Spacing for Back to Back Installation

3.3.3 Installation Angle

Install the inverter vertically. Never install the inverter horizontally, or at forward/backward tilted, or upside down.

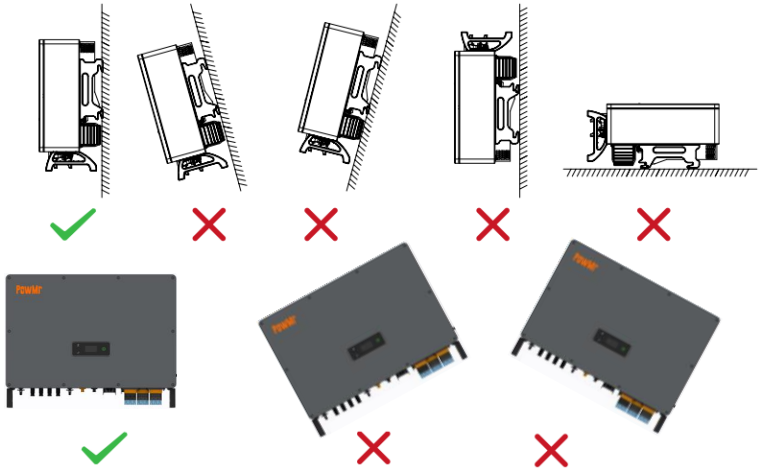


Figure 3-4 Permitted and prohibited mounting positions

3.4 Mounting the Inverter

3.4.1 Bracket Installation

Dimensions of wall bracket (mm)

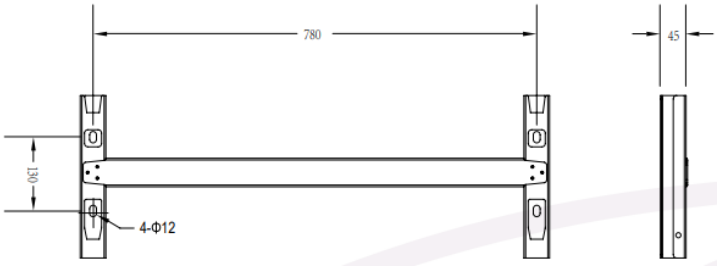


Figure 3-5 Dimensions of bracket

1. Level the assembled inverter-bracket by using the level, and mark the positions for drilling holes on the mounting bracket. Drill the holes by using a hammer drill.

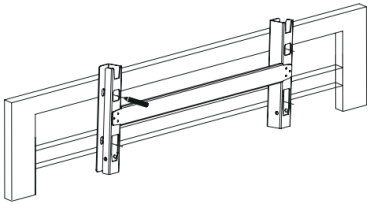


Figure 3-6 Marking hole position using installation bracket

2. Secure the inverter-bracket with bolts.

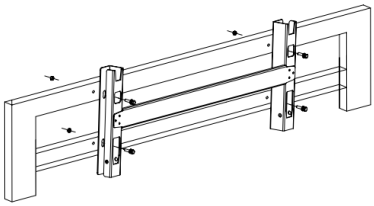


Figure 3-7 Fixing the bracket

3.4.2 Mounting the Inverter

Lift the inverter, hang the back rail on the fixed bracket carefully. Secure the inverter with M6 screws (two sides).

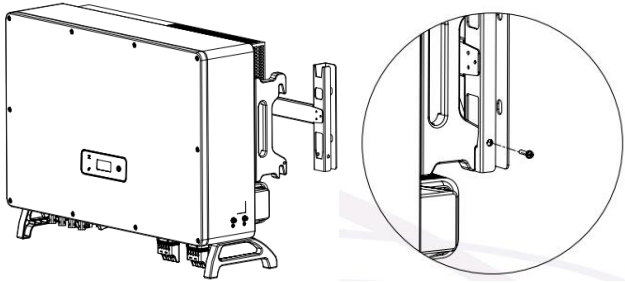


Figure 3-8 Mounting the inverter

3.4.3 External Ground Connection

Connect the inverter and ground bar through PE wire to achieve the purpose of grounding protection. Please always remember wiring the PE wire before wiring other wires.

DANGER

- Do not connect the N-wire as a protective ground wire to the inverter casing. Otherwise, it may cause electric shock.

NOTICE

- Reliable grounding is good for resisting surge voltage shock and improving EMI performance.
- Inverters must be well-grounded.
- For a system with only one inverter, just ground the PE cable.
- For a multi-inverter system, all inverters PE wire need to be connected to the same grounding copper bar to ensure equipotential bonding.

Ground terminal connection steps:

1. The external grounding terminal is located in on the lower right side of the inverter.
2. Fix the grounding terminal to the PE wire with a proper tool and lock the grounding terminal to the grounding hole in the lower right side of the inverter.

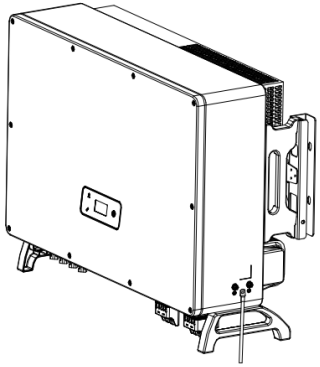


Figure 3-9 Grounding terminal connection

4 Electrical Connection

DANGER

- A high voltage in the conductive part of the inverter may cause an electric shock. When installing the inverter, make sure that the AC and DC sides of the inverter are completely de-energized.
- Do not connect the N-wire as a protective ground wire to the inverter casing. Otherwise, it may cause electric shock.

WARNING

- Do not ground the positive or negative pole of the PV string, otherwise it will cause serious damage to the inverter.
- Static may cause damage to the electronic components of the inverter. Antistatic measures should be taken during installation and maintenance.

NOTICE

- Do not use other brands or other types of terminals other than the terminals in the accessory package. PowMr has the right to refuse all damages caused by the mixed-use of terminals.
- Moisture and dust can damage the inverter, ensure the cable gland is securely tightened during installation. The warranty claim will be invalidated if the inverter is damaged as a result of a poorly connected cable connector.

4.1 Electrical Wiring Diagram

This diagram shows SOLXPOW X4 series hybrid inverter wiring structure and composition, concerning the real project, the installation and wiring have to be in line with the local standards.

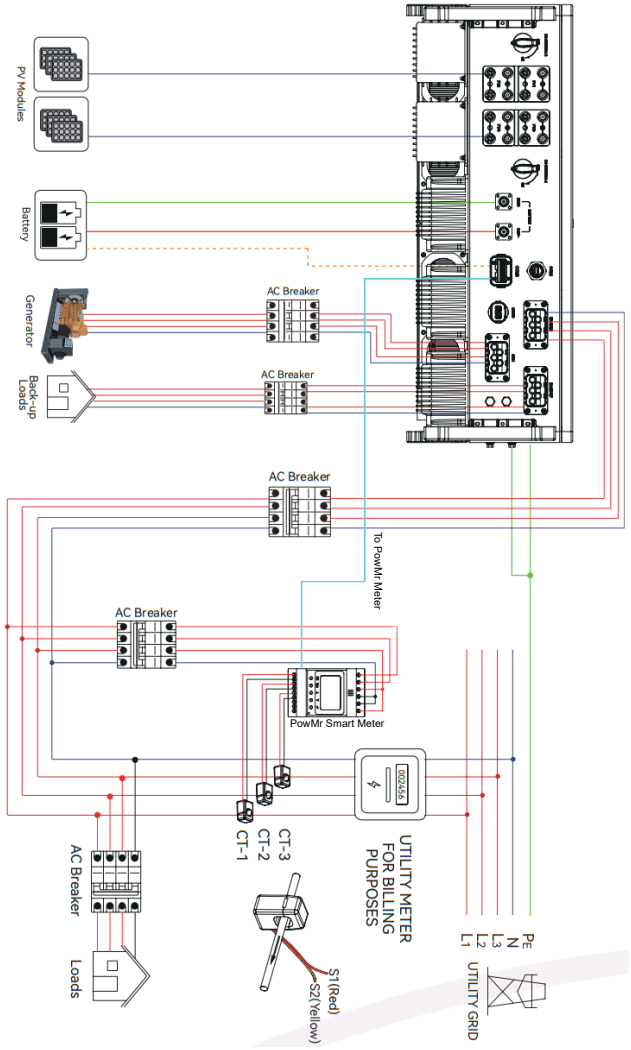


Figure 4-1 Electrical wiring diagram

*PowMr Smart Meter consists of ACR10R and SM. Define the cable connections for the meter based on the actual meter model and refer to Section 4.4. This cable diagram is for reference only.

Single inverter wiring diagram

This diagram is an example without special requirement on electrical wiring connection.

Neutral line of AC supply can be isolated or switched.

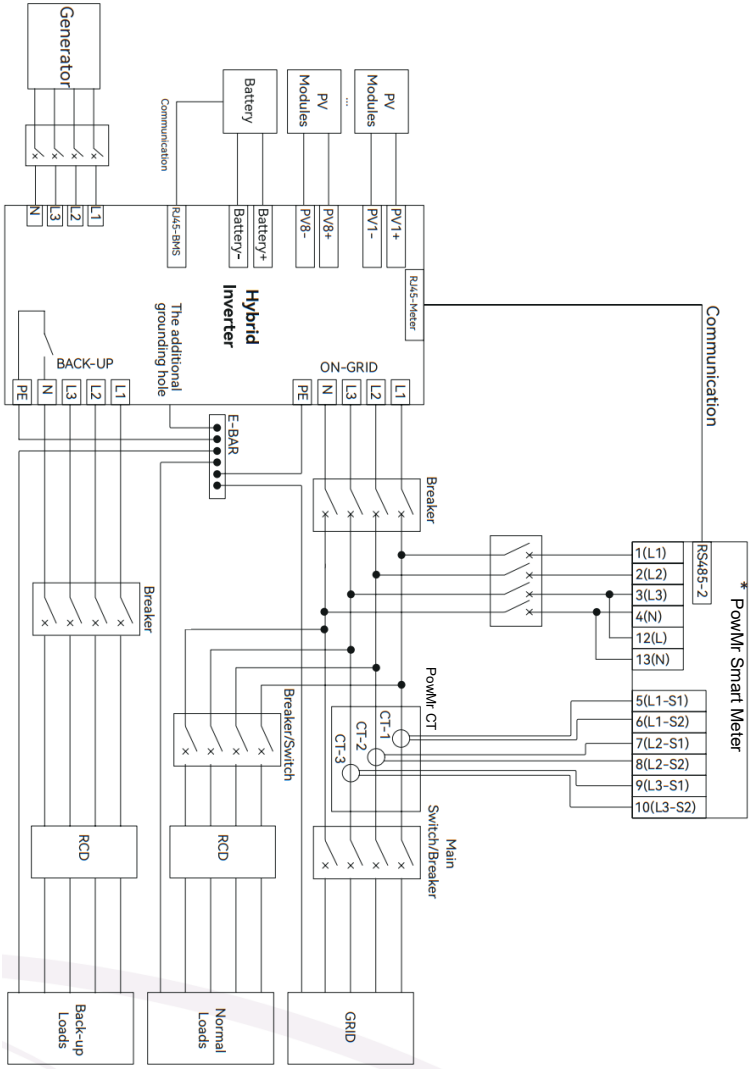


Figure 4-2 Standard wiring diagram

*PowMr Smart Meter consists of ACR10R and SM. Define the cable connections for the meter based on the actual meter model and refer to Section 4.4. This cable diagram is for reference only.

This diagram is an example for Australia and New Zealand. Neutral line of AC supply must not be isolated or switched, and the neutral line of GRID side and BACK-UP side must be connected together according to the wiring rules AS/NZS_3000. Otherwise, BACK-UP function will not work.

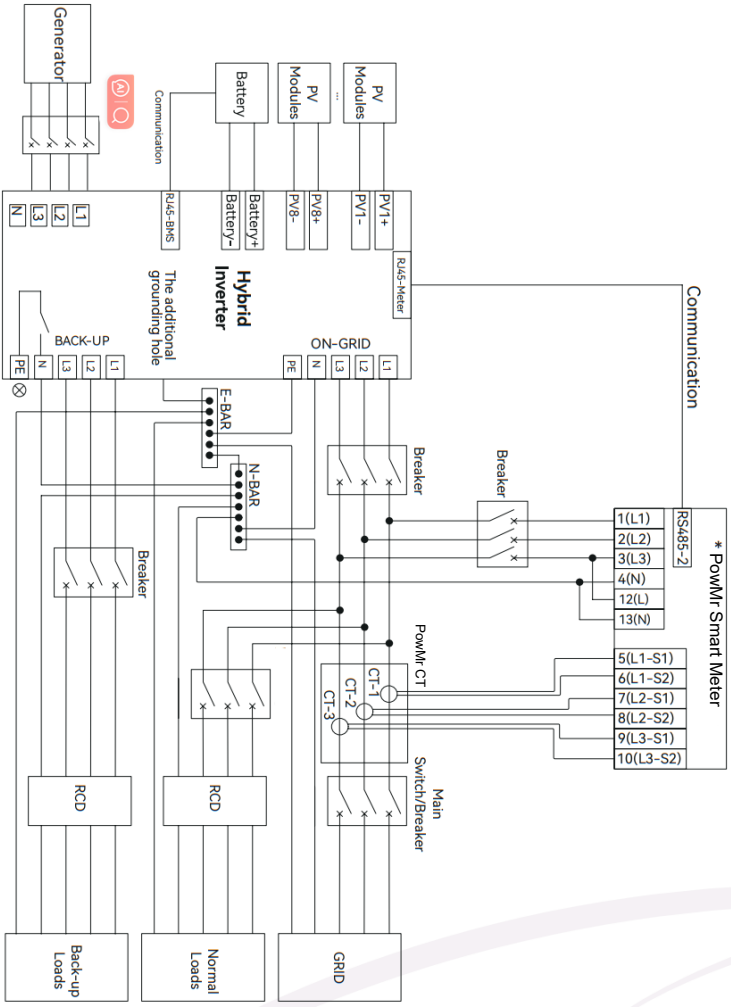


Figure 4-3 Australia wiring diagram

*PowMr Smart Meter consists of ACR10R and SM. Define the cable connections for the meter based on the actual meter model and refer to Section 4.4. This cable diagram is for reference only.

4.2 AC Connection

4.2.1 AC Side Requirements

NOTICE

- An independent AC breaker is required in both on-grid and back-up output side, and any loads cannot be connected with inverter directly.
- Before making the connection of AC cable, please confirm all DC & AC power source are disconnected from the inverter.
- The SOLXPOW X4 series three-phase high voltage hybrid inverter applies to the three-phase power grid with a voltage of 230/400V and a frequency of 50/60Hz.
- Connect the inverter to the grid only after getting an approval from the local electric power company.

A three-phase AC breaker needs to be installed on the AC side of the SOLXPOW X4. To ensure that the SOLXPOW X4 can safely disconnect itself from the power grid when an exception occurs, select a proper overcurrent protection device in compliance with local power distribution regulations and Max. input (output) current of SOLXPOW X4 AC side.

The allowable AC cable of wire diameter and cross-sectional area for SOLXPOW X4 are as shown in the following:

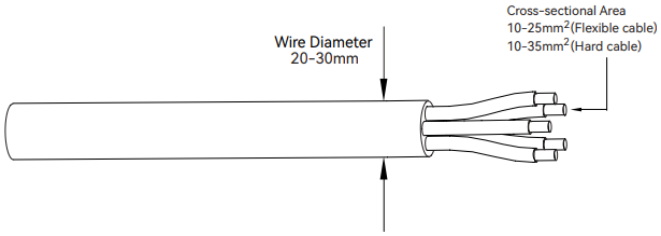


Figure 4-4

NOTICE

- Determine whether an AC circuit breaker with greater overcurrent capacity is required based on actual conditions.

Residual Current Monitoring Device

With an integrated universal residual current monitoring device, the inverter will disconnect immediately from the mains once a fault current with a value exceeding the limit is detected. However, if an external residual current device (RCD) (type A is recommended) is mandatory, the switch must be triggered at the residual current. RCD of other specifications can also be used according to local standard. The recommended residual current is as follows.

Inverter	Recommended residual current
SOLXPOW X4-25K	300mA
SOLXPOW X4-30K	
SOLXPOW X4-36K	360mA
SOLXPOW X4-40K	400mA
SOLXPOW X4P-40K	
SOLXPOW X4-50K	500mA
SOLXPOW X4P-50K	

4.2.2 Installing the AC Connector

DANGER

- High voltage may be present in inverter!
- Ensure all cables are voltage-free before electrical connection.
- Do not connect the AC circuit breaker until all inverter electrical connections are completed.

The AC terminal block is on the bottom side of the inverter.

1. Seal accessory option.

The recommended outer diameter of the cable is 20-24 mm and 24.5~30mm. If the outer diameter of the cable is greater than 24mm, remove part 1.

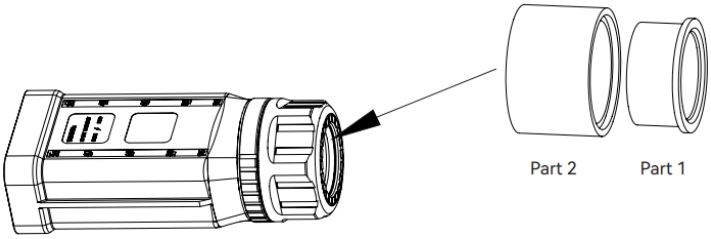


Figure 4-5

2. According to the figure 5-4, select an appropriate cable, peel the insulation sleeve of AC cable off for 95-100mm, and peel off the end of 3L /PE / N wires for 15mm.

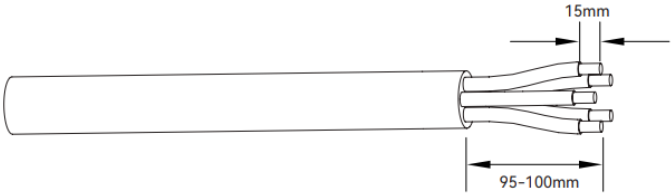


Figure 4-6

3. Thread the stripped wire into the lock nut and the main body in turn (the multi-core multi-strand copper wire cable needs to be riveted to the cord end terminal).

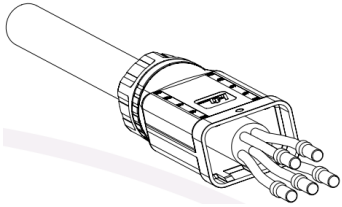


Figure 4-7

4. Insert the cable into the rubber core according to the line sequence, observe the perspective hole, the cable is in place, and the torque of the crimping screwdriver is 5 ± 0.1N.m.

WARNING

- The cord end terminals must be locked tightly, and make sure it won't be loose after a long period of use.

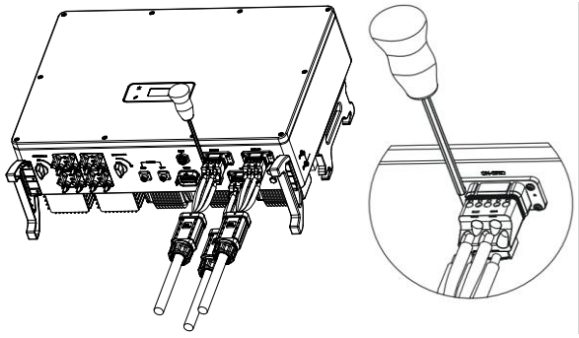


Figure 4-8A

5. Insert the main body into the rubber core and hear the "click" sound, then tighten the nut with an open-ended wrench (torque 10.0±0.1N·m) and complete the installation with a "click, click, click".

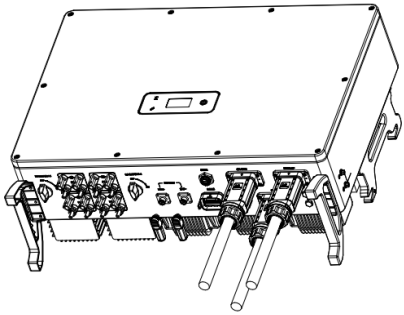


Figure 4-8B

4.2.3 Removal the AC Connector

1. Hold the unlocking buckle with one hand and rotate it in the marked direction, and rotate the nut in the opposite direction with the other hand.
2. Use a screwdriver to align the unlocking position, press and hold the main body and pull back to complete the removal.

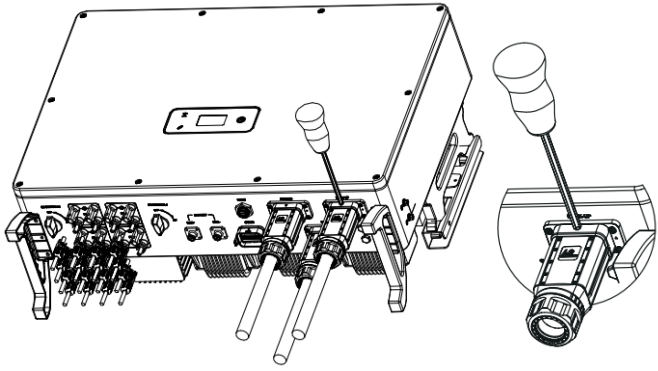


Figure 4-9

CAUTION

- Please distinguish the on-grid and back-up port, and don't mix up the on-grid port and back-up port when making the connection.

4.3 Monitoring Device Installation

SOLXPOW X4 series hybrid inverter supports WIFI, LAN, and 4G communication. Plug the WIFI, LAN, or 4G module into the COM1 port in the bottom of inverter. A slight "click" sound during the installation represents that the assembly is in place.

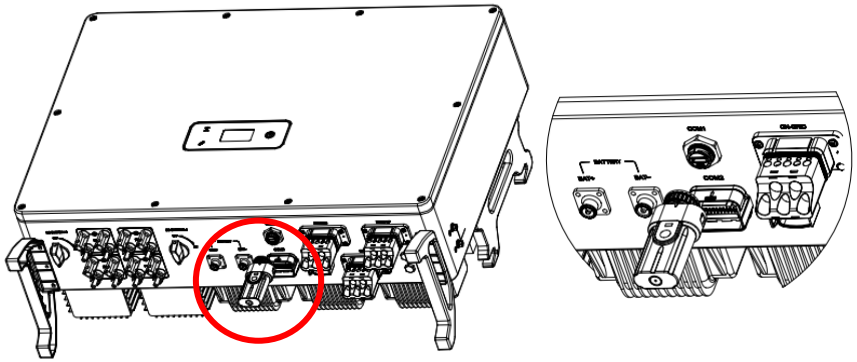


Figure 4-10 Monitoring device installation

NOTE

- Refer to “7 Monitoring” for more information.

4.4 Meter and CT Connection

The current Transformer, also called CT, is usually installed on the L wires between the house loads and the power grid.

The Meter can be installed in the AC combiner box or other places that are unable to be touched by children. PowMr CT cable with length of 2m, it's fixed and can't be extended. The CTs have been connected to the PowMr Meter when you received them, and you just need to follow the wiring diagram in the Meter to connect CT.

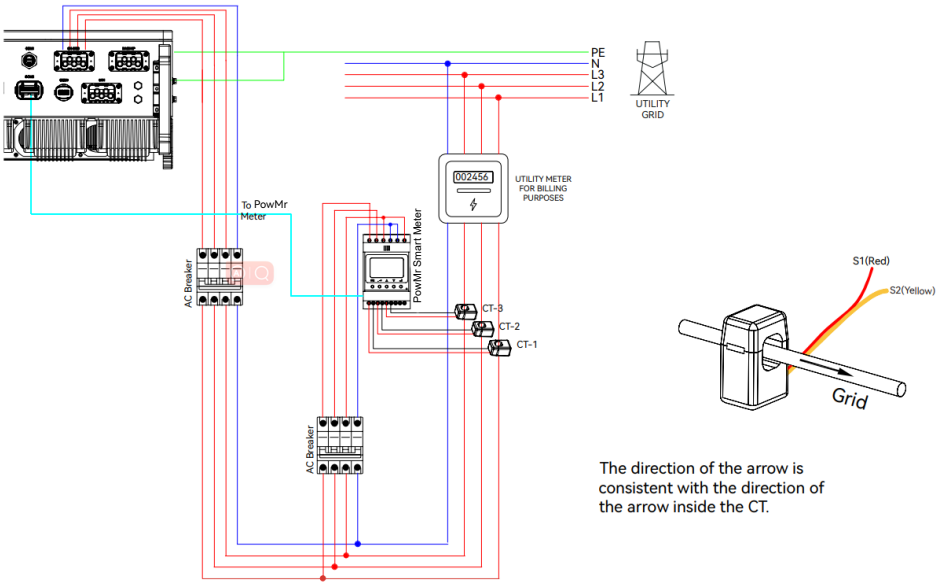


Figure 4-11

NOTICE

- CT installation direction should strictly follow the instruction in the user manual, otherwise, the inverter may not be working normally.
- The CT has to be corresponding with the port in the meter, and the connection between CT and Meter needs to be reliable, otherwise, the CT measurement accuracy may be affected.

NOTE

- Please choose the appropriate CT size according to your needs.

Meter terminals definition as shown in table below:

No.	Definition		Function
	ACR10R	SM	
1	L1		L1/L2/L3/N connect to grid to detect power grid voltage.
2	L2		
3	L3		
4	N		
5	L1-S1		To detect the CT current and direction.
6	L2-S2		
7	L2-S1		
8	L2-S2		
9	L3-S1		
10	L3-S2		
11	/	PE	Ground connection.
12	L	/	Power supplied from grid.
13	N	/	
RS485	/	Reserve	
	RS485	RS485-2	Communicate with hybrid inverter
ANT	/	Reserve	
LAN	/	Reserve	
Type-C	/	Type-C	Specified Debug Interface. Do not use it by non-professionals.

4.5 Communication Connection

All communication ports are in the multifunction communication Port at the bottom of inverter which including Meter port, CAN port, BMS port, EMS port, DRED port. DO port, 0-10V AO port, 4-20mA AO port.

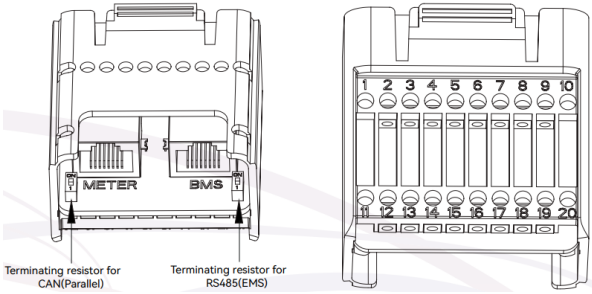


Figure 4-12A COM2 port

Pin	Definition	Function
METER(RJ45-1)	RS 485	Communicate with Meter
BMS(RJ45-1)	CAN	Communicate with BMS
1	COM	DO-1 (Multifunction Relay)
2	NO (Normally Open)	
3	/	Reserved
4	/	Reserved
5	DRM4/8	DRED For Australia and New Zealand
6	DRM3/7	
7	DRM2/6	
8	DRM1/5	
15	COM D/0	
16	REF D/0	
11	Fast stop +	Fast stop
12	Fast stop -	
13	485 B1	EMS
14	485 A1	
17	CANL_P	CAN for parallel connection of inverters
18	CANH_P	
19	/	Reserved
20	/	Reserved

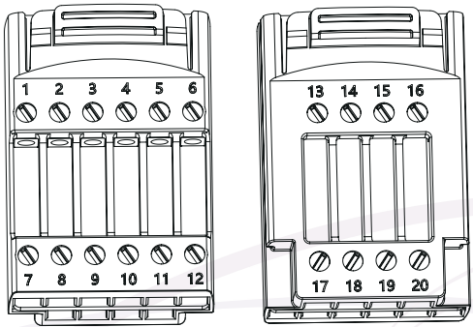


Figure 4-12B COM3 port

Pin	Definition	Function
1~6	/	Reserved
7	COM	DO-2 (Multifunction Relay)
8	NO	
9~10	/	Reserved
11	COM	DO-3 (Multifunction Relay)
12	NC	
13~16	/	Reserved
17	4-20mA_OUT	4-20mA analog output
18	GND	
19	GND	0-10V analog output
20	0-10V_OUT	

4.5.1 Assembling the Multi-com Connector

1. Unscrew the swivel nut from the connector.

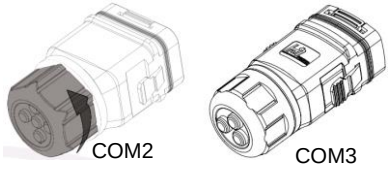


Figure 4-13

2. Take out the terminal block.

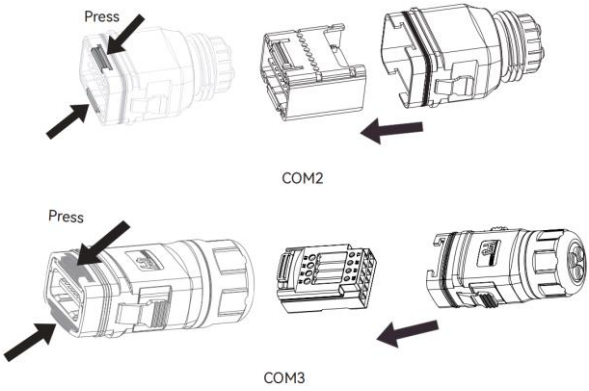


Figure 4-14

3. Remove the seal and lead the cable through the cable gland.

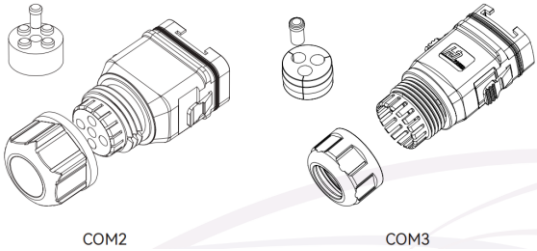


Figure 4-15

4.5.2 Connect the Meter and BMS Communication Cables

> ***NOTE***
>
> ● The communication between meter/BMS and inverter is RJ45 interface cable.

1. Thread the RJ45 plug of appropriate length through the swivel nut, and insert it into the open side of the rubber gasket.

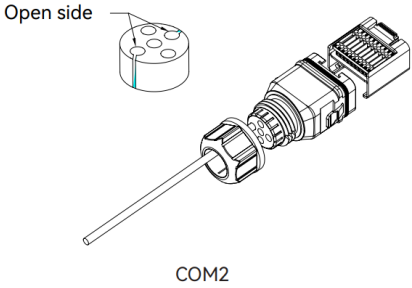


Figure 4-16

2. Insert one side of the RJ45 plug into the RJ45 port of terminal block.

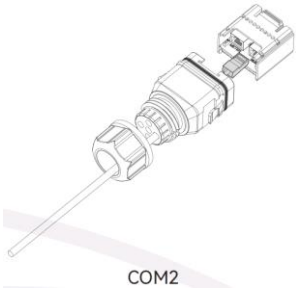


Figure 4-17

3. Insert another side of the communication cable into the meter RS485 port or BMS CAN port.

4.5.3 Connect Other Cables

1. Thread the cable of appropriate length through the swivel nut and the housing. Remove the cable jacket and strip the wire insulation.

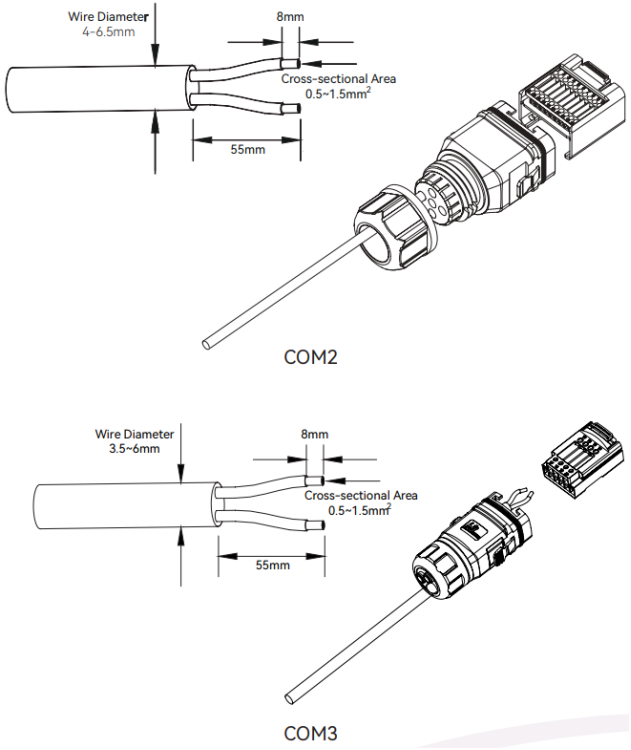


Figure 4-18

2. (Optional) When using a multi-core multi-strand copper wire cable, connect the AC wire head to the cord end terminal (hand-tight). In case of single-strand copper wire, skip this step.

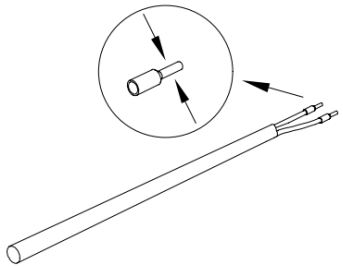


Figure 4-19

3. Fix all the wires to the terminal plug according to the assignment and tighten to a torque of 1.2+/-0.1N·m with a screwdriver.

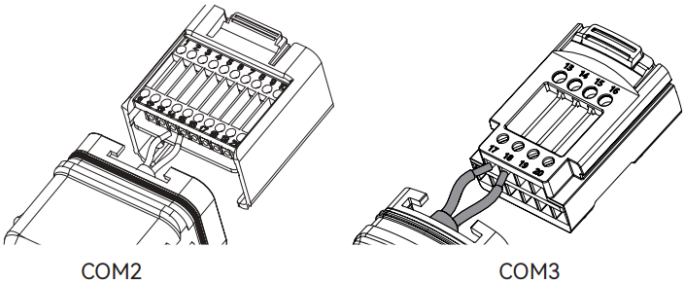


Figure 4-20

4. Pull the wires outward to check whether they are firmly installed. Insert the terminal block into the connector until it snaps into place with an audible click.

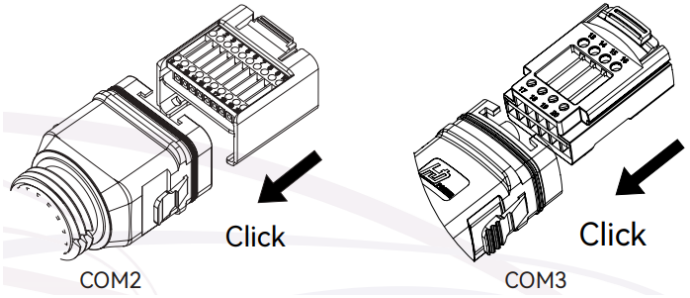


Figure 4-21

5. Fasten the swivel nut.

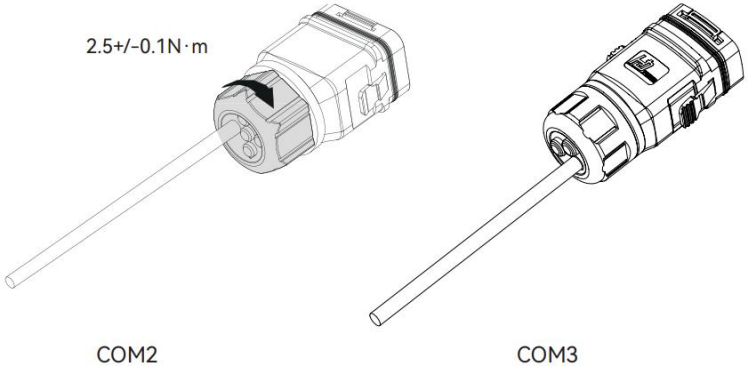


Figure 4-22

4.5.4 Installing the COM Connector

1. Remove the waterproof lid from the COM terminal.
2. Insert the COM connector into COM terminal on the bottom of the inverter until there is an audible click.

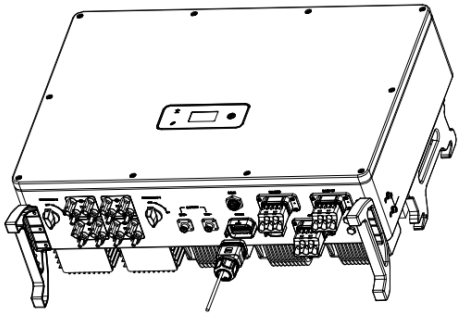
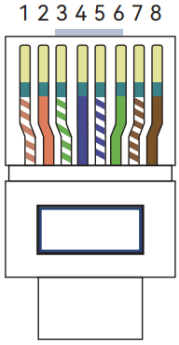


Figure 4-23

4.5.5 Meter and BMS Communication

> ***NOTE***
>
> - Before purchasing the battery, you need to make sure the battery you selected is in the battery approval list of PowMr, otherwise, the system may not work properly. Please contact your installer or PowMr service team for confirmation if you're not sure about it.

RJ45 terminal connection sequence and definition as below.



No.	Color	Meter Side	Battery Side
1	Orange & White	/	RS485_A3
2	Orange	/	RS485_B3
3	Green & White	RS485_B2	/
4	Blue	/	CANH_B
5	Blue & White	/	CANL_B
6	Green	RS485_A2	/
7	Brown & White	RS485_B2	/
8	Brown	RS485_A2	/

Figure 4-24 RJ45 terminal connection sequence and definition

4.5.6 EMS Communication

An EMS communication cable needs to be connected when to control the operation of a hybrid inverter through the EMS, and communication between EMS and inverter is RS485.

4.5.7 DRED

DRM and Ripple Control support only one function at the same time.

DRM

DRED (Demand Response Enabling Device) interface is special reserved for Australia and New Zealand according to their safety regulation, and PowMr doesn't provide the DRED device for the customer. The inverter supports the demand response modes as specified in the standard AS/NZS 4777. The inverter has integrated a terminal block for connecting to a DRED.

DRED wiring diagram (hybrid inverter) as below:

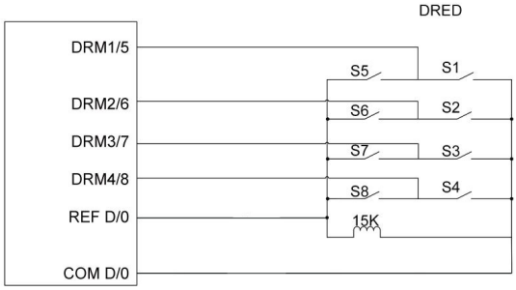


Figure 4-25

DRED mode as shown in table below:

Modus	Funktion
DRM 0	Operate the disconnection device
DRM 1	Do not consume power
DRM 2	Do not consume at more than 50% of rated power
DRM 3	Do not consume at more than 75% of rated power and source reactive power if capable
DRM 4	Increase power consumption (subject to constraints from other active DRMs)
DRM 5	Do not generate power
DRM 6	Do not generate at more than 50% of rated power
DRM 7	Do not generate at more than 75% of rated power and sink reactive power if capable.
DRM 8	Increase power generation (subject to constraints from other active DRMs
Priority	DRM1 > DRM2 > DRM3 > DRM4
	DRM5 > DRM6 > DRM7 > DRM8

NOTE

- There is a resistor between15(COM D/0) and 16(REF D/0), do not move the resistor while wiring.

RCR

RCR (Ripple Control Receiver) interface is special reserved for Germany and some other European country according to their safety regulation, and PowMr doesn't provide the RCR device for the customer.

In Germany and some European areas, a ripple control receiver is used to convert a power grid dispatching signal to a dry contact signal. The dry contact is required for receiving the power grid dispatching signal.

RCR wiring diagram (hybrid inverter) as below:

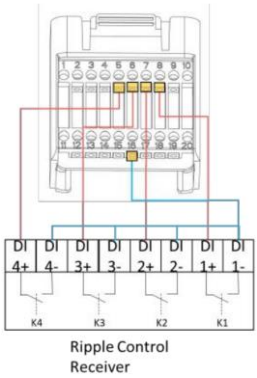


Figure 4-26

RCR operation mode as shown in table below:

Switch mode (External RCR device)	Feed-in output power (in % of the Rated AC output power)
K1 turn on	0%
K2 turn on	30%
K3 turn on	60%
K4 turn on	100%
RCR priority: K1>K2>K3>K4	

4.5.8 Multifunction Relay

The inverter is equipped with a multifunction dry contact relay, which helps turn the loads on or off when an extra contactor is connected, or startup the diesel generator when the diesel generator startup signal is connected.

NOTICE

- Maximum voltage and current at DO dry contact port: 230VAC 1A/30VDC 1A.

NOTE

- For more installation and setup information, please contact PowMr.

Load Control

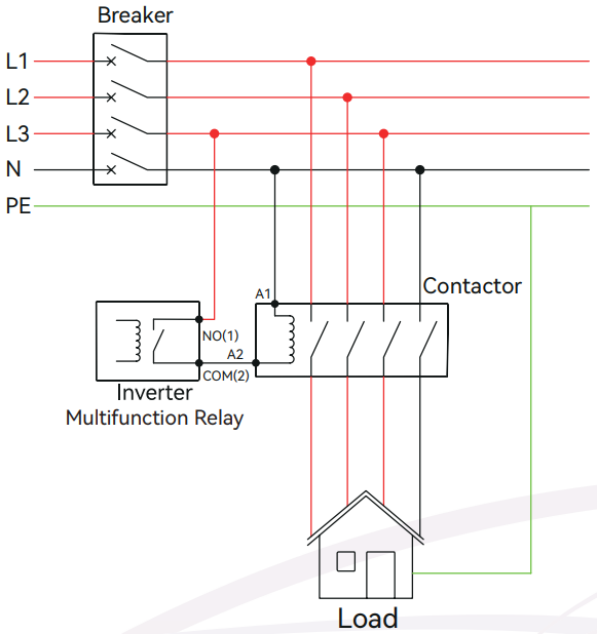


Figure 4-27 Load control connection diagram

NOTE

- The AC contactor should be placed between the inverter and the loads. Do not connect the load to DO port directly.
- The contactor is not supplied by the PowMr. Connect the load to the DO port of the inverter directly if the load is designed with a DI port. When the controlled load is connected to ONGRID, the contactor coil must also be connected to ONGRID. When the controlled load is connected to BACKUP, the contactor coil must also be connected to BACKUP.

Generator Control

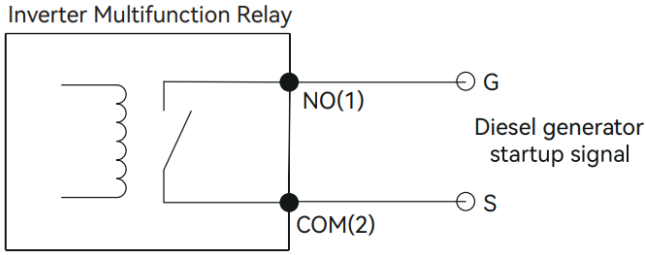
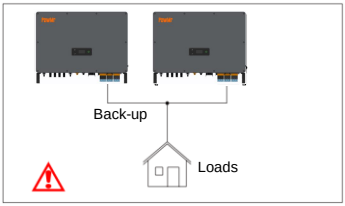


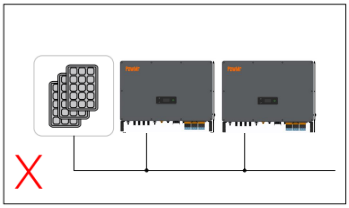
Figure 4-28 Generator Control connection diagram

When the "GEN signal" is active, the open contact (GS) will switch on (no voltage output).

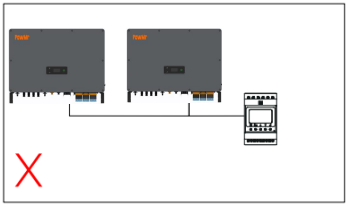
4.5.9 Parallel System



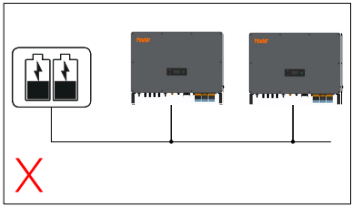
For the general version, back-up cannot connect in parallel. For advanced applications, please contact our after-sales department.



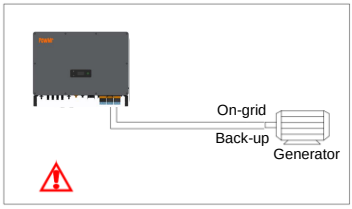
Single PV string cannot connect to multiple inverters.



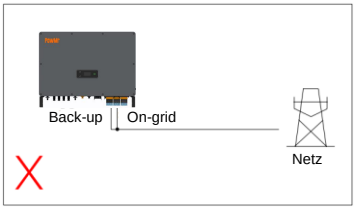
One meter cannot be connected to multiple inverters. Different CTs cannot connect to the same line cable.



One battery bank cannot be connected to multiple inverters.



The on-grid and back-up side cannot be connected to and generator directly.
For advanced applications, please contact our after-sales department.



The back-up side cannot be connected on-grid side or grid.

Figure 4-29

NOTE

- For more installation and setup information about parallel system, please contact PowMr.

4.5.10 Fast stop

SOLXPOW X4 hybrid inverter comes standard with fast stop function, and you can use this function by connecting an external switch into the fast stop interface if it requires in the installation place. The external switch doesn't include in our accessory box.

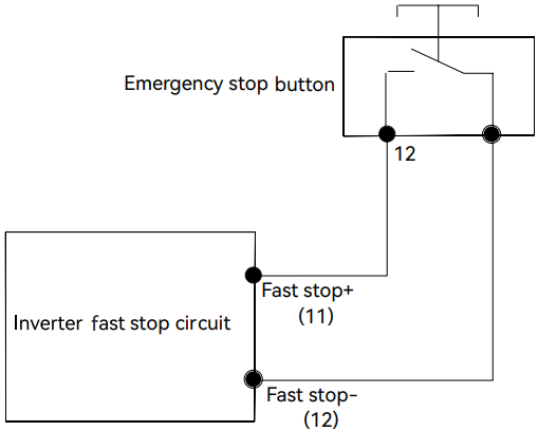


Figure 4-30 Fast stop connection diagram

4.6 PV String Connection

DANGER

- High voltage may be present in the inverter!
- Ensure all cables are voltage-free before performing electrical operations.
- Do not connect the DC switch and AC circuit breaker before finishing electrical connection.

NOTICE

- For best practice, ensure PV modules of the same model and specifications are connected in each string.

WARNING

- PV Max. Input voltage is 850V, otherwise inverter will be waiting.

4.6.1 PV Side Requirements

System Layout of Units with external DC Switch

1. Local standards or codes may require PV systems that fit with an external DC switch on the DC side. The DC switch must be able to safely disconnect the open-circuit voltage of the PV array plus a safety reserve of 20%. Install a DC switch to each PV string to isolate the DC side of the inverter.
2. The DC switch has to be certified by AS 60947.3:2018 and AS/NZS IEC 60947.1:2020 in Australia and New Zealand market. The Max. current of the DC switch matching with SOLXPOW X4 inverter is no less than 40A. We recommend the following electrical connection.

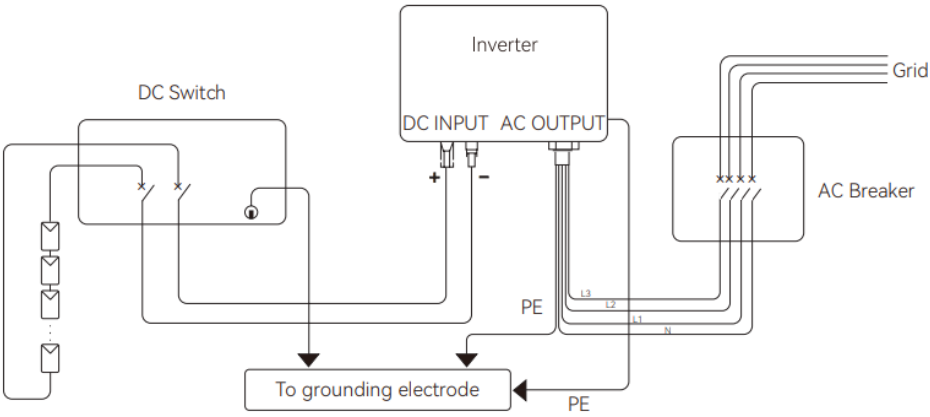


Figure 4-31

Select the appropriate photovoltaic cable

Cable requirements		Cable stripping length
Outside diameter	Conductor core section	
5.9-8.8 mm	4 mm²	7 mm

4.6.2 Assembling the PV Connector

> ***WARNING***
> - Before assembling the DC connector, make sure that the cable polarity is correct.

1. Peel off the DC cable insulation sleeve for 7 mm.

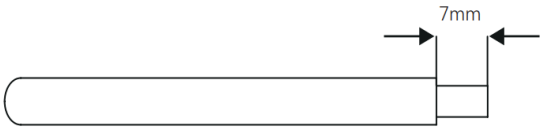


Figure 4-32

2. Disassemble the connector in the accessory bag.

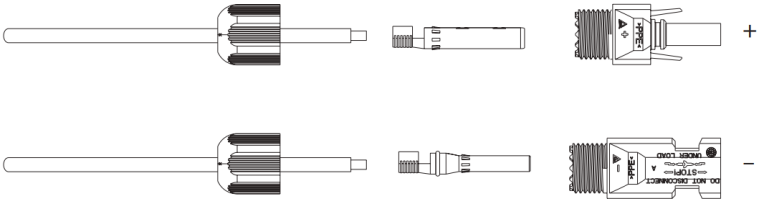


Figure 4-33

3. Insert the DC cable through the DC connector nut into the metal terminal and press the terminal with a professional crimping plier (pull back the cable with some power to check if the terminal is well connected to the cable).

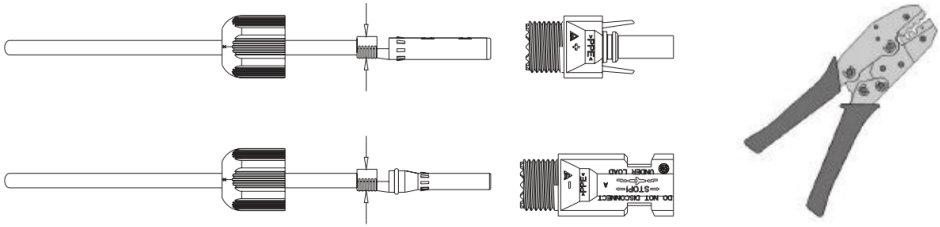


Figure 4-34

4. Insert the positive and negative cables into the corresponding positive and negative connectors, pull back the DC cable to ensure that the terminal is tightly attached in the connector.
5. Use an open-end wrench to screw the nut to the end to ensure that the terminal is well sealed.

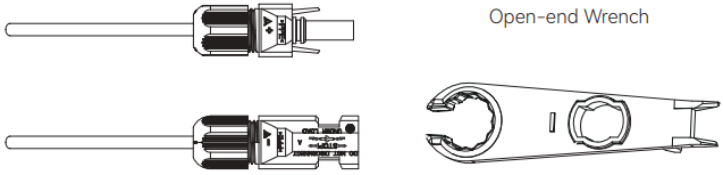


Figure 4-35

4.6.3 Installing the PV Connector

1. Rotate the DC switch to “OFF” position.

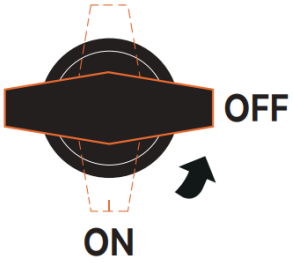


Figure 4-36

2. Check the cable connection of the PV string for polarity correctness and ensure that the open circuit voltage in any case does not exceed the inverter input limit of 1.000V, PV Max. Input voltage is 850V, otherwise inverter will be waiting.

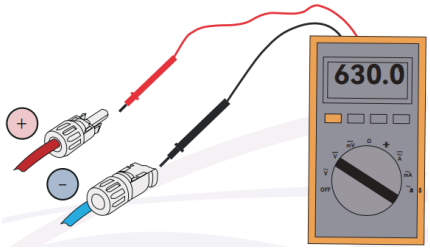


Figure 4-37

3. Insert the positive and negative connectors into the inverter DC input terminals respectively, a click sound should be heard if the terminals are well connected.

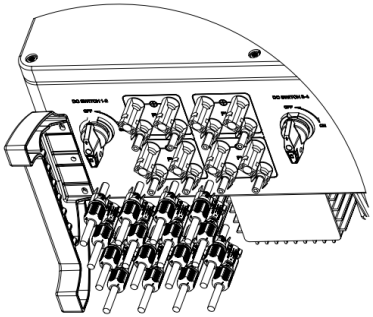


Figure 4-38

4. Seal the unused PV terminals with the terminal caps.

4.7 Power Cable of the Battery Connection

> ***NOTE***
>
> ● Please contact your battery supplier for detailed battery installation information.

4.7.1 The following principles must be considered when making battery connection:

1. Disconnect the AC breaker on the grid side.
2. Disconnect the breaker on the battery side.
3. Turn the inverter DC switch to the “OFF” position.
4. Make sure the maximum input voltage of battery is within the inverter limitation.

Select an appropriate DC cable

Cable requirements		Cable stripping length
Outside diameter	Conductor core section	
9.8±0.2 mm	25 mm²	20 mm

> ***CAUTION***
>
> ● If the conductor core of the battery cable is too small, which may cause poor contact between the terminal and the cable, please use the cable specified in the above table, or contact PowMr to purchase terminals of other specifications.

1. Peel off the battery cable insulation sleeve for 20 mm.

Figure 4-39

2. Disassemble the connector in the accessory bag, Thread the cable into end cap, grommet, and cable gland in turn.

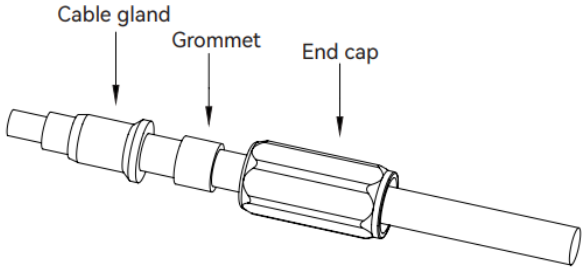


Figure 4-40

3. Insert the battery cable through into the metal terminal and press the terminal with a professional crimping plier (pull back the cable with some power to check if the terminal is well connected to the cable).

Figure 4-41

4. After the crimping is completed, push the cable gland, grommet and end cap at the plug end into place, and tighten the end cover with the thread of the plug unit.

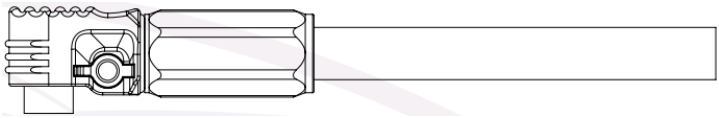


Figure 4-42

WARNING

- Before making the battery connector, please make sure the polarity of the cable is correct.
- Use a multimeter to measure the voltage of the battery pack and make sure the voltage is within the inverter limitation and the polarity is correct.

5. Insert the positive and negative connector into the inverter battery terminals respectively, and a “click” sound represents the assembly in place.

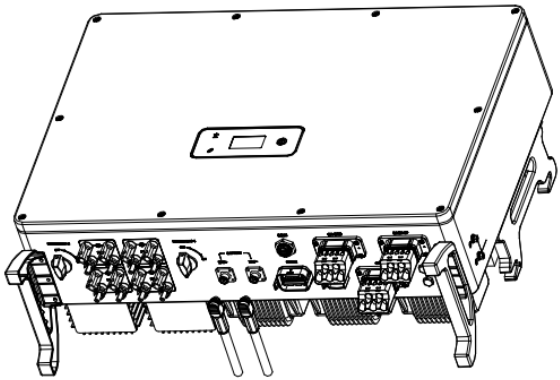


Figure 4-43

6. When pulling out the plug, you need to press the switch button first, and then pull the plug out.

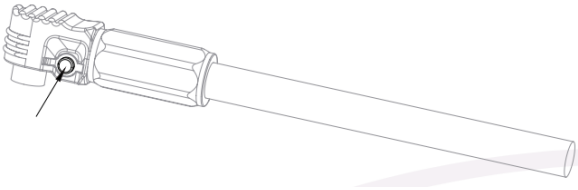


Figure 4-44

5 Commissioning

5.1 App Preparation

1. Install the Local configuration App and Cloud monitoring App with latest version. Refer to "7.2 Cloud monitoring App and 7.3 Local configuration App".
2. Register an account on the Cloud monitoring App. If you have got the account and password from the distributor/installer or PowMr, skip this step.

5.2 Inspection Before Commissioning

Check the following items before starting the inverter:

1. All equipment has been reliably installed.
2. DC switch and AC circuit breaker are in the "OFF" position.
3. The ground cable is properly and reliably connected.
4. The AC cable is properly and reliably connected.
5. The DC cable is properly and reliably connected.
6. The communication cable is properly and reliably connected.
7. The vacant terminals are sealed.
8. No foreign items, such as tools, are left on the top of the machine or in the junction box (if there is).
9. The AC circuit breaker is selected in accordance with the requirements of this manual and local standards.
10. All warning signs & labels are intact and legible.

5.3 Commissioning Procedure

If all of the items mentioned above meet the requirements, proceed as follows to start up the inverter for the first time.

1. Turn on the AC breaker.
2. Turn on the lithium battery switch. Power on the battery pack manually if a battery is equipped.
3. Turn on the DC switch, the DC switch may be integrated in the inverter or installed by the customer.
4. The inverter will work properly after turning on the DC and AC breakers on the condition the weather and grid meet requirements. The time for entering the operating mode may vary according to the chosen safety code.
5. Observe the LED indicator to ensure that the inverter operates normally.

6. After the inverter is started, please refer to the [QUICK USE GUIDE] which is attached to the access to configure the inverter.

NOTE

- If the inverter does not work properly, check the country code and battery ID Settings.
  1) Select the safety code suitable for the country (region) where the inverter is installed at.
  2) Select the battery ID suitable for the battery is installed.
- **CT AUTO TEST FUNCTION**

  SOLXPOW hybrid inverter has the function of detecting the installation direction and phase sequence of CT. The system is installed, this function can be enabled on the APP for detection.

NOTICE

- **SOC RESET FUNCTION**

  When the inverter is turned on for the first time, the battery will be automatically charged to calibrate the battery SOC. After the battery is charged, this function will be turned off automatically (If you confirm that it is not necessary, you can manually turn off the function. We recommend to enable this function.)

  If you need to calibrate the SOC during system use, you can manually enable the function to calibrate the battery SOC on app or inverter screen. After the battery is fully charged, the function is automatically disabled again.

5.4 Stop the Inverter

When turning off the inverter, please follow the steps below:

1. Shut down the inverter through the APP or the button on the display first.
2. Disconnect the breakers on the grid and load side.
3. Turn off the battery switch, and disconnect the DC breaker on the battery side (if any).
4. Wait 30 seconds and then turn the inverter DC switch to the “OFF” position. At this time, there is remaining power in the inverter capacitor. Wait for 10 minutes until the inverter is completely de-energized before operating.
5. Disconnect the AC and DC cables.

6 Operation

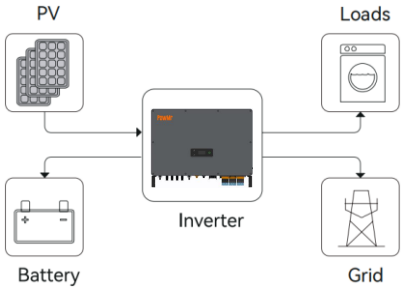
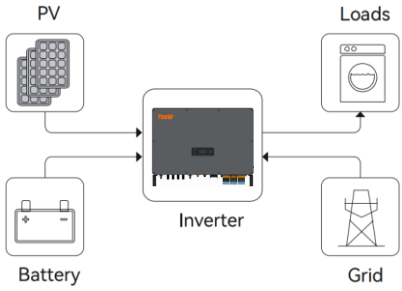
When the inverter is turned on, the following interfaces will be displayed on the OLED display, and the OLED display allows the user to check various operation information and to modify the settings of the inverter.

NOTE

- If the parameter is a number short press to change the number, long press to confirm the number and jump to the next number. Please wait for 10 seconds and the inverter will automatically save your settings or modifications.

6.1 Operation Modes

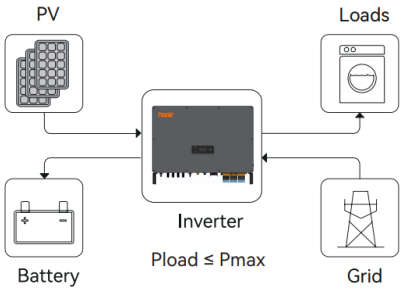
PowMr SOLXPOW X4 Hybrid inverter has the following basic operation modes and you can configure the operation mode as per your preference in the App.

General Mode	
In this working mode, when the power from the PV array is sufficient, PV power will supply the loads, battery, and grid in the order of loads first, battery second, and grid last. (You can set the power to the grid to 0W when the local grid doesn't allow inverter power to feed to the grid).	
When the PV power is insufficient, the battery will discharge to supply loads, and the grid will join in if the battery is not enough to supply loads.	

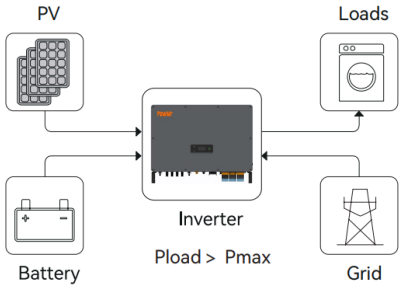
Peak load Shifting (Load Shifting)

Set the maximum power Pmax (kVA) contracted with the grid.

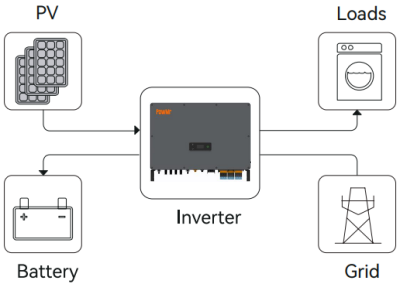
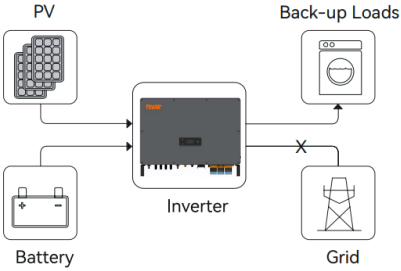
When the load consumption is less than the Pmax, the PV will charge the battery first, and the grid supplies the load. When the battery is full, PV will supply the load together with the grid, but the battery doesn't.

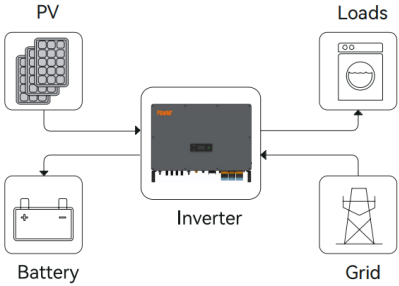
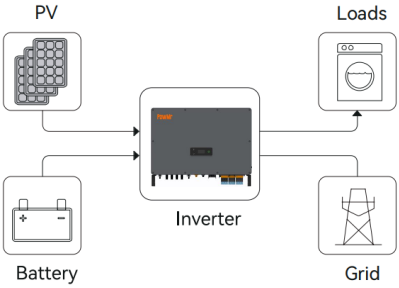


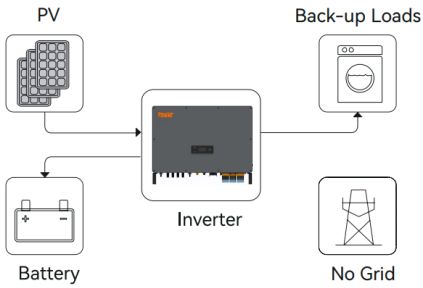
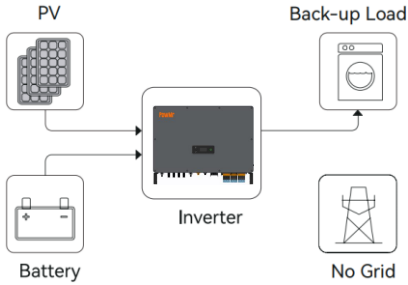
When the load consumption exceeds the Pmax, the inverter will take power from the battery and PV to supply power to the load to compensate for the power that exceeds the Pmax.



*To realize the “Peak load Shifting” function, the load power that exceeded Pmax has to be within the inverter max output power, otherwise, the inverter will only output the max power which allowed.

UPS Mode	
In this working mode, the inverter will use the power from PV or grid to charge the battery until it is fully charged, and as long as the grid is there, the battery won't discharge.	
When the grid fails, power from PV and battery will supply loads connected on the back-up side (UPS).	

Economic Mode	
In this working mode, you can set charge/discharge power and time in the App, inverter will use the power from PV or grid (whether to use can be set in the App) to charge the battery in the predetermined period.	
Inverter will use power from PV and battery to supply loads in the predetermined period and the insufficient part will be supplied by the grid.	

Off-grid Mode	
In the purely off-grid mode, power from PV will supply the back-up loads first and then charge the battery if there's surplus power.	
When the power from PV isn't enough, the battery will discharge to supply back-up loads together with PV.	

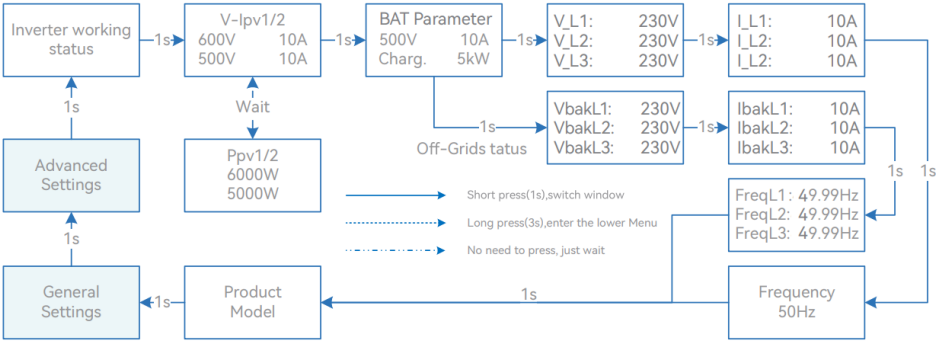
6.2 Back-Up and Off-Grid Output

Normally, the Back-Up switching time is less than 10ms. However, some external factors may cause the system to fail on switching to Back-Up mode. Therefore, the conditions for using the Back-Up function smoothly are as follows for your awareness.

1. Do not connect loads that are dependent on a stable energy supply for a reliable operation.
2. Do not connect the loads whose total capacity is greater than the maximum Back-Up capacity.
3. Do not connect the loads that may cause very high start-up current surges, such as non-frequency conversion air conditioning, vacuum cleaner or half-wave loads such as hair dryer, heat gun, hammer drill.
4. Due to the condition of the battery itself, battery current might be limited by some factors, including but not limited to the temperature and weather.

The inverter will restart in case of overload protection. The time required for restarting will increase (5 min at most) if overload protection repeats. Try to reduce Back-Up load power within maximum limitation or remove the loads which may cause very high start-up current surges.

6.3 Main Window



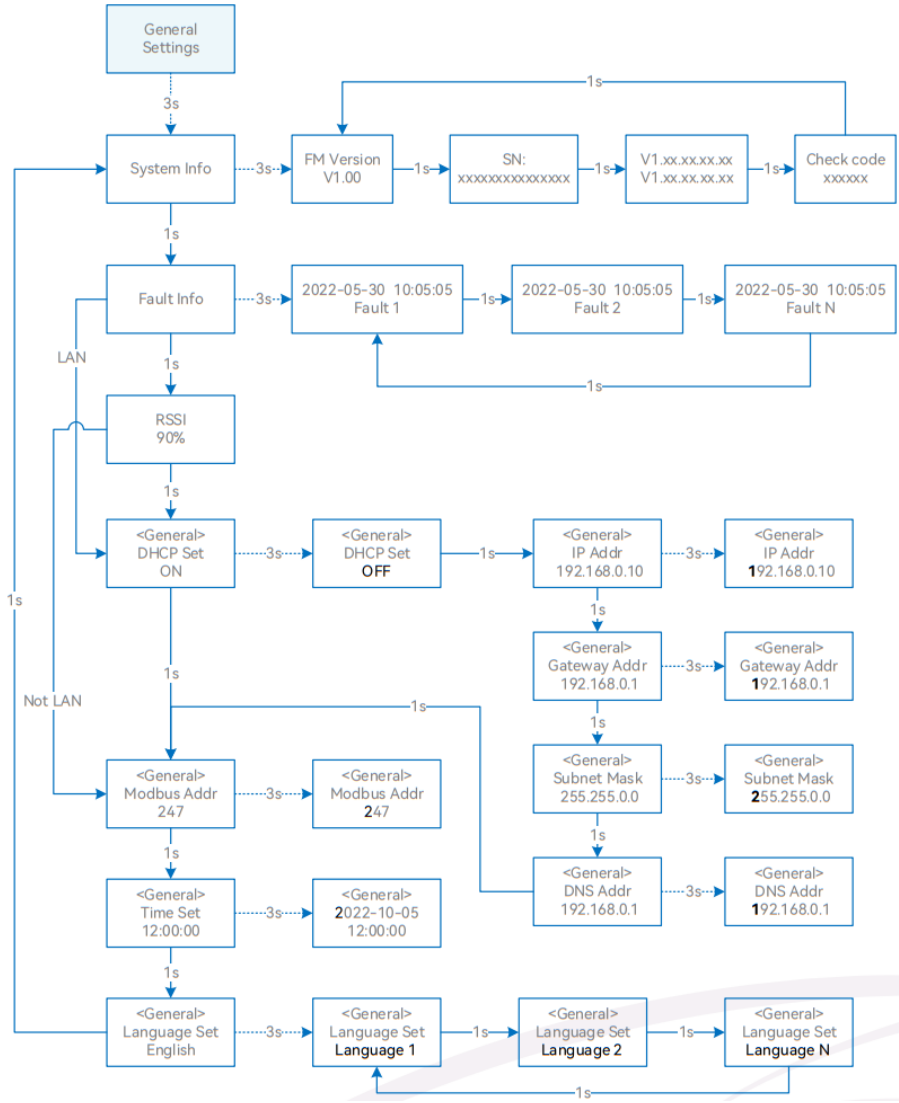
Inverter working status

Waiting/Checking/On-Grid/Fault Info/FW Updating

Inverter Display Abbreviation and Complete Name Reference Table

Abbreviation	Complete Name
V-Ipv1/2	PV input voltage and current of each MPPT
Ppv1/2	PV input power of each MPPT
BAT Parameter	Battery Parameter
Charg.	Charge
Dischg.	Discharge
V_L1:/ V_L2:/ V_L3:	Three-phase AC voltage (On-Grid status)
VbakL1:/ VbakL2:/ VbakL3:	Three-phase AC voltage (Off-Grid status)
I_L1:/I_L2:/I_L3:	Inverter output current (On-Grid status)
IbakL1:/IbakL2:/IbakL3:	Inverter output current (Off-Grid status)
FerqL1:/FreqL2:/FreqL3:	Inverter output Frequency (Off-Grid status)
FW Updating	Firmware Updating

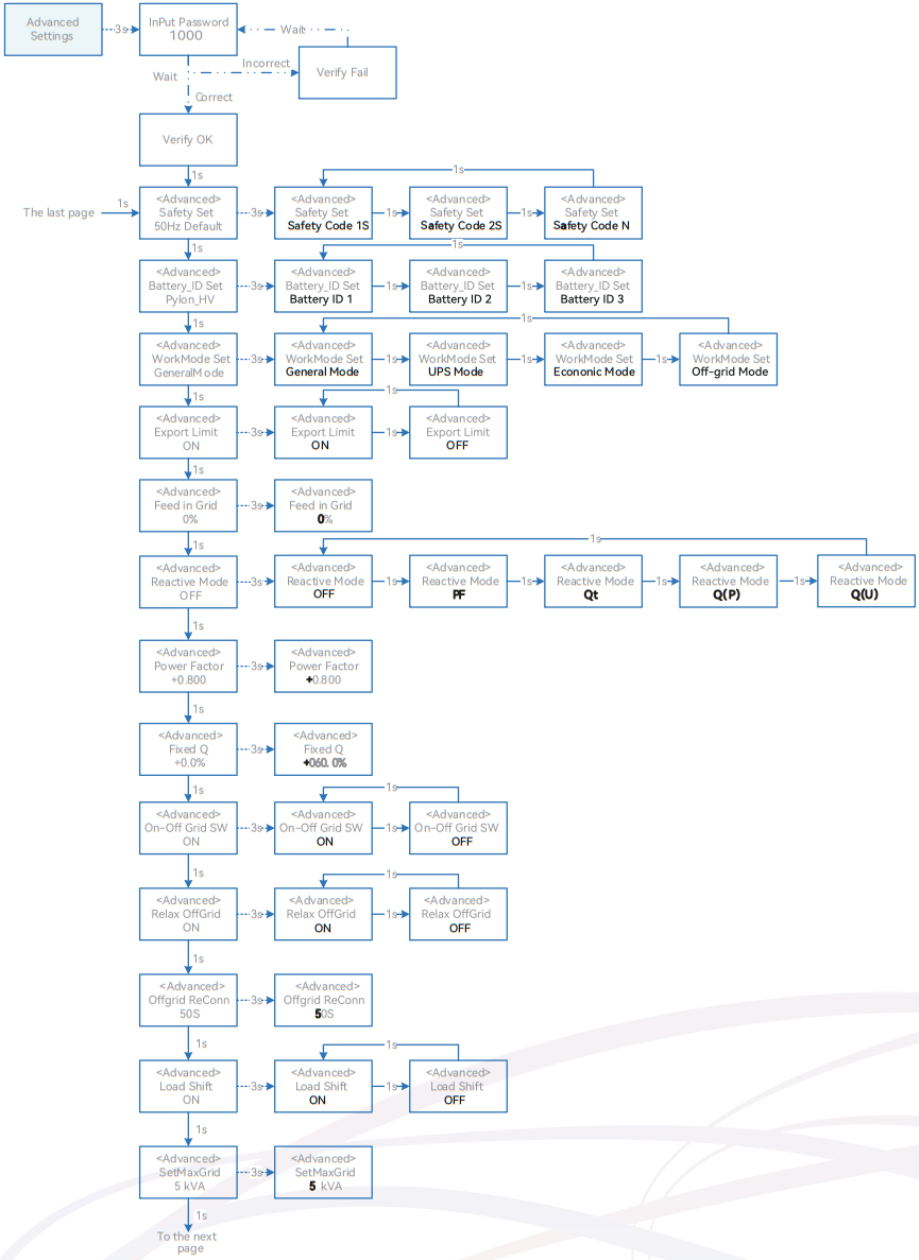
6.4 General Setting

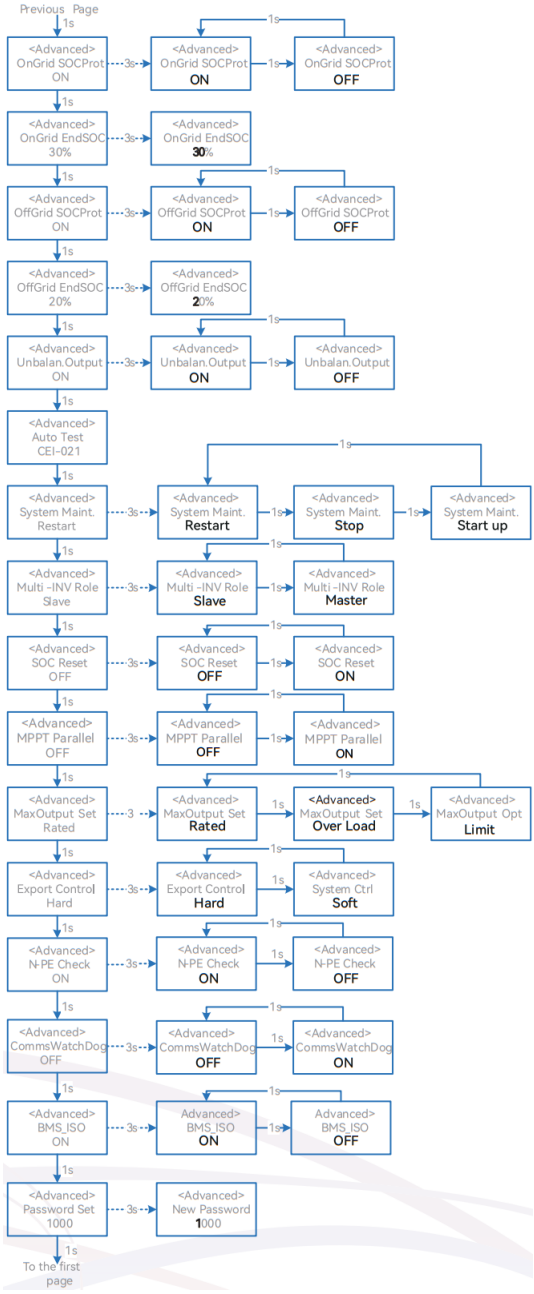


Inverter Display Abbreviation and Complete Name Reference Table

Abbreviation	Complete Name
System Info	System information
FM Version	Firmware version
SN	Series number
Fault Info	Fault information
RSSI	Received signal strength indicator
DHCP Set	Enable or disable DHCP functionality
IP Addr	If DHCP is turned off, set the static IP address
Gateway Addr	If DHCP is turned off, set the Gateway IP address
Subnet Mask	If DHCP is turned off, set the subnet mask
DNS Addr	If DHCP is turned off, set the domain name server address
Modbus Addr	Modbus address

6.5 Advanced Setting

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1s
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3s
<Advanced> OnGrid SOCProt ON
1s
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<Advanced> Unbalan.Output ON
<Advanced> Unbalan.Output OFF
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<Advanced> System Maint. Restart
<Advanced> System Maint. Stop
<Advanced> System Maint. Start up
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3
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<Advanced> MaxOutput Opt Limit
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<Advanced> System Ctrl Soft
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<Advanced> CommsWatchDog ON
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Advanced> BMS_ISO ON
Advanced> BMS_ISO OFF
<Advanced> Password Set 1000
<Advanced> New Password 1000
To the first page

Inverter Display Abbreviation and Complete Name Reference Table

Abbreviation	Complete Name
Safety Set	Select the code that meet local regulatory requirements
Battery_ID Set	Select the battery model
Work Mode	Current work mode / work mode setting
Export Limit	On-grid export limit function switch
Feed in Grid	Set the percentage of the power that is allowed to feed to the grid
Reactive Modes	Reactive Power Mode
PF	"Under ""Reactive Mode" "The reactive power can be regulated by the parameter PF (Power Factor)."
Qt	"Under ""Reactive Mode" "The reactive power can be regulated by the parameter Q-Var limits (in %)."
Q(P)	"Under ""Reactive Mode" "The PF changes with the output power of the inverter."
Q(U)	"Under ""Reactive Mode" "The reactive power changes with the grid voltage"
Fixed Q	The reactive power ratio when the "Reactive Mode" is Qt.
On-Off Grid SW	Off-grid function switch (If turn it on, the inverter will automatically switch to off-grid mode to ensure the back-up side power supply when the gird is abnormal or off, otherwise, there is no output on the back-up side)
Relax OffGrid	Reduce the switching sensitivity of the On/Off-grid (applied to the places where the grid is unstable or inverter always entered off-grid mode for some reasons)
Offgrid ReConn.	When inverter is operating without grid, it will stop backup output after overload protection, and restart within the set time.
Load Shifting	Peakload shifting function switch
SetMaxGrid	Set max allowed power from grid (under the condition of Peakload Shifting is on)
OnGrid SocProt.	On-grid battery SOC (State of Charge) Protection
OnGrid EndSOC	End-of-discharge SOC of on-grid
OffGrid SocProt.	Off-grid SOC Protection

Abbreviation	Complete Name
OffGrid EndSOC	End-of-discharge SOC of off-grid
Unbalan. Output	3-Phase Unbalanced Output Switch when inverter work on On-grid state
System Maint.	System maintenance, includes inverter stop and run, system restart
Multi-INV Role	In the multi-inverter parallel system, set the role of one inverter as the master and the other inverter as the slave.
SOC Reset	If turned it on, the battery will be automatically charged to calibrate the battery SOC. After the battery is charged, this function will be turned off automatically
MPPT Parallel	If MPPT is connected in parallel, enable this function.
MaxOutputSet	Select the maximum AC output power. Rated, Max. output power= Rated output power on the datasheet Overload, Max. output power=Max. output power on the datasheet Limit, Max. output power<Rated output power on the datasheet
Export Control	In the power export limit on mode, when the communication between the inverter and meter or the inverter and datalogger is interrupted, select the inverter operation mode from one of the follows: Hard, inverter stops Soft, inverter generates power as the “Feed in Grid” value set on the screen
N-PE Check	The N and PE shorting function on the BACK-UP side in the off-grid operation status.
CommsWatchDog	When the function is turned on, the inverter stops working when communication with the master is lost.

6.6 Country Code (Safety Code) Setting

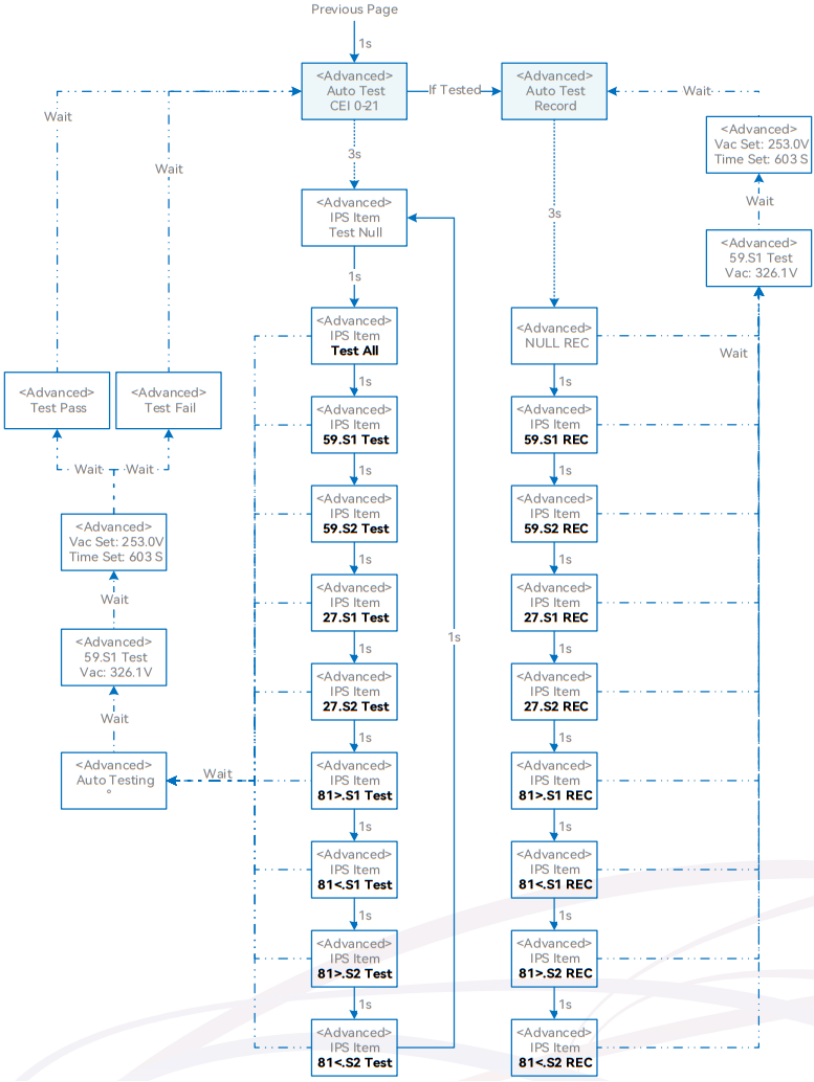
Please set "Country code (Safety code)" under the menu "Safety Set" in " Advanced Settings ". Refer to “6.5 Advanced Setting” for more information.

6.7 Auto-Test

This function is disabled by default, and will be only functional in the safety code of Italy. Short press the button several times until "Auto Test CEI 0-21" displays on the screen, press and hold the button 3 seconds to activate “Auto Test". After the auto test is finished, short press the button several times until the screen displays "Auto Test Record", and hold the button 3 seconds to check the test results.

The auto test will start when the correct test item is selected, and the test result will be displayed on the screen when it finished. If the test was successful, it will display "Test Pass", otherwise will display "Test Fail". After each item tested, the inverter will reconnect to the grid and automatically start the next test according to the requirements of CEI 0-21.

Connect the AC cable, auto test will start after the inverter connected to the grid, see the operation steps below:



6.8 Reactive Power

The inverter provides a reactive power regulation function.

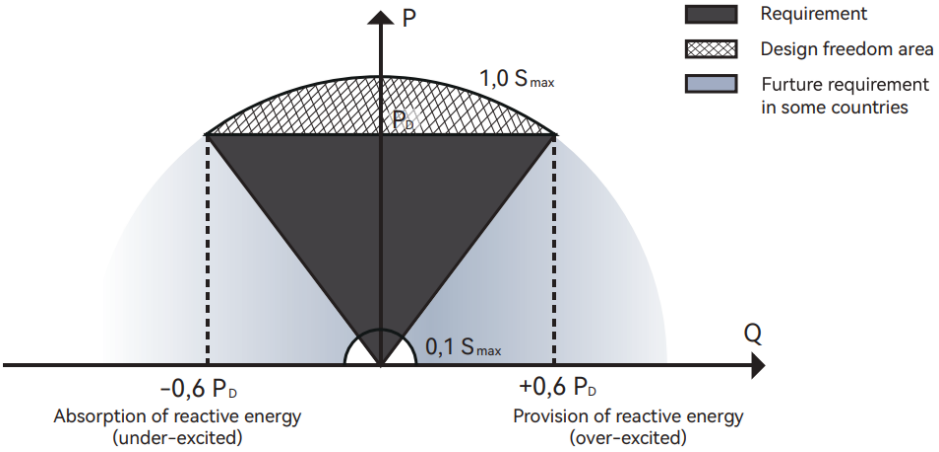


Figure 6-1 Capabilities

This mode can be enabled via configuration software. It is enabled by default in some regions, such as AU, DE market. For information on how to change default setpoints please contact PowMr Technical Support at support@powmr.com.

Descriptions of reactive power regulation mode:

Mode	Descriptions
Off	The PF is fixed at +1.000.
PF	The reactive power can be regulated by the parameter PF (Power Factor).
Qt	The reactive power can be regulated by the parameter Fixed Q (in %).
Q(P)	The PF changes with the output power of the inverter.
Q(U)	The reactive power changes with the grid voltage.

6.8.1 "Off" Modes

The reactive power regulation function is disabled. The PF is limited to +1.000.

6.8.2 "PF" Mode

The power factor is fixed and reactive power setpoint is calculated according to the current power.

The PF ranges from 0.8 leading to 0.8 lagging.

Leading: the inverter is sourcing reactive power to the grid.

Lagging: the inverter is injecting reactive power into the grid.

6.8.3 "Qt" Mode

In the Qt mode, system rated reactive power is fixed, and the system injects reactive power according to the delivered reactive power ratio.

The setting range of the reactive power ratio is 0~60% or 0~-60%, corresponding to the ranges of inductive and capacitive reactive power regulation respectively.

6.8.4 "Q(P)" Mode

The PF of the inverter output varies in response to the output power of the inverter. "Q(P)" Mode Parameter Descriptions:

Parameter	Erläuterung	Bereich
QP_P1(Point A)	Output power at P1 on the Q(P) mode curve (in percentage)	10% ~ 100%
QP_P2(Point B)	Output power at P2 on the Q(P) mode curve (in percentage)	20% ~ 100%
QP_P3(Point C)	Output power at P3 on the Q(P) mode curve (in percentage)	20% ~ 100%
QP_K1(Point A)	Power factor at P1 on the Q(P) mode curve	0.8 ~1
QP_K2(Point B)	Power factor at P2 on the Q(P) mode curve	
QP_K3(Point C)	Power factor at P3 on the Q(P) mode curve	
QP_Enter-Voltage	Voltage percentage for Q(P) function activation	100% ~ 110%
QP_Exit-Voltage	Voltage percentage for Q(P) function deactivation	90% ~ 100%
QP_Exit-Power	Power percentage for Q(P) function deactivation	1% ~ 20%
QP_Enable-Mode	Unconditional activation/deactivation of Q(P) function	Yes / No

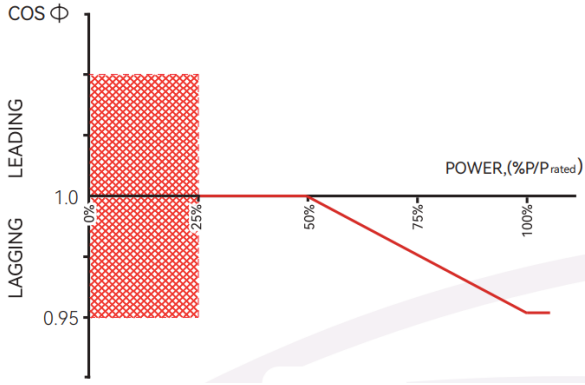


Figure 6-2 Q(P) Curve

6.8.5 "Q(U)" Mode

The reactive power output of the inverter will vary in response to the grid voltage. "Q(U)" Mode Parameter Descriptions:

Parameter	Explanation	Range
Hysteresis Ratio	Voltage hysteresis ratio on the Q(U) mode curve	0 ~ 5%
QU_V1	Grid voltage limit at P1 on the Q(U) mode curve	80% ~ 100%
QU_Q1	Value of Q/Sn at P1 on the Q (U) mode curve	-60% ~ 0
QU_V2	Grid voltage limit at P2 on the Q(U) mode curve	80% ~ 110%
QU_Q2	Value of Q/Sn at P2 on the Q (U) mode curve	-60% ~ 60%
QU_V3	Grid voltage limit at P3 on the Q(U) mode curve	100% ~120%
QU_Q3	Value of Q/Sn at P3 on the Q (U) mode curve	-60% ~ 60%
QU_V4	Grid voltage limit at P4 on the Q(U) mode curve	100% ~120%
QU_Q4	Value of Q/Sn at P4 on the Q(U) mode curve	0 ~ 60%
QU_Enter-Power	Active power for Q(U) function activation	20% ~ 100%
QU_Exit-Power	Active power for Q(U) function deactivation	1% ~ 20%
QU_Enable-Mode	Unconditional activation/deactivation of Q(U) function	Yes/No/Yes, Limited by PF

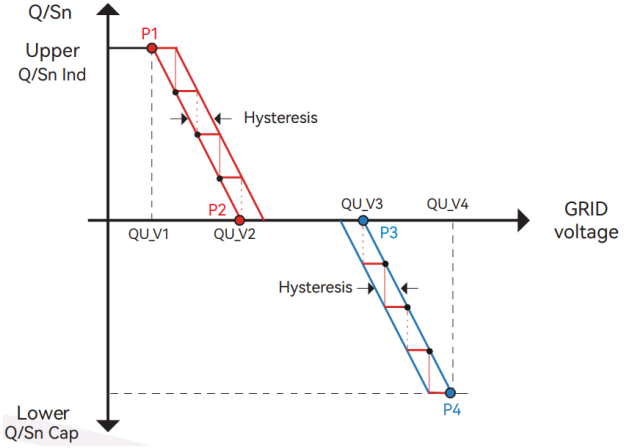


Figure6-3 Q(U) Curve

7 Monitoring

7.1 Monitoring Device

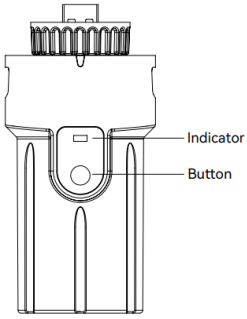


Figure 7-1 Monitoring device display interface

Indicator Status	Description
Off	Connection abnormal
Always On	Communicate with the server normally
Slow flashing	The monitoring device is not connected to the router or is not connected to the base station.
Quick flashing	The monitoring device is connected to the router or connected to the base station but not connected to the server.

Button	Description
Press 1 second	Reset device, the indicator goes off for 2 seconds, then flashes normally.
Press 5 second	Restore factory default settings, the indicator goes off for 2 seconds, then flashes once every 2 seconds, until the factory restore is completed.

NOTE

- The WiFi module needs to be configured to the router for the first installation. If the router name or password are changed, the WiFi devices will need to be reconfigured. For details, please refer to the [QUICK USE GUIDE] which is attached to the accessory bag.

  If DHCP is enabled on the router, the LAN version module does not need to be configured. Otherwise, please refer to the [QUICK USE GUIDE] which is attached to the accessory bag.

7.2 Cloud monitoring App

PowMr inverter provides a monitoring port that can collect and transmit data from the inverter to PowMr monitoring platform via an external monitoring device. Please refer to the product nameplate on side of enclosure to get the monitoring application. If download issues exist, contact your dealer or v technical support.

7.3 Local configuration App

Local configuration App is designed for quick configuration of PowMr hybrid inverters, offering features such as safety code, battery brand and type, work modes, and off-grid application settings through WiFi direct connection, etc.

Please refer to the product nameplate on side of enclosure to get the application. If download issues exist, contact your dealer or PowMr technical support.

8 Technical Parameters

8.1 Table 1 Specifications for Grid or Generator Operation

Model	SOLXPOW X4-25K	SOLXPOW X4-30K
Line Mode		
Input voltage waveform	Sinusoidal	
Max. input apparent power	30.0 kVA	36.0 kVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/60 Hz	
Max. input current	43.5 A	52.2 A
Transfer time	<20 ms	
Generator Mode		
Max. input apparent power	30.0 KVA	36.0 KVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/60 Hz	
Max. input current	43.5 A	52.2 A

Model	SOLXPOW X4-36K	SOLXPOW X4-40K
Line Mode		
Input voltage waveform	Sinusoidal	
Max. input apparent power	43.5 kVA	48.0 kVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/60 Hz	
Max. input current	63.0 A	69.6 A
Transfer time	<20 ms	
Generator Mode		
Max. input apparent power	43.5 kVA	48.0 kVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/60 Hz	
Max. input current	63.0 A	69.6 A

Model	SOLXPOW X4-50K
Line Mode	
Input voltage waveform	Sinusoidal
Max. input apparent power	60.0 kVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V
Rated AC frequency	50 Hz/60 Hz
Max. input current	87.0 A
Transfer time	<20 ms
Generator Mode	
Max. input apparent power	60.0 kVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V
Rated AC frequency	50 Hz/60 Hz
Max. input current	87.0 A

Model	SOLXPOW X4P-40K	SOLXPOW X4P-50K
Line Mode		
Input voltage waveform	Sinusoidal	
Max. input apparent power	48.0 kVA	60.0 kVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/60 Hz	
Max. input current	69.6 A	87.0 A
Transfer time	<20 ms	
Generator Mode		
Max. input apparent power	48.0 kVA	60.0 kVA
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/60 Hz	
Max. input current	69.6 A	87.0 A

8.2 Table 2: Inverter Mode Specifications (Backup Side)

Model	SOLXPOW X4-25K	SOLXPOW X4-30K
Rated output power	25.0 kW	30.0 kW
Max. output power	27.5 kW	33.0 kW
Rated output apparent power	25.0 kVA	30.0 kVA
Max. output apparent power	27.5 kVA	33.0 kVA
Rated output current	38.0 A	43.5 A
Max. output current	42.0 A	50.0 A
Rated output voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated output frequency	50 Hz/ 60 Hz	
Peak output apparent power	30 kVA, 60 s	36 kVA, 60 s
Voltage harmonic distortion	<3% @Linear load	
Max. efficiency	98.8%	
European efficiency	98.3%	

Model	SOLXPOW X4-36K	SOLXPOW X4-40K
Rated output power	36.0 kW	40.0 kW
Max. output power	39.6 kW	44.0 kW
Rated output apparent power	36.0 kVA	40.0 kVA
Max. output apparent power	39.6 kVA	44.0 kVA
Rated output current	52.0 A	60.0 A
Max. output current	60.0 A	66.0 A
Rated output voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated output frequency	50 Hz/ 60 Hz	
Peak output apparent power	43.5 kVA, 60 s	48 kVA, 60 s
Voltage harmonic distortion	<3% @Linear load	
Max. efficiency	98.8%	
European efficiency	98.3%	

Model	SOLXPOW X4-50K
Rated output power	50.0 kW
Max. output power	55.0 kW
Rated output apparent power	50.0 kVA
Max. output apparent power	55.0 kVA
Rated output current	75.0 A
Max. output current	83.0 A
Rated output voltage	3L/N/PE, 220/38 0V; 230/400 V; 240/415 V
Rated output frequency	50 Hz/ 60 Hz
Peak output apparent power	60 kVA, 60 s
Voltage harmonic distortion	<3% @Linear load
Max. efficiency	98.8%
European efficiency	98.3%

Model	SOLXPOW X4P-40K	SOLXPOW X4P-50K
Rated output power	40.0 kW	50.0 kW
Max. output power	44.0 kW	55.0 kW
Rated output apparent power	40.0 kVA	50.0 kVA
Max. output apparent power	44.0 kVA	55.0 kVA
Rated output current	60.0 A	75.0 A
Max. output current	66.0 A	83.0 A
Rated output voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated output frequency	50 Hz/ 60 Hz	
Peak output apparent power	48 kVA, 60 s	60 kVA, 60 s
Voltage harmonic distortion	<3% @Linear load	
Max. efficiency	98.8%	
European efficiency	98.3%	

8.3 Table 3 Specifications in Grid-Tie Mode (Grid-Side)

Model	SOLXPOW X4-25K	SOLXPOW X4-30K
Rated output power	25.0 kW	30.0 kW
Max. output power	27.5 kW	33.0/30.0 kW [1)]
Rated output apparent power	25.0 kVA	30.0kVA
Max. output apparent power	27.5 kVA	33.0/30.0 kVA [2)]
Max. battery charging power	25.0 kW	30.0 kW
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/ 60 Hz	
Rated output current	38.0 A	43.5 A
Max. output current	42.0 A	50.0/43.5 A [3)]
Power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	<3% @Rated output power	
DCI	<0.5%In	

Model	SOLXPOW X4-36K	SOLXPOW X4-40K
Rated output power	36.0 kW	40.0 kW
Max. output power	39.6 kW	44.0 kW
Rated output apparent power	36.0 kVA	40.0 kVA
Max. output apparent power	39.6 kVA	44.0 kVA
Max. battery charging power	36.0 kW	40.0 kW
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/ 60 Hz	
Rated output current	52.0 A	60.0 A
Max. output current	60.0 A	66.0 A
Power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	<3% @Rated output power	
DCI	<0.5%In	

Model	SOLXPOW X4-50K
Rated output power	50.0 kW
Max. output power	55.0 kW
Rated output apparent power	50.0 kVA
Max. output apparent power	55.0 kVA
Max. battery charging power	50.0 kW
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V
Rated AC frequency	50 Hz/ 60 Hz
Rated output current	75.0 A
Max. output current	83.0 A
Power factor	0.8 leading ... 0.8 lagging
Max. total harmonic distortion	<3% @Rated output power
DCI	<0.5%In

Model	SOLXPOW X4P-40K	SOLXPOW X4P-50K
Rated output power	40.0 kW	50.0 kW
Max. output power	44.0 kW	55.0 kW
Rated output apparent power	40.0 kVA	50.0 kVA
Max. output apparent power	44.0 kVA	55.0 kVA
Max. battery charging power	40.0 kW	50.0 kW
Rated AC voltage	3L/N/PE, 220/380 V; 230/400 V; 240/415 V	
Rated AC frequency	50 Hz/ 60 Hz	
Rated output current	60.0 A	75.0 A
Max. output current	66.0 A	83.0 A
Power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	<3% @Rated output power	
DCI	<0.5%In	

8.4 Table 4 Specifications in Charging Mode

Model	SOLXPOW X4-25K	SOLXPOW X4-30K
Battery specification		
Battery type	Lithium Battery (with BMS)	
Battery communication mode	CAN	
Battery voltage range	144-750 V	
Max. discharge current	100 A	
Utility or generator charging mode		
Charging algorithm	3-Stage	
Max. AC charging current	100 A	
Generator Max. charging power	25.0 kW	30.0 kW
Solar charging mode		
Startup voltage	140 V	
Max. DC input voltage *	1000 V*	
Rated DC input voltage	620 V	
MPPT voltage range *	200~850 V*	
Number of MPP trackers	4	
Number of DC inputs per MPPT	2	
Max. input current	30 A*4	
Max. short-circuit current	40 A*4	
Max. PV charging current	100 A	

Model	SOLXPOW X4-36K	SOLXPOW X4-40K
Battery specification		
Battery type	Lithium Battery (with BMS)	
Battery communication mode	CAN	
Battery voltage range	144-750 V	
Max. discharge current	100 A	
Utility or generator charging mode		
Charging algorithm	3-Stage	
Max. AC charging current	100 A	
Generator Max. charging power	36.0 kW	40.0 kW
Solar charging mode		
Startup voltage	140 V	
Max. DC input voltage *	1000 V*	
Rated DC input voltage	620 V	
MPPT voltage range *	200~850 V*	
Number of MPP trackers	4	
Number of DC inputs per MPPT	2	
Max. input current	30 A*4	
Max. short-circuit current	40 A*4	
Max. PV charging current	100 A	

Model	SOLXPOW X4-50K
Battery specification	
Battery type	Lithium Battery (with BMS)
Battery communication mode	CAN
Battery voltage range	144-750 V
Max. discharge current	100 A
Utility or generator charging mode	
Charging algorithm	3-Stage
Max. AC charging current	100 A
Generator Max. charging power	50.0 kW
Solar charging mode	
Startup voltage	140 V
Max. DC input voltage *	1000 V*
Rated DC input voltage	620 V
MPPT voltage range *	200~850 V*
Number of MPP trackers	4
Number of DC inputs per MPPT	2
Max. input current	30 A*4
Max. short-circuit current	40 A*4
Max. PV charging current	100 A

Model	SOLXPOW X4P-40K	SOLXPOW X4P-50K
Battery specification		
Battery type	Lithium Battery (with BMS)	
Battery communication mode	CAN	
Battery voltage range	144-750 V	
Max. discharge current	100 A	
Utility or generator charging mode		
Charging algorithm	3-Stage	
Max. AC charging current	100 A	
Generator Max. charging power	40.0 kW	50.0 kW
Solar charging mode		
Startup voltage	140 V	
Max. DC input voltage *	1000 V*	
Rated DC input voltage	620 V	
MPPT voltage range *	200~850 V*	
Number of MPP trackers	2	
Number of DC inputs per MPPT	3	
Max. input current	60 A*2	
Max. short-circuit current	80 A*2	
Max. PV charging current	100 A	

8.5 Table 5 General Specifications

Model	SOLXPOW X4-25K	SOLXPOW X4-30K
Over voltage category	PV: II; Main: III	
Dimensions	800*620*300 mm (W*H*D)	
Weight	72 kg	
Protection Rating	IP65	
Standby Power Consumption	<15 W	
Topology	Transformerless	
Operating Temperature Range	-30~60 °C	
Relative Humidity	0~100%	
Operating Altitude	3000m (>3000m derating)	
Cooling	Smart fan	
Noise Level	<50 dB	
Display	OLED & LED	
Communication	CAN, RS485, WiFi/LAN (Optional)	

Model	SOLXPOW X4-36K	SOLXPOW X4-40K
Over voltage category	PV: II; Main: III	
Dimensions	800*620*300 mm (W*H*D)	
Weight	72 kg	
Protection Rating	IP65	
Standby Power Consumption	<15 W	
Topology	Transformerless	
Operating Temperature Range	-30~60 °C	
Relative Humidity	0~100%	
Operating Altitude	3000m (>3000m derating)	
Cooling	Smart fan	
Noise Level	<50 dB	
Display	OLED & LED	
Communication	CAN, RS485, WiFi/LAN (Optional)	

Model	SOLXPOW X4-50K
Over voltage category	PV: II; Main: III
Dimensions	800*620*300 mm (W*H*D)
Weight	72 kg
Protection Rating	IP65
Standby Power Consumption	<15 W
Topology	Transformerless
Operating Temperature Range	-30~60 °C
Relative Humidity	0~100%
Operating Altitude	3000m (>3000m derating)
Cooling	Smart fan
Noise Level	<50 dB
Display	OLED & LED
Communication	CAN, RS485, WiFi/LAN (Optional)

Model	SOLXPOW X4P-40K	SOLXPOW X4P-50K
Over voltage category	PV: II; Main: III	
Dimensions	800*620*300 mm (W*H*D)	
Weight	72 kg	
Protection Rating	IP65	
Standby Power Consumption	<15 W	
Topology	Transformerless	
Operating Temperature Range	-30~60 °C	
Relative Humidity	0~100%	
Operating Altitude	3000m (>3000m derating)	
Cooling	Smart fan	
Noise Level	<50 dB	
Display	OLED & LED	
Communication	CAN, RS485, WiFi/LAN (Optional)	

1) AS 4777.2&VDE-AR-N 4105: 30.0 kW

2) AS 4777.2&VDE-AR-N 4105: 30.0 kW

3) AS 4777.2&VDE-AR-N 4105: 43.5 kW

*PV Max. Input voltage is 850V, otherwise inverter will be waiting.

9 Troubleshooting

9.1 Error Message

PowMr SOLXPOW X4 series hybrid inverter is designed in accordance with grid operation standards, and conform to the requirements of safety and EMC. The inverter had passed a series of rigorous tests to ensure it runs sustainably and reliably before shipment.

When a fault occurs, the corresponding error message will be shown on the OLED display, and in this case, the inverter might stop feeding into grid. The fault messages and their corresponding troubleshooting methods are listed below:

Error Message	Description	Solution
Mains Lost	Grid power outage, AC switch or circuit is disconnected.	1. Check whether the mains supply is lost. 2. Check whether the AC breaker and terminal are well connected.
Grid Voltage Fault	Inverter detects that the gird voltage exceeds the limit of selected safety set range.	1. Check whether the safety code is correct. 2. Check whether the AC cable wiring is correct. 3. Check whether the voltage increased cause by large AC cable impedance. In this case we could replace with a thicker AC cable. 4. Extend the voltage protection limit with the permission of the Electricity Authority.
Grid Frequency Fault	Grid over frequency or underfrequency, the grid frequency is higher or lower than the set protection value.	1. Check whether the AC cable is correct and well connected. 2. Change to another country with wider protection range if it's allowed by the local electricity company.
DCI Fault	Inverter detects that the direct current injection value exceeds the range.	1. Restart the inverter. 2. Seek for help from the installer or manufacture.
ISO Over Limitation	Inverter detects that DC side's insulation impedance to the ground is too low.	1. Check whether PV panels, cables, and connectors are waterlogged or damaged. 2. Use a megger to measure ground resistance on the DC side, and the measured value should not be less than

Error Message	Description	Solution
		500 KΩ. 3. Seek help from the installer or manufacture.
GFCI Fault	The inverter detects that the ground leakage current exceeds the limitation.	1. Restart the inverter. 2. Check whether the PV panels, cables, and connectors are waterlogged or damaged. 3. Seek help from the installer or manufacture.
PV Over Voltage	PV input voltage exceeds the upper limit.	Reduce the number of PV panels to make sure that the open-circuit voltage of each string is lower than the inverter maximum allowed input voltage.
Bus Voltage Fault	The voltage of bus circuit is too high	1. Check whether the input voltage exceeds the limit. 2. Restart the inverter. 3. Seek help from the installer or manufacture.
Inverter Over Temperature	The inverter detects its high internal temperature	1. Check whether the inverter installation location is well ventilated. 2. Try to turn it off for a while, and then power it back on when it cools down. 3. Seek help from the installer or manufacture.
N-P E Check Fault	The ground cable is loose or in poor connection	Check whether the ground cable wiring is correct.
SPI Fault	Internal communication got failed. Caused by a strong external magnetic field etc.	1. Restart the inverter. 2. Seek help from the installer or manufacture.
E2 Fault	Internal storage got abnormal. Caused by a strong external magnetic field etc.	1. Restart the inverter. 2. Seek help from the installer or manufacture.
GFCI Device Fault	GFCI device got abnormal	1. Restart the inverter. 2. Seek for help from the installer or manufacture.
AC Transducer Fault	AC transducer got abnormal	1. Restart the inverter. 2. Seek for help from the installer or manufacture.
Relay Check	Self-checking of internal relay	1. Use multimeter to measure the voltage

Error Message	Description	Solution
Fail	got failed. Neutral & ground cable are in poor connection on AC side.	between N&PE cable on AC side. If the voltage is higher than 10V, which means the neutral or ground connection is abnormal. 2. Restart the inverter. 3. Seek help from the installer or manufacture.
Internal Fan Fault	Inverter's internal fan got failed	1. Restart the inverter. 2. Seek for help from the installer or manufacture.
External Fan Fault	Inverter's external fan got failed	Check whether the fan is blocked by foreign matters, clean them if necessary.
Bat OV	Battery protection got triggered	1. Check working status of battery. 2. Check if battery is alarming.
Backup OV	Abnormal voltage exists on the back-up side	Turn off inverter and remove the back-up connector. Use a multimeter to measure whether there is voltage existing on the back-up connector.
Bus Volt Low	Abnormal power scheduling	Check whether the battery voltage or PV input voltage is normal
Hard Fault	Hardware protection got triggered	1. Restart the inverter. 2. Seek help from the installer or manufacture.
Backup OP	Output power over limitation on back-up side	Check whether the load power on back-up side exceeds the maximum output power of inverter.
Inverter OV	The load power exceeds the range of its limit of inverter in off-gird mode	1. Check whether there is an impact load on the back-up side and whether the load power is too high. 2. Check whether back-up side is short circuit.
Inverter OF	The load power exceeds the range of its limit of inverter in off-gird mode	1. Check whether there is an impact load on the back-up side and whether the load power is too high. 2. Check whether back-up side is short circuit.
Inverter OC	The load power exceeds the range of its limit of inverter in off-gird mode	1. Check whether there is an impact load on the back-up side and whether the load power is too high.

Error Message	Description	Solution
		2. Check whether back-up side is short circuit.
SCI Fault	Internal communication got failed. Caused by a strong external magnetic field etc.	1. Restart the inverter. 2. Seek for help from the installer or manufacture.
FLASH Fault	Internal storage anomaly. Caused by a strong external magnetic field etc.	1. Restart the inverter. 2. Seek for help from the installer or manufacture.
Meter Comm Fault	Abnormal communication between meter and inverter.	1. Check whether the communication connection between inverter and meter is reliable 2. Confirm whether the meter model is compatible
BMS Comm Fault	Abnormal communication between inverter and battery BMS.	1. Check whether the battery ID selection is correct. 2. Check whether the communication connection between inverter and BMS is reliable 3. Check the working status of battery.

9.2 Protection

No.	Protection Functions
1	DC reverse polarity protection
2	Battery input reverse connection protection
3	Insulation resistance protection
4	Surge protection
5	Over-temperature protection
6	Residual current protection
7	Islanding protection
8	AC over-voltage protection
9	Overload protection
10	AC short-circuit protection

9.3 Inverter Maintenance

DANGER

- Incorrect operation do cause the risk of inverter damage or personal injury.

  Please strictly follow the steps below.

  a). Select 'stop' option on inverter screen or monitoring app to shut down inverter.

  b). Turn off the AC breaker on utility grid side.

  c). Turn off inverter DC switch.

  d). Turn off the battery switch, and disconnect the DC breaker on the battery side (if any).

  e). Wait for 10 minutes to ensure the energy of capacitor is fully dissipated.

  f). Confirm all the indicator lights are off.

CAUTION

- Keep unprofessional person away.
- A temporary alarm sign or barrier must be posted to keep unprofessional person away while performing electrical connection and maintenance.

NOTICE

- Any Arbitrary replacement of internal components is forbidden.
- Please seek help from PowMr for maintenance support. Otherwise, we will not take any responsibility.

NOTE

- Please remember not to do the self-maintenance before being familiar with the proper instruction of the whole process.

Items	Methods	Period
System clean	Check dust or foreign matter on the heat-sink, air inlet and outlet.	Once 6-12 months
Electrical connection	Check whether the cables are in good connection.	Once 6-12 months
Sealing	Check whether all the terminals and ports are properly sealed. Reseal the cable hole if it is aging or not sealed.	Once a year

9.4 Battery Maintenance

Installation and maintenance of batteries should be performed or supervised with professional knowledge about batteries.

Please contact your battery supplier for detailed installation and maintenance information.

CAUTION

- Do not dispose battery in fire, or it may explode.
- Do not dismantle or break the battery. The electrolyte inside would be harmful to your body.
- The battery has risk of electrical shock, the following scenario should be noticed during the operation.

  a). Remove metal items from your body.

  b). Use insulated tools.

  c). Remove metal items from battery.

  d). Turn off the DC breaker of the battery before assembling or disassembling battery terminals.

  e). There is a risk of electrical shock if battery is unexpectedly grounded. Remove the grounding cable to avoid the electrical shock.

10 Contact Information

Should you have any question about this product, please contact us. We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Date of the device
- Fault code/name
- Brief description of the problem

China (HQ)

SHENZHEN HEHEJIN INDUSTRIAL Co., Ltd.

Address: Henggang Street, Longgang District, Shenzhen, Guangdong, China

Website: www.powmr.com

Service Mail: support@powmr.com

PowMr

SHENZHEN HEHEJIN INDUSTRIAL CO.,LTD

Tel/Fax: +86 755-28219903

Email: support@powmr.com

Web: www.powmr.com

Add: Henggang Street, Longgang District, Shenzhen, Guangdong, China