PSI-X3P15000-HYM
PSI-X3P20000-HYM
PSI-X3P25000-HYM
PSI-X3P30000-HYM

EN

THREE-PHASE HYBRID INVERTER

User Manual

PEIMAR

Before proceeding with the installation or configuration of system components, it is recommended to locally verify product compatibility.

In particular:
- the compatibility of the inverters with the local electrical grid,
- the compatibility of the batteries with the selected inverters,

must be assessed according to current regulations, local technical standards, applicable certifications, and up-to-date technical documentation.

All official catalogs and the most recent technical data sheets are available on our website: www.peimar.com.

It is specified that the technical data, information, and representations provided in this document are purely indicative. Peimar reserves the right to modify the data, drawings, and information contained in this document at any time and without notice.

PEIMAR

1. Safety

1.1. General Safety

The inverter series has been carefully designed and subjected to rigorous testing to ensure compliance with relevant national and international safety standards. However, as with any electrical and electronic equipment, certain safety precautions must be observed and followed during inverter installation in order to minimize the risk of personal injury and ensure a safe setup.

Please read, understand, and strictly follow the detailed instructions provided in the user manual and all other relevant regulations before proceeding with the inverter installation. The safety instructions contained in this document serve as additional guidelines alongside local laws and regulations.

Peimar disclaims any responsibility for consequences arising from violations of the storage, transportation, installation, and operating rules described in this document. Such consequences include, but are not limited to:

- Damage to the inverter caused by force majeure events such as earthquakes, floods, storms, lightning, fire hazards, volcanic eruptions, and similar events.
- Damage to the inverter caused by human actions.
- Use or operation of the inverter in violation of local regulations or policies.
- Failure to follow the usage instructions and safety precautions provided with the product and in this document.
- Incorrect installation or use of the inverter in unsuitable environmental or electrical conditions.
- Unauthorized modifications to the product or software.
- Damage to the inverter occurring during transportation by the customer.
- Storage conditions that do not comply with the requirements specified in this document.
- Installation and commissioning carried out by unauthorized personnel, lacking the necessary licenses or not in compliance with local and national regulations.

1.2. Safety Instructions for the PV System, the Inverter, and the Grid

Keep these important safety instructions. Failure to follow them may result in damage to the inverter, injury, or even loss of life.

1.2.1. PV System Safety Instructions

DANGER!

- Potential risk of fatal electric shock associated with the photovoltaic (PV) system.
- Exposure to sunlight can cause the PV modules to generate high direct current (DC) voltage, which may lead to electric shock, serious injury, or death.
- Never touch the positive or negative terminals of the PV connection device, and avoid touching both terminals simultaneously.
- Do not ground the positive or negative terminals of the PV modules.
- Only qualified personnel may perform PV module wiring.

WARNING!

- Surge protection devices (SPDs) must be installed when setting up the photovoltaic system. The inverter is equipped with surge protection devices on the PV input and AC grid sides.
- Please consult professionals before installing SPDs.

WARNING!

- Ensure that the DC input voltage does not exceed the maximum specified DC input voltage for the inverter. Overvoltage may cause irreversible damage to the inverter, and such damage is not covered under warranty.
- PV modules must be certified according to IEC61730 Class A standard.

DANGER!

Potential risk of fatal electric shock associated with the inverter.

- Use the inverter only when it is in perfect technical condition. Using a faulty inverter may result in electric shock or fire.
- Do not attempt to open the enclosure without Peimar's authorization. Unauthorized opening of the enclosure will void the warranty and may result in fatal danger or serious electric shock injuries.
- Ensure that the inverter is properly grounded before performing any operation to avoid the risk of electric shock that could lead to death or serious injury.
- Only qualified personnel are allowed to install, wire, and maintain the inverter, strictly following this document and applicable regulations.

DANGER!

- Before connecting any cables, it is essential to establish a proper grounding connection.

WARNING!

- During operation, avoid touching any part of the inverter except the DC switch and the LCD panel.
- Never connect or disconnect the AC and DC connectors while the inverter is operating.
- Before performing any maintenance work, turn off the AC and DC power supplies and disconnect them from the inverter. Wait 5 minutes to allow complete energy discharge.

WARNING!

Potential risk of burns due to the hot inverter enclosure.

- Avoid touching the inverter during operation, as it heats up and can cause physical injury.

WARNING!

- When handling the battery, carefully follow all safety instructions provided in the battery's manual. The battery used with the inverter must meet the specifications required for this inverter series.

CAUTION!

- Ensure that children are supervised to prevent them from playing with the device.
- Be mindful of the inverter's weight and handle it properly to avoid physical injury.
- Use insulated tools during installation and always wear personal protective equipment during both installation and maintenance.

NOTICE!

- The inverter is equipped with an integrated type B Residual Current Monitoring Unit (RCMU). If local regulations require an external Residual Current Device (RCD), verify the required RCD type. The use of a type A RCD with a 300 mA threshold is recommended. A type B RCD is also permissible.
- Keep all product labels and the inverter's nameplate clearly visible and in good condition.

1.2.3. Safety instructions for the public grid

WARNING!

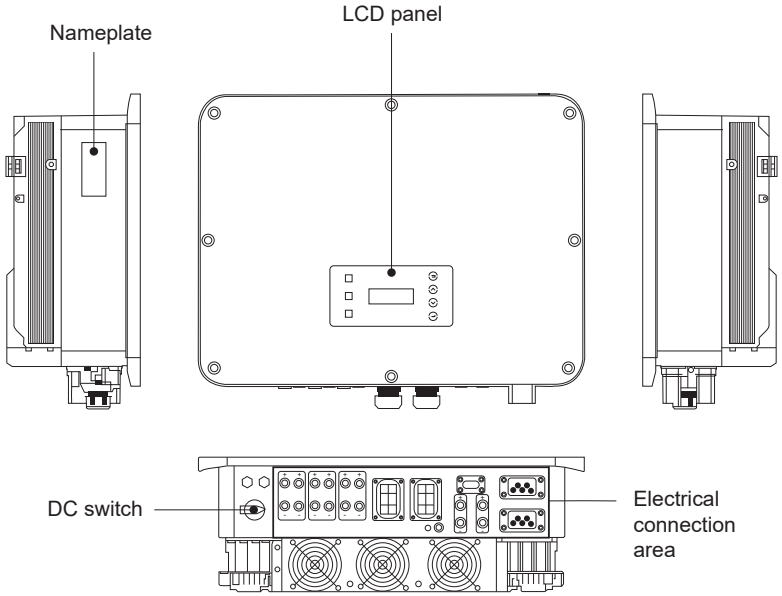
- Connect the inverter to the grid only with authorization from the local electric utility company.

2. Product Overview

2.1. System Description

The PSI-X-HYM series is an energy storage inverter that supports grid connection for photovoltaic systems. It perfectly meets the needs of rooftop solar installations and supports various smart solutions, such as load management, wireless metering, dual battery terminals, microgrids, etc., to achieve efficient and economical energy usage. The PSI-X-HYM series can be used with Peimar batteries of different capacities.

2.2. Appearance



Item	Description
Nameplate	The nameplate clearly indicates the device type, serial number, specific DC/AC parameters, certification, etc.

LCD Panel	Includes the screen, indicators, and buttons. The screen displays information; the indicators show the inverter status. The buttons allow parameter settings.
DC Switch	Allows disconnection of the DC circuit when necessary.
Electrical Connection Area	Includes PV terminals, battery terminals, AC terminals, communication terminals, etc.

2.3. Supported power grid

There are different wiring methods for various grid systems. The TT / TN-S / TN-C-S / IT systems are illustrated below:

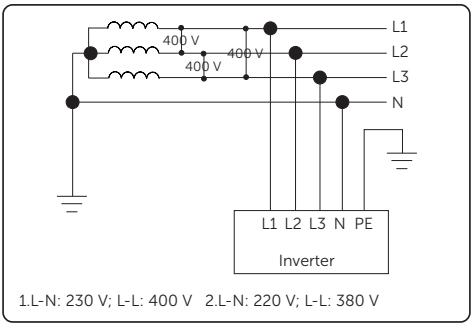


Figure 2-2 Supported Power Grid – TT

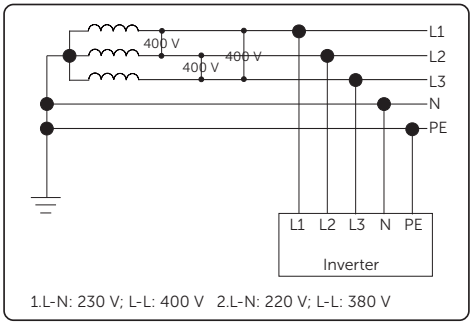


Figure 2-3 Supported Power Grid – TN-S

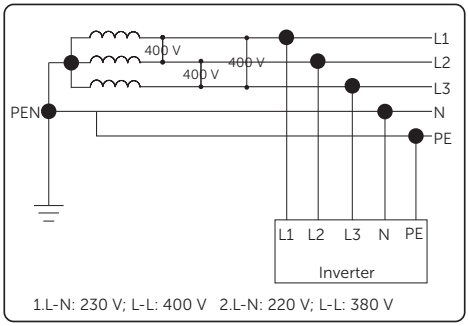


Figure 2-4 Supported Power Grid – TN-C-S

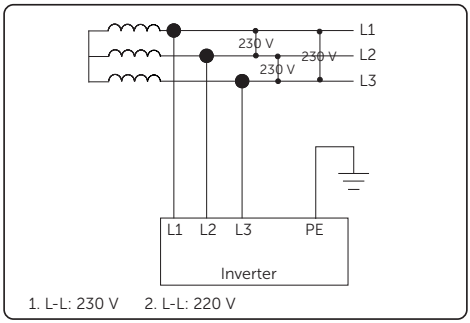


Figure 2-5 Supported Power Grid – IT

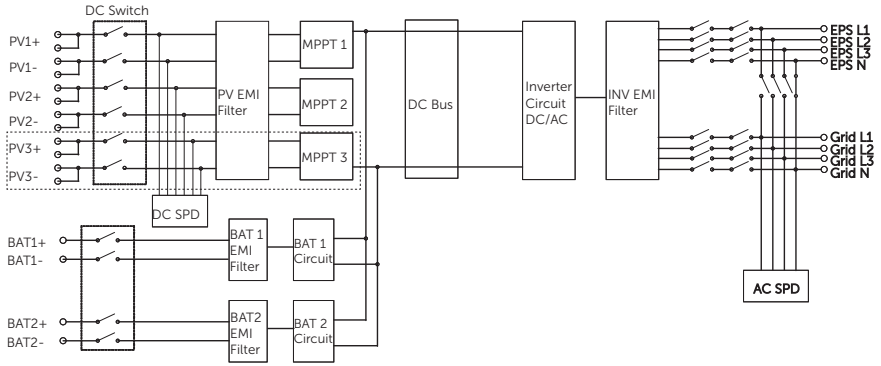
2.4. Symbols on the Label and Inverter

Symbol	Description
	CE mark. The inverter complies with the requirements of applicable CE directives.
	Caution: hot surface. Do not touch the inverter during operation, as it becomes hot!
	Risk of electric shock. High voltage is present after the inverter is powered on!
	Risk of danger. Potential hazards may exist after the inverter is turned on!
	Supplementary grounding point.
	Refer to the attached documentation.
	Danger of death from high voltage. Residual voltage remains after switching off the inverter; full discharge requires 5 minutes. Wait 5 minutes before performing any maintenance.
	The inverter cannot be disposed of with regular household waste.

2.5. Operating Principle

2.5.1. Circuit Diagram

The inverter is equipped with multiple MPPT channels for direct current (DC) input to ensure maximum power output even under variable photovoltaic input conditions. The inverter unit converts direct current into alternating current (AC) that meets the requirements of the electrical grid, feeding it into the grid. The inverter's operating principle is illustrated in the following diagram:



WARNING!

MPPT channel 3 is available for inverters PSI-X3P-15KP, 20KP, 25K, 25KW, 30K.

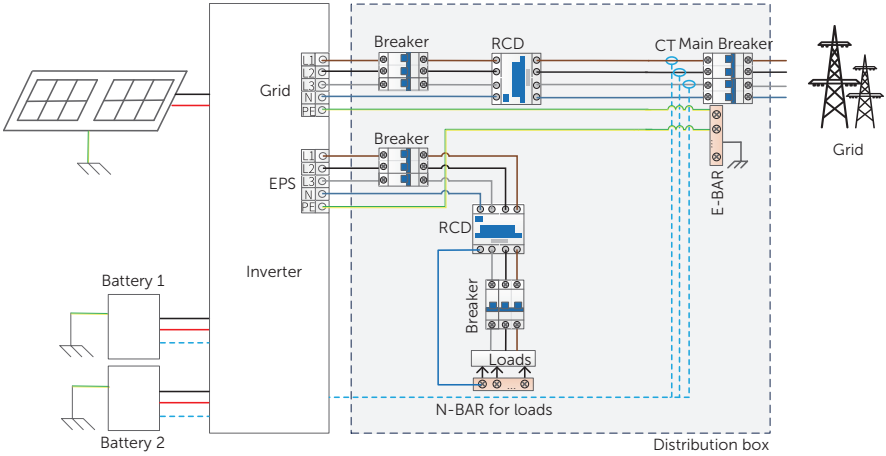


Figure 2-7: Whole-home backup for most countries

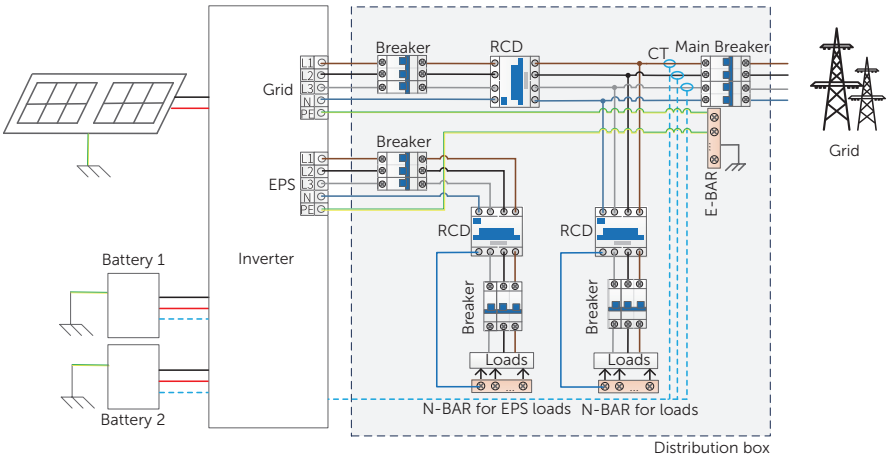


Figure 2-8: Partial home backup for most countries

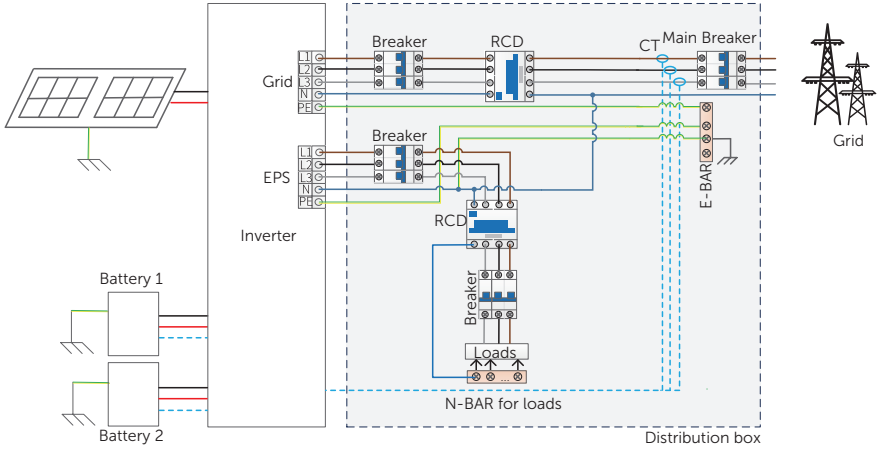


Figure 2-9: Whole-home backup for Australia

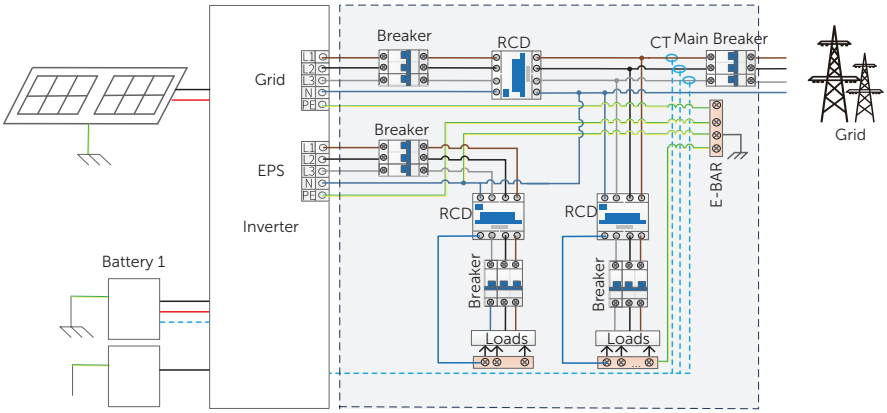


Figure 2-10: Partial home backup for Australia

WARNING!

The N wire is connected to ground (PE), and the diameter of the N wire must not be smaller than that of the L wire.

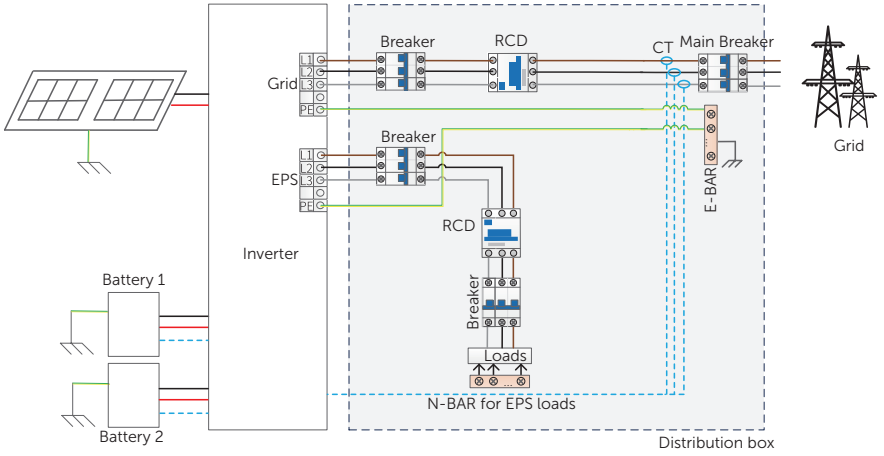


Figure 2-11: Application diagram for PSI-X3P-10K-HYM

2.6. Operating Status

The inverter in this series includes the following states: Waiting, Checking, Normal, EPS Checking, EPS, Fault, Inactive, Unusual Inactive, and Standby.

State	Description
Waiting	The inverter is waiting for the following two conditions to be met before entering the Checking state: Adequate photovoltaic input voltage. AC-side voltage and frequency meet the grid requirements as specified by the grid settings.
Checking	The inverter is verifying the conditions before transitioning to the Normal state.
Normal	The inverter is operating normally.
EPS Checking	The inverter is verifying conditions to enter EPS mode.
EPS	The inverter is operating in off-grid mode.
Fault	The inverter has detected an error and displays an error code.
Inactive	The battery's SOC has reached the minimum level, and there is insufficient PV input voltage, etc.
Unusual Inactive	The battery needs charging, but neither PV power nor grid power is sufficient to charge the battery.
Standby	A standby state when the load power is extremely low and there is insufficient PV input voltage, or when the battery SOC is above 10% but there is not enough PV voltage. In this state, the inverter monitors PV connection, load power, etc., to determine whether to exit standby and enter the Normal state.

WARNING!

When the inverter is in the Inactive state, you can reset the working mode, minimum SOC, and charging periods via the inverter's LCD screen or the Peimar app in order to charge the battery up to the minimum SOC. Then set the charging periods and reactivate the inverter. Ensure that the actual battery SOC – the new minimum SOC – is ≥ 2% in relation to the specified working mode; otherwise, the modified charging periods will not take effect. If the current system state falls within the modified limits and the set values cannot be reset, the battery will begin charging automatically.

2.7. Operating Modes

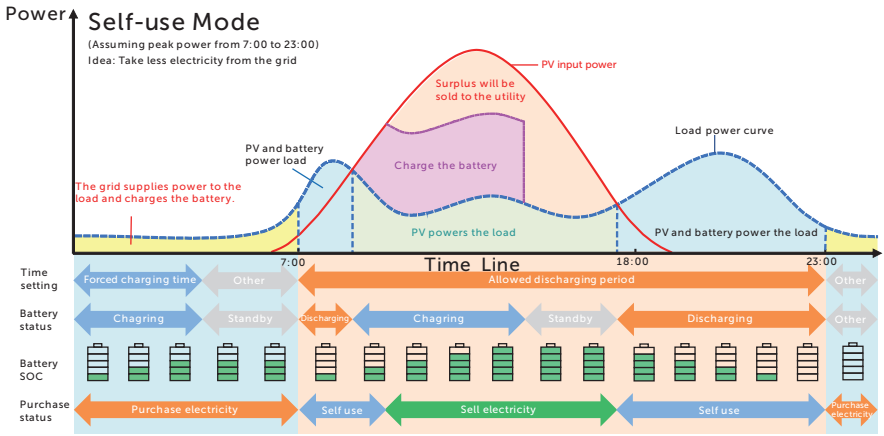
Several operating modes are available in grid mode, including: Self-Consumption, Feed-in Priority, Backup, Peak Shaving, TOU (Time of Use), Manual, and Smart Scheduling. You can select the operating mode based on your lifestyle and environment.

When the power supply from the utility company is interrupted due to a power outage, the inverter automatically switches to EPS mode and connects to the distribution board for specific loads, thereby supplying power to essential appliances.

For configuration instructions, refer to section "10.7.1 User Settings."

2.7.1. Self-Consumption Mode (Priority: Loads > Battery > Grid)

Self-consumption mode is suitable for areas with low feed-in subsidies and high electricity prices. Photovoltaic (PV) energy will first power the loads, excess energy will then be used to charge the battery, and finally the remaining energy will be fed into the grid.



WARNING!

Adjust the export control in accordance with the safety code.

Time Period	Inverter Operating Status
Forced Charging Period	Charge the battery first until the battery SOC reaches the specified value. The inverter can be configured to draw power from the grid or not.
Sufficient PV	Sufficient PV (PV > load > battery > grid) The energy generated by the photovoltaic (PV) system powers the load as the top priority. Any excess energy is then used to charge the battery, and if there is still remaining electricity, it can be sold to the grid. If the local utility limits electricity export to the grid, you can adjust the export control to limit the output to the grid. For specific settings, refer to “Export Control Adjustment.” Insufficient PV (PV + battery > load) The battery discharges energy to supply the load, and once its capacity reaches the minimum SOC, it stops discharging automatically.

WARNING!

Charge battery to: Battery SOC charged from the grid. Default value: 30%, adjustable range from 10% to 100%.

Min SOC: Minimum battery SOC when connected to the grid. Default value: 10%, adjustable range from 10% to 100%.

Charging and Discharging Periods

You can define two configurable operating periods: the forced charging period and the authorized discharging period. The time outside of these periods falls under other time slots.

Forced Charging Period (Default period: 00:00~00:00, disabled by default)

During this period, the inverter will prioritize charging the battery until the SOC reaches the specified value for each operating mode. The inverter can be configured to either draw or not draw power from the grid.

- Authorized Discharging Period (Default period: 00:00~23:59)

During this period, the inverter will allow the battery to discharge and charge based on the operating mode and the charging conditions.

- Period Not Defined as Forced Charging or Authorized Discharging

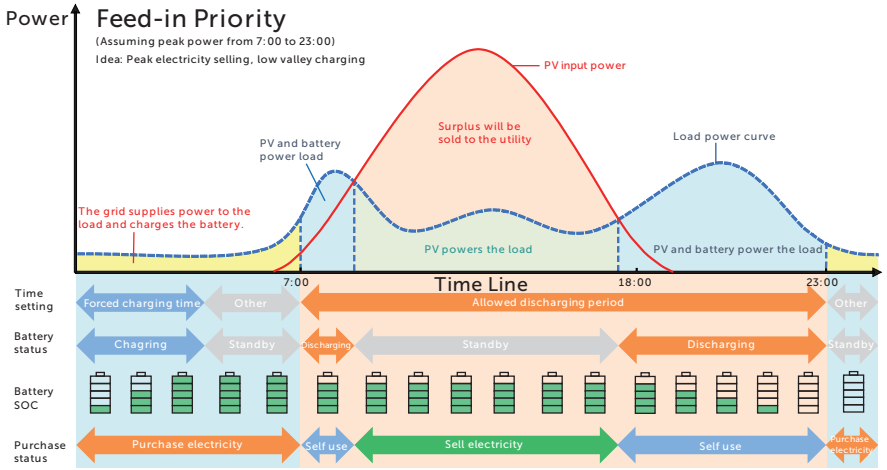
During this period, the inverter will allow the battery to charge, but will not permit it to discharge.

WARNING!

The charging and discharging period is applicable only to the self-consumption, feed-in priority, and backup modes. The forced charging period takes precedence over all operating modes.

2.7.2. Feed-in Priority Mode (Priority: Loads > Grid > Battery)

The feed-in priority mode is suitable for areas that benefit from high feed-in electricity subsidies. Photovoltaic (PV) energy is first used to supply power to the loads. Any excess power will be fed into the grid.



Time Period	Inverter Operating Status
Forced Charging Period	Charge the battery first until the SOC reaches the specified value. The inverter can be configured to draw power from the grid or not.

Authorized Discharge Period	Sufficient PV (PV > load > grid > battery) The energy generated by the photovoltaic system (PV) is directed to supply the loads. All excess power beyond the load demand will be fed into the grid. Insufficient PV (PV + battery > load) The photovoltaic system (PV) and the battery simultaneously supply energy to the load. Once the battery capacity reaches the minimum SOC, it automatically stops discharging.

WARNING!

Charge the battery to: the SOC of the battery charged from the grid. Default value: 50%, adjustable range from 10% to 100%.

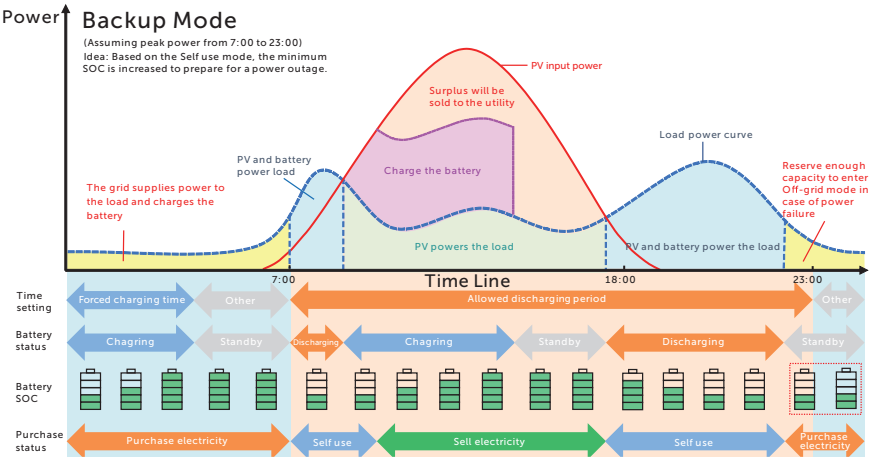
Min SOC: Minimum SOC of the battery when connected to the grid. Default value: 10%, adjustable range from 10% to 100%.

WARNING!

It is possible to define two configurable operating periods: forced charging period and authorized discharge period, in the feed-in priority mode. Refer to “Charging and Discharging Period” for more details. In this mode, it is necessary to consider whether the battery can be charged during the day. If this is not possible, it is recommended to define a forced charging period during off-peak hours and to allow battery charging from the grid.

2.7.3. Backup Mode (Priority: Loads > Battery > Grid)

The backup mode is suitable for areas subject to frequent power outages. This mode will maintain the battery capacity at a relatively high level to ensure that emergency loads can be powered when the grid is offline. The operating logic is the same as in the self-consumption mode.



Time Period	Inverter Operating Status
Forced Charging Period	Charge the battery until the state of charge (SOC) reaches the value specified for charging. It is possible to configure the inverter to draw more or less energy from the grid.
Authorized Discharge Period	The operating logic remains the same as in self-consumption mode. The difference is the following: in self-consumption mode, when there is no PV input and the battery SOC reaches SOC minimum 1 (Minimum SOC on-grid), the battery enters sleep mode. In this state, if a power outage occurs, the inverter cannot switch to EPS mode. In backup mode, when there is no PV input and the battery SOC reaches the minimum SOC (on-grid), the inverter enters standby mode. In this state, if the grid supply fails, the inverter will switch to EPS mode until the battery is discharged to SOC minimum 2 (Minimum SOC off-grid).

WARNING!

Min SOC1 (Minimum SOC on-grid): Minimum SOC during grid connection. Default value: 30%, adjustable range from 30% to 100%. Min SOC2 (Minimum SOC off-grid): Minimum SOC in off-grid conditions. Default value: 10%, adjustable range from 10% to 100%.

WARNING!

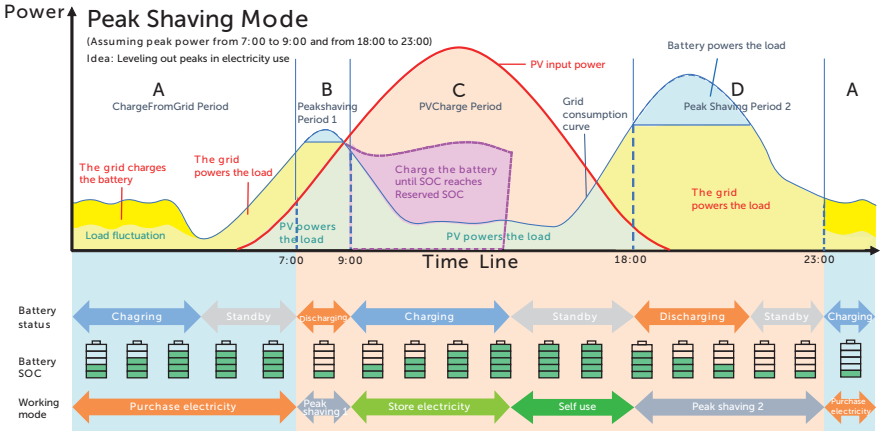
It is possible to define two configurable operating periods: the forced charging period and the authorized discharge period in backup mode. Refer to “Charging and Discharging Period” for further details.

WARNING!

If a power outage is expected, it is recommended to switch in advance from other modes to backup mode.

2.7.4. Peak Shaving Mode

The peak shaving mode is configured to flatten electricity consumption peaks. The system is intelligently controlled to ensure that charging takes place during off-peak hours and discharging occurs during peak hours.



Time Period	Inverter Operating Status
Period A	The grid can charge the battery up to the MaxSOC within the defined charging power limits. During this period, the battery will not discharge energy.
Periods B and D	Grid power consumption < Peak limit (FV + grid > load) The PV and the grid will supply the load. The battery will neither charge nor discharge. Grid power consumption > Peak limit (FV + battery + grid > load) The battery will discharge energy to supply the loads, thus reducing the amount of energy purchased from the grid.
Period C	(FV > battery > load > grid) The battery does not discharge energy. The PV charges the battery up to the reserved SOC before supplying the loads. Any excess power beyond the load demand is supplied to the loads first, then fed into the grid.

WARNING

MaxSOC: The energy drawn from the grid to charge the battery. By default, it is set to 50%, and the configurable range is from 10% to 100%.

ChargePowerLimits: The charging power from the grid. By default, it is 1000 W, and the configurable range is from 0 to 60000 W.

PeakLimits: Load consumption from the grid side. By default, it is 0 W, and the configurable range is from 0 to 60000 W.

Reserved SOC: The lower SOC limit of the battery required for the next peak shaving period. By default, it is 50%, and the configurable range is from 10% to 100%.

2.7.5. TOU Mode

In TOU mode, different operation modes such as self-consumption, charging, discharging, peak shaving, and battery stop can be defined for different time periods, according to real needs and environmental conditions, via the PeimarXPortal app or the website.

The day can be divided into up to 24 time slots, and the minimum slot duration is 15 minutes. An independent operating mode can be defined for each time slot. Please refer to the web guide or app guide for more details on how to configure TOU mode.

Time Slot	Operating Mode
x:xx~x:xx (e.g 0:00~0:15)	Choose one mode from: Self-Consumption / Charge / Discharge / Battery Stop / Peak Shaving

WARNING!

Self-Consumption: Same operating logic as in "Self-Consumption Mode", but not limited by the charge and discharge time slots. The priority is: PV > Loads > Battery > Grid.

Charge: PV power will charge the battery as much as possible up to the SOC defined by "Charge BAT to (%)". It is possible to define whether charging should also be performed from the grid. The default value of "Charge BAT to (%)" is 100%. When the battery has reached the defined SOC, any excess power will switch to “Self-Consumption Mode” to directly supply the loads (according to system configuration). At this point, charging from the grid is no longer authorized.

Discharge: If authorized by the battery, the system supplies a specified power to the grid based on the defined output percentage, thereby controlling the power on the AC port. It is

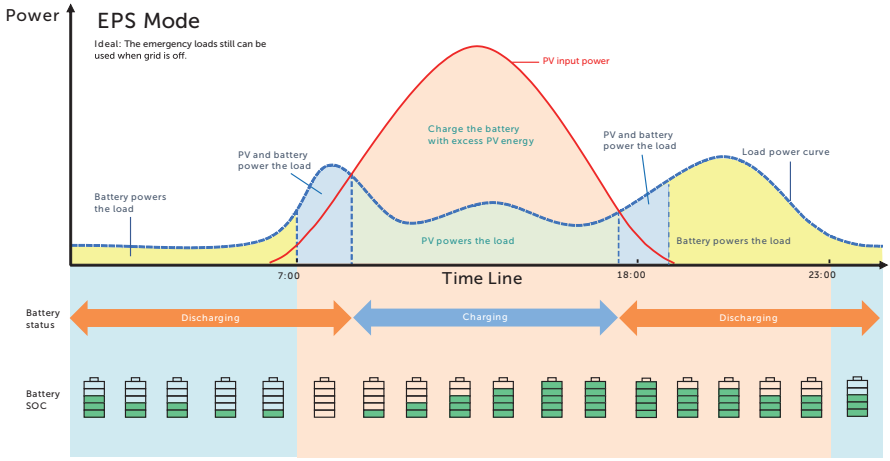
necessary to set the power rate (%) via the Web or App when selecting the Discharge mode. When the battery reaches the SOC value defined for “Discharge to (%)”, the inverter switches to “Self-Consumption Mode”.

Peak Shaving: The operating logic is as follows: when energy consumption from the grid exceeds the defined PeakLimit value, the battery is authorized to discharge energy. The excess power beyond the limit is supplied by the combination of photovoltaic and battery, in order to ensure that the maximum power purchased from the grid does not exceed the defined limit. It is necessary to set the PeakLimit value via the Web or the App when selecting the Peak Shaving mode.

Battery Stop: The battery neither charges nor discharges. PV energy supplies the loads or the grid. Only the battery with an SOC lower than the system's minimum SOC (TOU) can be charged.

2.7.6. EPS Mode (Priority: Loads > Battery)

In the event of a power outage, the system will provide uninterrupted power to the EPS loads using energy from the PV and the battery. It is important to ensure that the EPS loads do not exceed the maximum output power of the battery.



Battery SOC	Inverter Operating Status
Battery SOC > Min SOC (in off-grid mode)	PV is sufficient (PV > load > battery) PV prioritizes load supply; any excess energy is directed to charge the battery.
	PV is insufficient (PV + battery > load) PV prioritizes load supply. If energy is not sufficient, the battery discharges energy until reaching the minimum SOC, then the BatPowerLow error is triggered.
Battery SOC < Min SOC (in off-grid mode)	The inverter signals BatPowerLow. When PV is available, it will first charge the battery. After reaching the Min ESC SOC value, the system will automatically recover and re-enter EPS mode.

WARNING!

Min SOC: Minimum battery SOC in off-grid conditions. Default value: 10%, configurable range: from 10% to 100%.

Min ESC SOC: Minimum battery SOC required to enter EPS mode. Default value: 30%, configurable range: from 15% to 100%.

WARNING!

When the battery supplies the load, the available battery capacity decreases as the SOC drops.

Intelligent Scheduling Mode

The Intelligent Scheduling Mode is based on the fact that the inverter is connected to a Datahub, which performs intelligent forecasting and automatically adjusts the inverter's operating mode based on the information it receives.

In Intelligent Scheduling Mode, it is possible to define various operating modes – such as Self-Consumption (SS), Feed-in Priority (SS), and Intelligent Scheduling (SS) – for different time intervals, based on real needs and environmental conditions, via the PeimarXPortal app or the website.

WARNING!

Self-Consumption (SS): Same operating logic as in “Self-Consumption Mode”, but not limited by charge and discharge time intervals. Moreover, drawing energy from the grid is not authorized. Priority order: PV > Loads > Battery > Grid

Feed-in Priority (SS): Same operating logic as in “Feed-in Priority Mode”, but not limited by charge and discharge time intervals. Moreover, drawing energy from the grid is not authorized. Priority order: PV > Loads > Grid > Battery

Battery Does Not Discharge (SS): PV powers the load. When PV is insufficient, the grid supplies the load. The battery does not discharge energy. Priority order: PV > Loads > Battery

2.7.8. Manual Mode

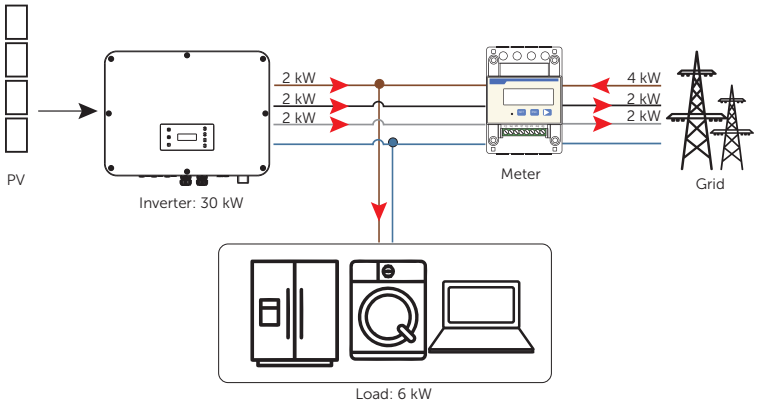
This operating mode is reserved for professional technical personnel to perform adjustments and maintenance. It includes forced discharge, forced charge, and stopping both charging and discharging. The system will return to the original operating mode after six hours of manual mode activation.

2.7.9. Export Control Function

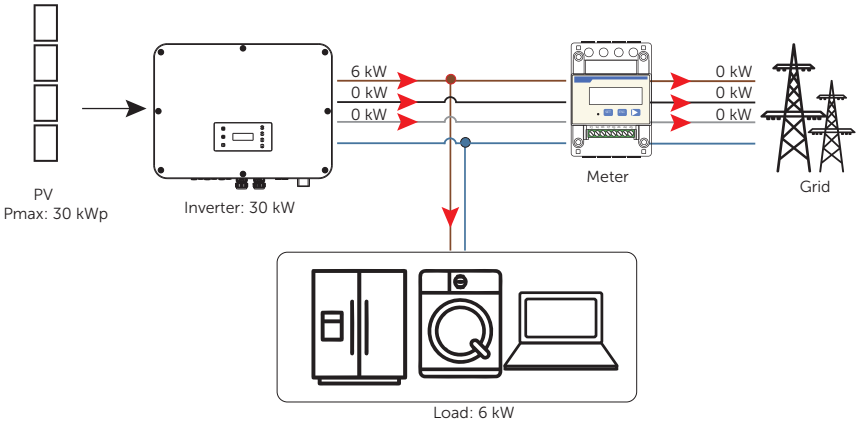
Solar export control is a limitation on the amount of energy your solar system can export to the grid. You have a defined limit for the amount of energy you can feed into the grid.

How export control works:

- CT/Meter required
- Correct setting of the export control limit value via the inverter. (For a parallel system, the regulation is done on the master inverter.)



Load: 6 kW



WARNING!

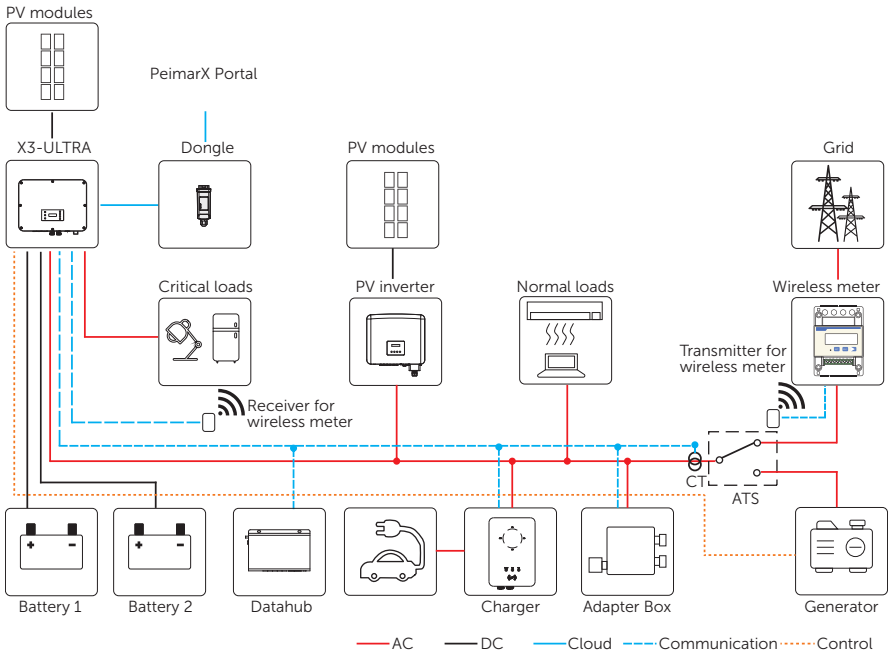
The export control value can be set from 0 W up to beyond the rated output power. For instructions on how to configure the export control function, please refer to “Export Control Settings”.

3. System Overview

WARNING!

The system diagram shows the supported connection schemes, but some solutions cannot be used simultaneously.

System Overview



Item	Description
PSI-X3P-HYM Series (the device covered in this manual)	The PSI-X3P-HYM series is an energy storage inverter that supports grid connection of a photovoltaic system.

PV Modules	The PV modules operate in MPPT mode. The maximum number of MPPTs is two for 15 kW and 20 kW inverters, and three for 25 kW and 30 kW inverters.
Battery	The inverter of the series must be paired with a lithium-ion battery. Two battery terminals can be connected to two battery strings. It communicates with the inverter via the BMS and must comply with regulatory specifications.
Meter/CT	The Meter/CT is used by the inverter for the readings of import/export or consumption, and manages the battery charge/discharge consequently for smart energy management applications. The wireless Meter solution is supported.
Additional inverter connected to the grid (supported)	The series inverter supports the microgrid function, which allows the hybrid inverter to simulate the grid to activate the terminal grid inverter during the off-grid period by connecting the hybrid inverter's EPS terminal. Please refer to "15.5 Application of the microgrid" for wiring and specific settings.
Adapter Box (supported)	With the Peimar Adapter Box, it is possible to connect the smart heat pump to energy storage systems, performing heat pump control through the inverter. Please refer to "15.2 Application of the Adapter Box" for wiring and specific settings.
DataHub (supported)	The DataHub is a professional device for platforms monitoring photovoltaic production systems, which allows data collection, storage, output control, centralized monitoring, and centralized maintenance of inverters, Meters, and environmental monitoring instruments in photovoltaic systems. Please refer to "15.4 Application of the DataHub" for wiring and specific settings.
EV Charger (supported)	The series inverter can communicate with the Peimar EV Charger to form an intelligent energy system with photovoltaic, storage, and electric vehicle charging, maximizing the use of photovoltaic energy. Please refer to "15.3 Application of the EV Charger" for wiring and specific settings.
Generator (supported)	The Peimar solution guarantees optimal interaction between the photovoltaic panels and the diesel generator, allowing fuel savings, reduction of energy costs, and ensuring a stable and reliable power supply. Please refer to "15.1 Application of the Generator" for wiring and specific settings.

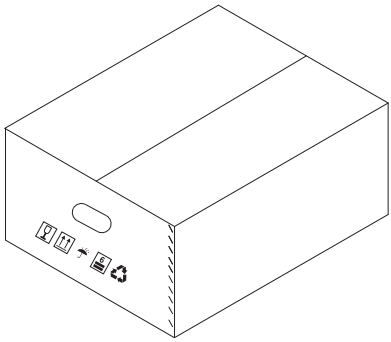
Grid	400 V / 230 V and 380 V / 220 V grids are supported. (230 V / 133 V and 220 V / 127 V grids are supported for the PSI-X3P-HYM).
PeimarXPortal	The PeimarXPortal is an intelligent, multifunction monitoring platform, accessible remotely or via wired connection. With the PeimarXPortal, operators and installers can always view the updated key data.

4. Transport and Storage

If the inverter is not put into operation immediately, the transport and storage requirements must be observed:

Transport

- Observe the warning symbols present on the inverter packaging before transport.
- Pay attention to the weight of the inverter. Take care to avoid injuries during the transport of the PSI-X3P-HYM (gross weight: 62 kg). Transport it according to the number of people required by local regulations.
- Wear protective gloves during manual transport of the equipment to avoid injury.
- During lifting of the inverter, keep your grip on the handle and the bottom part of the inverter. Keep the inverter in a horizontal position to avoid falls.



Storage

- The inverter must be stored in an indoor location.
- Do not remove the original packaging material and regularly check the condition of the external packaging material.

- The storage temperature must be between -40°C and +70°C. Humidity must be between 5% and 65%.
- Stack the inverter in accordance with the warning symbols shown on the inverter's carton to avoid it falling and damaging the device. Do not place it upside down.

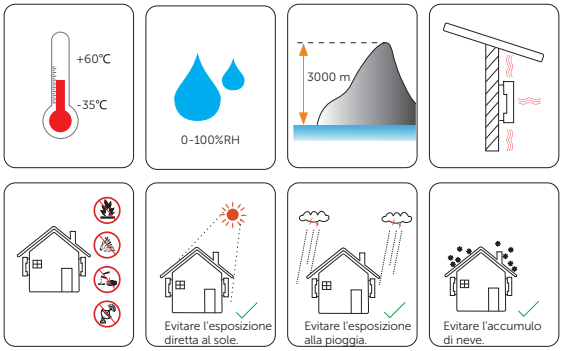
5. Preparation Before Installation

5.1. Selection of the Installation Location

The installation location chosen for the inverter is crucial to ensure the safety of the device, its lifespan, and performance. The inverter has IP66 ingress protection, which allows outdoor installation. The installation site must be practical for electrical connection, operation, and maintenance.

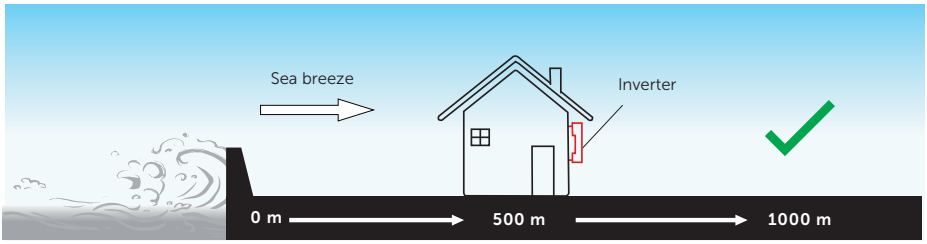
5.1.1. Environmental Requirements

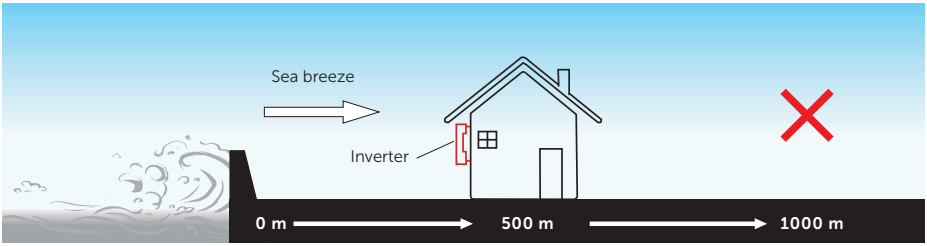
- Ambient temperature: from -35°C to +60°C.
- Relative humidity must be between 0 and 100 %RH.
- Do not install the inverter in areas where the altitude exceeds 3000 m.
- Install the inverter in a well-ventilated environment to facilitate heat dissipation.
- It is recommended to install a canopy above the inverter if it is mounted on an external support.
- Do not install the inverter in areas with flammable, explosive, or corrosive materials, nor near an antenna.
- Avoid direct exposure to sunlight, rain, and the accumulation of snow.



NOTICE!

- For outdoor installation, precautions against direct exposure to sunlight, rain, and snow accumulation are recommended.
- Direct exposure to sunlight increases the temperature inside the device. This increase does not present a safety risk but may affect the performance of the equipment.
- Install the inverter at least 500 meters from the coast and avoid having sea breeze directly affect the equipment.



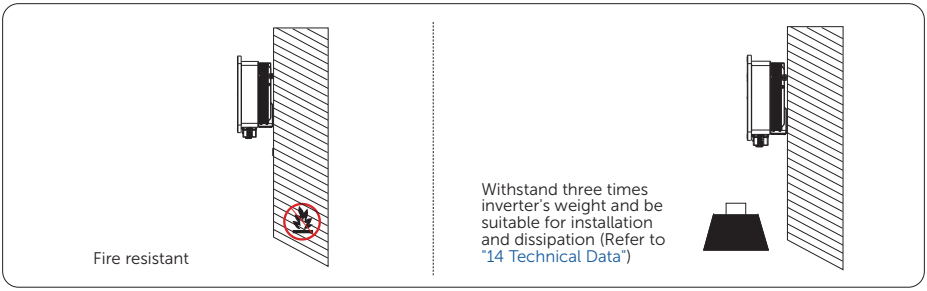


NOTICE!

For the installation of the complete system, refer to the specific environmental requirements of each unit.

Requirements for the Installation Support

The installation support must be made of non-flammable materials, such as solid bricks, concrete, etc., and must be able to bear the weight of the inverter as well as be suitable for its dimensions. If the wall's solidity is insufficient (for example, a wooden wall or a wall covered with a thick decorative layer), it must be further reinforced.



NOTICE!

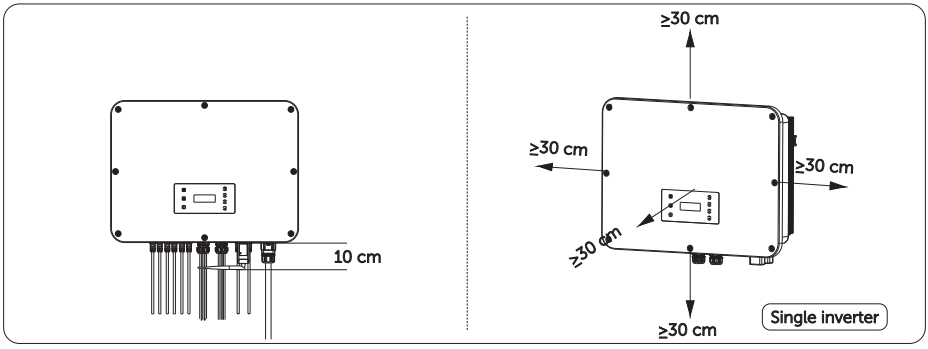
Please take into account the weight of the battery during wall mounting of the complete system.

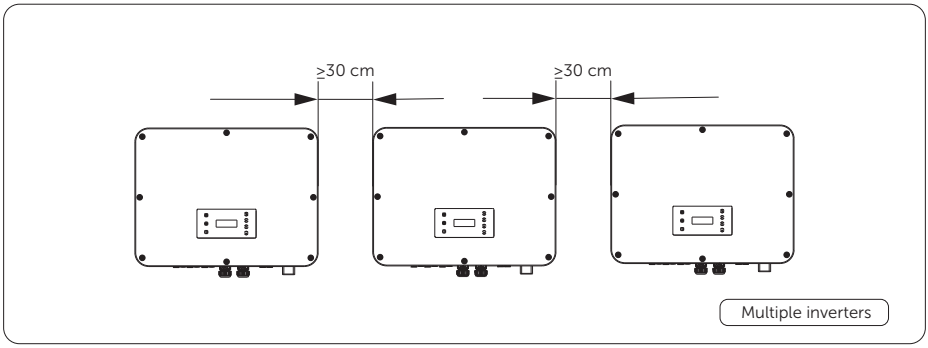
Distance Requirements

The minimum space reserved for the connection terminal located at the bottom of the inverter must be at least 10 cm. When planning the installation space, it is also important to consider the cable bending radius.

To ensure proper heat dissipation and facilitate disassembly, the minimum space around the inverter must comply with the standards specified below.

For installations with multiple inverters, ensure a minimum space of 30 cm between each inverter. In areas with high ambient temperatures, increase the distances between inverters and ensure adequate ventilation with fresh air, if possible.





5.2. Tool Requirements

The installation tools include, but are not limited to, those recommended below. If necessary, use other auxiliary tools available on site. All the tools listed must comply with regulatory requirements.

Hammer drill (bit: Ø12 mm)
Multimeter (≥ 1100 V DC)
Measuring tape
Utility knife
Marker
Torque screwdriver (Flat: M2) (Phillips: M2.5 / M3 / M5)

Flat screwdriver Ø2 mm
Diagonal pliers
Wire stripper
Crimping tool for RJ45
Crimping tool for PV terminals
Rubber mallet
Crimping tool
Crimping tool for ferrule terminals
Cable cutter
Torque wrench
Spirit level
Heat gun
Dust mask
Safety gloves
Safety boots
Safety glasses

5.3. Materiali supplementari richiesti

No.	Required Material	Type	Conductor Cross Section
1	PV wire	Dedicated PV wire with a rated voltage of 1000 V, temperature resistance of 105°C, fire resistance rating VW-1	4 mm² - 6 mm²
2	Communication wire 1	CAT5E/CAT6 network cable	/
3	Communication wire 2	Four-core signal cable	0.25 mm² - 0.3 mm²
4	Grid and EPS wire	Five-core copper cable	10 mm² / 16 mm²
5	Additional PE wire	Conventional yellow and green wire	Same as grid and EPS wire

Circuit breaker recommended for grid connection

Model	PSI-X3P15000-HYM	PSI-X3P20000-HYM	PSI-X3P25000-HYM PSI-X3P30000-HYM
Automatic Circuit Breaker	32 A	50 A	63 A

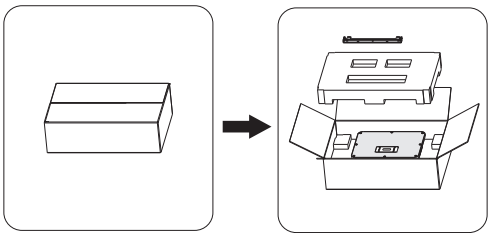
Automatic circuit breaker recommended for EPS connection

Model	PSI-X3P15000-HYM	PSI-X3P20000-HYM	PSI-X3P25000-HYM PSI-X3P30000-HYM
Automatic Circuit Breaker	32 A	40 A	63 A

6. Unpacking and Inspection

6.1. Unpacking

- The inverter undergoes 100% testing and inspection before shipment from the production factory. However, damage may still occur during transport. Before unpacking the inverter, check the external packaging materials to verify any possible damage, such as holes or cracks.
- Unpack the inverter according to the illustration below.



- Pay attention during handling of all packaging materials, as they can be reused for storage and moving of the inverter in the future.
- During the opening of the packaging, check whether the appearance of the inverter is damaged or if any accessories are missing. In case of damage or missing parts, immediately contact your dealer.

6.2. Materials Included in the Delivery

Inverter
Bracket
Positive PV connector, cable clamp, positive PV pin contact
Negative PV connector, negative PV pin contact
OT terminal, expansion screw, M5 screw
Positive battery connector
Negative battery connector
RJ45 terminal, RJ45 connector
8-pin terminal block, 7-pin terminal block
Document
Handle removal tool
CT
AC connector (black), Hex key, removal tool
AC connector (grey), Hex key, removal tool
PV positive and negative dustproof clip
Dongle

Item	Description	Quantity
/	Inverter	1 pc
/	Bracket	1 pc
A	Positive PV connector	6 pairs (4 pairs for PSI-X3P-HYM)
B	Positive PV pin contact	
C	Cable clamp	1 pc
D	Negative PV connector	6 pairs (4 pairs for X3P-HYM)
E	Negative PV pin contact	

F	OT terminal	2 pairs (1 pc for 10 mm² cable, 1 pc for 16 mm² cable)
G	Expansion screw	5 pcs
H	M5 screw	2 pcs
I	Positive battery connector	2 pcs
J	Negative battery connector	2 pcs
K	RJ45 terminal	8 pcs
L	RJ45 connector	1 pcs
M	8-pin terminal block	1 pcs
N	7-pin terminal block	1 pcs
O	Document	Document
P	Handle	2 pcs
Q	Removal tool (quick-release terminals)	1 pcs
R	CT	1 pcs
S	AC connector (black) (Supports a minimum cable diameter of 4 mm²)	1 pc (Supports a minimum cable diameter of 4 mm²)
T	Hex key	1 pc
U	Removal tool for AC connector	1 pc
V	AC connector (grey) (Supports a minimum cable diameter of 4 mm²)	1 pc (Supports a minimum cable diameter of 4 mm²)
W	Hex key	1 pc
X	Removal tool for AC connector	1 pc
Y	Positive PV dustproof clip	6 pairs (4 pairs for PSI-X3P-HYM)
Z	Negative PV dustproof clip	
/	Dongle	1 pc

NOTICE!

- Refer to the actual supply for optional accessories.
- The quantities in the packing list refer to the 30 kW inverter.
- The included hex key (parts T & W) is intended for temporary use only. It is recommended to use professional tools and a torque wrench to apply the specified tightening torque. Incorrect tightening may damage the AC terminals.

7. Mechanical Installation

WARNING!

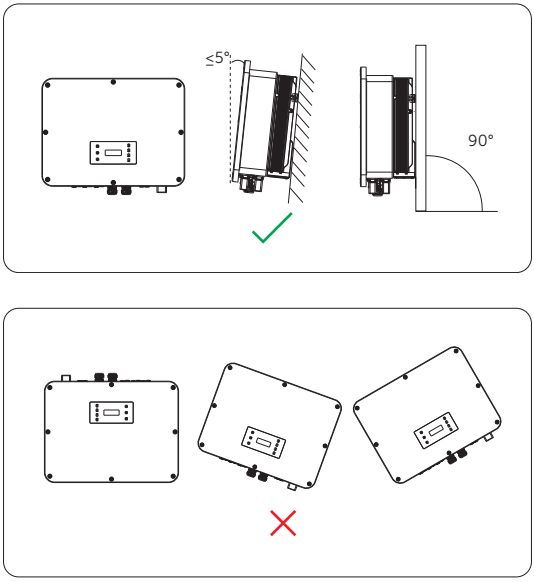
- Only qualified personnel may perform mechanical installation in compliance with local standards and requirements.
- Check for existing electrical cables or other pipes in the wall to avoid electric shocks or other damage.

CAUTION!

- Always pay attention to the weight of the inverter. Personal injury may occur if the inverter is lifted incorrectly or falls during transport or installation.
- Use insulated tools during device installation. Personal protective equipment must be worn during installation and maintenance.

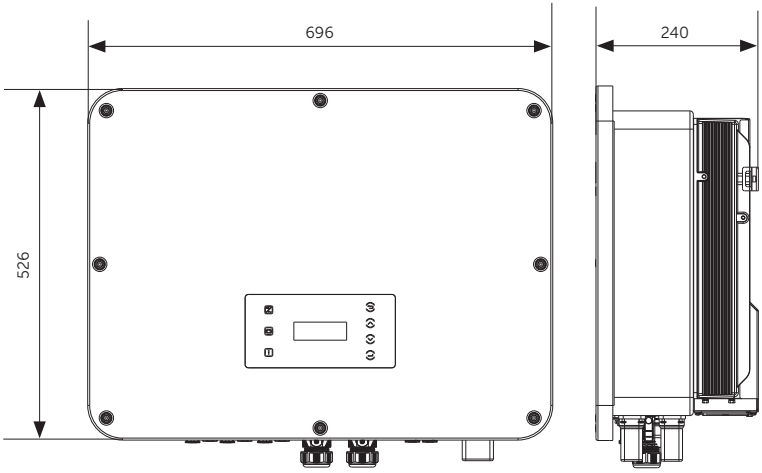
NOTICE!

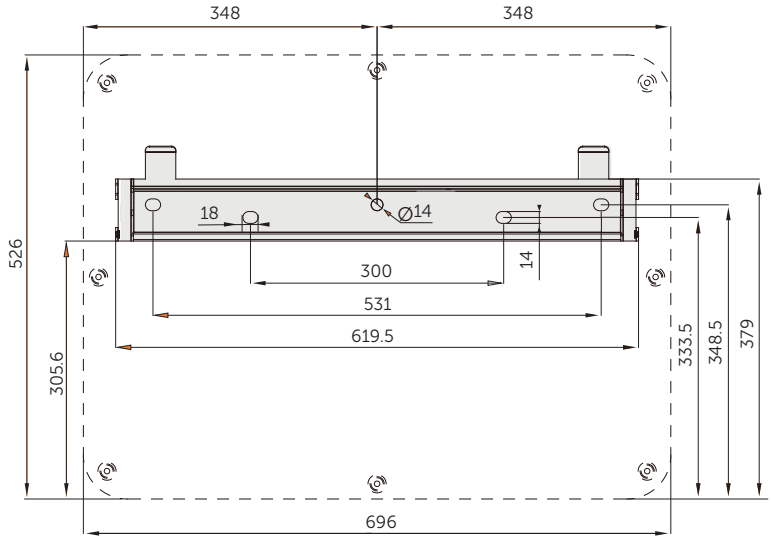
Install the inverter with a maximum rear tilt of 5 degrees and avoid forward tilt, side tilt, or upside-down installations.



7.1. Mounting Dimensions

Check the dimensions of the support before installation and leave sufficient space for heat dissipation and installation of the entire system.

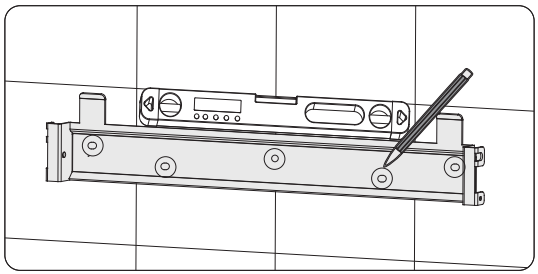




7.2. Installation Procedures

Step 1

Align the bracket horizontally on the wall and mark the position of the holes to be drilled.

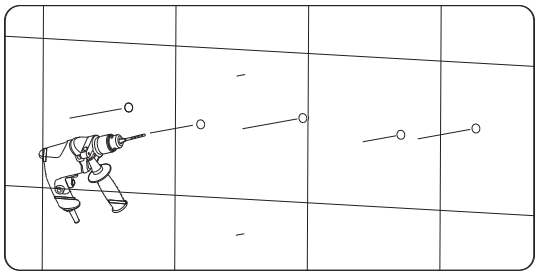


NOTICE!

- Take into account the height of the stacked battery when mounting the bracket.
- Check the bubble level and adjust the bracket until the bubble is centered.

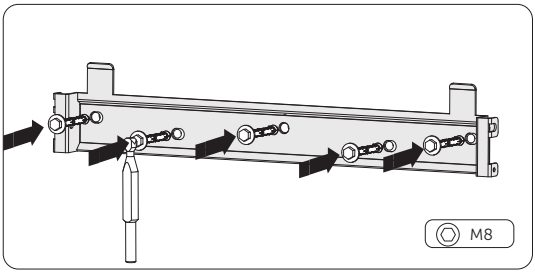
Step 2

Set the bracket aside and drill the holes with a Ø12 mm bit. The hole depth must be 90 mm.



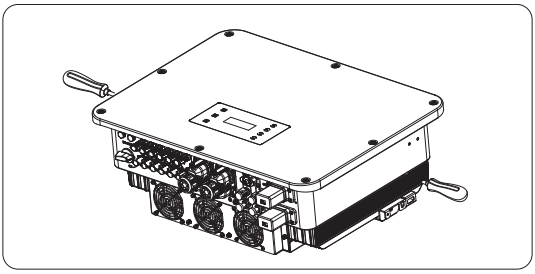
Step 3

Insert the expansion screws (part G) into the holes and fasten the bracket to the wall with the screws using a torque wrench.



Step 4

Open the antistatic bag, remove the inverter, and install the handle (part P).

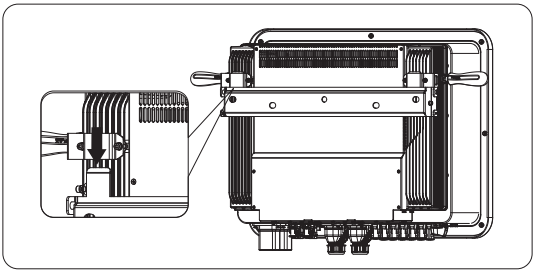


NOTICE!

- Avoid placing the inverter so that the wiring terminals are in contact with the floor or other objects, as they are not designed to support the weight of the inverter.
- If the inverter must be temporarily placed on the ground, use foam or other protective materials to avoid damage to the inverter.

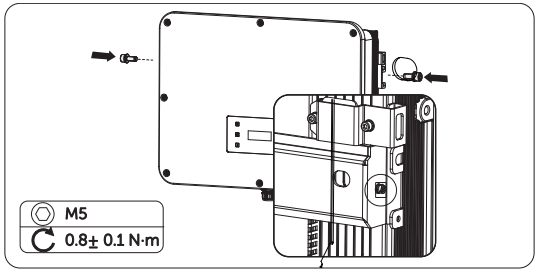
Step 5

Lift the inverter using the handles and hook it onto the bracket. The bracket hook must fit into the grooves of the inverter. Then, remove the handles.



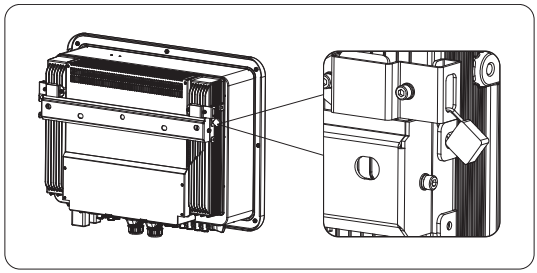
Step 6

Secure the inverter to the bracket with an M5 screw (part H).



Step 7

(Optional) For safety reasons, install an anti-theft device. Please note that the padlock is not included in the supply. Obtain one independently according to the closing hole diameter (Ø<10 mm). Keep the padlock key in a safe place.



8. Electrical Connection

NOTICE!

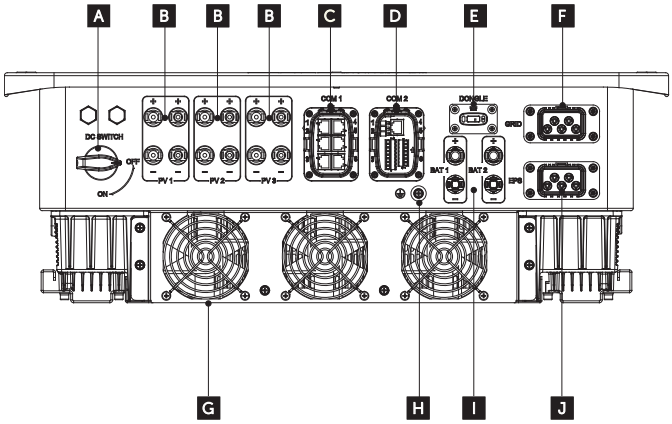
Before the electrical connection, make sure that the direct current (DC) switch and the alternating current (AC) circuit breaker are disconnected. Otherwise, an electric shock caused by high voltage could result in serious injury or death.

NOTICE!

- Only qualified personnel may perform the electrical connection in compliance with local standards and requirements.
- Follow this manual or any other related document to perform the wiring. Damage caused by incorrect wiring is not covered by the warranty.
- Use insulated tools and wear personal protective equipment when connecting the cables.

8.1. Overview of the Electrical Connection

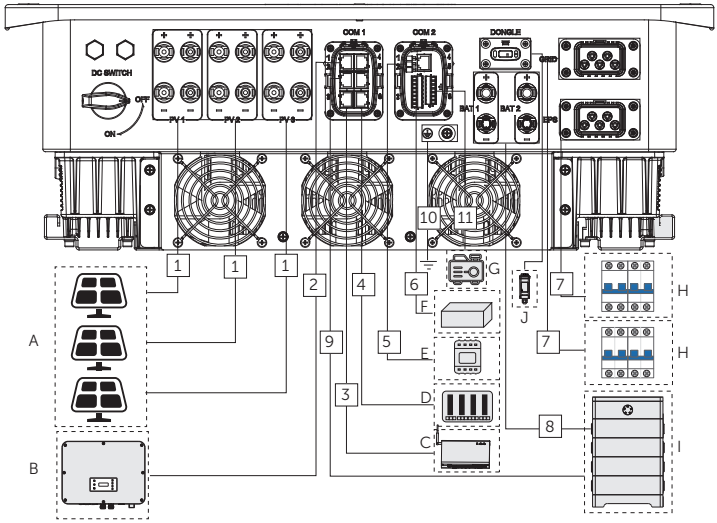
8.1.1. Inverter Terminals



Item	Name	Description	Device Voltage Class
A	DC switch	Disconnect the PV input if necessary	/
B	PV1, PV2, PV3	PV terminal that connects to the PV module. PV1 and PV2 terminals for X3P 15K, 19.9K, 20K, and 10K-HYM; PV1, PV2, and PV3 terminals for X3P-15KP, 20KP, 25K, 25KW, 30K, and 15K-HYM	DVC-C

C	COM 1	Communication terminal for Parallel-1, Parallel-2, BMS-1, BMS-2, RS485, DRM	DVC-A
D	COM 2	Communication terminal for ripple control, DIO, Meter / CT	DVC-A
E	DONGLE	Firmware update and data transmission	DVC-A
F	RETE	AC terminal that connects to the power grid	DVC-C
G	/	Fan	/
H		Additional grounding point	/
I	BAT 1, BAT 2	Battery terminal that connects to the battery power cable	DVC-C
J	EPS	AC terminal that connects to the EPS load	DVC-C

8.1.2. Inverter Cable Connections



Item	Name	Description	Device Voltage Class
A	PV module	PV module	Provided by the user
B	(Optional) PSI-X3P-HYM	(Optional) PSI-X3P-HYM	Supplied by Peimar
C	Peimar communication management device (Optional)	Peimar communication management device (Optional)	Supplied by Peimar
D	Grid management device (only for Australia and New Zealand)	Grid management device (only for Australia and New Zealand)	Provided by the user
E	Meter	Meter supportati: PSI-X-1PMETER-ZI e PSI-X-1PMETER-ZI-CT autorizzati.	Acquistato da Peimar

F	Ripple control receiver (Optional)	Select devices that meet the grid management requirements.	Provided by the user
G	Dry contact controlled device (Optional)	Generators and system circuit breakers are supported. For generators, select a generator equipped with an automatic transfer switch (ATS) with a nominal power greater than the sum of the battery charging power and the load power. For the system circuit breaker, select a breaker with automatic lock.	Provided by the user
H	AC circuit breaker	Select a suitable AC circuit breaker according to local regulations to ensure that the inverter can be disconnected from the grid in case of emergency. See “5.3 Additional Materials Required” for recommended specifications.	Provided by the user
I	Battery	PSI-X-2.5HS and PSI-X-3.6HS battery systems can be connected to the series inverter.	Provided by the user
J	Monitoring dongle (Optional)	Only the Peimar monitoring dongle is supported.	Supplied by Peimar

Article	Cable	Cable type and specifications	Source
1	PV DC input cable		Provided by the user
2	RS485 communication cable		Provided by the user

3	RS485 communication cable	See "5.3 Additional Materials Required"	Provided by the user
4	RS485 communication cable		Provided by the user
5	RS485 communication cable		Provided by the user
6	Signal cable		Provided by the user
7	AC output cable		Provided by the user
8	Battery power cable	/	Supplied with the battery
9	Battery communication cable		Provided by the user
10	PE cable	Materials	Provided by the user
11	Signal cable		Provided by the user

8.2. PE Connection

The inverter must be properly grounded. The connection point is labeled with the following symbol: ⏚.

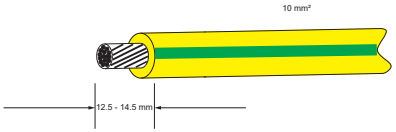
It is recommended to connect the inverter to a nearby grounding point.

NOTICE!

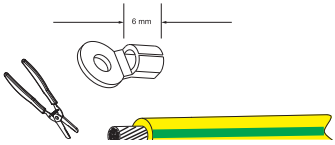
The PSI-X3P-HYM series inverter has a ground detection function, which allows verification that the inverter is properly grounded before startup. If the inverter is not grounded, a red light will turn on and a Ground Fault will be reported.

PE Connection Procedure

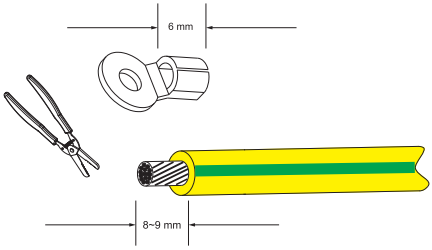
Step 1: Strip the insulation from the conductor using a wire stripper. The stripping length for a 16 mm² cable should be between 13.5 mm and 15.5 mm.



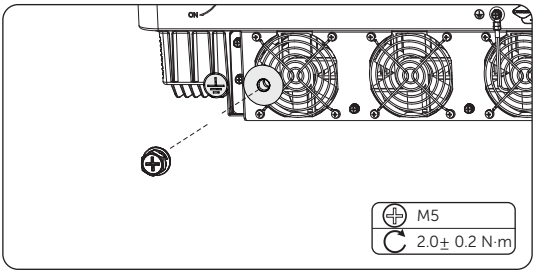
Step 2: Insert the stripped part into the OT terminal (part F).



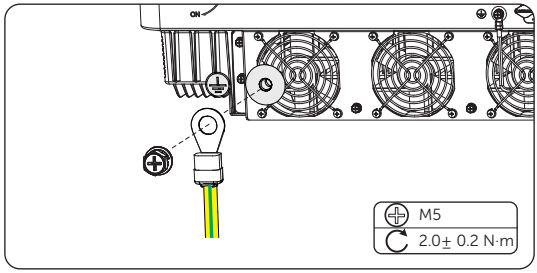
Step 3: Crimp the cable using a crimping tool.



Step 4: Unscrew the inverter's PE screw with a Phillips screwdriver.



Step 5: Connect the PE cable to the inverter and secure it with the original screw (Torque: 2.0 ± 0.2 N·m).



8.3. AC Connection

NOTICE!

Before connecting the inverter to the grid, approval must be obtained from the local distribution authority, as required by national and state interconnection regulations.

The inverter has an EPS function. When the grid is connected, the inverter outputs pass through the "on Grid" terminal, and when the grid is disconnected, the inverter outputs pass through the EPS terminal.

AC Connection Requirements

- Grid voltage requirements

  The grid voltage and frequency must be within the authorized range (400 V / 230 V, 380 V / 220 V, 50 / 60 Hz, and 230 V / 133 V, 220 V / 127 V, 50 / 60 Hz for the PSI-X3P10000-HYM-LV and PSI-X3P15000-HYM-LV models) and must comply with local grid requirements.
- Residual Current Device (RCD)

  The inverter does not require an external RCD during operation. If an external RCD is required by local regulations, a type A RCD rated at 300 mA is recommended. If required by the same regulations, a type B RCD is also acceptable.
- AC Circuit Breaker

  An AC circuit breaker matching the inverter's power rating must be used between the inverter output and the power grid. Each load should be equipped with an independent circuit breaker or another disconnecting device to ensure safe disconnection from the grid. For more information on the AC circuit breaker for the grid and EPS, see "5.3 Additional Materials Required."

- EPS Load

  Ensure that the rated power of the EPS load is within the inverter's rated output range. Otherwise, the inverter will trigger an overload alarm. In such cases, some equipment may fall outside the inverter's EPS rated power range. You can press the ESC button on the LCD screen to clear the alarm.

When connecting to the EPS terminal, pay attention to the following points:

- Medical equipment: Connection prohibited
- Precision instruments: Connection prohibited
- Devices sensitive to power outages: Connection prohibited
- For high-power loads such as refrigerators, air conditioners, washing machines, etc., ensure that the inrush power does not exceed the inverter's EPS peak power.

Type of Load	Equipment	Starting Power
Resistive load	Lamp	Rated power
	Fan	Rated power
	Hair dryer	Rated power
Inductive load	Refrigerator	3 to 6 times the rated power
	Air conditioner	3 to 5 times the rated power
	Washing machine	3 to 5 times the rated power
	Microwave oven	3 to 5 times the rated power

* Refer to the equipment's starting power to determine the actual starting power.

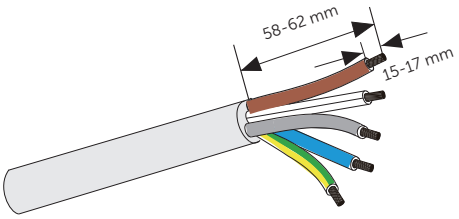
Wiring Procedure

NOTICE!

This section uses the wiring of the grid terminal as an example. However, it is also applicable to the wiring of the EPS terminal.

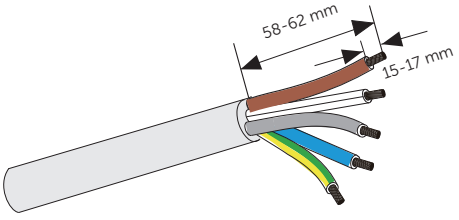
The PSI-X3P10000-HYM model does not connect to the N wire.

Step 1: Prepare a five-core cable as the grid cable and strip the insulation of L1, L2, L3, N, and the grounding conductor to an appropriate length.



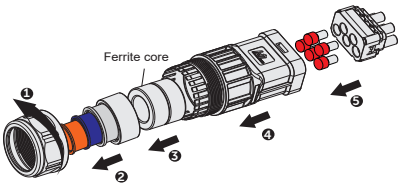
Câble à cinq conducteurs 10 mm² / 16 mm²

Step 2: Disassemble the AC connector (part S, part V for the EPS terminal) as shown below. Remove the rubber plugs according to the actual diameter of the cable.

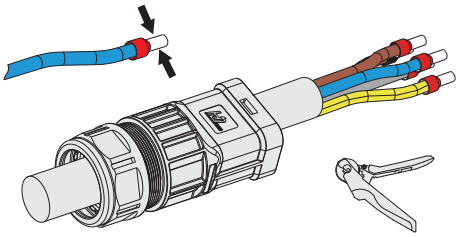


Five-core cable 10 mm² / 16 mm²

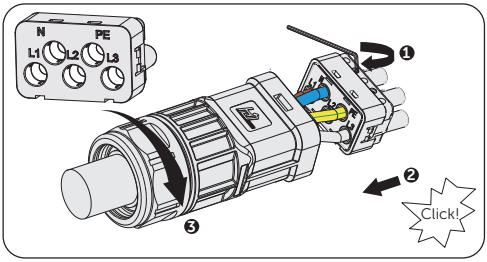
Step 3: Pass the grid cable through the rotating nut and the connector body in this order.



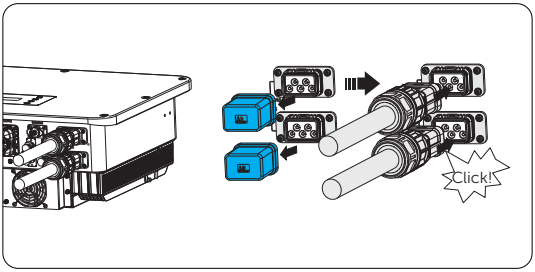
Step 4: Insert the L1, L2, L3, N conductors and the grounding conductor into the ferrules. Use a crimping tool to crimp the ferrules. Ensure that the conductors are correctly assigned and inserted into the ferrules.

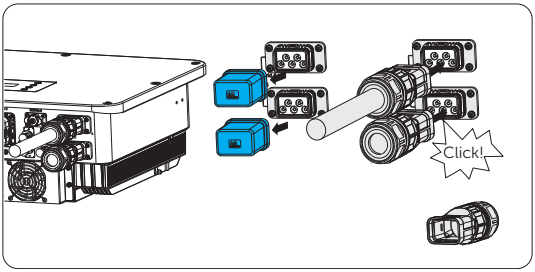


Step 5: Insert the crimped L1, L2, L3, N conductors and the grounding conductor into the terminal block according to the labeling. Tighten the terminal block screws with the Hex key (part T).



Step 6: Remove the caps from the AC terminals and insert the assembled AC connectors into the corresponding grid terminals and EPS terminals.





DANGER!

Before turning on the inverter, make sure that the AC connectors are correctly installed on the grid and EPS terminals, even if the EPS terminal is not wired. Otherwise, an electric shock caused by high voltage could result in serious injury or death.

WARNING!

Immediately reinstall the AC terminal caps after removing the connectors from the terminals.

8.4. PV Connection

DANGER!

- When exposed to sunlight, photovoltaic modules generate high and lethal voltage. Please take precautions.
- Before connecting the PV modules, make sure that the direct current (DC) switch and the alternating current (AC) circuit breaker are disconnected, and that the PV module output is properly isolated from the ground.

WARNING!

To reduce the risk of fire, it is essential to use a dedicated crimping tool specifically designed for PV installations, in order to ensure safe and reliable connections.

CAUTION!

The power supply comes from multiple sources and multiple live circuits.

Photovoltaic (PV) Connection Requirements

Open-circuit voltage and operating voltage

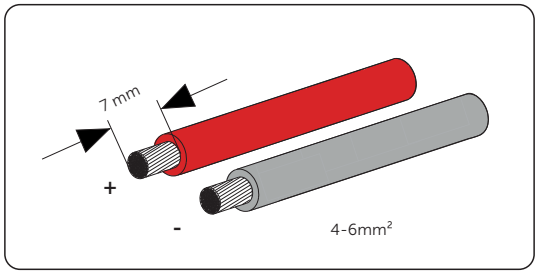
- The open-circuit voltage of each string of modules must not exceed the inverter's maximum PV input voltage (1000 V). Otherwise, the inverter may be damaged.
- The operating voltage of the PV modules must fall within the inverter's MPPT voltage range (180–950 V). Otherwise, the inverter will issue a PV voltage fault alarm.
- The effect of low temperatures must be taken into account, as they generally cause an increase in the voltage of photovoltaic panels.

Photovoltaic modules

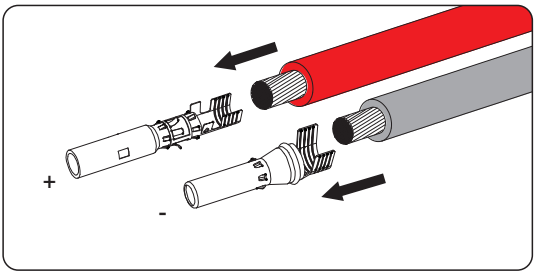
- The PV modules belonging to the same MPPT channel must be of the same brand.
- The strings in the same channel must have the same number of modules, be identically aligned, and have the same tilt.
- No pole (positive or negative) of the PV modules must be grounded.
- The positive cables of the PV modules must be connected to positive DC connectors.
- The negative cables of the PV modules must be connected to negative DC connectors.

Wiring procedures

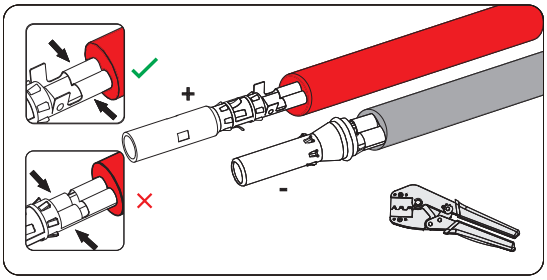
Step 1: Strip about 7 mm of the cable insulation.



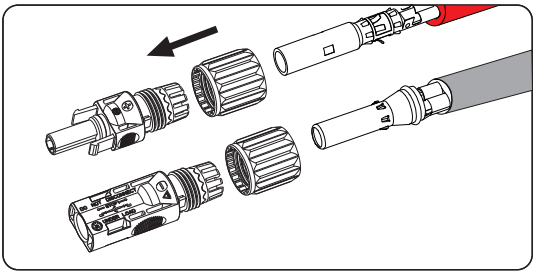
Step 2: Insert the stripped cable into the PV connector pin contact (part B and part E).



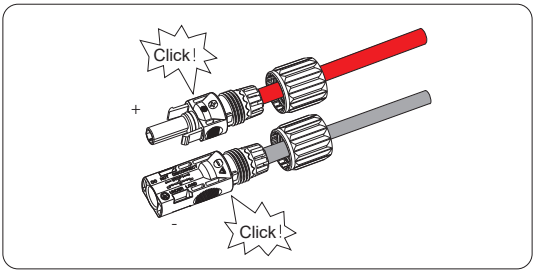
Step 3: Ensure that the PV cable and the PV connector pin contact have the same polarity. Crimp using the dedicated crimping tool for PV terminals. Pay attention to the crimping position.



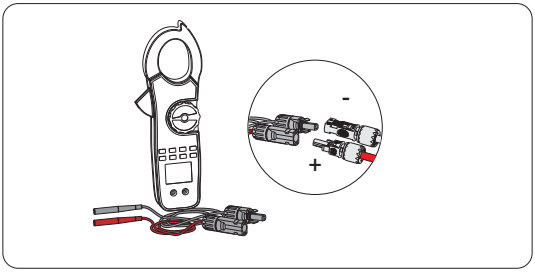
Step 4: Pass the PV cable through the rotating nut and insert the cable into the PV connector (part A and part D) until a “click” is heard. Pull the cable slightly backward to ensure the connection is secure. Tighten the rotating nut clockwise. Check that the PV connectors have the correct polarity before connection.



Step 5: If the connection is correct, a “click” will be heard. Pull the cable slightly backward to ensure the connection is secure. Tighten the rotating nut clockwise. Check that the PV connectors have the correct polarity before connection.



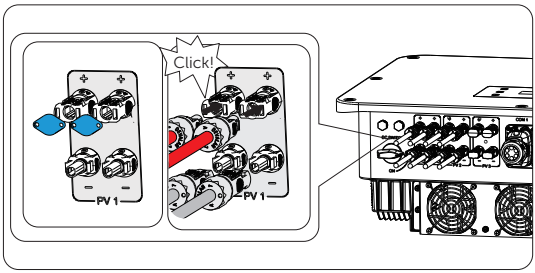
Step 6: Use a voltage measuring instrument compliant with local regulations to measure the positive and negative voltage of the assembled PV connectors. Ensure that the open-circuit voltage does not exceed the PV input limit of 1000 V.



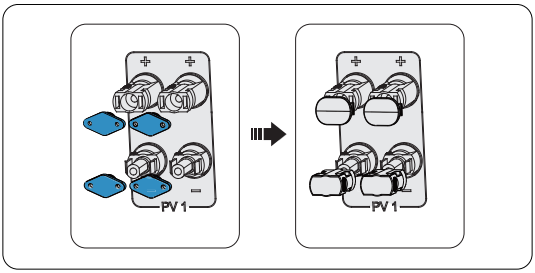
NOTICE!

If the voltage reading is negative, this indicates an incorrect DC input polarity. Check that the cable connections on the multimeter are correct or that the PV connectors have not been accidentally reversed.

Step 7: Remove the caps from the PV terminals and connect the assembled PV connectors to the corresponding terminals until an audible “click” is heard. The PV+ from the string side must be connected to the PV+ from the inverter side, and the PV– from the string side must be connected to the PV– from the inverter side.



Step 8 (optional): Fit the unused PV terminals with dust caps (part Y and part Z).



8.5. Battery power cable connection

DANGER!

- Before connecting the cables, make sure that the circuit breaker, the power button (if present), and the DC switch (if present) of the battery are in the OFF position.
- Always check that the correct polarity is observed. Never reverse the polarity of the battery cables: this would damage the inverter.

NOTE!

- The battery power cable is included in the battery accessory kit and is NOT supplied with the inverter.
- It is mandatory to choose a battery model that complies with national and local regulations. You can confirm the battery certifications by contacting Peimar.

Battery connection requirements

Batteries

- Peimar lithium-ion battery
- The inverter is equipped with two independent battery terminals, allowing the connection of two separate battery towers. The maximum charge and discharge current is 30 A for each BAT terminal.
- Make sure that the input voltage of each BAT terminal is higher than 120 V (minimum voltage) and lower than 800 V (maximum voltage).

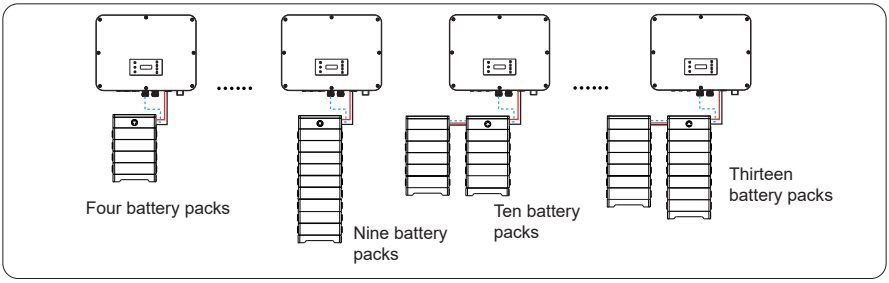
Miniature Circuit Breaker (MCB)

- If the battery is equipped with an easily accessible internal DC switch, no additional DC switch is required. If local regulations require the use of a DC MCB between the battery and the inverter, install a non-polarized DC MCB.
- The rated voltage of the DC circuit breaker must be higher than the maximum battery voltage.
- Refer to the battery documentation for the current:
  - For PSI-X-2.5HS and PSI-X-3.6HS battery systems, the current must be 40 A.
  - For PSI-X-5.8 series battery systems, the current must be 40 A.
  - For PSI-X-3.0 series battery systems, the current must be 40 A.
  - For PSI-X-5.1HS battery systems, the current must be 40 A.
- If using a one-to-two splitter, install it on the main circuit:
  - For PSI-X-2.5HS and PSI-X-3.6HS battery systems, the current must be 60 A.
  - For PSI-X-5.1HS battery systems, the current must be 70 A.
- Battery configuration information:
  - For PSI-X-2.5HS battery systems, a single BAT terminal supports from 3 to 13 modules, for a total of 3 to 26 modules.
  - For PSI-X-3.6HS battery systems, a single BAT terminal supports from 3 to 13 modules, for a total of 3 to 26 modules.
  - For PSI-X-5.1HS battery systems, a single BAT terminal supports from 3 to 13 modules, for a total of 3 to 26 modules.
  - For PSI-X-5.8 series battery systems, a single BAT terminal supports from 2 to 4 modules, for a total of 2 to 8 modules.
  - For PSI-X-3.0 series battery systems, a single BAT terminal supports from 2 to 4 modules, for a total of 2 to 8 modules.

- By connecting a battery cabinet in parallel to the inverter, it is possible to increase the battery capacity. The PSI-X-PRL-BMS is compatible with PSI-X-5.8SLV-V2 batteries. By connecting a battery cabinet in parallel to the inverter, it is possible to increase the battery capacity. The PSI-X-PRL-BMS is compatible with PSI-X-5.8SLV-V2 batteries.

- Battery connection diagram

Diagram 1: Connect a string of batteries to one BAT terminal (BAT 1 or BAT 2). (Suitable when the number of connected modules is less than 13.)



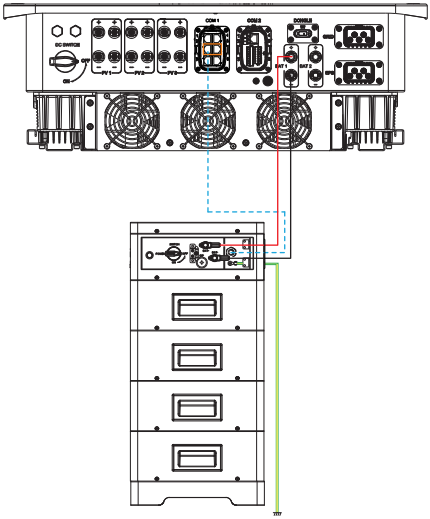
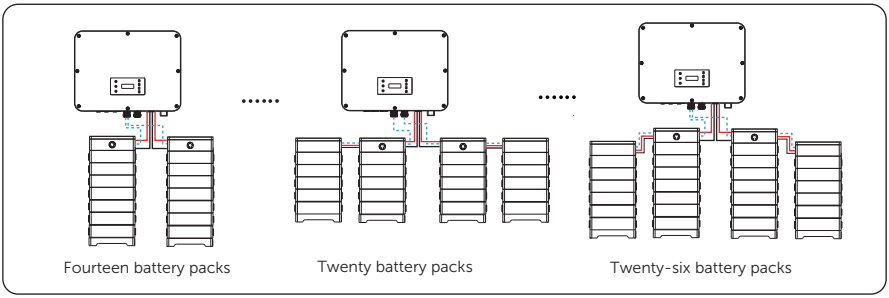
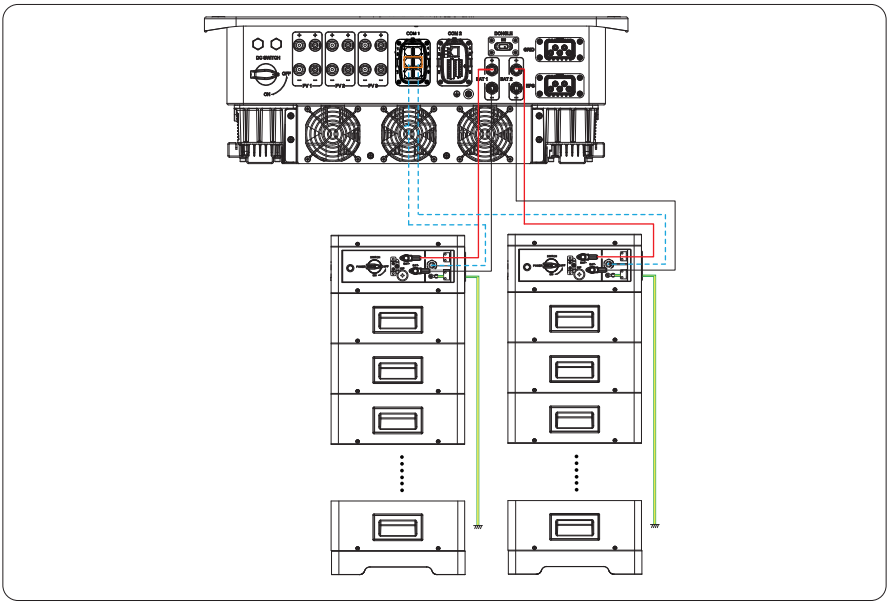


Diagram 2: Connect the two battery strings respectively to BAT 1 and BAT 2 terminals. (Suitable for battery packs connected in a number greater than 13.) An additional BMS is required.

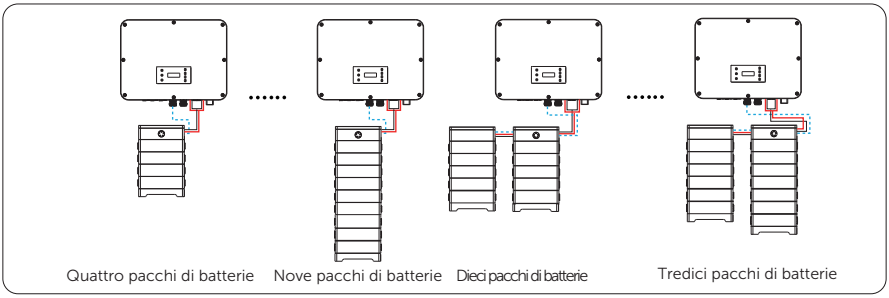


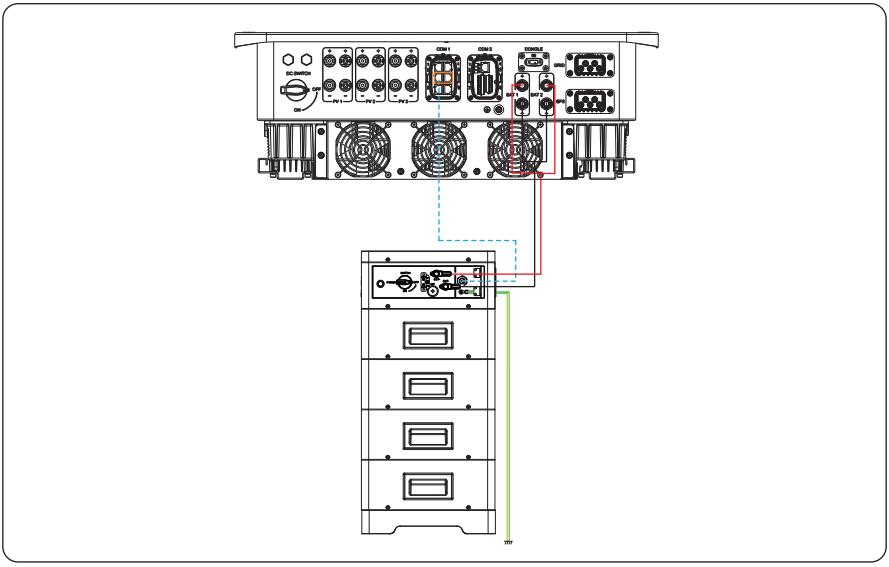


WARNING!

For Diagram 1 and Diagram 2: this allows full use of the battery capacity according to the different types of batteries. Each BAT terminal of the inverter can operate with a maximum rated current of 30 A. The total voltage of each battery string must meet the inverter's voltage requirements, namely between 120 V and 800 V.

Diagram 3: Connect the battery blocks simultaneously to the BAT 1 and BAT 2 terminals. Note that the maximum number of battery modules for this diagram is 13. An additional one-to-two type battery power cable is required.





WARNING!

For Diagram 3, use a one-to-two type battery power cable to connect one battery string to two BAT terminals. This allows full utilization of high-current battery performance when the battery's charge and discharge current exceeds 30 A.

WARNING!

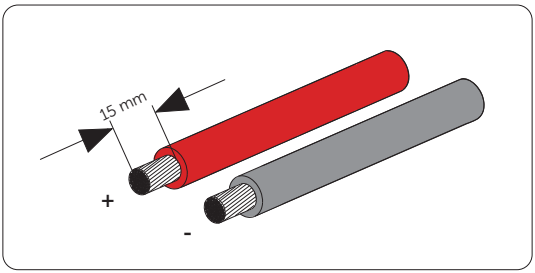
- Considering factors such as cost, battery performance optimization, and compliance with the inverter's voltage requirements, it is recommended to choose an appropriate battery connection diagram.
- Capacity can be increased by adding batteries of the same model. Extension with different battery models is not supported.

Wiring procedures

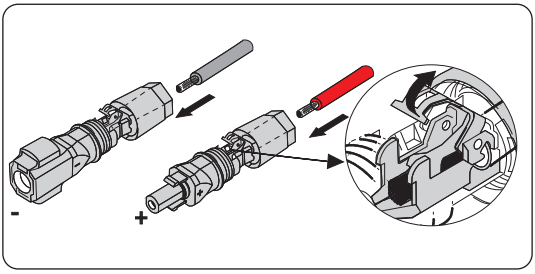
CAUTION!

Do not remove the caps from unused terminals. Reinstall the caps after removing the connectors from the terminals.

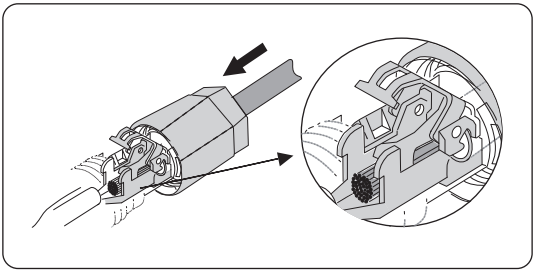
Step 1: Strip approximately 15 mm of insulation from the cable.



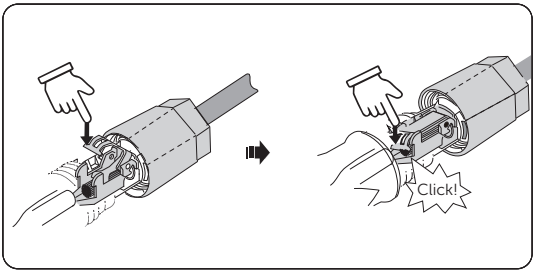
Step 2: Open the spring. Fully insert the stripped wire with twisted strands into the battery connector (part I and part J).



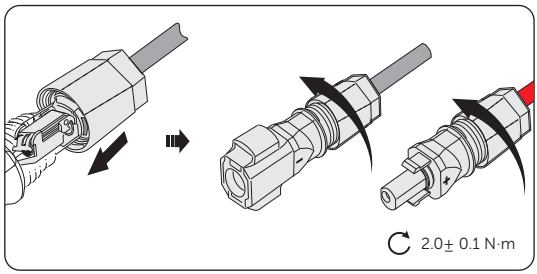
Step 3: The ends of the strands must be visible inside the spring.



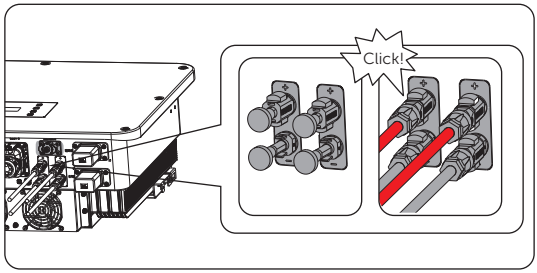
Step 4: Close the spring until a “click” is heard. Make sure the spring is securely latched.



Step 5: Insert the component into the sleeve. Tighten the cable gland to 2.0 ± 0.1 Nm.



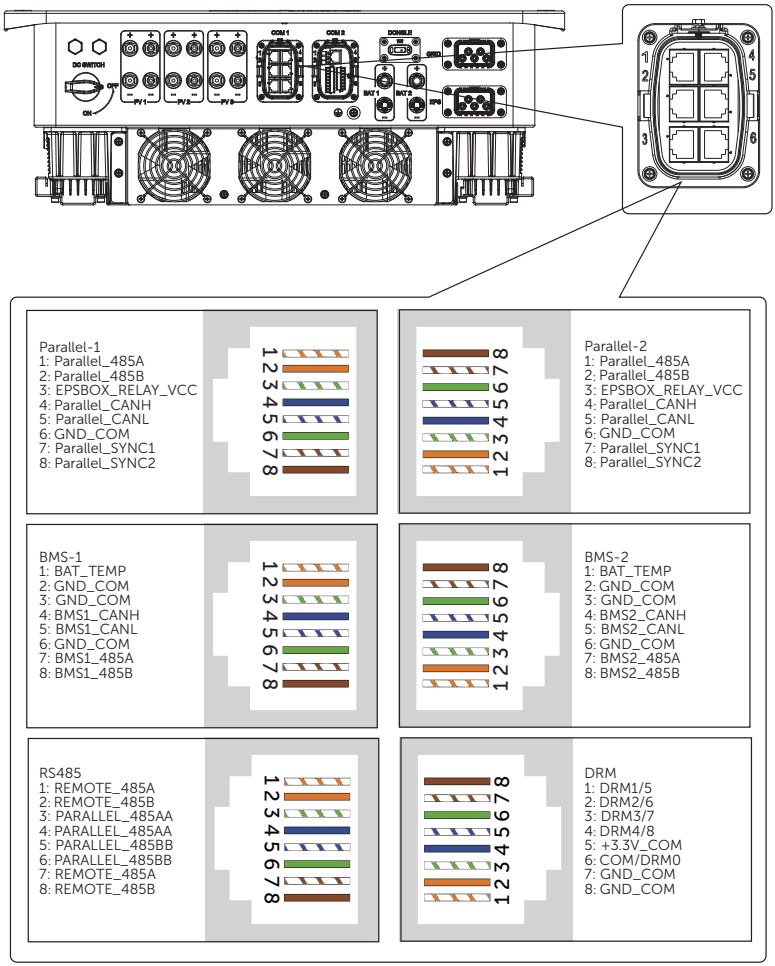
Step 6: Remove the caps from the battery terminals and connect the assembled battery connectors to the corresponding terminals until an audible “click” is heard.



8.6. Communication connection COM 1

8.6.1. COM 1 terminal pin assignment

The COM 1 terminal is used for parallel connection via the Parallel-1 and Parallel-2 communication terminals, battery communication via the BMS-1 and BMS-2 terminals, RS485 and DRM communication, or for external communication.


Parallel-1
1: Parallel_485A
2: Parallel_485B
3: EPSBOX_RELAY_VCC
4: Parallel_CANH
5: Parallel_CANL
6: GND_COM
7: Parallel_SYNC1
8: Parallel_SYNC2
Parallel-2
1: Parallel_485A
2: Parallel_485B
3: EPSBOX_RELAY_VCC
4: Parallel_CANH
5: Parallel_CANL
6: GND_COM
7: Parallel_SYNC1
8: Parallel_SYNC2
BMS-1
1: BAT_TEMP
2: GND_COM
3: GND_COM
4: BMS1_CANH
5: BMS1_CANL
6: GND_COM
7: BMS1_485A
8: BMS1_485B
BMS-2
1: BAT_TEMP
2: GND_COM
3: GND_COM
4: BMS2_CANH
5: BMS2_CANL
6: GND_COM
7: BMS2_485A
8: BMS2_485B
RS485
1: REMOTE_485A
2: REMOTE_485B
3: PARALLEL_485AA
4: PARALLEL_485AA
5: PARALLEL_485BB
6: PARALLEL_485BB
7: REMOTE_485A
8: REMOTE_485B
DRM
1: DRM1/5
2: DRM2/6
3: DRM3/7
4: DRM4/8
5: +3.3V_COM
6: COM/DRM0
7: GND_COM
8: GND_COM

8.6.2. Parallel communication connection

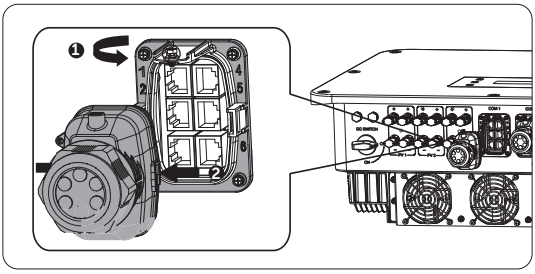
The inverter offers a parallel connection function. One inverter will be designated as the Master inverter, responsible for controlling the other Slave inverters in the system. For further details, refer to section “15.6 Application of the parallel function.”

WARNING!

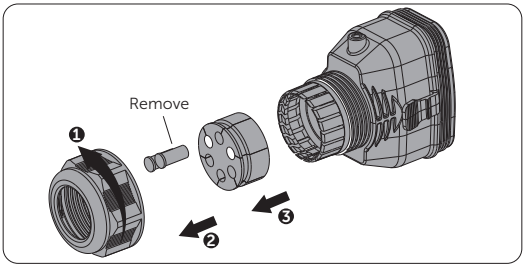
The communication cable length between two inverters connected in parallel must not exceed 3 meters, and this applies to the total cable length of all inverters connected in parallel.

Wiring procedure for parallel connection

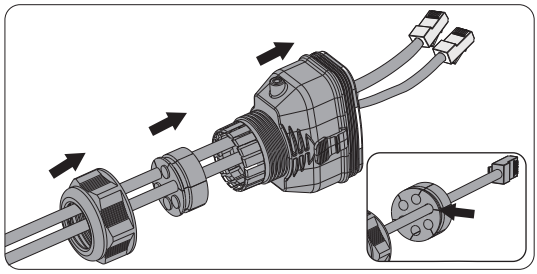
Step 1: Loosen the fixing screw on the COM 1 connector, then press the latches on both sides of the connector to remove it from the housing.



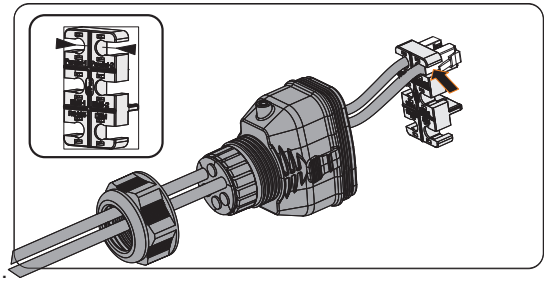
Step 2: Loosen the rotary nut counterclockwise and remove the sealing caps. Leave them in the cable support sleeve if you choose not to connect the cable.



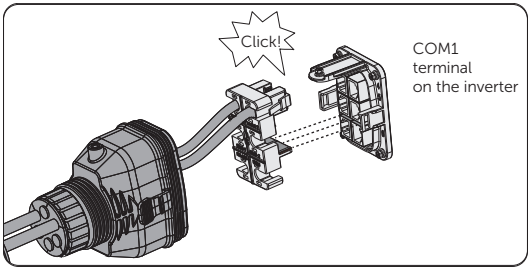
Step 3: Pass the cable through the rotary nut, the cable support sleeve, and the connector body, in that order.



Step 4: Install the network cables onto Parallel-1 and Parallel-2 of the cable support (part C), following the labeling.



Step 5: Connect the connector to the COM 1 terminal. Make sure that the tab on the cable support is properly inserted into the slot of the terminal. An audible “click” will be heard.



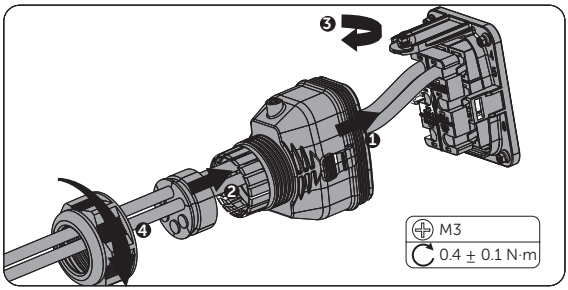
Step 6: Secure the assembled connector to the COM 1 terminal.

a. Reinstall the connector body into the COM 1 terminal.

b. Insert the cable support sleeve into the connector body.

c. Tighten the M3 screw to secure it. (Tightening torque: 0.4 ± 0.1 N·m)

d. Tighten the rotary nut clockwise to complete the COM 1 terminal wiring connection.

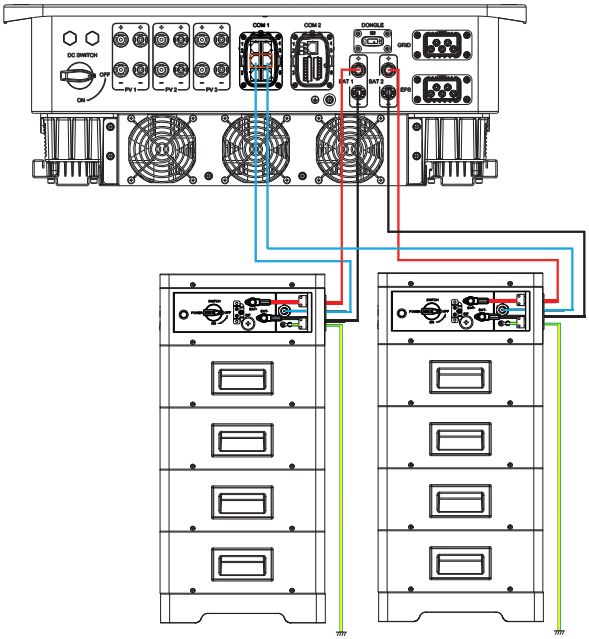


8.6.3. BMS communication connection

The inverter can be connected to two independent batteries of different capacities through the BMS-1 and BMS-2 communication terminals.

Each battery string must use the same battery model.

BMS connection diagram:



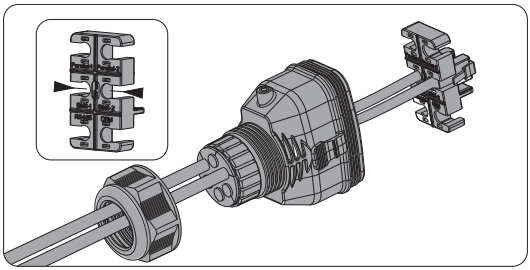
BMS wiring procedure

Step 1: Allentare le viti del terminale COM 1. Premere le linguette situate sui lati del corpo del connettore COM 1 e tirare contemporaneamente per rimuoverlo.

Step 2: Loosen the rotary nut counterclockwise and remove the sealing caps. Leave them in the cable support sleeve if you choose not to connect the cable.

Step 3: Pass the cable, in order, through the rotary nut, the cable support sleeve, and finally the connector body.

Step 4: Install the network cables onto BMS-1 and BMS-2 of the cable fixing device (part C), following the labels.



Step 5: Connect the assembled connector to the COM 1 terminal. Make sure the cable fixing part is well inserted into the terminal slot. An audible “click” will confirm the connection is secure. Pull the cable slightly backward to double-check that it is properly connected.

Step 6: Secure the assembled connector to the COM 1 terminal.

8.6.4. RS485 communication connection

For Peimar products, such as the Adapter Box, the EV Charger, and the Datahub, they can be connected to pins 3 and 6 or to pins 4 and 5.

As for pins 1, 2, 7, and 8, they can be used to connect devices other than Peimar products.

If it is necessary to connect multiple devices simultaneously, a splitter adapter can be used.

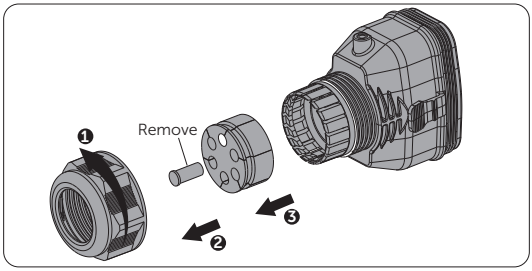
WARNING!

- Refer to section 15 – Appendix for the specific applications of the Adapter Box, EV Charger, and Datahub.
- The RS485 communication cable length must not exceed 30 meters.
- Not all devices are compatible with 8-pin network cables.
- In cases where such cables are not supported, the RJ45 terminal must be recrimped according to the pin assignment.

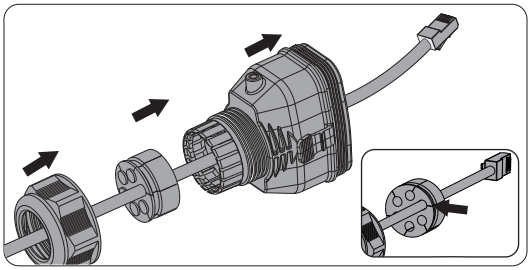
Wiring procedure for external equipment

Step 1: Loosen the screws on the COM 1 terminal. Press the tabs on the sides of the COM 1 connector body and pull simultaneously to remove it.

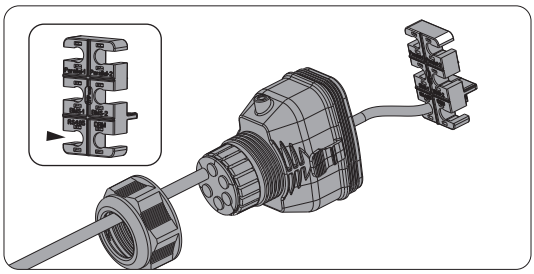
Step 2: Loosen the rotary nut counterclockwise and remove the sealing caps. Leave them in the cable support sleeve if you choose not to connect the cable.



Step 3: Pass the cable in sequence through the rotary nut, the cable support sleeve, and finally the connector body. The communication cable requires cutting the existing connector and recrimping the RJ45 terminal (part K).



Step 4: Install the network cable onto the RS485 port of the cable fixing device (part C), following the labeling.



Step 5: Connect the assembled connector to the COM 1 terminal. Make sure the tab on the cable fixing part is well inserted into the terminal slot. An audible “click” will indicate that the connection is secure. Pull the cable slightly backward to verify that the connection is firmly established.

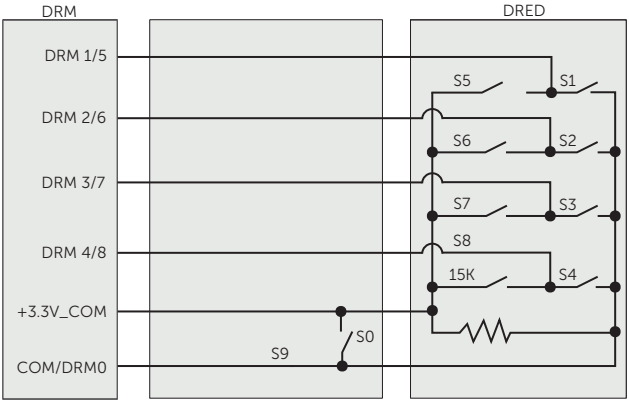
Step 6: Secure the assembled connector to the COM 1 terminal.

8.6.5. DRM connection (Applicable to AS/NZS 4777 standard)

In compliance with the AS/NZS 4777.2 standard, the inverter must support the Demand Response Mode (DRM) function.

By using an external control box, it is possible to quickly and effectively adjust the active or reactive power, allowing stable inverter operation during the adjustment process.

Currently, DRM 0, DRM 1, and DRM 5 modes are available.



Mode	Pin position	Requirement
DRM 0	Pin 6	When S0 is activated, the inverters shut down. When S0 is deactivated, the inverters restore the connection to the grid.
DRM 1	Pin 1	When S1 is activated, the inverters do not inject active power.
DRM 5	Pin 1	When S5 is activated, the inverters do not deliver active power.

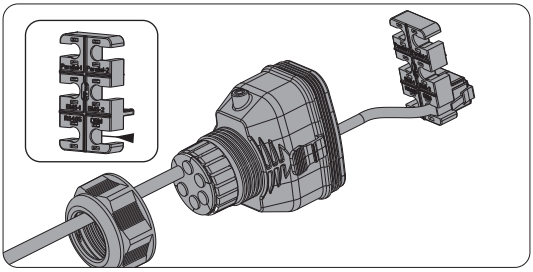
DRM connection wiring procedure

Step 1: Loosen the screws on the COM 1 terminal. Press the tabs located on the sides of the COM 1 connector body and pull simultaneously to remove it.

Step 2: Loosen the rotary nut counterclockwise and remove the sealing caps. Leave them in the cable support sleeve if you choose not to connect the cable.

Step 3: Pass the cable in the following order: rotary nut, cable support sleeve, then connector body.

Step 4: Connect the network cable to the RS485 port of the cable support (part C) according to the labels.



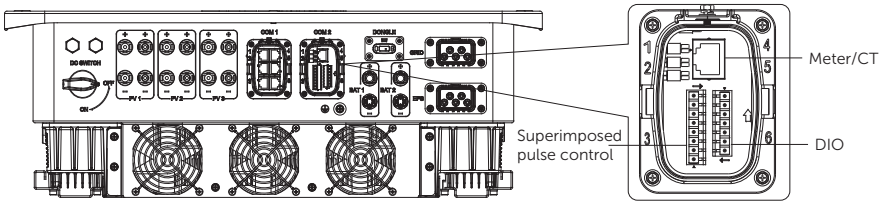
Step 5: Connect the assembled connector to the COM 1 terminal. Make sure the tab on the cable support is well inserted into the terminal slot. An audible “click” will be heard if the connection is secure. Pull the cable slightly backward to double-check the solidity of the connection.

Step 6: Secure the assembled connector firmly to the COM 1 terminal.

8.7. COM 2 communication connection

8.7.1. COM 2 terminal pin assignment

The COM 2 terminal is used for connecting to a meter/current transformer (CT), for pulse control, and for the DIO function.



Pin	Assignment
Meter/CT	
1	CT_R1_CON
2	CT_S1_CON
3	CT_T1_CON
4	METER_485A
5	METER_485B
6	CT_T2_CON
7	CT_S2_CON
8	CT_R2_CON
Pulse control	
1	RP_K4
2	GND_COM
3	RP_K3
4	GND_COM
5	RP_K2
6	GND_COM
7	RP_K1
8	GND_COM

Pin	Assignment
DIO Port	
1	DO_1
2	DO_2
3	DI_1+
4	DI_1-
5	DI_2+
6	DI_2-
7	GND_COM

8.7.2. Meter / Current Transformer (Meter/CT) connection

The inverter must operate with a Meter or a Current Transformer (CT) to monitor the household's electrical consumption. The Meter or CT can transmit the relevant electrical data to the inverter or the platform.

WARNING!

The inverter will shut down and display a Meter fault alarm if the Meter is not connected to the inverter. Smart meters must be authorized by our company. Unauthorized Meters and CTs may be incompatible with the inverter, causing inverter damage and malfunction in operating mode. Peimar will not be responsible for consequences caused by the use of other devices.

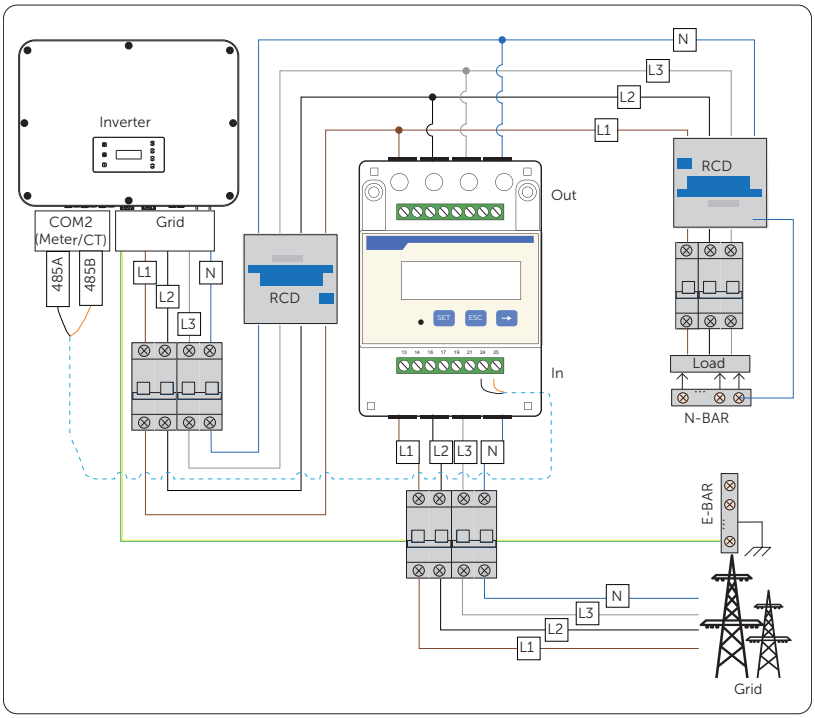
WARNING!

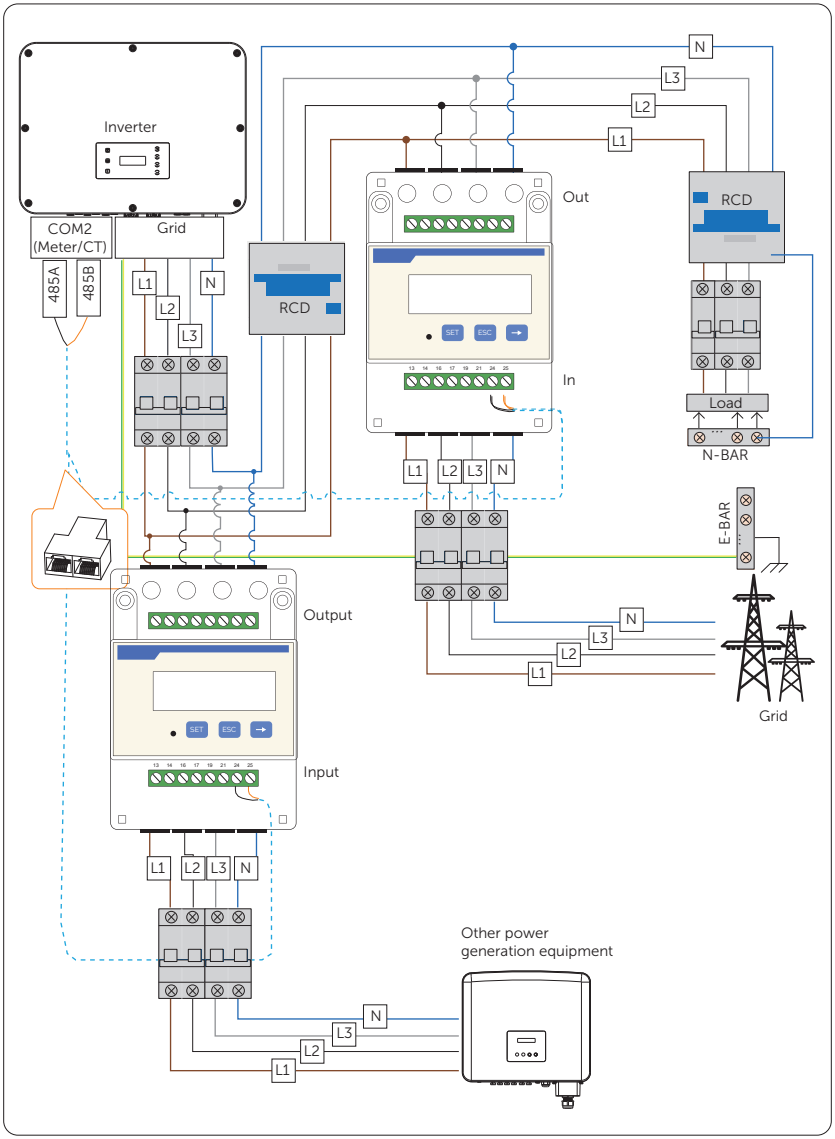
- Do not place the CT on the N (neutral) cable or on the ground cable.
- Do not place the CT on both the N wire and the L wire at the same time.
- Do not place the CT on the side where the arrow points toward the inverter.
- Do not place the CT on uninsulated wires.
- The cable length between the CT and the inverter must not exceed 100 meters.
- It is recommended to wrap the CT clip with insulating tape.

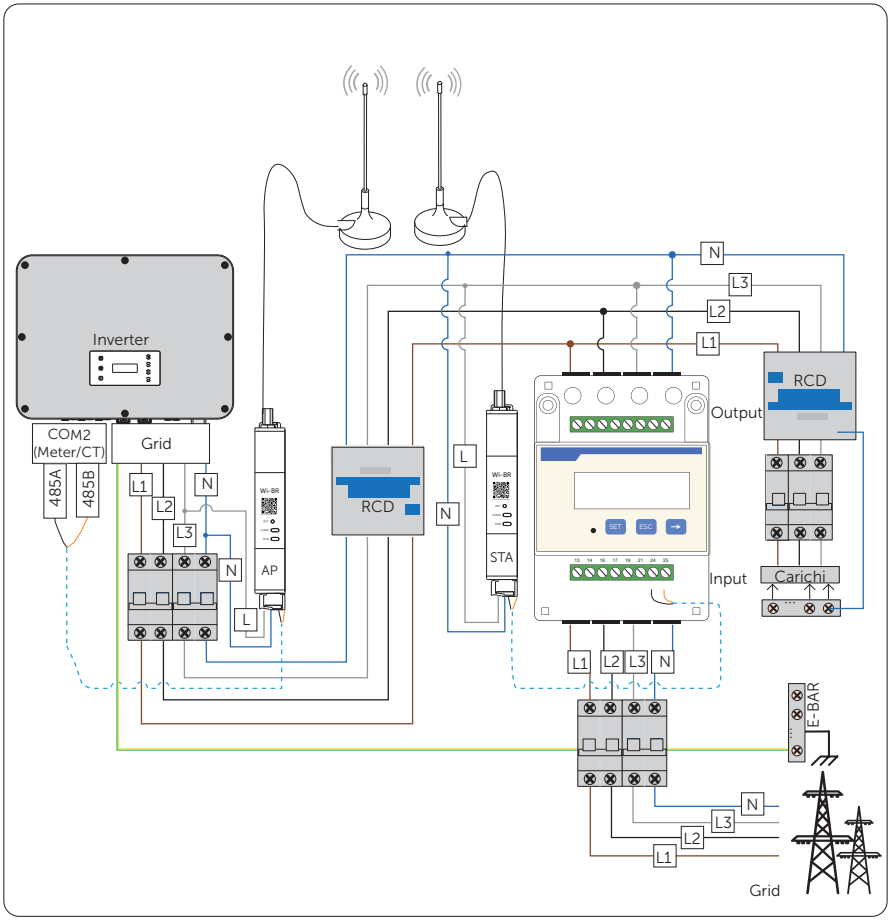
Meter/CT connection diagram

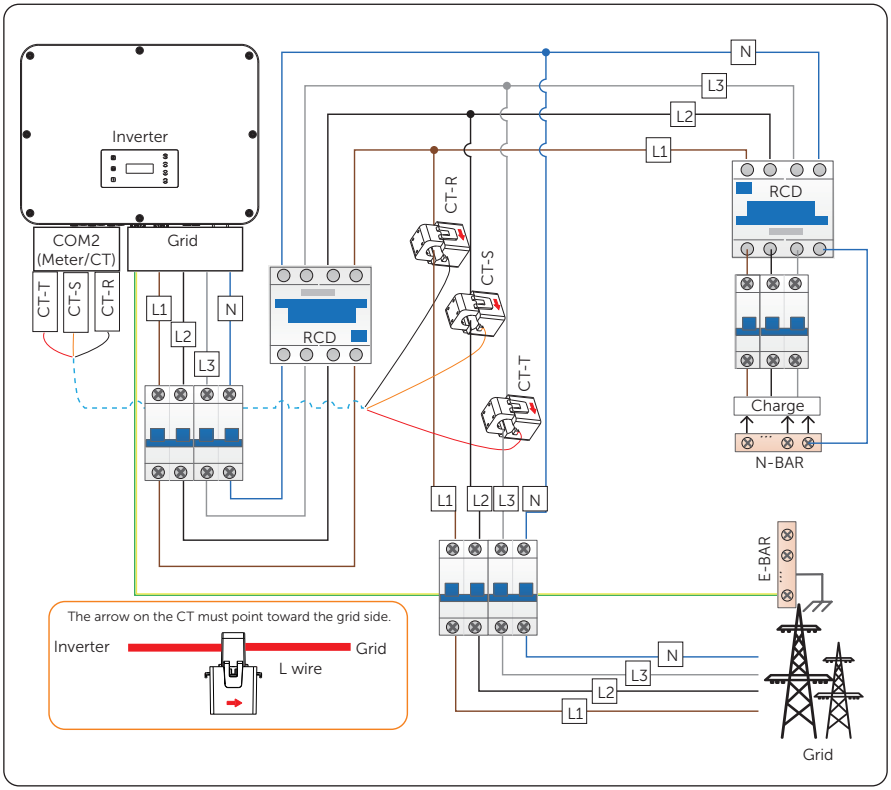
WARNING!

- The following figures use as an example an inverter with the PSI-X-1PMETER-ZI Meter.
- If you have other electricity generation devices (such as another inverter) at home and wish to monitor both devices, our inverter provides a Meter 2 communication function to monitor the generation device. For more information, please contact us.
- Connect PE (protective earth) for the Meter if it has a ground terminal.
- The PSI-X3P100000-TPM models are not connected to the N wire




Inverter
COM2
(Meter/CT)
Grid
485A
485B
L1
L2
L3
N
RCD
Out
In
SET
ESC
L1
L2
L3
N
RCD
Load
N-BAR
E-BAR
Output
Input
N
L3
L2
L1
Grid
Other power
generation equipment
N
L3
L2
L1


Inverter
COM2
(Meter/CT)
485A
485B
Grid
L1
L2
L3
N
AP
L
RCD
N
L
STA
N
L3
L2
L1
Output
RCD
Input
Carichi
L1
L2
L3
N
E-BAR
N
L3
L2
L1
Grid



WARNING!

- The arrow on the CT must point toward the public grid.
- CT-R must be connected to L1, CT-S to L2, and CT-T to L3, in accordance with L1, L2, and L3 of the inverter's grid terminal.

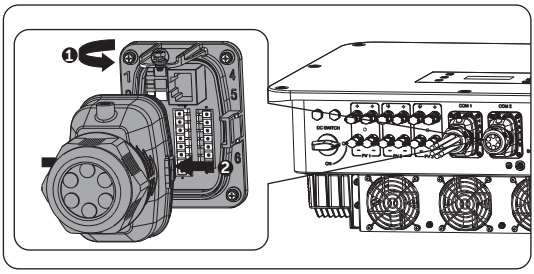
Meter/CT wiring procedure

	Pin	Pin assignment
For CT connection	1	CT_R1_CON

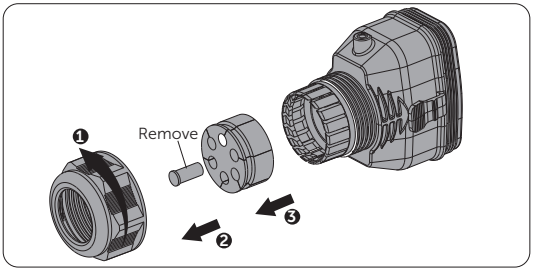
	2	CT_S1_CON
	3	CT_T1_CON
For Meter connection	4	METER_485A
	5	METER_485B
	6	CT_T2_CON
For CT connection	7	CT_S2_CON
	8	CT_R2_CON

Meter/CT wiring procedure

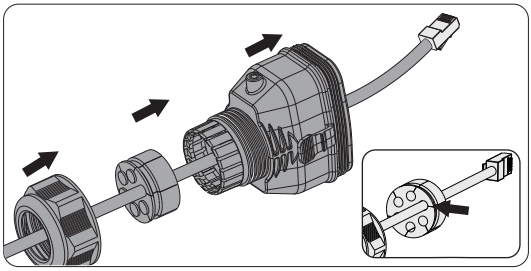
Step 1: Loosen the screws on the COM 2 terminal. Press the tabs located on the sides of the COM 2 connector housing and pull simultaneously to remove it.



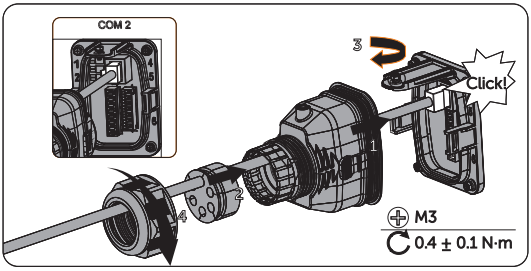
Step 2: Loosen the rotary nut on the housing, then remove the sealing caps from the cable support sleeve as needed. Do not remove the sealing caps from the holes if you choose not to connect the cable.



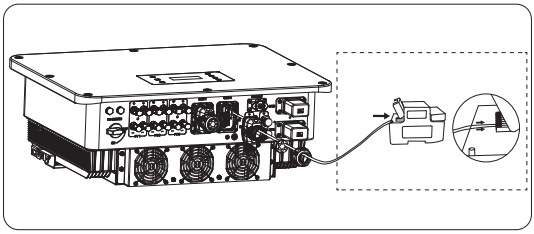
Step 3: Pass the cable in the following order: rotary nut, cable support sleeve, then connector housing.

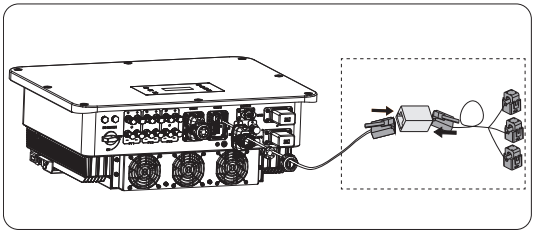


Step 4: Connect the assembled communication cable to the COM 2 terminal. Secure the assembled connector to the COM 2 terminal.



Step 5: For wired Meter connection, insert the other end of the communication cable into the Meter. For CT connection, connect the other end to the CT (part R).





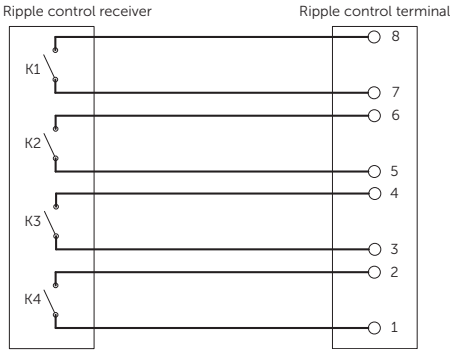
8.7.3. Centralized remote control connection

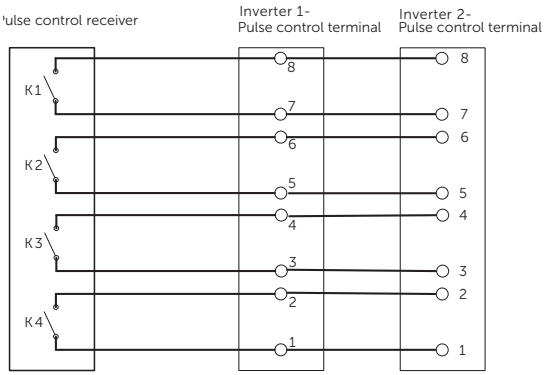
Centralized remote control is a common form of power grid management. Its communication is based on superimposing a very high-frequency signal onto the 50 / 60 Hz power grid. The inverter supports the connection of a digital signal source (for example, a receiver for centralized remote control) to the digital input.

Requirements for centralized remote control

- The signal source must be technically suitable for connection to the digital inputs (see technical data).
- The connected digital signal source must ensure safe isolation from the grid potential.

Connection diagram for centralized remote control





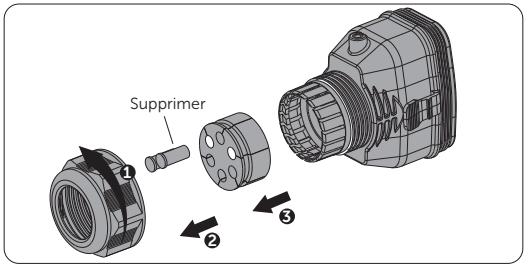
WARNING!

In the event of a master unit failure during parallel operation, the centralized remote control connection remains active when the slave is configured as master.

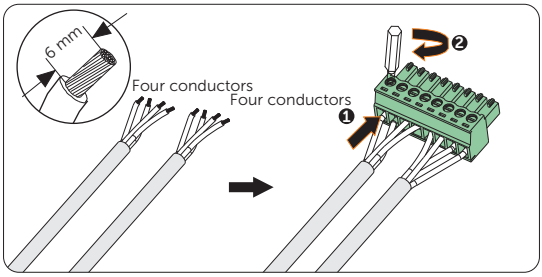
Centralized remote control wiring procedure

Step 1: Loosen the screws on the COM 2 terminal block. Press the tabs on the sides of the COM 2 connector housing and pull simultaneously to remove it.

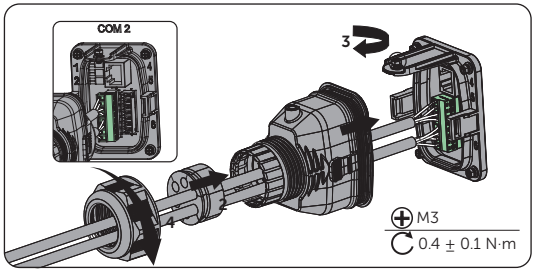
Step 2: Loosen the rotary nut on the housing, then remove the sealing caps from the cable support sleeve as needed. Do not remove the sealing caps from the holes if you choose not to connect the cable.



Step 3: Remove about 6 mm of cable insulation. Insert the conductors into the 8-pin terminal block (part M) and tighten the terminal screws (tightening torque: 1.5 N·m).



Step 4: Connect the assembled communication cable to the COM 2 terminal block. Pull the cable slightly backward to confirm correct insertion, then reposition the connector.



8.7.4. DIO communication connection

The DIO terminal block is designed to communicate with the generator and the system switch via a clean contact (dry contact).

To improve safety and reduce the risk of injury, it is possible to install the system switch in an easily accessible location by means of a dry contact connection. In case of emergency, the system switch can be easily reached and operated to quickly shut down the entire system, thus ensuring an immediate response and preventing further damage. For the generator, refer to section “15.1 Generator application” for a specific application.

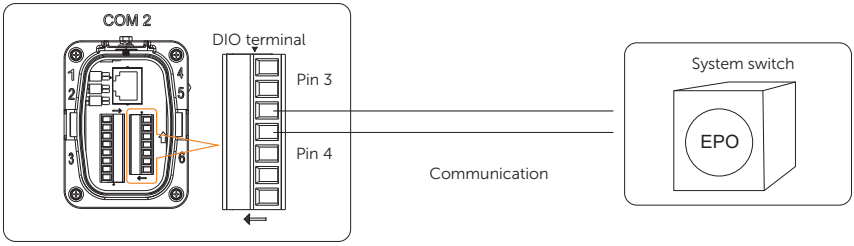
DIO pin definition

Application	Pin	Pin assignment
For generator dry contact output	1	DO_1
	2	DO_2
For system switch dry contact input	3	DI_1+
	4	DI_1-
Reserved	5	DI_2+
	6	DI_2-
Reserved	7	GND_COM

WARNING!

If there is strong interference in the surrounding environment, it is recommended to use shielded cables and to ground the cable shielding layer through pin 7.

System switch connection diagram



When the system switch is pressed, the OFF mode (DIO SW) is displayed on the LCD screen and the system is shut down. To release the switch, press it again.

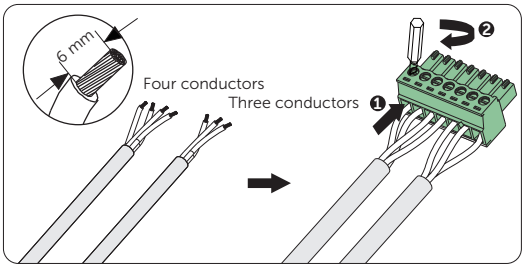
DIO wiring procedure

Step 1: Loosen the screws on the COM 2 terminal block. Press the tabs on the sides of the COM 2 connector housing and pull simultaneously to remove it.

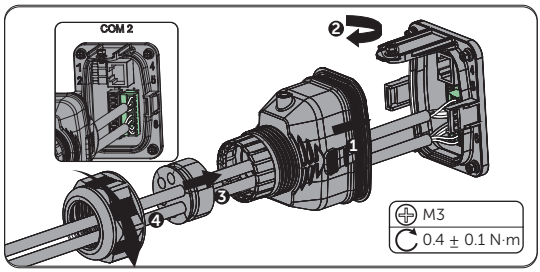
Step 2: Loosen the rotary nut and remove the sealing caps. Leave the caps in the cable support sleeve if you choose not to connect the cable.

Step 3: Prepare two four-conductor signal cables. Cut off any excess conductor. The cut conductor must be insulated. Pass the cables in the following order: rotary nut, cable support sleeve, and connector housing.

Step 4: Remove about 6 mm of cable insulation. Insert the conductors into the 7-pin terminal block (part N) and tighten the terminal screws (torque: 1.5 N·m). Make sure the conductors are well inserted into the terminal block.



Step 5: Connect the assembled communication cable to the COM 2 terminal block. Pull the cable slightly to confirm that it is well inserted, then reinstall the connector.

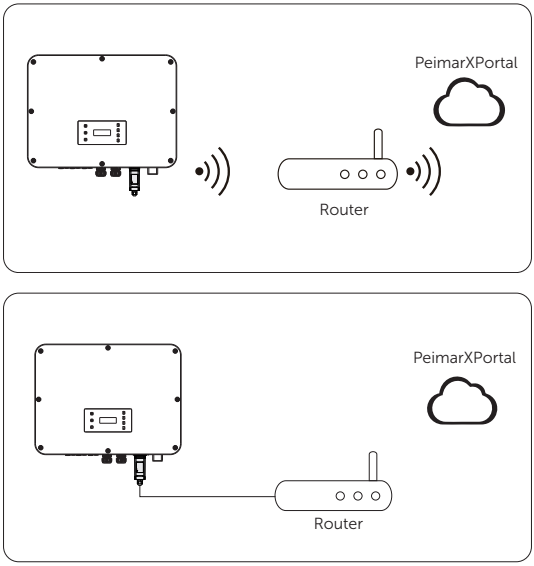


8.8. Monitoring connection

The inverter is equipped with a DONGLE terminal, which can transmit inverter data to the monitoring website via a dongle. The illustrations of the monitoring wiring procedure use the WiFi+LAN dongle as an example (the WiFi+LAN dongle has two communication modes: Wi-Fi mode or LAN mode; users can choose according to their actual needs).

Users should refer to the actual model received. (If the dongle does not meet the requirements, purchase the products directly from us.)

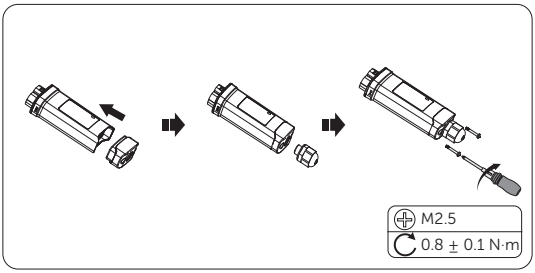
Monitoring connection diagram



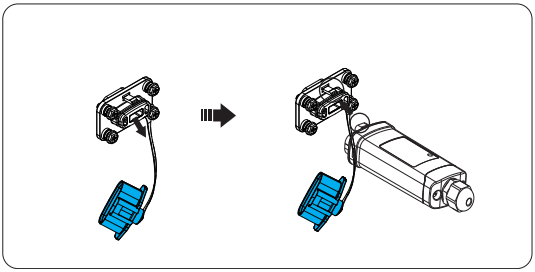
Monitoring wiring procedure

Wi-Fi mode:

a. Assemble the dongle.



b. Connect the dongle to the inverter.



CAUTION!

The slots on the inverter and the dongle must be on the same side. Otherwise, the dongle may be damaged.

WARNING!

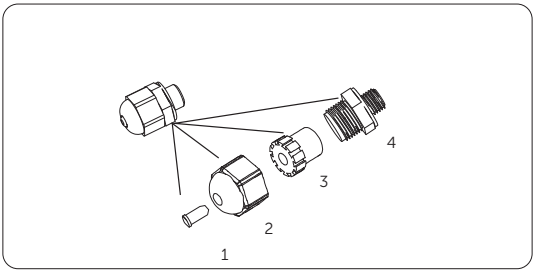
- The distance between the router and the inverter must not exceed 100 meters.
- If there are walls between them, the distance must not exceed 20 meters.
- For installations where the Wi-Fi signal is weak, install a Wi-Fi signal booster.

WARNING!

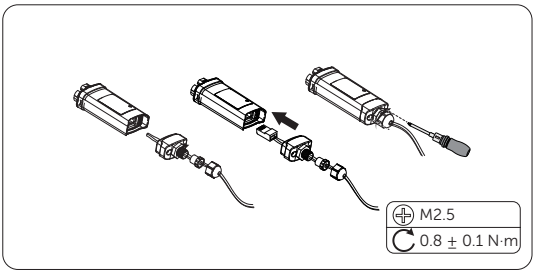
For more details on Wi-Fi configuration, refer to the manual of the dongle received. Wi-Fi can only be configured after the inverter is powered on.

LAN mode:

a. Disassemble the waterproof connector into components 1, 2, 3, and 4. Component 1 is not used. Keep it in a safe place.



b. Assemble the dongle.



c. Connect the dongle to the inverter.

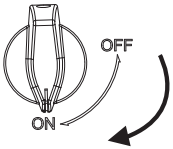
9. System commissioning

9.1. Pre-power-on checks

N	Item	Dettagli del controllo
1	Installation	The inverter is installed correctly and securely. The battery is installed correctly and securely. Any other device (if present) is installed correctly and securely.
2	Wiring	All DC, AC, and communication cables are connected correctly and securely. The Meter/current transformer (CT) is connected correctly and securely. The grounding cable is connected correctly and securely.
3	Switch	All DC and AC switches are OFF.
4	Connector	External AC and DC connectors are connected: The connectors on the grid and EPS terminal are connected correctly and securely.
5	Unused terminals	Unused terminals and ports are closed with waterproof caps.
6	Screws	All screws are tightened.

9.2. System start-up

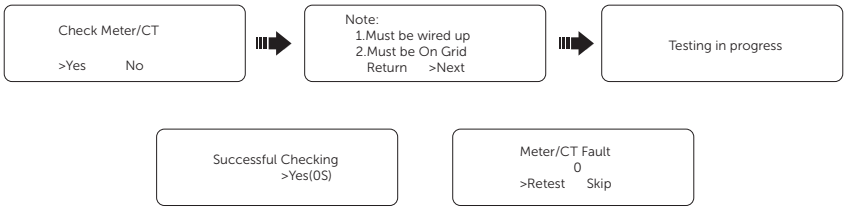
Step 1: Turn on the DC switch and check the LCD display.



- If the LCD display does not turn on, turn off the DC switch and check that the photovoltaic (PV) polarity is connected correctly.
- If an error is displayed on the LCD for a PV channel, turn off the DC switch and check the connection of the corresponding PV channel.

Step 2: Turn on the AC switch and wait for the inverter to start up.

- During the first power-on, if the Meter/CT is connected, an automatic check will be activated.



Step 3: Power the battery or operate its corresponding switch, button, or DC switch (refer to the battery manufacturer's documentation).

Step 4: Check the LCD display and perform a forced discharge and a forced charge through the following setting path:

Menu > Mode Selection > Manual, to verify whether the battery charging and discharging work correctly.

9.3. Lockable DC switch operation

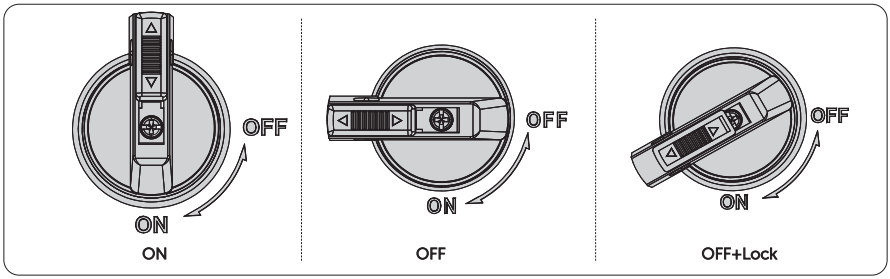
This series of inverters is equipped with two types of DC switches:

Non-lockable DC switch (optional; without lock)

Lockable DC switch (standard; with lock)

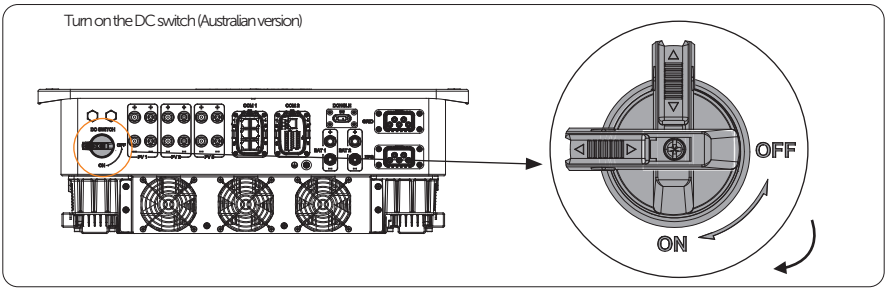
For the lockable DC switch:

The lockable DC switch has 3 positions: ON, OFF, and OFF + Lock. The default state of the DC switch is OFF.



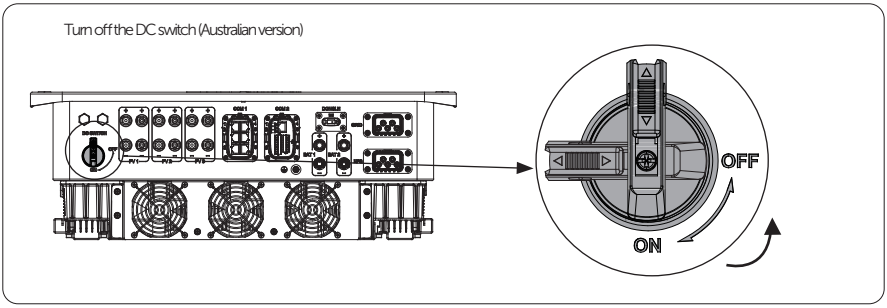
Turn on the DC switch

Move the DC switch from the OFF position to the ON position.



Turn off the DC switch

Rotate the DC switch from the ON position to the OFF position.

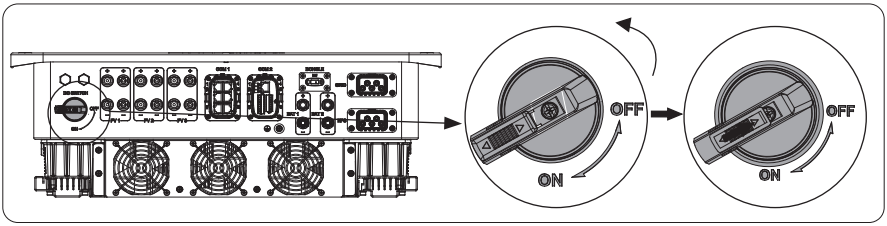


Lock the DC switch

a. Rotate the DC switch to the OFF position, then turn it to the left.

b. Push upward the position indicated by the arrow (as shown in the diagram below).

c. (Optional) After pushing the position upward, you can choose to lock the DC switch with a padlock.

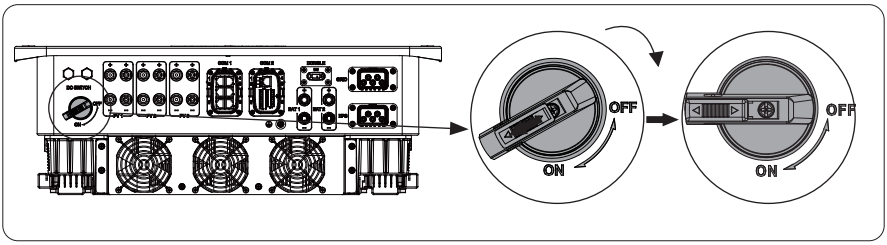


Unlock the DC switch

a. Remove the padlock (if present).

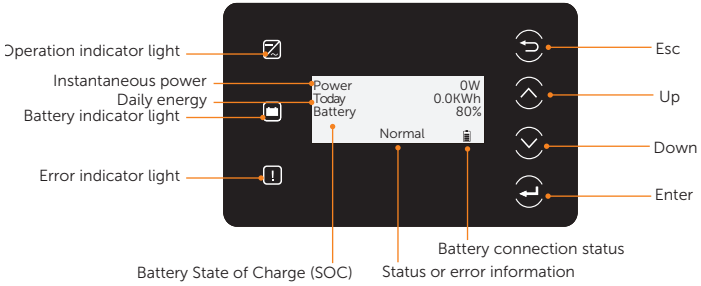
b. Push downward the position indicated by the arrow (as shown in the diagram below).

c. Wait for the switch to return to the OFF position.



10. LCD display operation

10.1. Introduction to the control panel

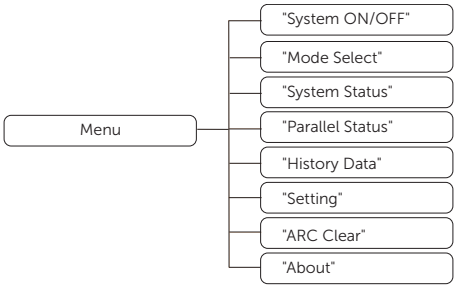


- In a normal state, the information “Power,” “Today,” and “Battery” will be displayed. You can press the buttons to change the information shown.
- In case of an error, the fault message and error code will be displayed; refer to section “12.2 Troubleshooting” for the corresponding solutions.

LED Indicator	Status	Definition
 Operating	Solid blue	The inverter is in a normal state.
	Flashing blue	The inverter is in standby or in verification mode.
 Error	Solid red	The inverter is in a fault state.
 Battery	Solid green	At least one of the batteries is in a normal state.
	Flashing green	Both batteries are in an inactive state.
	Solid black display	At least one of the batteries is connected correctly.
	Flashing black	Both batteries are disconnected.

Button	Definition
ESC Button	Exit the interface or the function in progress
Up Button	Move the cursor up or increase the value
Down Button	Move the cursor down or decrease the value
Enter Button	Confirm the selection

10.2. Introduction to the menu interface



There are eight submenus in the menu, which can be selected to perform the corresponding settings.

- System On/Off: Turn the inverter on or off.
- Mode Selection: Select the operating mode of the inverter, including:

Self Use

Feed-in Priority

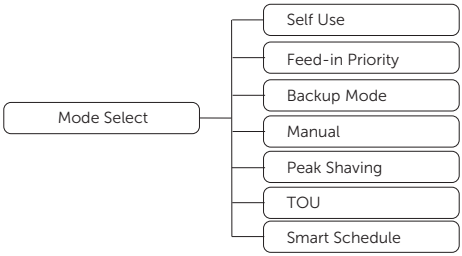
Backup Mode

Manual

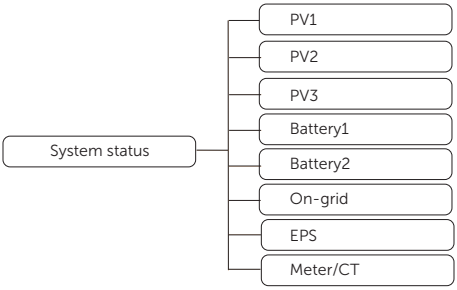
Peaking Shaving

TOU (Time of Use)

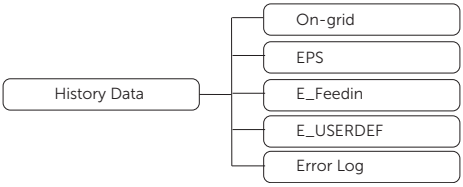
Smart Schedule



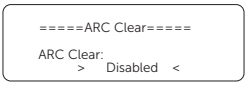
- System Status: Displays the real-time values of the photovoltaic (PV), batteries, etc., including: PV1, PV2, PV3, Battery 1, Battery 2, Grid (On-grid), EPS, and Meter/CT.



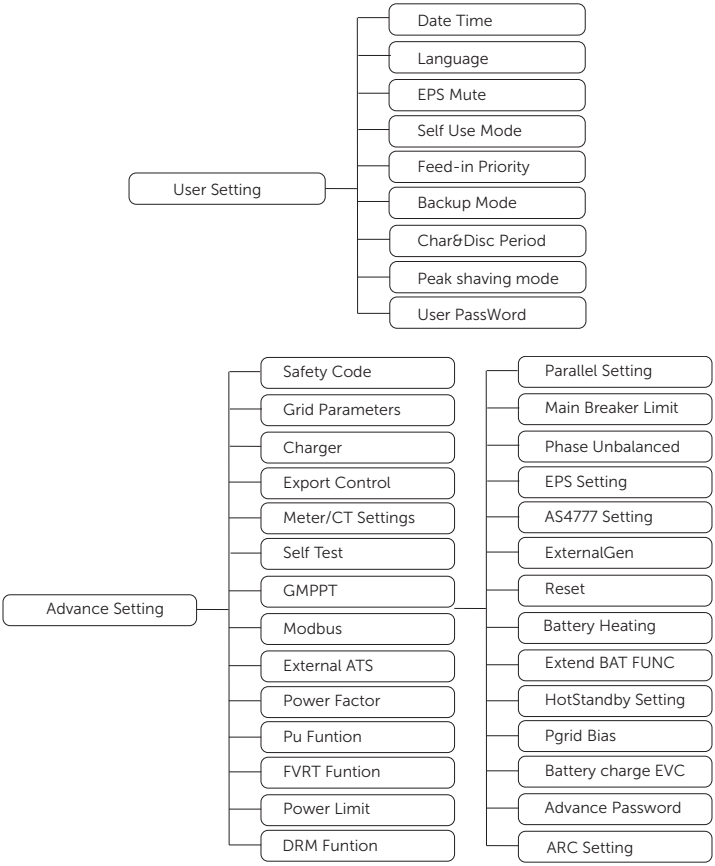
- Parallel Mode Status: Displays all status data from the master inverter when the inverters are connected in parallel.
- Historical Data: Displays the historical data of the grid (On-grid), EPS, E_FEEDIN, E_USERDEF, and the Error Log.



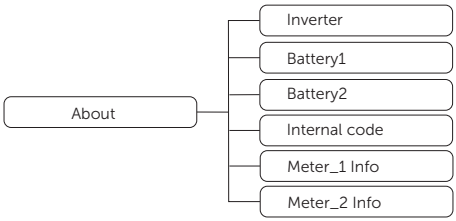
- Arc Clear: When disabled by default, the inverter will automatically clear the arc fault within five minutes, up to a maximum of four consecutive times. If the arc fault occurs a fifth time, a manual clear will be required. To perform a manual clear, select Trigger in ARC Clear; the inverter will immediately clear the arc fault and restart the system. For other parameters such as Arc Enable and Arc Self Check, refer to the section "Arc Setting."



- Settings: Configure the inverter parameters, including User Settings and Advanced Settings.



- Information: Displays information related to the inverter, Battery 1, Battery 2, and the internal code.



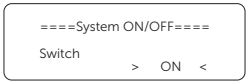
10.3. System ON/OFF

Path: Menu > System ON/OFF

Select ON or OFF to turn the inverter on or off.

The interface is set to ON by default.

When OFF is selected, the inverter stops operating.



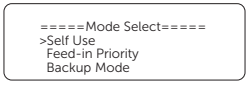
10.4. Mode Selection

Path: Menu > Mode Selection

In this section, you can select only the operating mode, namely: Self Use, Feed-in Priority, Backup, Peaking Shaving, TOU (Time of Use), Manual, and Smart Schedule..

You can choose the operating mode according to your lifestyle and surrounding environment.

Refer to section "2.6 Operating Modes" for an introduction to the modes, and to section "10.7.1 User Settings" for the specific configuration of each mode.

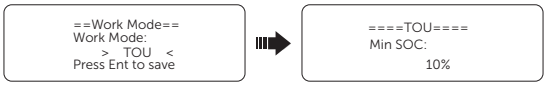


TOU Mode Setting

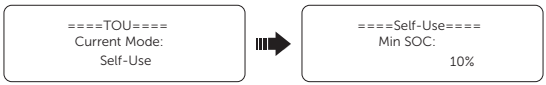
The TOU mode can only be configured via the PeimarXPortal application.

After configuring the TOU mode in the application, the selected TOU mode will be displayed in the TOU interface on the LCD screen.

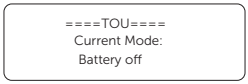
- Min. SOC: The minimum system SOC (state of charge).
- Min. SOC: Default value: 10%



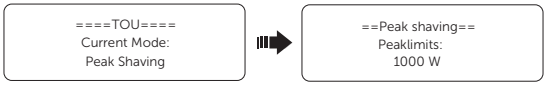
- Self Use: Same operating logic as the “Self Use mode,” but it is not limited by charging and discharging time periods.
- The priority for using photovoltaic (PV) energy is as follows: Loads > Battery > Grid. Min. SOC: Default value: 10%



- Battery Disabled: The battery does not charge or discharge. Photovoltaic (PV) energy is used to power the loads or is fed into the grid. The battery can only be charged if the battery SOC is lower than the system’s minimum SOC (TOU).



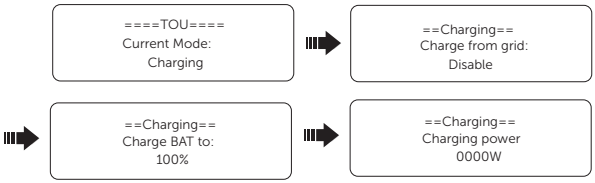
- The operating principle is as follows: when the power consumption from the grid exceeds the set PeakLimit value, the battery is allowed to discharge. The excess energy beyond the limit is supplied by the combination of photovoltaic and battery, ensuring that the maximum power drawn from the grid does not exceed the defined threshold.
- Peak Limit: Default value: 1000 W



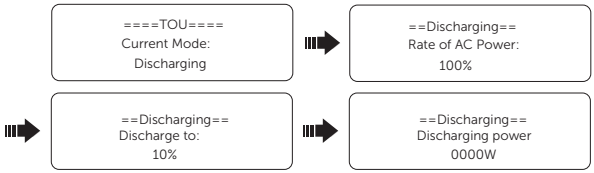
- Charge: Photovoltaic energy will charge the battery as much as possible up to the SOC percentage set for Charge BAT to (%). You can configure whether charging from the grid is allowed or not. The default value for Charge BAT to (%) is 100%.

When the battery reaches the defined SOC, the excess power will switch to self-use mode or be fed into the grid (according to the system configuration). At that point, charging from the grid is not allowed.

- Charge from grid: Default: Disabled
- Charge BAT to: Default: 100%
- Charge power: Default: 0000 W

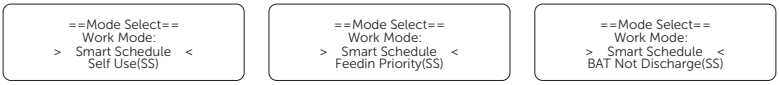


- Discharge: If allowed by the battery, the system supplies a specific power from the grid based on the defined output percentage, controlling the power on the AC port. The RatePower (%) parameter must be configured via the Web or the Application when selecting Discharge mode. When the battery reaches the Discharge to (%) SOC value, the inverter switches to self-use mode.
- AC Power Rate: Default: 100%
- Discharge to: Default: 10%
- Discharge power: Default: 0000 W



Smart Schedule Mode Setting

Smart scheduling can only be configured via the Peimar Cloud application. After configuring the smart schedule in the application, the selected mode will be displayed in the Smart Schedule interface on the LCD display.

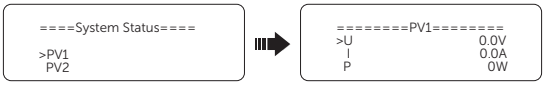


10.5. System Status

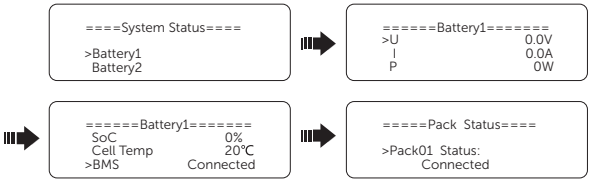
Displayed path: Menu > System Status

After entering the System Status interface, the status of the PV, battery, grid (On-grid), EPS, and Meter (Meter/CT) will be displayed on the LCD screen as follows:

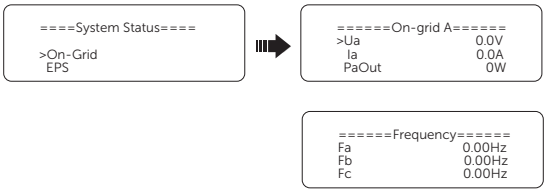
- PV Status: You can view the information related to PV1, PV2, and PV3. The information includes the input voltage, current, and power of each PV. For the PSI-X3P15000-HYM, PSI-X3P19900-HYM, and PSI-X3P20000-HYM inverters, the displayed value for PV3 is 0.



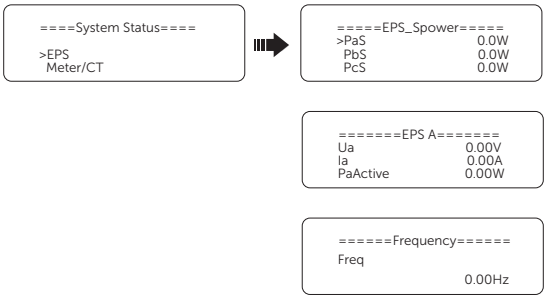
- Battery Status: The information related to Battery 1 and Battery 2 will be displayed here. It shows the status of each battery terminal, including: voltage, current, power, SOC (State of Charge), cell temperature, BMS (Battery Management System) connection status, and pack status. A positive power value means the battery is charging; a negative value means it is discharging.



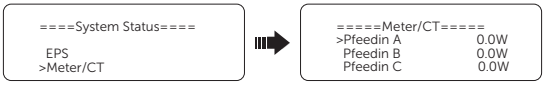
- Grid (On-grid) Status: The information includes the voltage, current, frequency, and output power of the grid terminal. The letters “A,” “B,” and “C” in On-grid A, On-grid B, and On-grid C correspond to L1, L2, and L3 respectively. The figure below will use On-grid A as an example. A positive power value means output power (to the grid); a negative value means input power (from the grid).



- EPS Status: The information includes the apparent power, voltage, current, active power, and frequency of the EPS terminal when disconnected from the grid. The letters “A,” “B,” and “C” in EPS A, EPS B, and EPS C refer respectively to L1, L2, and L3. The figure below will use EPS A as an example.



- Meter/CT Status: The information includes the feed-in power of L1, L2, and L3 detected by the connected Meter or CT. A positive value represents feeding electricity into the grid, while a negative value represents drawing electricity from the grid (purchasing electricity).

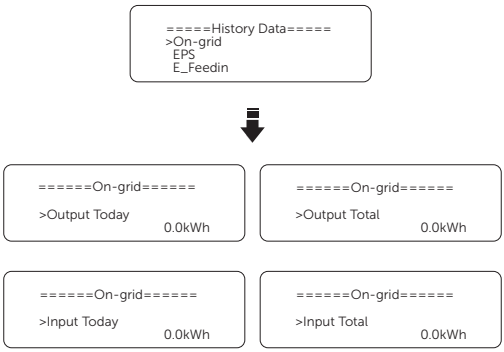


10.6. Historical Data

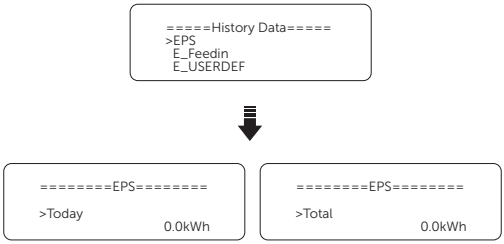
Displayed path: Menu > Historical Data

After entering the Historical Data interface, the status of the grid (On-grid), EPS, E_Feedin, E_USERDEF, and the Error Log will be displayed on the LCD screen as follows:

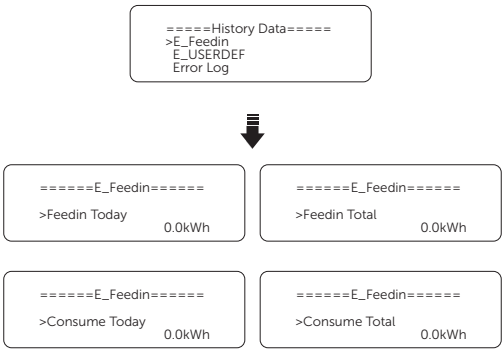
- Grid (On-grid): A log of the electricity output to and input from the grid through the grid terminal for today and total.
- Output today: Electricity output from the inverter today.
- Total output: Total electricity output since the first commissioning of the inverter.
- Input today: Electricity input to the inverter today.
- Total input: Total electricity input since the first commissioning of the inverter.



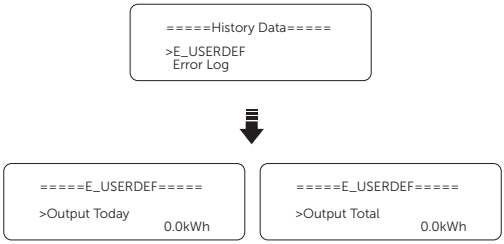
- EPS: A log of the electricity output from the inverter today and in total when disconnected from the grid (through the EPS terminal).



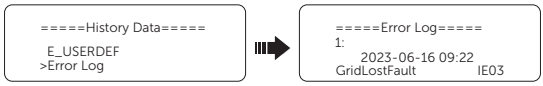
- E_Feedin: The total electricity fed into or drawn from the grid since the first commissioning of the inverter and on the current day (measured by the Meter / current transformer – Meter/CT).
- Feedin Today: Electricity sold to the grid today.
- Feedin Total: Total electricity sold to the grid since the first commissioning of the inverter.
- Consume Today: Electricity purchased from the grid today.
- Consume Total: Total electricity purchased from the grid since the first commissioning of the inverter.



- E_USERDEF: The electricity of the grid-connected inverter today and total (detected by Meter 2). This function is available only when Meter 2 is connected.



- Error log: Displays the last six error messages. The information includes the date and time of the error, the error code, and the description of the error.



10.7. Setting

The settings include the User Settings and the Advanced Settings.

10.7.1. User Setting

Access path to the settings: Menu > Setting ("0 0 0 0") > User Setting.

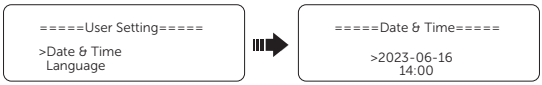
WARNING!

The default password to access the User Settings is: "0 0 0 0".

Date and Time Setting

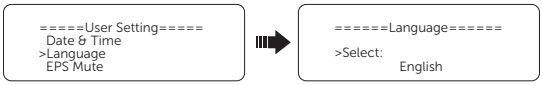
It is possible to define the current date and time of the installation site.

The display format is: "2023-06-16 14:00", in which: the first four digits represent the year (e.g.: 2000 ~ 2099), the fifth and sixth digits represent the month (e.g.: 01 ~ 12), the seventh and eighth digits represent the day (e.g.: 01 ~ 31), the remaining digits represent the time.



Language Setting

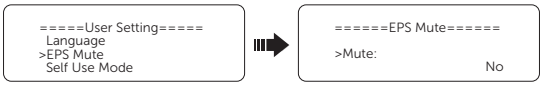
This inverter offers several languages from which customers can choose, such as: English, Deutsch, français, polskie, español, português. The default language is English.



EPS Silent Mode Setting

When the inverter operates in EPS mode, it is possible to choose whether the buzzer is activated or not.

- Select Yes: the buzzer is deactivated. This function is disabled by default.
- Select No: the buzzer will emit a sound every 4 seconds if the battery SOC is greater than the minimum EPS SOC.
- When the battery SOC is equal to the minimum EPS SOC, the buzzer will emit a sound at a higher frequency, namely every 400 ms.

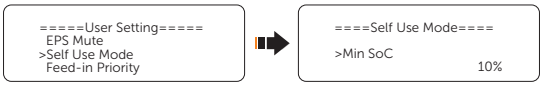


Self Use Mode Setting

Refer to "2.7.1 Self Use Mode" for the operating logic of this mode.

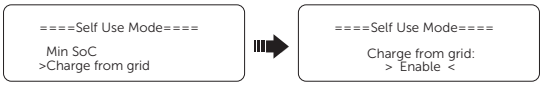
Minimum SOC: Default: 10%; range: 10%~100%

- The minimum battery SOC. The battery will not discharge energy when the battery SOC reaches this value.



- Charge from the Grid:

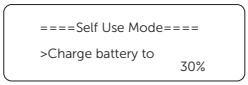
It is possible to define whether electricity should be taken from the grid to charge the battery during the forced charge period. When Charge from the Grid is set to Enabled, grid electricity is allowed to charge the battery; when it is set to Disabled, grid electricity is not allowed to charge the battery.



- Charge the Battery up to: Default: 30%; range: 10% ~ 100%

  Set the target SOC value for charging the battery from the grid during the forced charge period (applicable only if "Charge from the Grid" is enabled).

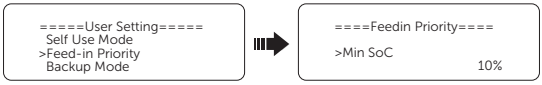
  It is possible to set a custom target value, meaning that during the forced charge period, the inverter will use both PV energy and grid energy to charge the battery up to the target SOC + 5%. Once the battery SOC reaches the target value, if PV energy is still sufficient (enough for charging and with a surplus), the inverter will continue to use PV energy to charge the battery.



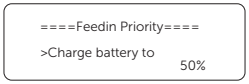
Feed-in Priority Setting

Refer to section "2.7.2 Feed-in Priority" for the operating logic of this mode.

- Minimum SOC: Default: 10%; range: 10% ~ 100%
- The minimum battery SOC. The battery will not supply energy when the battery SOC reaches this value.



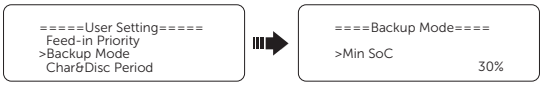
- Charge the Battery up to: Default: 50%; range: 10% ~ 100%
- Sets the amount of SOC to charge into the battery from the grid (applicable only when the "Charge from the Grid" function is enabled).
- It is possible to set your own target value, meaning that during the forced charge period, the inverter will use both PV and grid energy to charge the battery SOC up to the target value + 5%. After the battery SOC has reached the target value, if PV energy is still sufficient, the excess power will be fed into the grid.



Feed-in Priority Setting

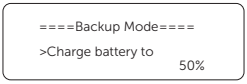
Refer to section "2.7.2 Feed-in Priority" for the operating logic of this mode.

- Minimum SOC: Default: 10%; range: 10% ~ 100%
- The minimum battery SOC.
- The battery will not provide energy when the battery SOC reaches this value.



- Charge the Battery up to: Default: 50%; range: 30% ~ 100%

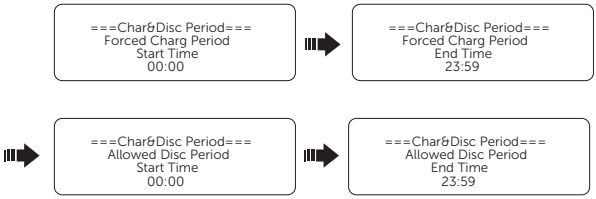
  In this mode, the charge from the grid function is enabled by default, and customers can independently set the target value. During the forced charge period, the inverter will use a combination of PV and grid energy to charge the battery up to the target value. If PV energy is still sufficient (enough for the loads and with excess energy), the inverter will continue to use PV energy to charge the battery.



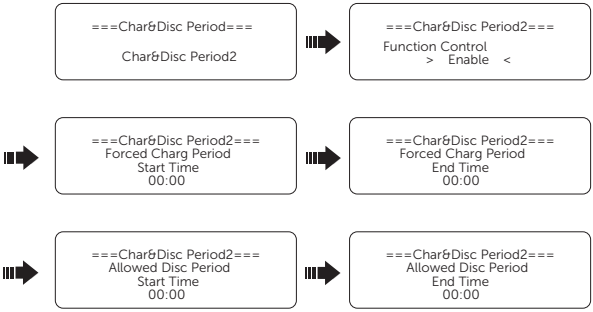
Charge and Discharge Period Setting

Here you can set the Forced Charge Period and the Allowed Discharge Period. If two charge and discharge periods are required, activate Function Control to enable Char&DischargPeriod2.

- Charge and Discharge Period: It is possible to set the charging and discharging times according to your needs. The system's default time axis is 24 hours.
- Forced Charge Period Start Time: Start time of charging; Default value: 00:00; range: 00:00 ~ 23:59.
- Forced Charge Period End Time: End time of charging; Default value: 00:00; range: 00:00 ~ 23:59.
- Allowed Discharge Period Start Time: Time from which discharging is allowed (charging or discharging of the battery depends on the operating mode); Default value: 00:00; range: 00:00 ~ 23:59.
- Allowed Discharge Period End Time: End time of discharging; Default value: 23:59; range: 00:00 ~ 23:59.



- Char&Disc Period2: The second time axis is disabled by default. If two charge and discharge periods are required, enable Charge and Discharge Period 2. This period will follow the same configuration logic as the Char&Disc Period.



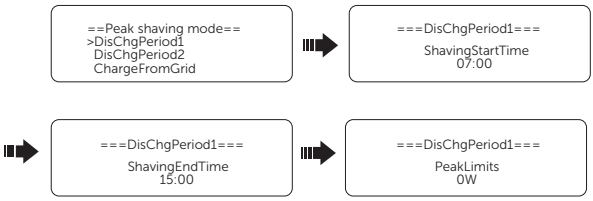
WARNING!

- The charge and discharge period is applicable only for self-use mode, feed-in priority, and backup mode.
- During periods not defined as forced charge period or allowed discharge period, the battery can be charged but cannot be discharged.
- During periods defined simultaneously as forced charge period and allowed discharge period, the battery will be forcibly charged.

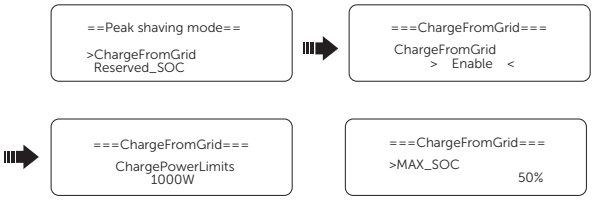
Peaking Shaving Mode Setting

The peaking shaving mode is suitable for regulating electricity consumption during peak periods. It consists of using the energy stored during low-demand periods to power loads during high-demand periods. Refer to section "2.7.4 Peaking Shaving Mode" for the operating logic of this mode.

- DisChgPeriod1: Used to set ShavingStartTime, ShavingEndTime, and PeakLimits. DisChgPeriod1 can be considered the peak shaving period. This period must cover the consumption peaks. The battery will be discharged to limit the load peak until the battery SOC drops to the minimum SOC (default: 10%).
- PeakLimits: Default: 0 W, range: 0 ~ 60000 W. Once the consumption (grid side) reaches this value, the inverter will start limiting to keep the consumption below this limit.
- ShavingStartTime: Default value: 7:00 — The battery starts discharging to reduce consumption from the set time.
- ShavingEndTime: Default value: 15:00 — The battery stops discharging at the set time.

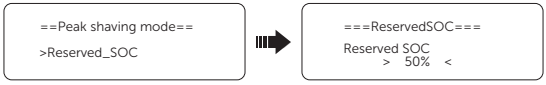


- DisChgPeriod2: Same operating logic as DisChgPeriod1.
  - PeakLimits: Default value: 0 W, range: 0 to 60000 W.
  - ShavingStartTime: Default value: 19:00 — The battery starts discharging to reduce consumption from the set time.
  - ShavingEndTime: Default value: 23:00 — The battery stops discharging at the set time.
- ChargeFromGrid: Can be used during a specific period. This period allows the inverter to draw energy from the grid to charge the battery, so as to have a sufficient reserve for peak shaving. This period starts from ShavingEndTime2 and ends at ShavingStartTime1.
    - Enable: Activates the ChargeFromGrid function to allow the inverter to draw energy from the grid to charge the battery. The parameters ChargePowerLimits and MAX_SOC are displayed only when this function is enabled.
    - ChargePowerLimits: Default value: 1000 W; range: 0 to 60000 W. Adjustable target power drawn from the grid. The inverter will use this power to charge the battery.
    - MAX_SOC: Default value: 50%; range: 10% to 100%. The inverter will charge the battery from the grid until the battery SOC reaches this value.



- Reserved_SOC: Default value: 50%; range: 10% to 100%.

  It can be used during a specific period. During this period, the inverter does not allow the battery to be charged from the grid. Photovoltaic (PV) is the only authorized source for charging the battery, and PV will have priority in charging it. The inverter will not supply energy to the loads until the battery's state of charge (SOC) exceeds this value, in order to preserve sufficient energy for the next peak shaving period.



User Password Setting

The default password is "0 0 0 0". It can be reset here.

10.7.2. Advanced Settings

Access path: Menu > Settings > Advanced Settings

WARNING!

All adjustable parameters, including the safety code, network settings, export control, etc., can only be modified with the rights associated with the installer password. Unauthorized use of this password may result in the entry of incorrect parameters, leading to production loss or violation of local regulations. Request the installer password from your dealer and never share it with unauthorized persons.

Safety Code Setting

WARNING!

- The inverter cannot be connected to the grid until the safety code has been correctly configured. If you have doubts about the safety code applicable to the location where the inverter is installed, contact your dealer or Peimar support.
- The configuration varies according to the safety code.

In this section, it is possible to configure the safety code in compliance with the regulations of different countries and the grid-tied standards. The inverter also offers a User Defined option, which allows customizing the parameters with a wide range of values.

Several regulatory standards are available: refer to the inverter's LCD display.

Security Code	Country
TOR	Austria
G99	United Kingdom
TR	Denmark
EN50549-EE	Estonia
EN50549-SE	Sweden
AS 4777.2	Australia
CEI0-21	Italy
C10/26	Belgium
G100 NI	Northern Ireland
VDE4105	Germany
PEA	Thailand

For Australia, select Australia Region A / B / C in accordance with the AS/NZS 4777.2 standard. Only after configuring the safety code will certain specific inverter system parameters take effect, in compliance with the corresponding safety regulations.

Standard parameters by region — Australia and New Zealand

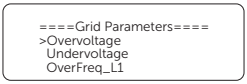
Standard code name	Australia A (AS4777_2020_A)	Australia B (AS4777_2020_B)	Australia C (AS4777_2020_C)	New Zealand	Setting range
OV-G-V	265 V	265 V	265 V	265 V	230–300 V
OV-GV1-T	1.5 s	1.5 s	1.5 s	1.5 s	—
OV-G-V2	275 V	275 V	275 V	275 V	230–300 V
OV-GV2-T	0.1 s	0.1 s	0.1 s	0.1 s	—
UN-G-V1	180 V	180 V	180 V	180 V	40–230 V
UNGV1-T	10 s	10 s	10 s	10 s	—
UN-G-V2	70 V	70 V	70 V	70 V	40–230 V
UNGV2-T	1.5 s	1.5 s	1.5 s	1.5 s	—

OV-G-F1	52 Hz	55 Hz	55 Hz	52 Hz	50–55 Hz
OVGF1-T	0.1 s	0.1 s	0.1 s	0.1 s	—
OV-G-F2	52 Hz	55 Hz	55 Hz	52 HWz	50–55 Hz
OVGF2-T	0.1 s	0.1 s	0.1 s	0.1 s	—

Region	Australia A	Australia B	Australia C	New Zealand	Adjustment range
Standard code name	Australia A (AS4777_ 2020_A)	Australia B (AS4777_ 2020_B)	Australia C (AS4777_ 2020_C)	New Zealand	Adjustment range
UN-G-F1	47 Hz	47 Hz	45 Hz	45 Hz	40–50 Hz
UNGF1-T	1.5 s	1.5 s	5 s	1.5 s	—
UN-G-F2	47 Hz	47 Hz	45 Hz	45 Hz	45–50 Hz
UNGF2-T	1.5 s	1.5 s	5 s	1.5 s	—
Startup-T	60 s	60 s	60 s	60 s	15–1000 s
Restore-T	60 s	60 s	60 s	60 s	15–600 s
Recover-VH	253 V	253 V	253 V	253 V	—
Recover-VL	205 V	205 V	205 V	198 V	—
Recover-FH	50.15 Hz	50.15 Hz	50.15 Hz	50.15 Hz	—
Recover-FL	47.5 Hz	47.5 Hz	47.5 Hz	47.5 Hz	—
Start-VH	253 V	253 V	253 V	253 V	—
Start-VL	205 V	205 V	205 V	198 V	—
Start-FH	50.15 Hz	50.15 Hz	50.15 Hz	50.15 Hz	—
Start-FL	47.5 Hz	47.5 Hz	47.5 Hz	47.5 Hz	—

Grid Parameter Setting

The default value corresponds to that specified according to the current safety regulations. The content will be displayed in accordance with the requirements of local laws and regulations. Please refer to the information actually displayed on the inverter's LCD screen.

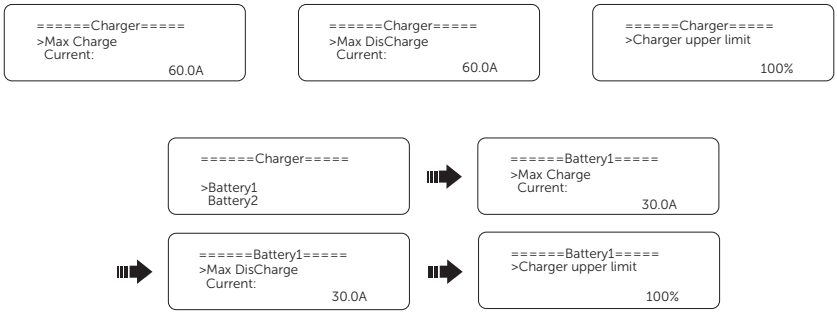


Charger Setting

The inverter is compatible with lithium-ion batteries. It is possible to set the battery charge and discharge parameters.

The interface of this parameter will differ depending on whether one battery or two batteries are connected.

- Max Charge: Maximum battery charging current
- Max Discharge: Maximum battery discharging current
- Upper Charge Limit: Default: 100%, range: 10% – 100%



Export Control Setting

This function allows the inverter to control the power fed into the grid. The value set by the user must be lower than the maximum value. If the user does not wish to feed electricity into the grid, they must set the User Value to "0".

WARNING!

According to the AS4777 safety code, the export control is located in the following path: Advanced Settings > AS4777 Settings. It is possible to define the Soft Limit and the Hard Limit of the export control to regulate the power fed into the grid. Refer to the "AS4777 Settings" section for further details.

Meter / Current Transformer (CT) Setting

A current transformer (CT) or a Meter must be connected to the inverter. The Meter is selected by default.

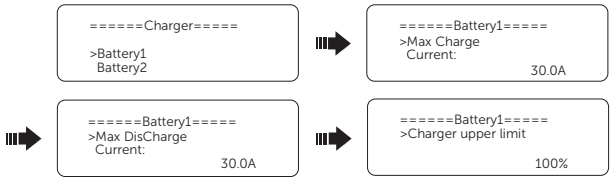
WARNING!

If the user has other electricity generation devices (such as another inverter) at their home and wishes to monitor both, the inverter offers a communication function with Meter 2 to allow monitoring of the power generation device.

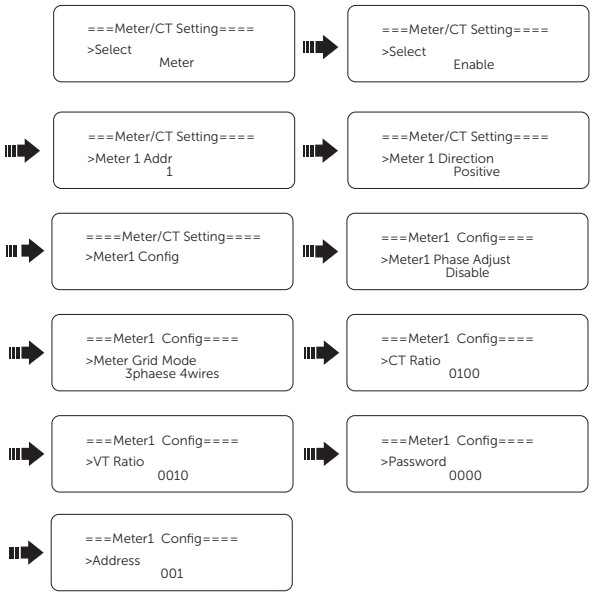
a. Select and enter the Meter/CT Settings according to the configuration path.

b. Set the address and direction of the Meter/CT:

- Case 1: È collegato solo un trasformatore di corrente (CT) per l'inverter in serie. Non è presente alcun dispositivo di produzione di elettricità nell'intero sistema. Attivare la selezione CT e scegliere il tipo di CT supportato. È possibile verificare lo stato della connessione nella sezione Verifica Meter/CT.



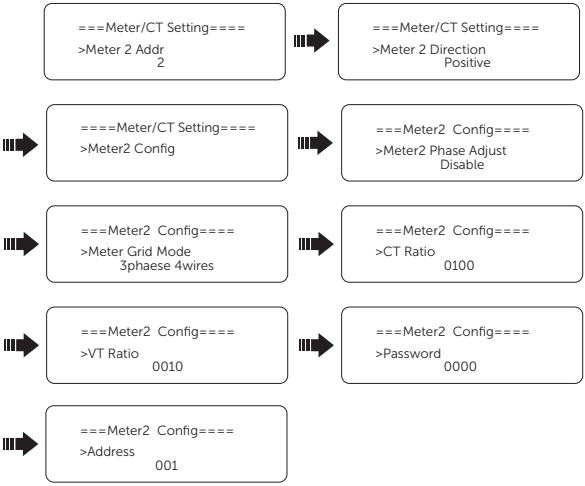
- Caso 2: Only Meter 1 is connected for the series inverter. There is no electricity generation device in the entire system. Activate the Meter 1 selection and set the address and direction of the Meter. It is possible to check the connection status in the Meter/CT Check section. The Peimar Meter is supported. If a Peimar Meter is used, the inverter will automatically recognize it and the parameters associated with the Meter 1 configuration will be displayed.



WARNING!

The CT and Meter 1 cannot be used simultaneously.

- Case 3: The CT and Meter 2 are connected (CT for the Peimar hybrid inverter, Meter 2 for another electricity generation device, or CT for another device, Meter 2 for the Peimar hybrid inverter). For the CT configuration, refer to Case 1. For the Meter 2 configuration, set the address and direction of Meter 2 according to the actual wiring. It is possible to check the connection status in the Meter/CT Check section. The Peimar Meter is supported. If a Peimar Meter is used, the inverter will automatically recognize it and the parameters associated with the Meter 2 configuration will appear.



- Case 4: Meter 1 and Meter 2 are connected (Meter 1 for the Peimar hybrid inverter, Meter 2 for another electricity generation device, or Meter 1 for another device, Meter 2 for the Peimar hybrid inverter). Refer to Case 2 for the configuration of Meter 1 and to Case 3 for the configuration of Meter 2. It is possible to check the connection status in the Meter/CT Check section.

Auto-Test Setting (only for CEI 0-21)

The auto-test function allows users to test the following items:

Test complet

Test Ovp (59.S2)

Test Uvp (S1)

Test Uvp (27.S2)

Test Ofp (81>.S1)

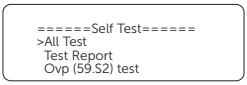
Test Ufp (81<.S1)

Test Ufp (81>.S2)

Test Ufp (81<.S2)

Test Ovp10 (59.S1)

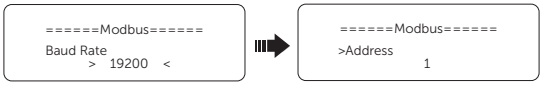
In the Auto-Test interface, the user can select All tests or a single test. All tests take about 6 minutes and display the message Success if the test is passed. A single test lasts from a few seconds to a few minutes. Before starting the test, make sure that the inverter is connected to the grid. Click on Test Report to view the results of all tests.



GMPPT Setting

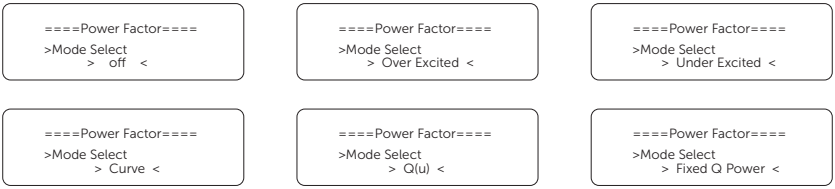
It is possible to adjust the shading tracking speed with four options: Off, Low, Middle, and High. This function is disabled by default.

- Off: Disables the shading tracking function.
- Low: Shading analysis every 4 hours.
- Middle: Shading analysis every 3 hours.
- High: Shading analysis every hour.



Power Factor Setting

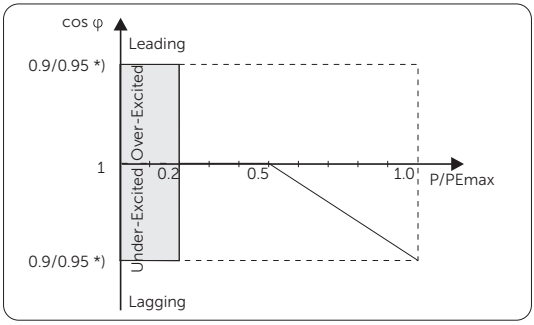
The default value corresponds to that specified according to current safety regulations. The content will be displayed in accordance with the requirements of local laws and regulations. Please refer to the local grid requirements.



Off	
Over Excited	PF Value
Under Excited	PF Value
Curve	P1 PF

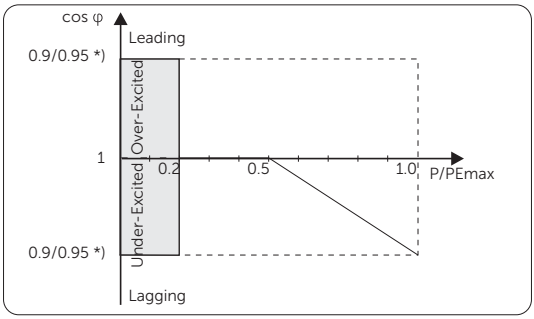
	P2 PF
	P3 PF
	P4 PF
	Power 1
	Power 2
	Power 3
	Power 4
	PflockInPoint
	PflockOutPoint
	3Tua
	Select
Q(u)	SetQuPower1
	SetQuPower2
	SetQuPower3
	SetQuPower4
	QuRespondV1
	QuRespondV2
	QuRespondV3
	QuRespondV4
Q(u)	K
	3Tua
	QuDelayTimer
	QuLockEn
Fixed Q Power	Q Power

- Reactive power control, standard reactive power curve cos φ = f(P)
  - For the VDE ARN 4105 regulation, the cos φ = f(P) curve must refer to curve A. The default value set is that indicated in curve A.



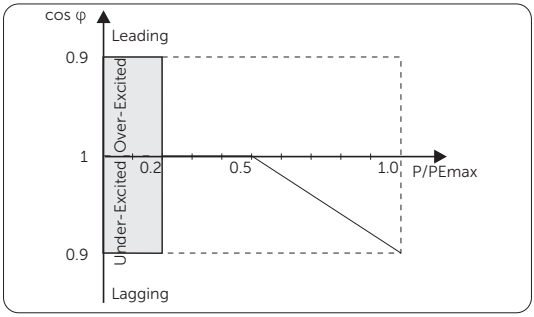
*) If the inverter's Pmax ≤ 4.6 kW, the power factor is 0.95 at power 1.0; if the inverter's Pmax > 4.6 kW, the power factor is 0.90 at power 1.0.

- For TOR, the cos φ = f(P) curve must correspond to curve B. The default value set is that indicated in curve B.

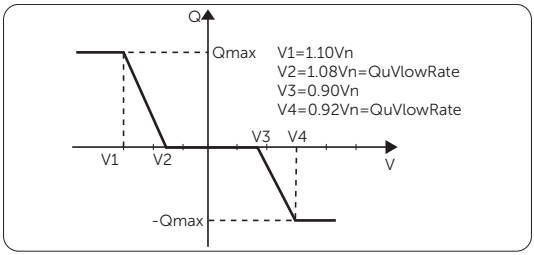


*) Depends on the required Q capacity

- For CEI 0-21, the default value of PFLockInPoint is 1.05. When Vac > 1.05 Vn and Pac > 0.2 Pn, the cos φ = f(P) curve corresponds to curve C.

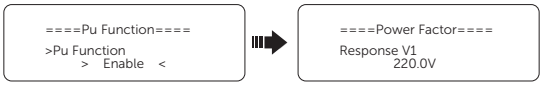


- Reactive power control, standard reactive power curve Q = f(V)

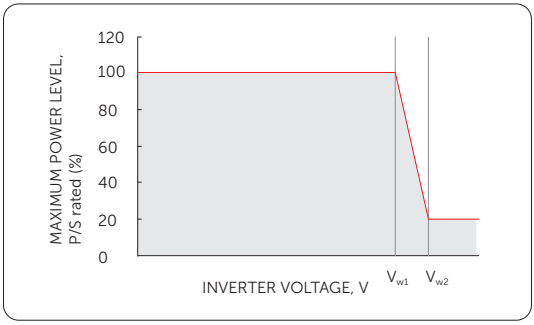


Pu Function Setting

(Applicable in some countries, please refer to local grid requirements.) The Pu function is a volt-watt response mode required by certain national regulations such as AS/NZS 4777.2. This function allows control of the inverter's active power based on the grid voltage. It is possible to define: Response Voltage, 3Tau, PuPower, 3Tau_Charge, and Pu Type. The interface elements of the P(u) function will be adjusted in accordance with local safety requirements and legal regulations. Any unauthorized modification is prohibited.



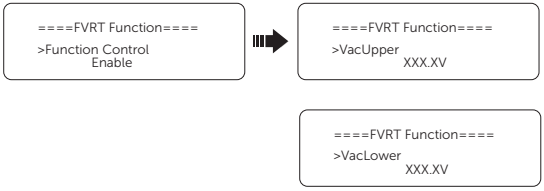
For AS/NZS 4777.2, the required curve for volt-watt mode can be referred to the curve below.



PVRT Function Setting

The PVRT function consists of HVRT (High Voltage Ride Through) and LVRT (Low Voltage Ride Through). With the PVRT function, the series inverter can ensure continuous operation without disconnecting from the grid in the event of sudden voltage increases or drops within a certain range and for a specific period of time.

- Enable: Activates the PVRT function
- VacUpper: Voltage for overvoltage ride through (HVRT)
- VacLower: Voltage for undervoltage ride through (LVRT)

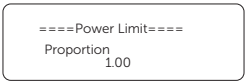


Power Limitation Setting

Here it is possible to set the nominal power as a percentage. The percentage of the rated output power is used as the actual output power.

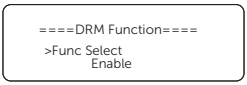
Proportion: Default: 1.00; range: 0.00 – 1.10

(For a 30 kW inverter, the proportion can only be set between 0.00 and 1.00; for other models of this inverter series, the proportion can be set between 0.00 and 1.10.)



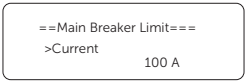
DRM Function Setting (Applicable to AS4777 Standard)

The DRM function is a demand response method required by the AS4777 standard and is applicable only in Australia and New Zealand. The function is enabled by default.



Main Switch Limit Setting

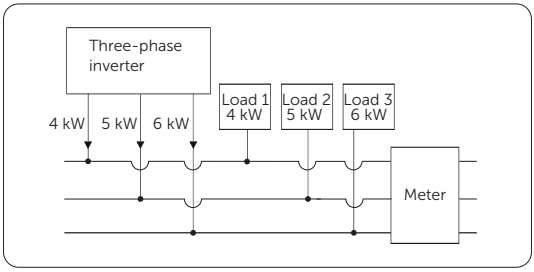
Due to power limits, the current of the Meter or the current transformer (CT) must comply with the requirements of the electricity company. It is possible to set the corresponding current according to the energy provider's requirements. Failure to adjust the current may cause the main switch circuit breaker to malfunction, thereby compromising battery charging and discharging. The default value is 100 A, range: 10 to 1000 A.



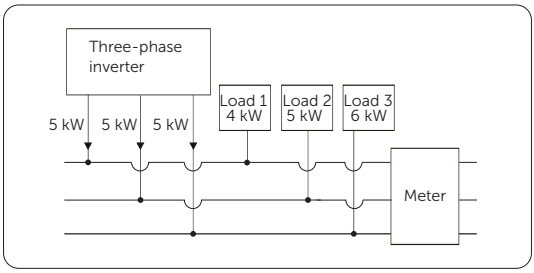
Phase Imbalance Setting

This function controls the distribution of output power in alternating current (AC). Deactivation is the default setting. Models PSI-X3P10000-HYM-LV and PSI-X3P15000-HYM-LV do not support this function.

- Enabled Mode: Each power phase will be delivered independently according to the corresponding loads connected to each phase.



- Disabled Mode: Balanced three-phase power output, with the same power on each phase. The total output power is determined by the total load power of the three phases.

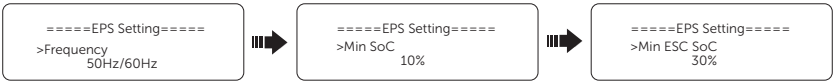


EPS Setting

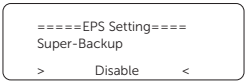
Select and access the EPS configuration interface to set the frequency, the minimum SOC, and the minimum EPS SOC.

- Frequency: Default: 50 Hz. This is the EPS output frequency.
  Minimum SOC: Default: 10%; range: 10% to 100%.
  - If the battery's state of charge (SOC) is lower than the minimum SOC, the inverter will display the message BatPowerLow and will shut down in the absence of PV input.

- Minimum EPS SOC: Default: 30%; range: 15% to 100%.
  - In EPS mode, this is the minimum state of charge required to reactivate EPS mode after the BatPowerLow message appears. When the battery SOC reaches the minimum EPS SOC through charging from the photovoltaic (PV) panels, the inverter will automatically switch to EPS mode.



- To enable Super-Backup mode and allow only the photovoltaic (PV) panels, without a battery, to enter EPS mode. Default setting: Disabled.



For three-phase inverters, the output power of the EPS terminals is limited to half (50%) of the rated EPS output power (with battery) for all phases combined. For more details, refer to the table below.

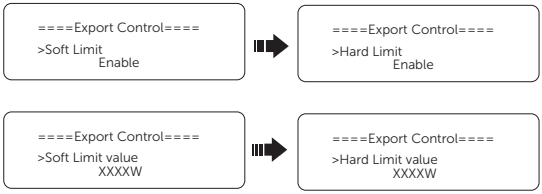
EPS Output (without battery)	PSI-X3P15000-HYM	PSI-X3P20000-HYM	PSI-X3P25000-HYM	PSI-X3P30000-HYM
Rated output power (W)	7500	10000	12500	15000
Peak apparent power (VA) – 130% overload	9750	13000	16250	19500

AS4777 Parameter

The AS4777 Parameter function is active only when the Safety Code is set to AS4777 and New Zealand, and is therefore applicable exclusively in Australia and New Zealand.

a Select and access the AS4777 parameter in the Advanced Settings interface. Two options will be displayed: Export Control (for controlling the active output power); General Control (for controlling the apparent output power).

b. Set the Soft Limit and Hard Limit values for Export Control and General Control. The image below shows the Export Control configuration as an example.



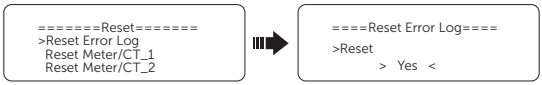
WARNING!

The arc auto-check must be performed when the inverter is in normal status and the current is higher than 1.5 A. If the message ARC Test Success is displayed, it means the arc detection function is working correctly.

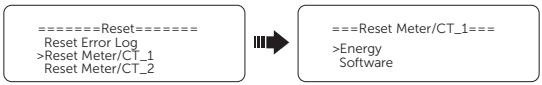
Reset

Here it is possible to reset the following items:

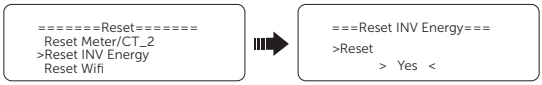
- Reset the error log



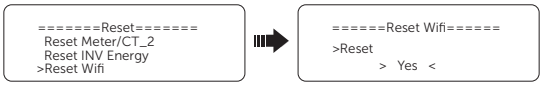
- Reset Meter/CT_1 or Meter/CT_2
  - Energy: reset of the power.
  - Software: reset and restart of the Meter, valid when using Peimar.



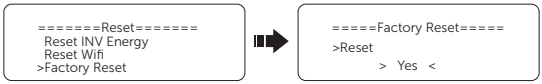
- Reset the inverter energy



- Reset the Wi-Fi



- Restore to factory settings

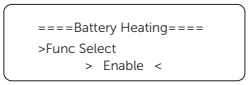


Battery Heating Setting

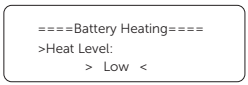
This function is disabled by default and is valid only if the battery has a heating function. It is possible to enable the battery heating function to warm it up and define the heating period. Only on-grid mode heating is supported.

- Connection of a single battery:

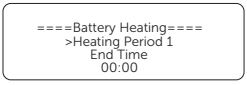
a. Enable the battery heating function.

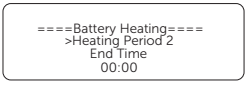


b. Select the heating level. Three levels can be set: Low / Medium / High.



c. Define the start time and end time for battery heating. It is possible to set two heating periods.

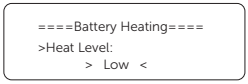




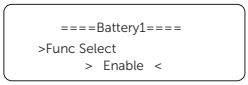
- Connection of two batteries:

a. Select the battery: battery1 or battery2.

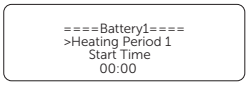
b. Select the heating level. Three levels can be set.

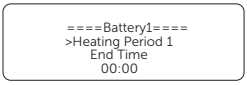


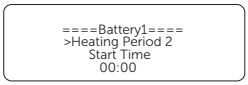
c. Enable the battery heating function.

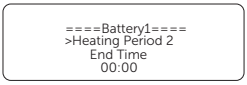


d. It is possible to set two heating periods.









WARNING!

If the ambient temperature is extremely low, enabling the battery heating will result in high electrical energy consumption.

Extend BAT FUNC Parameter

This function allows the extension of battery modules, for example, adding a new module to an existing system. It is applicable and functional only in on-grid mode and cannot be used in EPS mode. In on-grid mode, enabling this function allows the inverter to charge or discharge the battery down to about 38% of the state of charge (SOC). This function automatically deactivates 48 hours after activation.

HotStandby Parameter (HotStandby Setting)

This function is mainly used to reduce system energy losses when the load power is very low.

- Enabled: When the load power is very low and the other conditions for entering HotStandby mode are met, the inverter will switch to HotStandby mode to reduce system losses.
- Disabled: Even if the load power is very low and the conditions are met, the inverter will not enter HotStandby mode and will continue to supply power to the load. This setting is disabled by default.

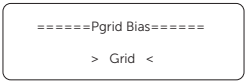
Pgrid Bias Parameter (Pgrid Bias Setting)

This function is disabled by default.

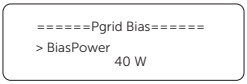
When the inverter has no output power:

a. Check the value of the Meter/CT in Menu > System Status > Meter/CT when the function is disabled.

b. If the value displayed in the System Status is negative, select Grid for Pgrid Bias in order to discharge energy to the grid. If the value displayed is positive, select INV for Pgrid Bias to draw energy from the grid.



c. Set the bias power value for extracting or injecting energy.



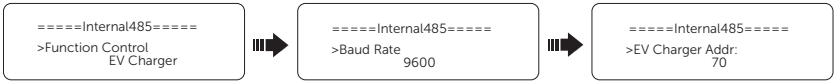
Internal485 Parameter (Internal485 Setting)

Allows communication with other Peimar devices, such as the EV Charger, the Datahub, the COM485, and the AdapterBox, via Internal485.

a. Select and enter the Internal485 interface;

b. Select the device to connect and set the corresponding baud rate and address.

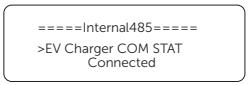
For example, for the EV Charger, the default baud rate is 9600.



WARNING!

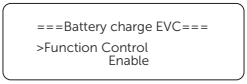
When two devices need to be connected simultaneously, the baud rate and address of both devices must be identical.

c. Check the connection status.



Battery Charge EVC

It is possible to set Enabled to allow the battery to discharge energy to the EV Charger. When set to Disabled, the battery is not authorized to discharge energy to the EV Charger.



Advanced Password

Here it is possible to reset the advanced password.

10.8. About

Display path: Menu > About

This section shows the basic information related to: inverter, battery, Meter, and internal code.
After entering the About interface, it is possible to view the following data:

- Inverter:
  - Model name, inverter serial number (Inverter SN), registration number (Register SN), ARM version, DSP version, on-grid runtime, EPS runtime.
- Battery 1 and Battery 2:
  - BatBrand, Bat_M SN (BMS serial number), Bat_PS1 SN (serial number of battery module 1), Bat_PS2 SN (module 2), Bat_PS3 SN (module 3), Bat_PS4 SN (module 4), Battery M version (BMS software version), Battery S version (module software version).
  - If multiple battery groups are connected in parallel, the group will also be displayed.
- Internal code:
  - Internal code of the inverter, Battery 1, and Battery 2.
- Meter_1 and Meter_2 info:
  - Meter_Type, Software, Serial Number (SN), Hardware.

11. Monitoring System Configuration

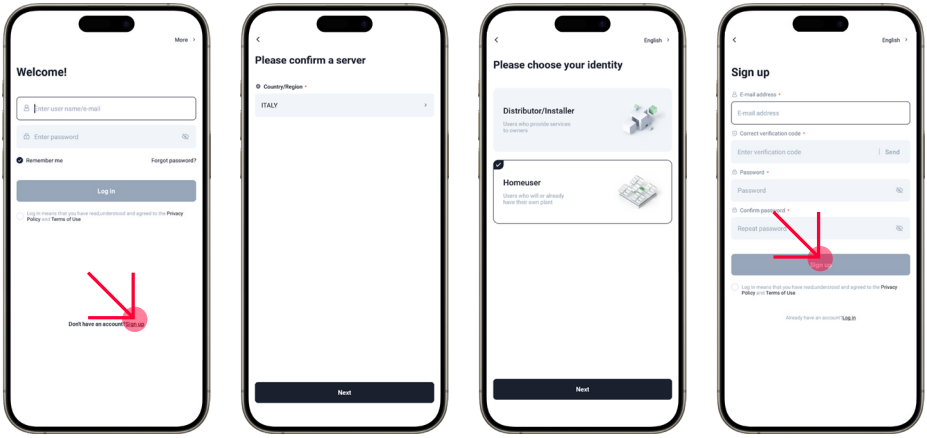
Step 1: Scan the QR code

Scan the QR code to download the monitoring app.

App Store | Google Play Store → Peimar X Portal

Step 2: Create an account

Click on [Register] to create an account, enter your details, then log in to your account.



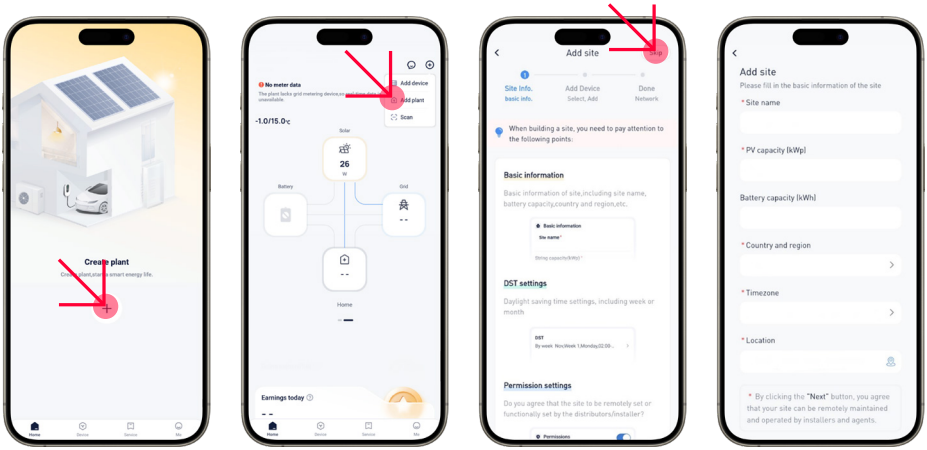
NOTE

App registration by creating a new account is intended for end users. If you wish to

request an agent account, contact technical support.

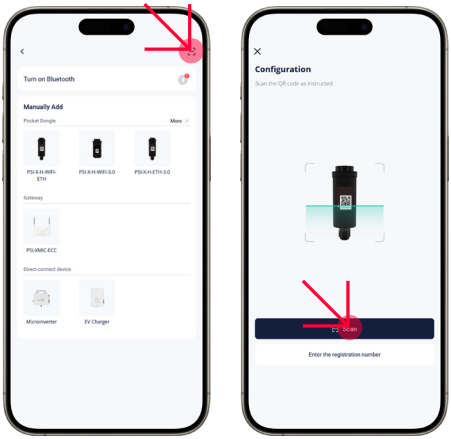
Step 3: Create a plant

Click on [+] in the main interface, then enter the required information to create your site.



Fase 4: Aggiungere un dispositivo

Dopo la fase precedente, accederai all'interfaccia [Aggiungi un dispositivo]. Inserisci il codice QR del dispositivo, quindi clicca su [OK].

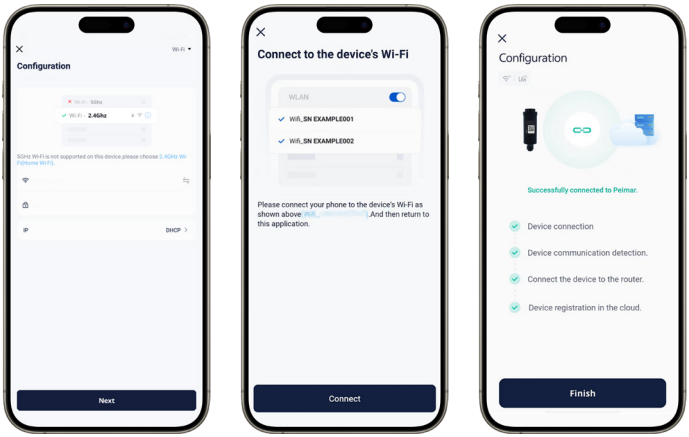


NOTE

If the QR code scanning step fails, try scanning the one-dimensional code instead. (Scanning the one-dimensional code may result in inaccurate results).

Step 5: Wi-Fi Configuration

In this step, you will start configuring the Wi-Fi.

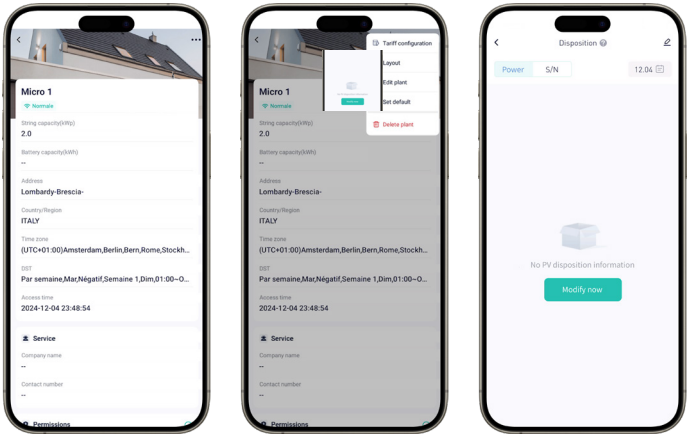


NOTE

If the Wi-Fi configuration fails, refer to the **PSI-X Monitoring System guide.**

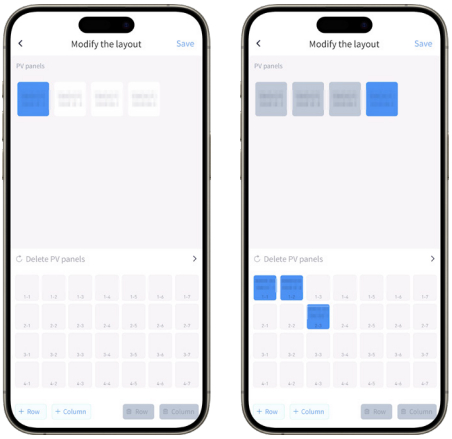
Step 6: Verify layout information

After configuring the Wi-Fi, click on [Layout] in the [Plant Detail] interface and select [Edit now].



Step 7: Customize the layout of the components

Select the corresponding device to customize the layout of the components, then click [Save] to save the settings. Afterwards, users will be able to view the power and connection status of each component, as well as check the total power at the bottom.



NOTE

The layout function is available after the Wi-Fi configuration has been successfully completed. Make sure that the Wi-Fi is properly configured before checking the layout information.

12. Troubleshooting and Maintenance

12.1.Shutdown

a. Turn off the system using the System ON/OFF option on the LCD screen.

b. Disconnect the battery power supply or operate the battery switch-disconnector (refer to the battery manufacturer's documentation).

c. Turn off the AC switch between the inverter and the power grid.

d. Set the DC switch to OFF.

NOTE

After shutting down the inverter, residual electricity and heat may remain, which can cause electric shock or burns. It is recommended to wear personal protective equipment (PPE) and wait five minutes after shutdown before performing any maintenance work on the inverter.

12.2 Troubleshooting

This section contains information and procedures for resolving possible inverter issues and provides practical advice to identify and solve most problems that may occur. Check the warning or error information on the system control panel or the application, and read the suggested solutions below in case of an error. Contact Peimar customer service for further assistance. It is recommended to be ready to describe your system installation in detail and to provide the inverter model and serial number.

Error Code	Fault	Description and Diagnosis
IE 01	TZ Protect Fault	Overcurrent fault. Wait a moment to see if the situation returns to normal. Disconnect PV-PV+ and the batteries, then reconnect them. If the system is in off-grid mode, check if the EPS load power exceeds the system's maximum limit or exceeds the battery's current supply capacity. If the system does not return to normal, contact Peimar customer service.
IE 02	Grid Lost Fault	Check the grid connection status. Or contact Peimar customer service for assistance.
IE 03	Grid Volt Fault	Grid voltage exceeded. Wait a moment; if the grid returns to normal, the system will reconnect. Check if the grid voltage is within the normal range. Or contact Peimar customer service.
IE 04	Grid FreqFault	Grid frequency overvoltage. Wait a moment; if the grid returns to normal, the system will reconnect. Or contact Peimar customer service.
IE 05	PV Volt Fault	PV overvoltage. Check the PV panel output voltage. Check if the DC switch is OFF. Or contact Peimar customer service.
IE 06	Bus Volt Fault	Press the ESC key to restart the inverter. Check if the PV input open-circuit voltage is within the normal range. Check if the half-wave load power exceeds the system limit. Or contact Peimar customer service.
IE 07	Bat Volt Fault	Check if the battery input voltage is within the normal range. Or contact Peimar customer service.

IE 08	AC10mins Volt	Grid voltage out of range in the last 10 minutes. The system will return to normal once the grid is restored. Or contact Peimar customer service.
IE 09	DCI OCP Fault	Wait a moment to see if the situation returns to normal. Or contact Peimar customer service.
IE 10	DCV OVP Fault	Fault in DCV EPS (off-grid) overvoltage protection. Wait a few moments to check if the system returns to normal. If not, contact Peimar customer service.
IE 11	SW OCP Fault	Software detection of an overcurrent fault. Wait a moment to see if the situation returns to normal. Turn off the PV, the battery, and the grid connections. Or contact Peimar customer service.
IE 12	RC OCP Fault	Check the impedance of the DC input and AC output. Wait a moment to see if the situation returns to normal. Or contact Peimar customer service.
IE 13	Isolation Fault	Check cable insulation. Wait a moment to see if the situation returns to normal. Or contact Peimar customer service.
IE 14	Temp Over Fault	Check if the ambient temperature exceeds the allowed limit. Or contact Peimar customer service.
IE 15	Bat Con Dir Fault	Check if the battery cables are connected in reverse polarity. Or request assistance from the installer if the problem persists.

IE 16	EPS Overload Fault	Turn off the high-power device and press the ESC key to restart the inverter. Or contact Peimar customer service if the problem persists.
IE 17	Overload Fault	Turn off the high-power device and press the ESC key to restart the inverter. Or contact Peimar customer service if the problem persists.
IE 18	BatPowerLow	Turn off the high-power device and press the ESC key to restart the inverter. Recharge the battery to a level higher than the voltage or protection capacity. Or contact Peimar customer service.
IE 19	BMS Lost	Check that the communication cable between the battery and the inverter is properly connected. Or contact Peimar customer service if the situation does not return to normal.
IE 20	Fan Fault	Check for any foreign objects that may be preventing the fan from operating correctly. Or contact Peimar customer service if the situation does not return to normal.
IE 21	Low TempFault	Check if the ambient temperature is too low. Or contact Peimar customer service if the situation does not return to normal.
IE 22	ParallelFault	Check the connection of the communication and ground cables, as well as the settings of the corresponding resistors. Or contact Peimar customer service if the situation does not return to normal.
IE 23	HardLimitFault	Check the power value set in the HardLimit parameters; increase the value if necessary. Or contact Peimar customer service if the situation does not return to normal.
IE 24	CTMeterConFault	Check that the CT (current transformer) or the meter is properly connected. Or contact Peimar customer service if the situation does not return to normal.

IE 25	InterComFault	Restart the inverter. Or contact Peimar customer service if the situation does not return to normal.
IE 26	INVR EEPROM	Turn off the PV system, the battery, and the grid, then reconnect them. Or contact Peimar customer service if the situation does not return to normal.
IE 27	RCD Fault	Check the impedance of the DC input and AC output. Disconnect PV+ PV– and the batteries, then reconnect them. Or contact Peimar customer service if the situation does not return to normal.
IE 28	Grid Relay Fault	Disconnect PV+ PV–, the grid, and the batteries, then reconnect them. Or contact Peimar customer service if the situation does not return to normal.
IE 29	EPS Relay Fault	Disconnect PV+, PV–, the grid, and the batteries, then reconnect them. Or contact Peimar customer service if the situation does not return to normal.
IE 30	PV ConnDirFault	Check whether the PV input lines are connected in reverse. Or contact Peimar customer service if the situation does not return to normal.
IE 31	Battery Relay	Press the ESC key to restart the inverter. Or contact Peimar customer service if the situation does not return to normal.
IE 32	Earth Relay	Press the ESC key to restart the inverter. Or contact Peimar customer service if the situation does not return to normal.
IE 33	Arc Fault	Check the wiring; if there are no visible faults, contact Peimar if the situation does not return to normal.
IE 100	PowerTypeFault	Update the software and press the ESC key to restart the inverter. Or contact Peimar customer service if the situation does not return to normal.

IE 102	Mgr Eeprom Fault	Turn off the photovoltaic system, the battery, and the grid, then reconnect them. Or contact Peimar customer service if the situation does not return to normal.
IE 104	DataHub Fault	Turn off the photovoltaic system, the battery, and the grid, then reconnect them. Or contact Peimar customer service if the situation does not return to normal.
IE 109	Meter Fault	Check whether the Meter is working properly. Or contact Peimar customer service if the situation does not return to normal.
IE 110	BypassRelayFlt	Press the ESC button to restart the inverter. Or contact Peimar customer service if the situation does not return to normal.
IE111	FAN3 Fault	Check whether there are any foreign objects stuck in the fan. Or contact Peimar customer service.
IE112	ARMParaComFlt	Check that the communication cables between the inverters are properly connected and that the baud rate (COMM) is the same for all inverters. Or contact Peimar customer service.
IE113	FAN1 Fault	Check whether there are any foreign objects stuck in the fan. Or contact Peimar customer service.
IE114	FAN2 Fault	Check whether there are any foreign objects stuck in the fan. Or contact Peimar customer service.
IE115	20305COM_Fault	Check whether a command has been sent from the Australian grid platform. Check whether the dongle is malfunctioning.

BE 01	BMS1_Exter_Err BMS2_Exter_Err	External battery communication error. Contact Peimar customer service.
BE 02	BMS1_InterErr BMS2_InterErr	Internal battery communication error. Contact Peimar customer service.
BE 03	BMS1_OverVolt BMS2_OverVolt	Battery overvoltage. Contact Peimar customer service.
BE 04	BMS1_LowerVolt BMS2_LowerVolt	Battery undervoltage. Contact Peimar customer service.
BE 05	BMS1_ChargeOCP BMS2_ChargeOCP	Battery error – overload. Contact Peimar customer service.
BE 06	DischargeOCP1 DischargeOCP2	Battery error – discharge overcurrent. Contact Peimar customer service.
BE 07	BMS1_TemHigh BMS2_TemHigh	Battery overheating. Contact Peimar customer service.
BE 08	BMS1_TempLow BMS2_TempLow	Battery temperature sensor failure. Contact Peimar customer service.
BE 09	CellImbalance1 CellImbalance2	Battery cell imbalance. Contact Peimar customer service.
BE 10	BMS1_Hardware BMS2_Hardware	Battery hardware protection failure. Contact Peimar customer service.

BE 11	BMS1_Circuit BMS2_Circuit	Battery circuit fault. Restart the battery. Contact Peimar customer service.
BE 12	BMS1_ISO_Fault BMS2_ISO_Fault	Battery insulation fault. Check that the battery is properly grounded, then restart it. Contact Peimar customer service.
BE 13	BMS1_VolSen BMS2_VolSen	Battery voltage sensor fault. Contact Peimar customer service.
BE 14	BMS1_TempSen BMS2_TempSen	Battery temperature sensor fault. Restart the battery. Contact Peimar customer service.
BE 15	BMS1_CurSen BMS2_CurSen	Battery current sensor fault. Contact Peimar customer service.
BE 16	BMS1_Relay BMS2_Relay	Battery relay fault. Contact Peimar customer service.
BE 17	TypeUnmatched1 TypeUnmatched2	Battery type mismatch. Update the battery BMS software. Contact Peimar customer service.
BE 18	Ver Unmatched1 Ver Unmatched2	Battery version mismatch. Update the battery BMS software. Contact Peimar customer service.
BE 19	MFR Unmatched1 MFR Unmatched2	Battery manufacturer mismatch. Update the battery BMS software. Contact Peimar customer service.
BE 20	SW Unmatched1 SW Unmatched2	Battery hardware–software incompatibility. Update the battery BMS software. Contact Peimar customer service.

BE 21	M&S Unmatched1 M&S Unmatched2	Battery master-slave control error. Update the battery BMS software. Contact Peimar customer service.
BE 22	CR_NORespond1 CR_NORespond2	Battery charge request not received. Update the battery BMS software. Contact Peimar customer service.
BE 23	BMS1 SW Protect BMS2 SW Protect	Battery slave software protection fault. Update the battery BMS software. Contact Peimar customer service.
BE 24	BMS1 536 Fault BMS2 536 Fault	Battery discharge fault (excessive current). Contact Peimar customer service.
BE 25	BMS1 SelfCheck BMS2 SelfCheck	Battery system overheating. Contact Peimar customer service.
BE 26	BMS1 TempDiff BMS2 TempDiff	Battery temperature sensor fault. Contact Peimar customer service.
BE 27	BMS1_BreakFault BMS2_BreakFault	Battery imbalance. Contact Peimar customer service.
BE 28	BMS1_FlashFault BMS2_FlashFault	Battery hardware protection fault. Contact Peimar customer service.
BE 29	BMS1_Precharge BMS2_Precharge	Battery pre-charge fault. Contact Peimar customer service.
BE 30	AirSwitchBreak1 AirSwitchBreak2	Battery switch fault. Check whether the battery isolator is turned off. Contact Peimar customer service.

BE 31	ClusterCntMIS1 ClusterCntMIS2	Battery switch fault. Check whether the battery isolator is turned off. Contact Peimar customer service.
BE 32	ClusterComAddr1 ClusterComAddr2	Battery switch fault. Check whether the battery isolator is turned off. Contact Peimar customer service.
BE 33	BMS1_UCellOver BMS2_UCellOver	Battery cell overvoltage. Contact Peimar customer service.
BE 34	BMS1_UCellLow BMS2_UCellLow	Battery cell undervoltage. Contact Peimar customer service.
BE 35	BMS1_SysFault BMS2_SysFault	Battery system fault. Check whether the battery isolator is turned off. Contact Peimar customer service.
BE 36	BMS1_LineFault BMS2_LineFault	Contact Peimar for assistance.
BE 37	BMS1_LinkerTemp BMS2_LinkerTemp	Contact Peimar for assistance.
BE 38	BMS1_BatLinker BMS2_BatLinker	Contact Peimar for assistance.
BE 39	BMS1_FanError BMS2_FanError	Contact Peimar for assistance.
BE 40	BMS1_FireFault BMS2_FireFault	Contact Peimar for assistance.
BE 41	BMS1_MSDFault BMS2_MSDFault	Contact Peimar for assistance.

IBE 01	BMS1 LOST	Communication error with BMS1. Contact Peimar for assistance.
IBE 02	BMS2 LOST	Communication error with BMS2. Contact Peimar for assistance.
/	Screen not turning on	Check whether the inverter is properly and normally connected to the photovoltaic system (PV), the battery, or the grid. Contact Peimar if the inverter is incorrectly connected.
/	Abnormal fan noise	Check whether there are any foreign objects stuck in the fan. Contact Peimar for assistance.
/	Screen on but no display	Contact Peimar for assistance.
/	LCD display stuck on “Waiting”	Check whether the input voltage from the battery or PV exceeds 180 V. If this condition is met, contact Peimar for assistance. If the input voltage is below 180 V, check the corresponding connections.
/	No reading after CT connection	Check that the current transformer (CT) is correctly connected on the L phase. Ensure that the arrow on the CT is pointing toward the grid. Contact Peimar if the situation does not return to normal.
/	No load reading (via App or Web)	Check that the load is properly connected. Check whether the load power is displayed correctly on the LCD screen. Verify that the monitoring module is functioning properly. Contact Peimar if the problem persists.

/	No grid reading (via App or Web)	Check that the grid connection is normal. Check that the grid parameters are correctly displayed on the LCD screen. Verify that the monitoring module is functioning properly. Contact Peimar if the problem persists.
/	No battery reading (via App or Web)	Check that the battery is properly connected. Check that the battery parameters are correctly displayed on the LCD screen. Verify that the monitoring module is functioning properly. Contact Peimar if the problem persists.
/	No feed-in data (via App or Web)	Check that the Meter/CT is properly connected. Check that the Meter/CT parameters are correctly displayed on the LCD screen. Verify that the monitoring module is functioning properly. Contact Peimar if the problem persists.
/	No data visible on App or Web	Verify that the monitoring module is functioning properly. Contact Peimar for assistance.
/	No display on the Meter after power-on	If the Meter connection is abnormal, reconnect it according to the wiring diagrams. Wait for the grid voltage to recover. Contact Peimar if the problem persists.
/	Abnormal electrical data on the Meter	If the wiring is incorrect, reconnect it following the diagrams in the manual. Adjust the voltage/current ratio according to the phases specified in the user manual. Contact Peimar if the problem persists.

12.3. Meter/CT Errors

Table 12-1 Troubleshooting List

Error code	Fault
0	CT not connected on phase A.
1	Two CTs are connected on phase A, or one CT is connected to the Neutral (N)
2	CT1 is connected simultaneously to phases A and B.
3	CT2 is connected simultaneously to phases A and B.
4	CT3 is connected simultaneously to phases A and B.
5	CT not connected on phase B.
6	Two CTs are connected on phase B, or one CT is connected to the Neutral (N).
7	CT1 is connected simultaneously to phases A and C.
8	CT2 is connected to phase A, while CT1 is connected simultaneously to phases B and C.
9	CT3 is connected to phase A, while CT1 is connected simultaneously to phases B and C.
10	CT2 is connected simultaneously to phases A and C.
11	CT1 is connected to phase A, while CT2 is connected simultaneously to phases B and C.
12	CT3 is connected to phase A, while CT2 is connected simultaneously to phases B and C.
13	CT3 is connected simultaneously to phases A and C.
14	CT1 is connected to phase A, while CT3 is connected simultaneously to phases B and C.
15	CT2 is connected to phase A, while CT3 is connected simultaneously to phases B and C.

16	CT not connected on phase C.
17	Two CTs are connected on phase C, or one CT is connected to the Neutral (N).
18	No reactive power detected on phase A after adjusting the CT sequence.
19	No reactive power detected on phase B after adjusting the CT sequence.
20	No reactive power detected on phase C after adjusting the CT sequence.
21–31	Reserved.
32	The DSP is powered off or contains no program.

NOTE

If no corresponding installation error is detected after a self-inspection and the inverter is not producing, check whether the readings of the three phases in the Status – Meter/CT section on the inverter screen match the actual situation. If no issue is found, disable Installation Check and Cyclic Check in the Meter/CT Settings – Meter/CT Verification menu, or contact Peimar technical support.

12.4. Maintenance

Regular maintenance of the inverter is required. Check and maintain the following components according to the instructions below to ensure optimal device performance. For inverters operating under harsh conditions, more frequent maintenance is necessary. Please keep maintenance records.

WARNING!

- Only qualified personnel are authorized to perform inverter maintenance.
- Only spare parts and accessories approved by Peimar may be used for maintenance operations.

12.4.1. Maintenance Procedures

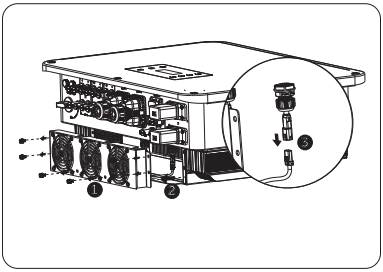
Table 12-2: Recommended Maintenance

Component	Inspection Notes	Maintenance Interval
Fans	Check whether the cooling fans located at the bottom of the inverter are covered with dirt or if any abnormal noise is detected. Clean the fans with a dry, soft cloth or a brush, or replace them if necessary.	Every 12 months
Electrical connection	Ensure that all cables are properly connected. Check the integrity of the cables: there must be no scratches in areas where they come into contact with metal surfaces. Verify that sealing plugs for inactive terminals are present and securely fastened.	Every 12 months
Grounding reliability	Check that the grounding terminal and grounding cable are properly connected. Use a ground resistance tester to measure the resistance between the inverter chassis and the PE bar in the electrical panel.	Every 12 months
Heat sink	Check whether the heat sink is covered with foreign objects.	Every 12 months
General condition of the inverter	Check for any damage to the inverter. Verify if any abnormal noises are perceived during inverter operation.	Every 6 months

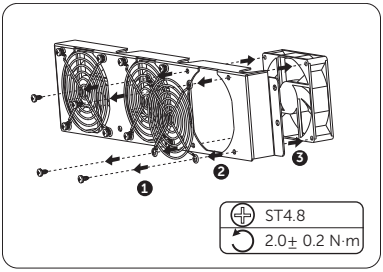
12.4.2. Fan Replacement

When the fan does not rotate and the fan feedback speed is 0, the LCD screen will display an error message: FAN1FAULT / FAN2FAULT / FAN3FAULT. Follow the steps below to perform the replacement:

Step 1: Loosen the inverter screws with a Phillips screwdriver, remove the inverter's outer cover, and then disconnect the terminals connected to the fans.



Step 2: Loosen the screws of the fan module, remove it, and replace the fans. Before replacement, make sure the new fan operates correctly.



Step 3: After replacing the fan, reassemble the components in the correct assembly order.

12.4.3. Firmware Update

WARNING!

- Ensure that the firmware file type and format are correct. Do not rename the file; otherwise, the inverter may not function properly.
- Do not change the folder name or the path where the firmware files are located, as this may cause the update to fail.

WARNING!

- Before proceeding, make sure that the PV input voltage is higher than 180 V (preferably on a sunny day), or that the battery SOC is higher than 20%, or that the battery voltage exceeds 180 V. Failure to meet these conditions may cause the update to fail.

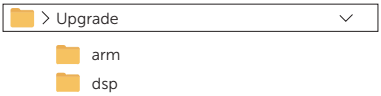
Preparation for the Update

- Prepare a USB flash drive (USB 2.0/3.0, ≤ 32 GB, FAT 16/32 format).
- Check the current firmware version of the inverter.
- Contact technical support to obtain the update files, then save them to the USB flash drive.

ARM file: XXX.XXXXX.XX_XXX_3P_ARM_VXXX.XX_XXXX.usb

DSP file: XXX.XXXXX.XX_XXX_3P_DSP_VXXX.XX_XXXX.usb

- Verify that the folder name and file path are correct.

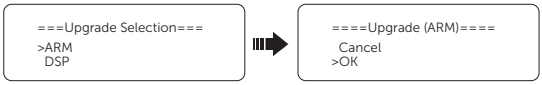


Update Procedure

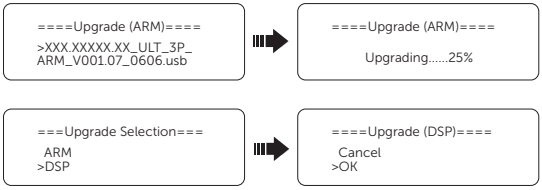
a. Press and hold the Enter key on the LCD screen for 5 seconds to enter OFF mode.

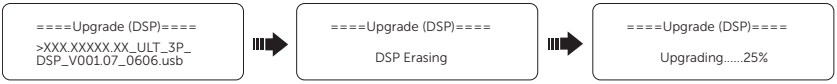
b. Remove the dongle from the inverter port and insert the USB flash drive. The inverter will automatically display the Upgrade Selection interface (see Section 8.1.1 for the dongle location).

c. On the Upgrade Selection screen, select ARM or DSP according to the file type, then press OK.



d. Select and confirm the firmware version, then press Enter to start the update. The ARM update takes about 20 seconds. The DSP update takes about 2 minutes.





e. When the update is complete, the LCD screen will display Upgrade Successful. In case of error, it will display Upgrade Failed.

CAUTION!

- If the ARM update fails or is interrupted, do not remove the USB flash drive. Turn off and restart the inverter, then repeat the update steps.

CAUTION!

If the DSP firmware update fails or is interrupted, follow these troubleshooting steps:

- Check whether the DC switch is turned off. If it is, turn it on.
- (Recommended) If the DC switch is already on, verify in Menu > System Status that the battery and PV parameters meet the update requirements (PV input or battery voltage must be above 180 V, or battery SOC must be above 20%).

- If not, select Menu > Selection Mode > Manual > Forced Charge to charge the battery. This process will “wake up” the battery to allow the DSP firmware update to proceed.

NOTE

If the screen freezes after the update, turn off the DC switch and turn it back on. The inverter will restart. If the problem persists, contact technical support.

13. Decommissioning

13.1. Inverter Disassembly

WARNING!

During disassembly, carefully follow the steps described below.

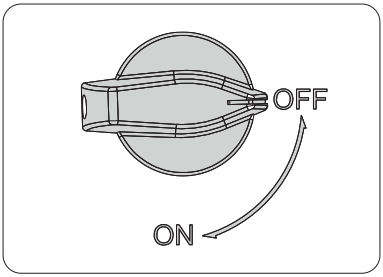
NOTE

The AC, battery, and PV terminals must be disconnected using the dedicated removal tool provided, to avoid damage or injury.

Step 1: Turn off the inverter LCD screen.

Step 2: Disconnect the external AC switch and the AC cable.

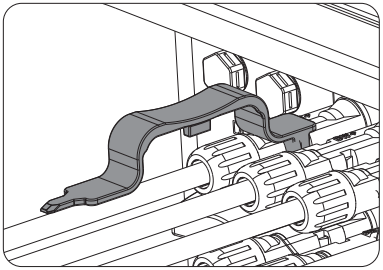
Step 3: Turn the DC switch to the OFF position.



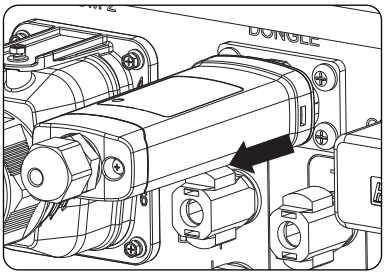
Step 4: Turn off the battery switch/device/circuit breaker (refer to the battery manual).

Step 5: Wait until the LCD screen turns off completely.

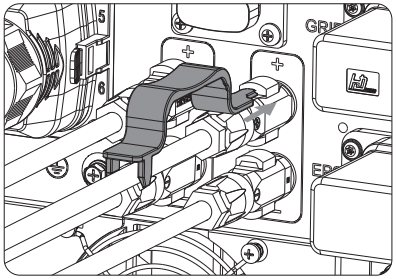
Step 6: Disconnect the PV connectors: insert the provided removal tool into the slot of the PV connectors, then gently pull to remove them.



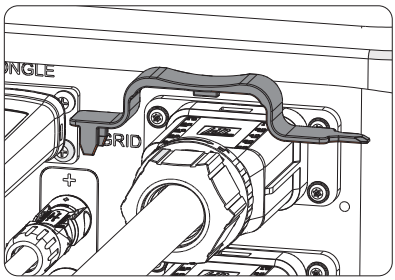
Step 7: Carefully remove the dongle module.



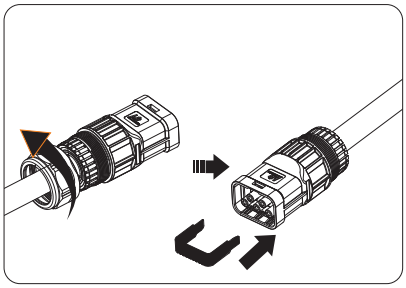
Step 8: Disconnect the battery connectors: insert the provided removal tool into the slot of the connectors and gently pull to remove them.



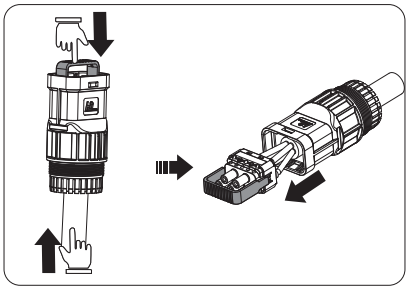
Step 9: Disconnect the AC connector: insert the removal tool into the AC connector slot to unlock it, then gently pull the connectors apart.



Step 10: Remove the swivel nut. Align the removal tool (U-shaped or X-shaped piece) with the slot in the core and insert it.



Step 11: Press downward with one hand and push the cable upward with the other to disconnect the AC connector.

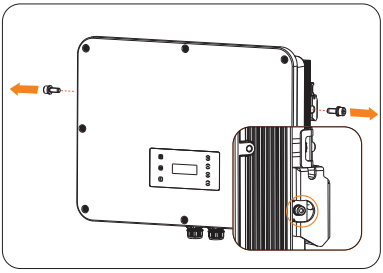


Step 12: Disconnect the COM 1 and COM 2 connectors: loosen the swivel nut of the COM connector and unscrew the M3 communication connector screw counterclockwise using a Phillips screwdriver. Press the tabs on both sides of the connector while pulling gently to remove it.

Step 13: Reinstall the original terminal caps on the terminals.

Step 14: Unscrew the grounding screw with a Phillips screwdriver and remove the grounding connection.

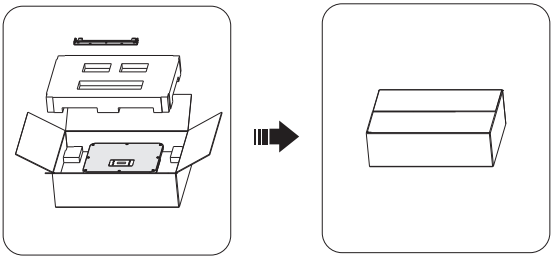
Step 15: Unlock the anti-theft lock if installed. Unscrew the M5 screw located on the sides of the inverter and lift the inverter vertically to remove it.



Step 16: Unscrew the mounting bracket screws and remove the bracket.

13.2. Inverter Packaging

- If possible, place the inverter in its original packaging.



If the original packaging is not available, use packaging material that meets the following requirements:

- Appropriate weight and dimensions for the inverter.
- Easy to transport.
- Can be completely sealed.

13.3. Inverter Disposal

Dispose of the inverter and any accessories in accordance with local regulations on the disposal of electronic waste applicable at the installation site.

14. Technical Data

Model	PSI-X3P-15000-HYM	PSI-X3P-20000-HYM
Maximum PV array power [Wp]	30000	40000
Maximum PV input power [W]	30000	40000
Maximum DC voltage [V]		
Nominal DC operating voltage [V]		
Number of MPP trackers / Strings per MPP tracker	2 (2 / 2)	2 (2 / 2)
Maximum input current (PV1 / PV2 / PV3) [A]	36 / 36	36 / 36
Maximum short-circuit current (PV1 / PV2 / PV3) [A]	45 / 45	45 / 45
MPPT operating voltage range [V]		
Start-up voltage [V]		
Shutdown voltage [V]		
Maximum reverse current from inverter to PV array [A]		

Model	PSI-X3P-25000-HYM	PSI-X3P-30000-HYM
Maximum PV array power [Wp]	50000	60000
Maximum PV input power [W]	50000	60000
Maximum DC voltage [V]		
Nominal DC operating voltage [V]		
Number of MPP trackers / Strings per MPP tracker	3 (2 / 2 / 2)	3 (2 / 2 / 2)
Maximum input current (PV1 / PV2 / PV3) [A]	36 / 36 / 36	36 / 36 / 36
Maximum short-circuit current (PV1 / PV2 / PV3) [A]	45 / 45 / 45	45 / 45 / 45

MPPT operating voltage range [V]	
Start-up voltage [V]	
Shutdown voltage [V]	
Maximum reverse current from inverter to PV array [A]	

NOTE

The maximum input voltage represents the upper limit of the direct current (DC) voltage. Any DC input voltage exceeding this value may damage the inverter.

PV3 is available only for 30K models. When two strings are connected to a single MPP tracker, the maximum input current for each string is 18 A; when only one string is connected to an MPP tracker, the maximum input current for that string is 20 A.

An input voltage outside the operating range may trigger inverter protection.

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Model	PSI-X3P-15000-HYM	PSI-X3P-20000-HYM
Nominal AC power [VA]	15000 (14999 for AS4777)	20000
Maximum apparent AC power [VA] (below +40 °C)	16500 (14999 for AS4777)	22000
Nominal grid voltage (AC voltage range) [V]		
Peak current [A]		
Nominal grid frequency [Hz]		
Nominal AC current [A] (230 V)	21.8	29.0
Maximum AC current [A] (beyond nominal, derating allowed) (230 V)	24.0 (21.8 for AS4777)	31.9
Displacement power factor		
Total harmonic distortion (THDi, at nominal power)		
Maximum fault current [A]	100	140
Maximum output overcurrent protection [A]	147	163

Model	PSI-X3P-25000-HYM	PSI-X3P-30000-HYM
Nominal AC power [VA]	25000 (24900 for VDE4105)	30000 (29999 for AS4777, 29900 for VDE4105)
Maximum apparent AC power [VA] (below +40 °C)	27500 (24900 for VDE4105)	30000 (29999 per AS4777, 29900 for VDE4105)
Nominal grid voltage (AC voltage range) [V]		
Peak current [A]		
Nominal grid frequency [Hz]		
Nominal AC current [A] (230 V)	36.3	43.5
Maximum AC current [A] (beyond nominal, derating allowed) (230 V)	39.9 (36.3 per VDE4105)	43.5
Displacement power factor		1 (-0.8 ~ 0.8)
Total harmonic distortion (THDi, at nominal power)		< 3%
Maximum fault current [A]	155	175
Maximum output overcurrent protection [A]	172	181

AC INPUT

Model	PSI-X3P-15000-HYM	PSI-X3P-20000-HYM
Nominal AC power [VA]	15000	20000
Nominal AC current [A]	21.8	29.0
Nominal grid voltage (AC voltage range) [V]	3P4W, 400 / 230, 380 / 220	
Nominal grid frequency [Hz]	50 / 60	

Model	PSI-X3P-25000-HYM	PSI-X3P-30000-HYM
Nominal AC power [VA]	25000	30000
Nominal AC current [A]	36.3	43.5
Nominal grid voltage (AC voltage range) [V]	3P4W, 400 / 230, 380 / 220	
Nominal grid frequency [Hz]	50 / 60	

BATTERY

Model	PSI-X3P-15000-HYM	PSI-X3P-20000-HYM
Battery type	Lithium-ion	
Battery voltage range [V]	120 - 800	
Maximum charge/discharge power [kW]	15 / 15	20 / 20
Maximum charge/discharge current [A]	60 (30 * 2)	
Number of connectable batteries	2	

Model	PSI-X3P-25000-HYM	PSI-X3P-30000-HYM
Battery type	Lithium-ion	
Battery voltage range [V]	120 - 800	
Maximum charge/discharge power [kW]	24 / 24	
Maximum charge/discharge current [A]	60 (30 * 2)	
Number of connectable batteries	2	

EPS OUTPUT (With Battery)

Model	PSI-X3P-15000-HYM	PSI-X3P-20000-HYM
Peak EPS power [VA]	15000	20000
Nominal EPS power [VA]		
Nominal EPS voltage [V], Frequency [Hz]		
Nominal EPS current [A] (220 V)	22.8	30.4
Nominal EPS current [A] (230 V)	21.8	29.0
Switching time [ms]		
Total harmonic distortion (THDv, linear load)		

Model	PSI-X3P-25000-HYM	PSI-X3P-30000-HYM
Peak EPS power [VA]	2 x nominal power, 10 s	
Nominal EPS power [VA]	25000	30000
Nominal EPS voltage [V], Frequency [Hz]	400 / 230, 50 / 60	
Nominal EPS current [A] (220 V)	37.9	45.5
Nominal EPS current [A] (230 V)	36.3	43.5

Switching time [ms]	< 10
Total harmonic distortion (THDv, linear load)	< 3%

EFFICIENCY

Model	PSI-X3P-15000-HYM PSI-X3P-20000-HYM
MPPT efficiency	99.9%
Maximum efficiency	98.00%
European efficiency	97.7%
Battery charging efficiency	98.5%
Battery discharging efficiency	97.0%

Model	PSI-X3P-25000-HYM PSI-X3P-30000-HYM
MPPT efficiency	99.9%
Maximum efficiency	98.00%
European efficiency	97.7%
Battery charging efficiency	98.5%
Battery discharging efficiency	97.0%

POWER CONSUMPTION

Model	PSI-X3P-15000-HYM PSI-X3P-20000-HYM
Internal consumption (night) [W]	< 5

Model	PSI-X3P-25000-HYM PSI-X3P-30000-HYM
Internal consumption (night) [W]	< 5

PROTECTIONS

Model	PSI-X3P-15000-HYM PSI-X3P-20000-HYM
Anti-islanding protection	Yes
DC reverse polarity protection	Yes
Insulation monitoring	Yes
Residual current monitoring	Yes

AC overcurrent protection	Yes
AC short-circuit protection	Yes
AC surge protection	Yes
Overtemperature protection	Yes
AFCI	F-I-AFPE-1-2-2 F-I-AFPE-1-2-2
Battery reverse charging from grid	Yes
Surge protection	Type II, DC et AC

Model	PSI-X3P-25000-HYM PSI-X3P-30000-HYM
Anti-islanding protection	Yes
DC reverse polarity protection	Yes
Insulation monitoring	Yes
Residual current monitoring	Yes
AC overcurrent protection	Yes
AC short-circuit protection	Yes
AC surge protection	Yes
Overtemperature protection	Yes
AFCI	F-IAFPE-1-2-3 F-I-AFPE-1-2-3
Battery reverse charging from grid	Yes
Surge protection	Type II, DC et AC

ENVIRONMENTAL LIMITS

Model	PSI-X3P-15000-HYM PSI-X3P-20000-HYM
Protection class	IP66
Pollution degree	PD3
Operating temperature range [°C]	-35 ~ 60 (Power derating above +45)
Humidity [%]	0 ~ 100
Altitude [m]	< 3000
Storage temperature [°C]	-40 ~ +70
Sound emission (typical) [dB]	< 45
Overvoltage category	DC: II; AC: III

Model	PSI-X3P-25000-HYM PSI-X3P-30000-HYM
Protection class	IP66
Pollution degree	PD3
Operating temperature range [°C]	-35 ~ 60 (Power derating above +45)
Humidity [%]	0 ~ 100
Altitude [m]	< 3000
Storage temperature [°C]	-40 ~ +70
Sound emission (typical) [dB]	< 45
Overvoltage category	DC: II; AC: III

GENERAL

Model	PSI-X3P-15000-HYM PSI-X3P-20000-HYM
Dimensions (LxHxP) [mm]	696 * 526 * 240
Weight [kg]	47
Cooling system	Intelligent cooling
Topology	Transformerless
Communication	Modbus (RS485), Meter (RS485), DI * 2, DO * 1
LCD display	Yes

Model	PSI-X3P-25000-HYM PSI-X3P-30000-HYM
Dimensions (LxHxP) [mm]	696 * 526 * 240
Weight [kg]	47
Cooling system	Intelligent cooling
Topology	Transformerless
Communication	Modbus (RS485), Meter (RS485), DI * 2, DO * 1
LCD display	Yes

NORMATIVE

Model	PSI-X3P-15000-HYM PSI-X3P-20000-HYM
Safety	EN / IEC 62109 -1 / -2
EMC (Electromagnetic Compatibility)	EN61000-6-1/2/3/4; EN61000-3-11/12; EN 5011; IEC 62920
Certifications	VDE4105 / G99 / AS4777 / EN50549 / CEI 0-21 / IEC61727 / PEA / MEA / NRS-097-2-1 / RD1699 / TOR

Model	PSI-X3P-25000-HYM PSI-X3P-30000-HYM
Safety	EN / IEC 62109 -1 / -2
EMC (Electromagnetic Compatibility)	EN61000-6-1/2/3/4; EN61000-3-11/12; EN 5011; IEC 62920
Certifications	VDE4105 / G99 / AS4777 / EN50549 / CEI 0-21 / IEC61727 / PEA / MEA / NRS-097-2-1 / RD1699 / TOR

* The specific gross weight is subject to the actual condition of the complete unit.

15. Appendix

15.1. Generator Application

15.1.1. Introduction to Generator Application

In some regions where the power supply is unstable, the use of generators becomes necessary to ensure uninterrupted operation of the loads.

The key feature of this system is its ability to automatically switch to generators combined with an energy storage system, thus forming a new power configuration when the grid is unavailable.

A diesel generator is used to reproduce grid functionality, while a hybrid inverter converts solar energy into usable electrical power.

15.1.2. Important Notes on Generator Application

NOTE 1: The generator must be equipped with an ATS (Automatic Transfer Switch) that allows automatic startup in the event of a power outage.

NOTE 2: The generator's nominal output power must be greater than the sum of the load power and the battery charging power. If two inverters are connected in parallel, the generator's nominal output power must exceed the combined total of both the load power and battery charging power.

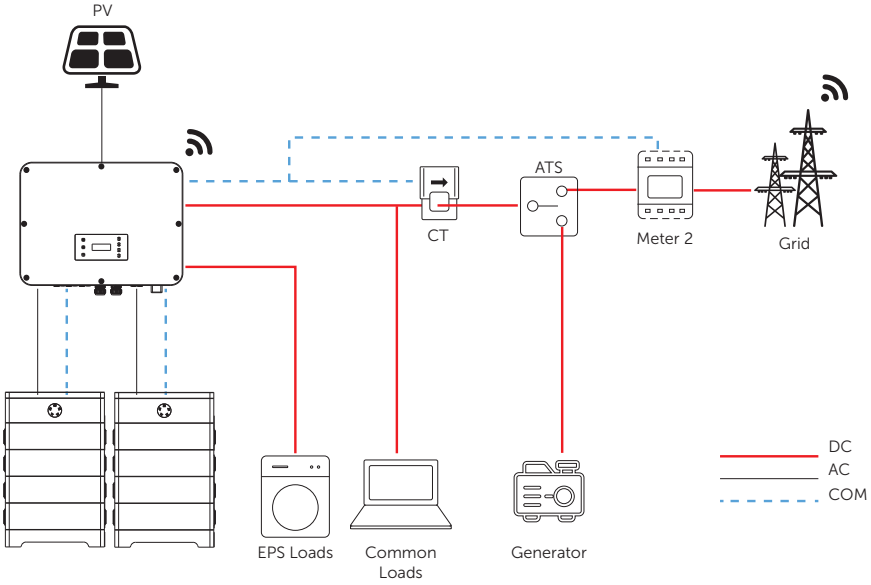
NOTE 3: If the generator output power is insufficient to meet the requirements described in NOTE 2, you can adjust the MaxChargePower value in Menu > Settings > Advanced Settings > External Generator to ensure that the generator can simultaneously support both the load and the battery charging demand.

NOTE 4: The EPS load must not exceed the battery's discharge power, to prevent the battery from being unable to supply the EPS load once the generator is turned off. In this case, the inverter will display an Overload Error. If two inverters are connected in parallel, the EPS load must be doubled.

15.1.3. ATS Control Mode

In this operating mode, the generator acts as a replacement for the power grid. There is no communication between the generator and the inverter, meaning no wiring modifications are required (however, the inverter cannot control the generator).

The ATS paired with the generator determines whether the generator should be turned on or off based on the status of the power grid.



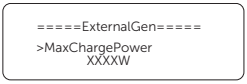
Inverter Parameters for ATS Control Mode

a. Select:

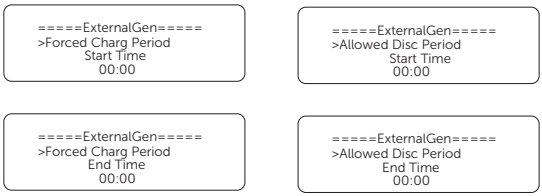
Menu > Settings > Advanced Settings > External Generator > ATS Control

b. Set the following parameters according to actual needs:

- MaxChargePower: Maximum battery charging power from the generator. (0–30000 W, default value: 5000 W)



- Charge & Discharge Period (Char&Disc Period): Includes the forced charging and authorized discharging periods. Two periods can be configured. These settings correspond to the same parameters found in Work Mode, so it is not necessary to access the work mode page when using generator mode.

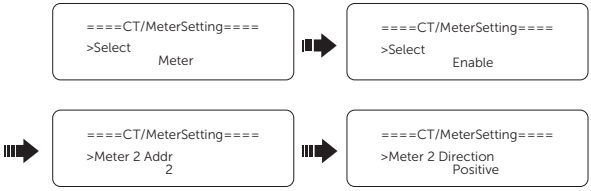


- Charge from Generator and Battery Charging up to: The SOC (State of Charge) value from which the system is allowed to charge from the generator. (10–100 %, default value: 10 %)

c. Select:

You can check the connection status in Meter/CT Check.

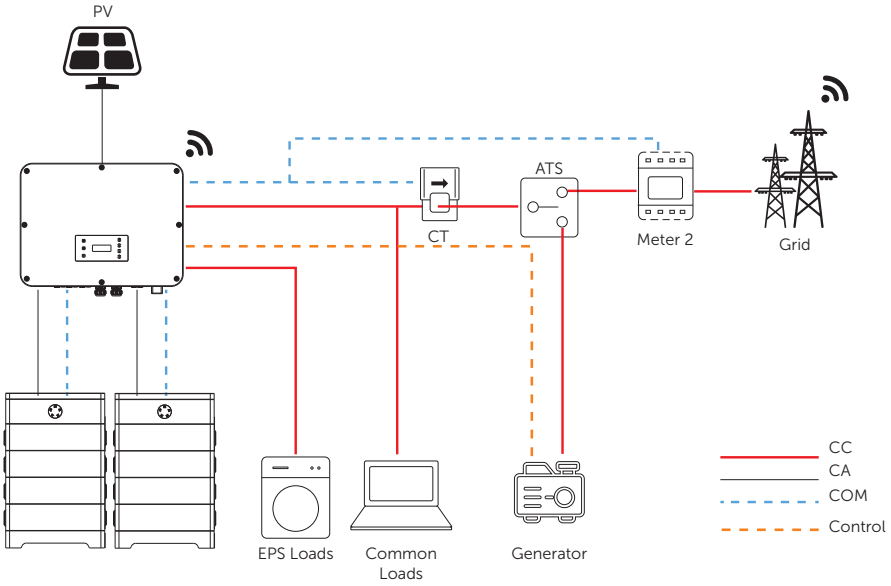
d. The connection status can be verified in the Meter/CT Check section.



15.1.4. Dry Contact Mode

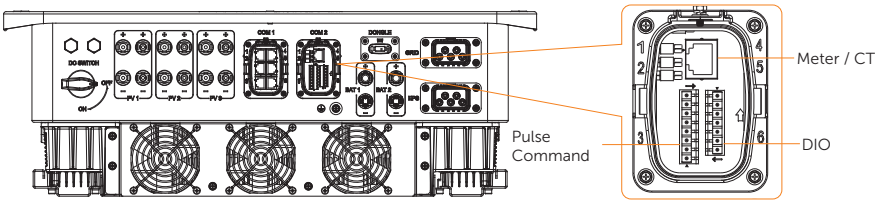
In this operating mode, users can intelligently control the system by establishing a dry contact connection between the inverter and the generator. This mode allows various parameters to be adjusted so that the system can meet the requirements of different operating scenarios.

Wiring Diagram



Inverter Connection in Dry Contact Mode

- Connection Terminal – DIO Terminal



- Connection Pin – Pin 1 and Pin 2

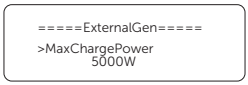
Application	Generator dry contact output		System switch dry contact input		Reserved		
Pin	1	2	3	4	5	6	7
Assignment	DO_1	DO_2	DI_1+	DI_1-	DI_2+	DI_2-	GND_ COM

- Connection Steps: Refer to section “8.7.4 DIO Communication Connection” for detailed wiring and connection instructions.
- Inverter Parameters for Dry Contact Mode:

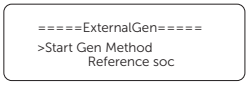
a. Select: Menu > Settings > Advanced Settings > External Generator > Dry Contact

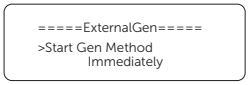
b. Set the corresponding parameters according to actual requirements:

- MaxChargePower: Maximum battery charging power from the generator. (0–30000 W, default value: 5000 W)

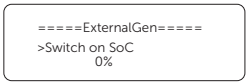


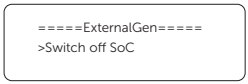
- Generator Start Method: You can select SOC Reference or Immediate. SOC Reference: Turns the generator on/off according to the configured start/stop SOC values. Immediate: Turns the generator on/off immediately based on the grid status.



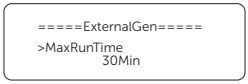


- Start/Stop SOC: This option is enabled only when SOC Reference is selected. The inverter starts the generator when the battery reaches the Start SOC, and stops it when it reaches the Stop SOC.

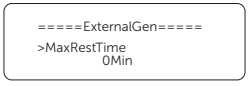




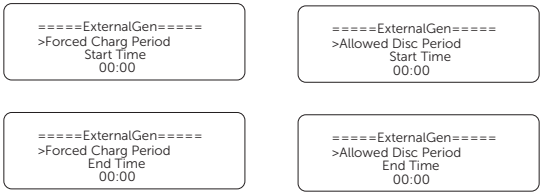
- MaxRunTime: Maximum generator running time. (Default: 30 minutes).



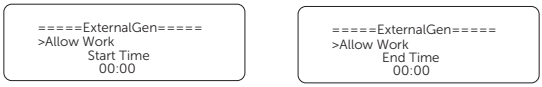
- MinRestTime: Minimum time interval between two consecutive starts, to prevent frequent start/stop cycles.



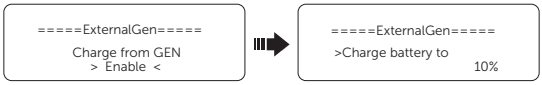
- Char&Disc Period: Includes the forced charging period and the allowed discharging period. Two time periods can be set. These settings are linked to the operating mode parameters, so there is no need to configure them separately.



- Allow Work: Authorized time period for generator operation. You can define both the start and end times.

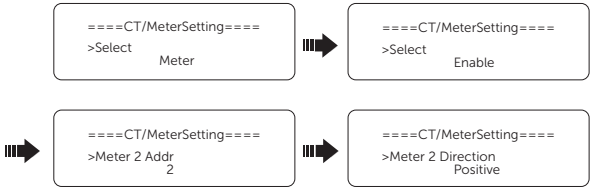


- Charge from Generator and Target SOC: Minimum SOC from which the system can start charging from the generator. (10–100%, default value: 10%)



c. Menu > Settings > Advanced Settings > Meter/CT Parameters

- Set the address and direction of Meter 2. The connection status can be verified in the Meter/CT Check section.

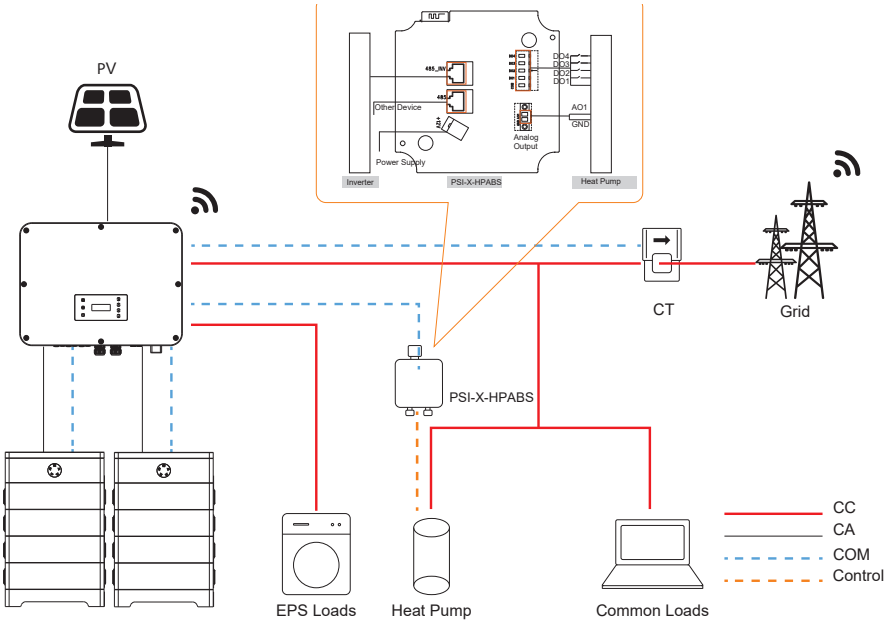


15.2. Application of the PSI-X-HPAB-S

15.2.1. Introduction to the Application of the PSI-X-HPAB-S

With the Peimar PSI-X-HPAB-S, users can efficiently utilize solar energy by directing it to the heat pump through the settings available on the Peimar inverter and the Peimar XPortal platform. This smart integration allows for optimized photovoltaic self-consumption, helping to reduce electricity costs.

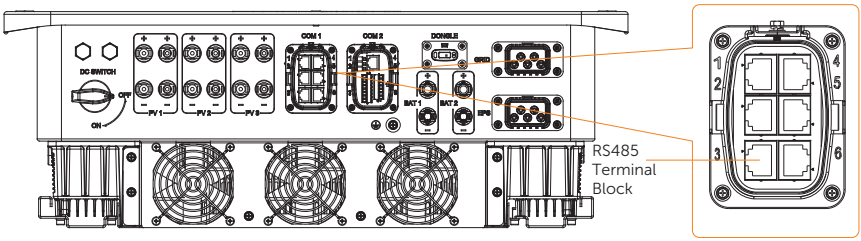
Wiring Diagram



The inverter communicates with the adapter module via RS485. When there is surplus energy, the adapter module can use it to power the heat pump through one of the following connection methods: dry contact, SG Ready, or analog output between the module and the heat pump. An external power supply is required to power the adapter module, as the inverter cannot directly provide electrical power to it.

15.2.2. Communication Connection with the Inverter

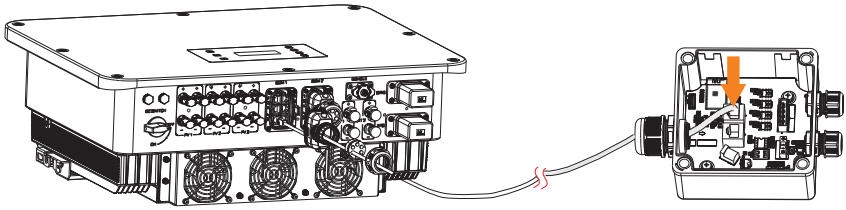
- Connection Terminal – RS485



- Connection Pins

Inverter RS485 Terminal		PSI-X-HPAB-S RS485_INV Terminal	
Pin	Assignment	Pin	Assignment
3 / 4	Parallel_485AA	4	RS485-A
5 / 6	Parallel_485BB	5	RS485-B

- Connection Steps: Refer to section “8.6.4 RS485 Communication Connection” for detailed wiring and connection instructions.



NOTE

Refer to the PSI-X-HPAB-S user manual for detailed connection instructions between the power supply and the module, as well as between the module and the heat pump.

PSI-X-HPAB-S Parameters

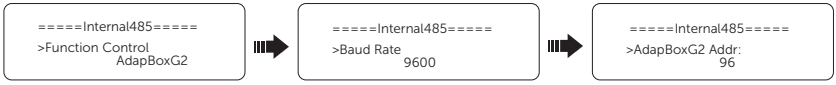
Settings Path:

Menu > Settings > Advanced Settings > Internal485

a. Select:

Menu > Settings > Advanced Settings > Internal485

b. Select PSI-X-HPAB-S and set the following parameters: la velocità in baud (baud rate) – Baud rate: Default 9600 and Device address



NOTE

If two devices must be connected simultaneously, their baud rate and address must match.

c. Verify the connection status.

NOTE

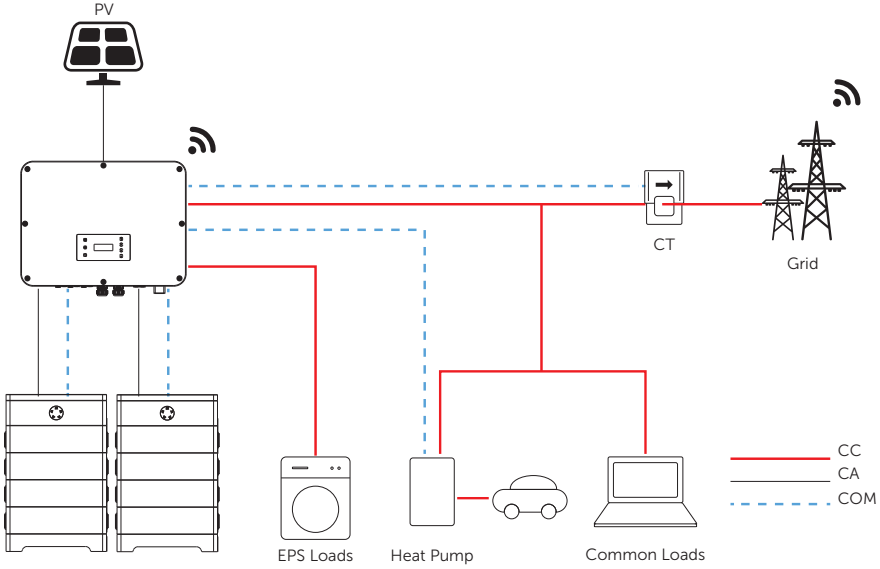
- For specific wiring and parameter configuration instructions, refer to the PSI-X-HPAB-S manual.

15.3. Application of the Electric Vehicle (EV) Charger

15.3.1. Introduction to the EV Charger Application

The EV Charger is designed for charging electric vehicles. It must be installed in a fixed location and connected to an alternating current (AC) power supply. It can communicate with other devices or systems (such as the inverter, Meter, CT, and management platforms) to enable intelligent control of the charging process.

15.3.2. Wiring Connection Diagram



15.3.3. Charging Modes

Green Mode:

In Green Mode, the EV Charger maximizes the use of surplus energy generated by the inverter. Based on the minimum power required to start charging, the charging current can be set to two levels: 3 A and 6 A (default: 3 A). If at any time the available surplus energy falls below the minimum required power to start charging, the EV Charger will stop charging.

Eco Mode:

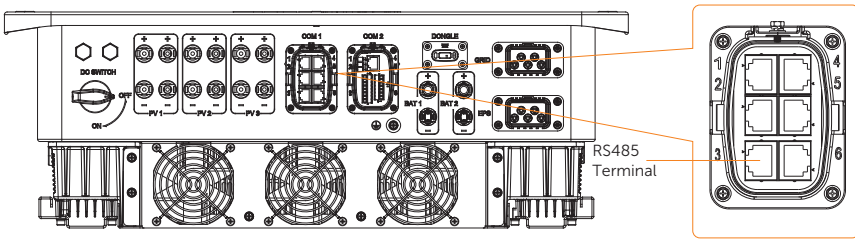
In Eco Mode, the charging power is continuously adjusted according to variations in energy production or household consumption, minimizing the use of grid electricity. In this mode, the user can set the charging current to five different levels: 6 A, 10 A, 16 A, 20 A, and 25 A (only 6 A and 10 A for 11 kW models). If at any time the available surplus energy is lower than the minimum power required to start charging (for example, 4.2 kW in three-phase mode), the shortfall will be supplied by the grid.

Fast Mode (Default Mode):

In Fast Mode, the EV Charger will charge the electric vehicle at the maximum possible speed, regardless of whether the photovoltaic system's generation is sufficient. If solar production is insufficient, the charger will automatically draw energy from the grid.

15.3.4. Communication Connection with the Inverter

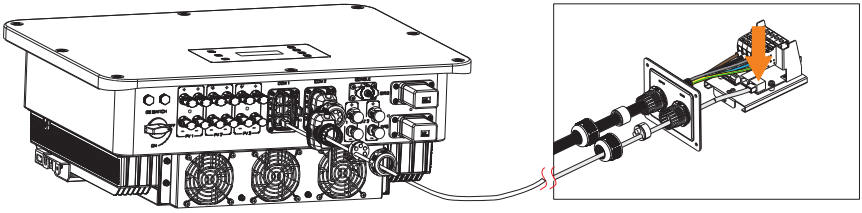
- Connection Terminal – RS485 Terminal Block



- Connection Pins

Inverter RS485 Terminal		EV Charger COM Terminal	
Pin	Assignment	Pin	Assignment
3/4	Parallel_485AA	4	A1
5/6	Parallel_485BB	5	B1

• Connection Steps: refer to section 8.6.4 RS485 Communication Connection for details on cable construction and wiring procedures.



WARNING!

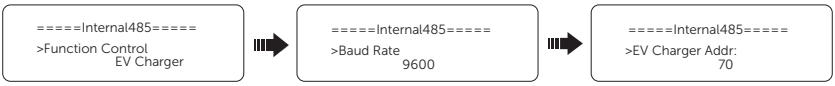
The EV Charger shown in the wiring diagram is the domestic version. Both the domestic and hybrid versions of the Peimar EV Charger are compatible with the PSI-X-HYM inverter.

15.3.5. EV Charger Settings

a. Select:

Menu > Settings > Advanced Settings > Internal485

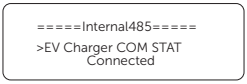
b. Select EV Charger, then set the corresponding Baud Rate and Address. The default baud rate is 9600.



WARNING!

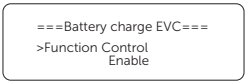
When two devices need to be connected simultaneously, the baud rate and address of both devices must be identical.

c. Verify the connection status:



d. You can enable the Battery Charge EVC function to allow the battery to transfer energy to the EV Charger through the following path:

Menu > Settings > Advanced Settings > Battery Charge EVC



WARNING!

- For wiring diagrams and detailed procedures related to the EV Charger, refer to the EVC Series User Manual.

15.4. Application of the PSI-X-DH1000

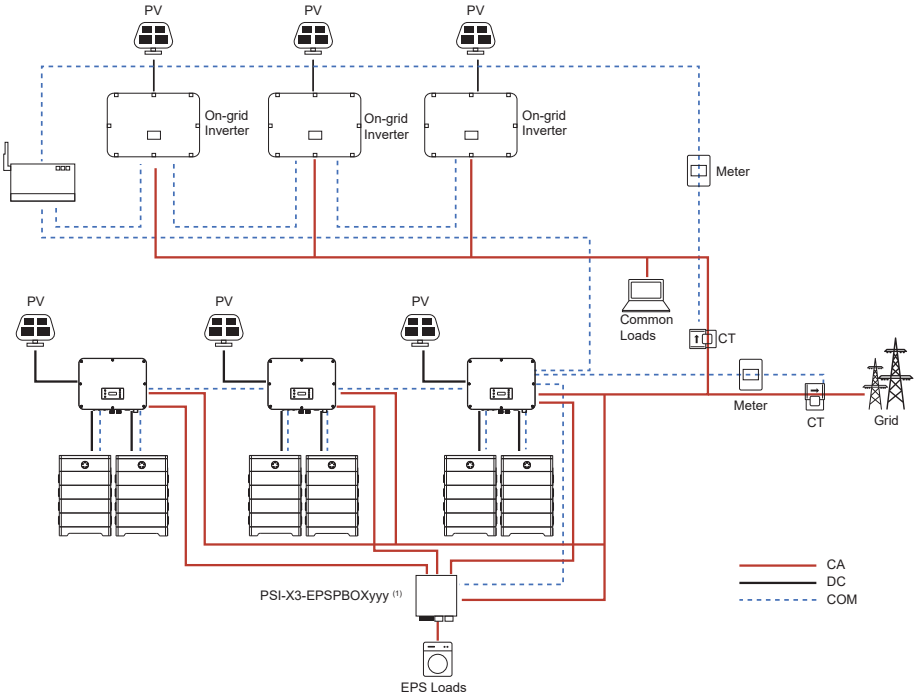
15.4.1. Introduction to the DataHub Application

The Peimar PSI-X-DH1000 can be connected to inverters via RS485 to control the total output power of the entire power station according to site requirements.

In addition, it can operate with PeimarXPortal to monitor all inverters, allowing real-time data visualization and device management.

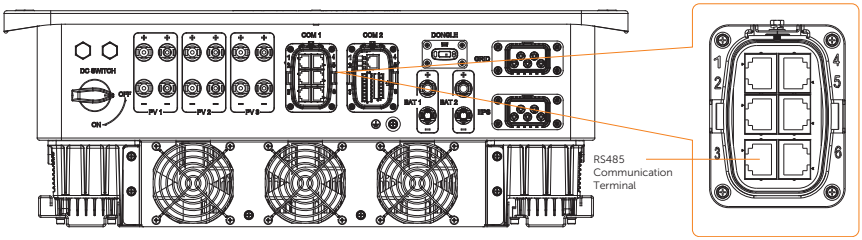
In a complete system, up to 10 inverters of the PSI-X-HYM series can be connected to the PSI-X-DH1000.

15.4.2. Wiring Connection Diagram



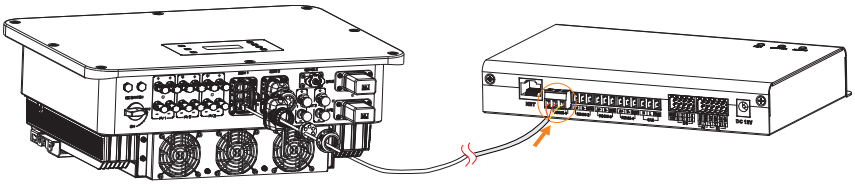
15.4.3. Communication Connection with the Inverter

- Connection Terminal – RS485 Terminal Block



- Connection Pins

Inverter RS485 Terminal	Assignment	DataHub RS485-1 Terminal	Assignment
3/4	Parallel_485AA	/	A+
5/6	Parallel_485BB	/	B-

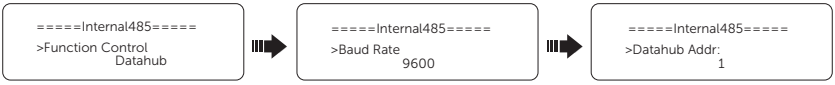


Connection Steps: refer to section 8.6.4 RS485 Communication Connection for detailed information on cable construction and wiring.

15.4.4. Configuration of the PSI-X-DH1000

a. Select:

b. Select DataHub and set the corresponding baud rate and address.



WARNING!

The baud rate, communication protocol, and verification method of the inverters connected to the same RS485 terminal of the PSI-X-DH1000 must be consistent, and the communication addresses of the inverters must be consecutive and non-duplicated.

WARNING!

- For detailed wiring and configuration procedures of the DataHub, refer to the PSI-X-DH1000 User Manual.

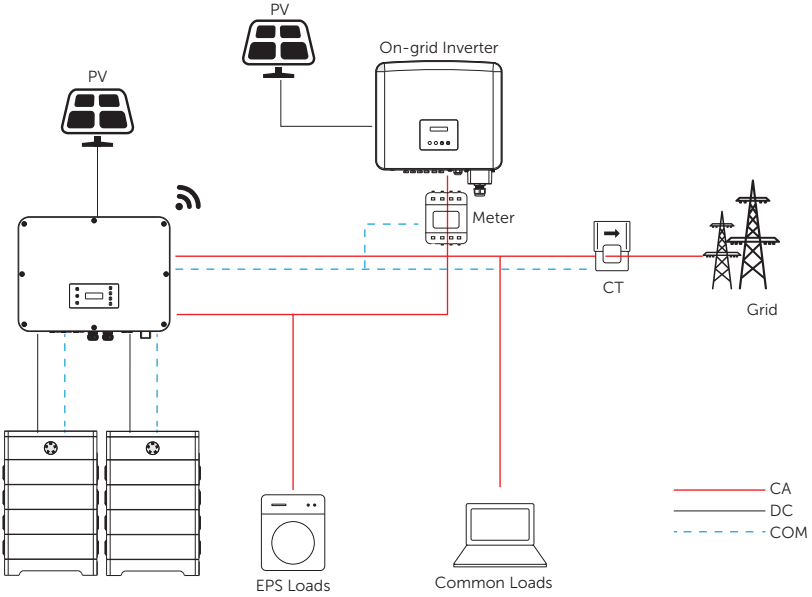
15.5. Microgrid Application

15.5.1. Introduction to Microgrid Application

Due to the islanding effect, an on-grid inverter cannot operate in off-grid mode. This means that the user would lose the photovoltaic energy generated by the on-grid inverter when the system is disconnected from the utility grid.

The microgrid function allows the hybrid inverter to simulate the grid, enabling the on-grid inverter to operate even in off-grid mode by connecting it to the EPS terminal of the hybrid inverter.

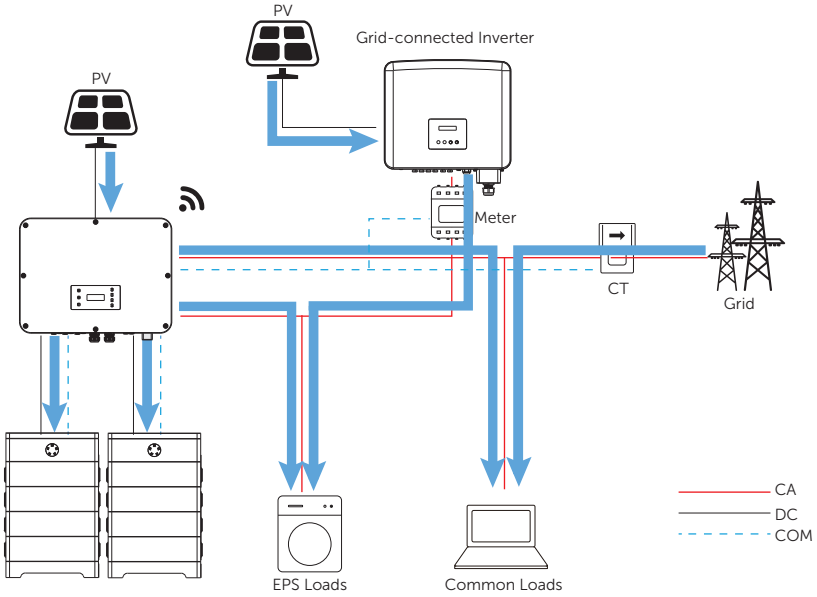
15.5.2. Wiring Diagram



15.5.3. Operating Mode

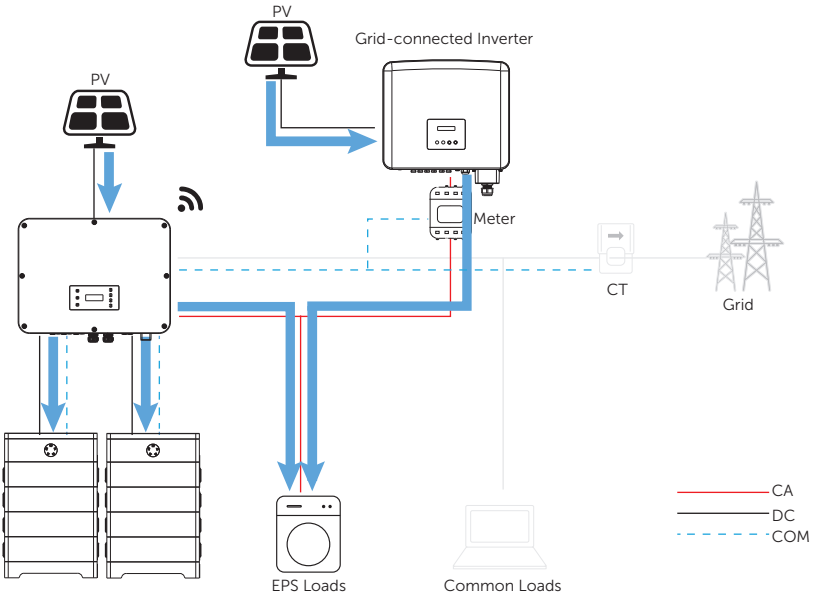
When PV generation is sufficient: The hybrid inverter and the on-grid inverter jointly supply power to both the common loads and the EPS loads. If there is surplus energy from the on-grid inverter, it will also be used to charge the battery.

When PV generation is insufficient: The hybrid inverter, the on-grid inverter, and the grid supply power to all loads together.



Grid-Off Operation

In this case, the hybrid inverter simulates the grid to enable the operation of the on-grid inverter. The hybrid inverter and the on-grid inverter jointly power the loads connected to the EPS (Emergency Power Supply) output. If there is excess energy, it will be used to charge the battery.



WARNING!

In EPS mode, due to the limited battery charging power, the hybrid inverter increases the EPS output frequency to limit and eventually stop the on-grid inverter, thereby ensuring stable operation of the entire system. During this process, the on-grid inverter may display a Grid Frequency Fault, which is a normal condition.

Precautions for Microgrid Applications

- The on-grid inverter must be from a brand compatible with the frequency adaptation function.
- The output power of the on-grid inverter must be less than or equal to the maximum EPS output power of the hybrid inverter.
- The output power of the on-grid inverter must be less than or equal to the maximum battery charging power.

WARNING!

Since the PSI-X-HYM series inverter cannot control the output power of the on-grid inverter in grid-connected mode, zero export cannot be guaranteed when:

Load power + battery charging power < on-grid inverter output power.

15.5.4. Cable Connection (Hybrid Inverter)

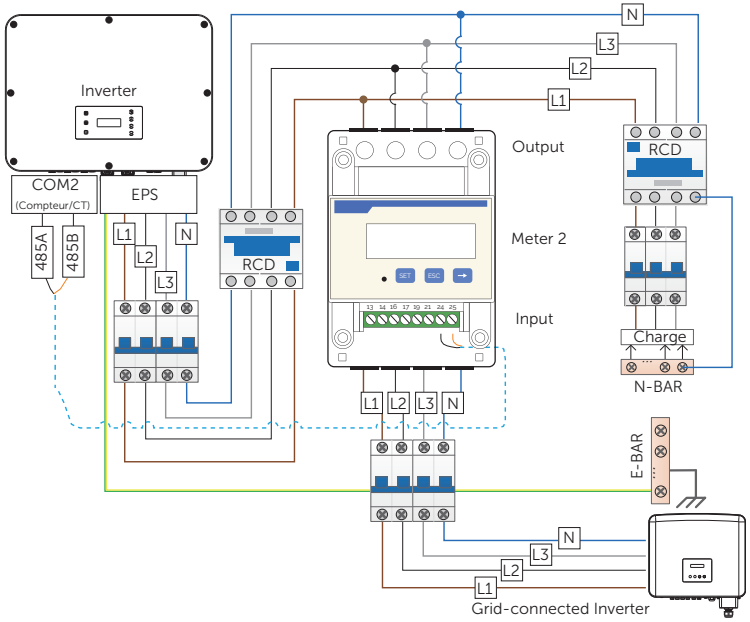
Refer to section “8.3 AC Connection” for the grid and EPS connection details of the PSI-X-HYM series inverter.

15.5.5. Cable Connection (On-Grid Inverter)

Connect the AC cable of the on-grid inverter to the EPS terminal of the PSI-X-HYM series inverter. Refer to the specific on-grid inverter user manual for detailed instructions.

15.5.6. Cable Connection (Meter)

To detect and monitor the power data generated by the on-grid inverter, install a Meter on the on-grid inverter side. Otherwise, the corresponding power data of the on-grid inverter cannot be monitored.



WARNING!

If a splitter adapter is used for the RJ45 port, it must be placed inside a waterproof enclosure.

- Pin Assignment

Application	For CT1			For Meter		For CT2		
Pin	1	2	3	4	5	6	7	8
Assignment	CT_ R1_ CON	C T _ S 1 _ CON	CT_ T1_ CON	METER _485A	METER _485B	CT_ T2_ CON	CT_ S2_ CON	CT_ R2_ CON

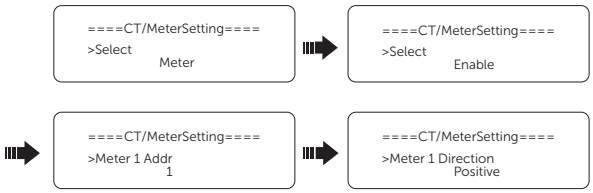
- Refer to section “8.7.2 Meter/CT Connection” and the Meter/CT user manual for the specific phase wiring details.
- LCD Display Setting:

For a configuration with two Meters (Meter 1 for grid connection, Meter 2 for EPS):

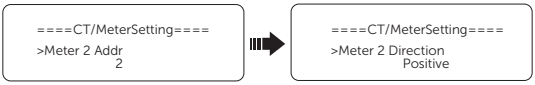
a. Select:

Menu > Settings > Advanced Settings > Meter/CT Settings

b. Set the address and direction of Meter 1. The connection status can be verified in Meter/CT Check.



c. Set the address and direction of Meter 2. Here too, the connection status can be verified in Meter/CT Check.



d. Once the connection has been successfully completed, check the feed-in power of Meter 1 via:

Menu > System Status > Meter/CT

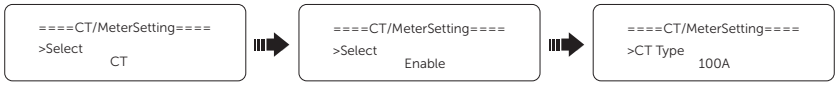
Check the output power (Daily Production and Total Production) of Meter 2 via: Menu > Historical Data > E_USERDEF

a. Select:

Menu > Settings > Advanced Settings > Meter/CT Settings

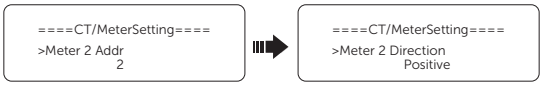
b. Select and activate the CT function, then select the desired CT.

The connection status can be verified in Meter/CT Check.



c. Set the address and direction of Meter 2.

You can verify the connection status again in Meter/CT Check.



d. Once the connection has been successfully established, check the feed-in power of Meter 1 under:

Menu > System Status > Meter/CT

Check the output power (Daily Production and Total Production) of Meter 2 under:

Menu > Historical Data > E_USERDEF

15.6. Parallel Function Application

15.6.1. Introduction to Parallel Application

The inverters in this series support parallel operation in both Grid mode and EPS mode.

They can be configured with or without the Peimar PSI-X3-EPSPBOXyyy(1).

- Without the PSI-X3-EPSPBOXyyy (1), the parallel system supports up to 3 units.
- With the PSI-X3-EPSPBOXyyy (1), the system can support up to 10 units.

Details are as follows:

Application	PSI-X3P15000-HYM	PSI-X3P20000-HYM	PSI-X3P25000-HYM	PSI-X3P30000-HYM
With PSI-X3-EPSPBOXyyy (1)	10	7	6	5
Without PSI-X3-EPSPBOXyyy (1)	3			

15.6.2. Warnings for Parallel Application

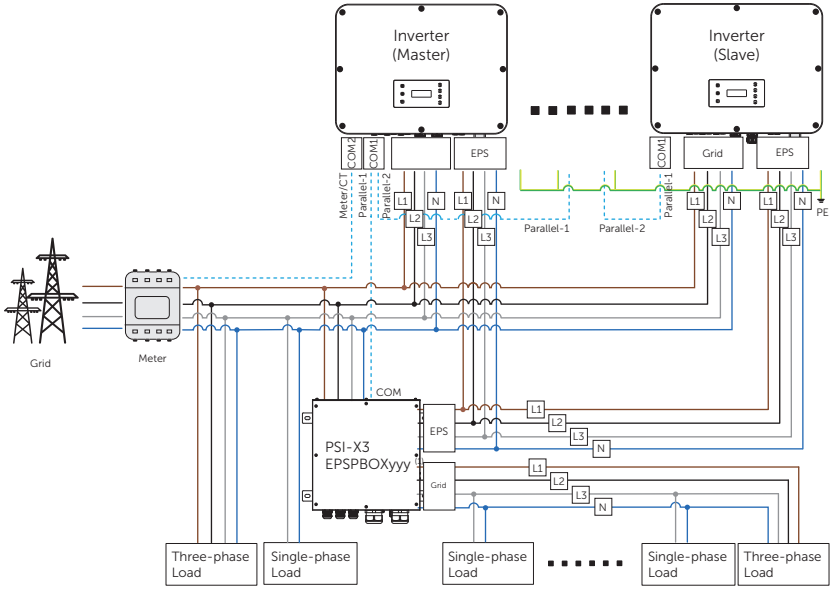
- All inverters must have the same firmware version.
- For optimal efficiency, it is recommended that all inverters are of the same model and are connected to batteries of the same model and number.
- In a parallel system, there are three operating states: Free, Slave, and Master.

Free	Only when no inverter is set as Master, all inverters in the system operate in Free Mode.
Slave	Once one inverter is set as Master, all other inverters automatically switch to Slave Mode. The Slave Mode cannot be modified from the LCD settings menu.
Master	When an inverter is set as Master, it enters Master Mode. The Master Mode can be changed back to Free Mode if needed.

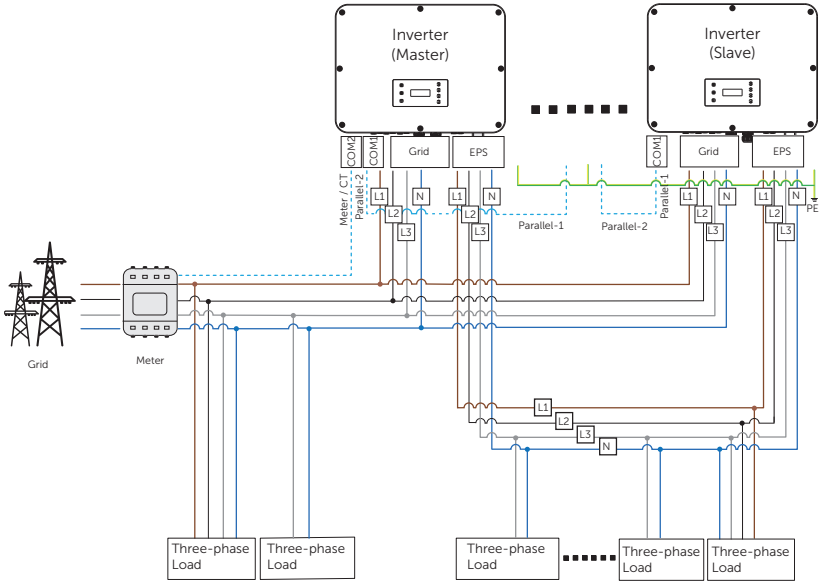
1) For a complete list of PSI-X3-EPSPBOXyyy models compatible with PSI-X3Pxxxx-HYM series inverters, please refer to the technical datasheets and catalog available on the website www.peimar.com

- The Master inverter has full authority in the parallel system to control energy management and load sharing among all Slave inverters. If the Master inverter encounters a fault and stops operating, all Slave inverters will shut down simultaneously. However, the Master inverter operates independently of the Slave units and is not affected by any faults occurring in them.
- The entire system operates according to the configuration parameters of the Master inverter, while most parameters of the Slave inverters are retained but remain inactive.
- If a Slave inverter is disconnected from the parallel system (network cable unplugged) and starts operating as a standalone unit, all its parameters become active again.
- The parallel system is highly complex and requires the connection of multiple cables. Therefore, all cables must be connected in the correct order, as even a small wiring error may cause the entire system to malfunction.

Parallel Connection Diagram



1) For a complete list of PSI-X3-EPSPBOXyyy models compatible with PSI-X3Pxxxx-HYM series inverters, please refer to the technical datasheets and catalog available on the website www.peimar.com


Inverter
(Master)
Inverter
(Slave)
COM2
COM1
Grid
EPS
COM1
Grid
EPS
Meter / CT
Parallel-2
L1
L2
L3
N
Parallel-1
Parallel-2
Parallel-1
PE
Grid
Meter
Three-phase
Load
Three-phase
Load
Three-phase
Load
Three-phase
Load
Three-phase
Load

15.6.3. System Wiring Procedure

Power Cable Connection – Grid and EPS Terminals

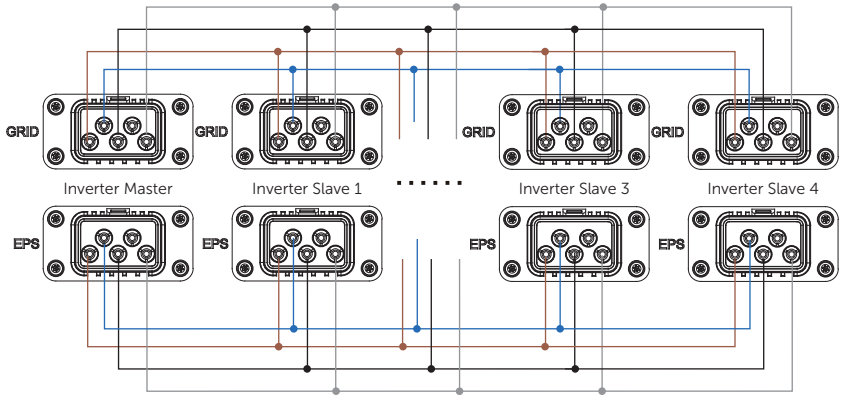
- With the PSI-X3-EPSPBOXyyy [1]:

a. Use a five-core copper cable to connect the Master inverter to the Slave inverter, as well as to connect the Master inverter to the PSI-X3-EPSPBOXyyy [1].

b. Grid Terminals (Master inverter, Slave inverter, and PSI-X3-EPSPBOXyyy [1]): Connect L1 to L1, L2 to L2, L3 to L3, and N to N.

c. EPS Terminals (Master inverter, Slave inverter, and PSI-X3-EPSPBOXyyy [1]): Connect L1 to L1, L2 to L2, L3 to L3, and N to N.

d. All PE (Protective Earth) cables must be connected to the same grounding bar (E-BAR) located nearby.



- Without the PSI-X3-EPSPBOXyyy [1]

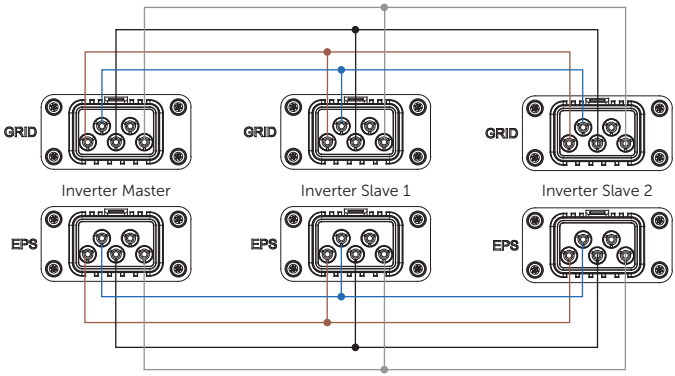
a. Use a five-core copper cable to connect the Master inverter to the Slave inverter.

b. Grid Terminals (Master and Slave inverters): connect L1 to L1, L2 to L2, L3 to L3, and N to N.

c. EPS Terminals (Master and Slave inverters): connect L1 to L1, L2 to L2, L3 to L3, and N to N.

d. All PE (Protective Earth) cables must be connected to the same grounding bar (E-BAR) located nearby.

1) For a complete list of PSI-X3-EPSPBOXyyy models compatible with PSI-X3Pxxxx-HYM series inverters, please refer to the technical datasheets and catalog available on the website www.peimar.com



Communication Cable Connection – COM1 and COM2 Terminals

- With PSI-X3-EPSPBOXyyy (1):

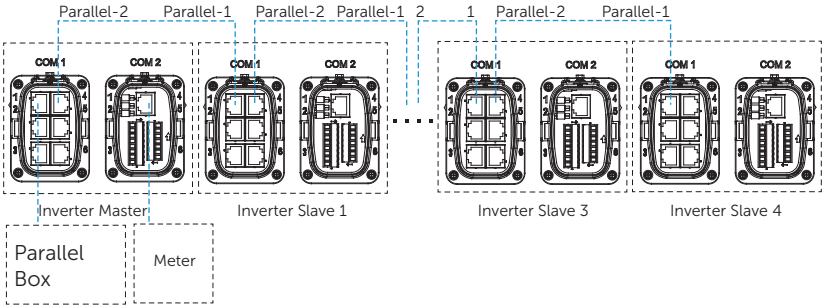
a. Use standard network cables to connect the Master inverter and Slave inverters.

b. The Parallel-1 terminal of the Master inverter must be connected to the COM terminal of the PSI-X3-EPSPBOXyyy (1).

c. The Parallel-2 terminal of the Master inverter must be connected to the Parallel-1 terminal of Slave inverter 1.

d. The Parallel-2 terminal of Slave inverter 1 must be connected to the Parallel-1 terminal of Slave inverter 2. Any additional inverters must be connected in the same daisy-chain manner.

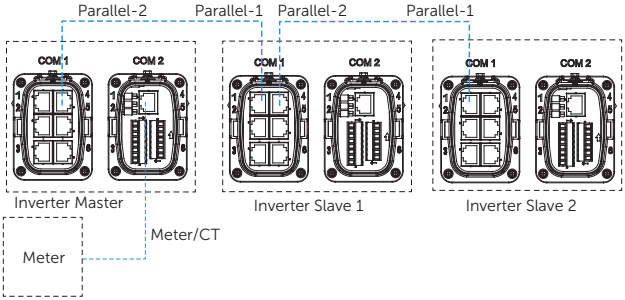
e. The Meter must be connected to the Meter/CT terminal of the Master inverter. Refer to section “8.7.2 Meter/CT Connection” for more details.



1) For a complete list of PSI-X3-EPSPBOXyyy models compatible with PSI-X3Pxxxx-HYM series inverters, please refer to the technical datasheets and catalog available on the website www.peimar.com

Without the PSI-X3-EPSPBOXyyyy [1]:

- The Parallel-2 terminal of the Master inverter must be connected to the Parallel-1 terminal of Slave inverter 1.
- The Parallel-2 terminal of Slave inverter 1 must be connected to the Parallel-1 terminal of Slave inverter 2.
- The Meter must be connected to the Meter/CT terminal of the Master inverter. Refer to section “8.7.2 Meter/CT Connection” for more information.



WARNING!

- Refer to the PSI-X3-EPSPBOXyyy [1] Installation Manual for parallel connection instructions on the PSI-X3-EPSPBOXyyy [1] side.
- Also, consult sections “8.3 AC Connection” and “8.6.2 Parallel Communication Connection” for the corresponding inverter configuration procedures.

Meter/CT Setting

Configuration path: Menu > Settings > Advanced Settings > Meter/CT Setting. For more details, refer to the section “Meter/CT Setting”.

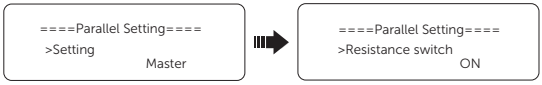
Parallel Mode Setting

Configuration path: Menu > Settings > Advanced Settings > Parallel Setting

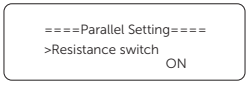
1) For a complete list of PSI-X3-EPSPBOXyyy models compatible with PSI-X3Pxxxx-HYM series inverters, please refer to the technical datasheets and catalog available on the website www.peimar.com

How to Establish a Parallel Connection

a. Turn on the power of the entire system, identify the inverter that will be set as Master, and connect the Meter to this inverter. Access the configuration screen on the LCD display of the Master inverter, select Parallel Setting, and set it to Master. Then go to Resistance Switch and set it to ON.

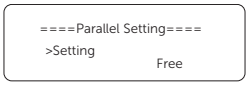


b. Locate the last Slave inverter in the parallel system, access its LCD display, and also set the Resistance Switch to ON.



How to Remove the Parallel Connection

a. Identify the inverter that needs to be set to Free. Go to Parallel Setting and select Free for that inverter.



b. Disconnect all network cables from the Parallel-1 and Parallel-2 terminals.

WARNING!

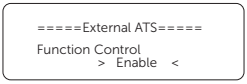
- If a Slave inverter is set to Free Mode but the network cable remains connected, the inverter will automatically revert to Slave Mode.
- If a Slave inverter is disconnected from the others but not set to Free Mode, it will stop operating and display a ParallelFault error.

External ATS Setting

Configuration path: Menu > Settings > Advanced Settings > External ATS

When the PSI-X3-EPSPBOXyyy [1] is connected in the parallel system, enable the External ATS function.

1) For a complete list of PSI-X3-EPSPBOXyyy models compatible with PSI-X3Pxxxx-HYM series inverters, please refer to the technical datasheets and catalog available on the website www.peimar.com



WARNING!

- If the output power does not reach the expected level, verify whether the power limit is set correctly via:

Menu > Settings > Advanced Settings > Export Control

- When the inverter operates without the PSI-X3-EPSPBOXyyy [1], the External ATS function must be disabled, otherwise it may affect proper off-grid switching.

Parallel Mode Display

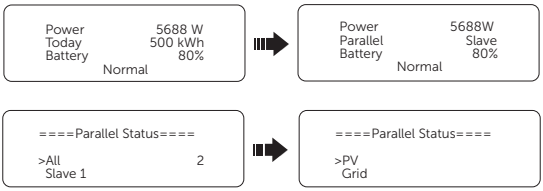
Display path: Menu > Parallel Status

WARNING!

- Once the inverter joins the parallel system, the Today Yield display will be replaced by the Parallel display.

In the Parallel Status interface, both the total system power and the individual power of each Slave inverter can be viewed directly from the Master inverter's display.

The number shown on this screen corresponds to the total number of inverters online, for example, two inverters in parallel as shown in the figure below.

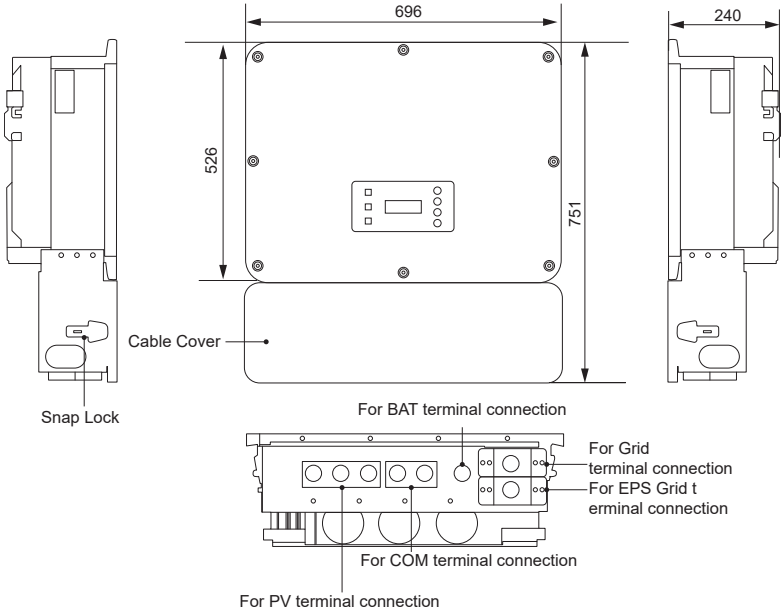


1) For a complete list of PSI-X3-EPSPBOXyyy models compatible with PSI-X3Pxxxx-HYM series inverters, please refer to the technical datasheets and catalog available on the website www.peimar.com

15.7. Cable Cover

This product comes with a compatible cable cover, sold separately, which can be purchased from Peimar if needed.

15.7.1. Appearance



15.7.2. Package Contents

Item	Description	Quantity
A	Cable cover	1 piece
B	Wi-Fi connection cable	1 piece
C	Wi-Fi holder	1 piece

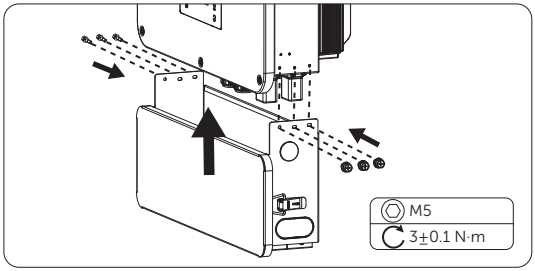
15.7.3. Additional Materials Required

Required Material	Type	Quantity	NOTE
(Optional) Security lock	< Ø7 mm	2 pieces	Install on both sides of the cable cover to prevent unauthorized opening.

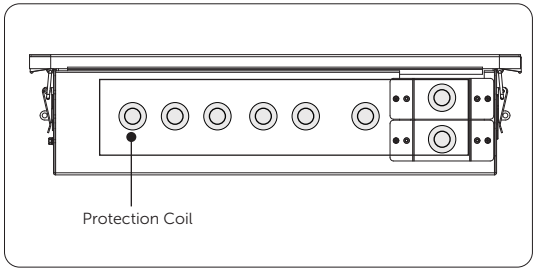
15.7.4. Installation Steps

Cable Cover Installation

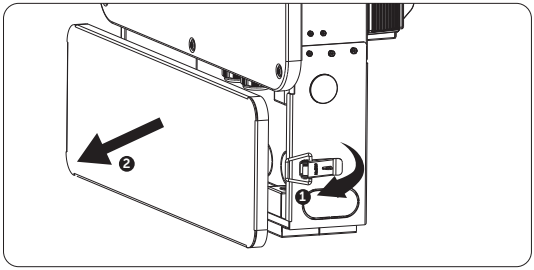
Step 1: Remove the screws on both sides of the inverter, align the cable cover with the holes, and then tighten the screws.



Step 2: Remove the protective sleeve from the selected terminal to be used.



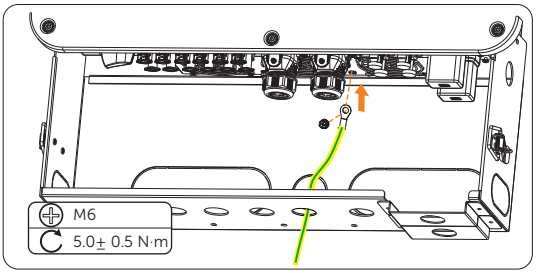
Step 3: Unlock the traction latches located on both sides of the cable cover, then remove the front panel.



PE Cable Connection

For the PE cable preparation process, refer to the section “PE Connection Procedures.”

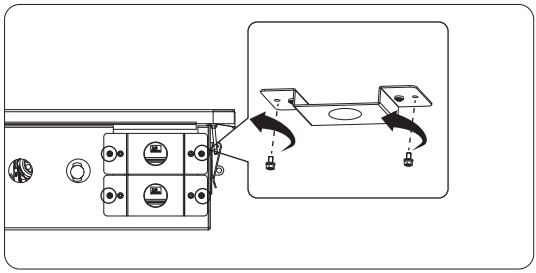
Step 1: Connect the PE cable to the inverter grounding point through the corresponding wiring opening on the cable cover. (Tightening torque: 5.0 ± 0.5 N·m)



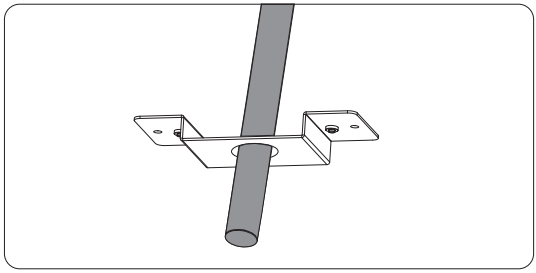
AC Connection

For the AC cable preparation process, refer to the section “AC Connection Wiring Procedures.”

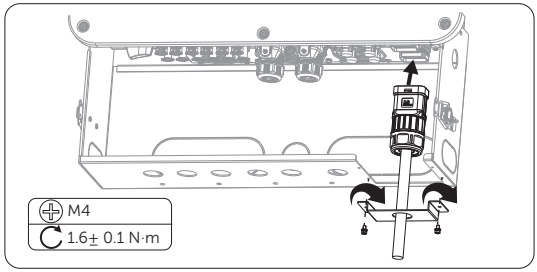
Step 1: Loosen the screws on the Grid and EPS wiring openings on the cable cover.



Step 2: Pass the five-core cable through the respective wiring openings for Grid and EPS, then, following the AC Connection Wiring Procedures, install the AC connector.



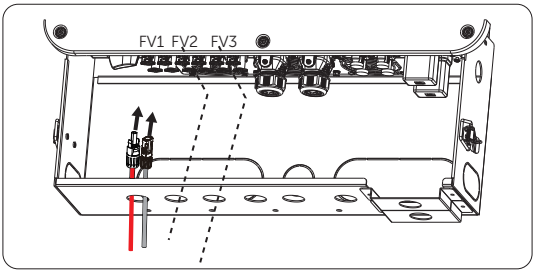
Step 3: Remove the protective caps from the AC terminals and insert the assembled AC connectors into the Grid and EPS terminals respectively. Re-tighten the previously removed screws. (Recommended tightening torque: 1.6 ± 0.1 N·m)



PV Connection

For the PV cable preparation process, refer to the section “PV Connection Wiring Procedures”.

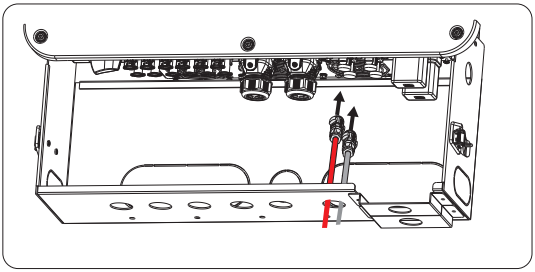
Step 1: Remove the protective caps from the PV terminals, then pass the prepared PV cable through the corresponding wiring openings on the cable cover and connect the assembled PV connectors to the matching PV terminals until a “click” is heard.



Battery Power Cable Connection

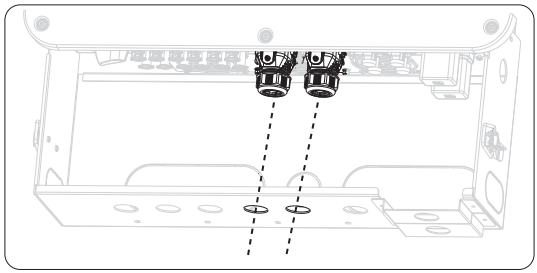
For the battery power cable preparation process, refer to the section “Battery Power Cable Wiring Procedures”.

Step 1: Remove the protective caps from the BAT terminals, pass the prepared battery power cable through the corresponding wiring openings on the cable cover, and connect the assembled battery connectors to the corresponding terminals until a “click” is heard.



Communication Connection

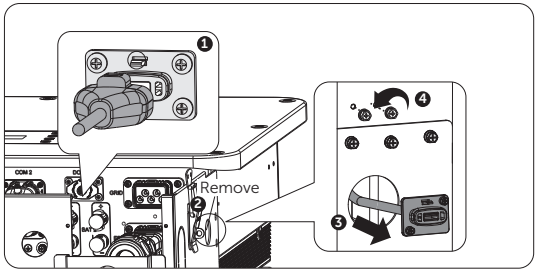
Step 1: Before connecting the cable to the connector, pass it through the wiring opening on the cable cover. For the subsequent steps, refer to sections “8.6 COM1 Communication Connection” and “8.7 COM2 Communication Connection.”



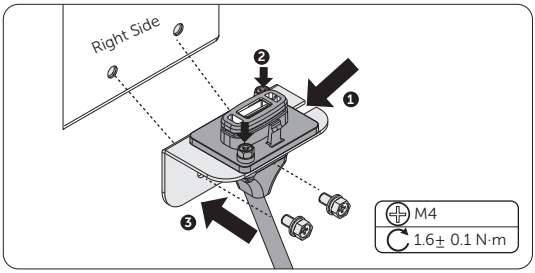
Monitoring Connection (Wi-Fi Mode)

For the monitoring system assembly process, refer to the section “Monitoring Wiring Procedures.”

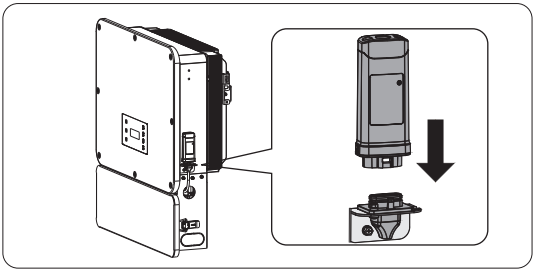
Step 1: Connect one end of the WiFi connection cable to the inverter’s Dongle terminal, remove the plug from the opening on the right side, and pass the WiFi cable through this opening. Loosen the screws on the side of the inverter.



Step 2: Loosen the screws of the WiFi connection cable, slide it into the WiFi holder, tighten the screws, and mount the assembly on the right side of the inverter using the provided screws.



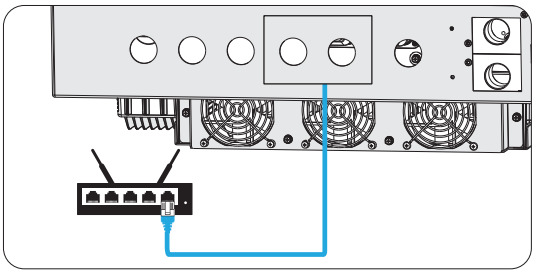
Step 3: Connect the Dongle to the WiFi connection cable.



Monitoring Connection (LAN Mode)

For the monitoring system assembly process, refer to the section “Monitoring Wiring Procedures.”

Step 1: Insert the assembled Dongle into the inverter’s Dongle terminal, pass the other end of the cable through the indicated wiring opening, and connect it to the router.

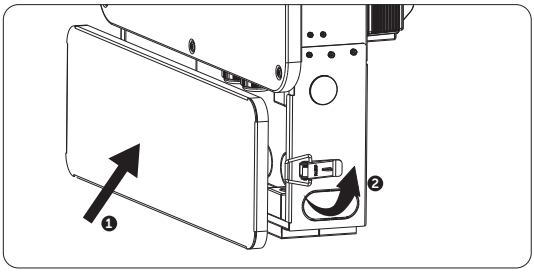


Front Panel Installation

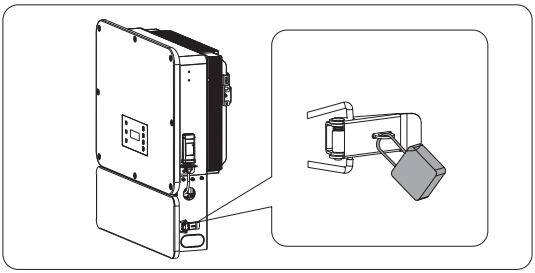
Step 1: Once installation is complete, perform a preliminary inspection following the instructions in section “9.1 Pre-Power-On Check”.

Step 2: Refer to section “9.2 System Power-On” to turn on the inverter.

Step 3: After confirming that the inverter operates correctly, install the front panel.



Step 4 (Optional): For safety reasons, security locks may be installed on both sides of the cable cover. Please note that the locks are not included in the package and must be purchased separately, according to the locking hole diameter (Ø < 7 mm). Keep the lock key in a safe place.



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