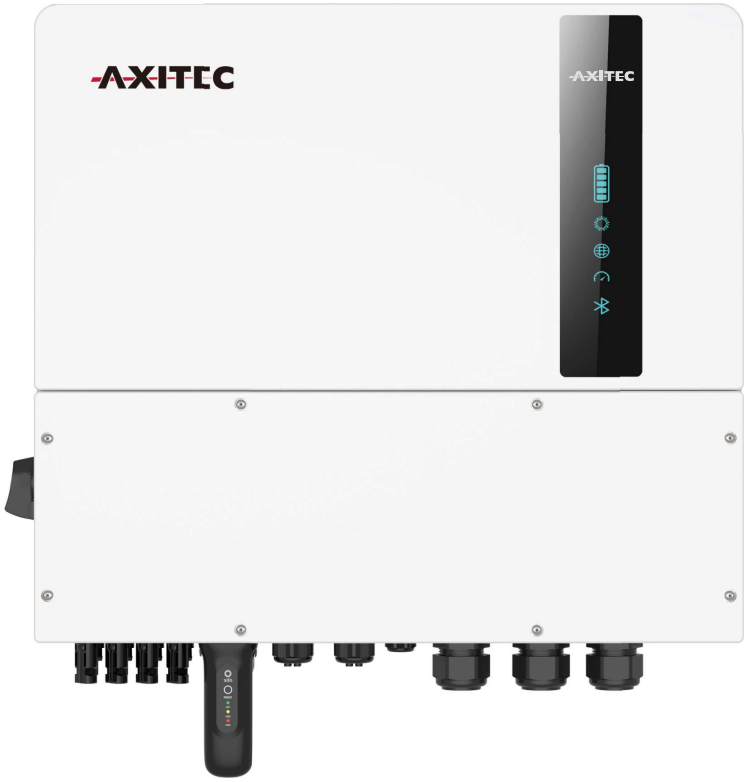
User Manual

for Hybrid Inverter



Applicable models
AXIhycon 12H
AXIhycon 15H
AXIhycon 20H

Applicable System
Three phase system

Version 1.0, Release Date: 11, 2024

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Contents

1.1 Product Description

The Axitec Series is designed for residential hybrid systems, which can work with batteries to optimize self-consumption. The unit can operate in both off- and on-grid modes.

This manual covers the Axitec Series inverter model listed below:

AXIhycon 12H, AXIhycon 15H, AXIhycon 20H

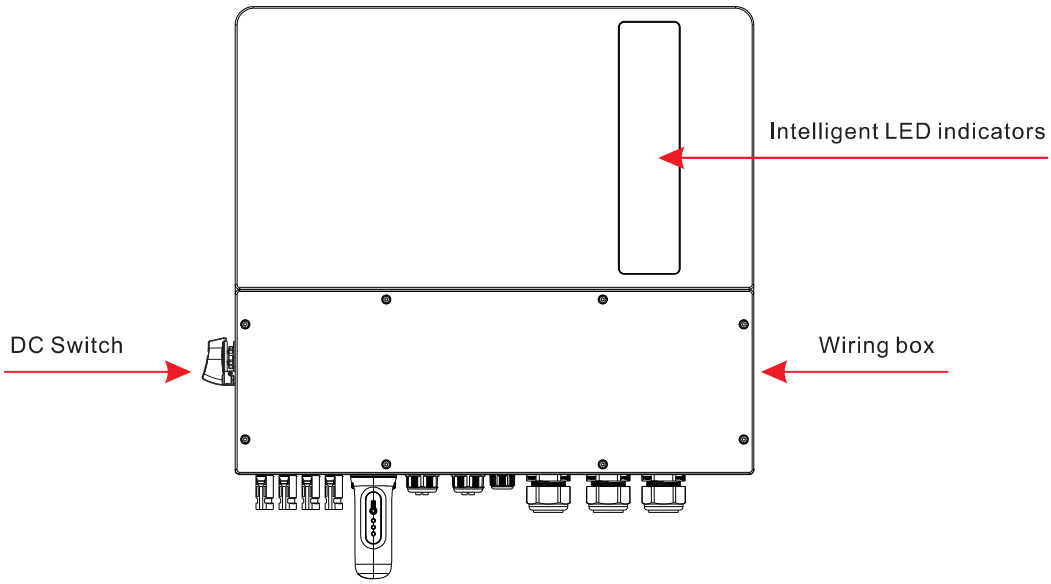


Figure 1.1 Front side view

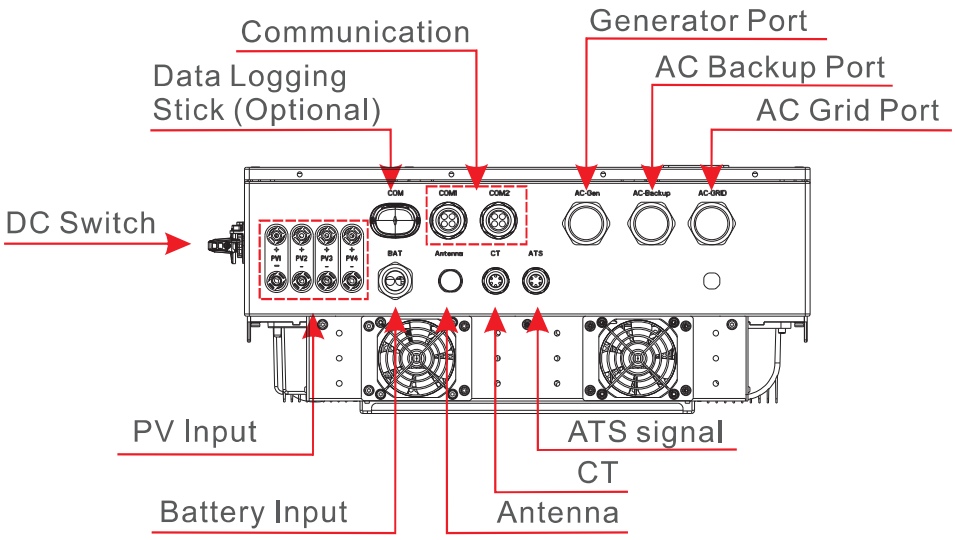
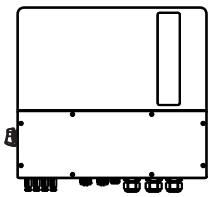
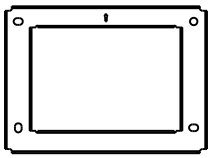


Figure 1.2 Bottom side view

1.2 Packaging

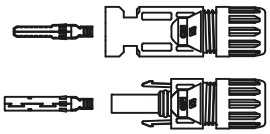
Please ensure that the following items are included in the packaging with your machine:


Inverter x1

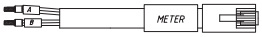

Back Plate x1


Fixing Screws(M4*12) x2

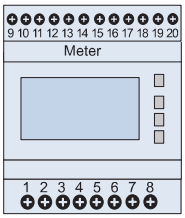

Expansion bolts(M10*70) x4


PV Connector x4

CAN cable x1



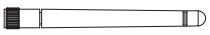
Meter cable x1

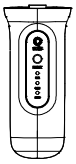


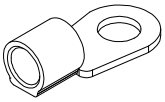
Eastron Meter x1


CT x3


RJ45 connector x6


Bluetooth Antenna x1


Data Logging Stick (Optional) x1


OT terminals x2

User Manual x1

NOTE:

If customer purchases the CT configuration scheme, the attachment only contains CT.

If the meter configuration plan is purchased, the accessories include CT, the meter, and the meter communication cable.

If anything is missing, please contact your local Axitec distributor.

1.3 Inverter Circuit Diagram

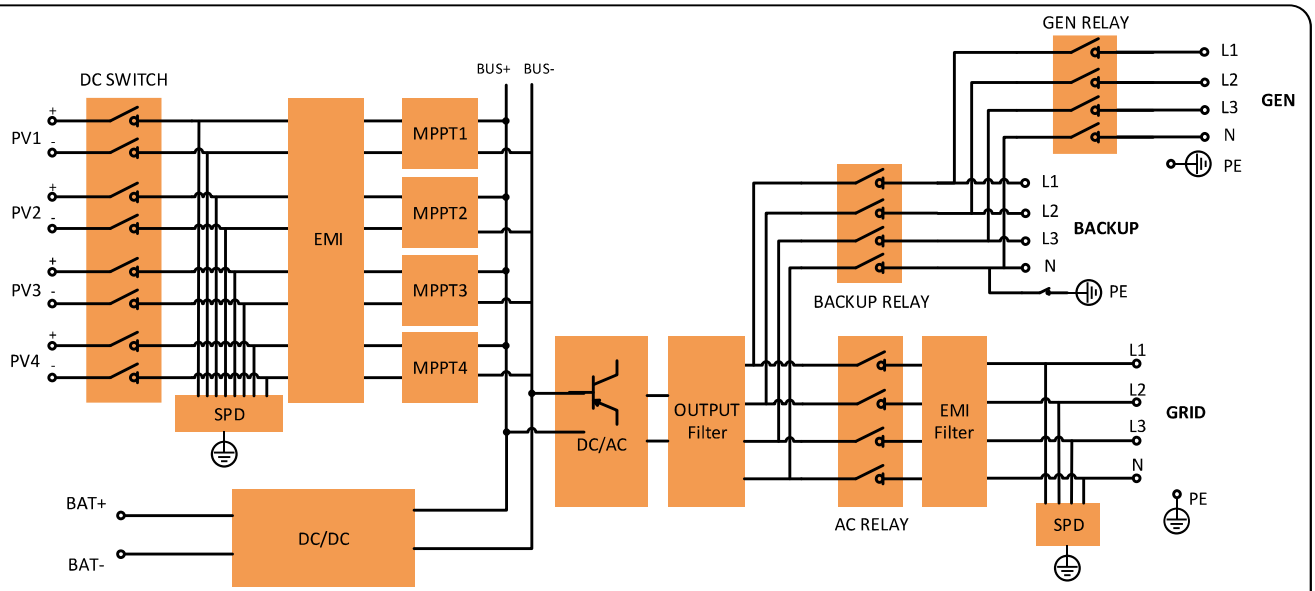


Figure 1.3

1.4 Tools Required for Installation

Technician Screwdriver

Torqx T20 Screwdriver

Wire Strippers
12AWG to 6AWG

Wire Strippers
20AWG to 10AWG

LUG Crimping Tool

Channel Locks

Multimeter (AC/DC amps)

Drill and Impact Driver

Torque Screwdriver

MC4 Crimping Tool

2.1 Safety

The following types of safety instructions and general information appear in this document as described below:

DANGER:
"Danger" indicates a hazardous situation which if not avoided, will result in death or serious injury.

WARNING:
"Warning" indicates a hazardous situation which if not avoided, could result in death or serious injury.

CAUTION:
"Caution" indicates a hazardous situation which if not avoided, could result in minor or moderate injury.

NOTE:
"Note" provides tips that are valuable for the optimal operation of your product.

WARNING: Risk of fire
Despite careful construction, electrical devices can cause fires.
- Do not install the inverter in areas containing highly flammable materials or gases.
- Do not install the inverter in potentially explosive atmospheres.

2.2 General Safety Instructions

WARNING:
Only devices in compliance with SELV (EN 69050) may be connected to the RS485 and USB interfaces.

WARNING:
Please don't connect PV array positive (+) or negative (-) to ground, it could cause serious damage to the inverter.

WARNING:
Electrical installations must be done in accordance with the local and national electrical safety standards.

WARNING:
Do not touch any inner live parts until 5 minutes after disconnection from the utility grid and the PV input.

WARNING:
To reduce the risk of fire, over-current protective devices (OCPD) are required for circuits connected to the inverter.
The DC OCPD shall be installed per local requirements. All photovoltaic source and output circuit conductors shall have isolators that comply with the NEC Article 690, Part II.

CAUTION:
Risk of electric shock, do not remove cover. There is no user serviceable parts inside, refer servicing to qualified and accredited service technicians.

CAUTION:
The PV array supplies a DC voltage when they are exposed to sunlight.

CAUTION:
The surface temperature of the inverter can reach up to 75℃ (167°F). To avoid risk of burns, do not touch the surface of the inverter while it's operating. Inverter must be installed out of the reach of children.

NOTE:
PV module used with inverter must have an IEC 61730 Class A rating.

WARNING:
Operations below must be accomplished by licensed technician or Axitec authorized person.

WARNING:
Operator must put on the technicians' gloves during the whole process in case of any electrical hazards.

WARNING:
AC BACKUP Port of AXIhycon is not allowed to connect to the grid.

WARNING:
Please refer to the specification of the battery before configuration.

2.3 Notice for Use

The inverter has been constructed according to the applicable safety and technical guidelines. Use the inverter in installations that meet the following specifications ONLY:

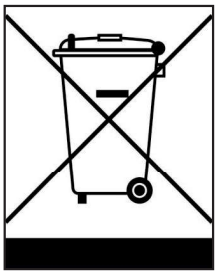
1. Permanent installation is required.

2. The electrical installation must meet all the applicable regulations and standards.

3. The inverter must be installed according to the instructions stated in this manual.

4. The inverter must be installed according to the correct technical specifications.

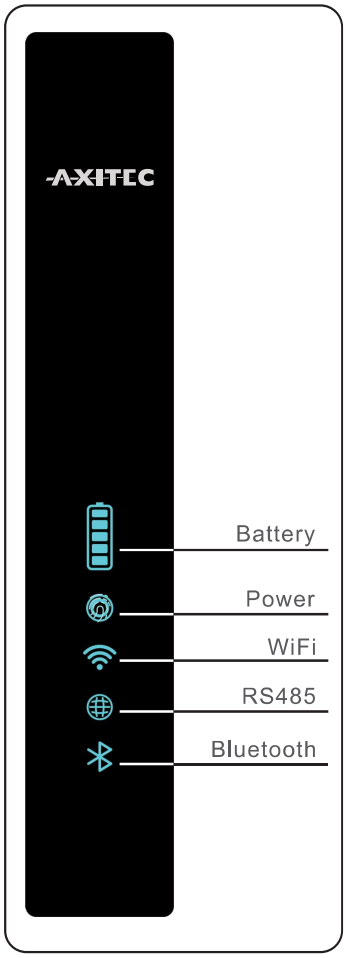
2.4 Notice for Disposal



This product shall not be disposed of with household waste.
They should be segregated and brought to an appropriate collection point to enable recycling and avoid potential impacts on the environment and human health.
Local rules in waste management shall be respected .

3.1 Intelligent LED Indicators

There are five indicators on the The Axitec Series Inverter (Battery, Power, WiFi, Ethernet and Bluetooth) which indicate the working status of the inverter.
The Bluetooth antenna or WiFi datalogger shall be installed at the Antenna/COM port of the hybrid inverter before local debugging.



Light	Status	Description
Battery	Blue flashing every 3s	Battery discharging.
	Blue flashing every 1.5s	Battery charging.
	Blue solid ON	Idle.
	OFF	No battery or not working.
Power	Blue solid ON	Normally operating.
	Yellow solid ON	Warning.
	RedSolid ON or flashing every 3s	Alarm.
	OFF	No battery or not working.
WiFi	Blue solid ON	COM port is being used.
	OFF	COM port is not used.
RS485	Blue solid ON	RS485 port is being used.
	OFF	RS485 port is not used.
Bluetooth	Blue solid ON	Bluetooth port is being used.
	OFF	Bluetooth port is not used.

Turning On the LED Indicator Lights

After a few minutes, the LED indicator lights will turn off to save power. To turn the lights back on, short-press the inverter LED light.

Alarm State

When the inverter has an alarm, the inverter LED light turns red and starts flashing. It is recommended to connect to the inverter with the Bluetooth tool. Then you can determine what the alarm code is.

NOTE:

Battery/WiFi/Ethernet/Bluetooth indicators will automatically turn off after 1 minute. The Power indicator will remain on with lower brightness. Short press the Power indicator will wake up all indicators.

3.2 System Description

3.2.1 Single system

The single system consists of PV module, battery, hybrid inverter, CT or smart meter.
The PV Module converts solar energy into electric energy, which is then converted by the inverter to charge the battery or power loads or feed into the grid.
User can connect heat pump, existing PV plant, generator and ATS according to the actual scenario.
The system has four working modes: self-use mode, feed in priority mode, off-grid mode and peak-shaving mode. (For settings ,see 5.5 work modes and settings)

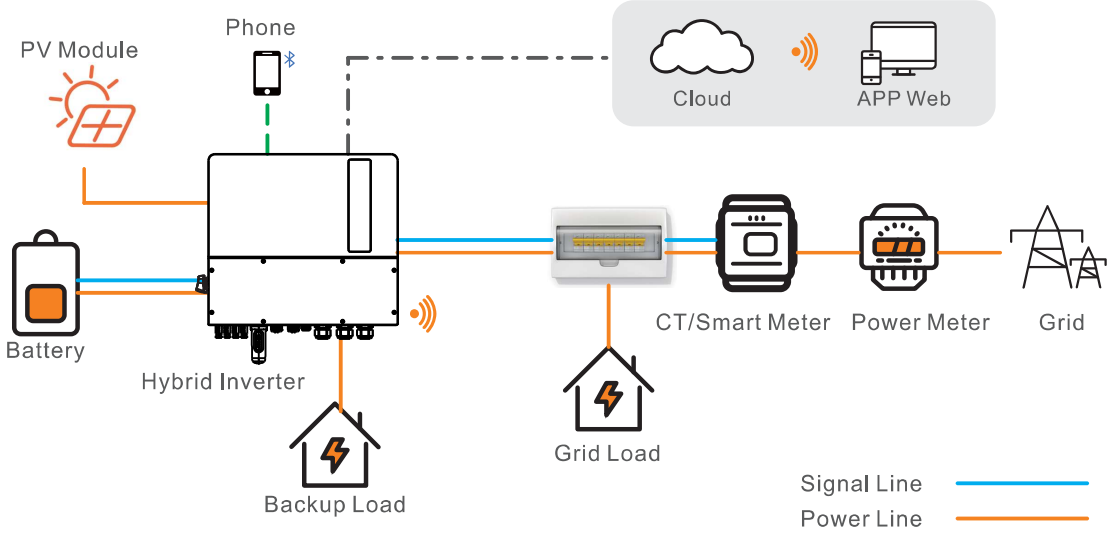


Figure 3.1 Single System

NOTE:

- If the CTs are connected, the Smart meter is not essential.
- you can choose CT scheme or Meter scheme deliver with inverter.
- In the event of a power outage on the grid, the system will seamlessly transition into off-grid mode, providing power exclusively to essential backup loads.
- When the grid recovers, the system switches back to the on-grid operation.
- Supports heat pump start-stop and power control, only when it has a SG Ready label.

3.2.2 Parallel System

User can add inverters and batteries to increase capacity. The system supports up to 6 inverters in parallel. Each battery connects to the inverter with an independent CAN line and is managed by the inverter connected to it.

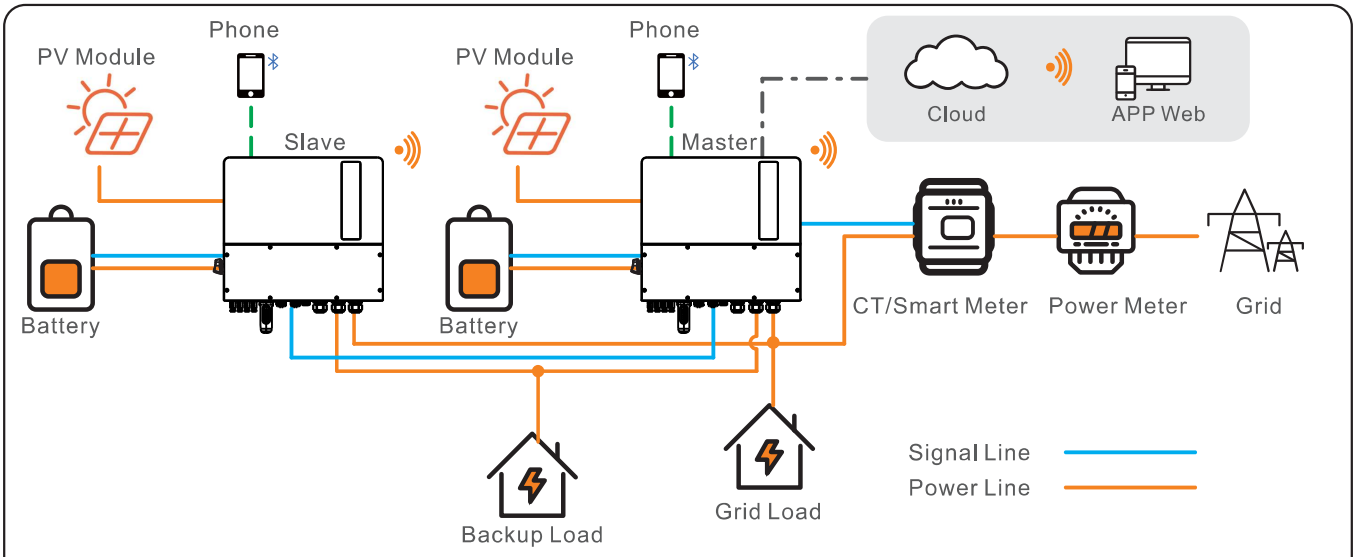


Figure 3.2 Parallel System

NOTE:

- CTs or Smart meter, Control signal of Heat Pump, Control signal of Generator or ATS should be connected to the master inverter.
- CTs delivered with the device can only support a system of up to 60 KW. If a higher power parallel system is required, you need to purchase additional Cts.
- Parallel connection of different models is not supported.(For example 12K and 15K can't be connected in parallel)
- Parallel connection of battery input port is not supported.
- The AC backup port can be connected in parallel, and the single-phase output power is 1/2 of the total rated power.
- The length and specification of the cable connecting the backup load to each inverter needs to be the same to ensure that the current is evenly distributed and prevents one of the inverters from being damaged by excessive current.
- In parallel-system scenarios, it is advisable to ensure uniform specifications and capacities for batteries on both the master and slave inverters.
  In cases where there is a disparity, it is recommended to connect the battery with a larger capacity to the master inverter. Connecting a higher-capacity battery to a slave inverter may result in incomplete discharge during high-load scenarios.

NOTE:

Single inverter noise is less than 65 dB (A), When using multiple inverters to combine, pay attention to noise protection.

Scenarios	12K	15K	20K	Backup single-phase output power (For example 12K)	Recommended Battery Capacity (For example, 12K&Backup 2h)
	AC capacity				
1 single	12K	15K	20K	6K	24KWh
2 in parallel	24K	30K	40K	12K	24KWh*2
3 in parallel	36K	45K	60K	18K	24KWh*3
4 in parallel	48K	60K	80K	24K	24KWh*4
5 in parallel	60K	75K	100K	30K	24KWh*5
6 in parallel	72K	90K	120K	36K	24KWh*6

For parallel system settings ,see 5.9 parallel settings .

For the details of electrical connections ,see 4 Installtion .

3.2.3 System with generator

The access of Diesel Generator is in the off-grid scenario.

The system stores PV energy in batteries during daytime, provided that there is energy surplus and supplies power to loads when the PV energy is insufficient or there is no PV energy at night.

When the battery power drops to a certain value, and a power outage occurs in the grid, the system will start the generator to power the load and charge the battery.

Generator's work logic is as follows:

(i)when the grid is not available and the battery is discharged to GEN_Start_SOC, the generator starts to power the load and charges the battery to GEN_Exit_SOC, then the generator stops.

(ii) If the load power > the generator rated power in (i), the battery will be discharged to power the load until Overdischarge_SOC, then generator may shutdown due to overload and the load will be powered off.

(iii) If the generator fail to start in (i), the battery will be discharge to Overdischarge_SOC, then the load power off.

(iv) If the system goes into the end of (iii), the battery will not discharge before it is charged to Overdischarge_SOC+ Overdischarge_Hysteresis_SOC (set by user).

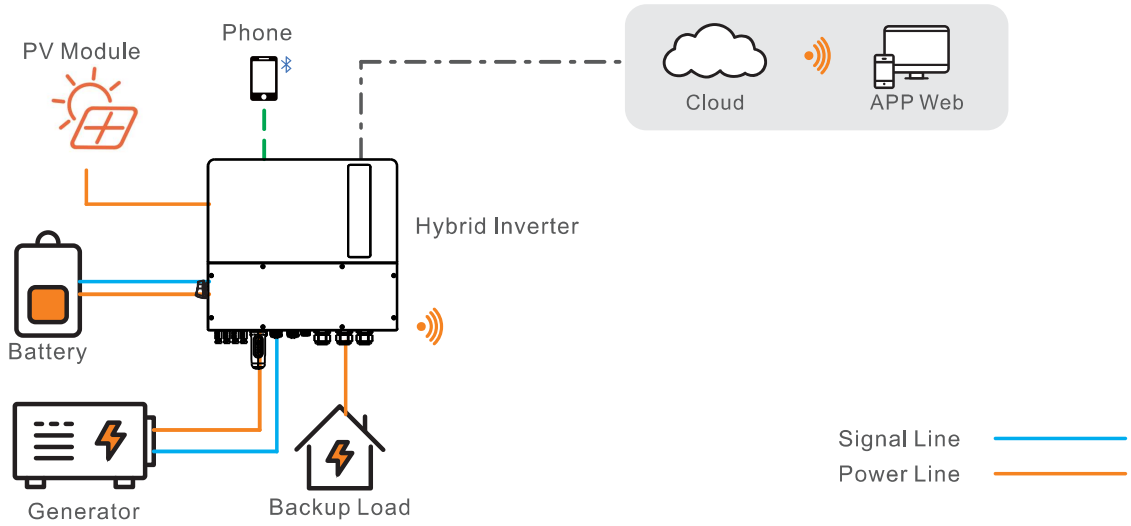


Figure 3.3 Typical off-grid scenario diagram (Generator on Gen port)

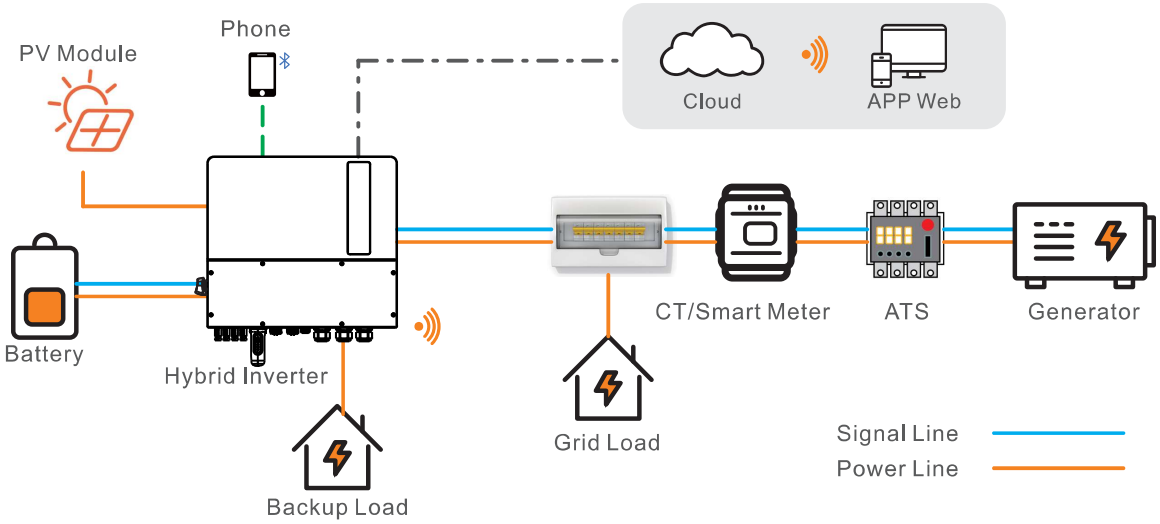


Figure 3.4 Typical off-grid scenario diagram (Generator on ATS)

CAUTION:
When the generator is connected, it is essential to correctly select the generator position on the APP, otherwise it may cause system failure or damage to the generator.

NOTE:

- In single system, a diesel generator can be connected via both AC-Gen port and ATS. If via AC-Gen port, it will only supply power to the backup load ; if it is necessary to supply power to the grid side, it is recommended that the generator be connected through ATS.
- In parallel-system scenarios, connecting a diesel generator via ATS is recommended.
- When the system is connected to the generator, it cannot be connected to a grid-tied inverter, because of a risk of damaging the generator.
- Whether CT or smart meter is required depends on the access position of the generator.
- If the generator is connected through an ATS on the grid side(Figure 3.4), then CT or smart meter is required.

3.2.4 System with grid-tied inverter

Generally, the access of grid-tied inverter is for the retrofit of a existing PV plant. The AXIhycon support access of both Axitec grid-tied inverter and third-party grid-tied inverter.

3.2.4.1 Access of third-party grid-tied inverter

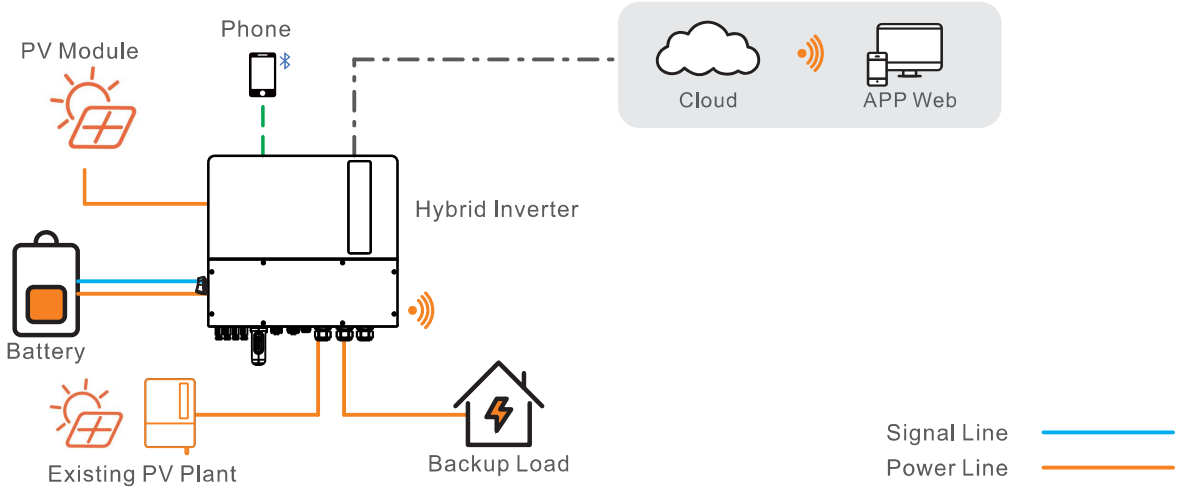


Figure 3.5 Typical off-grid AC-coupled diagram(off-grid)

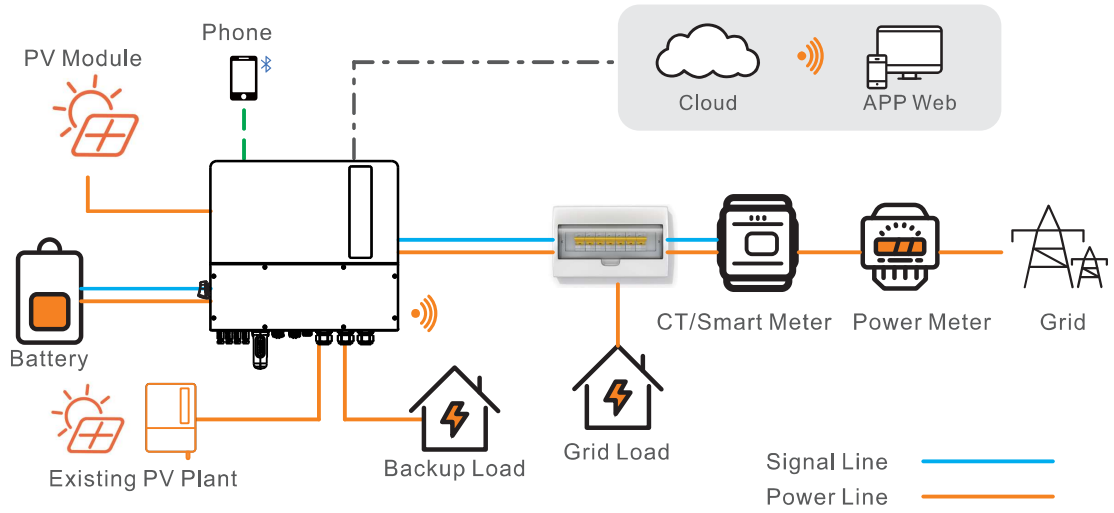


Figure 3.6 Typical on-grid AC-coupled diagram(on-grid)

- Third-party grid-tied inverter can be connected via AC-Gen port and AC-Backup port.
- With third-party grid-tied inverter connected to the system, it is recommended that: Grid-tied inverter power < rated AC power of AXIhycon inverter.
- In on-grid scenario, when the third-party grid-tied inverter is connected, the system cannot control the output power of the third-party grid-tied inverter, so Feed-in limitation cannot be realized.
- In off-grid scenario, the third-party grid-tied inverter must be configured with the correct grid code and equipped with over-frequency load shedding and under-frequency load rising functionalities. These features allow the system to dynamically adjust the frequency, effectively controlling the output power of the grid-tied inverter.

4.1 Select a Location for the Inverter

To select a location for the inverter, the following criteria should be considered:

- Exposure to direct sunlight may cause output power derating. It is recommended to avoid installing the inverter in direct sunlight.
- It is recommended that the inverter is installed in a cooler ambient which doesn't exceed 104℉/40℃.
- To select a location for the battery, please follow the battery manual specifications.

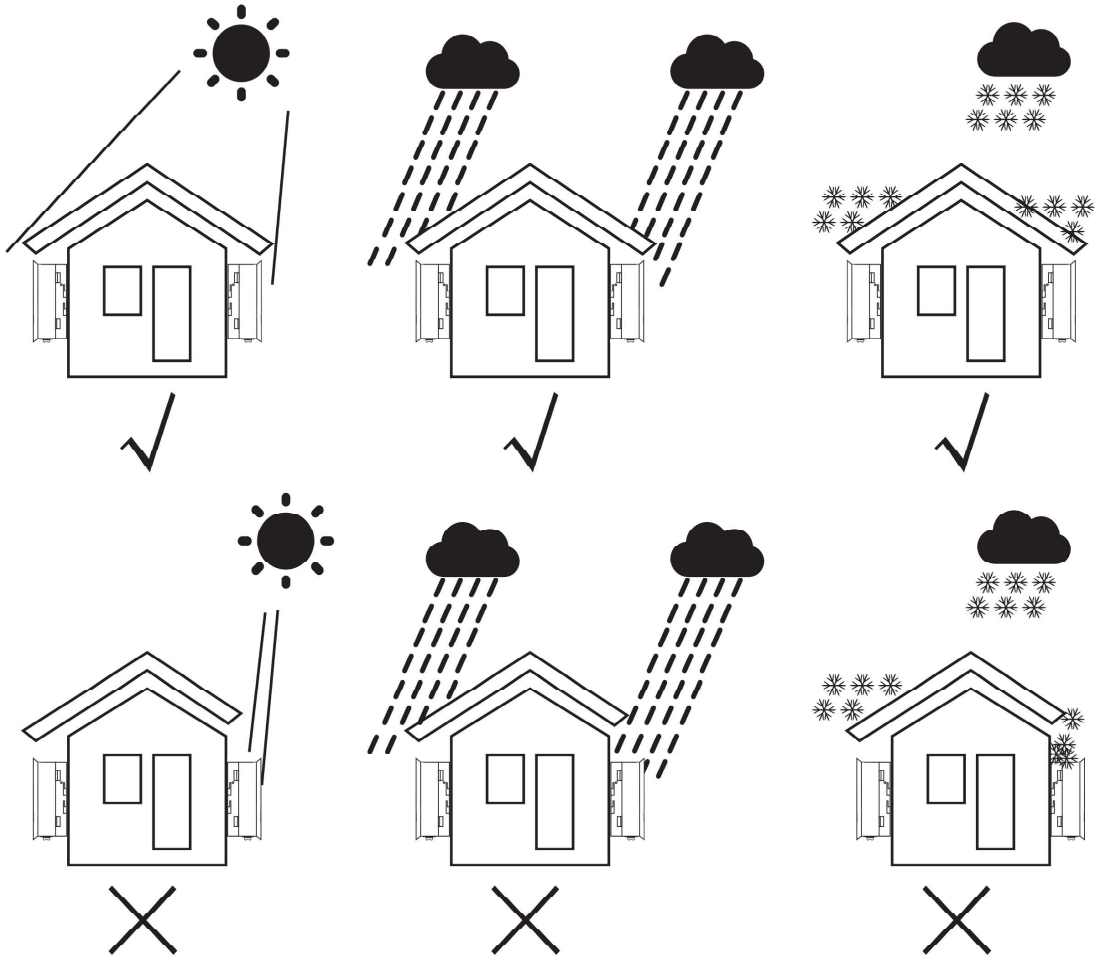


Figure 4.1 Recommended Installation locations

WARNING: Risk of fire

Despite careful construction, electrical devices can cause fires.

- Do not install the inverter in areas containing highly flammable materials or gases.
- Do not install the inverter in potentially explosive atmospheres.
- The mounting structure where the inverter is installed must be fireproof.

- Install on a wall or strong structure capable of bearing the weight of the machine (33.4kg).
- Install vertically with a maximum incline of +/- 5 degrees, exceeding this may cause output power derating.
- To avoid overheating, always make sure the flow of air around the inverter is not blocked. A minimum clearance of 500mm should be kept between inverters or objects and 1000mm clearance between the bottom of the machine and the ground.

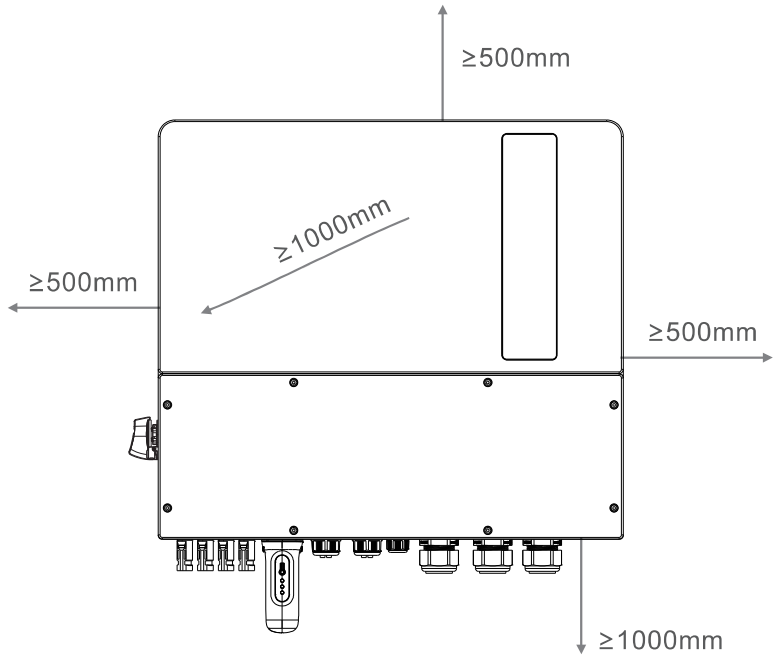


Figure 4.2 Inverter Mounting clearance

- Adequate ventilation must be provided.

NOTE:
Nothing should be stored on or placed against the inverter.

NOTE
If the inverter is installed in areas with high wind and sand, it is recommended to install a windproof and sand barrier above the inverter.

4.2 Mounting the Inverter

Dimensions of mounting bracket:

unit:mm

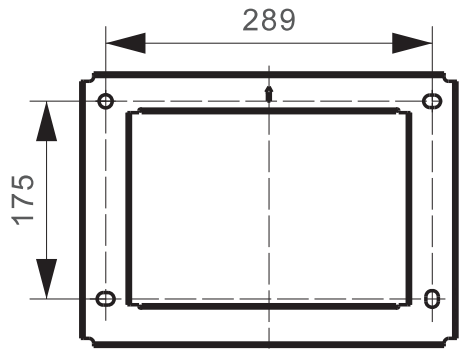


Figure 4.3 Inverter wall mounting

Once a suitable location has been found according to Section 4.1 and using Figure 4.3 as a guide, firmly attach the wall bracket to the wall.

The inverter shall be mounted vertically.

The steps to mount the inverter are listed below:

1. Select the mounting height of the bracket and mark the mounting holes.
   For brick walls, the position of the holes should be suitable for the expansion bolts.
2. Lift up the inverter (be careful to avoid body strain), and align the back bracket on the inverter with the convex section of the mounting bracket. Hang the inverter on the mounting bracket and make sure the inverter is secure (see Figure 4.4)

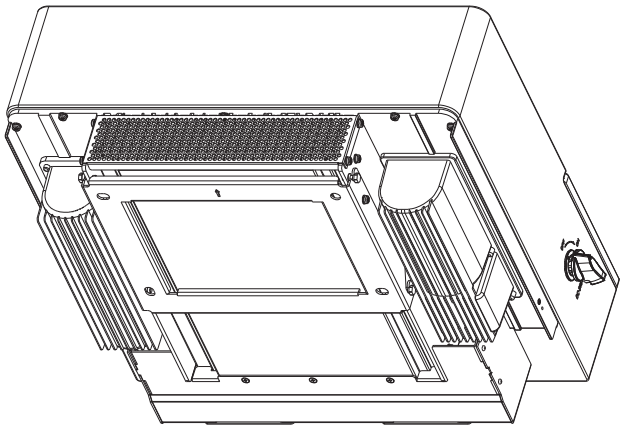


Figure 4.4 Wall Mount Bracket

WARNING:

The inverter must be mounted vertically.

4.3 PE Cable Installation

An external ground connection is provided at the right side of inverter.

Prepare OT terminals: M4. Use proper tooling to crimp the lug to the terminal.

Connect the OT terminal with ground cable to the both sides of inveter. The torque is 2N.m.

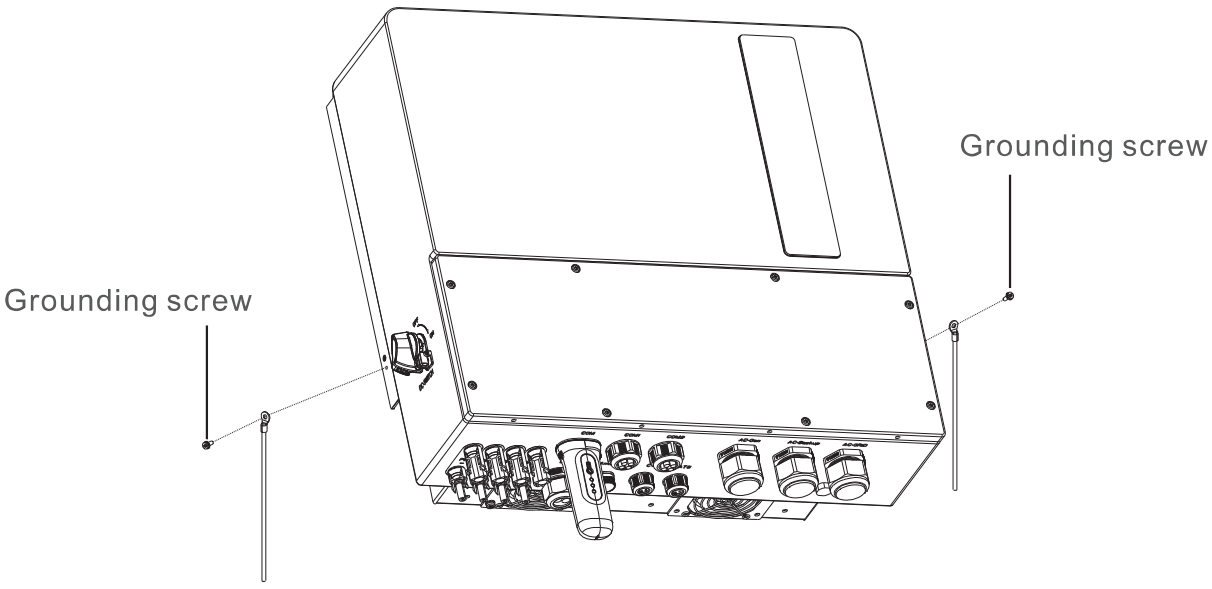


Figure 4.5 Connect the external grounding conductor

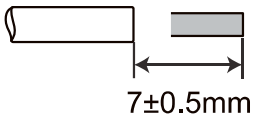
4.4 PV Input Cable Installation

Before connecting inverter, please make sure the PV array open circuit voltage is within the limit of the inverter.

Before connection, please make sure the polarity of the output voltage of PV array matches the“DC+”and“DC-”symbols.

Please use approved DC cable for PV system.

1. Select a suitable DC cable and strip the wires out by 7±0.5mm. Please refer to the table below for specific specifications.



Cable type	Cross section（mm²）	
	Range	Recommended value
Industry generic PV cable	4.0~6.0 (10~8AWG)	4.0（10AWG）

Figure 4.6

2. Take the DC terminal out of the accessory bag, turn the screw cap to disassemble it, and take out the waterproof rubber ring.

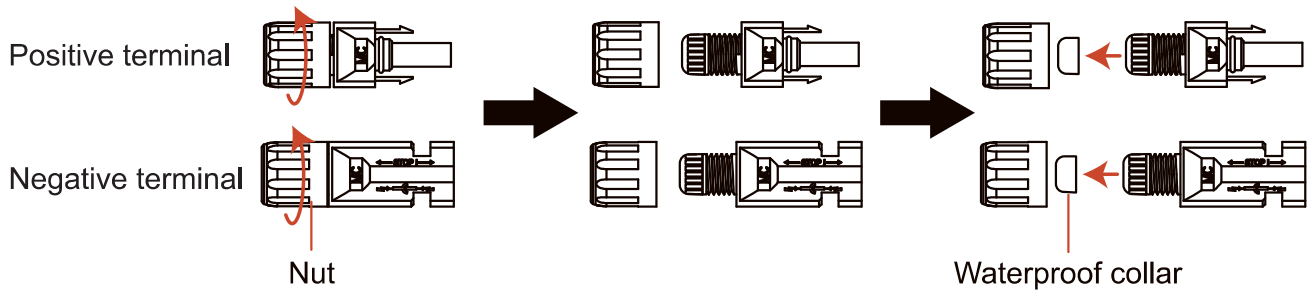


Figure 4.7

3. Pass the stripped DC cable through the nut and waterproof rubber ring.

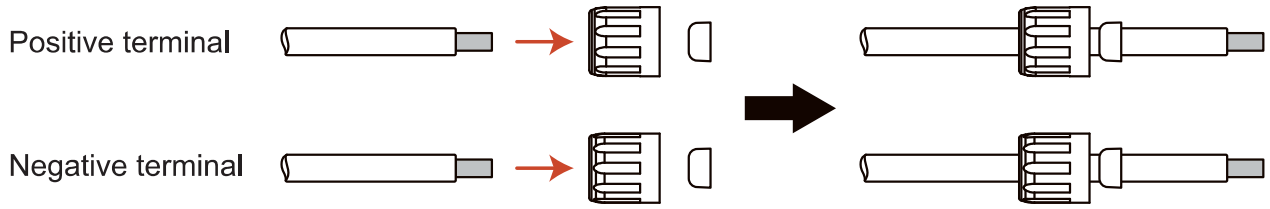


Figure 4.8

4. Connect the wire part of the DC cable to the metal DC terminal and crimp it with the MC4 crimping tool.

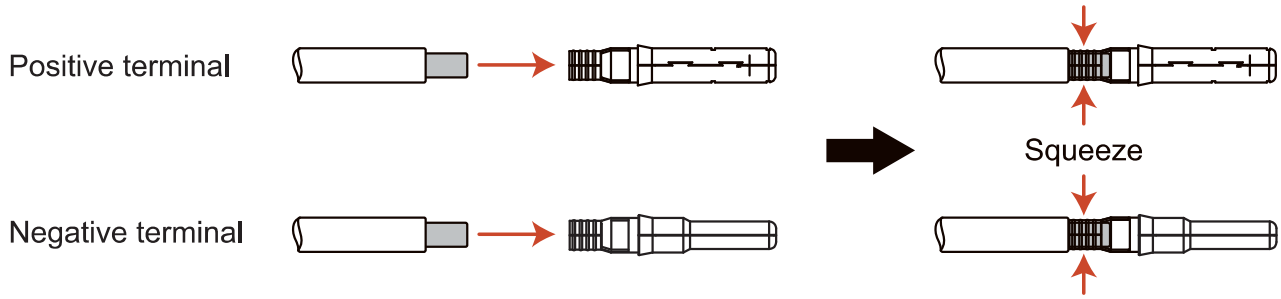


Figure 4.9

5. Insert the crimped DC cable into the DC terminal firmly, then insert the waterproof rubber ring into the DC terminal and tighten the nut.

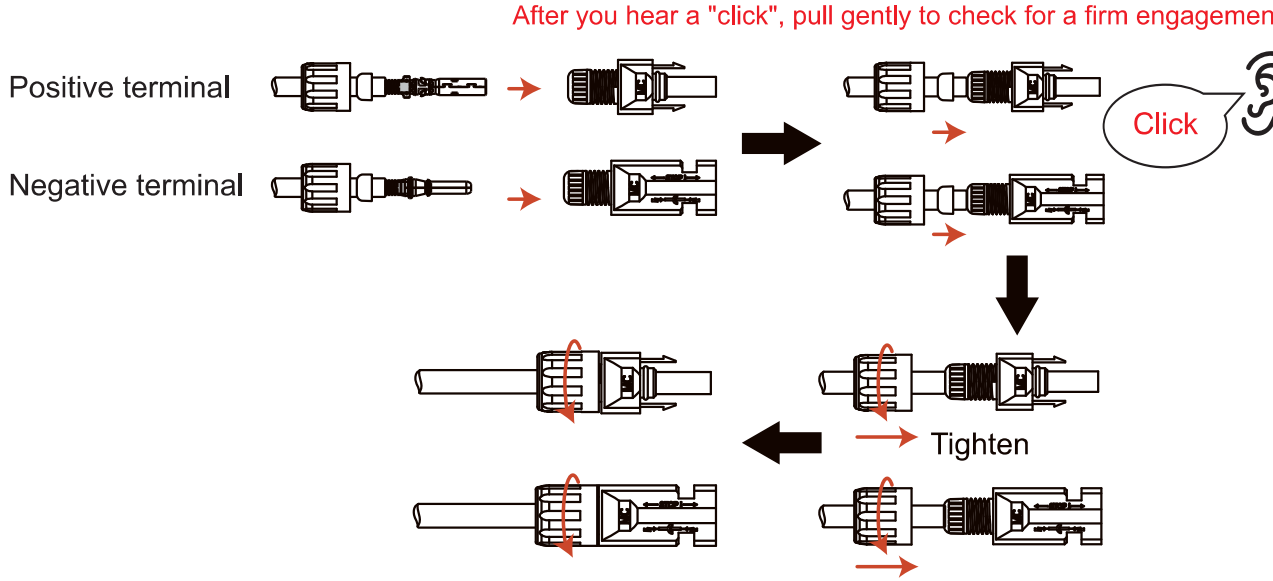


Figure 4.10

6. Measure PV voltage of DC input with multimeter, verify DC input cable polarity.

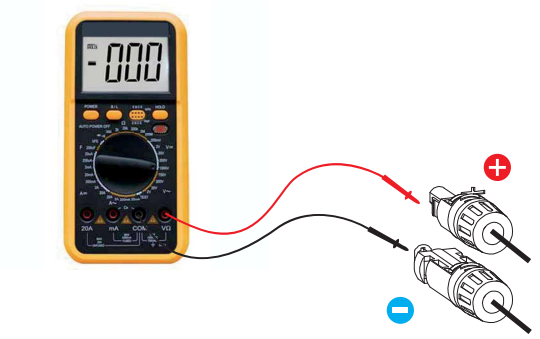


Figure 4.11

7. Connect the wired DC terminal to the inverter as shown in the Figure 4.12, and a slight "click" is heard to prove the connection is correct.

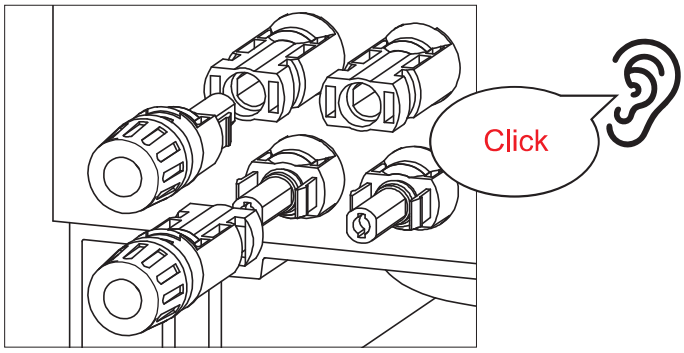


Figure 4.12

CAUTION:

If DC inputs are accidently reversely connected or inverter is faulty or not working properly, it is NOT allowed to turn off the DC switch. Otherwise it may cause DC arc and damage the inverter or even lead to a fire disaster. The correct actions are:

*Use a clip-on ammeter to measure the DC string current.

*If it is above 0.5A, please wait for the solar irradiance to get reduced until the current decreases to below 0.5A.

*Only after the current is below 0.5A, you are allowed to turn off the DC switches and disconnect the PV strings.

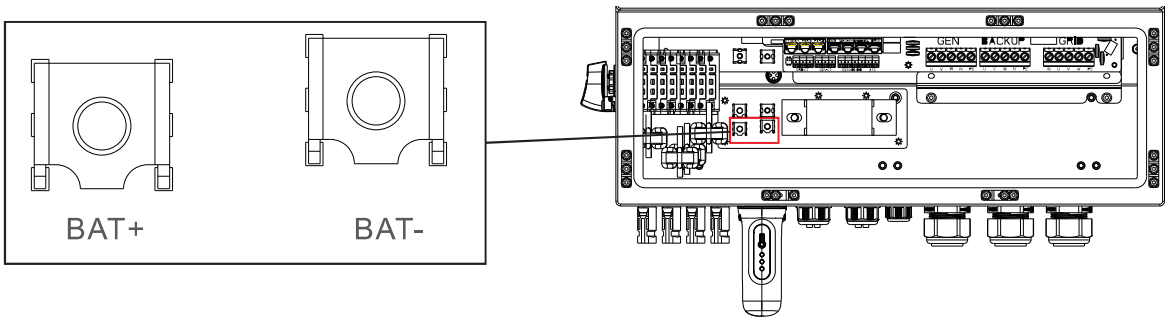
* In order to completely eliminate the possibility of failure, please disconnect the PV strings after turning off the DC switch to avoid secondary failures due to continuous PV energy on the next day.

Please note that any damages due to wrong operations are not covered in the device warranty.

4.5 Battery Cable Installation

DANGER:
Before installing the battery cables, be sure that the battery is turned off.
Use a multimeter to verify that the battery voltage is 0Vdc before proceeding.
Consult the battery product manual for instructions on how to turn it off.

1. The battery (+) and (-) cables shall only be connected to the inverter BAT terminals.
2. Run the cables into the wire box. Strip 13mm off the ends of each cable.
3. Crimp the R-type connectors onto the cables. Do not over crimp the connectors.
4. Remove the terminal bolts and then insert them through the connector holes.
5. Put each bolt back into the proper place, be sure to not reverse the polarity.
6. Tighten the bolts with a torque wrench screwdriver following the torque specs.
7. Battery Breaker recommended size: two-pole, 63A, leakage current protector recommended Type C, Icc≥20KA, Icp, mr≥350A fault current interrupting capacity at 800V/pole.



OT Terminal: R60-8, Recommended cable diameter: 8AWG(8.37mm²)

Figure 4.13 Battery cable connection

NOTE:
The battery fuse in the inverter wire box is replaceable.
The replacement can only be done by a technician authorized by Axitec.
Fuse specification: 1000V/100A.
The Max.temperature for connecting battery terminals is 105℃.

NOTE:
Before connecting the battery, please carefully read the product manual of the battery and perform the installation exactly as the battery manufacturer specifies in the manual.

4.6 AC Wiring

DANGER:
Before installing the AC cables, be sure that the OCPDs (breakers) are turned off.
Use a multimeter to verify that the AC voltages are 0Vac before proceeding.

There are three sets of AC output terminals and the installation steps for both are the same.

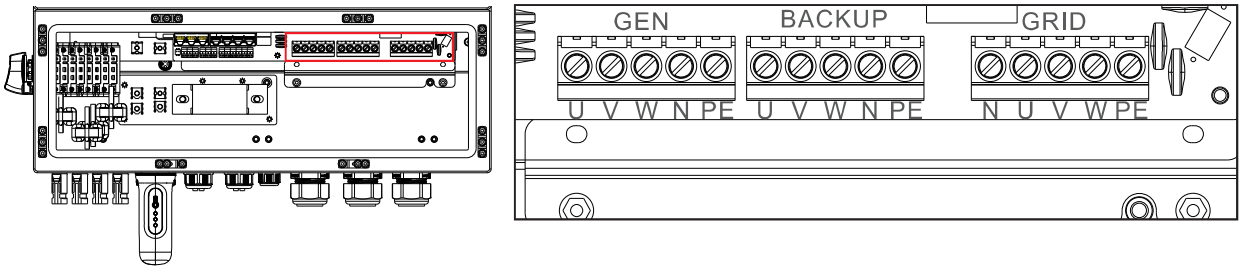


Figure 4.14 AC output terminals

Model	AC Grid	AC Backup/AC Gen	PE
Terminal	C10-12	C6-12	/
Torque	4-5N.m	4-5N.m	4-5N.m
Recommend cross section	8-6AWG (6mm²~10mm²)	10-6AWG (4mm²~10mm²)	6AWG

1. Bring the AC cables for the backup loads panel (backup) and the main service panel (grid) into the inverter wire box. The backup loads panel should not be electrically connected to the main service panel.
2. Strip 13mm from the ends of each cable. Crimp the R-type connectors onto the ends.
3. Remove the terminal bolts, insert them into the connectors, then use a torque wrench to tighten the bolts down.
4. Please refer to the terminal labels to connect the AC wires to the correct terminals.
5. The grid inrush current is 8.5A and the duration is less than 5ms.
6. AC Breaker recommended size: four-pole, 63A, leakage current protector recommended Type C, Icc≥20KA, Icp, mr≥350A fault current interrupting capacity at 230V/pole.
7. Cable Gland are recommended torque for installation is 4-5Nm. In order to ensure waterproof effect, the operator regularly checks whether the installation is tight.

NOTE:
The Max.temperature for connecting AC terminals is 105℃.

4.7 CT Connection

CAUTION:
Make sure the AC cable is totally isolated from AC power before connecting the smart meter or CT.

The CT provided in the product box is compulsory for hybrid system installation. It can be used to detect the grid current direction and provide the system operating condition to hybrid inverter.
CT Model: 120A/40mA_0.5%, ESCT-TA16 120A/40mA
CT Cable: Size – 2.3mm2, Length - 1m

Please install the CT on the phase lines at the system grid connection point and the arrow on the CT needs to point to the grid direction.

Lead the CT wires through the CT port at the bottom of the inverter and connect the CT wires to the 6 pin communication terminal block.

CT Wire	6 PIN Communication Terminal Block
White	Pin 1 (From Left to Right)
Black	Pin 2 (From Left to Right)

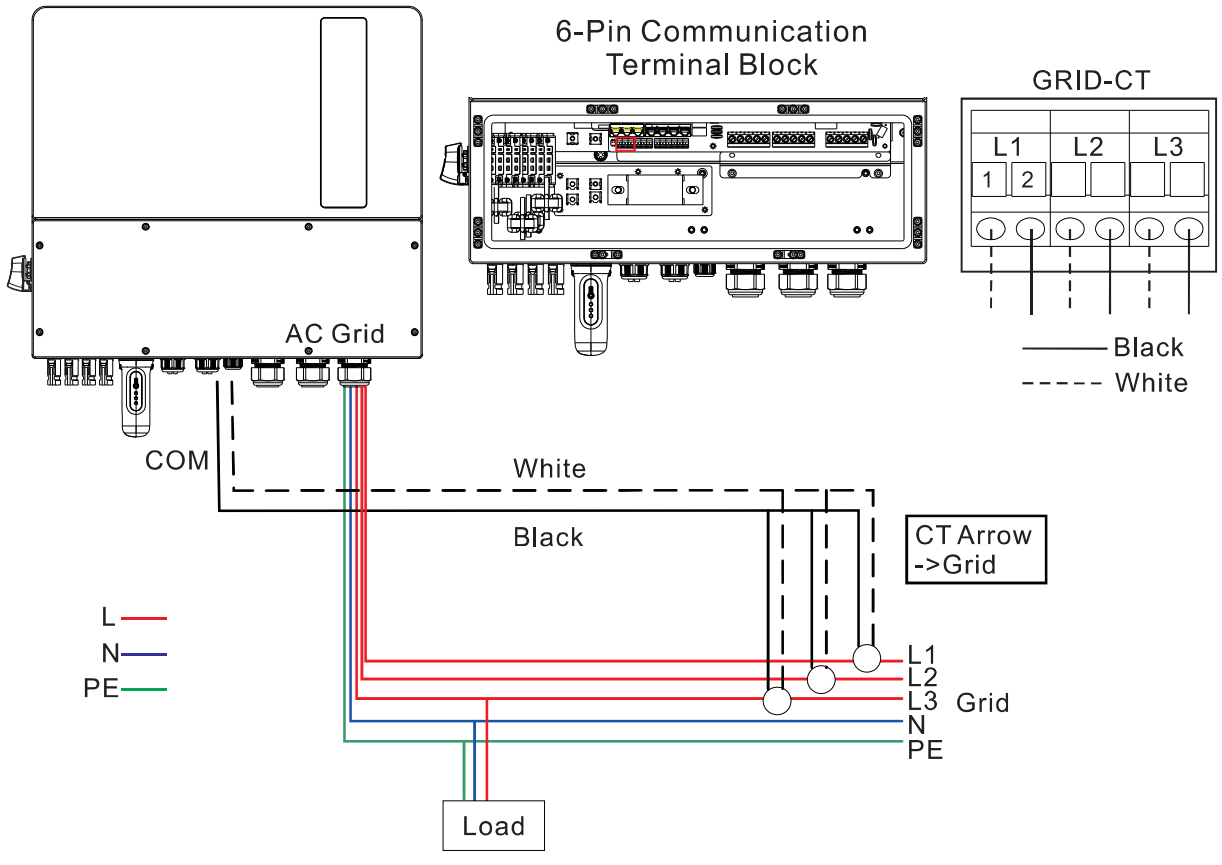
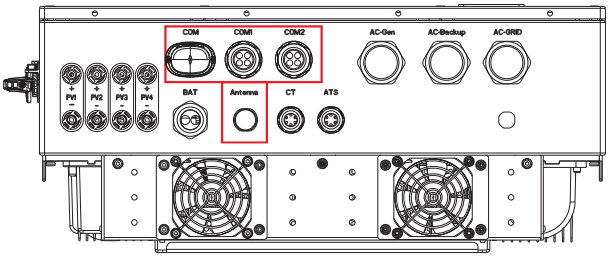


Figure 4.15

4.8 Inverter Communication

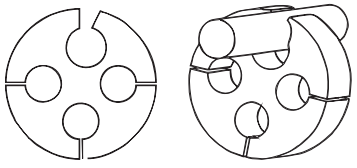
4.8.1 Communication Ports



Port	Port Type	Description
COM	USB	Used for Axitec data logger connection
ANTENNA	Antenna	Used for antenna connection for built in Bluetooth signal
COM1	4 hole watertight cable gland	Used for RJ45 connection inside wiring box
COM2	4 hole watertight cable gland	Used for RJ45 connection inside wiring box

Wiring steps for COM1-COM2:
Step 1. Loose the cable gland and remove the watertight caps inside the cable gland based on the number of the cables and keep the unused holes with watertight cap.
Step 2. Lead the cable into the holes in the cable gland.
(COM1-COM2 Hole Diameter: 6mm)
Step 3. Connect the cable to the corresponding terminals inside the wiring box.
Step 4. Reassemble the cable gland and ensure there is no bending or stretching of the cables inside the wiring box.

NOTE:
The 4-hole fastening rings inside the cable gland for COM1 and COM2 are with openings on the side.
Please separate the gap with hand and squeeze the cables into the holes from the side openings.



4.8.2 Communication Terminals

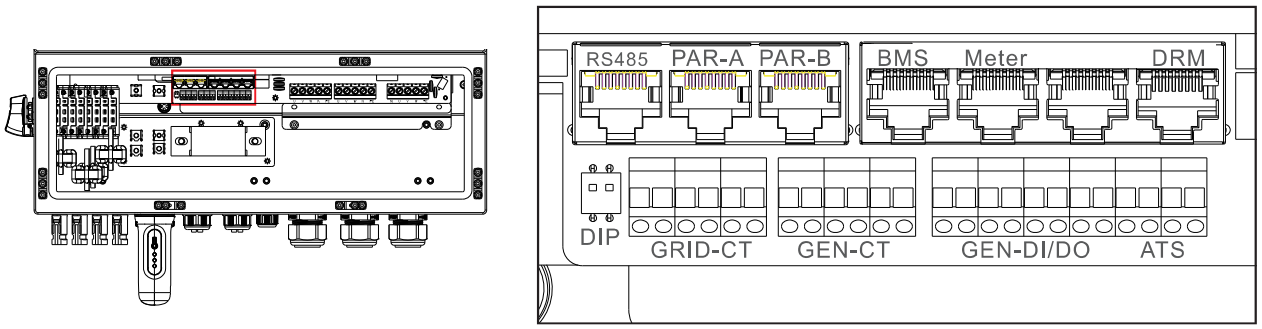


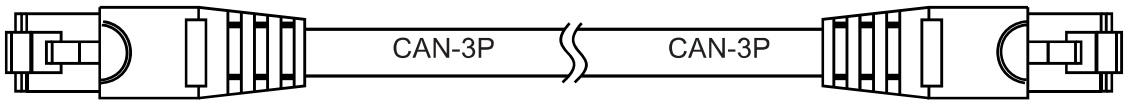
Figure 4.16 Communication terminals

Terminal	Type	Description
RS485	RJ45	Third-party external devices.
PAR-A	RJ45	(Optional) Parallel operation communication port.
PAR-B	RJ45	(Optional) Parallel operation communication port.
BMS	RJ45	Used for CAN communication between inverter and Lithium battery BMS.
Meter	RJ45	Used for RS485 communication between inverter and the smart meter.
COM	RJ45	Reserve.
DRM	RJ45	(Optional) To realize demand response or logic interface function, this function may be required in UK and Australia.
DIP Switch (2-1)	-	When a single inverter is running, DIP switch 1 and 2 shall be both at the bottom position. When multiple inverters are paralleled, DIP switch: Option 1: Both the first and last inverter (INV1 & INV3) have 1 of the DIP switch enabled (Either Pin1 or Pin2). Option 2: One of the first and the last inverter (INV1 or INV3) has 2 DIP switches enabled (Both Pin1 & Pin2)
GRID-CT	Cable	Connect grid Cts.
GEN-CT	Reserve	
GEN	Dry contact	Connect GEN .
DI/DO	Dry contact	Connect to gen start signal A and B.
ATS	Reserve	
Pin11/Pin12	Reserve	Connect Heat Pump.

4.8.3 BMS terminal connection

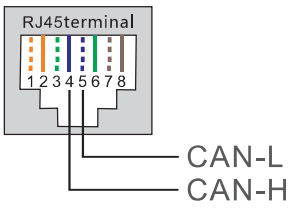
4.8.3.1 With lithium battery

CAN communication is supported between inverter and compatible battery models.
Please lead the CAN cable through the COM1 or COM2 port of the inverter and connect to the BMS terminal with RJ45 connector.



NOTE:

Before connecting CAN cable with the battery, please check whether the communication pin sequence of the inverter and the battery match;
If it does not match, you need to cut off the RJ45 connector at one end of the CAN cable and adjust the pin sequence according to the pin definitions of both inverter and battery.
Pin definition of the inverter BMS port is following EIA/TIA 568B.
CAN-H on Pin 4: blue
CAN-L on Pin 5: blue/white



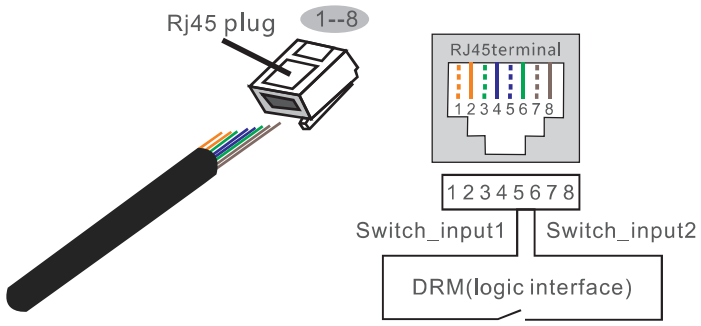
4.8.5 DRM port connection (Optional)

4.8.5.1 For remote shutdown function

Axitec inverters support remote shutdown function to remotely control the inverter to power on and off through logic signals.

The DRM port is provided with an RJ45 terminal and its Pin5 and Pin6 can be used for remote shutdown function.

Signal	Function
Short Pin5 and Pin6	Inverter generates
Open Pin5 and Pin6	Inverter shutdown in 5s



Correspondence between the cables and the stitches of plug, Pin5 and Pin6 of RJ45 terminal is used for the logic interface, other Pins are reserved.

Pin 1: Reserved; Pin 2: Reserved
Pin 3: Reserved; Pin 4: Reserved
Pin 5: Switch_input1; Pin 6: Switch_input2
Pin 7: Reserved; Pin 8: Reserved

Figure 4.17 Strip the insulation layer and connect to RJ45 plug

4.8.5.2 For DRED Control Function (For AU and NZ Only)

DRED means demand response enable device. The AS/NZS 4777.2:2020 required inverter need to support demand response mode(DRM).

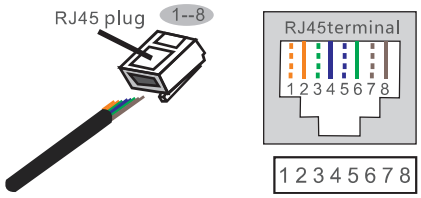
This function is for inverter that comply with AS/NZS 4777.2:2020 standard.

A RJ45 terminal is used for DRM connection.

Pin	Assignment for inverters capable of both charging and discharging	Pin	Assignment for inverters capable of both charging and discharging
1	DRM 1/5	5	RefGen
2	DRM 2/6	6	Com/DRM0
3	DRM 3/7	7	V+
4	DRM 4/8	8	V-

NOTE:

Axitec hybrid inverter is designed to provide 12V power for DRED.



Correspondence between the cables and the stitches of plug

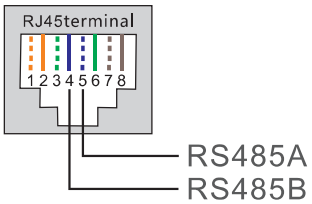
Pin 1: white and orange ; Pin 2: orange
Pin 3: white and green; Pin 4: blue
Pin 5: white and blue; Pin 6: green
Pin 7: white and brown; Pin 8: brown

Figure 4.18 Strip the insulation layer and connect to RJ45 plug

4.8.6 RS485 Port connection (Optional)

If a 3rd party external device or controller needs to communicate with the inverter, the RS485 port can be used. Modbus RTU protocol is supported by Axitec inverters.
To acquire latest protocol document, please contact Axitec local service team or Axitec sales.

NOTE:
Pin definition of the RS485 Port is following EIA/TIA 568B.
RS485A on Pin 5: blue/white
RS485B on Pin 4: blue



4.8.7 Parallel Inverter Connection (Optional)

Up to 6 units of the inverter can be connected in parallel.
Please connect the paralleled inverters by using P-A and P-B terminals.
Standard CAT5 with shielding layers internet cable can be used.

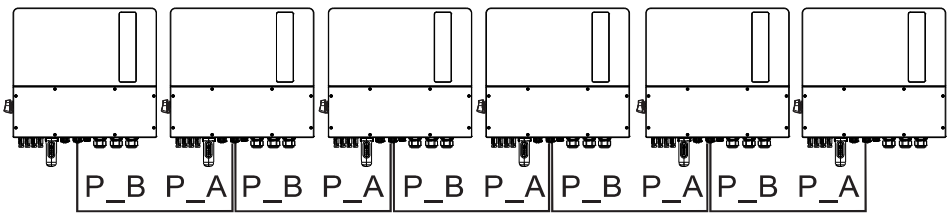


Figure 4.19 Parallel Terminal Connection

NOTE:
Please upgrade the latest software version before you want use the inverter in parallel mode.

4.8.8 12-pin Communication Terminal Block

Terminal Block Connection Steps:

Step 1. Lead the wires through the hole in COM1 or COM2 port (Hole Diameter: 2 mm)

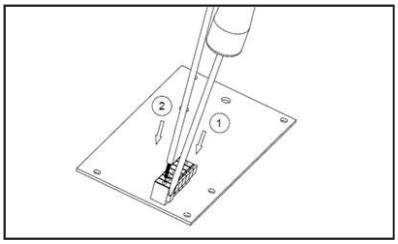
Step 2. Strip the wires for 9mm length

Step 3. Use slot type screwdriver to press the block on the top

Step 4. Insert the exposed copper part of the cable into the terminal.

Step 5. Remove the screwdriver and the terminal will clamp down on the exposed copper part.

Step 6. Give the cable a gentle tug to ensure that it is firmly secured.



4.8.8.1 Heat Pump Control Signal Connection

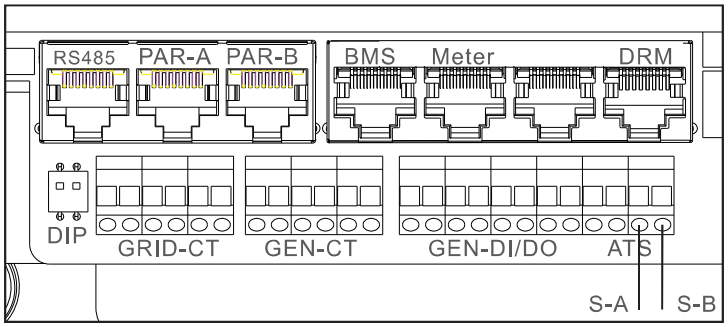


Figure 4.20

4.8.8.2 G-V Terminal Connection

The G-V terminal is a voltage-free dry contact signal for connecting with generator's NO relay to start up the generator when necessary.
When generator operation is not needed, Pin1 and Pin2 is in open circuit.
When generator operation is needed, Pin1 and Pin2 is in short circuit.
When generator connected to grid side, connect the generator start signal to PIN5 and PIN6.

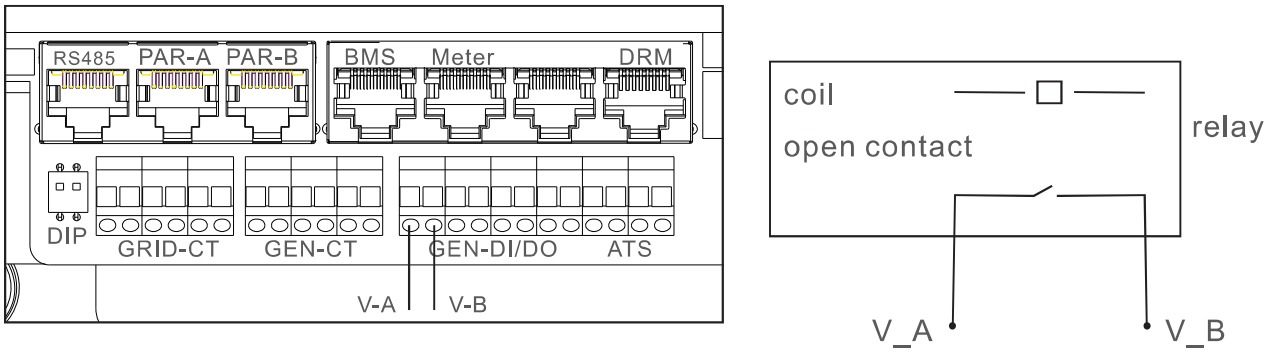


Figure 4.21

4.8.8.3 ATS240V Terminal Connection(Reserve)

The ATS240V terminal will output 230V AC voltage when inverter is connected to the grid, when the grid is not available, it will output 0V, then the ATS will transfer to generator.

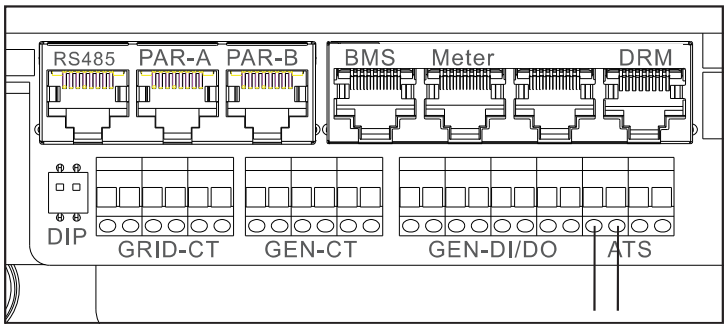


Figure 4.22

4.9 Inverter Remote Monitoring Connection

The inverter can be remotely monitored via WiFi, LAN or 4G.
The USB type COM port at the bottom of the inverter can connect to different kinds of Axitec dataloggers, enabling remote monitoring through the AXIcloud platform.
To install Axitec data loggers, please refer to the corresponding user manuals of Axitec data loggers.
The Axitec data loggers are optional and can be purchased separately.
Dust cover is provided in the inverter package in case the port is not used.

WARNING:
The USB type COM port only supports Axitec dataloggers.
It is forbidden to be used for other purposes.

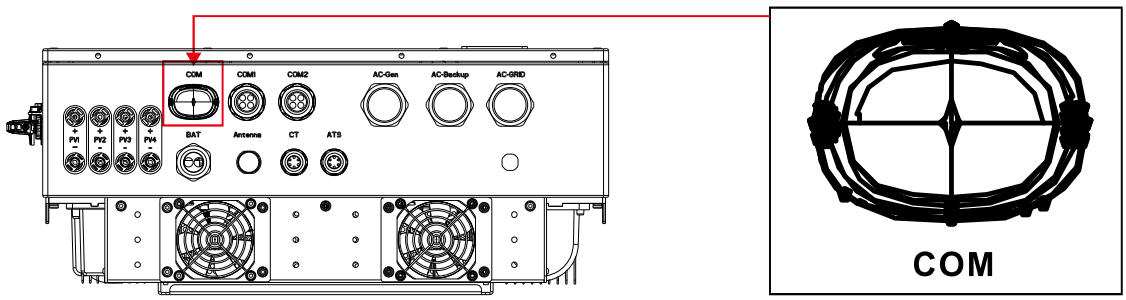


Figure 4.23

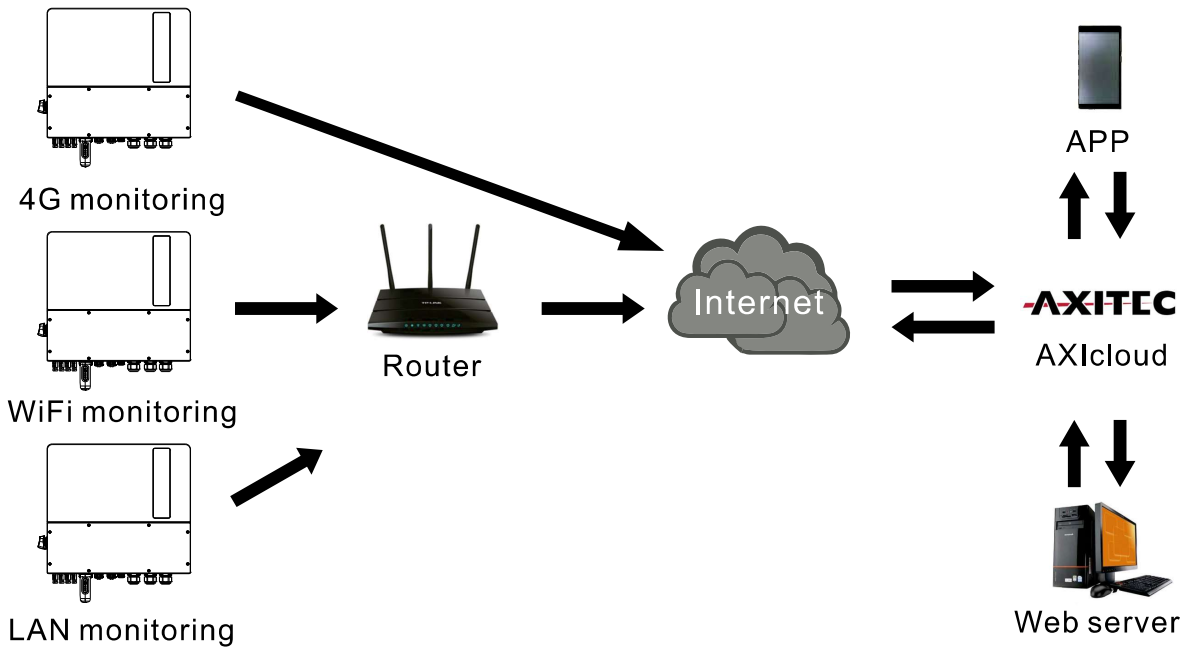


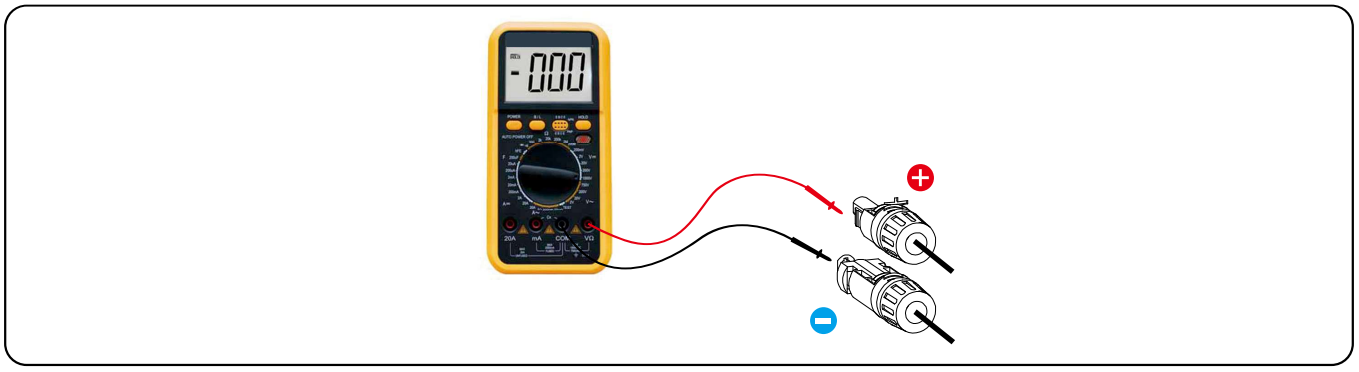
Figure 4.24 Wireless communication function

5.1 Preparation of Commissioning

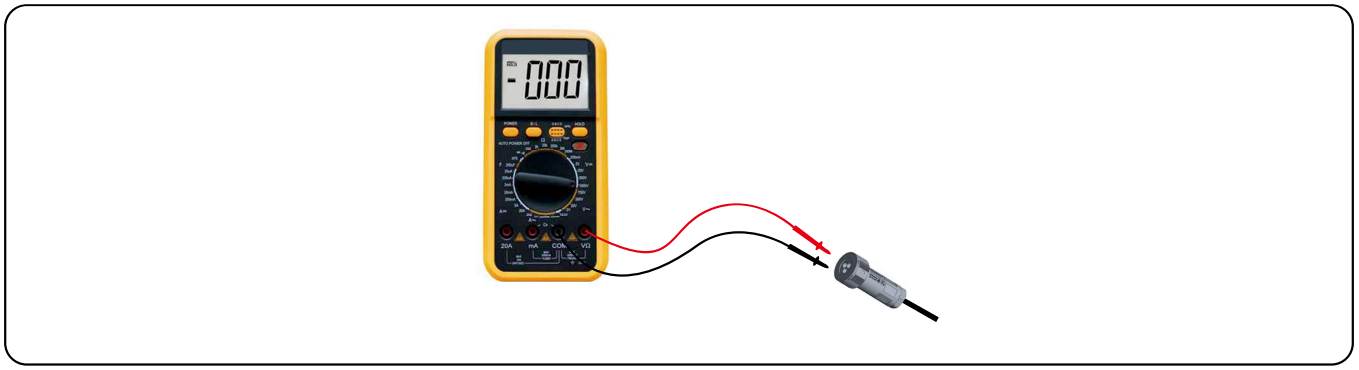
- Ensure that all the devices are accessible for operation, maintenance and service.
- Check and confirm that the inverter is firmly installed.
- Space for ventilation is sufficient for one inverter or multiple inverters.
- Nothing is left on the top of the inverter or battery module.
- Inverter and accessories are correctly connected.
- Cables are routed in safe place or protected against mechanical damage.
- Warning signs and labels are suitably affixed and durable.
- Bluetooth Antenna has been connected to the Antenna port of the inverter.
- An Android or IOS mobile phone with Bluetooth function is available.
- AXIcloud APP is installed on the mobile phone.
  There are three ways to download and install the latest APP:
  1. You can search "**AXIcloud**" in Google Play or App Store.
  2. You can scan this QR code below to download "**AXIcloud**".

5.2 Commissioning Procedure

Step 1: Measure DC voltage of PV strings and battery and ensure the polarity is correct.



Step 2: Measure AC voltage and frequency and ensure they are within local standard.

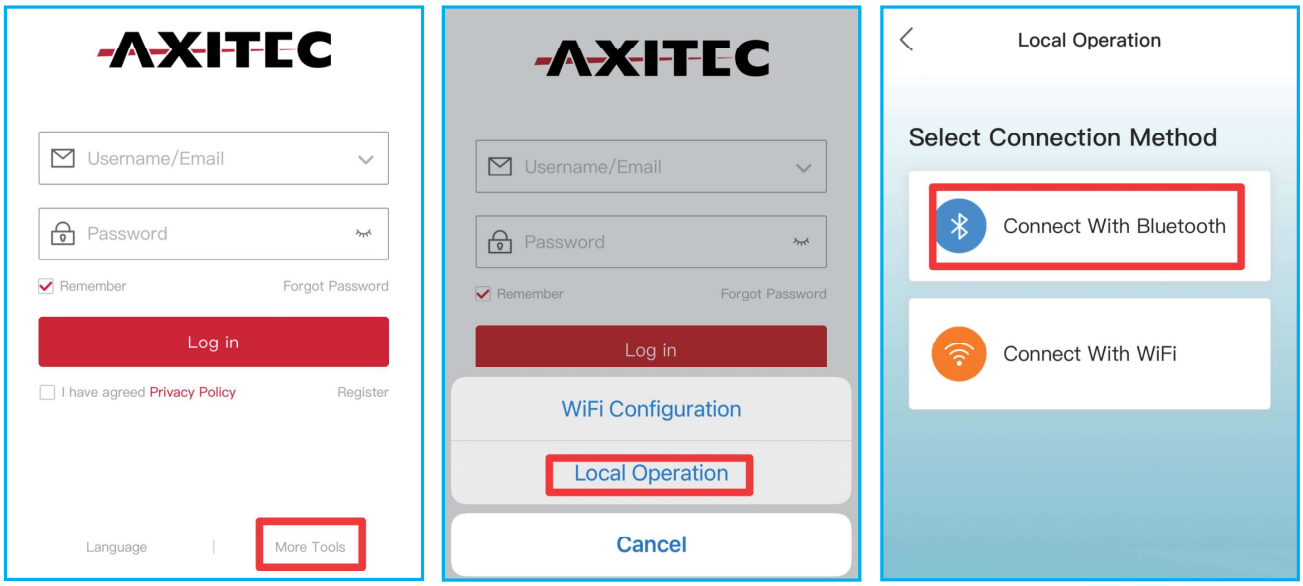


Step 3: Switch on the external AC breaker to power on the inverter control board. (Bluetooth signal available)

Step 4: **Connect with Bluetooth.**

Turn on Bluetooth switch on your mobile phone and then open the AXIcloud APP.

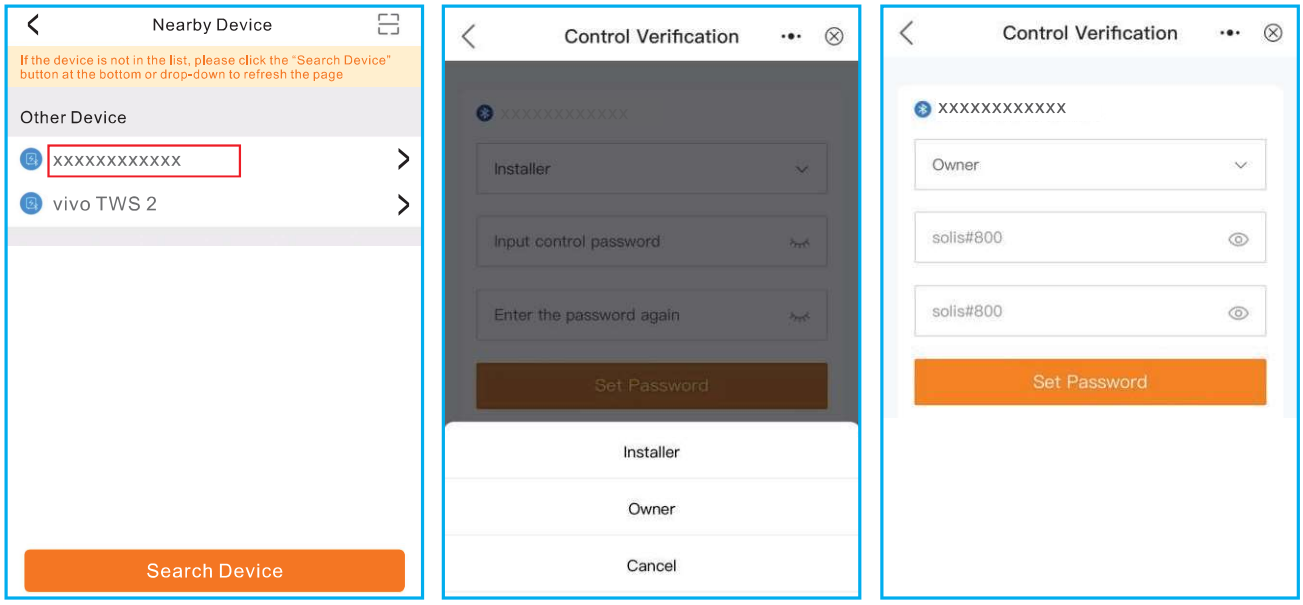
Click “More Tools”->”Local Operation”->”Connect with Bluetooth”



Step 5: Select the Bluetooth signal from the inverter. (Bluetooth Name: Inverter SN)

Step 6: **Login account.**

If you are the installer, please select the account type as Installer. If you are the plant owner, please select the account type as Owner. Then set your own initial password for control verification. (The first log-in must be finished by an installer in order to do the initial set up)

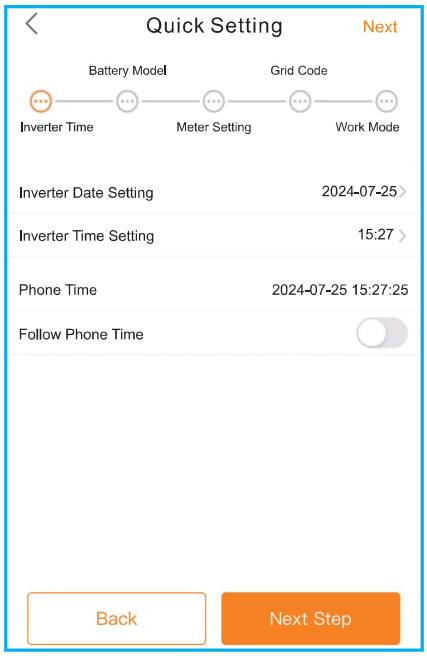


Step 7: After the log in for the first time, initial settings are required.

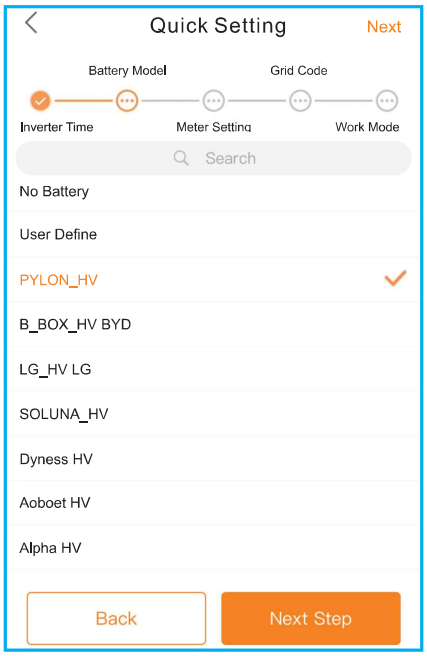
Step 7.1: **Set the inverter Date and Time.**
You can set to follow the time on your mobile phone.

Step 7.2: **Set the battery model.**
It must be based on the battery model that is actually connected to the inverter.
If there is no battery connected for the moment, please select “No Battery” to avoid alarms.
The default setting for battery over discharge SOC is 20%, force charge SOC is 10%.

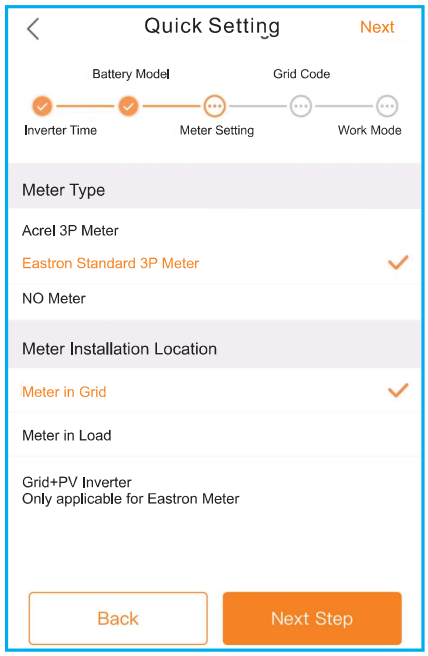
Step 7.3: **Set the meter setting.**
It must be based on the meter type that is actually connected to the inverter.
If there is no meter connected for the moment, please select “No Meter” to avoid alarms.
It is suggested to install the meter at the system grid connection point and select “Meter in Grid”.



Step 7.1



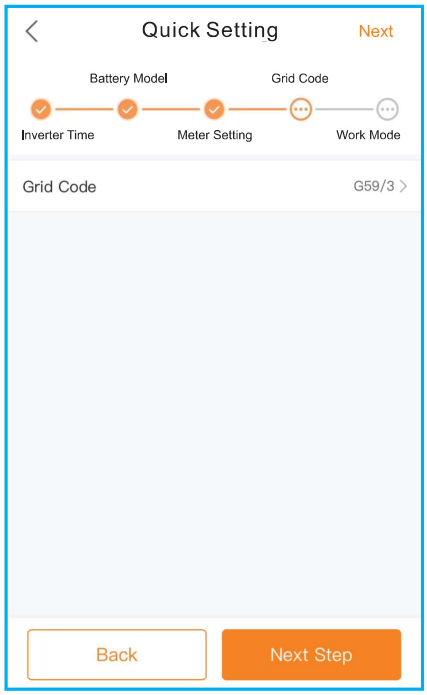
Step 7.2



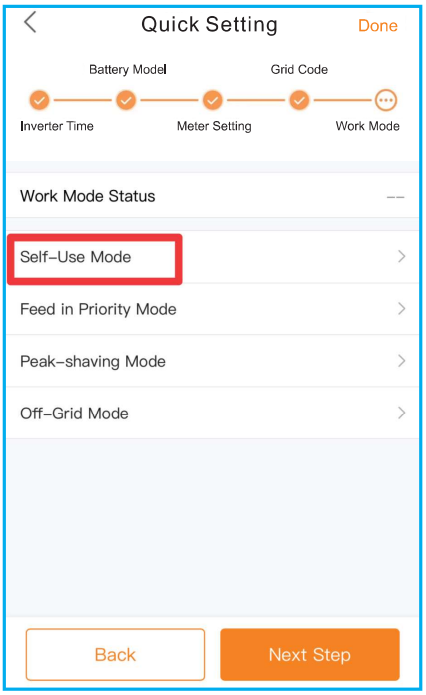
Step 7.3

Step 7.4: **Set the grid code setting.**
Please select the grid code based on the local grid network requirements.

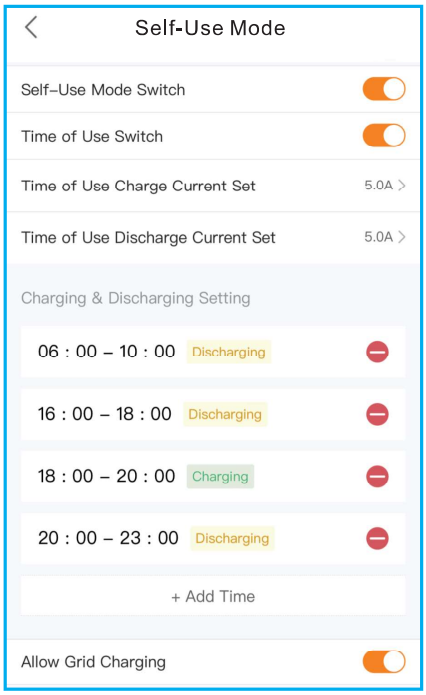
Step 7.5: **Set the work mode setting.**
Recommended setting is Self-Use Mode. This mode will maximize the use of PV power generation for household electricity, or store it in batteries and use it for household electricity. If need manually control the battery charging and discharging with respect to time, please use the Time of Use switch and the following set points. The “Allow Grid Charging” is recommended to be turned on (If turned off, the inverter will not force charge the battery and battery could potentially go to sleep).



Step 7.4



Step 7.5(1)



Step 4.5(2)

Step 8: **Setup complete.**

Now the initial settings on the inverter have been set and you can switch on the inverter's DC switch and switch on battery breaker to start up the system. You can also explore in the APP to check the operating data, alarm message or other advanced settings.

5.3 Shutdown procedure

Step 1. Turn off the AC breaker at the grid connection point.

Step 2. Turn off the DC switch of the inverter.

Step 3. Turn off the battery breaker.

Step 4. Wait until the device is powered off, and the system shutdown is complete.

5.4 Work Mode

Self-Use Mode stores the excess PV power into the battery. If the battery is charged, or there is no battery, the excess PV power will be exported(sold)back to the utility company. If the system is set to not export any power, then the inverter will curtail the PV power(derate the inverter output power).

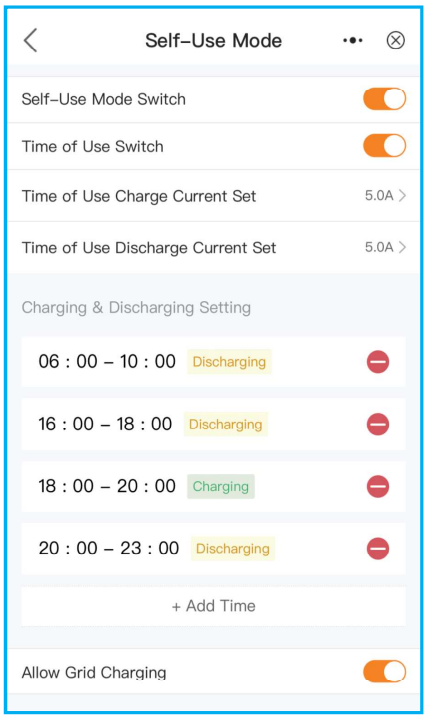
Feed in Priority Mode will ensure that the system exports any excess PV power after the home loads are supplied. If the export power quota has been met, then the remaining PV power will be stored in the battery. This mode should not be used if export power is going to be set to zero.

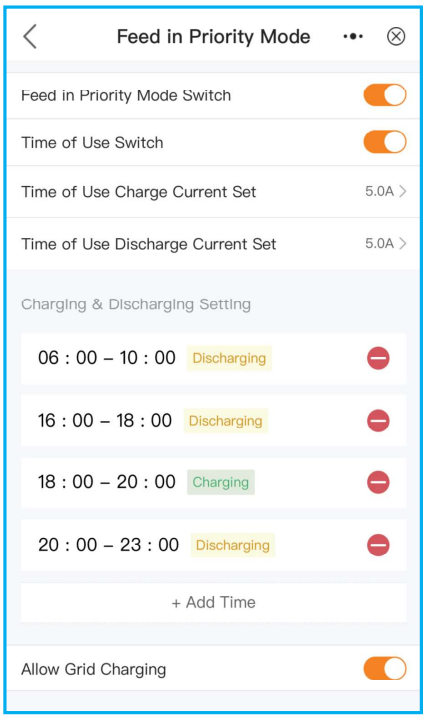
Off-Grid Mode is only to be used by systems that are not electrically connected to the grid at all. This mode is like Self-Use Mode, but the PV power will be curtailed if the battery is charged and the home load demand is lower than the amount of available PV power.

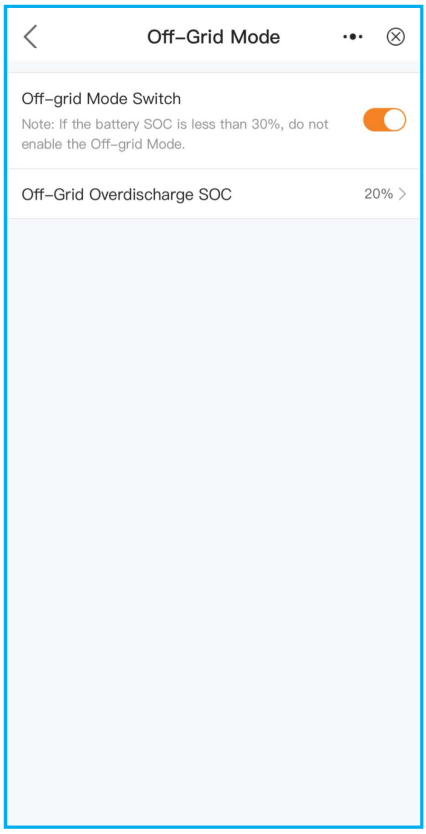
Peak-shaving Mode is possible to set the maximum power (Pmax) that the system obtains from the main grid. The power of the main grid charges batteries and supplies power to the load, which is within Pmax. When the load power exceeds the set maximum power (Pmax), the insufficient part is provided by the battery . At the same time, you can set the Peak SOC and charge the battery to this SOC as far as possible under the premise of satisfying Pmeter. The power of grid can be controlled to reduce the cost of electricity.

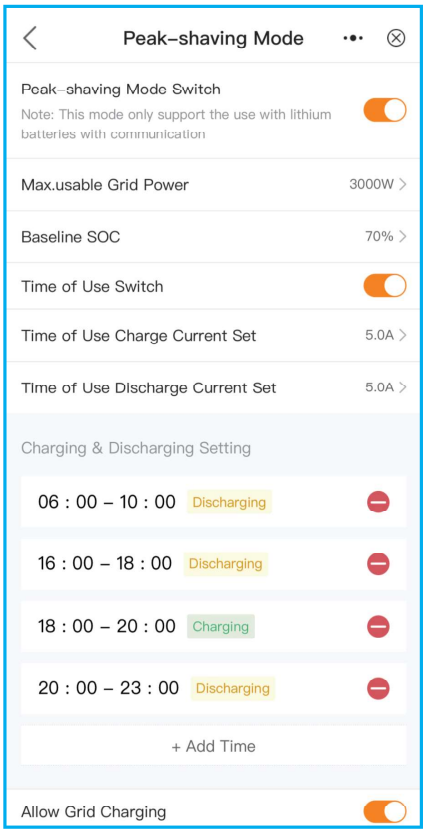
Time of Use Switch is for customizing when the battery is allowed to charge and discharge power and at what rate, established by a current(amperage)setting.If this slider switch is turned on, the inverter will only use this schedule to determine when to charge and discharge the battery. If Allow Grid Charging is turned on, the inverter will use grid power to charge the battery only under two circumstances:(1) the battery drains to the Force Charge SOC. (2)Time of Use is enabled and there is not enough available PV power during the charge window to meet the current rate that is established.

Time of Use is for manual control of the battery charging/discharging. If Time of Use is turned off, charging/discharging is automatically regulated by the inverter.


Self-Use Mode
Self-Use Mode Switch
Time of Use Switch
Time of Use Charge Current Set 5.0A
Time of Use Discharge Current Set 5.0A
Charging & Discharging Setting
06 : 00 – 10 : 00 Discharging
16 : 00 – 18 : 00 Discharging
18 : 00 – 20 : 00 Charging
20 : 00 – 23 : 00 Discharging
+ Add Time
Allow Grid Charging


Feed in Priority Mode
Feed in Priority Mode Switch
Time of Use Switch
Time of Use Charge Current Set 5.0A
Time of Use Discharge Current Set 5.0A
Charging & Discharging Setting
06 : 00 – 10 : 00 Discharging
16 : 00 – 18 : 00 Discharging
18 : 00 – 20 : 00 Charging
20 : 00 – 23 : 00 Discharging
+ Add Time
Allow Grid Charging


Off-Grid Mode
Off-grid Mode Switch
Note: If the battery SOC is less than 30%, do not enable the Off-grid Mode.
Off-Grid Overdischarge SOC 20%


Peak-shaving Mode
Peak-shaving Mode Switch
Note: This mode only support the use with lithium batteries with communication
Max.usable Grid Power 3000W
Baseline SOC 70%
Time of Use Switch
Time of Use Charge Current Set 5.0A
Time of Use Discharge Current Set 5.0A
Charging & Discharging Setting
06 : 00 – 10 : 00 Discharging
16 : 00 – 18 : 00 Discharging
18 : 00 – 20 : 00 Charging
20 : 00 – 23 : 00 Discharging
+ Add Time
Allow Grid Charging

5.5 Parallel Settings

Set up a parallel system according to the following steps:

A. Set the parallel mode as “Parallel”.

B. Set the master inverter address ID to 1, the other slaves to 2~6.

(Note: the address ID cannot be set to 0, and the physical address of the master must be 1)

C. Choose “master” or “slave” for each inverter.

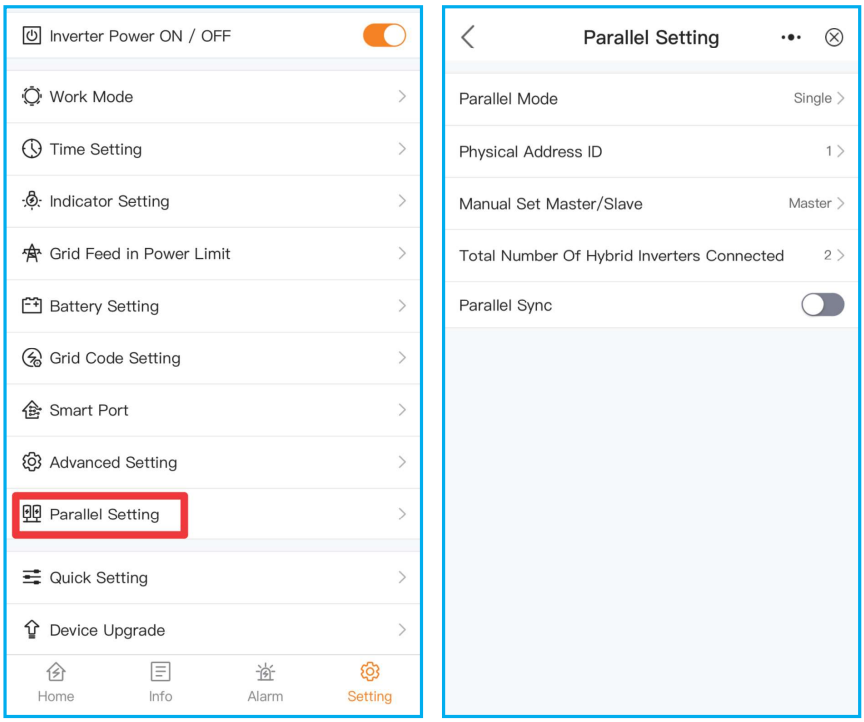
D. Choose the number of inverters in parallel, the range is 2~6.

E. Enable “Parallel Sync” , parameters of the main inverter will be synchronized to the slaves.

F. DIP Switch:

Option 1: Both the first and the last inverter(INV1 & INV3) have 1 of the DIP switch enabled. (Either Pin1 & Pin2)

Option 2: One of the first and the last inverter (INV1 or INV3) has 2 DIP switches enabled. (Both Pin1 or Pin2)



6. Maintenance

Axitec Series inverter does not require any regular maintenance. However, cleaning the heatsink will help inverter dissipating heat and increase the lifetime of inverter. The dirt on the inverter can be cleaned with a soft brush.

CAUTION:
Do not touch the surface when the inverter is operating. Some parts may be hot and cause burns. Turn OFF the inverter and let it cool down before you do any maintenance or cleaning of inverter.

The Intelligent LED indicators can be cleaned with cloth if they are too dirty.

NOTE:
Never use any solvents, abrasives or corrosive materials to clean the inverter.

Message Name	Information Description	Troubleshooting Suggestion
Off	Control device to shutdown	1. Turn on the device in the ON/OFF Setting.
LmtByEPM	The device's output is under controlled	1. Confirm whether the inverter is connected to an external EPM/meter to prevent reverse current. 2. Confirm whether the inverter is controlled by an external third-party device. 3. Confirm whether the power setting of the inverter power control is limited. 4. Verify settings in section 6.6.7 and check your meter readings.
LmtByDRM	DRM Function ON	1. No need to deal with it.
LmtByTemp	Over temperature power limited	1. No need to deal with it, the device is in normal operation.
LmtByFreq	Frequency power limited	
LmtByVg	The device is in the Volt-Watt mode	1. Due to the requirements of local safety regulations, when the grid voltage is high, the Volt-watt working mode is triggered, which generally does not need to be dealt with. 2. This mode is enabled by default.
LmtByVar	The device is in the Volt-Var mode of operation	1. Due to the requirements of local safety regulations, when the grid voltage is high, the Volt-watt working mode is triggered, which generally does not need to be dealt with. 2. This mode is enabled by default.
LmtByUnFr	Under frequency limit	1. No need to deal with it.
Standby	Bypass run	
StandbySynoch	Off grid status to On grid status	
GridToLoad	Grid to load	

Message Name	Information Description	Troubleshooting Suggestion
Surge Alarm	On-site grid surge	1. Grid side fault, restart the device. If it is still not eliminated, please contact the manufacturer's customer service.
OV-G-V01	Grid voltage exceeds the upper voltage range	1. Confirm whether the power grid is abnormal. 2. Confirm that the AC cable is properly connected. 3. Restart the system and check if the fault persists.
UN-G-V01	Grid voltage exceeds the lower voltage range	
OV-G-F01	Grid frequency exceeds the upper frequency range	
UN-G-F01	Grid frequency exceeds the lower frequency range	
G-PHASE	Unbalanced grid voltage	
G-F-GLU	Grid voltage frequency fluctuation	
NO-Grid	No grid	
OV-G-V02	Grid transient overvoltage	
OV-G-V03	Grid transient overvoltage	1. Restart the system, confirm if that the fault continues.
IGFOL-F	Grid current tracking failure	1. Confirm whether the power grid is abnormal. 2. Confirm that the AC cable is properly connected. 3. Restart the system and check if the fault persists.
OV-G-V05	Grid voltage RMS instanta-neous overvoltage fault	
OV-G-V04	Grid voltage exceeds the upper voltage range	
UN-G-V02	Grid voltage exceeds the lower voltage range	
OV-G-F02	Grid frequency exceeds the upper frequency range	
UN-G-F02	Grid frequency exceeds the lower frequency range	
NO-Battery	Battery is not connected	1. Check on information page 1 – Verify the battery voltage is within standards. 2. Measure battery voltage at plug.
OV-Vbackup	Inverting overvoltage	1. Check whether the backup port wiring is normal 2. Restart the system, confirm that the fault continues.
Over-Load	Load overload fault	1. Backup load power is too large, or some inductive load startup power is too large, need to remove some backup load, or remove the inductive load on the backup.

Message Name	Information Description	Troubleshooting Suggestion
BatName-FAIL	Wrong battery brand selection	1. Confirm whether the battery model selection is consistent with the actual one.
CAN Fail	CAN Fail	1. Can failure is a failure of communication between inverter and battery. Check cable conditions. Check to ensure you have it plugged in on the CAN port of the battery and inverter. Check that you are using the right cable. Some batteries require a special battery from the battery manufacturer.
OV-Vbatt	Battery overvoltage detected	1. Verify battery voltage is within standards. Measure battery voltage at inverter connection point. Contact your battery manufacturer for further service.
UN-Vbatt	Battery undervoltage detected	1. Restart the system and check if the fault persists. If it is still not eliminated, please contact the manufacturer's customer service.
Fan Alarm	Fan alarm	1. Check if the internal fan is working correctly or jammed.
OV-DC01 (1020 DATA:0001)	DC 1 input overvoltage	1. Check if the PV voltage is abnormal 2. Restart the system, confirm that the fault continues
OV-DC02 (1020 DATA:0002)	DC 2 input overvoltage	
OV-BUS (1021 DATA:0000)	DC bus overvoltage	1. Restart the system, confirm that the fault continues.
UN-BUS01 (1023 DATA:0001)	DC bus undervoltage	
UNB-BUS (1022 DATA:0000)	DC bus unbalanced voltage	
UN-BUS02 (1023 DATA:0002)	Abnormal detection of DC bus voltage	
DC-INTF. (1027 DATA:0000)	DC hardware overcurrent (1, 2, 3, 4)	1. Check if the DC wires are connected correctly without loose connection.
OV-G-I (1018 DATA:0000)	A phase RMS value overcurrent	1. Confirm that the grid is abnormal. 2. Confirm that the AC cable connection is not abnormal. 3. Restart the system, confirm that the fault continues.
OV-DCA-I (1025 DATA:0000)	DC 1 average overcurrent	1. Restart the system, confirm that the fault continues.
OV-DCB-I (1026 DATA:0000)	DC 2 average overcurrent	
GRID-INTF. (1030 DATA:0000)	AC hardware overcurrent (abc phase)	

Message Name	Information Description	Troubleshooting Suggestion
DCInj-FAULT (1037 DATA:0000)	The current DC component exceeds the limit	1. Confirm that the grid is abnormal. 2. Confirm that the AC cable connection is not abnormal. 3. Restart the system, confirm that the fault continues.
IGBT-OV-I (1048 DATA:0000)	IGBT overcurrent	1. Restart the system, confirm that the fault continues.
OV-TEM (1032 DATA:0000)	Module over temperature	1. Check whether the surrounding environment of the inverter has poor heat dissipation. 2. Confirm whether the product installation meets the requirements.
RelayChk-FAIL (1035 DATA:0000)	Relay failure	1. Restart the system, confirm that the fault continues.
UN-TEM (103A DATA:0000)	Low temperature protection	1. Check the working environment temperature of the inverter. 2. Restart the system to confirm if the fault continues.
PV ISO-PRO01 (1033 DATA:0001)	PV negative ground fault	1. Check whether the PV strings have insulation problems. 2. Check whether the PV cable is damaged.
PV ISO-PRO02 (1033 DATA:0002)	PV positive ground fault	
12Power-FAULT (1038 DATA:0000)	12V undervoltage failure	1. Check current leakage to ground. Verify your grounding. Verify all wires are in good condition and not leaking current to ground.
ILeak-PRO01 (1034 DATA:0001)	Leakage current failure 01 (30mA)	
ILeak-PRO02 (1034 DATA:0002)	Leakage current failure 02 (60mA)	
ILeak-PRO03 (1034 DATA:0003)	Leakage current failure 03 (150mA)	
ILeak-PRO04 (1034 DATA:0004)	Leakage current failure 04	
ILeak_Check (1039 DATA:0000)	Leakage current sensor failure	
GRID-INTF02 (1046 DATA:0000)	Power grid disturbance 02	1. Confirm whether the grid is seriously distorted. 2. Check whether the AC cable is connected reliably.
OV-Vbatt-H/ OV-BUS-H (1051 DATA:0000)	Battery overvoltage hardware failure / VBUS	1. Check if the battery circuit breaker is tripping. 2. Check if the battery is damaged.

Message Name	Information Description	Troubleshooting Suggestion
OV-ILLC (1052 DATA:0000)	LLC hardware overcurrent	1. Check whether the backup load is overloaded. 2. Restart the system, confirm that the fault continues.
INI-FAULT (1031 DATA:0000)	AD zero drift overlink	1. Restart the system, confirm that the fault continues.
DSP-B-FAULT (1036 DATA:0000)	The master-slave DSP communication is abnormal	
AFCI-Check (1040 DATA:0000)	AFCI self-test failure	
ARC- FAULT (1041 DATA:0000)	AFCI failure	1. Verify connections are tight within your PV system. Arc fault settings can be changed in advanced settings if further adjustment is necessary.

Table 7.1 Fault message and description

NOTE:
If the inverter displays any alarm message as listed in Table 7.1; please turn off the inverter and wait for 5 minutes before restarting it .
If the failure persists, please contact your local distributor or the service center.

Please keep ready with you the following information before contacting us.

1. Serial number of Axitec three phase inverter;
2. The distributor/dealer of Axitec three phase inverter (if available);
3. Installation date.
4. The description of the problem together with necessary information, pictures, attachment.
5. The PV array configuration (e.g. number of panels, capacity of panels, number of strings, etc.);
6. Battery details (brand, model, capacity, data connection, etc.).
7. Your contact details.

Technical Data	AXIhycon 12H
Input DC (PV side)	
Max Usable PV Input Power	19200W
Max. input voltage	1000V
Rated voltage	600V
Start-up voltage	160V
MPPT voltage range	200-850V
Full load MPPT voltage range	300-850V
Max. input current	4*20A
Max. short circuit current	4*30A
MPPT number/Max input strings number	4/4
Battery	
Battery Type	Li-ion
Battery Voltage range	120 - 800Vdc
Maximum charging Power	12kW
Maximum Charge/discharge current	50A
Communication	CAN/RS485
Output AC(Grid-side)	
Rated output power	12kW
Max. apparent output power	12kVA
Rated grid voltage	3/N/PE, 220V/380V, 230V/400V
The grid voltage range	320-460V
Rating grid frequency	50 Hz/60 Hz
AC grid frequency range	45-55 Hz/ 55-65Hz
Rating grid output current	18.2A/17.3A
Max. output current	18.2A/17.3A
Power factor	> 0.99 (0.8 leading to 0.8 lagging)
THDi	< 3%
Input AC(Grid-side)	
Max. input power	18kW
Rated input current	27.3A/26.0A
Rated input voltage	3/N/PE, 220V/380V, 230V/400V
Rated input frequency	50 Hz/60 Hz

Technical Data	AXIhycon 12H
Input Generator	
Max. input power	12kW
Rated input current	18.2A/17.3A
Rated input frequency	50 Hz/60 Hz
Output AC(Back-up)	
Rated output power	12kW
Peak apparent output power	2 time of rated power, 10 S
Back-up switch time	< 10ms
Rated output voltage	3/N/PE, 220V/380V, 230V/400V
Rated frequency	50 Hz/60 Hz
Rated output current	18.2A/17.3A
THDv(@linear load)	<3%
Efficiency	
Max. efficiency	97.70%
EU efficiency	97.50%
BAT charged by PV Max. efficiency	98.50%
BAT charged/discharged to AC Max. efficiency	97.20%
MPPT efficiency	99.90%
Protection	
Anti-islanding protection	Yes
Output over voltage protection	Yes
Insulation resistance monitoring	Yes
Residual current detection	Yes
Output over current protection	Yes
Short circuit protection	Yes
Integrated AFCI 2.0	Optional
Integrated DC switch	Yes
DC reverse polarity protection	Yes
PV overvoltage protection	Yes
Battery reverse protection	Yes

8. Specifications

Technical Data	AXIhycon 12H
General data	
Max. allowable phase imbalance (grid & back up)	100%
Max. power per phase (grid & back up)	50% rated power
Dimensions(W/H/D)	563*546*235mm
Weight	32.6kg
Topology	Transformerless
Self consumption (Night)	<25 W
Operation temperature range	-25℃ ~ +60℃
Relative humidity	0-95%
Ingress protection	IP66
Noise emission (typical)	<65 dB(A)
Cooling concept	Smart cooling
Max.operation altitude	2000m
Grid connection standard	EN 50549-1, VDE4105 CEI 0-21, CEI 0-16, NC-RFG TypeB, NRS 097-2-1 ED 2.1
Safety/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-3, IEC 61000-2
Features	
PV connection	MC4 connector
Battery connnection	OT terminal
AC connection	OT terminal
Display	LED indicator & Bluetooth+APP
Communication	CAN, RS485, Ethernet, optional:Wi-Fi, Cellular, LAN
Warranty	5 years

Technical Data	AXIhycon 15H
Input DC (PV side)	
Max Usable PV Input Power	24000W
Max. input voltage	1000V
Rated voltage	600V
Start-up voltage	160V
MPPT voltage range	200-850V
Full load MPPT voltage range	300-850V
Max. input current	4*20A
Max. short circuit current	4*30A
MPPT number/Max input strings number	4/4
Battery	
Battery Type	Li-ion
Battery Voltage range	120 - 800Vdc
Maximum charging Power	15kW
Maximum Charge/discharge current	50A
Communication	CAN/RS485
Output AC(Grid-side)	
Rated output power	15kW
Max. apparent output power	15kVA
Rated grid voltage	3/N/PE, 220V/380V, 230V/400V
The grid voltage range	320-460V
Rating grid frequency	50 Hz/60 Hz
AC grid frequency range	45-55 Hz/ 55-65Hz
Rating grid output current	22.8A/21.7A
Max. output current	22.8A/21.7A
Power factor	> 0.99 (0.8 leading to 0.8 lagging)
THDi	< 3%
Input AC(Grid-side)	
Max. input power	22.5kW
Rated input current	34.2A/32.5A
Rated input voltage	3/N/PE, 220V/380V, 230V/400V
Rated input frequency	50 Hz/60 Hz

Technical Data	AXIhycon 15H
Input Generator	
Max. input power	15kW
Rated input current	22.8A/21.7A
Rated input frequency	50 Hz/60 Hz
Output AC(Back-up)	
Rated output power	15kW
Peak apparent output power	2 time of rated power, 10 S
Back-up switch time	< 10ms
Rated output voltage	3/N/PE, 220V/380V, 230V/400V
Rated frequency	50 Hz/60 Hz
Rated output current	22.8A/21.7A
THDv(@linear load)	<3%
Efficiency	
Max. efficiency	97.70%
EU efficiency	97.50%
BAT charged by PV Max. efficiency	98.50%
BAT charged/discharged to AC Max. efficiency	97.20%
MPPT efficiency	99.90%
Protection	
Anti-islanding protection	Yes
Output over voltage protection	Yes
Insulation resistance monitoring	Yes
Residual current detection	Yes
Output over current protection	Yes
Short circuit protection	Yes
Integrated AFCI 2.0	Optional
Integrated DC switch	Yes
DC reverse polarity protection	Yes
PV overvoltage protection	Yes
Battery reverse protection	Yes

8. Specifications

Technical Data	AXIhycon 15H
General data	
Max. allowable phase imbalance (grid & back up)	100%
Max. power per phase (grid & back up)	50% rated power
Dimensions(W/H/D)	563*546*235mm
Weight	32.6kg
Topology	Transformerless
Self consumption (Night)	<25 W
Operation temperature range	-25℃ ~ +60℃
Relative humidity	0-95%
Ingress protection	IP66
Noise emission (typical)	<65 dB(A)
Cooling concept	Smart cooling
Max.operation altitude	2000m
Grid connection standard	EN 50549-1, VDE4105 CEI 0-21, CEI 0-16, NC-RFG TypeB, NRS 097-2-1 ED 2.1
Safety/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-3, IEC 61000-2
Features	
PV connection	MC4 connector
Battery connnection	OT terminal
AC connection	OT terminal
Display	LED indicator & Bluetooth+APP
Communication	CAN, RS485, Ethernet, optional:Wi-Fi, Cellular, LAN
Warranty	5 years

Technical Data	AXIhycon 20H
Input DC (PV side)	
Max Usable PV Input Power	32000W
Max. input voltage	1000V
Rated voltage	600V
Start-up voltage	160V
MPPT voltage range	200-850V
Full load MPPT voltage range	300-850V
Max. input current	4*20A
Max. short circuit current	4*30A
MPPT number/Max input strings number	4/4
Battery	
Battery Type	Li-ion
Battery Voltage range	120 - 800Vdc
Maximum charging Power	20kW
Maximum Charge/discharge current	50A
Communication	CAN/RS485
Output AC(Grid-side)	
Rated output power	20kW
Max. apparent output power	20kVA
Rated grid voltage	3/N/PE, 220V/380V, 230V/400V
The grid voltage range	320-460V
Rating grid frequency	50 Hz/60 Hz
AC grid frequency range	45-55 Hz/ 55-65Hz
Rating grid output current	30.4A/28.9A
Max. output current	30.4A/28.9A
Power factor	> 0.99 (0.8 leading to 0.8 lagging)
THDi	< 3%
Input AC(Grid-side)	
Max. input power	30kW
Rated input current	45.6A/43.3A
Rated input voltage	3/N/PE, 220V/380V, 230V/400V
Rated input frequency	50 Hz/60 Hz

Technical Data	AXIhycon 20H
Input Generator	
Max. input power	20kW
Rated input current	30.4A/28.9A
Rated input frequency	50 Hz/60 Hz
Output AC(Back-up)	
Rated output power	20kW
Peak apparent output power	1.6 time of rated power, 10 S
Back-up switch time	< 10ms
Rated output voltage	3/N/PE, 220V/380V, 230V/400V
Rated frequency	50 Hz/60 Hz
Rated output current	30.4A/28.9A
THDv(@linear load)	<3%
Efficiency	
Max. efficiency	97.70%
EU efficiency	97.50%
BAT charged by PV Max. efficiency	98.50%
BAT charged/discharged to AC Max. efficiency	97.20%
MPPT efficiency	99.90%
Protection	
Anti-islanding protection	Yes
Output over voltage protection	Yes
Insulation resistance monitoring	Yes
Residual current detection	Yes
Output over current protection	Yes
Short circuit protection	Yes
Integrated AFCI 2.0	Optional
Integrated DC switch	Yes
DC reverse polarity protection	Yes
PV overvoltage protection	Yes
Battery reverse protection	Yes

8. Specifications

Technical Data	AXIhycon 20H
General data	
Max. allowable phase imbalance (grid & back up)	100%
Max. power per phase (grid & back up)	40% rated power
Dimensions(W/H/D)	563*546*235mm
Weight	32.6kg
Topology	Transformerless
Self consumption (Night)	<25 W
Operation temperature range	-25℃ ~ +60℃
Relative humidity	0-95%
Ingress protection	IP66
Noise emission (typical)	<65 dB(A)
Cooling concept	Smart cooling
Max.operation altitude	2000m
Grid connection standard	EN 50549-1, VDE4105 CEI 0-21, CEI 0-16, NC-RFG TypeB, NRS 097-2-1 ED 2.1
Safety/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-1/-3, IEC 61000-2
Features	
PV connection	MC4 connector
Battery connnection	OT terminal
AC connection	OT terminal
Display	LED indicator & Bluetooth+APP
Communication	CAN, RS485, Ethernet, optional:Wi-Fi, Cellular, LAN
Warranty	5 years

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Please adhere to the actual products in case of any discrepancies in this user manual.
If you encounter any problem on the inverter, please find out the inverter S/N
and contact us, we will try to respond to your question ASAP.