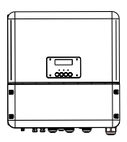
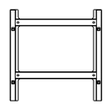
Quick Installation Guide

X1-Hybrid 3KW-5KW

I Packing List

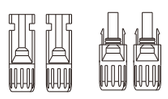


Inverter x1

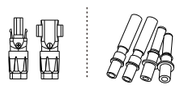


Bracket x1

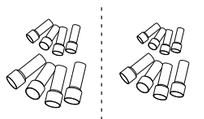
Expansion tubes x4
Expansion screws x4



DC connectors
(positive x2, negative x2)



Battery connectors
(positive x1, negative x1)
DC pin connectors
(positive x2, negative x2)



AC terminal x8 *

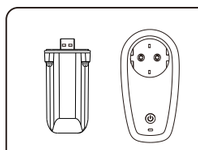
Ring terminal (external) x1
Ring terminal (internal) x1
Gasket x1

Grounding nut x1
Set screw(for mounting) x1

User manual x1
Warranty card x1

Quick installation guide x1

Wifi module(optional) x1

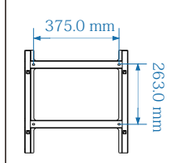


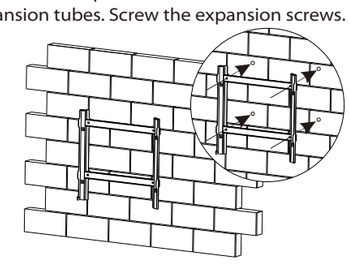
Smart Plug(optional) x1

AC terminal x8 *: 4 6AWG AC terminals and 4 10AWG AC terminals for Version I
4 10AWG AC terminals and 4 8AWG AC terminals for Version E and Version C

II Mounting Steps

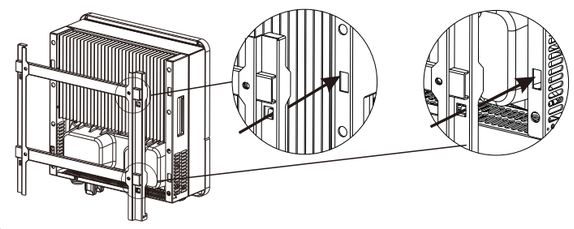
- Mark position of four holes.
- Drill holes with φ10 drill. Depth: at least 60mm.
- Tighten the expansion tubes. Screw the expansion screws.





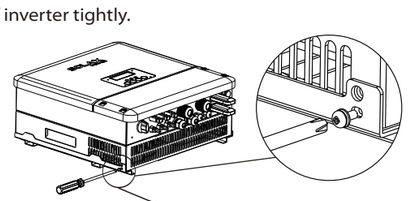
❶

- Match the inverter with the bracket.



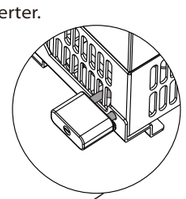
❷

- Screw the set screw on the left-bottom of inverter tightly.



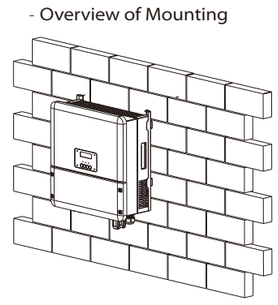
❸

- If necessary, costomer can install an anti-theft lock on the left-bottom of the inverter.



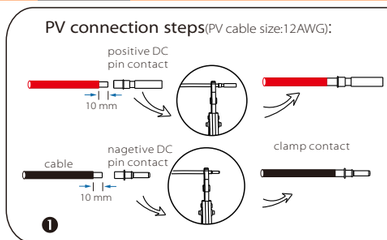
❹

- Overview of Mounting

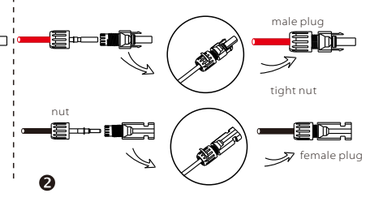


III PV and AC Connection

PV connection steps(PV cable size:12AWG):

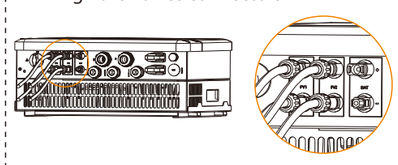


❶



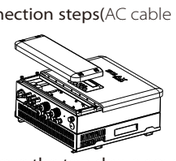
❷

- Align the halves connectors

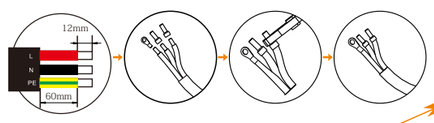


❸

AC connection steps(AC cable size: refer to table1&table2):



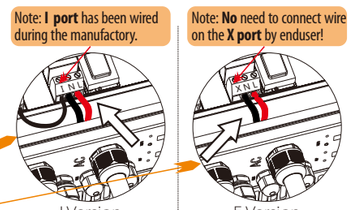
1.Remove the top-down cover.



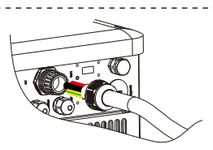
2. Make AC wires.

Note: **I port** has been wired during the manufactory.

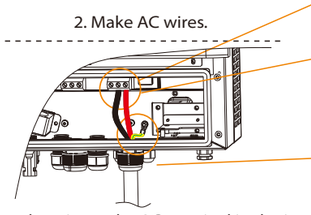
Note: **No** need to connect wire on the **X port** by enduser!



I Version E Version

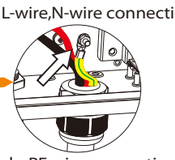


3. Insert AC cable into AC port through screw cap.



4. Connect the wire to the AC terminal in the inverter.

a. L-wire,N-wire connection



b. PE wire connection

Model	X1-Hybrid-3.0-D X1-Hybrid-3.0-N	X1-Hybrid-3.7-D X1-Hybrid-3.7-N	X1-Hybrid-4.6-D X1-Hybrid-4.6-N	X1-Hybrid-5.0-D X1-Hybrid-5.0-N
Cable	4-5mm²	4-5mm²	5-6mm²	5-6mm²
Micro-breaker	20A	20A	32A	32A

table1. E Version & C Version

Model	X1-Hybrid-3.0-D X1-Hybrid-3.0-N	X1-Hybrid-3.7-D X1-Hybrid-3.7-N	X1-Hybrid-4.6-D X1-Hybrid-4.6-N	X1-Hybrid-5.0-D X1-Hybrid-5.0-N
Cable	8-10mm²	8-10mm²	10-13mm²	10-13mm²
Micro-breaker	50A	50A	63A	63A

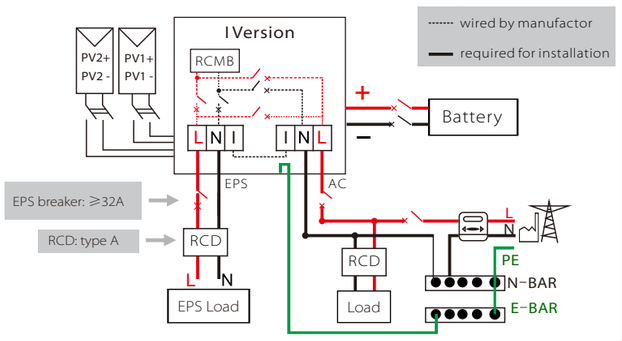
table2. I Version

IV EPS Connection(for I version and E version)

EPS wiring diagram

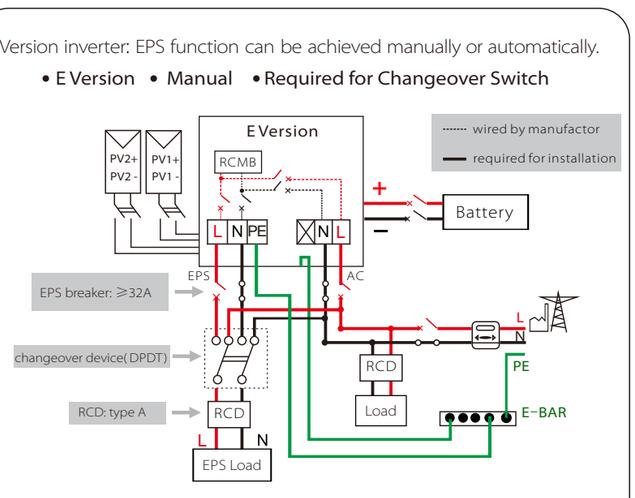
I Version inverter: EPS function can be only be achieved automatically.
Do not required for Changeover Switch.

• I Version • Auto •Do not required for Changeover Switch

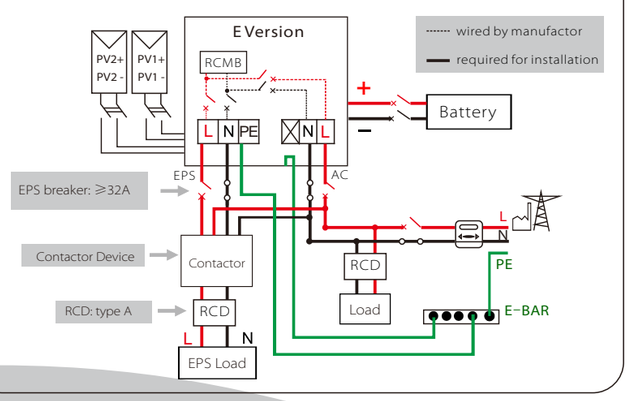


E Version inverter: EPS function can be achieved manually or automatically.

• E Version • Manual • Required for Changeover Switch

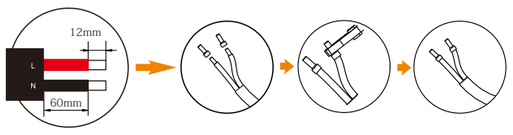


• E Version • Auto • Required for Changeover Switch

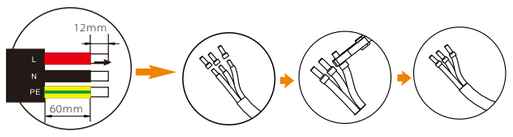


EPS connection steps:

1. Make wires(EPS cable size: refer to the table below)



I Version

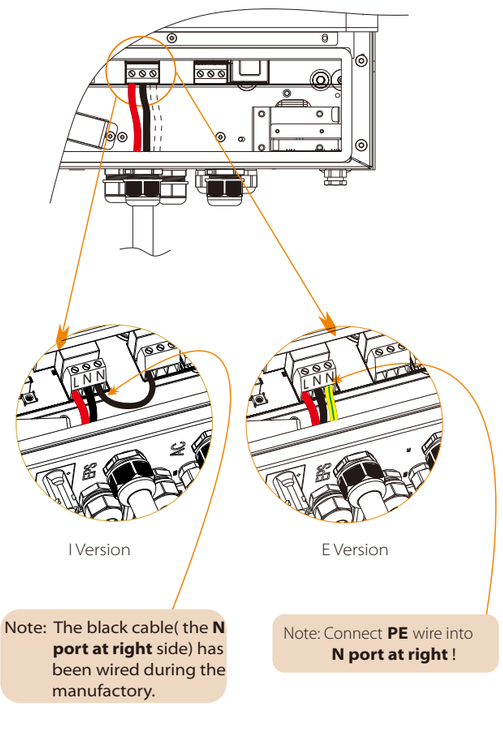


E Version

Model	X1-Hybrid-3.0-D X1-Hybrid-3.0-N	X1-Hybrid-3.7-D X1-Hybrid-3.7-N	X1-Hybrid-4.6-D X1-Hybrid-4.6-N	X1-Hybrid-5.0-D X1-Hybrid-5.0-N
EPS Cable	⩾5mm²	⩾5mm²	⩾5mm²	⩾5mm²
EPS breaker	25A	25A	32A	32A

table. Cable and Micro-breaker recommended

2. Insert EPS cable into EPS port through screw cap.



I Version E Version

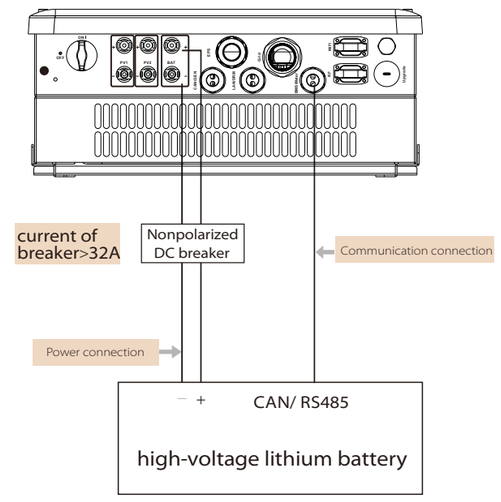
Note: The black cable(the **N port at right** side) has been wired during the manufactory.

Note: Connect **PE** wire into **N port at right** !

Please contact our sales for any compatible contactor purchase requirement .

V Battery Connection

Battery connection diagram



Battery breaker

Before connecting to battey, please install a nonpolarized DC breaker to make sure inverter can be securely disconnected during maintanance.

Model	X1-Hybrid-3.0-D X1-Hybrid-3.0-N	X1-Hybrid-3.7-D X1-Hybrid-3.7-N	X1-Hybrid-4.6-D X1-Hybrid-4.6-N	X1-Hybrid-5.0-D X1-Hybrid-5.0-N
Voltage	Nominal voltage of DC breaker should be larger than maximum voltage of battery.			
Current[A]	32A			

BMS PIN Definition

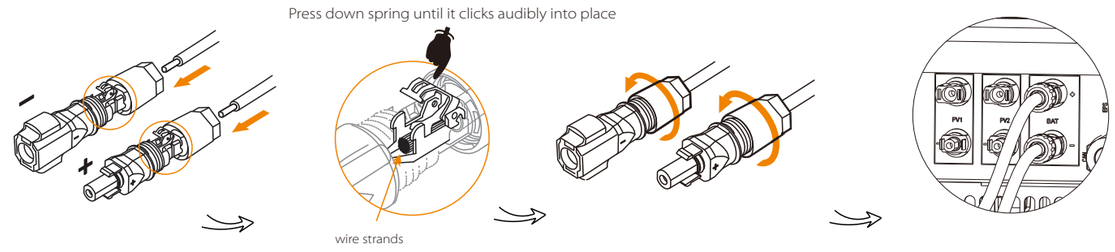
Communication interface bewteen inverter and battery is Rs485 or CAN with a RJ45 connector.

	PIN	1	2	3	4	5	6	7	8
CAN	Definition	X	GND	X	BMS_CANH	BMS_CANL	X	X	X
Rs485	Definition	X	X	X	X	X	GND	BMS_485A	BMS_485B

When using RS485 protocol, please note that PIN2 must be disconnected.

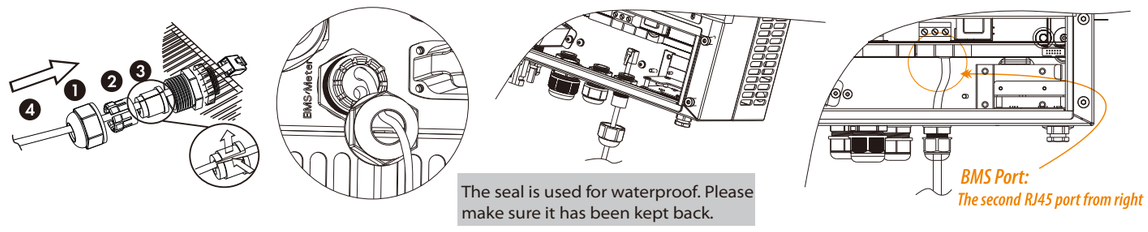
Note: The battery communication can only work when the battery BMS is compatible with the inverter.

A:Power Connection Steps:



The fine wire strands must be seen in the champer

B:Communication Connection Steps:



The seal is used for waterproof. Please make sure it has been kept back.

Step1: Disassemble the BMS/Meter cable gland.

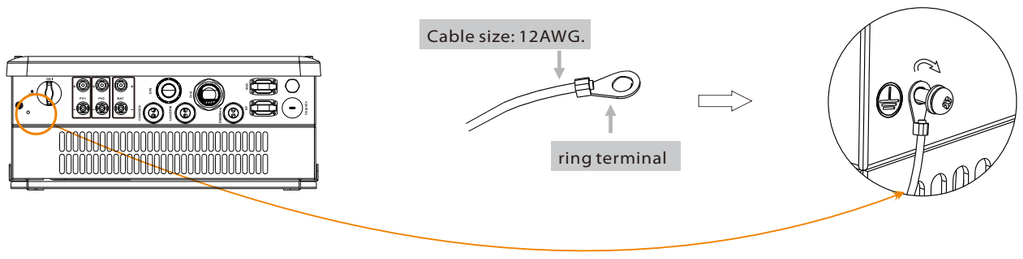
Step2: Prepare a communication cable(without sheath)and insert the communication cable through the cable nut.

Step3:Assemble the cable gland and screw the cable nut.

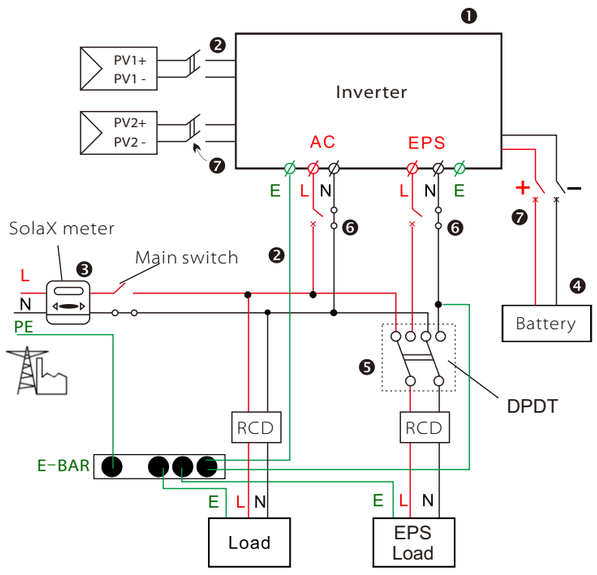
Step4: Insert one Rj45 side of the cable into BMS port inside of inverter and the other side into RS485 or Can port of the battery.

VI Earth Connection&Start Inverter

Earth Connection Steps(mandatory):



Start inverter



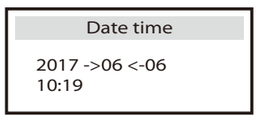
❶ Check the inverter is fixed well on the wall.
❷ Make sure all the DC wirings and AC wirings are completed.
❸ Make sure the meter is connected well.
❹ Make sure the battery is connected well.
❺ Make sure the external EPS contactor is connected well. (if needed)
❻ Turn on the AC switch and EPS switch.
❼ Turn on the PV/DC switch and battery switch.
❽ Press the "Enter" key for five seconds to exit Off Mode.(The mode is factory defaulted as Off Mode)

Inverter will start up automatically when the PV panels generate enough energy or the battery is dicharging.
Check the status of indicators and LCD screen. The left indicator should be blue and the indicator screen should display the main interface.

VII Start Guide

1.Set language

2.Set date time

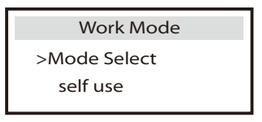


3.Set the safety standard

4.Set export control

This function allows the inverter able to control energy exported to the grid.
There are user value and factory value. The factory value is default which can not be charged by user. The user value setting by installer must be less than the factory value.

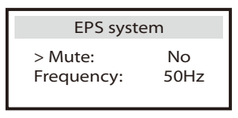
5.Set work mode



There are 4 work modes for choice.
Self use/ Back Up Mode/ Feed in Priority/ Force Time Use

Parameter	Comment
Self Use (default)	The PV generated power will be used to supply the local loads firstly, then to charge the battery. The redundant power will export to the public grid. When there is no PV supplied, battery will discharge for local loads firstly, and grid will supply power when the battery capacity is not enough.
Back Up Mode	Battery will stop discharing to keep higher capacity when the grid is on. Only when the gird is off and PV energy is not enough, battery will start to discharge to keep the emergency load working normally. This work mode applies to the area where suffering from blackout regularly.
Feed in Priority	The priority of inverter output power is: feeding to the grid⟶supplying the load ⟶charging the battery. This work mode applies to the area with high feed-in tariff.
Force Time Use	In this work mode the charging and discharging time can be set flexibly, and it also allows to choose whether charge from the grid or not.

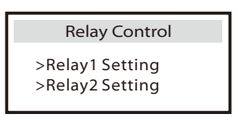
6.Set EPS system(For E & I Version only)



X1-Hyrbid inverter with E Version and I Version can work on the EPS mode.
EPS parameters can be set as below.
- "Mute"means you can set the warning of system which has entered EPS mode.
- "No"means there will be a buzzing and it is the default value.
- "Yes"means you choose to shut down the warning function.

Besides ,if the buzzing is sharp, it means EPS output is over loads."
Frequency "here can be set 50Hz or 60Hz please based on correlative loads.

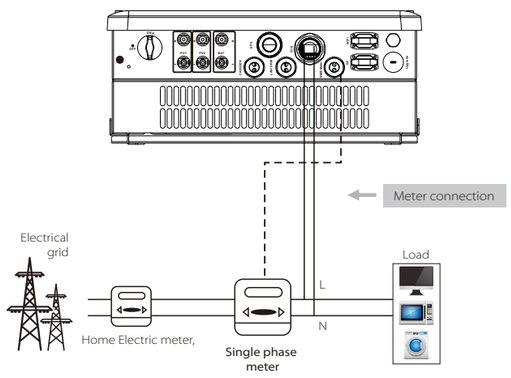
7.Set relay control(This function is being developed)



Relay Control is an optional function which can control designated load intelligently by consuming the surplus energy when feed in power reaches certain value.
This function can only be achieved with solax product "Smart Plug".
For specific operation, please refer to " Smart Plug user manual".

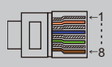
Meter Connection

Meter connection diagram



Meter PIN Definition

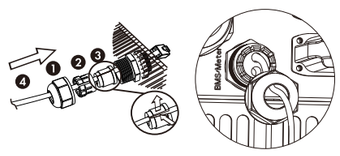
Communication interface bewteen inverter and meter is RS485 with a RJ45 connector.



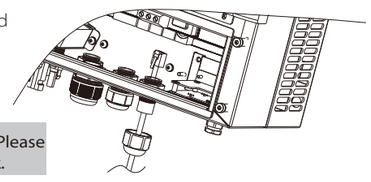
1	2	3	4	5	6	7	8
X	X	X	485A	485B	X	X	X

Meter connection steps:

Step1. Disassemble the BMS/Meter cable gland.
Step2. Prepare a communication cable(without sheath) and insert the communication cable through the cable nut.

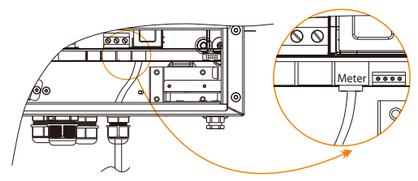


Step3. Assemble the cable gland and screw the cable nut.



The seal is used for waterproof. Please make sure it has been kept back.

Step4. Insert one side of Rj45 cable into Meter port inside of the inverter and the other side into RS485 port of the meter.



Meter Port: The **first** RJ45 port from right side

Firmware Upgrading

Preparation

Please ensure the inverter is steadily powered on.
Inverter must connect PV panels and keep the battery on through whole procedure of upgrading.
Please prepare a PC and an U-disk.

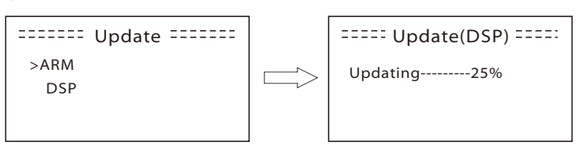
Warning!
Make sure the PV input power is more than 150V **(operate the upgrade on a sunny day)**, otherwise it may result in **serious failing** during upgrading.If the upgrading is broken off during operation, please ensure the inverter is steadily powered on and reinsert the U-disk.

Upgrading Steps:

Step1. Please contact our service support to get the update files, and extract it into your U-disk as follow:
"update\ARM\618.00050.00_Hybrid_X1G3_Manager_VX.XX_XX-XX.usb";
"update\DSP\618.00084.00_Hybrid_X1G3_Master_VX.XX_XXXXXXXX";
(Note: Vx.xx is version number, xxxxxxxx is file complation date. Don't modify the program file name, or it may cause that the inverter can't work anymore!)

Step2. Press the "Enter" key for 5 seconds to enter Off Mode. Then unscrew the waterproof lid and insert U-disk into the "upgrade" port at the bottom of the inverter.

Step3. The LCD will be shown as the picture below. Then press up and down to select the one that you want to upgrade and press "OK" to confirm to upgrade.



Step4. After the upgrade is finished, the LCD will display "succeed"(only for DSP upgrades), please remember to pull off the U-disk, screw the waterproof lid and press the "Esc" to return to the Main interface. Then press the "Enter" key to exit Off Mode.

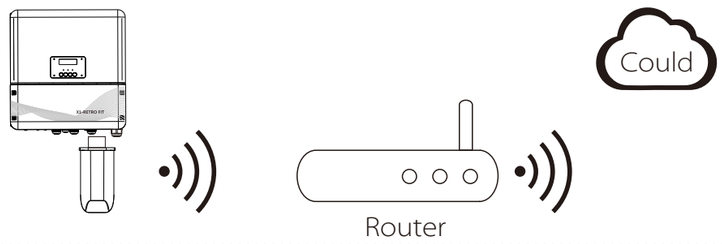
Monitoring Operation

Solax provides two ways for users to choose: WiFi(optinal) and Ethernet(LAN)

WiFi(optinal)

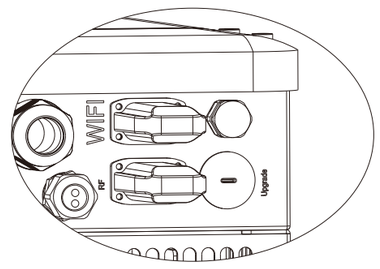
Inverter provides a WiFi port which can collect data from inverter and transmit it to monitoring-website via a Pocket WiFi. (Purchase the product from supplier if needed)

Diagram



WiFi Connection Steps:

Step1. Plug Pocket Wifi into "WiFi" port at the bottom of the inverter.
Step2. Build the connection between the inverter and router.
Step3. Create an user account online.(Please check the Pocket WiFi user manual for more details.)

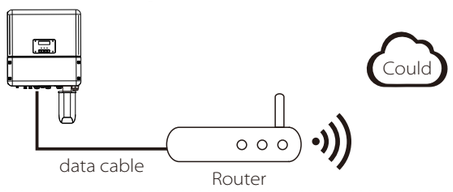


Ethernet(LAN)

LAN communication is the standard communication interface. It can transmit the data between the router and inverter via the local network.

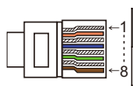
Application Occasion

This function is appliable for the below situation:
When the wifi signal is too weak to transmit data,user can use LAN port for the monitoring with a data cable.
Note: The wifi module still needs to be connected when using LAN connection.



LAN PIN Definition

Communication interface bewteen inverter and router is RS485 with a RJ45 connector.

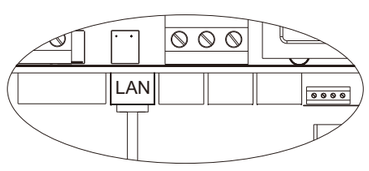


1	2	3	4	5	6	7	8
TX+	TX-	RX+	X	X	RX-	X	X

LAN Connection Steps:

Please refer to BMS connection steps (for user manual page32) for LAN connection. Please kindly noted the PIN definition and port position will be slightly different.

LAN/DRM Port



LAN Port: The **Fourth** RJ45 port from right side