Quick Installation

Solar pumping inverter

JNP550L-V5 JNP750L-V5 JNP1K1L-V5
JNP1K5L-V5 JNP2K2L-SE-V5 JNP2K2L-V5
JNP3KL-V5 JNP3K7L-V5

JNP2K2H-V5 JNP3KH-V5 JNP3K7H-V5 JNP4KH-V5
JNP5K5H-V5 JNP7K5H-V5

JNP11KH-V4 JNP15KH-V4 JNP18K5H-V4

JNP22KH-V5 JNP30KH-V5 JNP37KH-V5
JNP45KH-V5 JNP55KH-V5

JNP11KH-V5 JNP15KH-V5 JNP18K5H-V5

JNPxG-QI-EN-V1.1

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JNP2K2L-V5 JNP3KL-V5 JNP3K7L-V5 JNP4KL 4

JNP2K2H-V5 JNP3KH-V5 JNP3K7H-V5 JNP4KH-V5 JNP5K5H-V5 JNP7K5H-V5 4

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Quick Installation Guideline for solar pumping inverter –JNP550L-V5 JNP750L-V5 JNP1K1L-V5 JNP1K5L-V5 JNP2K2L-SE-V5

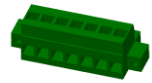
JNP2K2L-V5 JNP3KL-V5 JNP3K7L-V5 JNP4KL

JNP2K2H-V5 JNP3KH-V5 JNP3K7H-V5 JNP4KH-V5 JNP5K5H-V5 JNP7K5H-V5

1 Inverter Unpacking

Check according to Packing List whether all the parts are correct and in good condition or not. Accessories are shown as below:

1



2

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No.	Description	No.	Description
1	PV pump inverter	6	Water level sensor (Optional)
2	Signal terminal	7	Quick Installation Guideline
3	Cold-pressed Terminal(SC4-5)	8	Packing lis
4	Cold-pressed Terminal(UT10-5)	9	Water level sensor (Optional)
5	Expansion bolt(M6*60)	10	Certificate of inspection

2 Installation

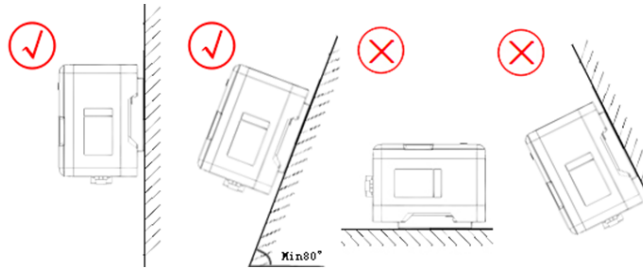
2.1 Prepare Installation Tools

The following tools will be needed in inverter installation and wire connection.

Sketch map	Name	Recommend specification	Function
	Wire crimpers	M2.5~M8	Crimp the PV cable core in connector tube for PV connector.
	Electric drill	Φ8	Used for drilling holes for installation bracket.
	Straight screwdriver	Φ3	Used for AC side wire installation
	Cross screwdriver	Φ5	Used for installing and disassembling inverter cover

2.2 Installation Direction and spacing dimension

The inverter shall be installed vertically or tilted backwards with a maximum angle of 10°

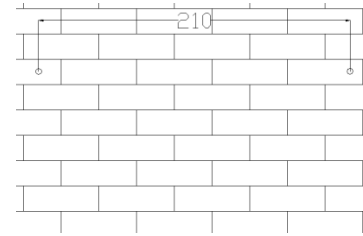


The minimum installation spacing dimensions are shown below:

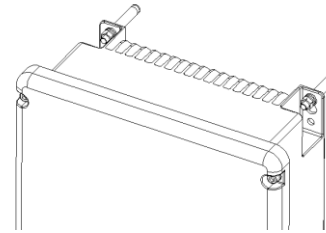
Direction	Minimum spacing	Direction	Minimum spacing
Above	100cm	Sides	100cm
Below	100cm	Front	100cm

2.3 Installation of Inverter

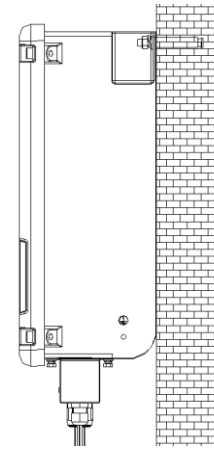
Step1:
Drill holes in the selected installation position according to the size（Hole distance 210mm）.



Step2:
Fix inverter in the located holes with bolts.



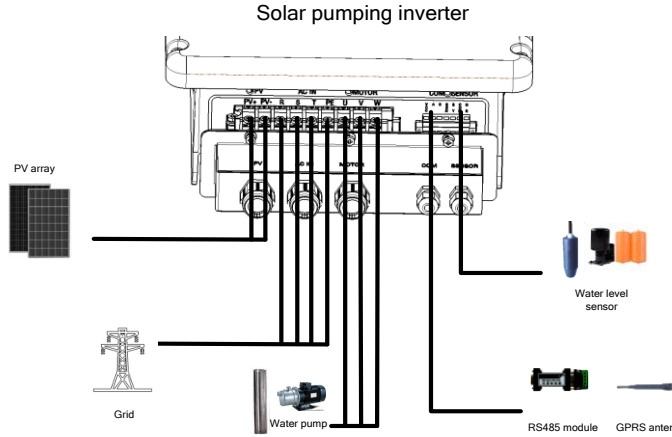
Step3:
Tighten the bolts, make the bolts cling to the wall.

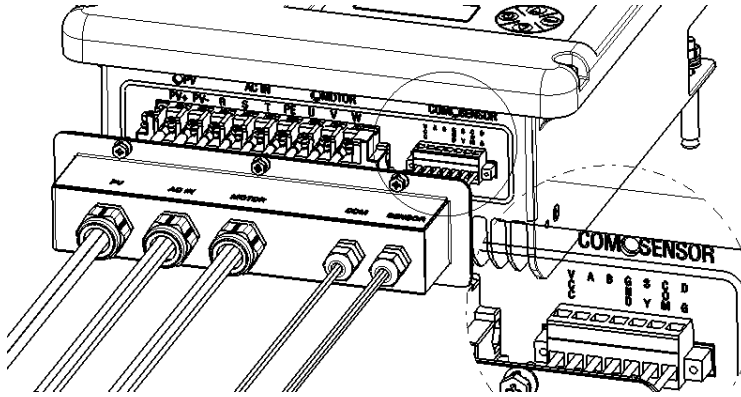


3 Electrical Connection

3.1 Connecting Terminals of Inverter

The input and output terminals are shown as below:





Terminals Description

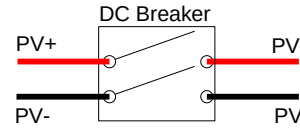
Terminals	Description
PV	PV array DC positive input terminals(PV+、PV-)

AC IN	AC input terminals (R、S、T、PE)
MOTOR	Output terminal, connect with AC pump (U、V、W)
SENSOR	Water level sensor signal input terminal(SY、COM、DG) (optional)
COM	RS485 or GPRS communication interface (VCC、A、B、GND) (optional)
⏚	Ground terminal

Inverter model	Recommended parameters of DC circuit breaker
JNP550L-V5	440VDC,10A
JNP750L-V5	440VDC,10A
JNP1K1L-V5	440VDC,10A
JNP1K5L-V5	440VDC,15A
JNP2K2L-V5	440VDC,15A
JNP3KL-V5	440VDC,30A
JNP3K7L-V5	440VDC,30A
JNP4KL-V5	440VDC,30A
JNP2K2H-V5	440VDC,15A
JNP3KH-V5	440VDC,15A
JNP4KH-V5	440VDC,20A
JNP5K5H-V5	440VDC,30A
JNP7K5H-V5	440VDC,30A

Notice!

It must be DC breaker, it's prohibited to be replaced by AC breaker.



3.2 Cable Selection for Electrical Connection

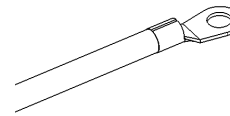
User can select cables for electrical connection according to the following specifications.

Inverter	Cable range（AWG）			Cable recommended（AWG）		
	DC side	AC side		DC side	AC side	
	PV+、PV-	U、V、W R、S、T	PE	PV+、PV-	U、V、W R、S、T	PE
JNP550L-V5	14-12	14-12	12	12	12	12

JNP750L-V5	14-12	14-12	12	12	12	12
JNP1K1L-V5	14-12	14-12	12	12	12	12
JNP1K5L-V5	14-12	14-12	12	12	12	12
JNP2K2L-SE-V5	14-12	14-12	12	12	12	12
JNP2K2L-V5	14-12	14-12	12	12	12	12
JNP3KL-V5	12-10	12-10	12	10	10	12
JNP3K7L-V5	12-10	12-10	12	10	10	12
JNP4KL-V5	12-10	12-10	12	10	10	12
JNP2K2H-V5	14-12	14-12	12	12	12	12
JNP3KH-V5	14-12	14-12	12	12	12	12
JNP3K7H-V5	14-12	14-12	12	12	12	12
JNP4KH-V5	14-12	14-12	12	12	12	12
JNP5K5H-V5	14-12	14-12	12	12	12	12
JNP7K5H-V5	14-12	14-12	12	12	12	12

3.3 AC Side(AC IN and MOTOR) Electrical Connection

Step1: Please connect the AC wire according to the following steps:

Operation Instruction	Operation Demonstration
1. Step Using wire crimpers, connecting AC cable and Cold-pressed Terminal(SC4-5).	

Step2:

JNP550L-V5、JNP750L-V5、JNP1K1L-V5、JNP1K5L-V5、JNP2K2L-SE-V5:

The AC conductor (R, S, PE, U, V, W) is fixed on the terminal through the corresponding waterproof terminal on the terminal cover. Notice: R is connected to the fire line, S is connected to the zero line, and PE is grounded. R, S and PE pass through the AC IN waterproof terminal, and U, V and W pass through the MOTOR waterproof terminal.

JNP2K2L-V5、JNP3KL-V5、JNP3K7L-V5、JNP4KL-V5:

Fix the AC input cable through the AC IN waterproof connector to the corresponding terminal (R, T, PE), and fix the water pump power supply cable through the Motor

waterproof connector to the corresponding terminal (U, V, W).

JNP2K2H-V5、JNP3KH-V5、JNP3K7H-V5、JNP4KH-V5、JNP5K5H-V5、JNP7K5H-V5:

Fix the AC input cable through the AC IN waterproof connector to the corresponding terminal (R, S, T, PE), and fix the water pump power supply cable through the Motor waterproof connector to the corresponding terminal (U, V, W).

Notice!

The phase sequence of AC pump motor and inverter should be corresponding, and if connection error occurs, there will be no water output or only with small water flow. Phase sequence's connection is right or not shall be inspected when it's trial running for the first time.

3.4 DC Side Connection

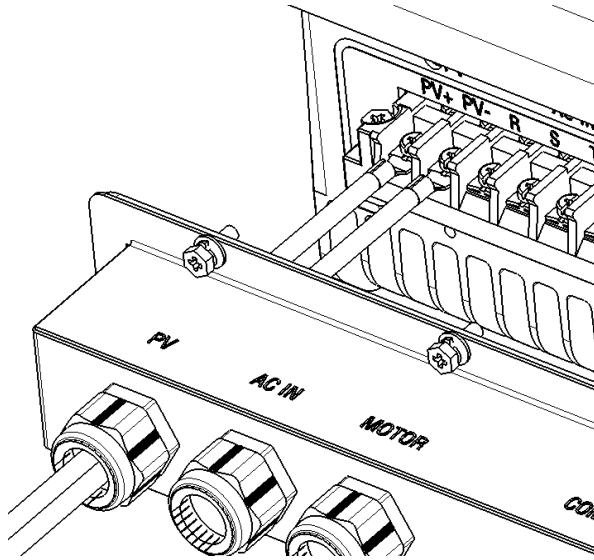
Danger!

DC side electric connection must be off, otherwise, it may cause casualty!

Step1: Please connect the DC wire according to the following steps:

Operation Instruction	Operation Demonstration
1. Step Using wire crimpers, connecting PV cable and Cold-pressed Terminal(UT10-5).	

Step2: Fixed the positive and negative cable Secure to the terminal through the terminal cover.



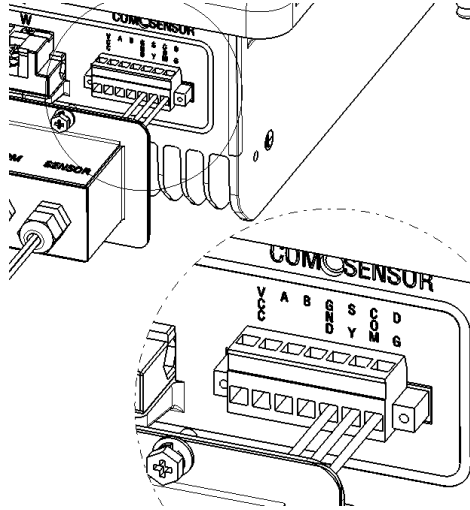
3.5 Inverter grounding

Make sure the reliable connection between ground ⏚ terminal of Inverter and the earth!

3.6 Water Level Sensor Connection

3.6.1 Water level sensor interface define

Water level sensor connector pins in inverter panel port are defined are shown below:



Terminal（SENSOR） connector pin	Detail
DG	Dry protection pin, Connected black cable
SY	Overflow protection pin, Connected white cable
COM	Dry protection and Overflow protection common pin, Connected green cable

3.6.2 Water level sensor connection

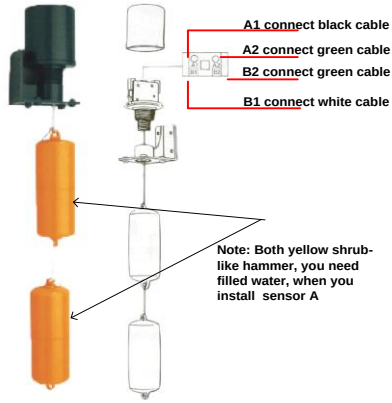
Two kinds of water level sensor you can select are shown below:

Sensor A Sensor B

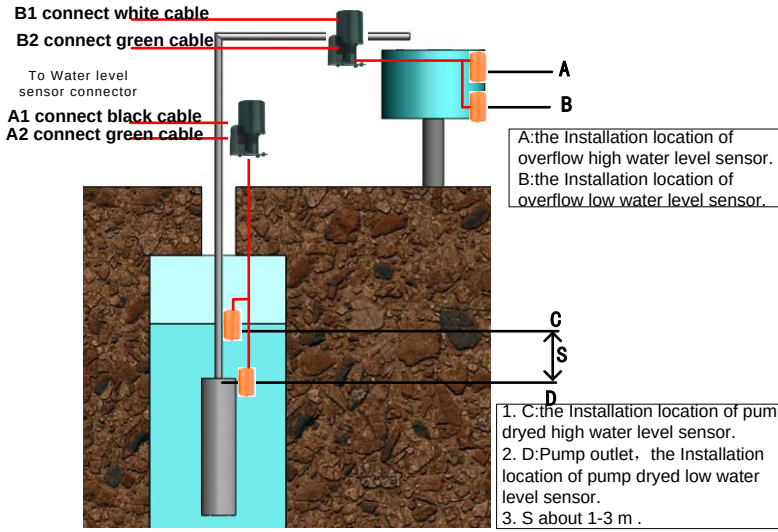
Notice!

If you select overflow protection water level sensor, you need to set the value of “OF-F”, the LCD menu ”Settings” "Para Set" "OF-F" to modify to “ON”. The setting method with reference to “21 Commissioning” .

If you selected water level sensor A, then water sensor installation method is shown below:

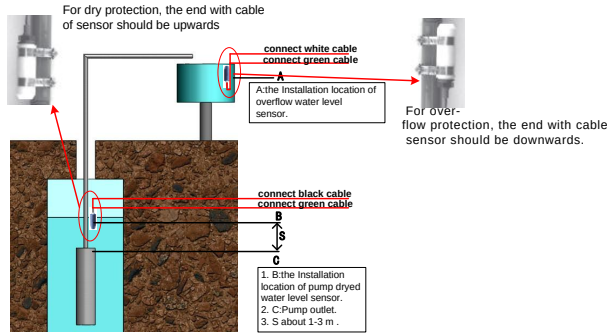


The detail figure of Sensor A



The installation figure of Sensor A

If you selected water level sensor B, then water sensor installation method is shown below:



The installation figure of Sensor B

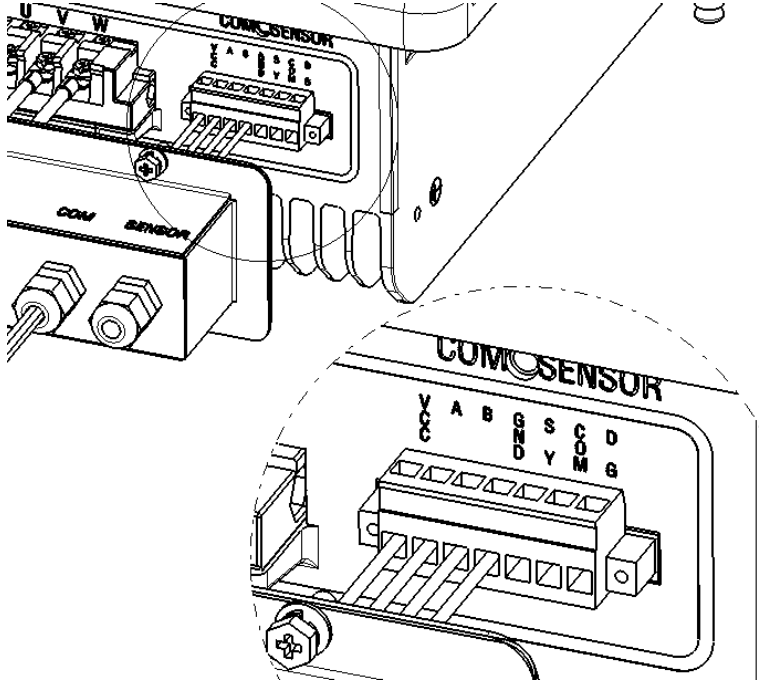
Notice!

If you choose Water Level Sensor B, please Notice the following aspects when intall:

1. For dry protection, the end with cable of sensor should be upwards;
2. For over-flow protection, the end with cable of sensor should be downwards.

3.7 Communication connection

Communication connector pins in inverter panel port are defined are shown below:

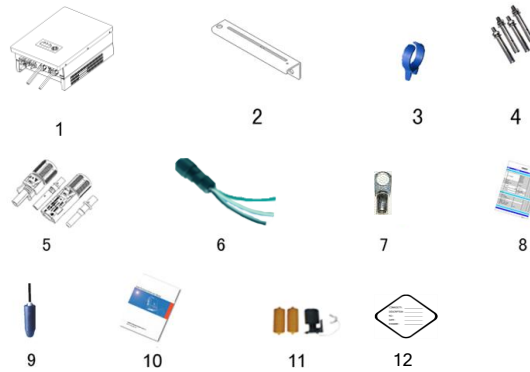


Notice：More information about the communication module, please refer to the **User and Installation Manual**.

Quick Installation Guideline for solar pumping inverter – JNP11KH-V4 JNP15KH-V4 JNP18K5H-V4

4 Inverter Unpacking

Check according to Packing List whether all the parts are correct and in good condition. Accessories are shown as below:



No.	Description	No.	Description
1	PV pump inverter	7	Ring Terminals
2	Installation bracket	8	Packing list
3	Blue Ring tool	9	Water level sensor (Optional)
4	Expansion bolt	10	Quick Installation Guideline
5	PV connector	11	Water level sensor (Optional)
6	Sensor and communication connector (Optional)	12	Certificate of inspection

5 Installation

5.1 Prepare Installation Tools

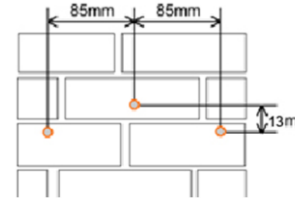
Please refers to “2.1 Prepare Installation Tools”.

5.2 Installation Direction and spacing dimension

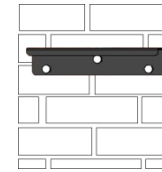
Please refers to “2.2 Installation Direction and spacing dimension”.

5.3 Installation of Inverter

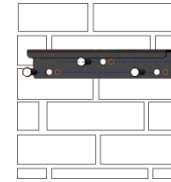
Step1:
Drill holes in the selected installation position according to the size and shape of installation bracket.



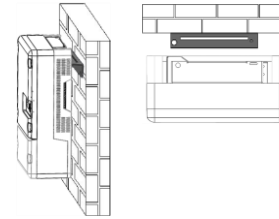
Step2:
Fix installation bracket in the located holes with bolts.



Step3:
Tighten the bolts, make the bolts cling to the wall.



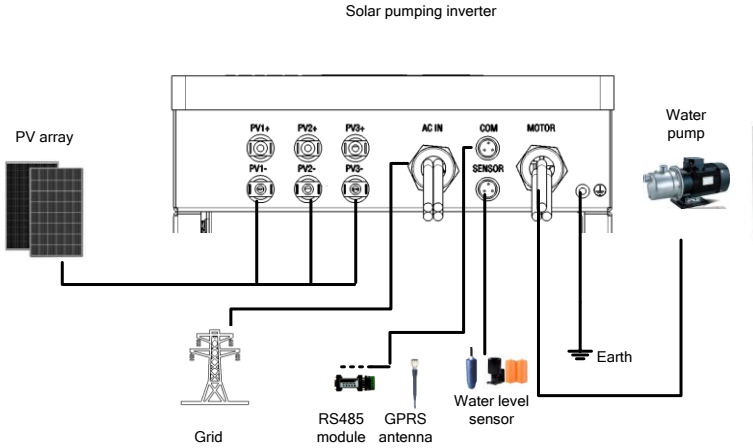
Step4:
Hang firmly inverter onto the installation bracket, then lock the hole.



6 Electrical Connection

6.1 Connecting Terminals of Inverter

The input and output terminals are shown as below:



Terminals Description

Terminals	Description
PV1+/ PV2+/PV3+	PV array DC positive input terminals
PV1-/ PV2-/PV3-	PV array DC negative input terminals
AC IN	AC input terminals (R、S、T、PE)
MOTOR	Output terminal, connect with AC pump (U、V、W)
SENSOR	Water level sensor signal input terminal (optional)
COM	RS485 or GPRS communication interface (optional)
⏚	Ground terminal

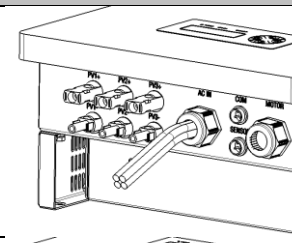
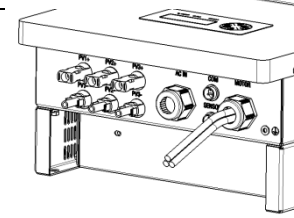
6.2 Cable Selection for Electrical Connection

User can select cables for electrical connection according to the following specifications.

Inverter	Cable range（AWG）			Cable recommended（AWG）		
	DC side	AC side		DC side	AC side	
	PV+,PV-	U、V、W R、S、T	PE	PV+,PV-	U、V、W R、S、T	PE
JNP11KH-V4	12	8	10	12	8	10
JNP15KH-V4	12	8	10	12	8	10
JNP18K5H-V4	12	8	10	12	8	10

6.3 AC Side Electrical Connection

Step1: Connecting of the wire of the connector:

Operation Instruction	Operation Demonstration
1. The AC IN contains four cable, each has a line mark(R、S、T、PE), Respectively connected to the grid cable.	
2. The motor contains three cable, each has a line mark(U、V、W), Respectively connected to the motor cable.	

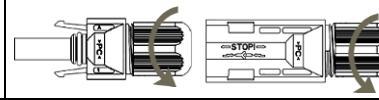
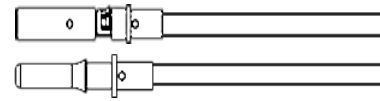
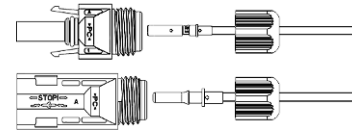
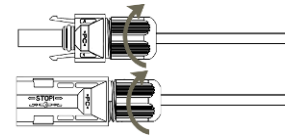
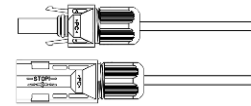
Notice！

The phase sequence of AC pump and inverter should be corresponding, and if connection error occurs, there will be no water output or only with small water flow. Phase sequence's connection is right or not shall be inspected when it's trial running for the first time.

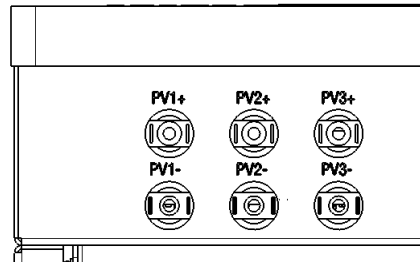
6.4 DC Side Connection

Danger！
DC switch must be off, otherwise, it may cause casualty!

Step1: Please connect the DC wire according to the following steps:

Operation Instruction	Operation Demonstration
1.Unscrew the fastening nuts of MC4 connector.	
2. Strip off the DC cable insulation layer to a length of approx. 7mm.Insert the exposed end of PV Cable into the connector tube, and press tightly with wire crimpers.	
3. Effect figure. **Remember! ! !** Terminals and connectors match the core, is not reversed.	
4. Pull the above finished cable with tube through the fastening nut.	
5. Plug it into the wiring slot until a sound being heard, which indicating plug into the right place. Then tighten the nut.	
6. Effect figure	

Step2: Plug the positive and negative connector into the corresponding terminals at the bottom of the inverter respectively.

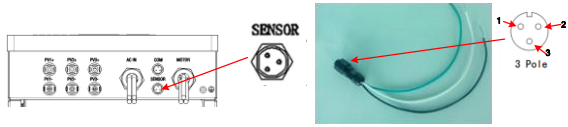


6.5 Inverter grounding

Make sure the reliable connection between ground ⏚ terminal of Inverter and the earth!

6.6 Water Level Sensor Connection

Water level sensor connector pins in inverter panel port are defined are shown below:

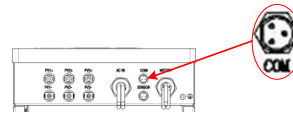


Terminal（SENSOR）connector pin	Detail
pin1	Dry protection pin, Connected black cable
pin2	Overflow protection pin, Connected white cable
pin3	Dry protection and Overflow protection common pin, Connected green cable

The define of water level sensor connector pins and the installation of water level sensor refer to “3.6 Water level sensor connection”.

6.7 Communication connection

Communication connector pins in inverter panel port are defined are shown below:



Notice：More information about the communication module, please refer to the **User and Installation Manual**.

Quick Installation Guideline for solar pumping inverter –JNP22KH-V5 JNP30KH-V5 JNP37KH-V5 JNP45KH-V5 JNP55KH-V5

7 Inverter Unpacking

The product has been tested and checked carefully before transportation, but damage may be caused during transportation, therefore, the product should also be checked carefully before installation.

- Please check whether inverter outer packing is in good condition;
- After unpacking, please check whether the equipment is in good condition;
- According to the packing list to check whether all the parts is correct and in good condition.

If any damage is found, please contact supplier or the transportation company. Please keep well the photos taken at the damaged parts and we'll provide you with best and fastest services.

Supplier supply the standard inverter and commonly used accessories as below:

Figure3-1 Inverter and standard fittings

Notice!

Photos are for reference only, please adhere to the original product!

Table3-1 Inverter and fittings table

No.	Description	Status
1	Solar Pump Inverter	Standard
2	Fixing rail	Standard
3	Water level sensor B	Optiona
4	Cold pressing terminal (SC4-5)	Standard
5	expansion bolt	Standard
6	certificate of inspection	Standard
7	specification	Standard
8	container loading list	Standard
9	Water level sensor A	Optional
10	pressure sensor	Optiona
11	Signal terminal row	Standard
12	Cold pressing terminal (SC35-8)	Standard

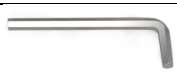
8 Installation Procedure

8.1 Prepare Installation Tools

The following tools will be needed during inverter installation and wire connection. You also can choose the right tools according to your own experience.

Table4-1 Installation tools list

Sketch map	Name	Recommend specification	Function
	hydraulic tong	10~70mm^2	For crimping of cold terminals.
	Electric drill	Φ9	Used for inverter installation plate fixed hole drilling.
	Straight screwdriver	Φ3	For the installation of communication connecting wires.

	Cross screwdriver	Φ5	Used for disassembling inverter cover.
	Inner hexagon spanner	5#	Used for disassembly and assembly of inverter cover panel.

8.2 Installation Direction

- The inverter should be installed vertically or titled backwards with a maximum angle of 10°.
- Do not install inverter tilted forwards.
- Never install the inverter horizontally.

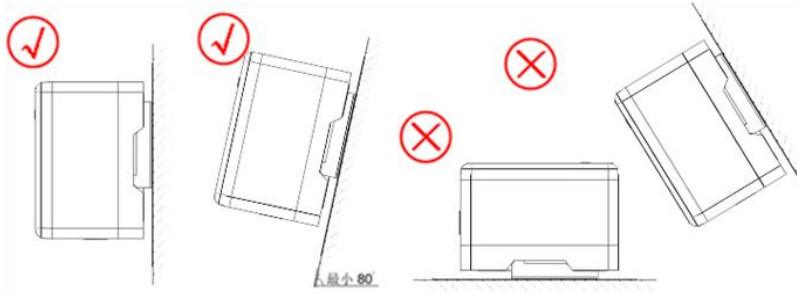


Figure5-1 Installation directions

- The installation height of inverter should be convenient for operation and reading out of the LCD displayed information.
- Do not install the inverter in a place where children can touch.
- The inverter uses air cooling mode and the installation site selected should ensure the minimum installation spacing between the inverter and the fixed object and the nearby inverters to ensure an good ventilation. And in front of the inverter need to keep enough space, is convenient to check the LCD display information.

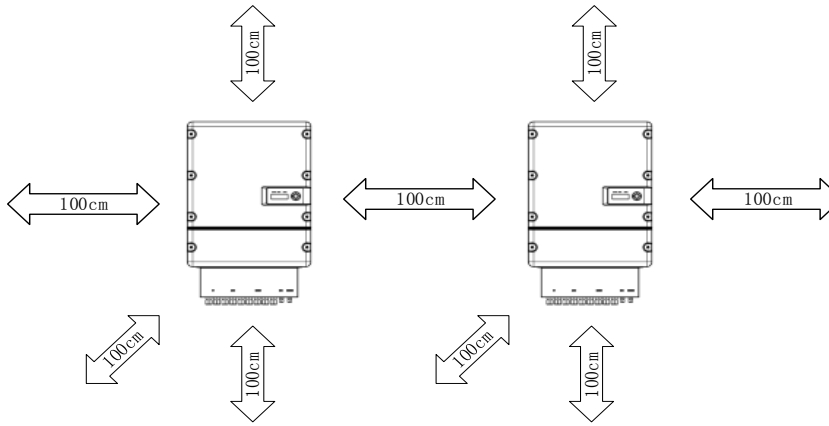


Figure5-2 Minimum spacing of adjacent installations

Table5-1 Minimum spacing dimension

Direction	Minimum spacing
Above	100cm
Below	100cm
Sides	100cm
Front	100cm

8.3 Installation of Inverter

Notice!

Do not use jackbolts or screws to install inverters on rocks or panels.

Notice!

- Fix the inverter on the rock or panel with the toggle bolt or screw is not permitted.
- Supplier would provide the bolt which suitable for the installation on the concrete wall.
- If the inverter is fixed on the wooden wall, please choose suitable bolt to finish the installation, the bolt length should be enough and penetrate the 1/2 depth of the walls.

Step 1: Select an appropriate hole on the wall according to the size of the inverter. It is recommended to drill holes with a diameter of 8+1/-0mm, a depth of 60+5/-0mm, a spacing between left and right holes of 180mm, and a spacing between upper and lower holes of 170mm, and then drive the expansion bolt into the hole

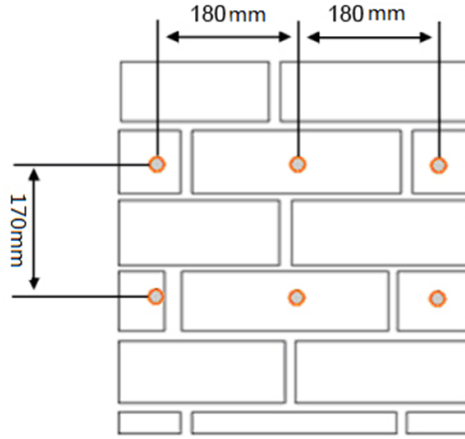


Figure 5-3 Bitmap of the JNPxH mounting hole

Step 2: Use expansion bolts to fix the mounting sheet metal to the wall. Lock the expansion bolt until the expansion bolt is attached to the wall.

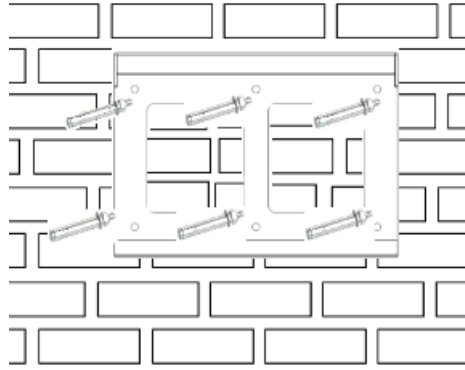


Figure 5-4 Installation of expansion bolts

Step 3: Hang the mounting lug on the back of the inverter onto the mounting sheet metal until the inverter is firmly installed on the panel, then release the inverter.11 Appendix B

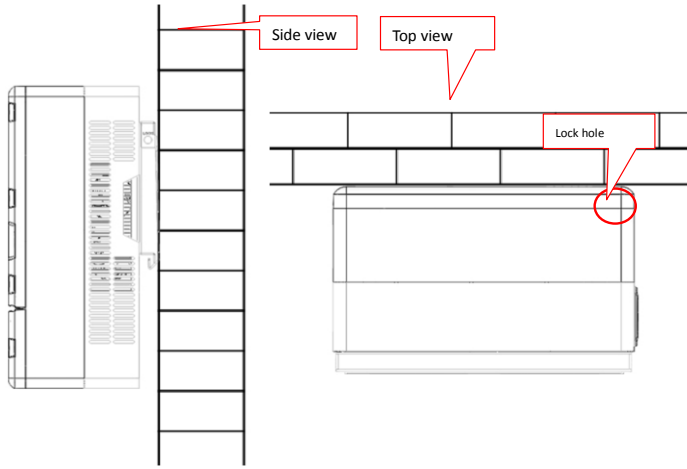


Figure 5-5 Completion effect of installation

9 Electrical Connection and Disassembling

The electrical connection can be carried out when the mechanical installation of inverter is completed. The following operation specification must be followed when making electrical connection.

Warning!

- All the electrical connection must meet local electrical connection standard.
- Only qualified electrical personnel can perform the wiring installation work.
- Incorrect wiring operation may cause operating casualties or equipment damage permanently.
- Ensure that there is no electricity in DC side before the electrical connection.
- Grounding correctly, using proper conductor and taking necessary Short-circuit protection to ensure the safe operation of inverter.
- Don't switch on any breaker before all the electrical connection are finished.

9.1 Connecting Terminals of Inverter

All the connecting terminals are at the bottom of the inverter, and the terminal cover is disassembled with a phillips screwdriver. There are DC side input (PV)

terminals, AC side input (AC IN) output (MOTOR) terminals, communication terminals and water level sensor terminals inside. As shown in the figure below.

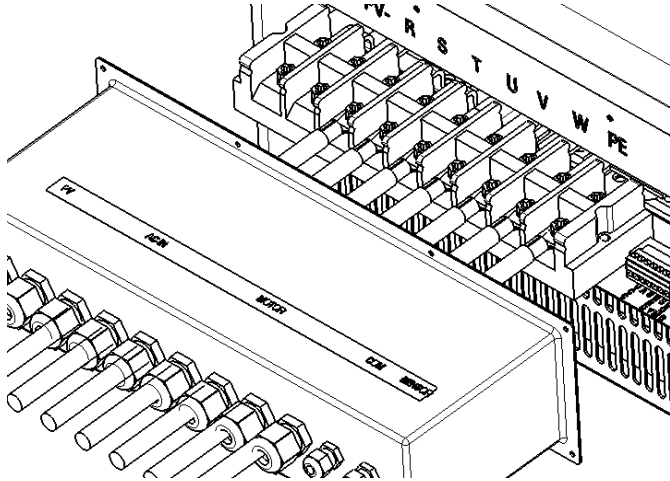


FIG. 6-1 External connection terminals of the inverter

Table6-1 Description

Terminals	Description
AC IN	AC input terminals, including R,S,T,PE.
PV	PV array DC input terminals, including PV+,PV-.
MOTOR	Output terminal, connect with AC pump, including U,V,W.
SENSOR	Water level sensor signal input terminal (optional)
COM	RS485 or GPRS communication interface (optional)
⏚	Grounding terminal(Grounding screw on the right side of inverter case)

9.2 Cable Selection

Please select cable according to the following table.

Table 6-3 Specification of Cables for Electrical Connection

Inverter	**Cable range（AWG）**		**Cable recommended（AWG）**	
	DC side	**AC side**	**DC side**	**AC side**

	PV+、PV-	U、V、W	PE	PV+、PV-	U、V、W	PE
JNP55KH-V5	1/0	1	5	1/0	1	5
JNP45KH-V5	1	3	5	1	3	5
JNP37KH-V5	3	3	5	3	3	5
JNP30KH-V5	4	4	5	4	4	5
JNP22KH-V5	5	5	5	5	5	5

9.3 DC Side Connection

Danger!

When carrying out connection between PV array and inverter, the PV array should be covered with opaque materials and the DC-SWITCH should be disconnected, otherwise, the PV array may generate dangerous voltage, cause casualty. The Non-professionals do not make the connection operation.

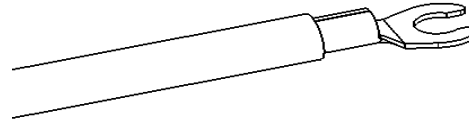
Warning!

Before connecting PV array to the inverter, ensure the earth impedance between PV array and ground is not less than 1Mohm.

Notice!

- If there is more strings PV modules in parallel, each string PV module should be with the same model, the same number of PV modules, the same inclination angle, the same azimuth angle, and the same cross-sectional area of the connecting wires.
- Inspect every system carefully before installation.

Step1: Please connect the wire of DC according to the following steps:

Operation Instruction	Operation Demonstration
7. Connect DC wire and cold terminal (SC35-8） firmly by crimping plier.	

Step2: Through the PV waterproof terminal on the terminal cover, fix the DC wire (PV +, PV -) on the terminal, pay attention to the positive and negative poles shouldn't be connected reversely, and ensure that the circuit breaker at the DC side of the system is in the off state.

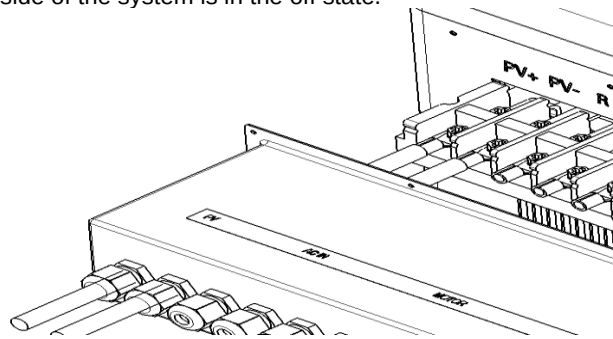


Figure6-4 PV side electrical connection

Warning！

Make sure the Positive and Negative poles connection of PV array and Inverter are correct!

9.4 AC Side Electrical Connection

Notice！

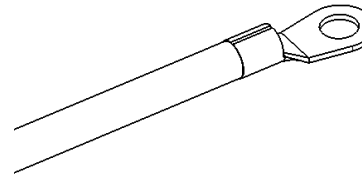
It's forbidden to connect several inverters in parallel to one set of pump!

Danger！

Ensure that all cables have no charge before electrical operation!

Step1: Connect the wires first:

Follow the steps below to connect the AC wires:

Operation Instruction	Operation Demonstration
Step1. Fasten the three-phase input, three-phase output and grounding wires to the cold pressing terminal (SC35-8) with crimping pliers seperately.	

Step2: Fix the AC wire (R, S, T, PE, U, V, W) on the terminal through the corresponding waterproof terminal on the terminal cover. Notice: R, S, T, PE pass through the AC in waterproof terminal, U, V, W pass through the motor waterproof terminal. R,S,T are AC input terminals, and U,V,W are AC output terminals which should be connected to pump.

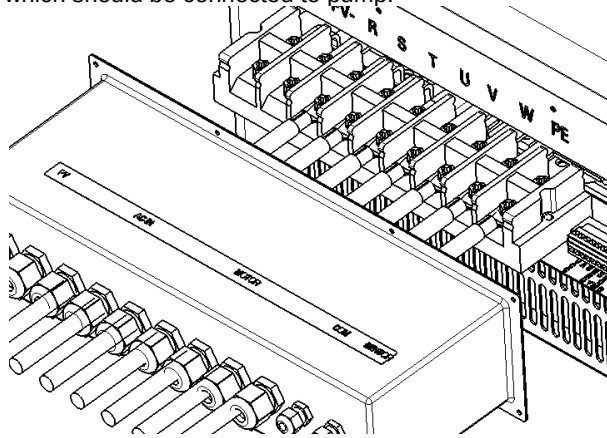


Figure6-3 AC side electrical connection

Notice!

The phase sequence between AC pump and inverter must be same, otherwise, it shall lead to less output or without water. Whether Phase sequence is corresponding or not should be tested when the pump system trial run for the first time.

For single phase pump, there is no sequence required after start capacitors are moved out.

Danger!

When the input AC terminal is connected with the inverter, the circuit breaker at the AC input side shall be disconnected, otherwise the AC input will generate dangerous voltage, causing personal injury and death. Do not operate wiring by non professionals.

Please make sure the AC input and AC output wiring is correct, Do not connect the input and output reversely, otherwise the inverter will be damaged.

Please make sure that three phase AC input the R, S, T and grounding are correctly connected to the Corresponding terminals. Do not connect the AC input R, S, T to the grounding terminal wrongly. Otherwise, it will damage inverter.

Make sure single AC input Live line , neutral line and grounded line are connected to corresponding R,S and PE terminals, T keeps without any connection, Do not connect R, S and AC input grounding wrongly.

Notice！

Different types of inverters have clear requirements on AC power supply voltage, frequency and power supply mode, etc. For specific requirements, please refer to the corresponding technical parameters table of each type of inverters in the appendix. It is strictly prohibited to connect power supply sources that do not meet the requirements to the inverter, otherwise the following consequences may occur:

- The inverter is not recoverable damage.
- The operation of the machine is unstable, manifested as unstable pipeline water flow, pump running noise, etc.

9.5 Inverter grounding

Make sure the reliable connection between ground ⏚ terminal of Inverter and the earth!

9.6 Water Level Sensor Connection

Dry protection function: There are two kinds of detection models, automatic and manual. Automatic dry protection is achieved through inverter's software. And manual model need water level sensors to input signal through SENSOR inside Inverter.

Overflow Protection: water level sensors are requested to input signal through SENSOR inside Inverter.

Notice！

- The water level sensors' location is designed according to your system situation.
- Water level sensor can be bound in corresponding position on the pipeline connected to the pump. Other method also can be used to ensure the water level sensor is in the right position.
- The installation of water level sensor must be reliable and effective.

17.6.1 Water level sensor interface define

Water level sensor connector pins in inverter panel port are defined as below:

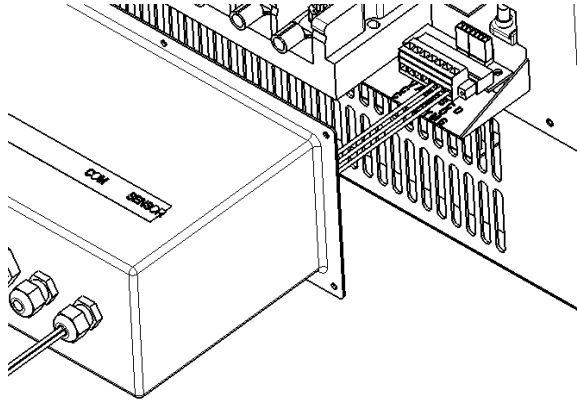


Figure6-5 Water level sensor interface define

Table 6-4

Terminal（SENSOR）pin	Detail
DG	Dry protection pin
SY	Overflow protection pin
COM	Dry protection and Overflow protection common pin,

Table 6-4

Terminal（SENSOR）pin	Detail
DG	Dry protection pin

SY	Overflow protection pin
COM	Dry protection and Overflow protection common pin,

17.6.2 Water level sensor connection

Two kinds of water level sensor you can select as shown below:

Sensor A Sensor B

Figure6-6 Water level sensor

If you selected water level sensor A, then water sensor installation method is shown below:

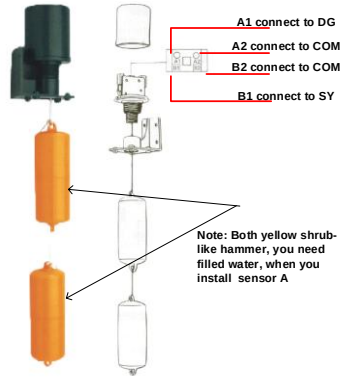


Figure6-7 The detail figure of Sensor A

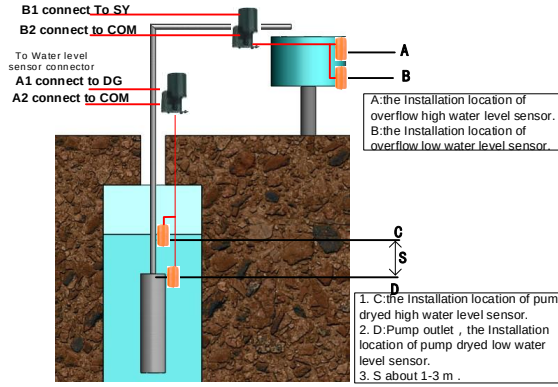


Figure6-8 The installation figure of Sensor A

If you selected water level sensor B, then water sensor installation method is shown below:

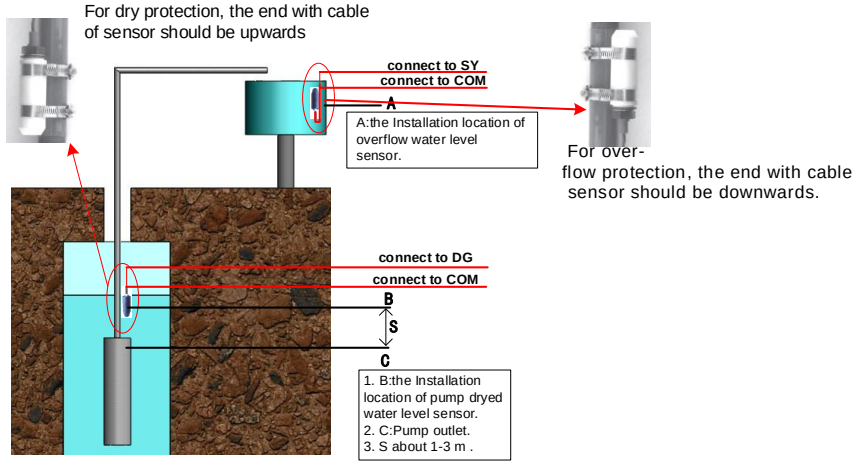


Figure6-9 The installation figure of Sensor B

9.7 Communication Connection

9.7.1 RS485 Communication

When the inverter communicates with a single machine, the communication between the inverter and the monitoring equipment can be connected through the communication cable. The COM outside the inverter is the remote communication terminal, and the output terminal wire is connected to the

monitoring equipment (computer).

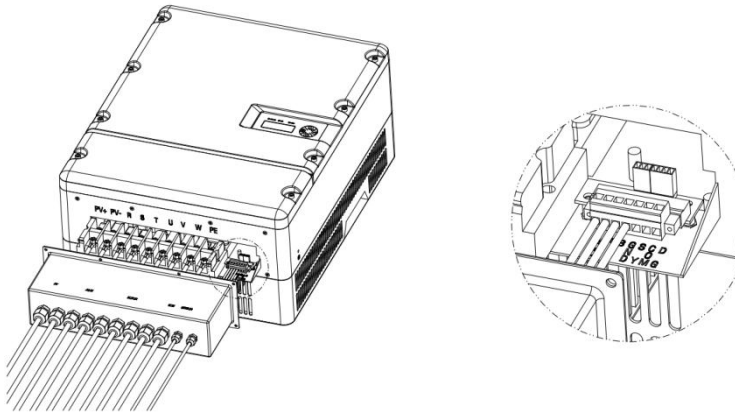


Figure6-10 Communication connection terminal

The com part of the machine panel and the water level sensor use the same terminal block, and the pin definitions are shown in the table below:

Table 6-5 COM terminal pin definition on machine panel

Terminal（SENSOR）pin	Detail
VCC	+5V power supply
A	RS485 communication port A.
B	RS485 communication port B.
GND	Electrical grounding

The following diagram guide you to connect a single inverter to monitoring equipment.

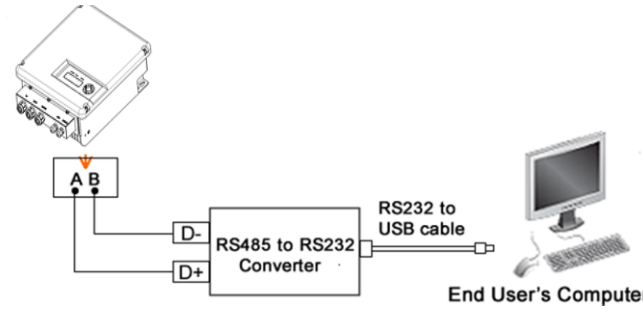


Figure6-11 Diagram of single communication wiring

The wiring diagram is schematic diagram, just take HEXIN converting module as an example. If the user choose other converter, need according to the converter's instructions, wiring the inverter's A, B wires to the converter's correct terminal.

Please refer to "**Inverter Management System User Manual**" for the corresponding monitoring software settings, after completing the wire connection.

Notice!

- The monitoring software is optional, when choose this function, "**Inverter Management System User Manual**" can be found from the accompanying CD.
- The inverter is supplied with default address "10".

9.7.2 GPRS Communication

Notice: More information about the communication module, please refer to the **User and Installation Manual For GPRS**.

9.8 Disassembling

9.8.1Safety Instruction

Warning!

Before disassembling the inverter:

- Turn off the DC switch.
- Waiting for a few minutes till ensure the inverter is uncharged.

Notice!

Electrostatic discharging will cause damage to the inner components of inverter. We should carry out the antistatic measure before disassembling and assembling.

9.8.2 Mounting and dismounting of cover panel

For maintenance reason, you may need open the cover of inverter, and ensure better seal performance, please operate according to the following instruction.

1. When open the inverter cover, first use a cross screwdriver to remove the grounding screw on the right side of the inverter case, and then use a 5# Allen wrench to screw down the cover plate fixing screws in turn, and install the gasket under the screw. When screwing down, pay attention to prevent the gasket from falling off.
2. when cover it back, first use a cross screwdriver to lock the grounding screw on the right side of the inverter case, then screw all the cover screws into the screw holes, use a 5 × Allen wrench, with a torque of 1.8 ± 0.2N · m, first lock the diagonal screws, and then lock the other screws in turn.

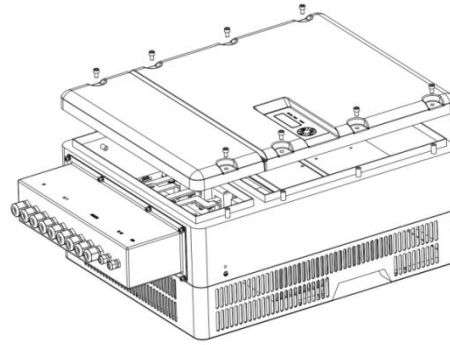


Figure6-12 Reference picture of Mounting and dismounting

Commissioning Guideline for solar pumping inverter

10 Commissioning

10.1 Verify before Commissioning

PV Arrays

The PV array should be checked before operating the inverter, and to ensure that the positive and negative mustn't be misconnect, Make sure that the open-circuit voltage of photovoltaic array doesn't exceed the required voltage.

DC Input

Make sure that the DC terminals of the inverter are connected correctly and maintained consistent with the PV array.

AC Input

Make sure R, S, and T of the AC input terminal of the inverter are properly connected. Do not connect R, S, and T to the ground pin.

AC Output

Make sure that the AC-side of inverter is connected correctly, and phases of AC-side are connected correctly.

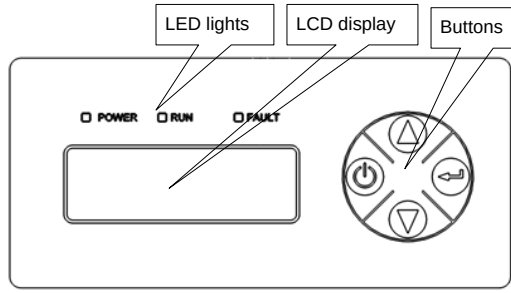
Verify of the water pump motor parameters

Check the electrical parameters on water pump motor nameplate: the rated input voltage and input current frequency, to ensure inverter is matched with the pump.

After finishing the above information, then begin initialization.

10.2 LCD Panel Operating Instructions

Inverter LCD Display



LED Indicator	Name	Color	Instructions
POWER	Power light	Green	Light on When power on
RUN	Running light	Green	Light on under normal operation
FAULT	Faulty light	Red	Light on when error occur, off when error be cleared

Buttons	Functions
"ON/OFF"	Press for 4s to get it started.
"UP"	Page up or increase parameter data.
"DOWN"	Page down or decrease parameter data.
"ENTER"	To choose and confirm.
+ "DOWN+ENTER"	Return to main interface.

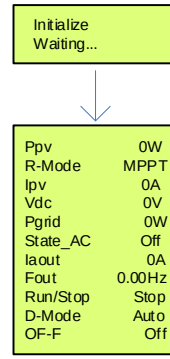
Notice!

When inverter power on, LCD screen background is lighted, and after 30s' normal running, the background light turns off.

10.3 Commissioning for JNP1K1L-V5~JNP18K5H-V4

10.3.1 Only DC Input, Disconnect grid input

Switch on inverter's DC switch or DC side electric connection, inverter start initialization.



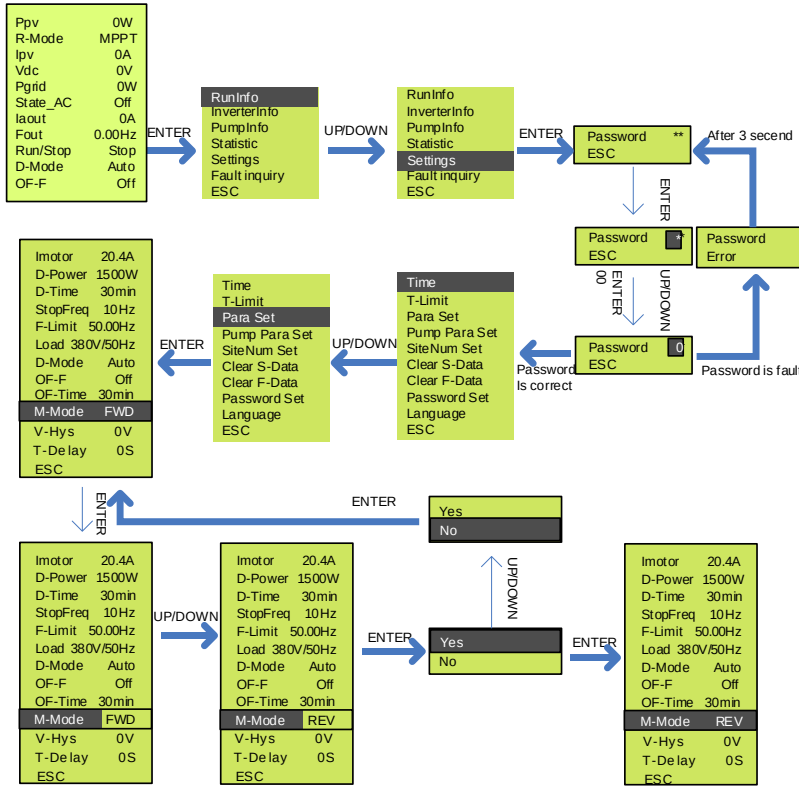
Notice!

- At the first running, ender user need to long-press "ON / OFF" key for 4 seconds around, then inverter start to run.
- Stop inverter, press "ON / OFF" key (1 second around), inverter shut down.

If the water output is very small or even no water output, please check the following two points:

1) Sun radiation is not strong enough;

2) Pump reverse, modify the inverter parameters, change the LCD menu "M-Mode", the factory default is "FWD" can be changed to "REV", thus adjustable steering pump, increase the water, solar pumping system running at peak performance, set as follows:



Parameter Settings Figure

10.3.2 Rated current confirmation of pump motor

In the first commissioning of solar pumping systems, you need to set the overload protection value of Inverter based on the rated current of pump motor, please refers to the above “Parameter Setting”.

Setting principle: The value of “Imotor” should be set to 1.2 times of the rated current of pump motor. If inverter alarm Fault5 during operation, Imotor can be increased by 5% each time till system can normal running.

10.3.3 Stop Frequency Setting

When finish the first commissioning successfully, need to set the system stop

frequency as following.

Step 1: Ensure the system is running and there has water output, enter to ”StopFreq”**.**

Step 2: To reduce the value of “StopFreq”. Reduce by 5Hz each time and press

"ENTER" to check the system performance. Keep reducing the value till the water just can not come out. Then adjust the value slightly until the water just come out, this value is the very data of StopFreq.

10.3.4 Only AC Input, Disconnect DC input

Please refer to **"10.3.1 Only DC Input. "** for commissioning steps.

At the first running, ender user need to long-press "ON / OFF" key for 4 seconds around, then inverter start to run.

Stop inverter, press "ON / OFF" key (1 second around), inverter shut down.

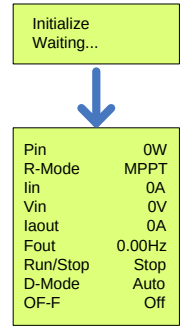
So far, your solar pumping systems first commissioning is completed! Thank you for using green energy!

10.4 Commissioning for JNP22KH-V5~JNP55KH-V5

10.4.1 Modify motor parameters

After confirming both of the input and output connection are in correct way, then switch on DC switch or Connect grid input, then LCD screen will show information as below.

10.4.2 Only DC Input. Disconnect grid input



The inverter should set the motor parameters before operation, the parameters including rated voltage, rated current, rated power ,rated frequency, rated rotor speed and power factor. The motor nameplate parameters information should be related to the inverter parameters. Below take Siemens motor and inverter parameters as example.

Table: motor nameplate as example

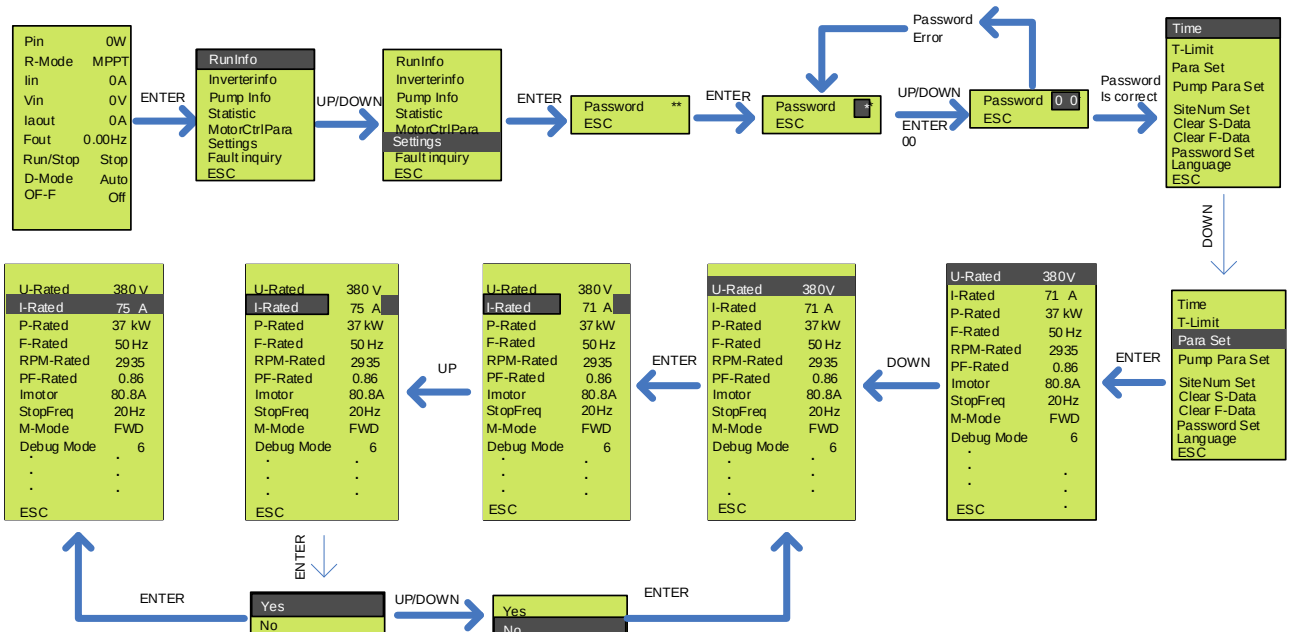
SIEMENS		
THREE-PHASE ASYNCHRONNOUS INVERTER DUTYMOTOR		
3~MOT		
37KW 380V/50Hz	Current 71A	COS φ 0.86
IP55IM.1080Kg	Torque 1285N.M	TH.CI.155UF
Constant Torque 10-50Hz	Speed 1488r/min	Q/321081 KJA005-2012
	BRGDE 03193	
SIEMENS LTD.,CHINA		

Table: motor nameplate's parameters contrast to inverter

Motor parameters	data	The inverter parameters	data
Voltage	380V	U-Rated	380V
Current	75A	I-Rated	75A
Power	37KW	P-Rated	37KW
Frequency	50Hz	F-Rated	50Hz
Speed	1488r/min	RPM-Rated	1488r/min

COSφ(P.F.)	0.86	PF-Rated	0.86

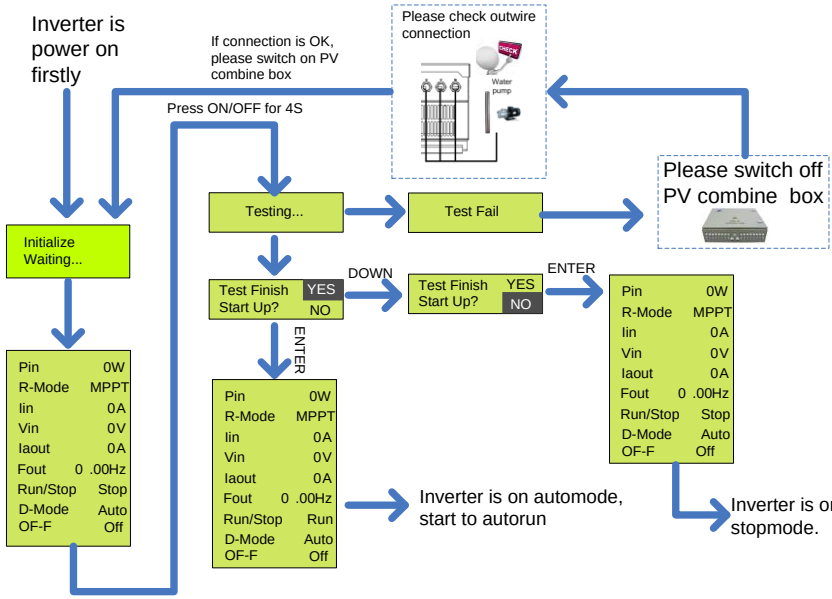
After confirming the needed parameters of inverter, enter the motor parameters interface of LCD displayed screen. The parameters should be the same as listed in table. The detailed operating processes are shown as below.



Notice: Motor parameters should be reset when change pump, output voltage and output frequency must keep same.

10.4.3 The test of motor parameters and commissioning

After modify the motor parameters, long-press the “ON/OFF” button to enter into testing status of motor parameters, when test succeed, then press “ENTER” to run, the details as below showed.



The test of motor parameters and commissioning sketch figure

Notice!

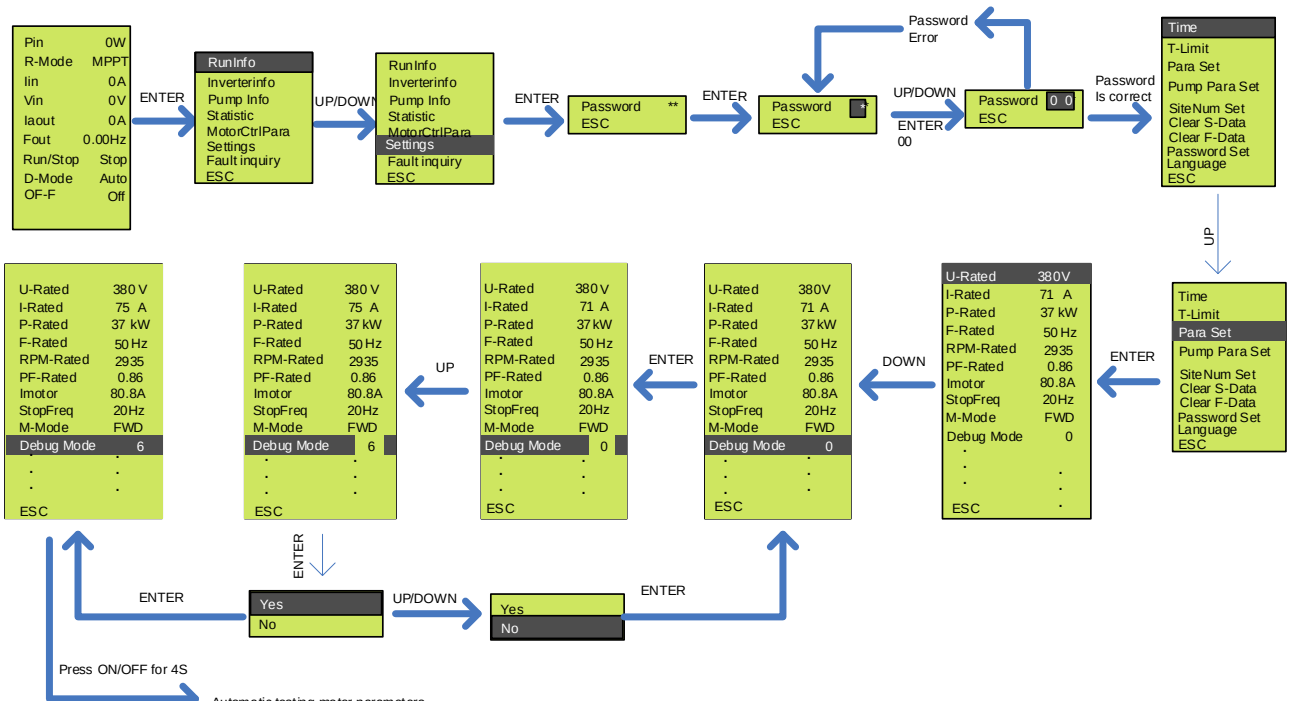
1.If the test failed, please check whether the inverter output and the motor wiring connection is in good condition or not, and AC breaker (if has) should be on!

2..After the motor parameters test successfully, then choose “YES” and press “ENTER” to start up.

3. Press "ON / OFF" for one second, to shut down the inverter.

Notice： Motor parameters’ testing must be done again when change pump, please ensure motor parameters’ reset before re-testing! Re-testing

processes are shown below:



Notice: If Solar Pumping System cannot pump water out and inverter display “state 09”, it may caused by air leak of pipe system, or long-time air discharge because of long pipe system. Please take measures according to the following steps:

First step: Check whether the pipe system is in good condition or not? If it’s good, please enter into LCD Menu “setting”→”Para Set” to modify “T-DJ” to “300S”. If system still cannot work, please increase “T-DJ” again, and start inverter. Meanwhile, record the time (T) from start up to stable water outgoing.

Second step: “T-DJ” should be set as T+10S.

Notice: If your solar pumping system has no flow, or the actual flow is less, may have the following two reasons:

1) Weak sunshine;

2) The pump reverse, modify the inverter parameters, change the LCD menu "M-Mode", the factory default is "FWD" can be changed to "REV", thus adjustable steering pump, increase the water, solar pumping system running at peak performance, Please refers to the above “Parameter Setting” for details.

10.4.4 Pump motor rated current confirmation

The Initial commissioning solar pumping systems, you need to set the value of the inverter overload protection according to the pump motor nameplate rated motor current value, the LCD menu ”Settings” ⇨ "Para Set" ⇨ "Imotor" to modify. The setting method with reference to the above “Parameter settings Figure” .

Setting principle: the value of "Imotor" should be set to 1.2 times the rated current value of the motor nameplate. If inverter alarm Fault5 during operation, “Imotor” can be increased by 5% each time till system can normal running.

10.4.5 Stop Frequency Setting

Please refer to “10.3.3 Stop Frequency Setting”.

10.4.6 Only AC Input. Disconnect DC input.

Please refer to **"10.3.2 Only DC Input. "** for commissioning steps.

At the first running, ender user need to long-press "ON / OFF" key for 4 seconds around, then inverter start to run.

Stop inverter, press "ON / OFF" key (1 second around), inverter shut down.

At this point, congratulations! Your photovoltaic pumping systems first test running is completed! Thank you for using green energy, in order to improve our living environment contribution.

11 Appendix: Troubleshooting

11.1 Troubleshooting for JNP550L-V5~JNP18K5H-V4

Stop condition and troubleshooting

Status Code	Phenomena	Reason	Troubleshooting
State 101 PV Array under-voltage	Inverter shutdown and will automatically restart after it disappear	Output energy from PV array is not enough	Please check PV input voltage and make sure the voltage is within inverter input voltage range. Notice: In cloudy days, morning and late in afternoon, this situation is normal.
State 109 Dry alarm	Inverter shut down till the water level reach the higher water level sensor, inverter can restart automatically.	Water level of water source is lower than lower level sensor, even lower than inlet of pump.	1. Please check the water level, if the water level is ok, please check whether there have air inside pump or not. 2. Please check the position of water level sensor.
State 110 Weak sunshine	Inverter shutdown. The status disappear, inverter can restart automatically.	The energy produced by PV array is low.	Usually appears in early morning, late in the afternoon and cloudy days. This situation is aim to protect the motor of pump.
State 114 Overflow alarm	Inverter shut down till water level in tank is higher than higher water level sensor, and it can restart automatically when the status disappears	Water level in tank is higher than higher level alarm of set	If this situation appears more than once, please check onsite and set the water level sensor at a proper height.

Fault100 Driver over-current	Inverter shutdown and will restart automatically after the fault disappears	1. Short circuit of inverter output wires; 2. Hardware circuit damage	Please check whether there have short circuit situation between 3 phase output wires
Fault105 Over-load	Inverter shutdown and will restart automatically after the fault disappears	The capacity of load is higher than rated output power of inverter.	Please make sure the system is proper designed. The power of pump motor should not be higher than inverter output.
Fault108 AC over-current	Inverter shutdown and will restart automatically after the fault disappears	1. The capacity of load is higher than rated output power of inverter. 2. Motor occurs locked-rotor; 3. Pipe system design is not reasonable	1. Inspect pump motor; 2. Inspect pipe system
Fault111 Temp. sensor fault	Inverter shut down	Temp. sensor inside inverter loosen or damage	Please contact supplier.
Fault112 Short-circuit	Inverter shutdown, non-recover malfunction. No automatically restart, only if recharged	Output wire short circuit.	1. Please check if there is short circuit in output wires. 2. If this happen frequently, please contact supplier.
Fault115 Shortage-phase output	Inverter shutdown and will restart automatically after the fault disappears	The wires' connection between inverter and pump appear fault	Please check if the output wires are proper connected and fixed.
Fault 200	AC input over-voltage.	Inverter stops, and display AC over-voltage.	1.AC power source is unstable, with high voltage; 2. Inverter internal damage.
Fault201	AC input low-*voltage*	1. AC power source cannot work as pass-by when there is no solar energy input	1.AC IN side circuit breaker be off; 2. AC power voltage is low.

		2. with low solar energy, AC power source cannot complement	
Fault202 AC input over-current	Inverter shutdown and will restart automatically after the fault disappears	1、Pump motor locked-rotor, or damaged. 2、hardware failure	1. Check the pump wiring and the pump for normal operation; 2. Check if the inverter output is normal.
Fault203 BUS low-voltage	Inverter shutdown and will restart automatically after the fault disappears	The grid voltage is too low, or the array voltage is too low or a hardware failure.	Disconnect the grid and PV input switch to ensure that the inverter input has no voltage. Check the grid voltage and PV voltage with a multimeter.
Fault204 Shortage-phase input	Inverter shutdown and will restart automatically after the fault disappears	One or two phase output cables of the grid are not well connected to the inverter. The power grid connection is loose and falls off.	Disconnect the grid and PV input switch to ensure that the inverter input has no voltage. Check the wiring on the input side of the grid.

11.2 Troubleshooting for JNP22KH-V5~JNP55KH-V5

Stop condition and troubleshooting

Status Code	Phenomena	Reason	Troubleshooting
State 101 PV Array under-voltage	Inverter shutdown and will automatically restart after it disappear	Output energy from PV array is not enough	Please check PV input voltage and make sure the voltage is within inverter input voltage range. Notice: In cloudy days, morning and late in afternoon, this situation is normal.
State 109 Dry alarm	Inverter shut down till the water level reach the higher water level sensor, inverter can restart automatically.	Water level of water source is lower than lower level sensor, even lower than inlet of pump.	1. Please check the water level, if the water level is ok, please check whether there have air inside pump or not. 2. Please check the position of water level sensor.
State 110 Weak sunshine	Inverter shutdown. The status disappear, inverter can restart automatically.	The energy produced by PV array is low.	Usually appears in early morning, late in the afternoon and cloudy days. This situation is aim to protect the motor of pump.
State 114 Overflow alarm	Inverter shut down till water level in tank is higher than higher water level sensor, and it can restart automatically when the status disappears	Water level in tank is higher than higher level alarm of set	If this situation appears more than once, please check onsite and set the water level sensor at a proper height.
Fault100 Driver over-current	Inverter shutdown and will restart automatically after the fault disappears	1. Short circuit of inverter output wires; 2. Hardware circuit damage	Please check whether there have short circuit situation between 3 phase output wires
Fault105 Over-load	Inverter shutdown and will restart automatically after the fault disappears	The capacity of load is higher than rated output power of inverter.	Please make sure the system is proper designed. The power of pump motor should not be higher than inverter output.
Fault108 AC over-current	Inverter shutdown and will restart automatically after	1. The capacity of load is higher than rated output power	1. Inspect pump motor; 2. Inspect pipe system

	the fault disappears	of inverter. 2. Motor occurs locked-rotor; 3. Pipe system design is not reasonable	
Fault111 Temp. sensor fault	Inverter shut down	Temp. sensor inside inverter loosen or damage	Please contact supplier.
Fault112 Short-circuit	Inverter shutdown, non-recover malfunction. No automatically restart, only if recharged	Output wire short circuit.	1. Please check if there is short circuit in output wires. 2. If this happen frequently, please contact supplier.
Fault115 Shortage-phase output	Inverter shutdown and will restart automatically after the fault disappears	The wires' connection between inverter and pump appear fault	Please check if the output wires are proper connected and fixed.
Fault 200 Fault 201 Fault 202 Fault 203	Inverter cannot start.	1. The connection between motor and inverter is not in good condition; 2.Motor failure; 3.Inverter failure.	1.Check the connection between motor and inverter, whether there exist short-circuit,open circuit,and etc. 2. Check motor situation;
Fault204	Communication error.	1.Loose communication cable. 2. Hardware failure	1.Check whether the communication cable is well connected.
Fault205 AC input over-current	Inverter shutdown and will restart automatically after the fault disappears.	1、Pump motor locked-rotor, or damaged. 2、hardware failure	1. Check the pump wiring and the pump for normal operation; 2. Check if the inverter output is normal.

Fault206 BUS low-voltage	Inverter shutdown and will restart automatically after the fault disappears.	The grid voltage is too low, or the array voltage is too low or a hardware failure.	Disconnect the grid and PV input switch to ensure that the inverter input has no voltage. Check the grid voltage and PV voltage with a multimeter.
Fault207 Shortage-phase input	Inverter shutdown and will restart automatically after the fault disappears.	One or two phase output cables of the grid are not well connected to the inverter. The power grid connection is loose and falls off.	Disconnect the grid and PV input switch to ensure that the inverter input has no voltage. Check the wiring on the input side of the grid.

Quick Installation Guideline for solar pumping inverter – JNP11KH-V5 JNP15KH-V5 JNP18K5H-V5

12 Inverter Unpacking

12.1 Unpacking Check

The product has been tested and checked carefully before transportation, but damage may be caused during transportation, therefore, the product should also be checked carefully before installation.

- Please check whether inverter outer packing is in good condition;
- After unpacking, please check whether the equipment is in good condition;
- According to the packing list to check whether all the parts is correct and in good condition.

If any damage is found, please contact supplier or the transportation company. Please keep well the photos taken at the damaged parts and we'll provide you with best and fastest services.

Supplier supply the standard inverter and commonly used accessories as below:

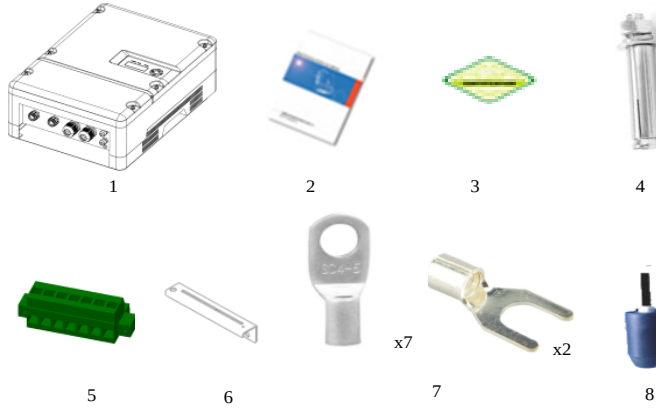


Figure3-1 Inverter and standard fittings

Notice!

Photos are for reference only, please adhere to the original product!

Table3-1 Inverter and fittings table

No.	Description	Status
1	Inverter model	Standard
2	Quick installation instruction	Standard
3	Certification	Standard
4	Expansion Bolt	Standard
5	Terminal block	Standard
6	Hanging board	Standard
7	Terminals	Optiona
8	Water level sensor	Optiona
9	GPRS_Device	Optiona
10	RS485 - RS232 Converter	Optiona

13 Installation Procedure

13.1 Prepare Installation Tools

The following tools will be needed during inverter installation and wire connection. You also can choose the right tools according to your own experience.

Table4-1 Installation tools list

Sketch map	Name	Recommend specification	Function
	Wire crimpers	M2.5~M8	For crimping of cold terminals.
	Electric drill	Φ6	Used for inverter installation plate fixed hole drilling.

	Straight screwdriver	Φ3	For the installation of communication connecting wires.
	Cross screwdriver	Φ5	Used for disassembling inverter cover.
	Inner hexagon spanner	5#	Used for disassembly and assembly of inverter cover panel.

13.2 Installation Direction

- The inverter should be installed vertically or titled backwards with a maximum angle of 10°.
- Do not install inverter tilted forwards.
- Never install the inverter horizontally.

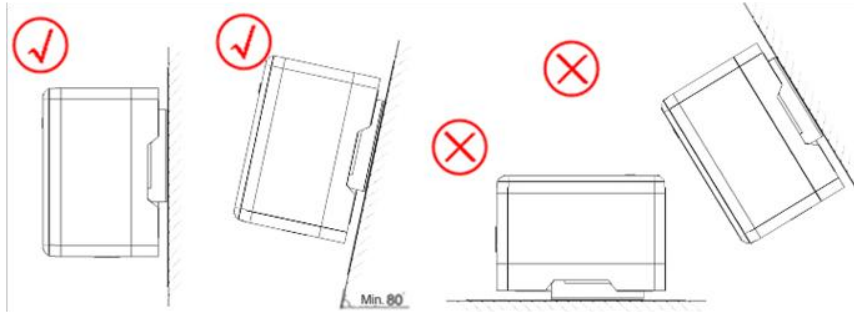


Figure5-1 Installation directions

- The installation height of inverter should be convenient for operation and reading out of the LCD displayed information.
- Do not install the inverter in a place where children can touch.
- The inverter uses air cooling mode and the installation site selected should ensure the minimum installation spacing between the inverter and the fixed object and the nearby inverters to ensure an good ventilation. And in front of the inverter need to keep enough space, is convenient to check the LCD display information.

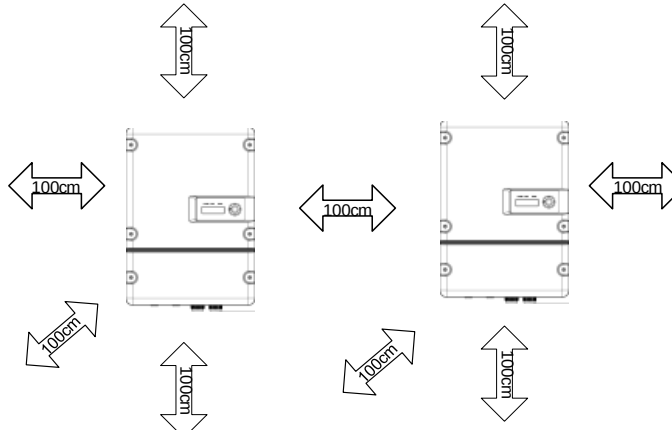


Figure5-2 Minimum spacing of adjacent installations

Table5-1 Minimum spacing dimension

Direction	Minimum spacing
Above	100cm
Below	100cm
Sides	100cm
Front	100cm

13.3 Installation of Inverter

Notice!

Do not use jackbolts or screws to install inverters on rocks or panels.

Notice!

- Fix the inverter on the rock or panel with the toggle bolt or screw is not permitted.
- Supplier would provide the bolt which suitable for the installation on the concrete wall.
- If the inverter is fixed on the wooden wall, please choose suitable bolt to finish the installation, the bolt length should be enough and penetrate the 1/2 depth of the walls.

Step 1: According to the size of the inverter, select a suitable location for drilling on the wall. It is recommended to drill 8+1/-0mm in diameter and 60+5/-0mm in depth. The hole spacing is shown in the figure below. Drive the expansion bolt into the hole.

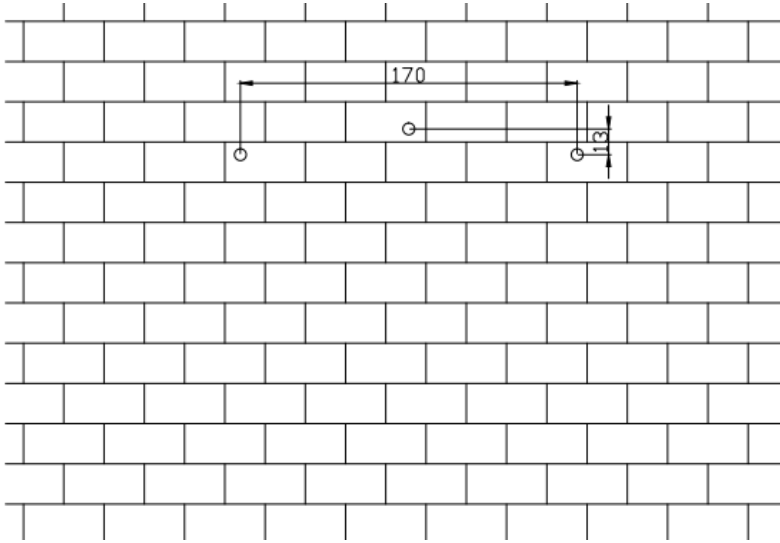


FIG. 5-3 Bitmap of the JNPxH mounting hole

Step 2: Use an expansion screw to secure the panel to the wall.

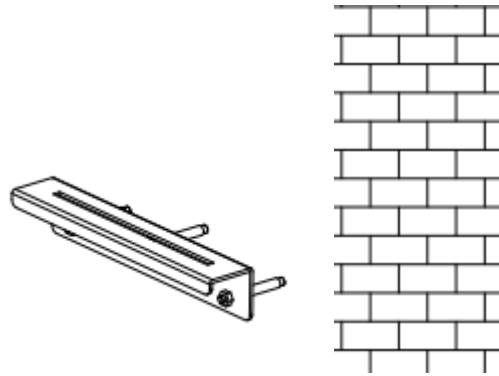


FIG. 5-4 The installation of the hanging boardStep 3: Lock the expansion bolt until the expansion bolt is attached to the wall.Put on photovoltaic inverter.

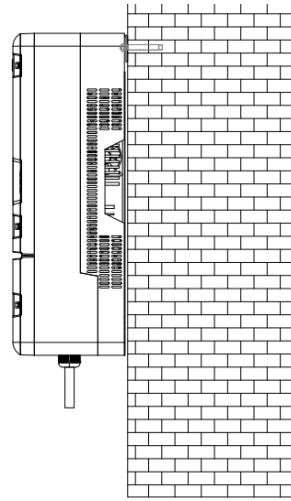


FIG. 5-5 Completion effect of installation

14 Electrical Connection

The electrical connection can be carried out when the mechanical installation of inverter is completed. The following operation specification must be followed when making electrical connection.

Warning!

- All the electrical connection must meet local electrical connection standard.
- Only qualified electrical personnel can perform the wiring installation work.
- Incorrect wiring operation may cause operating casualties or equipment damage permanently.
- Ensure that there is no electricity in DC side before the electrical connection.
- Grounding correctly, using proper conductor and taking necessary Short-circuit protection to ensure the safe operation of inverter.
- Don’t switch on any breaker before all the electrical connection are finished.

14.1 Connecting Terminals of Inverter

All connection terminals are at the bottom of the inverter, Remove the terminal cover with a cross screwdriver, It contains DC side input (PV) terminal, AC side AC input (AC IN), AC output (MOTOR) terminal, communication terminal and water level sensor terminal inside The DC side input terminal, AC side input and output terminals, and the grounding terminal are connected by a terminal block.The communication terminal and water level sensor terminal are connected by a signal terminal block.Please refer to Figure6-1.

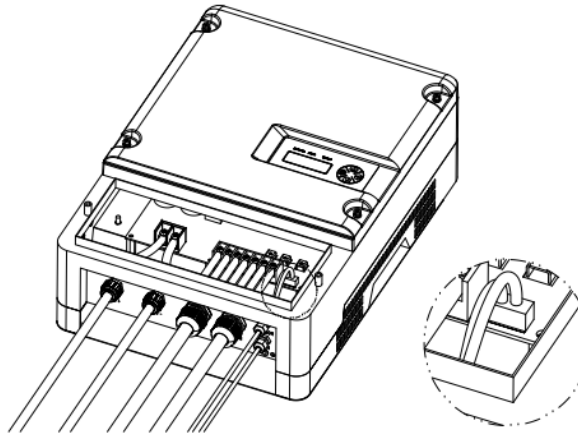


Figure6-1 External connection terminals of inverter

Table6-1 Description

Terminals	Description
AC IN	AC input terminals, including R,S,T,PE.
PV	PV array DC input terminals, including PV+,PV-.
MOTOR	Output terminal, connect with AC pump, including U,V,W.
SENSOR	Water level sensor signal input terminal (optional)
COM	RS485 or GPRS communication interface (optional)
	Grounding terminal(Grounding screw on the right side of inverter case)

14.2 Cable Selection

Please select cable according to the following table.

Table 6-3 Specification of Cables for Electrical Connection

Inverter	Cable range（AWG）			Cable recommended （AWG）		
	DC side	AC side		DC side	AC side	
	PV+、PV-	U、V、W	PE	PV+、PV-	U、V、W	PE
JNP11KH-V5	5-6	7-8	7	5	7	7
JNP15KH-V5	5-6	7-8	7	5	7	7
JNP18K5H-V5	5-6	7-8	7	5	7	7

14.3 AC Side Electrical Connection

Danger!

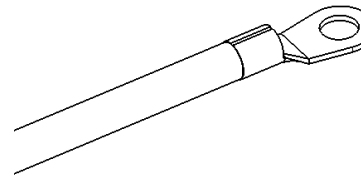
It’s forbidden to connect several inverters in parallel to one set of pump!

Danger!

Ensure that all cables have no charge before electrical operation!

Step1: Connect the wires first:

Follow the steps below to connect the AC wires:

Operation Instruction	Operation Demonstration
Step1. Fasten the three-phase input, three-phase output and grounding wires to the cold pressing terminal (SC10-6) with crimping pliers seperately.	

Step2: Fix the AC wire (R, S, T, PE, U, V, W) on the terminal through the corresponding waterproof terminal on the terminal cover. Notice: R, S, T, PE pass through the AC in waterproof terminal, U, V, W pass through the motor waterproof terminal. R,S,T are AC input terminals, and U,V,W are AC output terminals which should be connected to pump.

Noticed: For JNPxL series single phase AC input inverter, AC input Live line is fixed to R corresponding terminal, Neutral line is fixed to S corresponding terminal, T terminal is not connected.

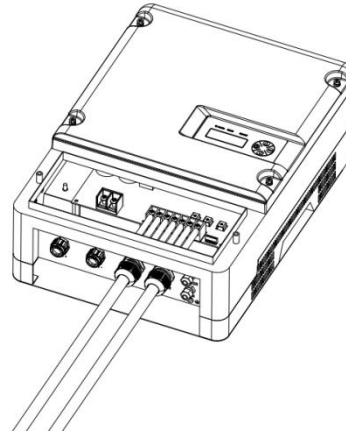


Figure6-3 AC side electrical connection

Step3: Connect the cables between pumping inverter and AC pump.

Danger!

When the input AC terminal is connected with the inverter, the circuit breaker at the AC input side shall be disconnected, otherwise the AC input will generate dangerous voltage, causing personal injury and death. Do not operate wiring by non professionals.

Please make sure the AC input and AC output wiring is correct, Do not connect the input and output reversely, otherwise the inverter will be damaged.

Please make sure that three phase AC input the R, S, T and grounding are correctly connected to the Corresponding terminals. Do not connect the AC input R, S, T to the grounding terminal wrongly. Otherwise, it will damage inverter.

Make sure single AC input Live line , neutral line and grounded line are connected to corresponding R,S and PE terminals, T keeps without any connection, Do not connect R, S and AC input grounding wrongly, otherwise it will damage the inverter.

Notice!

The phase sequence between AC pump and inverter must be same, otherwise, it shall lead to less output or without water. Whether Phase sequence is corresponding or not should be tested when the pump system trial run for the first time.

14.4 DC Side Connection

Danger!

When carrying out connection between PV array and inverter, the PV array should be covered with opaque materials and the DC-SWITCH should be disconnected, otherwise, the PV array may generate dangerous voltage, cause casualty. The Non-professionals do not make the connection operation.

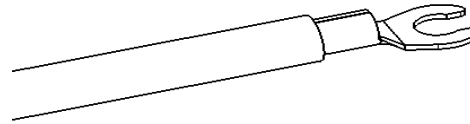
Warning!

Before connecting PV array to the inverter, ensure the earth impedance between PV array and ground is not less than 1Mohm.

Notice!

- If there is more strings PV modules in parallel, each string PV module should be with the same model, the same number of PV modules, the same inclination angle, the same azimuth angle, and the same cross-sectional area of the connecting wires.
- Inspect every system carefully before installation.

Step1: Please connect the wire of DC according to the following steps:

Operation Instruction	Operation Demonstration
8. Connect DC wire and cold terminal (UT16-8) firmly by crimping plier.	

Step2: Through the PV waterproof terminal on the terminal cover, fix the DC wire (PV +, PV -) on the terminal, pay attention to the positive and negative poles shouldn't be connected reversely, and ensure that the circuit breaker

at the DC side of the system is in the off state.

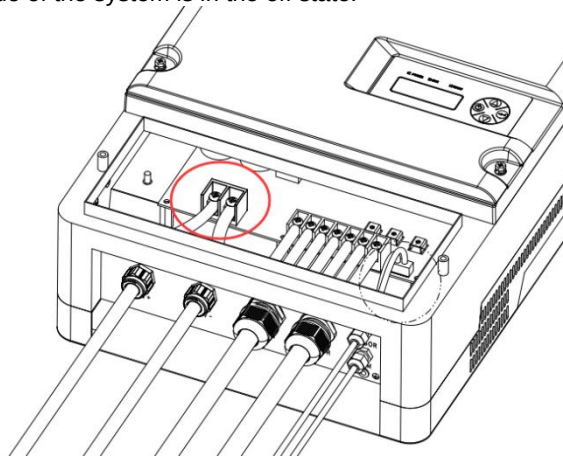


Figure6-4 PV side electrical connection

Warning!

Make sure the Positive and Negative poles connection of PV array and Inverter are correct!

14.5 Inverter grounding

Ensure reliable connection between inverter grounding terminal and grounding.

14.6 Water Level Sensor Connection

Dry protection function: There are two kinds of detection models, automatic and manual. Automatic dry protection is achieved through inverter's software. And manual model need water level sensors to input signal through SENSOR inside Inverter.

Overflow Protection: water level sensors are requested to input signal through SENSOR inside Inverter.

14.6.1 Water level sensor interface define

Water level sensor connector pins in inverter panel port are defined as below:

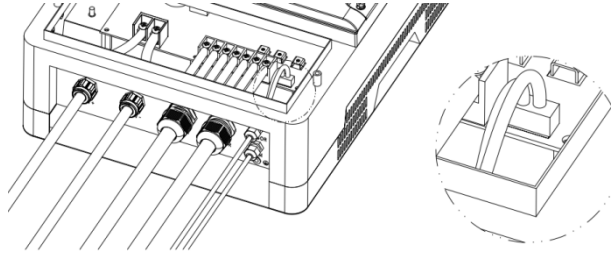


Figure6-5 Water level sensor interface define

Table 6-4

Terminal（SENSOR）pin	Detail
DG	Dry protection pin
SY	Overflow protection pin
COM	Dry protection and Overflow protection common pin,

Notice!

Above three input signal of water level sensors is passive signals, which is matching opening or closing signal of the corresponding water level sensors.

14.6.2 Water level sensor connection

Two kinds of water level sensor you can select as shown below:

Sensor A Sensor B

Figure6-6 Water level sensor

If you selected water level sensor A, then water sensor installation method is shown below:

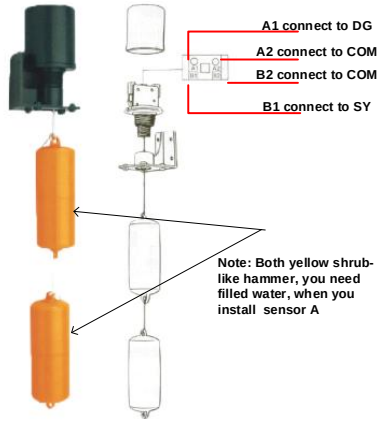


Figure6-7 The detail figure of Sensor A

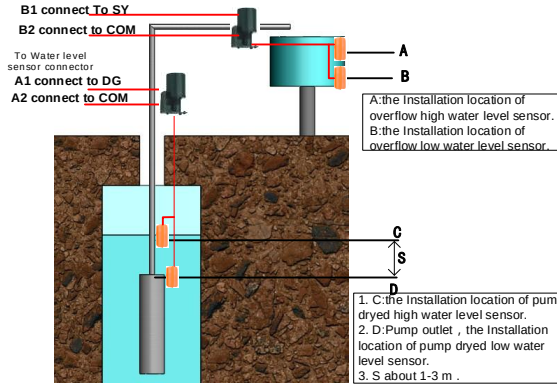


Figure6-8 The installation figure of Sensor A

If you selected water level sensor B, then water sensor installation method is shown below:

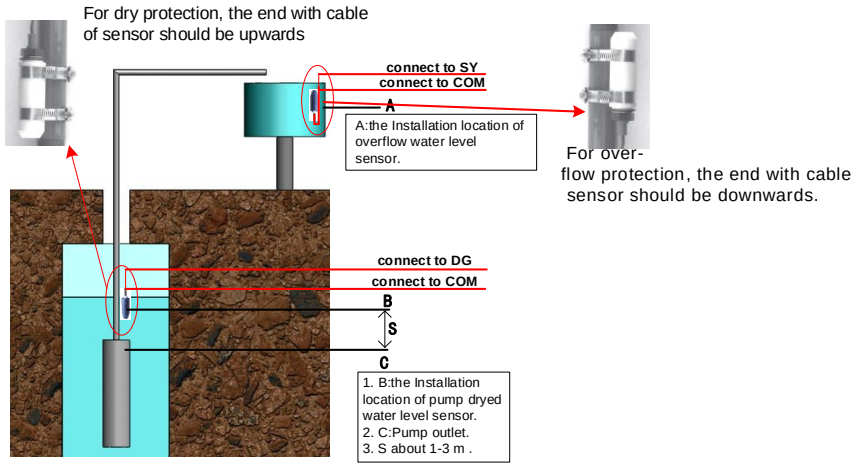


Figure6-9 The installation figure of Sensor B

Notice!

If you choose Water Level Sensor B, please Notice the following aspects when intall:

1. For dry protection, the end with cable of sensor should be upwards;
2. For over-flow protection, the end with cable of sensor should be downwards.

14.7 Communication Connection

14.7.1 RS485 Communication

When the inverter communicates with a single machine, the communication between the inverter and the monitoring equipment can be connected through the communication cable. The COM outside the inverter is the remote communication terminal, and the output terminal wire is connected to the monitoring equipment (computer).

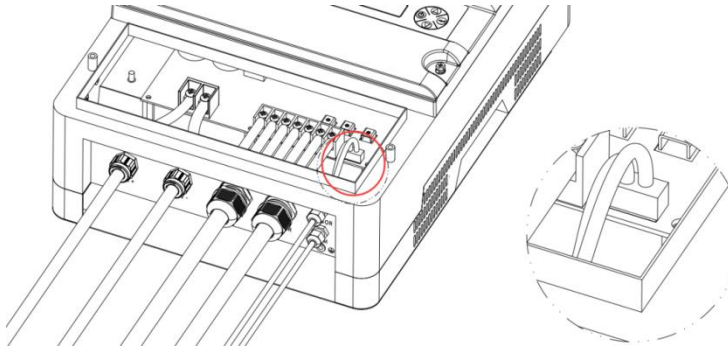


Figure6-10 Communication connection terminal

The com part of the machine panel and the water level sensor use the same terminal block, and the pin definitions are shown in the table below:

Table 6-5 COM terminal pin definition on machine panel

Terminal（SENSOR） pin	Detail
VCC	+5V power supply
A	RS485 communication port A.
B	RS485 communication port B.
GND	Electrical grounding

The following diagram guide you to connect a single inverter to monitoring equipment.

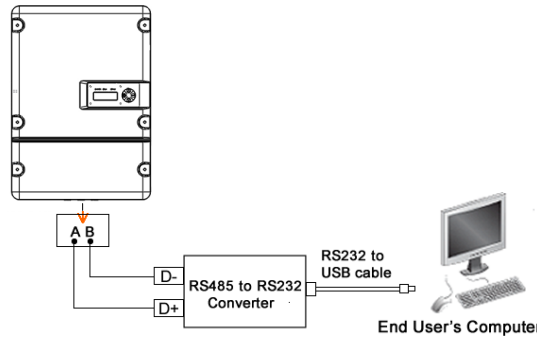


Figure6-11 Diagram of single communication wiring

The wiring diagram is schematic diagram, just take HEXIN converting module

as an example. If the user choose other converter, need according to the converter‘s instructions, wiring the inverter’s A, B wires to the converter’s correct terminal.
Please refer to “**Inverter Management System User Manual**” for the corresponding monitoring software settings, after completing the wire connection.

Notice!

- The monitoring software is optional, when choose this function, “**Inverter Management System User Manual**” can be found from the accompanying CD.
- The inverter is supplied with default address "10".

14.7.2 GPRS Communication

Notice：More information about the communication module, please refer to the **User and Installation Manual For GPRS**.

14.8 Disassembling

14.8.1Safety Instruction

Warning!

Before disassembling the inverter:

- Turn off the DC switch.
- Waiting for a few minutes till ensure the inverter is uncharged.

Notice!

Electrostatic discharging will cause damage to the inner components of inverter. We should carry out the antistatic measure before disassembling and assembling.

14.8.2 Mounting and dismounting of cover panel

For maintenance reason, you may need open the cover of inverter, and ensure better seal performance, please operate according to the following instruction.

1. When open the inverter cover, first use a cross screwdriver to remove the grounding screw on the right side of the inverter case, and then use a 5# Allen wrench to screw down the cover plate fixing screws in turn, and install the gasket under the screw. When screwing down, pay attention to prevent the gasket from falling off.
2. when cover it back, first use a cross screwdriver to lock the grounding screw on the right side of the inverter case, then screw all the cover screws into the screw holes, use a 5 × Allen wrench, with a torque of 1.8 ± 0.2N · m, first lock the diagonal screws, and then lock the other screws in turn.

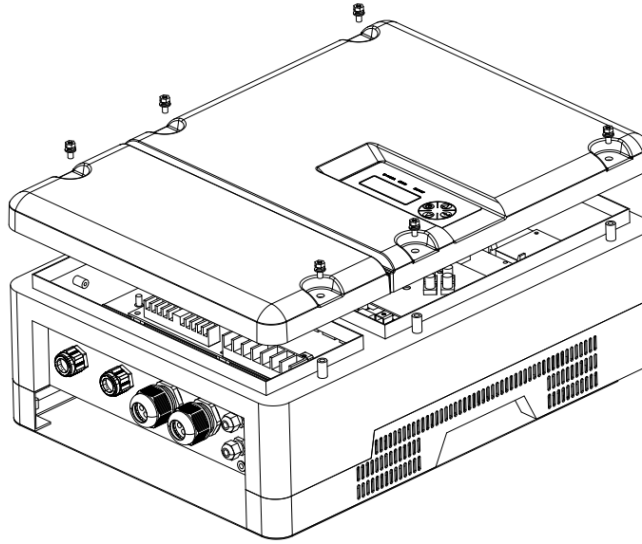


Figure6-12 Reference picture of Mounting and dismounting