Adapter Box G2

User Manual

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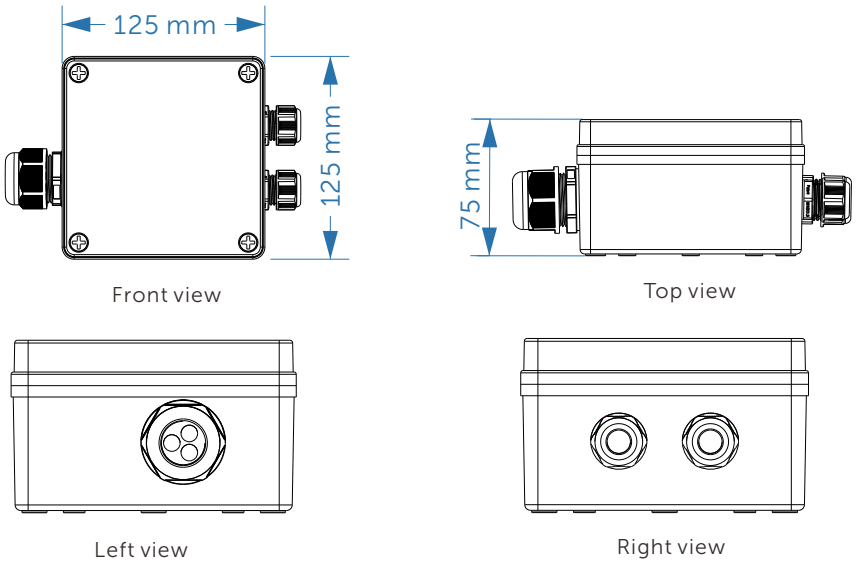
1 Overview of the Adapter Box G2

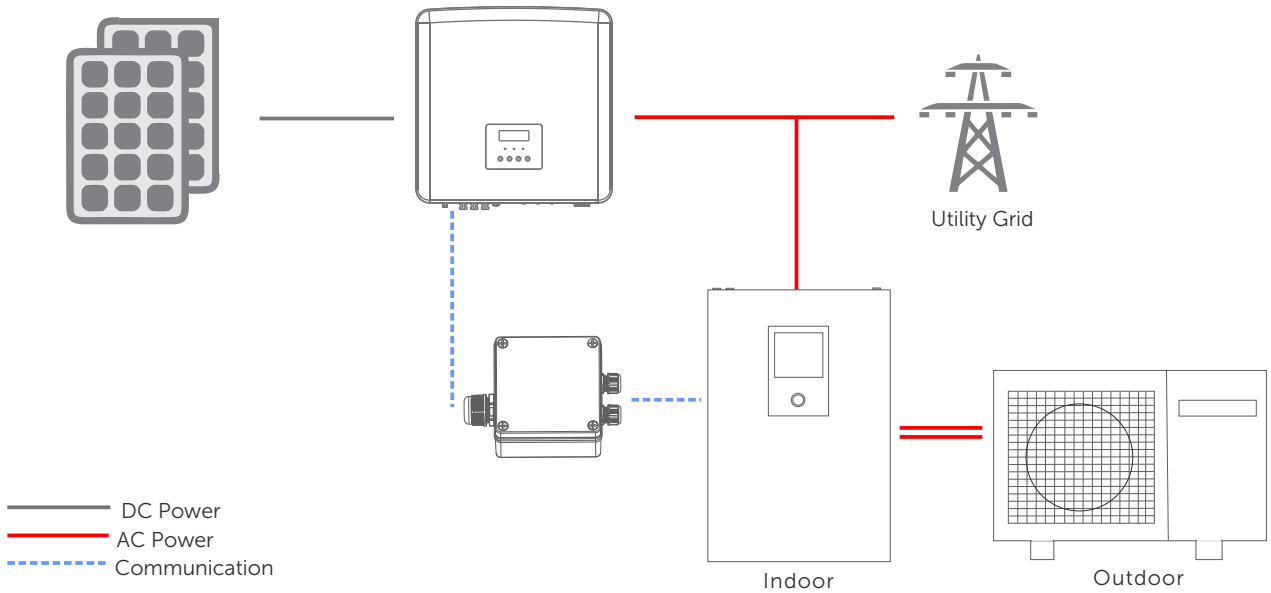
1.1 Introduction

An Adapter Box G2 is a heat pump controller. It communicates with Solax inverters through the RS485 and controls a heat pump with the dry contact or the analog output. Users can control the Adapter Box G2 to make use of the surplus solar energy of the inverter and battery storage capacity.
Note: A heat pump can only be connected to a Adapter Box G2.

1.2 Dimension



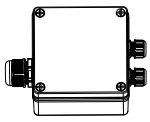
1.3 Diagram



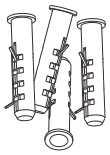
2 Installation

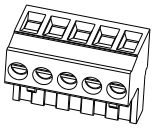
2.1 Packing List

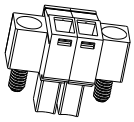
Check if there is any distortion or damage during transportation. If there is any damage or items missing, please contact the dealer.

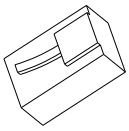

Adapter Box G2 × 1


Self-tapping screws × 4

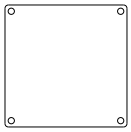

Expansion tubes × 4


5 pin male pluggable terminal block × 1

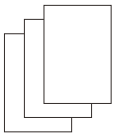

2 pin male pluggable terminal block × 1


RJ45 terminals × 2

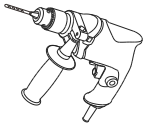

1 mm² tube pre-insulated terminals × 7


Marking Cardboard × 1

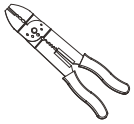

Power Adapter × 1 (optional)

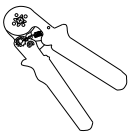

Documents

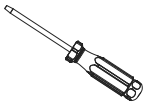
2.2 Tool Preparation

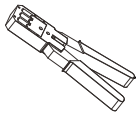

Drill (Bit Φ 6)


Cross-shaped screwdriver

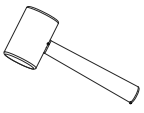

Cable stripper


Crimping plier


Flat-shaped screwdriver


Network cable crimping plier

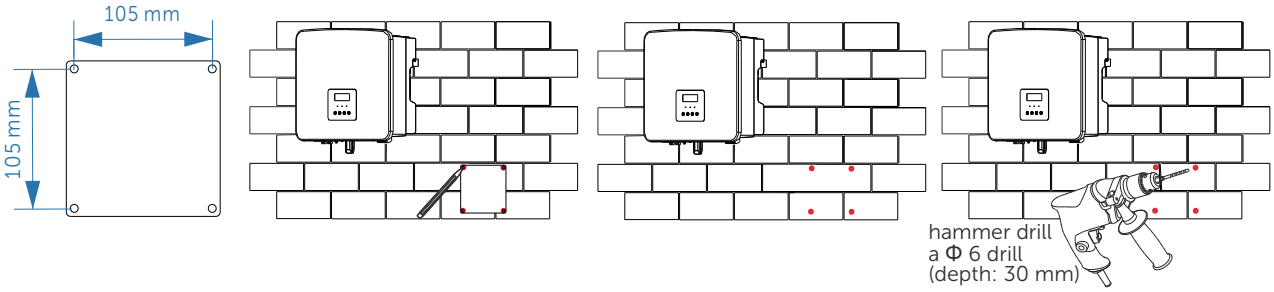

Diagonal plier


Rubber hammer

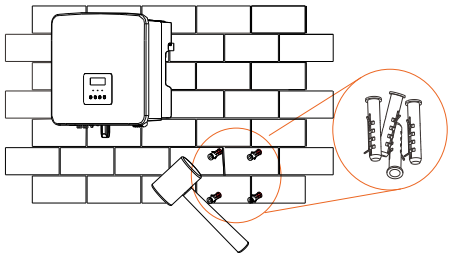

Marker

2.3 Wall Mounting

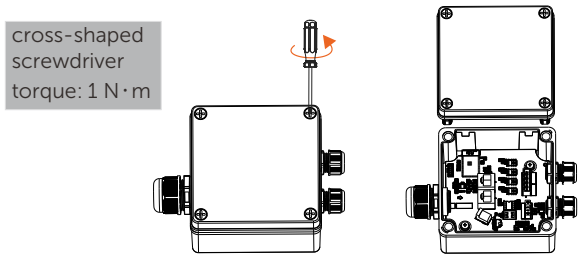
Step1. Use a marking cardboard to locate the holes and drill them on the wall.
Drill holes with a Φ 6 drill.
Depth: at least 30 mm.



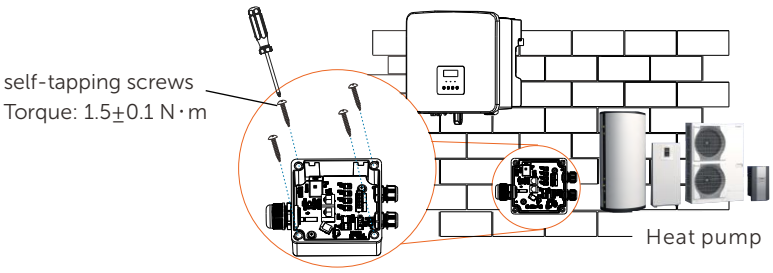
Step2. Put the expansion tubes in the holes and tighten them with a hammer.



Step3. Dismantle the top cover of the Adapter Box G2.



Step4. Pass self-tapping screws through the channels in the four corners of the box and screw them tightly.

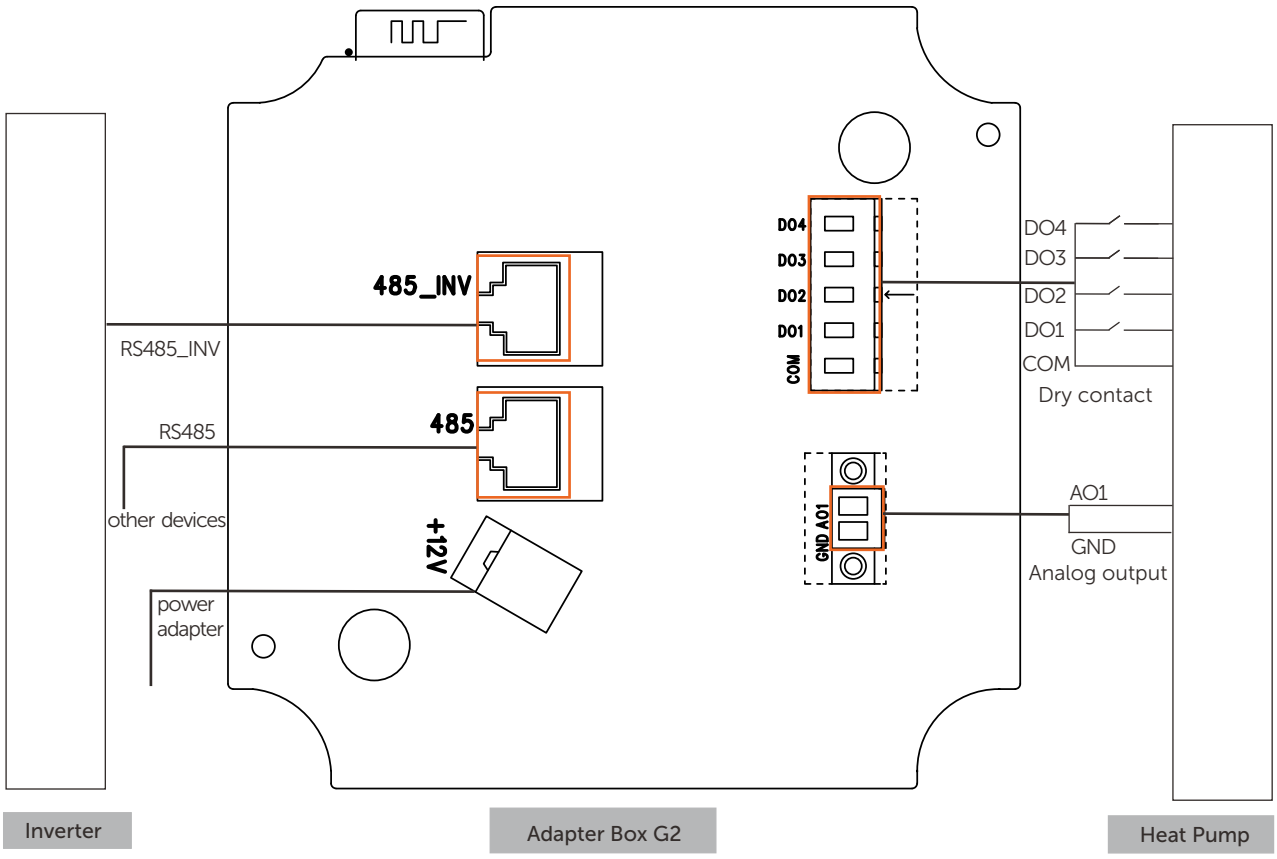


Note!

- Choose a place where the Adapter Box G2 is not directly exposed to the sun and close to the heat pump.
- The Adapter Box G2 needs to be installed horizontally. Please refer to picture in step 4 for the right installation method of the adapter box.

3 Electrical Connection

The figure below introduces the ports the Adapter Box G2, which shall be connected to the ports of a heat pump and an inverter.



- Functions of the ports of the Adapter Box G2

Name of ports	Functions of ports
Dry Contact(DO)	4 channel dry contact
Analog output(AO)	0-10 Vdc analog output
RS485_INV	Pin 4 and pin 5 are for RS485 communication with the inverter. Pin 3 and pin 6 are for 11-15 Vdc power supply input to the Adapter Box G2.
RS485	a branch port of the RS485_INV port for RS485 communication (Pin 4 and Pin 5)
Power Adapter	9- 14 Vdc power supply input to the Adapter Box G2

Note!

Pin 3 and pin 6 of RS485_INV port and a power adapter both can supply power for the Adapter Box G2, and users can choose one to get Adapter Box G2 powered.

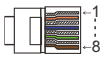
By introducing ports of the Adapter Box G2, the specific connection methods of ports among the box and a heat pump and an inverter shall be illustrated below.

3.1 Connection of the RS485_INV port

- Functions of the RS485_INV port:

a) communication between the Adapter Box G2 and the inverter.
b) power supply from the inverter to the Adapter Box G2.

- RS485_INV Pin Definition

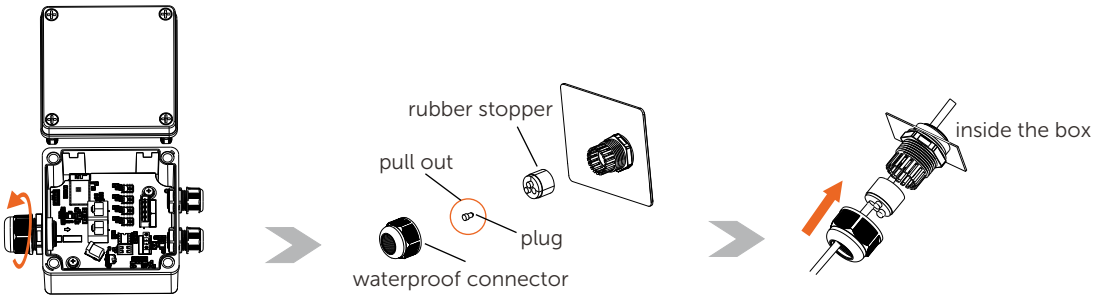


1	2	3	4	5	6	7	8
X	X	+13V	RS485-A	RS485-B	GND	X	X

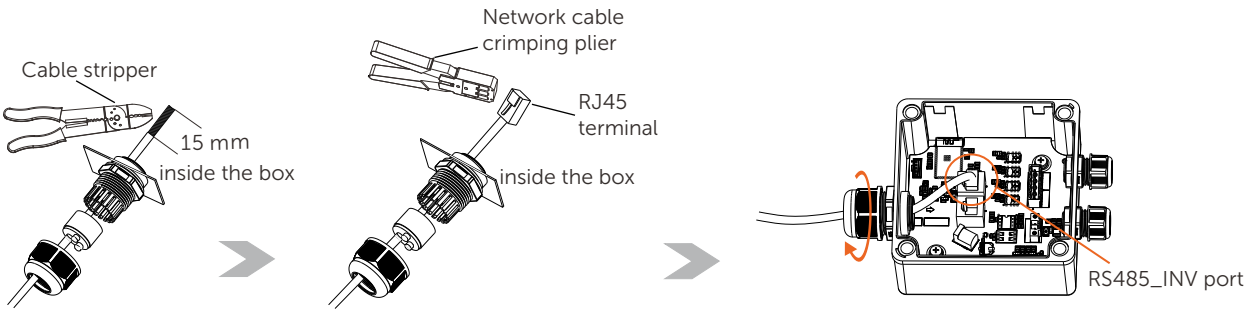
- Cable connection between an inverter and the Adapter Box G2

①. Cable connection of RS485_INV port (Adapter Box G2 side)

Step1. Unscrew the waterproof connector of the box, pull out one plug in the rubber stopper and thread a cable through the waterproof connector, the rubber stopper and insert it into the box.



Step2. Make a cable: **strip** 15 mm layer off the end of the cable **in the box** and plug the end into a RJ45 terminal according to the pin definition with a plier crimped. Connect the cable with the terminal to the RS485_INV port in the box, ensure rubber stoppers without cable threading are with plugs and then screw the waterproof cover tightly.



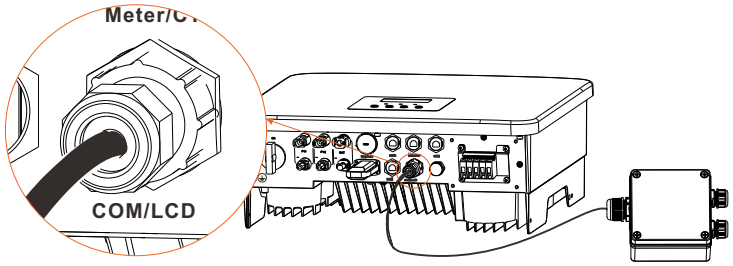
②.Cable connection of the inverter side

The Adapter Box G2 can be connected with different inverters to achieve communication between devices. With matching tests, X1-Hybrid G4, X3-Hybrid G4 and X3-MIC G2 series inverters can be matched to supply power for the Adapter Box G2. For further matching questions of other Solax inverters, please contact us for help before installation.

Here is an introduction to the port of inverters supplying power for the Adapter Box G2.

a) X1-Hybrid G4 and X3-Hybrid G4 series inverters

X1-Hybrid G4 and X3-Hybrid G4 series inverters support power for the Adapter Box G2 through COM/LCD port or COM port of the inverter respectively.



X1-Hybrid G4 inverter for example

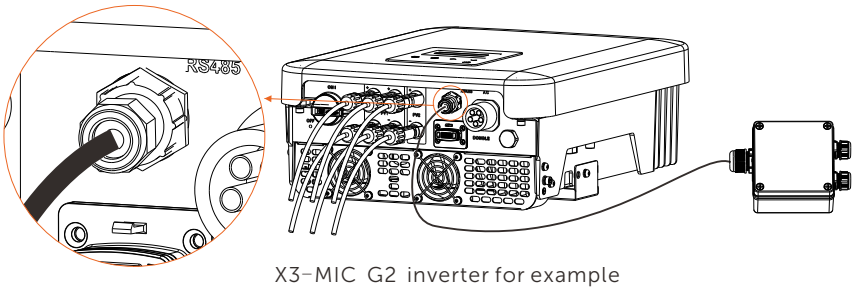
- COM Pin Definition of X1/X3-Hybrid G4 series



1	2	3	4	5	6	7	8
X	X	+13V	RS485_A	RS485_B	GND	X	X

b) X3-MIC G2 series inverters

X3-MIC G2 series inverters support power for the Adapter Box G2 through RS485 port of the inverter.



X3-MIC G2 inverter for example

- RS485 Pin Definition of X3-MIC G2 series



1	2	3	4	5	6	7	8
X	X	+12V	RS485_A	RS485_B	GND	X	X

When the inverter and the Adapter Box G2 are well connected, users need to enable the RS485 communication with the Adapter Box G2 in the settings of the inverter.

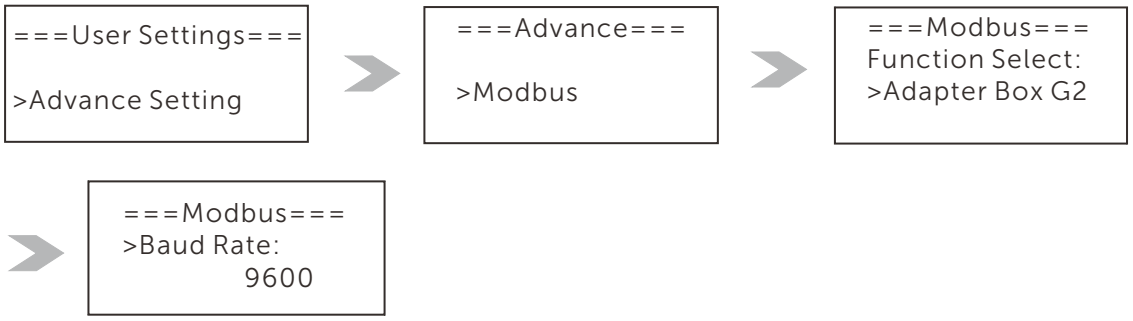
Notice!

A splitter can be used if the communication port of the inverter is occupied.

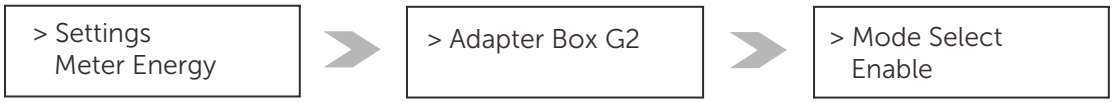
LCD setting on the inverter

When the cables are well connected, users need to set the LCD on the inverter to enable the RS485 communication between the inverter and the Adapter Box G2.

a) Setting steps on X1/X3-Hybrid G4 series inverters



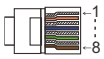
b) Setting steps on X3-MIC G2 series inverters



3.2 Connection of the RS485 port

- Function of the RS485 port:
  a branch port of RS485_INV port for RS485 communication with other devices.

- RS485 Pin Definition



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

Notice: refer to the communication cable connection method of the RS485_INV port.

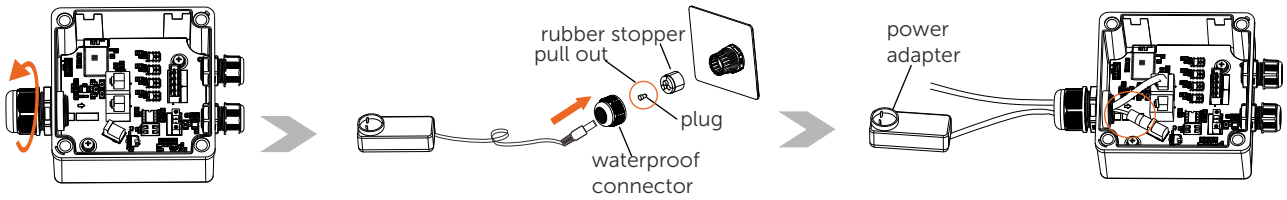
3.3 Connection of the power adapter port (optional)

- Function of a power adapter

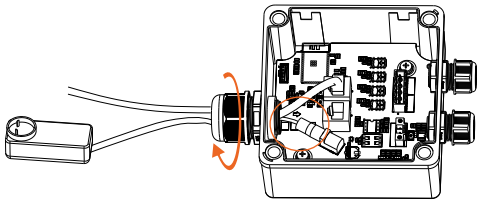
A power adapter is optional for the power supply of the Adapter Box G2. If the inverter matched cannot supply power for the Adapter Box G2, a power adapter is needed.

- Cable connection of a power adapter

Step1. Pull out one plug in the rubber stopper, thread the cable of the power adapter through the waterproof connector, the rubber stopper and then insert the cable into the power adapter port.



Step2. Check the rubber stopper without cable threading through are with plugs and then screw the waterproof connector tightly.



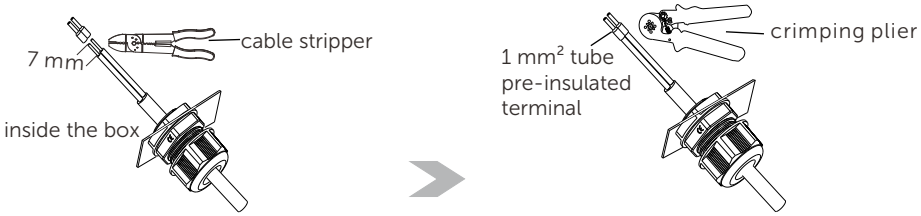
3.4 Connection of the AO port

Note: open ports without cable threading through must be plugged to prevent water. And reserve a proper length of all connected cables in the box to reduce its pulling force for connected terminals.

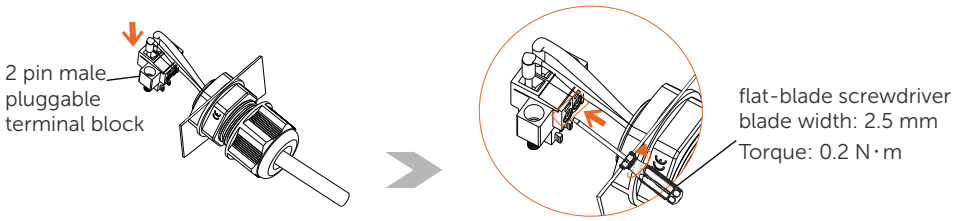
Step1. Prepare a two-core cable, remove 30 mm layer off from one end, pull the waterproof plug out and thread the cable through the waterproof connector into the box.



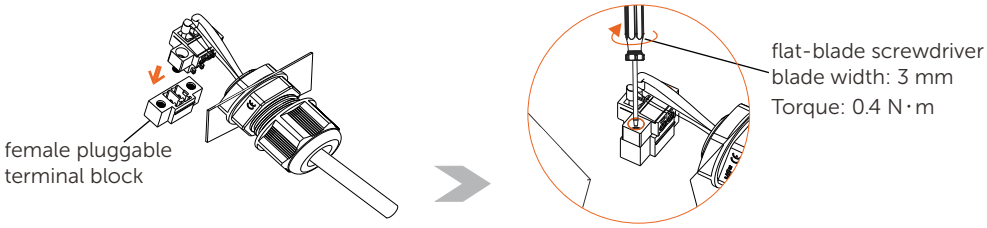
Step2. Strip 7 mm layer off the peeled cables and insert them into 1 mm^2 tube pre-insulated terminal and crimp them tightly.



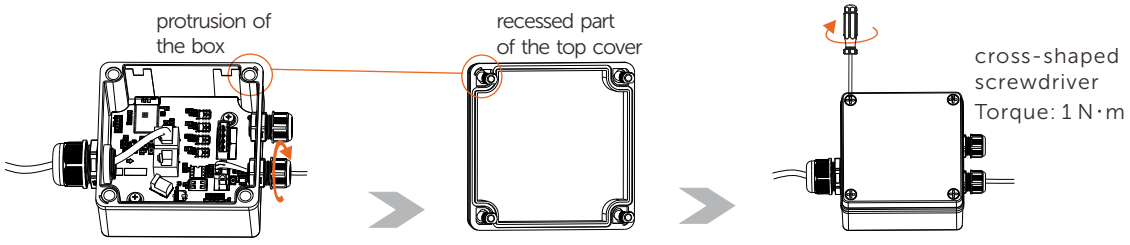
Step3. Insert the cables with terminals into the male pluggable terminal block and screw them tightly.



Step4. Plug the male pluggable terminal block with cables into the female pluggable terminal block fixed in the Adapter Box G2 and screw them tightly.



Step5. Screw the waterproof connector tightly, align the recessed part of the top cover with the protrusion of the box and lock the top cover.



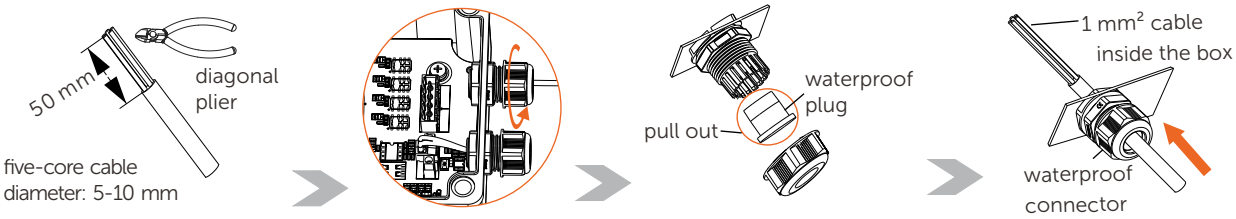
Please refer to the manual of a heat pump for how the other end of the cable is connected to the heat pump.

3.5 Connection of the DO port

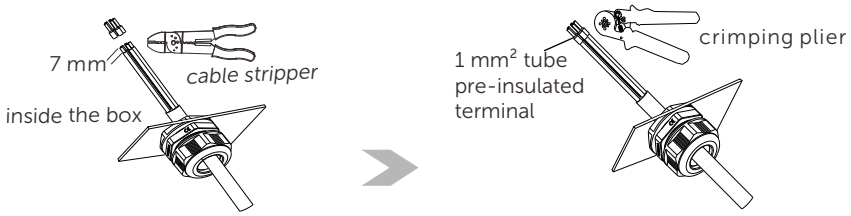
Note: open ports without cable threading through must be plugged to prevent water. And reserve a proper length of all connected cables in the box to reduce its pulling force for connected terminals.

a) DO port connection under the control of dry contact

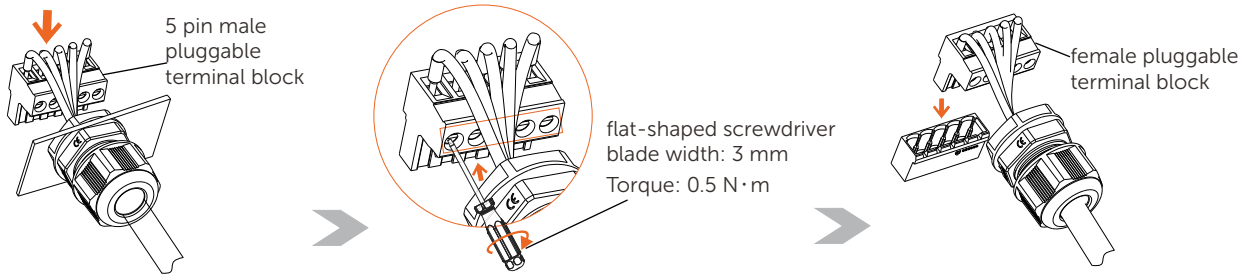
Step1. Prepare a five-core cable, remove 50 mm layer off from one end, pull the waterproof plug out and thread the cable through the waterproof connector.



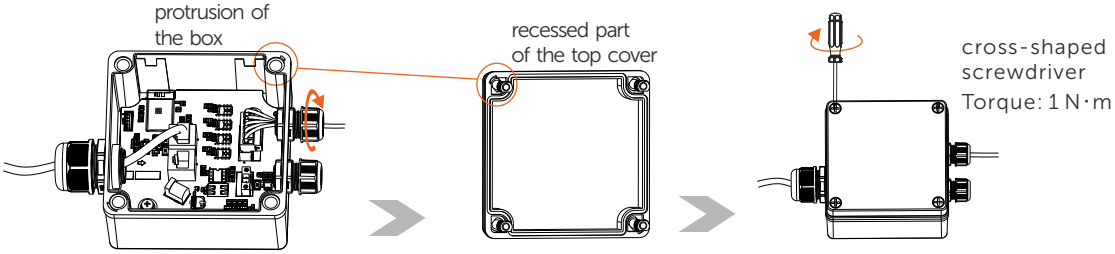
Step2. Strip 7 mm off the peeled cables and insert them into 1 mm² tube pre-insulated terminal.



Step3. Insert the cables with terminals into the male pluggable terminal block, screw them tightly. Insert the male pluggable terminal block with cables into the female pluggable terminal block fixed in the Adapter Box G2.



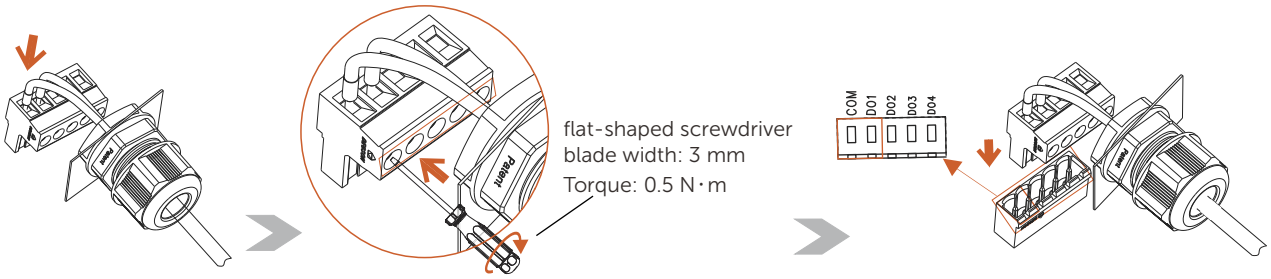
Step4. Screw the waterproof connector tightly, align the recessed part of the top cover with the protrusion of the box and lock the top cover.



b) DO port connection under the control of SG Ready

Step1. Prepare a two-core cable, then strip, crimp and threading the cable through connectors and then make the cable as the way you have been done in a).

Step2. Insert the cables with terminals into the male pluggable terminal block, screw them tightly. Insert the male pluggable terminal block with cables into the DO1 and COM port if the female pluggable terminal block fixed in the Adapter Box G2.



Step3. After step 2 is finished, screw tight the waterproof connecter and lock the top cover as the method in a).

Please refer to the manual of a heat pump for how the other end of the cable is connected to the heat pump.

4 Configuration of APP

The APP "SolaxCloud" is used to control the Adapter Box G2.
The screen shots here are for reference only and the actual interfaces may differ. Users can update their APP as needed.

4. 1 APP Login

➢ APP account login

- If you don't have the app or monitoring cloud's account yet, you can operate as below:

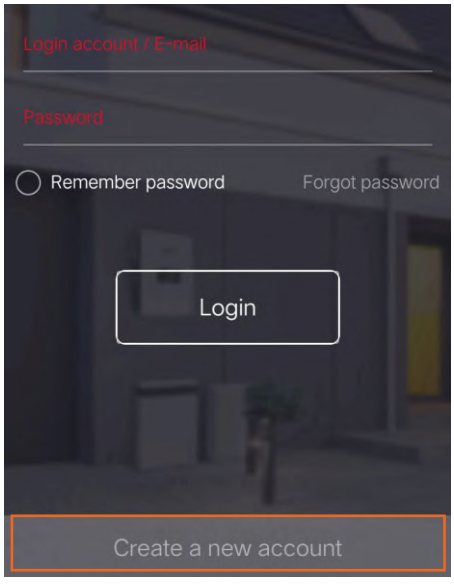
➢ Monitoring Cloud Registration

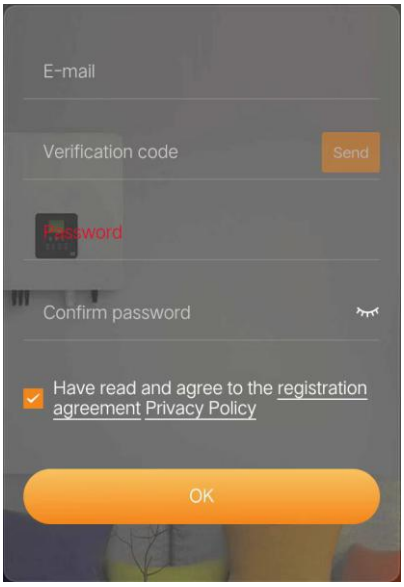
Step 1: Use your smart phone to scan below QR code or search for the keyword "SolaXCloud" in Appstore to download the Monitoring App.

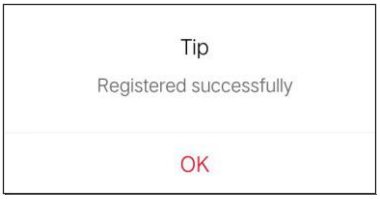
IOS

Google

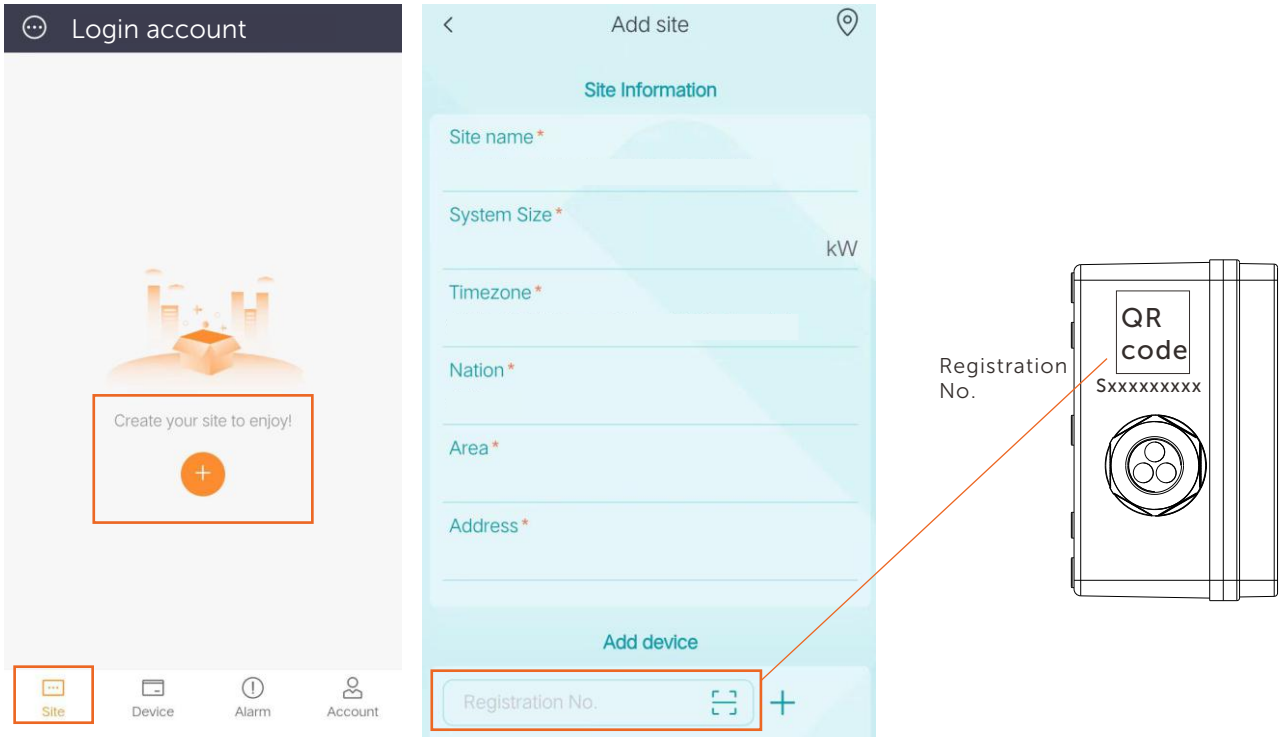
Step 2: Touch the setting button at the upper left corner of the Monitoring App to choose language.
Step 3: Touch "Create a new account" at the bottom of Monitoring App and fill in the information to create the account.







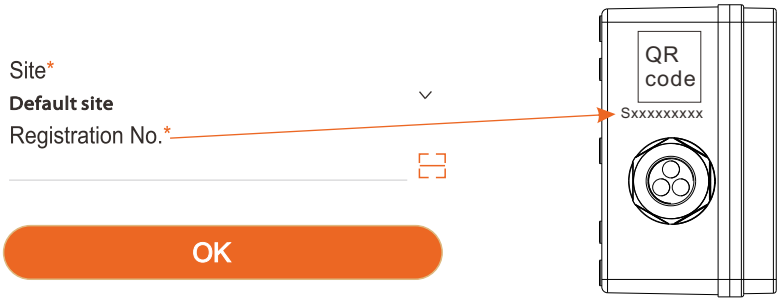
Step 4: For the first login, click "+" to create site. Fill in site information and type in or scan the Registration No. and follow the instructions to complete the site creation and WiFi connection.



- If you already have the account, you can operate as below:

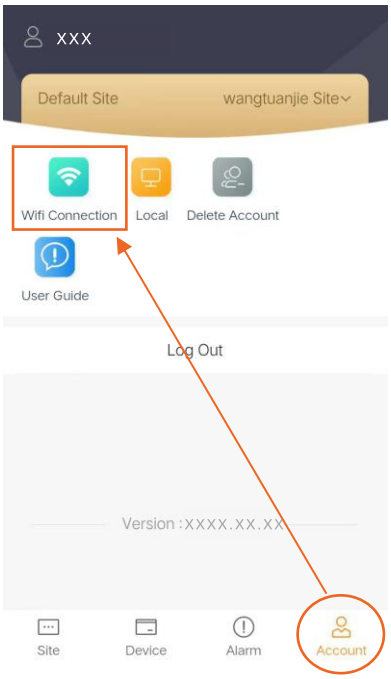
➢ Add Device

Step 1: Login your account and turn to "Device" page in the app.
Step 2: Touch the "+" icon on the upper right corner and fill in the information to add the Adapter Box G2.

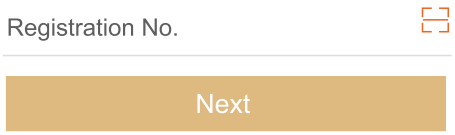


➢ Wi-Fi Connection

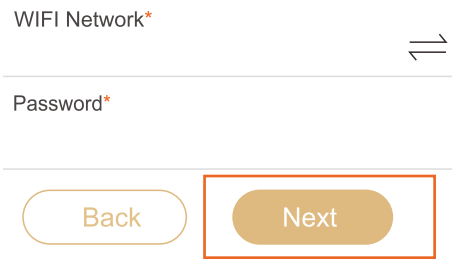
Step 1: Login your account and turn to "Account" page in the app.
Step 2: Click "Wifi Connection".



Step 3: Type in or scan the Registration No. of the Adapter Box G2. Then touch "Next" and agree to join the network of the Adapter Box G2.



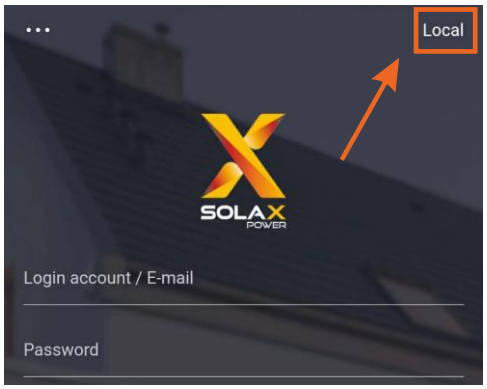
Step 4: Type in or choose your home Wi-Fi SSID and password, then touch “Next”.
*Only 2.4GHz Wi-Fi is available.

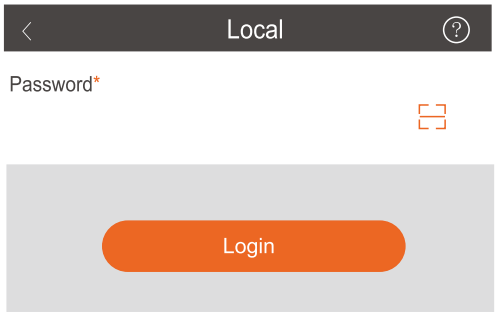


Step 5: Follow the instructions to complete Wi-Fi setting, there will be a note when the setting successes.
*Check more Wi-Fi setting information on www.solaxcloud.com/wifiSetting/

➢ Local Mode

Use your smart phone to connect the SolaX Wi-Fi signal (Wifi_Sxxxxxxxx).
Then touch Local and type in password (initially same as the Registration No.) to access the Local Mode in the Monitoring App.
*Visit the local password setting instruction on www.solaxcloud.com/wifiSetting/





* Users can visit the IP address http://192.168.10.10/ in a browser to configure WiFi if necessary. (The password is the Registration No.)

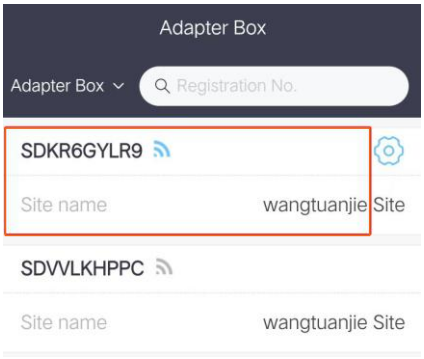
4.2 Settings for the Adapter Box G2

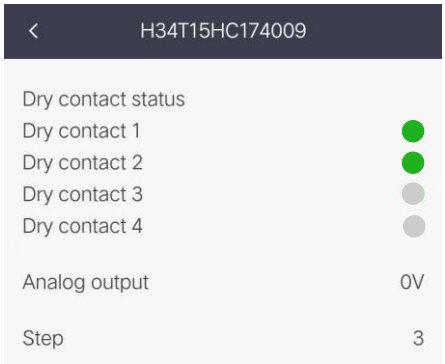
➢ Monitoring interface

Step 1. Click "Device" at the bottom of the interface. Select "Adapter Box" from the drop-down list on the top left corner to enter the monitoring interface.



Step2. Choose the user's online device. The status, analog output and the present step of dry contact are as below.





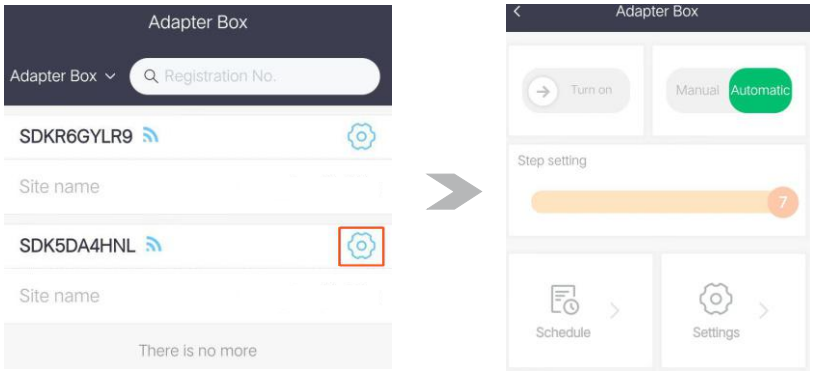
* Green points indicate the dry contact relay is closed and grey points mean the relay is open.

* "Analog output" indicates the analog output voltage which is at the range of 0 ~ 10 V.

* "Step" indicates the present step of the Adapter Box.

➢ Setting interface

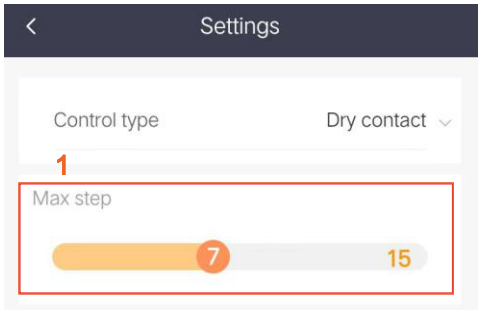
Click the icon below to enter the setting interface.



Users choose "Automatic" and can control a heat pump with the following methods (selecting in the drop-down list of "Control type") in accordance with the actual cable connection.

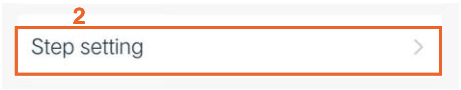
①. Dry Contact

Step1. The Adapter Box G2 offers 15 steps. Users set the "Max step" as needed according to the max step of the heat pump connected. Also, the step range of "Step setting" in the setting interface shall change with the parameter of the "Max step" users set.



Dry contact setting page

Step2. Click "Step setting" to set the rate of each step of the Adapter Box in accordance with the rate of the heat pump connected.



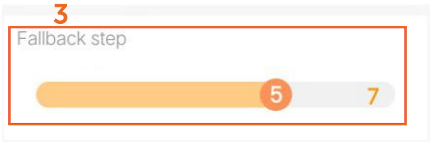


Adapter Box G2

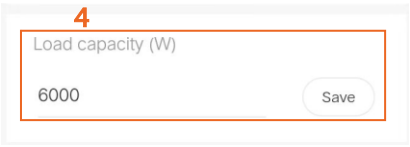
TB142 10-11 (COM-IN5)	TB142 10-12 (COM-IN6)	TB142 10-13 (COM-IN7)	TB142 10-14 (COM-IN8)	Step for capacity setting		
OFF	OFF	OFF	OFF	[OFF]	OFF	0%
ON	OFF	OFF	OFF	[ON]	Step1	10%
OFF	ON	OFF	OFF		Step2	20%
ON	ON	OFF	OFF		Step3	30%
OFF	OFF	ON	OFF		Step4	50%
ON	OFF	ON	OFF		Step5	70%
OFF	ON	ON	OFF		Step6	80%
ON	ON	ON	OFF		Step7	100%

heat pump for example

Step3. Set the "Fallback step" as needed. That is the step of the Adapter Box when the communication between the inverter and the Adapter Box is disconnected.



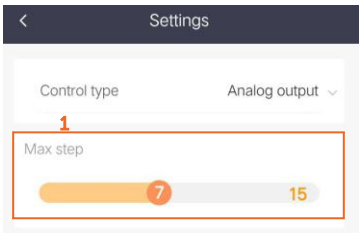
Step4. Set the "Load capacity" in accordance with the rated power of the heat pump connected to finish settings under dry contact.



Step5. Set effective time periods on the "Schedule" setting page to enable the settings of the Adapter Box.

②. Analog output

Step1. Set the "Max step" to adjust the power accuracy of the step in accordance with the power of the heat pump.



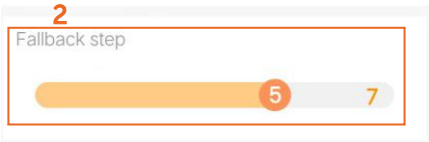
Step	Analog output
OFF	0 V
Step 1	1.25 V
Step 2	2.5 V
Step 3	3.75 V
Step 4	5 V
Step 5	6.25 V
Step 6	7.5 V
Step 7	8.75 V
Step 8	8.75~10 V

Adapter Box G2

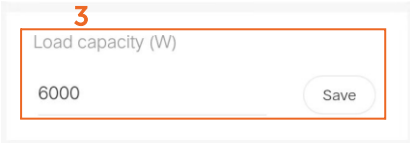
0-10V	Step for capacity setting	
0~0.63V	OFF	0%
1.88V	Step1	10%
3.13V	Step2	20%
4.38V	Step3	30%
5.63V	Step4	50%
6.88V	Step5	70%
8.13V	Step6	80%
9.38~10V	Step7	100%

heat pump for example

Step2. Set the "Fallback step" as needed. That is the step of the Adapter Box when the communication between the inverter and the Adapter Box is disconnected.



Step3. Set the "Load capacity" in accordance with the rated power of the heat pump connected to finish settings under dry contact.

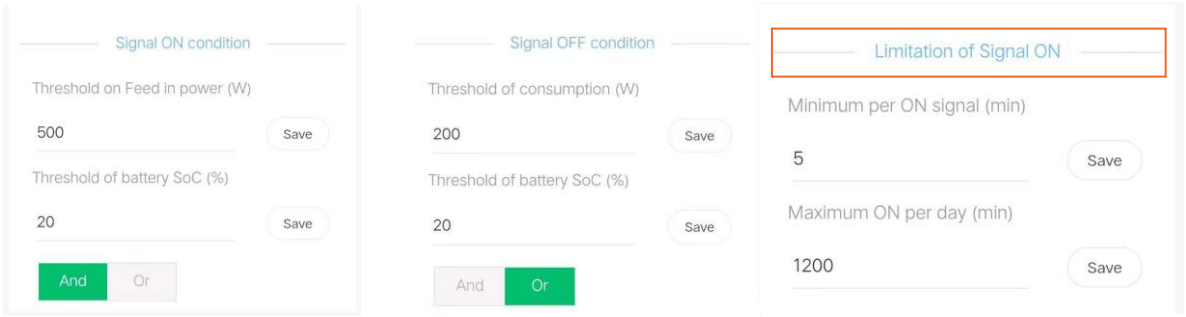


Step4. Set effective time periods on the "Schedule" setting page to enable the settings of the Adapter Box.

③. SG Ready

Under "SG Ready" mode, the dry contact only control the default relay DO1. The relay is closed when "Signal ON condition" is met and the relay is open when "Signal OFF condition" is met.
Under automatic mode, users select "Automatic", click "Settings" to select "SG Ready" and set the parameters below.

Step1. Set parameters under the "Signal ON condition" and the "Signal OFF condition" as needed. The "Threshold of battery" shall be set at the range of 10%~100%. The parameters under "Limitation of Signal ON" do not need to be set.



Note: The difference between "Threshold on Feed in power" and "Threshold of consumption" must be greater than the power of the heat pump.

Step2. Select "And" / "Or" under different situations under "Automatic" mode.

Scenario		Situation	"And/ Or" to select	the Result relating to "And/ Or" selection
Battery connected	No 0kW export control	Realtime power going to grid > the power putting on "threshold on feed in power"	"Or"-when either condition is met; "And"-when both conditions are met	send "turn on" com -mand to Heat Pump
		Realtime battery SOC > the SOC putting on "threshold of battery SOC"		
		Realtime power taking from grid > the power putting on "threshold of consumption"	"Or"-when either condition is met; "And"-when both conditions are met	send "turn off" com -mand to Heat Pump
		Realtime battery SOC < the SOC putting on "threshold of battery SOC"		
	Export control set 0kW in system	Realtime battery SOC > the SOC putting on "threshold of battery SOC"	to select "Or"	send "turn on" com -mand to Heat Pump
		Realtime power taking from grid > the power putting on "threshold of consumption"	"Or"-when either condition is met; "And"-when both conditions are met	send "turn off" com -mand to Heat Pump
		Realtime battery SOC < the SOC putting on "threshold of battery SOC"		
No battery connected	No 0kW export control	Realtime power going to grid > the power putting on "threshold on feed in power"	either "And" or "Or"	send "turn on" com -mand to Heat Pump
		Realtime power taking from grid > the power putting on "threshold of consumption"	either "And" or "Or"	send "turn off" com -mand to Heat Pump
	Export control set 0kW in system	This function cannot be supported.		

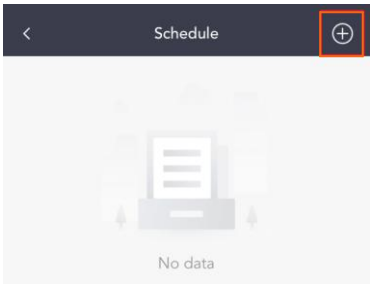
Notice: Signal off takes the priority when both "Signal ON condition" and "Signal OFF condition" are met.

* The"Minimum per ON signal" indicates the relay shall be closed for at least 5 minutes when it meets the "Signal ON condition".
* The "Maximum ON per day" indicates the relay shall be open when the heat pump is controlled by the Adapter Box for more than 1200 minutes within a natural day.

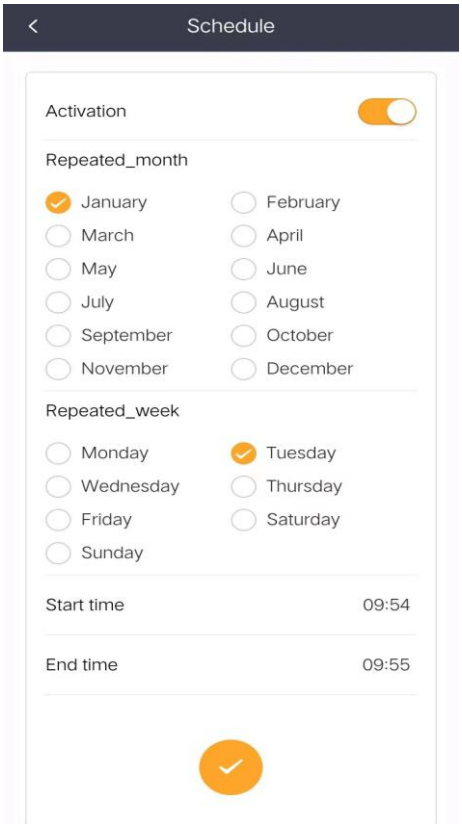
Step3. Set effective time periods on the "Schedule" setting page to enable the settings of the Adapter Box.

How to set schcedules

Step1. Click "Schedule" in the setting interface to enter the scheduling page. Then touch the icon "+" on the top right corner to set new time periods.



Step2. Set new time periods.



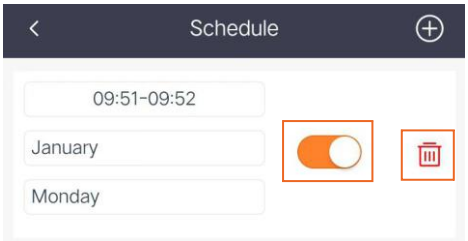
* "Activation" makes the schedule users set valid.

* "Repeated_month", "Repeated_week", "Start time" and "End time" specify the valid time periods.

* The range of "Start time" and "End time" should be at 00:00-23:59 and the "End time" must be later than the "Start time".

*Click "Save" when users complete all the settings.

Note: Users can set up to 6 time periods. The enabling switch (the "Activation" switch) and the "delete" icon are used to adjust the schedules.



5 Technical Data

Product Name	Adapter Box G2
Model	Adapter Box G2
Max. Dry Contact	2 A 30 V d.c./ 0.5 A 230V a.c. *4
Analog Output	0-10 Vdc
Rated Input Voltage	9-14 Vdc
Idle Power	0.5 W
Rated Power	2 W
EIRP Power	17.46 dBm (Measured Max. Average)
Frequency	2.412~2.472GHz
Antenna Type	PCB antenna
Interface	RS485
Degree of Protection	IP65
Operating Temperature	-40~60℃
Wireless Mode	802.11 b/g/n
Dimension (mm)	125 * 125 * 75
Net Weight (kg)	0.4

6 Certification and Safety

6.1 Certification mark

6.2 Safety

The Adapter Box G2 produced by SolaX Power Network Technology (Zhejiang) Co., Ltd. has been designed and tested strictly in accordance with relevant safety regulations. The safety instructions must be followed when installing and maintaining the electrical and electronic equipment. Improper operation will cause personal injury and property damage to the operator and the third party.

- Before installation, ensure all power of the adapter box has been cut off.
- Do not dismantle or scrap by force.
- Strictly follow the installation guide to connect cables and the enclosure must be well locked before the adapter box is electrified.
- Unauthorized opening and cable connection will void the warranty and cause lethal danger or serious injury due to electric shock.
- Refer to the corresponding installation guide for related safety requirements when it is connected to other devices.
- Anti-static measures should be taken to decrease the damage of static electricity to electronic components.
- Keep away from flammable, explosive materials.
- All the product labels and nameplate on the inverter shall be maintained clearly visible.



Indicates that the product must not be processed with household waste. It must be brought to an electric and electronic waste collection point for recycling and disposal. By ensuring the appropriate disposal of this product you also help in preventing potentially negative consequences for the environment and human health. The recycling of materials helps preserve our natural resources. For further information regarding the recycling of this product, please contact your municipality, local waste disposal center or the store where the products was purchased.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1)This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in

a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

RF exposure warning
This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

7 Contact Us

If you have any question or any technicalquestion about Adapter Box, please contact us through the following methods.

SolaX Power Network Technology (Zhejiang) Co., Ltd.
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FAX: +86 571 56075753
EMAIL: service@solaxpower.com
WEB: www.solaxpower.com