SolaX Heat Pump Solution

——Adapter Box G2

ENGLISH

V1.0

Overview

An Adapter Box G2 is a heat pump controller. It communicates with SolaX inverters via RS485 to control a heat pump via the dry contact or the analogue output. Users can control the Adapter Box G2 to utilise the inverter's surplus solar energy and battery storage capacity.

Note:

A heat pump can only be connected to one Adapter Box G2.

Adapter Box G2

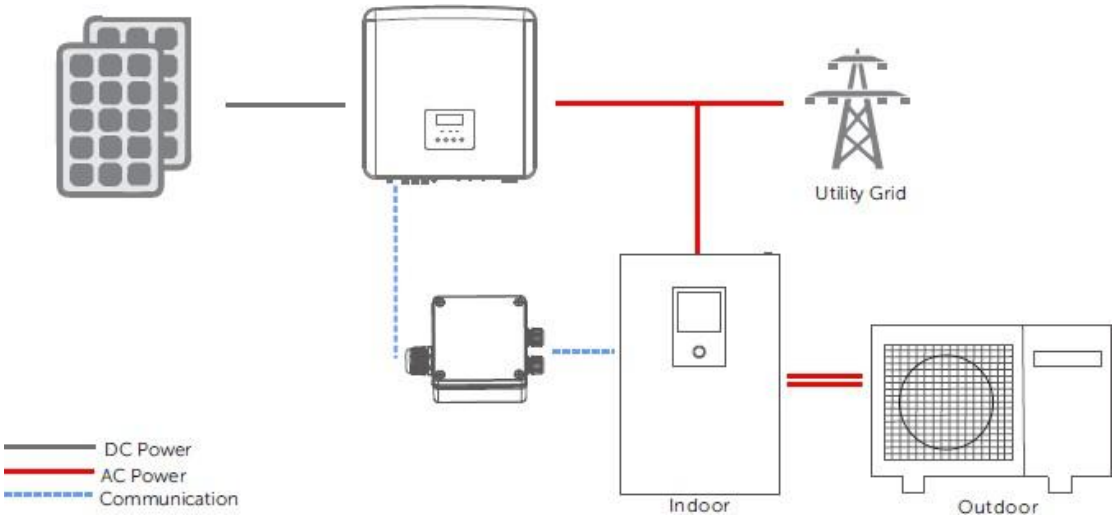


Figure 1: Solax Heat Pump Solution Diagram

Figure 1: Solax Adapter Box G2

Features:

1. **Remote control and setting**
   - Wi-Fi network connection
   - Control Heat Pump input

2. **Dual-control Mode**
   - Digital output, 16 signals supported
   - Analog output, Max. 15 steps setting
3. **Various Heat Pump**
   - SG Ready Heat Pump
   - Dry Contact Heat Pump
   - Analog Control Heat Pump
4. **Solar Efficiency**
   - Optimize solar efficiency with Inverter (RS485 connect)
5. **Schedule Setting**
   - Customize schedule to control

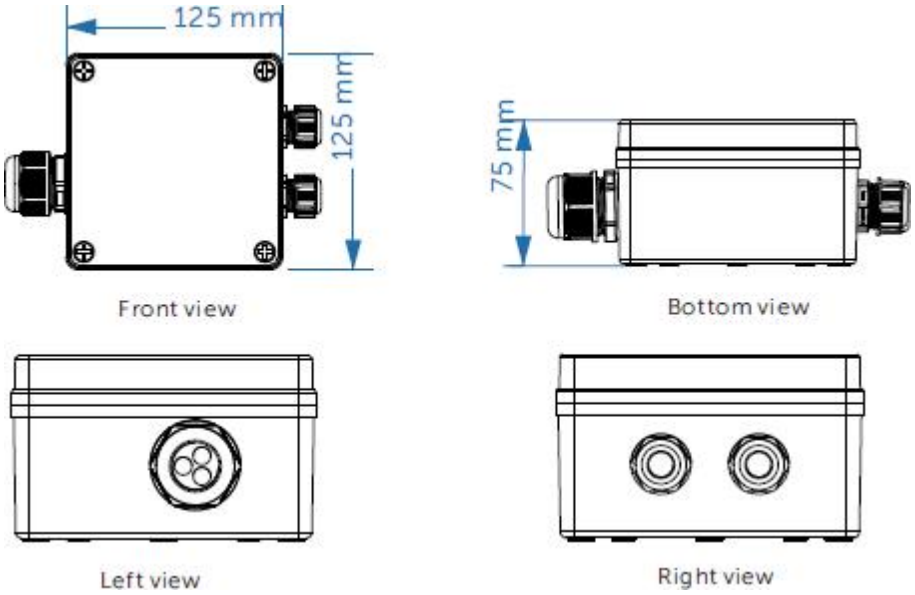


Figure 2: Adapter Box G2 Dimensions

Table 1: Adapter Box G2 Data Sheet

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°C
Wireless Mode	802.11 b/g/n
Dimension (mm)	125 * 125 * 75
Net Weight (kg)	0.4

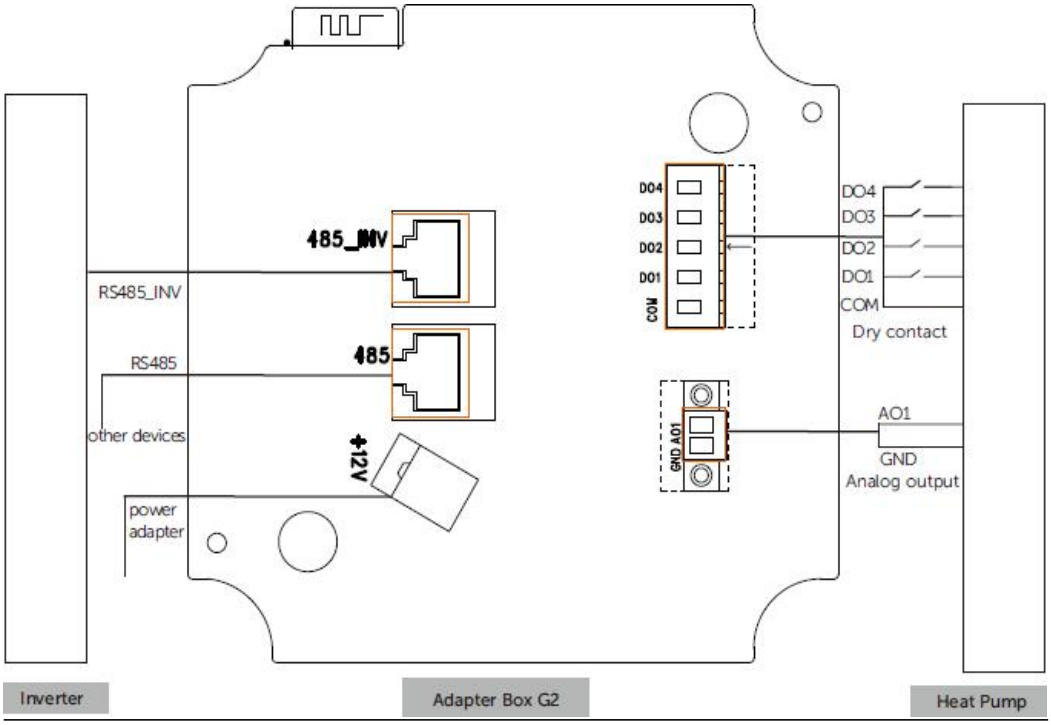


Figure 3: Adapter Box G2 Ports Diagram

Table 2: Name and Functions of Ports

Name of ports	Functions of ports

Dry contact(DO)	4 channel dry contact
Analogue output (AO)	0-10 Vdc analogue 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 Adapter Box G2.
RS485	A split connection for EV chargers etc.(Pin 4 and Pin 5)
Power adapter	External 9-14 Vdc power supply

Attention

Pin 3 and pin 6 of the RS485_INV connection and a power adapter can both supply the Adapter Box G2 with power, and the user can select one of them to supply the Adapter Box G2 with power.

Adapter Box G1 VS Adapter Box G2

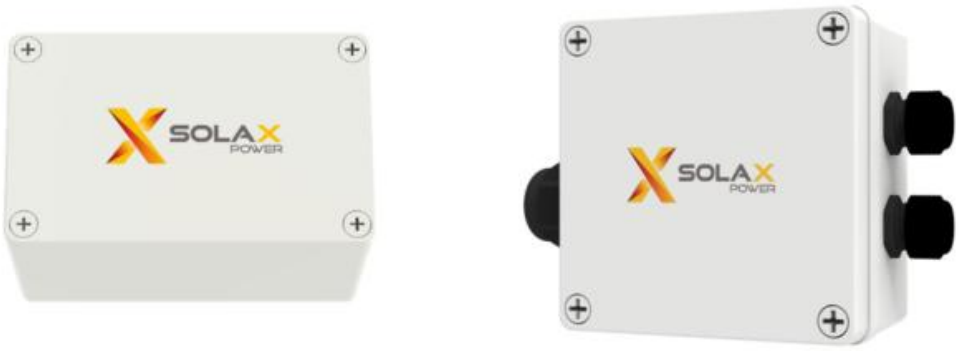


Figure 4: Adapter Box G1 (left) and G2 (right)

Adapter Box G1, it has:

- **Dry contact communication** between the adapter box G1 and the inverter
- One control mode: **SG Ready** control
- **No Wi-Fi**.
- The setting is made manually **on the inverter**, no APP control.

Adapter Box G2, it has:

- **RS485 communication** with the inverter.

- Three control modes: Control via **analogue output**, control **via dry contact**, control via **SG Ready**. Compatible with most heat pumps.
- Integrated **Wi-Fi** module.
- Monitor your account to manage **remote** control and monitoring from the APP.

Scenarios

1. Adapter Box G2 + hybrid inverter
   Compatible hybrid inverter model:
   - X1-Hybrid-G4, X3-Ultra, X3-Hybrid-G4, X1/X3-IES

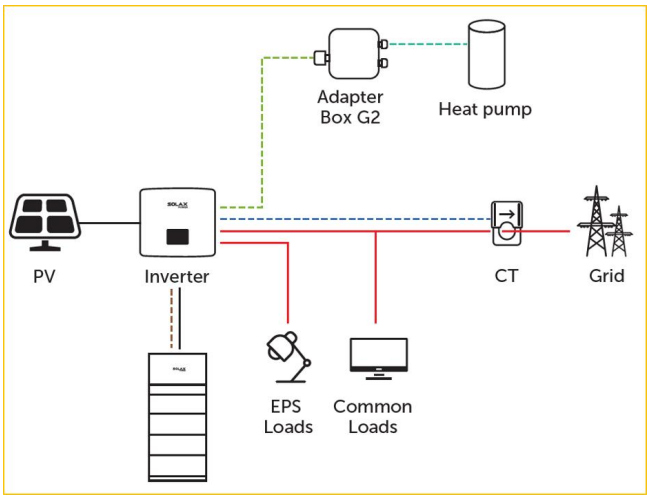
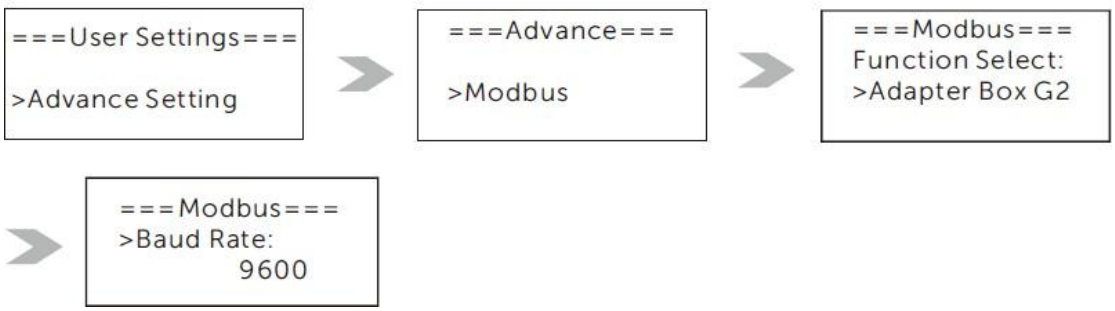


Figure 5: Adapter Box G2 + hybrid inverter diagram

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



   - Activate Modbus communication with the Adapter Box G2.
   - The baud rate should be 9600.
2. Adapter Box G2 + on-grid inverter
   Compatible on-grid inverter model:
   X3-PRO G2, X3-MIC G2, X1-SMART G2, X1-Mini G4, X1-BOOST G4

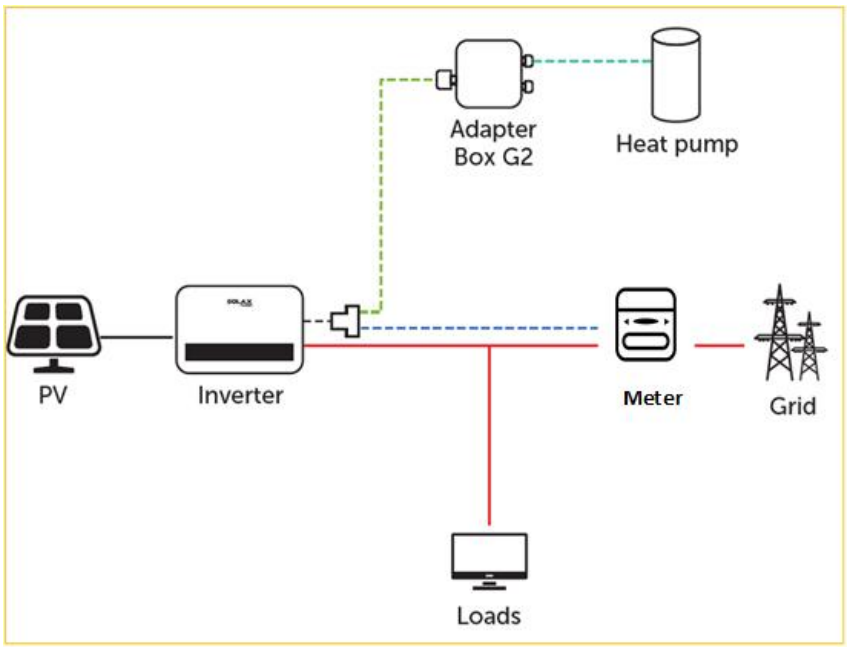


Figure 6: Adapter Box G2 + on-grid inverter diagram

b) Setting steps on X3-MIC G2 series inverters

> Settings
Meter Energy

> Adapter Box G2

> Mode Select
Enable

3. Adapter Box G2 + EV charger

Method 1: Connect the EV Charger to 485 port on the Adapter Box G2.

Method 2: Use a RJ45 splitter to connect the Adapter Box G2 and EV Charger together

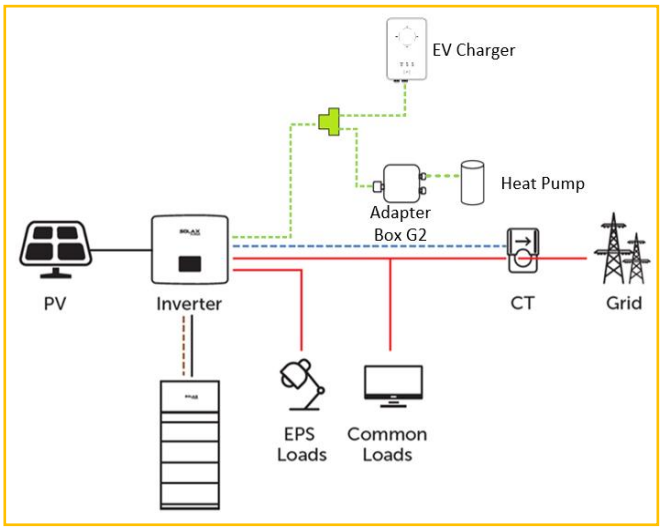


Figure 7: Adapter Box G2 + EV charger solution diagram

Connection

Overview

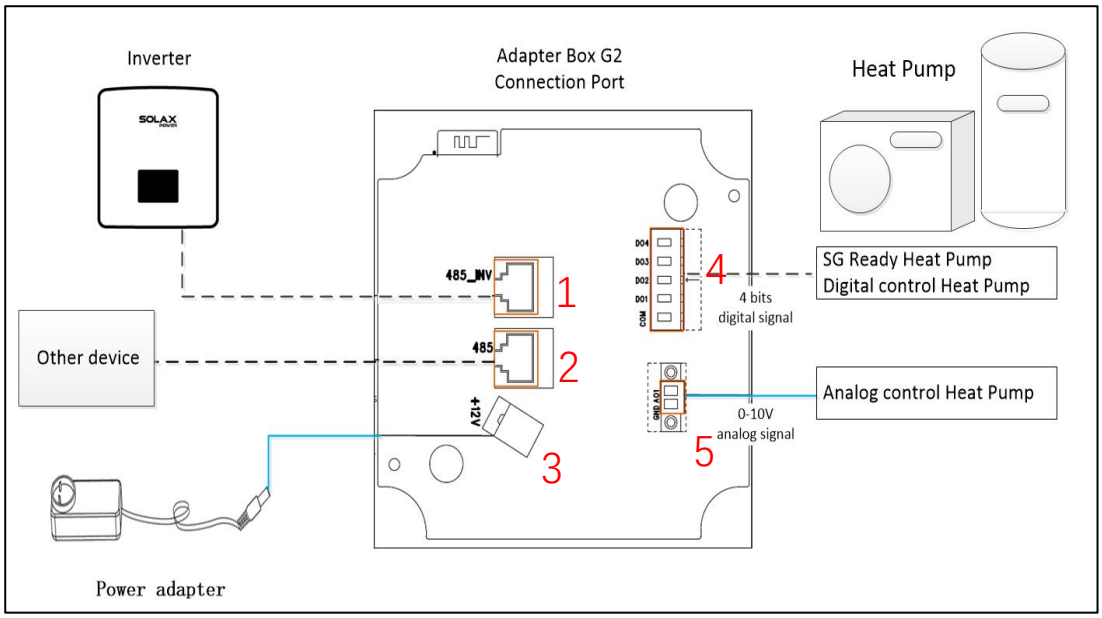


Figure 8: Adapter Box G2 Connection Diagram

1) Inverter connection port

→ 4&5 pin is for inverter communication. 3&6 pin is for 12V power supply from inverter

2) Other device connection port

→ 4&5 pin is for communication with other device like EV charger etc.

3) Auxiliary power supply input

→ Used if the inverter could not provide power

4) DO output port

→ Connection for SG ready and dry contact heat pump

5) AO output port

→ Connection for analog control heat pump

Figure 9: Actual Picture of Adapter Box G2 Ports

Inverter to Adapter Box G2

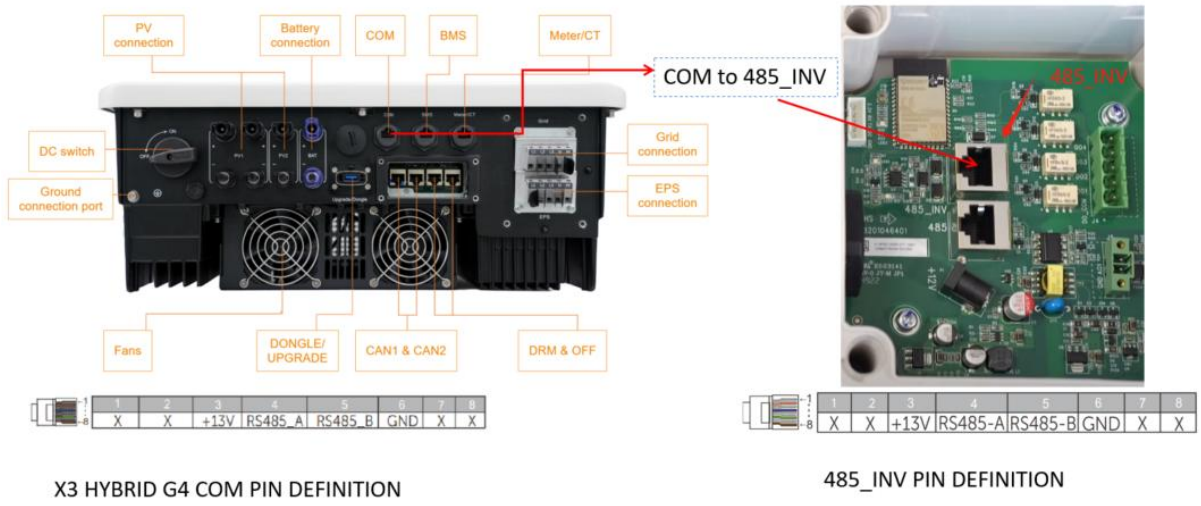


Figure 10: Inverter to Adapter Box G2 Connection Diagram

Adapter Box G2 to Heat Pump

Figure 11: Adapter Box G2 to Heat Pump Connection Diagram

Figure 12: Adapter Box G2 Control Type

Dry Contact

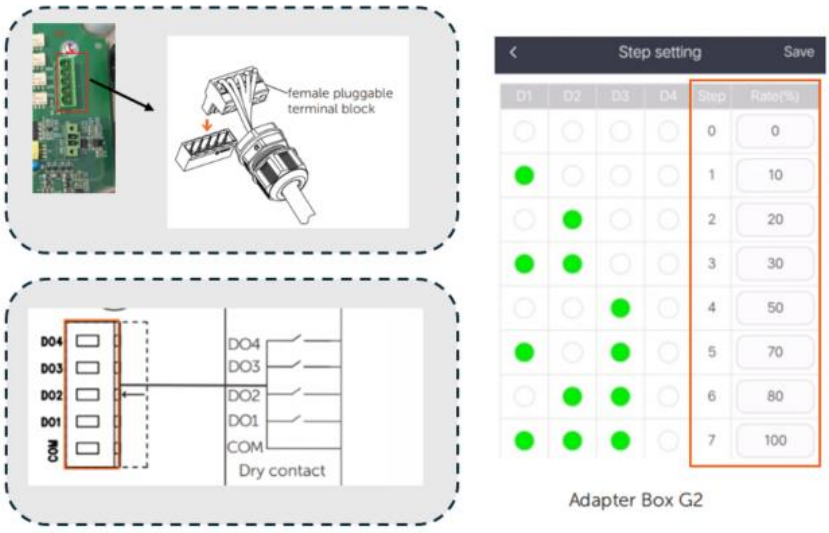


Figure 13: Connection and Step Setting for Dry Contact Control Type

Note:

On this mode the DO1, DO2, DO3 and DO4 all can work, each DO has on/off status, so that the four DO interface can represent 8 mode of heat pump work power . Here we can use the setting to run the heat pump under different Rate. CATE 6 has a better performance than CATE 5.Meanwhile their max transmission distance is 100 meters. If the distance is above 100 meters, can use CATE 7

.

SG Ready

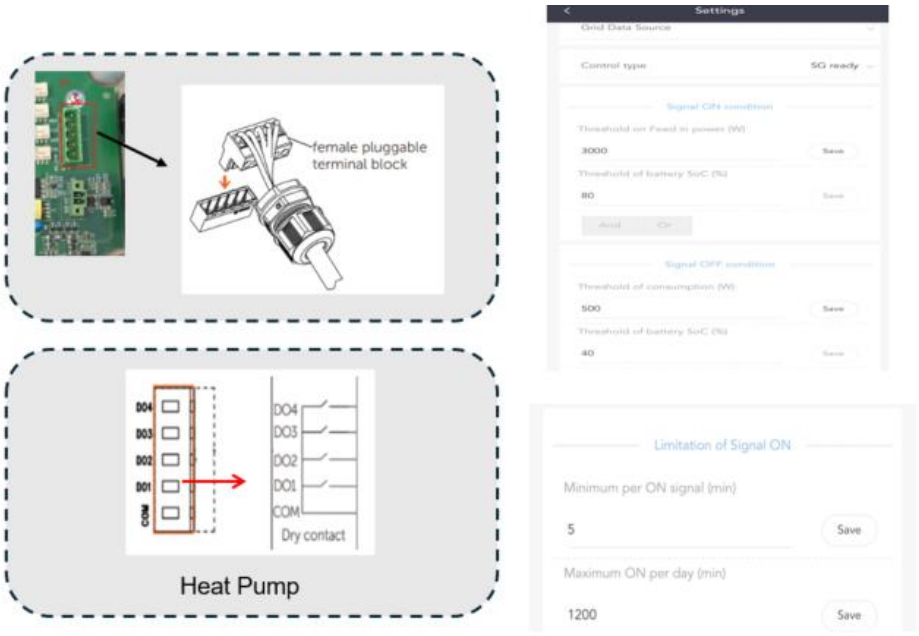
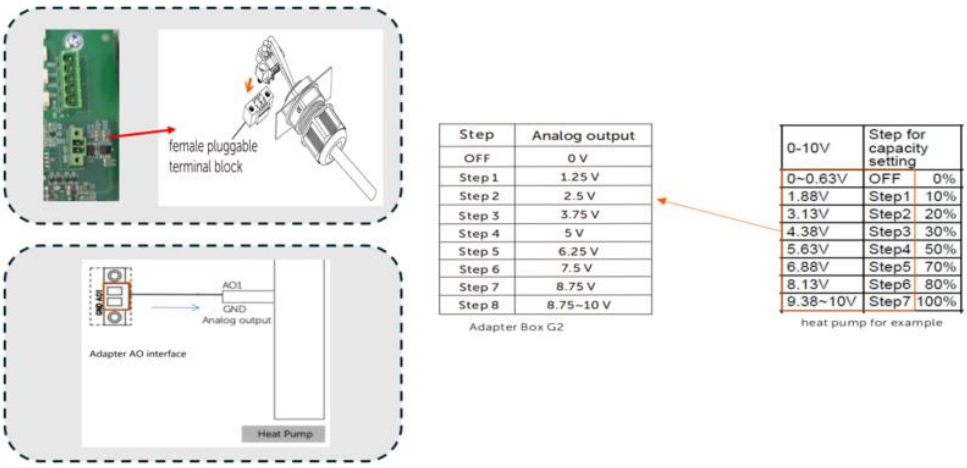


Figure 14: Connection and Step Setting for SG Ready Control Type

Note:

On this mode, only DO1 work (default setting), DO1 has on/off status.

Analog Output



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

Figure 15: Connection and Step Setting for Analog Output Control Type

Note:

Adapter Box AO(0~10v) connect to heat pump AI interface. Step 6 has a better performance than Step 5. Meanwhile, the maximum transmission distance is 100 meters. If the distance is above 100 meters, use Step 7.

Adapter Box G2 Software Support

Adapter Box G2 APP Registration

- The Adapter Box G2 can be controlled via the" SolaX Cloud" APP.
- Please follow the Wi-Fi installation guide to register a monitor account and create a website.
- Add the serial number of the Adapter Box G2 under the site.

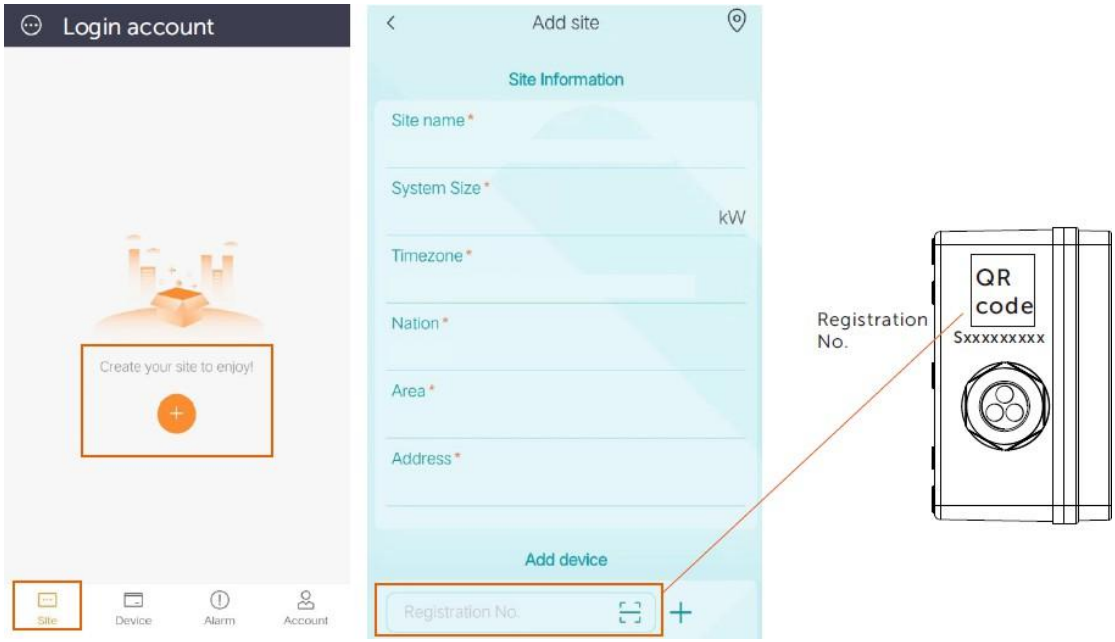


Figure 16: APP registration

- If you already have a monitoring account, log in with the account and go to the "Device" page in the app.
- Tap the "**+**" icon in the upper right corner and enter the information to add the Adapter Box G2.

Figure 17: Add Devices

Adapter Box G2 Monitoring Interface

Step 1. Click "Device" at the bottom of the user interface. Select "Adapter Box" from the drop-down list in the upper left corner to open the monitoring interface.

Step 2. Select the user's online device. You can see the status, the analog output and the current step of the dry contact.

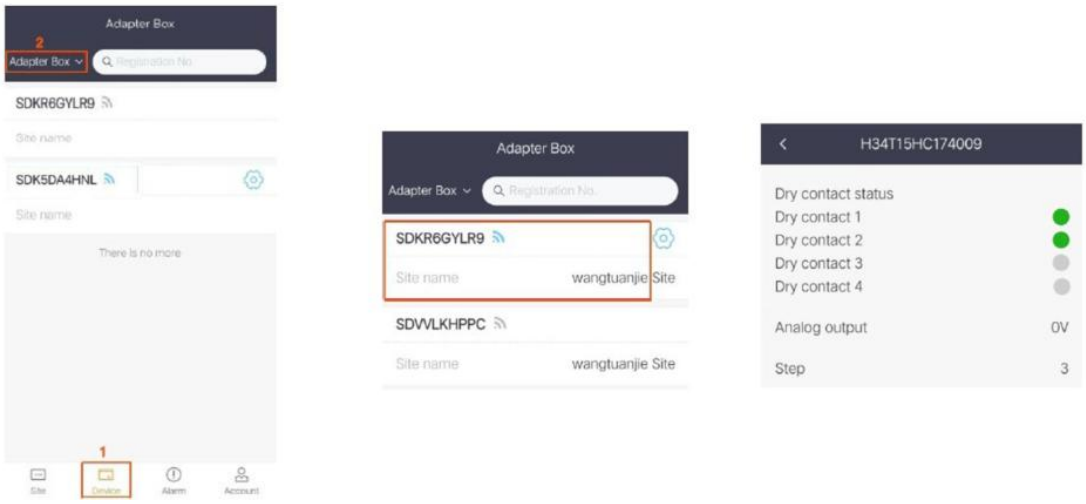


Figure 18: Monitoring Instruction

Adapter Box G2 Interface Setting

Click on "Device" at the bottom of the interface. Select "Adapter Box" from the drop-down list in the upper left corner to open the monitoring interface.

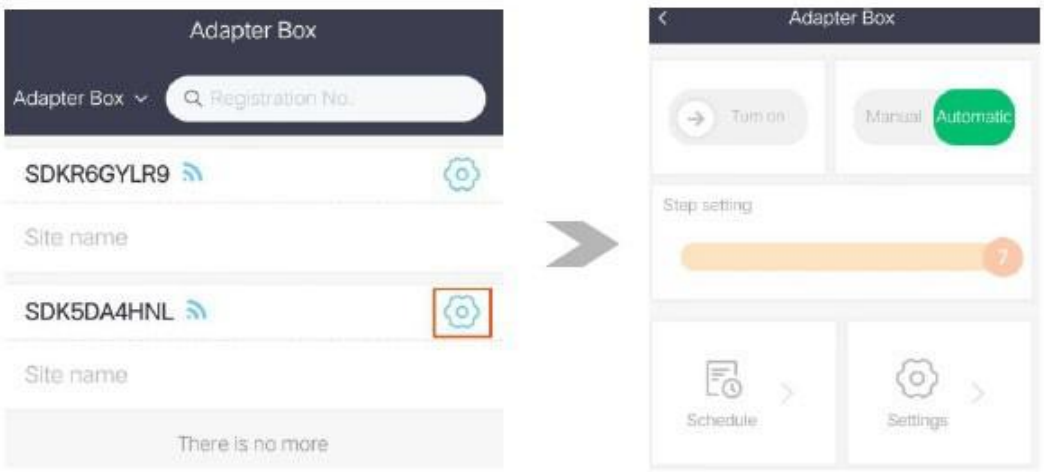


Figure 19: Interface Setting

Select" Automatic" and you can control the heat pump according to the schedule.

Adapter Box G2 Dry Contact Control

- Maximum of 15 step, you can change the step as required.
- Set the speed of each step according to the speed of the heat pump.
- The "fallback step" is required if communication with the inverter is interrupted.
- The "load capacity" is the rated capacity of the heat pump.
- Set effective time periods on the "Schedule" settings page to activate the adapter box settings.

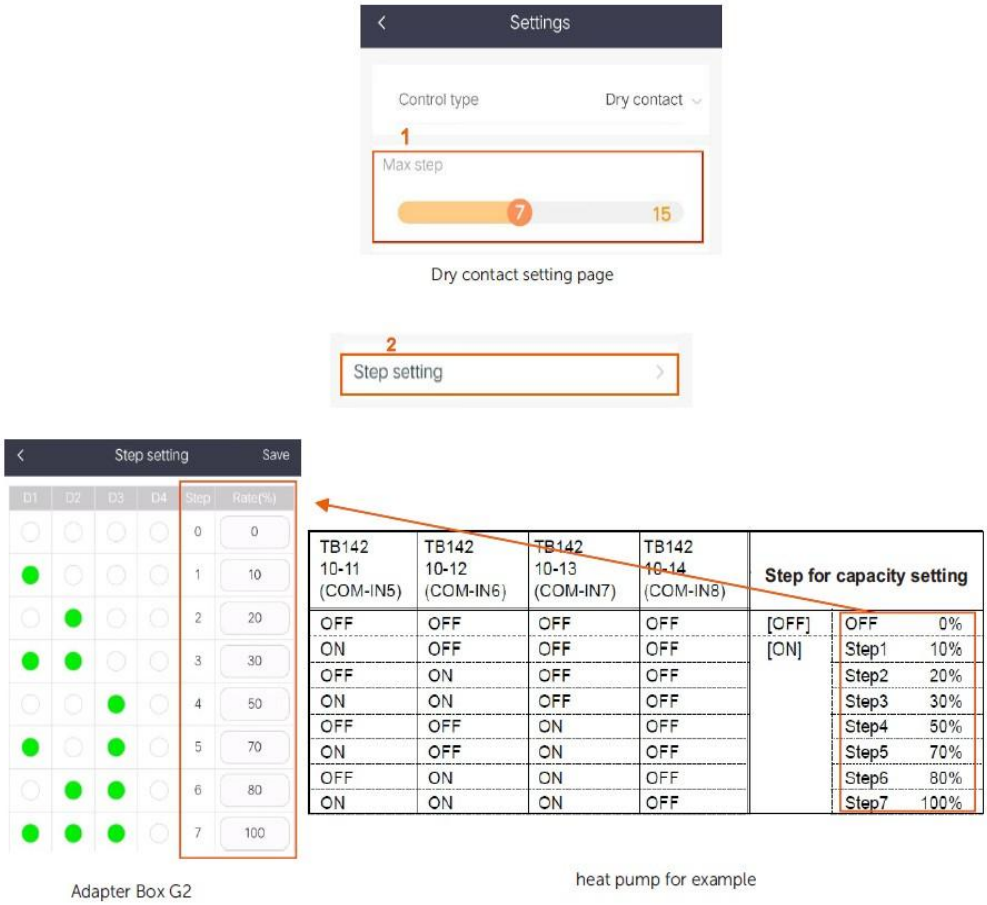


Figure 20: Dry Contact Control

Adapter Box G2 Analogue Output Control

- Maximum 15 steps.
- Each step means a different analog output voltage level. The corresponding power depends on the configuration of the heat pump.
- The step changes depending on the excess feed-in power.
- The interval between the individual steps is approximately 10 s.
- The analog output level increases or decreases in sequence, the steps cannot be skipped.
- Example: The nominal output of the heat pump is 2000W (load capacity = 2000W), there are 7 step, the current step is the switch-off step. With a PV power surplus of 1000W (corresponds to step 4: 50%), an analog signal is output from switch-off step to step 4 to 50%, the interval time is 10s, so it takes about 40s to reach the corresponding step.

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

Figure 21: Analogue Output Control

Adapter Box G2 SG Ready Control

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

Figure 22: Mode and Parameter Setting

Select" And"/" Or" in different situations in" Automatic" mode.

Note: The switched off signal has priority if both the "Signal ON" condition and the "Signal OFF" condition are met.

Table 3: Different Situations Setting Instruction

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.		

Adapter Box G2 Schedule

Step 1. Click "Schedule" in the settings interface to access the scheduling page. Then tap the "+" icon in the upper right corner to set new time periods.

Step 2. Set new time periods.

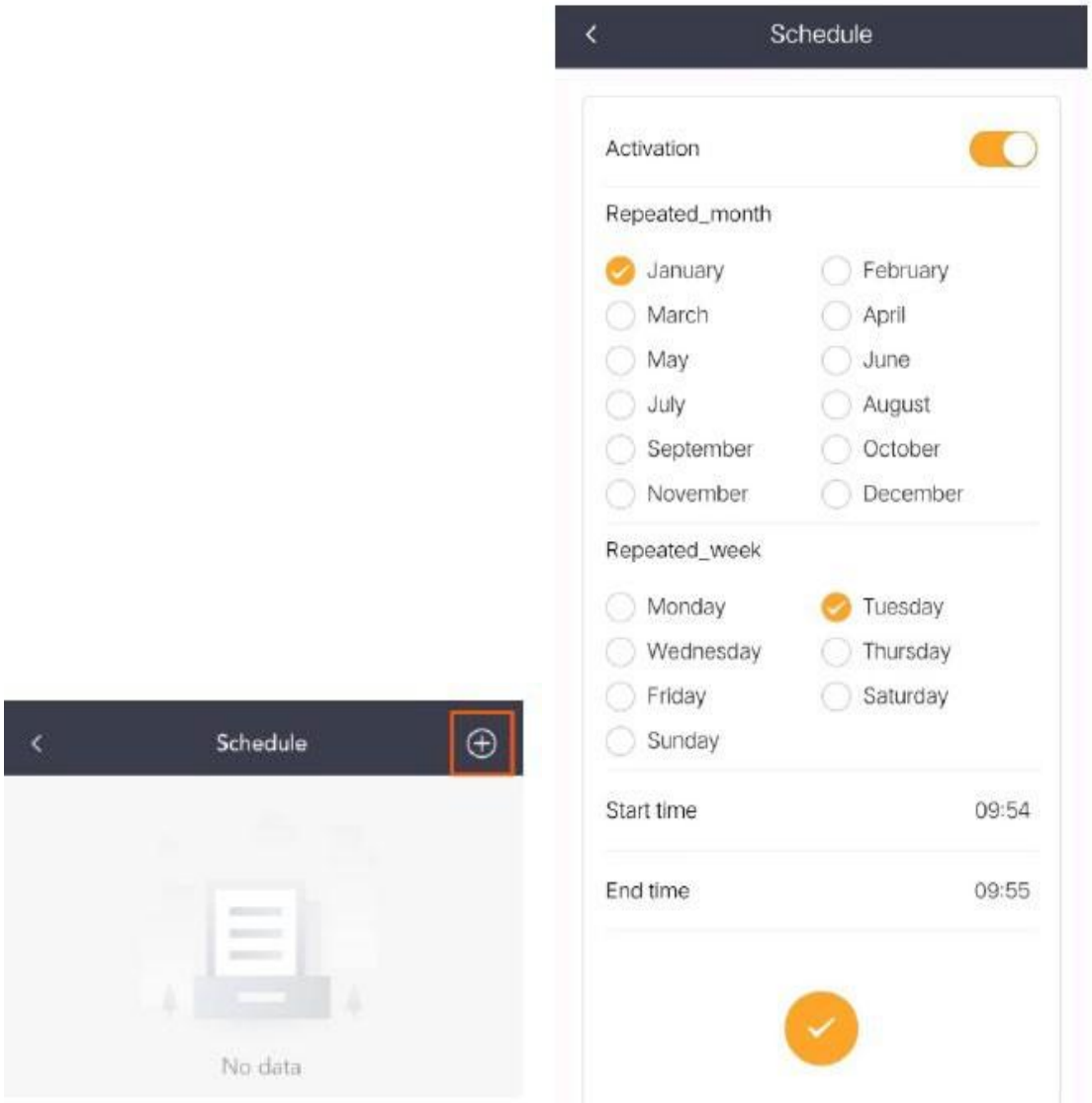


Figure 23: Adapter Box G2 Schedule Instruction

- Activation" makes the schedule set by the user valid.
- "Repeated_month", "Repeated_week", "Start time" and "End time" indicate the valid time periods.
- The range of "Start time" and "End time" should be between 00:00 and 23:59 and the "End time" must be after the "Start time".
- Click on "Save" when the user has made all the settings.
- The user can set up to 6 time periods. The "Enable" switch (the "Activate" button) and the "Delete" symbol are used to adjust the schedules.