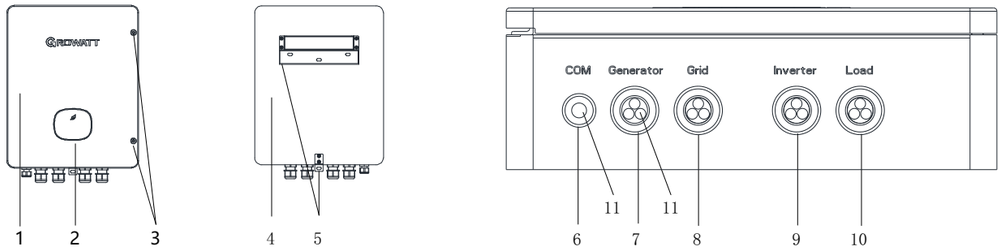
SYN 50-XH-1 Quick Guide

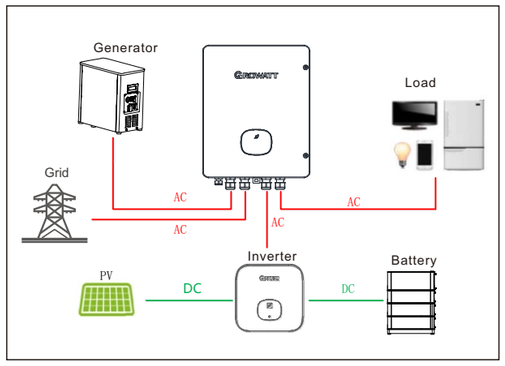
1. Overview



1：Front panel	2：LED indicator	3：Screw for top cover	4：The main frame body
5：Mounting bracket	6：COM wiring port	7：Generator wiring port	8：Grid wiring port
9：Inverter wiring port	10：Load wiring port	11：Waterproof plugs	

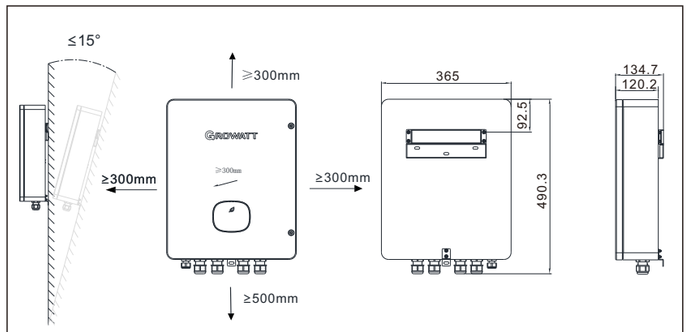
2. Installation

System overview



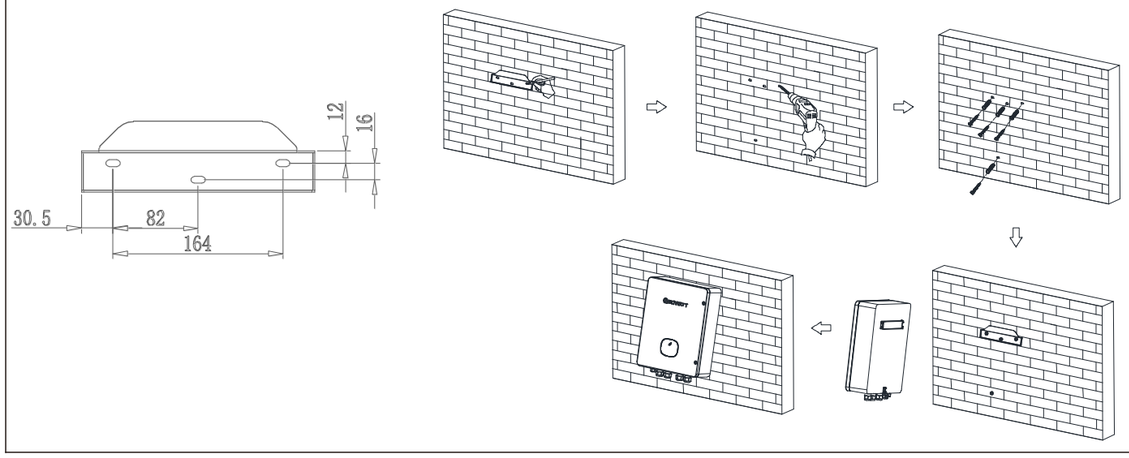
2.1 Installation requirements

The front, back and side pictures of the machine are as follows:

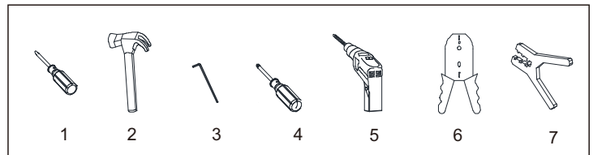


2.2 Installation steps

1.Determine SYN 50-XH-1 mounting location, on a wall, stud framing or pole. It is recommended to mount the Backup Interface in a location protected from direct sunlight.
2.To allow proper heat dissipation, maintain at least a 300mm clearance between the SYN 50-XH-1 and other objects.
3.Position the mounting bracket against the wall/pole and mark the drilling hole locations.
4.Drill the holes and mount the bracket. Verify that the bracket is firmly attached to the mounting surface.
5. Hang SYN 50-XH-1 on the bracket.



2.3 Required tools

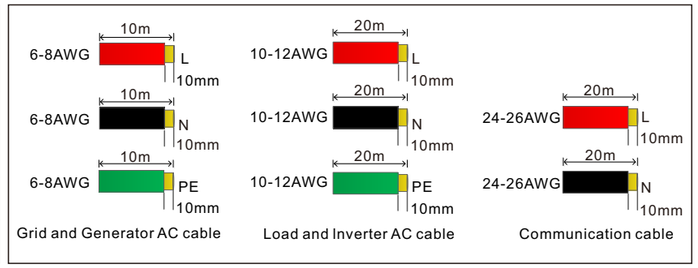


No.	Name	Size	No.	Name	Size
1	straight screwdriver	Φ5mm	2	hammer	/
3	Allen wrench	Φ5mm	4	Cross rise	Φ5mm
5	Electric drill	Φ6mm	6	Wire stripper	/
7	Line pressing pliers	/			

3. Wire specification suggestions

The cable specifications of this machine are as follows, and the wiring end is stripped 10mm.

project	Wire diameter	Line length
Grid input cable	6-8AWG	10m
Inverter input cable	8-12AWG	20m
Load output cable	8-12AWG	20m
Generator input cable	6-8AWG	10m
Communication cable	22-26AWG	20m



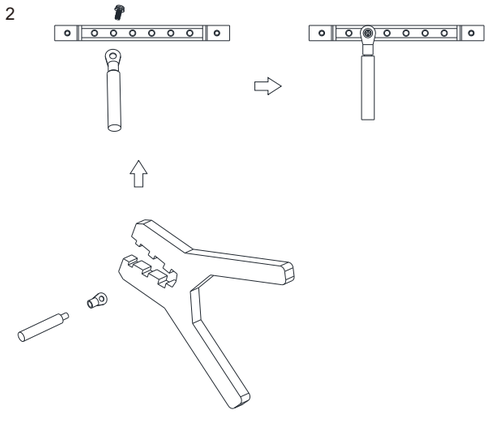
3.2 Wiring instructions

3.2.1 Connecting SYN 50-XH-1 to the Grid

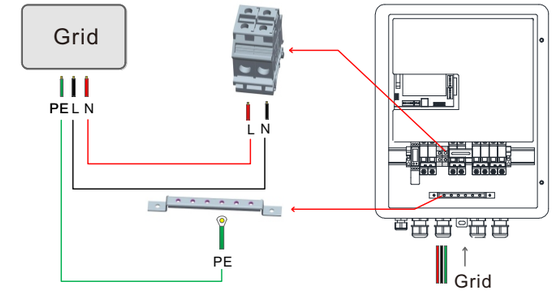
1.Take out the two screws on the upper cover of the machine, open the upper cover, and do not remove the ugly plate inside the machine.
2.Loosen the plastic cover printed as " Grid " counterclockwise, remove the three waterproof plugs, and reserve three holes.
3.Route the three power grid cables (L/N/PE) through the three holes and connect them to the power grid input terminal and the ground copper bar. The screw torque on the power grid terminal is 26.5 in*lbs / 3.0 N*m to 31 in*lbs / 3.5 N*m, and the screw torque on the ground terminal is 13 in*lbs / 1.5 N*m.
4.Finally, fasten the plastic cover clockwise. Wiring is shown as follows:

1

2



3



Connection to the Grid

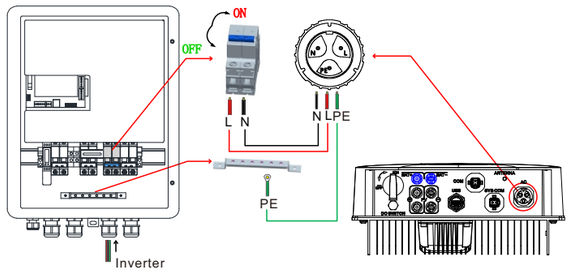
3.2.2 Connecting SYN 50-XH-1 to the Inverter

When connecting theSYN 50-XH-1 to the XH Inverter, we need to connect AC power cable and communication cable.

1)To connect to the AC cable:
1.Loosen the plastic cover printed as "Inverter" counterclockwise, remove the three waterproof plugs, and reserve three holes.
2.Route the cables of the three inverters (L/N/PE) through the three holes, connect the cables to the inverter circuit breaker terminal and the ground copper bar. The screw torque of the inverter circuit breaker terminal is 17.5 in*lbs / 2 N*m, and the screw torque on the ground terminal is 13 in*lbs / 1.5 N*m.
3.Finally, fasten the plastic cover clockwise. Wiring is shown as follows:

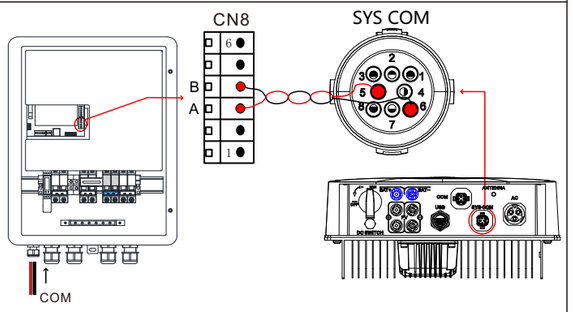
2)To connect to the communication cable:
1.Loosen the plastic cover printed as "COM" on the machine counterclockwise, remove the waterproof plug, and reserve a hole.
2.Route the two communication cables of (A/B) through the hole, connect them to the CN8 terminal of the control board, connect the other end of the cable to the SYS COM terminal of the inverter, and tighten the screws. The following table lists the corresponding terminal pins.
Wiring is shown as follows:

1



Connection AC cable to the XH Inverter

2

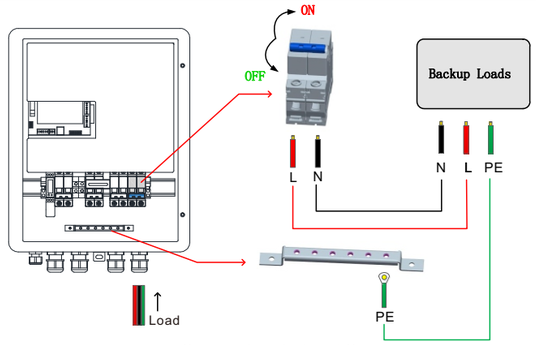


Connection communication cable to the XH Inverter

COM Port	XH Inverter SYS COM	SYN 50-XH-1 CN8
RS485 A	PIN 5	A
RS485 B	PIN 6	B

3.2.3 Connecting SYN 50-XH-1 to the load

1.Loosen the plastic cover printed as "Load" counterclockwise, remove the three waterproof plugs, and reserve three holes.
2. Route the three load cables (L/N/PE) through the three holes, connect them to the load circuit breaker terminal and ground copper bar. The load breaker terminal screw torque is 17.5 in*lbs / 2 N*m, and the ground terminal screw torque is 13 in*lbs / 1.5N*m.
3.Finally, fasten the plastic cover clockwise. The wiring is shown on the right:

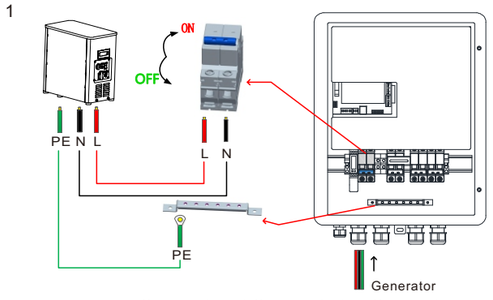


Connection to the AC Loads

3.2.4 Connecting SYN 50-XH-1 to the Generator (optional)
When connecting the SYN 50-XH-1 to the Generator, we need to connect AC power cable and the dry signal cable.

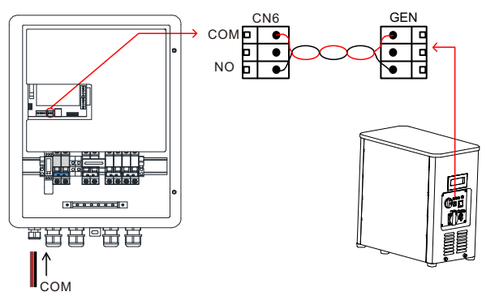
1)Connecting the AC cable:
1.Loosen the plastic cover printed as "Generator" counterclockwise, remove the three waterproof plugs, and reserve three holes.
2.Route the three generator cables (L/N/PE) through the three holes, connect them to the generator circuit breaker terminal and ground copper bar. The screw torque of the generator circuit breaker terminal is 17.5 in*lbs / 2 N*m, and the screw torque on the ground terminal is 13 in*lbs / 1.5 N*m.
3.Finally, fasten the plastic cover clockwise. Wiring is shown as follows:
2)Connecting the dry signal cable:
1.Route the two communication cables (DRY+/DRY-) through the COM hole and connect them to the CN6 terminal on the control board. The other end of the communication cable is connected to the signal control point of the generator.
2.Fasten the plastic cover with "COM" clockwise.
3. Finally, close the upper cover of the machine and lock it with screws, torque 31 in* lbs / 3.5 N*m. Connection mode is as follows:

1



Connection AC cable to the Generator

2



Connect the dry signal of the generator diagram

4. LED Description

System state	LED state	
	Green	Red
On-grid Mode	On	Off
Back-up Mode	Blinking，on 1s,off 1s	Off
No communication with the inverter	Off	Blinking，on 1s,off 1s
System fault	Off	On
Firmware upgrade	The yellow light blinks, on and off for one second	

5.System startup and shutdown operations

5.1 To start the system, please follow the following steps:

1.Turn on the DC switch of the ARK battery. For details, Please refer to the ARK battery manual.
2.Turn on the DC switch of the inverter. For details, Please refer to the XH inverter manual.
3.Turn on the power grid switch, then turn on the inverter input breaker of the SYN 50-XH-1, and observe whether the inverter and battery indicators are displayed. If yes, go to the next step. If there is no display, it means that there is no mains supply. You need to press the POWER button of the ARK battery for a long time to wake up the battery. Please refer to the ARK battery installation manual.
4.Through the upper computer of the inverter, turn on the inverter off-grid enabling function and set register 225 to 1. For detailed operations, please refer to the inverter user manual.
5.After the preceding steps, if the indicator of the SYN 50-XH-1 is green, it indicates that the SYN 50-XH-1 is working properly.

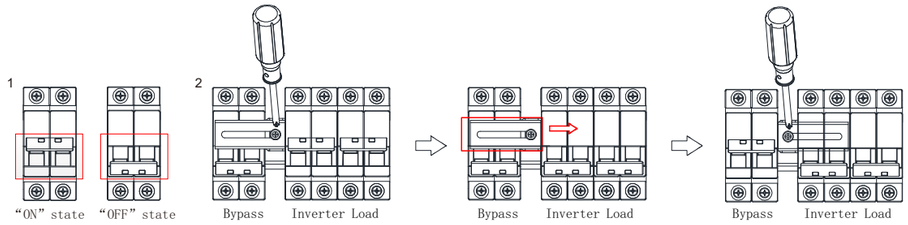
5.2 Shut down the system, please refer to the following steps:

1.Disconnect the Inverter input breaker on the SYN 50-XH-1 and then disconnect the power grid switch.
2.Turn off the DC switch of the inverter.
3.Turn off the DC switch of the ARK battery.
4.Waiting for a while, and then all the indicators of the inverter, the ARK battery, and the SYN 50-XH-1 went out. The system is powered off completely.

6.Manual bypass operation

When SYN 50-XH-1 fails, it cannot be switched to the bypass state. In order to ensure that the household power supply can be manually switched to the mains bypass state

The operation is as follows:
1.Shut down the entire system. For details, please refer to section 5.2.
2.Manually turn off the inverter switch and load switch (“OFF” indicates turn off state).
3.Use a Phillips screwdriver to loosen the firmware screws on the power bypass switch.
4.Slide the firmware to one end of the inverter switch.
5.Tighten the screws on the firmware, Turn on the power bypass switch (“ON” indicates turn on state). The torque of the screws is 10.5 in*lbs / 1.2 N*m. The operation is shown below.
6.Power on the entire system. For details, please refer to section 5.1.



7.Service and contact

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