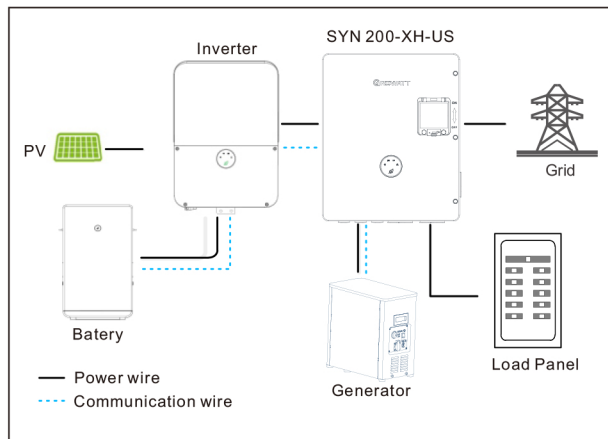


1. Overview

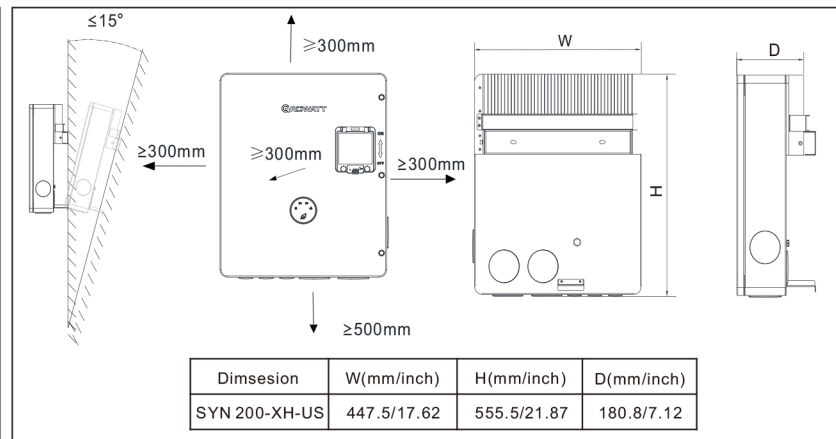
1: Front panel	2: Grid indicator	3: Communication indicator	4: Status Indicator
5: Fault indicator	6: Inverter wiring port	7: Load wiring port	8: Grid wiring port
9: Heat sink	10: COM wiring port	11: Reserved wiring port	12: Generator wiring port
13: Wall mount bracket			

2. Installation

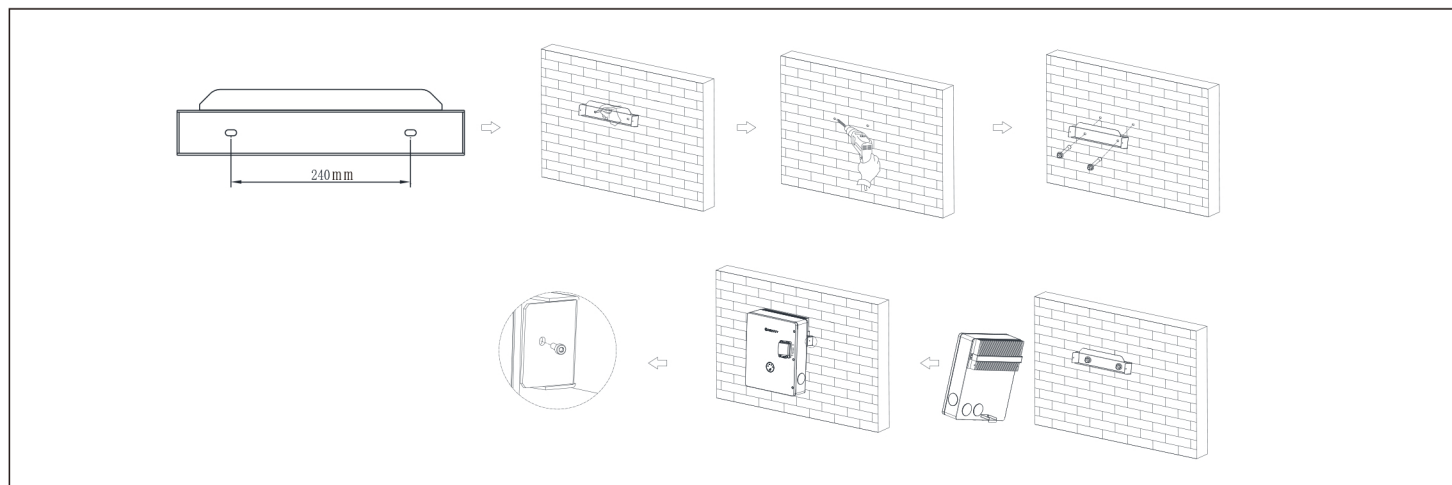
2.1 System overview



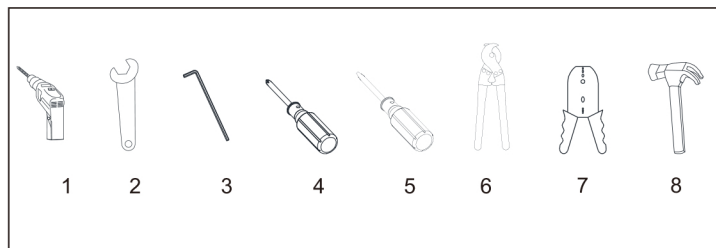
2.2 Installation requirements



2.3 Wall mounting



2.4 Required tools

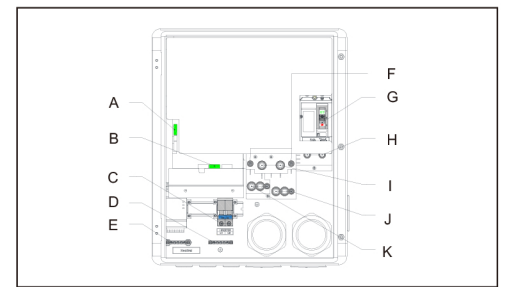


No.	Name	Size	No.	Name	Size
1	Electric drill	Φ6mm	2	wrench	Φ3/8"
3	Allen wrench	Φ7/32" Φ5/16"	4	Cross rise	Φ5mm
5	Flat screwdriver	Φ1mm	6	Wire cutter	/
7	Wire stripper	/	8	hammer	/

3. Electrical connection

3.1 Electrical connection

A	Inverter communication port	B	Generator control port	C	Inverter wiring port
D	Inverter Ground Terminals	E	Inverter Neutral Terminals	F	Generator wiring port
G	Grid switch	H	Grid wiring port	I	Load Panel wiring port
J	Main Neutral Terminals	K	Main Ground Terminals		



Cables prepared by the customer:

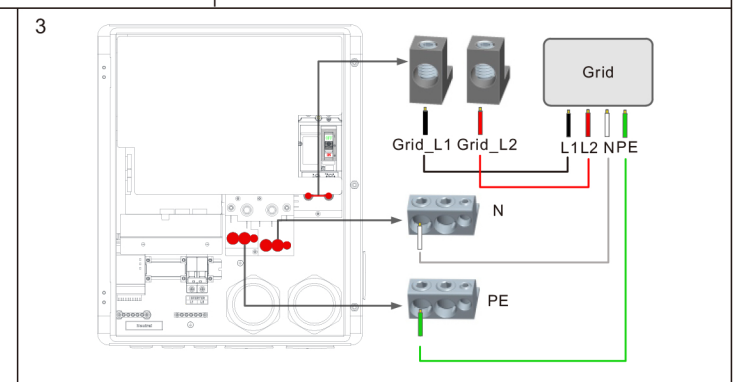
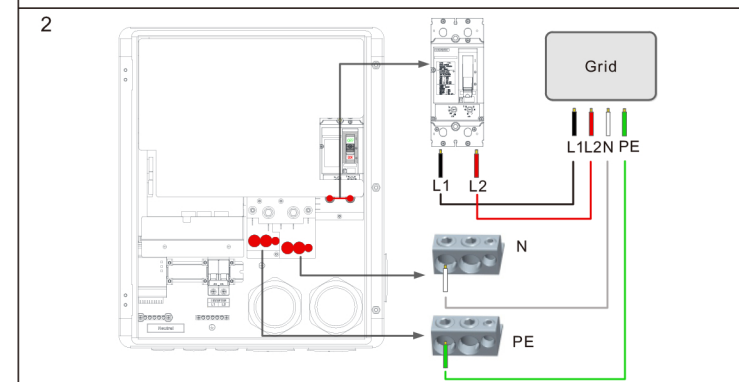
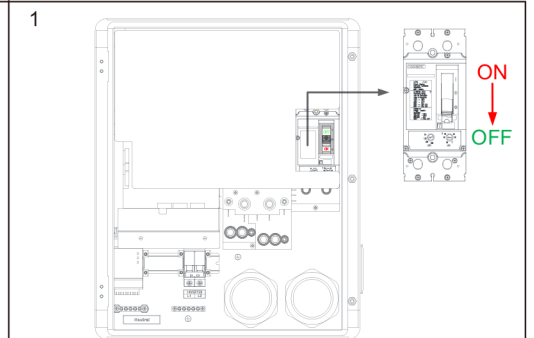
	Use	Type	Size
1	Grounding Conductors (Load/Generator/Inverters)	Yellow-green jacketed or solid bare copper	6~1/0 AWG (Load/Generator) 10~8 AWG (Inverters)
2	AC output conductors (Load/Grid)	Multi-color jacket, copper	0-4/0 AWG
3	Generator Input conductors		4~0 AWG
4	Inverter Input conductors		10~6 AWG
5	12V power output conductors	Red and black multi-color copper	16~14 AWG
6	Communication cable	CAT5E suggested	/

Note:

It is recommended to use two or three polychromatic multi-core copper cables for Grid/Load/Generator/Inverter connection. Recommended using yellow-green single multi-core cables for PE connection. Recommended using shielded twisted pair cable for RS485 connection.

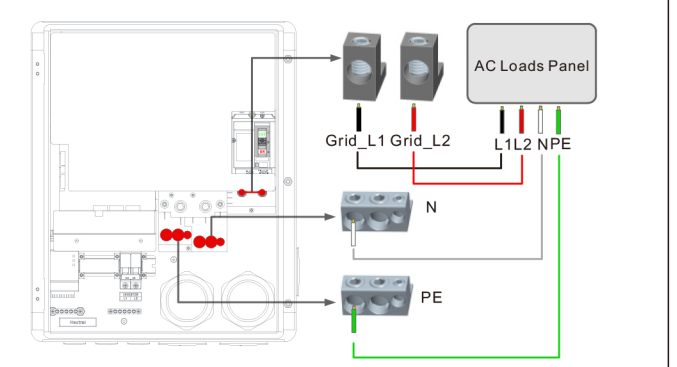
3.2 Connecting the SYN 200-XH-US to the Grid panel

1. Release the Allen screws of the upper cover and open the upper cover.
2. Install a conduit of the required diameter into the Grid conduit entry. Use the conduit holder to support the conduit.
3. For versions with circuit breaker. Pull down the main breaker until it shows OFF. Ensure that the main breaker is OFF, as shown in Figure 1.
4. Pass the cable from the grid through the grid conduit to the terminals of the circuit breaker. Tighten the terminal screws with a torque of 310 in*lbs / 35N*m, as shown in Figure 2.
5. For version without circuit breaker. Pass the cable from the grid through the grid conduit to the GridL1 and GridL2 terminals of the SYN 200-XH-US. Tighten the terminal screws with a torque of 310 in*lbs / 35N*m, as shown in Figure 3.
6. Connect the neutral and grounding wires to the neutral and grounding terminals. Tighten the terminal screws with a torque of 310 in*lbs / 35N*m.



3.3 Connecting the SYN 200-XH-US to the Load panel

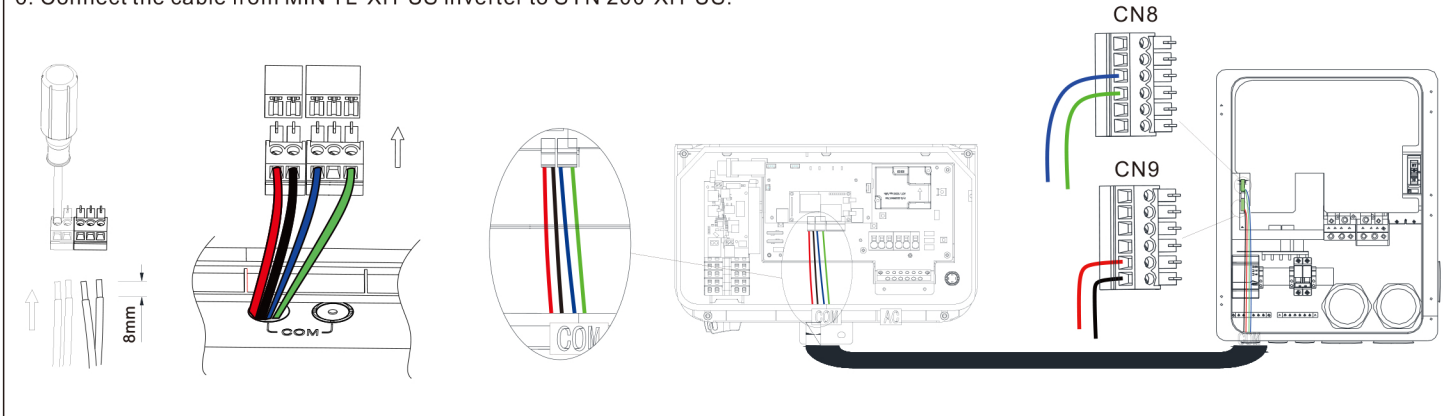
1. Install a conduit of the required diameter into the Loads conduit entry. Use the conduit holder to support the conduit.
2. Pass the cable from the AC Loads panel through the Loads conduit to the Load_L1 and Load_L2 terminals of the SYN 200-XH-US. Tighten the terminal screws with a torque of 310 in*lbs / 35N*m.
3. Connect the neutral and grounding wires to the neutral and grounding terminals. Tighten the terminal screws with a torque of 310 in*lbs / 35N*m, as shown on the right.



3.4 Connecting the SYN 200-XH-US to the Inverter

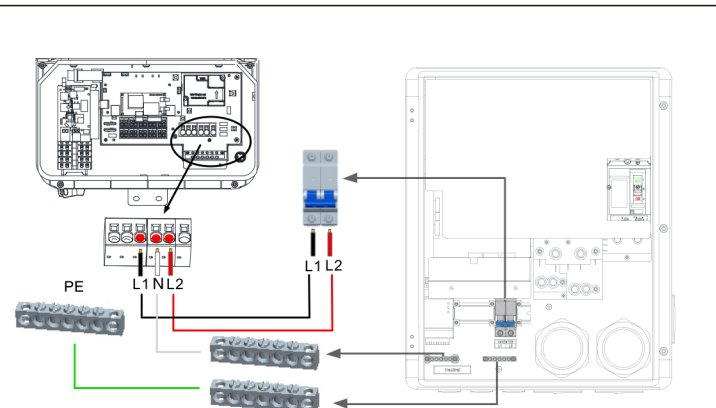
3.4.1 Installation of communication cables:

1. Insert the conduit into the left side COM drill guide that was opened .
2. Insert the cable through the conduit to the inverter wiring box .
3. Remove the cable's external insulation using a crimping tool or cable cutter.
4. Insert the cable into MIN TL-XH-US inverter RS485 connector(3 pin) ,as described in follow figures.
5. Insert the cable into SYN 200-XH-US RS485 connector(CN8) and power connector(CN9) ,as described in follow figures.
6. Connect the cable from MIN TL-XH-US inverter to SYN 200-XH-US.



3.4.2 Installation inverter AC power cables:

1. Install a conduit of the required diameter into the INV conduit entry. Use the conduit holder to support the conduit.
2. Pass the cable through the INV conduit.
3. Connect the neutral and grounding cables to the corresponding neutral and grounding terminals. Tighten the terminal screws with a torque of 18 in*lbs / 2 N*m.
4. Connect the GRID L1 and GRID L2 terminal of the MIN TL-XH-US inverter to the INV Breaker terminal of SYN 200-XH-US. Tighten the terminal screws with a torque of 18 in*lbs / 2 N*m.



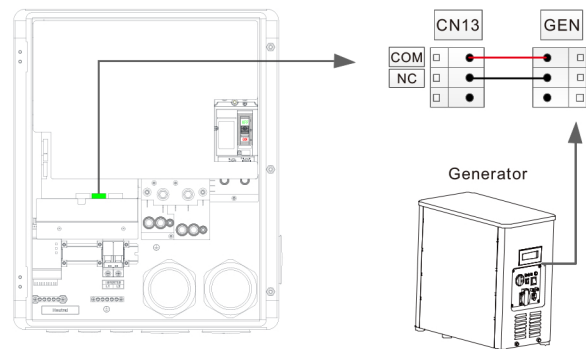
Power cable connection between SYN 200-XH-US and Inverter

3.5 Connecting the SYN 200-XH-US to Generator

You must install the communication cable with the Generator first, and then install the power cables.

3.5.1 Generator communication cables installation:

1. Pass the shielded communication wire through the COM conduit, One end of the communication cable is connected to the 3-pin connector of SYN 200-XH-US, and the other end is connected to the remote control port of the generator.



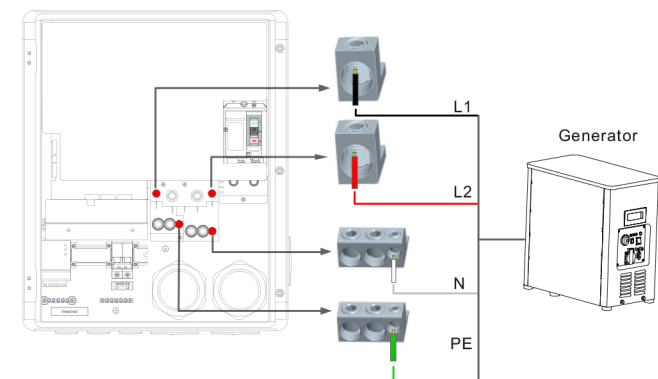
Communication connection between SYN 200-XH-US and Generator

⚠ Note:

1. The COM/NC signal of CN13 is the remote control switch signal of the generator.
2. The above only shows the wiring method of the generator with 2-wire start mode. For other types of generators, please refer to the generator wiring guide.

3.5.2 Generator input power cable installation:

1. Install a conduit of the required diameter into the generator conduit entry. Use the conduit holder to support the conduit.
2. Pass the cable through the generator conduit.
3. Connect the ground cable to the ground terminal, Tighten the terminal screws with a torque of 141 in*lbs / 16 N*m.
4. Connect the L1 and L2 terminal of the generator to the GEN L1 and GEN L2 terminal of SYN 200-XH-US. Tighten the terminal screws with a torque of 310 in*lbs / 16 N*m.
5. Connect the neutral wires to the neutral terminals. Tighten the terminal screws with a torque of 310 in*lbs / 35 N*m.



Connection to the Generator

4. LED Indication

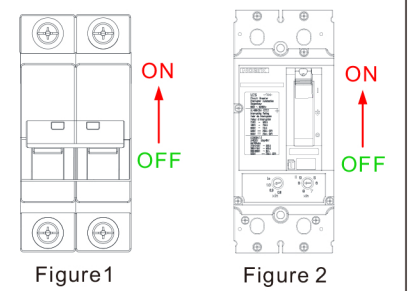
	Description	LED color	LED status	SYN 200-XH-US status
	Grid indicator	Green	Solid	Connect to the grid
	Communication indicator	Green	Solid	Communication with the inverter is normal
Status indicator	Green	Solid	On-grid works normally	
		1S on and 1S off	Off-grid works normally	
		3S on and 3S off	The generator works normally	
Fault indicator	Red	Solid	Fault	
		1S on and 1S off	Overload	

Note: If the four indicator lights flash at the same time, it means that the SYN 200-XH-US is upgrading the firmware.

5. System startup and shutdown operations

5.1 System power-on operation, please follow the steps below:

1. Close the DC switch of the ARO battery. Then close the DC switch of the inverter. The battery cannot be woken up if there is no PV input, you need press and hold the battery switch until the indicator light flashes. Please refer to the ARO battery installation manual.
2. Close the inverter input breaker of the SYN 200-XH-US, as shown in Figure 1.
3. Push the grid input circuit breaker to the "ON" position, indicating that the grid input breaker is closed, as shown in Figure 2. (For versions with circuit breaker).
4. Download our APP and set the inverter off-grid output through the APP. For details, please refer to the off-grid enable function setting of the TL-XH-US inverter.
5. If the grid indicator, communication indicator, and status indicator of the SYN 200-XH-US are all green and the fault indicator is off, it means that the SYN 200-XH-US is working normally. System indicator, please refer to section 4.
6. If the preceding steps fail to power on the device, check the operation methods carefully or contact us.



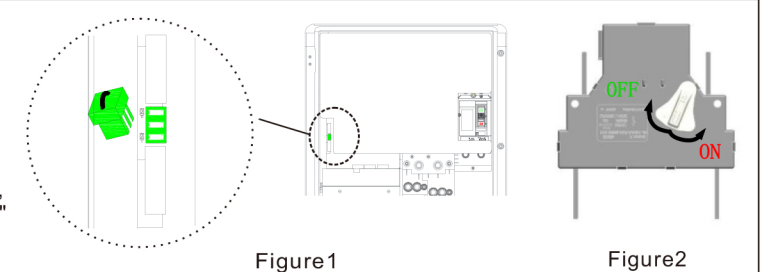
5.2 System power-off operation, Please follow the steps below:

1. Disconnect the miniature circuit INV_breaker on the SYN 200-XH-US.
2. Disconnect the DC switch of the inverter. Press and hold the battery switch button until the indicator light goes out. Then turn off the DC switch of the ARO battery. Please refer to the ARO battery installation manual.
3. Pull down the Grid breaker switch until the word OFF is displayed, indicating that the circuit breaker is off.
4. Wait and observe that the inverter, battery, SYN 200-XH-US and other indicators are all off, indicating that the system is completely powered off.

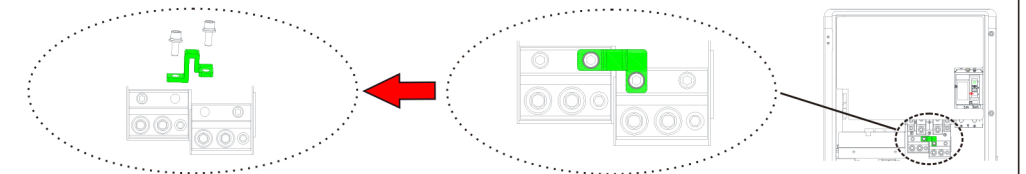
6. Manual bypass operation

In case of the SYN 200-XH-US is failure, it cannot be switched to the bypass state. In order to ensure household electricity, you can manually switch to the mains bypass state by performing the following operations.

1. Shutdown the entire system, please refer to section 5.2.
2. Insert the 3-pin terminal with the short wire into the 3-pin interface of the SYN 200-XH-US, as shown in the right figure 1.
3. Make sure that the AC circuit breaker of the grid is disconnected, and manually rotate the white switch counterclockwise to the "ON" position, as shown in the right figure 2.
4. Power up the entire system, please refer to section 5.1.



⚠ Note: Where Electrical Inspection Authorities require the neutral assembly to be disconnected from the enclosure, we need to remove the bonding jumper shown in the picture on the right.



7. Service and contact

Growatt USA, Inc
9227 Reseda Blvd, #435 Northridge, CA 91324, USA.

T 866-686-0298
E usaservice@ginverter.com
W www.growatt-america.com



Download Manual

GR-UM-252-A1-00



Growatt New Energy