10KW Parallel Kit Installation Guide

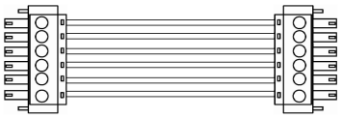
1. Introduction

This inverter can be used in parallel with maximum 3 units. The supported maximum output power is 30KW/30KVA.

2. Parallel cable

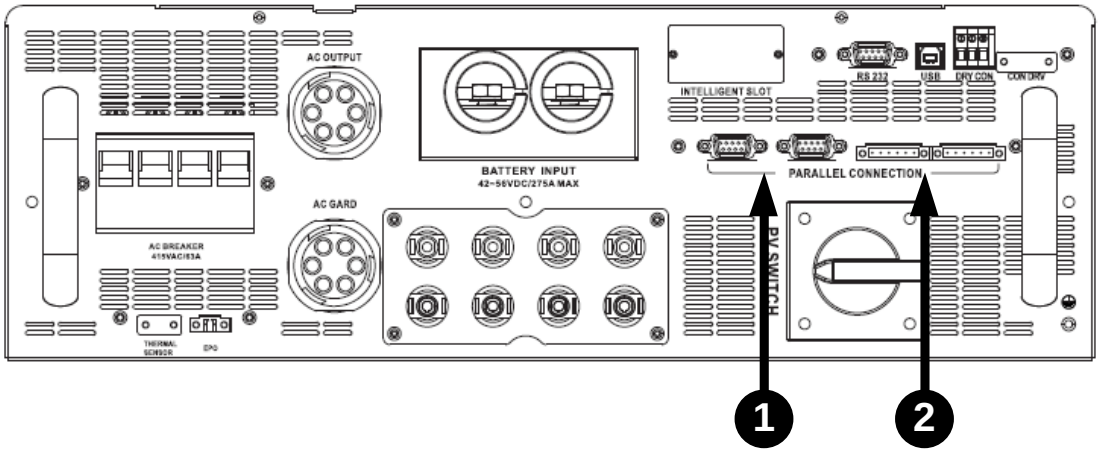
You will find the following items in the package:

Parallel communication cable



Current sharing cable

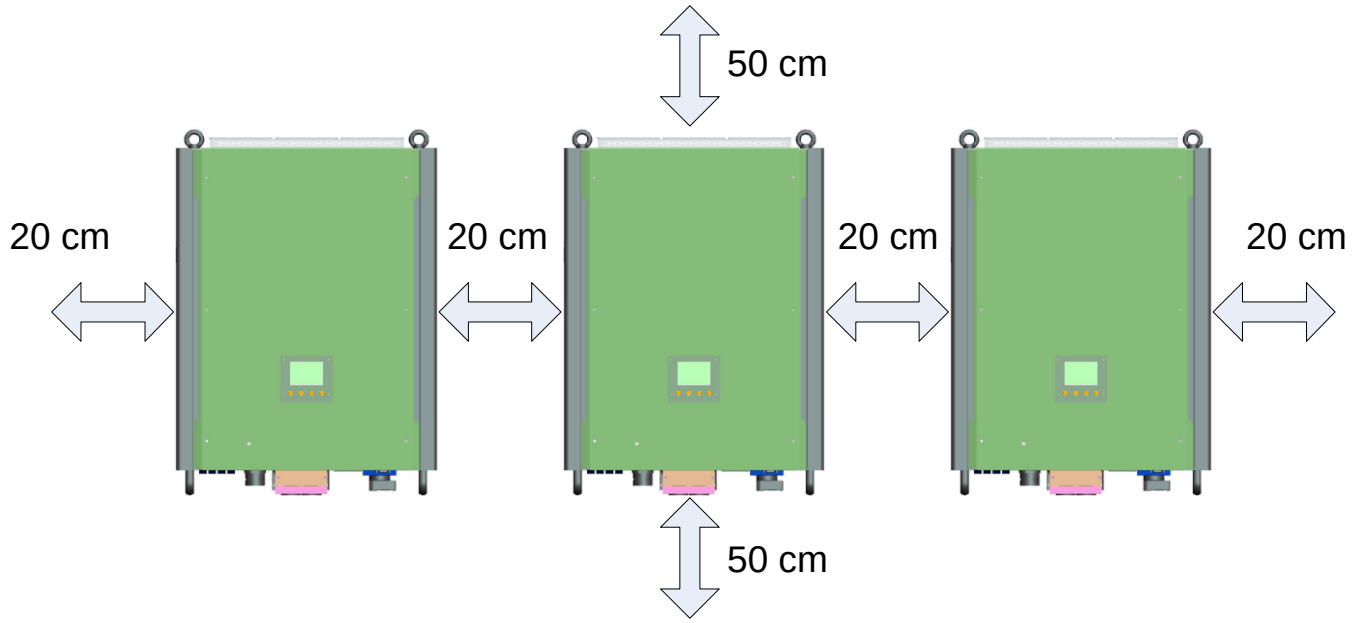
3. Overview



1. Parallel communication port
2. Current sharing port

4. Mounting the Unit

When installing multiple units, please follow below chart.

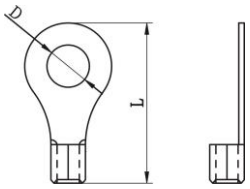


NOTE: For proper air circulation to dissipate heat, it's necessary to allow a clearance of approx. 20 cm to the side and approx. 50 cm above and below the unit. Be sure to install each unit in the same level.

5. Wiring Connection

The cable size of each inverter is shown as below:

Ring terminal:



Recommended battery cable and terminal size for each inverter:

Model	Wire Size	Ring Terminal			Torque value
		Cable mm^2	Dimensions		
			D (mm)	L (mm)	
10KW	3/0	85	8.4	54.2	7~12 Nm

WARNING: Be sure the length of all battery cables is the same. Otherwise, there will be voltage difference between inverter and battery to cause parallel inverters not working.

Recommended AC input and output cable size for each inverter:

Model	AWG no.	Conductor cross-section	Torque
10KW	10~8 AWG	5.5~10 mm^2	1.4~1.6Nm

You need to connect the cables of each inverter together. Take the battery cables for example. You need to use a connector or bus-bar as a joint to connect the battery cables together, and then connect to the battery terminal. The cable size used from joint to battery should be X times cable size in the tables above. "X" indicates the number of inverters connected in parallel.
Regarding cable size of AC input and output, please also follow the same principle.

CAUTION!! Please install a breaker at the battery side. This will ensure the inverter can be securely disconnected during maintenance and fully protected from overcurrent of battery.

Recommended breaker specification of battery for each inverter:

Model	One unit*
10KW	300A/60VDC

*If you want to use only one breaker at the battery side for the whole system, the rating of the breaker should be X times current of one unit. “X” indicates the number of inverters connected in parallel.

Recommended battery capacity

Inverter parallel numbers	2	3
Battery Capacity	800AH	1200AH

CAUTION! Please follow the battery charging current and voltage from battery spec to choose the suitable battery. The wrong charging parameters will reduce the battery lifecycle sharply.

Approximate back-up time table

Load (W)	Backup Time @ 48Vdc 800Ah (min)	Backup Time @ 48Vdc 1200Ah (min)
5,000	240	360
10,000	112	168
15,000	60	90
20,000	40	60
25,000	20	30
30,000	13	20

PV Connection

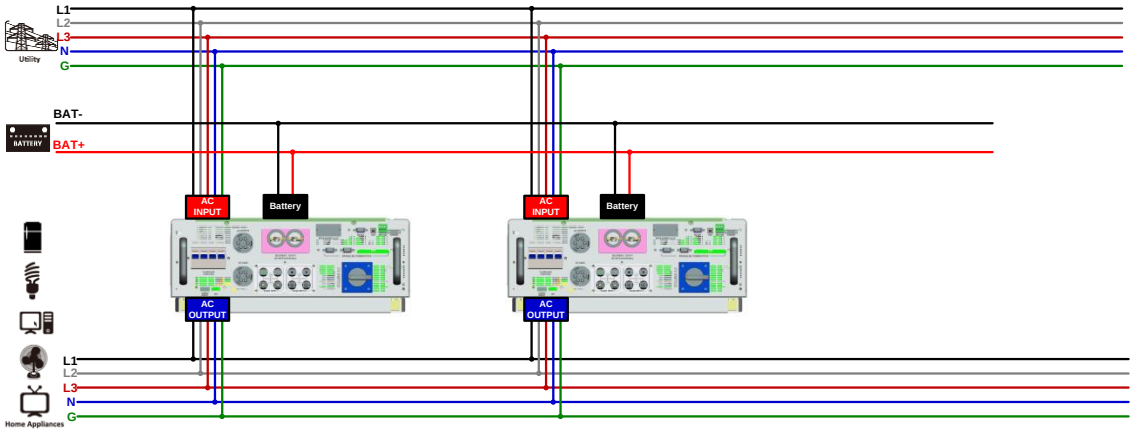
Please refer to user manual of single unit for PV Connection.

CAUTION: Each inverter should connect to PV modules separately.

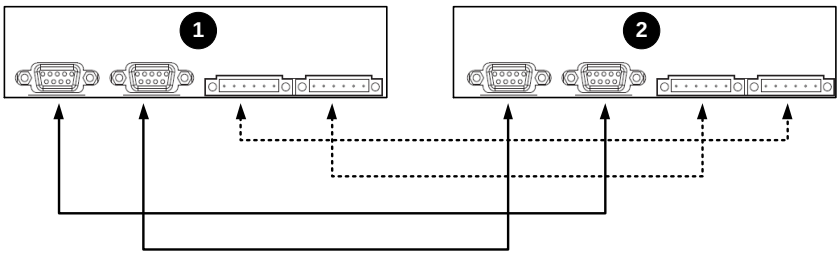
6. Inverters Configuration

Two inverters in parallel:

Power Connection

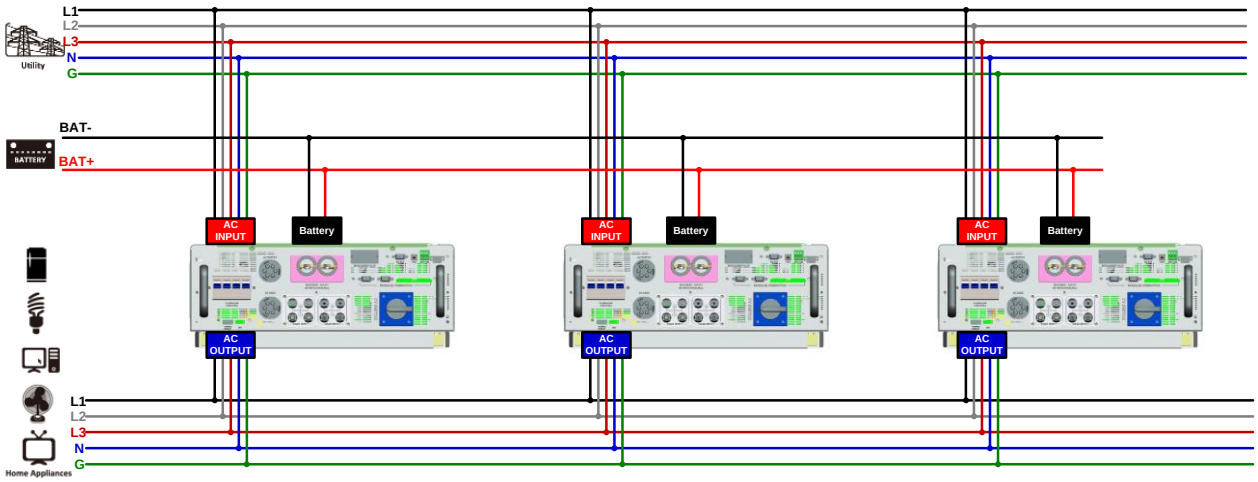


Communication Connection

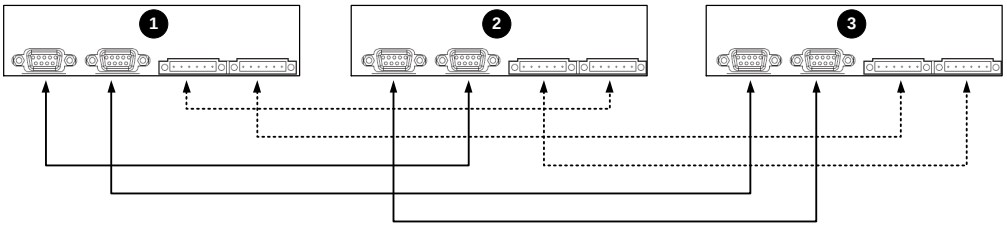


Three inverters in parallel:

Power Connection



Communication Connection



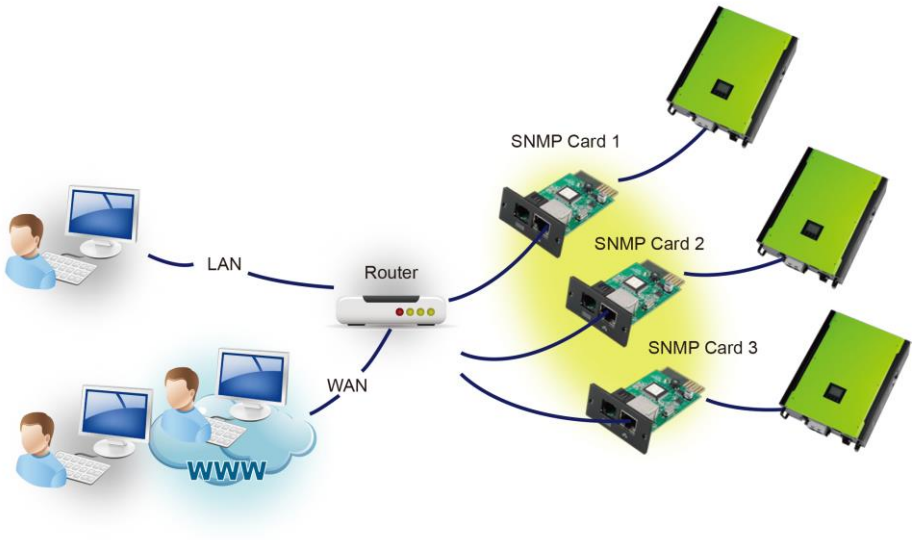
7. Setting and LCD Display

Setting Program:

The parallel function setting is only available by SolarPower. Please install SolarPower in your PC first.
For setting, you can set the inverter one by one through RS232 or USB port.
But we suggest to use SNMP or Modbus card to combine the system as a centralized monitoring system. Then, you can use "SYNC" function to set all the inverters at the same time. If using SNMP or Modbus card to set up program, the bundled software is SolarPower Pro.

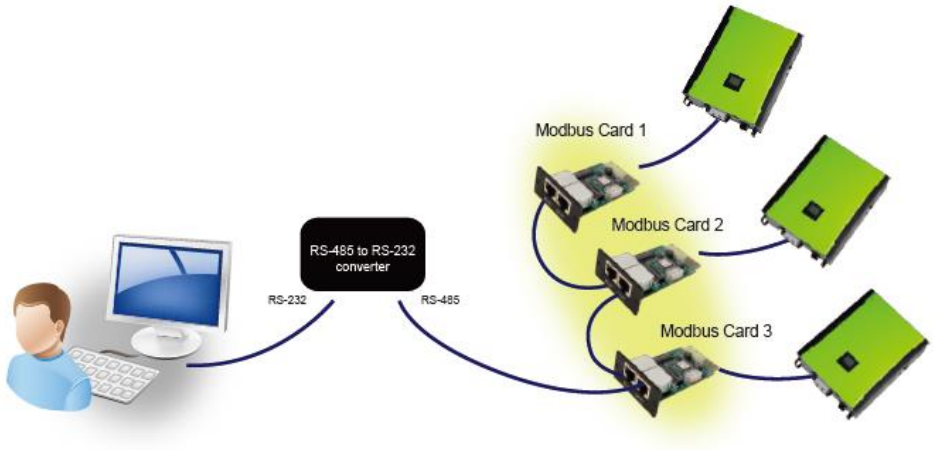
- Use SNMP card to synchronize the parameters:

Each inverter should be installed one SNMP card. Make sure all of the SNMP cards are connected to the router as a LAN.



- Use Modbus card to synchronize the parameters:

Each inverter should be installed one Modbus card. Make sure all of the Modbus cards are connected to each other and one of the Modbus cards is connected to the computer by RS-485/RS232 converter.



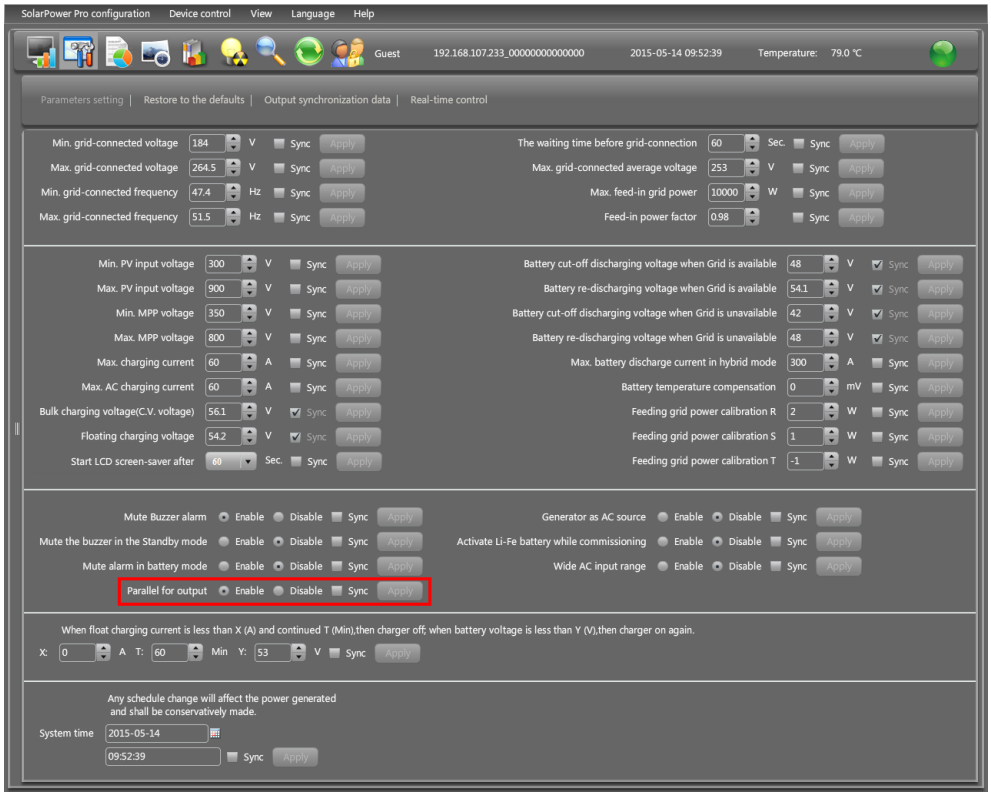
Launch SolarPowerPro in computer and select Device Control >> Parameter Setting >> Parallel output. Two options: Enable or Disable.

If you want to use parallel function, please choose "Enable" and press "Apply" button. Then, "Sync" button will be shown is the screen. Please be sure to click "Sync" button before clicking "Apply" button.

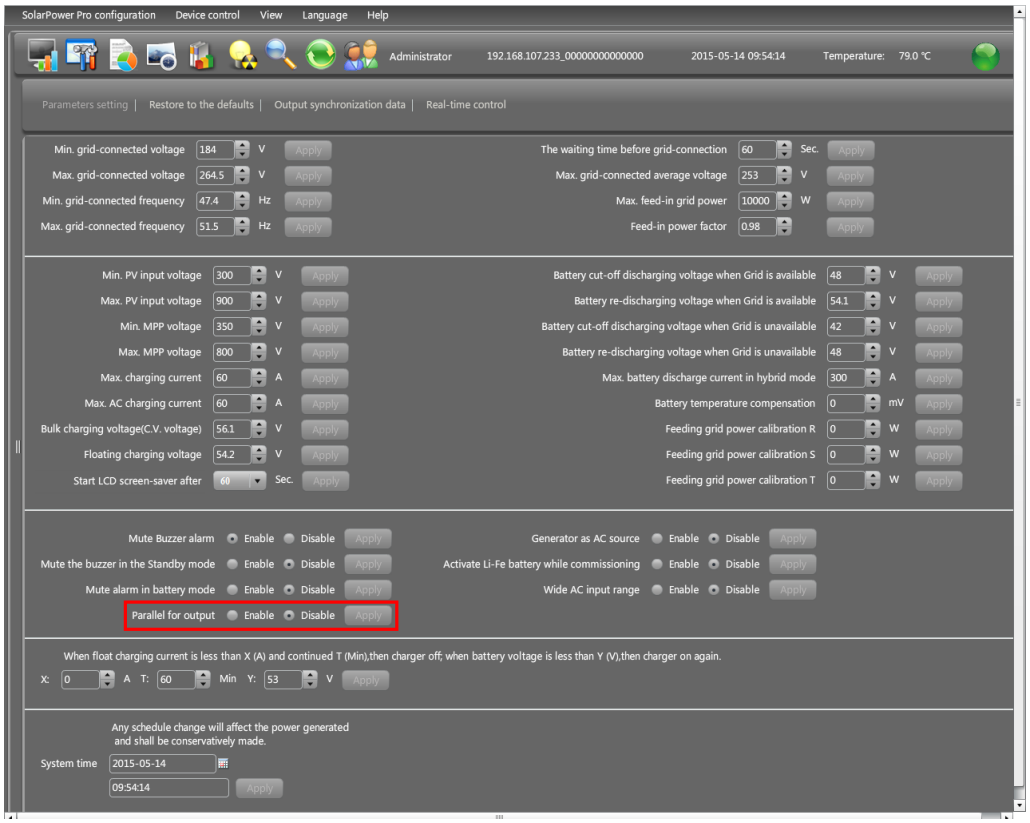
There is a “Sync” button in each parameter setting. When “Sync” is clicked and “Apply” is pressed, this new setting will be applied to all inverters. If not, this setting is only effected in current inverter you choose.

Note: Without centralized monitoring system, “Sync” function is not effective. Then, you have to set up the inverter one by one through serial communication port.

Parallel for output: Enable



Parallel for output: Disable



Fault code display:

Fault Code	Fault Event	Icon on
37	Over current on Neutral wire	
60	Power feedback protection	
61	Relay board driver loss	
62	Relay board communication loss	
71	Firmware version inconsistent	
72	Current sharing fault	
80	CAN fault	
81	Host loss	
82	Synchronization loss	

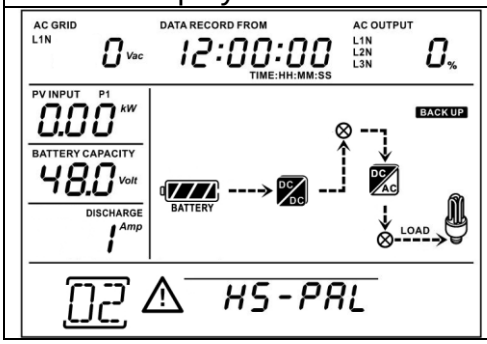
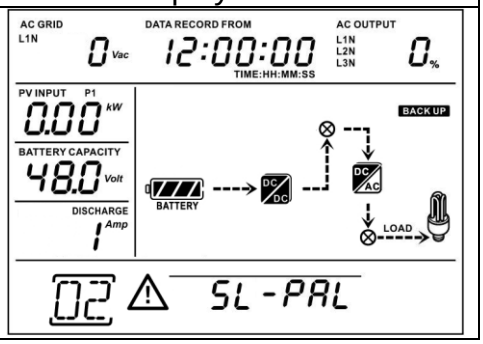
8. Commissioning

Step 1: Check the following requirements before commissioning:

- Correct wire connection.
- Ensure all breakers in Line wires of load side are open and each Neutral wire of each unit is connected together.

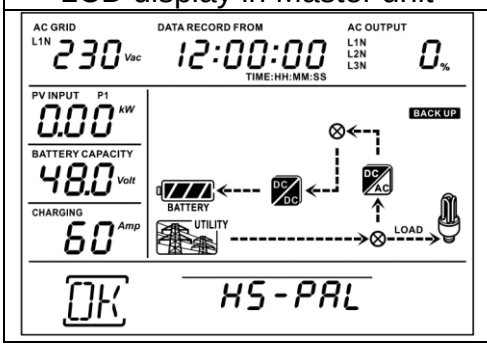
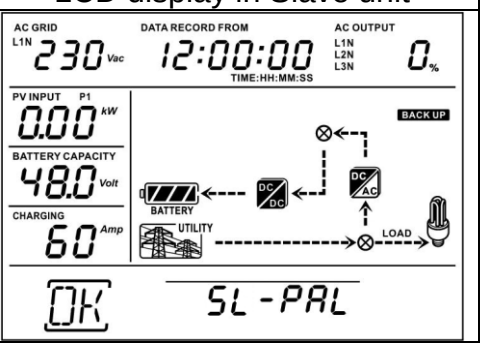
Step 2: Turn on each unit and set “enable parallel for output” on SolarPower or SolarPower Pro. And then, shut down all units.

Step 3: Turn on each unit.

LCD display in Master unit	LCD display in Slave unit
	

NOTE: Master and slave units are randomly defined. Warning 02 is AC GRID voltage low.

Step 4: Switch on all AC breakers of Line wires in AC input. It’s better to have all inverters connect to utility at the same time. If not, it will display fault 82 in following-order inverters. However, these inverters will automatically restart. If detecting AC connection, they will work normally.

LCD display in Master unit	LCD display in Slave unit
	

Step 5: If there is no more fault alarm, the parallel system is completely installed.

Step 6: Please switch on all breakers of Line wires in load side. This system will start to provide

power to the load.

9. Trouble shooting

Situation		Solution
Fault Code	Fault Event Description	
37	Over current on Neutral wire	1. Remove excessive loads. 2. Restart the inverter. 3. If the problem remains, please contact your installer.
60	Current feedback into the inverter is detected.	4. Restart the inverter. 5. Check if L1/L2/L3/N cables are not connected with wrong sequence in all inverters. 6. Make sure the sharing cables are connected in all inverters. 7. If the problem remains, please contact your installer.
61	Relay board driver loss,	1. Disconnect all of power source. 2. Only connect AC input and press Enter key to let it working in bypass mode. 3. Check if the problem happens again or not and feed back the result to your installer.
62	Relay board communication loss,	
71	The firmware version of each inverter is not the same.	1. Update all inverter firmware to the same version. 2. After updating, if the problem still remains, please contact your installer.
72	The output current of each inverter is different.	1. Check if sharing cables are connected well and restart the inverter. 2. If the problem remains, please contact your installer.
80	CAN data loss	1. Check if communication cables are connected well and restart the inverter. 2. If the problem remains, please contact your installer.
81	Host data loss	
82	Synchronization data loss	