All in one system
（off-grid version）

Verson:1.1

User Manual

All in one system
（off-grid version）

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About this manual

Purpose

This manual describes the assembly, installation, operation, warning codes, and fault codes of this unit. Please read this manual carefully before installation and operation. Save this booklet for future reference.

Scope

This manual provides safety and installation guidelines, as well as information on tools and wiring.

Safety instructions

Warning: This chapter contains important safety and operating instructions. Read and save this booklet for future reference.

1.Before using this device, please read all instructions and warning labels on the device, as well as all relevant chapters of the battery and this manual.

2. Warning - To reduce the risk of injury, only charge deep cycle lead-acid rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.

3. Do not disassemble this machine. When maintenance or repair is needed, take it to a qualified service center. Incorrect reassembly may pose a risk of electric shock or fire.

4. To reduce the risk of electric shock, please disconnect all wires before performing any maintenance or cleaning. Turning off the device will not reduce this risk.

5. Warning - Only qualified personnel can install this device using batteries.

6. Never charge frozen batteries.

7. To achieve optimal operation of the inverter/charger, please select the appropriate cable size according to the required specifications. Proper operation of this inverter/charger is very important.

8. Be extremely careful when using personal tools on or around the battery. There is a potential risk of falling tools causing sparks or short circuits in batteries or other electrical components, which may lead to explosions.

9. When you want to disconnect the AC or DC terminal, please strictly follow the installation procedure. For detailed information, please refer to the installation section of this manual.

10. Provide fuses as overcurrent protection for battery power supply.

11. Grounding Instructions - This inverter/charger should be connected to a permanently grounded wiring system. When installing this frequency converter, please be sure to comply with local requirements and regulations.

12. Do not short-circuit the AC output and DC output. When the DC power supply is short circuited, do not connect to the power supply.

13. Danger!! Only qualified maintenance personnel can repair the equipment. If the fault still exists, please send this inverter/charger back to your local dealer or service center for repair.

Warning markers

Warning signs inform individuals of situations that may cause serious personal injury, death, or equipment damage. They also told me how to prevent danger. The warning signs used in this operation manual are shown in the following figure:

Sign	Name	Instructions	Abbreviation
Danger	Danger	Failure to comply with relevant requirements may result in serious personal injury or even death.	
Warning	Warning	Failure to comply with relevant requirements may result in personal injury or equipment damage.	
Prohibition	Electrostatic sensitivity	Failure to comply with relevant requirements may result in equipment damage.	
Scalding	High temperature	Do not touch the base of the frequency converter as it will generate heat.	
Notice	Notice	The procedures adopted to ensure normal operation.	Notice

Introduce

This is a multifunctional solar inverter all-in-one machine that combines the functions of an inverter, MPPT solar charger, and battery backup, providing portable uninterrupted power supply support. Its full LCD display provides a configurable and easily accessible button operation, such as battery charging current, priority of AC energy charger, and acceptable input voltage according to different applications.

Characteristic

- Pure sine wave inverter.
- Built in MPPT solar charging controller.
- Modular battery installation, allowing for the installation of a corresponding number of battery modules as needed.
- The input voltage range can be configured for household appliances and personal computers through LCD settings.
- The battery charging current can be configured according to the application program through LCD settings.
- Priority configuration of AC chargers can be achieved through LCD settings.
- Compatible with mains voltage or generator power.
- Auto restart during Ac recovery.
- Overload/Over temperature/Short circuit protection.
- Inverter supports without battery operation mode.
- Lithium battery activation function.
- Cold start function.
- Intelligent fan control has significantly reduced fan noise.

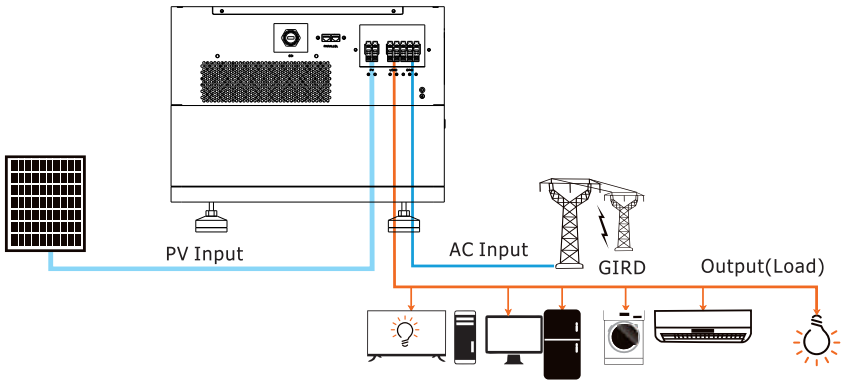
Basic System Architecture

The following figure shows the basic application of the solar inverter all-in-one machine. It also includes the following devices to have a complete operating system.

- Generators or public utilities.
- Photovoltaic modules (optional).

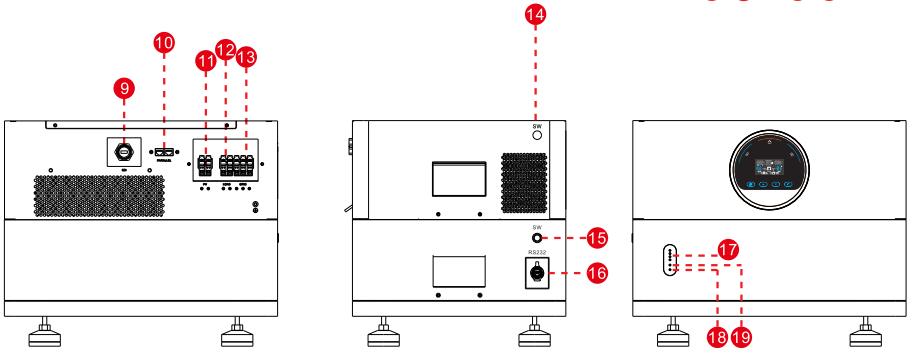
According to your requirements, consult your system integrator to learn about other possible system architectures.

This inverter can provide power to various appliances in home or office environments, including electric motor type appliances such as tube lights, fans, refrigerators, and air conditioners.



Product Overview

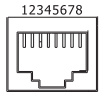
U-P10KW-1-H



U-P3/5KW-1-H

1. LCD display screen
2. Charging indicator light
3. Fault or warning indicator light
4. Public bypass/inverter indicator light
5. Exit button
6. Up button
7. Press down button
8. Input button
9. External module interface
10. Parallel connection-CAN port
11. PV1 Input Connection End
12. AC output terminal
13. Communication input terminal
14. Inverter switch
15. Battery switch
16. Battery computer software interface
17. Battery level display light
18. Battery warning display light
19. Battery running display light
20. PV2 Input Connection End

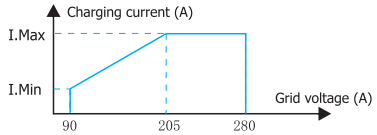
15 The sequence of RS232 communication terminals for batteries

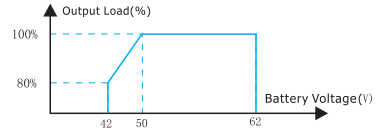
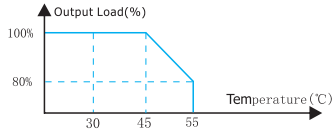


NO.	BMS
1	
2	
3	RS232-TX
4	RS232-RX
5	GND
6	
7	
8	

Specification

Line mode specifications			
Model	UGP-3pro U-P3KW-1-H	UGP-5pro U-P5KW-1-H	UGP-10pro U-P10KW-1-H
Rated output power	3000VA	5000VA	10000VA
	3000W	5000W	10000W
Line mode specifications	48V		
Input voltage waveform	Sinusoidal curve (utility or generator)		
Nominal input voltage	230Vac		
Low line voltage disconnection	90V ± 3V (household appliances) 170V ± 3V (computers)		
Low loss voltage reconnection	100V ± 3V (household appliances) 180V ± 3V (computer)		
High line voltage disconnection	280V±3V		
High line voltage reconnection	270V±3V		
Maximum AC input voltage	280V±3V		
Nominal input frequency	50Hz/60Hz (dynamic detection)		
Low line frequency disconnection	40±1Hz		
Low line frequency reconnection	42±1Hz		
High line frequency disconnection	65±1Hz		
High line frequency reconnection	63±1Hz		
Output voltage waveform	Same as the input waveform		
Output short-circuit protection	Line mode: circuit breaker/Battery mode: Electrical circuit		
Efficiency (Line Mode)	>95%(Rated R load, fully charged battery)		
Transfer time (single unit)	10ms typical value (uninterruptible power supply); 20 millisecond typical value (device)		
Transmission time (parallel)	Typical value of 50 milliseconds		
Pass Through Without Battery	Yes		
Max. Bypass Overload Current	26A	39A	70A
Max. Bypass Input Current	26A	45A	78A
Max. Inverter/Rectifier Current	13.6A/3000W	22.7A/5000W	44.5A/10000W

Electric charging mode specifications			
Model	U-P3KW-1-H	U-P5KW-1-H	U-P10KW-1-H
Nominal input voltage	230Vac		
Input voltage range	90~280Vac		
Nominal Output Voltage	48Vdc		
Maximum charging current of the power grid	50A/12.5A	100A/25A	100A/25A
Overcharge protection	Have		
The relationship between the maximum battery charging current and the grid voltage --Battery voltage 50V			
Solar charging and grid charging			
Maximum PV open circuit voltage	500Vdc		
PV voltage range	85~450Vdc		
Maximum output power	6000W	6000W	12000W
Maximum solar charging current	50A	100A	100A
Maximum charging current (PV+Grid)	50A	100A	100A
Maximum output current	15A	27A	27+27A
Minimum starting voltage	85Vdc		
Charging algorithm			
Algorithm(Three stages)	Boost CC (constant current stage)		
	Boost CV (constant voltage stage)		
	Float charging (constant pressure stage)		
Charging curve			
Battery type settings	Battery type settings	Boost CC/CV	Float charging
	AGM	56.4V	54V
	Overwhelm	58.4V	54V
	Custom	Adjustable, up to 60V	
	Li		

Inversion mode parameters			
Model	U-P3KW-1-H	U-P5KW-1-H	U-P10KW-1-H
Rated output power	3KVA	5KVA	10KVA
	3KW	5KW	10KW
Nominal DC output voltage	48Vdc		
Output voltage waveform	Pure sine wave		
Nominal Output Voltage	230Vac±5%		
Nominal output frequency (Hz)	50 ± 0.3Hz/60 ± 0.3Hz (adjustable)		
Peak efficiency	93%		
Overload protection (SMPS load)	5.5 seconds at 150% load; 10.5 seconds at 105%~150% load		
Surge rating	2x rated power for 5s		
Self activating battery function	Have		
Output short-circuit protection	Have		
Cold start voltage	46V		
DC output voltage too low to turn off Load<50%	43V		
@Load≥50%	42V		
DC input voltage overvoltage alarm and fault	62V±0.4V		
DC output overvoltage recovery voltage value	60V±0.4V		
Battery voltage limit When the battery voltage is below 50Vdc, The output power will decrease. The minimum AC output voltage is 180 volts			
Temperature limit When the ambient temperature is above 45 ℃,The output power will decrease.The maximum output voltage is 180 volts.			
General specifications			
Working temperature	-10~55°C		
Range storage temperature	-15~60°C		

Device

Safety guidelines

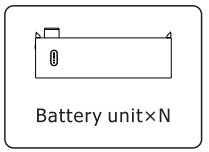
Warning signs indicate situations that may cause serious personal injury or death, or equipment damage. They also told me how to prevent danger. This operation the warning signs used in the manual are as follows:

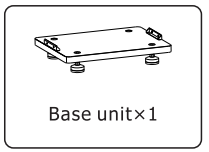
	• After receiving this product, please first confirm that the product packaging is intact and undamaged. If you have any questions, please contact the logistics company or local distributor immediately. • The installation and operation of inverters must be carried out by professional technicians who have received professional training and are fully familiar with the safety requirements of all electrical systems in this manual.
	• When connecting to the power supply, do not perform operations such as connecting/disconnecting the inverter, opening the cover for inspection, etc. Before wiring and inspection, the user must confirm that the circuit breakers on the AC side of the DC and inverter have been disconnected and wait for at least 5 minutes.
	• Ensure that there is no strong electromagnetic interference caused by other electrical or electrical equipment around the installation site. • Do not modify inverters unless authorized. • All electrical installations must comply with local and national household appliance standards.
	• Do not touch the inverter casing or heat sink to avoid burns, as they may become hot during inverter operation.
	• Apply appropriate polishing techniques before operation.
	• Do not open the meter cover of the inverter unless authorized. The electrical components inside the inverter are sensitive to static electricity. During authorized operations, it is essential to take appropriate anti-static measures.
	• The inverter needs to be reliably grounded.
	• Ensure that the DC and AC side circuit breakers have been disconnected and wait for at least 5 minutes before wiring and inspection.

Unboxing and inspection

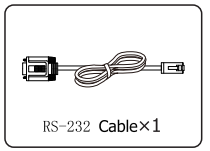
Before installation, please check the equipment. Ensure that there is no damage inside the packaging. You should have received the following items in the package:


Inverter unit×1


Battery unit×N


Base unit×1

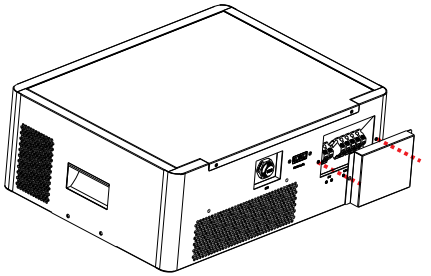
User Manual×1


RS-232 Cable×1


KM4*8×4

Prepare

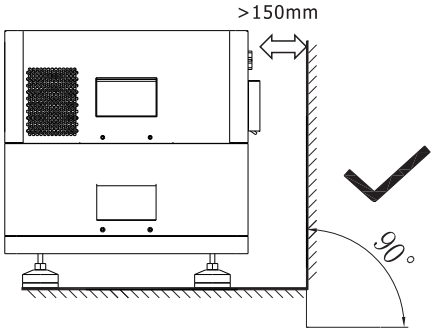
Before connecting all wiring, please remove the wiring cover of the inverter and remove the two screws, as shown in the following figure.

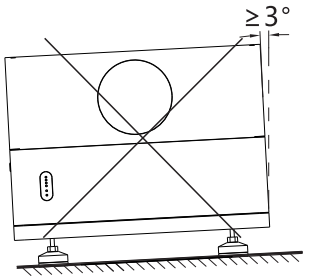


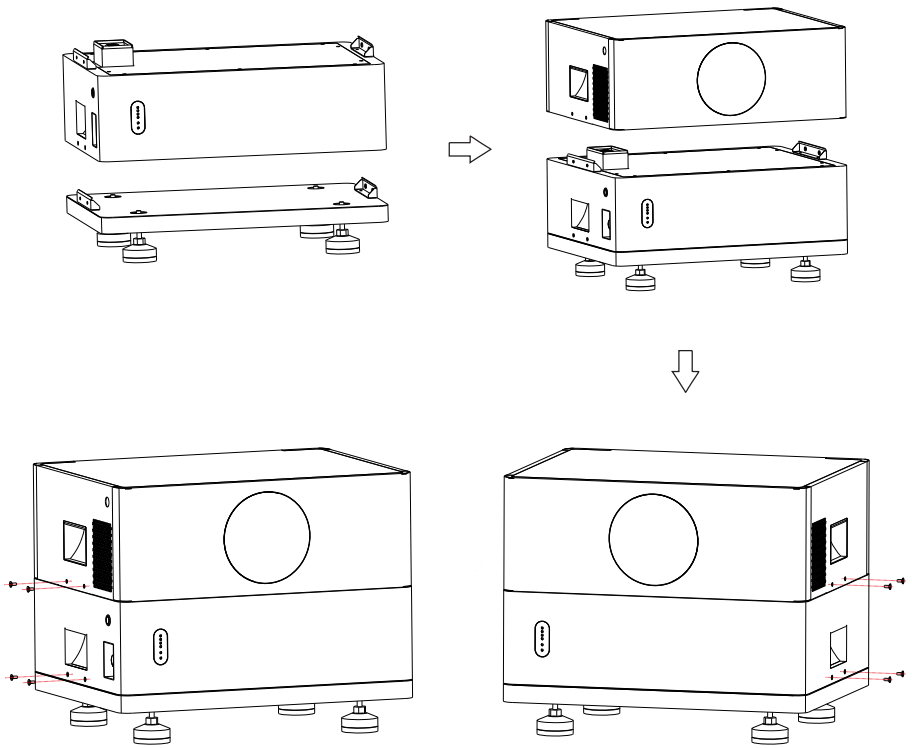
Installation location

Before selecting the installation location, please consider the following points:
- Do not install the solar inverter all-in-one machine on flammable building materials.
- The ambient temperature should be between -10 ℃ and 55 ℃ to ensure optimal operation of the inverter.
- The installation posture is to place it on a horizontal ground to prevent tipping.
- Ensure that the distance between the surface of other objects placed and the inverter is as shown in the figure below, to ensure that the solar inverter integrated machine has sufficient space for heat dissipation and can remove wires.

 **Suitable for installation on concrete or other non combustible surfaces.**







- Place the base on the ground.
- Insert the battery module into the base (according to the corresponding number of batteries according to your own usage).
- Insert the inverter module into the battery module.
- Lock the corresponding module fixing nuts with KM4 * 8 in sequence.

AC input/output connection

Be careful!! There are two end panels marked with "IN" and "OUT" respectively.
Please do not connect the input and output connectors incorrectly.
Warning!! All wiring must be carried out by qualified personnel.
Warning!! The use of appropriate AC transmission cables is crucial for the safety and efficient operation of the system. To reduce the risk of injury, please use the recommended appropriate cable gauge below.

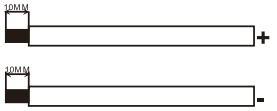
Suggested cable requirements for AC cables.

Model	Cable size	Cable(mm²)	Torque
U-P3KW-1-H	10AWG	5	1.2N.m
U-P5KW-1-H	8AWG	8	1.4~1.6N.m
U-P10KW-1-H	6AWG	13	1.4~1.6N.m

Model	Maximum bypass current	Recommended circuit breaker
U-P3KW-1-H	26A	2P-26A
U-P5KW-1-H	45A	2P-45A
U-P10KW-1-H	78A	2P-78A

Insert the AC transmission line according to the polarity of the fingers on the end plate and tighten the end plate screws. Be sure to connect the PE protective conductor.(⏚)

PE → Grounding (yellow-green)
L → Line (brown or black)
N → Neutral (blue)

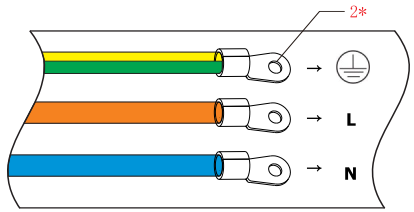


U-3KW-H-1/U-P5KW-H-1

⏚→Ground (yellow-green)

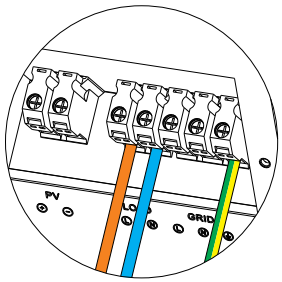
L→LINE (brown or black)

N→Neutral (blue)

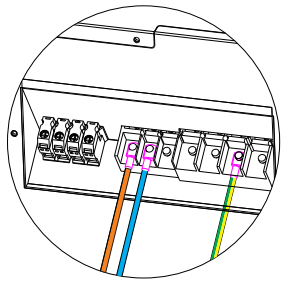


2*: Ring terminal(M5 for AC output wires, M6 for AC input wires)

U-10KW-H-1



U-3KW-H-1/U-P5KW-1-H

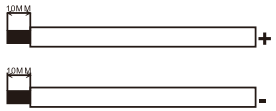


U-10KW-H-1

⚠	Warning Before attempting to hard connect the AC power supply to the device, make sure that the AC power supply is disconnected.

Then, insert the AC output line according to the polarity of the fingers on the end plate, and tighten the end plate screws. Be sure to connect the PE protective conductor first.(⏚)

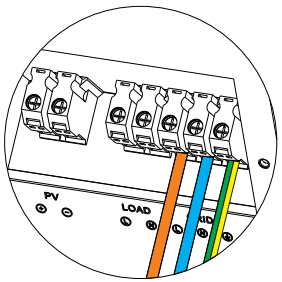
PE →Grounding (yellow-green)
L →Line (brown or black)
N →Neutral (blue)



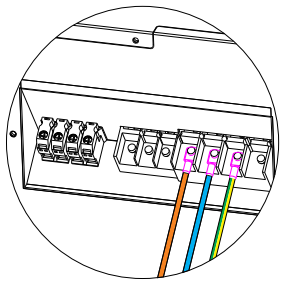
U-3KW-H-1/U-P5KW-H-1

2* ： Ring terminal (M5 for AC output wires,M6 for AC input wires)

U-10KW-H-1



U-3KW-H-1/U-P5KW-H-1



U-10KW-H-1

Ensure that the wires are securely connected

Attention: It is important to ensure that the AC wires are connected with the correct polarity. If the L and N lines are connected in reverse, when these inverters are operated in parallel, it may cause a short circuit in the public utility.
Attention: Electrical appliances such as air conditioners may take at least 2-3 minutes to restart, as sufficient time is needed to balance the refrigerant in the circuit. If there is a power shortage and it is restored in a short period of time, it will cause damage to the devices you are connected to. To prevent such damage, please check whether the air conditioning manufacturer is equipped with a delay function before installation. Otherwise, the inverter/ charger will trigger an overload fault and cut off the output to protect your appliances, but sometimes it can still cause internal damage to the air conditioner.

Photovoltaic connection

⚠ **Attention:** Before connecting the photovoltaic module, please install a separate DC circuit breaker between the inverter and the photovoltaic module.
Warning! All wiring must be carried out by qualified personnel.
Warning! Connecting photovoltaic modules with appropriate cables is crucial for system safety and efficient operation. To reduce the risk of damage, please use the recommended suitable cable gauge below.

Model	Cable size	Cable(mm²)	Torque
U-P3KW-H-1	10AWG	6	1.2N.m
U-P5KW-H-1	10AWG	6	1.2N.m
U-P10KW-H-1	10AWG	6	1.2N.m

Selection of photovoltaic modules:
When selecting suitable photovoltaic modules, it is important to consider the following parameters:

- The open circuit voltage (Voc) of photovoltaic modules shall not exceed the maximum value. Open circuit voltage of inverter photovoltaic array.
- The maximum power supply voltage (Vmp) should be within the voltage range of the photovoltaic array MPPT.

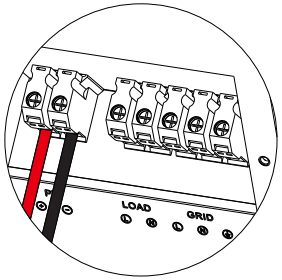
Solar charging mode			
Model	U-P3KW-H-1	U-P5KW-H-1	U-P10KW-H-1
Maximum open circuit voltage of photovoltaic array	500Vdc		
Maximum power point voltage range of photovoltaic array	85Vdc~450Vdc		

Please follow the following steps to connect the photovoltaic modules:

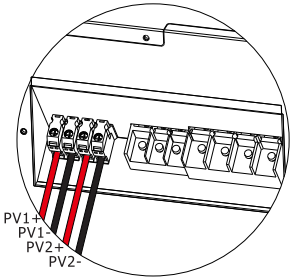
- Remove the insulation sleeve of the positive and negative wires by 10mm.

- Check if the polarity of the connecting cable between the photovoltaic module and the photovoltaic output terminal is correct.

  Connect the positive pole (+) of the connecting cable to the positive pole (+) of the PV output connector; Connect the negative terminal of the connecting cable (-) to the negative terminal of the PV output connector (-).



U-P3KW-H-1/U-P5KW-H-1

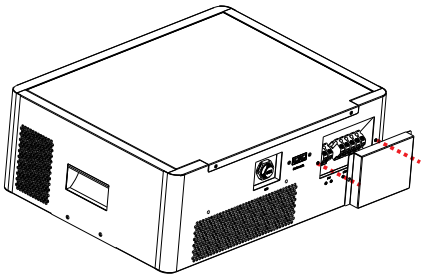


U-P10KW-H-1

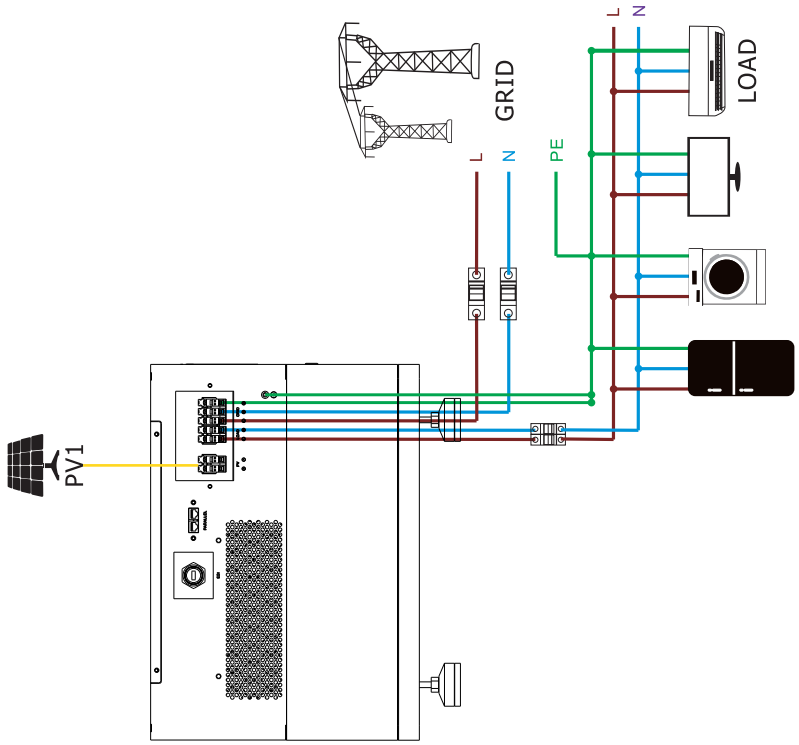
- Make sure the wires are securely connected.

Final assembly

After connecting all wiring, place the wiring cover back in place and tighten the two screws as shown below.

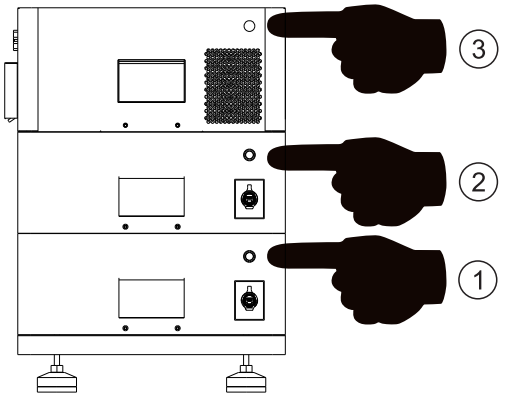


The wiring system of the inverter



Run Operation

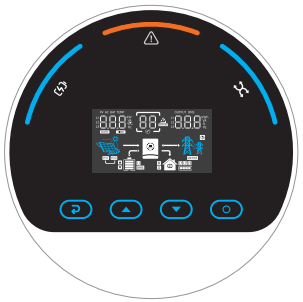
Power switch



After assembly,
1. First, turn on battery switches 1 and 2 (if only one is connected, only turn on the battery switch; if multiple are connected, the one close to the inverter is the host. The host supports one click start function. Press the switches of all batteries. Then, only operate the host to control the on and off of multiple batteries)
2. Turn on the inverter switch 3.

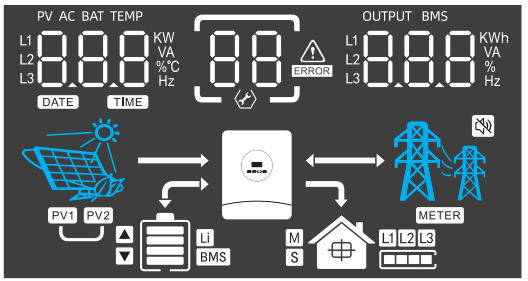
Operation and Display Panel

The operation and display board shown in the figure below is located on the front board of the frequency converter. It includes three indicator lights, four function keys, and an LCD display screen, indicating the operation status and input/output power information.



Function	Icon	Describe
Exit/Return		Exit/Return to Previous Page
Up		Go to the previous selection
Down		Go to the next selection
Confirm/Enter		Confirm selection or go to the next page

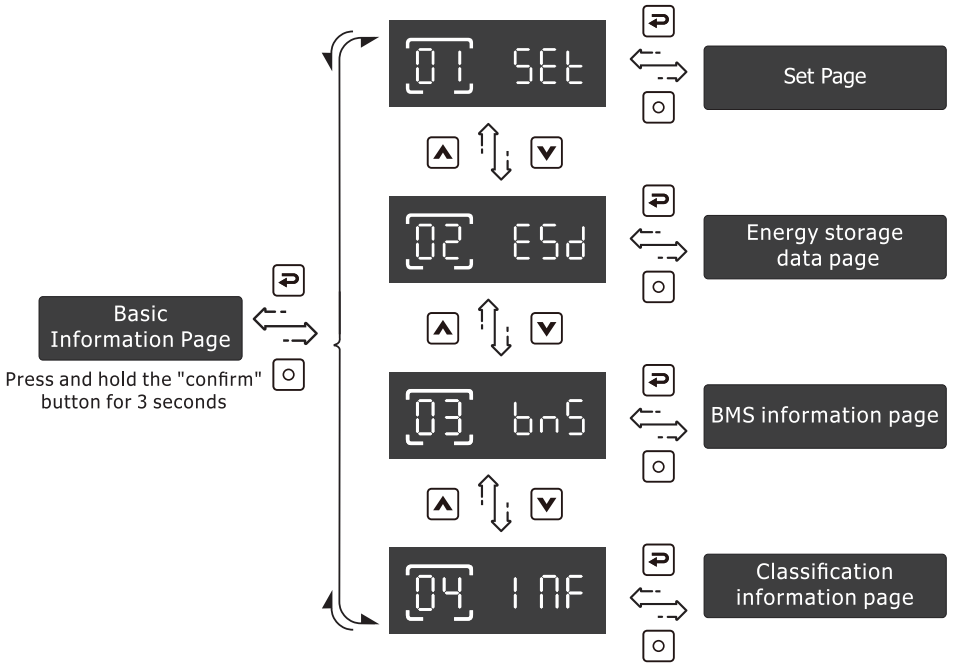
LED indicator	Icon	Describe
Battery		When charging the battery, the LED light flashes.
		If the battery is fully charged, the LED light will remain on.
		If the battery is not charged, the LED light will turn off.
Grid connection		When the inverter is operating in grid mode, the LED will remain on continuously.
Inverter start		When the inverter is operating in off grid mode, the LED light will flash.
		When the inverter is not operating in off grid mode, the LED light will turn off.
Fault		If the inverter malfunctions, the LED light will remain on continuously.
		If a warning event occurs in the inverter, the LED light will flash.
		When the frequency converter is operating normally, the LED light will turn off.
Buzzer information		
Beeping sound		Press any button, the buzzer will last for 0.1 seconds
		Press and hold the "Confirm" button, and the buzzer will last for 3 seconds.
		If a malfunction occurs, the buzzer will continue to sound.
		If a warning event occurs, the buzzer will emit a discontinuous beep (refer to the "Warning Code Table" section for more information)



Icon	Describe
Input source information	
	Refers to the input voltage, output frequency, photovoltaic voltage, photovoltaic power, battery voltage, and charger current.
Configuration program and fault information	
	Represent setting project
	Indicates warning and fault codes.
	Warning:  Flashing warning code
	Fault:  Always on fault code

Output Information	
OUTPUT BMS L1 L2 L3 8.8.8 KWh VA % Hz	Display output voltage, output frequency, load percentage, load (VA), load (volts), and discharge current.
Battery Information	
	Display battery level at 0-24%, 25-49%, 50-74%, and 75-100%.
LI	Indicates the type of lithium battery.
BMS	SBM Indicates that communication has been established between the inverter and BMS. ▲ Indicates that BMS allows battery discharge. ▼ Indicates that BMS allows battery charging. If the icon flashes, force charging.
Mode operation information	
	Indicates that the load is directly provided by public facilities.
	Indicates that the common charger circuit is in operation.
	Indicates that the inverter/charger is in operation.
	Indicates that the photovoltaic MPPT is supplying power to the load.
	Indicates that the photovoltaic MPPT is charging the battery.
	Indicates that the battery is discharging towards the load.
Mute operation	
	Indicates that the device alarm is disabled.

LCD operation flowchart

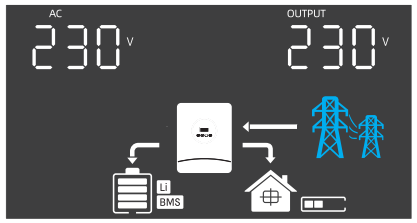


On the Basic Information page, hold down the "Confirm" button for 3 seconds to select the next item. Press the "up" or "down" keys to switch between the selection options, and press "confirm" Key in to select the option. Press the "ESC" key to return to the previous screen.

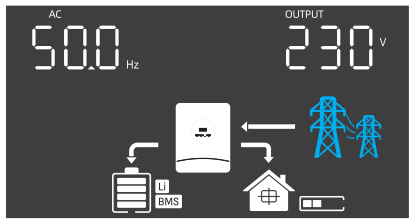
Basic Information

The base information will be switched by pressing "Up" or "DOWN" key. The selectable information is switched as below order: (Take the 48V model for example).

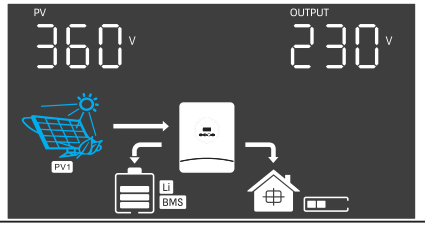
Input voltage/Output voltage
Utility voltage is 230V,output voltage is 230V



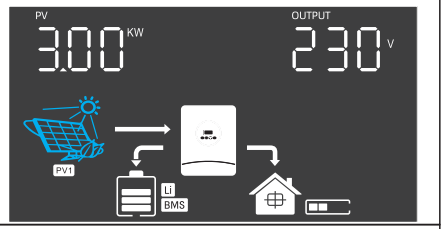
Input frequency /Output voltage
Utility voltage is 230V,output voltage is 230V



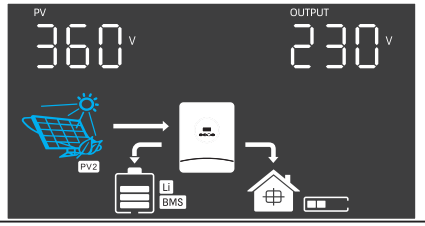
PV Voltage/Output voltage
PV voltage is 360V,output voltage is 230V



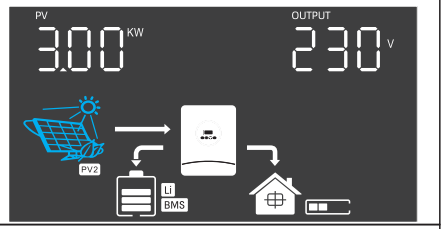
PV Power /Output Voltage
PV power is 3.00KW, output voltage is 230V



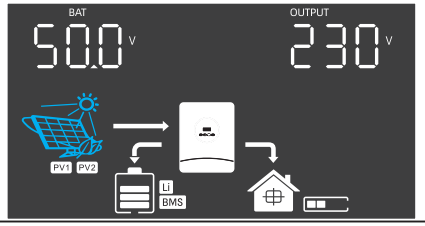
PV Voltage/Output voltage
PV voltage is 360V,output voltage is 230V



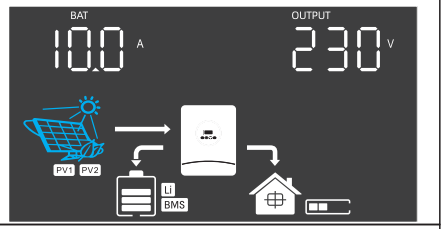
PV Power /Output Voltage
PV power is 3.00KW, output voltage is 230V



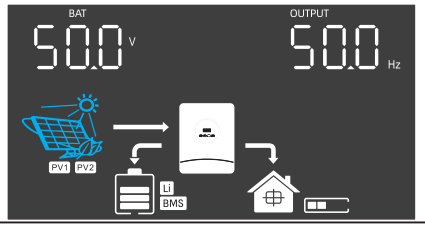
Battery Voltage/Output voltage
Battery voltage is 50.0V,output voltage is 230V



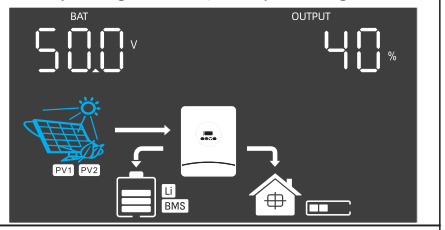
Charging Current /Output Voltage
Charging current is 10A, output voltage is 230V



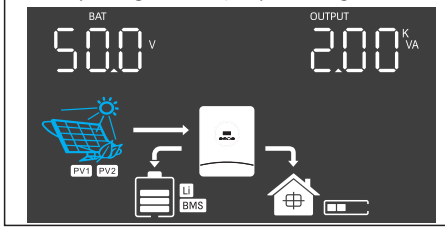
Battery Voltage/Output Frequency
Battery voltage is 50.0V,output frequency is 50Hz



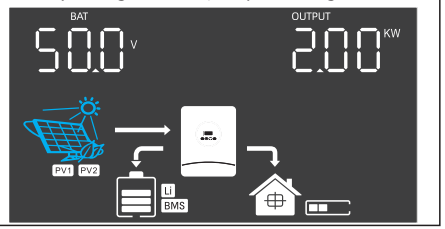
Battery Voltage/Load percentage
Battery Voltage is 50.0V, Load percentage is 40%



Battery Voltage/Load va
Battery voltage is 50.0V,output wattage is 2.00KVA

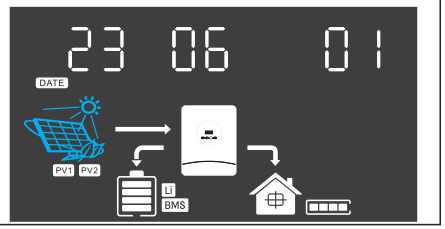


Battery Voltage/Load wattage
Battery Voltage is 50.0V, output wattage is 2.00KW

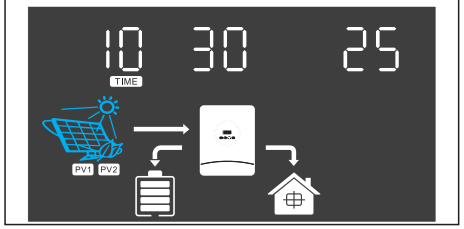


Battery Voltage/Discharging current
Battery voltage is 50.0V,discharging current is 80A

Date
2023-06-01



Time
10:30:25



NOTE:

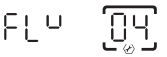
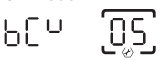
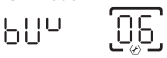
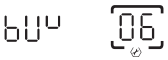
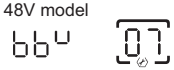
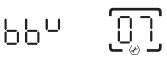
1) Pages 5 and 6 of the basic information page are exclusive to the U-P10KW-1-H.

2) "  " The small ICONS of the Pv1 and Pv2 are exclusive to the U-P10KW-1-H.

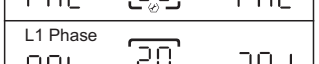
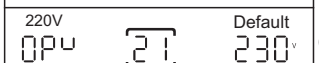
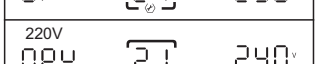
Set Page

Press the "Up" or "Down" button to select the setup program. Then, press the "Enter" button to confirm the selection or the "Exit" button to exit. Continue the up or down button after 1.5 seconds to quickly increase or decrease the set value.

Set Project		Optional options	
00	Exit Settings	00 ESC	
01	Battery type settings	Default value bAt 01 AGM AGn	If "battery definition" or "lithium battery" is selected, the battery charging voltage and low DC cutoff voltage can be set in programs 03, 04, and 05. If you choose "lithium battery" inverter, you can charge the battery when it needs to be activated. Before starting the inverter, please ensure that the lithium battery is connected. If the inverter is not connected to a battery or lithium battery, do not choose the "lithium battery" battery type.
		bAt 01 Flooded FLd	
		bAt 01 custom USE	
		bAt 01 Li LI b	
02	BMS type	bnS 02 BMS 1	01 is the pylon agreement.

03	Constant voltage charging voltage(CV)	48V model 	Default 56.4V	In the all-in-one machine, you need to select "Lithium Battery" in 01, and this program will be activated. Set the range from 48.0V to 60.0V, and use the default value of 56.4V.
04	Float charging voltage	48V model 	Default 54.0V	In the all-in-one machine, you need to select "Lithium Battery" in 01, and this program will be activated. Set the range from 48.0V to 60.0V, and use the default value of 54V.
05	Low DC cut-off voltage or SOC	48V model 	Default 42.0V	IF"self-defined" or "Lib" is selected in program 01,this program is enabled. Setting range is from 42.0V to 48.0V
			Default 10 %	The SOC setting range is from 0% to 90%.
06	Setting battery voltage or SOC point back to utility when "SBU priority" in program 24	48V model 	Default 46.0V	Setting range is from 44.0V to 54.0V. Increment of each click is 0.1V.
			Default 20 %	The SOC setting range is from 5% to 95%.
07	Setting battery voltage point back to battery mode when selecting "SBU priority" in program 24	48V model 	Default 54.0V	Setting range is from 48.0V to 60.0V. Increment of each click is 0.1V.
			Default 70 %	The SOC setting range is from 10% to 100%.
09	Max charging current (Utility charge current +PV charging current)	50A 	Default 50A	Set the range from 1A to 50/100A, with a minimum adjustable amount of 1A.
10	Max utility charging current setting	30A 	Default 30A	Set the range from 1A to 50/100A, with a minimum adjustable amount of 1A.

NOTE: The setting value of item"07" should be larger than the setting value of item"06".

20	AC output mode	Single 		When the units are used in parallel with single phase, please select "PAL"in program 20. It is required to have at least three inverters or maximum twelve inverters to support three-phase equipment. It's required to have at least one inverter in each phase or it's up to ten inverters in one phase. Please select "3P1" in program 20 for the inverters connected to L1 phase, "3P2" in program 20 for the inverters connected to L2 phase and "3P3" in program 20 for the inverters connected to L3 phase. Before starting up inverters, please connect all N wires of AC output together.
		Parallel 	Default PAL	
		L1 Phase 	3P1	
		L2 Phase 	3P2	
		L3 Phase 	3P3	
21	Output voltage setting	220V 	220V	Output voltage configuration.
		220V 	Default 230V	
		220V 	240V	
22	Output frequency setting	50Hz 	Default 50Hz	Output frequency configuration.
		60Hz 	60Hz	
23	Grid input range setting	Appliance mode 	Default APL	APL should be selected ,when the utility is not well.
		UPS mode 	UPS	
24	Output source priority	Utility >> PV >> Battery 	USb	Utility provides power to the loads first.PV and battery will provide power to loads only when utility is not available.
		PV >> Utility >> Battery 	SUb	PV provides power to the loads first . If PV is not sufficient ,utility will supply power the loads at the same time. Battery will provide power to loads only when utility is not available.
		PV >> Battery >> Utility 	Default SbU	PV provides power to the loads first. If PV is not sufficient , battery will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to the setting point in program 5.

25	charger priority	**If the inverter is operating under electrical load, the priority of the charger can be set as follows. However, when the inverter operates in the inverter load state, only the photovoltaic can charge the battery.**			
		PV First	CHS 25	Default CSO	PV will charge battery first. Utility will charge battery only when PV is unavailable.
		PV and Utility	CHS 25	SNU	PV and utility will charge battery together.
		PV Only	CHS 25	OSO	Only PV can charge the battery.
26	Feeding power to grid	Disable	FPG 26	Default dIS	If selected ,inverter is not allowed to feed exceeding solar power to grid.
		Enable	FPG 26	ENA	
27	Overload bypass function	Enable	LbP 27	Default ENA	If it is enabled ,the inverter will switch to utility mode if overload happens in battery mode.
		Disable	LbP 27	dIS	
28	Overload restart function	Enable	OLr 28	Default ENA	If it is enable , the inverter will auto restart when overload occurs.
		Disable	OLr 28	dIS	
29	Over temperature restart function	Enable	Otr 29	Default ENA	If it is enable,the inverter will auto restart when over temperature occurs.
		Disable	Otr 29	dIS	
40	Backlight of LCD	Disable	bL 40	Default dIS	If selected,LCD backlight will be off after no button is pressed for 60S.
		Enable	bL 40	ENA	If selected,LCD backlight will be always-on.
41	Auto return to the first page of display screen	Disable	bFP 41	Default dIS	If selected,the display screen will stay at latest screen user finally switches.
		Enable	bFP 41	ENA	If selected ,it will automatically return to the first page of display screen(Input voltage/ output voltage) after no button is pressed for 60S.
42	Buzzer Alarm	Enable	bEP 42	Default ENA	If selected, buzzer is not allowed to beep.
		Disable	bEP 42	dIS	If selected, buzzer is allowed to beep.

43	Energy stored data for PV and load	Disable	ESd 43	Default dIS	If this option is selected, the inverter will delete all historical data of photovoltaic and load energy, and stop recording historical data of photovoltaic and load energy.
		Enable	ESd 43	ENA	If selected, inverter will record historical data for PV and load energy . NOTE: Before selected, please double check if date and time is correct, if incorrect, please set date and time in program 50~55.
44	Reset Default		rSt 44	Default dIS	If selected, default initial Settings page.
			rSt 44	ENA	If selected, Enable restores all Settings other than the parallel Output mode setting item (20) to their initial values.
45	FAN work mode		FAN 45	Default PFC	In performance mode, the inverter will perform at its highest performance.
			FAN 45	bLC	Balanced mode, applicable to the condition of 80% output power and 90A charge current limitatiaon, to reduce additional noise greatly.
			FAN 45	SLC	Silent mode, applicable to the condition of 60% output power and 70A charge current limitatiaon, to reduce additional noise extremely.
50	Time setting-Year	Year	YEA 50	23	Setting range is from 23 to 99.
51	Time setting-Month	Month	mON 51	8	Setting range is from 1 to 12.
52	Time setting-Day	Day	dAY 52	20	Setting range is from 1 to 31.
53	Time setting-Hour	Hour	HOU 53	21	Setting range is from 0 to 23.
54	Time setting-Minute	Minute	mIN 54	43	Setting range is from 0 to 59.
55	Time setting-Second	Second	SEC 55	50	Setting range is from 0 to 59.

Energy stored data Page

The energy stored data will be switched by pressing "UP" or "DOWN" key . The selectable information is switched as below order:

PV generated energy today
88 kWh

PV generated energy this month
88 kWh

PV generated energy this year
89 kWh

PV generated energy current in total
348 kWh

Load consumed energy today
78 kWh

Load consumed energy this month
78 kWh

Load consumed energy this year
80 kWh

Load consumed energy in total
272 kWh

BMS information Page

The BMS information will be switched by pressing "UP" or "DOWN" key. The selectable information is switched as below order:

Battery pack number / mean SOC
Connected battery pack number is 4, mean SOC is 97%

BMS voltage / SOC
BMS voltage is 54.0V, SOC is 99% on battery pack of address 1

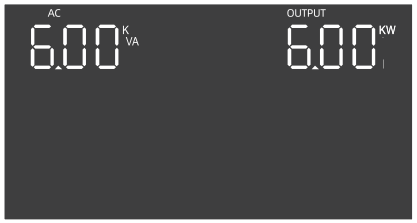
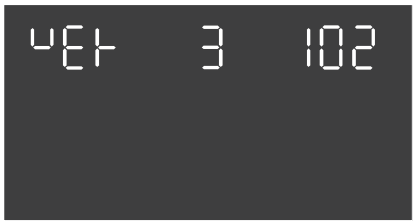
BMS voltage / current
BMS voltage is 54.0V, current is 1A on battery pack of address 1

BMS highest temperature / lowest temperature
BMS highest temperature is 25℃ , lowest temperature is 20℃ on battery pack of address 1

BMS fault code / flag
BMS fault code is 0, flag is 000 on battery pack of address 1

Rated information Page

The rated information will be switched by pressing "UP" or "DOWN" key. The selectable information is switched as below order：

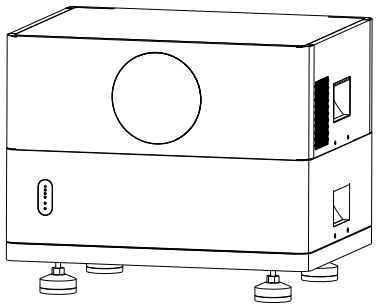
Rated VA / WATT Rated VA is 6KVA, WATT is 6KW	Rated battery voltage / Max. charge current Rated battery voltage is 48V, Max. charge current is 100A
	
Firmware version (Master DSP) Firmware version is 3102	Firmware version (Slave DSP,For U-P10KW-1-H) Firmware version is 3001
	

Note: The above is for reference reading purposes, and the parameters may vary depending on the model.

Lithium Battery Communication

It only allows the connection of lithium batteries and the establishment of configured communication. Please follow the steps below to configure communication between the lithium battery and inverter.

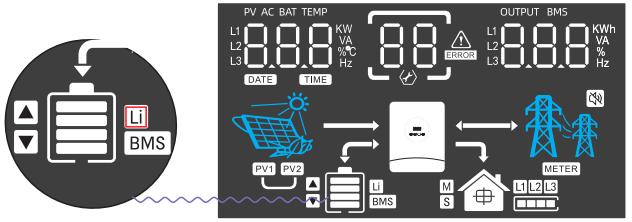
1. Assemble the product according to the following diagram.



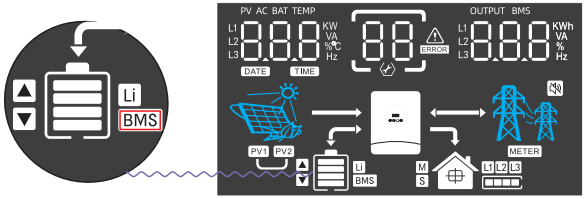
2. Configure the battery type to "Lib" in LCD settings project 01; Default "Lib" when leaving the factory.

The battery type is lithium battery

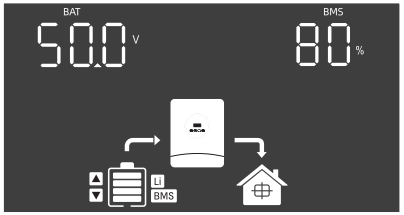
Then the LCD display will display the "Li" icon



3. Power the lithium battery and inverter. Wait a moment, if communication is established between them, the LCD will display the "BMS" icon, as shown below.



3. By pressing the "up" or "down" button to scroll through the real-time information on the LCD, as shown in the following figure, you can see the parameters of SOC in the communication system.



This page represents an SOC of 80%.

Parallel Installation Guide

1.Introduction

This inverter can be used in parallel with two different operation modes.

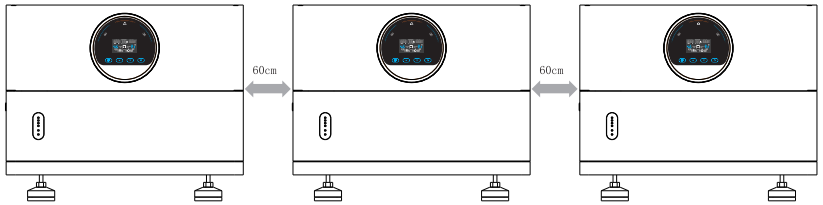
1.Parallel operation in single phase with up to 6 units. The supported maximum output power is 18KW/18KVA for U-P3KW-H-1;30KW/30KVA for U-P5KW-H-1;60KW/60KVA for U-P10KW-H-1.

2.Maximum six units work together to support three-phase equipment. Six units support one phase maximum. The supported three-phase maximum output power is 18KW/18KVA and one phase can be up to 18KW/18KVA for U-P3KW-H-1;Supported three-phase maximum output power is 30KW/30KVA and one phase can be up to for 30KW/30KVA U-P5KW-H-1;Supported three-phase maximum output power is 60KW/60KVA and one phase can be up to for 60KW/60KVA U-P10KW-H-1.

NOTE 1: If this unit is bundled with parallel cable, this inverter is default supported parallel operation. You may skip section 2.

NOTE 2: Under parallel operation modes, battery must be connected with inverters.

2.Mounting the Unit



NOTE : To achieve proper air circulation for heat dissipation, please leave a gap of about 60 centimeters on the side and about 60 millimeters on the left and right sides of the device. Ensure that each unit is installed at the same level.

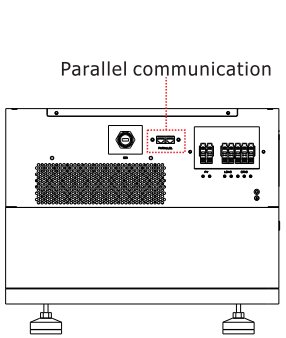
3.Package Contents

In parallel kit, you will find the following items in the package:

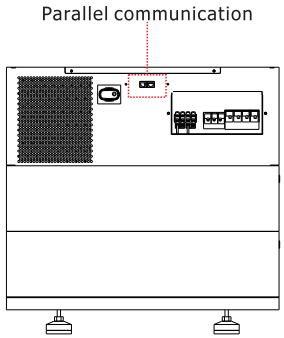
Parallel communication cable *1PCS

Parallel communication connector*1PCS

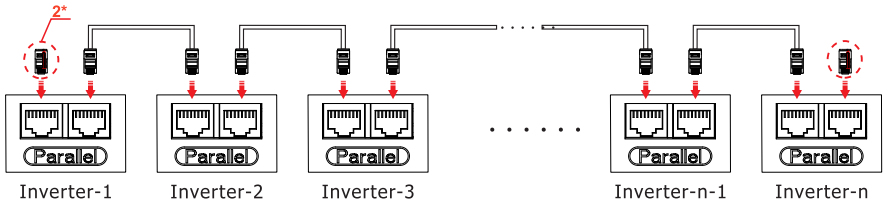
4.Wiring connection



U-P3/5KW-1-H



U-P10KW-1-H

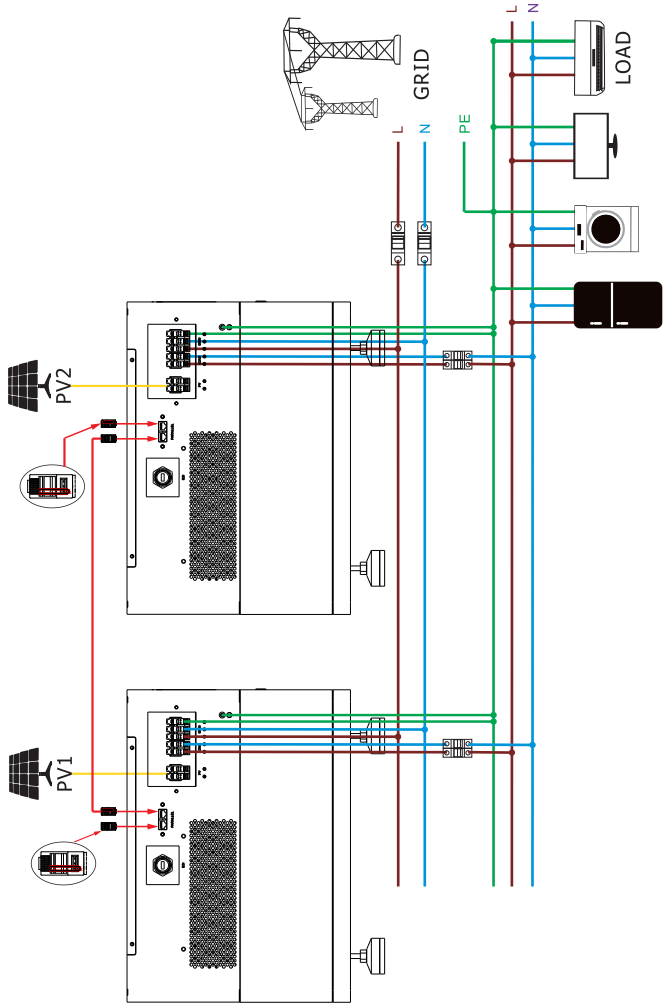


Connect parallel communication cable one by one.

2*:Connect parallel communication connector to the first one and the last one.

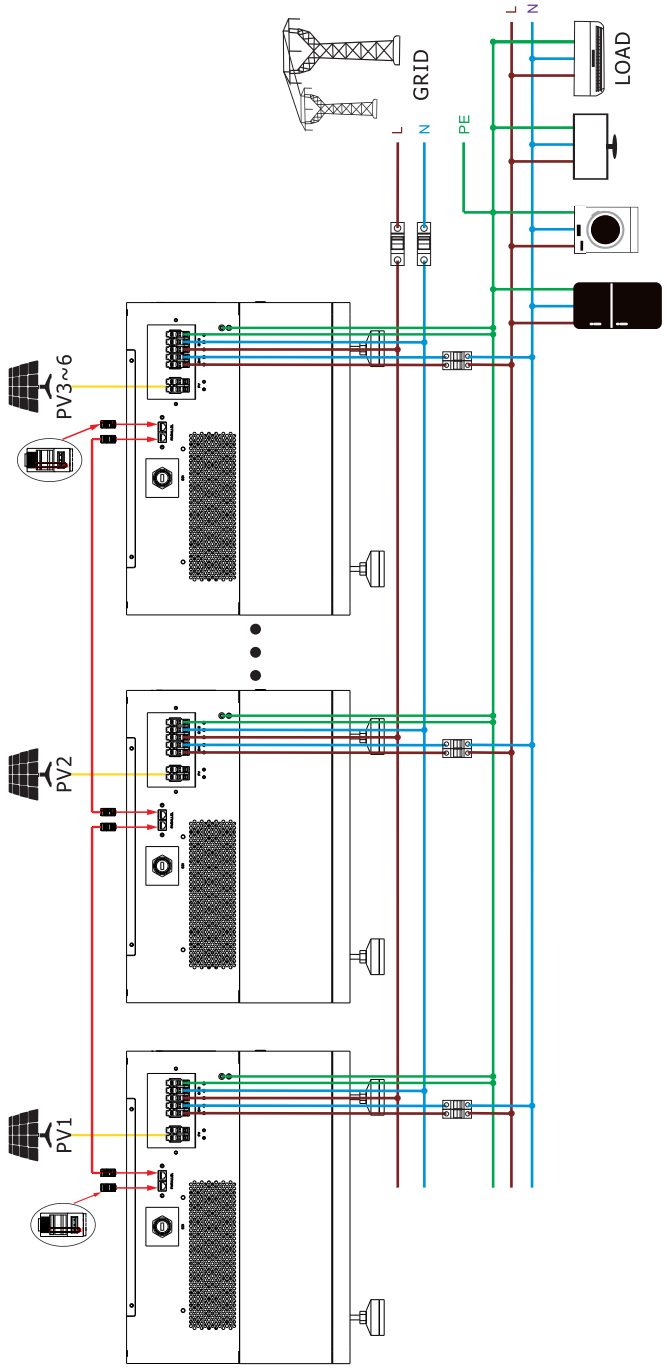
Single Phase Parallel connection diagram for two inverters in parallel

U-P3/5KW-1-H



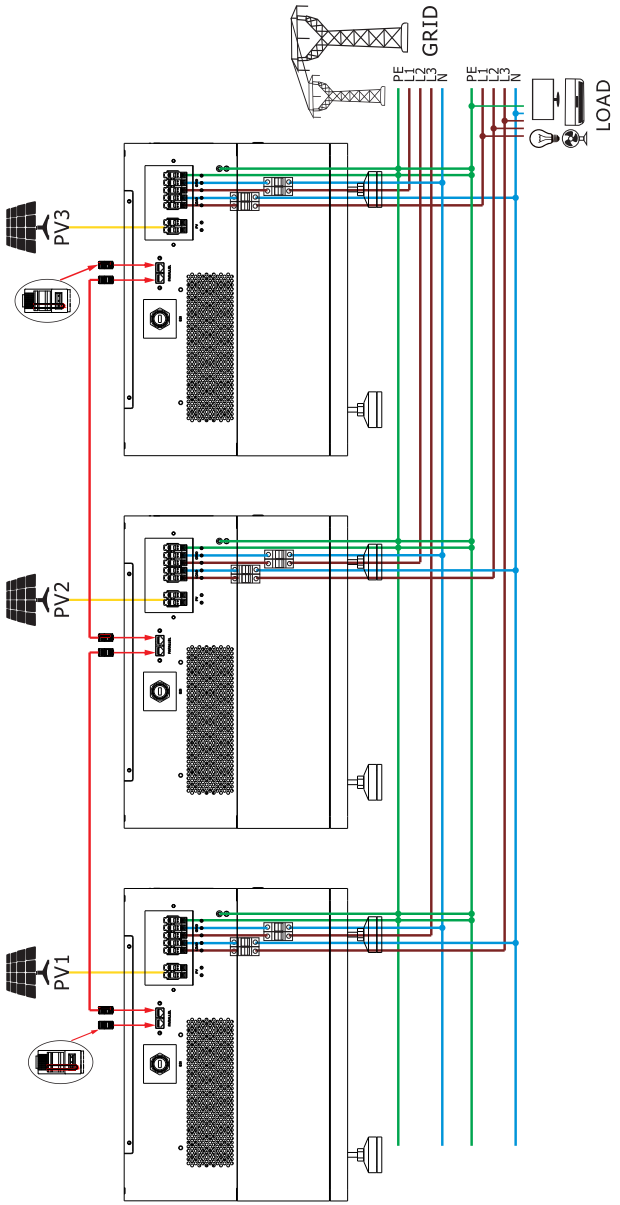
Single Phase Parallel connection diagram for 3~6 inverters in parallel

U-P3/5KW-1-H



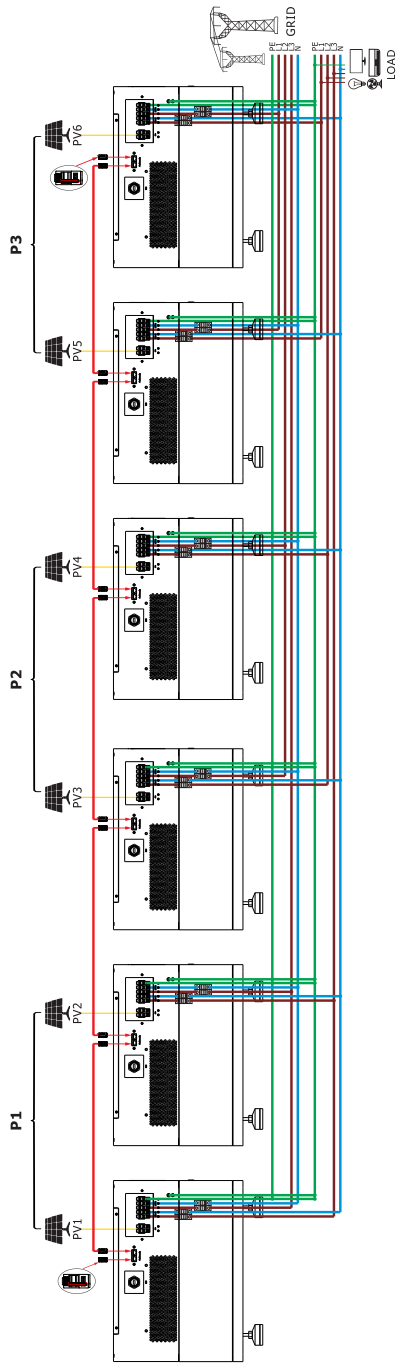
Three Phase Parallel connection diagram for 3 inverters in parallel

U-P3/5KW-1-H



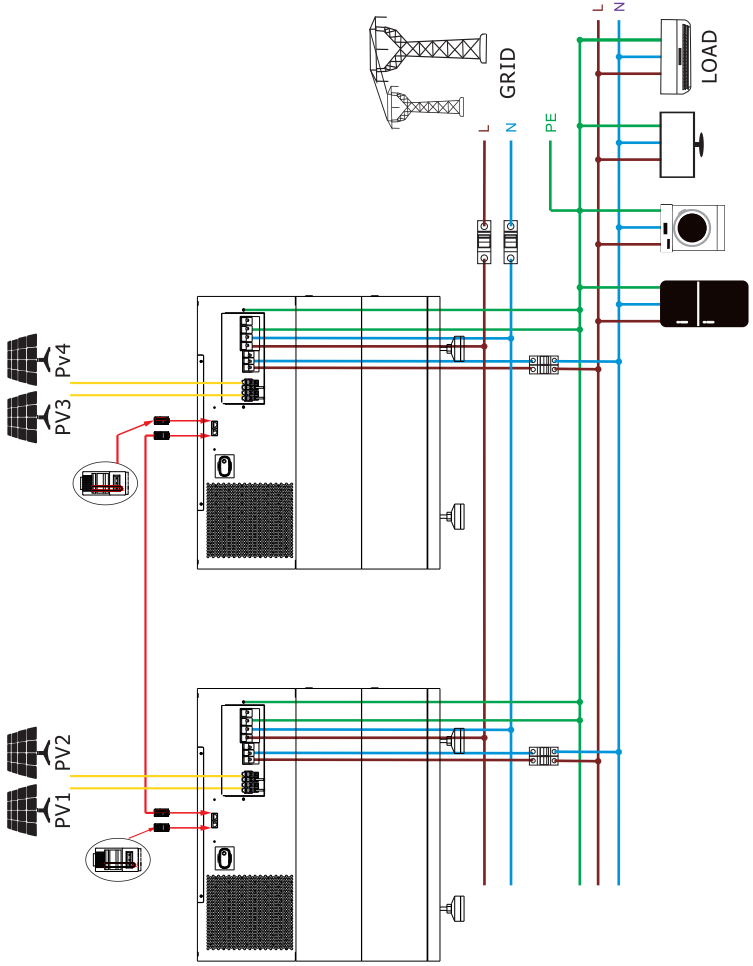
Three Phase Parallel connection diagram for 6 inverters in parallel

U-P3/5KW-1-H



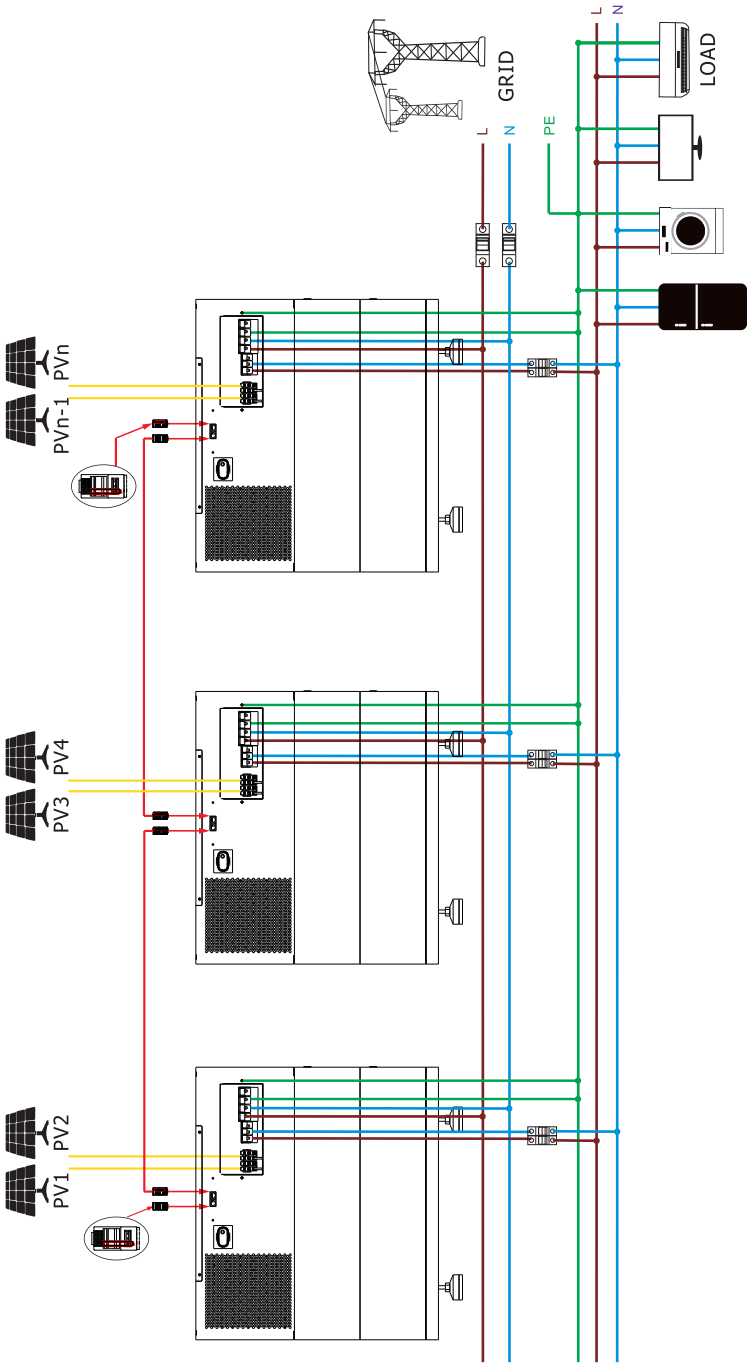
Single Phase Parallel connection diagram for two inverters in parallel

U-P10KW-1-H



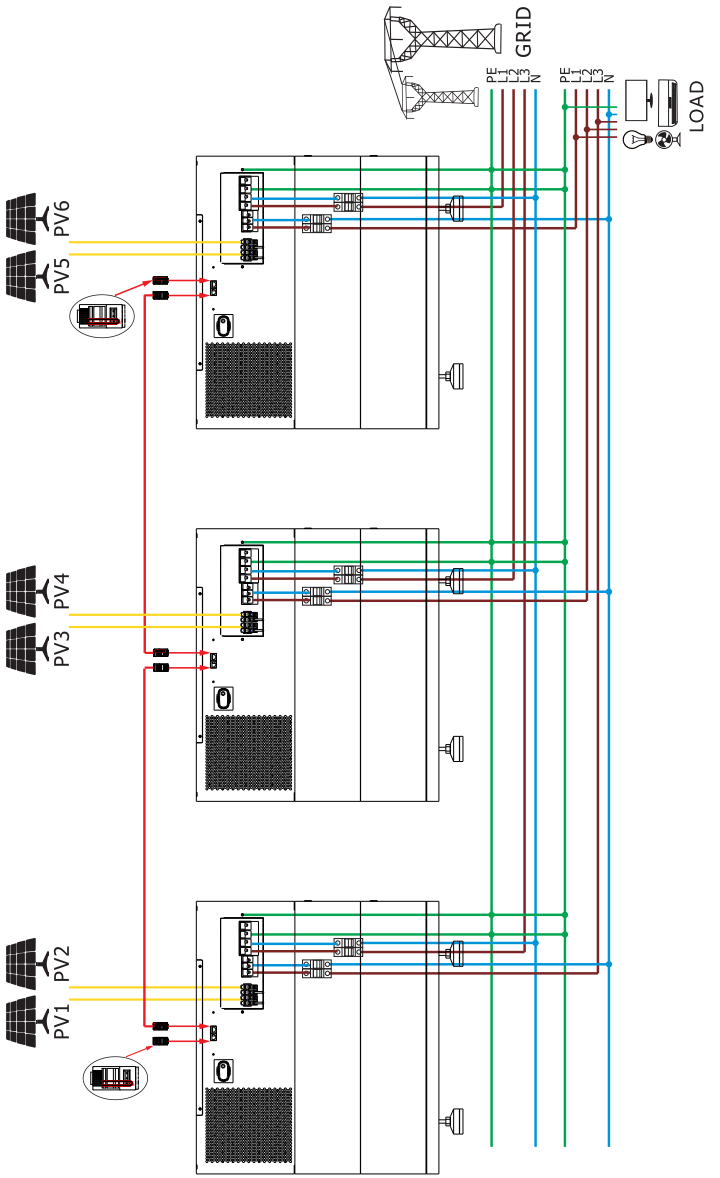
Single Phase Parallel connection diagram for 3~6 inverters in parallel

U-P10KW-1-H



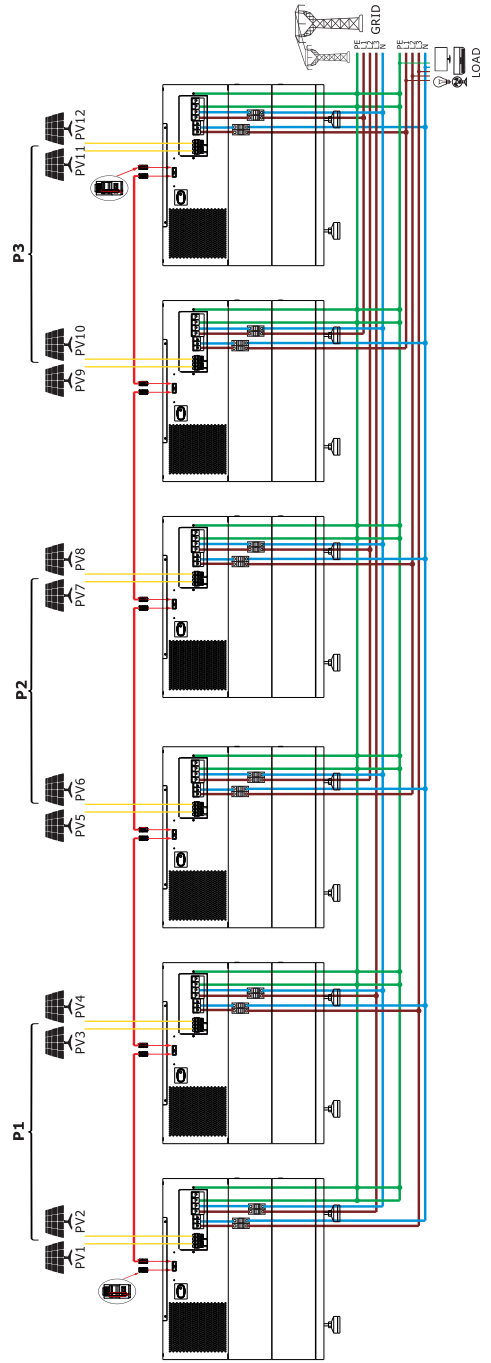
Three Phase Parallel connection diagram for 3 inverters in parallel

U-P10KW-1-H



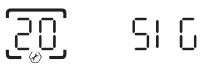
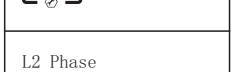
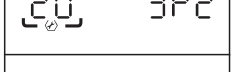
Three Phase Parallel connection diagram for 6 inverters in parallel

U-P10KW-1-H



5. LCD Setting and Dispaly

Setting Program

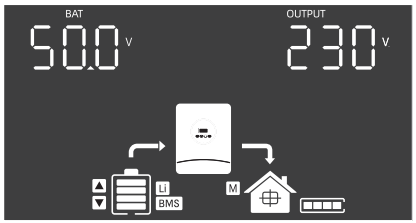
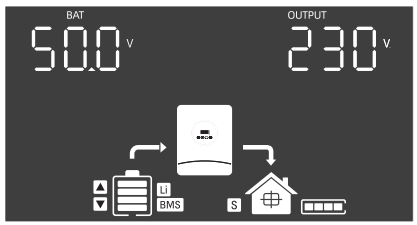
20	**AC output mode**	Single 	When the units are used in parallel with single phase, please select "PAL" in program 20.It is required to have at least three inverters or maximum six inverters to support three-phase equipment. It's required to have at least one inverter in each phase or it's up to six inverters in one phase.Please select "3P1" in program 20 for the inverters connected to L1 phase,"3P2" in program 20 for the inverters connected to L2 phase and "3P3" in program 20 for the inverters connected to L3 phase. Before starting up inverters, please connect all N wires of AC output together.
		Parallel 	
		L1 Phase 	
		L2 Phase 	
		L3 Phase 	

6.Commissioning

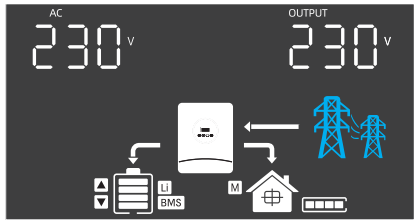
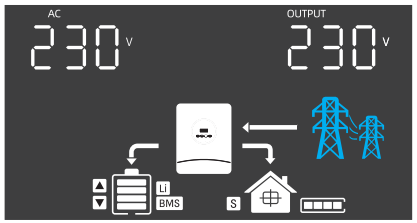
Parallel in single phase

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 wires of each unit are connected together.

Step 2: Turn on each unit and set "PAL" in LCD setting program 20 of each unit. And then shut down all units.
NOTE: To be safe,it's better to turn off switch when setting LCD program.
Step 3: Turn on each unit.

LCD display in Master unit	LCD display in Slave unit
	

NOTE: Master and slave units are randomly defined.
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.
However, these inverter will automatically restart. If detecting AC connection, they will work normally.

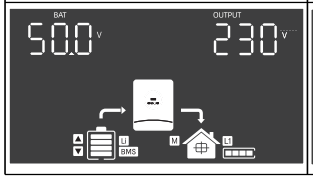
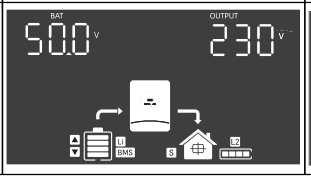
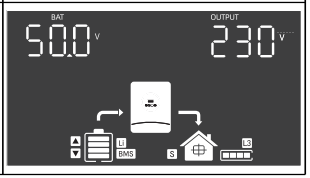
LCD display in Master unit	LCD display in Slave unit
	

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.

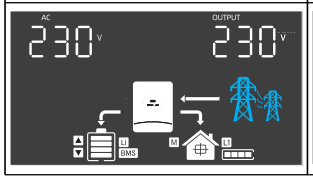
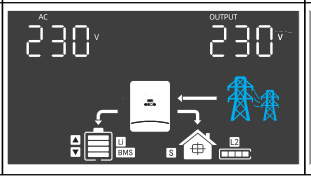
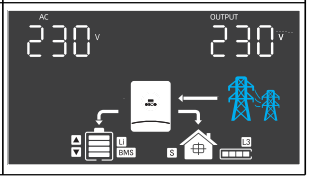
Support three-phase equipment

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 wires of each unit are connected together.

Step 2: Turn on all units and configure LCD program 20 as P1,P2 and P3 sequentially. And then shut down all units.
NOTE: To be safe, it's better to turn off switch when setting LCD program.
Step 3: Turn on all units sequentially.

LCD display in L1-phase unit	LCD display in L2-phase unit	LCD display in L3-phase unit
		

Step 4: Switch on all AC breakers of line wires in AC input. If AC connection is detected and three phase are matched with unit setting. they will work normally. Otherwise, the AC icon will flash and they will not work in line mode.

LCD display in L1-phase unit	LCD display in L2-phase unit	LCD display in L3-phase unit
		

Step 5: If there is no more fault alarm,the system to support 3-phase equipment 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.
NOTE 1: To avoid overload occurring, before turning on breakers in load side. it's better to have whole system in operation first.
NOTE 2: Transfer time for this operation exists. Power interruption may happen to critical devices, which cannot bear transfer time.

Warning Code Table

When fault event happens, the fault LED is flashing. At the same time, warning code, icon ⚠ is shown on the LCD screen.

Warning Code	Warning Information	Audible alarm	Trouble shooting
01	Overload	Beep twice every second	Reduce the loads.
02	FAN is locked(UP)	Beep three times every second	Check if the Fans wiring connected well. Replace the fan.
03	FAN is locked(DOWN)	Beep three times every second	Check if the Fans wiring connected well. Replace the fan.
04	Grid over voltage waring	No buzzer alarm	Check whether the grid voltage exceeds the allowable range of the inverter.
05	Output not connected together in parallel mode	No buzzer alarm	Check whether the output load of the inverter is normal, and check whether the inverter are connected together in the sane phase.
06	Remote shutdown warning	No buzzer alarm	Check if remote shutdown is enabled via WIFI. Disable the enable or restart the inverter.
08	BMS communication failure	No buzzer alarm	Check whether the inverter 01 setting item is selected for LI battery

Fault Code Table

When fault event happens, inverter will cut off output, and the fault LED is solid on. At the same time, fault code, icon ⚠ and **ERROR** are shown on the LCD screen.

Fault Code	Fault Information	Trouble Shooting
01	Bus voltage is too high	AC Surge or internal components failed. Restart the unit, if the error happens again, please return to repair center.
02	Bus voltage is too low	Restart the unit, if the error happens again, please return to repair center.
03	Bus soft start fail	Internal components failed. Restart the unit, if the error happens again, please return to repair center.
10	Inverter soft start fail	Internal components failed. Restart the unit, if the error happens again, please return to repair center.
11	Over current or surge detected by Software	Restart the unit, if the error happens again, please return to repair center.
12	Over current or surge detected by hardware	Restart the unit, if the error happens again, please return to repair center.
13	Output voltage is too low	Internal components failed. Restart the unit, if the error happens again, please return to repair center.

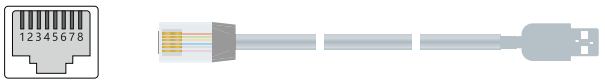
14	Output voltage is too high	Restart the unit, if the error happens again, please return to repair center.
15	Output short circuited	Check if wiring is connected well and remove abnormal load.
16	Inverter current sensor failed	Restart the unit, if the error happens again, please return to repair center.
17	Current feedback into the inverter is detected.	1. Restart the inverter. 2. Check if L/N cables are not connected reversely in all inverters. 3. For parallel system in single phase, make sure the sharing cables are connected in all inverters. For supporting three-phase system, make sure the sharing cables are connected in the inverters in the same phase, and disconnected in the inverters in different phases. 4. If the problem remains, please contact your installer.
20	Overload time out	Reduce the connected load by switching off some equipment.
21	OP current sensor failed	Restart the unit, if the error happens again, please return to repair center.
22	Sharing current sensor failed	Restart the unit, if the error happens again, please return to repair center.
23	The AC input and output wires are inversely connected	1. Please check AC input and output wires are connected correctly. 2. If this error happens during parallel installation, please check wires connection. If they are connected correctly, please funish parallel installation first, and then restart inverters. 3. If the problem remains, please contact your installer.
24	The output relay exception	Restart the unit, if the error happens again, please return to repair center.
30	Battery voltage is too high	Check if spec and quantity of batteries are meet requirements.
31	Over current happen at DC/DC circuit	Restart the unit, if the error happens again, please return to repair center.
32	DC/DC current sensor failed	Restart the unit, if the error happens again, please return to repair center.
33	No.2 DC/DC current sensor failed	Restart the unit, if the error happens again, please return to repair center.
34	DC/DC soft start fail	Restart the unit,if the error happens again,please return to repair center.
35	Over current happen at DC/DC circuit detected by hardware	Restart the unit, if the error happens again, please return to repair center.
36	Over current happen at LLC circuit	Restart the unit, if the error happens again, please return to repair center.
37	LLC hardware fault	Restart the unit, if the error happens again, please return to repair center.
40	PV voltage is too high	Reduce the number of PV modules in series.
41	Short circuited happen at PV port	Check if wiring is connected well.

42	PV power anomaly	Restart the unit, if the error happens again, please return to repair center.
43	Over current happen at PV port	Restart the unit, if the error happens again, please return to repair center.
44	PV current sensor failed	Restart the unit, if the error happens again, please return to repair center.
45	Pv1 high input power	Reduce the connected load. Restart the unit, if the error happens again, please return to repair center.
46	Pv2 high input power	Reduce the connected load. Restart the unit, if the error happens again, please return to repair center.
50	Fan is locked	Check if wiring is connected well. Replace the fan.
51	Over temperature happen at PV circuit	The temperature of internal INV component is over the limitation. Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
52	Over temperature happen at INV circuit	The temperature of internal INV component is over the limitation. Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
53	Over temperature happen at Convert L circuit	The temperature of Convert L battery converter component is over the limitation. Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
54	Over temperature happen at Convert H circuit	The temperature of internal Convert H component is over the limitation. Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
55	Over temperature happen at LLC TX	The temperature of internal DC/DC TX is over the limitation. Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
60	CAN data loss	1. Check if communication cables are connected well and restart the inverter. 2. If the problem remains, please contact your installer.
61	Host data loss	
62	Synchronization data loss	
63	The firmware version of each inverter is not the same.	1. Update all inverter firmware to the same version. 2. Check the version of each inverter via LCD setting and make sure the CPU versions are same. If not, please contact your installer to provide the firmware to update. 3. After updating, if the problem still remains, please contact your installer.
64	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.
65	AC output mode setting is different.	1. Switch off the inverter and check LCD setting program 20. 2. For parallel system in single phase, make sure no 3P1, 3P2 or 3P3 is set on program 20. For supporting three-phase system, make sure no "PAL" is set on program 20. 3. If the problem remains, please contact your installer.

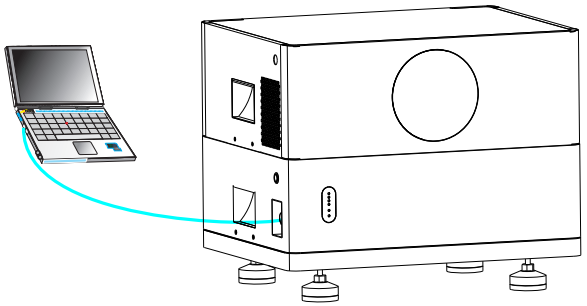
66	Single unit is installed to parallel system	1. Please check if single unit is installed to parallel system. 2. If this error happens during parallel installation, please check wires connection. If they are connected correctly, please funish parallel installation first, and then restart inverters. 3. If the problem remains, please contact your installer.
98	DSP failed to communicate with MCU	Restart the unit, if the error happens again, please return to repair center.

Battery information Page

1.RJ45/RS232 Communication point definition(8P8C)



PIN	RS232	PIN	RS232
1	NC	5	GND
2	NC	6	NC
3	TX	7	NC
4	RX	8	NC



2.Battery function description

2.1Buzzer action description

NO.	Mode	Description
1	Fault	Beep 0.25S every 1S
2	Protection	Beep 0.25S every 2S (except over voltage protection)
3	Alarm	Beep 0.25S every 3S (except over voltage alarm)

NOTE:
The buzzer function can be enabled or disabled by the computer software.
It is disabled by default.

2.2 Indicator Description

Led working status indication:

PACK Status	Normal/Alarm/Protection	RUN	ALM	SOC indication LEDs				Remark
		●	●	●	●	●	●	
Power Off	Sleep	OFF	OFF	OFF	OFF	OFF	OFF	All off
Standby	Normal	Flash 1	OFF	Indication by SOC				Standby state
	Alarm	Flash 1	Flash 3					Cell low voltage
Charge	Normal	ON	OFF	Indication by SOC (The top SOC Led Flash 2)				The maximum power LED flashes (flashes 2), and the overcharge alarm ALM does not flash
	Alarm	ON	Flash 3					
	Over Charge protection	ON	OFF	ON	ON	ON	ON	If there is no mains power, LED as standby
	Temperature/Over current Fault/Protection	OFF	ON	OFF	OFF	OFF	OFF	Close charge
Discharge	Normal	Flash 3	OFF	Indication by SOC				
	Alarm	Flash 3	Flash 3					
	Under Discharge Protection	OFF	OFF	OFF	OFF	OFF	OFF	Close discharge
	Temperature/Over current Short circuit/Fault/Protection	OFF	ON	OFF	OFF	OFF	OFF	
Fault		OFF	ON	OFF	OFF	OFF	OFF	Close charge/discharge

Capacity indication:

Status		Charge				Discharge			
Capacity indicator		L4 ●	L3 ●	L2 ●	L1 ●	L4 ●	L3 ●	L2 ●	L1 ●
SOC%	0<SOC<25%	L4 ○	L3 ○	L2 ○	Flash 2	L4 ○	L3 ○	L2 ○	L1 ●
	25%=SOC<50%	L4 ○	L3 ○	Flash 2	L1 ●	L4 ○	L3 ○	L2 ●	L1 ●
	50%=SOC<75%	L4 ○	Flash 2	L2 ●	L1 ●	L4 ○	L3 ●	L2 ●	L1 ●
	75%=SOC=100%	Flash 2	L3 ●	L2 ●	L1 ●	L4 ●	L3 ●	L2 ●	L1 ●
RUN indicator		●				Flash 3			

LED flashing description:

Flashing mode	● ON	○ OFF
Flash 1	0.25S	3.75S
Flash 2	0.5S	0.5S
Flash 3	0.5S	1.5S

2.3 Sleep and wake up

Sleep:

When any of the following conditions is met, the system enters the low power consumption mode:

- Single or overall over discharge protection is not released within 30 seconds.
- Press the key (3 ~ 6S) and release the key.
- The minimum monomer voltage is lower than the sleep voltage, and the duration reaches the sleep delay time (no communication, no protection, no balance and no current).
- The standby time exceeds 24 hours (no communication, no charge and discharge, no mains power).
- Forced shutdown by computer software.

NOTE:
Before entering sleep, ensure that the input terminal is not connected to the external voltage, otherwise it will not be able to enter the low power consumption mode.

Wake up:

When the system is in the low power consumption mode and meets any of the following conditions, the system will exit the low power consumption mode and enter the normal operation mode:

- Connect the charger, and the output voltage of the charger shall be greater than 48V. (the battery voltage of 16 strings needs to be greater than 51.2V)
- Press the switch.
- With RS232 activation.

NOTE:
After single or overall over discharge protection, enter the low power consumption mode, wake up regularly every 4 hours, and turn on the charge discharge MOS. If it can be charged, it will exit the sleep state and enter normal charging; If the Automatic wake-up fails to charge for 10 consecutive times, it will no longer wake up automatically.

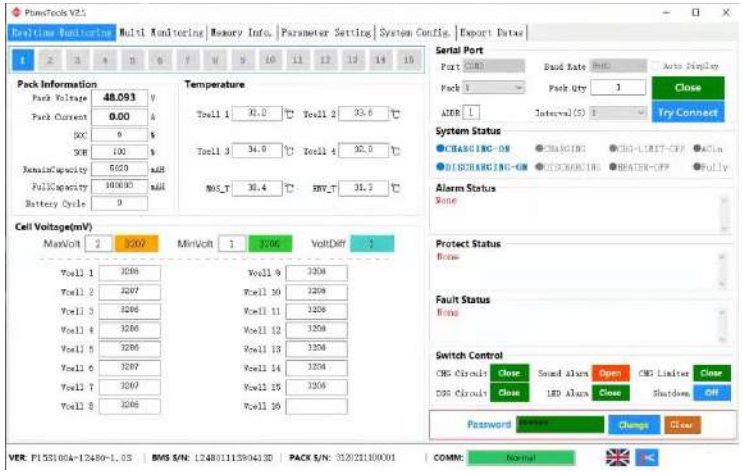
When the system is defined as that the recovery voltage is not reached after 2 days of standby (standby time setting value) after the end of charging, it is forced to resume charging until the end of recharging.

Battery Monitoring

1. Software running environment

The software runs on PC and it is compatible to use Windows operating system. The system environment requires the support of Microsoft .Net Framework version 2.0 or above. Please confirm that it has been installed before use. The installation is as follows:

- Download Microsoft .Net framework
- Double click the downloaded program to install it
- This software does not need to be installed independently, but only needs to meet the environment. Double click the main program icon to run it.



2. Connect the computer software.

- Ensure that the BMS board is normally powered on and not in sleep state, the crystal head of the communication line is inserted into the communication port of the protection board, and the USB end is inserted into the computer.
- Double click to start the computer software.
- Click the "try to connect" button to search the serial port to try to connect. Or manually select the serial port and click the "open serial port" button link.

NOTE:
If connection fails for the following reasons, the resolutions are:

- Using the wrong host computer:
  Method: replace the correct version of the computer software.

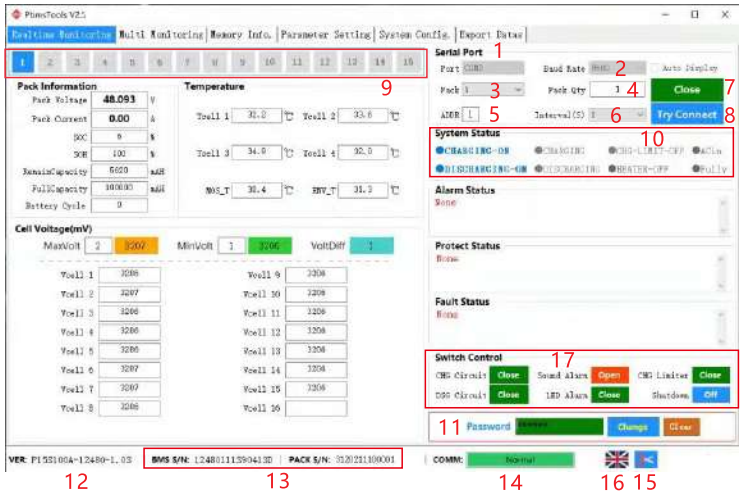
- Poor communication line or wrong wiring:
  Method: replace the communication line or correct the wrong wiring.
- The computer USB interface is not recognized:
  Method: change a USB interface
- Drive not installed:
  Method: install the driver corresponding to the communication line.

Method for judging whether the communication line driver has been installed:

- Check whether there is a relevant COM port in the "serial port" drop-down of the computer software. If it is not found, it may not be installed.
- Press the win key and R key at the same time to open the [run] window, enter the devmgmt.msc command, and open the [device manager].

3. Interface function

3.1 Real time monitoring

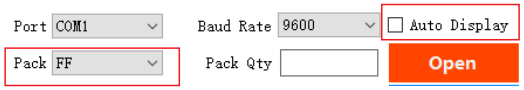


NO.	Item	Description
1	Serial port	Serial port: you can select the drop-down item to select the serial port to communicate. (Note: available when the serial port is not opened)
2	Baud rate	Baud rate: you can select the drop-down item to select the baud rate of communication. (Note: available when the serial port is not opened)
3	PACK	Pack: the drop-down item can be selected. When FF is selected, access the RS232 interface of the host to obtain all pack data. (Note: available when the serial port is not opened)
4	PACK QTY	Number of packs: the total number of packs read by the upper computer from the BMS board (when applied to multiple computers in parallel, the pack data is obtained from the main pack).
5	ADDR	Address: the currently read BMS address value.
6	Intervals	Interval (seconds): optional. The interval between the upper computer reading data from the BMS board.
7	Close	Turn on the serial port: turn on or off the serial port by alternating the function buttons.

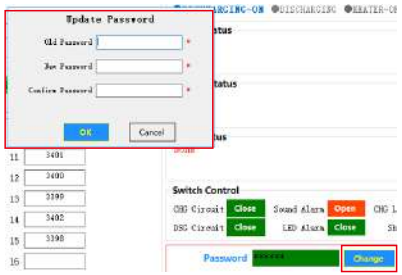
NO.	Item	Description
8	Try connect	Try to connect: search for available serial ports and open them.
9	Pack serial number group	The data key, which is the package serial number, displays the package being read and presented on the current interface with white words on a blue background;
		"Auto" key, alternate function buttons. Available when FF is selected for pack in 3 and monitoring is started, i.e. each pack data is displayed automatically in cycle (when applied to multiple machines in parallel).
11	Administrator password column	Some setting functions can only be used after entering the administrator password. When the password is entered correctly, the input box will turn green. At this time, you have obtained the authority of the administrator.
12	Version	software version number of BMS.
13	S/N	Barcode and pack s / N of BMS board.
14	Monitor communication status	Communication status between computer software and BMS board.
15	Screenshot function	Click to enter the screenshot status, and the toolbar will appear after marking out the screenshot area with the mouse.
16	Flag Icon	Displays the flag icon of the current language country. Click to switch languages.
17	Switch control	When the button is red, it indicates that the function processing is off, and when it is green, it indicates that it is on.

NOTE:

- Try to connect:
  First set the baud rate and pack on the computer software, connect the BMS board with the RS232 communication line, then insert the USB interface of the RS232 communication line into the USB port of the computer, and then click the "try to connect" button to automatically search and open the effective serial port.
- Automatic rotation pack:
  When FF is selected in the "pack" drop-down item, the "rotation" check box in the interface becomes available. Check it to use the rotation function. Uncheck it to cancel the rotation function.



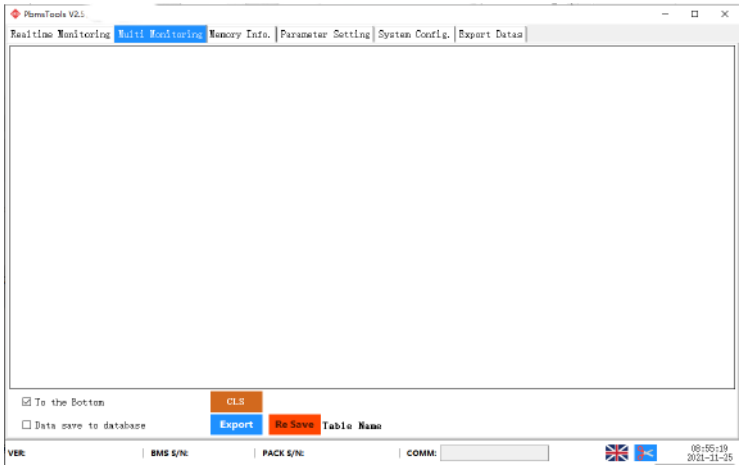
- Change Password:
  Click the "Change" button at the bottom right of the interface to pop up the password modification window. Enter the old password and the new password and then confirm. Note: there is no function to retrieve the password. Please remember the modified new password.



- Get administrator privileges:
  Enter the administrator password in the "administrator password" input box at the bottom right of the interface. After correctly entering the password, the input box turns green. At this time, you have obtained administrator permission.

3.2 Parallel monitoring

- Interface:
  Click the main interface tab [Multi Monitoring] to enter the interface.

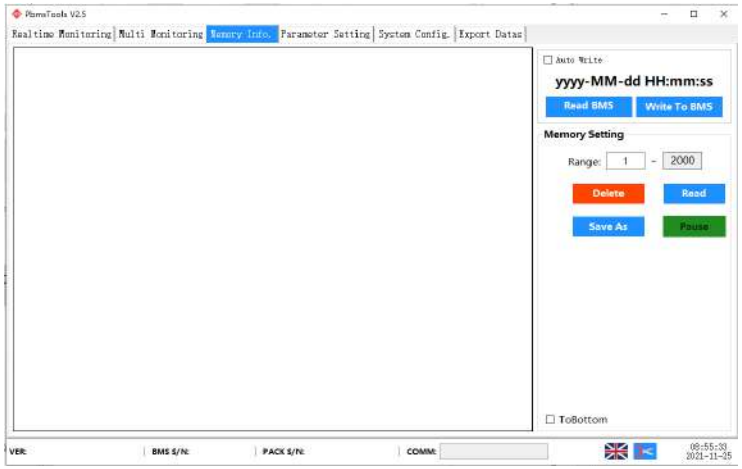


- To the Bottom:
  Check "To the Bottom" at the bottom left to display the monitored real-time data in the data area. Note: this function only displays the data on the interface, and the data has not been saved.
- Clear interface data:
  Click the button "CLS" to clear the real-time data on the interface.
- Record data
  Check "Data save to database" to start recording data. When there is data recording, the number of saved data will appear on the right.
- Export data
  Click the "Export " button to export the recorded real-time data. You can also export on the export data page.

3.3 Store information.

- Interface:
  Click the main interface tab [Memory Info.] to enter the interface.
- Read / write BMS time:
  Click the "Read BMS" button on the upper right to read the BMS time.
  Click the "Write To BMS" button on the upper right to write the BMS time.
- Storage settings:
  Range: start sequence number and maximum sequence number.
  Read records: read stored records.

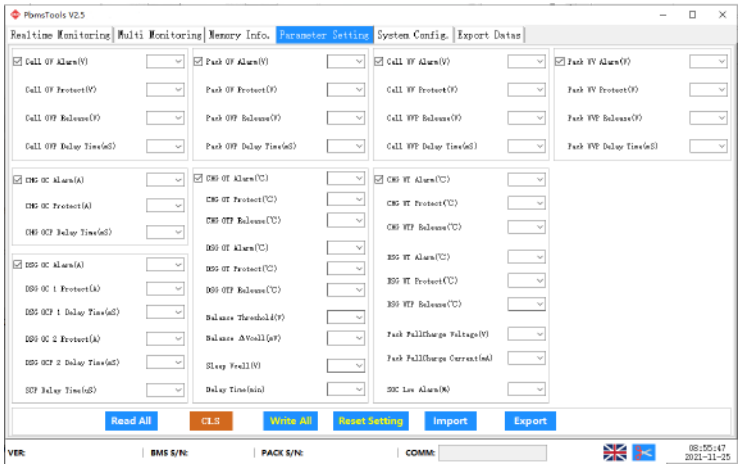
Pause / continue: when reading, click "pause" to read, and then click again to continue reading.
Save record: save the record on the interface to local.
Delete record: delete the storage record of BMS board.



NOTE:
when reading, the prompt "no more data" indicates that the reading has been completed.

3.4 Parameter setting

- Interface:
  Click the main interface tab [Parameter Setting] to enter the interface.

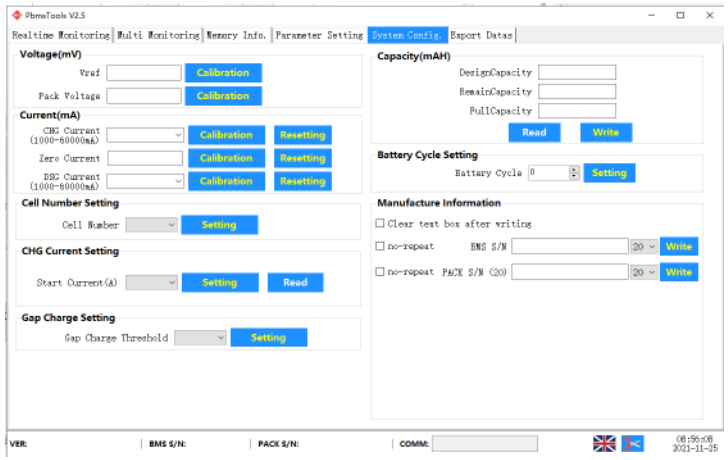


- Function:
  Read parameters: read all parameters in the interface.

Write parameters: overwrite BMS parameters. This operation requires administrator privileges.
Restore default parameters: restore all parameters to the default parameters. The default parameters are from the preset parameters in BMS. This operation requires administrator privileges.
Import parameters: read the data in the local file into this interface. Note: the data is only read on the interface and has not been written into the BMS. If you need to write, please execute the write operation.

3.5 System settings

- Interface:
  Click the main interface tab [System Config.] to enter the interface.



- function:
  Just follow the interface prompts. Some function operations require administrator privileges.

3.6 Export data

After checking "record data" on the [parallel monitoring] page, the recorded data can be exported on this page. The table is named after the starting time point of the record. The data can be saved for up to two months, and the expired data will be automatically cleared. You can double-click the table name to export data.