

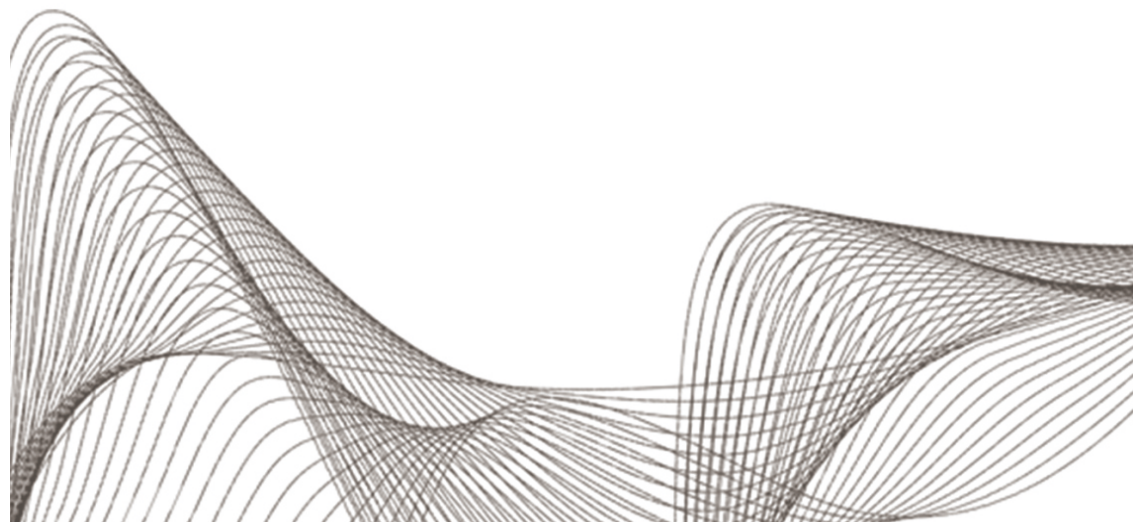
制作说明：A4对折

封面纸质：铜板纸

USER MANUAL

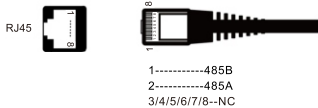
Hybrid

Solar Inverter



8.3 RS485 port

When the BMS/485 communication interface is externally connected, as shown in the following figure:



RJ45

1-----485B
2-----485A
3/4/5/6/7/8--NC

RJ45	Definition
Pin 1	RS485-B
Pin 2	RS485-A
Pin3	/
Pin4	/
Pin 5	/
Pin6	/
Pin 7	/
Pin8	/

 **NOTICE**

If you need to use the inverter to communicate with the lithium battery BMS , please contact us for the communication protocol or upgrade the inverter to the appropriate software programme .

If you are using a normal RJ45 cable, check the pin definitions.

8.4 Dry contact port

Communication Connection

Please use supplied communication cable to connect to inverter . Please install a monitoring software on the computer.

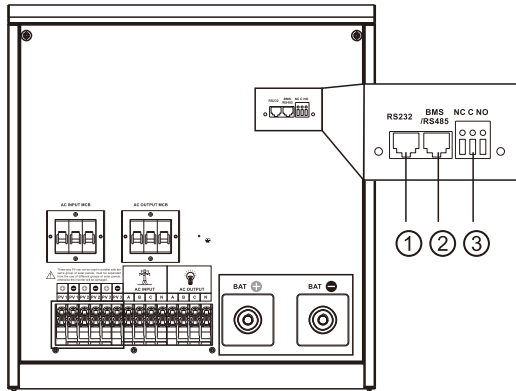
Dry Contact Signal

There is one dry contact (3A/250VAC)available on the rear panel. It could be used to deliver signal to external device when battery voltage reaches warning level.

Unit Status	Condition			Dry contact port:  NC C NO	
				NC & C	NC & C
Power Off	Unit is off and no output is powered.			Close	Open
Power On	Output is powered from battery or solar.	Normal mode	Battery voltage< Low DC warning voltage	Open	Close
			Battery voltage> Float charging voltage	Close	Open
		Solar first mode	Battery voltage< Solar to AC voltage	Open	Close
			Battery voltage> AC to DC voltage	Close	Open

8. Communication

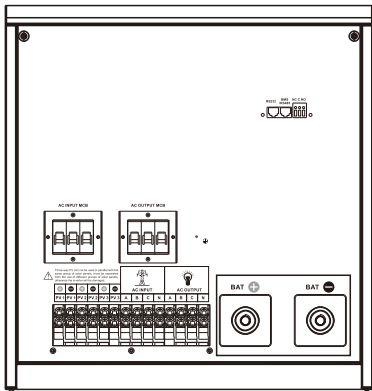
8.1 Overview



1	RS-232 port	3	Dry contact port
2	BMS/RS485 port	4	

8.2 RS-232 port

Users can use the host computer software to read and modify the device parameters through this port. If you need the installation package of the host computer software , you can contact us to get the installation package. The port is used to connect to the RS-232 data acquisition module , which allows users to view the operating status and parameters of the inverter via mobile phone APP .



RJ45	Definition
Pin 1	/
Pin 2	12V
Pin 3	RXD
Pin 4	/
Pin 5	GND
Pin 6	TXD
Pin 7	/
Pin 8	/

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1 About This Manual

1.1 Purpose

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations, Keep manual for future reference.

1.2 Scope

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

2 Safety Instructions

 **WARNING: This chapter contains important safety and operating instructions. Read and keep this manual for future reference.**

- Before using the unit read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
- CAUTION**-To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.
- Do not disassemble the unit Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
- To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
- CAUTION**-Only qualified personnel can install this device with battery.
- NEVER** charge a frozen battery.
- For optimum operation of this inverter/charger, please follow required spec to select appropriate cable size. It's very important to correctly operate this inverter/charger.
- Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.
- Please strictly follow installation procedure when you want to disconnect AC or DC terminals, Please refer to INSTALLATION section of this manual for the details
- Two piece of 250A fuse is provided as over-current protection for the battery supply.
- GROUNDING INSTRUCTIONS -This inverter/ charger should be connected to a permanent grounder wiring system. Be sure to comply with local requirements and regulation to install this inverter.
- NEVER cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
- Warning!!** Only qualified service persons are able to service this device. If errors still persist after following troubleshooting table, please send this inverter/charger back to local dealer or service center for maintenance.

7. Technical datasheet

Model		KA18048SS	KA30048SS
Input	Input Sources	L1+L2+L3+N+PE	
	Rated Input Voltage	3 x 380VAC/400VAC (3相+N线)	
	Voltage Range	155-483VAC±3V(APL Mode) 295-483VAC±3V(UPS Mode)	
	Frequency	50Hz/60Hz(Auto Adaptive)	
Output	Output Rating Power	18000W	30000W
	Output Voltage	380VAC±5%	
	Output Frequency	50/60Hz±0.1%	
	Waveform	Pure Sine Wave	
	Transfer Time (adjustable)	Computers(UPS Mode)10ms, Appliance(APL Mode)20ms	
	Peak Power	36000VA	60000VA
	Overload capacity	Battery mode: 11s@105%~150% Load;21s@150%~200%; Load 400ms@>200% Load	
Grid-connected operation	Output Voltage	380VAC	
	Feed into the grid voltage range	337-437VA	
	Feed into the grid frequency range	49-51±1Hz/59-61±1Hz	
	Nominal output current	3×26.9A	3×47.8A
	Power Factor Range	>0.99	
	Maximum conversion efficiency (DC/AC)	98%	
Battery	Battery Voltage	48Vdc	
	Constant Charging Voltage(Adjustable)	56.4Vdc	
	Floate Charging Voltage(Adjustable)	54Vdc	
Chargers	PV Charging Mode	Triple MPPT	Six channel MPPT
	MAX.PV Input Power	3×7500W	6×5500W
	MPPT Tracking Range	60~500Vdc	90~500Vdc
	Best voltage	300~400V	
	MAX.PV Input Voltage	500Vdc	
	PV max input current	27A/27A/27A	6×18A
	MAX.PV Charging Current	360A	450A
	MAX.AC Charging Current	300A	450A
Display	MAX.Charging Current	360A	450A
	LCD interface	CAN display running mode/load/input/output, etc.	
Interface	RS232	Baud Rate2400	
	Extend the socket communication interface	Lithium Battery BMS Communication Card WifiCard, Dry Contact	
Environments	Operating Temperature	-10~50℃	
	Humidity	20%~95%(Non-condensing)	
	Storage Temperature	-15~60℃	
	Altitude	Altitude Not Over 1000m,Derating over 1000m,Max 4000m. Refer to IEC62040	
	Noise	≤50db	
	Standards and certification	EN-IEC 60335-1,EN IEC 60335-2-29, IEC 62109-1	

6. Trouble removal

Problem	LCD/Buzzer	Explanation/Possible cause	What to do
Unit shuts down automatically during startup process.	LCD and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low (<46V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication	1. The battery voltage is far too low (<43V/Cell) 2. Internal fuse tripped.	1. Contact repair center for replacing the fuse. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in battery mode.	The battery image lights up, but there is no response from the mains image.	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.
		Insufficient quality of AC power. (Shore or Generator)	1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied) is working well or if input voltage range setting is correct. (UP-->sppliance)
		Set "Solar First" as the priority of output source.	Change output source priority to Utility first.
When the unit is turned on, internal relay is switched on and off repeatedly.	Buzzer beeps	Battery is disconnected.	Check if battery wires are connected well.
Buzzer beeps continuously	Fault code 07	Overload error. The inverter is overload 105% and time is up.	Reduce the connected load by switching off some equipment.
		If PV input voltage is higher than specification, the output power will be derated. At this time, if connected loads is higher than derated output power, it will cause overload.	Reduce the number of PV modules in series or the connected load.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Temperature internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 02	Internal temperature of inverter component is over 100°C	
	Fault code 03	Battery is over-charged	Return to repair center.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.
	Fault code 01	Fan fault	Replace the fan.
	Fault code 06	Output voltage below 160V	1. Reduce the connected load. 2. Return to repair center
	Fault code 58	The output voltage is higher than the set value (set value +20V)	
	Fault code 08/09/53/57	Internal components failed.	Return to repair center.
	Fault code 51	Over current or surge.	Restart the unit, if the error happens again, please return to repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced.	
	Fault code 59	PV input voltage is beyond the specification.	Reduce the number of PV modules in series.

3 Introduction

This is a multi-function Inverter/charger, combining functions of inverter, solar charger and battery charger to offer uninterruptible power support with portable size. Its comprehensive touch screen provides user configurable and easy-to-operate push-button operations. such as battery charging current, AC/solar charger prioritization, and acceptable input voltages based on different loads.

3.1 Features

- ♦ Pure sine wave inverter
- ♦ The input voltage range can be configured for household appliances and personal computers via touch screen Settings
- ♦ Application-based configurable battery charging current setting via touch screen
- ♦ The AC/solar charger priority can be configured through touch screen Settings
- ♦ Compatible to mains voltage or generator power
- ♦ Auto restart while AC is recovering
- ♦ Overload/Over temperature/short circuit protection
- ♦ Smart battery charger design for optimized battery performance
- ♦ Cold start function

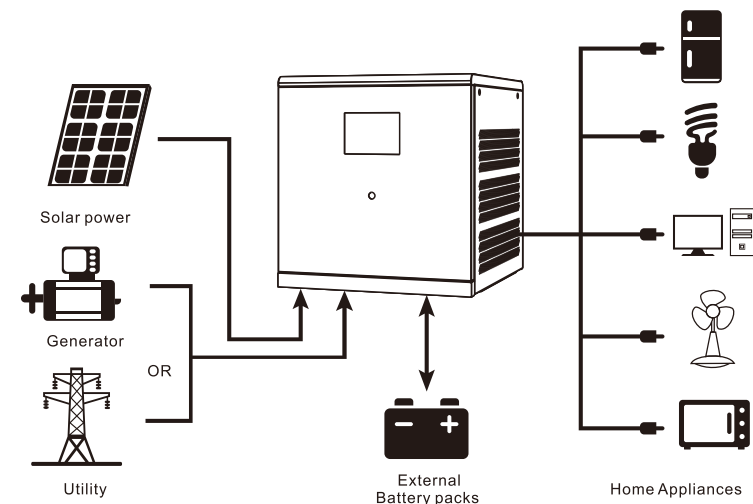
3.2 Basic System Architecture

The following illustration shows basic application for this inverter/charger. It also includes following devices to have a complete running system:

- ♦ Generator or Utility
- ♦ PV modules

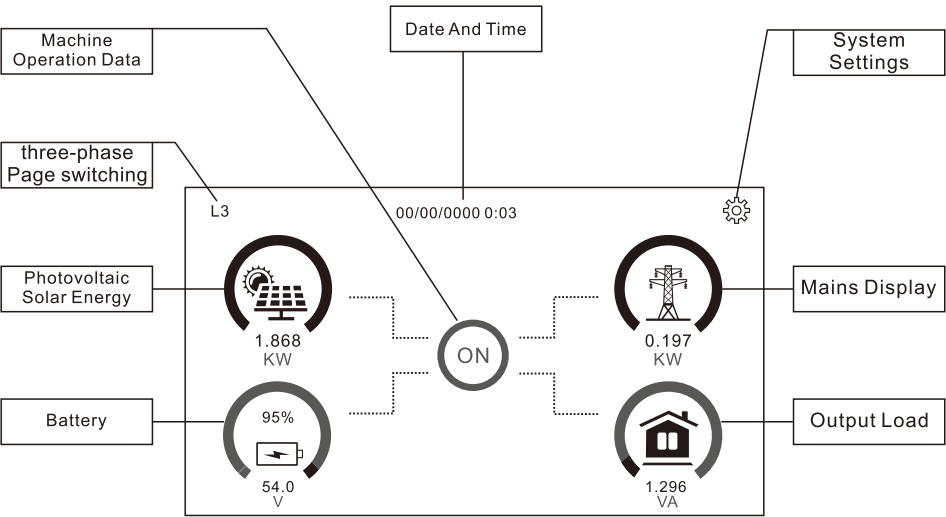
Consult with your system integrator for other possible system architectures depending on your requirements.

This inverter can power all kinds of appliances in home or environment, including motor-type appliances such as tube light, fan, refrigerator and air conditioner.



3.3 Product Overview

3.3.1 Touch color screen



5.5.2 Alarm Descriptions

➤ **Alarm:** The red LED flashes, and the LCD displays an alarm code, the inverter does not enter the failure mode

Alarm Indicator

Alarm Code	Alarm Event	Audible Alarm
01	Fan is locked when inverter is on.	Beep three times every second
02	Over temperature	None
03	Batery is over-charged	Beep once every second
04	Low battery	Beep once every second
07	Overload	Beep once every 0.5 second
10	Output power derating	Beep twice every 3 seconds
15	PV energy is low.	Beep twice every 3 seconds
16	When the BUS starts slowly, the mains voltage is too high and will report 16.	None
E9	Battery equalization	None
bP	Battery is not connected	None

5.5.3 Code Reference

Related information code will be displayed on LCD screen. Please check inverter LCD screen for the operation.

Code	Description
60	If battery status is not allowed to charge and discharge after the communication between the inverter and battery is successful, it will show code 60 to stop charging and discharging battery.
61	Communication lost - After battery is connected, communication signal is not detected for 1 minutes, buzzer will beep. - Communication lost occurs after the inverter and battery is connected successfully, buzzer beeps immediately.
69	If battery status is not allowed to charge after the communication between the inverter and battery is successful, it will show code 69 to stop charging battery.
70	If battery status must to charge after the communication between the inverter and battery is successful, it will show code 70 to charge battery.
71	If battery status is not allowed to discharge after the communication between the inverter and battery is successful, it will show code 71 to stop discharge battery.

5.5 Fault and alarm description

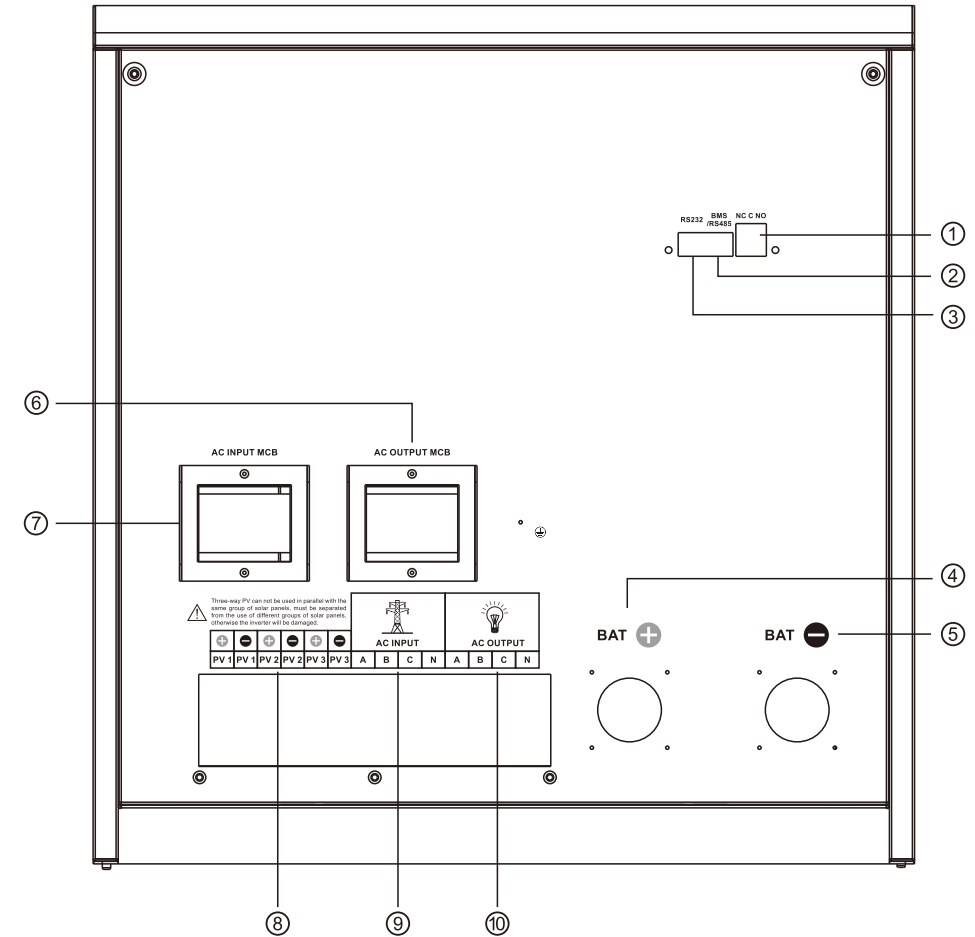
5.5.1 Faults Descriptions

➤ **Fault:** The inverter enters the fault mode, the red LED light is always on and the LCD displays the fault code.

Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off.	
02	Over temperature or NTC is not connected well.	
03	Battery voltage is too high.	
04	Battery voltage is too low.	
05	Output short circuited or over temperature is detected by internal converter components.	
06	Output voltage is too high.	
07	Over load time out.	
08	Bus voltage is too high	
09	Bus soft start failed	
51	Over currents or surge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
57	Current sensor failed	
58	Output voltage is too low	
59	PV voltage is over limitation	

3.3.2 Back Panel



1. Dry Contact
2. BMS/RS485 Communication Port
3. RS232 Communication Port
4. Battery Terminal Positive
5. Battery Terminal Negative
6. AC output Miniature Circuit Breaker
7. AC input Miniature Circuit Breaker
8. PV Input
9. AC input
10. AC output

4 INSTALLATION

4.1 Unpacking and Inspection

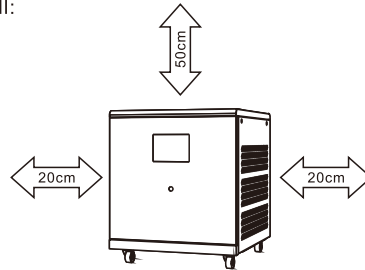
Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:

- ◆ The unit x 1
- ◆ User manual 1

4.2 Mounting the Unit

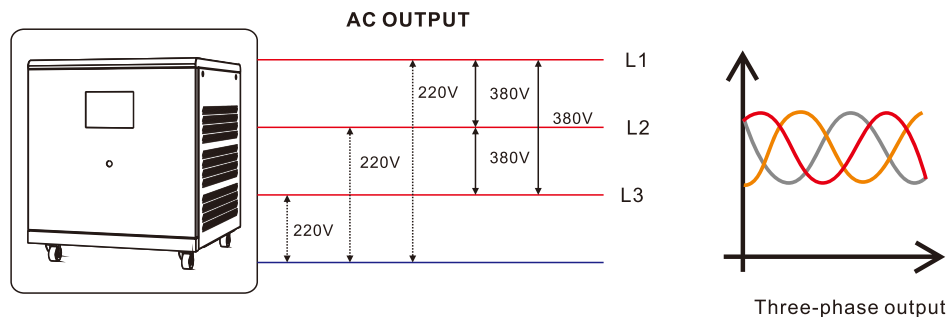
Consider the following points before selecting where to install:

- ※ Do not mount the inverter on flammable construction materials.
- ※ For proper air circulation to dissipate heat, allow a clearance of approx. 20 cm to the side and approx. 50 cm above the unit.
- ※ The ambient temperature should be between and to ensure optimal operation.
- ※ Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.



SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.

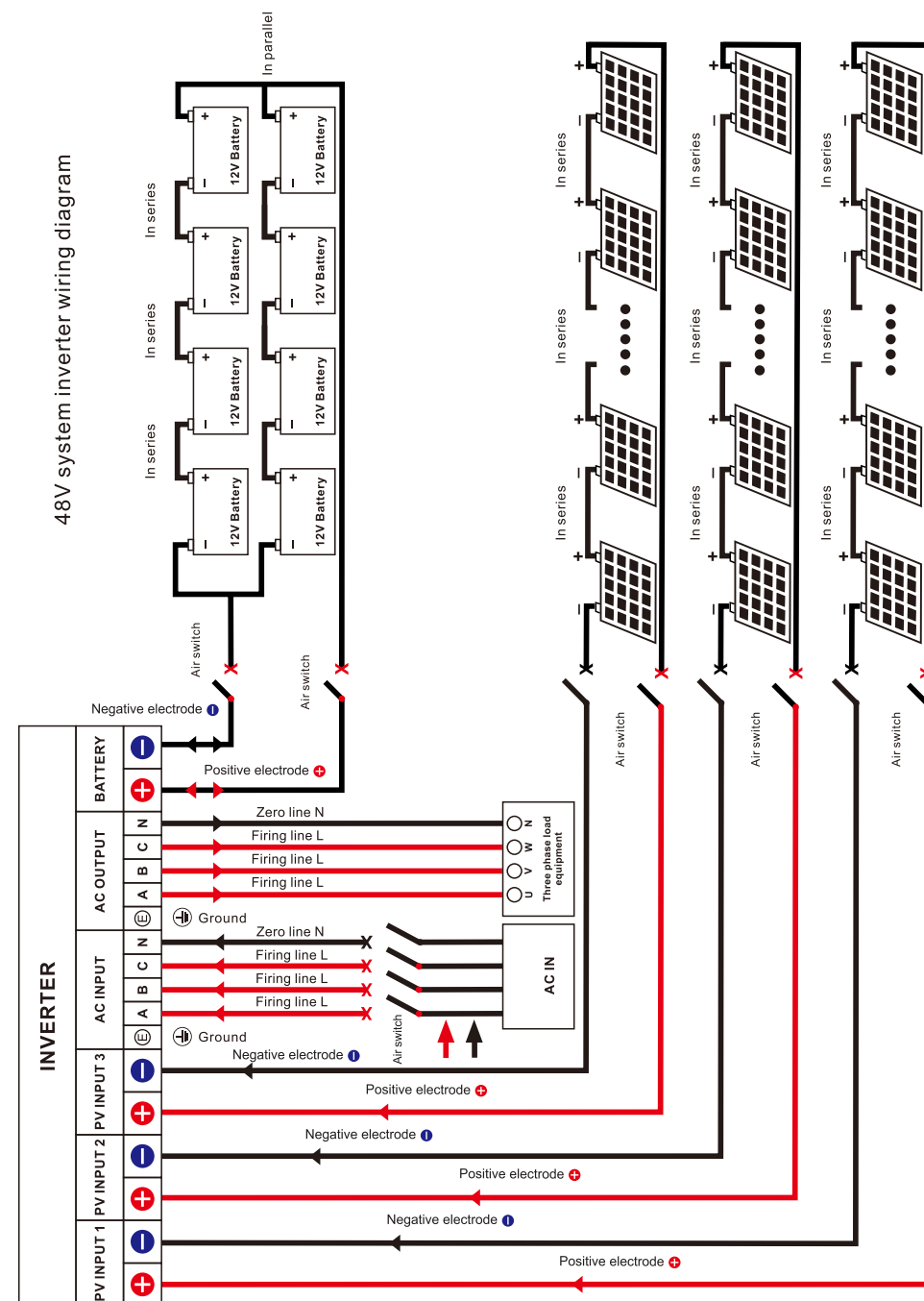
4.3 Three-phase mode



Items	Description
Applicable models	KA series
AC output phase voltage(L-N)	200~400Vac, 230Vac default

Advanced Settings menu	Advanced Settings menu page																								
Advanced Function <table><thead><tr><th>Setting Parameter</th><th>Current Value</th><th>Set Value</th><th></th></tr></thead><tbody><tr><td> Dual Mode</td><td>ON</td><td> ON</td><td></td></tr><tr><td> Dual BAT VOL Under</td><td>44.0V</td><td>44.0V</td><td></td></tr><tr><td> Dual BAT SOC Under</td><td>20%</td><td>20%</td><td></td></tr><tr><td> Dual BAT VOL Receiver</td><td>52.0V</td><td>52.0V</td><td></td></tr><tr><td> Dual BAT SOC Receiver</td><td>50%</td><td>50%</td><td></td></tr></tbody></table> Adv page 1/3	Setting Parameter	Current Value	Set Value		Dual Mode	ON	ON		Dual BAT VOL Under	44.0V	44.0V		Dual BAT SOC Under	20%	20%		Dual BAT VOL Receiver	52.0V	52.0V		Dual BAT SOC Receiver	50%	50%		This page can be set Dual mode: ON/OFF Dual BAT VOL Under: 44V/22V, if the battery voltage is lower than the inverter setting, the dual output is cut off. Dual BAT SOC Under: Default 20%, if the BMS capacity is lower than the SOC setting the second output will be cut. Dual BAT VOL Receiver:Default 52V/26V,if the battery voltage is higher than the inverter setting, the dual will be restored. Dual BAT SOC Receiver:Default 50%,if the BMS capacity is higher than the SOC setting, the second output will be restored.
Setting Parameter	Current Value	Set Value																							
Dual Mode	ON	ON																							
Dual BAT VOL Under	44.0V	44.0V																							
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Advanced Founction <table><thead><tr><th>Setting Parameter</th><th>Current Value</th><th>Set Value</th><th></th></tr></thead><tbody><tr><td> Dual Discharge Time</td><td>Disable</td><td>0min</td><td></td></tr><tr><td> Dual Recover Delay Time</td><td>5 Min</td><td>5 Min</td><td></td></tr><tr><td> Dual Output On Time</td><td>0:00</td><td> 0:00</td><td></td></tr><tr><td> Dual Output Off Time</td><td>0:00</td><td> 0:00</td><td></td></tr></tbody></table> Adv page 2/3	Setting Parameter	Current Value	Set Value		Dual Discharge Time	Disable	0min		Dual Recover Delay Time	5 Min	5 Min		Dual Output On Time	0:00	0:00		Dual Output Off Time	0:00	0:00		This page can be set Dual Discharge Time: The value ranges from 0-990min Configure Discharge Time to turn off second output, and waiting time to turn on the second output when the inverter is back to Line mode or Battery is incharging status. Dual Recover Delay Time: Configure the second output recovery delay. Even if Dual BAT VOL Receiver and Dual BAT SOC Receiver conditions are met,enable the second output after the recovery delay ends, The value ranges from 0-60min. Dual Output On Time:The value ranges from 0 to 23. Dual Output Off Time:The value ranges from 0 to 23.				
Setting Parameter	Current Value	Set Value																							
Dual Discharge Time	Disable	0min																							
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Setting Parameter	Current Value	Set Value																							
Output Open Time	0:00	0:00																							
Output Stop Time	0:00	0:00																							
Device information setting menu	Device information setting menu page																								
Device Info System Time:0000-00-00 00:09 2000 Year 0 Month 0 Day 0 H 9 M 0 S Back Light: RGB Switch: ON	This page can be set System time :year/month/day/hour/minute /second. Back Light: From dark to light. RGB Switch : ON/OFF																								

Mains grid Settings menu	Mains grid Settings menu page																				
Grid Setting <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="text-align: left; font-size: 0.8em;">Setting Parameter</th> <th style="text-align: left; font-size: 0.8em;">Current Value</th> <th style="text-align: left; font-size: 0.8em;">Set Value</th> <th style="font-size: 0.8em;"></th> </tr> </thead> <tbody> <tr> <td>Input Voltage Range</td> <td>APL</td> <td>APL ▼</td> <td>✓</td> </tr> <tr> <td>Grid-Connected Regulation</td> <td>Pakistan</td> <td>Pakistan ▼</td> <td>✓</td> </tr> <tr> <td>Grid Feed Enable</td> <td>OFF</td> <td>OFF ▲</td> <td>✓</td> </tr> <tr> <td>Grid Feed Current</td> <td>10A</td> <td>10A</td> <td>✓</td> </tr> </tbody> </table> Grid Setting page 1/2	Setting Parameter	Current Value	Set Value		Input Voltage Range	APL	APL ▼	✓	Grid-Connected Regulation	Pakistan	Pakistan ▼	✓	Grid Feed Enable	OFF	OFF ▲	✓	Grid Feed Current	10A	10A	✓	This page can be set Input Voltage Range: APL/UPS Grid-Connected Regulation: Germen/ SouthAmerica /pakistan Grid Feed Enable: Disable / Enable Grid Feed Current: Default 20A
Setting Parameter	Current Value	Set Value																			
Input Voltage Range	APL	APL ▼	✓																		
Grid-Connected Regulation	Pakistan	Pakistan ▼	✓																		
Grid Feed Enable	OFF	OFF ▲	✓																		
Grid Feed Current	10A	10A	✓																		
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Setting Parameter	Current Value	Set Value																			
AC CHA Open Time	0:00	0:00 ▼	✓																		
AC CHA Stop Time	0:00	0:00 ▼	✓																		
Charging Settings menu	Charging Settings menu page																				
Charge Setting <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="text-align: left; font-size: 0.8em;">Setting Parameter</th> <th style="text-align: left; font-size: 0.8em;">Current Value</th> <th style="text-align: left; font-size: 0.8em;">Set Value</th> <th style="font-size: 0.8em;"></th> </tr> </thead> <tbody> <tr> <td>CHA Source Priority</td> <td>SNU</td> <td>SNU ▼</td> <td>✓</td> </tr> <tr> <td>MAX Utility CHA CUR</td> <td>30A</td> <td>30 A</td> <td>✓</td> </tr> <tr> <td>MAX CHA Current</td> <td>40A</td> <td>40 A</td> <td>✓</td> </tr> <tr> <td>Solar Supply Priority</td> <td>BLU</td> <td>BLU ▼</td> <td>✓</td> </tr> </tbody> </table> Charge Setting page 1/1	Setting Parameter	Current Value	Set Value		CHA Source Priority	SNU	SNU ▼	✓	MAX Utility CHA CUR	30A	30 A	✓	MAX CHA Current	40A	40 A	✓	Solar Supply Priority	BLU	BLU ▼	✓	This page can be set CHA Source Priority: Set the charging priority 1.CSO: Solar energy will give priority to battery charging. Alternating current only charges the battery when solar power is not available. 2.SNU: Solar and mains power will charge the battery at the same time. 3.OSO: Solar energy will be the only source of chargers, whether there is AC or not. Note: If the inverter/charger is operating in battery mode, only solar energy can charge the battery. If there is enough solar energy, the solar energy will charge the battery. MAX Utility CHA CUR: MAX CHA Current is smaller than that in program in MAX Utility CHA CUR, the inverter will apply charging current from program MAX CHA Current for utility charger. MAX CHA Current: MAX CHA Current To configure total charging current for solar and utility chargers Solar Supply Priority: BLU solar power priority to provide energy to battery/LBU solar power priority to provide energy to the load.
Setting Parameter	Current Value	Set Value																			
CHA Source Priority	SNU	SNU ▼	✓																		
MAX Utility CHA CUR	30A	30 A	✓																		
MAX CHA Current	40A	40 A	✓																		
Solar Supply Priority	BLU	BLU ▼	✓																		



4.4 Requirements for cables and ring circuit breakers

• PV input

Models	Cable Diameter	Max PV Input Current	Circuit Breaker Spec
KA18048SS	10AWG	3x27A	3x32A
KA30048SS	10AWG	6x18A	6x32A

• AC input

Models	Output Mode	Max . Current	Cable Diameter	Circuit Breor Spec
KA18048SS	L1+L2+L3+N+PE	3x26.9A	3x10AWG	3x63A/230VAC
KA30048SS	L1+L2+L3+N+PE	3x47.8A	3x8AWG	3x80A/230VAC

• Battery

Models	Cable Diameter	Max . Current	Circuit Breaker Spec
KA18048SS	3x2AWG	372A	3x150A/70VDC
KA30048SS	3x3/0AWG	684A	3x300A/70VDC

• AC output

Models	Output Mode	Max . Current	Cable Diameter	Circuit Breor Spec
KA18048SS	L1+L2+L3+N+PE	3x26.9A	3x10AWG	3x63A/230VAC
KA30048SS	L1+L2+L3+N+PE	3x47.8A	3x8AWG	3x80A/230VAC



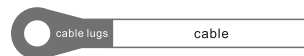
NOTICE

• PV Input , AC input , AC output , Battery

1. Use a stripper to remove the 6-8mm insulation of the Cable.



2. Fixing a ferrule at the end of the cable (ferrule needs to be prepared by the user).



3. Fixing cable lugs that supply with the box at the end of the cable .

The wire diameter is for reference only . If the distance between the PV array and the inverter or between the inverter and the battery is long , using a thicker wire will reduce the voltage drop and improve the performance of the system .

	This page can be set Battery Equalization: You can set this program if you select "Liquid Battery" or "User Defined" in the battery type. BAT EQ Voltage: 29.2V for 24V system, 58.4V for 48V system, BAT EQ Time: The value ranges from 5 minutes to 900 minutes. BAT EQ Out Time: The value ranges from 5 minutes to 900 minutes. BAT EQ Interval: The value ranges from 0 to 90 days.
	This page can be set DC TO AC voltage:22V-25.5V/44V-51V AC TO DC voltage:24V-29/48V-58V
System working mode setting menu	System working mode setting menu page
	This page can be set ECO function: Under the battery model, when the load is low, the system will temporarily stop. Output priority:Output source priority option. 1.SUB: Solar energy as the first priority for the load, if the solar energy is not enough to supply all connected loads, the utility grid energy will supply the load at the same time. Solar power as the first priority provides power for the load output source priority selection. 2.SBU: If the solar energy is not enough to supply all the connected loads, the battery energy will supply the loads simultaneously. The mains supplies power to the load only when the battery voltage drops to a low level warning voltage or when the solar and battery are insufficient. Output TYPE:SIG/PAL/3P1/3P2/3P3 Remove the power generation capacity: tick the check box and click "YES". Clear Generation:OFF/ON Reset Factory Setting: To restore the default values, tick the check box and click "YES".

Basic Setting

Setting Parameter	Current Value	Set Value	
MIP Cut Off Buz	ON	ON	
Over Temp Restart	OFF	OFF	
Auto Back Menu	ON	ON	

Basic Setting page 2/2

This page can be set

MIP Cut Off Buz: ON/OFF

Over Temp Restart: ON/OFF

Auto Back Menu: ON/OFF

Battery Settings menu

Battery Setting

Setting Parameter	Current Value	Set Value	
Battery Type	AGM	AGM	
Bluck Charging VOL	56.4V	56.4V	
Float Charging VOL	54.0V	54.0V	
Battery Cut-off VOL	42.0V	42.0V	
Battery Low VOL	44.0V	44.0V	

Battery Setting page 1/4

This page can be set

Battery Type:AGM/FLD/USE/LIA/PYL/TQF /GRO/LIB/LIC

Bluck Charging VOL: If you select Custom in the battery type, you can set the program. The Settings range for 24V system is 24. 0V-30.0V, and the Settings range for 48V system 48.0V-60.0V

Float Charging VOL: 27V/54V

Battery Cut-off VOL: If battery power is the only power available, the converter will shut down.

If PV energy and battery power are available, the inverter will charge the battery without AC output. If Custom is selected in the battery type, you can set the program.

24V system are set from 20.0V-26.0V
48V system are set from 40.0V-52.0V
and the Battery Cut-off VOL will be fixed at the set value regardless of the proportion of load connected.

Battery Low VOL: 24V system are set from 20.0V-27.0V, 48V system are set from 40.0V -54.0V

Battery Setting

Setting Parameter	Current Value	Set Value	
BMS Function Switch	OFF	OFF	
BMS SOC Under Lock	10%	10%	
BMS SOC Turn To AC	20%	20%	
BMS SOC Turn To DC	95%	95%	
BMS Restart SOC	50%	50%	

Battery Setting page 2/4

This page can be set

BMS Function Switch: Whether to enable the BMS communication function.

BMS SOC Under Lock: The SOC value of the BMS falls below the set value and the inverter shuts down to protect the battery.

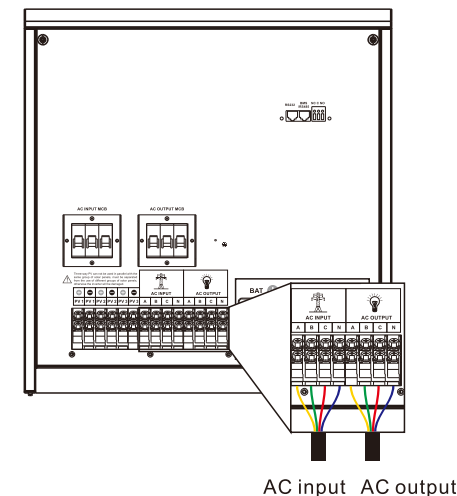
BMS SOC Turn To AC: When the inverter operating mode is set to battery priority mode, when the BMS SOC is below the set value, the inverter will be forced to enter the power supply to charge.

BMS SOC Turn To DC: When the inverter works in battery priority mode, the inverter works in DC mode when the BMS SOC is higher than the set value.

BMS Restart SOC: When the inverter is turned on, the SOC must be higher than the set value to work properly.

4.5 AC input & output connection

Connect the live, neutral and ground cables in the position and order of the cables as shown in the diagram below .

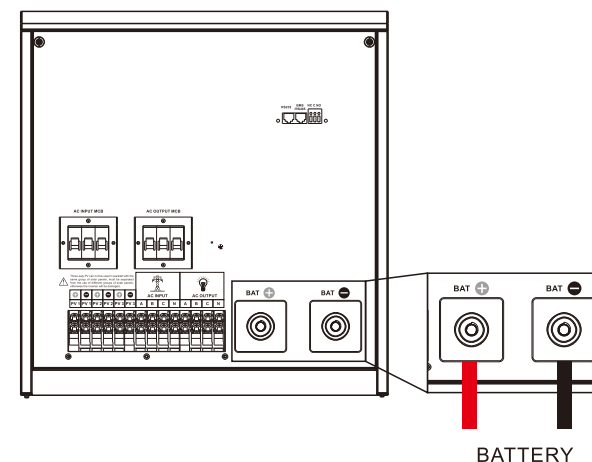


⚠ DANGER

- Before connecting the AC input and output , the circuit breaker must be disconnected to avoid the risk of electric shock and must not be operated with electricity.
- Please check that the cable used is sufficient for the requirements , too thin , poor quality cables are a serious safety hazard.

4.6 Battery connection

Connect the positive and negative cable of the battery according to the diagram below .

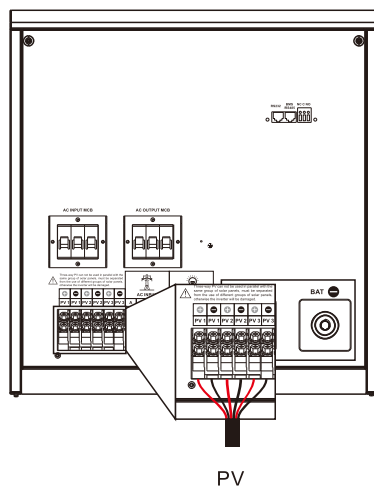


⚠ DANGER

- Before connecting the battery , the circuit breaker must be disconnected to avoid the risk of electric shock and must not be operated with electricity .
- Please ensure that the positive and negative terminals of the batteries are correctly connected and not reversed , otherwise the inverter may be damaged .
- Please check that the cable used is sufficient for the requirements , too thin , all quality cables are a serious safety hazard .

4.7 PV connection

Connect the positive and negative wires of the two strings of PV according to the diagram below .



⚠ DANGER

- Before connecting the PV , the circuit breaker must be disconnected to avoid the risk of electric shock and must not be operated with electricity .
- Make sure that the open - circuit voltage of the PV modules connected in series does not exceed the maximum open - circuit voltage of the inverter (the value is 500V), otherwise the inverter may be damaged.

Load page	Load detail page
Load L1 Output:230.0V50.0Hz L1 Load Percent:0% L1 Power:0W0VA L2 Output:230.0V49.9Hz L2 Load Percent:0% L2 Power:0W0VA L3 Output:230.1V49.9Hz L3 Load Percent:0% L3 Power:0W0VA Back	This page displays the output mode, output voltage, output frequency, inductive current, active power, reactive power in detail.
Mains page	Mains details page
AC Input L1 Frequency:0.0Hz L1 Input Voltage:0.0V L1 Ac Input Power:0W L2 Frequency:0.0Hz 12 Input Voltage:0.0V L2 Ac Input Power:0W L3 Frequency:0.0Hz L3 Input Voltage:0.0V L3 Ac Input Power:0W Back	This page displays the frequency, input voltage and power of the grid

5.4.2 System Settings menu

System Settings menu	System Settings menu page																								
System Setup Battery Setting System Work Mode Grid Setting Charge Setting Basic Setting Advanced Function Device Info	This is the system Settings page, including battery Settings, system working mode, battery Settings, mains Settings, charging Settings, basic Settings, advanced functions, device information																								
Basic Settings menu	Basic Settings menu page																								
Basic Setting <table><tr><th>Setting Parameter</th><th>Current Value</th><th>Set Value</th><th></th></tr><tr><td>⚙️ Output Voltage</td><td>230V</td><td>◀ 230V</td><td>✓</td></tr><tr><td>⚙️ Output Frequency</td><td>50Hz</td><td>◀ 50Hz</td><td>✓</td></tr><tr><td>⚙️ Alarm Control</td><td>ON</td><td>◀ ON</td><td>✓</td></tr><tr><td>⚙️ Over Load Bypass</td><td>OFF</td><td>◀ OFF</td><td>✓</td></tr><tr><td>⚙️ Over Load Restart</td><td>OFF</td><td>◀ OFF</td><td>✓</td></tr></table> Basic Setting page 1/2	Setting Parameter	Current Value	Set Value		⚙️ Output Voltage	230V	◀ 230V	✓	⚙️ Output Frequency	50Hz	◀ 50Hz	✓	⚙️ Alarm Control	ON	◀ ON	✓	⚙️ Over Load Bypass	OFF	◀ OFF	✓	⚙️ Over Load Restart	OFF	◀ OFF	✓	This page can be set Inverter voltage: 220/230/240V(default 230V) Inverter frequency: 50/60HZ(default 50HZ) Alarm Control:ON/OFF Over Load Bypass:ON/OFF Over Load Restart:ON/OFF
Setting Parameter	Current Value	Set Value																							
⚙️ Output Voltage	230V	◀ 230V	✓																						
⚙️ Output Frequency	50Hz	◀ 50Hz	✓																						
⚙️ Alarm Control	ON	◀ ON	✓																						
⚙️ Over Load Bypass	OFF	◀ OFF	✓																						
⚙️ Over Load Restart	OFF	◀ OFF	✓																						

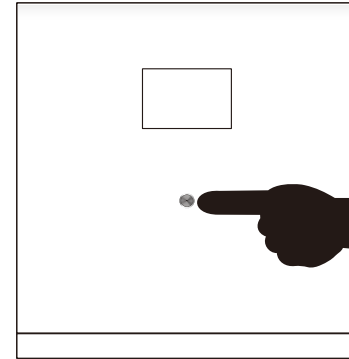
5. 4 Touch screen operation instructions

5.4.1 Touch screen Home screen Content

Inverter page	Inverter data details page
Detail Machine Type: 5548 Lcd Version: V 10.01 Inverter Type: HPVINV02 Driver Version: V 10.01 Boosting Temper: 26 °C Main Version: V 30.03 Machine Temper: 27 °C MPPT Temper: 24°C MOS Temper: 27°C IAP Status: Normal ↑ ↓ L1 Back	This page shows the inverter machine model, machine type, booster tube temperature, machine temperature, MPPT temperature, inverter temperature, bottom program is normal, color screen version number, central control board version number, machine control board version number.
PV page	PV data details page
Solar L1 PV Input: 0.0 V 0.0 A L1 PV Input Power: 0 W L2 PV Input: 0.0 V 0.0 A L2 PV Input Power: 0 W L3 PV Input: 0.0 V 0.0 A L3 PV input Power: 0 W Today: 2.882KWh Month: 2.8 KWh Year: 2.8KWh Total: 2.8KWh Back	This page shows the input voltage, current and power of photovoltaic solar panels in detail. It can also record today's photovoltaic power generation, this month's photovoltaic power generation, this year's photovoltaic power generation, and the total photovoltaic power generation.
Battery page	Battery details page
Battery Battery Voltage: USE BMS COM Function: OFF Battery Voltage: 49.7 V Charge Current: 0 A Discharge Current: 0 A L1 Bus Voltage: 348 V L2 Bus Voltage: 348 V L3 Bus Voltage: 349 V Li Battery Active: OFF ↑ ↓ BAT BMS Back	This page shows the battery type, BMS current communication status, battery voltage, BAT charging current, BAT discharge current and BUS voltage in detail and Li Battery Active.
BMS page	BMS details page
BMS BMS 485 Protocol: NULL SOC: 100 % Charge Current: 0.0 A Discharge Current: 0.0 A BMS Temper: 0.0 °C Discharge Limit Voltage: 0.0 V Charge Limit Voltage: 0.0 V Charge Limit Current: 100.0 A ↑ ↓ Li Battery Active: Back	This page displays the BMS current usage protocol, BMS current SOC value, BMS charging current, BMS discharge current BMS temperature, BMS discharge limit voltage, BMS charge limit voltage, BMS charge limit current in detail.

5 OPERATION

5.1 Power ON/OFF



Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the bottom of the case) to turn on the unit.

5.1.1 Steps to start up

Connect the battery that meets the requirements (battery voltage needs to be beyond 46V) or AC (AC needs to confirm the suitable input range depends on the output mode), then you can start up the inverter.

➤ Mains power on

Connect to normal AC power, press the switch, the system will automatically turn on. If you set AC output power priority, after waiting for a period of time, the panel will display AC mode that represents turn on the machine successfully, then will enter the AC mode.

When the normal mains power is connected and press the power-on button then the system will automatically power on. If it is set as AC output priority, after a period of time, the panel will display the AC mode to indicate that the power-on is complete and enter the AC mode.

➤ Battery boot

Connect to battery, press the power-on button to establish a working power source.

The system will automatically turn on, after waiting for a period of time, the panel will display battery mode that represents turn on the machine successfully, then will enter the battery mode.

5.1.2 Shutdown steps

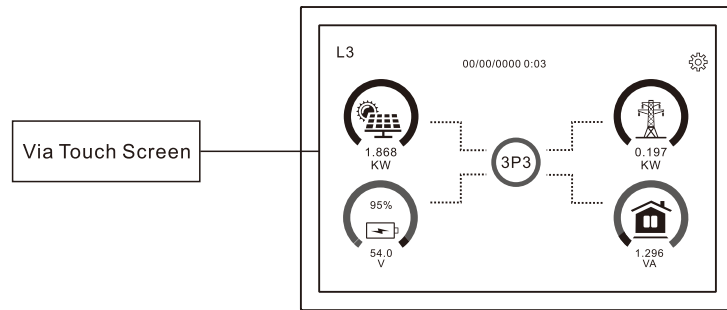
When the system is in battery mode or AC mode output, press the switch again, then the system will be turned off.

5.2 LCD display icon

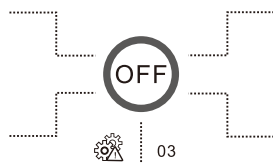
The operation and display panel shown below is located on the front panel of the inverter. It includes a LCD display.

5.2.1 Home Screen

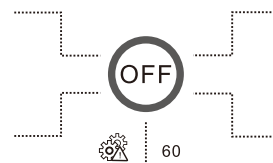
The LCD is a touch screen. The upper part of the LCD screen overall information of the inverter.



1.The absence of an icon in the center of the home screen indicates that the system is operating normally. If the gray icon and characters are displayed in the center of the main screen, it means that the inverter has an alarm, and the alarm information will be displayed in characters under this icon (detailed error information can be viewed in the instruction manual alarm menu). If the red icon and characters are displayed in the center of the main screen, it means that the inverter is faulty, and the fault information will be displayed in characters under this icon (detailed error information can be viewed in the instruction manual alarm menu).



Battery is over charged



PV voltage
is over limitation

2.At the top of the screen is the time.

3.System Settings icon, press the Settings button, you can enter the system Settings screen, including battery Settings, System working mode, grid settings, basic settings, advanced features, device information.

4. The main screen displays information including PV, mains, load and battery. It also shows the direction of energy flow with arrows. Equivalent power. When approaching the limit value, the color on the panel will change from green to red, making the system information vividly displayed on the main screen.

5. Photovoltaic power and load power are always positive.

6. The mains power is connected negatively to the grid and obtained positively.

7. The negative direction of battery power supply means charging, and the positive direction means discharging.

5.3 Touch screen flow chart

