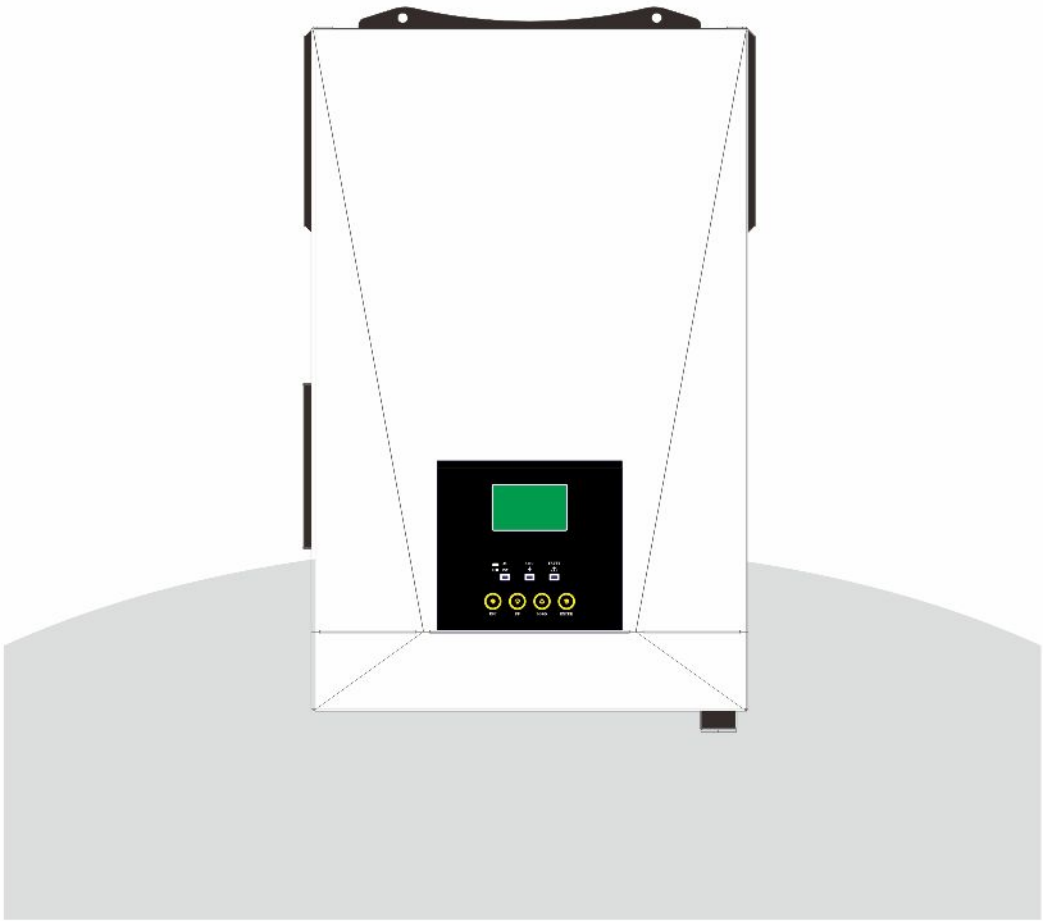
User Manual

5.5KW
INVERTER / CHARGER



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ABOUT THIS MANUAL

Purpose

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

1.Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
2.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.
3.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.
4.To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning.Turning off the unit will not reduce this risk.
5.CAUTION – Only qualified personnel can install this device with battery.
6.NEVER charge a frozen battery.
7.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.
8.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.
9.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.
10.One piece of 150A fuse is provided as over-current protection for the battery supply.
11.GROUNDING INSTRUCTIONS -This inverter/charger should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
12.NEVER cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
13.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.

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 LCD display offers user-configurable and easy-accessible button operation such as battery charging current, AC/solar charger priority, and acceptable input voltage based on different applications.

There are two different types of built-in solar chargers: PWM and MPPT solar charger. For the detailed product specification, please consult your local dealers.

Features

·Pure sine wave inverter
·Configurable input voltage range for home appliances and personal computers via LCD setting
·Configurable battery charging current based on applications via LCD setting
·Configurable AC/Solar Charger priority via LCD setting
·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

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 office environment, including motor-type appliances such as tube light, fan, refrigerator and air conditioner.

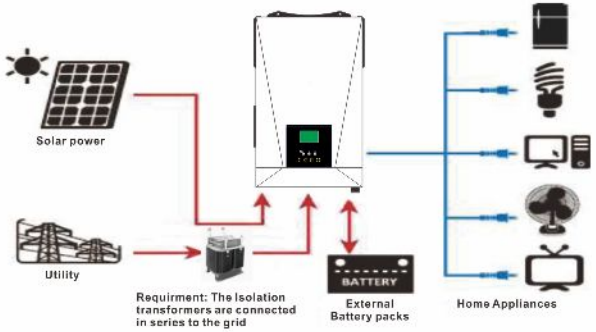
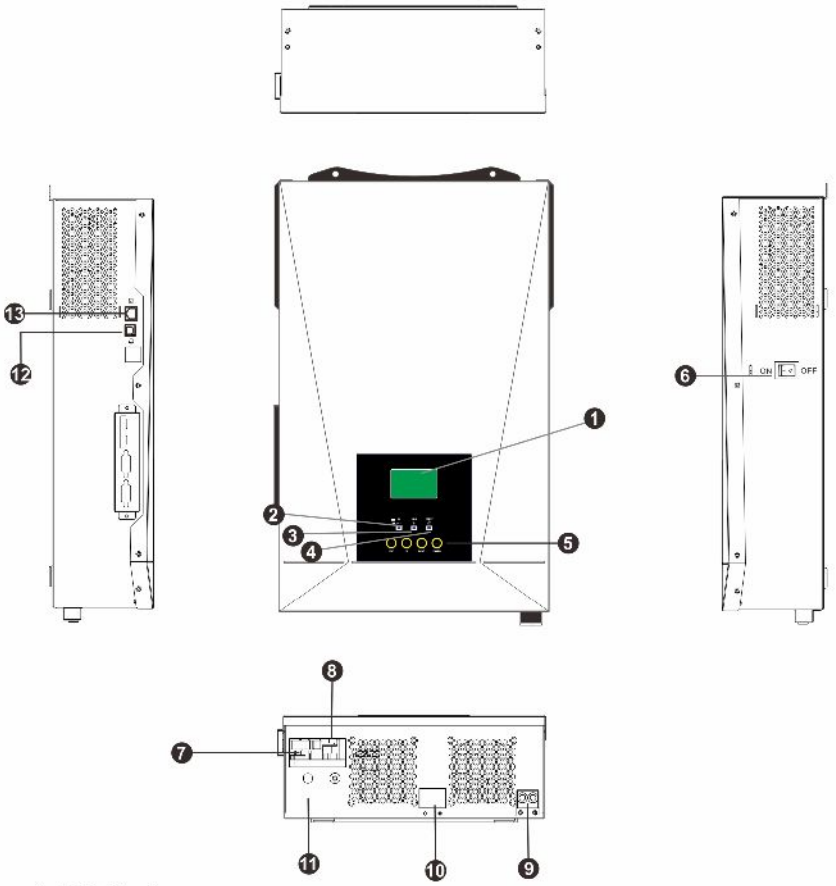


Figure 1 Hybrid Power System

One detection device needs be connected between the PV + and PV- & the ground, to ensure leakage current between PV + and PV- & the ground is less than 30mA.

Isolation transformer Specs. : 10KW—220:220V 60*100 single phase Isolation transformer.

Product Overview



1.LCD display
2.Status indicator
3.Charging indicator
4.Fault indicator
5.Function buttons
6.Power on/off switch
7.AC input
8.AC output
9.PV input
10.Battery input
11.Circuit breaker
12.USB communication port
13.RS-232 communication port

INSTALLATION

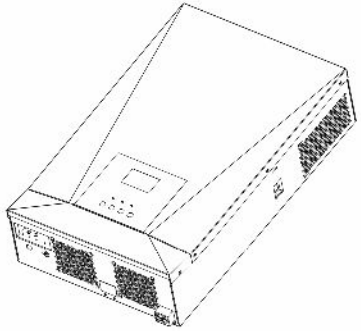
Unpacking and Inspection

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 x 1
·Communication cable x 1

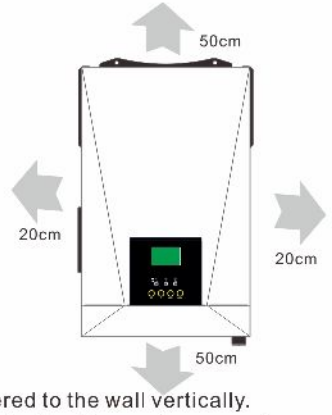
Preparation

Before connecting all wirings, please take off bottom cover by removing two screws as shown below.



Mounting the Unit

Consider the following points before selecting where to install:
·Do not mount the inverter on flammable construction materials.
·Mount on a solid surface
·Install this inverter at eye level in order to allow the LCD display to be read at all times.
·For proper air circulation to dissipate heat, allow a clearance of approx. 20 cm to the side and approx. 50 cm above and belowthe unit.
·The ambient temperature should be between 0°C and 55°C to ensure optimal operation.
·The recommended installation position is to be adhered to the wall vertically.
·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.**

Install the unit by screwing two screws. It's recommended to use M4 or M5 screws.

Battery Connection

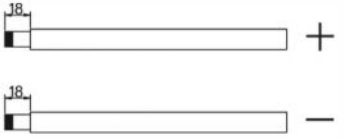
CAUTION: For safety operation and regulation compliance, it's requested to install a separate DC over-current protector or disconnect device between battery and inverter. It may not be requested to have a disconnect device in some applications, however, it's still requested to have over-current protection installed. Please refer to typical amperage in below table as required fuse or breaker size.

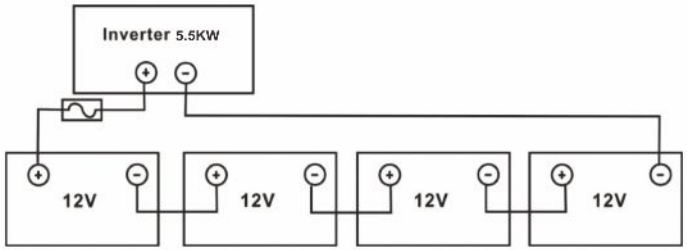
WARNING! All wiring must be performed by a qualified personnel.
WARNING! It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable as below.

Recommended battery cable size:

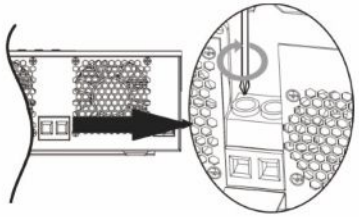
Model	Wire Size	Cable(m**m²**)	Torque value**(max)**
5.5KW	1 x 4AWG	25	2 Nm

Please follow below steps to implement battery connection:
1.Remove insulation sleeve 18 mm for positive and negative conductors.
2.Suggest to put bootlace ferrules on the end of positive and negative wires with a proper crimping tool.





4.Insert the battery wires flatly into battery connectors of inverter and make sure the bolts are tightened with torque of 2 Nm in clockwise direction. Make sure polarity at both the battery and the inverter/charge is correctly connected and conductors are tightly screwed into the battery terminals.
Recommended tool: #2 Pozi Screwdriver



⚠	**WARNING: Shock Hazard** Installation must be performed with care due to high battery voltage in series.
⚠	**CAUTION!!** Before making the final DC connection or closing DC breaker/ disconnector, be sure positive (+) must be connected to positive (+) and negative (-) must be connected to negative(-).

AC Input/Output Connection

CAUTION!! Before connecting to AC input power source, please install a separate AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input. The recommended spec of AC breaker is 50A for 5.5KW.
CAUTION!! There are two terminal blocks with "IN" and "OUT" markings. Please do NOT mis-connect input and output connectors.

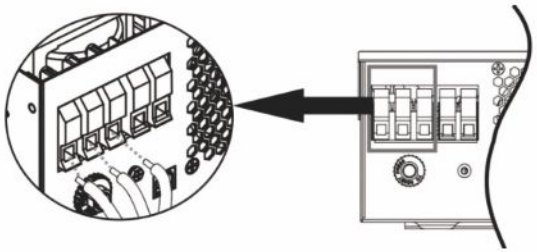
WARNING! All wiring must be performed by a qualified personnel.
WARNING! It's very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, please use the proper recommended cable size as below.

Suggested cable requirement for AC wires

Model	Wire Size	Cable(mm^2)	Torque value(max)
5.5KW	10AWG	6	1.2 Nm

Please follow below steps to implement AC input/output connection:
1.Before making AC input/output connection, be sure to open DC protector or disconnector first.
2.Remove insulation sleeve 10mm for six conductors. And shorten phase L and neutral conductor N 3 mm.
3.For 5.5KW models, insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor (⏚) first.

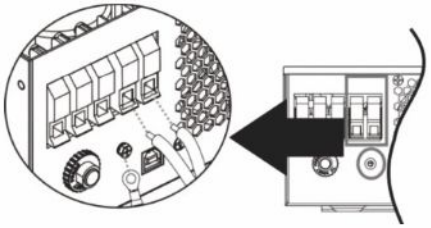
⏚ →Ground (yellow-green)
L→LINE (brown or black)
N→Neutral (blue)



⚠	**WARNING:** Be sure that AC power source is disconnected before attempting to hardwire it to the unit.

4.Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws.
Be sure to connect PE protective conductor(⏚)first.

⏚ →Ground (yellow-green)
L→LINE (brown or black)
N→Neutral (blue)



5.Make sure the wires are securely connected.

CAUTION: Appliances such as air conditioner are required at least 2~3 minutes to restart because it's required to have enough time to balance refrigerant gas inside of circuits. If a power shortage occurs and recovers in a short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check manufacturer of air conditioner if it's equipped with time-delay function before installation. Otherwise, this inverter/charger will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

PV Connection

CAUTION: Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury,please use the proper recommend cable size as below.

Model	Wire Size	Cable(mm^2)	Torque value(max)
5.5KW	1 x 12AWG	4	1.2 Nm

PV Module Selection:

When selecting proper PV modules, please be sure to consider below parameters:
1.Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of inverter.
2.Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.

INVERTER MODEL	5.5KW
Max. PV Array Open Circuit Voltage	450Vdc
PV Array MPPT Voltage Range	120Vdc~430Vdc

Take 250Wp PV module as an example. After considering above two parameters, the recommended module configurations for 5.5KWare listed as below table.

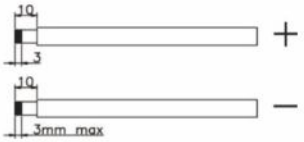
Solar Panel Spec (reference) -250Wp -Vmp:30.1Vdc -Imp:8.3A -Voc:37.7Vdc -Isc:8.4A -Cells:60	SOLAR INPUT (Min in serial:6 pcs,max.in serial:13 pcs)	Qty of panels	Total input power
	6 pcs in serial	6 pcs	1500W
	8 pcs in serial	8 pcs	2000W
	12 pcs in serial	12 pcs	3000W
	13 pcs in serial	13 pcs	3250W
	8 pieces in serial and 2 sets in parallel	16 pcs	4000W
	10 pieces in serial and 2 sets in parallel	20 pcs	5000W

PV Module Wire Connection

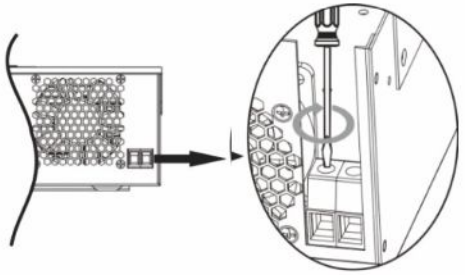
Please follow below steps to implement PV module connection:

1.Remove insulation sleeve 10 mm for positive and negative conductors.

2.Suggest to put bootlace ferrules on the end of positive and negative wires with a proper crimping tool.



4.Check correct polarity of wire connection from PV modules and PV input connectors. Then, connect positive pole (+) of connection wire to positive pole (+) of PV input connector. Connect negative pole (-) of connection wire to negative pole (-) of PV input connector. Screw two wires tightly in clockwise direction. Recommended tool: 4mm blade screwdriver



Final Assembly

After connecting all wirings, please put bottom cover back by screwing two screws as shown below.

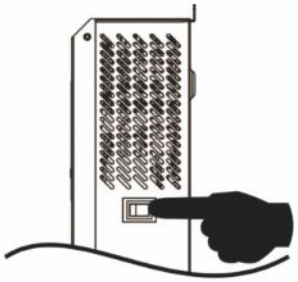
Communication Connection

Please use supplied communication cable to connect to inverter and PC. Insert bundled CD into a computer and follow on-screen instruction to install the monitoring software. For the detailed software operation, please check user manual of software inside of CD.

OPERATION

Power ON/OFF

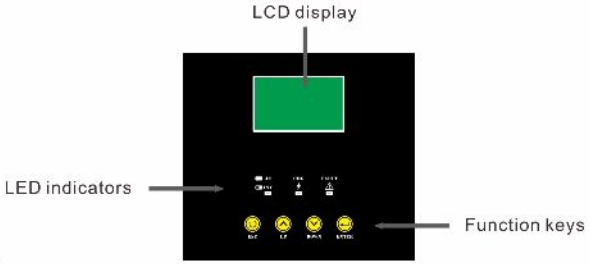
Side view of unit



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

Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes three indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



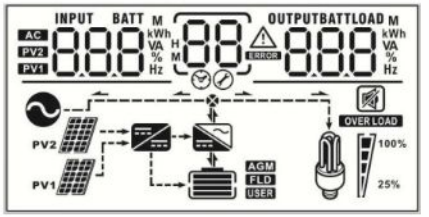
LED Indicator

LED Indicator			Messages
AC / INV	Green	Solid On	Output is powered by utility in Line mode.
		Flashing	Output is powered by battery or PV in battery mode.
CHG	Green	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
FAULT	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.

Function Keys

Function Key	Description
ESC	To exit setting mode
UP	To go to previous selection
DOWN	To go to next selection
ENTER	To confirm the selection in setting mode or enter setting mode

LCD Display Icons



Icon	Function description
Input Source Information	
AC	Indicates the AC input.
PV	Indicates the PV input
INPUTBATT 888 kW VA % °C Hz	Indicate input voltage, input frequency, PV voltage, charger current (if PV in charging for 3.5K models), charger power (only for MPPT models), battery voltage.
Configuration Program and Fault Information	
88	Indicates the setting programs.
88 ERROR	Indicates the warning and fault codes. Warning: 88 flashing with warning code. Fault: 88 lighting with fault code
Output Information	
OUTPUTBATTLOAD 888 kW VA % Hz	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current.
Battery Information	
CHARGING	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.

In AC mode, it will present battery charging status.

Status	Battery voltage	LCD Display
Constant Current mode / Constant Voltage mode	<2V/cell	4 bars will flash in turns.
	2 ~ 2.083V/cell	Bottom bar will be on and the other three bars will flash in turns.
	2.083 ~ 2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.
	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash.
Floating mode. Batteries are fully charged.		4 bars will be on.

In battery mode, it will present battery capacity.

Load Percentage	Battery Voltage	LCD Display
Load >50%	< 1.85V/cell	
	1.85V/cell ~ 1.933V/cell	
	1.933V/cell ~ 2.017V/cell	
	> 2.017V/cell	
Load < 50%	< 1.892V/cell	
	1.892V/cell ~ 1.975V/cell	
	1.975V/cell ~ 2.058V/cell	
	> 2.058V/cell	

Load Information				
OVER LOAD	Indicates overload.			
100% 25%	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.			
	0%~24%	25%~49%	50%~74%	75%~100%

Mode Operation Information	
	Indicates unit connects to the mains.
	Indicates unit connects to the PV panel.
BYPASS	Indicates load is supplied by utility power.
	Indicates the utility charger circuit is working.
	Indicates the DC/AC inverter circuit is working.

Mute Operation	
	Indicates unit alarm is disabled. Press and hold the "ESC" key for 3 seconds.

LCD Setting

After pressing ENTER butto the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press"ENTER" button to confirm the selection or ESC button to exit.

Program	Description	Selectable option	
00	Exit setting mode	Escape: 00 ESC	long press the ESC button for 3 seconds ,and the mute will turn on automatically
01	Output source Priority selection	Utility first(default) 01 UtL	Line: (default) Utility will provide power to the loads as the first priority, solar charging the battery. When solar energy is in sufficient,utility and solar energy charge the battery at the same time.When utility is unavailable,it will be powered by solar energy or batteries.
		Solar first 01 PUL	Solar: Solar energy provides power to the loads as the first priority. when the solar energy is sufficient, the extra energy will charge the battery . When solar energy is insufficient for load, batteries and solar will supply power the loads at the same time. When solar energy and batteries are insufficient or solar energy is unavailable, utility provides power to the loads and charges the battery at the same time.
		Battery first 01 SbU	Battery: Battery energy provides power to the loads as first priority. utility energy will supply power the loads only when battery.low-level warning voltage or the setting point.
		Utility and Solar 01 PAL	Solar + Line: Solar energy provides power to the loads as the first priority. If solar energy is not sufficient to power all loads, utility energy will supply power the loads at the same time.
02	Output voltage	220Vac 02 220	230Vac(default) 02 230
		240Vac 02 240	Note: after modify the output voltage,the device must be restarted.

03	Output Frequency	50Hz(default) 03 50Hz	60Hz 03 60Hz
		Note: after modify the frequency,the device must be restarted to be effective	
04	Battery type	AGM(default) 04 AGM	Flooded 04 FLd
		No Battery 04 Nbt	If inverter work without battery, program 04 must be set to Nbt
		User-Defined 04 USE	If "User-Defined" is seleted.battery charge voltage and low DC cut-off volage can be set up in program 05,06.
05	Bulk charge voltage	24V model default setting:28.0 05 28.0 48V model default setting:56.0 05 56.0	Bulk charging voltage: 24V model:(default 28.0Vdc) setting range :24V to 30V setting increase or decrease of 0.1V. 48V model: (default 56.0Vdc) setting range :48V to 60V Please note: if self-defined is selected in Program 04,this program can be set up.
06	Floating charge voltage	24V model default setting:27.0 06 27.0 48V model default setting:54.0 06 54.0	Floating charge voltage: 24V model:(default 27.0Vdc) setting range :24V to 30V setting increase or decrease of 0.1V. 48V model: (default 54.0Vdc) setting range :48V to 60V Please note: if self-defined is selected in Program 04,this program can be set up.
07	Low voltage alarm	24V model default setting:22.0 07 22.0 48V model default setting:44.0 07 44.0	Low-voltage alarm: 24V model:(default 22.0Vdc) setting range :18V to 25V setting increase or decrease of 0.1V. 48V model: (default 44.0Vdc) setting range :36V to 50V setting increase or decrease of 0.1V.

08	Low voltage Shutdown	24V model default setting:21.0 08 21.0 48V model default setting:42.0 08 42.0	Low Voltage Shutdown: 24V model:(default 21.0Vdc) setting range :18V to 25V setting increase or decrease of 0.1V. 48V model: (default 42.0Vdc) setting range :36V to 50V setting increase or decrease of 0.1V.
10	AC charge	default 10 30A	（default 30A）setting range is 0A to 80A, the increment or decrement is 10A per click. Note: when the AC charging current is Set to '0A',if PV,battery and Utility exsist At the same time ,the PV will only charge The battery and the load is powered by Utility.and the grid-tie function is not available
11	Single and Parallel setting	default 11 SIG	Single enable
		single-phase parallel 11 PAL	single-phase parallel enable
		A phase 11 3A	A-phase parallel enable
		B phase 11 3b	B-phase parallel enable
		C phase 11 3C	C-phase parallel enable
		Please note: 1.when three-phase parallel,make sure that A-phase is the host; 2.after the parallel parameters are modified,the device must be restarted to be effective;	

12	AC input voltage range	APL (default) 12 APL	If selected, acceptable AC input voltage range will be within 120-280VAC.
		UPS 12 UPS	If selected, acceptable AC input voltage range will be within 170-280VAC.
13	AC+Solar Total charging current	Default 13 60A	（default 60A）setting range is 10A to 100A, the increment or decrement is 10A per click. NOTE:If the charging current needs to reach 100A,solar input voltage must be more than 350v
14	Setting voltage Point to battery mode when selecting "SBU priority" or "PUL priority" in Program 01	24V model default setting:27.0vdc 14 27.0 48V model default setting:54.0vdc 14 54.0	24V model: 27.0Vdc(default) setting range :20V to 29V 48V model: 54.0Vdc(default) setting range :40V to 58V setting increase or decrease of 0.1V.

Parallel function operation instructions

(Maximum of nine parallel machines)
Single phase parallel:

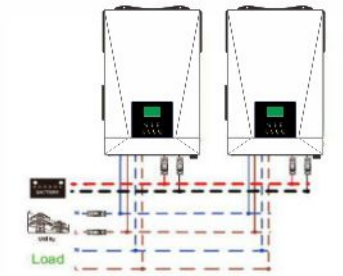
1.CAUTION: It is forbidden for inverter to share the same solar panel group.

2. Connecting the parallel communication line and power cable as shown below
Warning: All inverters must share the same battery pack when paralleling.

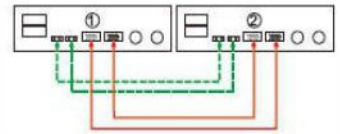
3. Set the parameters of each inverter separately (working mode, single-phase parallel function).
Warning: When working in parallel, the working mode of each inverter must be the same working mode, output voltage,frequency.

4. After setting the parameters, turn on each inverter in turn.
WRINGING:for each group of PV,only one inverters can be connected,otherwise ,it may damage inverters.

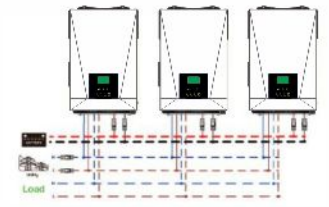
Two inverters in parallel :
Power Connection:



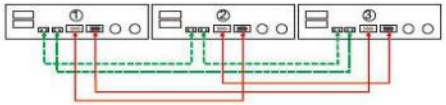
Communication Connection :



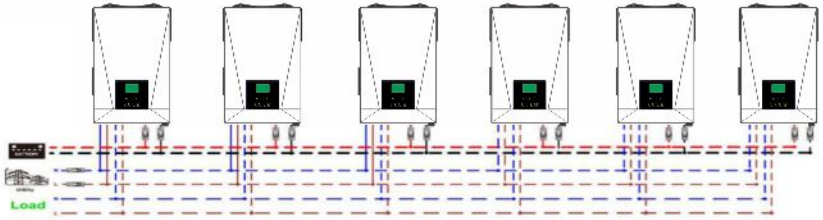
Three inverters in parallel :
Power Connection:



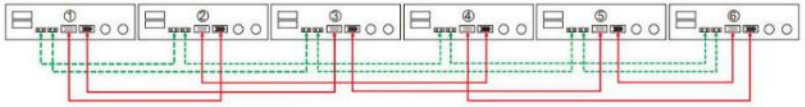
Communication Connection :



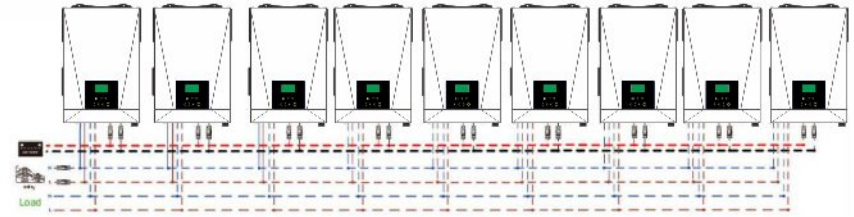
Six inverters parallel :
Power Connection:



Communication Connection :



Nine inverters parallel :
Power Co necti



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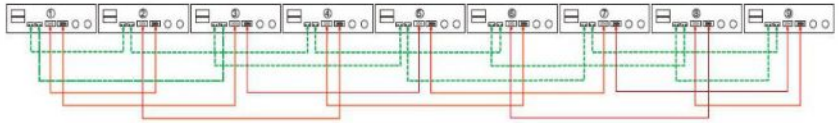
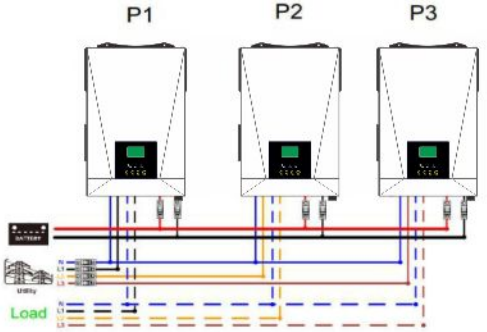
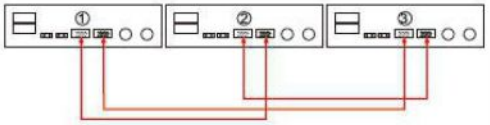


Three-phase parallel:
1.CAUTION: It is forbidden for inverter to share the same solar panel group.
2. Connecting the parallel communication line and power cable as shown below
Warning: All inverters must share the same battery pack when paralleling
3.Set the parameters of each inverter independently (working mode, single-phase parallel function, three-phase parallel function and set A/B/C phase sequence).
Warning: When working in parallel, the working mode of each inverter must be the same working mode.
4.After setting the parameters, first turn on the A phase inverter and then turn on each inverters in turn.
One inverter in each phase:
WRINGING:Do not connect the current sharing cable between the inverters which are in different phase. Otherwise ,it may damage inverters .

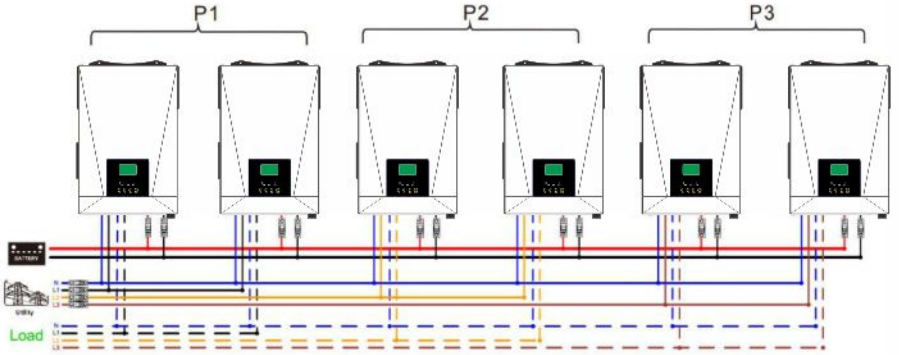
Power connection:



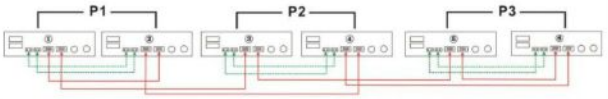
Communication connection:



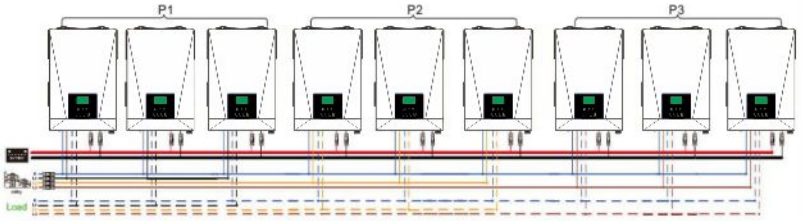
Two inverter in each phase:
Power connection:



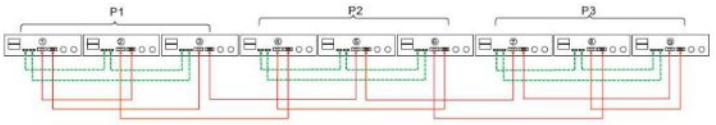
Communication connection:



Three inverter in each phase:
Power connection:



Communication connection:



Fault Reference Code

Fault code	Fault event
01	Bus voltage is too high
02	Inverter voltage is too high
03	Inverter voltage is too low
04	Bus soft start failure
05	Overload fault
06	Output short circuited
07	Battery voltage is too low
08	Inverter soft start failure
09	Bus voltage is too low
10	Parallel fault
11	Over temperature
12	Battery voltage is too high
13	A phase lost
14	B phase lost
15	C phase lost
16	AC output voltage and frequency setting is different
17	AC input voltage and frequency detected different
18	Power feedback protection
19	Firmware version inconsistent
20	Currenent sharing fault
23	PV is over current
24	PV over temperature

25	PV overload
26	PV boost fault

Warnin g Indicator

Warning code	Warning Event
01	Battery voltage is too low
02	Input voltage is too low
03	Input voltage is too high
04	Overload
05	Over temperature
06	Fan is locked when inverter is on
07	Battery voltage is too high
21	PV voltage is too low
22	PV voltage is too high

TROUBLE SHOOTING

Problem	LCD/LED/Buzzer	Possible cause	What to do
Unit shuts down automatically during start up process	LCD/LED and buzzer will be active then complete off	The battery voltage is too low	1.Re-charge battery. 2. Replace battery
No response after power on	No indication	1.The battery voltage is too low. 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	Input voltage is displayed as '0' on the LCD and green LED is flashing	Input protector is triggered	Check if AC breaker is turned on and AC wiring is connected well.
	LED is flashing	Insufficient quality of AC power	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.
When the unit is turned on, internal relay is switched on and off repeatedly	LCD display and LED flashing	Battery is disconnected	Check if battery wires are connected well
Buzzer beeps continuously and red LED is on	warning code 06	Fan fault	Replace the fan
	warning code 05	Internal temperature of inverter component is over 85°C	Check whether the environment around the equipment well ventilated
	warning code 07	The battery voltage is too high	check if spec and quantity of batteries are meet requirements
		Battery is over-charged	Return to repair center

Buzzer beeps continuously and red LED is on	Fault code 10	Parallel fault	Please check if the connection between the inverters is loose
	Fault code 06	Output short circuited	Check if wiring is connected well and remove abnormal load
	Fault code 05	Overload error , the inverter is overload 100% and overload time reaches the upper limit	Reduce the connected load by switching off some equipment
Buzzer beeps continuously and red LED is on	warning code 22	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 02/03	Output abnormal(Inverter voltage below than 180VAC or is higher than 260VAC)	1. Reduce the connected load 2. Return to repair center
	Fault code 01/04/06	Internal components failed	Return to repair center
	Fault code 23	Over current or surge	Remove abnormal load or check PV input
	Fault code 01	Bus voltage is too high	Restart the unit if the error happens again please return to repair center
	Fault code 09	Bus voltage is too low	
	Fault code 02/03	Output voltage is unbalanced	
	Fault code 11	Internal temperature of inverter component is over 85°C	Check whether the environment around the equipment well ventilated
	Fault code 12	The battery voltage is too high	Check if spec and quantity of batteries are meet requirements
		Battery is over-charged	Return to repair center

Buzzer beeps continuously and red LED is on	fault code 13/14/15	Phase loss	1.check whether three-phase power is connected 2.check whether the inverter turns on three-phase parallel
	fault code 16	AC output voltage and frequency setting is different	Check whether the output voltage and frequency of each inverter are set the same
	Fault code 17	AC input voltage and frequency detected different	Check whether the input voltage and frequency of each inverter are set the same
	Fault code 18	Power feedback protection	1.restart the inverter. 2.check if L/N cables sre not Connected reversely in all inverters. 3.for parallel system in single phase ,make sure the sharing are connected in all inverters. For supportin three-phase system,make sure the sharing Cables are connected in the inverters in the same phase. And disconnnected in the inverters in different phase.
	Fault code 19	Firmware version inconsistent	1.update all inverter firmware to the same version 2.if the problem remains ,please contact your installer.

SPECIFICATIONS

Table 1 Solar Mode specifications

MODEL	5.5KVA 48VDC
Rated output power	5.5KVA/5.5KW
PV Max power	5500W
PV operating voltage range	120-450VDC
PV normal operating voltage	280-360VDC
Normal output voltage	230VAC
Output voltage range	230 ± 5%VAC
Normal output current	24A
Power factor	1.0
Efficiency(DC/AC)	≥92%
Frequency	50/60Hz
Overload protection	MPPT will close immediately as long as the input power is greater than the maximum output power
PV Max input current	20A

Table 2 Line Mode specifications

Input Voltage Waveform	Pure sine wave (utility or generator)
Normal Input Voltage	230VAC
Low Loss Voltage	120VAC±7V (wide range) 170VAC±7V(narrow range)
Low Loss Return Voltage	130VAC±7V (wide range) 180VAC±7V(narrow range)
High Loss Voltage	280VAC±7V
High Loss Return Voltage	270VAC±7V
Max AC Input Voltage	300VAC
Normal Input Frequency	50Hz / 60Hz (Auto detection)
Low loss Frequency	40±1Hz
Low loss Return Frequency	42±1Hz
High loss Frequency	70±1Hz
High loss Return Frequency	69±1Hz
Output short circuit protection	Circuit Breaker
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)
Communication	USB or RS232 or WIFI
Humidity	0-90% RH(No-condensing)
Operation temperature	−10-50℃

Table 3 Charge Mode specifications

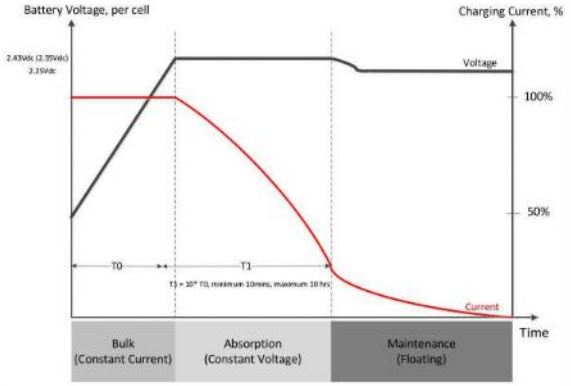
INVERTER MODEL	5.5KVA
Charging Algorithm	3-Step
Utility Charging Mode	
AC Charging Current	0/10/20/30/40/50/60/70/80Amp (@$V_{I/P}$=230Vac)
Bulk Charging Voltage	48.0-60.0vdc (Default:56 vdc)
Floating Charging Voltage	48.0-60.0vdc (Default:54vdc)
Charging Curve	
Max. charging current(Solar+AC)	100A
Over-charging voltage	60vdc

Table 4 Inverter Mode specifications

Normal DC voltage	48V
Waveform	Pure sine wave
Output voltage range	230VAC±5%
Output frequency	50/60Hz±1Hz
Peak Efficiency	≥90%
Power factor	1.0
Overload protection	20s@101%~120% load ,10s@121%~150% load, 5s@≥150% load
Transfer time	10ms typical (UPS); 20ms typical (Appliances)
Protection features	Low voltage protection; High voltage protection Overload protection ; Over-temperature protection Short circuit protection; Over-charge protection; Battery reverse protection
Cold start voltage	46.0VDC
Low voltage alarm(optional)	36.0-50.0VDC
Low voltage alarm recovery	44.0VDC
Low voltage shutdown(optional)	36.0-50.0VDC
High voltage alarm recovery	60.0VDC
Dimension(LxWxH)mm	498X313X123
Net Weight (KG)	10.0
Gross Weight (KG)	11.3