

User Manual

Pure Sine Wave Inverter & Charger

8000W/10000W/12000W



(E)



Table Of Contents

SAFETY INSTRUCTIONS	1
INTRODUCTION	2
1.Basic System Architecture	2
2.Product Features	3
PRODUCT OVERVIEW	4
1.Top view	4
2.Real view	4
OPERATION AND DISPLAY PANEL	5
LED Indicator	5
LCD Display Icons.....	6
LCD Setting	8
Fault Reference Code	13
SPECIFICATIONS	14
Appendix	15

SAFETY INSTRUCTIONS



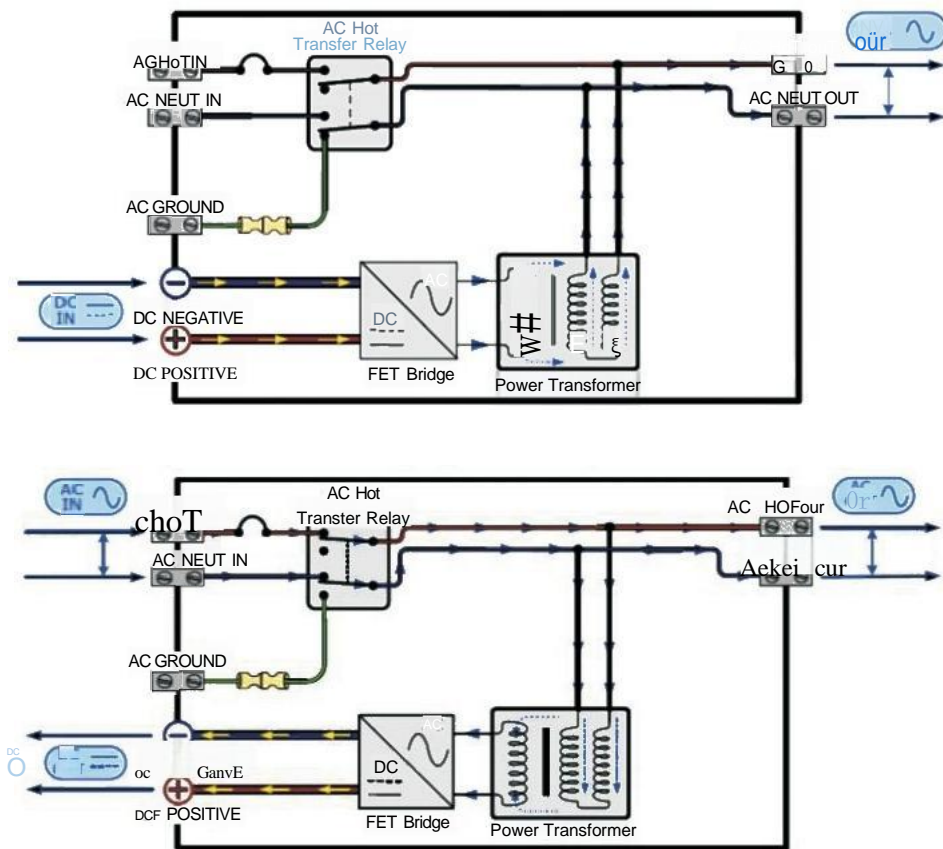
WARNING:This chapter contains Important safety and operating Instructions.

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. **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.
11. **NEVER** cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
12. **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

1.Basic System Architecture



1.1 Instruction to working mode

Inversion priority mode

- (1) In case of normal battery voltage, the inverter operates under inversion mode and load power is supplied by battery inversion ;
- (2) the system automatically switches to battery-powered mode if the battery is fully charged by solar energy or wind Energy through controller.
- (3) the battery can also be charged when inverter operates under electric supply mode, which is determined by mode Setting of charging current. the charging current can be OA if charging is unnecessary

Electric supply priority mode

(1)In case the load is powered by electric supply,the electric supply has to pass input protection device,And filter before supplying power to load in order to ensure power stability.it can be also charge the battery(determined By charging mode)

(2)in case of outage or abnormality of electric supply,the system automatically switches to battery-powered mode

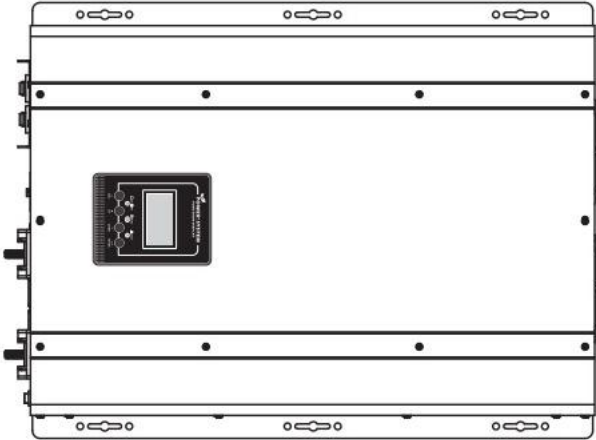
(3)in case electric supply is normal,the system automatically switches to electric supply mode to supply power to load

2.Product Features

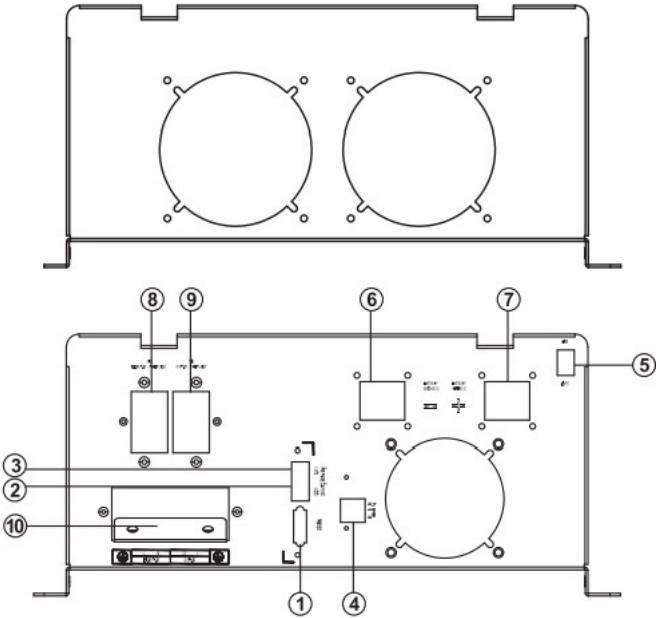
- 1.Pure sine wave inverter
- 2.Configurable input voltage range for home appliances and personal computers via LCD setting
- 3.Configurable battery charging current based on applications via LCD setting
- 4.LCD and LED Display
- 5.Over temperature auto restart
- 6.Overload/Over temperature/short circuit protection

PRODUCT OVERVIEW

1.Top view



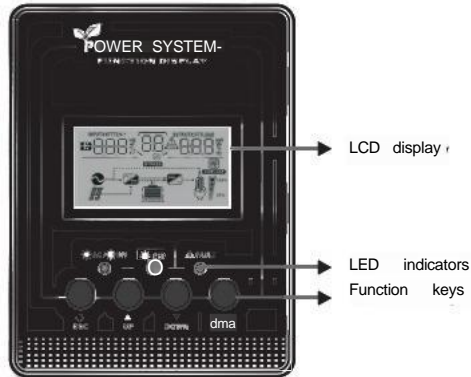
2.Real view



- 1.RS232 port
- 2.LCD remote control
- 3.LED remote control
- 4.Dry contact
- 5.On/Off
- 6.Battery negative
- 7.Battery positive
- 8.AC output protect
- 9.AC input protect
- 10.Output/Input

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.



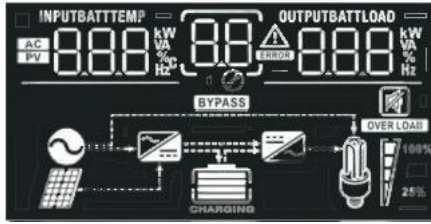
LED Indicator


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 Or	Battery is fully charged.
		Flashing	Battery is charging
△FAULT	Red	Solid Or	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	
	Indicates the PV input	
INPUTBATT kW VA	Indicate input voltage, input frequency, PV voltage, battery voltage and charger current.	
Configuration Program and Fault Information		
	Indicates the setting programs	
	Indicates the warning and fault codes	
	Warning: B8 \triangle flashing with warning code	
	Fault: 8B lighting with fault code	
Output Information		
OUTPUTBATTLOAD 888 kW VA	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current	
Battery Information		
	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%	<1.717V/cell			
	1.717V/cell ~1.8V/cell			
	1.8~1.883V/cell			
	>1.883 V/cell			
50%>Load >20%	<1.817V/cell			
	1.817V/cell ~1.9V/cell			
	1.9~1.983V/cell			
	>1.983			
Load<20%	<1.867V/cell			
	1.867V/cell ~1.95V/cell			
	1.95 ~2.033V/cell			
	>2.033			
Load Information				
OVERLOAD	Indicates overload			
100%	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.			
	0%-24%	25%-49%	50%-74%	75%-100%
25%		!		
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			

LCD Setting

After pressing and holding ENTER button for 3 seconds,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.


After setting out the output frequency,the output voltage,the charge current and the AC input voltage range, it is necessary to turn off the electricity and restart the inverter.

Setting Programs

Program	Description	Selectable option	
00	Exit setting mode	Escape ESC	
01	Output source priority: To configure load power source priority	Utility first (default) B E 	Utility will provide power to the loads as first priority. battery energy will provide power to the loads only when utility power is not available
		Battery priority 5bU ?	battery energy provides power to the loads as first priority Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12.
03	Input voltage range	Wide Utility effective range Nominal output voltage:-23%to+15% 	
		Narrow(default) Utility effective range: Nominal output voltage:-15%to+15% ! UPS	
04	Power saving mode enable/disable	Saving mode disable (default) BH SdS	If disabled,no matter connected load is low or high,the on/off status of inverter output will not be effected.
		Saving mode enable 045ER	If enabled,the output of inverter will be off when connected load is pretty low or not detected.
05	Battery type	type of battery	Fast V Floating V
		Gel U.S.A	14.0 13.7
		A.G.M.1 b-2	14.1 13.4

		A. G. M. 2 <u>□-2</u>	14.6	13.7
		Sealed lead acid b-4	14.4	13.6
		Gel euro b-5	14.4	13.8
		Open lead acic b-6	14.8	13.8
		Calcium b-7	15.1	13.6
		De-sulphation b-8	15.5 for 4 hrs	
		- <u>b-L</u>	When the battery voltage reached to 14.7V, UPS closes the charge. UPS open charging when the battery voltage down to 12.5V	
		User-defined (default fast V 14.3, Floating V 13.7) b-0	If User-Defined is selected , user can set the battery type in program 94	
07	Auto restart when over temperature occurs	Restart disable (default) <input type="checkbox"/>	Restart enable L T	
09	Output frequency	50Hz (default) 50,	60Hz] 60.	
11	Maximum utility charging current	Refer to Appendix , the default is the maximum value, with 5A base, it can be up/down set, the minimum is 0A, the maximum can not exceed (Pout*0.42/VDC) 1 <u>58</u>		
12	Low battery voltage inverter transfer to Utility	The default is low battery voltage alarm point setting range is from 10.5Vto 12.5Vfor 12V(*2for 24V *4for 48V,*8for 96V), if the voltage set by user is below default point , the default is low battery voltage alarm point. Increment of each click is 0.1V for 12V (*2for 24V,*4for 48V,*8for 96V) <small>BATT</small> H. S		

13	High battery voltage recovery	Output of Battery model if battery voltage is set higher 13.5v-15.5v, otherwise it is output of bypass setting range is from 13.0V to 15.5V for 12V(*2for 24V, *4for 48V, *8for 96V), if the voltage set by user Increment of each click is 0.2V for 12V(*2for 24V, *4for 48V, *8for 96V)	
		BATT 1 — v —	
18	Alarm control	Alarm on(default) b8R	Alarm off bBF
19	Auto return to default display screen	Return to default display screen (default) <u>ESP</u>	If selected, no matter how users switch display screen, it will automatically return to default display screen (Input voltage /output voltage) after no button is pressed for 1 minute
		Stay at latest screen	If selected, the display screen will stay at latest screen user finally switches.
20	Backlight control	Backlight on (default) LOA	Backlight off <u>LBF</u>
22	Beeps while primary source is interrupted	Alarm on(default) ROR	Alarm off 22 RBF
25	Record Fault code	Record enable FEN	Record disable (default)
26	Bulk charging voltage(C.V voltage)	If User-defined is selected in program 94, this program can be set up. setting range is from 13.0V to 15.5V for 12V (*2for 24V, *4 for 48V, *8for 96V)	
	Maximum charging voltage for lithium battery, when the battery voltage reached the charge voltage, it closes the charge	If User-defined is selected in program 94, this program can be set the maximum charging voltage. setting range is from 13.0V-15.5V	
	E&C	BATT U E&C 13.8	

27	Floating charging voltage	If User-defined is selected in program 94, this program can be set up. setting range is from 13.0V to 15.0V for 12V(*2for 24V, *4for 48V, *8for 96V)	
	<u>FLU</u>	<u>FLU</u> BATT	
27	Battery low voltage open charging (for lithium battery)	If User-defined is selected in program 94, this program can be set up. setting range is from 12.0V to 14.0V for 12V(*2for 24V, *4for 48V, *8for 96V)	
	<u>HC</u>		
29	Low DC cut-off voltage	The default single section is 10.0V .setting range is from 10.0Vto 12Vfor 12V(*2for 24V, *4for 48V, *8for 96V)) Increment of each click is 0.1V for 12V (*2for 24V, *4for 48V, *8for 96V)	
		<u>[DU</u> P9 <u>BB°</u> BATT	
93	Frequency Range	Special 40-70HZ □ !	
		General 50HZ 45-55HZ/60HZ 55-65HZ CER	
94	Selection of battery type	ithium battery L ✓ <u>RLb</u>	If selected, battery charge voltage and battery low open charging can be set up in program 26, 27
		Other battery <u>LEP</u>	If selected , battery charge voltage can be set up in program 26, 27
95	Battery high voltage trip	When dry contact switch from NC to NO, battery voltage arrive to setting voltage, dry contact point switch to NC. This setting can not be higher than fast charge voltage. setting range is from 13.0V to 15.5V for 12V(*2for 24V *4for 48V, *8for 96V) Increment of each click is 0.1V for 12V(*2for 24V, *4for 48V, *8for 96V) BATT	
		<u>HGU</u>	

Fault Reference Code

warning code	warning event	Icon on
03	Battery voltage overcharge	
04	Battery voltage is too low	
05	Inverter over temperature	
07	Inverter over load	
12	PV input voltage is too low	
13	PV input voltage is too higher	
14	PV over current	
15	PV over temperature	
88	Transformer phase reversal	
89	Frequency is out of range	
97	Inverter fail to communicate with MPPT	

Fault Code	Fault Event	Icon on
02	Heat sink over temperature	
03	Battery voltage is too higher	
04	Battery voltage is too low	
05	Output short circuit	
06	Output is too high or too low	
07	Overloac	
99	Inverter fail to slow start	

SPECIFICATIONS

MODEL		8048E	8096E	10048E	10096E	12048E	12096E	
Rated Output Power		8000W		10000W		12000W		
Transfer Time		10ms typical						
Invert mode	Nominal output voltage rms	230VAC(200~240VAC 10V Gear setting)						
	Output frequenc)	50HZ±0.3HZ or 60HZ±0.3HZ						
	Output wave form	Pure Sine wave						
	Output overload	105%>Load<120%±10%;Faut(turn off output after 10 seconds) 120%>Load<150%±10%;Fault (turn off output after 3 seconds) 150%>Load±10%;Fault (turn off output after 1 seconds)						
	Short circuit protection	Software protection						
	Nominal efficiency	>88%						
	Power factor	0.9-1						
Line mode	Input voltage range	Narrow range			Wide rang			
		Nominal output voltage±15%			Nominal output voltage +15%, -23%			
	Input frequency voltage	40Hz-70Hz						
	Input wave form	Sine wave(Utility or generator)						
	Short circuit protection	Circuit breaker						
	Output Overload	120%>Load<150%±10%;fault (turn off output after 60 seconds); 150%>Load±10%;fault(turn off output after 1 seconds)						
	Over Charge protection shutdown	16.0for12Vdc/*2for24V/*4for48V/*8for 96V						
	Efficiency online transfer mode	>95%						
	AC Charge	Charge current can be set(5A UP/DOWN setting,For specific parameters,pkease refer to Appendix)						
	Selection of battery charging Voltage type							
	Battery type	Fast V			Float V			
	Gel U.S.A	14.0			13.7			
	A.G.M 1	14.1			13.4			
	A.G.M 2	14.6			13.7			
	Sealed Lead Acid	14.4			13.6			
Gel Euro	14.4			13.8				
Open Lead Acid	14.8			13.3				
Cakium	15.1			13.6				
De sulphation	15.5 for 4 hrs then off							
Li	14.7							
other	Iser-defined							

Battery	Nominal DC Input Voltage	48V/96V	48V/96V	48V/96V
	Battery voltage range	12V(10Vdc ~16Vdc) ±0.3Vdc/*2for24V/*4for48V/*8for 96V		
	Low DC Warning Voltage	12V(10.5Vdc ±0.3Vdc)/*2for24V/*4for48V/*8for 96V		
	Low DC Cut-off Voltage	12V(10Vdc ±0.3Vdc)/*2for24V/*4for48V/*8for 96V		
others	Operating Temperature Range	0~40℃		
	Humidity	0%~95%		
	Noise	<50dB		
	Dimension (D*W*H), mm	584*450*200		

Appendix

Model	Power value	Charge current
8048E	8000W	70A
8096E		35A
10048E	10000W	75A
10096E		40A
12048E	12000W	75A
12096E		50A

*Product specifications are subject to change without further notice