CA10289

Pure Sine Wave Inverter System

YOHAKO

USER MANUAL

JAPAN TECHNOLOGY

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I .Operating Introduction

1-1.Open-package inspection

1).After opening the package,please check the attached parts and components, including operation manual and checking whether the inverter is in good condition? If found any inverter broken or components missing, do not turn on the machine, feedback to the carrier or supplier.

Note:

Please keep the box and packing materials in case the use in future.

1-2.Installation notice:

1). The products should be well-ventilated, away from water and the corrosive and combustible gases.

2).Do not set it in a corner, ensure the bottom of the front panel, the rear panel fan outlet and ,the side of the machine are well-ventilated.

3).The environment temperature should remain 0-40℃.

4).If the machine operates under low temperature environment, it world cause water condense, only in a absolute dry condition can the machine would work normal, otherwise there will be a electric shock.

5). Install the inverter near the mains input socket or nearby the switch, to draw out plugs then cut off mains supply once there is an emergency.

Attention:

1).Load should be turned off before connecting to inverter and turned on one by one after connecting completed.

2).The inverter should be connected to a socket with a corresponding current protection.

3).All power sockets should link with ground protection.

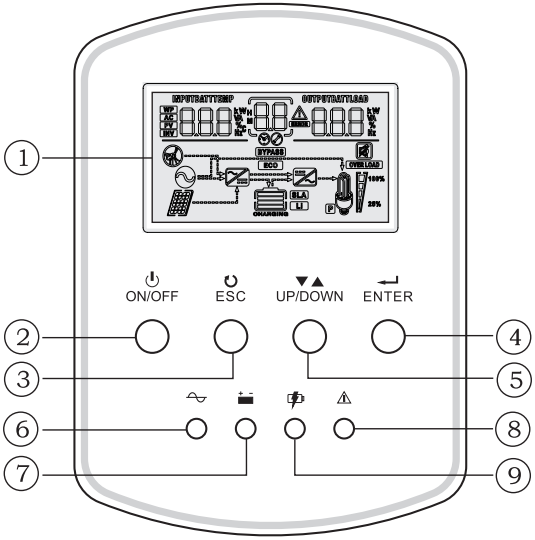
4).No matter input power cable inserts to mains socket or not, the inverter will also continue outputing possibly, turning off the inverter can not guarantee there is o current inside the machine. In order to make sure to cut off the output of inverter, you should turn off all the switches then turn off the main supply .

5).To load inductive appliances such as electromotor,displayer and laser printer, inverter capacity should be twice as loading machine's rated power at least.

Ⅱ.Description of front board

1000VA-1500VA

LED Light and Button Meanings:



①.LCD Display
②.ON/OFF button
③.ESC button
④.Confirm button
⑤.UP/DOWN button
⑥.AC power indicator light
⑦.Inverter indicator light
⑧.Fault indicator light
⑨.Charging indicator light

Ⅲ.Function setting and buttons meaning

ON/OFF· ON/OFF button:Long press 2 seconds to boot; long press 1 second to shutdown.

ESC . ESC button:Press this button to return to the default display screen, in setting mode press this button to return to the previous menu exit settings.

UP/DOWN. Up/Down button:The setting button toggles the LCD display information, which can be used to select the next option in the setting mod.

ENTER . ENTER button:In the setting mode, use to confirm the selection.

01.AC power priority mode: AC input priority to supply the load and batteries, battery supply the loads without AC input.

02.Solar energy priority mode:The solar input priority to supply the load and battery, when there is no solar input,battery supplies the load.

Enter setting status:

Enter setting mode, Press "ENTER" button for 10 seconds.
Exit setting mode, Press "ESC" button repeatedly.
1.Press "UP" or "DOWN" button to choose the parameter and then press "ENTER" button.
2.When parameter is flashing, press "UP" or "DOWN" to change it and then press "ENTER" button to confirm.
When setting: Setting icon is flashing
Setting succeed: Left-sided frame of the parameter will flash
Setting failed: FAULT light on

Settings	Display (Left)	Display (Mid)	Display (Right)	Setting range	Descriptions
Mains input voltage range	AIr	00	UPS	Narrow range	Mains input range is 180-265V
			APL	Wide range	Mains input range is 155-265V
Mains frequency oltage range	AFr	01	LO	Narrow range	Mains input frequency range is 45-65HZ
			HI	Wide range	Mains input frequency range is 40-70HZ
Working mode	None	02	UTI	Mains priority	The utility power will provide power to the load first. Only when the utility power is not enough to supply the load, the solar energy And the battery will provide power to the load.
			SOL	Solar priority	When solar energy is sufficient, solar energy will be preferentially provided to the load. When there is solar energy but not enough, the solar energy and battery power will provide power to the load at the same time. When there is no solar power, the utility will provide power to the load. At the same time, If the battery voltage drops to the low-battery warning voltage point or the set DC-to-AC voltage point,the mains will also provide power to the load.
			SBU	Battery priority	When solar energy is sufficient, solar energy will be preferentially provided to the load. When there is solar energy but not enough, the solar energy and battery power will provide power to the load at the same time. If the battery voltage drops to the low battery warning voltage point or the set DC to AC voltage point, the mains will provide power to the load.
Charging mode	None	03	CUT	Mains priority	The energy of the mains and the solar energy charge the battery at the same time
			CSO	Solar priority	In the solar priority mode, when the PV meets the requirements, the battery is charged with solar energy preferentially, and when the battery voltage is too low, the mains charge will be started
			OSO	Solar charging only	The machine simply uses the energy of solar energy to charge the battery
Mains charging current ratio	ACP	04	100%	10~100%	Adjustable charging current ratio of mains
Solar charging current ratio	SCP	05	100%	20~100%	You can adjust the charging current proportional solar
Boost charging voltage	CU	06	14.2V	13.5~15.0V	Bulk charging voltage setting, according to different types of batteries

Settings	Display (Left)	Display (Mid)	Display (Right)	Setting range	Descriptions
Float charging voltage	FLU	07	13.6V	12.5~14.0V	Float voltage setting, according to different types of batteries
Battery lockdown voltage	COU	08	10.2V	9.5V~11.5V	Set the shutdown voltage point of battery protection voltage
Charging voltage of mains recovery	DTA	09	12.0V	11.5~12.5V	Set the battery voltage point when the mains power is involved in the solar energy priority charging mode
Charging voltage of mains off	ATD	10	13.5V	13.0V~14.0V	Select the voltage point of converting from mains to solar power in solar priority mode
Inv. output voltage	OU	11	220V	200~240V	Set the inverter output voltage
Mains detection speed	CST	12	HI	High speed	Mains sensitivity settings:high medium low
			IDE	Mid. speed	
			LO	Low speed	
Inv. output frequency	OF	13	50Hz		Set inverter output frequency
			60Hz		
Fault restart switch	RA	14	TE	On	Restart 3 times after short circuit or overload
			TD	Off	No restart after short circuit or overload
Backlight control	BLC	15	LON	Always on	The display backlight is always on
			LOF	Always off	The display backlight is always off
			LOD	Delay off	Display backlight smart switch
Buzzer control switch	BEC	16	AON	On	Allows beeping in fault state
			AOF	Off	No beeping in any state
Low battery alarm switch	BOL	17	OFF	Off	Intelligent battery protection function, it is not recommended to change
			ON	On	
Load limit	LL	18	OFF	Off	Intelligent transformer temperature protection function, it is not recommended to change
			ON	On	
Load alarm limit	LEL	19	OFF	Off	This setting does not adapt to this inverter. Setting not available.
			ON	On	
Baud rate	BAU	20	0	2400	Set the communication baud rate
			1	4800	
			2	9600	
Output display mode	ODT	21	220V	220V	Set display output voltage
			110V	110V	
Swon bat voltage	BLS	22	11.5V	10.5V~12.2V	After the machine is shut down abnormally, the battery voltage must be higher than the set value before it can be turned on normally
Bat low off restart vol	BRU	23	13.0V	12.0V~14.0V	After the machine is shut down abnormally, the battery voltage must be higher than the set value before it can be turned on normally
Battery type	BTT	24	SEL	SEL	Sealed Lead Acid Battery
			GEL	GEL	Gel Battery
			FLD	FLD	Inter Cell
			USER	USER	Customer Customization
			TER	LiCoMnNi02	Ternary Lithium Battery
			LIF	BAT-LiFeP04	Lithium Iron Phosphate Battery
Factory	RS	25	ON	On	All settings are restored to factory settings
			OFF	Off	No recovery process, keep existing settings

Error Codes for reference

Display (Left)	Display (Right)	Details
ALA	021	Inverter communication connection failure alarm
ALA	233	Abnormal mains output alarm
ALA	236	Abnormal machine load alarm
ALA	237	Inverter overload alarm
ALA	231	Abnormal output alarm
ALA	234	High battery voltage alarm
ALA	235	Low battery voltage alarm
ALA	241	Memory chip read and write error alarm
ALA	232	Memory chip connection failure alarm
ALA	238	Inverter over temperature alarm
ALA	239	Load-causing over temperature alarm
ALA	242	Host computer software planned shutdown alarm
FAL	102	Inverter overload shutdown fault
FAL	104	Abnormal output fault
FAL	105	Abnormal load fault
FAL	106	Inverter over temperature fault
FAL	135	High battery voltage fault
FAL	134	Low battery voltage fault
FAL	123	Load-causing over temperature fault
FAL	169	Current detection signal failure
FAL	161	Abnormal mains output fault
FAL	152	Temperature sensor connection failure
FAL	162	Host computer software planned shutdown failure

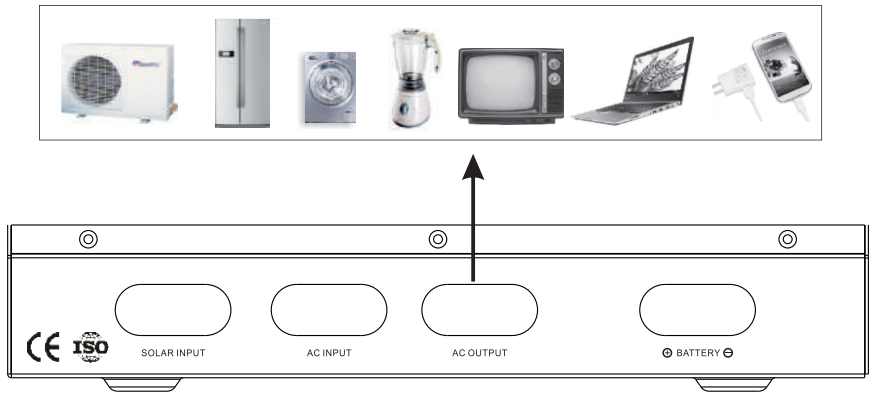
Ⅳ.Connection way of input and output

Make the AC input terminal connect the AC input socket, and the load to connect the AC output universal socket.

Description of back panel

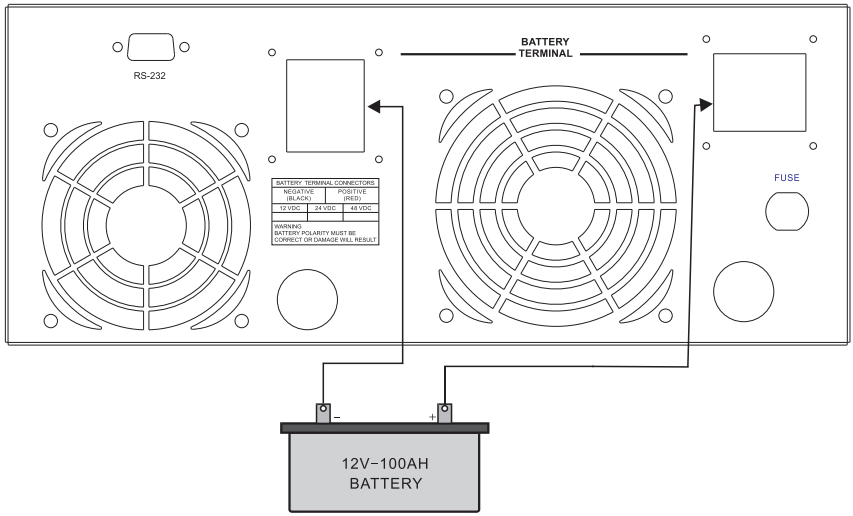
DC INPUT-	Battery negative terminal
DC INPUT+	Battery positive terminal
AC INPUT	AC input terminal
AC OUTPUT	AC output universal socket
SOLAR INPUT+	Solar panel positive interface
SOLAR INPUT-	Solar panel negative interface

1. 500VA/800VA/1000VA/1500VA/2000VA Series Connection Wiring Diagram

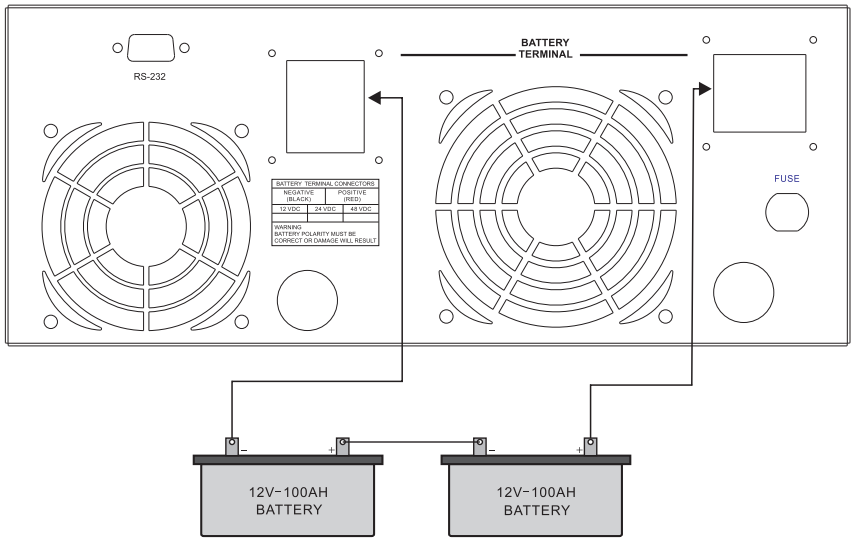


V.Battery wiring diagram

1.12V Battery Wiring Diagram



2.24V Series Battery Wiring Diagram



Ⅵ.Care and Maintenance

1).This inverter is low in repair rate. Battery of standard model is valve adjusting, low maintenance, ensuring better life only by charging often. When connecting to mains supply, no matter inverter on or off, it still keeps charging for battery, and provide over charge, over discharge protection.

2).If there has been long time no using, please discharging then charging the inverter each 4-6 months.

3). Usually, the life span of battery is 3-5 years. If any wrong with it, please ask professionals for changing. And do not change it by yourself.

4).Don't change the single battery, changing the battery should according to the suppliers instructions.

5).Normally, the battery should discharge then recharge every four or six months, charging for it more than 12 hours after discharging.

6).At high temperature area, the battery should be discharging and charging every 2 months and the standard charging time is 12 hours at least each time.

Note:

1).Before changing battery, must turn off inverter and disconnect the mains supply

2).Remove metal object like ring, watch etc.

3).Please don't put the metal objects on the battery.

4).This is the normal phenomenon, when connecting the battery wire, the wiring will appear at a small spark.

5). Be attention to connecting between anode and cathode.

Ⅶ.Rapid troubleshooting and maintenance

Fault	Cause	Solution
NO city power input	Recoverable fuse broken	Change the fuse
Terminal heating	Fault or loose connection	Fasten again
No Output	Battery no energy or overload	Charge battery or reduce loads
Switch on failure	Fault connection with city power or battery	Check connection with battery or connect again
Alarm when switch on	Battery no energy or overload	Charge battery or reduce loads
Buzzer scream every second	Over temperature alarm or low battery alarm	Check if fan heat dissipation hole jammed
Fan sometimes twirls or sometimes stop	Fan twirls when inside temperature reaches 45℃, stop when 37℃	Normal phenomenon, fan is under intelligent control

Ⅷ.Technical Parameter

Momdel		500VA	800VA	1000VA	1500VA	2000VA
Rated Power		400W	640W	800W	1200W	1600W
Input	Voltage	145-275VAC				
	Frequency	45-65HZ				
Output	Voltage	AC220V±3%(Battery Mode)				
	Frequency	50/60Hz±1%(Battery Mode)				
Output wave Form		Pure sine wave				
Transfer efficiency		>85%				
Battery		Optional				
Rated battery voltage		12/24/48VDC				
Max.AC charging current of 12V battery		8A	11A	17A	33A	35A
Max.AC charging current of 24V battery		4A	5A	8A	16A	18A
PWM cntroller charging current		30A				
Battery low alarm		battery light discharge 11.5V*N; battery load discharge 11.5V*N@load<20%; 11V*N@load>50%/10.5V*N@load>50%;				
Battery low recovery		battery light discharge 12V*N; battery load discharge 12V*N@load<20%; 11.5V*N@load>50%/11V*N@load>50%;				
DC low voltage shutdown		battery light discharge 11V*N; battery load discharge 11V*N@load<20%; 10.5V*N@load>50%/10V*N@load>50%;				
DC high voltage alarm and fault		16V*N				
DC high voltage recovery		15V*N				
Maximum PV array power		12V: 400W 24V:800W				
PWM input voltage range		12V: PWM 15V-50VDC 24V: PWM 30V-60VDC				
Maximum PV array open circuit voltage		12V: PWM 50VDC 24V: PWM 60VDC				
Maximum solar charging current		30A				
Alarm						
Low battery alarm		Audible alarm-1 beeping per second				
Overload alarm		Audible alarm-continuous beeping				
Fault		Audible alarm-continuous beeping				
Protection		Overload, short circuit, high & low voltage protection of battery and AC input.				
Conversion method		Interactive				
Overload power		Load 150%,shut down ofter 2 seconds				
Working environment	Temperature	-10℃~75℃				
	Humidity	10%~90%				

Above parameter version change without any notification.

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