USER'S MANUAL

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Series INV
Pure Sine Wave Contravariant Power Supplies

Inverter Catalogue

Brief Introduction of Inverter

1.1. Summary

These series of Inverters aim at needs of Office Automation and computerization by considering placement space and location as well as noise that disturbs personnel in design. Taking small volumes, low noise with high stabilities and easy operation as key elements, the products also maintain its consistent excellent qualities and functions. The most outstanding point of these series of Inverters is adopting of the latest IGBT success-ratio unit with special equipped driving ship and special designed control circuit. So applications of our Inverters will make your precise electric equipment perform most efficiently

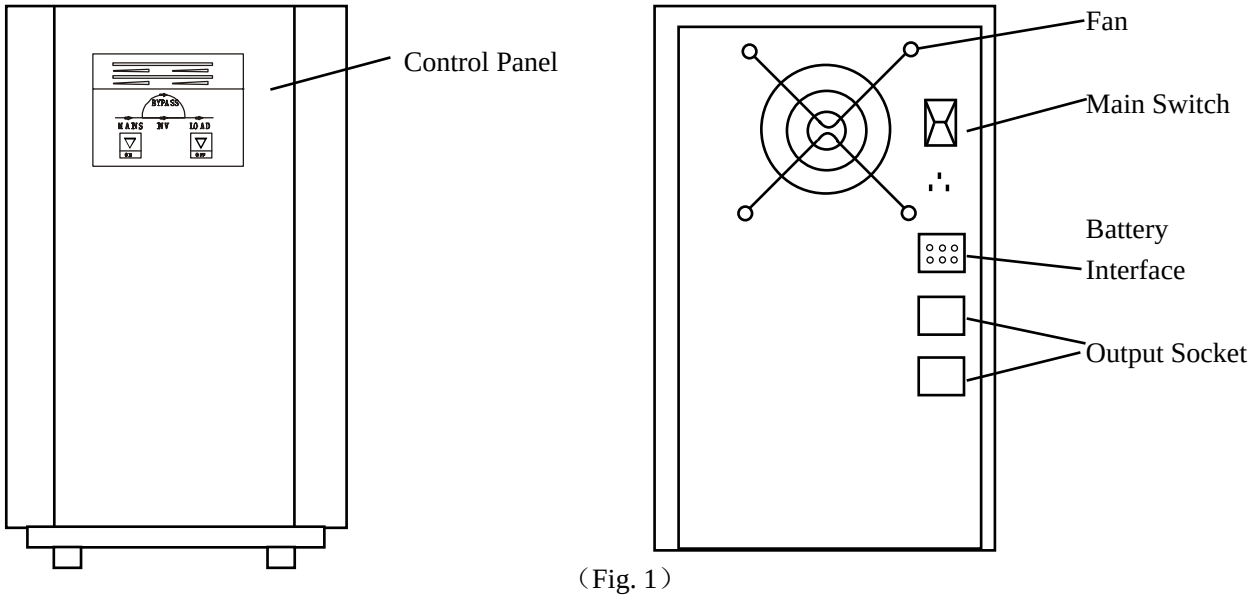
1.2 Notice

In order to guarantee normal performance of existing functions of the Inverters, please notice:

1. Please make sure you read this manual detailedly before using
2. Fixing must be operated as the indications in this manual
3. Operate as indicated steps
4. Avoid overloaded employ in case any trouble of the Inverters
5. Please the Inverters clean
6. Please keep this manual for reference in future
7. Fixing and maintenance should be handled by qualified personnel
8. It’s better to keep two persons on the spot while fixing Inverters
9. Construct according to safety code
10. Please do not open the machine cover to escape any person or machine from being shocked by electricity

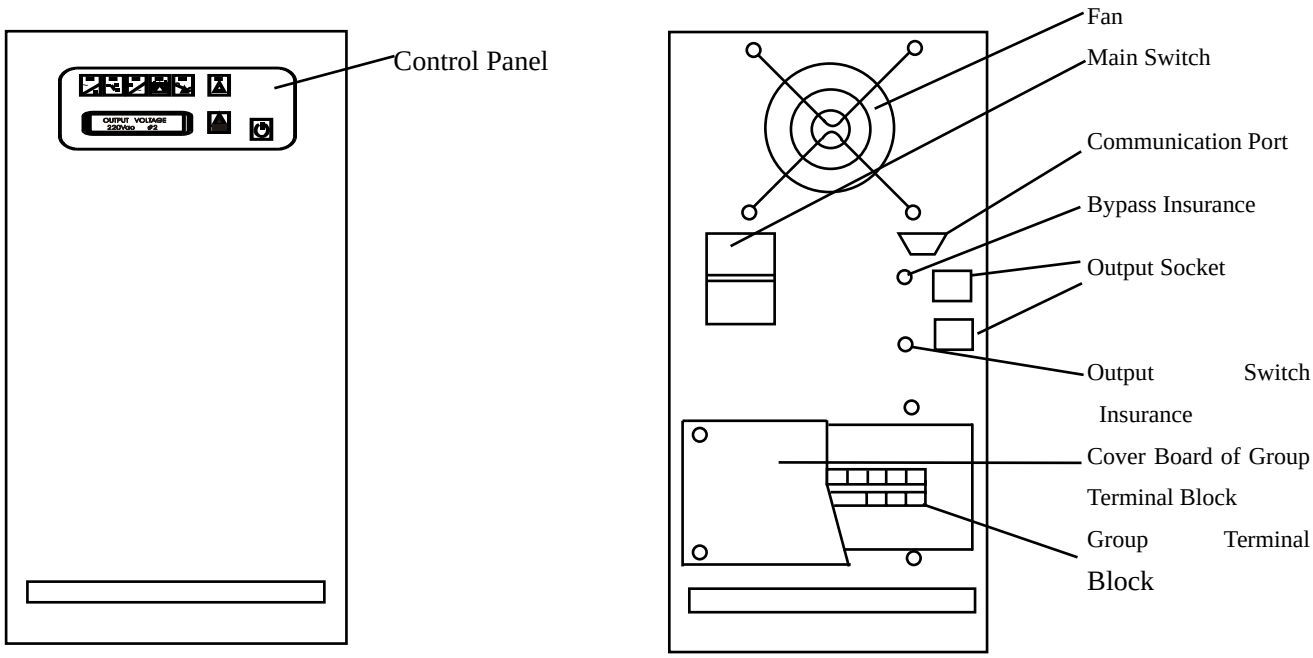
Outline Structure of Inverter

2.1 Appearance of 1KVA Inverter



（Fig. 1）

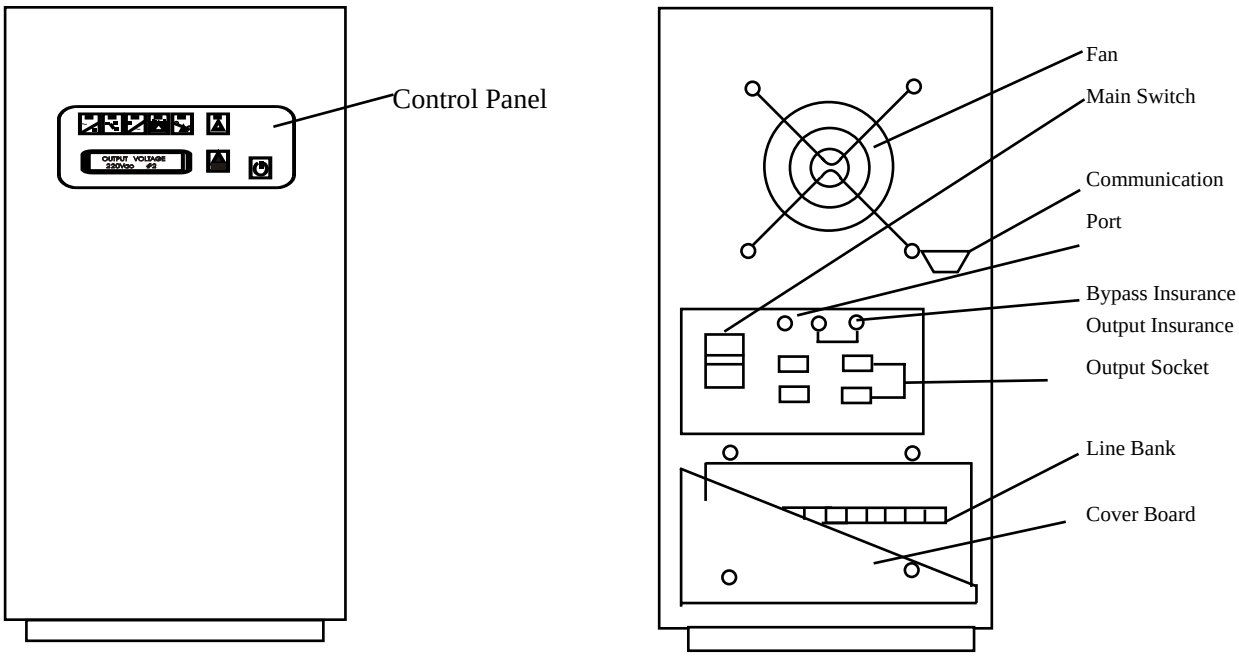
2.2 Appearance of 2.3KVA Inverter



（Fig.1.A）

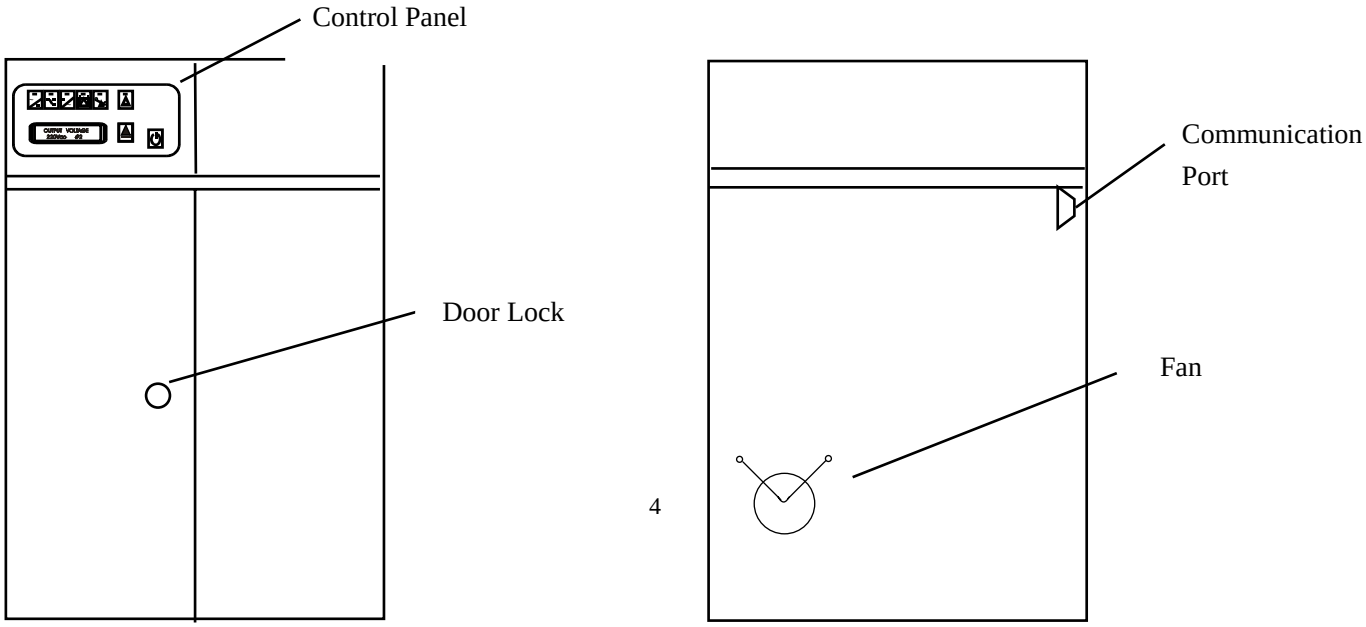
Outline Structure of Inverter

2.3 Appearance of 5. 6KVA Inverter



（Fig.2.B）

2.4 Appearance of 8KVA~20KVA Inverter



3. Placement of Inverter

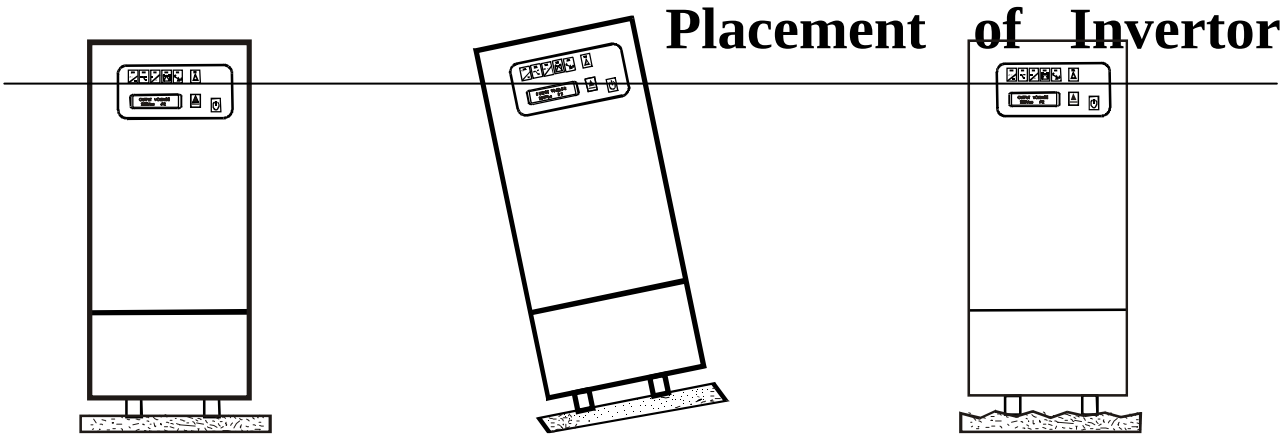
Placement of Inverter

3.1 Transit and Removal

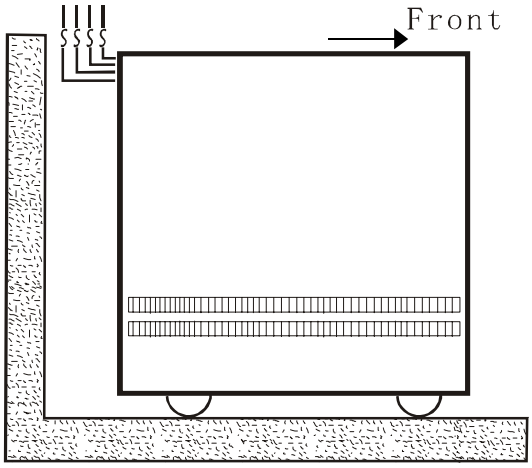
1. Please dismantle all the connections firstly
2. Handle with care, no hitting
3. No inverted removal

3.2 Placement

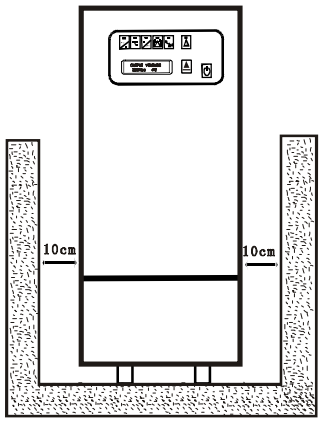
1. Please do not set it on any rugged or declining place(Fig.5)
2. Please put the inverter in a ventilated place, its back and two sides should be at least 10cm from walls to make sure unobstructed working of air orifice and air gate. (Fig. 6, Fig.7)
3. Keep the inverter from direct irradiating of sunshine (Fig.8)
4. Keep it from rain or sloppy places(Fig.9).
5. Keep it far from fire and high temperature in case the temperature gets too high (Fig. 10)
6. Keep it from space with corrosive gas
7. Temperature of running environment should be 0---+40



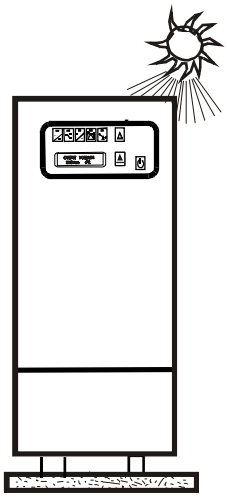
（Fig.5）



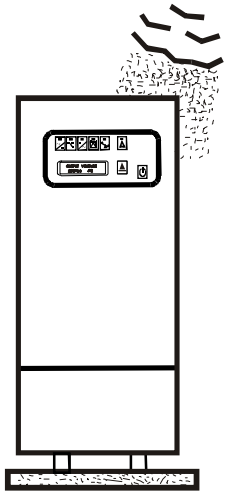
（Fig.6）



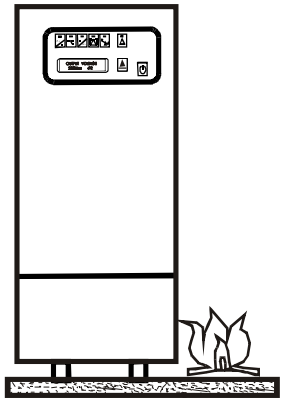
（Fig.7）



（Fig.8）



（Fig.9）



（Fig.10）

Fixing and Connection of Invertor

4.1 Notice

1. Please follow electric principles while constructing
2. Do earthing properly
3. Test input voltage by electricity meter to check if the voltage is right
4. Stave off operation under power and make sure safe construction
5. Turn the switch on back of the inverter to “OFF”
6. Take the cover board on group terminal block away off
7. Connect input and output cables correctly in keep with marks on group terminal block and lock them after taking insulated treatment
8. After connection, set the cover board of the group terminal block back, then the inverter can start work

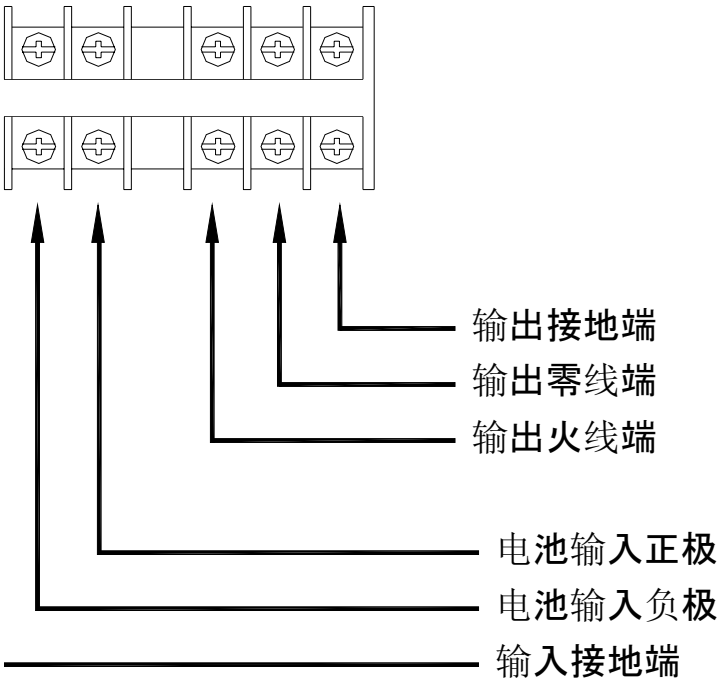
4.2 Fixing of Inverter

4.2.1 1KVA Inverter

1KVA inverter provides two input power lines for batteries which can be inserted directly into battery interfaces of the inverter, but please notice positive electrode and cathode of the connecting lines, they can not be connected in opposite directions, or the inverter will de damaged. Then insert the load into output socket of the inverter. Attention: the loading should be beyond rated ration.

4.2.2 Inverters over 2KVA

There's a group terminal block on the back of the inverter. Battery input(1, 10), inverter output (L,N) and earthing(⏚) can be connected properly according to the wiring marks. Please notice the difference of positive electrode and cathode of batteries



输出接地端---Earthing Output Terminal
输出零线端---Zero Line Output Terminal
输出火线端---Live line Output Terminal
电池输入正极-Positive Electrode of Battery Input
电池输入负极-Cathode of Battery Inout
输入接地端---Earthing Inout Terminal

（Fig.11）

Warning：

1. **This machine has to be connected to the ground, and the earthing wire should not**

be removed or cut under any condition to prevent electricity shock

a) Direct and alternating current exist between wiring terminals at the back of the inverter, so please fit the cover board properly before start the machine

4.3 Selection of Dynamical Fittings

Fixing and Connection of Inverter

4.3.1 Selection of Wiring

4.3.2

Voltage / Power Capacity	Battery Input	Output	
		220（V）	110（V）
2KVA	5mm^2	2 mm^2	4mm^2
3KVA	6mm^2	2.5 mm^2	6mm^2
5KVA	6mm^2	3.5 mm^2	8mm^2
8KVA	8mm^2	5.5 mm^2	12mm^2
10KVA	10mm^2	8 mm^2	16mm^2
15KVA	16mm^2	10 mm^2	16mm^2

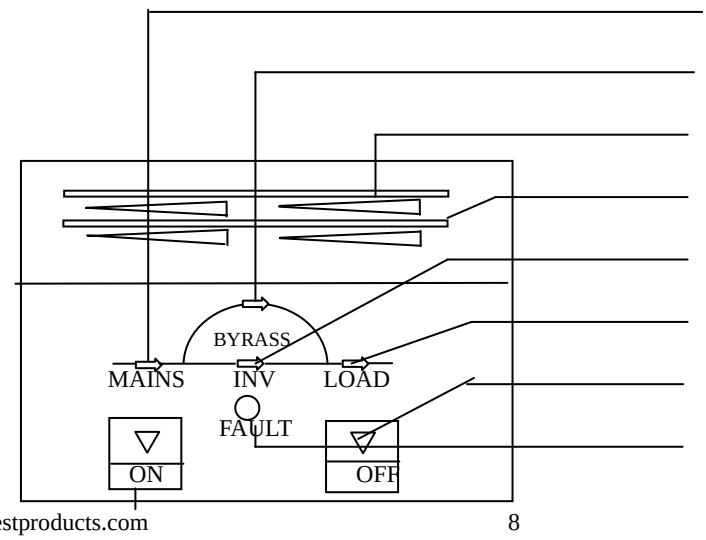
4.5.2 Selection of Air Switch

Voltage / Power Capacity	Battery Input	Output	
		220（V）	110（V）
2KVA	32A	15A	32A
3KVA	32A	20A	50A
5KVA	50A	32A	63A
8KVA	100A	63A	100A
10KVA	100A	100A	100A
15KVA	100A	100A	100A

5.1Controlling and Pointing Device

Operation of Inverter

5.1.1 Control Panel of 1KVA Inverter



1. Mains Indicator
2. Indicator of Bypass Power Supply
3. Load Indicator
4. Indicator of Battery Electricity Quantity
5. Indicator of Invertor Working Statuc
6. Indicator of Load Power Supply
7. Inverter Stop Button
8. Trouble Indicator
9. Invertor Start Button

(Fig. 12 A）

5.1.2 Control Panel of Inverters over 2KVA

1. Input Indicator ： input indication of power supply of Mains（MAINS）
2. Bypass Indicator ： output indication of power supply of mains（BYPASS）
3. Output Indicator ： output indication of power supply of converter（INVERTER）
4. Indicator of Battery Electricity Quantity ： if this light is on, it means electricity in the battery is being used up （BATTERY）
5. Overloading Indicator ： it shows if the user's using electricity quantity is over rated capacity of the inverter（OVERLOAD）
6. Fault Indicator ： to indicate troubles of inverter（FAULT）
7. LCD Display ： display figure signals, such as voltage, frequency, power, status of inverter etc.

（1）.AC:LOSS(OK) BAT:OK(LOW)

NO OUTPUT(BYPASS OUTPUT，INVERTER OUTPUT)

(2).INPUT VOLTAGE (5).OUTPUT FREQUENCY

(3).OUTPUT VOLTAGE (6).BATTRY VOLTAGE

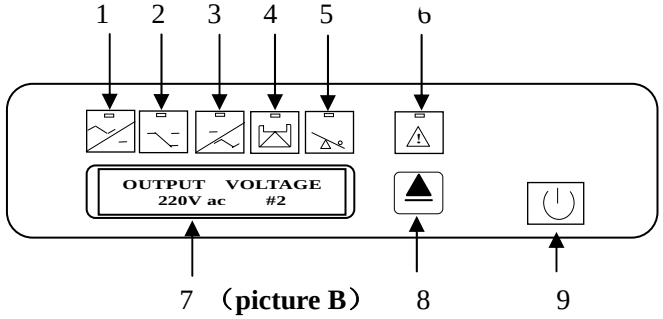
(4).INPUT FREQUENCY (7).OUTPUT POWER

8.Selection Button of LCD Display ： press this button to display each working parameters of the inverter circularly

9.SwitchButton of Inverter ： the inverter will be powered on or off if this button is pressed for four seconds continuously

Remark: all indicators that relate with Mains only work when Mains are input in the inverter

Operation of Invertor



（picture B）

5.2 Operational Procedure

Operations of this series are very easy and convenient, the system will run normally if you operate as

following steps correctly:

5.2.1 The Switching On

1. Make sure the main switch in on “OFF” position, and no load is connecting with inverter output
2. Check if the input power supply of the inverter is regular
3. Turn the main switch to the position of “ON”
4. Press the “Switch Button” on control panel and keep for four seconds, cooling fan starts, after about 25 seconds the green contravariant indicator（⎓/∽） will turn bright gradually
5. If the contravariant indicator（⎓/∽） is on, that means the inverter is working normally
6. After the inverter is switched on successfully, the load can be connected to the inverter for using

5.2.2 Procedure of Switching Off

1. Power off the load that is connected with the inverter
2. Press the “Switch Button” on control panel and keep for four seconds
3. Pull the main switch to “OFF”

Notice: do not power off the inverter if the load is not turned off

5.2.3 Procedure of Switching on

1. Pull the main switch to “ON”
2. Press the “Switch Button” on the control panel for about four seconds to turn on the inverter
3. Start the load

Trouble Removing of Inverter

6.1 Running Indication

There are voice alarm of the control panel in daily use

Light on　Turn off　No　Lasting Alarm　Alarm every 4 seconds　Alarm every 1 second

Indicators on Control Panel @1				Alarming Voice	Working Status of Inverter	Treatment @2
~/-	-/~					
□	□	■	■	———	Normal	No
□	■	□	■	———	Did not press switch button of the inverter	See Fig.15
□	-20S		■	———	The switch button of inverter is not pressed	No
■	□	■	■	))) - - - - - -	Power cut	Check input wire
■	□	■	■	))) - - - - - -	Electricity in battery is using up	Turn off the inverter or the load
■	■	■	■	))) ———	Electricity in battery has been used up	Turn off the inverter
□	■	□	■	))) ———	Overload	Reduce the loading
□	■	□	□	))) ———	Abnormal of the inverter	Contact for maintenance

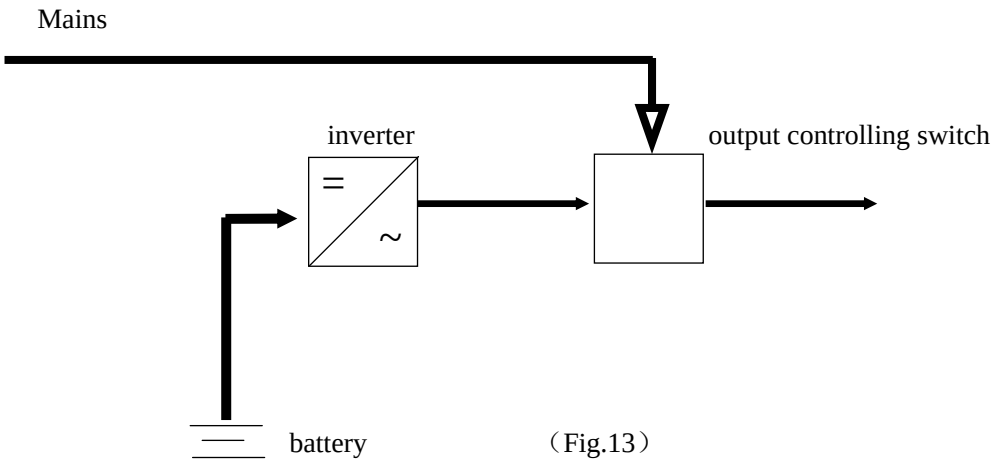
Remark ：

@ Please see Fig. 15 for indication explanation

@ for indicators of mains input and bypass, the indicator is on when there is mains input, if the bypass indicator is on, that indicates the inverter is outputting; if the inverter is not equipped with mains, the indicator would not be on, there is no outputting of the inverter when the bypass indicator is on

7.1 Normal Operation

As Fig.13, the mains supplies power to loads through commutator/inverter and static switch and charges the battery though a charger



（Fig.13）

Direction of Communication Interface of Inverter

8.1 Direction of Communication Por

(I) Most computer systems are equipped with inverters to prevent systematic faults and document damages caused by power cut. Using status of electricity is available if the computer is connected with a communication port

(II) Communication port can connect with a computer through D89 on the backplance to know status of the inverter. Users should buy interface and software separately in accordance with his DOS, WINDOWS3.1, WINDOWS95/98, WINDOWSNT, NOVELL, so the computer is possible to get online with the inverter and display the operational condition of the inverter on screen of the computer. If the mains is cut off, the system understands the electricity is cut, then it sends warning message and it will perform normal switching-off procedure automatically before it records data and closes programs once the presupposed time is up, at last it will cut off the power of the inverter automatically. When the mains supply normally again, the inverter will recover its service

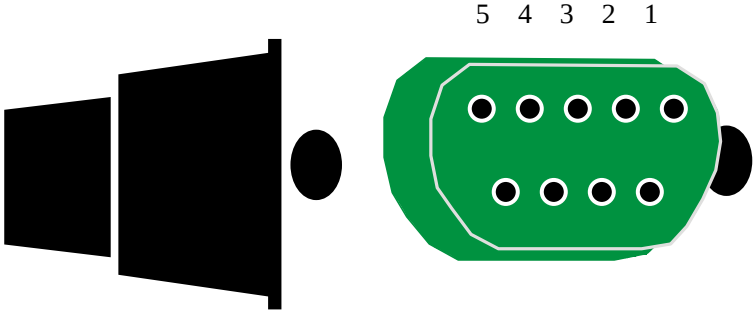
(III) There are two kind of computer interfaces available in this inverter, one only shows status of the inverter which fits personal computer, the other offers detailed information of the inverter, making is suitable for stations, supervision systems etc. Standard machines only provide the first kind of interface, software is sold separately .

1. The first computer interface: provide only mains cutting alarm, low electricity warning and powering off of the inverter
2. The second computer interface: use RS232 communication to connect with computer and send data continuously. Data the inverter offers includes input voltage, output voltage, output frequency, voltage of battery and using percent of loads, internal temperature of the inverter etc.

(IV) Hard equipment the inverter supplies: D89, see Fig.25 for its appearance

Pin signal of D89 which is provided with the inverter is as follows:

Pin#	Function	I/O
2	RS232 Rx	Input
3	RS232 Tx	Output
5	Grond	Input



（Fig.14）

Electrical Specification

Specification		INV-1KVA	INV-2KVA	INV-3KVA	INV-5KVA	INV-6KVA	INV-8KVA	INV-10KVA	INV-15KVA	INV-20KVA
Rated Capacity		800W	1600W	2400W	3200W	4800W	6400W	8000W	1200W	16000W
Output	Mode	Pure sine wave，THD<3%								
	Voltage Stability	220V±2%　110V±2%								
	Frequency	50Hz，60Hz±0.5%								
	Provisional Change	100% load change，±4% 120%rated current，swift to bypass automatically after 5 seconds5seconds (BYPASS)								
	Overload Performance	150%rated current，swift to bypass automatically after 10 cycles（BYPASS）								
	Load Power Factor	0.8 lagged								
	Current Wave Crest Ratio	3：1								
Input Voltage of Direct Current		48V±20%	110V±20%，120V±20%				220V±15%，240V±15%，360V±15%			
		220V±15%，240V±15%，360V±15%								
Efficiency(Full)		>65%	>80%		>86%					
Noise		50db	55db		60db					
Protection		Limit output if overloaded Overload/short circuit protection Rejection capacity of circnit noise is FCCA								
Indicator		Normal of inverter　(green light)　Low voltage of battery (red light) Overload (red light)　Fault(red light)								
Alarm		Ring every 4 seconds after cutting of mains Ring every second if the battery is being used up Keep ringing if any fault or the battery is used up								
Computer Interface		9PinD Type connector(Option)								
Environment	Temperature	0~40								
	Humidity	95% if no curdling								
Size (W×H×Dmm)		560×280×365	555×265×570		635×270×690		550×450×1000			
Input device		Wire	Group terminal block							
Remark: above information is for reference, if any change please take real products as criterions										