



IPS-DTASeries 0.5KVA-15KVA**

Pure Sine Wave Inverter

User Manual

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PREAMBLE

IPS-DTA series pure sine wave inverter equipment is a conversion device that converts mains power and DC power into uninterrupted and purified AC power, and provides continuous AC power for computers and other electrical equipment to prevent instability and interruption of mains power. Electricity.

TECHNICAL CHARACTERISTICS OF INVERTER POWER SUPPLY:

1	CPU control, simple and reliable circuit
2	Using SPWM pulse width modulation technology, the output is a pure sine wave with stable frequency and voltage, noise filtering, and low distortion
3	Built-in bypass switch, fast switching between mains and inverter, can choose mains power supply or DC power supply, selected by dial switch
4	The front panel of the inverter has LCD or LED display mode, and the status is clear at a glance
5	Completely isolated inverter technology, output noiseless pure sinusoidal AC voltage
6	It is allowed to cut off the DC in the power-on state, and the machine automatically switches to the mains bypass without affecting the power supply of the load, which is convenient for maintenance and replacement of the battery
7	Mains main supply type and battery main supply type: DIP switch can be selected A) main supply type of mains: when there is mains, it is in the output of mains, and it will automatically switch to inverter output when the input of mains fails; B) Battery main supply type: when there is mains power, it is in the inverter output, and it will automatically switch to the mains output when the DC input fails;
8	In DC main supply mode, if the battery or DC voltage is too high or too low, the DC inverter will automatically shut down and switch to the bypass output. If the battery voltage returns to normal, the power supply will automatically restore the inverter output
9	In DC main supply mode, if the load is overloaded, the DC inverter will automatically shut down, and automatically switch to bypass output. After 60 seconds after the overload is eliminated, the power supply will automatically restore the DC power supply output
10	Support RS485 communication function. Use the monitoring software to understand the working conditions of the power supply in real time
11	Three sets of passive dry nodes are provided, which are respectively used for DC faults, inverter faults, and mains faults
12	Support no DC power-on function, and can run in the state of only mains power. This function allows the inverter power supply to be put into use first, and then the battery is installed

PRECAUTIONS

This manual allows you to easily operate and maintain the system. In order to make the system function normally, please pay attention to the following items:

1	Be sure to read this manual carefully before use
2	Follow the instructions and operate according to the law. It is strictly forbidden to reverse the DC input or connect the AC input to the AC output
3	Handle with care when moving the machine
4	Please follow the instructions for power supply construction
5	In order to avoid personal injury and machine damage caused by electric shock, there must be a complete grounding system
6	Avoid overloading, so as not to cause machine failure

7	Keep the manual properly for future reference
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Warning!

The output of the inverter power supply cannot be used in parallel or grid-connected, otherwise the machine will be damaged.

Disclaimer:

Due to the continuous update and improvement of products and technologies, the content of this document may not be completely consistent with the actual product, please understand, if you need to know about product updates, please contact the manufacturer.

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I. INTRODUCTION OF PURE SINE WAVE INVERTER

1.1 GENERAL DESCRIPTION

The pure sine wave inverter is specially designed for electricity and communication systems. It is a conversion device that converts electricity from the mains city ac voltage or batteries' dc voltage to a continuous and purified AC power applied for computers and other electrical equipment. To prepare for the instability of the city's electricity and power cuts. It also prevents various distortions of utility power, such as power supply voltage drop, surge voltage, spike voltage, and broadcast frequency interference.

1.2 SERIES MODEL DESCRIPTION

IPS-DTA XXXX -YY

- IPS--- IDEALPLUSING(IPS) Group
- DTA---DC to AC
- XXXX---- Rate capacity of inverter
- YY---Input Voltage

For example, IPS-DTA2000-48 Means 48VDC to 220Vac 2000V Inverter

1.3 CUSTOMIZED RANGE

220VAC OUTPUT DESIGN				
Model	Input DC	Input Bypass AC	Output AC	Capacity
IPS-DTAXXXX-24	24VDC	220/230/240VAC	220/230/240VAC	0.5-5KVA
IPS-DTAXXXX-48	48VDC	220/230/240VAC	220/230/240VAC	0.5-10KVA
IPS-DTAXXXX-110	110VDC	220/230/240VAC	220/230/240VAC	0.5-15KVA
IPS-DTAXXXX-125	125VDC	220/230/240VAC	220/230/240VAC	0.5-15KVA
IPS-DTAXXXX-220	220VDC	220/230/240VAC	220/230/240VAC	0.5-15KVA
120VAC OUTPUT DESIGN				
Model	Input DC	Input Bypass AC	Output AC	Capacity
IPS-DTAXXXX-24	24VDC	110/120/130VAC	110/120/130VAC	0.5-5KVA
IPS-DTAXXXX-48	48VDC	110/120/130VAC	110/120/130VAC	0.5-8KVA
IPS-DTAXXXX-110	110VDC	110/120/130VAC	110/120/130VAC	0.5-8KVA
IPS-DTAXXXX-125	125VDC	110/120/130VAC	110/120/130VAC	0.5-8KVA
IPS-DTAXXXX-220	220VDC	110/120/130VAC	110/120/130VAC	0.5-8KVA

SPECIFICATION

Table 1

		0.5K	1K	2K	3K	4K	5K	6K	8K	10K	12K	15K
DC Input	Rate input Voltage/Vdc	Table 2										
	Rate input Current/A	Table 2										
	Input dc range Voltage	Table 2										
	Reverse noise Current	≤10%										
AC Bypass input	Allow bypass voltage (Vac)	110/120/130/220/230/240 VAC										
	Rate input current/A	1.8A	3.6A	7.2A	10.8A	14.5A	18.2A	21.8A	29A	36A	44A	55A
	Bypass conversion time/ms	≤5ms										
AC Output	Rated output Capacity/KVA	0.5K	1K	2K	3K	4K	5K	6K	8K	10K	12K	15K
	Rated output power/W	400	800	1600	2400	3200	4000	4800	6400	8000	10000	12000
	Rated output voltage and frequency	110/120/130/220/230/240 VAC 50Hz/60Hz										
	Rate output current/A	1.8A	3.6A	7.2A	10.8A	14.5A	18.2A	21.8A	29A	36A	44A	55A
	Output voltage accuracy/V	110/120/130/220/230/240±3%										
	Output frequency accuracy/Hz	50±0.1% or 60±0.1%										
	Waveform distortion rate (THD)	≤3% (Linear load)										
	Dynamic Response	5% (Load 25%←→100%)										
	Power Factor/PF	0.8										
	Over load ability	≥100%~125%, 10mins; 125%~150%, 15seconds; 150%, shut down Immediately										
	Efficiency	≥85% (80% Resistive load)										
	Bypass conversion time/ms	≤5ms										
Operating Environment	Insulation strength (input and output)	1500Vac, 1min										
	Noise/1m	≤40dB										
	Operating temperature	For LCD: -5°C~+40°C For LED: -25°C~+50°C										
	Humidity	0~90%, no cooling										
	Altitude /m	≤1000										
Dimension	Rack Mount	A	A/B/E	A/B/E	C	C	C	C	D	D	D	D
	Weight/Kg	4.8/6	5/6	6/7	12	13	14	15	20	22	22	22
Protect function		Input lower voltage, input over-voltage protection; output overload protection, output short circuit protection										

Note: The rated output power with error 500VA±50W; 1-10KVA is ±100W

Table 2

Inverter input DC voltage (Vdc) (Error: +/-0.5~1V)

	12V Series		24V Series		48V Series		110V Series		220V Series		240V Series	
Rate input voltage	12Vdc		24Vdc		48Vdc		110Vdc		220Vdc		240Vdc	
working voltage range	9.8~14.5V		20~30.5V		40~58.8V		90~145V		180~270V		200~300V	
Start up /Boot voltage range	10.2~4.2V		21.5~29.5V		42~57V		94~142V		190~265V		210~295V	
Rate input current	500VA	40A	500VA	20A	500VA	9.8A	500VA	4.3A	500VA	2.2A	500VA	1.9A
	1KVA	76A	1KVA	38A	1KVA	19A	1KVA	8.3A	1KVA	4.2A	1KVA	3.9A
	/	/	2 KVA	76A	2 KVA	38A	2 KVA	16.6A	2 KVA	8.3A	2 KVA	7.8A
	/	/	3 KVA	117A	3 KVA	57A	3 KVA	24.9A	3 KVA	12.4A	3 KVA	11.7A
	/	/	/	/	4 KVA	77A	4 KVA	33.4A	4 KVA	16.7A	4 KVA	15.6A
	/	/	/	/	5 KVA	98A	5 KVA	36.6A	5 KVA	18.3A	5 KVA	19.6A
	/	/	/	/	6 KVA	117A	6 KVA	51.3A	6 KVA	22A	6 KVA	23.5A
	/	/	/	/	8 KVA	156A	8 KVA	68A	8 KVA	34.2A	8 KVA	34.2A
	/	/	/	/	10 KVA	196A	10 KVA	85A	10 KVA	42.7A	10 KVA	39A
	/	/	/	/			12KVA	102A	12KVA	51A	12KVA	47A
/	/	/	/					15KVA	64A	15KVA	58	

Remarks:

Due to the difference in the instrument used during the test, the range points may slightly deviate. The input current size determines the input switch size configuration

Explanation:

In order to protect the battery, the inverter can start normally only when the battery voltage is within the STARTUP/Boot voltage range.

After the inverter is switched on and inverter can work normally within the working voltage range work under the battery or DC power supply mode. When the battery or DC voltage drops to the lower working voltage limit, the inverter will be powered off.

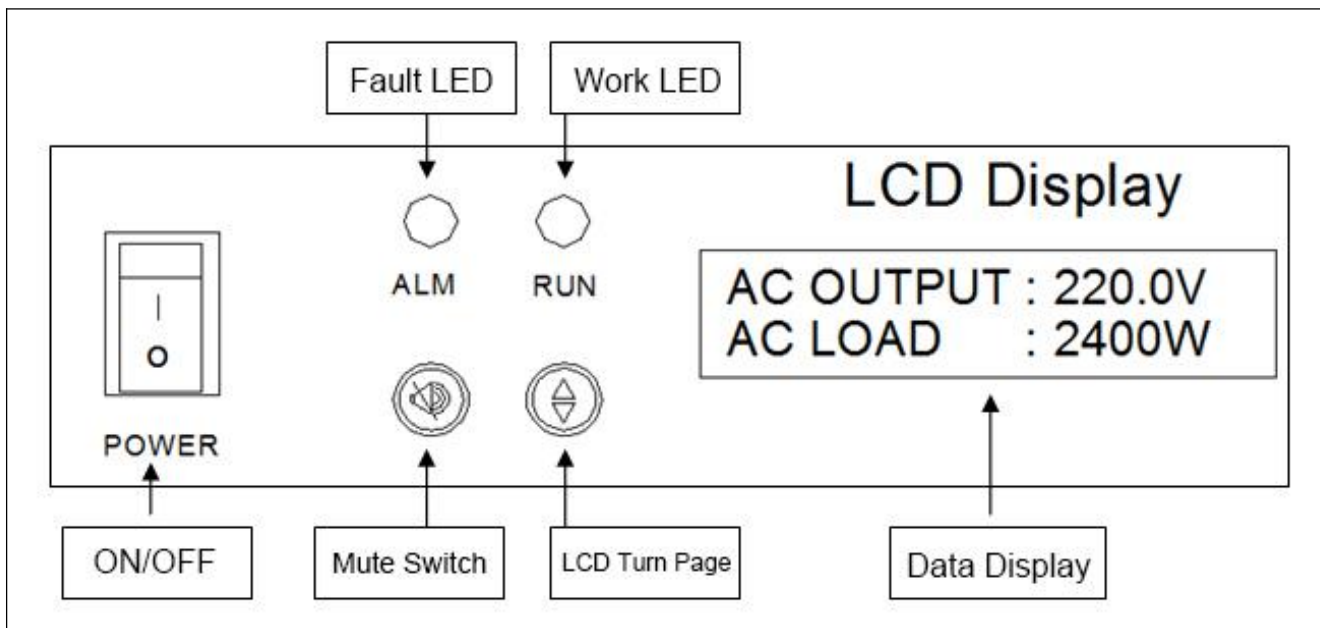
1.4. LED 1U PANEL FUNCTION INTRODUCTION



Item	Panel	Full name	Definition
1	POWER	Switch	This switch is only used to control the switching of the DC inverter, and does not control the starting of the mains

2	MUTE	"Mute switch" button	When alarming, press the buzzer to turn off
3	LIN	AC City Power indicator	The LIN Indicator ON Mean the inverter work in AC input and ac output in bypass mode
4	INV	Invert indicator	The INV Indicator ON Means the inverter work in DC input
5	BAT	Battery indicator	The BAT Indicator ON When the battery or DC input voltage is out the working range of the inverter
6	LAD	Load indicator	The LAD Indicator ON when the inverter fail to work
7	TEMP	Over-temp indicator	The light will come on when the temperature of the machine itself is too hot, and will go off at other times.

1.5. LCD 1U PANEL FUNCTION INTRODUCTION



"Power switch" button (black)	This switch is only used to control the switching of the DC inverter, and does not control the starting of the mains
"Mute switch" button	When alarming, press the buzzer to turn off
LCD Turn Page	Cycle to turn pages to view LCD display parameters
Data display screen	Displays inverter input, output, temperature, communication address and other data, and the specific display content is subject to the actual object
Fault LED	Lights up when the inverter is faulty
Work LED	Lights up when DC inverter

LCD display content introduction

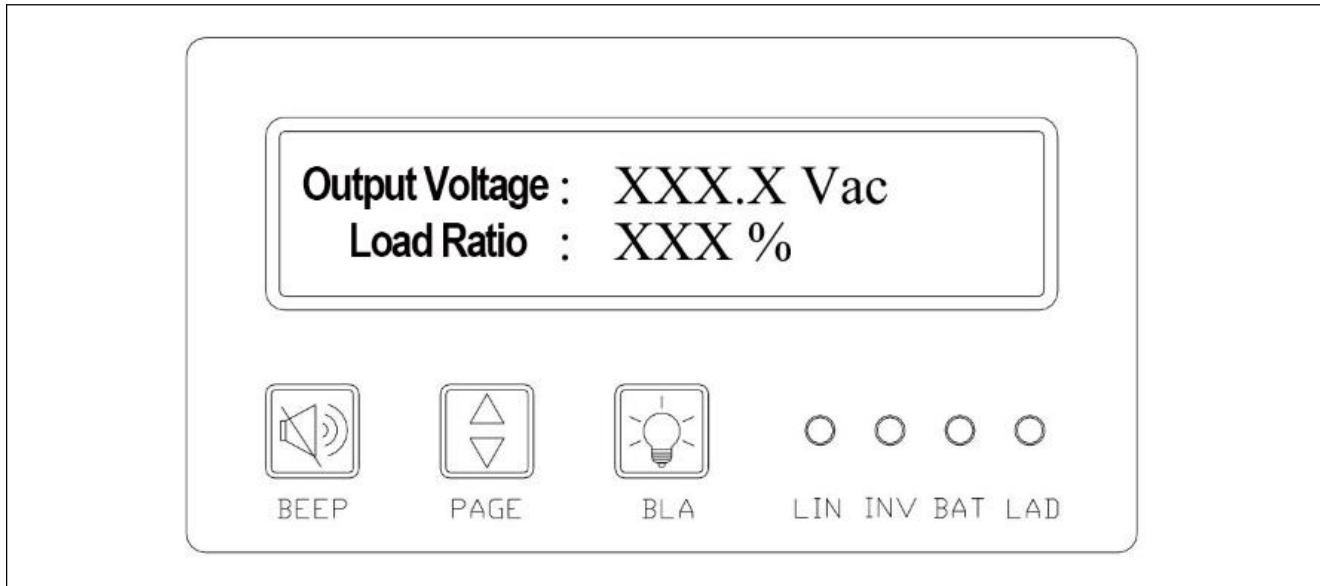
First Page	AC OUTPUT AC LOAD	Second Page	OUT FREQ CURRENT	Third Page	AC INPUT TEMP
Fouth Page	DC INPUT ADDRESS	Fiveth Page	MODE ALARM	Sixth Page	AC/DC

Among them, the content in ALARM indicates:

OV L: overload; OV T: over temperature; DC HV: DC overvoltage; DC LV: DC undervoltage;

INV ER: Inverter failure BYP HV: Mains overvoltage; BYP LV: Mains undervoltage; NO: No alarm.

1.6 LCD 2-4U PANEL FUNCTION INTRODUCTION



LED functions

Utility Light	The utility light is on when there is a utility input and it is a utility output, in bypass.
Inverter Light	The inverter light is on when the inverter is working when the bypass input is faulty
Battery Light	The battery light is on when the battery or DC input voltage is not within the operating range of the machine.
Load Light	The load light is on when the inverter has a fault

Backlight key function

1	Press the backlight key once, the backlight lights up
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Mute key function

1	When the buzzer is in the beeping state, press and hold for 1~2 seconds to turn off the buzzer
2	When in alarm state and the buzzer is off, press and hold this key for 1~2 seconds to turn on the buzzer

LCD Turn Page

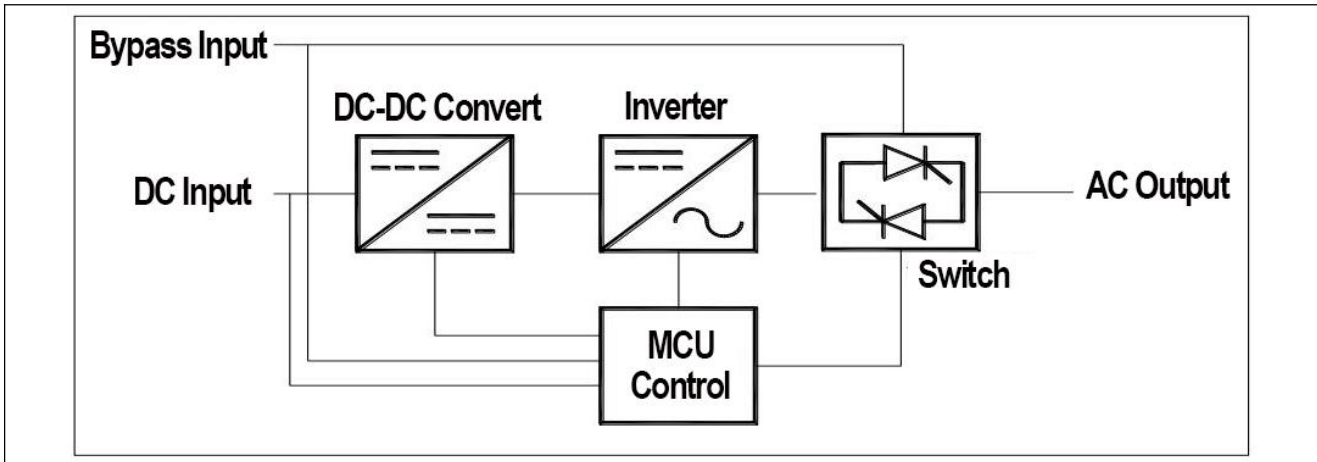
1	Page turn key: cycle through the pages to view the various LCD display parameters The LCD display has six pages (standard models), each page displays two lines of content, as the display is constantly updated, please refer to the actual shipment.
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First Page Output voltage: XXX.X Vac Load capacity: XXX XX W	Second Page Output frequency: XX.X Hz Output current: XX.X A
Third Page AC input voltage: XXX.X Vac Temperature inside the machine: XXX C"	Fouth Page DC input voltage: XXX.X Vdc Communicate address: XXX
Fiveth Page Current charging: XX Current alarm: XXXX	Sixth Page Main supply method: XXXX

The content in ALARM indicates: OV L: overload; OV T: over temperature; DC HV: DC over voltage; DC LV: DC under voltage; INV ER: inverter fault BYP HV: utility overvoltage; BYP LV: utility undervoltage; NO: no alarm.

II. TYPICAL APPLICATION

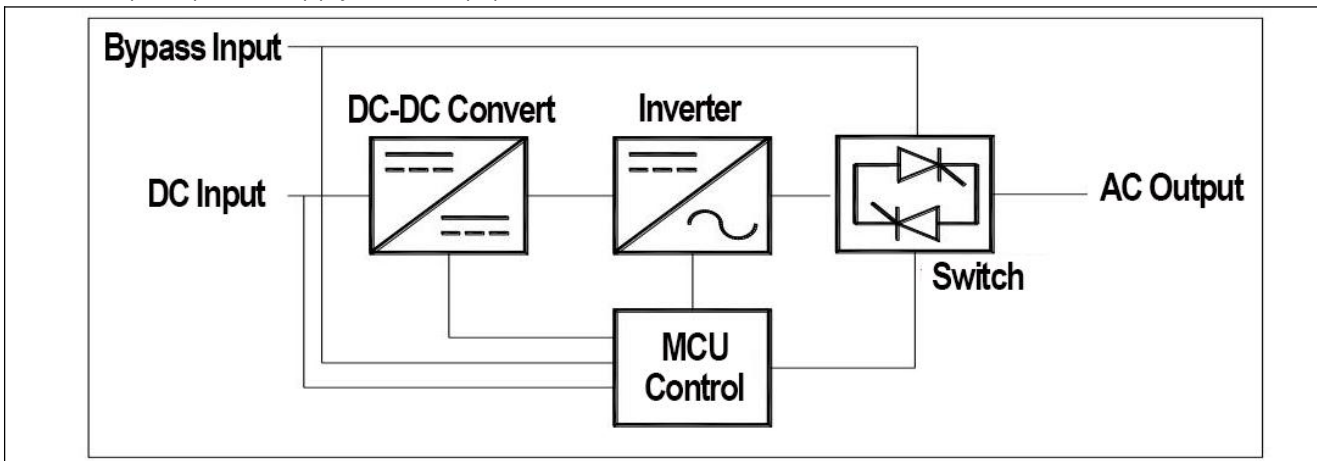
2.1 WORKING PRINCIPLE DIAGRAM OF INVERTER POWER SUPPLY



2.2 SYSTEM WORKING PRINCIPLE

2.2.1 MAINS BYPASS

Utility bypass mode, the utility power is switched to the output via a relay and is supplied directly from the utility bypass. When the mains power fails, it automatically switches to inverter and is powered by battery or DC, ensuring uninterrupted power supply to the equipment.



- **AC Mains bypass mode**

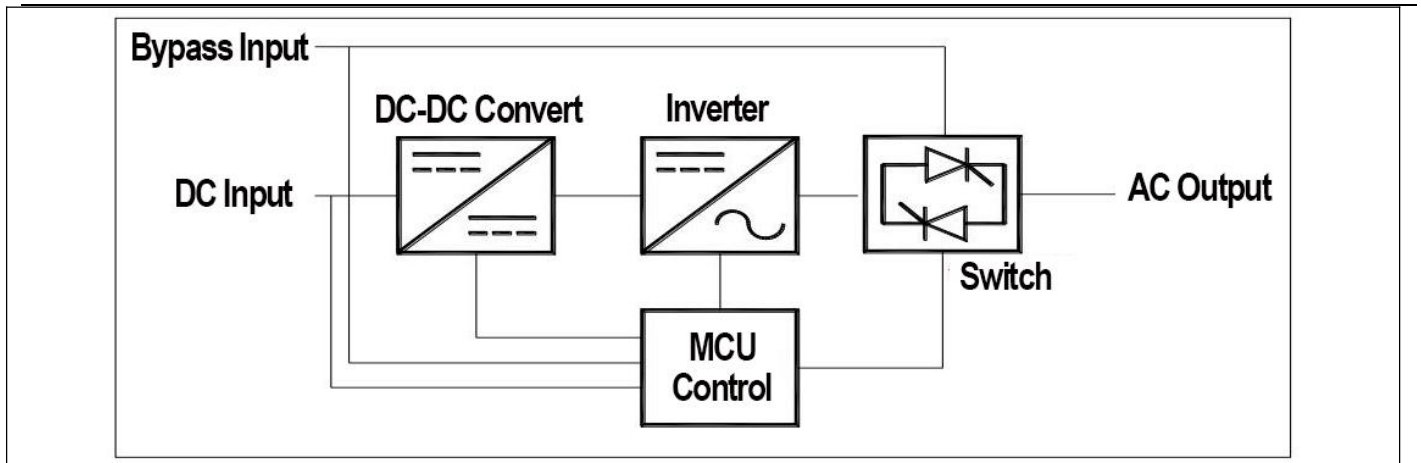
In the AC mains bypass mode, the mains power is switched to the output via a relay, and the mains bypass directly supplies power. When the main fails, it automatically switches to the inverter and is powered by the battery or DC to ensure uninterrupted power supply to the equipment.

- **Inverter mode**

In the inverter mode, after the DC boost inverter is reversed, it is switched to the output via a relay and directly powered by the battery or DC. When the inverter fails, it automatically switches to the bypass and is powered by the mains to ensure the uninterrupted power supply of the equipment.

2.2.2 INVERTER MODE

In inverter mode, the DC step-up inverter is switched to the output via a relay for direct power supply from the battery or DC. When the inverter fails, it automatically switches to the bypass and is powered by the mains, ensuring uninterrupted power supply to the equipment.



WARNING: The output of the inverter power supply cannot be used in parallel or in grid connection, otherwise the machine will be damaged!

III. INSTALLATION AND OPERATION

3.1 RECEIVING

Due to possible damage to the machine during transportation, please check the packing of the goods when receiving the goods that the goods company is carrying. In case of any damage, please indicate on the receipt.

3.2 STORAGE

Keep it in a cool, dry, ventilated place away from highly corrosive, dusty, hot, and humid environments. If you do not use the inverter for a long period of time, you should be able to use it every 6months

3.3 PREPARATION BEFORE INSTALLATION

3.3.1 Check if the specification, type, output capacity, input AC voltage, input DC voltage, output AC voltage, etc., meet the contents specified at the time of ordering. Check the machine for damage during transportation.

3.3.2 CONFIRMING INSTALLATION CONDITIONS

1. No dust, choose a ventilated, clean installation environment;
2. The proper ambient temperature
3. Relative humidity meets requirements
4. No corrosive gas such as steam
5. No flammable and explosive products nearby
6. There is a power supply that complies with safety regulations

3.3.3 INSTALLATION ACCESSORIES

When the host is shipped, it is not equipped with rack headphones. The rack headphones are placed in the accessory bag. During installation, the rack is taken out of the accessory bag and then fixed to the left and right sides of the machine using the screws in the accessory bag.

Place the transparent cover and dry contact male terminal of the wiring terminal in the accessory bag.

3.4 CONNECTION LEADS

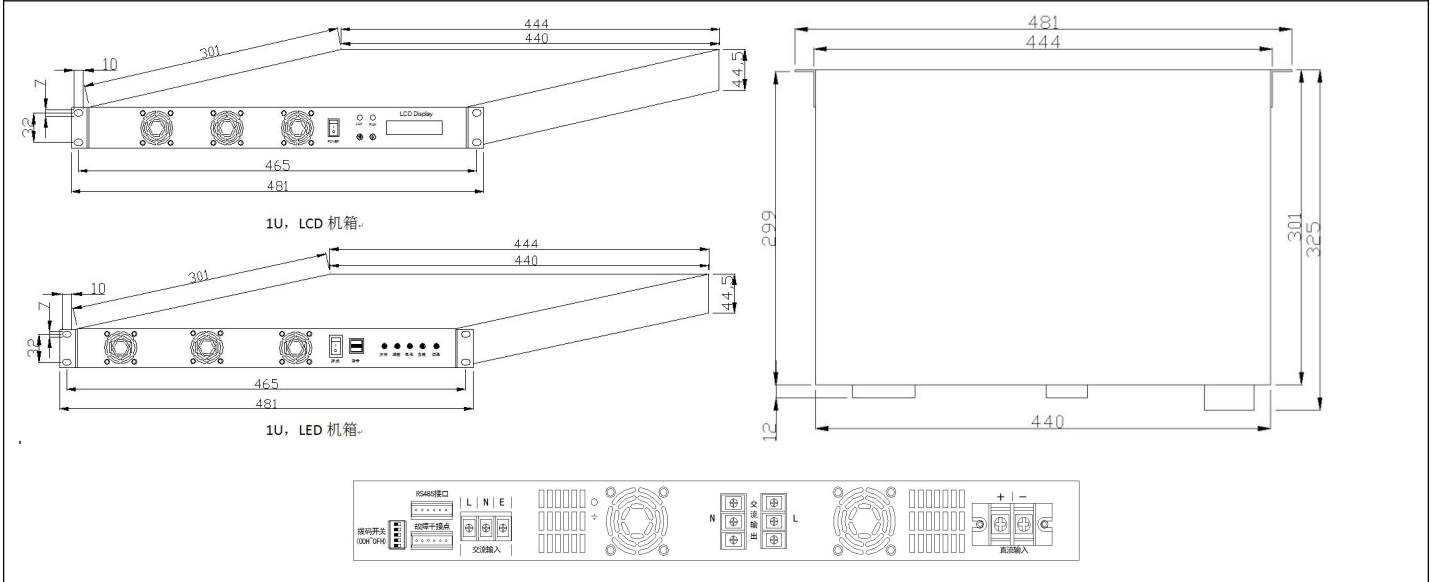
1. Make sure all switches are off.
2. Connect the host's DC input cable correctly. Note the positive and negative polarity.
3. Connect the host AC input cable correctly.

4. Connect the host AC output cable correctly.
5. Connect the host to a good ground wire.

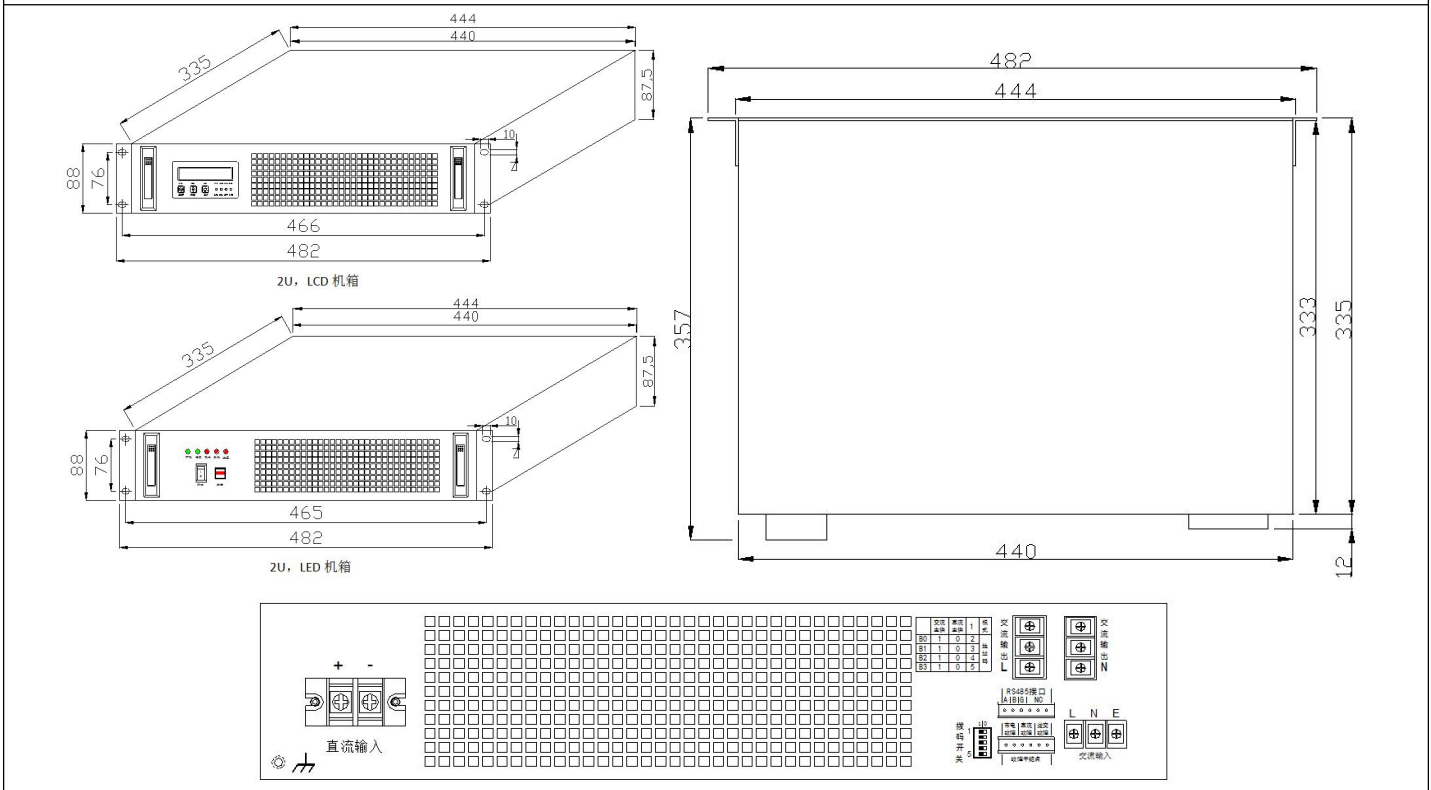
3.5 APPEARANCE & DIMENSION

3.5.1 MECHANICAL DRAWINGS

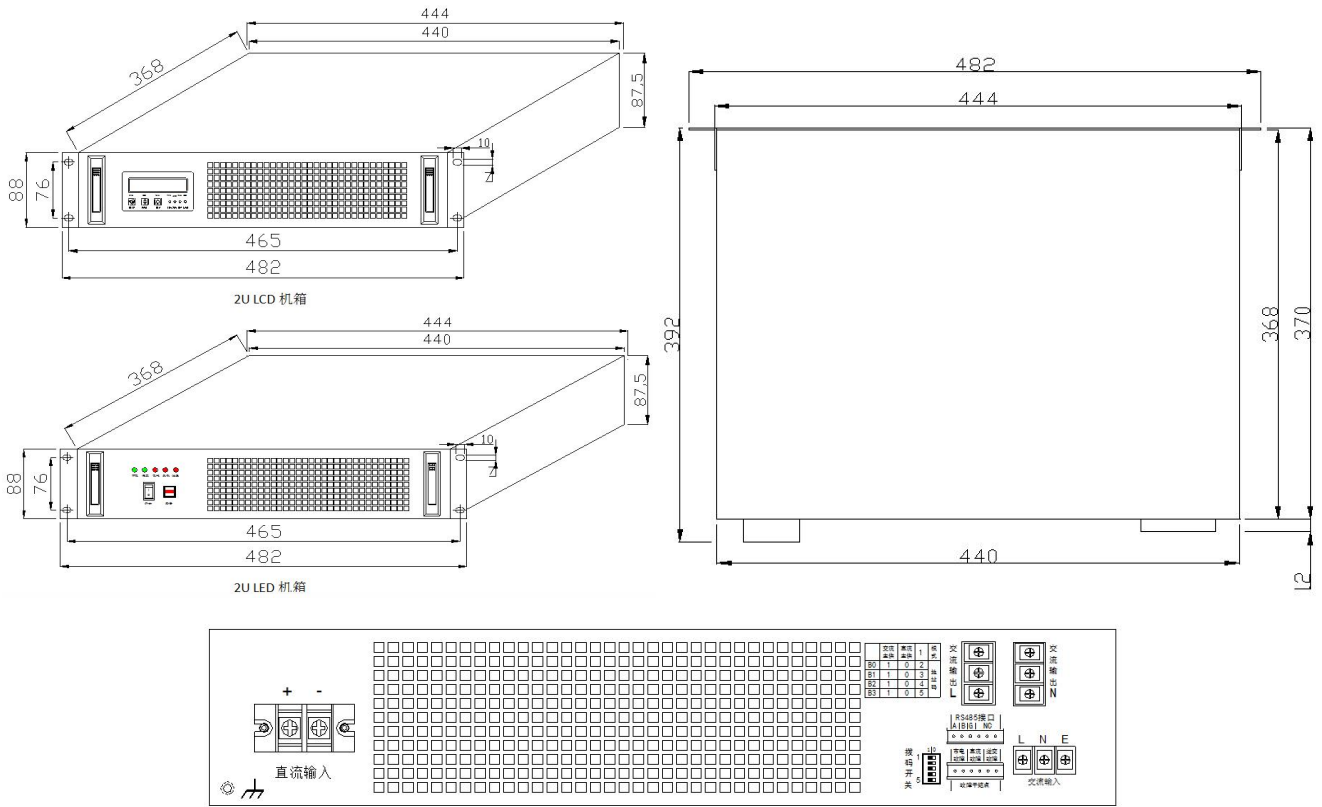
19inch 1U Rack Mount Front & Rear View



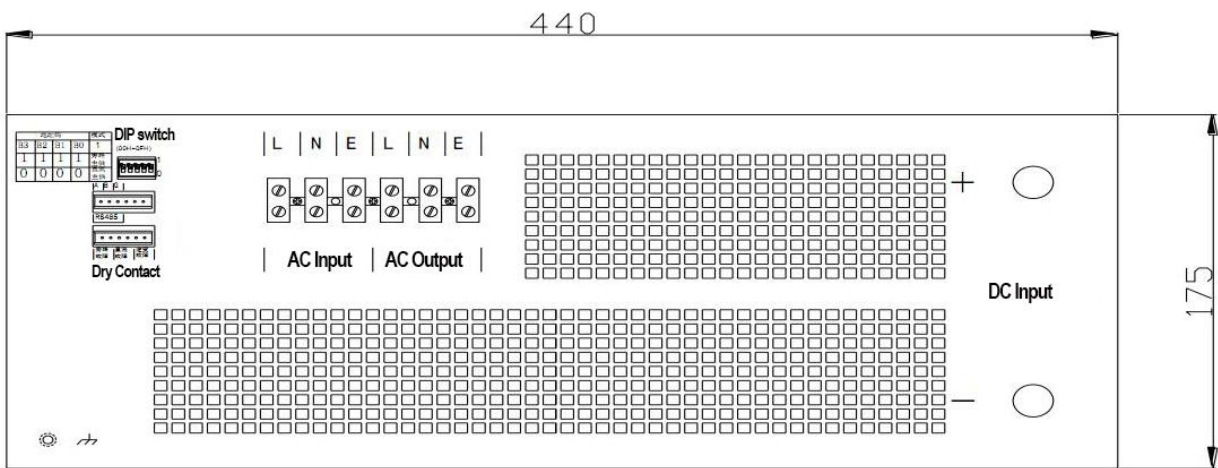
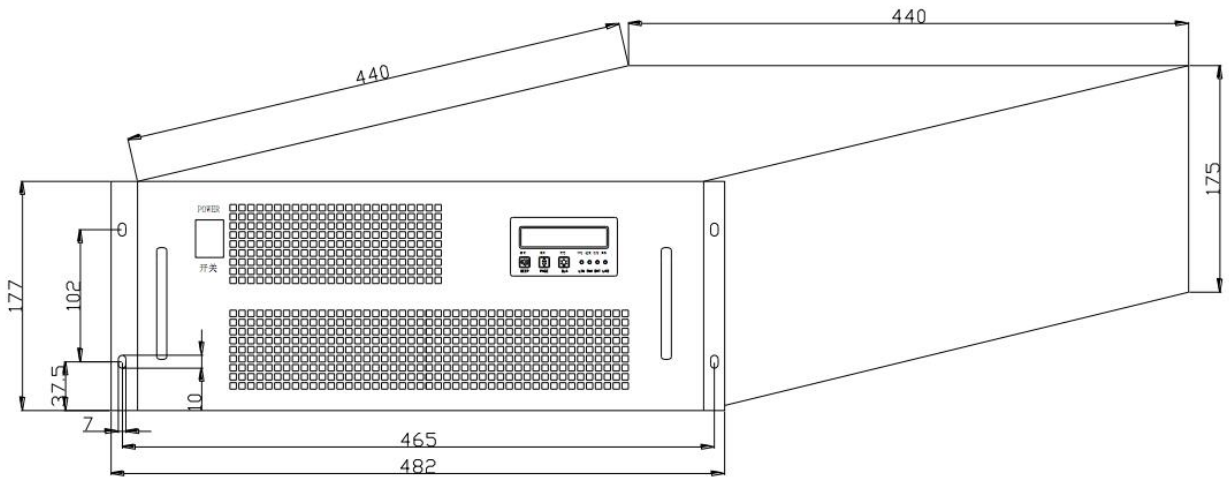
19inch 2U A-Rack Mount Front & Rear View



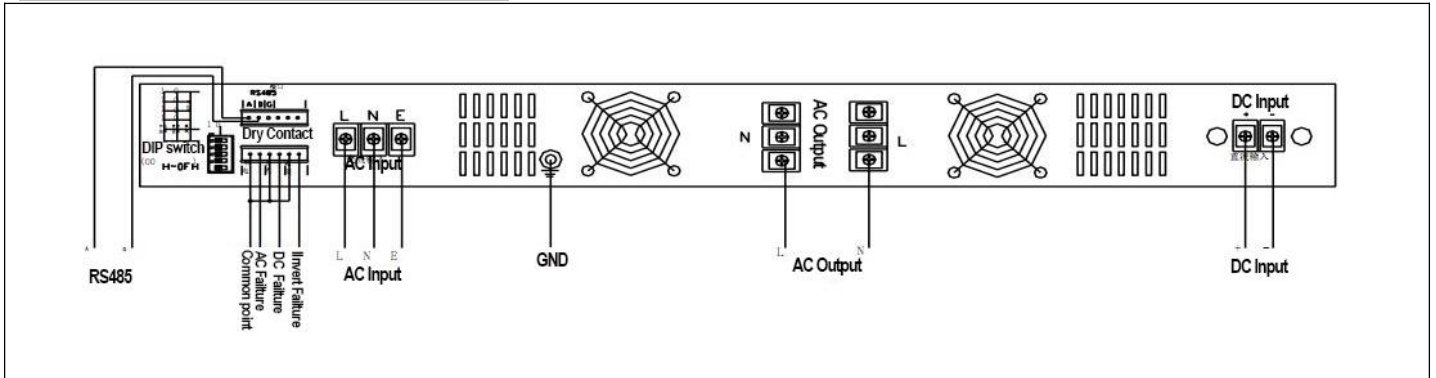
19inch 2U B-Rack Mount Front & Rear View



19inch 4U Rack Mount Front & Rear View

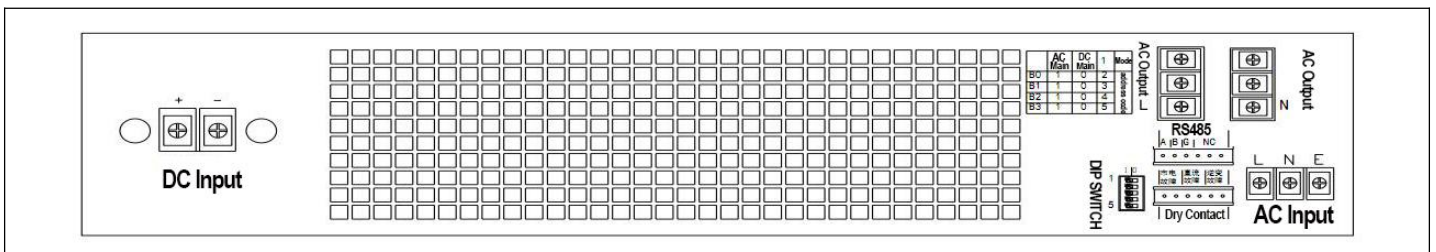


3.5.2 WIRING DIAGRAM DESCRIPTION



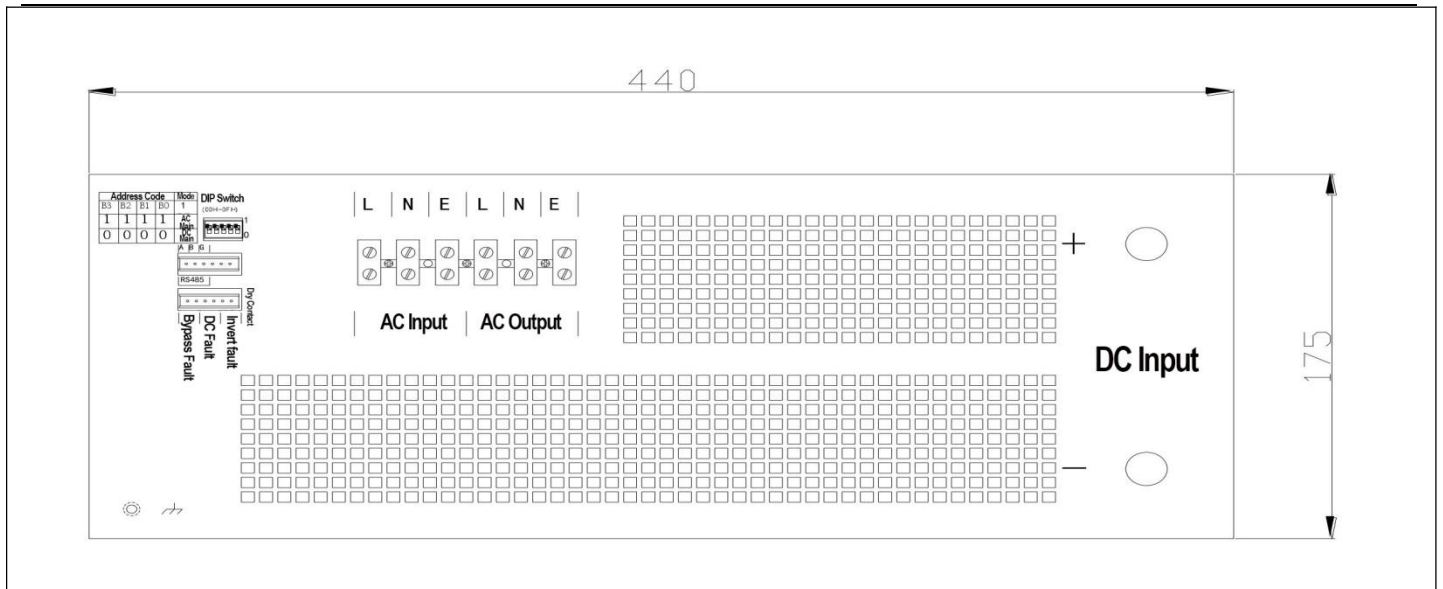
1U Rack Mount type

Item	Name	Definition
1	DC(MODE)	Prefer to use the DC Voltage Input
2	AC(MODE)	Prefer to use the AC bypass Input
3	AC FAIL	AC Input is fault
4	DC fault	DC Input is fault
5	INV fault	Inverter is fault
6	COMM	The common return line of three signal
7	L	The live wire of AC input or AC output
8	N	The neutral wire of AC input or AC output
9	E	The ground wire of AC input
10	GND/PG	Protect ground



2U Rack Mount type

Item	Name	Definition
1	DC(MODE)	Prefer to use the DC Voltage Input
2	AC(MODE)	Prefer to use the AC bypass Input
3	AC FAIL	AC Input is fault
4	DC fault	DC Input is fault
5	INV fault	Inverter is fault
6	COMM	The common return line of three signal
7	L	The live wire of AC input or AC output
8	N	The neutral wire of AC input or AC output
9	E	The ground wire of AC input
10	GND/PG	Protect ground



4U Rack Mount type

Item	Name	Definition
1	DC(MODE)	Prefer to use the DC Voltage Input
2	AC(MODE)	Prefer to use the AC bypass Input
3	AC FAIL	AC Input is fault
4	DC fault	DC Input is fault
5	INV fault	Inverter is fault
6	COMM	The common return line of three signal
7	L	The live wire of AC input or AC output
8	N	The neutral wire of AC input or AC output
9	E	The ground wire of AC input
10	GND/PG	Protect ground

3.5. 3 WIRING DIAGRAM

Port name	Functional description	Remark	
DC Input +	Battery Input +	DC Module Input "+" Terminal	
DC Input -	Battery Input -	DC Module Input "-" Terminal	
AC Output L	AC Output L	Output Line Wire	
AC Output N	AC Output N	Output Neutral Wire	
AC Input	L	AC Input L	Input Line Wire
	N	AC Input N	Input Neutral Wire
	E	Earth	Earth Wire
Dry contact	City electricity fault	Two points are connected when it is failure	
	DC Fault	Two points are connected when it is failure	
	Invert Fault	Two points are connected when it is failure	
Communication port	A	RS485A	
	B	RS485B	
	G	GND	
DIP Switch	Mode selection "1" mean AC for main input	After the operation of the dialing switch It should be reboot the inverter after switch "DIP"	

	<p>"0" mean DC for main input BO-B3 (2-5) address code range from 00~15, The lowest address code is 0 and highest address code is 15 It can set 15pcs address code</p>	<p>switch" , if not , it did not work Switch the DIP switch to the digital side is 1 Switch the DIP switch to the NO side is 0 (0000-1111)</p>
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Noted

- Connect the inverter with the Earth is necessary to make sure it can safety and normal operation of the inverter and reduce electromagnetic interference.
- The grounding wire must be grounded (GND) and the earth grounding terminal should be as close to the instrument as possible.

3.6 OPERATING

1. Switch on of the inverter (Recommend turn on the inverter switch first then switch the load)
2. Press the "switch" button, the inverter will have 1-5seconds of "BEEP" mean the inverter under **Self Test** and it has been started-up.
3. All Inverter start up with Self Test function , as before the inverter with stabilized output, it should be check whether the external environment and the inverter are normal. If the inverter and all status parameters of the utility power are normal, the inverter power supply will work stably in the utility power or inverter state. This process needs approximately 10 seconds
4. Switch off (Recommend turn on the Load switch first then switch the Inverter)
5. Press the "switch" button and turn off the inverter.

IV. MAINTENANCE AND AFTER-SALES

4.1.MAINTENANCE

1. In order to ensure continuous normal operation of the inverter, regular maintenance and maintenance are required.
2. The installation and storage of inverter should avoid high corrosive, high dust, high temperature and high humidity environments as much as possible.
3. Avoid metal material falling into the box.
4. Periodically check whether the connection line is aging and the cable connection point is tight and safe or not .
5. Clean the cooling fan regularly and check if the fan is normal.

4.2 ACCESSORIES

One user manual, one certificate of conformity, and one inspection report.
2 pieces of rack ears (not available in vertical chassis) and 3 * 8 pieces of countersunk screws (6-8 pieces).
A set of detachable transparent covers and other detachable terminals on the terminal.
The above accessories are usually placed in foam inside the cardboard box. Please pay attention.

4.3 LED AND BUZZER COMBINATION STATUS TABLE

	LIN	INV	BAT	Load	TEMP	Beep
AC Mains output	ON	OFF				
Inverter output	OFF	ON				
DC over-voltage			1s 1flash			1s 1 buzzer
DC lower voltage			3s 1flash			3s 1 buzzer

Overload 150%				ON		Without stopping buzzer
Overload 125~150%				1s 1flash		1s 1 buzzer
Overload 100~125%				3s 1flash		3s 1 buzzer
Over temperature			1s 1flash	1s 1flash	1s 1flash	1s 1 buzzer
Inverter failure			ON	ON	ON	Without stopping buzzer

Remark

- Blank form indicates mean that it should be refer to related items
- For example: "LINE" is ON, "INV" is OFF, "BAT" flashes for 1 second, "Load" goes off, and buzzer sounds for 1 second. IT means In the ac output state, DC input over voltage, normal load, no over temperature

4.4 FAULT ANALYSIS TABLE

- When the inverter fails, the red signal indicator on the front panel will be "ON"
- According to different fault conditions appear as long and alarm or flashing.
- You can determine the cause of the fault by looking at the indicators on the front panel and refer to the following figure for proper handling.

NO	Fault	Possible Reason	Solutions
1	Battery, load, over temperature LED, 1s 1 flash	Turn off the output due to internal overheating	(1) Check the fan is running or not (2) Check the air vents are blocked or not (3) The environment temperature is too high or not (4) Reduce the load (5) Wait 10 minutes for inverter cooling and drop of the temperature then restart
2	The load LED Indicator ON and the buzzer sounds	(6) Overload more than 150% (7) Internal failure to shut down the inverter	(1) Check whether running in overload (2) If yes, Reduce the load and restart
3	Battery LED Indicator ON. 3s1 flash, buzzer 3s 1 sound	Input DC voltage is too lower	Check the DC input voltage is too lower and out of the range for the inverter requirements
4	Battery LED Indicator ON. 1s1 flash, buzzer 1s 1 sound	Input DC voltage is too higher	Check the DC input voltage is too higher and out of the range for the inverter requirements
5	Load LED Indicator, 3 seconds 1 flash, buzzer 3 seconds 1 sound	Overload 100~125%	(3) Check whether running in overload (4) If yes, Reduce the load and restart
6	The LINE Indicator OFF after connect with AC City main Power	AC Mains voltage and frequency exceed the input limited range	(5) Check if the AC mains voltage and frequency exceed the inverter input range. (6) Check whether the power switch on the panel is switch on or not .
7	Connect DC Power source for input, turn on the power switch and the machine does not respond	(7) The input DC voltage does not meet the requirements or is too lower (8) The input polarity is reversed.	(9) Check if the DC input voltage is too lower can not meets the requirements (10) Check if input polarity is reversed.

8	Customer's DC input circuit breaker can not be switch and close	(11) Select the bigger capacity circuit breaker (12) Inverter internal circuit failure causes the machine to short circuit	(13) Select the bigger capacity circuit breaker (14) Switch on the DC circuit breaker then Switch on the AC circuit breaker (15) If it still did not work mean the inverter internal circuit are broken or short circuit
9	Can not switch the dc and bypass in automatic	(16) AC Mains voltage and frequency exceed the Inverter input limited range: (17) The dial switch (DIP Switch)on the rear panel is set to the wrong position.	(1) Check whether the ac mains voltage and frequency exceed the input range of the inverter (2) Check whether the dial switch (DIP Switch) in corresponding position or not
10	For other fault be happen , please contact with factory after sale service support team.		

V. WARRANTY

After the day of buying the equipment, non man-made failure, there is 1 year warranty

If there is failure please contact with the sellers

The following not included in the warranty:

- Man-made failure or out of guarantee period or disassemble the cabinet or cover of inverter without permission
- The failure or broken cause by Force Majeure or external reason
- Misapplication, accident, neglect, amendment or repair without permission
- Use goes beyond the limit
- Break the operation instruction

Warranty Card				
Product name		Product NO.		
Product model		Purchase time		
Remark :				
Purchase company				
Contact person		Telephone		
Distributor				
Maintain Record				
Date	Maintain type	Summery	Maintenance man signature	User signature