



User Manual

AIPS-30A/50A Series Products



AI Power(Suzhou) Tech Co.,Ltd

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1、 Safety precautions

1.1 statement

In any of the following cases, the Company will not assume any responsibility:

- Use the equipment in harsh environment beyond the description in this manual;
- Use the equipment in any installation and practical environment beyond the relevant international standards;
- Changing products or modifying software codes without authorization;
- Failing to operate according to the operating instructions and safety warnings in the products and documents;
- Equipment damage caused by unnatural environment.

1.2 General safety precautions

◆ Electrical safety

- The electrical connection must be carried out in strict accordance with the description in the manual and the schematic diagram of electrical wiring;
- Before powering on, please confirm that the equipment is properly grounded and check that the wiring is connected correctly;
- When operating with high voltage and alternating current, special tools should be used;
- When the equipment needs to be moved or reconnected, the power supply should be disconnected, and the corresponding operation should be carried out after the equipment is completely powered off;
- In order to meet the requirements of EMC, the length of the output line should be within 10 meters.

◆ Personal safety

- The person who carry out various high-voltage operations and install AC equipment must be qualified for high-voltage and AC operations;
- When installing and overhauling the equipment, relevant person should take appropriate protective measures as required, such as wearing anti-static work clothes and gloves, and remove easily conductive objects such as jewelry and watches to avoid electric shock or burns.

◆ Operational safety

- Before using this product, please read the "Safety Precautions" carefully to ensure the correct and safe use.

- Please operate machine as required when operating;
- Avoid using this equipment in direct scorching sun, drippy environment;
- Please do not put the equipment in the fire or near the electrical heater, hot stove and other similar equipment with high temperature;
- In case of fire, please use dry powder fire extinguisher correctly. Don't use liquid fire extinguisher, or you will get an electrical shock.

1.3 Use environment

Please be careful not to use it in the following working environments:

- High and low temperature and humid places exceeding the technical specifications (temperature: under -20°C or above 60°C);
- Places are in scorching sun or close to heating sources;
- Places are subject to vibration and collision;
- Places with dust, corrosive substances and hypersaline.

2、 Product Introduction

The power conversion system developed by AI Power(Suzhou) Tech Co.,Ltd adopts modular design and advanced control algorithm to realize multi-machine parallel connection, and the power level of parallel system covers 30KW~1MW. The module has the functions of local monitoring, and accepts EMS system remote scheduling, and adapts load and power grid excellently. At the same time, the design of independent air flue makes it effectively cope with various complex application environment, and it also makes the system safer, more reliable, economical and adaptable to various environment.

2.1 Product features

- The PF value of AC side is ONE, which improves the carrying capacity of load;
- The module adopts our patented technology to realize two-way energy flow;
- Seamless handover in bothway
- Dynamic response, full load switching time is less than 40ms ;
- Higher on power density, smaller on size, lighter on weight;

- Local or remote operation control, simple and intuitive;
- Modular design, easy to maintain and expand;
- Abundant external connections, with off-parallel switching devices and isolation transformers;
- Can directly interact with BMS;
- Reliable protective performance, resistance to low temperature, humidity, salt fog and other harsh environments;
- Adopt staggered parallel technology to reduce ripple current;
- Multi-dimensional intelligent fan adjustment technology to reduce power consumption and noise;
- DSP design, realize full digital control;

2.2 Appearance description

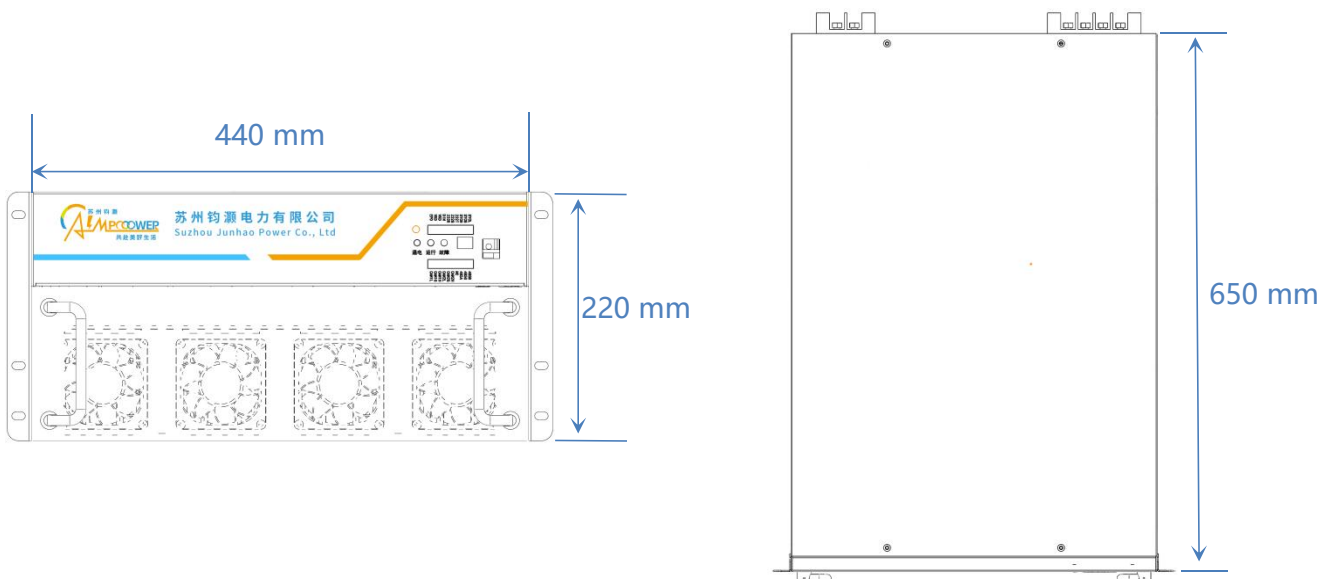









Figure 1 Installation Dimensions of AIPS Series

2.3 Symbols on Product

Symbol	Explanation
	Danger to life due to high voltages!
	Burn danger due to the hot surface that may exceed 60°C.
	Read the user manual before maintenance!
	Disconnect the PCS from all the external power sources before maintenance!
	Do not touch live parts for 15 minutes after disconnection from the power sources. Only qualified personnel can open and maintain the PCS.
	Do not dispose of the PCS together with household waste.
	CE certification mark.

3、 Installation

3.1 Installation environment

- The place where the equipment is placed should be well ventilated, away from water sources, heat sources, corrosive substances, inflammable and explosive articles and other dangerous goods;
- Avoid installation in an environment with scorching sun, dust, volatile gases, corrosive substances and hypersaline;
- It is forbidden to install the equipment in the working environment with metal conductive dust;
- Keep the air inlet and outlet holes of the front and rear panels unobstructed.

3.2 Unpacking inspection

- Unpack the equipment, visually inspect the appearance of the machine, and check whether it is damaged by collision during transportation.
- Check whether the attached accessories are complete against the delivery list (Table 1).

Attachment name	quantity	unit
Power module host	1	sets
Quick operation instruction	1	pcs
Quality inspection report	1	pcs
Attached accessories	1	pcs

Table 1 Delivery List

The following is the optional list Table 2.

Matching name	quantity	unit
LCD Monitor	1	sets
Connection line	1	pcs

Table 2 Optional List

3.3 Power cable preparation

Rated power	Connection Port	Number of cables	Rated voltage	Rated current	Wiring cross-sectional area	Terminal type
30kW	DC Side	2	750Vdc	40A	10mm ²	Ot-25mm-M6 terminal
	AC Side	4	400Vac	44A	10mm ²	Ot-25mm-M6 terminal
50kW	DC Side	2	750Vdc	66.7A	16mm ²	Ot-25mm-M6 terminal
	AC Side	4	400Vac	73A	16mm ²	Ot-25mm-M6 terminal

Table 3 Recommendation on power cable specification

3.4 Equipment application scenarios

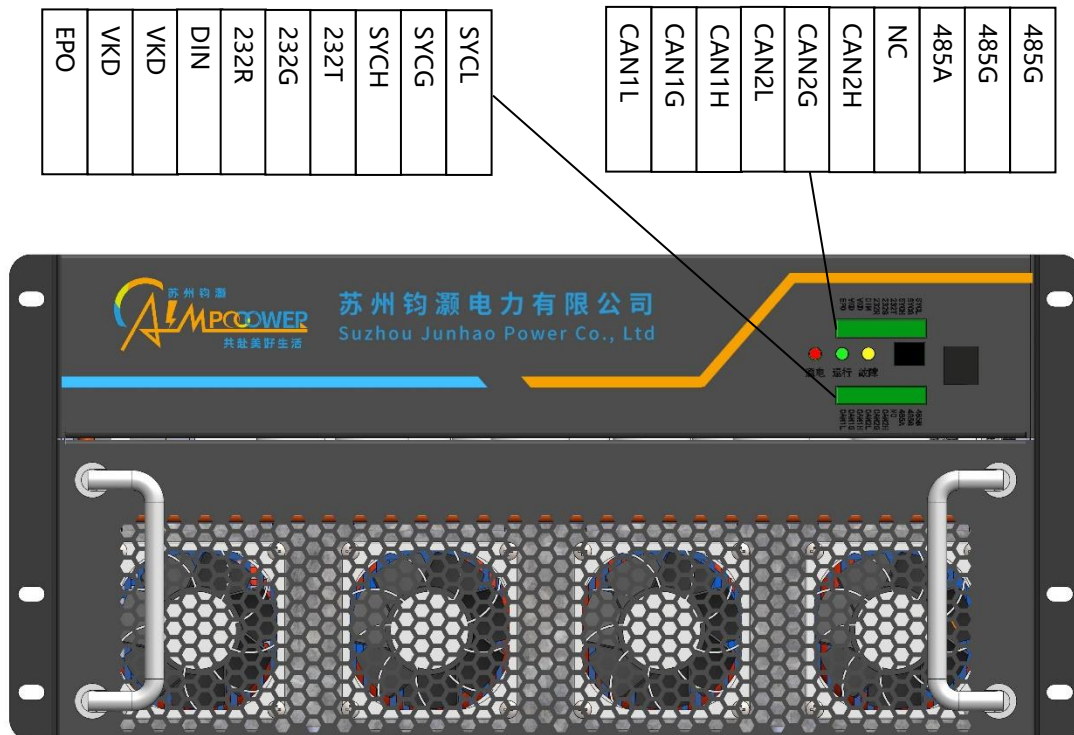
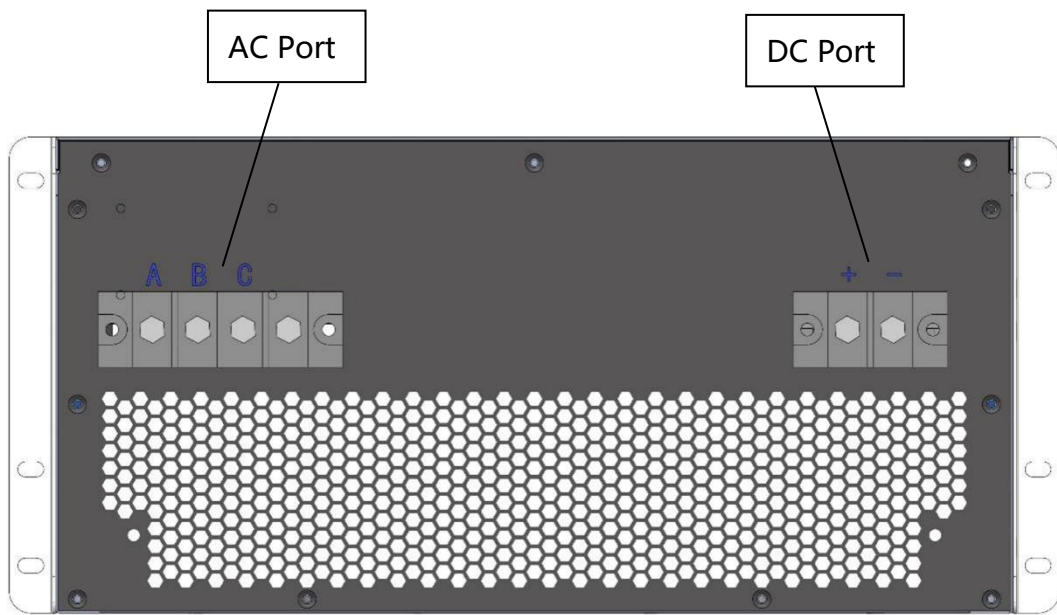


Figure 2 Schematic diagram of equipment application scenario



4、 Maintenance

Each on-site maintenance, the power module should be checked for routine functions, mainly including the following aspects:

- 1) Check the working condition of the power module;
- 2) Check the operation mode switching of the power module;
- 3) Check the indicator display of the power module;
- 4) Check the connecting cables and flat cables.

5、 Troubleshooting

Fault code	describe	Fault handling
1	Reserved	Reserved
2	DC relay error	Contact dealer for more information
3	Communication Error	Check the DC communication port
4	DC low bus over voltage	Contact dealer for more information
5	DC port over voltage	Check the DC input voltage
6	DC port over current	Contact dealer for more information
7	DC port under voltage	Check the DC input voltage
8	DC high bus over voltage	Contact dealer for more information
9	DC bus under voltage	Check the DC input voltage
10	IGBT over temperature	Check the heat dissipation port
11	Phase sequence error	Check the grid phase sequence
12	Control board over temperature	Check the heat dissipation port
13	Radiator over temperature	Check the heat dissipation port

14	Grid over voltage	Check the grid voltage
15	Over current	Check the off-grid load
16	Gird over frequency	Check the grid frequency
17	Grid under voltage	Check the grid voltage
18	Grid under frequency	Check the grid frequency
19	DC unbanlance	Contact dealer for more information
20	Over current (hardware)	Check the off-grid load
21	DC high bus over voltage (hardware)	Contact dealer for more information
22	DC low bus over voltage (hardware)	Contact dealer for more information
23	DC over current (hardware)	Contact dealer for more information
24	Driver board 1 error	Contact dealer for more information
25	Driver board 2 error	Contact dealer for more information
26	Driver board 3 error	Contact dealer for more information
27	Driver board 4 error	Contact dealer for more information
28	Driver board 5 error	Contact dealer for more information
29	Driver board 6 error	Contact dealer for more information
30	System power supply error	Contact dealer for more information
31	Emergency stop	Check the emergency stop port
32	Reserved	Reserved
33	Reserved	Reserved
34	DC port reversed	Check the DC port polarity
35	Off grid error	Check the off-grid load
36	Precharge error	Contact dealer for more information
37	Failure to meet startup conditions	Check the cable
38	Equalizing circuit over current	Contact dealer for more information
39	Zero sequence current protect	Check the off-grid load
40	Pwm signal error	Contact dealer for more information
41	Lock error	Contact dealer for more information
42	Island error	Check the on-grid breaker

6、 Technical parameters

project	Detailed specifications	
	AIPS-30A	AIPS-50A
DC parameters		
Rated voltage	750V d. c.	750V d. c.
Voltage range	650–850V d. c.	650–850V d. c.
Rated charging current	40 A d. c.	66. 7A d. c.
Maximum charging current	46 A d. c.	77A d. c.
Rated discharging current	40 A d. c.	66. 7A d. c.
Maximum discharging current	46 A d. c.	77A d. c.
AC parameters		
Rate output power	30kW	50kW
Rated voltage(AC)	400V a. c. , 3L/PE	400V a. c. , 3L/PE
Rated current(AC)	44A	73A
Norminal Operation frequency	50/60Hz	50/60Hz
Maximum current	52A a. c.	87A a. c.
Maximum output overcurrent protection	57A a. c.	95A a. c.
Maximum output fault current	140A peak	140A peak
Conditional short-circuit current (Icc)	140A rms	140A rms
Minimum required prospective short-circuit current(Icp, mr)	110A	110A
Rated short time withstand current (Icw)	≤157A Rms/1 s	≤157A Rms/1 s
Rated peak withstand current(Ipk)	≤400A Peak/1ms	≤400A Peak/1ms
Maximum apparent power	36kVA	60kVA
Current (inrush)	20 kA/20μs	20 kA/20μs
Total Harmonic Distortion (THD)	≤3%	≤3%
Power factor	0.9 leading to 0.9 lagging	0.9 leading to 0.9 lagging

General parameters		
Communication method	RS485/CAN/Ethernet	RS485/CAN/Ethernet
Protection class	Class I	Class I
Overvoltage category	OVC III (AC Main) OVC II (DC)	OVC III (AC Main) OVC II (DC)
PCS Topology	Non-isolated (DC-AC)	Non-isolated (DC-AC)
The type of electrical supply system	TN	TN
Ingress protection	IP20	IP20
Pollution degree	PD2 (Internal)	PD2 (Internal)
Operating temperature	-20~60°C (Derating above 45°C)	-20~60°C (Derating above 45°C)
Relative humidity	≤95%RH	≤95%RH
Cooling mode	Smart forced air cooling	Smart forced air cooling
Altitude	5000m, Derating above 3000m	5000m, Derating above 3000m
Overall dimension (H*W*D)	220*440*650 mm	220*440*650 mm
Weight (kg)	48 kg	48 kg

7、Quality Assurance

AI Power(Suzhou) Tech Co.,Ltd (hereinafter referred to as the company) will repair or replace the products free of charge when it is not work during the warranty period.

1. Evidence

During the warranty period, the company requires customers to show the invoice and date of purchasing products. At the same time, the trademark on the product should be visible clearly , otherwise we will refuse to repair.

2. Condition

- The unqualified products after replacement shall be handled to our company.
- The customer should reserve a reasonable time for the company to repair the faulty equipment.

3. Exemption from liability

The Company has the right not to guarantee the quality in the following situations:

- The whole machine and parts have exceeded the warranty period.
- Transport damage especially it caused by users
- Incorrect installation, modification or using
- Operation beyond the very harsh environment described in this manual.
- Machine failure or damage caused by installation, repair, alteration or disassembly by service personnel other than our company.
- Machine failure or damage caused by using non-standard or non-company components or software.
- Anything beyond the scope of installation and use specified in relevant international standards.
- Damage caused by abnormal natural environment

Due to the product failure caused by the above situation, the customer requires maintenance service. After being judged by our service organization, we can provide paid maintenance service.

In order to continuously improve customer satisfaction, our products and user manuals are in continuous improvement and upgrading. If there is any difference between the manual in your hand and the product, it may be due to the version. Please refer to the specific product. If you still have questions, please contact our company.

8、 about us

If you have any questions about this product, please contact us. Please remember the following contact information:

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