



User Manual

AIPS-30A/50A Series Products



AI Power(Suzhou) Tech Co.,Ltd

CATALOG

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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

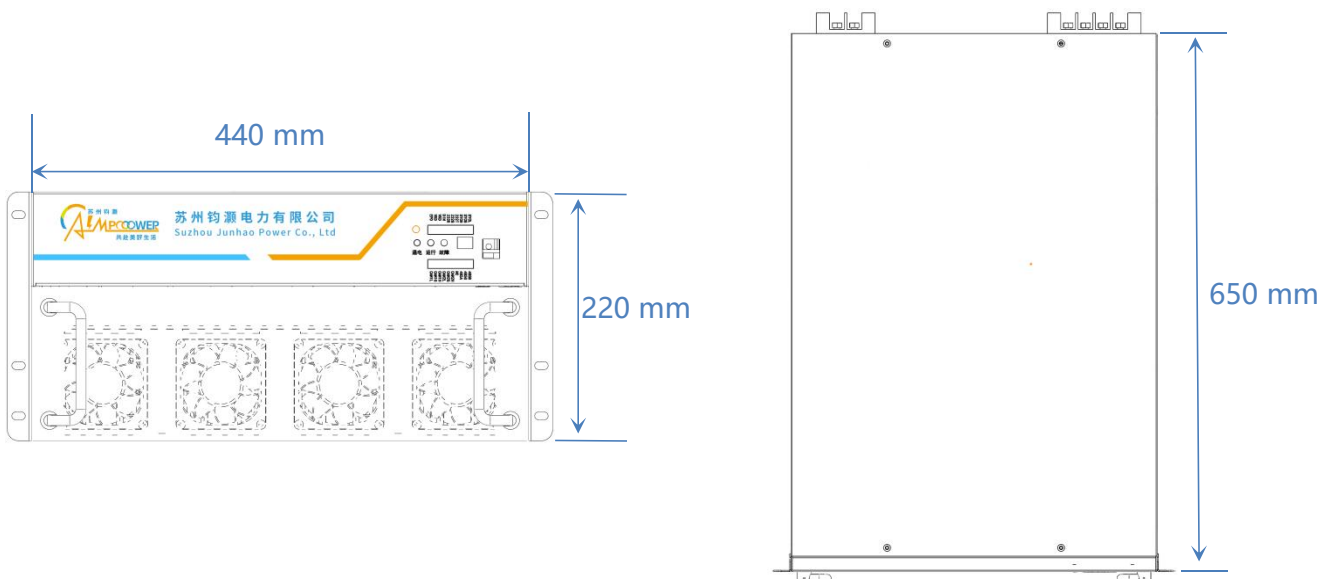









Figure 1 Installation Dimensions of AIPS Series

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

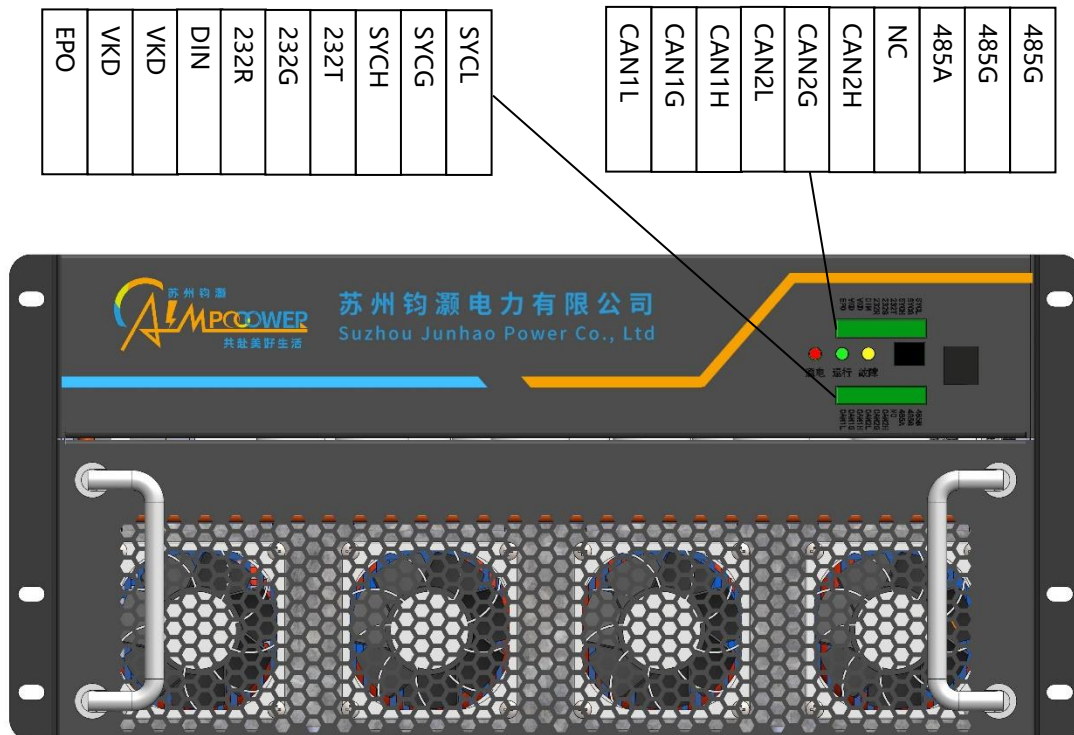
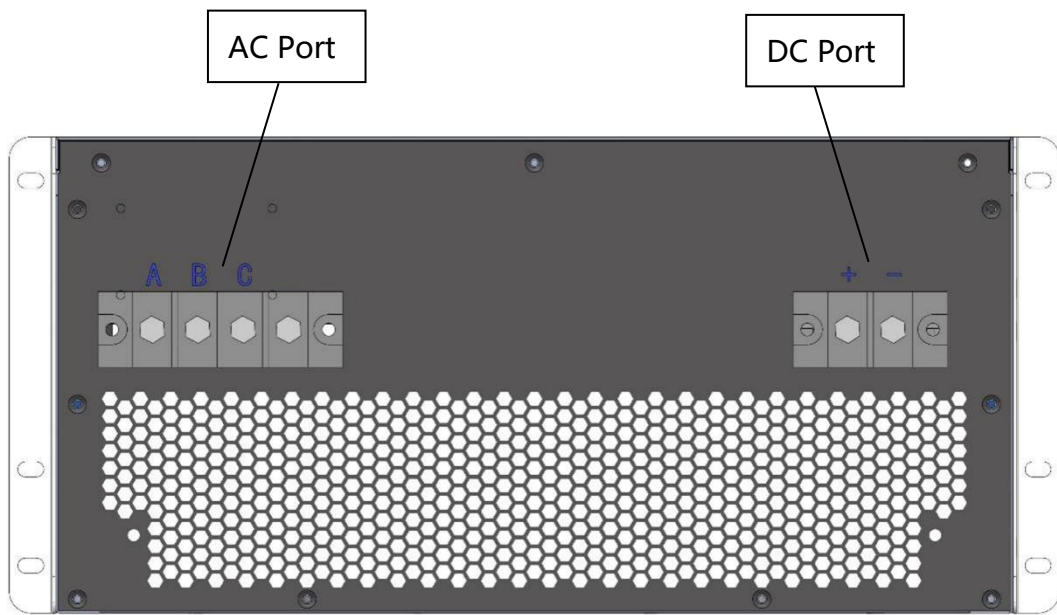


Figure 2 Schematic diagram of equipment application scenario



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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