



**Air-heat integrated air
conditioning instruction
(1500w&80w/k)**



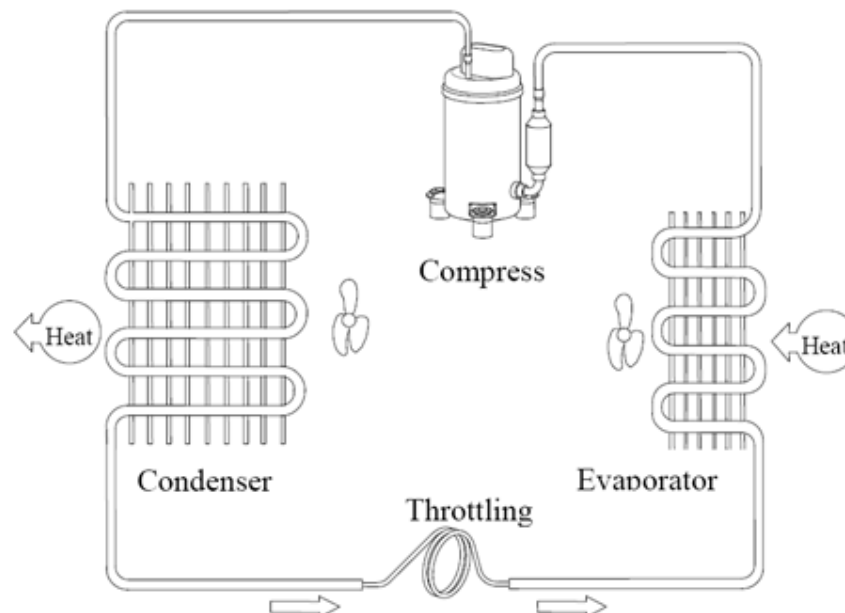
Note: The air conditioner has the function of power-on automatic start-up. Normally, no manual adjustment is needed.

1. Introduction

Cabinet air condition is actively cooling with compressor, and it will remove the heat inside the cabinet to outside. It also can keep the dust and heat outside the cabinet, avoiding problems from using fan. The inside cabinet can be maintained at an ideal temperature for electrical components which effectively guarantees the stability of the electronic equipment and improves the reliability of the whole system.

Feature.

1. This series of products can be widely used for outdoor communication cabinets, battery cabinets, electric cabinets and industry control cabinets etc.
2. The protective level of internal and external circulation is IP55, which can protect cabinet to avoid moisture, dust, water. The air conditioner can also be indoor or outdoor installed.
3. Digital temperature controller and high precision of temperature control.



2. Normative standard

No.	Standard No.	Standard Name
01	GB 4208	Enclosure Protection Class
02	GB 4706.1	safety of household and similar electrical appliances
03	GB9237 -2001	mechanical refrigerating systems used for cooling and heating-safety requirements
04	GB/T 17626.8	Electromagnetic compatibility - Testing and measurement techniques-Power frequency magnetic field immunity test
05	GB/T 4798.1、2、3	Environmental conditions existing in application of electric

3. Product parameters

Name	Outdoor cabinet air conditioner
Model	AC1500&DC80w/k
Mounting Method	Semi-embedded Mounting
Power Supply	220VAC ± 15% /50Hz&DC48V
Cooling capacity	1500W@L35/35&80W/K
Power capacity	420W@L35/35&DC68W
Cooling capacity	1125W@L35/55
Power capacity	540W@L35/55
Max Noise Level	65dB (A)
IP Grade	IP55
Heater	Optional 800w
Hydrogen Function	Optional
Net Weight	45kg
Refrigerant	R134a
Dimensions	950*510*200 (mm)

4. Type Selection of Cabinet Air Conditioner

Formula:

$$Q_t = (Q_i + Q_r) \times 1.2$$

Q_t : Heat released by the cabinet (W)

Q_i : Heat released by the inner cabinet (W)

Q_r : Heat spreads from outside to the inside of cabinet (W)

Q_i : Heat released by the inside of the cabinet (W)

The calculation of the heat released by the components in the cabinet is based on the following (related to the components installation).

- 1) Heating of variable-frequency drive, transformer, drive and servo amplifier etc.: rated power 1K, about 30~50W heat (depending on the load and divided by fan pump load and mechanical load).
- 2) PLC is about 35~50W heating(group as a unit), heat of industrial personal computer is controlled by its size. All calculated of 300W/ unit;
- 3) Heat of contact components: rated power 1KW is about 5~20W heat, can be ignored compared with large power components.
- 4) Heat of common server is about 280-500W. Heat of UPS is 20% of its power.
E.g. When the variable-frequency drive is working with load, its loss (transformed into heating) is about 3%~5% of system rated power, which can be calculated. When the variable-frequency drive is of 1KW, the loss maybe 30W to 50W.
- 5) Heat of SCR: 2W/A. 1KW DC Drive is about 7W~10W.

$$Q_r = k \times A \times \Delta T$$

k ---Heat transfer coefficient

- 1) $k=5.5W/ m^2 .K$ Steel cabinet
- 2) $k=12.0W/ m^2 .K$ Aluminum-magnesium alloy enclosure
- 3) $k=0.2W/ m^2 .K$ Plastic material cabinet

A ---Surface area of the cabinet (unit--- m^2)

$$\Delta T = T_1 - T_2 \text{ (unit---}^\circ\text{C)}$$

T_1 ---maximum temperature of outside cabinet

T_2 ---controlled temperature of inside cabinet

E.g. Dimension of a steel cabinet: L×H×D: 1500×2000×800 mm,

Heat of the inside elements is 1000W, controlled temperature inside the cabinet is 28 °C, outside temperature is 35 °C。

Answer. Surface area of the cabinet--- $A=1.5\times 2\times 2+0.8\times 2\times 2+1.5\times 0.8=10.4\text{ m}^2$.

Heat removed from out to inside of cabinet--- $Q_r=k\times A\times\Delta T=5.5\times 10.4\times(35-28)=400.4\text{ W}$

Total heat produced by the cabinet--- $Q_t=(Q_i+Q_r)\times 1.2=(1000+400.4)\times 1.2=1680.48\text{ W}$

So choose the cabinet air conditioner with cooling capacity of 2000W.

5. Installation of Air Conditioner

5.1 Installation instruction.

- Please do not use this equipment in hot, dusty, moist or corrosive environment. The ambient temperature should not be high than 55°C and also should not be less than -40°C. The humidity should not be more than 85%. Starting voltage should not be higher or lower than 10% of the rated voltage.
- Place the air conditioner on the cabin and screw the air conditioner on the edge of the cabin.
- Make sure that the air conditioning drainage is smooth and that the pipe exposed outside the wall should not be raised or bent to avoid affecting the drainage.
- Do not upside-down, over-tilt and collision when handling or moving the equipment
- Installation and electrical wiring of the equipment must be operated strictly by professionals in accordance with the relevant provisions of this manual.

5.2 Safety Alert

- Please follow the instructions before installation. Otherwise, improper installation may lead to leakage, electric shock, fire, equipment loosening and other safety hazards.
- Air conditioning prohibits heavy pressure, heating, pulling power lines and water pipes
- The voltage, frequency and capacity of the power supply must conform to the requirements for the use of the product.
- Ground wires should not be connected to gas pipes, tap pipes, lightning rods and telephone lines. Electrical shock may occur if grounding is not good.
- Keep objects in the air conditioner and heavy pressure strictly prohibited.
- When cleaning, disassembling or repairing equipment, cut off the power supply first to avoid

electric shock and other accidents.

- Where there are flammable gases, corrosive gases, oil mist, conductive powder and other places with poor ambient air quality, it is strictly prohibited to install and use the equipment.
- When abnormal happens (smoke, abnormal sound, long-term non-working after power-on, etc.), the power supply should be cut off immediately and the operation of the equipment should be stopped. At the same time, please report to the professionals for overhaul.

5.3 Installation drawing

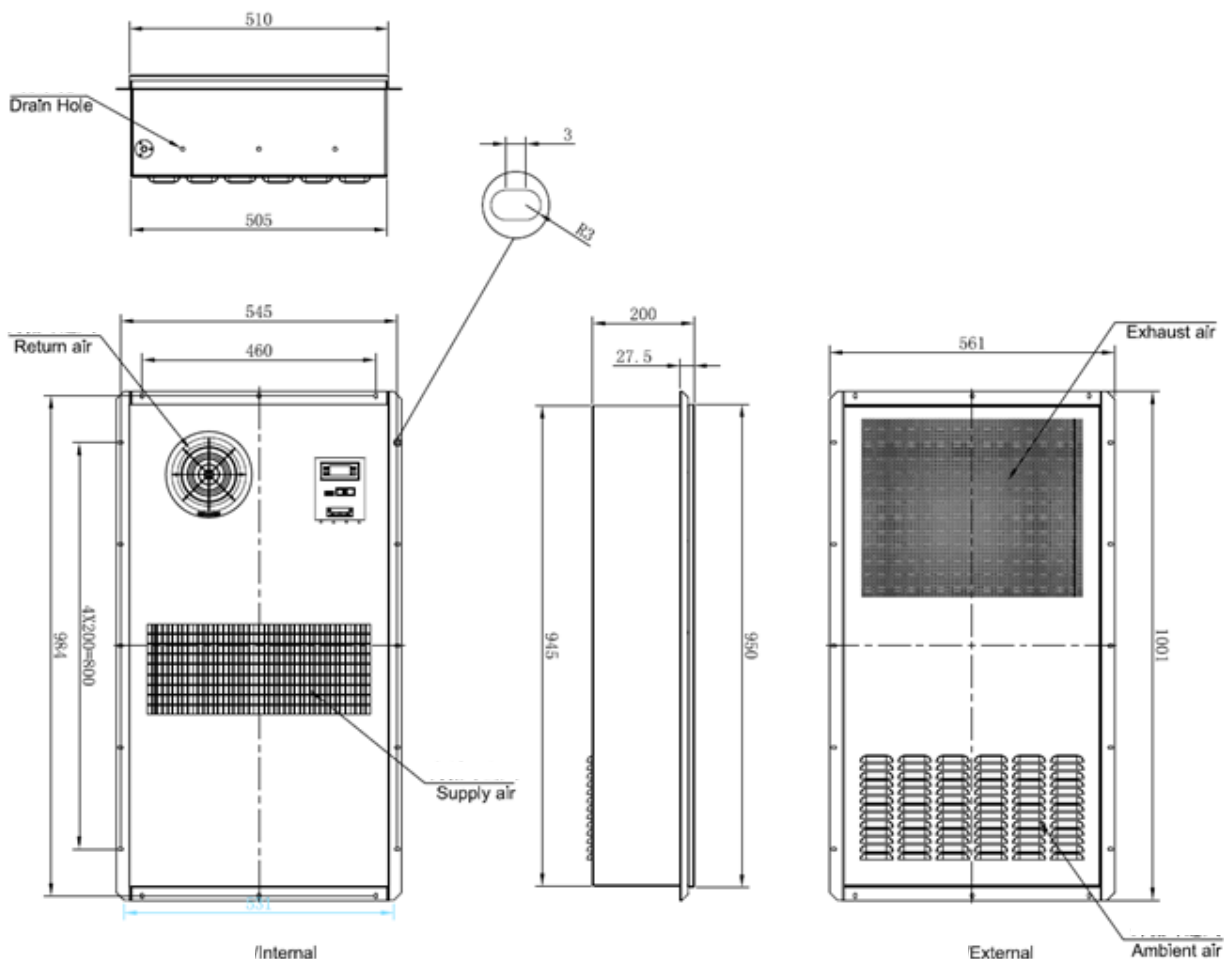
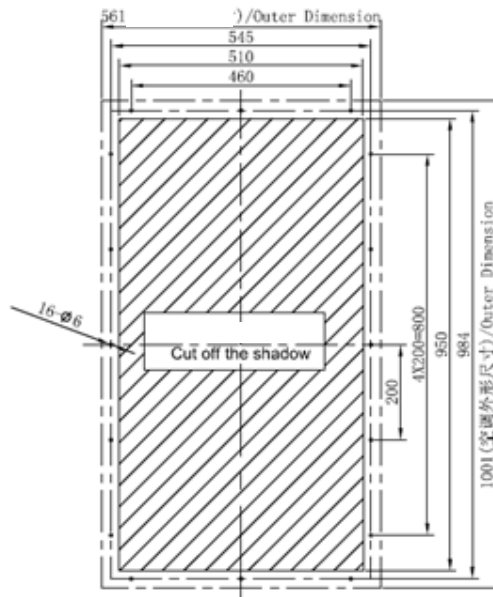
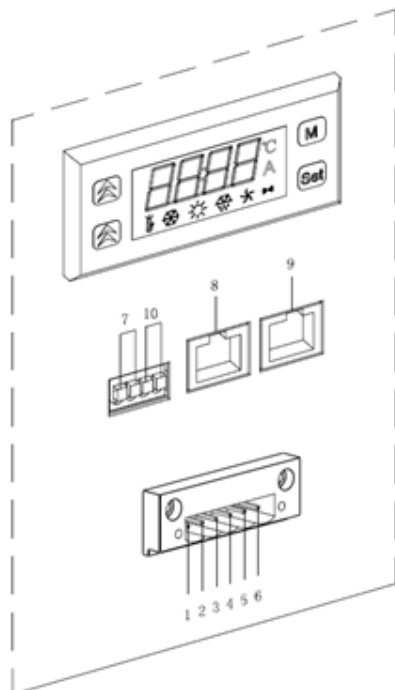


Figure 1-Cabinet Door Cutting Dimension



5.4 Terminal instructions



Instructions of display panel:

The display panel shows cabinet temperature under normal circumstance, and shows alarm code when there is a malfunction;

In the bottom is the status bar, different lamp represents different status.

- : Lamp on when setting mode; Flashing when self diagnose ;
- : Lamp on when cooling;
- : Lamp on when heating;
- : Lamp on when external fan is running;
- : Flashing when alarm.

Number	Symble	Definition	Description
1	L	Live line of AC power	/
2	N	Neutral line of AC power	/
3	PE	Ground wire of power	/
4	/	/	/
5	-48V	Negative electrode of DC power	/
6	GND	Positive electrode of DC power	/
7	ALARM	Dry contact alarm output	Dry contact alarm: normal closed
8	RS485-OUT	Communication interface	/
9	RS485-IN	Standby communication interface	/
10	CONTROL	External signal input port	External singal input port: accept external control signal to control the air conditioner

