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A brand of legrand

ECOND series air-cooled Flat Type

User Manual

Preface-About the product and manual

[To users]

Dear users! Thank you for purchasing ECOND series air-cooled flat type condenser!

To ensure better use, please read this manual carefully before using it and ensure correct use and operation in order to achieve a lasting and reliable operation effect.

[Warranty]

This product is covered by our maintenance service with the purchase contract or relevant approved procedures.

[Exception clauses]

1. Free warranty period expires;
2. Disassembly or modification of the product without authorization;
3. Violation of product operation or use specifications;
4. Man-made failures;
5. Losses caused by force majeure or other external factors at client site.

[**Note**: Any of the above exemption clauses will not be covered by the warranty.]

[Customer service]

Our company provides customers with a full range of technical support. You can contact local office or customer service center.

[Contact]

Service hotline: 400-700-9662

[Related description]

1. This manual is provided with the product. Please keep it properly for future reference. If this manual is lost or damaged, please request it directly from the manufacturer;
2. This manual is written for the ECOND series air-cooled flat type condenser products. The content may not be applicable to other models;
3. The copyright of this manual belongs to Our company. All rights are reserved. The content is subject to change without notice.

Contents

Chapter 1 Product Overview

1.1 Introduction

The ECOND series air-cooled flat type condenser is a new generation of high-efficiency energy-saving condenser independently designed and developed by Our company and has single-system type and dual-system type. The single-system ECOND air- cooled flat type condenser is used to match the single-system indoor unit or single refrigeration system of the dual-system indoor unit. The dual-system ECOND air-cooled flat type condenser is used to match the dual-system indoor unit.

Features:

- ✓ Flexible installation, supporting vertical and horizontal air outlet.
- ✓ Single and double refrigerant circuits, suitable for various systems.
- ✓ Enhanced heat transfer internal threaded tube, anti-corrosion fin coating optional.
- ✓ Marine grade corrosion-resistant aluminum, solid and beautiful.
- ✓ High-quality low-noise three-phase axial flow fan with built-in thermal protection.
- ✓ Integral protective cover prevents damage to the copper tube of the heat exchanger.
- ✓ IP55 standard electrical control box available.
- ✓ Stepless frequency conversion control of the fan.

1.2 Model Description

Taking EACCOND042SP model as an example, the naming rules are shown in Fig. 1-

1.

0	1	2	3	4	5	6	7	8	9	10	11
E	A	C	C	O	N	D	0	4	2	S	P

0	E	ENERSAFE
1-2	AC	AIRE ACONDICIONADO
3-4-5-6	COND	CONDENSADOR
7-8-9	XXX	CAPACIDAD KW
10	S	CIRCUITO SIMPLE
	D	CIRCUITO DOBLE
11	P	FLAT TYPE
	V	V TYPE

Fig. 1-1 Naming rules

ECOND air-cooled flat type condenser has 15 models, as shown in Table 1-1 below.

Table 1-1 Model list

Type / No.	Single system	Dual system
1	EACCOND018SP	/
2	EACCOND024SP	/
3	EACCOND028SP	/
4	EACCOND032SP	/
5	EACCOND036SP	/
6	EACCOND042SP	/
7	EACCOND048SP	EACCOND048DP
8	EACCOND054SP	EACCOND054DP
9	EACCOND064SP	EACCOND064DP
10	EACCOND072SP	EACCOND072DP
11	EACCOND084SP	EACCOND084DP
12	EACCOND096SP	/

1.3 Product Composition

The ECOND air-cooled flat type condenser consists of finned coils, axial fans, fan inverters, pressure sensors and cryogenic components. Cryogenic components are only configured for cryogenic outdoor units. The heat exchanger is located inside the condenser, and the appearance and location of other parts are shown in Fig. 1-2, 1-3 and 1-4.

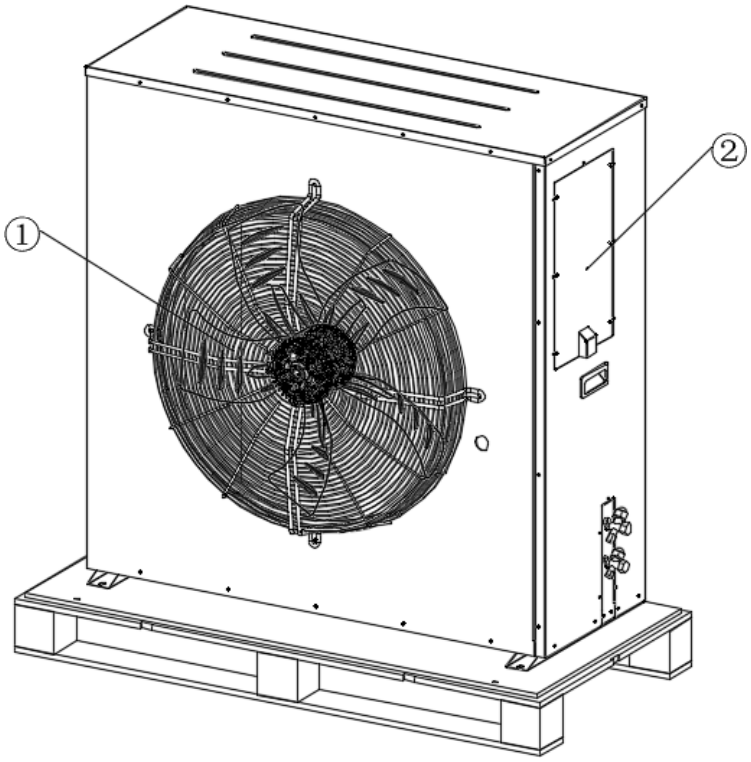


Fig. 1-2a Schematic diagram of single system of EACCOND018 air-cooled condenser (single fan)

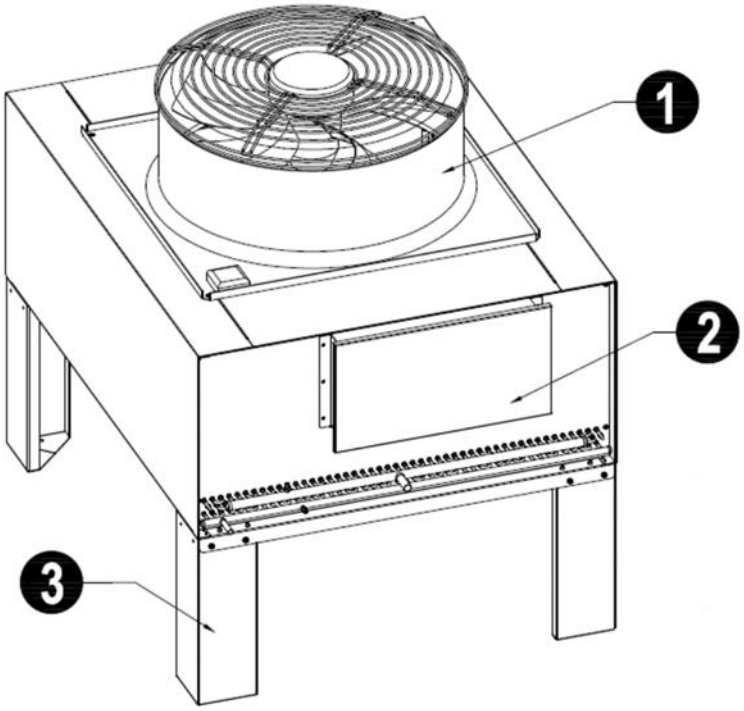


Fig. 1-2b Schematic diagram of single system of ECOND air-cooled flat type condenser (single fan)

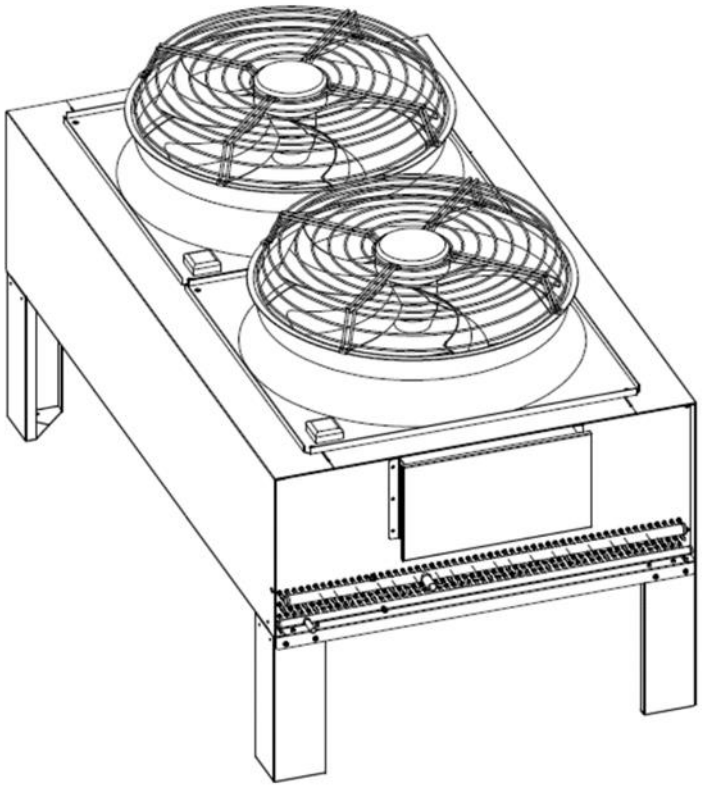


Fig. 1-3 Schematic diagram of dual system of ECOND air-cooled flat type condenser (two fans)

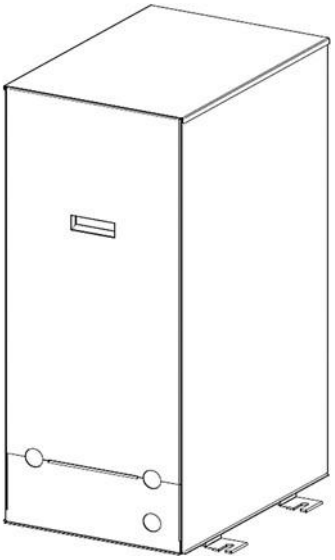


Fig. 1-4 Schematic diagram of cryogenic components

Description: 1-External fan; 2-Electric control box; 3-Support feet.

◆ Note

Cryogenic components are only configured under outdoor low-temperature conditions. Single-system cryogenic outdoor unit is equipped with 1PCS cryogenic components, and dual-system cryogenic outdoor unit is equipped with 2PCS cryogenic components.

1.4 Storage Requirements

The storage environment of the condenser should meet GB/T19413-2010 and JB/T7659.5-1995. See Table 1-2 for details.

Table 1-2 Storage requirements

Content	Requirements
Storage environment	Clean (no dust), well-ventilated, indoor
Ambient temperature	-40°C~+60°C
Storage time	No more than 6 months; the performance needs to be re-calibrated after 6 months

1.5 Operating Environment Requirements

The condenser operating environment should meet GB/T19413-2010 and JB/T7659.5-1995. See Table 1-3 for details.

Table 1-3 Operating Environment Requirements

Item	Requirements
Installation position	The equivalent distance between the indoor unit and standard condenser is 30m; height difference *ΔH: -10m≤ΔH≤20m; installation method: horizontal or vertical air outlet

Item	Requirements
Ambient temperature	Normal temperature type: -20℃~+45℃; cryogenic type and fluorine pump type: -40℃~+45℃
Operating power	380V±10%, 50/60Hz
Altitude	≤1000m; derated for use above 1000m. For details, please contact our technicians
Protection	IP55
Note: "*": The condenser has a positive drop above the indoor unit, and a negative drop below it	

◆ Note

1. When the equivalent distance between the indoor unit and standard condenser is within 30m, please refer to the specific requirements for the equivalent length of the refrigerant connecting pipe in the *Precision Air Conditioner User Manual*.

2. When the equivalent distance between the indoor unit and the standard condenser exceeds 30m, please consult Our company for details.

1.6 Structural Parameters

1.6.1 Shape

The dimensions of the condenser are shown in Fig. 1-5 and 1-6, and the specific structural parameters are shown in Table 1-4.

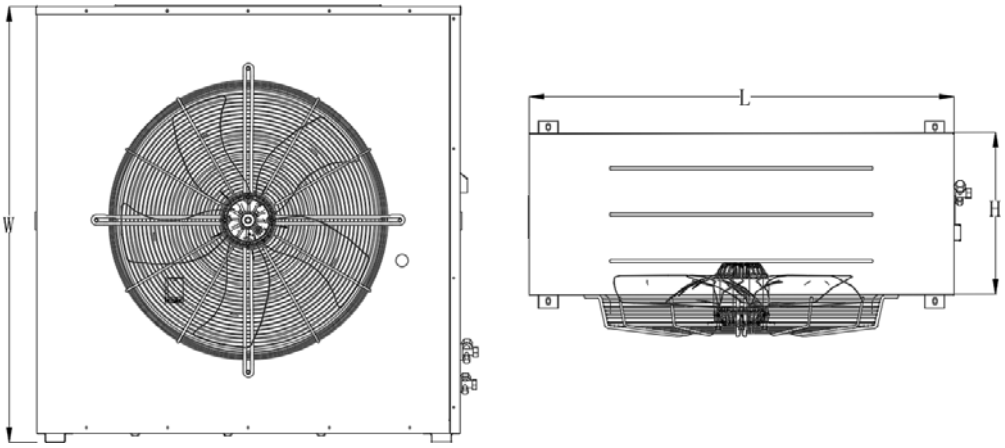


Fig. 1-5 Structure of EACCOND018 air-cooled condenser

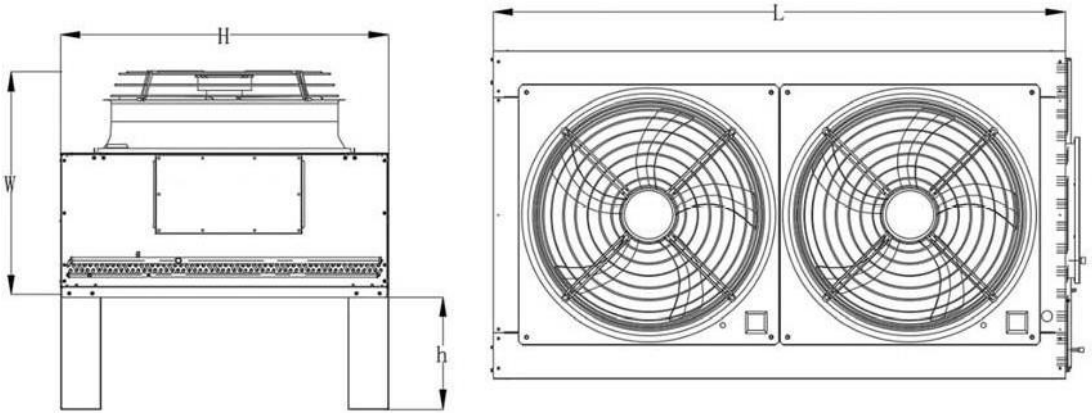


Fig. 1-6 Structure of ECOND air-cooled flat type condenser

Table 1-4 Structural parameters

Model	Number of fans	Weight (kg)	Dimensions (mm)				Liquid pipe interface	Air pipe interface
	(PCS)		L	W	H	h	(mm)	(mm)
EACCOND018S	1	100	1050	1077	340	/	15.88	19.05
EACCOND024S	1	115	1330	817	975	455	15.88	19.05
EACCOND028S	1	115	1330	817	975	455	15.88	19.05
EACCOND032S	1	124	1330	817	1050	455	15.88	19.05
EACCOND036S	1	134	1380	802	1050	455	15.88	19.05
EACCOND042S	1	138	1530	802	1220	455	15.88	19.05
EACCOND048S	1	138	1730	802	1220	455	15.88	22
EACCOND048D							15.88	19.05
EACCOND054S	1	152	1730	802	1220	455	15.88	22
EACCOND054D							15.88	19.05
EACCOND064S	2	168	1930	817	1220	455	15.88	22
EACCOND064D							15.88	19.05
EACCOND072S	2	172	2130	817	1220	455	15.88	22
EACCOND072D							15.88	19.05
EACCOND084S	2	245	2130	802	1220	455	15.88	25.4
EACCOND084D							15.88	19.05
EACCOND096S	2	245	2130	802	1244	455	15.88	25.4

Cryogenic components need to be configured under outdoor cryogenic conditions. The dimensions of cryogenic components are shown in Fig. 1-6, and the specific structure parameters are shown in Table 1-5.

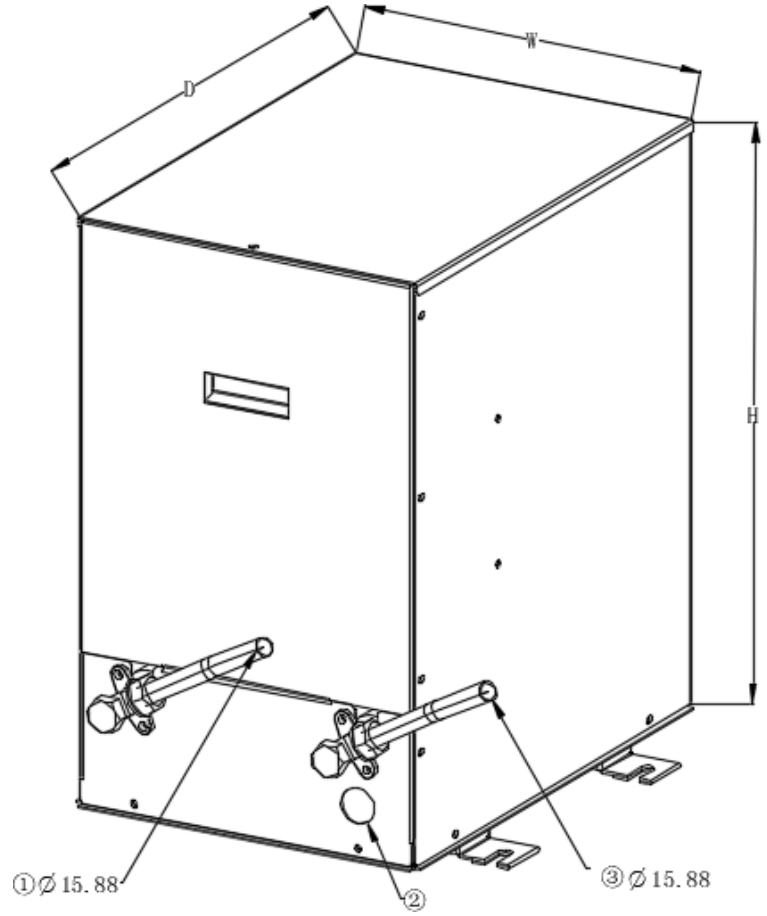


Fig. 1-6a DW003/007 Schematic diagram of cryogenic component structure

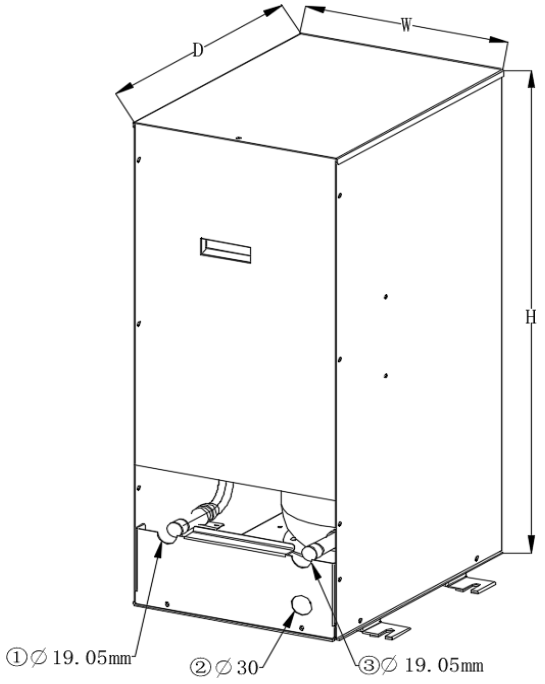


Fig. 1-6b DW014 Schematic diagram of cryogenic component structure

Description: ①-Liquid inlet pipe; ②-Wire inlet hole; ③-Liquid outlet pipe.

Table 1-5 Structural parameters of cryogenic components

Model	Configured model	Dimensions (mm)		
		D	W	H
DW-03	EACCOND018S	430	300	384
DW-07	EACCOND024S,EACCOND028S,EACCOND032S,EACCOND036S,EACCOND042S,	430	300	500
DW-14	EACCOND042S,EACCOND048S,EACCOND054S,EACCOND064S,EACCOND072S,EACCOND084S,EACCOND096S,EACCOND48D,EACCOND54D,EACCOND064D,EACCOND072D,EACCOND084D	430	300	750

◆ Note

The dual-system outdoor unit is equipped with 2PCS cryogenic components.

1.6.2 Mounting Base

1.6.2.1 Horizontal mounting base

The horizontal mounting base is shown in Fig. 1-7 and 1-8 and 1-9. The specific sizes of bases/mounting holes of each model are shown in Table 1-6.

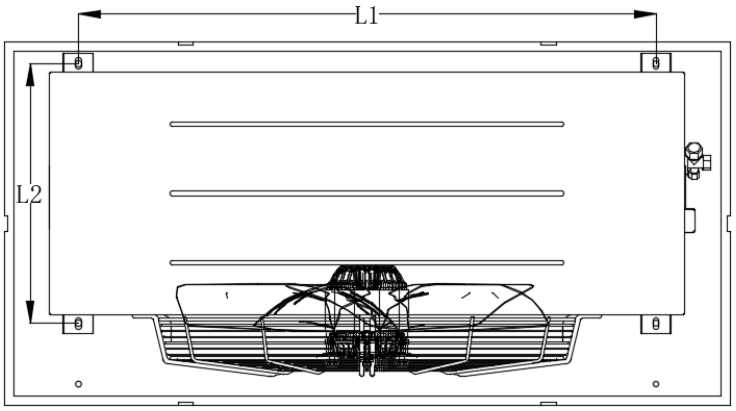


Fig. 1-7 ECONDS018 Dimension drawing of the mounting base

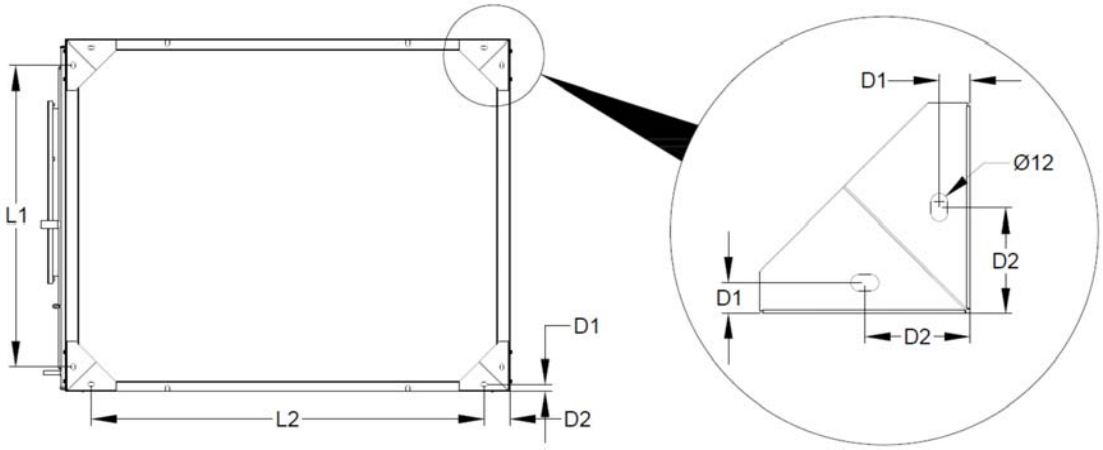


Fig. 1-8 Dimension drawing of the mounting base

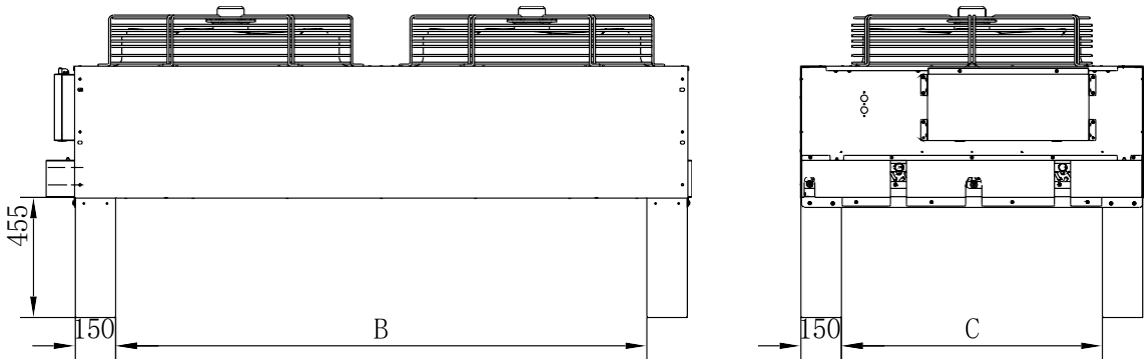


Fig. 1-9 Dimensions of the horizontal mounting base

Table 1-6 Size of mounting base/mounting hole (unit: mm)

Model	L1	L2	D1	D2	B	C
EACCOND018S	955	430	/	/	/	/
EACCOND024S, EACCOND028S	825	1175	22	75	1025	675
EACCOND032S, EACCOND036S	900	1175	22	75	1025	750
EACCOND042S	1070	1375	22	75	1225	920
EACCOND048S, EACCOND048D EACCOND054S, EACCOND054D	1070	1575	22	75	1425	920
EACCOND064S, EACCOND064D	1070	1775	22	75	1625	920
EACCOND072S, EACCOND072D EACCOND084S, EACCOND084D	1070	1975	22	75	1825	920
EACCOND096S	1095	1975	22	75	1825	945

◆ Note

The mounting holes are long flat holes. It is recommended to use M10×30 bolts to fix the mounting base.

1.6.2.2 Vertical mounting base

The vertical mounting base and dimensions are shown in Fig. 1-10, and the E dimensions of each model are shown in Table 1-7.

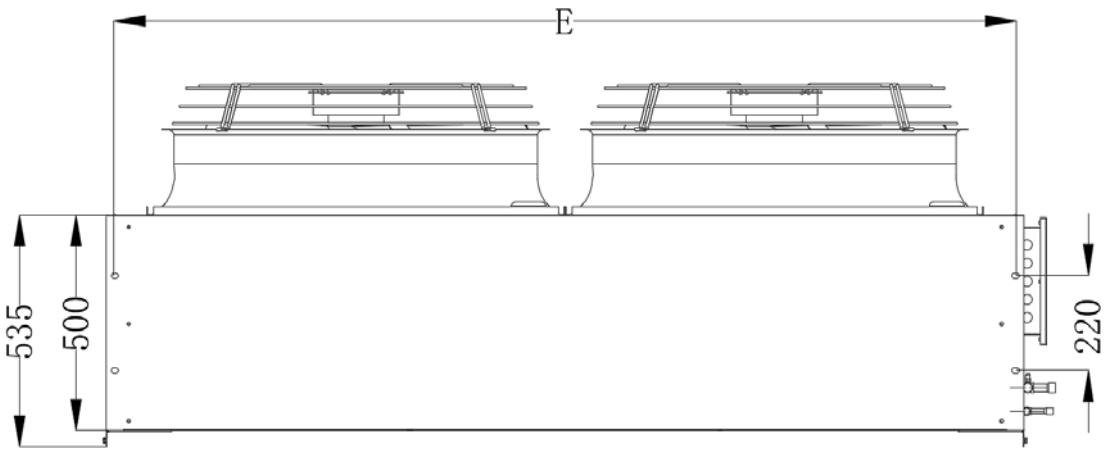


Fig. 1-10 Dimensions of the vertical mounting base (bottom view)

Table 1-7 E dimensions (unit: mm)

Model	E
EACCOND024S,EACCOND028S, EACCOND032S, EACCOND036S	1290
EACCOND042S	1490
EACCOND048S, EACCOND048D, EACCOND054S, EACCOND054D	1690
EACCOND064S, EACCOND064D	1890

◆ Note

1. The mounting holes are long flat holes. It is recommended to use M10×30 bolts to fix the mounting base.
2. Corresponding dual system outdoor unit has 2PCS cryogenic components.

1.6.2.3 Cryogenic component mounting base

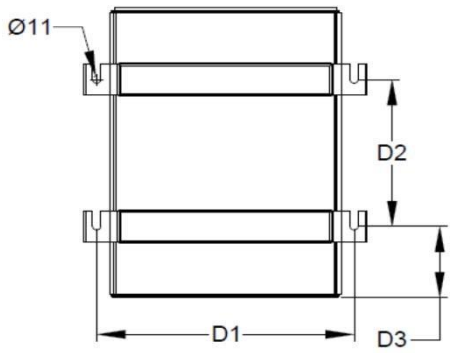


Fig. 1-11 Dimensional drawing of cryogenic component mounting base

Table 1-8 Mounting hole size (unit: mm)

Model	Size		
	D1	D2	D3
DW-03/07/14	343	220	105

Chapter 2 Installation of Condenser

2.1 Unpacking

When installing on site, first remove the packaging of the ECOND air-cooled flat type condenser, then remove the 4 fixing nuts, and move the condenser to the installation site.

◆ Check points

1. If the condenser is placed horizontally, the support legs must be installed before being placed vertically.
2. Check whether the condenser is under pressure.
3. When handling the condenser by hand, do not touch the copper tube in order to avoid bending and deformation of the copper tube and system leakage.

Inspection

When receiving the ECOND air-cooled flat type condenser, check the accessories according to the packing list, and check whether any part has obvious damage. If any part is missing or damaged, report to the carrier immediately. If you find any concealed damage, also report it to the carrier and the local office of the supplier.

2.2 Installation Requirements

2.2.1 Environment

1. In order to ensure the heat dissipation performance, please install the condenser outdoors where the air flow is smooth, avoid places where there are dust, snow and other conditions that may block the condenser coil, and also ensure that there is no steam or waste heat, acidic or alkaline gases around the unit.
2. It is recommended that users adopt horizontal installation when the conditions permit, which is beneficial to improve the efficiency of air intake and reduce noise.
3. Try to install the condenser far enough away from the residential area to avoid noise disturbing the residents. Please refer to the local environmental protection standards for the specific installation distance.
4. For the installation direction, please refer to the arrow marks on the ECOND air- cooled flat type condenser.

5. When installing on the roof, pay attention to the load-bearing of the floor, protect the waterproof layer of the roof, and comply with relevant local laws and regulations.
6. Make sure that the ground wire of the electric arc welder is not in contact with the condenser, so as to avoid breakdown of the welding spot in the coil by the arc.

2.2.2 Installation Space

There should be sufficient space for installation and maintenance around the installation location of the ECOND air-cooled flat type condenser.

◆ Space requirements

1. The ECOND air-cooled flat type condenser requires at least 600mm maintenance space at the front, rear, left, and right side.
2. There is no obstruction within at least 3000mm of the air outlet of the ECOND air- cooled flat type condenser.
3. The air outlet of the ECOND air-cooled flat type condenser should avoid short circuit of hot air, which will result in poor heat exchange effect, as shown in Fig. 2-3.
4. When a condenser is placed on top of another condenser, the upper condenser must be installed on a bracket and a cushion pad should be installed between the unit and the bracket for shock isolation. It is forbidden to stack two condensers directly through screw connection, as shown in Fig. 2-4.
5. Refer to Fig. 2-5 for the installation diagram of the cryogenic components of the outdoor unit.

The specific requirements are shown in Fig. 2-1 and 2-2.

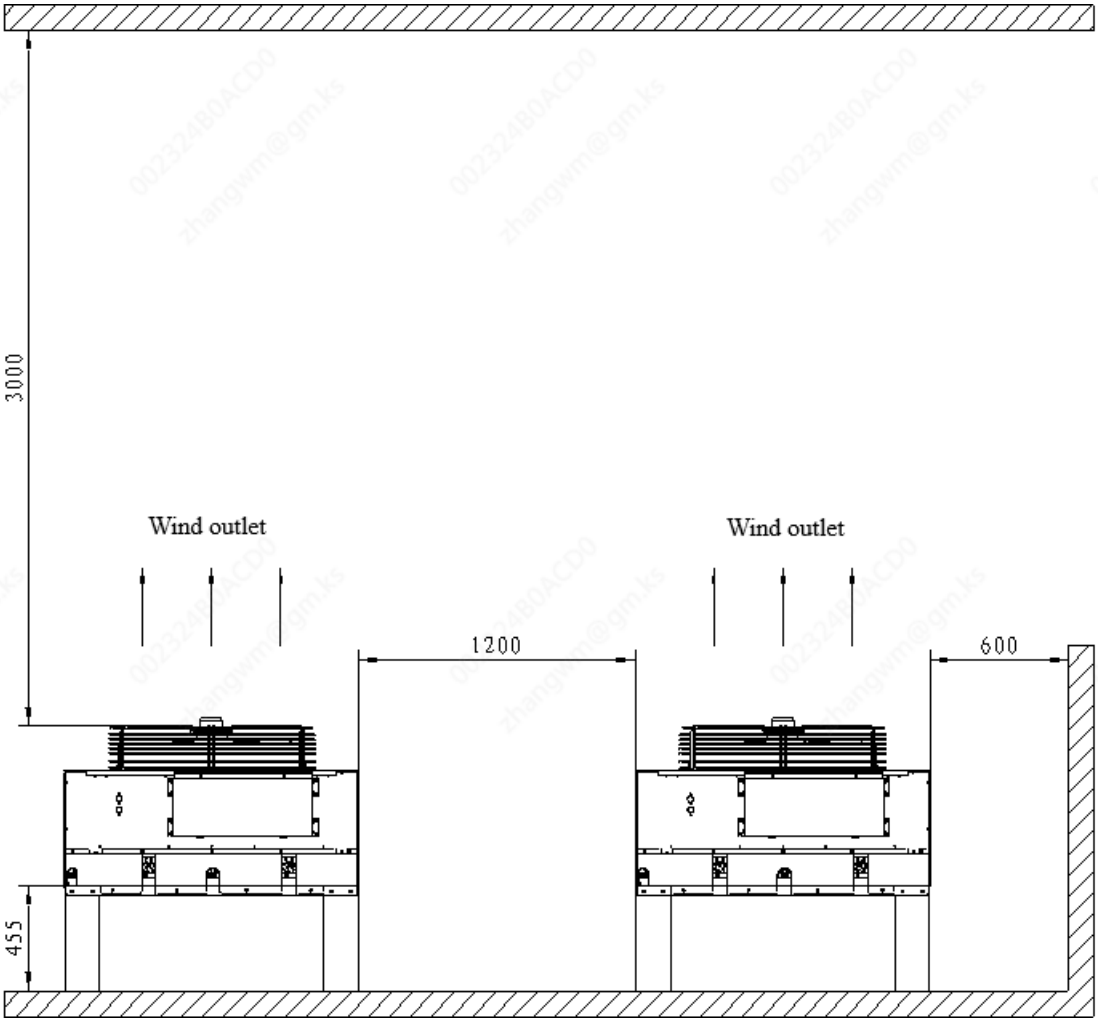


Fig. 2-1 Horizontal installation space requirements (unit: mm)

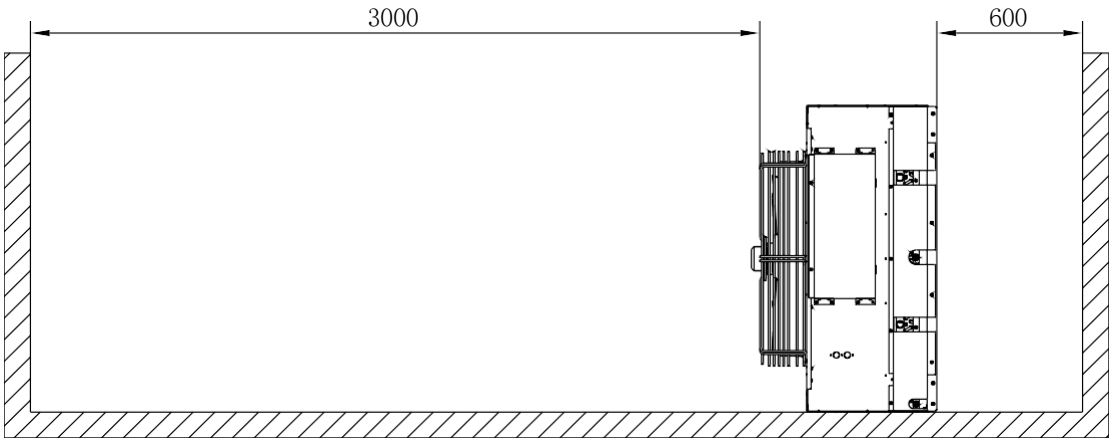


Fig. 2-2 Vertical installation space requirements (unit: mm)

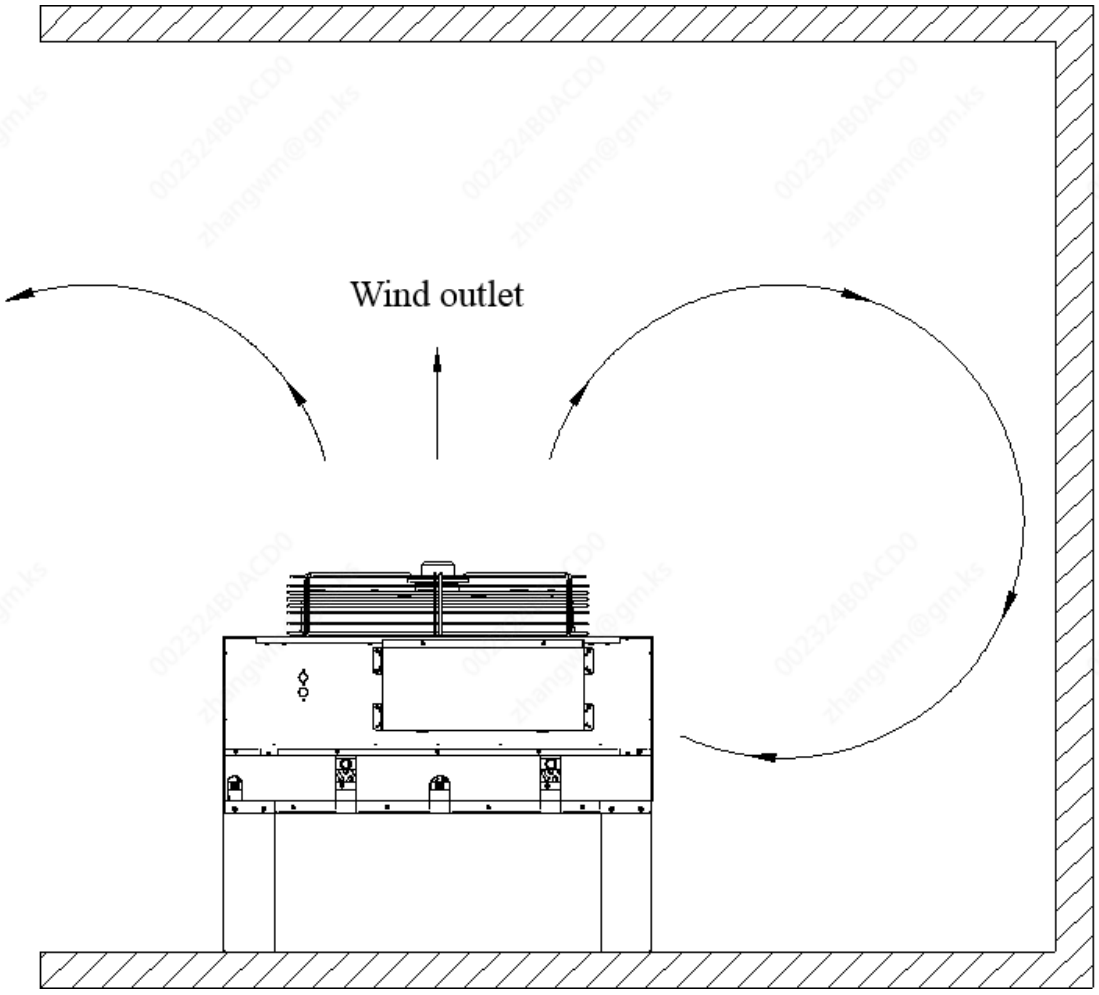


Fig. 2-3 Schematic diagram of horizontal installation of hot air short circuit

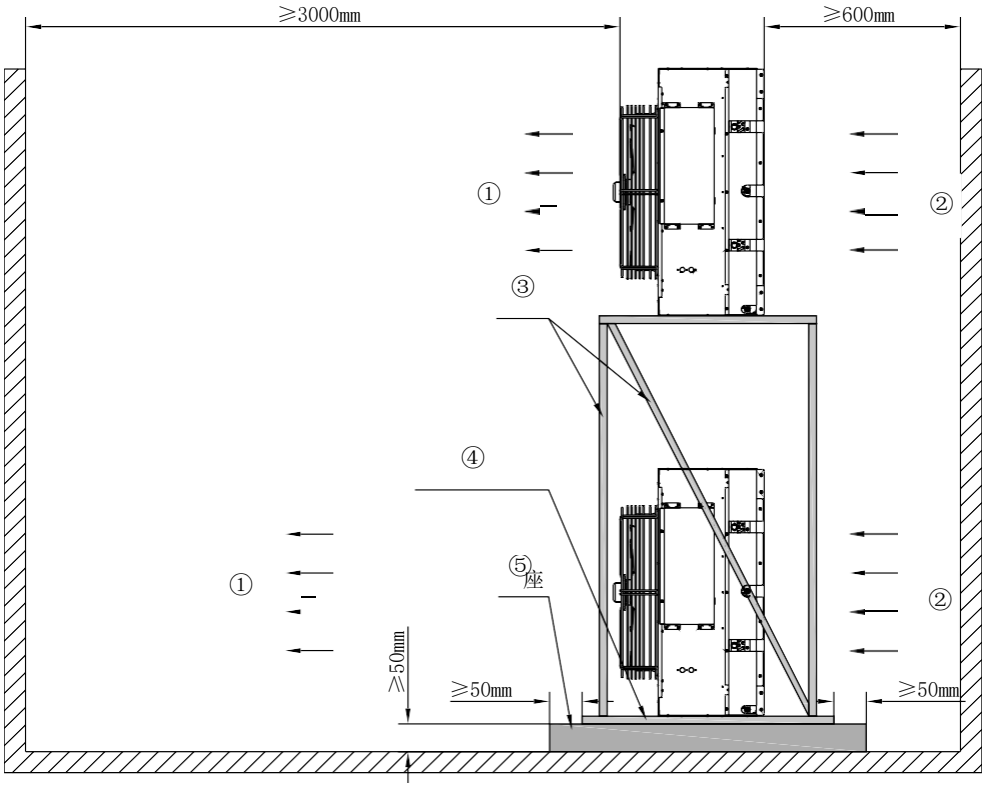


Fig. 2-4 Schematic diagram of stacking two outdoor units

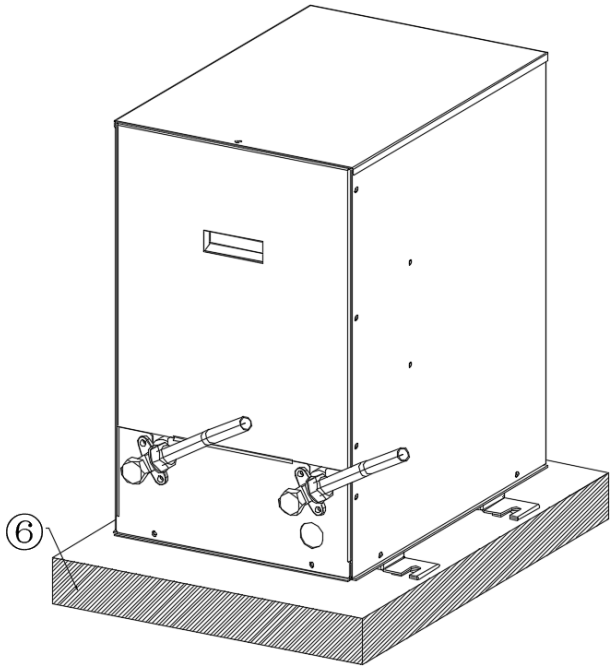


Fig. 2-5 Schematic diagram of installation of cryogenic components

Item	Description	Item	Description
①	Wind outlet	②	Wind inlet
③	Bracket	④	Outdoor unit stand
⑤	Base	⑥	Base

2.2.3 Fixing

After the installation location and method of the condenser are determined, move the condenser to the installation location and fix it with M10×30 screws or expansion screws. The installation must be firm, and stainless steel screws are recommended.

2.2.4 Pipeline Connection of Indoor and Outdoor Units

See the user manual of indoor unit.

2.2.5 Cable Connection of Indoor and Outdoor Units

2.2.5.1. Determine the cable specifications

Select the power supply cable and signal cable specifications according to the rated operating current of the fan (see Table 2-3) and installation distance.

Table 2-3 Recommended cable diameter of ECOND air-cooled flat type condenser

Condenser model	Number of fans (PCS)	Full load current (A)	Recommended specifications for power supply cables (mm^2)	Recommended specifications for signal cables (mm^2)
EACCOND018S	1	2	1.5*4	0.5*2
EACCOND024S, EACCOND028S EACCOND032S, EACCOND036S EACCOND042S, EACCOND048S EACCOND048D, EACCOND054S EACCOND054D	1	2.5	1.5*4	0.5*2
EACCOND064S, EACCOND064D EACCOND072S, EACCOND072D EACCOND084S EACCOND084D EACCOND096S	2	5.0	2.5*4	0.5*2

◆ Note

The outdoor part of the cable between the indoor unit and the ECOND air-cooled flat type condenser must use a cable suitable for outdoor use, and the signal cable must use a twisted pair shielded cable.

2.2.5.2 Connecting cables

Outdoor unit: Connect the power cables (PE/L1/L2/L3) and signal cables (A2+/B2-/GND) from the condenser output interface of the indoor unit electric control box to the condenser electric control box according to the wiring markings as shown in Fig. 2-11 and 2-12, and connect the AC220V/50/60HZ power cables to the corresponding cryogenic component terminal to complete the wiring work. For the

detailed diagram of the output interface of the indoor unit condenser, please refer to the *Precision Air Conditioner User Manual*.

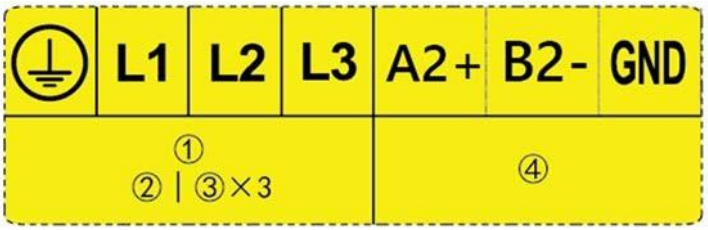


Fig. 2-11 Wiring comparison of room temperature outdoor unit

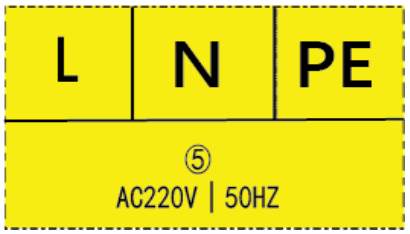


Fig. 2-12 Wiring comparison of cryogenic components

Description: ①—Condenser; ②—GND; ③—Live wire; ④—Condenser 485 signal; ⑤—Condenser power supply

◆ Note

1. In order to ensure the high waterproof performance of the electric control box, it is necessary to apply sealant on the waterproof joint after the external power supply is connected.
2. The cables should not be in contact with high temperature objects (such as uninsulated copper tube, water pipes, etc.) in order to avoid damage to the insulation layer.
3. Please follow local regulations for wiring.
4. The indoor unit and outdoor unit need to be connected to the signal cables only when there is communication, and the communication cables need to be outdoor shielded wires.

2.2.6 Pressure Maintaining, Leak Detection and Vacuuming

See *Precision Air Conditioner User Manual*

Chapter 3 Outdoor Fan Inverter

◆ Note

The content of this chapter is mainly for manufacturers or professional maintenance personnel. It is recommended that users do not operate without permission.

3.1 Fan Inverter

The wiring terminals are located on the control board of the electric control box of the fan. The distribution is shown in Fig. 3-1, and the specific definition is shown in Table 3-1. For wiring terminals, see Fig. 3-2 and Table 3-2 below.

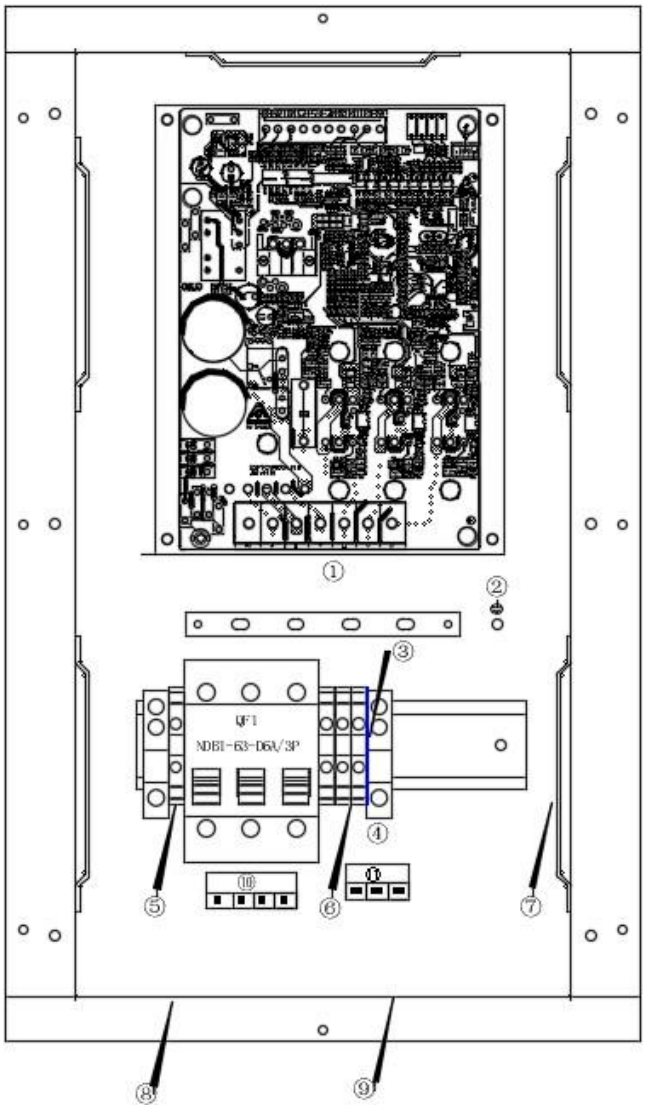


Fig. 3-1 Electric control box of outdoor unit

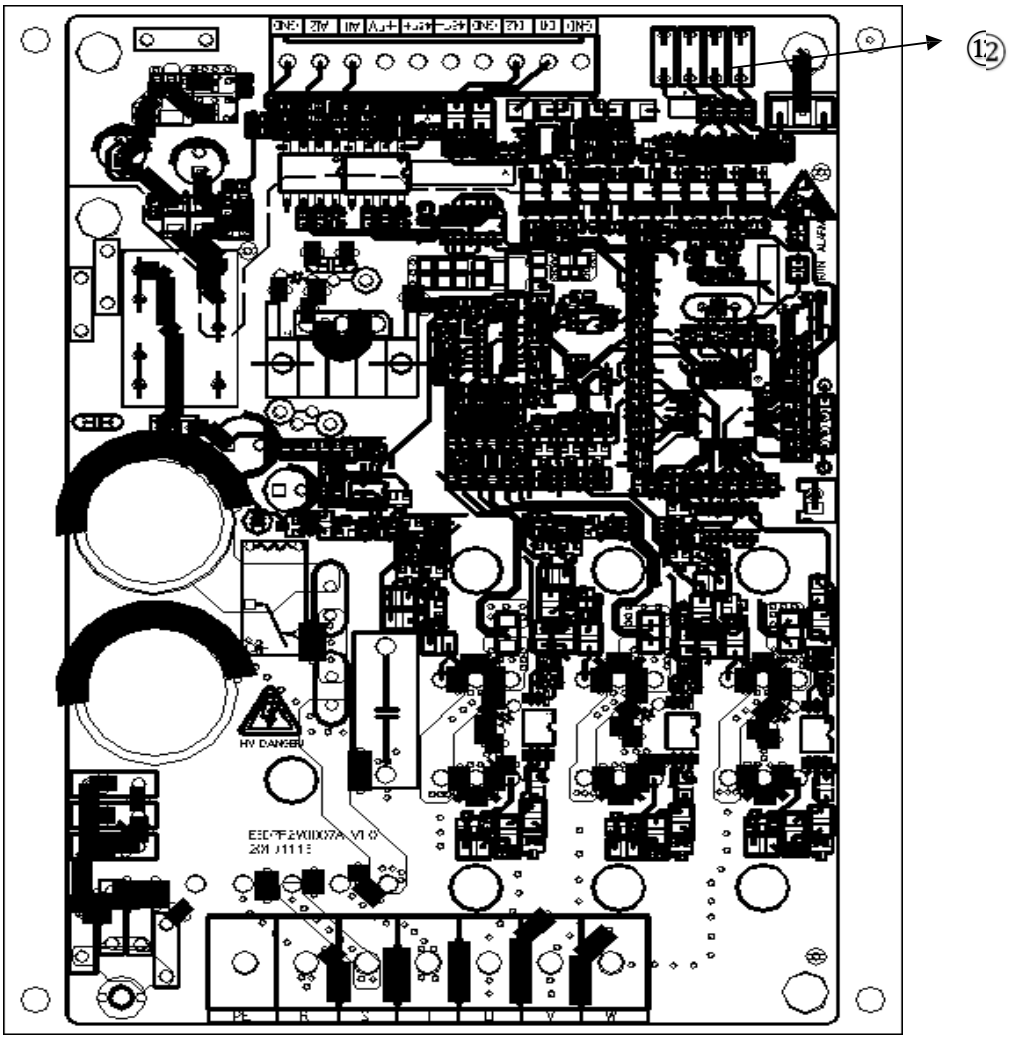


Fig. 3-2 Schematic diagram of inverter

Table 3-1 Definition of electric control box

Item	Description	Item	Description
①	MCU1 inverter	②	Fan grounding
③	partition	④	Fixing part
⑤	Power supply ground wire	⑥	Gray 2.5 terminal *3
⑦	Cable fastener	⑧	Fan inlet hole
⑨	Pressure sensor wire inlet hole	⑩	Power supply into line
⑪	Customer 485 signal line	⑫	DIP position: outdoor unit DIP of single system/system 1 of dual system: XXX, system 2 outdoor unit DIP of dual system: xxx

Table 3-2 Inverter port configuration

Terminal No.	Port type	Interface description
AI1~AI2	Analog input interface	Pressure sensor
+5V		Analog +5V voltage output (Imax=50mA)
GND		Analog GND
DI1	Digital input interface	Digital input (digital level signal)
DI2		Digital input (digital level signal)
GND		In-board GND
485+/485-	Communication port	Standard RS485 communication

Chapter 4 Maintenance and Troubleshooting

The maintenance of the unit is important to its performance and service life. Please check the ECOND air-cooled V-type condenser regularly, and maintain it in time if there is a problem.

◆ Note

Equipment maintenance must be completed by professional operators.

Except for the items that require live debugging, the power of the indoor unit must be cut off during maintenance and the air switch of the condenser must be disconnected.

When troubleshooting, if you encounter a failure that cannot be judged, please consult our technical staff in time.

4.1 Maintenance

4.1.1 Refrigeration System

Check whether the refrigeration pipes are firm. If not, use fastening objects to prevent the refrigeration pipes from vibrating with the wall, the ground or the equipment frame.

Carefully check all refrigeration pipes and fittings for oil stains to ensure that there is no leakage.

4.1.2 Heat Exchanger

Clean the fins and coils of the heat exchanger regularly.

When the air flow of the condenser is obstructed, it should be cleaned with compressed air or fin cleaning agent (weak alkaline). When using compressed air, the blowing should be in reverse airflow direction.

Check whether the fins are reversed or damaged. If there is any reversal, perform maintenance in time.

In winter, avoid the accumulation of snow from affecting the air intake of the condenser.

4.1.3 Fan

Check whether the fan is operating normally and whether there are abnormal noises, vibrations, bearing jams and other problems.

4.1.4 Fan Inverter

Check whether the fan inverter is working normally. If not, please repair or replace it in time. For maintenance methods, refer to Chapter 3 Setting and Using of Fan Inverter, etc.

4.1.5 Pressure Sensor

If the pressure sensor fails, please replace with voltage type pressure sensor that meets the requirements of use.

◆ Note

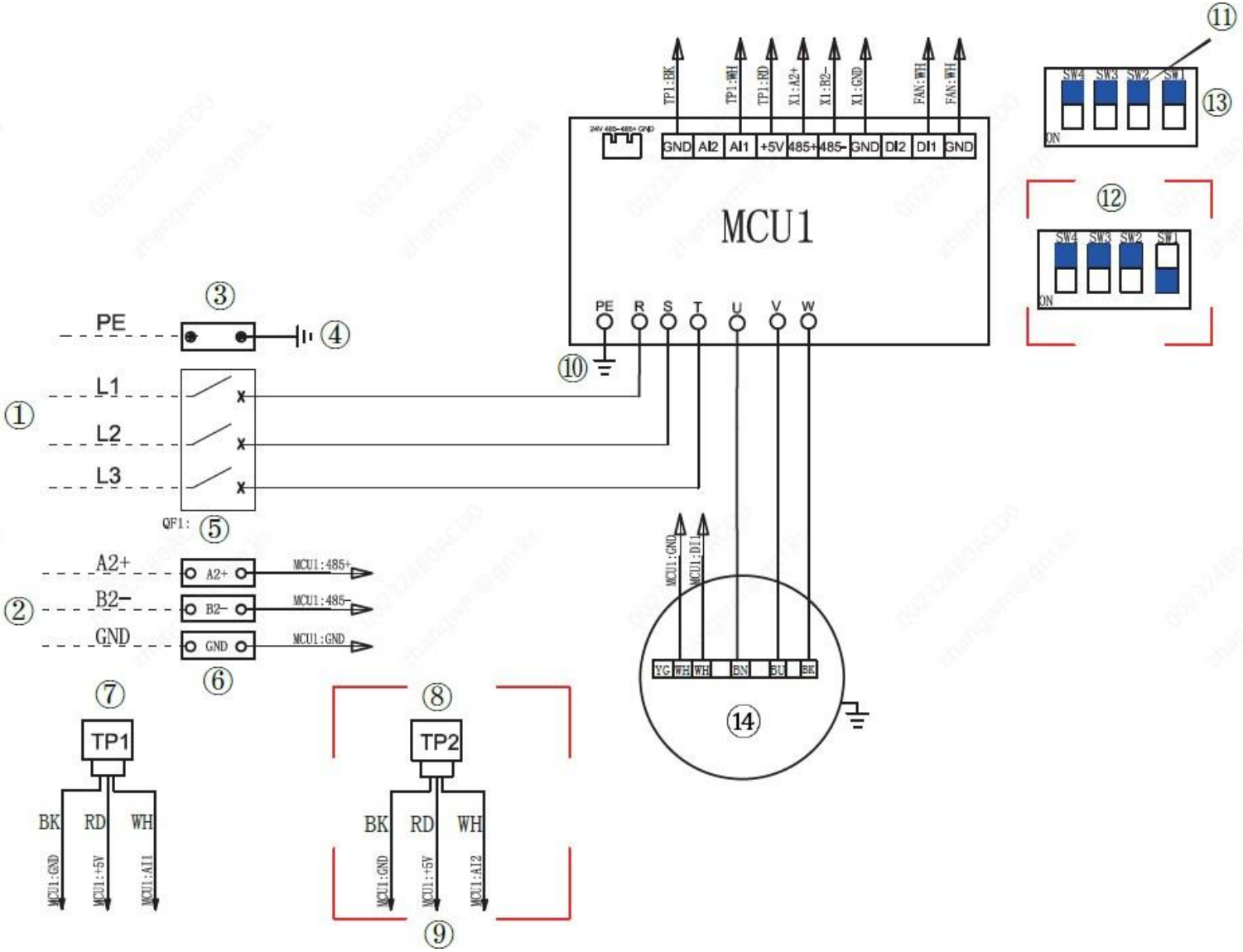
1. All ECOND air-cooled flat type condensers use voltage type pressure sensors when delivered. It is recommended that users buy directly from our company.

2. If other voltage type pressure sensors are chosen, the selected type must meet the requirements of use.

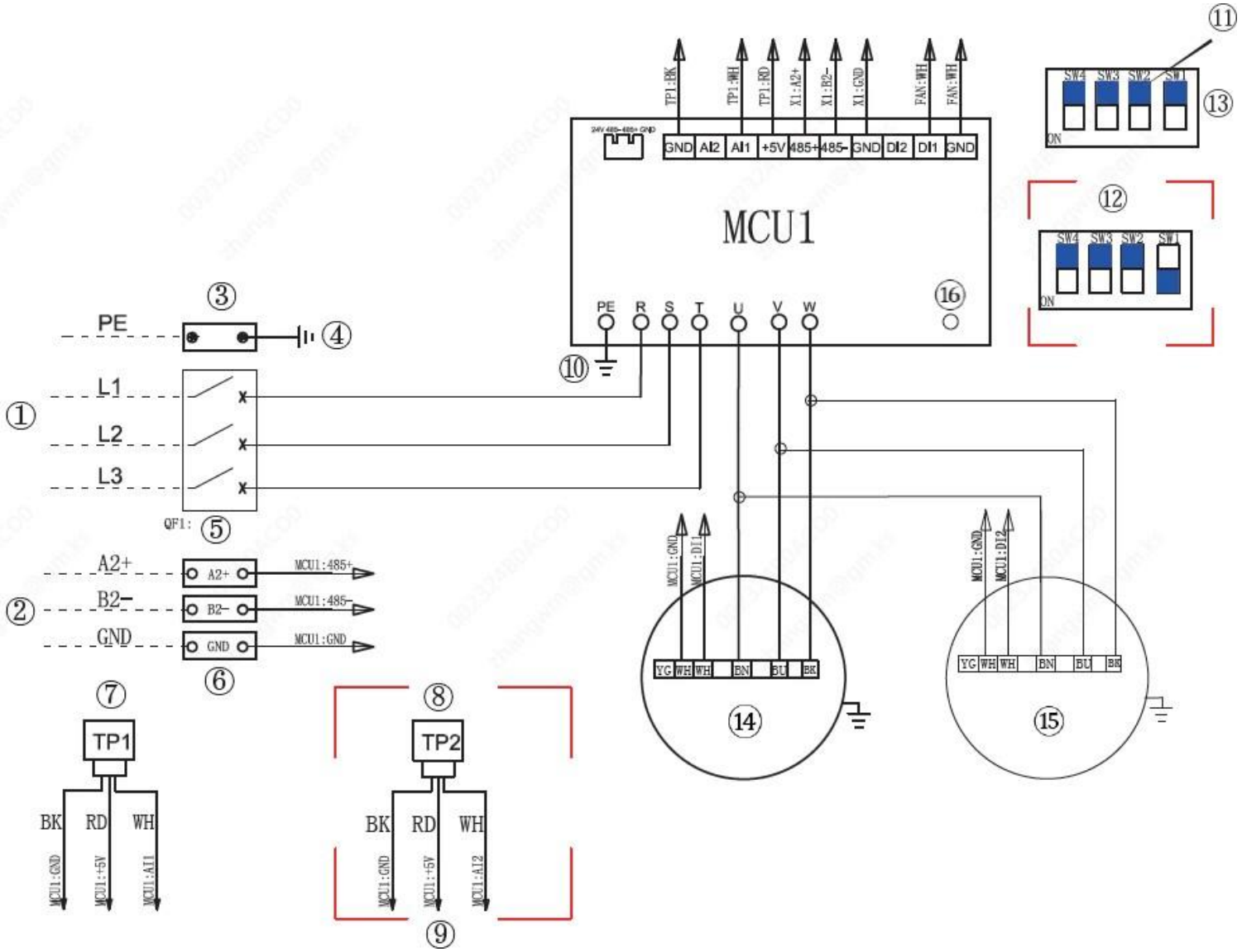
4.2 Troubleshooting

When the RUN indicator of the inverter is always in green, it means the machine is running; when the green light flashes, it means the machine is stopped. When the Alarm indicator of the inverter flashes in red, it means that the machine has a failure. In case of failure, please seek technical support from our company.

Appendix 1 Wiring diagram of ECOND variable-frequency air-cooled flat type condenser (single fan)



Appendix 2 Wiring diagram of ECOND variable-frequency air-cooled flat type condenser (dual fans)



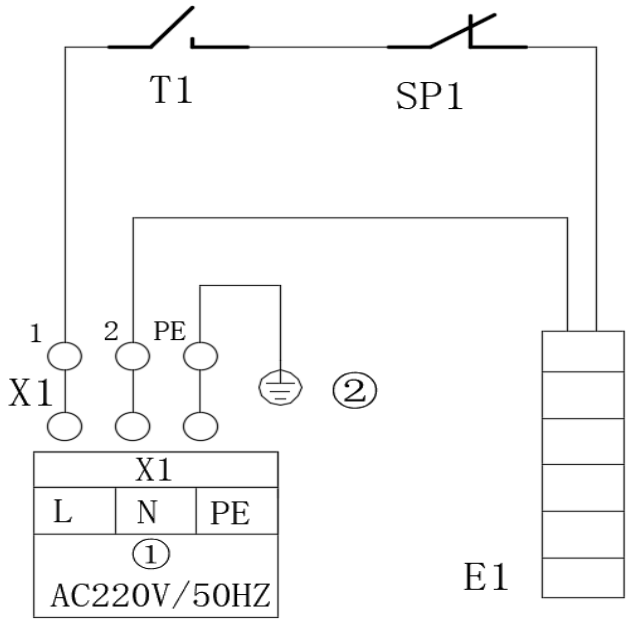
◆ Note

1. Both external power supply and internal signal cables are wired on site;

2. Both external power supply and internal and external signal cables need to be connected to the corresponding ports of the indoor unit.

Item	Description	Item	Description
①	External power	②	Communication
③	GND	④	Inverter GND
⑤	Circuit breaker	⑥	Terminal block
⑦	Pressure sensor TP1(Red)	⑧	Pressure sensor TP2(Red)
⑨	Dual system optional	⑩	Fan 1 / Power GND
⑪	DIP direction	⑫	If two outdoor units are configured for the dual-system indoor unit,the dip switch of outdoor unit 2 is as follows:
⑬	DIP switch	⑭	FAN 1
⑮	FAN 2	⑯	Fan 2 GND

Appendix 3 Wiring Diagram of Cryogenic Components



Item	Description	Item	Description
X1	Terminal block	T1	Thermostat
SP1	High voltage switch	E1	Electric heating belt
①	Customer power supply	②	GND