

User Manual

Wine Cellar Cooling System Split Series



- Thank you for purchasing this "Thenow" product;
- Please read this manual carefully before attempting to install, operate or service;
- Please retain this booklet for future reference.



WARNING

To avoid the risk of electrical shock ,property damage ,personal injure or death,please read the following instructions carefully with safety or warning labels.

- * During transportation or moving, please follow the correct direction on the packing case.
- * After transportation or moved, it needs to be allowed to stand for more than 24 hours before it can be turned on.
- * Do not attempt to carry out any measurement, device replacement or other maintenance work not covered in this manual, otherwise it may lead to warranty failure, endanger normal operation, extend equipment downtime and increase additional maintenance costs.



Disconnect electric power from the appliance before performing any maintenance or repairs,failure to do so could result in death or electrical shock.

Table Of Contents

Introduction	1
Working Principle	2
Main Technical Datas	3
Installation&Debugging	7
Wiring Diagram&operation Instruction	11
Introduction And Use Of The Control Panel	17
Communication Protocol	22
Maintenance	26
Troubleshooting	27
After Service	30

Introduction

The now wine cellar cooling units split system is intended for cellars without access to proper ventilation. They are known for their efficiency and longevity. Each unit is designed to maintain a consistent temperature and humidity in spaces where proper ventilation is not feasible. The evaporator is installed inside and the condensing unit can be placed as far as 30m away. Since it exhausts outside, split cooling systems operate quietly and reduce vibration inside the cellar, which is believed to negatively affect the quality of wine.

This unit we have different models for different occasions, widely used in household, wine cabinet, underground wine cellar, wine wall and so on.

Features:

- Auto cooling and heating mode, keep wine cellar under constant temperature.
- The evaporator is nickel plated for corrosion protection.
- Adopt circulating water wet-film auto control humidification system, wet film is made of Swedish organic polymer material with sterilization and disinfection function.
- Intelligent touch control panel.
- Pull-out design wet film module, easy to replace.
- Control constant condensation temperature.
- Three speed air flow under auto control to maintain the ideal environment for long-term wine storage.
- Can be ceiling mounted, rack mounted, or floor mounted.

Working Principle

1、Refrigeration

Using cycling vapor compression refrigeration system, when the compressor work, indraft low temperature and pressure refrigerant gas from evaporator, compressed by compressor into high temperature and pressure gas, and then into the condenser to condense into liquid, meantime release heat, after throttling under the function of the thermal expansion valve, entering into the evaporator and absorbed heat, then evaporate into gas, finally back to the compressor through the suction tube and complete a refrigeration cycle ; On the other hand, through changing of refrigerant flow direction, total or partial condensing heat generated from refrigeration can be exhausted to outside, to achieve the purpose of adjusting the indoor temperature.

2、Heating Principle (Optional)

- a、Electric heating compensation
- b. Heat pump heating : Using the working principle of the compressor , through a four-way reversing valve, the condenser and evaporator are interchangeable ,to absorb heat from the outside and transfer it to the inside , so as to increase the room temperature.

3、Dehumidification Principle

When the wet air flows through the evaporator surface, the air temperature will drop, when it falls below the dew point, the steam in the air will condense out, gathering and drainage of water pipes in the receiving plate, the controller automatically adjusts the compressor start-up time according to the setting humidity , so as to achieve the purpose of adjusting humidity.

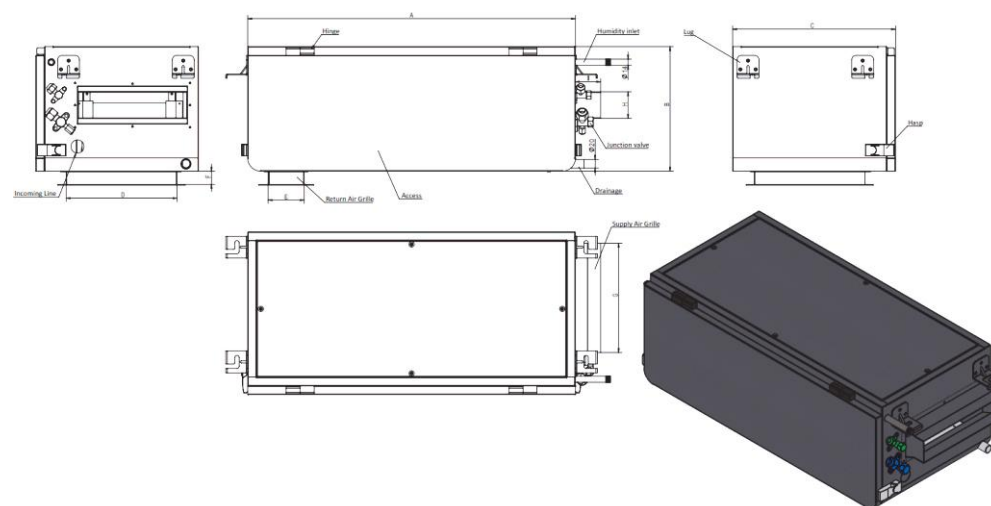
4、Humidification Principle (Optional)

Using environmental protection wet curtain, water was spurted to the room area under large air volume to achieve the purpose of humidifying.

Main Technical Datas

Unit Dimension

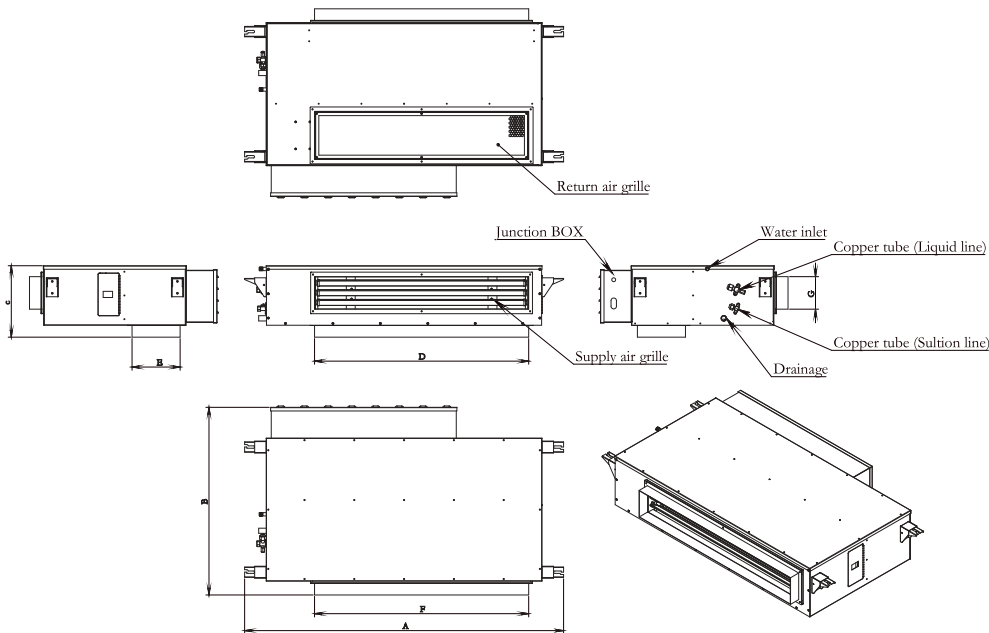
Evaporator Unit



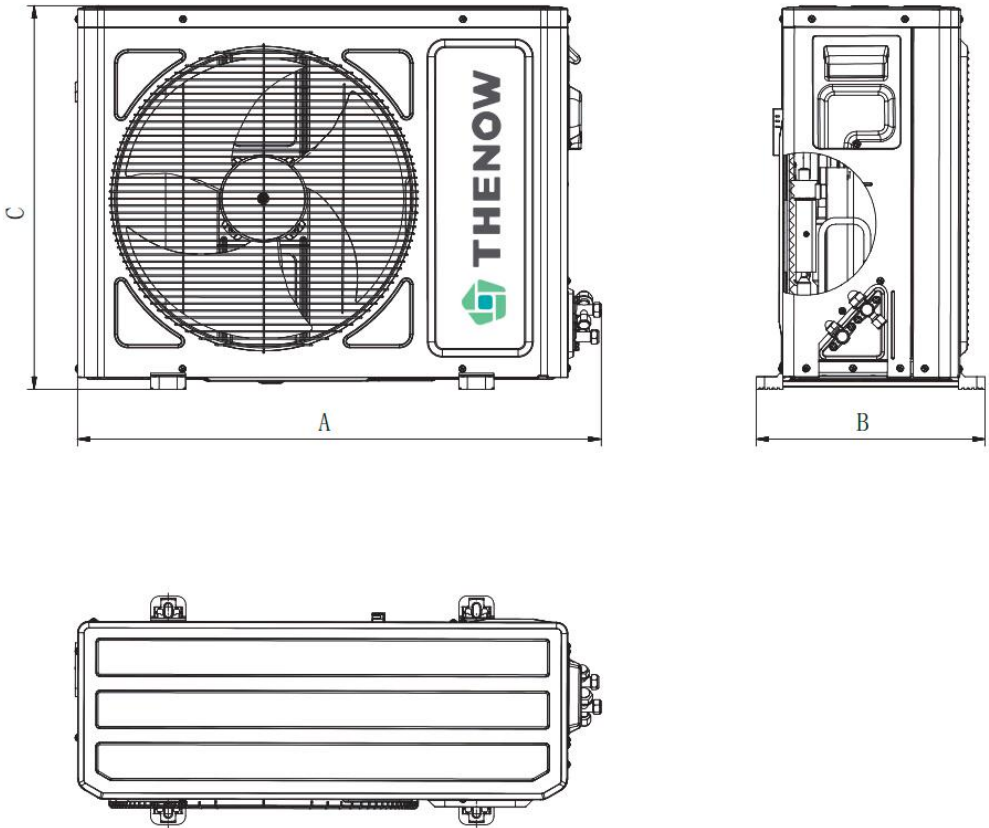
Unit:mm

No. \ Size	A	B	C	D	E	F	G	H	I
HSN-J15	750	285	375	255	82.5	30	250	60	57.5

Condensing Unit



No.	Model	Size: (mm)						
		A	B	C	D	E	F	G
1	HSN-J30	945	790	300	572	202	462	137
2	HSN-J60	1345	790	300	902	202	902	137
3	HSN-J90	1545	790	300	1202	202	1142	137
4	HSN-J150	1945	890	350	1542	202	1302	137



No.	Model	Size:mm		
		A	B	C
1	HSN-J15	700	300	460
2	HSN-J30	810	275	540
3	HSN-J60	810	275	540
4	HSN-J90	960	360	860
5	HSN-J150	1010	400	1250

Technical Datas

Performance \ Model		HSN-J15	HSN-J30	HSN-J60	HSN-J90	HSN-J150
Power Supply		1PH/220V,50Hz				3PH/380V,50Hz
Room Capacity	m ³	5-15	10-30	30-60	60-90	90-150
Power	P	0.5	1	2	3	5
Cooling	Kw	1.2	2.5	5	7.5	12.5
Electrical Heating (Optional)	Kw	1	1.6	3	6	9
Air Flow	m ³ /h	200	350	700	1100	1250
Static Pressure	Pa	30	30	30	40	50
Noise	dB (A)	50	50	50	53	62
Controller		PC Intelligent				
Temperature	°C	10-16, ±2				
Humidity	%RH	50-70, ±5				
Total Power	Kw	0.4	2.9	4.4	8.5	14
Humidifier	Type	Wet membrane humidifier				
Evaporator Unit	Size	mm	700*285*375	760*600*250	1160*600*250	1360*600*250

Note: There are several factors such as glass, stone, concrete, insulation, ambient temperature, ventilation etc. which will change the required amount of Kw/BTU needed to properly cool your wine room or wine cabinet. We strongly recommend you contact with us or our distributors beforehand to help you to choose the model matched. We do not bear the losses caused by the selection errors caused by the above reasons.

Installation & Debugging

1. Pre-installation Inspection

- (1) Check the outer packing for breakage.
- (2) Machine model (nameplate), check whether it is consistent with what you ordered.
- (3) The appearance of the whole machine is intact
- (4) Check attached accessories (as follows)

Evaporator Unit

1	Unit	1 pc	
2	Instruction/Certificate of qualification	1 pc	
3	Warranty Card	1 pc	
4	Control Panel	1 pc	
5	Inlet Valve	1 pc	
6	Drain-pipe (Hose)	50cm	Φ15/Φ22
7	Hoop	1 Set	
8	Connection Wire	3m	
9	Copper Pipe	3m	
10	Composite Expansion Yarn	4 Sets	
11	Nut	16 pcs	
12	Gasket	12 pcs	
13	Cushion	4 pcs	
14	Steeve	4 pcs	
15	Drain Trap	1 Set	Φ15/Φ22 There must be a vent

Condensing Unit

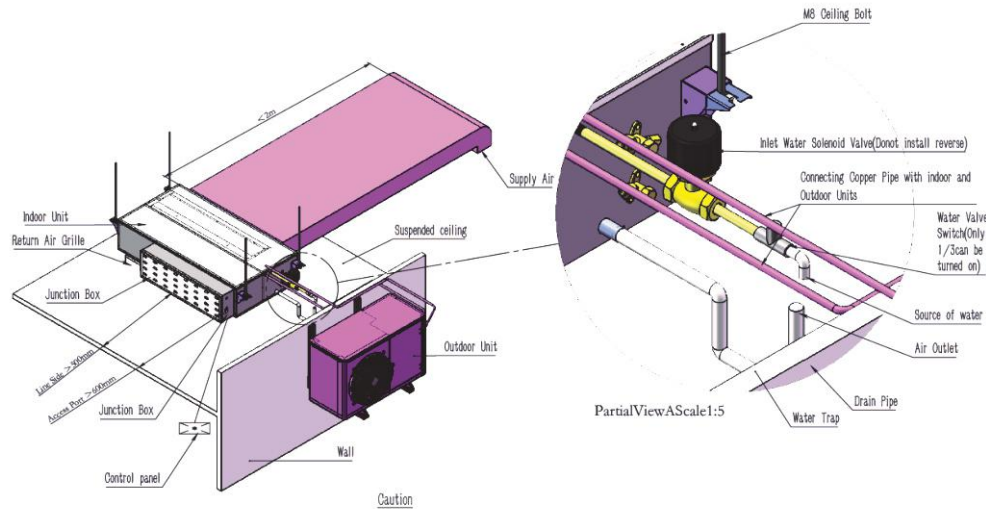
16	Triangle Bracket	1 set	
17	Insulation Cotton	1 set	
18	Setscrew	1 set	
19	Setscrew	1 set	

Note: These accessories are required for machines with humidifying modules. If any items listed on the packing slip do not match your order information, contact your distributor or Thenow Customer Service immediately



Our company is not responsible for any accident caused by opening the panel and electric control cabinet without the permission of the company.

Installation



1. Inspection port on the ceiling must be reserved under the junction box near the piping side, size must be confirmed with manufacturer or dealer beforehand.
2. To make sure the unit in good running, please install the unit strictly according to the above sketch and keep the supply air and return air smoothly.
3. Water inlet solenoid valve must be installed by qualified person(s), and connect the wiring to the reserved port of the junction box.
4. Standard pipe length is 5m, less than 5m no need to add refrigerant. If more than 5m, excess length adding refrigerant according to standard 70g/m.
5. PVC drain pipe is acceptable, the size must be greater than or equal to the condensate water pipe and the shorter the better, keeping at least 2% downward. Meantime, water trap and air outlet port must be installed according to the above sketch.
6. The installation length of the outlet pipe does not exceed 2m, otherwise it will affect the performance of the unit.

Condensing Unit



- *Test the system before installing it to check for non-visible shipping damage.
- * Do not modify the equipment, it may cause damage to the equipment and will void the warranty.
- *Never place anything on top of the unit.
- *Never block or cover any of the openings or outlets to the unit.

Evaporator Unit :

1. The lifting and installation of the equipment shall ensure that the screw rod is vertical and the machine is horizontal, and the ceiling shall be able to bear the weight of the unit.
2. To keep good ventilation and easy maintenance, requires that there must be more than $\geq 450 \times 600$ mm maintenance space around and at the top of the equipment.
3. Never install the unit in danger areas, such as strong magnetic, steam, dust, heating source, corrosion and combustible gases etc.
4. Inlet valve has independent valve.
5. Don't reduce the drain diameter when connecting the drain pipe.
6. Air supply duct, return air duct (stainless steel duct) must be sealed, air duct insulation 20mm.
7. The machine achieves constant temperature and humidity through indoor circulation.

Condensing Unit :

1. Good heat dissipation must be ensured.
2. Installation personnel must be trained and certified to work.
3. This equipment is heavy. Place the unit on the floor or on a level and stable. The carrying capacity of the mounting bracket shall not be less than 4 times the self-weight of the cooling units, and the carrying capacity of the condensing unit mounting bracket shall be at least 180 kgs.
4. The condensing unit shall not be installed in a common area such as aisles, corridors, and exits inside the building.
5. The condensing unit should be as far as possible away from the adjacent doors and windows and green plants, and the distance between the door and the window shouldn't be less than 3 to 4 meters.
6. Copper pipe needs heat preservation, insulation cotton thickness ≥ 2 cm.

Online Debugging

Horizontal: The bottom of the equipment must be fixed with an expansion bolt, and ground connection has to be completely correctly.

Electrical: Confirm that the power supply of the user's power distribution box is single-phase 220V or 3-phase 380V, the fluctuation amplitude does not exceed 10%, the distribution box capacity meets the equipment use requirements. Refer to the internal electrical schematic diagram of the unit, connect the indoor and outdoor unit, and add a fire alarm protector to the wire socket of the unit.

1. Power the machine.
2. Turn on the machine.
3. Set the temperature and humidity.
4. Start the machine for trial run.
5. See the appendix for other Settings.
6. Check coil temperature (below ambient temperature 5-8°C).
7. No problem machine operation.

Note:

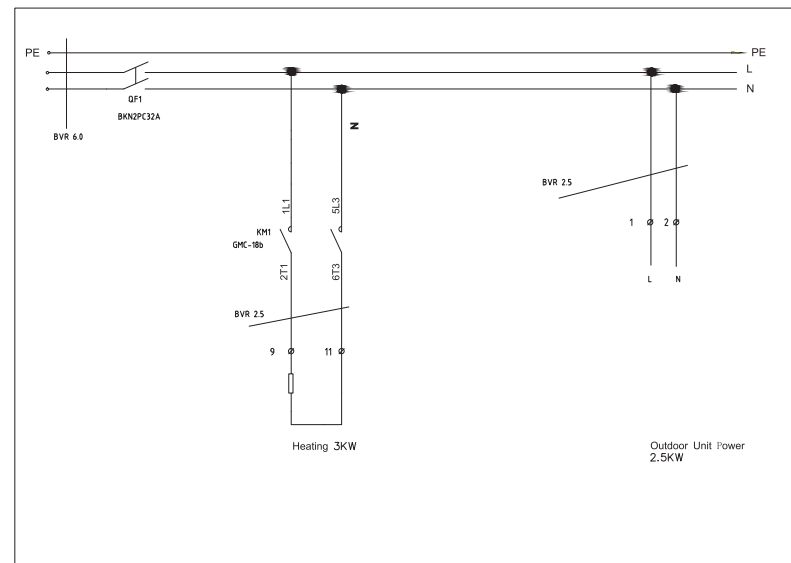
After transportation or moved, it needs to be allowed to stand for more than 24 hours before it can be turned on.

The system is designed to maintain a cellar temperature of 10-16°C as long as the ambient temperature does not exceed 40°C or no less than 5°C.

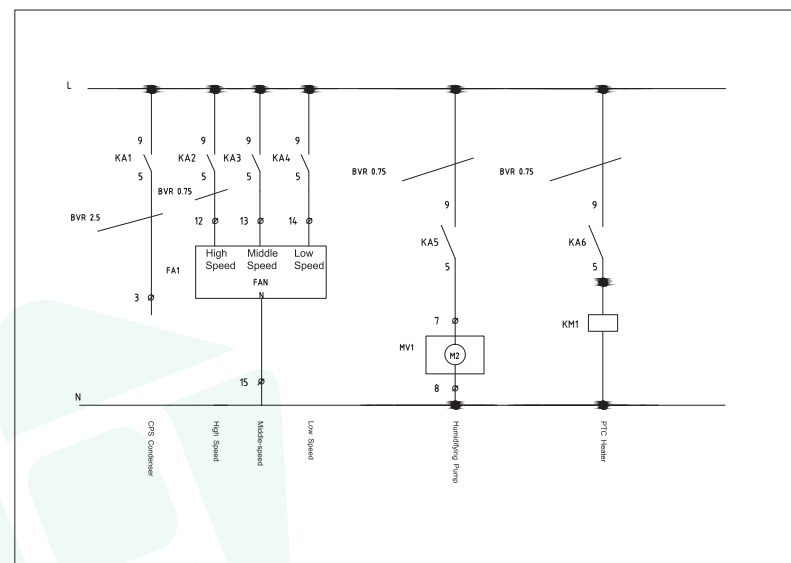
Tips: Save your box and all packaging materials, they provide the only safe means of transporting/shipping the unit.

Wiring Diagram & Operation Instruction

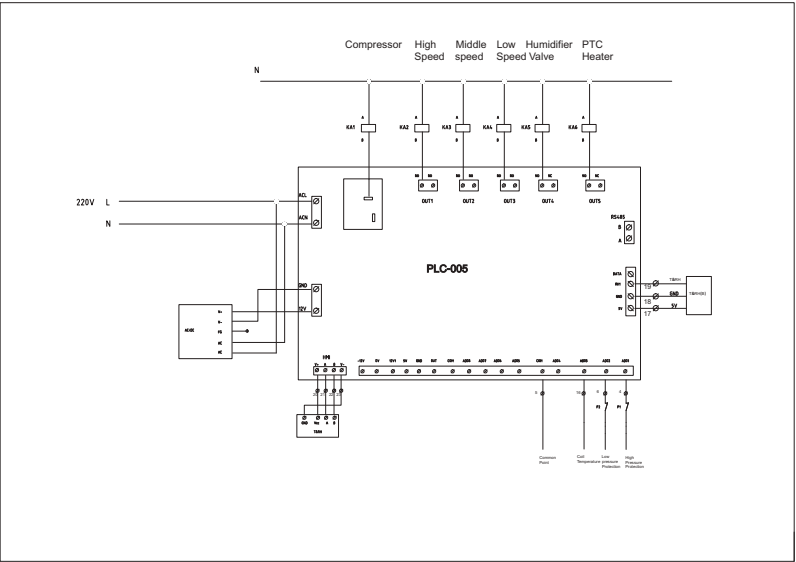
Electric Heating Wiring Diagram (HSN-J15~J60)



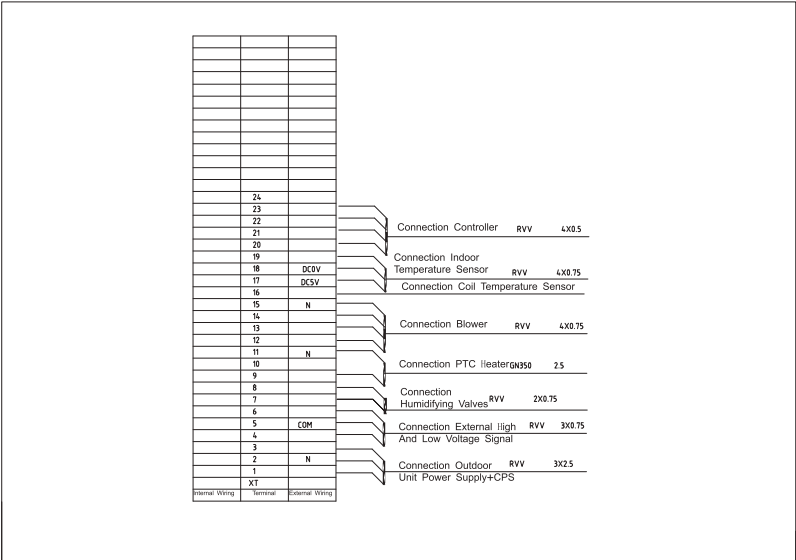
Fan+Valve Wiring Diagram



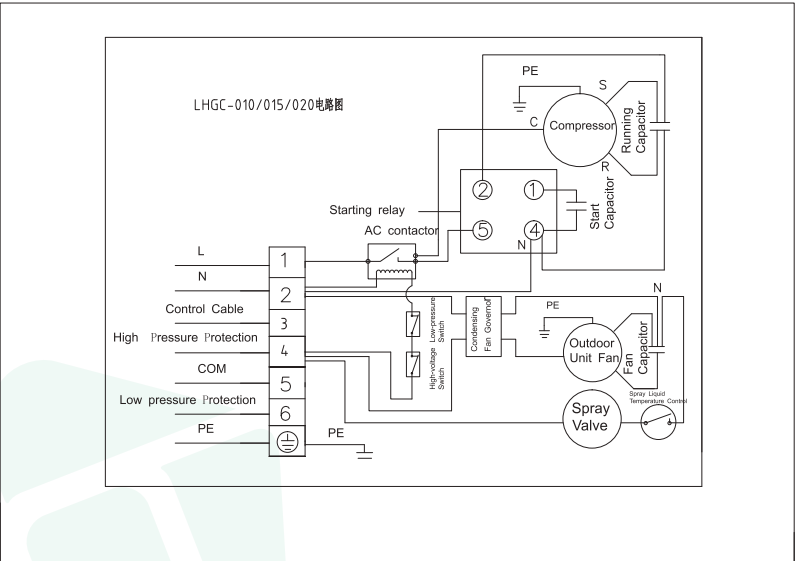
Main Control Board Wiring Diagram



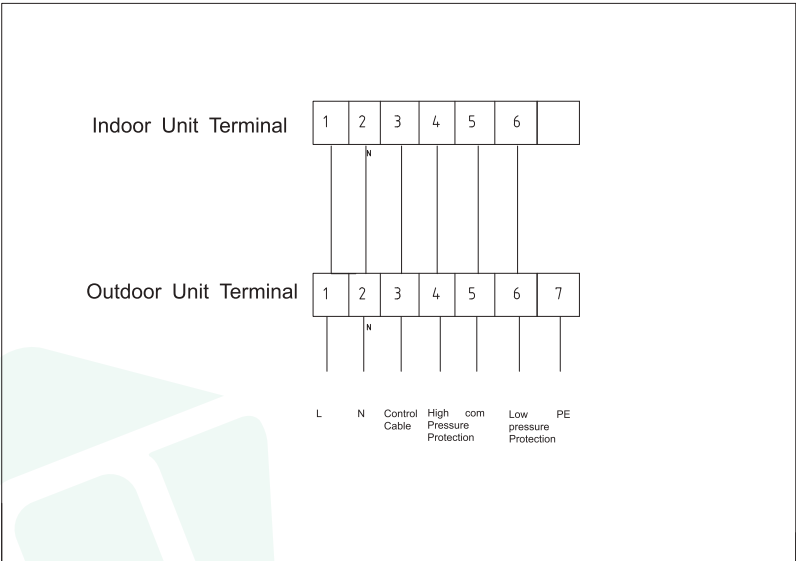
Terminal Diagram



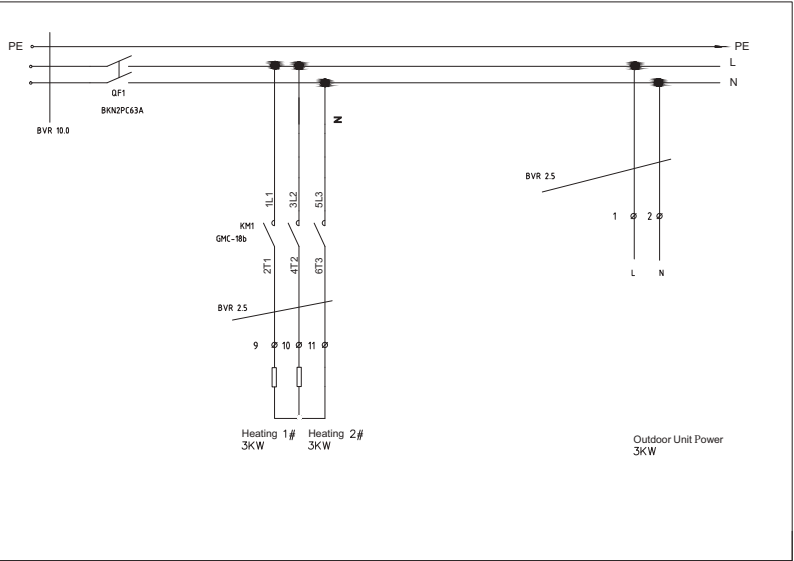
Condenser PBC Wiring Diagram



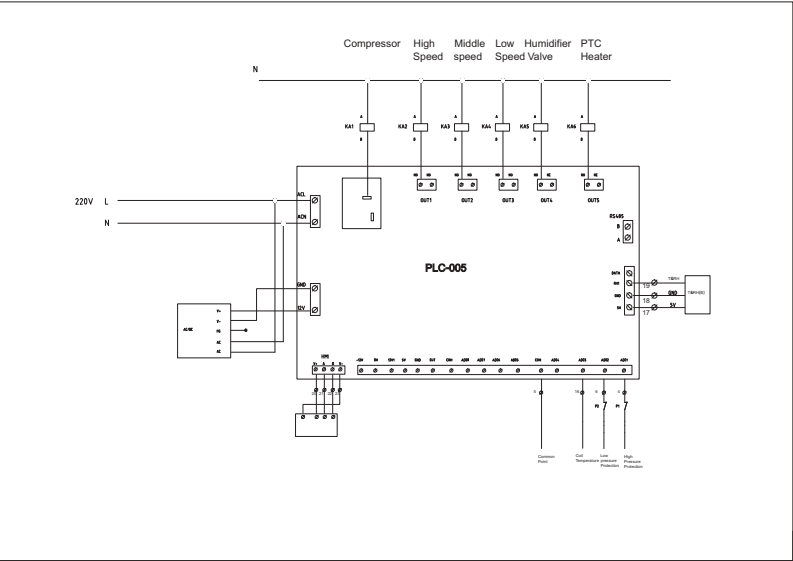
Indoor And Outdoor Unit Terminal Connection Diagram



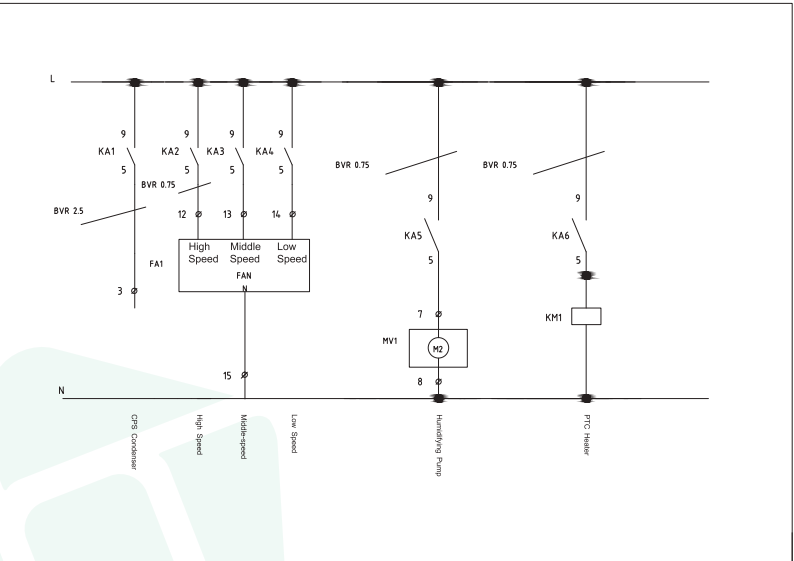
Electric Heating Wiring Diagram (HSN-J90~J150)



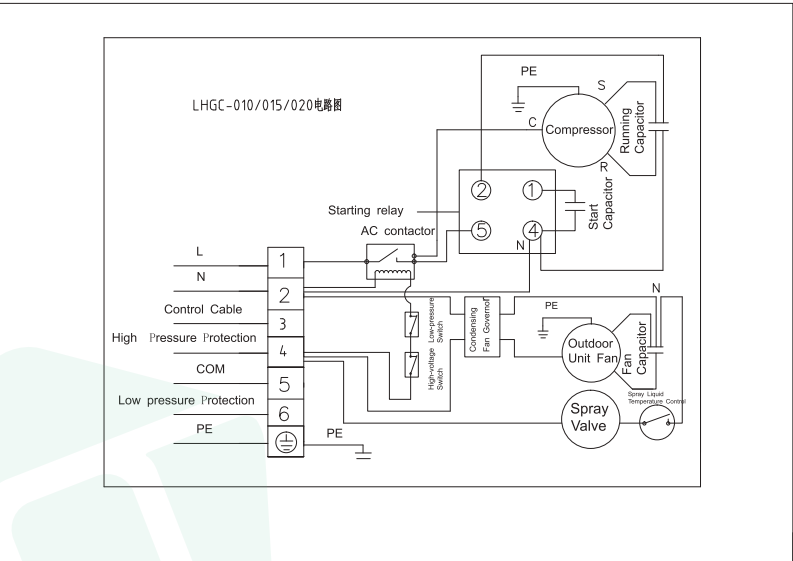
Main Control Board Wiring Diagram



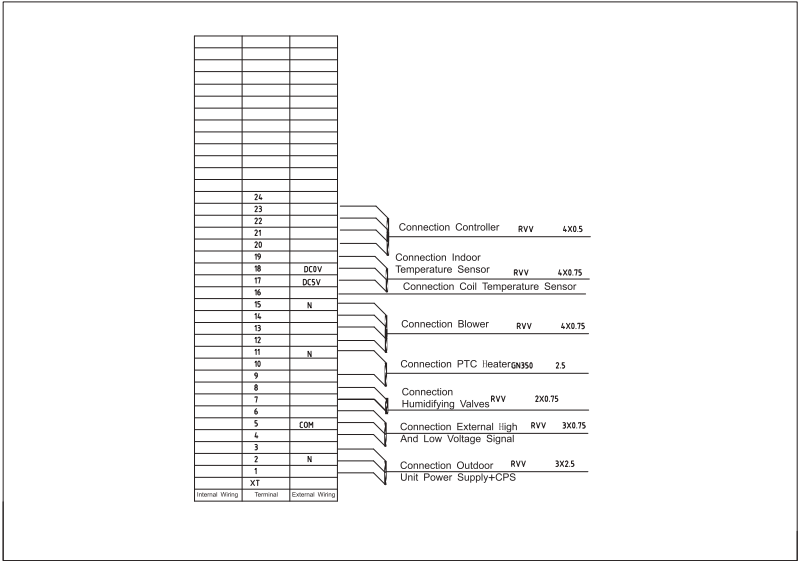
Fan+Valve Wiring Diagram



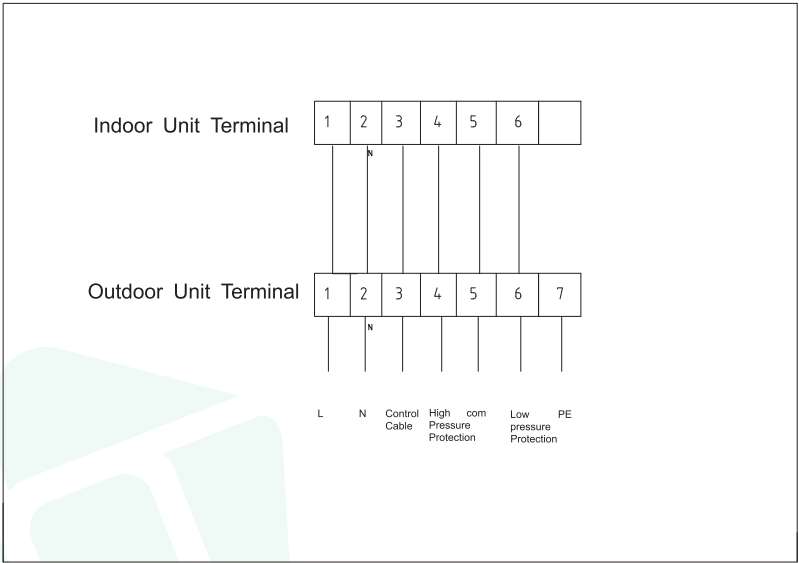
Condenser PBC Wiring Diagram



Terminal Diagram



Indoor And Outdoor Unit Terminal Connection Diagram



Introduction And Use Of The Control Panel



Product Introduction:

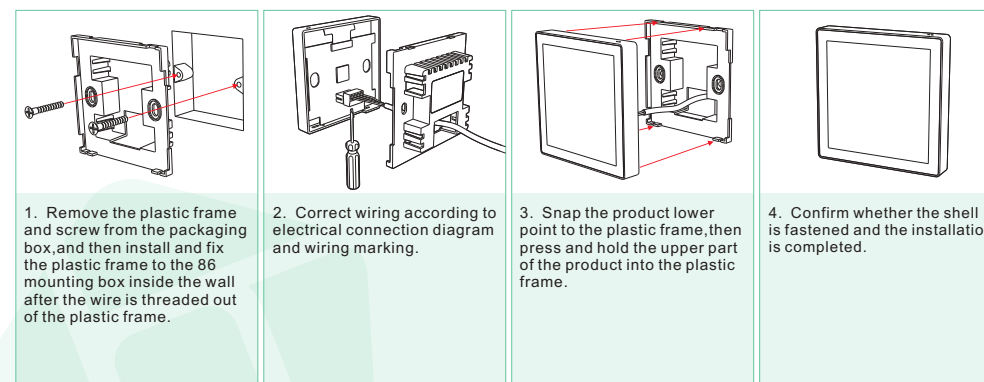
CK-4C-86 series controller is a new type of controller to realize intelligent control of constant temperature and humidity for a wine cellar and wine cabinet cooling units, which is widely used in precise temperature control places with small volume.

The controller adopts 4-inch large -screen colorful display technology, timing control, automatic/manual control of wind speed , automatic operation of the appropriate wind speed , comfortable energy saving , accurate and reliable.

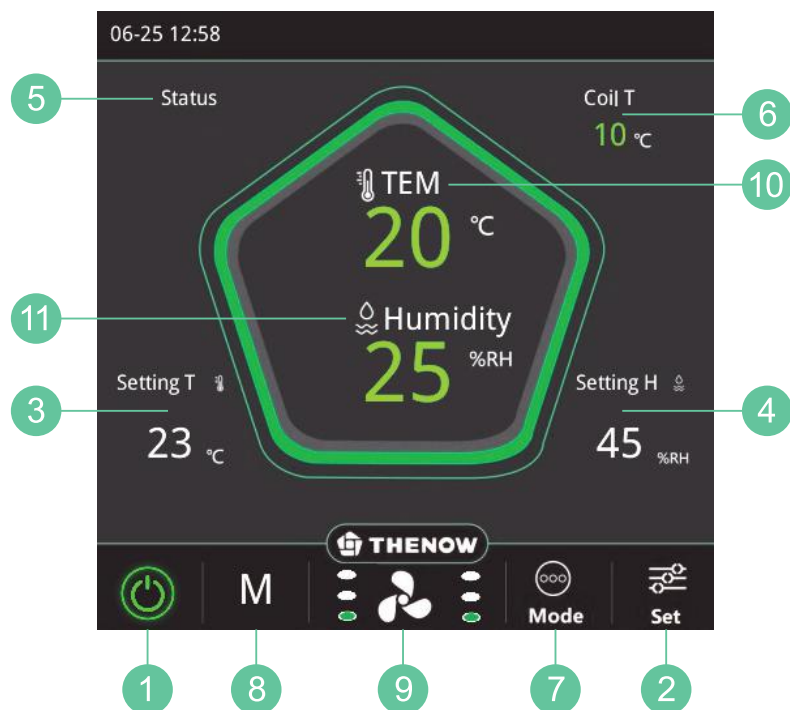
1. With 4-inch capacitive full-touch screen to display clear texture.
2. Temperature and humidity ,clock real time display .
3. Can be controlled regularly.
4. Wind speed manual/automatic control selection.
5. Multiple operating mode options.
6. Built-in advanced parameter settings,manufacturers can freely set according to different customer needs.
7. Standard 86 mounting bottom case for quick and easy installation.
8. Power off and restart function.
9. Alarm can be remembered.

Power supply mode	PCB: AC220V±10% 50/60HZ
	The control panel DC12V
The shall material	Flame retardant ABS+PC
Power	<12W
Pitch-row	60mm
size	PCB: 123mm×85mm
	The control pan: 91mm×90mm
Storage environment	-10~~70℃ 5%~~95%RH
Work condition	-10~~70℃ 5%~~95%RH

Product Installation:



Operating Instructions



- 1 Power ON/OFF
- 2 Set (humidity/temperature/time)
- 3 Setting temperature
- 4 Setting humidity
- 5 Status (constant temperature/humidity or constant temperature and humidity)
- 6 Coil temperature
- 7 Mode (control "status" button)
- 8 Manual/automatic (control fan button)
- 9 Wind speed or set wind speed
- 10 Wine cabinet/cellar temperature
- 11 Wine cabinet/cellar humidity

How to :		
Turn system ON/OFF		<p>*Press the "ON/OFF" button once, make the button change from red to green, then the unit is on.</p>
Set humidity		<ol style="list-style-type: none"> 1. Press the button 2. Find , click to enter. 3. Set humidity
Set temperature		<ol style="list-style-type: none"> 1. Press the button 2. Find , click to enter. 3. Set temperature
Set time		<ol style="list-style-type: none"> 1. Press the button 2. Find , click to enter. 3. Set time
Set the wind speed		<ol style="list-style-type: none"> 1. When shows M, press to manually set the wind speed. 2. When shows A, the wind speed is in automatic mode.

Communication Protocol

Versions : CHG-SN4C-1.0

Communication mode : RS485 ModBus RTU

Baud rate : 9600bqs

Start bit : 1bit

Data bits : 8bit

Odd-even check : None

Stop bit : 1bit

Read hold register(read 10 pieces of data at once)

Device address	Function code	Register address	Register number	CRC16	
1byte	1byte	2 bytes	2 bytes	2 bytes	
01—200	0x03	0x00 0x00	0x00 0x0a	CRC	CRC

Device return code

Device address	Function code	Register address	Data	CRC16	
01—200	0x03	0x12	20 bytes	CRC CRC	High order Low order

Data analysis:

00 00 (0001 Starting up 0000 Power off)

00 01 (00 XX) XX=16 Ambient humidity 16 system

00 02 (00 XX) XX=16 Ambient temperature 16 system

00 03 (00 XX) XX=16 Setting humidity 16 system

00 04 (00 XX) XX=16 Setting temperature 16 system

00 05 (0000 No fault alarm ; 0001 System fault detection)

00 06 (0000 Low speed ; 0001 intermediate speed ; 0002 High speed)

00 07 (0000 Auto ; 0001 Ventilate ; 0002 Constant temperature ; 0003 Constant humidity)

00 08 (0000 manual ; 0001 Auto)

00 09 Reserved

Read device address format

Device address	Function code	Register address	Register number	CRC16	
1byte	1byte	2 bytes	2 bytes	2 bytes	
00	0x25	0x00 0xdf	0x00 0x01	CRC CRC	High order Low order

Device return code

Device address	Function code	Register number	Data	CRC16	
00	0x25	0x02	0x00 1~200	CRC CRC	High order Low order

Write hold register

Device address	Function code	Register address	Register values	CRC16
1byte	1byte	2 bytes	2 bytes	2 bytes
01—200	0x06	0x00 0x00—0xFF	XX XX	CRC High order CRC Low order

Device return code

Original command return

Control command parsing

Device address	Register values(The high post is in front and the low post is behind.)
0x00 0x00	0001 Starting up 0000 Power off
0x00 0x03	Set humidity: 00 XX (XX=16Set the humidity value in hexadecimal)
0x00 0x04	Set temperature: 00 XX (XX=16Set the temperature value in hexadecimal)
0x00 0x06	0000 Low speed; 0001 intermediate speed; 0002 High speed
0x00 0x07	0000 Auto; 0001 Ventilation; 0002 Constant temperature; 0003 Constant humidity
0x00 0x08	0000 Manual; 0001 Auto
Remaining address value	Reserved

CRC16 C Check C program code

```
uncharCRC_data[40];          // Data sets that require CRC check can be changed at will
                               // according to the amount of data(maximum 255 data)

                               unchar  CRC_H;          //CRC   Check high
                               //CRC   Check low
unchar  CRC_L;                //CRC   Check low
unchar  temp;                 //N data to be verified
uint    CRC_16;               //Check preset value
#define  CRC_DXS              0xa001

modbus_CRC16(temp);           //CRC16   Check and compute subfunctions

void modbus_CRC16(unchar temp)
{
    unchar  t_1;
    unchar t_2;
    unchar  data;
    CRC_16=0xffff;            //Preset value

    for(t_1=0; t_1<temp; t_1++)
    {
        CRC_16^=CRC_data[t_1];
        for(t_2=0; t_2<8; t_2++)
        {
            data=CRC_16&0x0001;
            CRC_16>>=1;
            if(data==1)
            {
                CRC_16^=CRC_DXS;
            }
        }
    }
    CRC_H=CRC_16;              //CRC   Check high
    CRC_16>>=8;
    CRC_L=CRC_16;              //CRC   Check low
}
```

Maintenance

1、Using Requirements

- (1) Working conditions: Surrounding temperature at 5°C-35°C, relative humidity lower than 90% ;
- (2) Please make certain power supply is specified voltage, it's strictly prohibited to operate equipment with phase missing or under voltage;
- (3) If the equipment has not been used for a long time ,please make sure to turn off the power.

2、Cleaning



Disconnect electric power from the appliance before any operation, otherwise there will be the risk of electric shock.

- (1) Because the temperature probe is a sensitive element,in dusty place,please use low pressure water to clean regularly (for example,with the dust ball blowing wash),when the accuracy become poor ,please orrect or replace;
- (2) When dust collects on the air filter,will affect the effect of the equipment,or even breakdown, so must clean the filter regularly, at least once per month; if the environment is dusty,it must be cleaned weekly or daily, except for connecting with pipes.(cleaning method: remove the filter from the side of the inlet of the unit, knocking gently when cleaning or use cleaner to remove the dust on the net, or put thefilter in warm water below 40 degrees and add a small amount of neutral detergent washing,then rinse with water and dry it in the air).



Do not replace the filter while the machine is working

Troubleshooting



WARNING

Disconnect electric power from the appliance before performing any maintenance or repairs,failure to do so could result in death or electrical shock.

- * If maintenance is needed, wait for 3 minutes after power failure (let capacitor discharge on PCB), and then open the maintenance door.
- * The surface temperature of the condenser may be very high. Do not touch it to prevent burns.
- * Even if the fan and compressor have stopped ,there is still adangerous voltage at the terminals of the starting capacitor.

Troubleshooting		
Status	Reason	Suggestion
Cooling unit not running	<ol style="list-style-type: none"> 1. No power. 2. power cord unplugged. 3. low voltage 4. Incorrect or loose wirings. 5. Ambient temperature above 35°C or lower 5°C. 6. Setting higher than ambient temperature. 7. Defrosting mode on . 	<ol style="list-style-type: none"> 1. Check power at receptacle &fuses. 2. Plug-in power cord plug. 3. Contact an authorized electrician. 4. Check all wirings and connections. 5. Ambient temperature not meet unit working conditions. 6. lower temperature setting . 7. Wait 5-30minutes.
Cannot dehumidification	<ol style="list-style-type: none"> 1. Inlet or outlet air grille is stuck. 2. Air filter is stuck. 3. Refrigerant leakage. 4. Compressor not working. 5. Fan not working. 	<ol style="list-style-type: none"> 1. Please check the air grille and clean it. 2. Air filter is stuck. 3. Add refrigerant. 4. Check whether the compressor is normal. 5. Check the fan.
No air exhaust	<ol style="list-style-type: none"> 1. The air supply is blocked. 2. Fan not working. 	<ol style="list-style-type: none"> 1. Check and clean air outlet. 2. Check the fan.
Louder noise	<ol style="list-style-type: none"> 1. Loose parts. 2. Air filter is stuck. 3. The unit is not installed smoothly. 	<ol style="list-style-type: none"> 1. Check parts. 2. Clean filter. 3. Install the machine smoothly.

Status	Reason	Suggestion
Temperature too high	<ol style="list-style-type: none"> 1. Setting too high. 2. Improper cabinet seals. 3. Ambient temperature too high. 4. Cabinet/room too large. 5. Fan fault. 6. Refrigerant leakage. 	<ol style="list-style-type: none"> 1. lower setting. 2. Check gasket and door opening. 3. Check installation location. 4. Check for excessive size or the machine model choice is improper. 5. Check both evaporator and condenser fans. 6. Add refrigerant.
Unit running too long or continually	<ol style="list-style-type: none"> 1. The machine model choice is improper or improper room sealing. 2. Ambient temperature to high. 	<ol style="list-style-type: none"> 1. Check machine mode or check room tightness. 2. Check installation location or increase setting.
Evaporator icing	<ol style="list-style-type: none"> 1. Evaporator airflow restricted. 2. Unit not stopping due to air leak, high ambient temperature or low setting. 3. Low ambient temperature 4. Bad thermostat or sensor 5. Refrigerant leaking 6. Expansion valve blockage 	<ol style="list-style-type: none"> 1. Check the fan. 2. Check fr seal,door opening,ambient temperature and setting. 3. Defrost the unit. 4. Check for thermostat and sensor. 5. Check for sealed system leakage. 6. Check for low side pressure.
The fan keeps running	<ol style="list-style-type: none"> 1. Fan protection procedure 2. Wrong wiring harness connection 	<ol style="list-style-type: none"> 1. Wait 3 minutes. 2. Check harness links.
No cooling but compressor running	<ol style="list-style-type: none"> 1. Refrigerant leakage. 2. Evaporator airflow restricted. 	<ol style="list-style-type: none"> 1. Check of refrigerant. 2. Check for airflow through evaporator.



The above information is for reference only. If the machine fails to work properly, please contact your local dealer or your local authorized repair station.

All electrical installation and maintenance work in this manual must be performed by a professional electrical engineer.,our company is not responsible for opening the panel and electric control cabinet without the permission of the company.

After Service

1 . Limited Warranty

The machine provided by our company is guaranteed for one year and the fan is guaranteed for two years and the compressor for three years from the date of arrival. During the warranty period, any defects due to workmanship or materials, we guarantee to repair or replace the machine free of charge. (warning: the machine due to the use of dust ,corrosive liquid and other non-machine quality reasons for damage is not covered by the warranty.

2 . Commitment In After Service

During the warranty period, our company is responsible for the maintenance of the equipment, if the equipment exceeds the warranty period, our company will charge for reasonable maintenance cost.

3 . Other Preferential Terms

Our company provides free technical advisory services to users.