

TECHNICAL & SERVICE MANUAL V1.0

—DC-INVERTER AIR CONDITIONERS

MODEL:

AUF-48UR6RTMPA

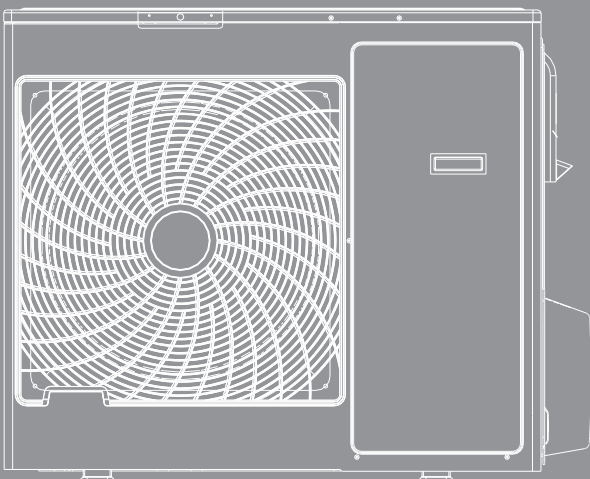


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1. GENERAL

1. General

1.1 Features

Floor-standing Type Air Conditioner

Features

➤ **24-hour Timer ON and OFF**

This Timer can be set to automatically turn the unit on or off within a 24-hour period.

➤ **Mute Operation**

The excellent fan design enables the airflow to be quiet and smooth with minimum noise.

➤ **Various Refrigerant Pipe Connecting Methods**

The refrigerant pipe can be connected from 3 different directions (rear, right or left) .

More methods, more conveniently.

➤ **Self Recovery of Power Break**

When the power supply is recovered after break, all presets are still effective and the air conditioner can run according to the original setting.

➤ **Fault Self-diagnosis Function**

When there is something wrong with the air conditioner, the micro computer could diagnose the faults, which can be read from the display and is convenient for maintenance.



1. GENERAL

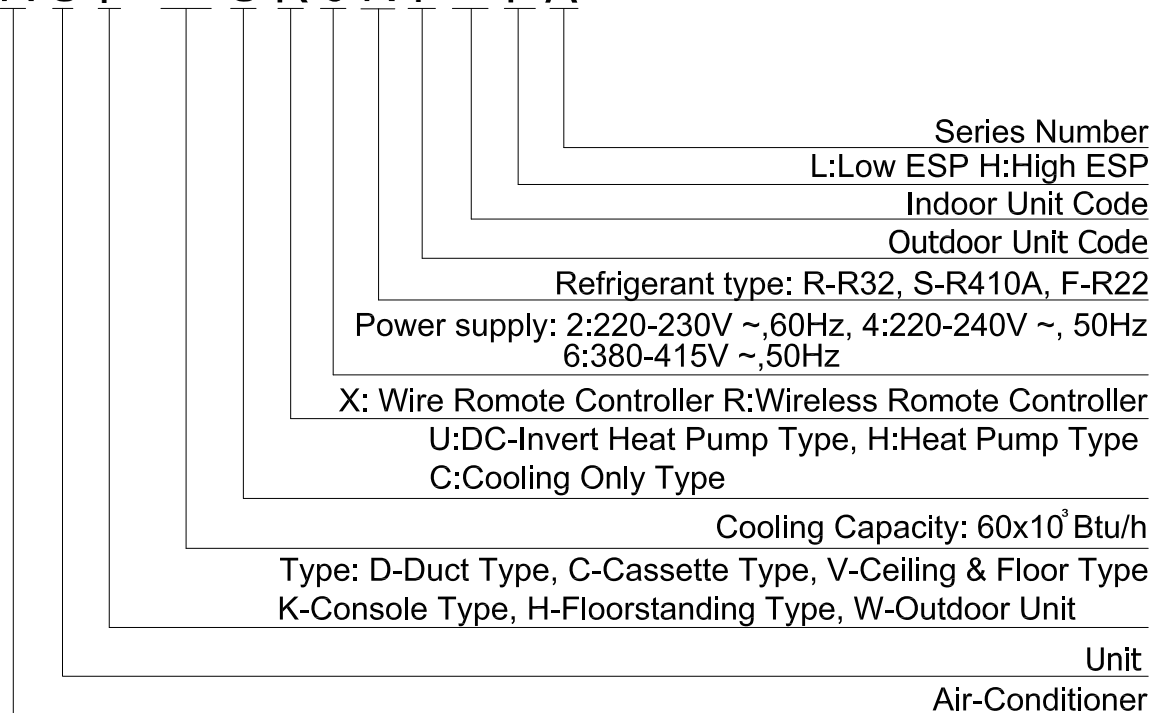
1.2 Product lineup

Model (Btu/h) Type	42K	48K	60K
Floor standing		●	

● ---available model

1.3 Nomenclature

A U F - 48 U R 6 R T M P A



1.4 Unit installation

1:1 system is the only compatible combination.

(One indoor unit can only be connected with one outdoor unit.)

1. GENERAL

1.5 Working range

Power Supply

Working Voltage	342V ~ 438V
Voltage Imbalance	Within a 3% deviation from each voltage at the main terminal of outdoor unit
Starting Voltage	Higher than 85% of the Rated Voltage

Operating temperature range

This heat pump air conditioner has been designed for the following outdoor operating temperatures.

Type	Mode	Outdoor operating temperature (°C)	
		maximum	minimum
DC-Inverter Split Air Conditioner (Heat pump type)	Cooling Operation	48	-15
	Heating Operation	24	-15

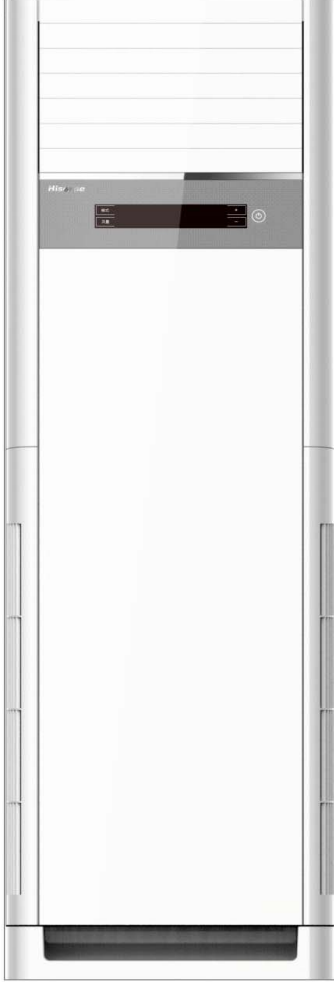

Storage condition:

Temperature -20~65°C

Humidity 30%~80%

1. GENERAL

1.6 Product picture

Model (capacity)	48K
Indoor Unit	
Outdoor Unit	

1. GENERAL

Display and Button Introduction



● Button Operation

1. ON/OFF BUTTON

For turning on/off the appliance.

2. TEMPERATURE SETTING BUTTONS

Used to adjust the set temperature.

Each time $\boxed{+}$ button is pressed, the temperature can rise by 1°C ;

Each time $\boxed{-}$ button is pressed, the temperature can rise by 1°C.

3. MODE BUTTON

For selecting the operation mode.

Each time "MODE" button is pressed, the operation mode is changed in sequence:



4. FAN SPEED BUTTON

For selecting indoor fan speed.

Each time "FAN" button is pressed, the fan speed is changed in sequence:



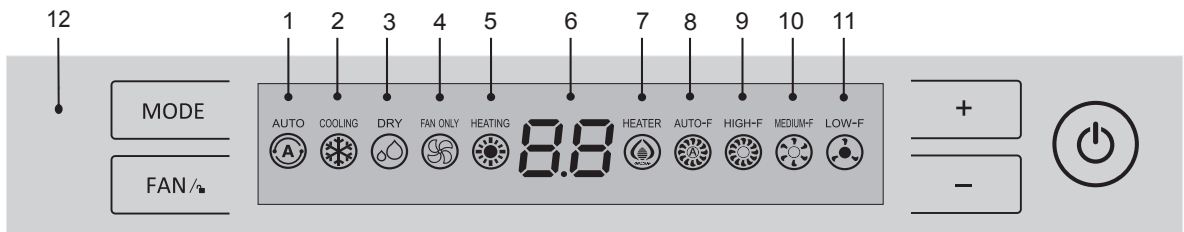
- ☑ **"AUTO" fan speed is invalid when select "FAN ONLY" mode.**
"FAN" button is invalid when select "DRY" mode.

It can also be used to unlock the user interface.

The user interface will lock automatically if idle beyond 1 minute, then the user interface will be locked; Hold the "FAN" button for 3 seconds to unlock; The remote control is still usable when the user interface has locked.

1. GENERAL

Display and Button Introduction



● Display Introduction

1. Auto mode display: Display during auto mode.
2. Cooling mode display: Display during cooling mode.
3. Dry mode display: Display during dry mode.
4. Fan only mode display: Display during fan only mode.
5. Heating mode display: Display during heating mode.
6. Temperature display: Display indoor temperature or indoor set temperature, default display indoor set temperature.
7. Heater display: It lights up during heating mode when electric heater is on (Only valid for models with electric heater).
8. 9. 10. 11. Fan speed set display.
8. Auto fan speed display: It lights up when the appliance is set with auto fan speed.
9. High fan speed display: It lights up when the appliance is set with high fan speed.
10. Medium fan speed display: It lights up when the appliance is set with medium fan speed.
11. Low fan speed display: It lights up when the appliance is set with low fan speed.
12. Signal Receptor.

2. SPECIFICATIONS

Model				AUF-48UR6RTMPA
Indoor model				AUF-48UR4RMPA
Outdoor model				AUW-48U6RT
Electric parameter	Power supply	Indoor	V/ph/Hz	220~240-1-50
	Power supply	Outdoor	V/ph/Hz	380~415-3-50
	Input consumption	Max.	W	6400
	Input current	Max.	A	11.6
Seasonal efficiency	Cooling	Pdesignnc	kW	12.3
		SEER	W/W	6.11
		$\eta_{s,c}$	100%	240%
		Energy Efficiency Class	-	-
	Heating (Average Season)	Pdesignnh	kW	9.5
		SCOP	W/W	3.72
		$\eta_{s,c}$	100%	146%
		Energy Efficiency Class	-	-
	Tbiv	°C	-7	
	Tol	°C	-10	
Cooling	Capacity	Rated	kW	12.3
		Range(Min~Max)	kW	3.300~13.200
	Input	Rated	kW	4.40
	Current	Rated	A	7.5
	EER	Rated	W/W	2.80
Heating	Capacity	Rated	kW	14.0
		Range(Min~Max)	kW	3.000~14.600
	Input	Rated	kW	4.17
	Current	Rated	A	7.3
	COP	Rated	W/W	3.36
Indoor fan motor	Model		-	ZW702B500008
	Qty		-	1
	Output		W	200
	Speed(Hi/Med/Lo)		r/min	500/450/410
Indoor coil	Number of rows		-	3
	Tube pitch(a) x Row pitch(b)		mm	21x18.19
	Fin spacing		mm	1.4
	Fin type		-	Hydrophilic aluminium
	Tube outside diameter and type		mm	Φ7.0, innergroove tube
	Coil (Length x Height x Width)		mm	480x882x54.57
	Number of circuits		-	6
Indoor unit	Dimension	WxHxD	mm	580×1870×380
	Packing	WxHxD	mm	690x2000x480
	Weight	Net/Gross	kg	52/63
	Air Volume	Hi/Med/Lo	m ³ /h	1750/1500/1300
		Hi/Med/Lo	CFM	1029/882/765
	Sound Level (SPL)	Hi/Med/Lo	dB(A)	52/46/44
	Sound Level (PWL)	Hi	dB(A)	64
	External Static Pressure	Rated	Pa	-
		Range	Pa	-
	Controller	Type	-	Remote control
		Model	-	J1-06(E)
	Drainage water pipe diameter		mm	dΦ18
	Drain pump		-	Standard
	Air filter		-	Standard
Qty'per 20' /40' /40'HQ		-	32/68/85	
Design pressure	H/L	MPa	4.3/1.6	
Room temperature	Setting Temperature	Cooling	°C	-15- 48
	Range	Heating	°C	-15 - 24

2. SPECIFICATIONS

Model			AUF-48UR6RTMPA	
Indoor model			AUF-48UR4RMPA	
Outdoor model			AUW-48U6RT	
Compressor	Model	-	KTF310D43UMT	
	Type	-	ROTARY	
	Brand	-	GMCC	
	Capacity	Btu/h	34154	
	Input	W	2765	
	Rated current (RLA)	A	5.38	
	Refrigerant oil	Model	-	POE VG74
Amount		ml	1000	
Outdoor fan motor	Model	-	SIC-81FW-F1138-1	
	Qty	-	1	
	Output	W	138	
	Speed	r/min	850	
Outdoor coil	Number of rows	-	2	
	Tube pitch(a) x Row pitch(b)	mm	21x21.65	
	Fin spacing	mm	2	
	Fin type	-	Hydrophilic aluminium	
	Tube outside diameter and type	mm	Φ7.94, Innergroove tube	
	Coil (Length x Height x Width)	mm	970x1008x43.5	
	Number of circuits	-	6	
Outdoor unit	Dimension	WxHxD	mm	950×1050×340
	Packing	WxHxD	mm	1110×460×1200
	Weight	Net/Gross	kg	85.0/97.0
	Air Volume	Hi	m ³ /h	5800
	Sound Level (SPL)	Hi	dB(A)	62
	Sound Level (PWL)	Hi	dB(A)	76
	Refrigerant	Type	-	R32
		Amount	kg	2.50
		TCO2Eq	-	1.688
		GWP	-	675
	Throttle type	-	-	EEV
	Qty'per 20' /40' /40'HQ	-	-	26/53/106
	Design pressure	H/L	MPa	4.3/1.6
Refrigerant piping	Liquid/ Gas	mm(inch)	Φ9.52/Φ19.05 (3/8'/3/4')	
	Pipe length	Max.	m	50
	Height difference	Max. (OD lower)	m	30
		Max. (OD higher)	m	30
	Add Refrigerant Amount	g/m	28	
	Pipe Length for Additional Refrigerant	m	5	
Ambient Temperature Range	Cooling	°C	-15~48	
	Heating	°C	-15~24	

NOTE:

1. Test conditions:

Cooling : Indoor: DB27°C/ WB19°C Outdoor: DB35°C/ WB24°C

Heating: Indoor: DB20°C/ WB15°C Outdoor: DB7°C/ WB 6°C

2. The sound pressure level is based on the following conditions:

Outdoor unit:

Measure the noise value of 4 points, which are 1 meter in front of the four sides of the unit surface and 1/2(unit height +1) meter high from the floor level, and calculate the weighted average of the noise.

Indoor unit:

Floor standing : Test the noise value of the point 1.0m below the unit and 1.0m in front of the unit.

3. The above data was measured in an anechoic chamber. Please take into consideration the reflected sound of your specific application environment.

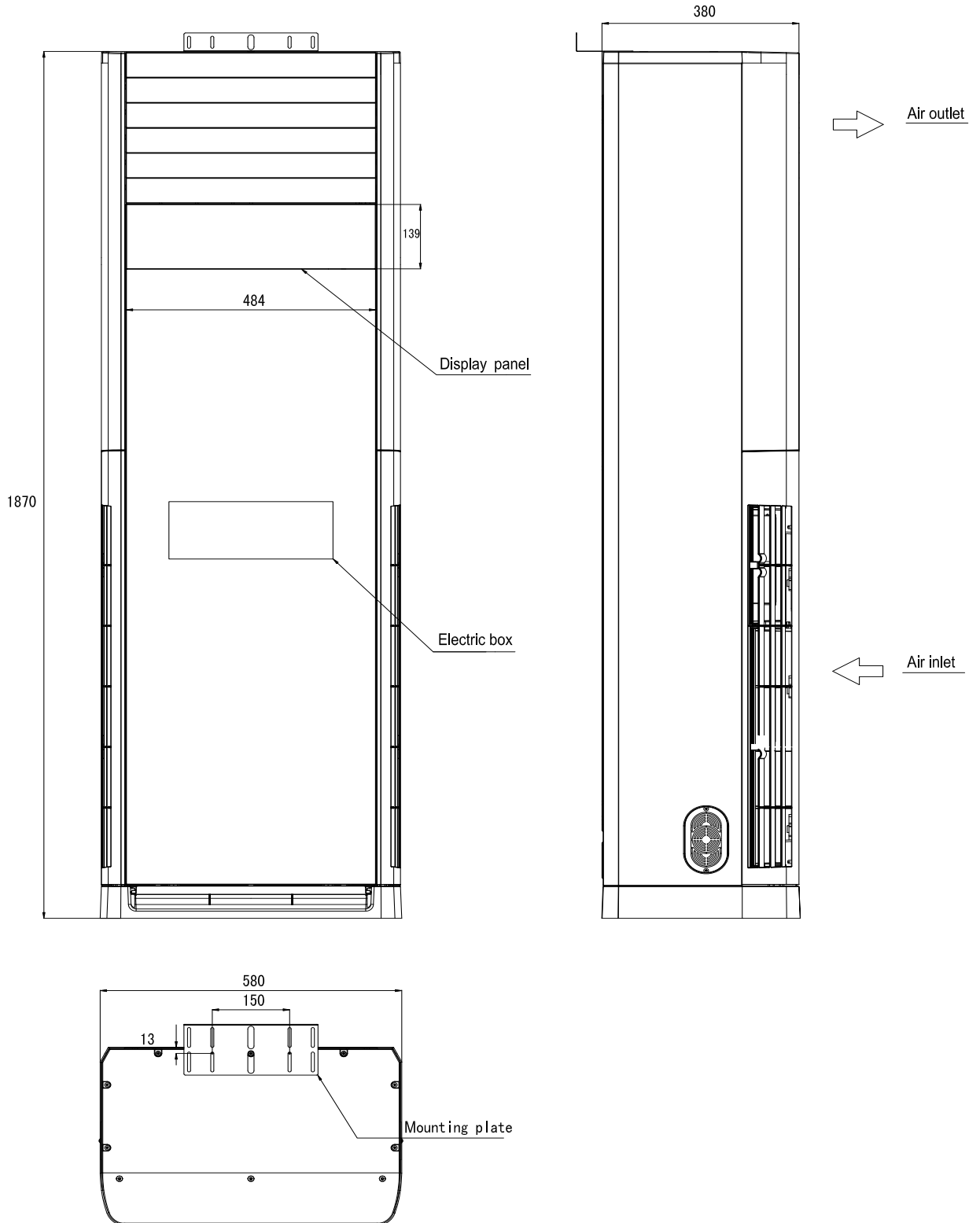
4. All specifications are subjected to change by the manufacturer without prior notice.

3. OUTLINES AND DIMENSIONS

3. Outlines and dimensions

3.1 Indoor unit

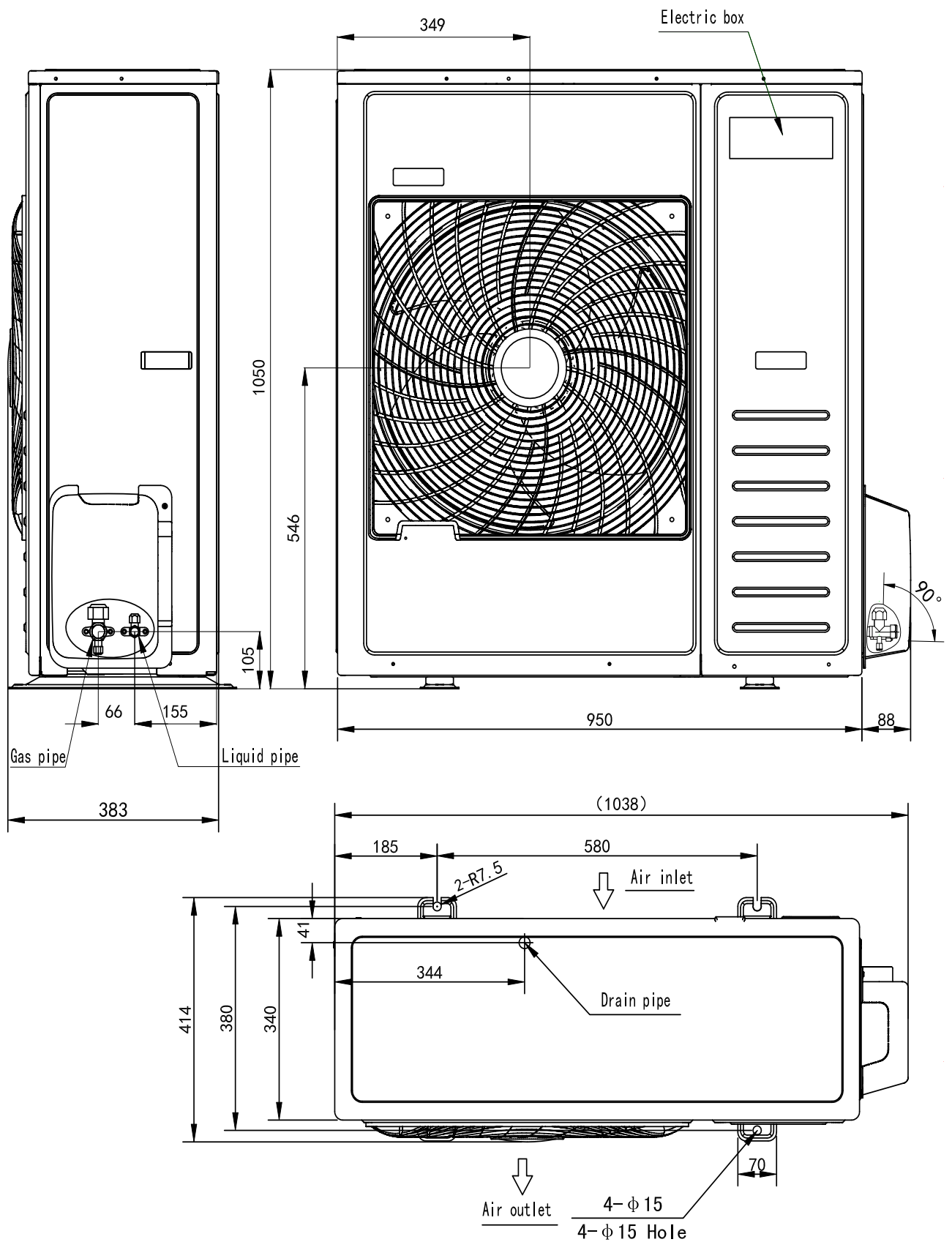
Unit: mm



3. OUTLINES AND DIMENSIONS

3.2 Outdoor unit

Unit: mm



4. ELECTRIC DATA

4. Electrical data

Outdoor unit	Power supply			Applicable Voltage		ELB	
	Voltage(V)	PH	Frequency (Hz)	Umin (V)	Umax (V)	Nominal Current (A)	Nominal Sensitive Current (mA)
48K	380-415	3	50	342	438	32	30

NOTE:

1. The above compressor data is based on 100% capacity combination of indoor units at the rated operating frequency.
2. This data is based on the same conditions as the nominal heating and cooling capacities.
3. The compressor is started by an inverter, resulting in extremely low starting current.

5. CAPACITIES AND SELECTION DATA

5. Capacities and selection data

5.1 Capacity characteristic charts

The following charts show the characteristics of outdoor unit capacity, which corresponds with the operating ambient temperature of outdoor unit.

Conditions:

- ① Pipe length / height difference : 5m / 0m
- ② Compressor at rated inverter frequency
- ③ Indoor fan speed at high fan speed
- ④ Capacity loss due to white frost and defrost operation is not included.

COOLING CAPACITY (kW)

Indoor temperature		Outdoor temperature (°C DB)					
(°C WB)	(°C DB)	20	25	32	35	40	45
14	20	11.1	10.9	10.1	9.9	9.1	8.6
16	22	12.1	11.6	11.4	10.6	9.9	9.4
18	25	12.6	12.1	12.4	11.6	11.1	10.6
19	27	13.3	13.1	12.9	12.3	12.1	11.9
19.5	27	13.9	13.4	13.1	12.9	12.4	12.1
22	30	15.9	14.9	14.4	13.9	13.4	12.6
24	32	17.1	16.6	16.1	15.9	14.9	13.6

(°C DB) : Dry Bulb Temperature (°C)

(°C WB) : Wet Bulb Temperature (°C)

HEATING CAPACITY (kW)

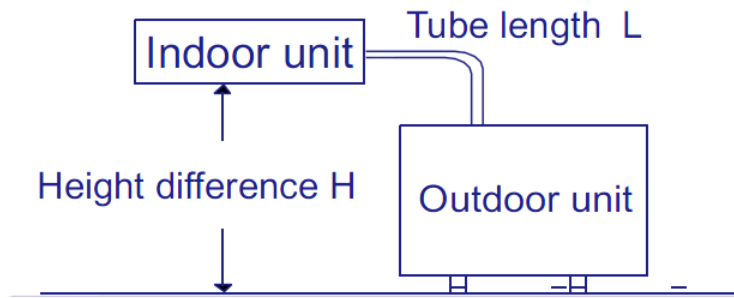
Outdoor temperature		Indoor temperature (°C DB)						
(°C WB)	(°C DB)	20	25	27	28	30	31	32
-16	-15	8.7	8.7	8.2	8.2	7.8	7.8	7.8
-11	-10	9.6	9.6	9.2	9.2	8.7	8.7	8.7
-6	-5	11.4	11.4	10.9	10.9	10.9	10.3	10.3
-1	0	13.0	13.0	12.3	12.3	11.8	11.8	11.8
6	7	14.0	14.0	14.0	14.0	14.0	14.0	13.5
9	10	14.9	14.6	14.6	14.6	14.6	14.6	14.4
14	15	15.3	14.9	14.9	14.9	14.9	14.9	14.6

(°C DB) : Dry Bulb Temperature (°C)

(°C WB) : Wet Bulb Temperature (°C)

5. CAPACITIES AND SELECTION DATA

5.2 Piping length correction factor



The correction factor is based on the equivalent piping length in meters (EL) and the height difference between the outdoor and indoor units in meters (H).

H:

Height difference between indoor unit and outdoor unit (m).

- H>0: Position of outdoor unit is higher than position of indoor unit (m).
- H<0: Position of outdoor unit is lower than position of indoor unit (m).

L:

Actual one-way piping length between indoor unit and outdoor unit (m).

EL:

Equivalent one-way piping length between indoor unit and outdoor unit (m).

Gas Diameter (mm/inch)	9.52 (3/8')	12.7 (1/2')	15.88 (5/8')	19.05 (3/4')
90° Elbow	0.15	0.2	0.25	0.35

Cooling :

EL Model	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
48K	1.0	0.95	0.92	0.88	0.87	0.85	0.83	0.80	0.78	0.75

5. CAPACITIES AND SELECTION DATA

Heating:

EL Model	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
48K	1.0	0.94	0.91	0.88	0.85	0.82	0.79	0.76	0.73	0.70

The correction factor of height between indoor unit and outdoor unit

Height difference	5m	10m	30m
Factor	0.01	0.02	0.025

To ensure correct unit selection, consider the farthest indoor unit.

NOTE

1. The data above is given assuming the height difference between the indoor and outdoor units is 0m.
2. Be sure to minimize the length of connection pipes to optimize the performance. If the outdoor unit is installed higher or lower than the indoor unit, it is necessary to apply height correction factor additionally to length correction factor to calculate cooling/heating.
If outdoor unit is higher, correction should be applied to cooling capacity, if outdoor unit is lower, correction should be applied to heating capacity.

5. CAPACITIES AND SELECTION DATA

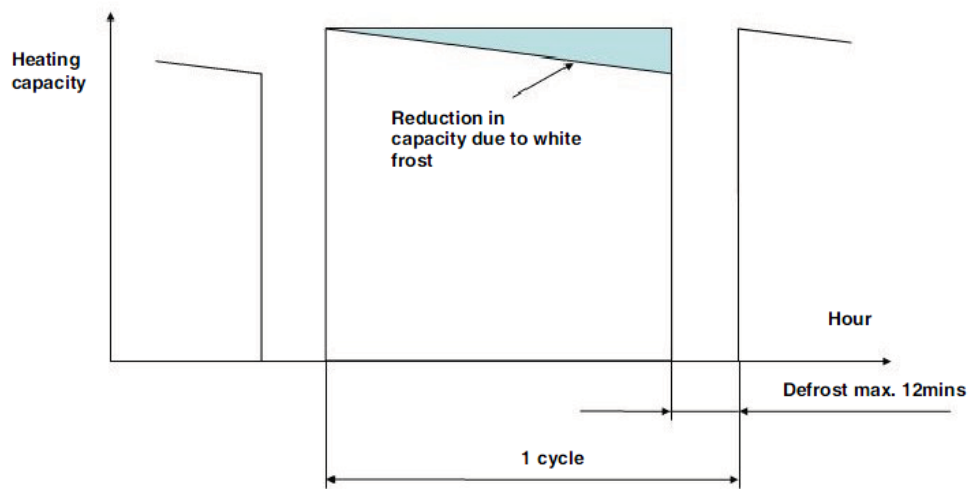
5.3 Correction factors according to defrosting operation

The heating capacity in the previous paragraph is given without consideration of the condition of defrosting operation period. In consideration of defrosting operation, the heating capacity is corrected with the equation below.

Corrected heating capacity = Defrost Correction factor x unit capacity

OUTDOOR TEMPERATURE (°CDB)	-15	-10	-5	0	7	10	15
Correction factor (humidity rate 85% RH)	0.95	0.95	0.91	0.81	1.0	1.0	1.0

Correction Factor



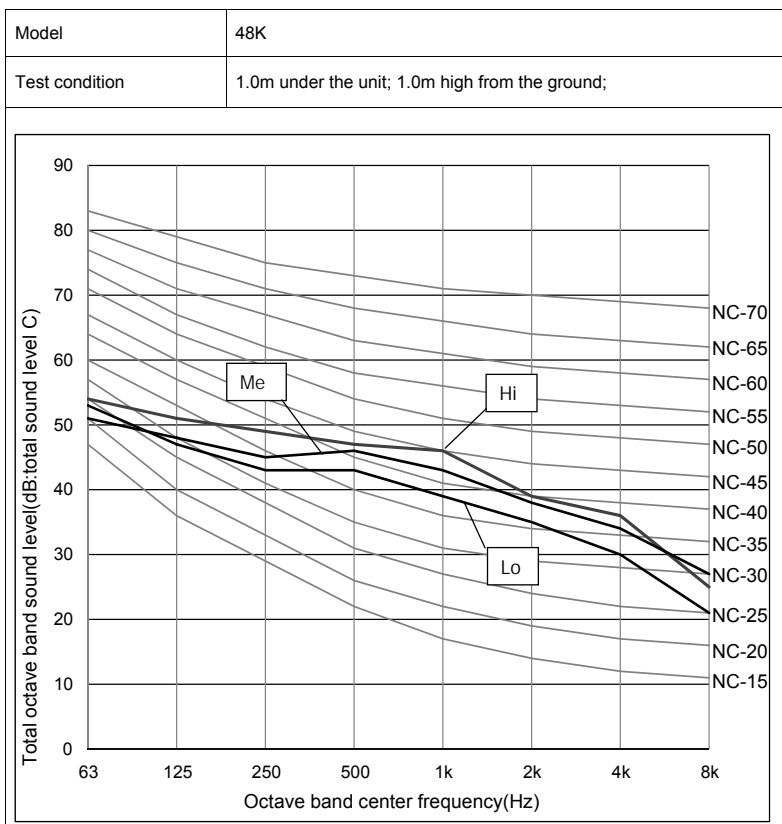
NOTE:

The correction factor is not valid for special conditions such as snowfall or operation in a transitional period.

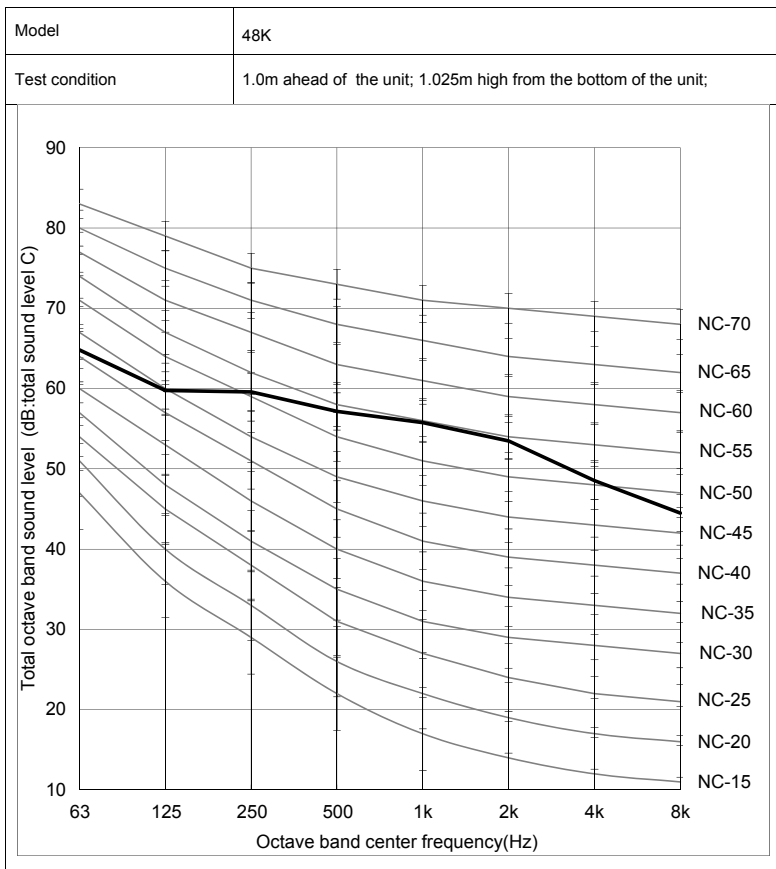
6.SOUND PRESSURE DATA

6. Sound pressure data

Indoor unit



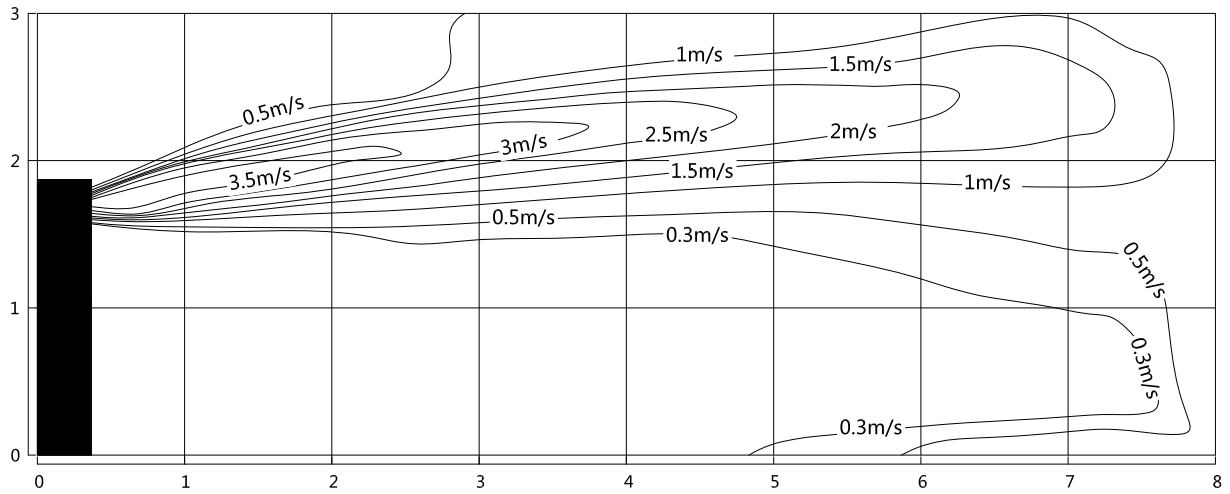
Outdoor unit



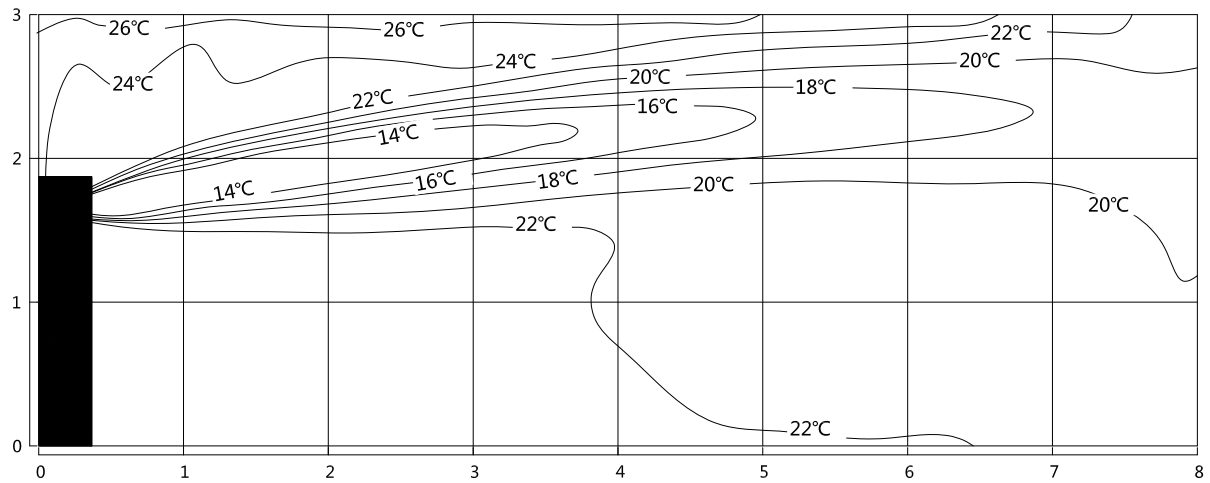
7. AIR FLOW DISTRIBUTION

7. Air flow distribution

1) Floor-standing installation/Cooling/Air Velocity Distribution



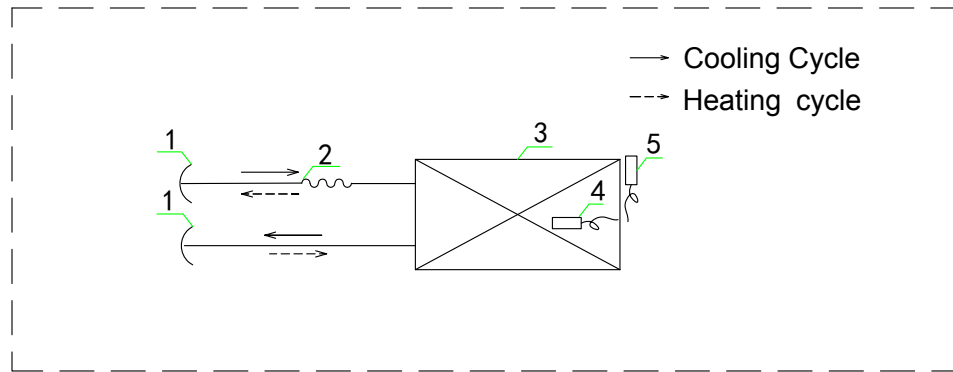
2) Floor-standing installation/Cooling/Air Temperature Distribution



8. REFRIGERANT CYCLE

8. Refrigerant cycle

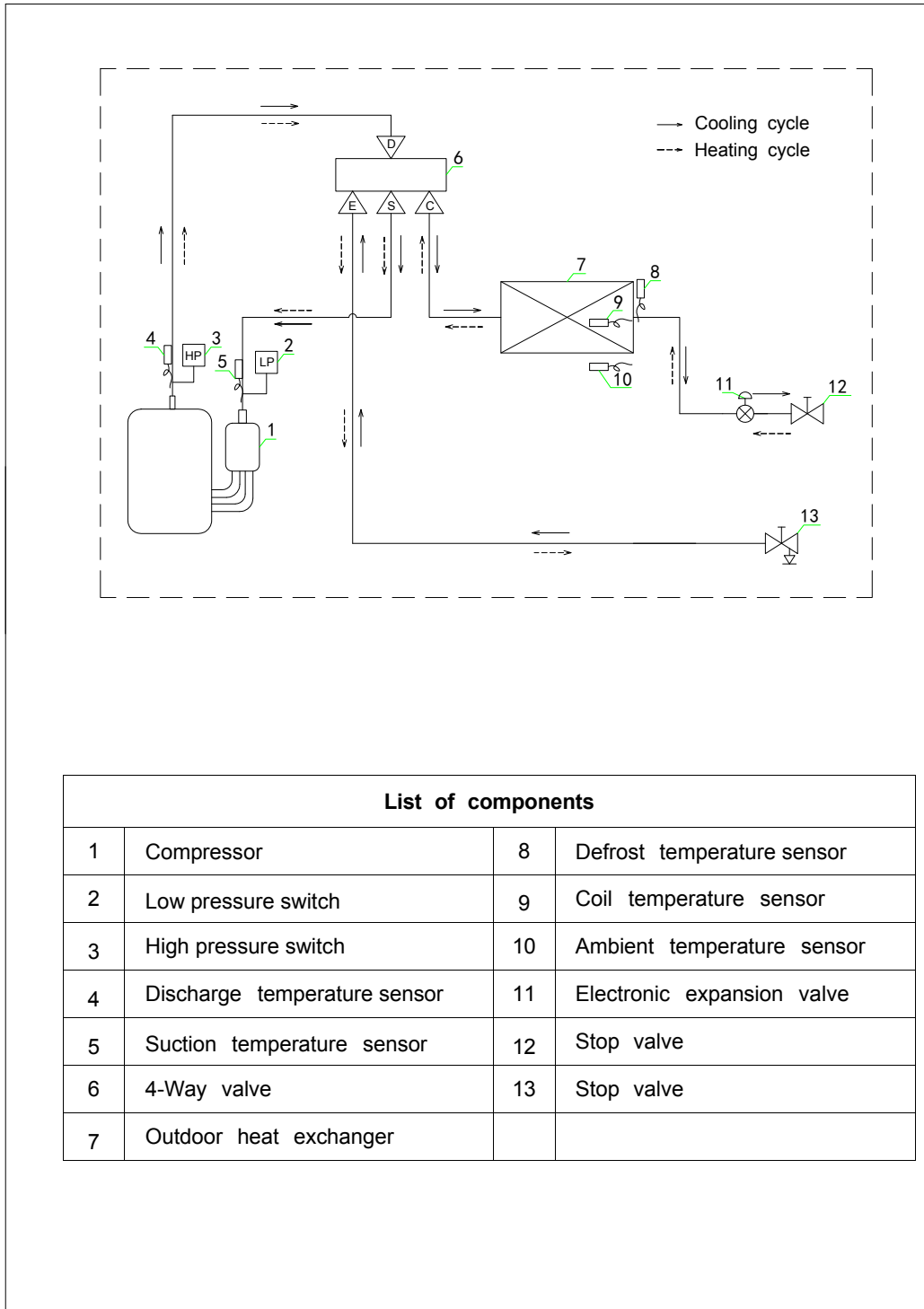
Indoor Unit



List of components			
1	Hexagon nut	4	Ambient temperature sensor
2	Split capillary	5	Coil temperature sensor
3	Indoor heat exchanger		

8. REFRIGERANT CYCLE

Outdoor Unit



List of components

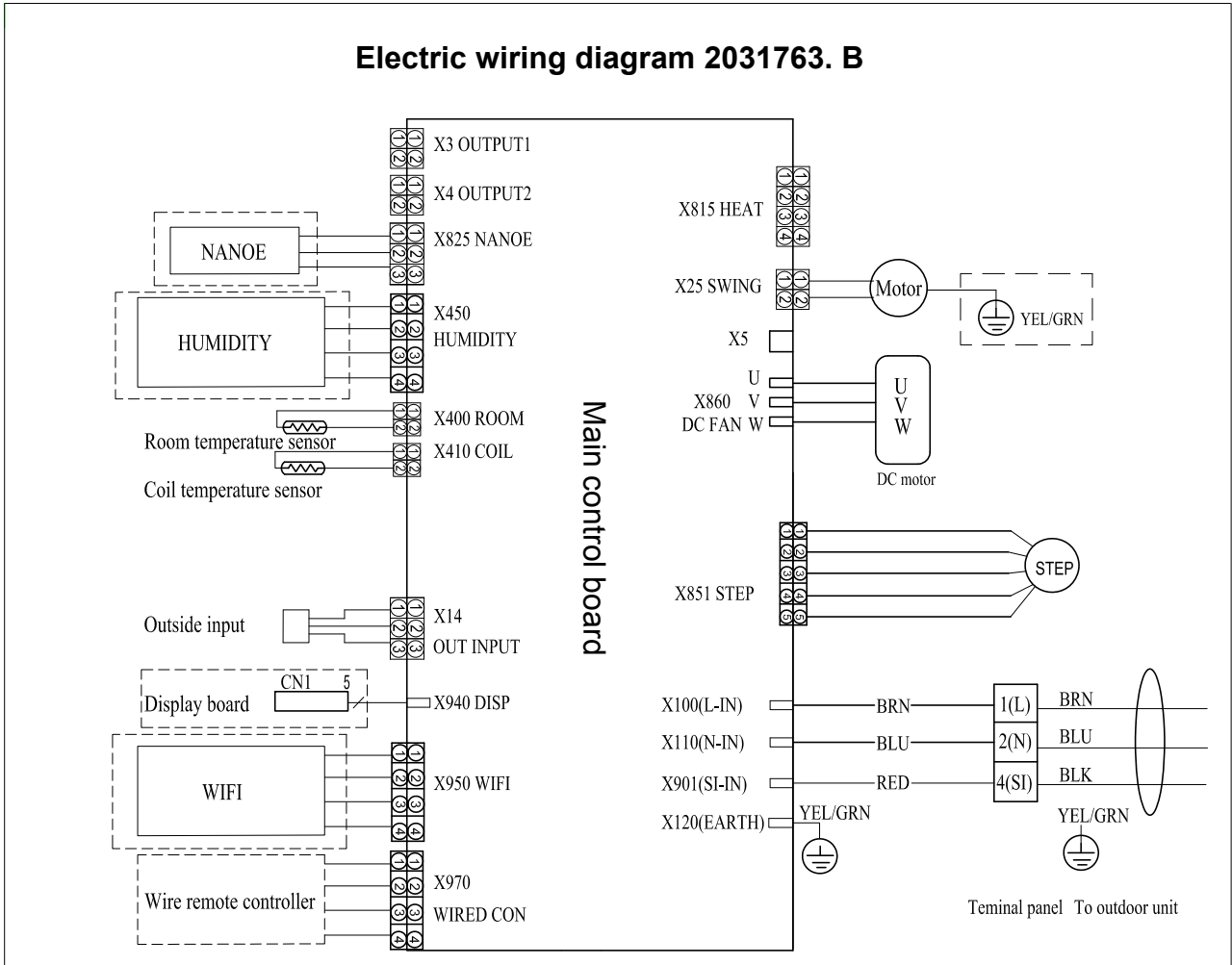
1	Compressor	8	Defrost temperature sensor
2	Low pressure switch	9	Coil temperature sensor
3	High pressure switch	10	Ambient temperature sensor
4	Discharge temperature sensor	11	Electronic expansion valve
5	Suction temperature sensor	12	Stop valve
6	4-Way valve	13	Stop valve
7	Outdoor heat exchanger		

9. WIRING DIAGRAM

9. Wiring diagram

9.1 Electrical wiring diagrams

Indoor Unit



Remark:

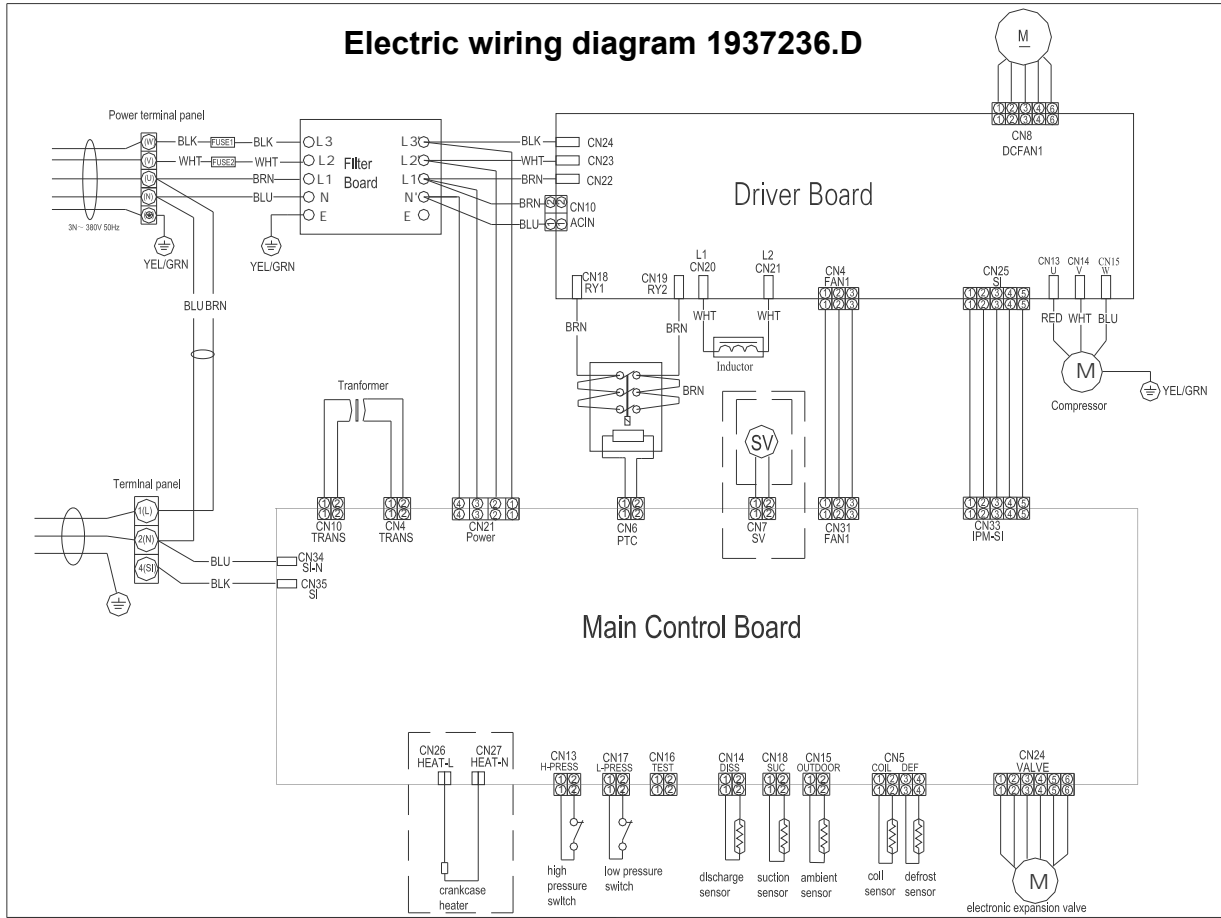
Dashed parts are not available in some models.
For details, see the table below.

	Indoor units model	NANOE	Humidity	Display board	WIFI	Wired remote controller	YEL/GRN
Floor standing	48K			●	●		●

●--available part

9. WIRING DIAGRAM

Outdoor Unit



Remark:
Dashed parts are not available in some models.
For details, see the table below.

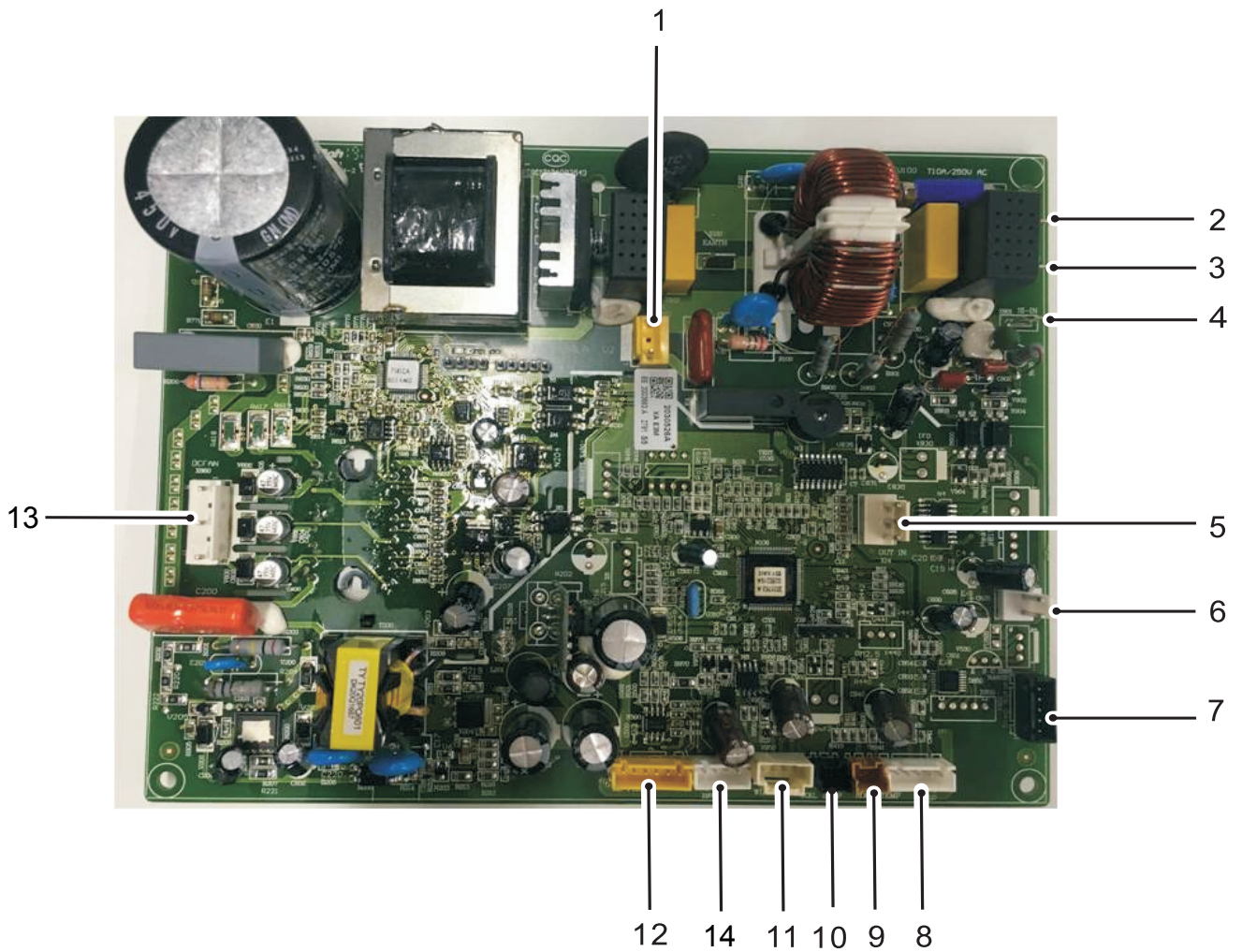
Outdoor unit model	CN7 SV	Crankcase heater
48K	●	●

●--available part

9. WIRING DIAGRAM

9.2 Control Board Picture

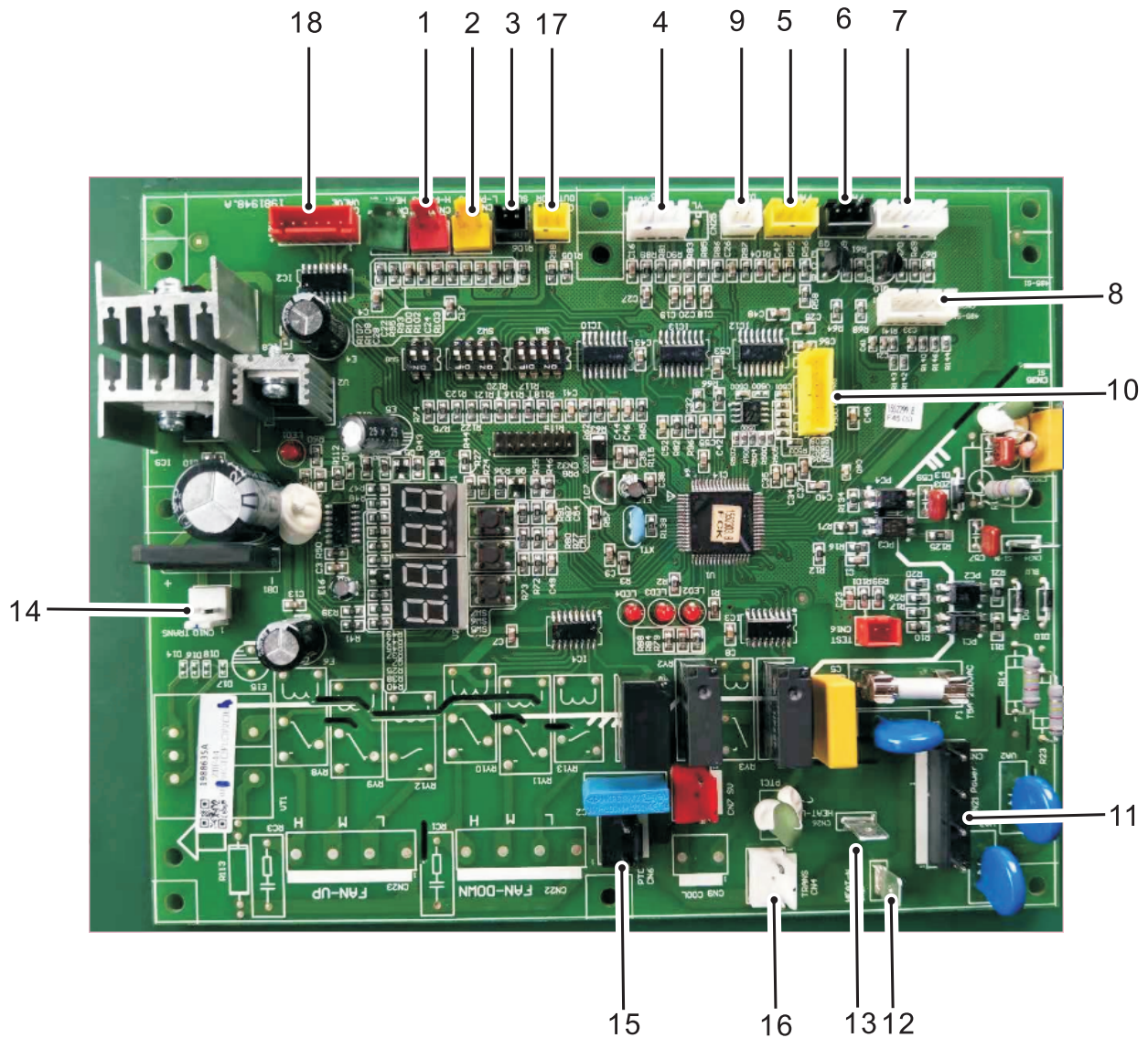
Indoor unit



NO.	Description	NO.	Description
1	Swing	8	Display
2	L-IN	9	Room
3	N-IN	10	Coil
4	SI-IN	11	WIFI
5	Output	12	EE Prom
6	Nano	13	Fan Motor
7	Step Motor	14	Wired Controller

9. WIRING DIAGRAM

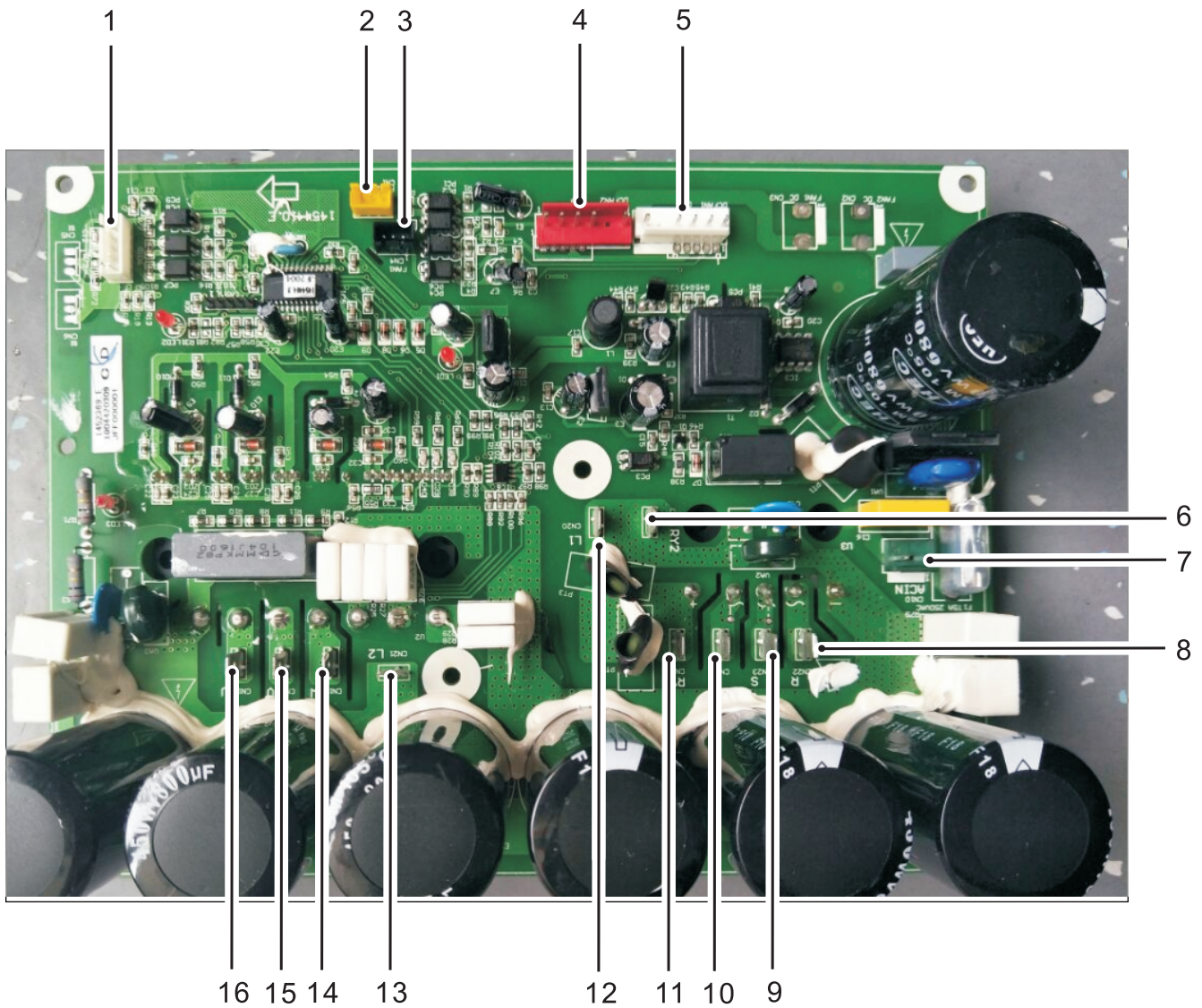
Outdoor unit



NO.	Description	NO.	Description
1	High Pressure Switch	10	EEPROM Program
2	Low Pressure Switch	11	AC Power in
3	Suction Temperature Sensor	12	Heater-N
4	Coil & Defrost Temperature Sensor	13	Heater-L
5	DC Fan 2	14	Transformer
6	DC Fan 1	15	AC contactor
7	IPM-SI	16	Transformer
8	Computer/Checker	17	Ambient Temperature Sensor
9	Discharge Temperature Sensor	18	Electric Expansion Valve

9. WIRING DIAGRAM

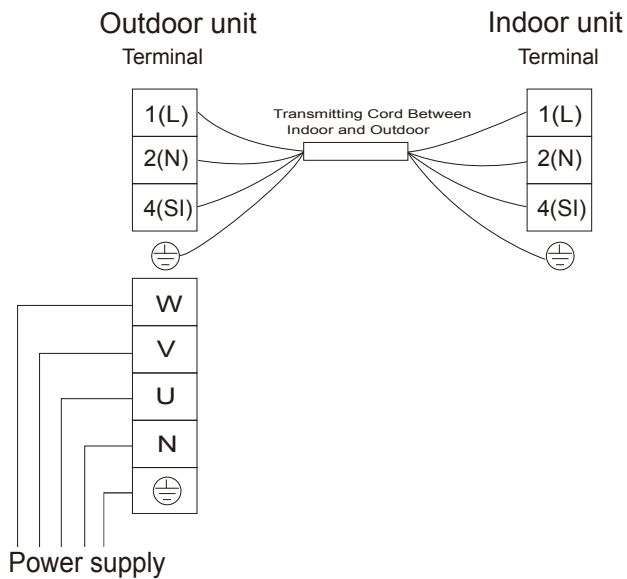
Driver board



NO.	Description	NO.	Description
1	IPM-S	9	AC IN-L2
2	DC Fan 2	10	AC IN-L3
3	DC Fan 1	11	Contactora RY1
4	DC Fan Motor 2	12	Reactor L1
5	DC Fan Motor 1	13	Reactor L2
6	Contactora RY2	14	Compressor W
7	AC Power	15	Compressor V
8	AC IN-L1	16	Compressor U

9. WIRING DIAGRAM

9.3 Common Wiring



Recommended Wire Size

Model (Capacity)	Power supply	ELB		Power source (cable size)	Transmitting Cable Size
		Rated Current (A)	Nominal Sensitive Current (mA)		
48K	380-415V 3N~, 50Hz	32	30	5×2.5mm ²	4×1.5mm ²

Max. Running Current(A): REFER TO NAMEPLATE

- Use an ELB (Electric Leakage Breaker). If not, it will cause electric shock or fire.
- Do not operate the system until all the check points have been cleared.

(A) Check to ensure that the insulation resistance is more than 2 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

(B) Check to ensure that the stop valves of the outdoor unit are fully open and then start the system.

- Pay attention to the following items while the system is running.

(A) Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 90°C.

9. WIRING DIAGRAM

(B) DO NOT PUSH THE BUTTON OF THE MAGNETIC SWITCH(ES). It will cause a serious accident.

NOTES:

- 1) Follow local codes and regulations when selecting field wires.
- 2) The wire sizes marked in the table are selected at the maximum current of the unit according to the European Standard, EN60335-1. Use the wires which are not lighter than the ordinary tough rubber sheathed flexible cord (code designation H07RN-F) or ordinary polychloroprene sheathed flexible cord (code designation H07RN-F).
- 3) Use a shielded cable for the transmitting circuit and connect it to the ground.
- 4) In the case that power cables are connected in series, add each unit maximum current and select wires below.

Selection According to EN60335-1

Current i(A)	Wire Size(mm ²)
$i \leq 6$	0.75
$6 < i \leq 10$	1
$10 < i \leq 16$	1.5
$16 < i \leq 25$	2.5
$25 < i \leq 32$	4
$32 < i \leq 40$	6
$40 < i \leq 63$	10
$63 < i$	*

* In the case that current exceeds 63A, do not connect cables in series.

10. FIELD SETTING

10. Field Setting

10.1 Outdoor unit DIP switch

DIP Setting

DIP Switch Setting of Outdoor Unit

Disconnect the power before setting. Without turning off, the switch settings are not refreshed and might be invalid. Mark of "■" indicates the position of DIP switches.

Setting is required

SW2-1

Refrigerant Piping Length Setting

SW2-4

Refrigerant Collection

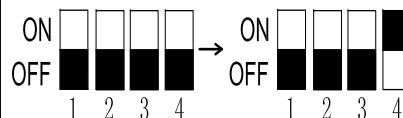
Setting is required

Actual Piping Length L(m)

$L < 15$

$15 \leq L < \text{Max. length allowed}$

Setting
before
Shipment



After setting refrigerant piping length dip switch, cooling/heating performance can be improved.

Refrigerant collection mode

Actions:

The compressor runs with the aim frequency, and without any protection when raise frequency; The EEV runs with setting opening; Outdoor unit fan will run with the set fan speed.

Operation procedures:

Step 1:

Press the ON/OFF button to power off the appliance.

Step 2:

Disconnect the machine power.

Step 3:

Close the shut-off valve of the liquid piping with an Allen wrench in a clockwise direction.



10.FIELD SETTING

Step 4:

Open the maintenance panel.

Step 5:

Switch the dial code SW2-4 to ON position on the main control board.

Step 6:

Switch on the machine power.

Step 7:

Check if "40" is displayed on the LED digital tube of the main control board.



Step 8:

When the numerals on the LED digital tube of outdoor unit count down to 0 (40 → 39 → 38 ... 0), and "0" begins to blink, close the shut-off valve of the gas piping with an Allen wrench in a clockwise direction.



Step 9:

Cut off machine power and the procedure for recovering refrigerant is finished.

NOTE:

Be sure to switch back the dial after refrigerant recovery operation. If not, it will enter refrigerant recovery mode again after power ON. But if not cut off the power, it will not enter refrigerant recovery mode and will running normally.

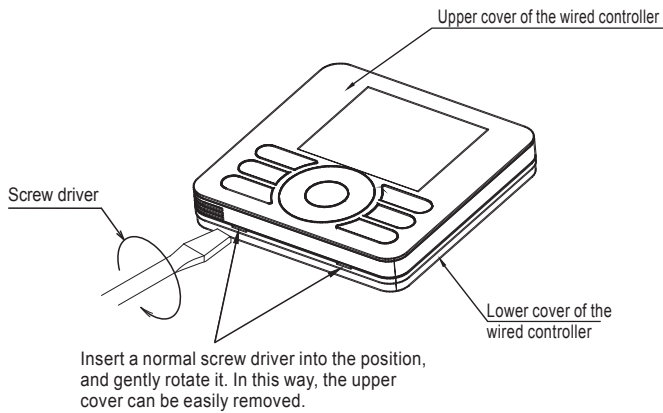
10.FIELD SETTING

Indoor unit parameter revision

Internal control parameter adjustment can be performed using wired remote controller YXE-C01U/YXE-C02U.

1. Connecting the wired remote controller with the indoor unit

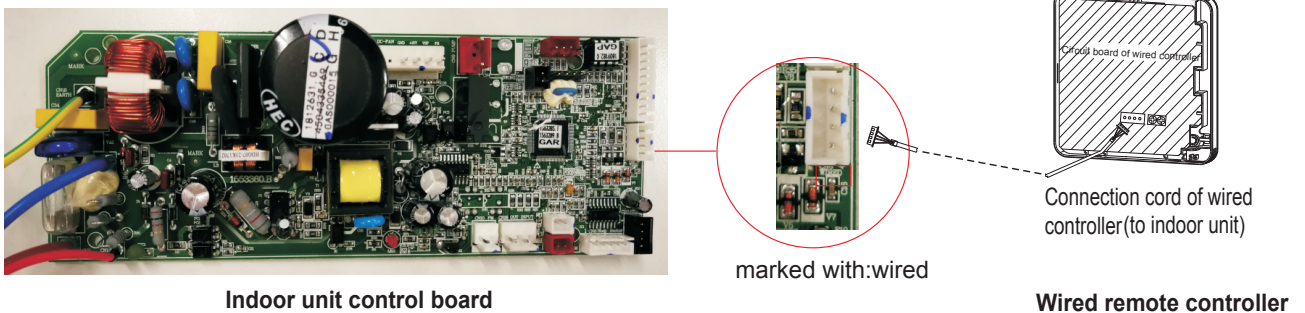
Step 1: Remove the upper cover of the wired controller



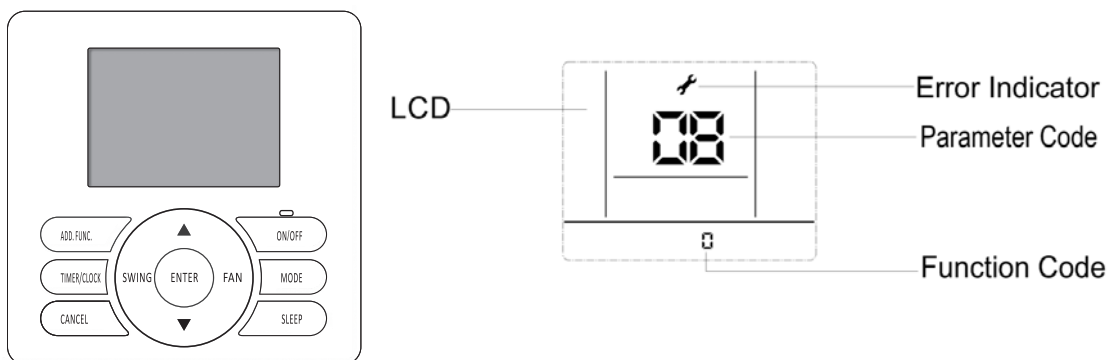
NOTE:

Control board of the remote controller is placed on the upper cover. Please protect it from being scratched during removal and installation!

Step 2: Connect the wired controller with the indoor unit



2. Changing system parameter



OPERATION:

- ① Hold down both "MODE" button and "ADD.FUNC." button for 3 seconds, symbol and parameter number blink at the same time.
- ② Press "▲" "▼" button to adjust parameter number until "17" is displayed. And press "ENTER" button to enter system parameter adaption state, symbol stops blinking, parameter number blinks.
- ③ Select desired parameter code by pressing "▲"/"▼" button following the table below, and press "ENTER" button to confirm.
- ④ Select desired function code by pressing "▲"/"▼" button, and press "ENTER" button to confirm.

10.FIELD SETTING

Press "ON/OFF"button or "CANCEL"button to quit parameter adaption state.

⑤Press "ON/OFF"button or "CANCEL"button to quit.

PARAMETER CODE	PARAMETER DESCRIPTION	PARAMETER VALUE&REPRESENTATION		NOTE
		DATA TYPE	REPRESENTATION (FUNCTION CODE)	
1	Self Recovery of Power Break	Integer	0: Cancel Self Recovery of Power Break function; 1: Self Recovery of Power Break; others: invalid	
2	Temperature Type	Integer	0: Centigrade Temperature; 1: Fahrenheit Temperature; others: invalid	
3	Temperature Display Type	Integer	0: Default display set temperature; 1: Default display room temperature; others: invalid	
4	Ratio of ambient temperature sensed by indoor temperature sensor(cooling mode)	Integer	0~10valid, more than 10 default is 10 0: 0%; 1: 10%; ...; 10: 100%	0-entirely use temperature sensed by wired remote controller; 10-entirely use temperature sensed by indoor unit
5	Filter Cleaning Indication	Integer	0: Cancel Filter Cleaning prompt function; 1: Set Filter Cleaning prompt function; others: invalid	
6	Filter Cleaning Time Setting	Integer	0~32, more than 32 default is 32*1000h	
7	Installation Height	Integer	0~10m, more than 10m default is 10	Cassette type (DC motor)
8	Cooling Temperature Compensation (indoor unit temperature sensor)	Integer	0: 0°C; 1: -0.5°C; 2: -1°C; 3: -1.5°C; 4: -2°C; 5: -2.5°C; 6: -3°C; 7: -3.5°C; 8: -4°C; 9: -4.5°C; 10: -5°C; (the wired controller displays integer with the symbol)	
9	Heating Temperature Compensation (indoor unit temperature sensor)	Integer	0: 0°C; 1: -0.5°C; 2: -1°C; 3: -1.5°C; 4: -2°C; 5: -2.5°C; 6: -3°C; 7: -3.5°C; 8: -4°C; 9: -4.5°C; 10: -5°C; (the wired controller displays integer with the symbol)	
10	Static Pressure Setting	Integer	1~240, function code=static pressure more than the limit static pressure default the limit static pressure, Default is 0(default static pressure, related to models)	Duct type (DC motor)
12	Ratio of temperature sensed by indoor temperature sensor(Heating mode)	Integer	0~10valid, more than 10 default is 10 0: 0%; 1: 10%; ...; 10: 100%	0-entirely use temperature sensed by wired remote controller; 10-entirely use temperature sensed by indoor unit
13	Temperature Adjustment-Cooling	Character	-10~10°C (Single Character with symbol)	Temperature displayed on wired controller
14	Temperature Adjustment-Heating	Character	-10~10°C (Single Character with symbol)	Temperature displayed on wired controller
25	Access control, fire protection, ON/OFF function set	Integer	=0, Access control, fire protection functions are all disabled; =1, Access control function is enabled; =2, fire protection function is enabled; =3, Access control, fire protection are all enabled; =4, ON/OFF function are all enabled.	

10.FIELD SETTING

RunningParameterQuery

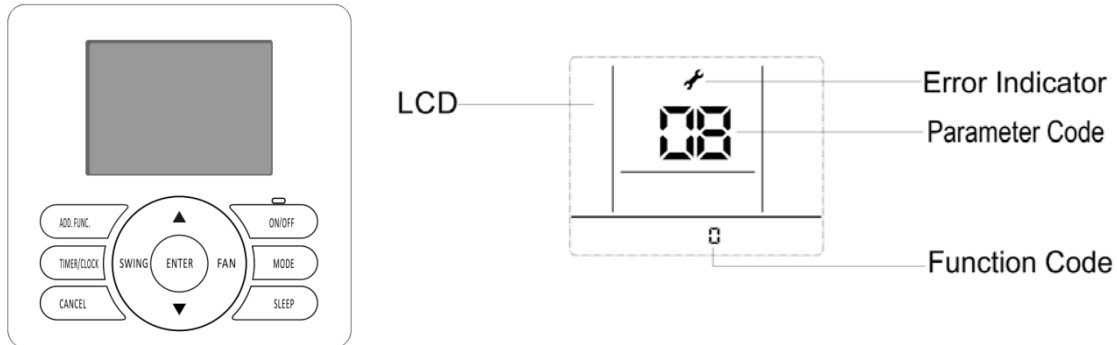
Running parameter can be referred by digital tube switch or specified wired remote controller.

Query by wired remote controller (YXE-C01U,YXE-C02U,YXE-D01U)


Operation:

1.Connect the wired remote controller with the indoor unit (same method as Indoor unit parameter revision)

2.Change the system parameter



OPERATION:

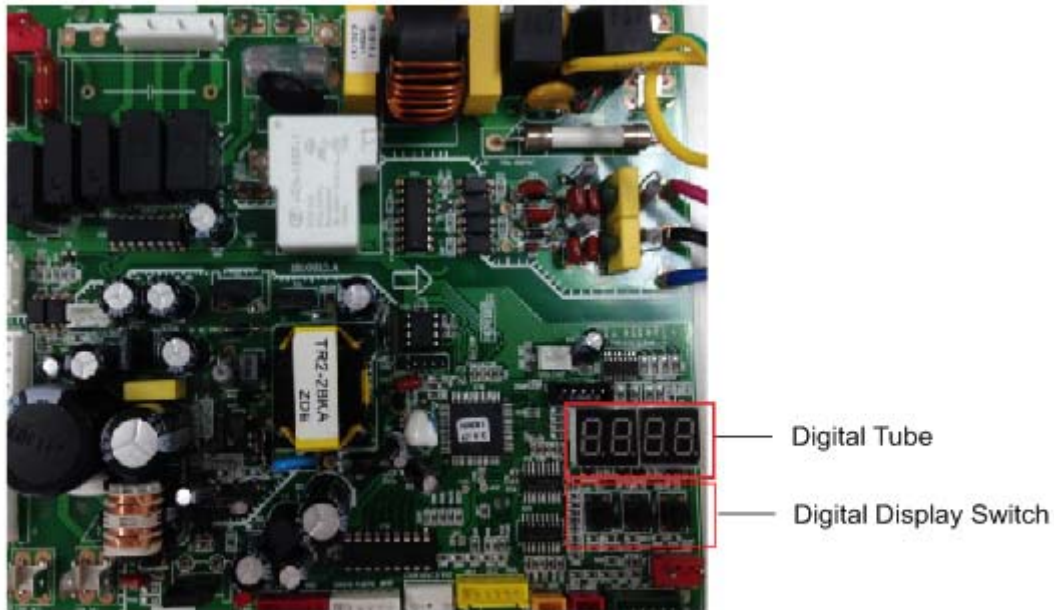
- ① Hold down both "MODE" button and "ADD.FUNC." button for 3 seconds, symbol  and parameter number blink at the same time.
- ② Press "▲" "▼" button to select parameter number as you need, parameter value will be displayed on the LCD.

Parameter Code	Parameter Description
06	Indoor unit air inlet temperature
07	Indoor unit coil sensor temperature
08	Outdoor unit ambient sensor temperature
09	Discharge temperature
10	Suction temperature
11	Outdoor coil temperature
12	Discharge pressure
13	Suction pressure
14	Outdoor EEV opening
15	AC current input
16	AC voltage
24	Fault code
25	Drive fault code
26	Indoor unit air outlet temperature
28	Compressor current
29	Indoor unit room temperature
30	Indoor unit coil inlet temperature
31	Indoor unit coil outlet temperature
32	Outdoor unit condenser inlet temperature
33	Outdoor unit condenser outlet temperature
43	Outdoor unit defrost temperature
57	Outdoor fan 1 speed
58	Outdoor fan 2 speed
60	Indoor fan speed

NOTE: For some models, some parameter values will not display on the wired controller.

10.FIELD SETTING

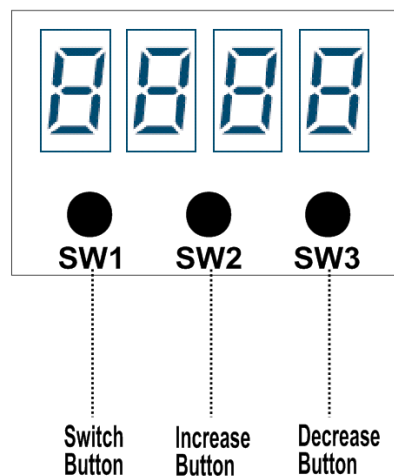
Query by digital tube switch



DC-Inverter outdoor control board

Digital Display Switch Introduction

It can be used to check outdoor running parameters.



There are 3 buttons on the digital display board :

- 1) SWITCH button : Indoor parameters and outdoor parameters can be selected in turn by pressing it.
“P.”-outdoor unit parameter, “H.”-indoor unit parameter ;
- 2) INCREASE button: Each time it is pressed, the number rises by 1,hold down it, the number will be rapidly increased;
- 3) DECREASE button : Each time it is pressed, the number lowers by 1,hold down it, the number will be

10.FIELD SETTING

rapidly decreased.

- 4) The parameters will be displayed after 3s when the checking numbers are selected.

Parameters can be checked as the table below.

Parameter code	Descriptions
0	Protection Code or Fault code
P.1	Target Frequency
P.2	Driving Frequency
P.4	Outdoor EEV Opening
P.5	Outdoor EEV Target Opening
P.6	Upper DC Motor Revolving Speed
P.8	AC Input Voltage
P.9	Current
P.10	Modular Temperature
P.11	Capacity Needed
P.12	Modular Fault
P.20	Outdoor Ambient Temperature
P.21	Outdoor Coil Temperature
P.22	Outdoor Defrost Temperature
P.23	Suction Temperature
P.24	Discharge Temperature
H.1	Indoor Unit Fault
H.2	Indoor Ambient Temperature
H.3	Indoor Coil Temperature
H.4	Indoor Setting Temperature

10. FIELD SETTING

10.2 Instructions for the function setting of access control, fire protection

10.2.1 Factory setting

In case of using or cancelling the access control / fire protection function, use the wired controller to modify the parameters of indoor unit.

NOTE: please refer to “ Indoor unit parameter revision ” section in TC Manual for how to use the wired controller to modify the parameters of indoor unit.

10.2.2 Function introduction

- (1) Access control: control mode to control the unit startup & shutdown based on the ON & OFF state of the access control port.
- (2) Fire protection: control mode to control the unit startup & shutdown based on the ON & OFF state of the fire protection port.

10.2.3 Function setting

- (1) Hardware connection

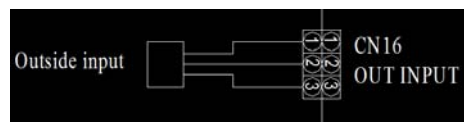


Figure 1 electrical wiring diagram

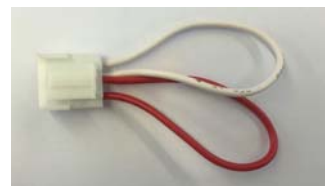


Figure 2 short wiring



Figure 3 main control board

3 pins of the OUT INPUT CN16 socket shown in the electrical wiring diagram of Figure 1 are short circuited state under as factory default (an external short circuit plug shown as Figure 2, and the OUT INPUT CN16 socket of main control board is shown as Figure 3).

(Illustration: the socket number in circuit is subject to the actual serial number of PCB.)

- 1) When using the door lock function, the red wire should be cut and connect the door lock control switch attached to it (supplied by user), and the connecting wire should be 22AWG or above. In normal conditions, the unit operates normally once the switch is closed and shuts down once the switch is off.
- 2) When using the fire protection function, the red wire should be cut and connect the fire protection lock control switch attached to it (supplied by the user), and the connecting wire should be 22AWG or above. In normal conditions, the unit operates normally once the switch is closed and shuts down once the switch is off.

10.FIELD SETTING

(2) Timing sequence description:

- Access control:

- 1) Control of entrance card disconnection: the air conditioner will be shut down after the access control signal is disconnected for 30 seconds. In this state, the indoor unit can't start. If the user performs start operation, the wired controller will not respond and displays power-off status.
- 2) Control of entrance card connection: after the closed circuit of entrance card interface, power-on restrictions are released, the wired controller maintains power-off and the startup & shutdown control is enabled.

- Fire protection

- 1) Access to fire protection: the air conditioner will be shut down and won't blow air after the access control signal is disconnected for 3 seconds. In this state, the indoor unit can't be started. If the user performs start operation, the wired controller shall not respond and displays power-off status.
- 2) Cancellation of fire protection: after the short circuit of fire protection signal, release power-on restrictions, the wired controller maintains power-off status and the startup & shutdown control is enabled.

- Relative priorities of instructions

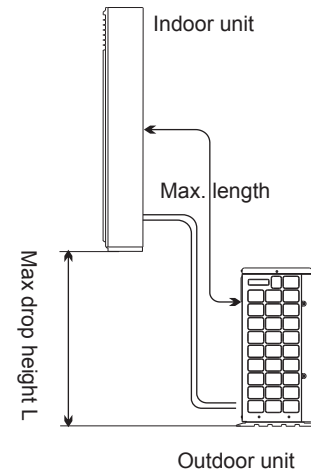
Access control and fire prevention functions shall not affect each other.

11. PIPING WORK AND REFRIGERANT CHARGE

11. Piping work and refrigerant charge

11.1 MAX. length allowed

Model Cooling Capacity (Btu/h)	Max. Pipe Length (m)	Max. Drop Length (m)
48K	50	30

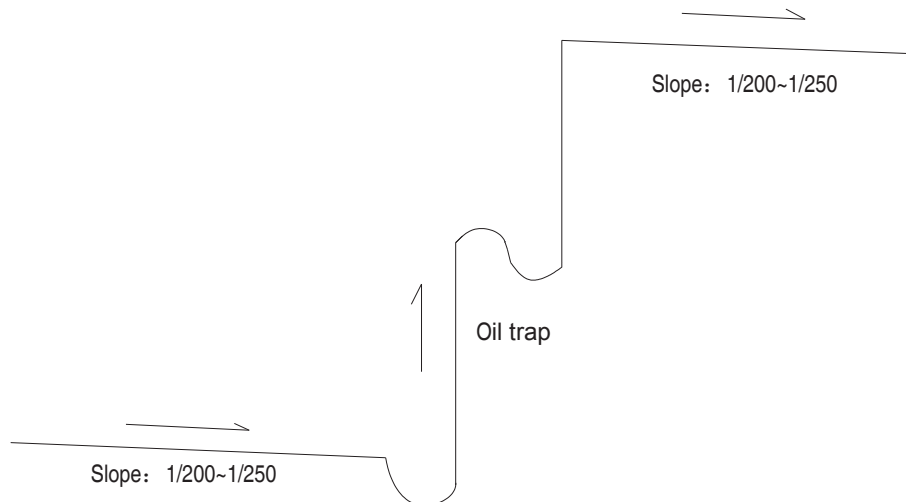


*Do your best to reduce the pipe length. Long pipe may cause capacity decrease.

Refrigerant precharge for a piping length of 5m is charged in the outdoor unit at the factory. When the piping is longer than 5m, additional refrigerant is necessary.

11.2 Oil trap

When the indoor unit is lower than outdoor unit and height difference is larger than 5m, install an oil trap every 5m (height difference) on suction piping.



NOTE:

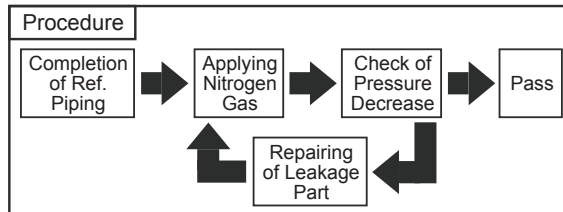
1. To avoid storing too much oil in the oil trap, the oil trap should be as short as possible.
2. The horizontal piping should slope down along the refrigerant flow direction, to bring the oil back to compressor, the slope is about 1/200 to 1/250.
3. To ensure better performance of cooling/heating, the refrigerant piping should be short and straight as much as possible.

11. PIPING WORK AND REFRIGERANT CHARGE

11.3 Air tight test

Do use nitrogen when performe air-tight test.

Connect the gauge manifold using charging hoses with a nitrogen cylinder to the check joints of the liquid line and the gas line stop valves. Perform the air-tight test. Don't open the gas line stop valves. Apply nitrogen gas pressure of 4.3MPa. Check for any gas leakage at the flare nut connections, or brazed parts by gas leakage detector or foaming agent. It is OK if gas pressure does not decrease. After the air tight test, release nitrogen gas.



11.4 Additional refrigerant charge

Although refrigerant has been charged into this unit, additional refrigerant charge is required according to piping length.

- The additional refrigerant precharge quantity should be determined and charged into the system according to the following procedure.
- Record the additional refrigerant quantity in order to facilitate maintenance and servicing activities.

Refrigerant charge before shipment (W0 (kg))

W0 is the outdoor unit refrigerant charge before shipment ;

Xg is additional refrigerant outdoor unit needs to charge according to piping length during installation.

Model	Refrigerant precharged before shipment (W0(g))	Total refrigerant pipe length	
		0m~5m	Longer than 5m
48K	2500	0g	$Xg = 28g / m \times (\text{Total pipe length(m)} - 5)$

12. INSTALLATION TOOLS AND INSTALLATION FLOW CHART

12.1 Necessary tools and instrument list for installation

No.	Tool	No.	Tool	No.	Tool	No.	Tool
1	Handsaw	6	Copper Pipe Bender	11	Spanner	16	Leveler
2	Phillips Screwdriver	7	Manual Water Pump	12	Charging Cylinder	17	Clamper for Solderless Terminals
3	Vacuum Pump	8	Pipe Cutter	13	Gauge Manifold	18	Hoist (for Indoor Unit)
4	Refrigerant Gas Hose	9	Brazing Kit	14	Cutter for Wires	19	Ammeter
5	Megohmmeter	10	Hexagon Wrench	15	Gas Leak Detector	20	Voltage Meter

Use tools and measuring instruments only for the new refrigerant which is in direct contact with refrigerant.

◇ : Interchangeability is available with R410A

● : Only for Refrigerant R32

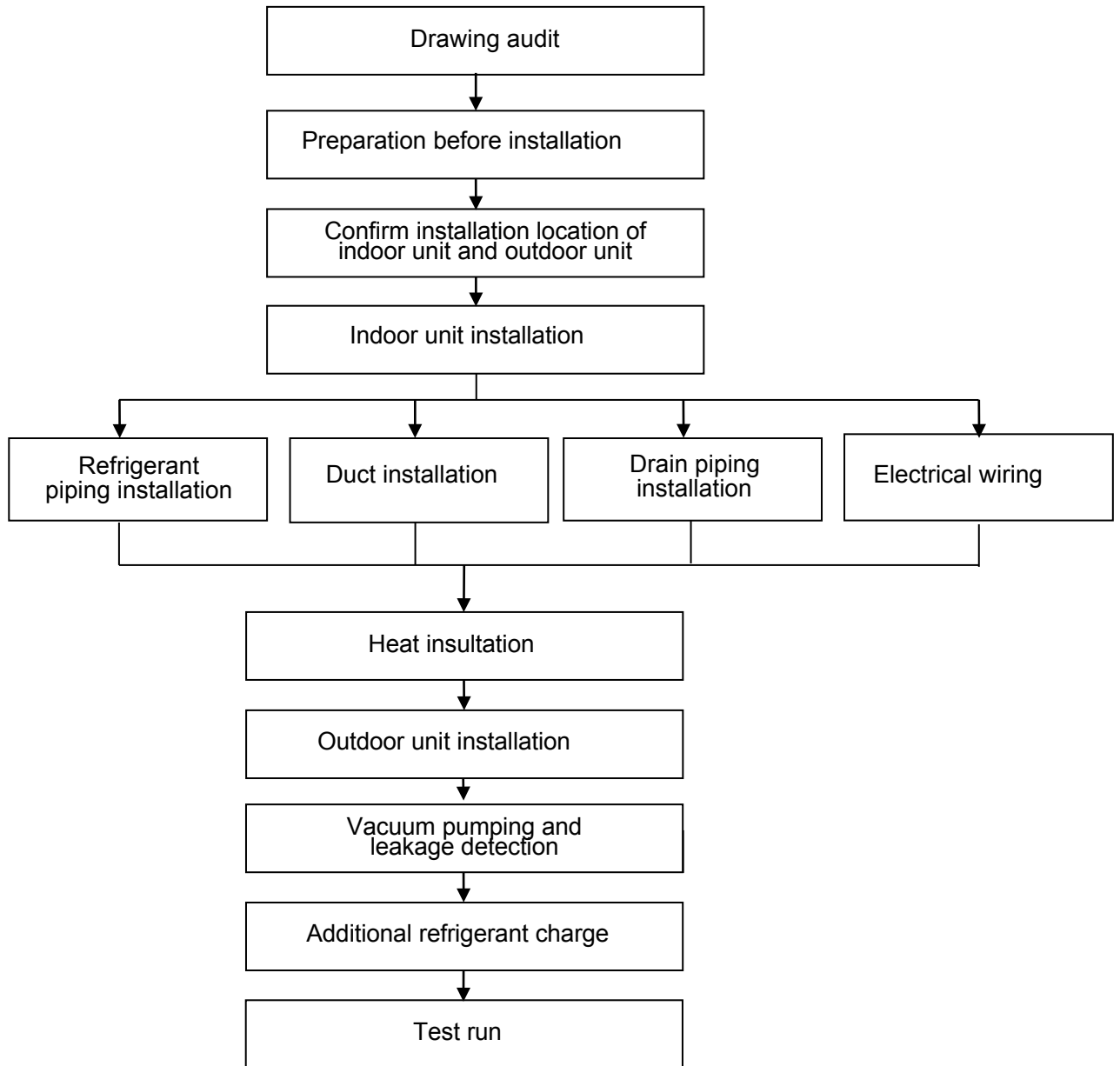
× : Prohibited

◆ : Only for Refrigerant R22

Measuring Instrument and Tool for R410A		R32	R22	Reason of Non-Interchangeability and Attention (*: Strictly Required)	Use
Refrigerant Pipe	Pipe Cutter Chamfering Reamer	◇	◇	-	Cutting Pipe Removing Burrs
	Flaring Tool	◇	◇	* The flaring tools for R32 are applicable to R22/R410A. * If using flaring tube, make dimension of tube larger for R410A. * In case of material 1/2H, flaring is not available.	Flaring for Tubes
	Pipe Bender	◇	◇	* In case of material 1/2H, bending is not available. Use elbow for bend and braze.	Bending
	Expanding Tool	◇	◇	* In case of material 1/2H, expanding of tube is not available. Use socket for connecting tube.	Expanding Tubes
	Torque Wrench	◇	××	* For $\phi 1/2$, $\phi 5/8$, spanner size is up 2mm.	Connection of Flare Nut
		◇	◇	* For $\phi 1/4$, $\phi 3/8$, $\phi 3/4$, spanner size is the same.	
	Brazing Tool	◇	◇	* Perform correct brazing work.	Brazing for Tubes
	Nitrogen Gas	◇	◇	* Strict Control against Contamin (Blow nitrogen during brazing.)	Prevention from Oxidation during Brazing
Lubrication Oil (for Flare Surface)	●	◆	* Use a synthetic oil which is equivalent to the oil used in the refrigeration cycle. * Synthetic oil absorbs moisture quickly.	Applying Oil to the Flared Surface	
Vacuum Drying & Refrigerant Charge	Refrigerant Cylinder	×	×	* Check refrigerant cylinder color. * Liquid refrigerant charging is required regarding zeotropic refrigerant. * Use the weight scale.	Refrigerant Charging
	Vacuum Pump	◇	◇	* The current ones are applicable. However, it is required to mount a vacuum pump adapter which can prevent from reverse flow when a vacuum pump stops, resulting in no reverse oil flow.	Vacuum Pumping
	Adapter for Vacuum Pump	◇	◆		Vacuum Pumping, Vacuum Holding, Refrigerant Charging and Check of Pressures
	Manifold Valve	◇	◆	* No interchangeability is available due to higher pressures when compared with R22. * Do not use current ones to the different refrigerant. If used, mineral oil will flow into the cycle and cause sludges, resulting in clogging or compressor failure.	
	Charging Hose	◇	×	* Connection diameter is different; R32/R410A: UNF1/2, R22: UNF7/16.	
	Weight Scale	◇	◇		Measuring Instrument for Refrigerant Charging
	Refrigerant Gas Leakage Detector	×	×	* The current gas leakage detector (R22) is not applicable due to different detecting method.	Gas Leakage Check

12. INSTALLATION TOOLS AND INSTALLATION FLOW CHART

12.2 Installation flow chart



NOTE: This flow is only for reference; for detailed information, please see installation manual section.

13. CONTROL MODE

13. Control mode

13.1 Indoor unit mode control

1. Main general technical parameters

- (1) Remote receiver distance: 8 m.
- (2) Remote receiver angle: Less than 80 degrees.
- (3) Temperature control accuracy: $\pm 1^{\circ}\text{C}$.
- (4) Time error: Less than 1%.

2. Functions of the controller

Control function

2.1 Operator-machine communication

Air conditioning and remote controller is provided with a temperature sensor. The remote controller on the temperature sensor detects the default settings of room temperature at room temperature. If the indoor control unit has not received remote control signal for a long time, it will automatically switch to the air conditioner body temperature sensor.

2.2 Timer function

(1) Timer on

When set to start in a time by the remote controller, the air conditioner starts in the timer on condition. When the set time is up, the air conditioner will turn on and operates in the preset conditions after receiving a signal from the remote controller. If the air conditioner has not received a signal from the remote controller when the set time is up, it will automatically start and operate in the preset conditions.

(2) Timer off

When set to stop in a set time by the remote controller, the air conditioner will start in the timer off condition. When the set time is up, the air conditioner will turn off after receiving a signal from the remote controller. If the air conditioner has not received a signal from the remote controller when the set time is up, it will turn off automatically.

- (3) Neither the turning on nor turning off operation will cancel the timer function.

2.3 Sleep

- (1) In the heating, cooling or dehumidifying mode, press the "Sleep" button on the remote controller to start or cancel the sleep function in turn, and at the same time the sleep icon on the display screen will be on or off accordingly.
- (2) In the heating mode, the set temperature will decrease automatically after the sleep function is started.

13. CONTROL MODE

(3) In the cooling mode, the set temperature will rise automatically after the sleep function is started.

(4) By default, the setting is to cancel the sleep function. Turning off the unit will also cancel the sleep function.

2.4 Highly efficient run function (only for some remote controller)

In Cooling, Dehumidification, Fan mode, press the "HIGH POWER " to enter the refrigeration mode, set the temperature automatically adjusting to the lowest temp; the Fan speed is powerful speed; frequency is high frequency operation.

In heating mode, press the "HIGH POWER" to enter the refrigeration mode, set the temperature automatically adjusting to the highest temp.; the Fan speed is powerful speed; frequency is high frequency operation.

Mute function (only for some remote controller)

In the indoor unit operation mode, you may turn on or turn off mute function with mute key.

The air conditioner will run with mute fan speed in mute mode.

2.5 Mute function (only for some remote controller)

In the indoor machine operation mode , You may turn on mute function and turn off mute function by mute key. The air conditioner will run by mute fan speed in mute mode.

2.6 Cooling wind prevention mode

In the heating-run, to prevent the indoor fan from blowing cold air, the indoor fan will stop or RUN slowly until the coil is warm.

2.7 Blow waste heating and waste cooling function

In the heating mode, when the air conditioner is turned off, the indoor heat exchanger temperature is still higher, so the air conditioner will continue to run the waste heat operation. In Cooling and dehumidification mode, after the compressor stops, indoor unit will continue to set the speed of operation for a period of time.

2.8 Dehumidifying method:

If remote control setting is in dehumidifying mode, indoor unit is forced to run at low speed (high power key or a strong bond also maintains a low wind speed), and the outdoor unit runs according to the refrigeration mode operation.

2.9 Self Recovery of Power Break

When the power supply is recovered after a failure, all presets are still effective and the air-conditioner can run according to the previous setting.

How to set/cancel:

It can be set /cancelled with the wired remote controller.

For details, see internal control parameter adjustment.

13. CONTROL MODE

2.10 Fault code

The fault code can be shown by LED on the indoor panel.

2.11 Filter cleaning

Filter cleaning LED will light up when air filter is clogged with dust. How to set/cancel: It can be set /cancelled with the wired remote controller.

For details, see internal control parameter adjustment.

13.2 Outdoor unit mode control

Control function

1. Cooling Anti-Freeze Protection

The indoor coil sensor functions as real time temperature detector of evaporator. It prevents the indoor unit evaporator temperature becoming too low. If the indoor coil temperature is too low, the compressor will automatically start the protection mode.

2. Overload Protection

To prevent system overload caused by excessive pressure, the machine will implement real-time detection when outdoor coil temperature is too high during cooling mode or indoor coil temperature is too high during heating mode.

3. Exhaust temperature protection

To prevent deterioration due to high exhaust temperature of compressor, the machine will realize the real-time detection of the exhaust gas temperature. If the temperature is too high, the compressor will come to automatic protection mode.

4. Oil-return Control

When the compressor runs at low frequency for a long time, the control system will start the oil-return mechanism. The oil in the system returns to the compressor.

5. Operation Mode

Air conditioning mode is the operation mode set by users through remote controller, four modes are available: cooling, heating, dehumidification, and fan mode.

6. Four-way Valve Control

Four-way valve of the outdoor unit shuts down in cooling and defrosting mode but starts in heating mode. During the heating process, the four-way valve stops working for a period of time after the compressor is disconnected.

7. Start-up Protection

To prevent compressor from restarting frequently when the system pressure has not been completely balanced, and it cannot be restarted within 3 minutes.

8. Pressure Protection

When the pressure increases to a preset value, the pressure switch will automatically protect the unit. The compressor will stop and report the fault code protection.

14. SENSOR PARAMETER

14. Sensor parameter

1. THE PARAMETER OF OUTDOOR COMPRESSOR DISCHARGE TEMPERATURE SENSOR:

($R_0=187.25K\pm 6.3\%$; $R_{100}=3.77K\pm 2.5K$; $B0/100=3979K\pm 1\%$)

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR (MIN)%	DR (MAX)%
-30	908.2603	985.5274	1065.1210	-7.84	7.47
-29	855.3955	927.6043	1001.9150	-7.78	7.42
-28	805.9244	873.4324	924.8368	-7.73	5.56
-27	759.6097	822.7471	887.5944	-7.67	7.31
-26	716.2320	775.3041	835.9165	-7.62	7.25
-25	675.5881	730.8775	787.5529	-7.56	7.20
-24	637.4902	689.2583	742.2720	-7.51	7.14
-23	601.7645	650.2533	699.8601	-7.46	7.09
-22	568.2499	613.6835	660.1191	-7.40	7.03
-21	536.7970	579.3832	622.8658	-7.35	6.98
-20	507.2676	547.1989	587.9307	-7.30	6.93
-19	497.5332	516.9882	555.1565	-3.76	6.88
-18	453.4748	488.6192	524.3977	-7.19	6.82
-17	428.9819	461.9693	495.5191	-7.14	6.77
-16	405.9517	436.9251	486.3954	-7.09	10.17
-15	384.2888	413.3808	442.9105	-7.04	6.67
-14	363.9047	391.2386	418.9563	-6.99	6.62
-13	344.7169	370.4072	396.4325	-6.94	6.56
-12	326.6497	350.8019	375.2461	-6.88	6.51
-11	309.6286	332.3441	355.3104	-6.83	6.46
-10	293.5903	314.9620	336.5448	-6.79	6.41
-9	278.4719	298.5822	318.3744	-6.74	6.22
-8	264.2156	283.1464	302.2294	-6.69	6.31
-7	250.7678	268.5936	286.5448	-6.64	6.26
-6	238.0783	254.8686	271.7603	-6.59	6.22
-5	226.1003	241.9200	257.8193	-6.54	6.17
-4	214.7903	229.6997	244.6593	-6.49	6.11
-3	204.1073	218.1630	232.2612	-6.44	6.07
-2	194.0135	207.2681	220.5495	-6.39	6.02
-1	184.4732	196.9759	209.4913	-6.35	5.97
0	175.4533	187.2500	199.0468	-6.30	5.93
1	166.8952	178.0255	189.1529	-6.25	5.88
2	158.8023	169.3067	179.8058	-6.20	5.84
3	151.1467	161.0633	170.9724	-6.16	5.80
4	143.9026	153.2667	162.6216	-6.11	5.75
5	137.0455	145.8905	154.7246	-6.06	5.71
6	130.5528	138.9097	147.2544	-6.02	5.67
7	124.4033	132.3011	140.1856	-5.97	5.62
8	118.5769	126.0429	133.4946	-5.92	5.58
9	113.0550	120.1146	127.1591	-5.88	5.54
10	107.8202	114.4973	121.1586	-5.83	5.50
11	102.8560	109.1728	115.4734	-5.79	5.46
12	98.1470	104.1246	110.0855	-5.74	5.41
13	93.6787	99.3367	104.9778	-5.70	5.37
14	89.4378	94.7946	100.1342	-5.65	5.33
15	85.4114	90.4842	95.5398	-5.61	5.29
16	81.5875	86.3926	91.1805	-5.56	5.25
17	77.9551	82.5076	87.0430	-5.52	5.21
18	74.5034	78.8177	83.1150	-5.47	5.17
19	71.2227	75.3122	79.3848	-5.43	5.13

14. SENSOR PARAMETER

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR (MIN)%	DR (MAX)%
20	68.1036	71.9808	75.8414	-5.39	5.09
21	65.1373	68.8141	72.4746	-5.34	5.05
22	62.3155	65.8032	69.2746	-5.30	5.01
23	59.6306	62.9395	66.2324	-5.26	4.97
24	57.0752	60.2152	63.3395	-5.21	4.93
25	54.6424	57.6227	60.5877	-5.17	4.89
26	52.3258	55.1551	57.9695	-5.13	4.85
27	50.1192	52.8058	55.4778	-5.09	4.82
28	48.0168	50.5684	53.1058	-5.05	4.78
29	46.0133	48.4371	50.8472	-5.00	4.74
30	44.1034	46.4046	48.6960	-4.96	4.71
31	42.2825	44.4711	46.6466	-4.92	4.66
32	40.5458	42.6261	44.6937	-4.88	4.63
33	38.8891	40.8668	42.8323	-4.84	4.59
34	37.3084	39.1890	41.0576	-4.80	4.55
35	35.7998	37.5883	39.3653	-4.76	4.51
36	34.3596	36.0609	37.7511	-4.72	4.48
37	32.9844	34.6030	36.2109	-4.68	4.44
38	31.6710	33.2113	34.7412	-4.64	4.40
39	30.4164	31.8823	33.3383	-4.60	4.37
40	29.2176	30.6130	31.9988	-4.56	4.33
41	28.0718	29.4004	30.7197	-4.52	4.29
42	26.9765	28.2417	29.4979	-4.48	4.26
43	25.9293	27.1342	28.3306	-4.44	4.22
44	24.9277	26.0755	27.2150	-4.40	4.19
45	23.9697	25.0632	26.1488	-4.36	4.15
46	23.0530	24.0950	25.1293	-4.32	4.12
47	22.1757	23.1688	24.1545	-4.29	4.08
48	21.3360	22.2826	23.2221	-4.25	4.05
49	20.5321	21.4345	22.3301	-4.21	4.01
50	19.7623	20.6226	21.4766	-4.17	3.98
51	19.0261	19.8468	20.6612	-4.14	3.94
52	18.3211	19.1040	19.8808	-4.10	3.91
53	17.6458	18.3926	19.1338	-4.06	3.87
54	16.9986	17.7113	18.4185	-4.02	3.84
55	16.3784	17.0537	17.7335	-3.96	3.83
56	15.7839	16.4332	17.0774	-3.95	3.77
57	15.2139	15.8338	16.4488	-3.92	3.74
58	14.6673	15.2592	15.8464	-3.88	3.71
59	14.1430	14.7083	15.2690	-3.84	3.67
60	13.6400	14.1799	14.7154	-3.81	3.64
61	13.1573	13.6730	14.1846	-3.77	3.61
62	12.6941	13.1868	13.6756	-3.74	3.57
63	12.2494	12.7202	13.1872	-3.70	3.54
64	11.8224	12.2723	12.7186	-3.67	3.51
65	11.4124	11.8424	12.2690	-3.63	3.48
66	11.0185	11.4295	11.8373	-3.60	3.45
67	10.6401	11.0331	11.4230	-3.56	3.41
68	10.2765	10.6522	11.0251	-3.53	3.38
69	9.9271	10.2863	10.6429	-3.49	3.35
70	9.5912	9.9348	10.2756	-3.46	3.32
71	9.2682	9.5968	9.9231	-3.42	3.29
72	8.9576	9.2720	9.5841	-3.39	3.26
73	8.6589	8.9597	9.2583	-3.36	3.23
74	8.3716	8.6594	8.9451	-3.32	3.19
75	8.0951	8.3705	8.6440	-3.29	3.16
76	7.8290	8.0926	8.3544	-3.26	3.13
77	7.5730	7.8252	8.0758	-3.22	3.10

14. SENSOR PARAMETER

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR (MIN)%	DR (MAX)%
78	7.3264	7.5679	7.8078	-3.19	3.07
79	7.0891	7.3202	7.5499	-3.16	3.04
80	6.8605	7.0818	7.3018	-3.12	3.01
81	6.6403	6.8522	7.0629	-3.09	2.98
82	6.4282	6.6311	6.8329	-3.06	2.95
83	6.2239	6.4182	6.6115	-3.03	2.92
84	6.0269	6.2131	6.3982	-3.00	2.89
85	5.8371	6.0154	6.1928	-2.96	2.86
86	5.6542	5.8249	5.9949	-2.93	2.84
87	5.4777	5.6413	5.8042	-2.90	2.81
88	5.3076	5.4644	5.6205	-2.87	2.78
89	5.1435	5.2937	5.4433	-2.84	2.75
90	4.9853	5.1292	5.2726	-2.81	2.72
91	4.8326	4.9705	5.1079	-2.77	2.69
92	4.6852	4.8174	4.9492	-2.74	2.66
93	4.5430	4.6697	4.7960	-2.71	2.63
94	4.4058	4.5272	4.6483	-2.68	2.61
95	4.2733	4.3896	4.5058	-2.65	2.58
96	4.1453	4.2568	4.3683	-2.62	2.55
97	4.0218	4.1287	4.2355	-2.59	2.52
98	3.9024	4.0049	4.1074	-2.56	2.50
99	3.7872	3.8854	3.9837	-2.53	2.47
100	3.6758	3.7700	3.8643	-2.50	2.44
101	3.5661	3.6585	3.7512	-2.53	2.47
102	3.4601	3.5509	3.6419	-2.56	2.50
103	3.3577	3.4468	3.5362	-2.59	2.53
104	3.2588	3.3463	3.4341	-2.61	2.56
105	3.1632	3.2491	3.3353	-2.64	2.58
106	3.0708	3.1551	3.2398	-2.67	2.61
107	2.9816	3.0643	3.1475	-2.70	2.64
108	2.8953	2.9765	3.0582	-2.73	2.67
109	2.8118	2.8915	2.9717	-2.76	2.70
110	2.7311	2.8093	2.8881	-2.78	2.73
111	2.6531	2.7299	2.8072	-2.81	2.75
112	2.5776	2.6530	2.7289	-2.84	2.78
113	2.5046	2.5785	2.6531	-2.87	2.81
114	2.4340	2.5065	2.5798	-2.89	2.84
115	2.3656	2.4368	2.5087	-2.92	2.87
116	2.2995	2.3693	2.4400	-2.95	2.90
117	2.2354	2.3040	2.3733	-2.98	2.92
118	2.1734	2.2407	2.3088	-3.00	2.95
119	2.1134	2.1795	2.2463	-3.03	2.97
120	2.0553	2.1201	2.1858	-3.06	3.01
121	1.9991	2.0626	2.1271	-3.08	3.03
122	1.9446	2.0070	2.0702	-3.11	3.05
123	1.8918	1.9530	2.0151	-3.13	3.08
124	1.8406	1.9007	1.9617	-3.16	3.11
125	1.7911	1.8500	1.9099	-3.18	3.14
126	1.7430	1.8009	1.8597	-3.22	3.16
127	1.6965	1.7533	1.8110	-3.24	3.19
128	1.6514	1.7071	1.7638	-3.26	3.21
129	1.6076	1.6623	1.7180	-3.29	3.24
130	1.5652	1.6189	1.6736	-3.32	3.27

14. SENSOR PARAMETER

2. THE PARAMETER OF THE OTHER SENSOR IN INDOOR AND OUTDOOR UNIT: ($R_0=15K\pm 2\%$;
 $B0/100=3450K\pm 2\%$)

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR (MIN)%	DR (MAX)%
-30	60.78	64.77	68.99	-6.16	6.12
-29	57.75	61.36	65.16	-5.88	5.83
-28	54.89	58.15	61.58	-5.61	5.57
-27	52.19	55.14	58.23	-5.35	5.31
-26	49.63	52.30	55.08	-5.11	5.05
-25	47.21	49.62	52.13	-4.86	4.81
-24	44.92	47.10	49.37	-4.63	4.60
-23	42.76	44.73	46.78	-4.40	4.38
-22	40.71	42.49	44.34	-4.19	4.17
-21	38.77	40.38	42.05	-3.99	3.97
-20	36.93	38.39	39.90	-3.80	3.78
-19	35.18	36.51	37.87	-3.64	3.59
-18	33.53	34.74	35.97	-3.48	3.42
-17	31.96	33.06	34.17	-3.33	3.25
-16	30.48	31.47	32.49	-3.15	3.14
-15	29.07	29.97	30.89	-3.00	2.98
-14	27.73	28.56	29.39	-2.91	2.82
-13	26.46	27.22	27.98	-2.79	2.72
-12	25.26	25.95	26.64	-2.66	2.59
-11	24.11	24.75	25.38	-2.59	2.48
-10	23.03	23.61	24.19	-2.46	2.40
-9	21.99	22.53	23.06	-2.40	2.30
-8	21.01	21.51	22.00	-2.32	2.23
-7	20.08	20.54	20.99	-2.24	2.14
-6	19.19	19.62	20.04	-2.19	2.10
-5	18.35	18.74	19.14	-2.08	2.09
-4	17.55	17.92	18.29	-2.06	2.02
-3	16.78	17.13	17.48	-2.04	2.00
-2	16.06	16.38	16.71	-1.95	1.97
-1	15.36	15.67	15.98	-1.98	1.94
0	14.70	15.00	15.29	-2.00	1.90
1	14.08	14.36	14.64	-1.95	1.91
2	13.48	13.75	14.02	-1.96	1.93
3	12.91	13.17	13.43	-1.97	1.94
4	12.36	12.62	12.87	-2.06	1.94
5	11.85	12.09	12.34	-1.99	2.03
6	11.35	11.59	11.83	-2.07	2.03
7	10.88	11.11	11.35	-2.07	2.11
8	10.43	10.66	10.89	-2.16	2.11
9	9.999	10.230	10.450	-2.26	2.11
10	9.590	9.816	10.040	-2.30	2.23

14. SENSOR PARAMETER

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR (MIN)%	DR (MAX)%
11	9.199	9.422	9.647	-2.37	2.33
12	8.826	9.047	9.269	-2.44	2.40
13	8.470	8.689	8.910	-2.52	2.48
14	8.129	8.347	8.567	-2.61	2.57
15	7.804	8.021	8.240	-2.71	2.66
16	7.493	7.709	7.928	-2.80	2.76
17	7.196	7.412	7.630	-2.91	2.86
18	6.912	7.127	7.346	-3.02	2.98
19	6.640	6.855	7.074	-3.14	3.10
20	6.381	6.595	6.815	-3.24	3.23
21	6.132	6.347	6.567	-3.39	3.35
22	5.894	6.109	6.330	-3.52	3.49
23	5.667	5.882	6.103	-3.66	3.62
24	5.449	5.664	5.886	-3.80	3.77
25	5.240	5.456	5.678	-3.96	3.91
26	5.048	5.260	5.478	-4.03	3.98
27	4.864	5.072	5.286	-4.10	4.05
28	4.687	4.891	5.101	-4.17	4.12
29	4.517	4.717	4.924	-4.24	4.20
30	4.355	4.550	4.753	-4.29	4.27
31	4.198	4.390	4.589	-4.37	4.34
32	4.048	4.236	4.431	-4.44	4.40
33	3.904	4.089	4.280	-4.52	4.46
34	3.766	3.946	4.134	-4.56	4.55
35	3.663	3.810	3.994	-3.86	4.61
36	3.506	3.679	3.859	-4.70	4.66
37	3.383	3.552	3.729	-4.76	4.75
38	3.265	3.431	3.604	-4.84	4.80
39	3.152	3.314	3.484	-4.89	4.88
40	3.043	3.202	3.368	-4.97	4.93
41	2.938	3.094	3.257	-5.04	5.00
42	2.838	2.990	3.149	-5.08	5.05
43	2.741	2.890	3.046	-5.16	5.12
44	2.648	2.793	2.946	-5.19	5.19
45	2.558	2.701	2.850	-5.29	5.23
46	2.472	2.611	2.758	-5.32	5.33
47	2.389	2.525	2.669	-5.39	5.40
48	2.309	2.443	2.583	-5.49	5.42
49	2.232	2.363	2.500	-5.54	5.48
50	2.158	2.286	2.421	-5.60	5.58
51	2.087	2.212	2.344	-5.65	5.63
52	2.018	2.140	2.269	-5.70	5.69
53	1.952	2.072	2.198	-5.79	5.73
54	1.888	2.005	2.129	-5.84	5.82

14. SENSOR PARAMETER

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR (MIN)%	DR (MAX)%
55	1.827	1.941	2.062	-5.87	5.87
56	1.767	1.880	1.998	-6.01	5.91
57	1.710	1.820	1.936	-6.04	5.99
58	1.655	1.763	1.876	-6.13	6.02
59	1.602	1.707	1.818	-6.15	6.11
60	1.551	1.654	1.762	-6.23	6.13
61	1.502	1.602	1.709	-6.24	6.26
62	1.452	1.553	1.657	-6.50	6.28
63	1.409	1.505	1.606	-6.38	6.29
64	1.364	1.458	1.558	-6.45	6.42
65	1.322	1.413	1.511	-6.44	6.49
66	1.280	1.370	1.466	-6.57	6.55
67	1.241	1.328	1.422	-6.55	6.61
68	1.202	1.288	1.379	-6.68	6.60
69	1.165	1.249	1.339	-6.73	6.72
70	1.129	1.211	1.299	-6.77	6.77
71	1.095	1.175	1.261	-6.81	6.82
72	1.061	1.140	1.224	-6.93	6.86
73	1.029	1.106	1.188	-6.96	6.90
74	0.9977	1.073	1.153	-7.02	6.94
75	0.9676	1.041	1.120	-7.05	7.05
76	0.9385	1.011	1.088	-7.17	7.08
77	0.9104	0.9810	1.056	-7.20	7.10
78	0.8833	0.9523	1.026	-7.25	7.18
79	0.8570	0.9246	0.9971	-7.31	7.27
80	0.8316	0.8977	0.9687	-7.36	7.33
81	0.8071	0.8717	0.9412	-7.41	7.38
82	0.7834	0.8466	0.9146	-7.47	7.43
83	0.7604	0.8223	0.8888	-7.53	7.48
84	0.7382	0.7987	0.8639	-7.57	7.55
85	0.7167	0.7759	0.8397	-7.63	7.60
86	0.6958	0.7537	0.8161	-7.68	7.65
87	0.6755	0.7322	0.7933	-7.74	7.70
88	0.6560	0.7114	0.7712	-7.79	7.75
89	0.6371	0.6913	0.7498	-7.84	7.80
90	0.6188	0.6718	0.7291	-7.89	7.86
91	0.6011	0.6530	0.7051	-7.95	7.39
92	0.5840	0.6348	0.6897	-8.00	7.96
93	0.5674	0.6171	0.6709	-8.05	8.02
94	0.5514	0.6000	0.6527	-8.10	8.07
95	0.5359	0.5835	0.6350	-8.16	8.11
96	0.5209	0.5675	0.6179	-8.21	8.16
97	0.5064	0.5519	0.6014	-8.24	8.23
98	0.4923	0.5369	0.5853	-8.31	8.27

14. SENSOR PARAMETER

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR (MIN)%	DR (MAX)%
99	0.4787	0.5224	0.5698	-8.37	8.32
100	0.4655	0.5083	0.5547	-8.42	8.36
101	0.4528	0.4946	0.5401	-8.45	8.42
102	0.4404	0.4814	0.5259	-8.52	8.46
103	0.4284	0.4685	0.5121	-8.56	8.51
104	0.4168	0.4561	0.4988	-8.62	8.56
105	0.4056	0.4440	0.4859	-8.65	8.62
106	0.3947	0.4323	0.4733	-8.70	8.66
107	0.3841	0.4210	0.4611	-8.76	8.70
108	0.3739	0.4100	0.4493	-8.80	8.75
109	0.3640	0.3993	0.4379	-8.84	8.81
110	0.3544	0.3890	0.4267	-8.89	8.84
111	0.3450	0.3789	0.4159	-8.95	8.90
112	0.3360	0.3692	0.4055	-8.99	8.95
113	0.3272	0.3597	0.3953	-9.04	9.01
114	0.3187	0.3505	0.3854	-9.07	9.06
115	0.3104	0.3416	0.3758	-9.13	9.10
116	0.3024	0.3330	0.3665	-9.19	9.14
117	0.2947	0.3246	0.3574	-9.21	9.18
118	0.2871	0.3164	0.3468	-9.26	8.77
119	0.2798	0.3085	0.3401	-9.30	9.29
120	0.2727	0.3008	0.33	-9.34	9.34

15. TROUBLESHOOTING

15. Troubleshooting

15.1 Trouble guide

Troubleshooting for Normal Malfunction

Troubleshooting	Possible Reason of Abnormality	How to Deal With
Air conditioner can not start up	<ol style="list-style-type: none"> 1. Power supply failure; 2. Trip of breaker or blow of fuse; 3. Power voltage is too low; 4. Improper setting of remote controller; 5. Remote controller is short of power. 	<ol style="list-style-type: none"> 1. Check power supply circuit; 2. Measure insulation resistance to ground to see if there is any leakage; 3. Check if there is a defective contact or leak current in the power supply circuit; 4. Check and set remote controller again; 5. Replace batteries.
The compressor starts or stops frequently	The air inlet and outlet has been blocked.	Remove block obstacles.
Poor cooling/heating	<ol style="list-style-type: none"> 1. The outdoor heat exchanger is dirty, such as condenser; 2. There are heating devices indoors; 3. The air tightness is not enough, and people come in and out too frequently. 4. Block of outdoor heat exchanger; 5. Improper setting of temperature. 	<ol style="list-style-type: none"> 1. Clean the heat exchanger of the outdoor unit, such as condenser ; 2. Remove heating devices; 3. Keep certain air tightness indoors; 4. Remove block obstacles; 5. Check and try to set temperature again.
Sound from deforming parts	During system starting or stopping, a sound might be heard. However, this is due to thermal deformation of plastic parts.	It is not abnormal, and the sound will disappear soon.
Water leakage	<ol style="list-style-type: none"> 1. Drainage pipe blocked or broken; 2. Wrap of refrigerant pipe joint is not closed completely. 	<ol style="list-style-type: none"> 1. Change the drainage pipe; 2. Re-wrap and make it tight.

Troubleshooting according to fault codes

When the air conditioner failure occurs, the fault code will be displayed on the control board, wired remote controller or display panel.

How to check fault codes

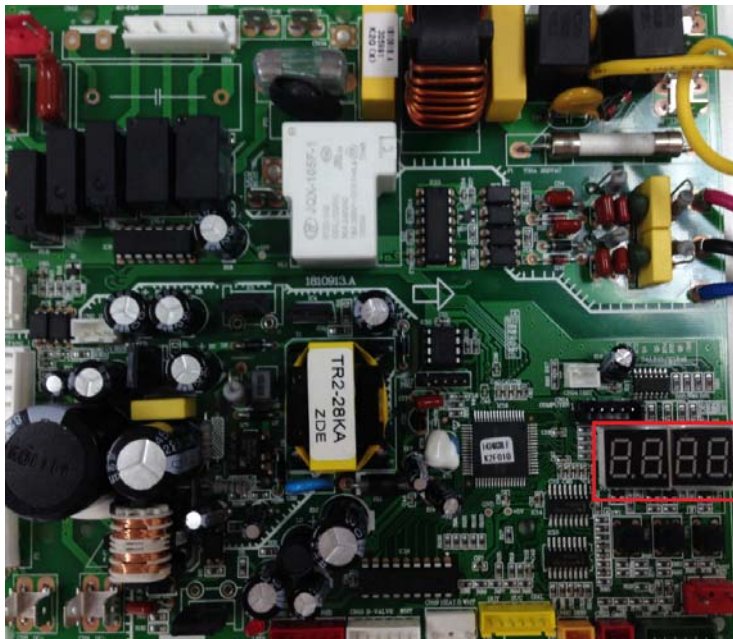
Indoor Unit

1. Continue pressing "SLEEP" button of wireless remote controller for 4 times, fault codes will display on the LCD for 10 seconds, and automatically disappears after 10 seconds.
2. Display on the panel.

15. TROUBLESHOOTING

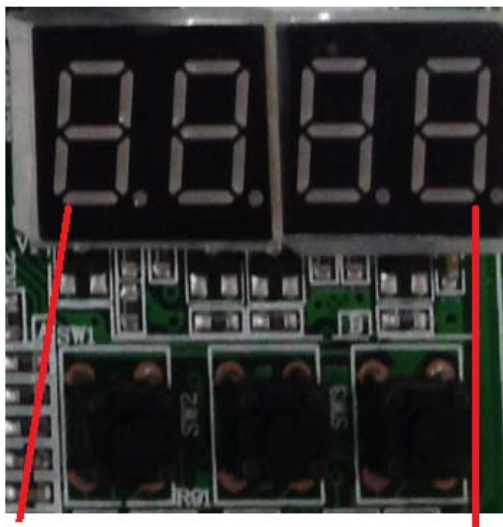
Outdoor Unit

Fault code will display on digital tube board.



Outdoor Control Board

7-segment display



E shows failure occur

Display ERROR Code

15. TROUBLESHOOTING

15.2 Fault codes

The following is the fault code table of outdoor unit.

Table 1 Outdoor fault code

Fault code	Fault Description	Possible Reasons for Abnormality	How to Deal With	Remarks
1	Outdoor ambient temperature sensor fault	<ol style="list-style-type: none"> 1.The outdoor ambient temperature sensor is connected loosely; 2.The outdoor ambient temperature sensor fails to work; 3.The sampling circuit fails. 	<ol style="list-style-type: none"> 1. Reconnect the outdoor ambient temperature sensor; 2. Replace the outdoor ambient temperature sensor components; 3. Replace the outdoor control board components. 	
2	Outdoor coil temperature sensor fault	<ol style="list-style-type: none"> 1. The outdoor coil temperature sensor is connected loosely; 2. The outdoor coil temperature sensor fails; 3. The sampling circuit fails. 	<ol style="list-style-type: none"> 1. Reconnect the outdoor coil temperature sensor; 2. Replace the outdoor coil temperature sensor components; 3. Replace the outdoor control board components. 	
3	The unit over-current turn off fault	<ol style="list-style-type: none"> 1. Control board current sampling circuit fails; 2. The current is over high because of the supply voltage is too low; 3. The compressor is blocked; 4. Overload in cooling mode; 5. Overload in heating mode. 	<ol style="list-style-type: none"> 1. Replace the electrical control board components; 2. Normal protection; 3. Replace the compressor; 4. Please see the NOTE 3; 5. Please see the NOTE 4. 	
4	EEprom Data error	<ol style="list-style-type: none"> 1.EE components fails; 2.EE components control circuit fails; 3.EE components are inserted incorrectly. 	<ol style="list-style-type: none"> 1. Replace the EE components; 2. Replace the outdoor control board components; 3. Reassembly the EE components. 	
5	Cooling freezing protection(the indoor coil temperature is too low) or heating overload (indoor coil temperature is too high)	<ol style="list-style-type: none"> 1. The indoor unit can not blow air normally; 2. The room temperature is too low in cooling mode or the room temperature is too high in heating; 3.The filter is dirty; 4.The duct resistance is too high to result in low air flow; 5.The setting fan speed is too low; 6.The indoor unit is not installed in accordance with the installation standards, and the air inlet is too close to the air outlet . 	<ol style="list-style-type: none"> 1. Check whether the indoor fan, indoor fan motor and evaporator work normally; 2. Normal protection; 3. Clean the filter; 4. Check the volume control valve, duct length etc.; 5. Set the speed with high speed; 6. Reinstall the indoor unit referring to the user manual to change the distance between the indoor unit and the wall or ceiling. 	
7	The communication fault between the indoor unit and outdoor unit	<ol style="list-style-type: none"> 1.The connection cable is connected improperly between the indoor unit and outdoor unit; 2.The communication cable is connected loosely; 3.The communication cable fails; 4.The indoor control board fails; 5.The outdoor control board fails; 6.Communication circuit fuse open; 7.The specification of communication cable is incorrect. 	<ol style="list-style-type: none"> 1. Reconnect the connection cable referring to the wiring diagram; 2. Reconnect the communication cable; 3. Replace the communication cable; 4. Replace the indoor control board; 5. Replace the outdoor control board; 6. Check the communication circuit, adjust the DIP switch and the short-circuit fuse; 7. Choose suitable communication cable referring to the user manual. 	
13	Compressor overheat protector device	<ol style="list-style-type: none"> 1. The wiring of the overload protector is connected loosely. 2. The overload protector fails. 3. The refrigerant is not enough; 4. The installation pipe is longer than the normal one, but no extra refrigerant is added; 5. The expansion valve fails; 6. The outdoor control board fails. 	<ol style="list-style-type: none"> 1. Reconnect the wiring of the overload protector; 2. Replace the overload protector; 3. Check the welding point of the unit to confirm whether it leaks, and then recharge the refrigerant; 4. Add the refrigerant; 5. Replace the expansion valve; 6. Replace the outdoor control board. 	

15. TROUBLESHOOTING

Fault code	Fault Description	Possible Reasons for Abnormality	How to Deal With	Remarks
14	The high pressure switch operates or the unit stops for high pressure protection	<ol style="list-style-type: none"> 1. The wiring of the high pressure protector is connected loosely; 2. The high pressure protector fails; 3. The outdoor control board is abnormal; 4. Overload in cooling; 5. Overload in heating. 	<ol style="list-style-type: none"> 1. Reconnect the wiring the high pressure protector; 2. Replace the high pressure protector; 3. Replace the outdoor control board; 4. Please refer to the NOTE 3; 5. Please refer to the NOTE 4. 	Applied to models with high pressure switch or pressure sensor
15	The low pressure switch protection or the unit turn off for low pressure protection	<ol style="list-style-type: none"> 1. The wiring of the low pressure switch is connected loosely; 2. The low pressure switch fails; 3. The refrigerant is not enough; 4. The expansion valve fails in Heating mode; 5. The outdoor control board is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the wiring of the low pressure switch; 2. Replace the low pressure switch; 3. Check the welding point to confirm whether the unit leaks, and then add some refrigerant; 4. Replace the expansion valve; 5. Replace the outdoor control board. 	Applied to models with low pressure switch or pressure sensor
16	Overload protection in cooling mode	System overloads.	Please refer to the NOTE3.	
17	Discharge temperature sensor fault	<ol style="list-style-type: none"> 1. The wiring of the discharge temperature sensor is connected loosely; 2. The discharge temperature sensor fails; 3. The sampling circuit is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the wiring of the discharge temperature sensor; 2. Replace the discharge temperature sensor; 3. Replace the outdoor control board. 	
22	The defrosting sensor fault	<ol style="list-style-type: none"> 1. The wiring of the defrosting sensor is connected loosely; 2. The defrosting sensor fails; 3. The sampling circuit is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the wiring of the defrosting sensor; 2. Replace the defrosting sensor; 3. Replace the outdoor control board. 	
45	IPM fault	There are many reasons for this failure. You can check the driver board fault LED to further analyze the fault code of the drive board and to learn about what leads to the fault and how to operate it. Specific information can be seen in table 5, table 6.	See attached "analysis of the driving board fault".	
46	IPM and control board communication fault	<ol style="list-style-type: none"> 1. The cable between the control board and the driver board is connected loosely; 2. The cable between the control board and the driver board fails; 3. The driver board fails; 4. The control board fails. 	<ol style="list-style-type: none"> 1. Reconnect the cable between the control board and the driver board; 2. Replace the communication cable between the control board and the driver board; 3. Replace the driver board; 4. Replace the control board. 	
47	Discharge temperature too high fault	<ol style="list-style-type: none"> 1. The refrigerant of the unit is not enough; 2. The refrigerant of the unit is not enough due to adding the length of the installation pipe; 3. Throttling service fails; 4. The outdoor ambient temperature is too high. 	<ol style="list-style-type: none"> 1. Check the welding point to confirm whether the unit has leakage point, and then add some refrigerant. 2. Add some refrigerant referring to the installation user manual; 3. Replace the throttling service (such as capillary, expansion valve) 4. Normal protection. 	
48	the outdoor DC fan motor fault (upper fan motor)	<ol style="list-style-type: none"> 1. The wiring of the up DC fan motor is connected loosely; 2. The cord of the up DC fan motor fails; 3. The up DC fan motor fails; 4. The drive circuit of the up DC fan motor fails; 5. The outdoor fan has been blocked. 	<ol style="list-style-type: none"> 1. Reconnect the wiring of the up DC fan motor; 2. Replace the up DC fan motor; 3. Replace the up DC fan motor; 4. Replace the driver board of the fan motor; 5. Check the outdoor fan and ensure the outdoor fan can run normally. 	

15. TROUBLESHOOTING

The following is the fault code table of indoor unit.

Table 2 Indoor fault code

Fault code	Fault Description	Possible Reasons for Abnormality	How to Deal With	Remarks
64	Communication between Indoor & Outdoor unit Fault	<ol style="list-style-type: none"> 1. The indoor unit and the outdoor unit are not connected properly; 2. The communication cable is connected loosely; 3. The communication cable between the indoor unit and the outdoor unit is failure or the cable between the indoor control board to terminal fails or the cable between the outdoor control board to the terminal fails; 4. The indoor control board fails; The outdoor control board fails. 	<ol style="list-style-type: none"> 1. Reconnect the connection cable referring to the indoor and outdoor wiring diagram; 2. Reconnect the communication cable referring to the indoor and outdoor wiring diagram; 3. Replace the communication cable referring to the indoor and outdoor wiring diagram; 4. Replace the indoor control board; 5. Replace the outdoor control board. 	
72	Indoor fan motor fault	<ol style="list-style-type: none"> 1. The cable of the indoor fan motor is connected loosely; 2. The cable of the indoor fan motor fails; 3. The indoor fan motor fails; 4. The indoor control board fails. 	<ol style="list-style-type: none"> 1. Reconnect the cable of the fan motor; 2. Replace the cable of the fan motor; 3. Replace the fan motor; 4. Replace the indoor control board; 5. Check the indoor fan and ensure the indoor fan can run normally. 	
73	Indoor EEPROM Data 1 fault	<ol style="list-style-type: none"> 1. Indoor EE components fail; 2. The control circuit of the EE components fail; 3. The EE components have been inserted in opposite direction. 	<ol style="list-style-type: none"> 1. Replace the EE components; 2. Replace the indoor control board; 3. Reassemble the EE components of the indoor control board. 	
80	Panel key fault	<ol style="list-style-type: none"> 1. The button fails; 2. The cable of the display board fails; 3. The display board fails; 4. The indoor control board fails. 	<ol style="list-style-type: none"> 1. Replace the display board; 2. Replace the cable of the display board; 3. Replace the display board; 4. Replace the indoor control board. 	
81	Indoor ambient Temperature Sensor Fault	<ol style="list-style-type: none"> 1. The cable of the room temperature sensor is connected loosely; 2. The room temperature sensor 3. The sampling circuit is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the cable of the room temperature sensor; 2. Replace the room temperature sensor; 3. Replace the indoor control board. 	
83	Evaporator Middle Temperature Sensor Fault	<ol style="list-style-type: none"> 1. The cable of the coil temperature sensor of the evaporator fails; 2. The coil temperature sensor of the evaporator fails; 3. The sampling circuit is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the cable of the coil temperature sensor of the evaporator; 2. Replace the coil temperature sensor of the evaporator; 3. Replace the indoor control board. 	
F0 (240)	Wired remote controller EEPROM failure	<ol style="list-style-type: none"> 1. EE of wired remote controller is abnormal; 2. The control board of the wired remote controller is abnormal. 	Change the wired remote controller .	
F1 (241)	Wired remote controller temperature sensor failure	<ol style="list-style-type: none"> 1. Temperature sensor of the wired remote controller is abnormal; 2. The control board of the wired remote controller is abnormal. 	Change the wired remote controller .	
F2 (242)	Wired remote controller clock IC failure	The control board of the wired remote controller is abnormal.	Change the wired remote controller .	
F3 (243)	Wired remote controller humidity sensor failure	<ol style="list-style-type: none"> 1. Temperature /humidity sensor of the wired remote controller is abnormal; 2. The control board of the wired remote controller is abnormal. 	Change the wired remote controller .	

15. TROUBLESHOOTING

Fault code	Fault Description	Possible Reasons for Abnormality	How to Deal With	Remarks
FE(254)	Communication between main control board & Wiring remote controller Fault (display on wiring remote controller)	<ol style="list-style-type: none"> 1. The wired controller and the indoor control board are connected loosely. 2. The sequence of the wiring between the wired controller to the indoor control board is wrong; 3. The wiring between the wired controller to the indoor control board fails; 4. The wired controller fails; 5. The indoor control board is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the wiring between the wired controller to the indoor control board; 2. Replace the wiring between the wired controller to the indoor control board; 3. Replace the wiring between the wired controller to the indoor control board; 4. Replace the wired controller; 5. Replace the indoor control Board. 	
ER	Communication between main control board & display board Fault (displays on display board)	<ol style="list-style-type: none"> 1. The wiring between the display board to the indoor control board is connected loosely; 2. The sequence of the wiring between the display board to the indoor control board is wrong; 3. The wiring between the display board to the indoor control board fails; 4. The display board fails; 5. The indoor control board fails. 	<ol style="list-style-type: none"> 1. Reconnect the wiring between the display board to the indoor control board; 2. Replace the wiring between the display board to the indoor control board; 3. Replace the wiring between the display board to the indoor control board; 4. Replace the display board; 5. Replace the indoor control board. 	

NOTE 1:

If the indoor unit can not turn on or the indoor unit turns off itself after 30s, at the same time the unit does not display the error code, please check the fire and the socket of the control board.

NOTE 2:

If the indoor unit displays the 75,76,77,78 error code after you turn on the unit, please check the TEST seat of the indoor control board or the TEST detection circuit whether short circuit exists.

NOTE 3: Overload in cooling mode

Overload in cooling mode		
sr.	The root cause	Corrective measures
1	The refrigerant is excessive	Discharge the refrigerant, and recharge the refrigerant referring to the rating label
2	The outdoor ambient temperature is too high	Please use it within allowable temperature range
3	Short-circuit occurs in the air outlet and air inlet of the outdoor unit	Adjust the installation of the outdoor unit referring to the user manual
4	The outdoor heat exchanger is dirty, such as condenser	Clean the heat exchanger of the outdoor unit, such as condenser
5	The speed of the outdoor fan motor is too low	Check the outdoor fan motor and fan capacitor
6	The outdoor fan is broken or the outdoor fan is blocked	Check the outdoor fan
7	The air inlet and outlet has been blocked	Remove the obstacles
8	The expansion valve or the capillary fails	Replace the expansion valve or the capillary

15. TROUBLESHOOTING

NOTE 4: Overload in heating mode

Overload in heating mode		
sr.	The root cause	Corrective measures
1	The refrigerant is excessive	Discharge the refrigerant, and recharge the refrigerant referring to the rating label
2	The indoor ambient temperature is too high	Please use it within allowable temperature range
3	Short-circuit occurs in the air outlet and air inlet of the outdoor unit	Adjust the installation of the indoor unit referring to the user manual
4	The indoor filter is dirty	Clean the indoor filter
5	The speed of the indoor fan motor is too low	Check the indoor fan motor and fan capacitor
6	The indoor fan is broken or the outdoor fan is blocked	Check the indoor fan
7	The air inlet and outlet have been blocked	Remove the obstacles
8	The expansion valve or the capillary fails	Replace the expansion valve or the capillary

15. TROUBLESHOOTING

Table 3 DriveFault code

Fault code	Fault description	Possible reasons for abnormality	How to deal with
1	Q axis current detection, failure in drive control	1. Compressor wire is not connected properly; 2. Bad driver board components; 3. Compressor start load is too large; 4. Compressor demagnetization; 5. Compress or oil shortage serious wear of crankshaft; 6. The compressor insulation fails.	1. Check the compressor wire; 2. Change the driver board ; 3. Turn on the unit after the pressure is balanced again; 4. Change the Compressor; 5. Change the Compressor; 6. Change the Compressor.
2	Phase current detection failure in drive control	1. Compressor voltage default phase; 2. Bad driver board components; 3. The compressor insulation fault.	1. Check the compressor wire connection; 2. Change the driver board; 3. Change the Compressor.
3	Initialization, phase current imbalance	Bad driver board components.	Change the driver board .
4	Speed estimation, failure in drive control	1. Bad driver board components; 2. Compressor shaft clamping; 3. The compressor insulation fails.	1. Change the driver board ; 2. Change the Compressor ; 3. Change the Compressor .
5	IPM FO output fault	1. System overloads or current overloads. 2. Driver board fails; 3. Compressor oil shortage, serious wear of crankshaft; 4. The compressor insulation fault.	1. Check the air-conditioner system; 2. Change the driver board; 3. Change the Compressor; 4. Change the Compressor.
6	Communication between driver board and control board fault	1. Communication wire connect not well; 2. Driver board fault; 3. Control board fault;	1. Check the compressor wire connection. 2. Change the driver board; 3. Change the control board ;
7	AC voltage, overload voltage	1. Supply voltage input is too high or too low; 2. Driver board fails;	1. Check power supply; 2. Change the driver board;
8	DC voltage, overload voltage	1. Supply voltage input is too high ; 2. Driver board fault;	1. Check power supply; 2. Change the driver board;
9	AC voltage imbalance	Driver board fails;	Change the driver board;
10	The PFC current detection circuit fault before compressor is ON	Bad driver board components;	Change the driver board
11	AC voltage supply in outrange	1. Power supply is abnormal, and power frequency is out of range; 2. Driver board fails;	1. Check the system; 2. Change the driver board;
12	Products of single-phase PFC over-current, FO output low level	1. System overload, current is too large; 2. Driver board fault; 3. PFC fault.	1. Check the system; 2. Change the driver board; 3. Change PFC.
	Inverter over current (3-phase power supply air conditioners)	1. System overload, current is too large; 2. Driver board fault; 3. Compressor oil shortage, serious wear of crankshaft; 4. The compressor insulation fault.	1. Check the system; 2. Change the driver board; 3. Change the Compressor; 4. Change the Compressor.
13	Inverter over current	1. System overload, current is too large; 2. Driver board fault; 3. Compressor oil shortage, serious wear of crankshaft; 4. The compressor insulation fault.	1. Check the system; 2. Change the driver board; 3. Change the Compressor; 4. Change the Compressor.
14	PFC over current(single-phase air-conditioner)	1. System overload, current is too large; 2. Driver board fault; 3. PFC fault.	1. Check the system; 2. Change the driver board; 3. Change PFC.
	Phase imbalance or phase lacks or the instantaneous power failure (only for 3-phase power supply air conditioners)	1. 3-Phase voltage imbalance; 2. The 3-phase power supply phase lost; 3. Power supply wiring is wrong; 4. Driver board fault.	1, Check the power supply; 2. Check the power supply; 3. Check the power supply wiring connection; 4. Change the driver board.
15	The instantaneous power off detection	1. The power supply is not stable ; 2. The instantaneous power failure ; 3. Driver board fault;	1. Check the power supply; 2. Not a fault; 3. Change the driver board.

15. TROUBLESHOOTING

Fault code	Fault description	Possible reasons for abnormality	How to deal with
16	Low DC voltage 200V	1. Voltage input is too low; 2. Drive board fault.	1. Check the power supply; 2. Change the driver board;
18	Driver board read EE data error	1. EEPROM has no data or data error; 2. EEPROM circuit fault.	1. Change EEPROM component; 2. Change the driver board.
19	PFC chip receive data fault	Abnormal communication loop.	Change the drive board.
20	PFC soft start is abnormal	Abnormal PFC drive loop.	Change the drive board.
21	The compressor drive chip could not receive data from PFC chip.	Communication loop fault.	Change the drive board.

15. TROUBLESHOOTING

Table 4 Limitation code

Code	Definitions	Descriptions
101	When overcurrent occurs, stop the frequency from increasing.	Current control
102	When overcurrent occurs, reduce the frequency.	Current control
103	When the temperature of IPM module is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of IPM module.
104	When the temperature of IPM module is too high, reduce the frequency.	Frequency control to keep appropriate temperature of IPM module.
105	When the discharge temperature is too high, stop the frequency from increasing.	Frequency control to keep appropriate discharge temperature.
106	When the discharge temperature is too high, reduce the frequency.	Frequency control to keep appropriate discharge temperature.
107	In cooling mode, when the temperature of the outdoor unit coil is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of the outdoor unit coil in cooling mode.
108	In cooling mode, when the temperature of the outdoor unit coil is too high, reduce the frequency.	Frequency control to keep appropriate temperature of the outdoor unit coil in cooling mode.
113	To prevent the indoor unit from being frozen or high temperature, stop the frequency from increasing.	Frequency control to keep appropriate temperature of the indoor unit coil.
114	To prevent the indoor unit from being frozen or high temperature, reduce the frequency.	Frequency control to keep appropriate temperature of the indoor unit coil.
119	When DSH exceeds the target value, the valve opening gets wider to adjust the flow.	Control on expansion valve based on DSH.
120	When DSH exceeds the target value, the valve opening gets narrower to adjust the flow.	Control on expansion valve based on DSH.
121	When DSH exceeds the target value, stop the valve opening from getting narrower.	Control on expansion valve based on DSH.
122	When DSH exceeds the target value, stop the valve opening from getting wider.	Control on expansion valve based on DSH.
131	When the temperature of IPM module is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of IPM module.
132	When the temperature of IPM module is too high, reduce the frequency.	Frequency control to keep appropriate temperature of IPM module.
134	When the discharge temperature is too high, stop the valve opening getting narrower.	Control on discharge temperature expansion valve.
140	The compressor overloads.	Control on the compressor output.
141	The compressor current overloads.	Control on the output torque of the compressor.

※ DSH: Discharge Super Heat

These codes appearing in the operation process indicate some kind of normal operation state, instead of faults, so they do not need to be dealt with.

16. CHECKING COMPONENTS

16. Checking components

16.1 Check refrigerant system

TEST SYSTEM FLOW

Conditions: ① Compressor is running.

② The air condition should be installed in good ventilation.

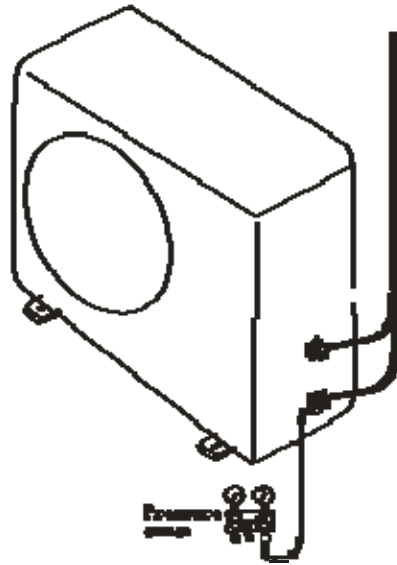
Tool: Pressure Gauge

Technique: ① see ② feel ③ test

See ----- Tube defrost.

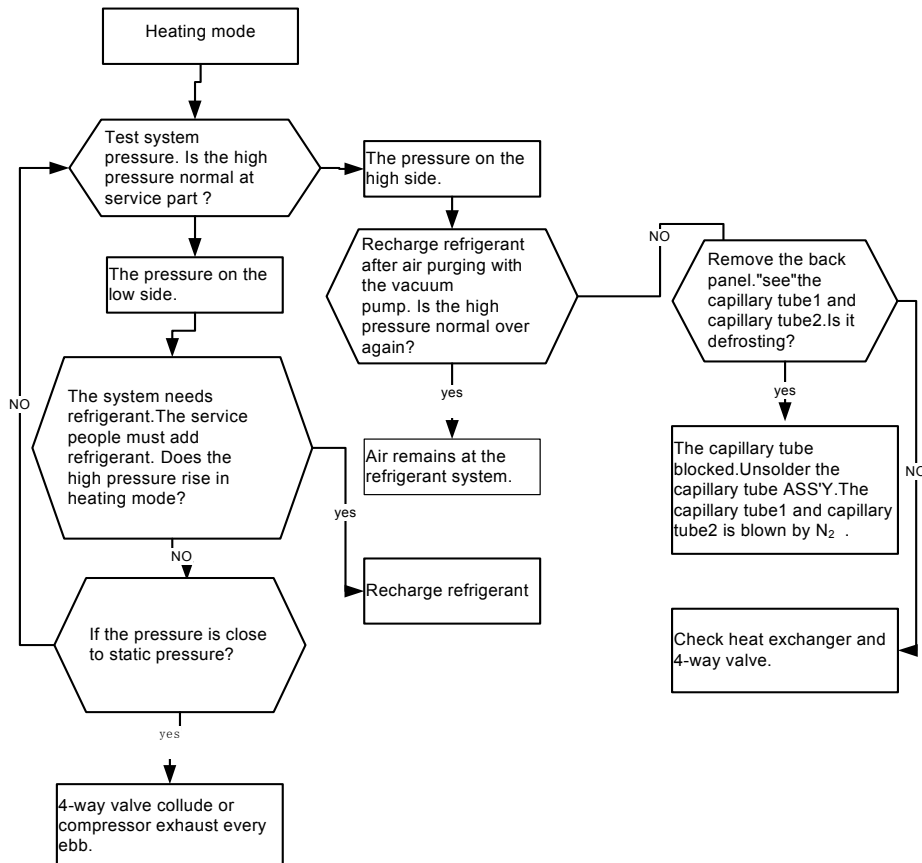
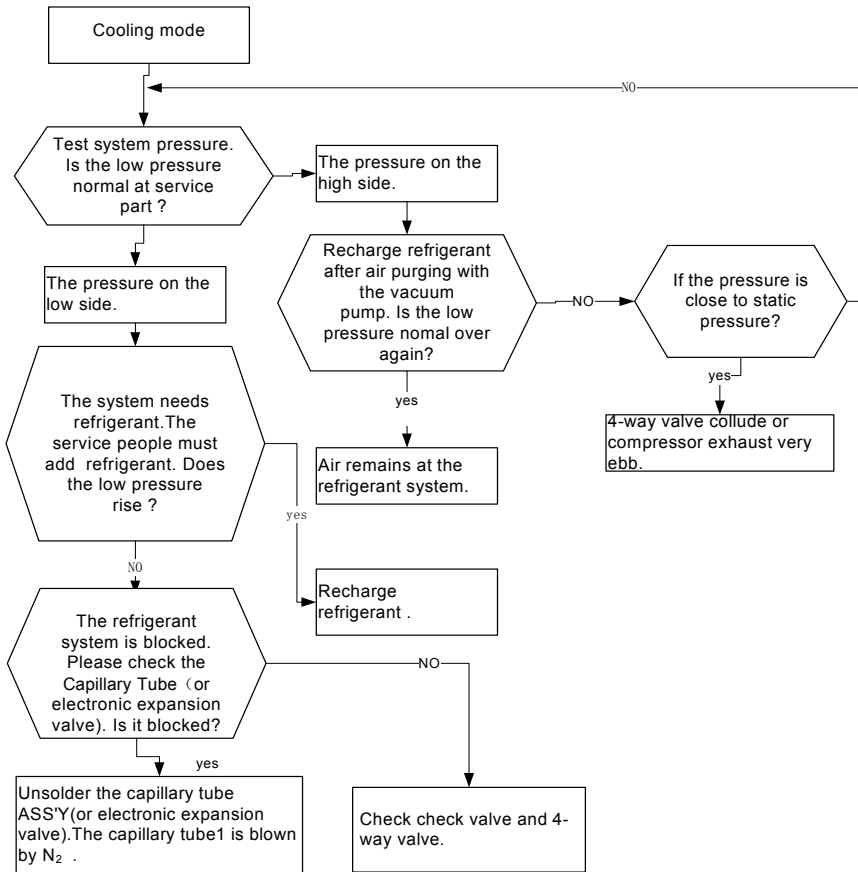
Feel ----- The difference between temperature of tubes.

Test ----- Test pressure.



14. CHECKING COMPONENTS

Test system flow



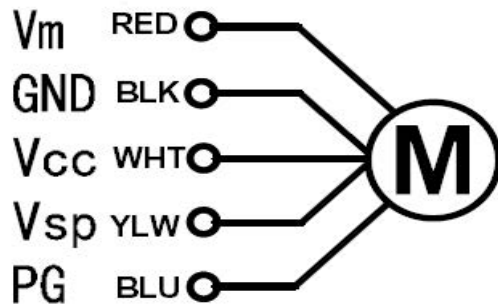
16. CHECKING COMPONENTS

16.2 Check parts unit

1. INDOOR FAN MOTOR

Motor model (DC motor)

48k: ZW702B500008



Test in resistance.

TOOL: Multimeter.

Test the resistance of the main winding. The indoor fan motor fails if the resistance of main winding is 0 (short circuit) or ∞ (open circuit).

Test in voltage

TOOL: Multimeter.

Insert screwdriver to rotate indoor fan motor slowly for 1 revolution or over, and measure voltage "YELLOW" and "GND" on motor. The voltage repeats 0V DC and 5V DC.

NOTES:

Please don't hold motor by leading wires.

Please don't plug IN/OUT the motor connector while power is ON.

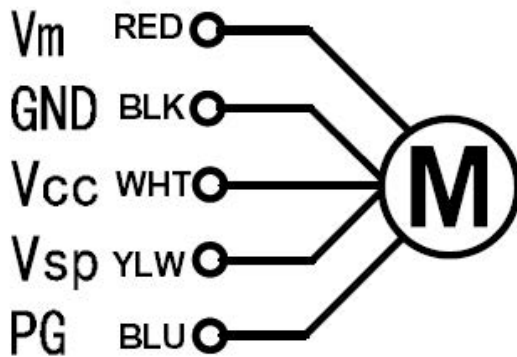
Please don't drop or dump motor against hard material. Malfunction may not be observed at early stage after such shock. But it may be found later, this type of mishandling void our warranty.

16. CHECKING COMPONENTS

2. OUTDOOR FAN MOTOR

Motor Model: DC MOTOR

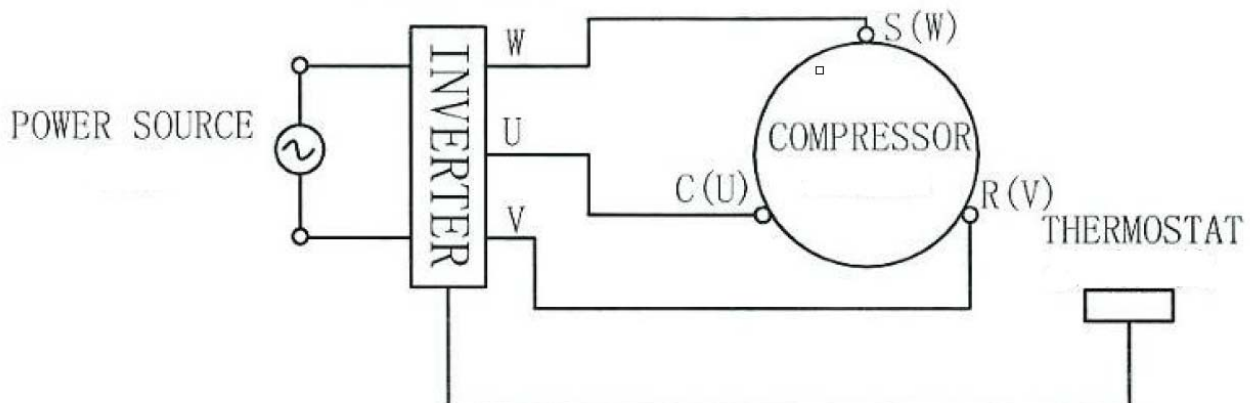
48K: SIC-81FW-F1138-1



3. COMPRESSOR

COMPRESSOR EXAMINE AND REPAIR

48K: KTF310D43UMT



Test in resistance.

TOOL: Multi-meter.

Test the resistance of the winding. The compressor fails if the resistance of winding is 0 (short circuit) or ∞ (open circuit).

Familiar error:

- 1) Compressor motor lock.
- 2) Discharge pressure value approaches static pressure value.
- 3) Compressor motor winding abnormality.

16. CHECKING COMPONENTS

NOTES:

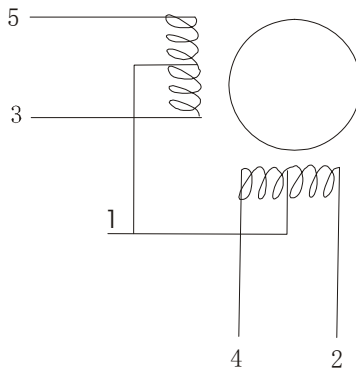
- 1) Don't put a compressor on its side or turn over.
- 2) Please assemble the compressor in your air conditioner rapidly after removing the plugs.
Don't place the compressor in air for a long time.
- 3) Avoid compressor running in reverse caused by connecting electrical wire incorrectly.
- 4) Warning! In case AC voltage is impressed to compressor, the compressor performance will decrease because of its rotor magnetic force decreasing.

4. INDUCTANCE

Familiar error:

- 1) Sound abnormality
- 2) Insulation resistance disqualification.

5. STEP MOTOR



Test in resistance.

TOOL: Multimeter.

Test the resistance of winding. The stepper motor is fault if the resistance of winding is 0(short circuit) or ∞ (open circuit) .

16. CHECKING COMPONENTS

6. FUSE

Checking for continuity of fuse on PCB ASS'Y.

Remove the PCB ASS'Y from the electrical component box. Then pull out the fuse from the PCB ASS'Y

(Fig.1)

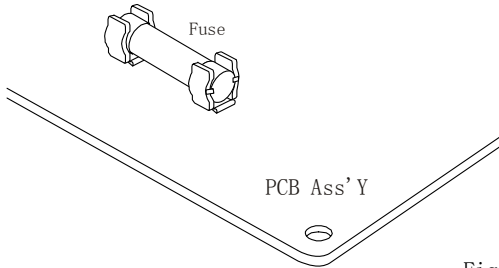


Fig. 1

Check for continuity by a multimeter as shown in Fig.2.

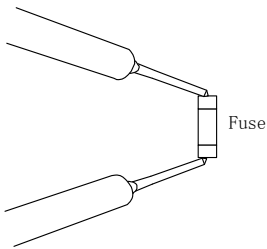


Fig. 2

7. CAPACITOR

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig.3.

Observe the deflection of the pointer, setting the resistance measuring range of the multimeter to the maximum value.

- * The capacitor is "good" if the pointer bounces to a great extent and then gradually returns to its original position.
- * The range of deflection and deflection time differ according to the capacity of the capacitor.

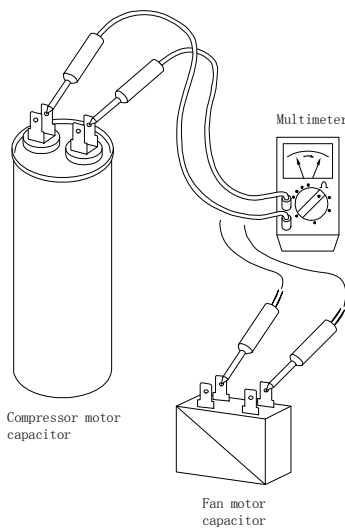
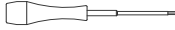



Fig. 3

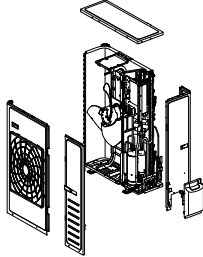
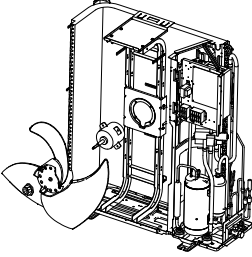
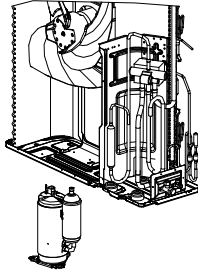
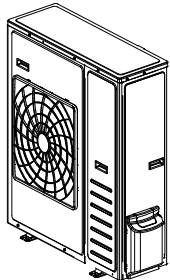
17. DISASSEMBLY AND ASSEMBLY

17.1 Disassembly and assembly for compressor and motor

The special tools for compressor & motor disassembly and assembly:

	Tool
1	Hexagon Screwdriver 
2	Hexagon Socket 

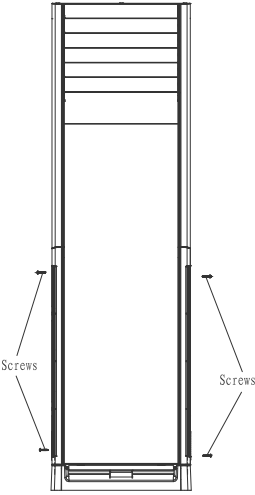
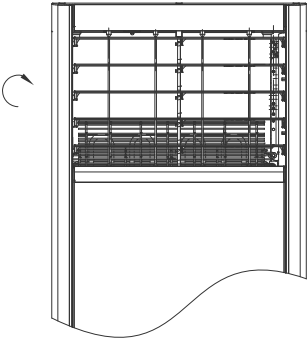
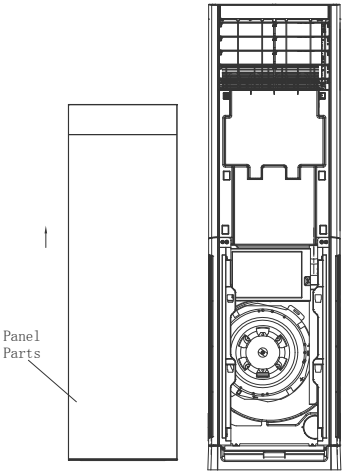
Important: Before disassembly and assembly, make sure that the power to the system has been disconnected and verified as voltage free.

Step	Illustration	Handling Instruction
1. Remove the external casing		<ol style="list-style-type: none"> 1. Remove the top cover, handle and valve cover; 2. Remove the outer case and right side plate.
2. Remove the motor		<ol style="list-style-type: none"> 1. Remove the motor from the motor supporter. 2. Remove the blade nut, then remove the blade;
3. Remove the compressor		<ol style="list-style-type: none"> 1. Unsolder the 4-way valve piping assy from the compressor; 2. Remove the compressor mounting bolts; 3. Carefully remove the compressor from chassis.
4. Assemble the unit		<p>Assemble the unit in the reverse order of disassembly.</p>

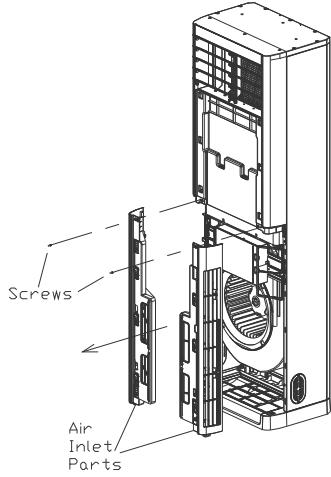
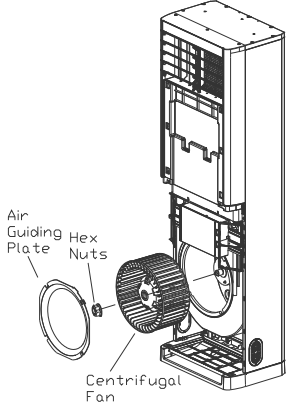
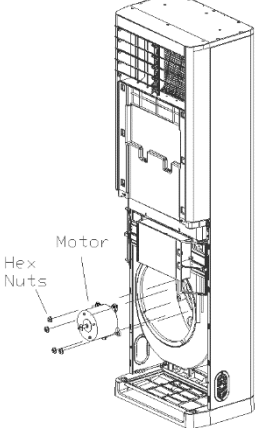
17. DISASSEMBLY AND ASSEMBLY

17.2 Disassembly and assembly for compressor and motor

Important: Before disassembly and assembly, make sure that the power to the system has been disconnected and verified as voltage free.

Step	Illustration	Handling Instruction
1. Remove the screws		Remove the four screws at the left and right air inlets.
2. Rotate the level vanes		Rotate the level vanes parallel to the direction of the wind.
3. Remove the panel parts		<ol style="list-style-type: none"> 1. Hold the bottom of the panel parts and push it up. 2. Remove the panel parts.

17. DISASSEMBLY AND ASSEMBLY

<p>4. Remove the air inlet parts</p>	 <p>Screws</p> <p>Air Inlet Parts</p>	<p>Remove the two screws on the front of air inlet parts.</p>
<p>5. Remove the fan</p>	 <p>Air Guiding Hex Plate</p> <p>Centrifugal Fan</p>	<ol style="list-style-type: none">1. Remove the air guiding plate by rotating it clockwise.2. Unscrew the hex nuts.3. Remove the centrifugal fan.
<p>6. Remove the motor</p>	 <p>Motor</p> <p>Hex Nuts</p>	<ol style="list-style-type: none">1. Unscrew the hex nuts.2. Remove the DC motor.

18. CONTROL LOGIC DESCRIPTION

18. Control logic description

18.1 Fan Only Mode

(1) Outdoor fan and compressor stop.

(2) Temperature setting function is disabled, and no setting temperature is displayed. (3) Indoor fan can be set to high/medium/low, but can not be set to auto.

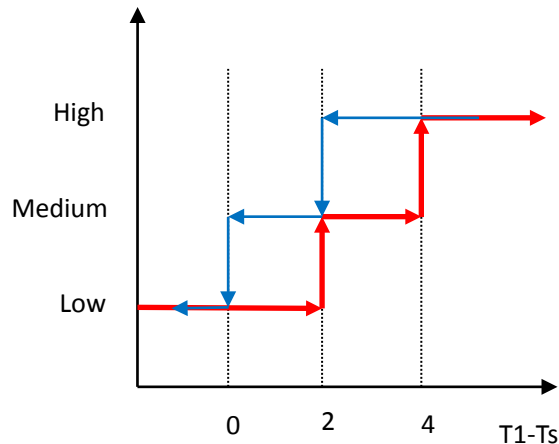
18.2 Cooling Mode

Indoor fan running rules:

In cooling mode, indoor fan runs all the time and the speed can be selected as high, (medium), low and auto.

The auto fan:

T1 is indoor room temperature. Ts is setting temperature.



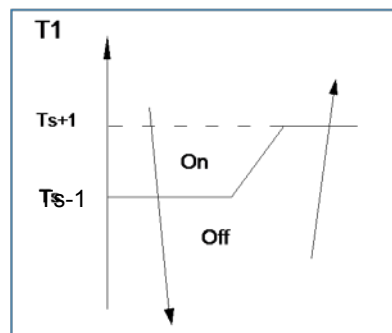
Inverter outdoor unit:

Compressor and outdoor fan running rules:

Once the compressor starts up, it will follow the below rules:

When indoor room temp. T1 is lower than Ts, the compressor and outdoor fan will shut off.

When T1 is higher than Ts+1, the compressor and outdoor fan will start up.



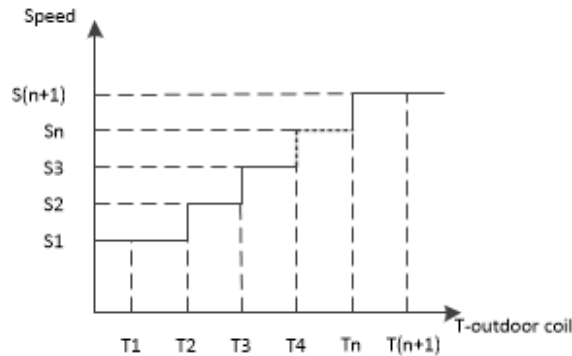
Outdoor fan running rules:

Once the outdoor fan start up, it will follow the below rules:

Single outdoor fan: First, it will run in an invariable speed for a short time; Then it will regulate the speed by the outdoor-coil temperature.

Double outdoor fan: If it has two outdoor fans, the upper fan regulates the speed by the rules, and the lower fan speed lowers than the upper fan speed for 30rpm~60rpm.

18. CONTORL LOGIC DESCRIPTION



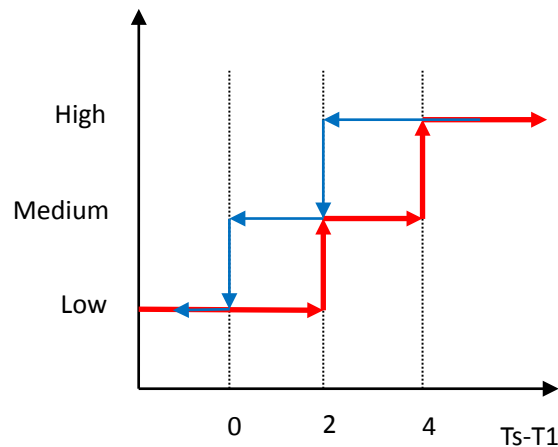
18.3 Heating Mode

Indoor fan running rules:

In several minutes after the heating mode is started, the fan of the indoor unit will not run until the heat exchanger of the indoor unit reaches a high enough temperature. That is because cold air prevention system is operating. After several minutes, the speed can be selected as high, (medium), low and auto.

The auto fan:

T_1 is indoor room temperature. T_s is setting temperature.



DC-Inverter outdoor unit:

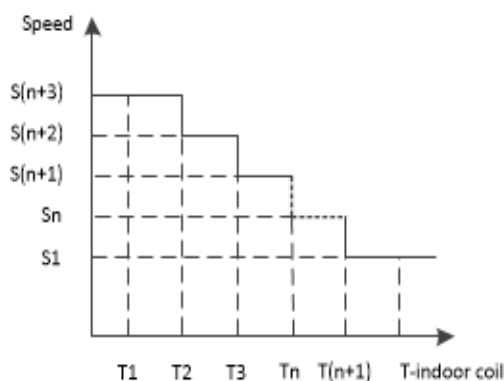
Outdoor fan running rules:

Once the outdoor fan starts up, it will follow the below rules:

Single outdoor fan: First, it will run in an invariable speed for a short time; Then it will regulate the speed by the indoor-coil temperature.

Double outdoor fan: If it has two outdoor fans, the upper fan regulates the speed by the rules, and the lower fan speed lowers than the upper fan speed for 30rpm~60rpm.

18. CONTORL LOGIC DESCRIPTION



18.4 Auto Mode

This mode can be chosen with remote controller and the setting temperature can be changed between 16~30°C.

In auto mode, the machine will choose cooling, heating or fan-only mode according to ΔT ($\Delta T = T1 - Ts$).

$\Delta T = T1 - Ts$	Running mode
$\Delta T > 3^{\circ}\text{C}$	Cooling
$-3^{\circ}\text{C} \leq \Delta T \leq 3^{\circ}\text{C}$	Fan-only
$\Delta T < -3^{\circ}\text{C}$	Heating

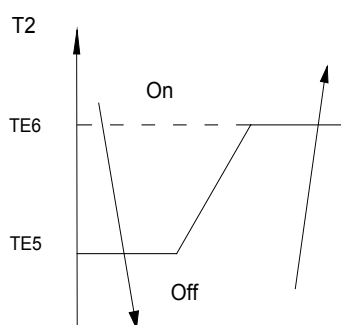
Indoor fan will run at auto fan of the relevant mode. The louver operates same as in relevant mode. If the compressor keep stopping for 10 minutes or the setting temperature is modified, the machine will choose mode according to ΔT again.

18.5 Evaporator Low-temperature Protection

DC-Inverter

AC will enter T2 protection if any of the following condition is satisfied.

Condition:



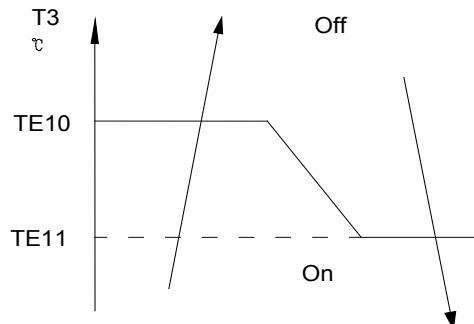
Cooling mode: When the indoor coil temp. T2 keeps lower than TE5 for 120 seconds, the compressor and outdoor fan will shut off. When T2 is higher than TE6, the compressor and outdoor fan will restart up.

18. CONTROL LOGIC DESCRIPTION

18.6 Condenser High-temperature Protection

DC-Inverter outdoor unit

AC will enter T3 protection if any of the following conditions is satisfied.



Condition1:

Cooling mode: When the outdoor coil temp. T3 keeps higher than T2 for 10 seconds, the compressor and outdoor fan will shut off. When T3 is lower than T1, the compressor and outdoor fan will restart up.

Condition2:

Heating mode: When the indoor coil temp. T3 keeps higher than T2 for 10 seconds, the compressor and outdoor fan will shut off. When T3 is lower than T1, the compressor and outdoor fan will restart up.

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Product improvement, specifications and appearance in this manual are subject to change without prior notice.