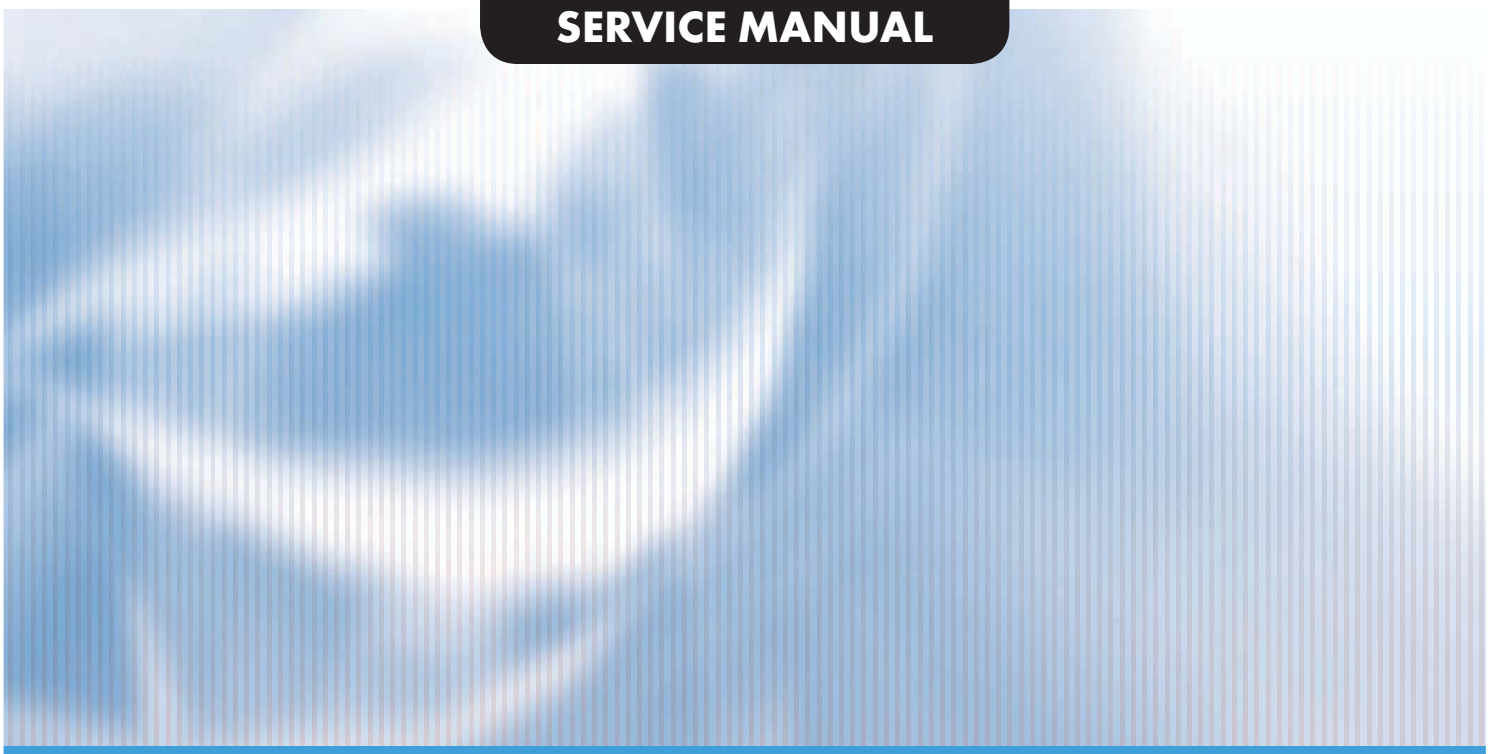
SERVICE MANUAL



NEW MULTI SYSTEM SERIES

INDOOR UNITS

MS-H07AICN PT, MS-H09AICN PT
MS-H12AICN PT, MS-H18AICN PT

sinclair
AIR CONDITIONING

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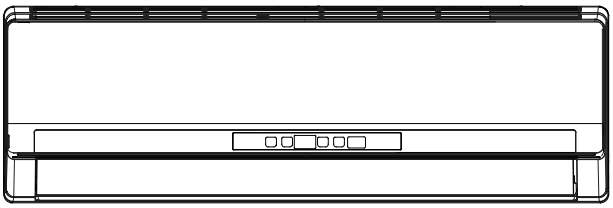
1. Summary

Indoor Unit

MS-H07AICN PT
MS-H09AICN PT
MS-H12AICN PT
MS-H18AICN PT



Remote Controller

YAA1FB

2. Specifications

Specification Sheet

Model		MS-H07AICN PT	MS-H09AICN PT
Product Code		CB161N07700_L31222	CB161N07800_L31222
Rated Voltage	V~	220-240	220-240
Rated Frequency	Hz	50	50
Phases		1	1
Power Supply Mode		Outdoor	Outdoor
Cooling Capacity	W	2100	2600
Heating Capacity	W	2600	3000
Air Flow Volume (SH/H/M/L)	m^3/h	580/500/400/300	600/500/400/300
Dehumidifying Volume	L/h	0.6	0.8
Fan Type		Cross-flow	Cross-flow
Fan Diameter-height	mm	Φ92X645	Φ92X645
Fan Motor Speed (SH/H/M/L) Cool	rpm	1260/1050/920/730	1260/1050/900/690
Fan Motor Speed (SH/H/M/L) Heat	rpm	1320/1200/1100/950	1320/1200/1000/910
Fan Motor Power Output	W	10	20
Fan Motor Running Current	A	0.2	0.1
Fan Motor Capacitor	μF	1.0	1.0
Evaporator Material		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
Evaporator Pipe Diameter	mm	Φ7	Φ7
Evaporator Number of Rows		2	2
Evaporator Fin Pitch	mm	1.5	1.4
Evaporator Length(L)X Height(H) X Width(W)	mm	581X267X25.4	636X25.4X267
Motor Model		FN20J-PG	MP24AA
Overload Protector		/	/
Motor Full Load Amp(FLA)	A	3.15	3.15
Sound Pressure Level (SH/H/M/L)	dB (A)	41/39/34/28/-	42/39/34/28/-
Sound Power Level (SH/H/M/L)	dB (A)	51/49/40/38/-	52/49/44/38/-
Outline Dimension (WXHXD)	mm	845X275X180	845X275X180
Package Carton Dimension (LXWXH)	mm	915X255X355	915X255X355
Package Dimension (LXWXH)	mm	918X258X370	918X258X370
Net Weight	kg	9	9
Gross Weight	kg	12	11
Liquid pipe	mm	Φ6	Φ6
Gas Pipe(to indoor unit)	mm	Φ9.52	Φ9.52
Note: The connection pipe applies metric diameter.			

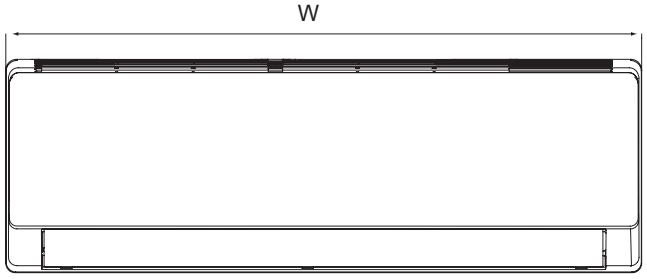
The above data is subject to change without notice; please refer to the nameplate of the unit.

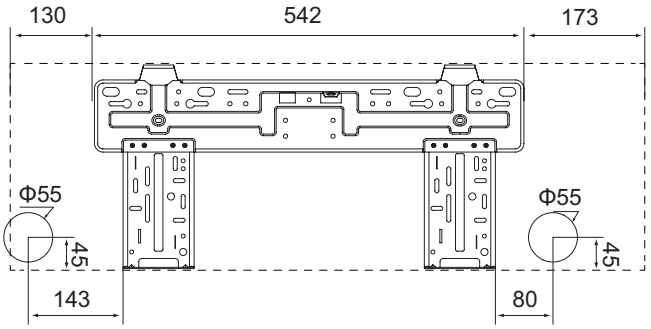
Model		MS-H12AICN PT	MS-H18AICN PT
Product Code		CB161N07900_L31222	CB161N07600_L31222
Rated Voltage	V~	220-240	220-240
Rated Frequency	Hz	50	50
Phases		1	1
Power Supply Mode		Outdoor	Outdoor
Cooling Capacity	W	3500	5275
Heating Capacity	W	4000	5800
Air Flow Volume (SH/H/M/L)	m^3/h	600/500/400/300	850/780/650/550
Dehumidifying Volume	L/h	1.2	1.8
Fan Type		Cross-flow	Cross-flow
Fan Diameter-height	mm	Φ92X645	Φ98X710
Fan Motor Speed (SH/H/M/L) Cool	rpm	1290/1070/900/690	1350/1150/1050/900
Fan Motor Speed (SH/H/M/L) Heat	rpm	1280/1050/980/920	1420/1250/1150/1050
Fan Motor Power Output	W	20	20
Fan Motor Running Current	A	0.1	0.31
Fan Motor Capacitor	μF	1.0	1.5
Evaporator Material		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
Evaporator Pipe Diameter	mm	Φ7	Φ7
Evaporator Number of Rows		2	2
Evaporator Fin Pitch	mm	1.4	1.4
Evaporator Length(L)XHeight(H)XWidth(W)	mm	636X25.4X267	715X25.4X304.8
Motor Model		MP24AA	MP28VB
Overload Protector		/	/
Motor Full Load Amp(FLA)	A	3.15	3.15
Sound Pressure Level (SH/H/M/L)	dB (A)	42/40/35/30/-	48/43/40/35/-
Sound Power Level (SH/H/M/L)	dB (A)	52/50/45/40/-	58/53/50/45/-
Outline Dimension (WXHXD)	mm	845X275X180	940X298X200
Package Carton Dimension (LXWXH)	mm	915X255X355	1010X380X285
Package Dimension (LXWXH)	mm	918X258X370	1013X383X300
Net Weight	kg	9	12
Gross Weight	kg	11	15
Liquid pipe	mm	Φ6	Φ6
Gas Pipe(to indoor unit)	mm	Φ9.52	Φ12
Note: The connection pipe applies metric diameter.			

The above data is subject to change without notice; please refer to the nameplate of the unit.

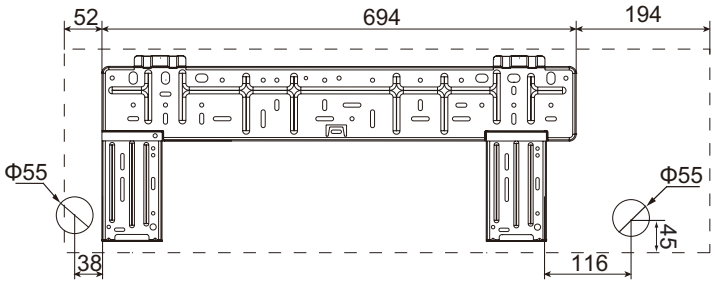
3. Outline Dimension Diagram

Indoor Unit





MS-H07AICN PT
MS-H09AICN PT
MS-H12AICN PT

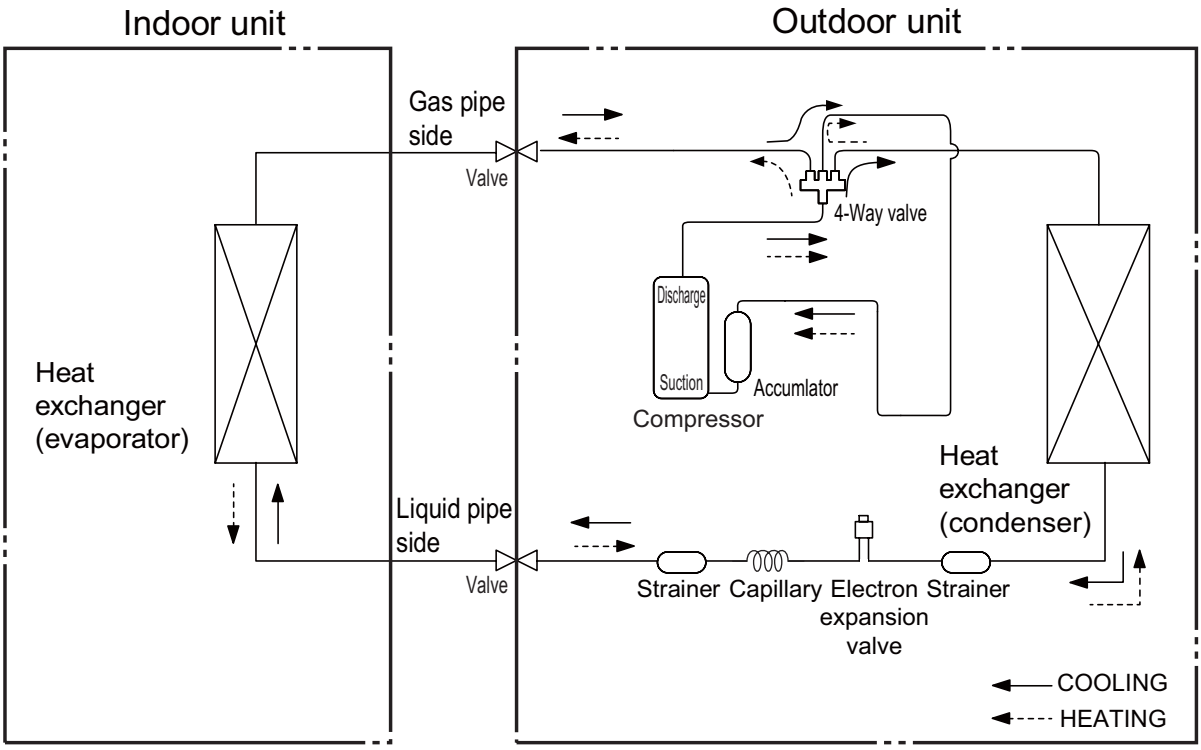


MS-H18AICN PT

Unit:mm

Models	W	H	D
MS-H07AICN PT MS-H09AICN PT MS-H12AICN PT	845	275	180
MS-H18AICN PT	940	298	200

4. Refrigerant System Diagram



Connection pipe specification:
Liquid pipe:1/4" (6mm)
Gas pipe:3/8" (9.52mm) MS-H07AICN PT MS-H09AICN PT MS-H12AICN PT
Gas pipe:1/2" (12mm) MS-H18AICN PT

5. Electrical Part

5.1 Wiring Diagram

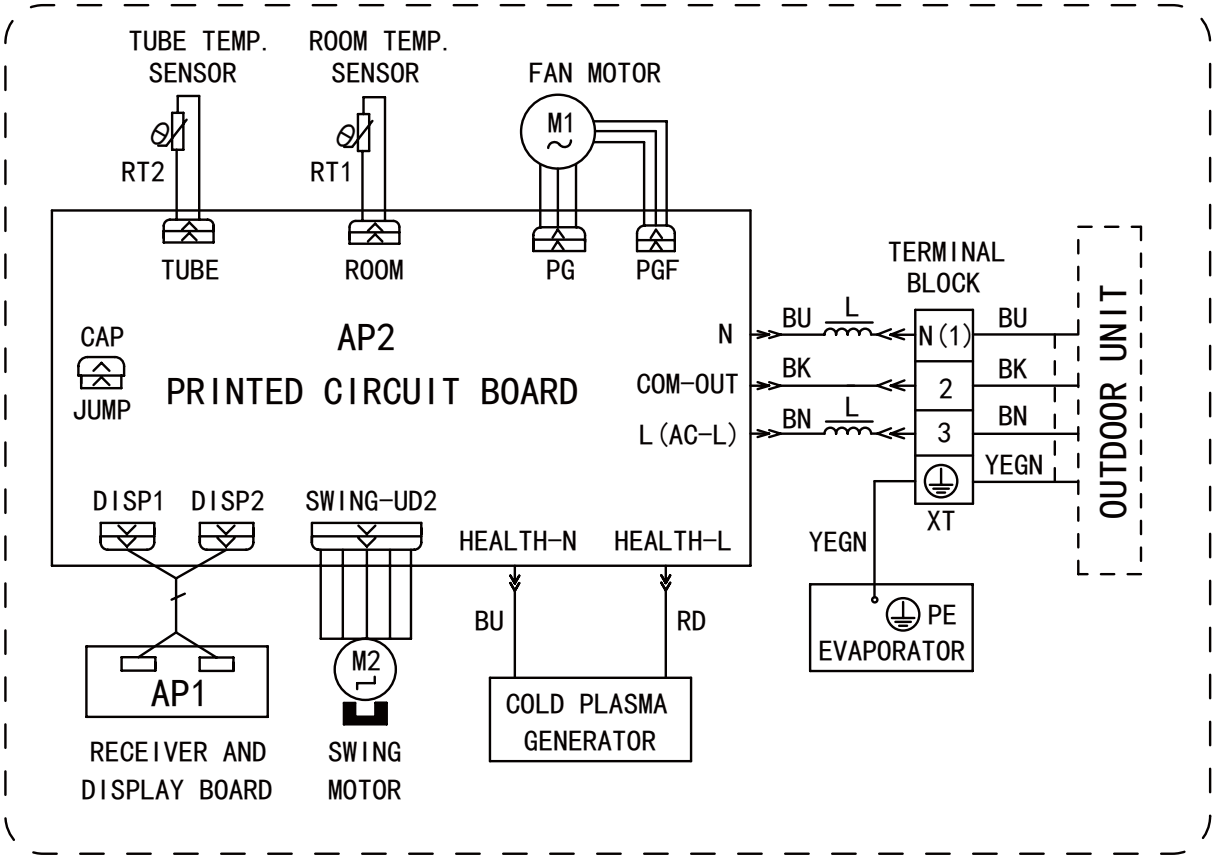
●Instruction

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue	⏚	Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

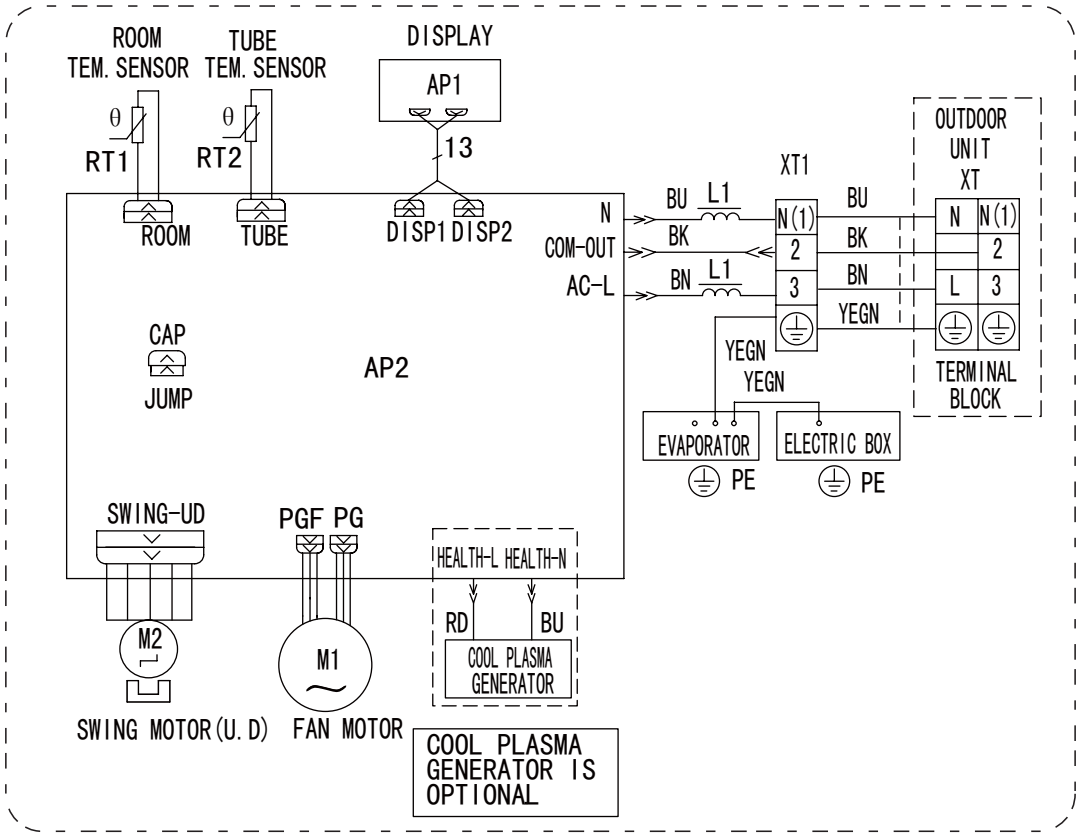
Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

● Indoor Unit

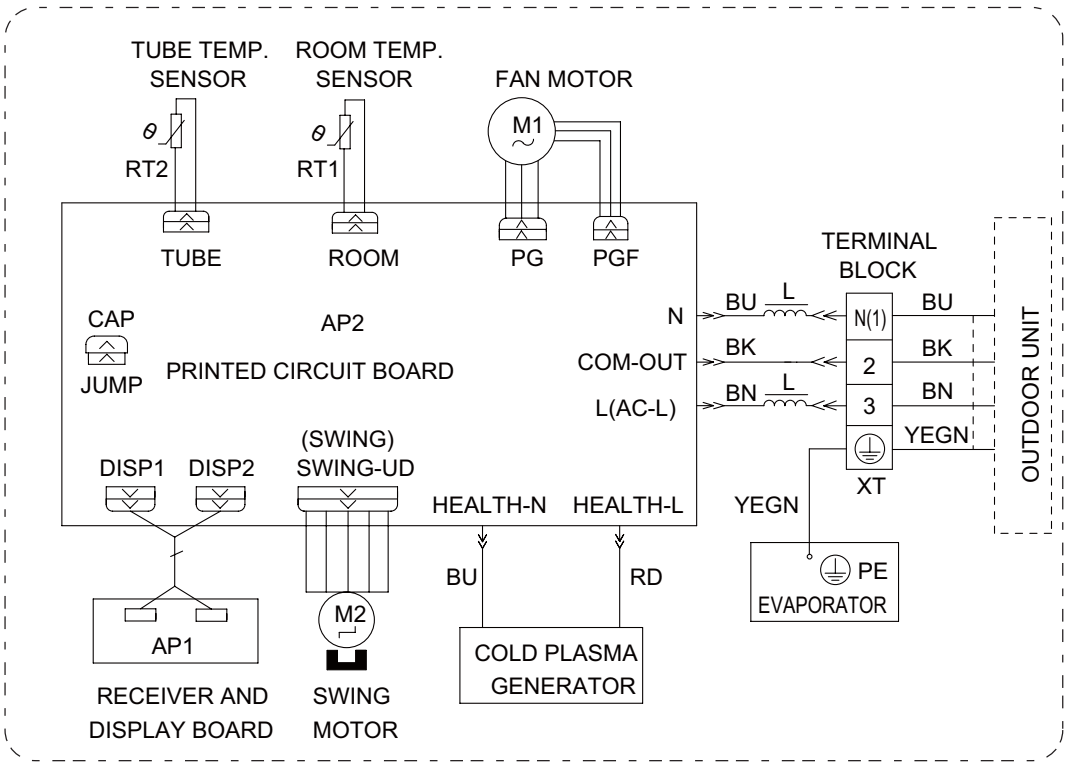
MS-H07AICN PT



MS-H09AICN PT MS-H12AICN PT



MS-H18AICN PT

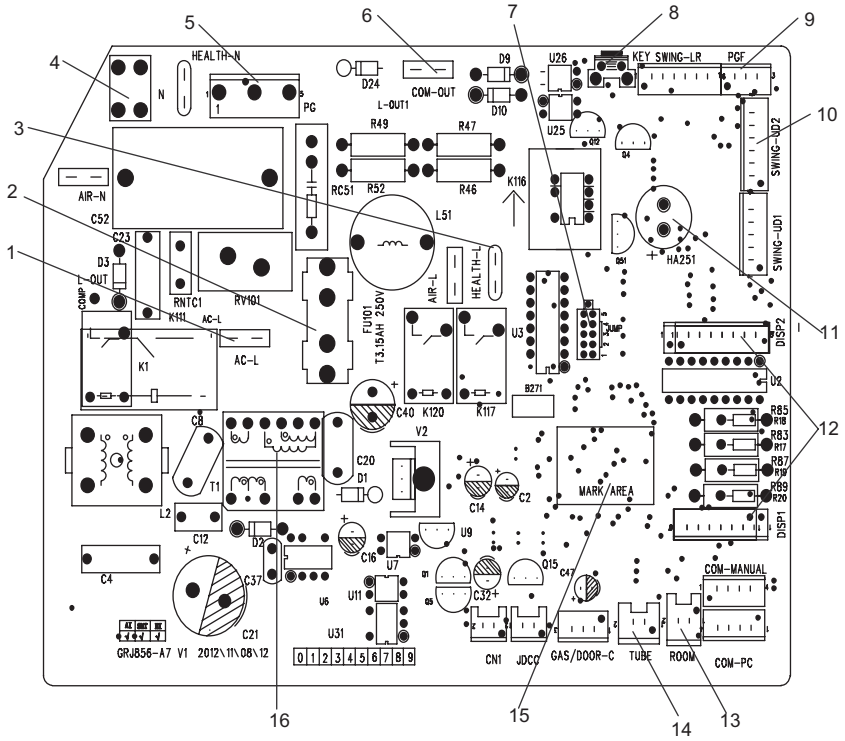


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

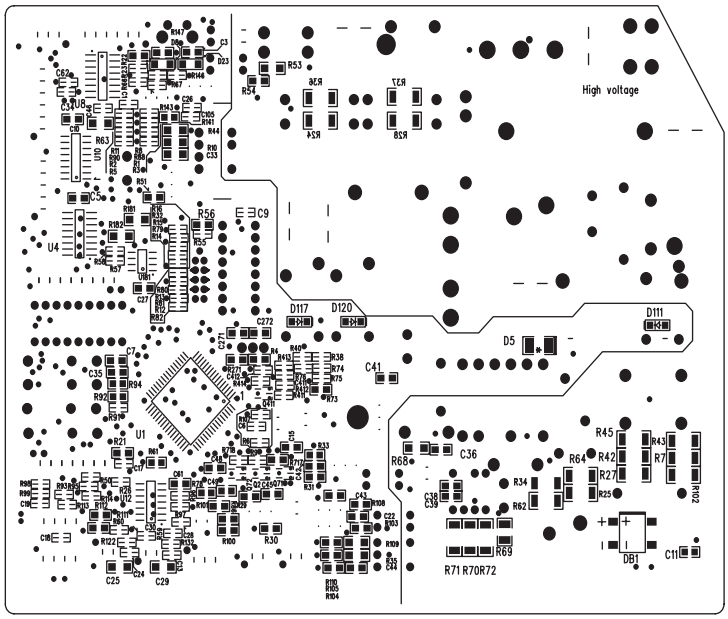
Indoor Unit

• Top view



No.	Name
1	Port of live wire
2	Protective tube
3	Live wire of health function
4	Port of neutral wire
5	Port of indoor fan
6	Communication port
7	Jumper cap
8	Auto button
9	Feedback of indoor fan
10	Port of motor for vertical swing
11	Buzzer
12	Port of display
13	Port of indoor ambient temperature sensor
14	Port of indoor pipe temperature sensor
15	Main chip
16	High-frequency transformer

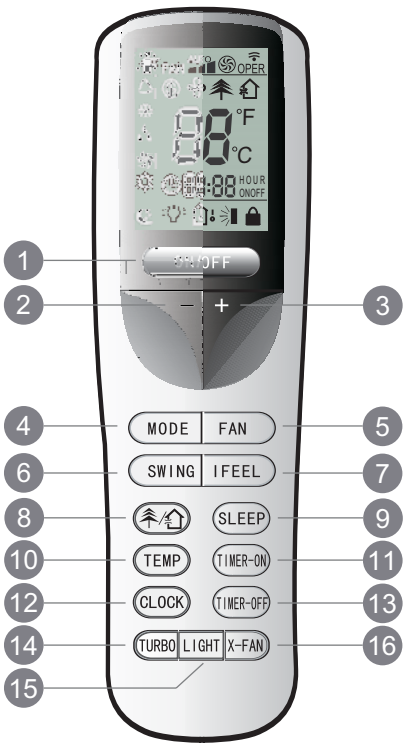
• Bottom view



6. Function and Control

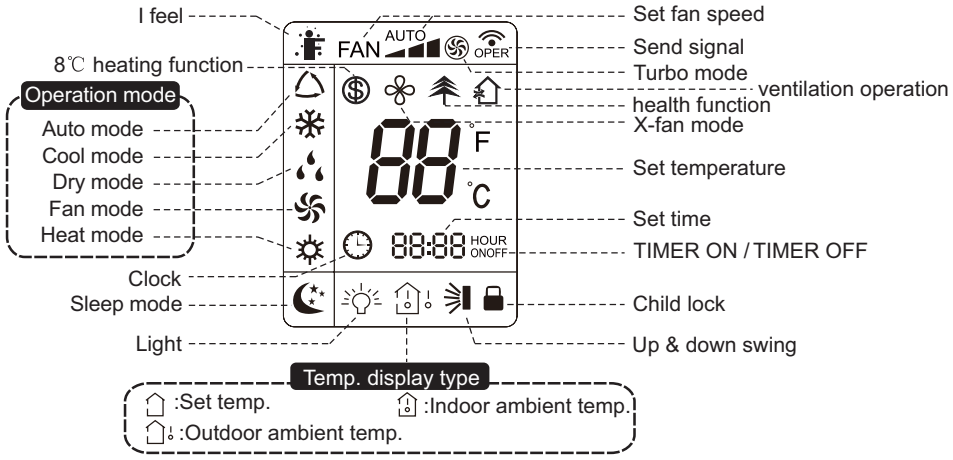
6.1 Remote Controller Introduction

Buttons on Remote Controller



1. ON/OFF button
2. - button
3. + button
4. MODE button
5. FAN button
6. SWING button
7. I FEEL button
8. ↟/⌂ button
9. SLEEP button
10. TEMP button
11. TIMER-ON button
12. CLOCK button
13. TIMER-OFF button
14. TURBO button
15. LIGHT button
16. X-FAN button

Introduction for Icons on Display Screen



Introduction for Buttons on Remote Controller

Note:

● After putting through the power, the air conditioner will give out a sound. Operation indictor " " is ON (red indicator). After that, you can operate the air conditioner by using remote controller.

● Under on status, pressing the button on the remote controller, the signal icon " "on the display of remote controller will blink once and the air conditioner will give out a “de” sound, which means the signal has been sent to the air conditioner.

● Under off status, set temperature and clock icon will be displayed on the display of remote controller (If timer on, timer off and light functions are set, the corresponding icons will be displayed on the display of remote controller at the same time); Under on status, the display will show the corresponding set function icons.

1. ON/OFF Button

Press this button to turn on the unit. Press this button again to turn off the unit.

2. - Button

Press this button to decrease set temperature. Holding it down above 2 seconds rapidly decreases set temperature. In AUTO mode, set temperature is not adjustable.

3. + Button

Press this button to increase set temperature. Holding it down above 2 seconds rapidly increases set temperature. In AUTO mode, set temperature is not adjustable.

4. MODE Button

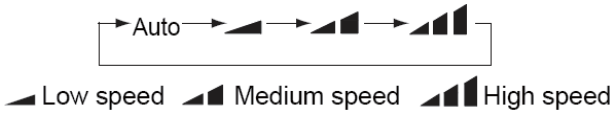
Each time you press this button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, FAN, and HEAT*, as the following:

*Note:Only for models with heating function.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LCD, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.
(As for cooling only unit, it won't have any action when it receives the signal of heating operation.)

5. FAN Button

This button is used for setting Fan Speed in the sequence that goes from AUTO, , to, then back to Auto.



6. SWING Button

Press this button to set up &down swing angle, which circularly changes as below:

This remote controller is universal. If any command , or is sent out, the unit will carry out the command as indicates the guide louver swings as:

7. I FEEL Button

Press this button to turn on I FEEL function. The unit automatically adjust temperature according to the sensed temperature. Press this button again to cancel I FEEL function.

8. / Button

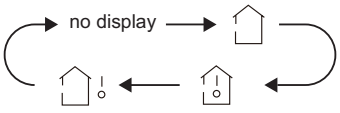
Press this button to achieve the on and off of healthy and scavenging functions in operation status. Press this button for the first time to start scavenging function; LCD displays "". Press the button for the second time to start healthy and scavenging functions simultaneously; LCD displays "" and "". Press this button for the third time to quit healthy and scavenging functions simultaneously. Press the button for the fourth time to start healthy function; LCD display "". Press this button again to repeat the operation above. (This function is applicable to partial of models)

9. SLEEP Button

Press this button to go into the SLEEP operation mode. Press it again to cancel this function. This function is available in COOL, HEAT (Only for models with heating function) mode to maintain the most comfortable temperature for you.

10. TEMP Button

Press this button can see indoor set temperature, indoor ambient temperature or outdoor ambient temperature on indoor unit's display. Temperature is set circularly by remote controller as below:



When selecting " " by remote controller or no display, temperature indicator on indoor unit displays set temperature.
When selecting " " by remote controller, temperature indicator on indoor unit displays indoor ambient temperature.
When selecting " " by remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.
Outdoor ambient temperature display may can't be selected for some models.When indoor unit receives " " signal, it displays indoor set temperature.
Only for the model whose indoor unit has dual-8 display.

11. TIMER-ON Button

Press this button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again.

After press of this button, disappears and "ON" blinks. 00:00 is displayed for ON time setting. Within 5 seconds, press + or - button to adjust the time value. Every press of either button changes the time setting by 1 minute. Holding down either button rapidly changes the time setting by 1 minute and then 10 minutes. Within 5 Seconds after setting,press TIMER ON button to confirm.

12. CLOCK Button

Press CLOCK button,blinking. Within 5 seconds, pressing + or - button adjusts the present time. Holding down either button above 2 seconds increases or decreases the time by 1 minute every 0.5 second and then by 10 minutes every 0.5 second. During blinking after setting, press CLOCK button again to confirm the setting, and then will be constantly displayed.

13. TIMER-OFF Button

Press this button to initiate the auto-off timer. To cancel the auto-timer program, simply press the button again. TIMER OFF setting is the same as TIMER ON.

14. TURBO Button

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

15. LIGHT Button

Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on, is displayed. If the light is turned off, disappears.

16. X-FAN Button

Pressing X-FAN button in COOL or DRY mode, the icon is displayed and the indoor fan will continue operation for 2 minutes in order to dry the indoor unit even though you have turned off the unit.

After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

Combination of "+" and "-" buttons: About lock

Press "+" and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked, is displayed. In this case, pressing any button, blinks three times.

Combination of "MODE" and "-" buttons:About switch between Fahrenheit and centigrade

At unit OFF, press "MODE" and "-" buttons simultaneously to switch between °C and °F.

Combination of "TEMP" and "CLOCK" buttons:About Energy-saving Function

Press "TEMP" and "CLOCK" simultaneously in COOL mode to start energy-saving function.Nixie tube on the remote controller displays "SE". Repeat the operation to quit the function.

Combination of "TEMP" and "CLOCK" buttons:About 8°C Heating Function

Press "TEMP" and "CLOCK" simultaneously in HEAT mode to start 8°C Heating Function Nixie tube on the remote controller displays "" and a selected temperature of "8°C".(46°F if Fahrenheit is adopted). Repeat the operation to quit the function.

About Back-lighting Function

The unit lights for 4s when energizing for the first time, and 3s for later press.

About HEALTH function (COLD PLASMA)

Turn on the unit, start up the fan (Breezing and X-FAN are excluded) and press HEATLTH button on remote controller to start health function (If there is not HEALTH button on remote controller, the unit defaults health function ON.)

Operation guide

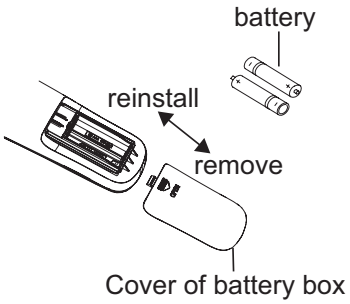
1. After putting through the power, press "ON/OFF" button on remote controller to turn on the air conditioner.
2. Press "MODE" button to select your required mode: AUTO, COOL, DRY, FAN,HEAT.
3. Press "+" or "-" button to set your required temperature. (Temperature can't be adjusted under auto mode).
4. Press "FAN" button to set your required fan speed: auto, low, medium and high speed.
5. Press "SWING" button to select fan blowing angle.

Replacement of Batteries in Remote Controller

1.Press the back side of remote controller marked with“ OPEN ”as shown in the fig, and then push out the cover of battery box along the arrow direction.

2. Replace two 7# (AAA 1.5V) dry batteries, and make sure the position of “+” polar and “-“ polar are correct.

3. Reinstall the cover of battery box.



Note:

● During operation, point the remote control signal sender at the receiving window on indoor unit.

● The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.

● Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.

● Replace new batteries of the same model when replacement is required.

● When you don’t use remote controller for a long time, please take out the batteries.

● If the display on remote controller is fuzzy or there’s no display, please replace batteries.

6.2 Brief Description of Modes and Functions

MS-H07AICN PT MS-H09AICN PT MS-H12AICN PT

1. Temperature Parameters

◆ Indoor preset temperature (T_{preset})

◆ Indoor ambient temperature ($T_{amb.}$)

2. Basic Functions

Once energized, in no case should the compressor be restarted within less than 3 minutes. In the situation that memory function is available, for the first energization, if the compressor is at stop before de-energization, the compressor will be started without a 3-minute lag; if the compressor is in operation before de-energization, the compressor will be started with a 3-minute lag; and once started, the compressor will not be stopped within 6 minutes regardless of changes in room temperature;

(1)Cool mode

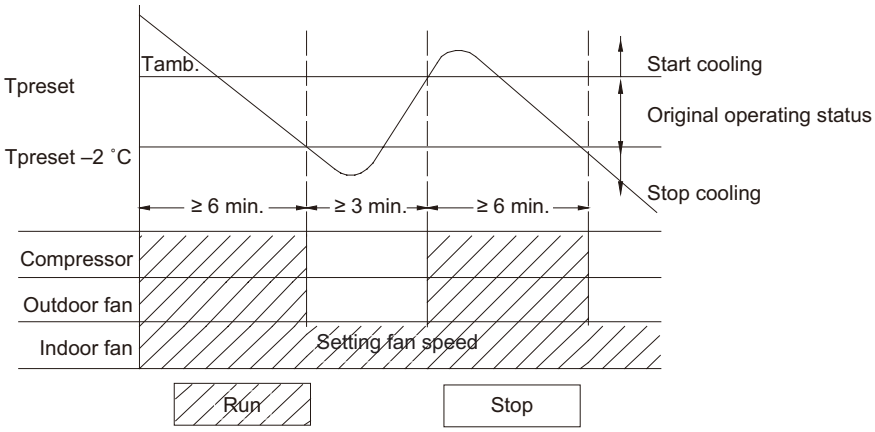
① The condition and process of cooling

If $T_{amb.} \geq T_{preset}$ cool mode will act, the compressor and outdoor fan will run, and the indoor fan will run at the set speed.

If $T_{amb.} \leq T_{preset+2°C}$, the compressor will stop, the outdoor fan will delay 30 seconds to stop, and the indoor fan will run at the set speed.

If $T_{preset+2°C} \leq T_{amb.} \leq T_{preset}$, the unit will keep running in the previous mode.

In this mode, the reversal valve will not be powered on and the temperature setting range is 16°C~30°C.



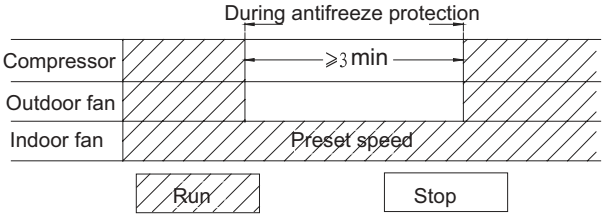
② Protection function

◆ Overcurrent protection

If total current is high, the compressor will run in limited frequency. If total current is too high, the compressor will stop, the outdoor fan will delay 30 seconds to stop, indoor unit will display E5 and outdoor yellow light will blink 5 times.

◆ Antifreezing protection

When the antifreezing protection is detected, the compressor will stop, the outdoor fan will stop after 30 seconds, and the indoor fan and swing motor will keep running in the original mode. When antifreezing protection is eliminated and the compressor has stopped for 3 minutes, the compressor will resume running in the original mode.



(2) Dehumidifying Mode

① Working conditions and process of dehumidifying

If $T_{amb.} > T_{preset}$, the unit will enter cooling and dehumidifying mode, in which case the compressor and the outdoor fan will operate and the indoor fan will run at low speed.

If $T_{preset-2°C} \leq T_{amb.} \leq T_{preset}$, the compressor remains at its original operation state.

If $T_{amb.} < T_{preset-2°C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will operate at low speed.

② Protection

Protection is the same as that under the cooling mode.

(3) Heat mode

① Working conditions and process of heating

If $T_{amb.} \leq T_{preset +2°C}$, the unit enters heating mode, in which case the four-way valve, the compressor and the outdoor fan will operate simultaneously, and the indoor fan will run at preset speed in the condition of preset cold air prevention.
If $T_{amb.} \geq T_{preset +5°C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will stop after 60-second blow at low speed
If $T_{preset +2°C} < T_{amb.} < T_{preset +5°C}$, the unit will maintain its original operating status.
Under this mode, the four-way valve is energized and temperature can be set within a range of 16~30°C. The operating symbol, the heating symbol and preset temperature are revealed on the display.
② Condition and process of defrost
When duration of successive heating operation is more than 45 minutes, or accumulated heating time more than 90 minutes, and one of the following conditions is reached, the unit will enter the defrost mode after 3 minutes.
(1)$T_{outdoor\ ambient} > 5°C$, $T_{outdoor\ tube} \leq -2°C$;
(2) $-2°C \leq T_{outdoor\ ambient} < 5°C$, $T_{outdoor\ tube} \leq -6°C$;
(3) $-5°C \leq T_{outdoor\ ambient} < -2°C$, $T_{outdoor\ tube} \leq -8°C$;
(4)$-10°C \leq T_{outdoor\ ambient} < -5°C$, $T_{outdoor\ tube} - T_{compensatory} \leq (T_{outdoor\ ambient-3°C})$
(5)$T_{outdoor\ ambient} < -10°C$, $T_{outdoor\ tube} - T_{compensatory} \leq (T_{outdoor\ ambient-3°C})$
(after energizing, $T_{compensatory}=0°C$ during the first defrosting; if it is not the first defrosting, $T_{compensatory}$ is confirmed by $T_{outdoor\ tube}$ of quitting last defrosting: a. when $T_{outdoor\ tube} > 2°C$, $T_{compensatory}=0°C$; b. when $T_{outdoor\ tube} \leq 2°C$, $T_{compensatory}=3°C$)
At that time, the indoor fan stops and the compressor stops, and after 30 seconds the outer fan will stop, and then after 30 seconds, the four-way valve will stop. After 30 seconds, the compressor is initiated for raising the frequency to defrost frequency.
When the compressor has operated under defrost mode for 7.5 minutes, or $T_{outdoor\ ambient} \geq 10°C$, the compressor will be converted to 46Hz operation. After 30 seconds, the compressor will stop. And after another 30 seconds, the four-way valve will be opened, and after 60 seconds, the compressor and the outer fan will be started, the indoor fan will run under preset cold air prevention conditions, and H1 will be displayed at temperature display area on the display panel. Defrost frequency is 85Hz.
③ Protection
◆ Cold air prevention
The unit is started under heating mode (the compressor is ON):
① In the case of $T_{indoor\ amb.} < 24°C$: if $T_{tube} \leq 40°C$ and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if $T_{tube} > 40°C$, the indoor fan also will run at low speed; and after 1-minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1-minute low speed operation or 2-minute non-operation, if $T_{tube} > 42°C$, the fan will run at present speed.
② In the case of $T_{indoor\ amb.} \geq 24°C$: if $T_{tube} \leq 42°C$, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within one-minute low speed operation, if $T_{tube} > 42°C$, the indoor fan will be converted to preset speed.
Note: $T_{indoor\ amb.}$ indicated in ① and ② refers to, under initially heating mode, the indoor ambient temperature before the command to start the compressor is performed according to the program, or after the unit is withdrawn from defrost, the indoor ambient temperature before the defrost symbol is cleared.
◆ Total current up and frequency down protection
If the total current $I_{total} \leq 6A$, frequency rise will be allowed; if $I_{total} \geq 7A$, frequency rise will not be allowed; if $I_{total} \geq 8A$, the compressor will run at reduced frequency; and if $I_{total} \geq 9A$, the compressor will stop and the outdoor fan will stop with a time lag of 30s.

(4) Fan mode

Under the mode, the indoor fan will run at preset speed and the compressor, the outdoor fan, the four-way valve and the electric heater will stop.
Under the mode, temperature can be set within a range of 16~30°C .

(5) AUTO mode

① Working conditions and process of AUTO mode
a. When $T_{ambient} \geq 26°C$, the unit will operate in cool mode. The set temperature is 25°C.
b. When $T_{ambient} \leq 22°C$, the heat pump unit will operate in Heat mode., set temperature be 20°C; the cooling only unit will operate in Fan mode, set temperature be 25°C.
c. When $23°C \leq T_{ambient} \leq 25°C$, the unit will operate in the previous state. If it is energized for the first time, it will operate in Fan mode.
d. Under auto mode, if its cooling mode, operation frequency is same as that under cooling mode; if its heating mode, operation frequency is same as that under heating mode.
② Protection
a. In cooling operation, protection is the same as that under the cooling mode;
b. In heating operation, protection is the same as that under the heating mode;
c. When ambient temperature changes, operation mode will be converted preferentially. Once started, the compressor will remain unchanged for at least 6 minutes.

(6) Common Protection Functions and Fault Display under COOL, HEAT, DRY and AUTO Modes

① Overload protection
T_{tube}: measured temperature of outdoor heat exchanger under cooling mode; and measured temperature of indoor heat exchanger under heating mode.

1) Cooling overload

a. If T_{tube}≤52°C, the unit will return to its original operation state.

b. If T_{tube}≥55°C, frequency rise is not allowed.

c. If T_{tube}≥58°C, the compressor will run at reduced frequency.

d. If T_{tube}≥62°C, the compressor will stop and the indoor fan will run at preset speed.

2) Heating overload

a. If T_{tube}≤50°C, the unit will return to its original operation state.

b. If T_{tube}≥53°C, frequency rise is not allowed.

c. If T_{tube}≥56°C, the compressor will run at reduced frequency.

d. If T_{tube}≥60°C, the compressor will stop and the indoor fan will blow residue heat and then stop.

② Exhaust temperature protection of compressor

If exhaust temperature ≥98°C, frequency is not allowed to rise.

If exhaust temperature ≥103°C, the compressor will run at reduced frequency.

If exhaust temperature ≥110°C, the compressor will stop.

If exhaust temperature ≤90°C and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

③ Communication fault

If the unit fails to receive correct signals for durative 3 minutes, communication fault can be justified and the whole system will stop.

④ Module protection

Under module protection mode, the compressor will stop. When the compressor remains at stop for at least 3 minutes, the compressor will resume its operation. If module protection occurs six times in succession, the compressor will not be started again.

⑤ Overload protection

If temperature sensed by the overload sensor is over 115°C, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. If temperature is below 95°C, the overload protection will be relieved°C.

⑥ DC bus voltage protection

If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

⑦ Faults of temperature sensors

3. Other Controls

(1) ON/OFF

Press the remote button ON/OFF: the on-off state will be changed once each time you press the button.

(2) Mode Selection

Press the remote button MODE, then select and show in the following ways: AUTO, COOL, DRY, FAN, HEAT, AUTO.

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1°C. Regulating Range: 16~30°C, the button is useless under the AUTO mode.

(4) Time Switch

You should start and stop the machine according to the setting time by remote control.

(5) SLEEP State Control

1. In cooling mode:

1.1 When the initial set temperature is 16~23°C,the temperature will rise 1°C by every hour after sleep function is set; the temperature will not change after rising 3°C; after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

1.2 When the initial set temperature is 24-27°C,the temperature will rise 1°C by every hour after sleep function is set; the temperature will not change after rising 2°C;after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

1.3 When the initial set temperature is 28-29°C,the temperature will rise 1°C by every hour after sleep function is set; the temperature will not change after rising 1°C; after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

1.4 When the initial set temperature is 30°C, the unit will keep on running at this temperature; after running for 7 hours, the temperature will decrease 1°C and it will not change after that.

Relationship between set temperature and running time:

Initial Temp.	Running time(T)							
0(start)	1	2	3	4	5	6	7	8
16	17	18	19	19	19	19	18	18
17	18	19	20	20	20	20	19	19
18	19	20	21	21	21	21	20	20
19	20	21	22	22	22	22	21	21
20	21	22	23	23	23	23	22	22
21	22	23	24	24	24	24	23	23
22	23	24	25	25	25	25	24	24
23	24	25	26	26	26	26	25	25

24	25	26	26	26	26	26	25	25
25	26	27	27	27	27	27	26	26
26	27	28	28	28	28	28	27	27
27	28	29	29	29	29	29	28	28
28	29	29	29	29	29	29	28	28
29	30	30	30	30	30	30	29	29
30	30	30	30	30	30	30	29	29

2. In heating mode:

2.1 When the initial set temperature is 16°C, the unit will keep on running at this temperature;

2.2 When the initial set temperature is 17~20°C, the temperature will decrease 1°C by every hour after sleep function is set; the temperature will not change after decreasing 1°C;

2.3 When the initial set temperature is 21~27°C, the temperature will decrease 1°C by every hour after sleep function is set; the temperature will not change after decreasing 2°C;

2.4 When the initial set temperature is 28~30°C, the temperature will decrease 1°C by every hour after sleep function is set; the temperature will not change after decreasing 3°C;

Relationship between set temperature and running time:

Initial Temp.	Running time(T)							
0(start)	1	2	3	4	5	6	7	8
16	16	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16
18	17	17	17	17	17	17	17	17
19	18	18	18	18	18	18	18	18
20	19	19	19	19	19	19	19	19
21	20	19	19	19	19	19	19	19
22	21	20	20	20	20	20	20	20
23	22	21	21	21	21	21	21	21
24	23	22	22	22	22	22	22	22
25	24	23	23	23	23	23	23	23
26	25	24	24	24	24	24	24	24
27	26	25	25	25	25	25	25	25
28	27	26	25	25	25	25	25	25
29	28	27	26	26	26	26	26	26
30	29	28	27	27	27	27	27	27

(6) Indoor Fan Control

The Indoor Fan can be set as HIGH, MED, LOW by remote control, and the Indoor Fan will be respectively run at high, medium, low speed. It will also be set as AUTO, and the Indoor Fan is as the followings at the automatic wind speed.

① Cooling mode: in auto cooling mode or normal cooling mode, the auto fan speed will run at below mode:

a. When Tamb.≥Tpreset+2°C, the indoor fan will run at high speed;

b. When Tpreset<Tamb.<Tpreset+2°C, the indoor fan will run at middle speed;

c. Tamb.≤Tpreset, the indoor fan will run at low speed;

Switches between high speed and middle speed, middle speed and low speed, high speed and low speed, running time of 3.5 minutes must be ensured.

② Heating mode: in auto heating mode or normal heating mode, the auto fan speed will run at below mode:

a. When Tamb.≤Tpreset+1°C, the indoor fan will run at high speed;

b. When Tpreset+1°C<Tamb.<Tpreset+3°C, the indoor fan will run at middle speed;

c. Tamb. ≥Tpreset+3°C, the indoor fan will run at low speed;

Switches between high speed and middle speed, middle speed and low speed, high speed and low speed, running time of 3.5 minutes must be ensured.

Fan mode is the same as cooling mode.

(7) Buzzer Control

The buzzer will send a “Di” sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler doesnt receive the remote control ON signal under the mode of heating mode.

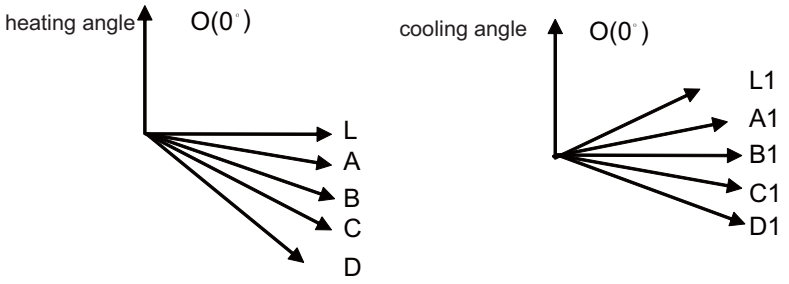
(8) Auto button

If the controller is on, it will stop by pressing the button, and if the controller is off, it will be automatic running state by pressing the button, swing on and light on, and the main unit will run based on the remote control if there is remote control order.

(9) Up-and-Down Swinging Control

When power on, the up-and-down motor will firstly move the air deflector to counter-clockwise, close the air outlet. After starting the machine, if you dont set the swinging function, heating mode and auto-heating mode, the up-and-down air deflector will move to D clockwise; under other modes, the up-and-down air deflector will move to L1. If you set the swinging function when you start the machine,

then the wind blade will swing between L and D. The air deflector has 7 swinging states: Location L, Location A, Location B, Location C, Location D, Location L to Location D, stop at any location between L-D (the included angle between L~D is the same). The air deflector will be closed at 0 Location, and the swinging is effectual only on condition that setting the swinging order and the inner fan is running. The indoor fan and compressor may get the power when air deflector is on the default location.



(10) Basic Display

① Operation pattern and mode pattern display

All the display patterns will display for a time when the power on, the operation indication pattern will display in red under standby status. When the machine is start by remote control, the indication pattern will light and display the current operation mode (the mode light includes: Cooling, heating and dehumidify). If you close the light key, all the display patterns will close.

② Double-8 display

According to the different setting of remote control, the nixie light may display the current temperature (the temperature scope is from 16°C to 30°C) and indoor ambient temperature. The set temperature displayed in auto cooling and fan mode is 25°C and the set temperature displayed in auto heating mode is 20°C. Under heating mode, nixie tube displays H1 or heating indicator is off 0.5s and blinks 10s in defrosting.(If you set the fahrenheit temperature display, the nixie light will display according to fahrenheit temperature)

(11) Protection function and failure display

E2: Freeze-proofing protection
E4: Exhausting protection
E5: Overcurrent protection
E6: Communication failure
H4: Overload protection
F1: Indoor ambient sensor start and short circuit (continuously measured failure in 30S)
F2: Indoor evaporator sensor start and short circuit (continuously measured failure in 30S)
F3: Outdoor ambient sensor start and short circuit (continuously measured failure in 30S)
F4: Outdoor condenser sensor start and short circuit (continuously measured failure in 30S, and dont measure within 10 minutes after defrosted)
F5: Outdoor exhausting sensor start and short circuit (continuously measured failure in 30S after the compressor operated 3 minutes)
H3: Overload protection of compressor
H5: Module protection
PH: High-voltage protection
PL: Low-voltage protection
P1: Nominal cooling and heating
P2: Maximum cooling and heating
P3: Medium cooling and heating
P0: Minimum cooling and heating

(12) Drying Function

You may start or stop the drying function under the modes of cooling and dehumidify at the starting status (The modes of automatism, heating and air supply do not have drying function). When you start the drying function, after stop the machine by pressing the switch button, you should keep running the inner fans for 2 minutes under low air damper (The swing will operate as the former status within 2 minutes, cooling indicator is on for 0.5s and then off for 10s in drying and other load is stopped), then stop the entire machine; When you stop the drying function, press the switch button will stop the machine directly. When you start the drying function, operating the drying button will stop the inner fans and close the guide louver.

(13) Memory function when interrupting the power supply

Memory content: mode, swing function, light, set temperature and wind speed. After interrupted the power supply, the machine will start when recovering the power according to the memory content automatically. If the last remote control command has not set the timed function, the system will remember the last remote control command and operate according it. If the last remote control command has set timed function and the power supply is interrupted before the timed time, the system will remember the timed function of the last remote control command, the timed time will recounted form power on. If the last remote control command has set timed function, the time is out and the system is start or stop according to the set time when the power supply is interrupted, the system will remember the operation status before the power supply was interrupted, and do not carry out timed action; The timed clock will not remembered.

(14)Electric heating band control of outdoor unit

① Compressor electric heating band control:

a) Start condition: the compressor is in off status and the $T_{outdoor\ ambient\ temperature}$≤-5°C.

b) Stop condition: the band is off when either of the below condition is met:

1.The compressor is in on status;

2.The compressor is in off status and the $T_{outdoor\ ambient\ temperature}$≥-5°C.

c) When outdoor ambient temperature sensor is in malfunction status, the electric heating band stops operation.

② Condenser electric heating band control:

1.When $T_{outdoor\ ambient}$≤1°C, the electric heating band starts working;

2. When enter defrosting and defrosting is finished, the chassis electric heating band starts working for 3min as the compressor starts. After the compressor starts for 3min and $T_{outdoor\ ambient}$≥3°C, the electric heating band stops operation.

3.When $T_{outdoor\ ambient}$≥3°C, the condenser electric heating band doesn't work.

4.When 1°C<$T_{outdoor\ ambient}$<3°C, the condenser electric heating band keeps the previous status.

When outdoor ambient temperature sensor is in malfunction status, the electric heating band stops operation; the electric heating band can work again after 2min of last stop.

(15)Compulsory defrosting function

① Start up compulsory defrosting function

Under ON status, set heating mode with remote controller and adjust the temperature to 16°C. Press "+, -, +, -, +,-" button successively within 5s and the complete unit will enter into compulsory defrosting status. Meanwhile, heating indicator will ON 10s and OFF 0.5s successively. (Note: If complete unit has malfunction or stops operation due to protection, compulsory defrosting function can be started up after malfunction or protection is resumed.

② Exit compulsory defrosting mode

After compulsory defrosting is started up, the complete unit will exit defrosting operation according to the actual defrosting result, and the complete unit will resume normal heating operation.

(16)Refrigerant recovery function (applicable for moving the unit or maintaining the unit)

① Start up refrigerant recovery function

Set cooling mode with remote controller within 5min after energization, adjust temperature at 16°C and press light button on remote controller for 3 times successively to any one indoor unit within 3s and then the complete unit will enter into refrigerant recovery status. All indoor units display Fo. Maintenance person close all liquid valves. After 5min, withstand the thimble of all checking valves with tools one by one. If there's no refrigerant spraying out, close corresponding valve immediately, turn off the unit with remote controller and then remove the connection pipe.

② Exit refrigerant recovery function

During refrigerant recovery process, if any one indoor unit receives any remote control signal or refrigerant recovery function has operates for about 25min, refrigerant recovery function will be exited automatically. If the complete unit is at standby status before refrigerant recovery, the complete unit will still at standby status after refrigerant recovery. If the complete unit is at ON status, the unit will operate according to original operation mode.

MS-H18AICN PT

1.Basic function of system

(1)Cooling mode

1.Under this mode, fan motor, swing will work under setting status, the temp. range is 16-30ºC(61-86 Fahrenheit scale)

2.Outdoor unit malfunction or unit stop running, indoor unit will keep original running status, malfunction displayed.

3.When0 (Tset-Tamb.), if indoor fan motor is high speed, that the fanmotorist running in middle speed, the middle speed or low speed will be maintained;(this condition should be executed when compressor ressor statr up); the super high speed will not rotate; When (Tamb-Tset) ≥1ºC , the fan will return to the setting fan speed.

(2)Dehumidifying mode

1.Under this mode, fan motor will run atlow speed,swing will work at setting status,setting temp. range is 16-30ºC(61-86 Fahrenheit scale)

2.Outdoor unit malfunction or protection, unit will stop, indoor unit will keep original running status, malfunction displayed.

(3)Fan mode

Under this mode,indoor fan motor couldbe setted at high,middle,low or auto speed,compressor,outdoor unit and valve will stop to run. Under this mode, temp. range should be 16-30ºC(61-86 Fahrenheit scale)

(4)Heating mode

1.Under this mode, temp. range should be 16-30ºC (61-86 Fahrenheit scale)

2.Working condition and procedure of heating mode: When unit turn on and enter into heating mode, indoor unit enter into anti-cool wind mode, when unit is stop running, and indoor fan motor turns on, blowing heat will act.

3.Protection function, under heating mode, compressor will stop to run due to malfunction happened, indoor fan motor will blow surplus heat.

4.Defrosting control: When receiving the defrost ing signal from outdoorunit, displayerwill Heating indicator on indoor display is off for 0.5s and then on for 10s during blinking,10slater, indoor fan motor will stop to run.

5.Anti-coold wind function

6.Blow heat air function

a.If heating temp. meets the compressor stop running condition, compressors, outdoor fan motor will stop to run, the upper and lower guide louver will rotate to horizontal position L, indoor fan motor run at setting fan speed for 60s, then the indoor fan motor will stop to run.

b.Due to PG motor block running, the air guide board will keep the position when it stopping. (under each mode), other malfunction unit will stop to run, the upper and lower air guide louver will rotate to horizontal position L, indoor fan unit will run at setting fan speed and run for 60s, indoor fan unit will stop to run.

(5)Auto mode:

1.When Tamb≥26 , select the cooling mode, at this time, the setting temp. is 25ºC (77 Fahrenheit scale)

2.Cooling and heating units: T_{amb}≤22ºC , will run at heating mode, at this time, the setting temp. is 20 (68 Fahrenheit scale)

3. Cooling only unit: When T_{amb}≤22ºC , it will run at Fan mode, the setting temp. is 25ºC (77 Fahrenheit scale)

4.When 23ºC ≤$T_{indoor\ amb.}$≤ 25ºC ,firstly enter into auto mode and run at auto fan speed, other modes will run at auto mode, will keep the previous running mode. (When entering into Dehumidifying mode, it will run at auto fan speed)

(6)Auto fan speed controlmode

2. Display state of indoor indicators

(1) State of indoor display board

1. When the unit is powered on, all patterns will be displayed and then only power indicator is on. When the unit is turned on with a remote controller, the operating indicator is on and operation mode which is set currently is displayed.

2. In defrosting mode, heating indicator on indoor display is off for 0.5s and then on for 10s during blinking.

3. Set temperature is displayed on "Double 8".

●Display of operation patterns and mode patterns

When the unit is powered on, all patterns will be displayed and the standby operation indicator will become red. When the unit is turned on through a remote controller, the operation indicator is light. At the same time, operating mode patterns (mode indicators include cooling, heating and dehumidification modes) set currently are displayed, and dynamic display patterns of wind speed are displayed. If the light button is switched off, all display will be turned off.

●Temperature display control mode of separated air conditioner

① When user sets the remote controller at set temperature display, currently set temperature will be displayed.

② Only when remote signals are converted from other display states into indoor ambient temperature display state, the remote controller will display indoor ambient temperature for 3 seconds and then return to set temperature display.

③ Only when remote signals are converted from other display states into outdoor ambient temperature display state, the remote controller will display outdoor ambient temperature for 3 seconds and then return to set temperature display.

④ If the controller is lack of outdoor display functions, as the signal is received, set temperature will be displayed.

⑤ When the unit is turned off, temperature display will be compulsively set at given temperature by the controller. When the unit is turned on, patterns as set by remote signals will be displayed.

⑥ If user does not set up temperature display state, given temperature will be displayed.

(2) Failure display of indoor unit

1. Requirements for failure display

When multiple failures appear at the same time, failure protection codes shall be displayed alternatively.

① Hardware failures shall be displayed immediately, refe rring to requirements in "Failure State Display Table";

② Operation states shall be displayed immediately, referring to requirements in "Failure State Display Table";

③ Other failures shall be displayed 200s after the compressor stops, referring to requirements in "Failure State Display Table". (Note: in the case that the unit is switched off with the remote controller, or the compressor is switched on again, failure display waiting time (200s) shall be cleared.)

④ Frequency limitation and reduction states shall be displayed by means of remote calling.

2. Failure display control

Indicator failure display shall be kept synchronous with Double 8 failure display, that is, during indicator blinking, failure code corresponding to such indicator shall be displayed on Double 8.

3. Method of remote calling of failure display

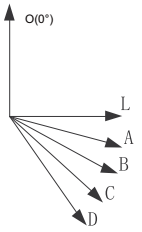
Entering the failure remote calling mode: push the light button six times within 3s to call out relevant failure protection code; Quit the failure remote calling mode: push the light button six times within 3s or call out failure display to enter it for 5 minutes and then quit.

3. Other control targets

(1) Up and down wind blow functions

When the unit is powered on, the up and down wind blow motor will turn a wind deflector anti-clockwise to Position 0 to shut down the air outlet. When the unit is switched on and wind blow function is not preset, under the heating mode, up and down wind blades will turn clockwise to position D; and under other modes, the up and down wind blades will turn clockwise to position L. If wind blow function is set at the same time as the unit is switched on, the wind blades will swing between position L and D. The wind blades can be kept in seven states: position L, position A, position B, position C, position D, swing between position L and D, stop at one position from L to D. When the unit is turned off, the wind deflector will be closed up to position 0. Wind blow action is effective only when wind blow commands are set and the indoor unit is running.

Note: When the wind blades are set at position L to B, position A to C, or position B to D through remote setting, the wind deflector will swing between position L and D. L—A—B—C—D.



(2) Buzzer

When the controller is powered on, signals from a remote controller are received, or the auto button is pushed, a buzzer will give out prompt tone.

(3) Auto button

When the button is pushed, the unit will operate in auto mode and the indoor fan will run in auto state. When the indoor fan is running, the wind blow motor will work. When the button is pushed again, the unit will be switched off. At the same time as the button is pushed, the whole unit will be powered on and enter into fast test mode; when the unit is powered on and detects for continuous 20s (such time shall not be fast tested) that the auto button is pushed, and if the unit is currently at fast test state, the unit will quit the fast test state.

(4) Sleep function

In this mode, the unit will automatically select appropriate sleep curve to operate according to different set temperature.

1. If sleep function is set in cooling, the system will increase set temperature automatically for operation in a certain degree.
2. If sleep function is set in heating mode, the system will decrease set temperature automatically for operation in a certain degree.

(5) Timing function

The main board integrates general timing and moment timing. Such two timing functions can be selected through a remote controller on which different functions are arranged.

1. General timing:

Timing start: timing start can be set when the unit is off. When preset time is reached, the controller will operate in a preset mode. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours. Timing stop: timing stop can be set when the unit is on. When preset time is reached, the system will be turned off. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours.

2. Moment timing

Timing start: if timing start is set when the system is at operation state, the system will continue to operate; if timing start is set when the system is at stop, as the preset time is reached, the system will start to run in preset mode. Timing stop: if timing stop is set when the system is at stop state, the system will keep standby; if timing stop is set when the system is in operation, as the preset time is reached, the system will stop running.

Timing change:

When the system is in timing mode, start and stop can be set through the On/Off button on the remote controller; or timing time can be reset and the system will operate according to the latest setting. When the system is in operation and both timing start and stop are set, the system will stay at currently set operation state. When preset timing stop time is reached, the system will stop working. When the system is at stop state and both timing start and stop are set, the system will keep at stop state. When preset timing start time is reached, the system will start operation. From then on, the system will operate in preset mode at a preset start time and stop at a preset stop time everyday. If timing stop time is set as the same as timing start time, a stop command will be executed.

(6) Dry and mildew proof function

Dry and mildew proof function can be set in cooling and dehumidification modes.

(7) Control of indoor fan

Indoor fan can be set at four levels, super-high, high, middle and low, with a remote controller. When one level is set, the fan will thus operate at such level. The fan can also be set at auto state.

(8) Power-failure memory function

What will be memorized includes modes, up and down wind blow, light, preset temperature, preset wind speed, general timing (no memory for moment timing), and Fahrenheit /Celsius degree. When the unit is powered on again after power failure, operation continues according to memorized content. If timing is not set by the last remote control command, the system will memorize the last remote control command and operate in the mode specified in the last remote control command. If timing is set by the last remote control command and power failure happens before the preset time, the system, as powered on again, will memorize the timing function set by the last remote control command. Timing will be re-counted from the time at which the system is powered again. If timing is set by the last remote control command and timing of start or stop is reached before power failure, the system, as powered on again, will memorize operation state before power failure and will not perform timing action. Moment timing is out the range of memory.

(9) Locked Protection of PG Motor

When starting up the fans, if the motor has run at a lower speed continuously for a period, for preventing automatic protection of the motor, stop running, and display the locked operation; if the machine is running at present, the code of the locked fault---H6 of double-eight digital tubes will be displayed; if the machine is shut down at present, the information of the locked fault will not be displayed.

(10) Super Power Function

In cooling and heating modes (automatic, dehumidifying and air-supplying modes are without strong power), press the button of Super Power, the wind speed on the remote controller is displayed as super-high air flow, and the inner fans are also turned to super-high air flow;

(11) Health Function

When the inner fans are running, the remote controller is set at the Health function at this time (if there is no Health button on the remote controller, the Health On order is defaulted), then start the Health function device.

(12) Fault Detection of Thermo-bulb

1. Indoor Environment Thermo-bulb:

Detect the fault of thermo-bulb at any time;

2. Indoor Pipe Temperature Thermo-bulb:

During the defrosting period, the fault of the thermo-bulb will be not detected, which shall be detected in 5 minutes after defrosting is completed; the fault of the thermo-bulb will be detected at other times;

3. Protecting Treatments of Thermo-bulb:

When the thermobulb is detected to be short-circuited continuously for 5 seconds: It is regarded that the temperature detected by the thermo-bulb is over-high (or unlimited), then the whole machine will exert corresponding safety stops according to the over-high temperature sensed by the thermo-bulb, and display corresponding temperature safety stops and faults of the thermo-bulb simultaneously.

When the thermo-bulb is detected in open circuit continuously for 5 seconds: stop the machine in protection, directly display corresponding faults of the thermo-bulb.

(13) Refrigerant recycling function (applicable when changing installation location or in maintenance)

1. Enter refrigerant recycling function

Within 5min after energizing (unit ON or OFF status is ok), continuously press LIGHT button for 3 times within 3s to enter refrigerant recycling mode; Fo is displayed and refrigerant recycling function is started. At this moment, the maintenance people closes liquid valve. After 5min, stick the thimble of maintenance valve with a tool. If there is no refrigerant spraying out, close the gas valve immediately and then turn off the unit to remove the connection pipe.

2. Exit refrigerant recycling function

After entering refrigerant recycling mode, when receive any remote control signal or enter refrigerant recycling mode for 25min, the unit will exit refrigerant recycling mode automatically If the unit is in standby mode before refrigerant recycling, it will be still in standby mode after finishing refrigerant recycling; if the unit is in ON status before refrigerant recycling, it will still run in original operation mode.

(14) Compulsive Defrosting Function

1. Start up compulsory defrosting function

Under ON status, set heating mode with remote controller and adjust the temperature to 16℃ . Press “+, -, +, -, +,-” button successively within 5s and the complete unit will enter into compulsory defrosting status. Meanwhile, heating indicator on indoor unit will ON 10s and OFF 0.5s successively. (Note: If complete unit has malfunction or stops operation due to protection, compulsory defrosting function can be started up after malfunction or protection is resumed.

2. Exit compulsory defrosting mode

After compulsory defrosting is started up, the complete unit will exit defrosting operation according to the actual defrosting result, and the complete unit will resume normal heating operation.

Part Ⅱ : Installation and Maintenance

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.
The following contents are very important for installation and maintenance.

Please follow the instructions below.

●The installation or maintenance must accord with the instructions.
●Comply with all national electrical codes and local electrical codes.
●Pay attention to the warnings and cautions in this manual.
●All installation and maintenance shall be performed by distributor or qualified person.
●All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.
●Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.

Warnings

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.
10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.
11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.
12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.
13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
14. Replace the fuse with a new one of the same specification if it is burnt down; don't replace it with a cooper wire or conducting wire.
15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)
2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 20kg.
3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.
4. Ware safety belt if the height of working is above 2m.
5. Use equipped components or appointed components during installation.
6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

1. Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.
2. Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture or other hazards.
3. Make sure no refrigerant gas is leaking out when installation is completed.
4. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.
5. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

Improper installation may lead to fire hazard, explosion, electric shock or injury.

Main Tools for Installation and Maintenance

1. Level meter, measuring tape

2. Screw driver

3. Impact drill, drill head, electric drill

4. Electroprobe

5. Universal meter

6. Torque wrench, open-end wrench, inner hexagon spanner

7. Electronic leakage detector

8. Vacuum pump

9. Pressure meter

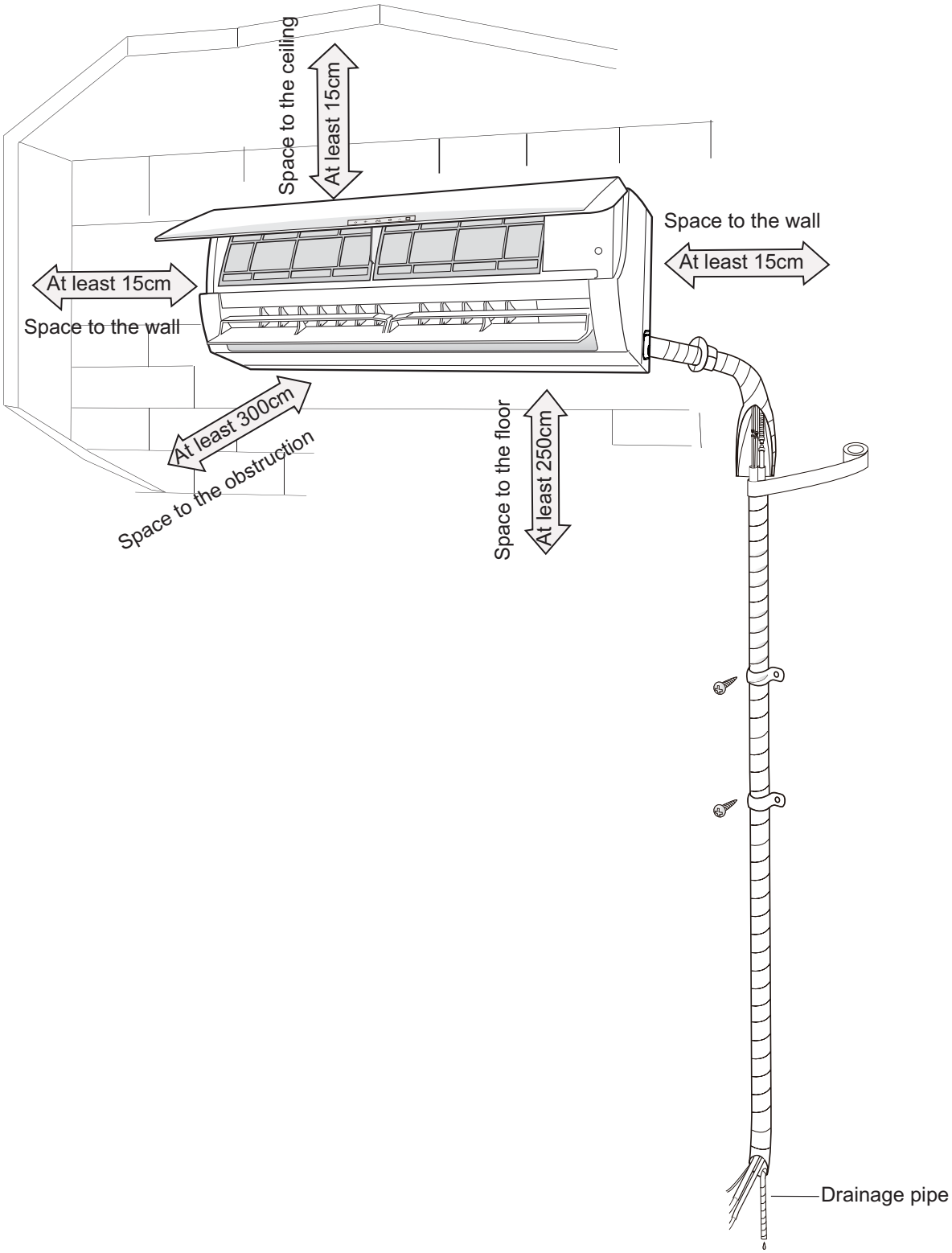
10. Pipe pliers, pipe cutter

11. Pipe expander, pipe bender

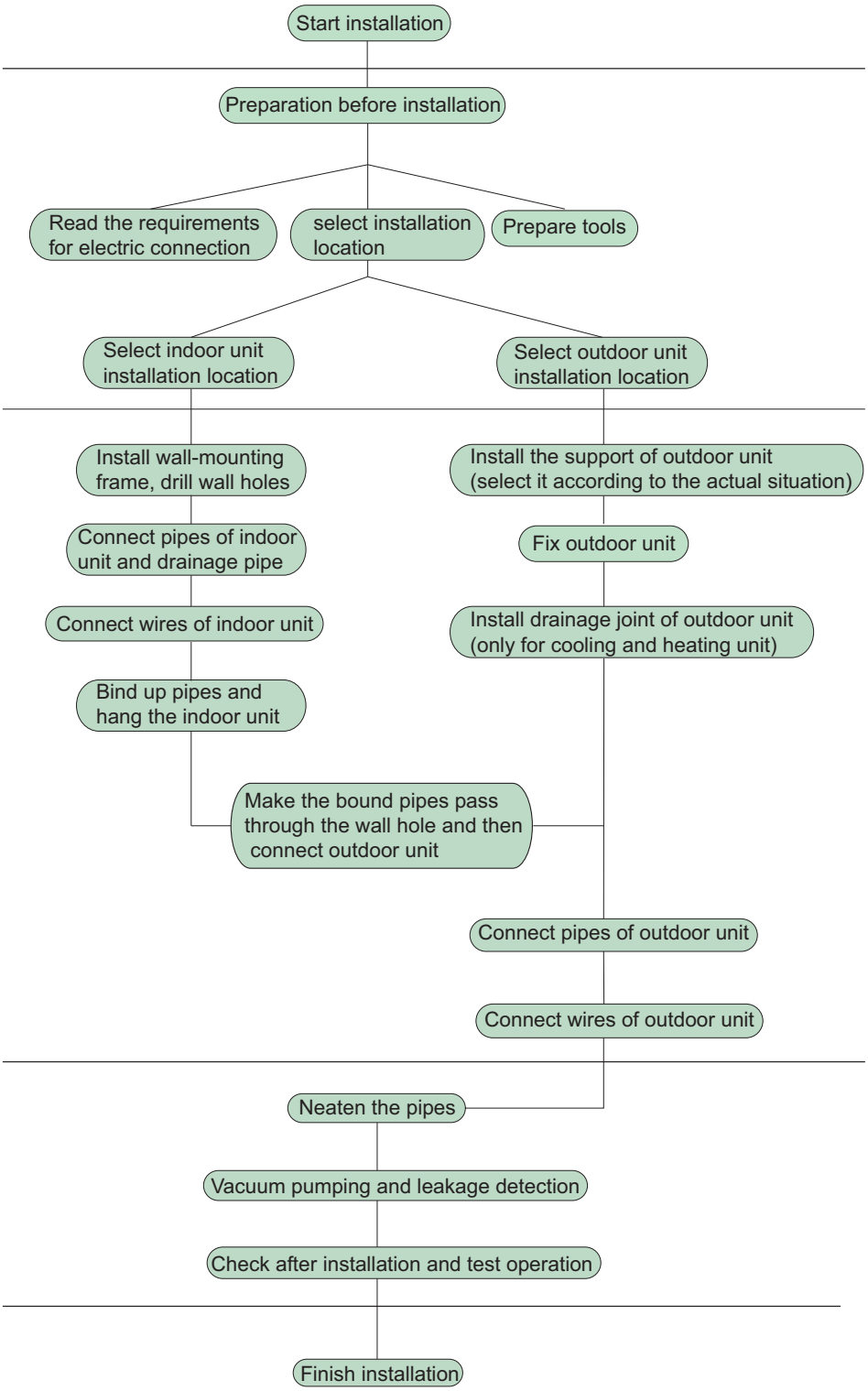
12. Soldering appliance, refrigerant container

8. Installation

8.1 Installation Dimension Diagram



Installation procedures



Note: this flow is only for reference; please find the more detailed installation steps in this section.

8.2 Installation Parts-checking

No.	Name	No.	Name
1	Indoor unit	8	Sealing gum
2	Outdoor unit	9	Wrapping tape
3	Connection pipe	10	Support of outdoor unit
4	Drainage pipe	11	Fixing screw
5	Wall-mounting frame	12	Drainage plug(cooling and heating unit)
6	Connecting cable(power cord)	13	Owner's manual, remote controller
7	Wall pipe		

⚠ **Note:**
1.Please contact the local agent for installation.
2.Don't use unqualified power cord.

8.3 Selection of Installation Location

1. Basic Requirement:
Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:
(1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
(2) The place with high-frequency devices (such as welding machine, medical equipment).
(3) The place near coast area.
(4) The place with oil or fumes in the air.
(5) The place with sulfureted gas.
(6) Other places with special circumstances.

2. Indoor Unit:
(1) There should be no obstruction near air inlet and air outlet.
(2) Select a location where the condensation water can be dispersed easily and won't affect other people.
(3) Select a location which is convenient to connect the outdoor unit and near the power socket.
(4) Select a location which is out of reach for children.
(5) The location should be able to withstand the weight of indoor unit and won't increase noise and vibration.
(6) The appliance must be installed 2.5m above floor.
(7) Don't install the indoor unit right above the electric appliance.
(8) The appliance shall not be installed in the laundry.

8.4 Electric Connection Requirement

1. Safety Precaution
(1) Must follow the electric safety regulations when installing the unit.
(2) According to the local safety regulations, use qualified power supply circuit and air switch.
(3) Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring may result in electric shock,fire hazard or malfunction. Please install proper power supply cables before using the air conditioner.
(4) Properly connect the live wire, neutral wire and grounding wire of power socket.
(5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.
(6) Do not put through the power before finishing installation.
(7) For appliances with type Y attachment,the instructions shall contain the substance of thefollowing.If the supply cord is damaged,it must be replaced by the manufacturer,its service agent or similarly qualified persons in order to avoid a hazard.
(8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

2. Grounding Requirement:
(1) The air conditioner is first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
(2) The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
(3) The grounding resistance should comply with national electric safety regulations.
(4) The appliance must be positioned so that the plug is accessible.
(5) An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
(6) Including an air switch with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload. (Caution: please do not use the fuse only for protect the circuit)

8.5 Installation of Indoor Unit

1. Choosing Installation location
Recommend the installation location to the client and then confirm it with the client.

2. Install Wall-mounting Frame
(1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
(2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) and then fill the plastic expansion particles in the holes.

(3) Fix the wall-mounting frame on the wall with tapping screws (ST4.2X25TA) and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

3. Install Wall-mounting Frame

(1) Choose the position of piping hole according to the direction of outlet pipe. The position of piping hole should be a little lower than the wall-mounted frame.(As show in Fig.1)

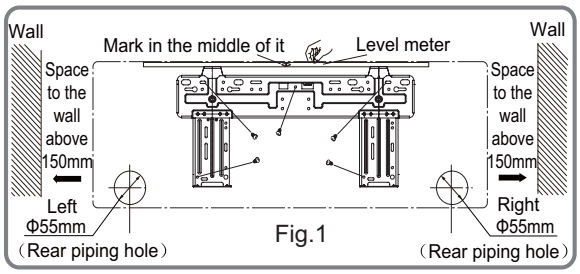


Fig.1

(2) Open a piping hole with the diameter of Φ55mm on the selected outlet pipe position.In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of 5-10°.(As show in Fig.2)

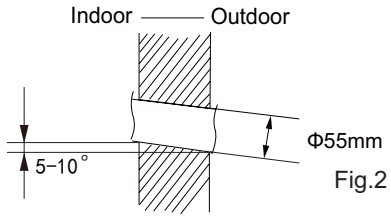


Fig.2

⚠ **Note:**

(1) Pay attention to dust prevention and take relevant safety measures when opening the hole.

(2) The plastic expansion particles are not provided and should be bought locally.

4. Outlet Pipe

(1) The pipe can be led out in the direction of right, rear right, left or rear left.(As show in Fig.3)

(2) When selecting leading out the pipe from left or right, please cut off the corresponding hole on the bottom case.(As show in Fig.4)

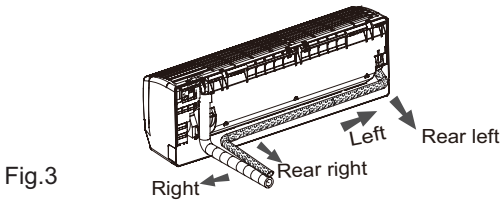


Fig.3

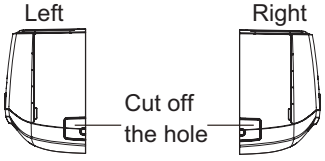


Fig.4

5. Connect the Pipe of Indoor Unit

(1) Aim the pipe joint at the corresponding bellmouth.(As show in Fig.5)

(2) Pretightening the union nut with hand.

(3) Adjust the torque force by referring to the following sheet. Place the open-end wrench on the pipe joint and place the torque wrench on the union nut. Tighten the union nut with torque wrench.(As show in Fig.6)

(4) Wrap the indoor pipe and joint of connection pipe with insulating pipe, and then wrap it with tape.(As show in Fig.7)

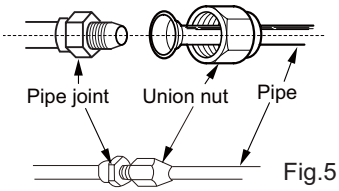


Fig.5

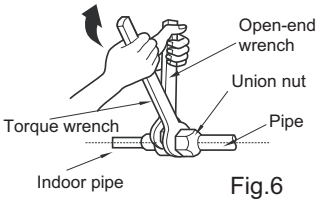


Fig.6

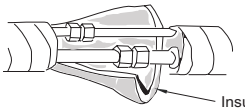


Fig.7

Refer to the following table for wrench moment of force:

Hex nut diameter(mm)	Tightening torque(N·m)
Φ6	15~20
Φ9.52	30~40
Φ12	45~55
Φ16	60~65
Φ19	70~75

6. Install Drain Hose

(1) Connect the drain hose to the outlet pipe of indoor unit.(As show in Fig.8)

(2) Bind the joint with tape.(As show in Fig.9)

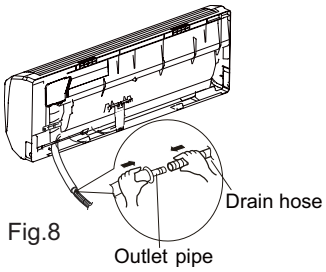


Fig.8

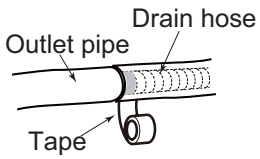


Fig.9

⚠ **Note:**

(1) Add insulating pipe in the indoor drain hose in order to prevent condensation.

(2) The plastic expansion particles are not provided.
(As show in Fig.10)

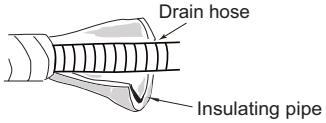


Fig.10

7. Connect Wire of Indoor Unit

(1) Open the panel, remove the screw on the wiring cover and then take down the cover.(As show in Fig.11)

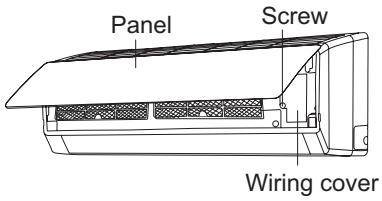


Fig.11

(2) Make the power connection wire go through the cable-cross hole at the back of indoor unit and then pull it out from the front side.(As show in Fig.12)

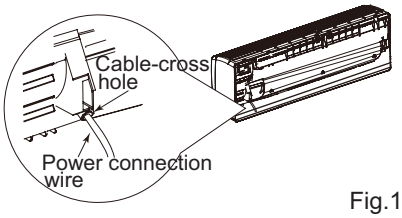


Fig.12

(3) Remove the wire clip; connect the power connection wire to the wiring terminal according to the color; tighten the screw and then fix the power connection wire with wire clip.(As show in Fig.13)

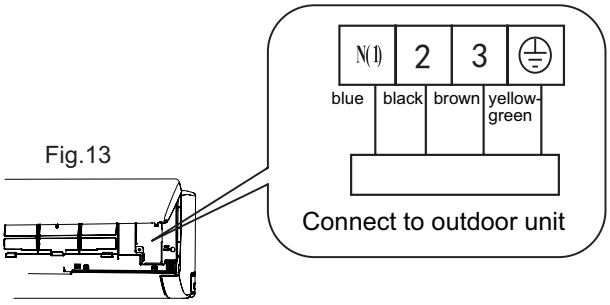


Fig.13

Note: The wiring connect is for reference only, please refer to the actual one.

(4) Put wiring cover back and then tighten the screw.
(5) Close the panel.

⚠ **Note:**

(1) All wires of indoor unit and outdoor unit should be connected by a professional.
(2) If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.
(3) For the air conditioner with plug, the plug should be reachable after finishing installation.
(4) For the air conditioner without plug, an air switch must be installed in the line. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

8. Bind up Pipe

(1) Bind up the connection pipe, power cord and drain hose with the band.(As show in Fig.14)
(2) Reserve a certain length of drain hose and power cord for installation when binding them. When binding to a certain degree, separate the indoor power and then separate the drain hose.(As show in Fig.15)
(3) Bind them evenly.
(4) The liquid pipe and gas pipe should be bound separately at the end.

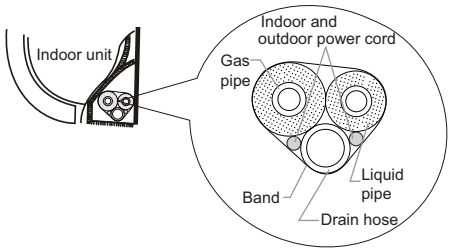


Fig.14

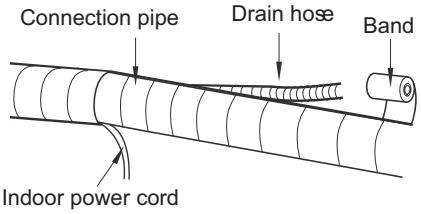


Fig.15

⚠ **Note:**

(1) The power cord and control wire can't be crossed or winding.
(2) The drain hose should be bound at the bottom.

9. Hang the Indoor Unit

(1) Put the bound pipes in the wall pipe and then make them pass through the wall hole.
(2) Hang the indoor unit on the wall-mounting frame.
(3) Stuff the gap between pipes and wall hole with sealing gum.
(4) Fix the wall pipe. (As show in Fig.16)
(5) Check if the indoor unit is installed firmly and closed to the wall.(As show in Fig.17)

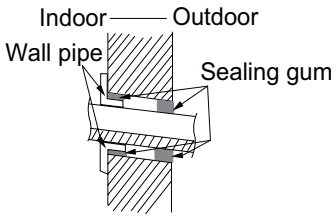
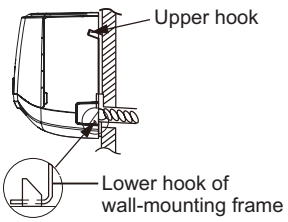


Fig.16

Fig.17



⚠ **Note:**

Do not bend the drain hose too excessively in order to prevent blocking.

8.6 Check after Installation and Test Operation

1. Check after Installation

Check according to the following requirement after finishing installation.

NO.	Items to be checked	Possible malfunction
1	Has the unit been installed firmly?	The unit may drop, shake or emit noise.
2	Have you done the refrigerant leakage test?	It may cause insufficient cooling (heating) capacity.
3	Is heat insulation of pipeline sufficient?	It may cause condensation and water dripping.
4	Is water drained well?	It may cause condensation and water dripping.
5	Is the voltage of power supply according to the voltage marked on the nameplate?	It may cause malfunction or damage the parts.
6	Is electric wiring and pipeline installed correctly?	It may cause malfunction or damage the parts.
7	Is the unit grounded securely?	It may cause electric leakage.
8	Does the power cord follow the specification?	It may cause malfunction or damage the parts.
9	Is there any obstruction in air inlet and air outlet?	It may cause insufficient cooling (heating).
10	The dust and sundries caused during installation are removed?	It may cause malfunction or damaging the parts.
11	The gas valve and liquid valve of connection pipe are open completely?	It may cause insufficient cooling (heating) capacity.

2. Test Operation

(1) Preparation of test operation

● The client approves the air conditioner installation.

● Specify the important notes for air conditioner to the client.

(2) Method of test operation

● Put through the power, press ON/OFF button on the remote controller to start operation.

● Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.

● If the ambient temperature is lower than 16℃ , the air conditioner can't start cooling.

9. Maintenance

9.1 Error Code List

NO.	Malfunction Name	Display Method of Indoor Unit				Display Method of Outdoor Unit			A/C status	Possible Causes
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
1	Indoor ambient temperature sensor is open/short circuited	F1		OFF 3S and blink once					During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	1. Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal. 2. Components in mainboard fell down leads short circuit. 3. Indoor ambient temp. sensor damaged.(check with sensor resistance value chart) 4. Mainboard damaged.
2	Indoor evaporator temperature sensor is open/short circuited	F2		OFF 3S and blink twice					AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing) 4. Mainboard damaged.
3	Internal motor (fan motor) do not operate	H6	OFF 3S and blink 11 times						Internal fan motor, external fan motor, compressor and electric heater stop operation,guide louver stops at present location.	1. Bad contact of DC motor feedback terminal. 2. Bad contact of DC motor control end. 3. Fan motor is stalling. 4. Motor malfunction. 5. Malfunction of mainboard rev detecting circuit.
4	Malfunction protection of jumper cap	C5	OFF 3S and blink 15 times						Wireless remote receiver and button are effective, but can not dispose the related command	1. No jumper cap insert on mainboard. 2. Incorrect insert of jumper cap. 3. Jumper cap damaged. 4. Abnormal detecting circuit of mainboard.

9.2 Procedure of Troubleshooting

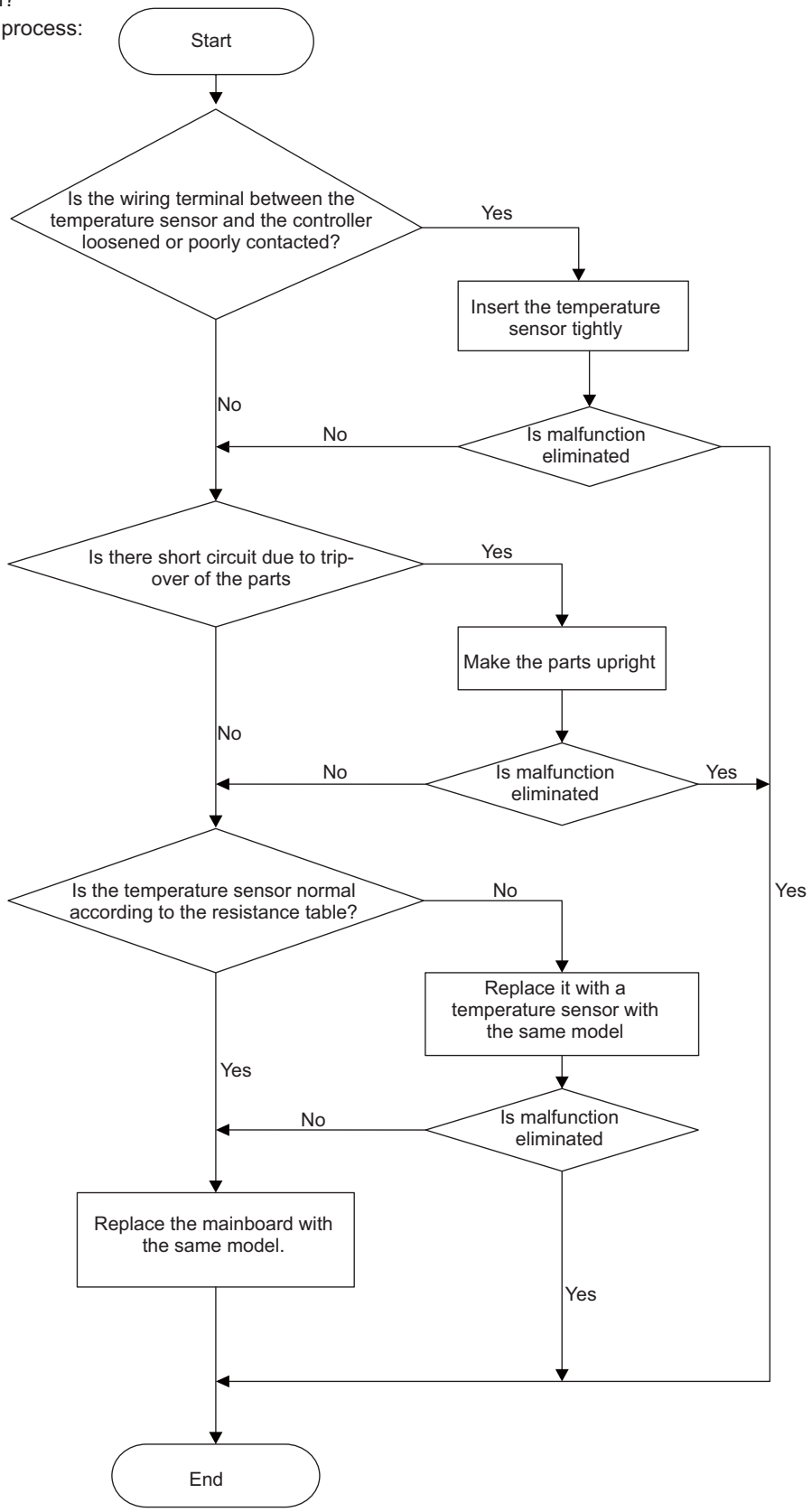
Indoot Unit

1. Malfunction of Temperature Sensor F1, F2

Main detection points:

- Is the wiring terminal between the temperature sensor and the controller loosened or poorly contacted?
- Is there short circuit due to trip-over of the parts?
- Is the temperature sensor broken?
- Is mainboard broken?

Malfunction diagnosis process:

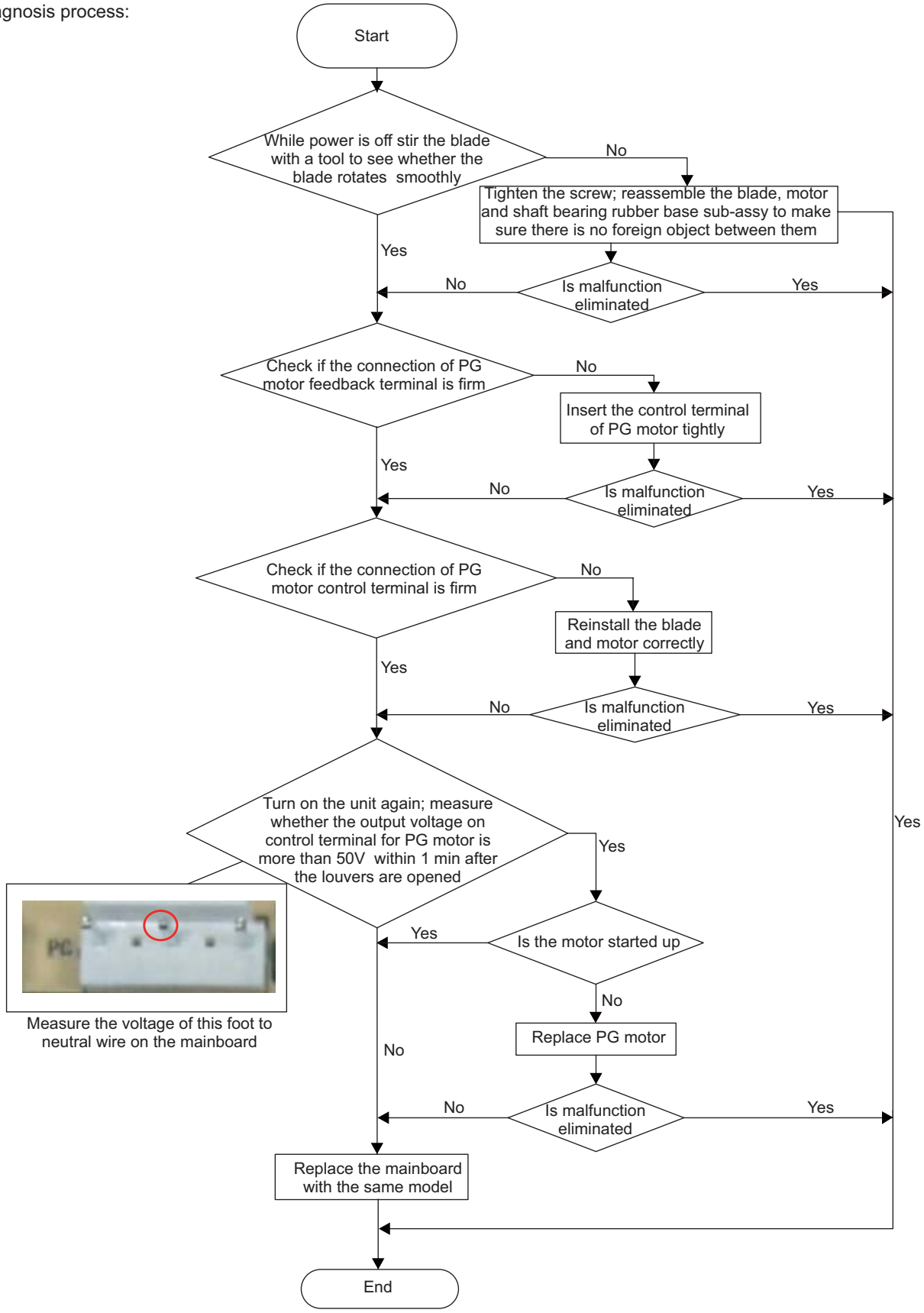


2. Malfunction of Blocked Protection of IDU Fan Motor H6

Main detection points:

- SmoothlyIs the control terminal of PG motor connected tightly?
- SmoothlyIs the feedback interface of PG motor connected tightly?
- The fan motor can't operate?
- The motor is broken?
- Detectioncircuit of the mainboard is defined abnormal?

Malfunction diagnosis process:

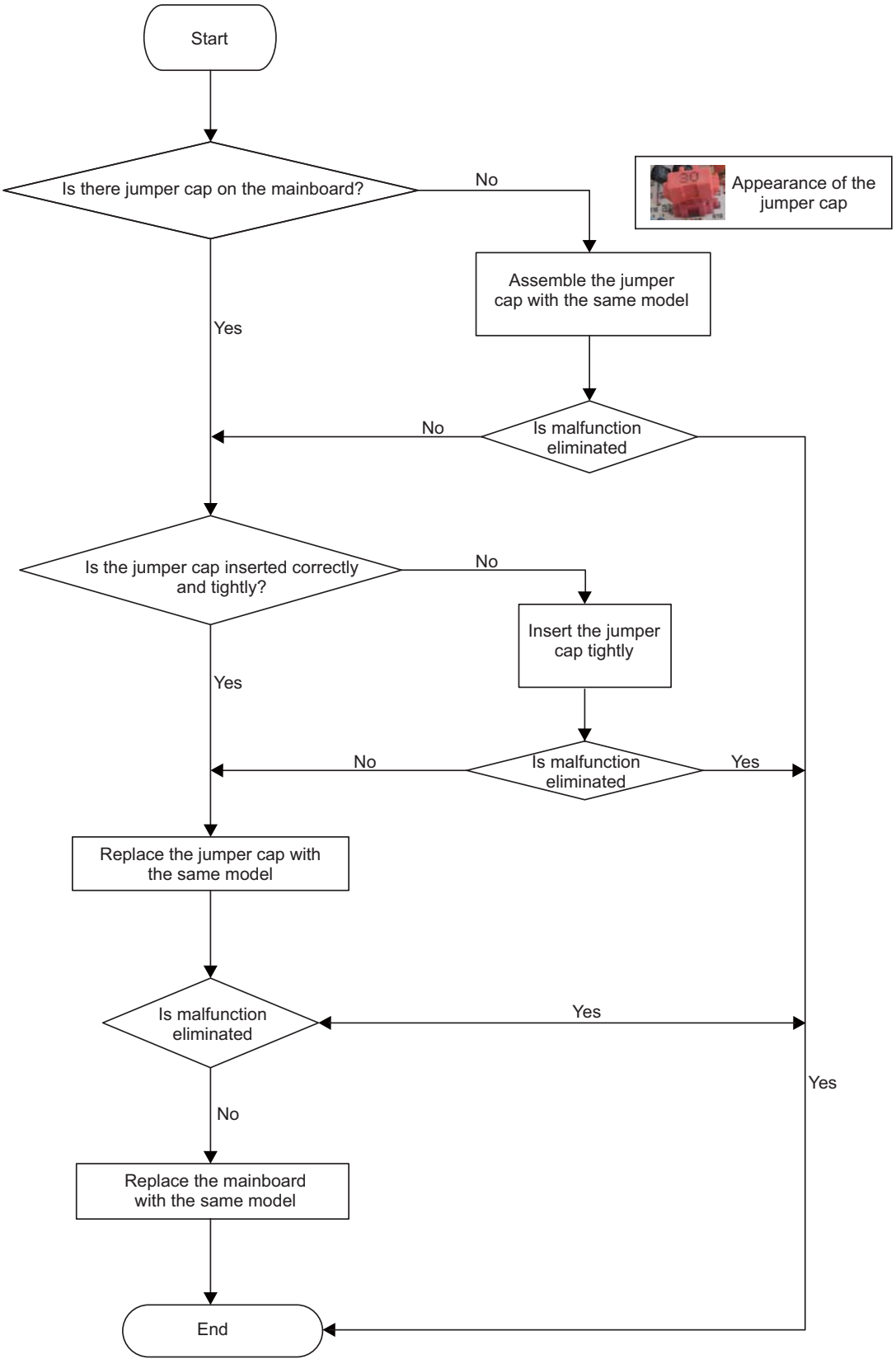


3. Malfunction of Protection of Jumper Cap C5

Main detection points:

- Is there jumper cap on the mainboard?
- Is the jumper cap inserted correctly and tightly?
- The jumper is broken?
- The motor is broken?
- Detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



9.3 Troubleshooting for Normal Malfunction

1. Air Conditioner Can't be Started Up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isn't bright and the buzzer can't give out sound	Confirm whether it's due to power failure. If yes, wait for power recovery. If not, check power supply circuit and make sure the power plug is connected well.
Wrong wire connection between indoor unit and outdoor unit, or poor connection for wiring terminals	Under normal power supply circumstances, operation indicator isn't bright after energization	Check the circuit according to circuit diagram and connect wires correctly. Make sure all wiring terminals are connected firmly
Electric leakage for air conditioner	After energization, room circuit breaker trips off at once	Make sure the air conditioner is grounded reliably Make sure wires of air conditioner is connected correctly Check the wiring inside air conditioner. Check whether the insulation layer of power cord is damaged; if yes, place the power cord.
Model selection for air switch is improper	After energization, air switch trips off	Select proper air switch
Malfunction of remote controller	After energization, operation indicator is bright, while no display on remote controller or buttons have no action.	Replace batteries for remote controller Repair or replace remote controller

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see it's blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation postion is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit's pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	Blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit't pressure is much lower than regulated range. If refrigerant isn't leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver can't swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor can't operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor can't operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor can't operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver Can't Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor can't operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver can't operate	Replace the main board with the same model

4. Air Conditioner is Leaking

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe connection place of indoor unit	Wrap it again and bundle it tightly

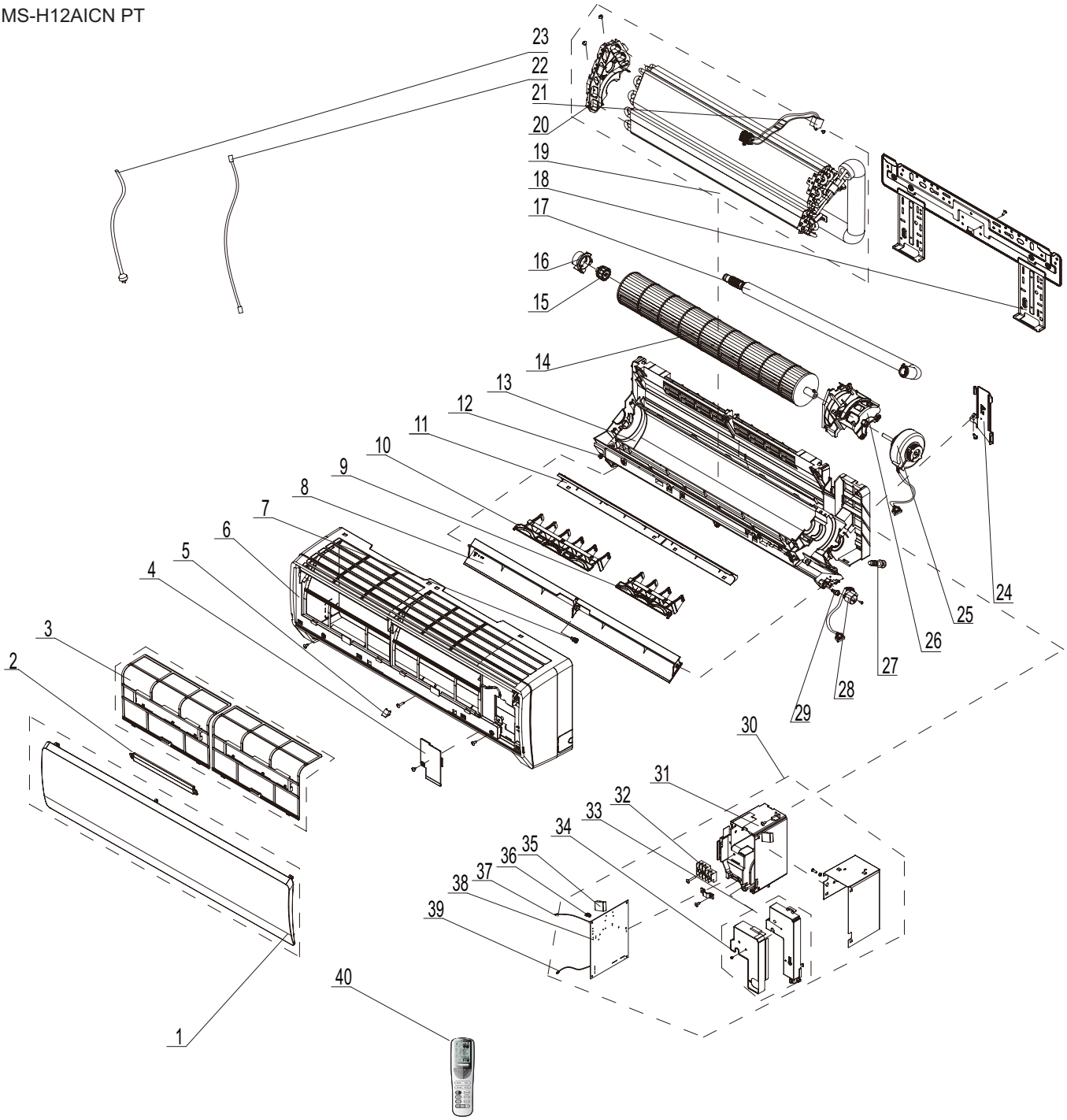
5. Abnormal Sound and Vibration

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
When turn on or turn off the unit, the panel and other parts will expand and there's abnormal sound	There's the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
When turn on or turn off the unit, there's abnormal sound due to flow of refrigerant inside air conditioner	Water-running sound can be heard	Normal phenomenon. Abnormal sound will disappear after a few minutes.
Foreign objects inside the indoor unit or there're parts touching together inside the indoor unit	There's abnormal sound fro indoor unit	Remove foreign objects. Adjust all parts' position of indoor unit, tighten screws and stick damping plaster between connected parts
Foreign objects inside the outdoor unit or there're parts touching together inside the outdoor unit	There's abnormal sound fro outdoor unit	Remove foreign objects. Adjust all parts' position of outdoor unit, tighten screws and stick damping plaster between connected parts
Short circuit inside the magnetic coil	During heating, the way valve has abnormal electromagnetic sound	Replace magnetic coil
Abnormal shake of compressor	Outdoor unit gives out abnormal sound	Adjust the support foot mat of compressor, tighten the bolts
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

10. Exploded View and Parts List

10.1 Indoor Unit

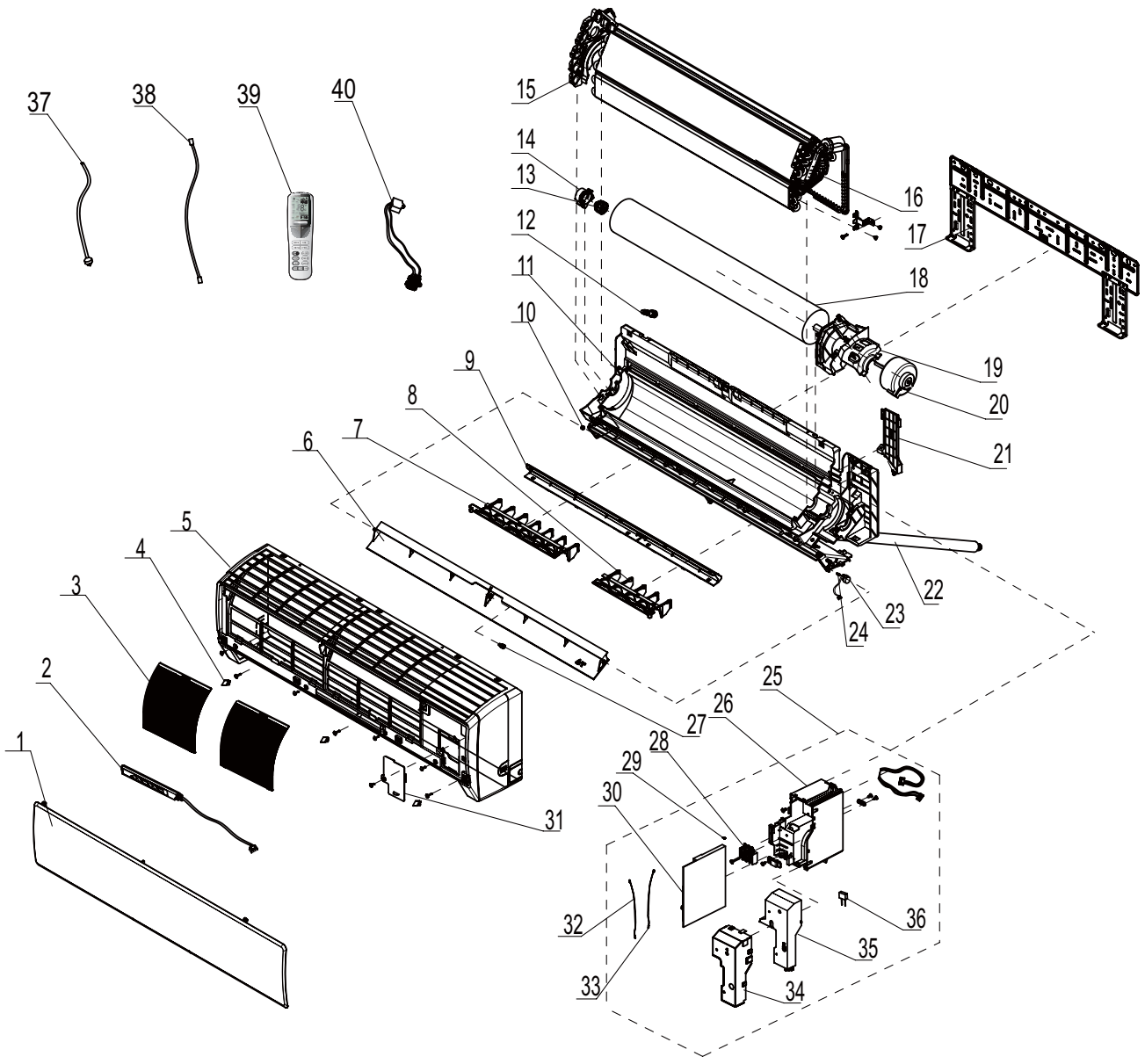
MS-H07AICN PT
MS-H09AICN PT
MS-H12AICN PT



NO.	Description	Part Code			Qty
		MS-H07AICN PT	MS-H09AICN PT	MS-H12AICN PT	
	Product Code	CB161N07700_L31222	CB161N07800_L31222	CB161N07900_L31222	
1	Front Panel Sub-Assy	20012557_L31222	20012557_L31222	20012557_L31222	1
2	Display Board	30565012	30565012	30565012	1
3	Filter Sub-Assy	1112220403	1112220403	1112220403	2
4	Electric Box Cover2	20122075	20122075	20122075	1
5	Screw Cover	24252016	24252016	24252016	1
6	Front Case Sub-Assy	2001213908	2001213908	2001213908	1
7	Axile Bush	10542036	10542036	10542036	1
8	Guide Louver	10512157	10512157	10512157	1
9	Air Louver 1	10512156	10512156	10512156	1
10	Air Louver 2	10512155	10512155	10512155	1
11	Helicoid tongue	26112163	26112163	26112163	1
12	Left Axile Bush	10512037	10512037	10512037	1
13	Rear Case assy	2220210301	2220210301	2220210301	1
14	Cross Flow Fan	10352017	10352017	10352017	1
15	O-Gasket sub-assy of Bearing	7651205102	7651205102	7651205102	1
16	Ring of Bearing	26152022	26152022	26152022	1
17	Drainage Hose	0523001401	0523001401	0523001401	1
18	Wall Mounting Frame	01252021	01252021	01252021	1
19	Evaporator Assy	01100100128	01100100128	01100100129	1
20	Evaporator Support	24212091	24212091	24212091	1
21	Cold Plasma Generator Sub-assy	/	/	/	/
22	Connecting Cable	4002052317	4002052317	4002052317	0
23	Power Cord	/	/	/	/
24	Connecting Pipe Clamp	26112164	26112164	26112164	1
25	Fan Motor	150120874	150120874	150120874	1
26	Motor Press Plate	26112161	26112161	26112161	1
27	Rubber Plug (Water Tray)	76712012	76712012	76712012	1
28	Stepping Motor	1521212901	1521212901	1521212901	1
29	Crank	10582070	10582070	10582070	1
30	Electric Box Assy	10000202942	10000202943	10000202944	1
31	Electric Box	2011216701	2011216701	2011216701	1
32	Terminal Board	42011233	42011233	42011233	1
33	Lower Shield Sub-assy of Electric Box	01592072	01592072	01592072	1
34	Electric Box Cover1	22242135	22242135	22242135	1
35	Capacitor CBB61S	33010747	33010747	33010747	1
36	Jumper	4202300106	4202300106	4202300105	1
37	Temperature Sensor	390000453	390000453	390000453	1
38	Main Board	30138000410	30138000410	30138000410	1
39	Temperature Sensor	390000599	390000599	390000599	1
40	Remote Controller	30510125_L31222	30510125_L31222	30510125_L31222	1

Above data is subject to change without notice.

MS-H18AICN PT



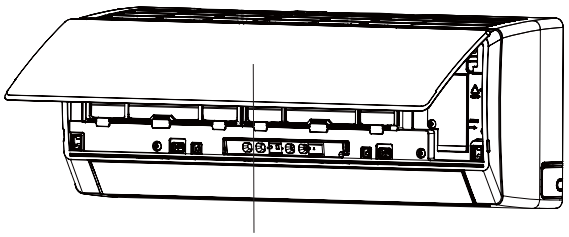
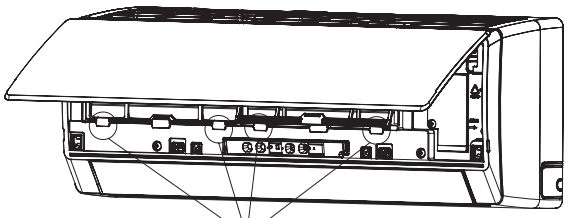
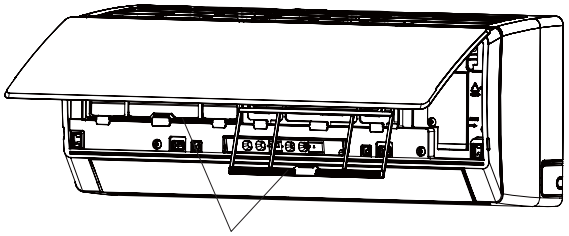
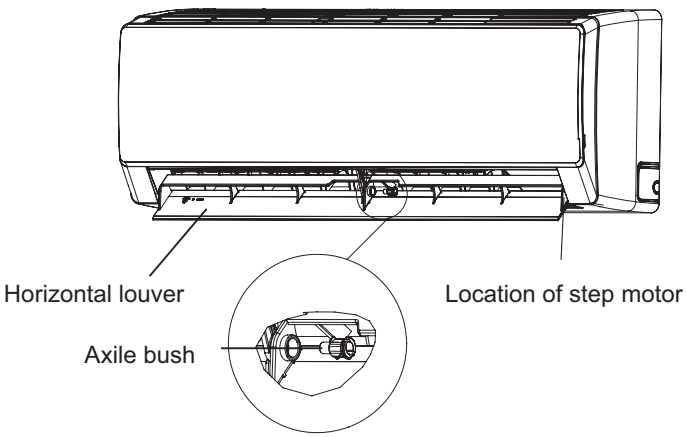
NO.	Description	Part Code	Qty
		MS-H18AICN PT	
	Product Code	CB161N07600_L31222	
1	Front Panel Assy	20012280_L31222	1
2	Display Board	30565039	1
3	Filter Sub-Assy	1112208901	2
4	Screw Cover	24252016	3
5	Front Case Sub-Assy	20022172	1
6	Guide Louver	10512115	1
7	Air Louver 1	10512116	1
8	Air Louver 2	10512117	1
9	Helicoid tongue	26112238	1
10	Left Axile Bush	10512037	1
11	Rear Case assy	12312214	1
12	Rubber Plug (Water Tray)	76712012	1
13	O-Gasket of Cross Fan Bearing	76512203	1
14	O-Gasket sub-assy of Bearing	7651205102	1
15	Evaporator Support	24212133	1
16	Evaporator Assy	01002575	1
17	Wall Mounting Frame	01252218	1
18	Cross Flow Fan	10352019	1
19	Motor Press Plate	26112494	1
20	Fan Motor	15012146	1
21	Connecting pipe clamp	26112164	1
22	Drainage hose	05230014	1
23	Stepping Motor	15012086	1
24	Crank	10582070	1
25	Electric Box Assy	10000202932	1
26	Electric Box	2011210801	1
27	Axile Bush	10542036	1
28	Terminal Board	42011233	1
29	Jumper	4202300108	1
30	Main Board	30138000411	1
31	Electric Box Cover2	20112081	1
32	Temperature Sensor	390000451	1
33	Temperature Sensor	390000597	1
34	Shield cover of Electric Box	01592092	1
35	Electric Box Cover1	20122154	1
36	Capacitor CBB611A	3301074712	1
37	Power Cord	/	/
38	Connecting Cable	4002052317	0
39	Remote Controller	30510125_L31222	1
40	Cold Plasma Generator	1114001602	/

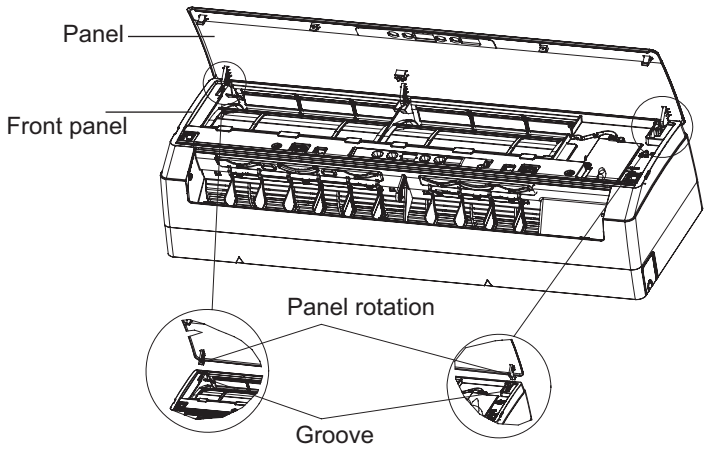
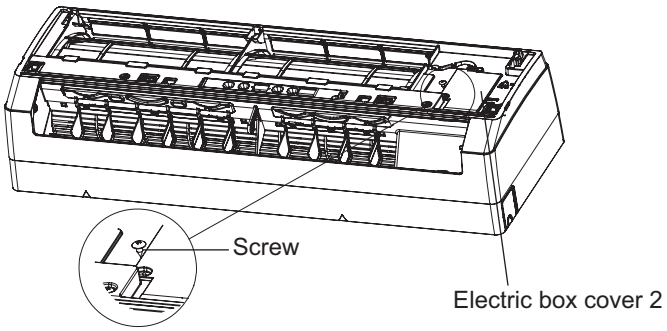
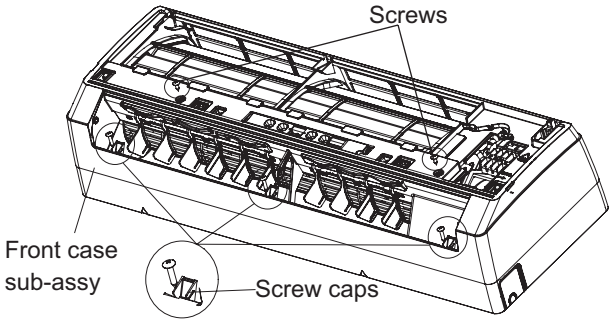
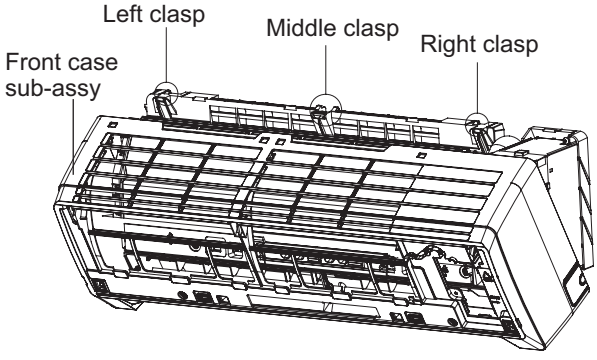
Above data is subject to change without notice.

11. Removal Procedure

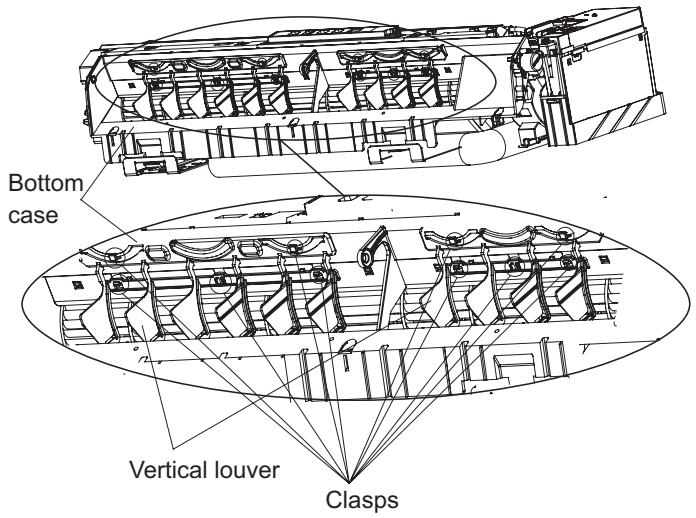
⚠ Warning: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

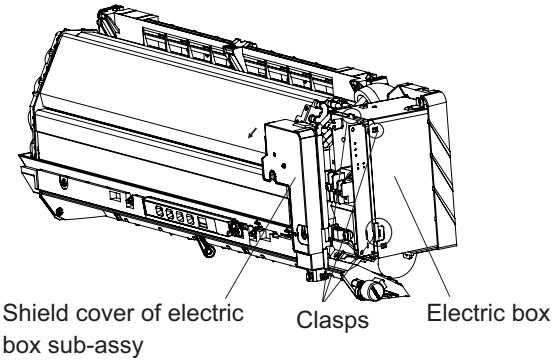
Removal Procedure of Indoor Unit

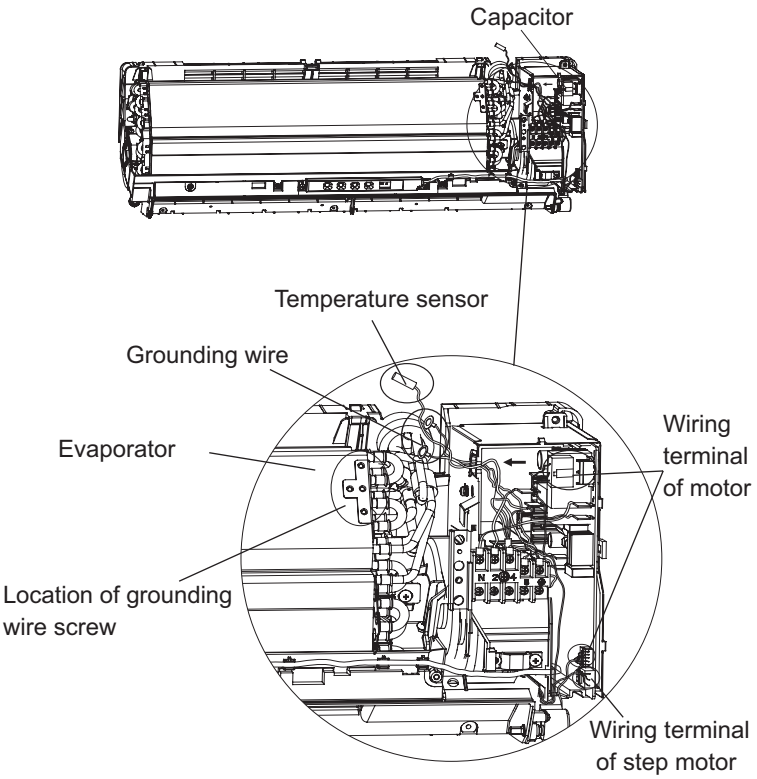
Steps	Procedure	
1. Remove filter		
a	Open the panel.	 Panel
b	Loosen the clasp shown in the fig and then pull the left filter and right filer outwards to remove them.	 Clasp  Left filter and right filer
2. Remove horizontal louver		
	Push out the axile bush on horizontal louver. Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it. Note: The quantity of axile bush is different for different models.	 Horizontal louver Location of step motor Axile bush

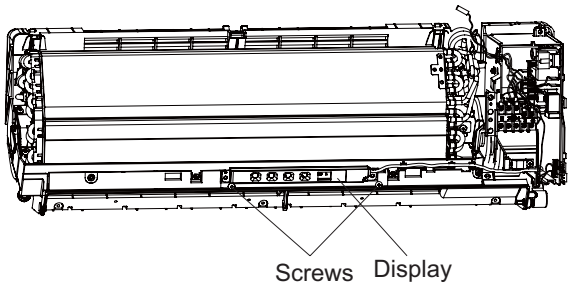
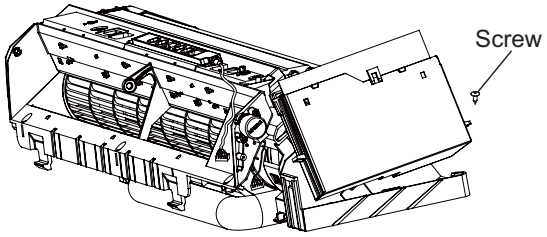
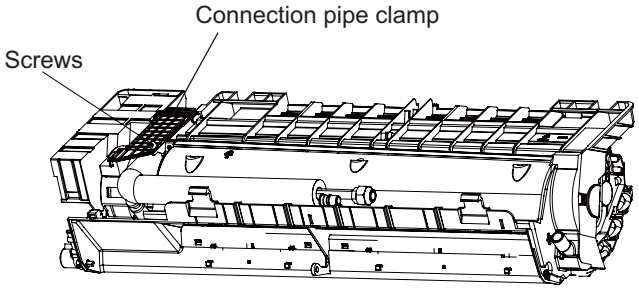
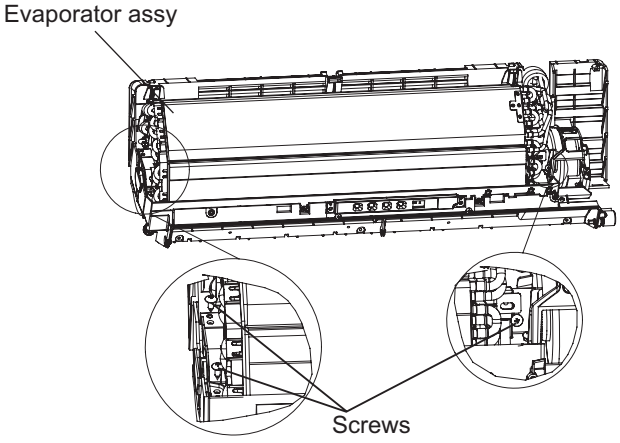
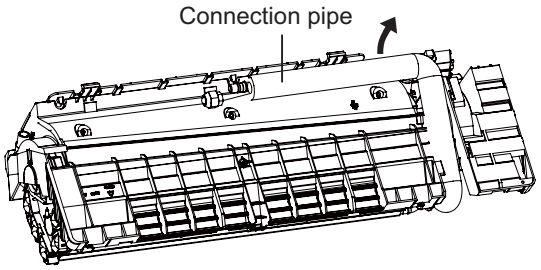
Steps	Procedure
3. Remove panel	
Open the front panel; separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel. Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.	
4. Remove electric box cover 2	
Remove the screw on the electric box cover 2 to remove the electric box cover 2.	
5. Remove front case sub-assy	
a Remove the screws fixing front case. Note: 1.Open the screw caps before removing the screws around the air outlet. 2.The quantity of screws fixing the front case sub-assy is different for different models.	
	
b Loosen the clasps at left, middle and right sides of front case. Life the front case sub-assy upwards to remove it.	

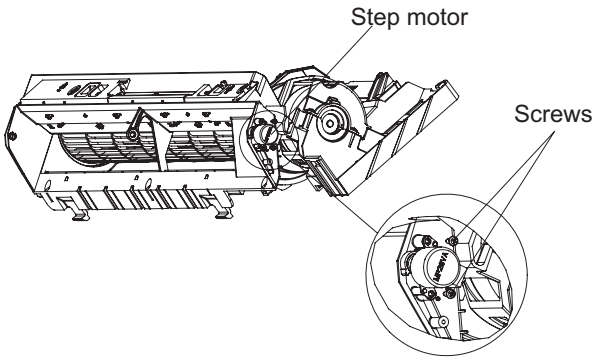
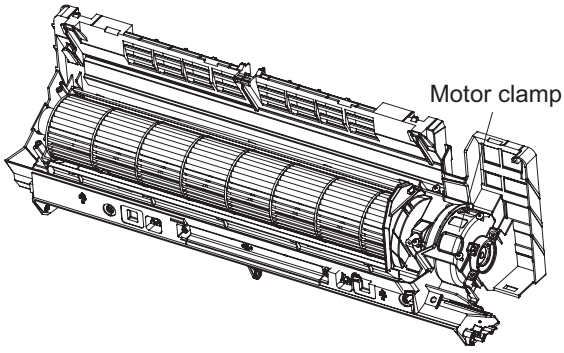
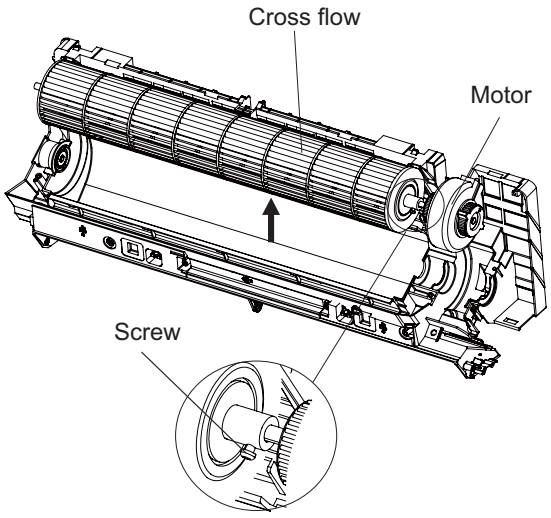
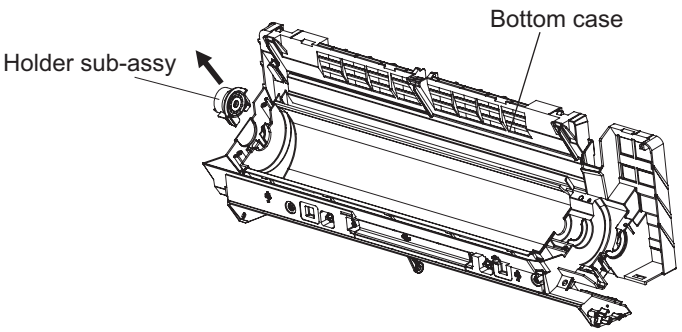
Steps	Procedure
6. Remove vertical louver	
	Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.
7. Remove electric box assy	
a	Loosen the connection clasps between shield cover of electric box sub-assy and electric box, and then remove the shield cover of electric box sub-assy.
b	Cut off the tieline which binding the temperature sensor and grounding wire on the evaporator, and then pull out the indoor tube temperature sensor from the evaporator. Remove the screws at the connection place between grounding wire and evaporator. Pull out the wiring terminal of motor and wiring terminal of step motor from the mainboard. Note: 1.Location of tube temperature sensor and tieline on the evaporator is different for different models. 2.When pulling out the wiring terminal, pay attention to loose the clasp and don't pull it so hard.







Steps	Procedure	
c	Remove two screws fixing display. Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.	
d	Remove the screw fixing electric box assy and then remove the electric box assy.	
8. Remove evaporator assy		
a	At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.	
b	Remove 3 screws fixing evaporator assy.	
c	Adjust the position of connection pipe on evaporator slightly and then lift the evaporator upwards to remove it.	

Steps	Procedure
9. Remove stepping motor	
Remove the screw fixing step motor and then remove the step motor.	
10. Remove motor and cross flow blade	
a Remove the screws fixing motor clamp and then remove the motor clamp.	
b Remove the screw at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them.	
c Remove the bearing holder sub-assy.	

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: Tf=Tcx1.8+32

Set temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius(°C)		Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius(°C)		Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius(°C)
61	60.8	16		69/70	69.8	21		78/79	78.8	26
62/63	62.6	17		71/72	71.6	22		80/81	80.6	27
64/65	64.4	18		73/74	73.4	23		82/83	82.4	28
66/67	66.2	19		75/76	75.2	24		84/85	84.2	29
68	68	20		77	77	25		86	86	30

Ambient temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius(°C)		Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius(°C)		Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius(°C)
32/33	32	0		55/56	55.4	13		79/80	78.8	26
34/35	33.8	1		57/58	57.2	14		81	80.6	27
36	35.6	2		59/60	59	15		82/83	82.4	28
37/38	37.4	3		61/62	60.8	16		84/85	84.2	29
39/40	39.2	4		63	62.6	17		86/87	86	30
41/42	41	5		64/65	64.4	18		88/89	87.8	31
43/44	42.8	6		66/67	66.2	19		90	89.6	32
45	44.6	7		68/69	68	20		91/92	91.4	33
46/47	46.4	8		70/71	69.8	21		93/94	93.2	34
48/49	48.2	9		72	71.6	22		95/96	95	35
50/51	50	10		73/74	73.4	23		97/98	96.8	36
52/53	51.8	11		75/76	75.2	24		99	98.6	37
54	53.6	12		77/78	77	25				

Appendix 2: Configuration of Connection Pipe

1.Standard length of connection pipe

● 5m, 7.5m, 8m.

2.Min. length of connection pipe is 3m.

3.Max. length of connection pipe and max. high difference.

4.The additional refrigerant oil and refrigerant charging required after prolonging connection pipe

● After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.

● The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):

Cooling capacity	Max length of connection pipe	Max height difference
5000 Btu/h(1465 W)	15 m	5 m
7000 Btu/h(2051 W)	15 m	5 m
9000 Btu/h(2637 W)	15 m	10 m
12000 Btu/h(3516 W)	20 m	10 m
18000 Btu/h(5274 W)	25 m	10 m
24000 Btu/h(7032 W)	25 m	10 m
28000 Btu/h(8204 W)	30 m	10 m
36000 Btu/h(10548 W)	30 m	20 m
42000 Btu/h(12306 W)	30 m	20 m
48000 Btu/h(14064 W)	30 m	20 m

● When the length of connection pipe is above 5m, add refrigerant according to the prolonged length of liquid pipe. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.

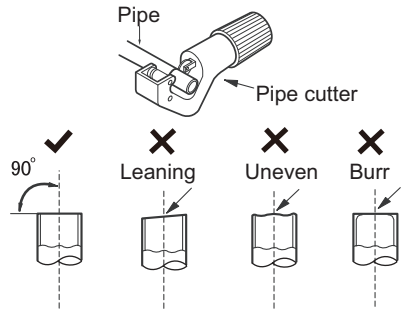
● Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Additional refrigerant charging amount for R22, R407C, R410A and R134a			
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe(mm)	Gas pipe(mm)	Cooling only(g/m)	Cooling and heating(g/m)
Φ6	Φ9.5 or Φ12	15	20
Φ6 or Φ9.5	Φ16 or Φ19	15	20
Φ12	Φ19 or Φ22.2	30	120
Φ16	Φ25.4 or Φ31.8	60	120
Φ19	/	250	250
Φ22.2	/	350	350

Appendix 3: Pipe Expanding Method

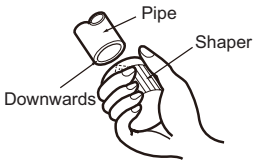
⚠ **Note:**

Improper pipe expanding is the main cause of refrigerant leakage.Please expand the pipe according to the following steps:



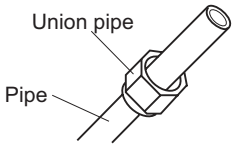
A:Cut the pip
- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with pipe cutter.

B:Remove the burrs
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C:Put on suitable insulating pipe

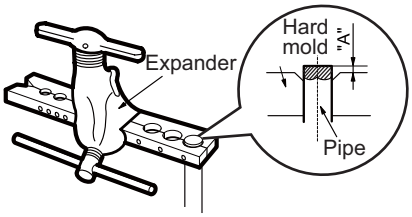
D:Put on the union nut
- Remove the union nut on the indoor connection pipe and outdoor valve; install the union nut on the pipe.



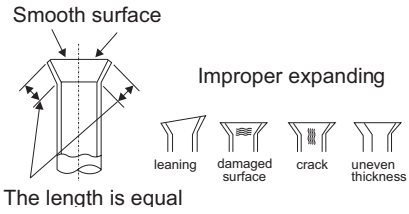
E:Expand the port
- Expand the port with expander.

⚠ **Note:**
- "A" is different according to the diameter, please refer to the sheet below:

Outer diameter(mm)	A(mm)	
	Max	Min
Φ6 - 6.35 (1/4")	1.3	0.7
Φ9.52 (3/8”)	1.6	1.0
Φ12 - 12.70 (1/2”)	1.8	1.0
Φ16 - 15.88 (5/8”)	2.4	2.2



F:Inspection
- Check the quality of expanding port. If there is any blemish, expand the port again according to the steps above.



Appendix 4: List of Resistance for Temperature Sensor

Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor(15K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Resistance Table of Tube Temperature Sensors for Indoor and Outdoor (20K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

Resistance Table of Discharge Temperature Sensor for Outdoor(50K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.75
-28	799.8		11	93.42		50	17.65		89	4.61
-27	750		12	89.07		51	16.99		90	4.47
-26	703.8		13	84.95		52	16.36		91	4.33
-25	660.8		14	81.05		53	15.75		92	4.20
-24	620.8		15	77.35		54	15.17		93	4.08
-23	580.6		16	73.83		55	14.62		94	3.96
-22	548.9		17	70.5		56	14.09		95	3.84
-21	516.6		18	67.34		57	13.58		96	3.73
-20	486.5		19	64.33		58	13.09		97	3.62
-19	458.3		20	61.48		59	12.62		98	3.51
-18	432		21	58.77		60	12.17		99	3.41
-17	407.4		22	56.19		61	11.74		100	3.32
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.13
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.96
-12	306.2		27	45.07		66	9.83		105	2.87
-11	289.6		28	43.16		67	9.49		106	2.79
-10	274		29	41.34		68	9.17		107	2.72
-9	259.3		30	39.61		69	8.85		108	2.64
-8	245.6		31	37.96		70	8.56		109	2.57
-7	232.6		32	36.38		71	8.27		110	2.50
-6	220.5		33	34.88		72	7.99		111	2.43
-5	209		34	33.45		73	7.73		112	2.37
-4	198.3		35	32.09		74	7.47		113	2.30
-3	199.1		36	30.79		75	7.22		114	2.24
-2	178.5		37	29.54		76	7.00		115	2.18
-1	169.5		38	28.36		77	6.76		116	2.12
0	161		39	27.23		78	6.54		117	2.07
1	153		40	26.15		79	6.33		118	2.02
2	145.4		41	25.11		80	6.13		119	1.96
3	138.3		42	24.13		81	5.93		120	1.91
4	131.5		43	23.19		82	5.75		121	1.86
5	125.1		44	22.29		83	5.57		122	1.82
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.22		124	1.73
8	108		47	19.81		86	5.06		125	1.68
9	102.8		48	19.06		87	4.90		126	1.64