

3 times when fan motor restarts continuously, the unit will stop and the LED will display the failure.

When outdoor fan speed keeps too low (lower than 100RPM) or too high (higher than 1500RPM) for 60s, the unit will stop and the LED will display the failure. Malfunction is cleared 30s later.

#### 14.3.5 Inverter module protection

The Inverter module has a protection function about current, voltage and temperature. If these protections happen, the corresponding code will display on indoor unit and the unit will stop working.

#### 14.3.6 Indoor fan delayed open function

When the unit starts up, the louver will be active immediately and the indoor fan will open 10s later.

If the unit runs in heating mode, the indoor fan will be also controlled by anti-cold wind function.

#### 14.3.7 Compressor preheating functions

Preheating permitting condition:

If  $T_4 < 3^{\circ}\text{C}$  ( $37.4^{\circ}\text{F}$ ) and the machine connects to power supply newly within 5 seconds or if  $T_4 < 3^{\circ}\text{C}$  ( $37.4^{\circ}\text{F}$ ) and compressor has stopped for over 3 hours, the compressor heating cable will work.

Preheating mode:

A weak current flow through the coil of compressor from the wiring terminal of the compressor, then the compressor is heated without operation.

Preheating release condition:

If  $T_4 \geq 5^{\circ}\text{C}$  ( $41^{\circ}\text{F}$ ) or the compressor starts running, the preheating function will stop.

#### 14.3.9 Condenser high temperature T3 protection

--- $55^{\circ}\text{C}$  ( $131^{\circ}\text{F}$ )  $< T_3 < 60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ ), the compressor frequency will decrease to the lower level until to F1 and then runs at F1. If  $T_3 < 54^{\circ}\text{C}$  ( $129.2^{\circ}\text{F}$ ), the compressor will keep running at the current frequency.

--- $T_3 < 52^{\circ}\text{C}$  ( $125.6^{\circ}\text{F}$ ), the compressor will not limit the frequency and resume to the former frequency.

--- $T_3 > 60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ ) for 5 seconds, the compressor will stop until  $T_3 < 52^{\circ}\text{C}$  ( $125.6^{\circ}\text{F}$ ).

#### 14.3.10 Evaporator low temperature T2 protection

--- $T_2 < 0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ ), the compressor will stop and restart when  $T_2 \geq 5^{\circ}\text{C}$  ( $41^{\circ}\text{F}$ ).

--- $0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ )  $\leq T_2 < 4^{\circ}\text{C}$  ( $39.2^{\circ}\text{F}$ ), the compressor frequency will be limited and decreased to the lower level

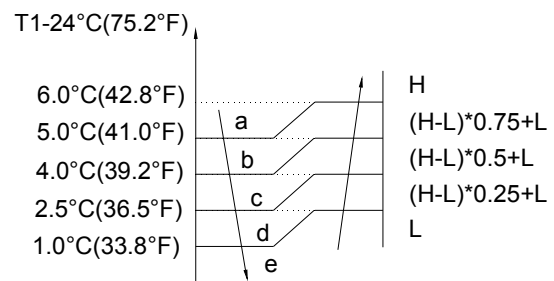
--- $4^{\circ}\text{C}$  ( $39.2^{\circ}\text{F}$ )  $\leq T_2 \leq 7^{\circ}\text{C}$  ( $44.6^{\circ}\text{F}$ ), the compressor will keep the current frequency.

--- $T_2 > 7^{\circ}\text{C}$  ( $44.6^{\circ}\text{F}$ ), the compressor frequency will not be limited.

### 14.4 Operation Modes and Functions

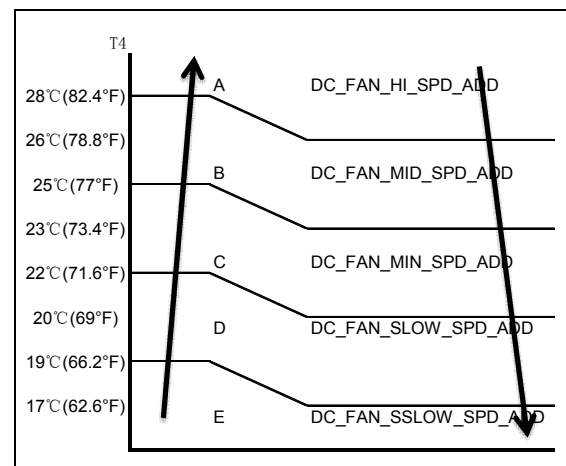
#### 14.4.1 Fan mode

- (1) Outdoor fan and compressor stop.
- (2) Temperature setting function is disabled, and no setting temperature is displayed.
- (3) Indoor fan can be set to high/med/low/auto.
- (4) The louver operates same as in cooling mode.
- (5) Auto fan:



#### 14.4.2 Cooling Mode

##### 14.4.2.1 Outdoor fan running rules



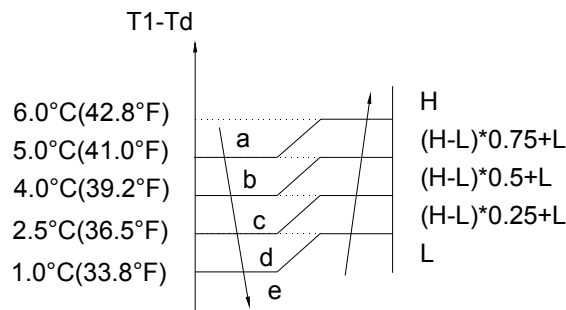
##### 14.4.2.2 Indoor fan running rules

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

The indoor fan is controlled as below:

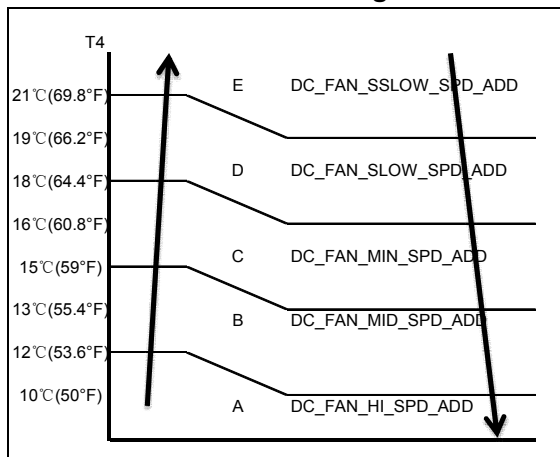
Setting fan speed	T1-Td °C(°F)	Actual fan speed
H	4.5(40.1)	H+ (H+=H+G)
	3.0(37.4)	H (=H)
	1.5(34.7)	H- (H-=H-G)
M	4.5(40.1)	M+ (M+=M+Z)
	3.0(37.4)	M (M=M)
	1.5(34.7)	M- (M-=M-Z)
L	4.5(40.1)	L+ (L+=L+D)
	3.0(37.4)	L (L=L)
	1.5(34.7)	L- (L-=L-D)

Auto fan in cooling mode acts as follow:



### 14.4.3 Heating Mode

#### 14.4.3.1 Outdoor fan running rules



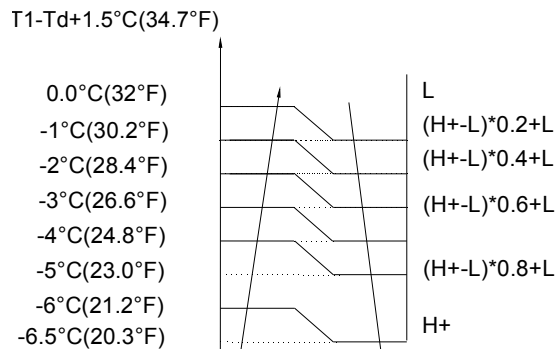
#### 14.4.3.2 Indoor fan running rules

When the compressor is on, the indoor fan can be set to high/med/low/auto. And the anti-cold wind function has the priority.

The indoor fan is controlled as below:

Setting fan speed	T1-Td+1.5 °C(34.7°F)	Actual fan speed
H	-1.5(29.3° F)	H- (H-=H-G)
	-3.0(26.6° F)	H (=H)
	-4.5(23.9° F)	H+ (H+=H+G)
M	-1.5(29.3° F)	M- (M-=M-Z)
	-3.0(26.6° F)	M (M=M)
	-4.5(23.9° F)	M+ (M+=M+Z)
L	-1.5(29.3° F)	L- (L-=L-D)
	-3.0(26.6° F)	L (L=L)
	-4.5(23.9° F)	L+ (L+=L+D)

Auto fan action in heating mode:



#### 14.4.3.3 Defrosting mode

If any one of the following items is satisfied, AC will enter the defrosting mode.

After the compressor starts up and keeps running, mark the minimum value of T3 from the 10th minutes to 15th minutes as T30.

- 1) If the compressor cumulate running time is up to 29 minutes and  $T3 < TCDI1$ ,  $T3 + T30SUBT3ONE \leq T30$ .
- 2) If the compressor cumulate running time is up to 35 minutes and  $T3 < TCDI2$ ,  $T3 + T30SUBT3TWO \leq T30$ .
- 3) If the compressor cumulate running time is up to 29 minutes and  $T3 < TCDI3$  for 3 minutes.
- 4) If the compressor cumulate running time is up to 120 minutes and  $T3 < -15^\circ\text{C}(5^\circ\text{F})$ .

#### Condition of ending defrosting:

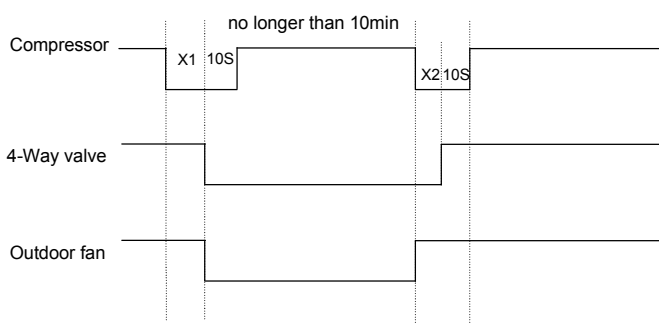
If any one of the following items is satisfied, the defrosting will finish and the machine will turn to normal heating mode.

----T3 rises to be higher than TCDE1.

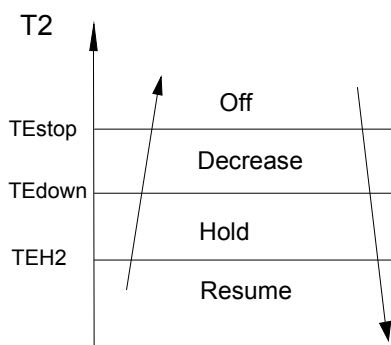
----T3 keeps to be higher than TCDE2 for 80 seconds.

----The machine has run for 10 minutes in defrosting mode.

#### Defrosting action:



#### 14.4.3.5 Evaporator coil temperature protection



Off: Compressor stops.

Decrease: Decrease the running frequency to the lower level.

Hold: Keep the current frequency.

Resume: No limitation for frequency.

#### 14.4.4 Auto-mode

This mode can be chosen with remote controller and the setting temperature can be changed between 17~30°C (62.6~86°F).

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

$\Delta T = T1 - Ts$	Running mode
$\Delta T \geq 1^\circ\text{C} (33.8^\circ\text{F})$	Cooling
$-1^\circ\text{C} (30.2^\circ\text{F}) < \Delta T < 1^\circ\text{C} (33.8^\circ\text{F})$	Fan-only
$\Delta T \leq -1^\circ\text{C} (30.2^\circ\text{F})$	Heating

Indoor fan will run at auto fan of the relevant mode.

The louver operates same as in relevant mode. If the machine switches mode between heating and cooling, the compressor will keep stopping

for 15 minutes and then choose mode according to T1-Ts.

If the setting temperature is modified, the machine will choose running function again.

#### 14.4.5 Drying mode

Drying mode works the same as cooling mode in low speed.

All protections are active and the same as that in cooling mode.

#### 14.4.6 Timer function

14.4.6.1 Timing range is 24 hours.

14.4.6.2 Timer on. The machine will turn on automatically when reaching the setting time.

14.4.6.3 Timer off. The machine will turn off automatically when reaching the setting time.

14.4.6.4 Timer on/off. The machine will turn on automatically when reaching the setting "on" time, and then turn off automatically when reaching the setting "off" time.

14.4.6.5 Timer off/on. The machine will turn off automatically when reaching the setting "off" time, and then turn on automatically when reaching the setting "on" time.

14.4.6.6 The timer function will not change the AC current operation mode. Suppose AC is off now, it will not start up firstly after setting the "timer off" function. And when reaching the setting time, the timer LED will be off and the AC running mode has not been changed.

14.4.6.7 The setting time is relative time.

#### 14.4.7 Sleep function mode

14.4.7.1 The sleep function is available in cooling, heating or auto mode.

14.4.7.2. Operation process in sleep mode is as follow:

When cooling, the setting temperature rises 1°C (33.8°F) (be lower than 30°C (86°F)) every one hour, 2 hours later the setting temperature stops rising and the indoor fan is fixed at low speed.

When heating, the setting temperature decreases 1°C (33.8°F) (be higher than 17°C (62.6°F)) every one hour, 2 hours later the

setting temperature stops rising and indoor fan is fixed at low speed. (Anti-cold wind function has the priority).

14.4.7.3 Operation time in sleep mode is 7 hours. After 7 hours the AC quits this mode and turns off

14.4.7.4 Timer setting is available.

#### **14.4.8 Auto-Restart function**

The indoor unit is equipped with auto-restart function, which is carried out through an auto-restart module. In case of a sudden power failure, the module memorizes the setting conditions before the power failure. The unit will resume the previous operation setting (not including sleep function) automatically after 3 minutes when power returns.

#### **14.4.9 Follow me**

1) If the indoor PCB receives the signal which results from pressing the FOLLOW ME button on remote controller or wired remote controller, the buzzer will emit a sound and this indicates the follow me function is initiated. But when the indoor PCB receives signal which sent from remote controller every 3 minutes, the buzzer will not respond. When the unit is running with follow me function, the PCB will control the unit according to the temperature from follow me signal, and the temperature collection function of room temperature sensor will be shielded.

2) When the follow me function is available, the PCB will control the unit according to the room temperature from the remote controller and the setting temperature.

3) The PCB will take action to the mode change information from remote controller signal, but it will not be affected by the setting temperature.

4) When the unit is running with follow me function, if the PCB doesn't receive any signal from remote controller for 7 minutes or pressing FOLLOW ME button again, the follow me function will be turned off automatically, and the temperature will control the unit according to

the room temperature detected from its own room temperature sensor and setting temperature.

#### **14.4.10 8°C Heating(optional)**

In heating operation, the preset temperature of the air conditioner can be as low as 8°C (46.4°F), which keeps the room temperature steady at 8°C(46.4°F) and prevents household things freezing when the house is unoccupied for a long time in severe cold weather.

#### **1.3.11 Drain pump control**

Adopt the water-level switch to control the action of drain pump.

Main action under different condition : ( every 5 seconds the system will check the water level one time)

1. When the A/C operates with cooling (including auto cooling), dehumidifying, and forced cooling mode, the pump will start running immediately and continuously, till stop cooling.

2. Once the water level increase and up to the control point, LED will alarm and the drain pump open and continue checking the water level. If the water level fall down and LED disarmed (drain pump delay close 1 minute) and operate with the last mode. Otherwise the entire system stop operating (including the pump) and LED remain alarming after 3 minutes,



### Point check function

Press the LED DISPLAY or LED or MUTE button of the remote controller three times, and then press the AIR DIRECTION or SWING button three times in ten seconds, the buzzer will keep ring for two seconds. The air conditioner will enter into the information enquiry status. You can press the LED DISPLAY or AIR DIRECTION button to check the next or front item's information.

When the AC enter the "information enquiry" status, it will display the code name in 2 seconds, the details are as follows.

Enquiry information	Displaying code	Meaning
T1	T1	T1 temp.
T2	T2	T2 temp.
T3	T3	T3 temp.
T4	T4	T4 temp.
T2B	Tb	T2B temp.
TP	TP	TP temp.
TH	TH	TH temp.
Targeted Frequency	FT	Targeted Frequency
Actual Frequency	Fr	Actual Frequency
Indoor fan speed	IF	Indoor fan speed
Outdoor fan speed	OF	Outdoor fan speed
EXV opening angle	LA	EXV opening angle
Compressor continuous running time	CT	Compressor continuous running time
Causes of compressor stop.	ST	Causes of compressor stop.
Reserve	A0	
Reserve	A1	
Reserve	b0	
Reserve	b1	
Reserve	b2	
Reserve	b3	
Reserve	b4	
Reserve	b5	
Reserve	b6	
Reserve	dL	
Reserve	Ac	
Reserve	Uo	
Reserve	Td	

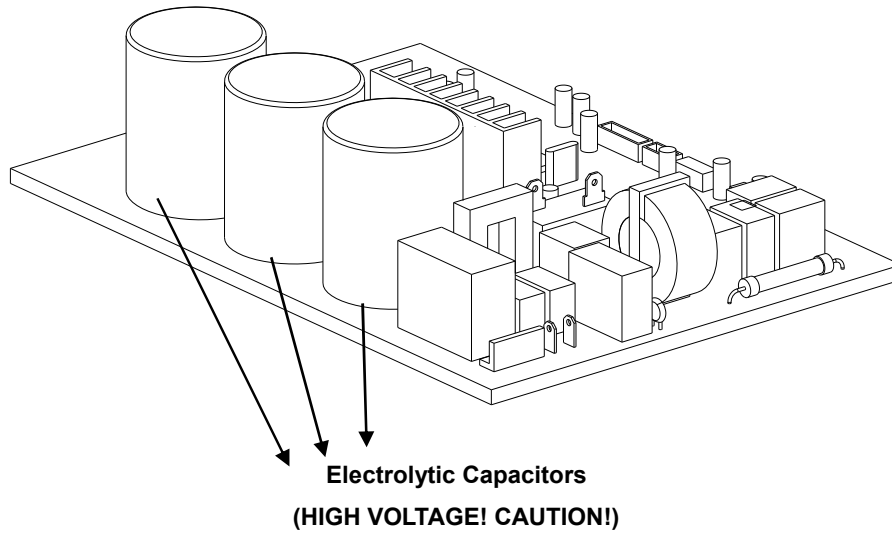
When the AC enter into the information enquiry status, it will display the code value in the next 25s, the details are as follows.

Enquiry information	Display value	Meaning	Remark
T1,T2,T3,T4, T2B,TP,TH, Targeted Frequency, Actual Frequency	-1F,-1E,-1d,-1c,-1b,-1A	-25,-24,-23,-22,-21,-20	1. All the displaying temperature is actual value. 2. All the temperature is °C no matter what kind of remote controller is used. 3. T1,T2,T3,T4,T2B display range:-25~70, TP display range:-20~130. 4. Frequency display range: 0~159HZ. 5. If the actual value exceeds the range, it will display the maximum value or minimum value.
	-19—99	-19—99	
	A0,A1,...A9	100,101,...109	
	b0,b1,...b9	110,111,...119	
	c0,c1,...c9	120,121,...129	
	d0,d1,...d9	130,131,...139	
	E0,E1,...E9	140,141,...149	
	F0,F1,...F9	150,151,...159	
Indoor fan speed /Outdoor fan speed	0	OFF	
	1,2,3,4	Low speed, Medium speed, High speed, Turbo	For some big capacity motors.
	14-FF	Actual fan speed=Display value turns to decimal value and then multiply 10. The unit is RPM.	For some small capacity motors, display value is from 14-FF(hexadecimal), the corresponding fan speed range is from 200-2550RPM.
EXV opening angle	0-FF	Actual EXV opening value=Display value turns to decimal value and then multiply 2.	
Compressor continuous running time	0-FF	0-255 minutes	If the actual value exceeds the range, it will display the maximum value or minimum value.
Causes of compressor stop.	0-99	For the detailed meaning, please consult with engineer	Decimal display
Reserve	0-FF		

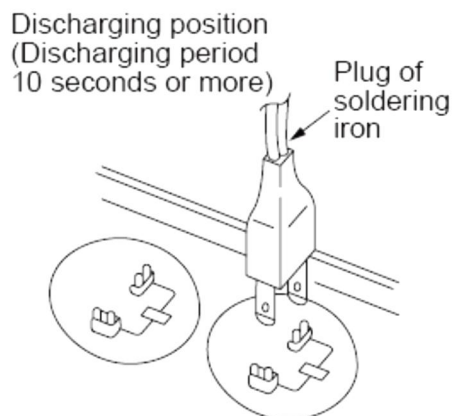
## 16. Troubleshooting

### Safety

Electricity is stored in capacitors, even when the power supply is shut off. Do not forget to discharge the electricity in the capacitors.



For other models, For other models, connect a discharge resistor (approx.100Ω 40W) or a soldering iron plug between the + and - terminals of the electrolytic capacitor on the opposite side of the outdoor printed circuit board (PCB).



**Note:** The picture above is for reference purposes only. The design of the devices depicted may vary by model.

## 16.1 Indoor Unit Error Display

Operation lamp	Timer lamp	Display	LED STATUS
☆ 1 time	X	E0	Indoor unit EEPROM parameter error
☆ 2 times	X	E1	Communication malfunction between indoor and outdoor units
☆ 4 times	X	E3	Indoor fan speed malfunction
☆ 5 times	X	E4	Indoor room temperature sensor (T1 ) malfunction
☆ 6 times	X	E5	Evaporator coil temperature sensor (T2) malfunction
☆ 7 times	X	EC	Refrigerant leakage detection
☆ 8 times	X	EE	Water-level alarm malfunction
☆ 1 time	O	F0	Current overload protection
☆ 2 times	O	F1	Outdoor ambient temperature sensor (T4 ) malfunction
☆ 3 times	O	F2	Condenser coil temperature sensor (T3) malfunction
☆ 4 times	O	F3	Compressor discharge temperature sensor (T5) malfunction
☆ 5 times	O	F4	Outdoor unit EEPROM parameter error
☆ 6 times	O	F5	Outdoor fan speed malfunction
☆ 7 times	O	F6	Indoor coil outlet pipe sensor(Located on outdoor unit low pressure valve)
☆ 8 times	O	F7	Communication malfunction between Cassette optional lift panel and the unit
☆ 9 times	O	F8	Cassette optional lift panel malfunction
☆ 10 times	O	F9	Cassette optional lift panel not closed
☆ 1 times	☆	P0	Inverter module (IPM) malfunction
☆ 2 times	☆	P1	Over-voltage or under-voltage protection
☆ 3 times	☆	P2	Compressor top high temperature protection (OLP)
☆ 4 times	☆	P3	Low ambient temperature cut off in heating
☆ 5 times	☆	P4	Compressor drive malfunction
☆ 6 times	☆	P5	Indoor units mode conflict
☆ 7 times	☆	P6	Low pressure protection
☆ 8 times	☆	P7	Outdoor IPM temperature sensor error

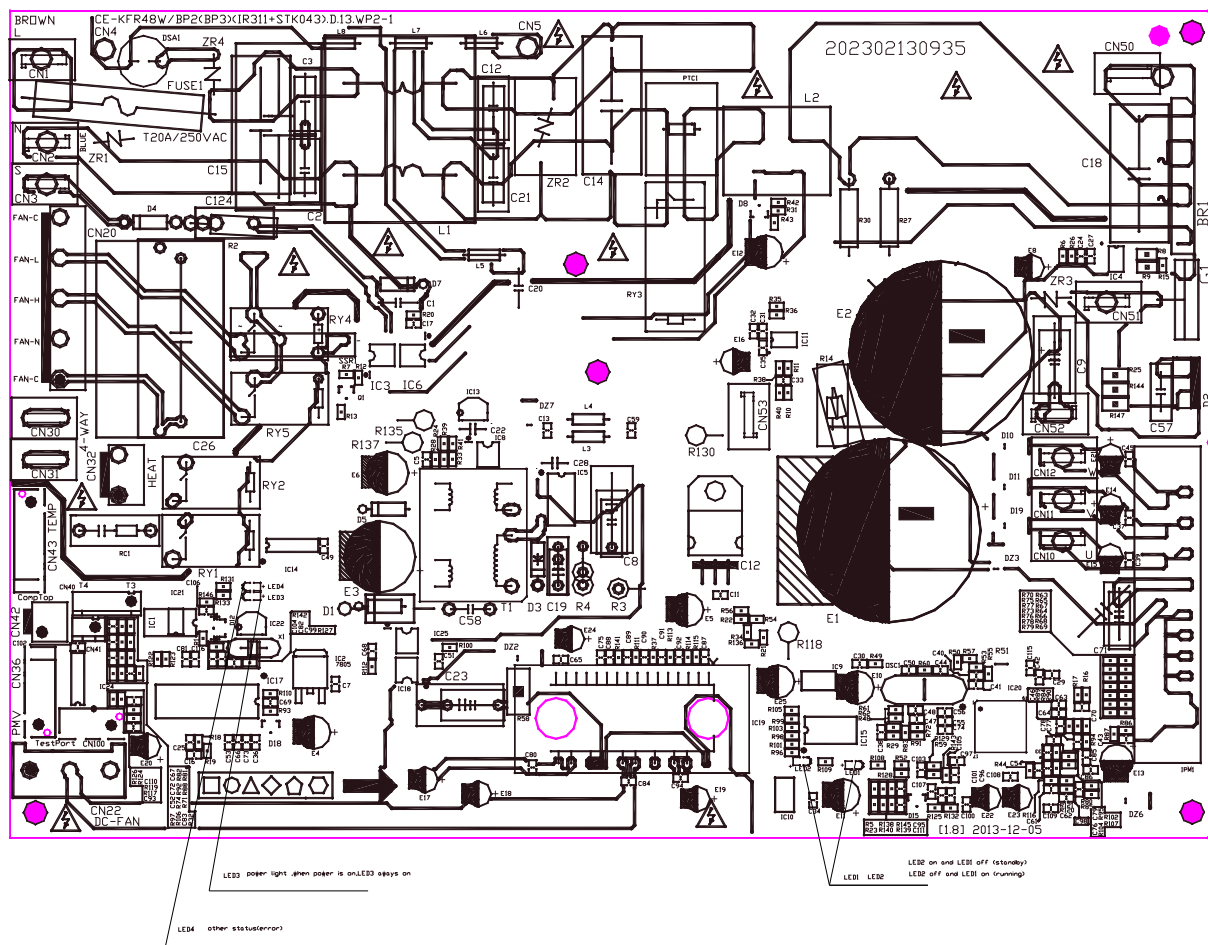
O (light)

X (off)

☆ (flash)

## 16.2 Outdoor unit error display

### For 9K-24K outdoor unit:



No.	Problems	LED2 (Green)	LED1 (Red)	IU display
1	standby for normal	O	X	
2	Operation normally	X	O	
3	Compressor drive board EEPROM error	O	☆	E5
4	IPM malfunction or IGBT over-strong current protection	☆	X	P0
5	Over voltage or too low voltage protection	O	O	P1
6	Inverter compressor drive error	X	☆	P4
7	Inverter compressor drive error	☆	O	P4
8	Communication malfunction between main control board and driver board	☆	☆	P4

### For 36K-48K Outdoor Unit

No	Problems	Error Code
1	Communication malfunction between indoor and outdoor units	E1
2	Current overload protection	F0
3	Outdoor ambient temperature sensor (T4 ) malfunction	F1
4	Condenser coil temperature sensor (T3) malfunction	F2
5	Compressor discharge temperature sensor (T5) malfunction	F3
6	Outdoor unit EEPROM parameter error	F4
7	Outdoor fan speed malfunction	F5
8	Inverter module (IPM) malfunction	P0
9	Over-voltage or under-voltage protection	P1
10	Compressor top high temperature protection (OLP)	P2
11	Low ambient temperature cut off in heating	P3
12	Compressor drive malfunction	P4
13	High temperature protection of indoor coil in heating	J0
14	Outdoor temperature protection of outdoor coil in cooling	J1
15	Temperature protection of compressor discharge	J2
16	PFC module protection	J3
17	Communication malfunction between control board and IPM board	J4
18	High pressure protection	J5
19	Low pressure protection	J6
20	Outdoor IPM module temperature sensor malfunction	P7
21	AC voltage protection	J8

### Outdoor check function

N	Display	Remark
00	Normal display	Display running frequency, running state or malfunction code
01	Indoor unit capacity demand code	Actual data*HP*10 If capacity demand code is higher than 99, the digital display tube will show single digit and tens digit. (For example, the digital display tube show "5.0",it means the capacity demand is 15. the digital display tube show "60",it means the capacity demand is 6.0)
02	Amendatory capacity demand code	
03	The frequency after the capacity requirement transfer	
04	The frequency after the frequency limit	
05	The frequency of sending to 341 chip	
06	Indoor unit evaporator outlet temp.(heating T2, cooling T2B)	If the temp. is lower than 0 degree, the digital display tube will show "0".If the temp. is higher than 70 degree, the digital display tube will show "70".
07	Condenser pipe temp.(T3)	If the temp. is lower than -9 degree, the digital display tube

08	Outdoor ambient temp.(T4)	will show “-9”.If the temp. is higher than 70 degree, the digital display tube will show “70”. If the indoor unit is not connected, the digital display tube will show: “——”		
09	Compressor discharge temp.(T5)	The display value is between 13~129 degree. If the temp. is lower than 13 degree, the digital display tube will show “13”.If the temp. is higher than 99 degree, the digital display tube will show single digit and tens digit. (For example, the digital display tube show “0.5”,it means the compressor discharge temp. is 105 degree. the digital display tube show “1.6”,it means the compressor discharge temp. is 116 degree)		
10	AD value of current	The display value is hex number.		
11	AD value of voltage			
12	Indoor unit running mode code	Off:0, Fan only 1,Cooling:2, Heating:3		
13	Outdoor unit running mode code	Off:0, Fan only 1,Cooling:2, Heating:3, Forced cooling:4		
14	EXV open angle	Actual data/4. If the value is higher than 99, the digital display tube will show single digit and tens digit. For example, the digital display tube show “2.0”,it means the EXV open angle is 120×4=480p.)		
15	Frequency limit symbol	Bit7	Frequency limit caused by IGBT radiator	The display value is hex number. For example, the digital display tube show 2A, then Bit5=1, Bit3=1, Bit1=1. It means frequency limit caused by T4, T3 and current.
		Bit6	Frequency limit caused by PFC	
		Bit5	Frequency limit caused by T4.	
		Bit4	Frequency limit caused by T2.	
		Bit3	Frequency limit caused by T3.	
		Bit2	Frequency limit caused by T5.	
		Bit1	Frequency limit caused by current	
		Bit0	Frequency limit caused by voltage	
16	DC fan motor speed			
17	IGBT radiator temp.	The display value is between 30~120 degree. If the temp. is lower than 30 degree, the digital display tube will show “30”.If the temp. is higher than 99 degree, the digital display tube will show single digit and tens digit. (For example, the digital display tube show “0.5”,it means the IGBT radiator temp. is 105 degree. the digital display tube show “1.6”,it means the IGBT radiator temp. is 116 degree)		
18	Indoor unit number	The indoor unit can communicate with outdoor unit well. General:1, Twins:2		
19	Evaporator pipe temp. T2 of 1# indoor unit	If the temp. is lower than 0 degree, the digital display tube will show “0”.If the temp. is higher than 70 degree, the digital display tube will show “70”. If the indoor unit is not		
20	Evaporator pipe temp. T2 of 2# indoor unit			
21	Evaporator pipe temp. T2 of 3# indoor unit			

		connected, the digital display tube will show: “——”
22	1# Indoor unit capacity demand code	<p>Actual data*HP*10</p> <p>If capacity demand code is higher than 99, the digital display tube will show single digit and tens digit. (For example, the digital display tube show “5.0”,it means the capacity demand is 15. the digital display tube show “60”,it means the capacity demand is 6.0). If the indoor unit is not connected, the digital display tube will show: “——”</p>
23	2# Indoor unit capacity demand code	
24	3# Indoor unit capacity demand code	
25	Room temp. T1 of 1# indoor unit	<p>If the temp. is lower than 0 degree, the digital display tube will show “0”.If the temp. is higher than 70 degree, the digital display tube will show “70”. If the indoor unit is not connected, the digital display tube will show: “——”</p>
26	Room temp. T1 of 2# indoor unit	
27	Average room temp. T1	
28	Reason of stop	
29	Evaporator pipe temp. T2B of 1# indoor unit	<p>If the temp. is lower than 0 degree, the digital display tube will show “0”.If the temp. is higher than 70 degree, the digital display tube will show “70”. If the indoor unit is not connected, the digital display tube will show: “——”</p>
30	Evaporator pipe temp. T2B of 2# indoor unit	



## 16.3 Diagnosis and Solution

### 16.3.1 EEPROM parameter error diagnosis and solution (E0/F4)

Error Code	<b>E0/F4</b>
Malfunction conditions	Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.
Potential causes	<ul style="list-style-type: none"><li>● Installation mistake</li><li>● Faulty PCB</li></ul>

#### Trouble shooting:

Power off, then restart the unit 2 minutes later. Does a problem still remain?

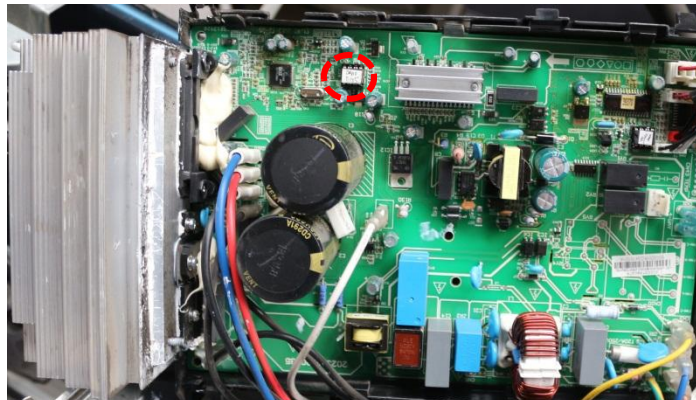
Yes

Replace the indoor/outdoor main PCB.

EEPROM: a type of read-only memory. The contents can be erased and reprogrammed using a pulsed voltage. To locate the EEPROM chip,



Indoor PCB



Outdoor PCB

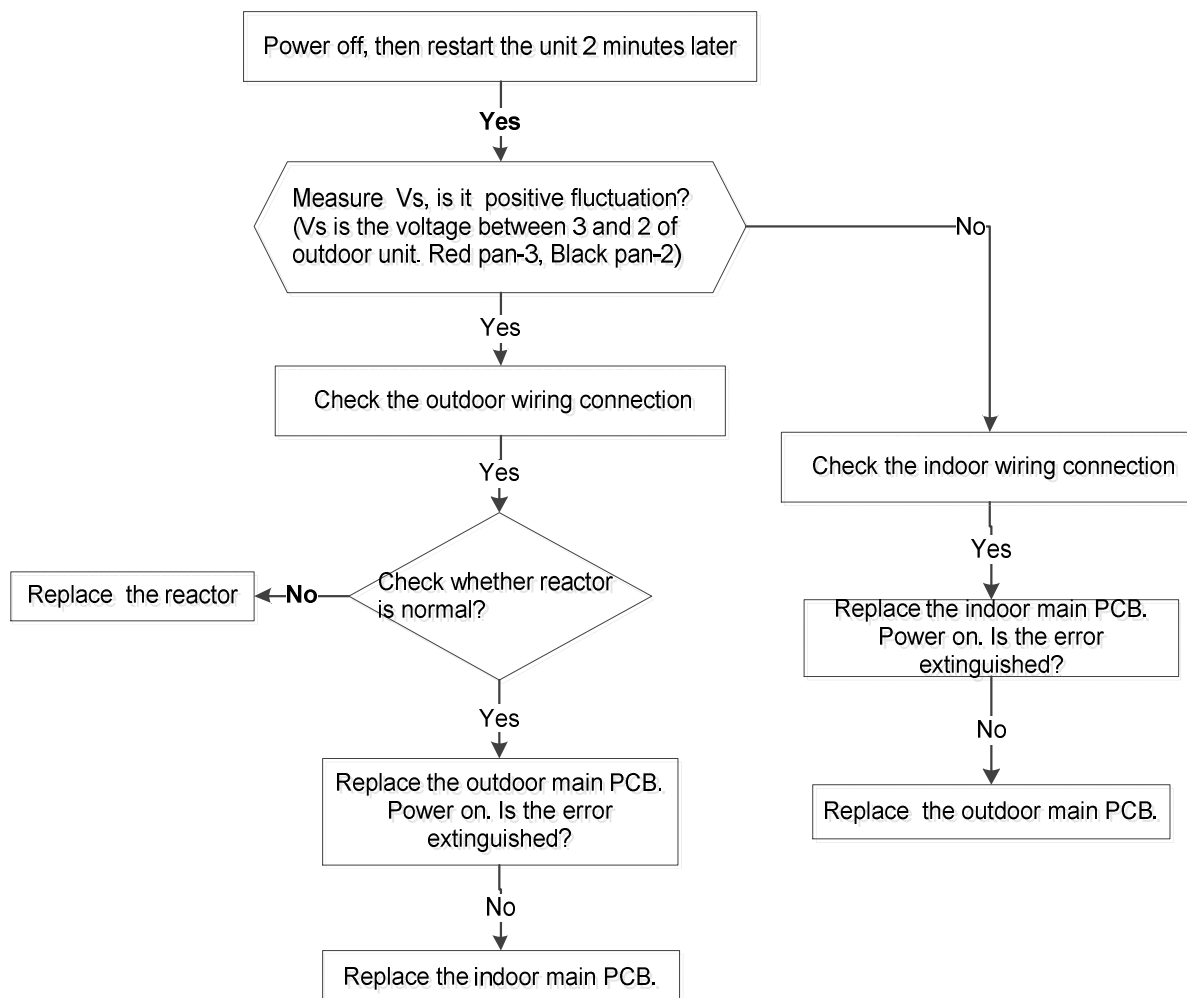
**Note:** The two photos above are only for reference purposes only. The design of the devices depicted may vary by model.

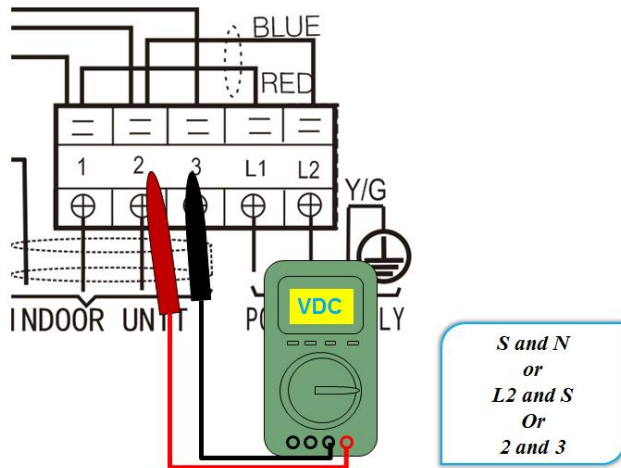
### 16.3.2 Communication malfunction between indoor and outdoor units diagnosis and solution (E1)

For 9K-24K:

Error Code	<b>E1</b>
Malfunction conditions	If the indoor unit does not receive feedback from outdoor unit for 110 seconds 4 consecutive times.
Potential causes	<ul style="list-style-type: none"> <li>Wiring mistake</li> <li>Faulty indoor or outdoor PCB</li> </ul>

Trouble shooting:





**Remark:**

Use a multimeter to test the DC voltage between 2 port and 3 port of outdoor unit. The red pin of multimeter connects with 2 port while the black pin is for 3 port.

When AC is normal running, the voltage will move alternately between -50V to 50V.

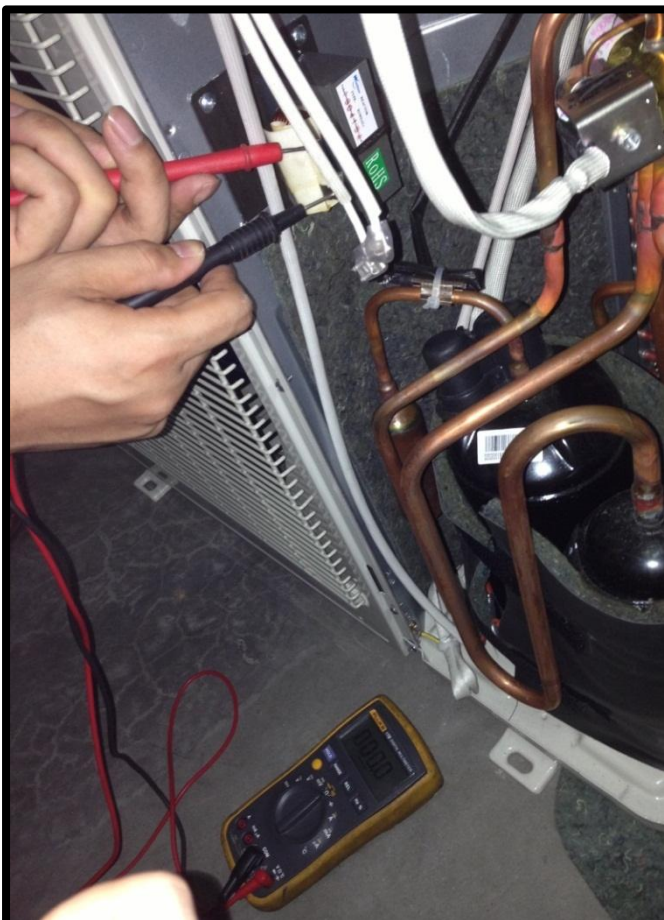
If the outdoor unit has malfunction, the voltage will move alternately with positive value.

While if the indoor unit has malfunction, the voltage will be a certain value.

Remark,

The old label is L1,L2,S, L1,L2

The new label is 1, 2, 3, L1,L2



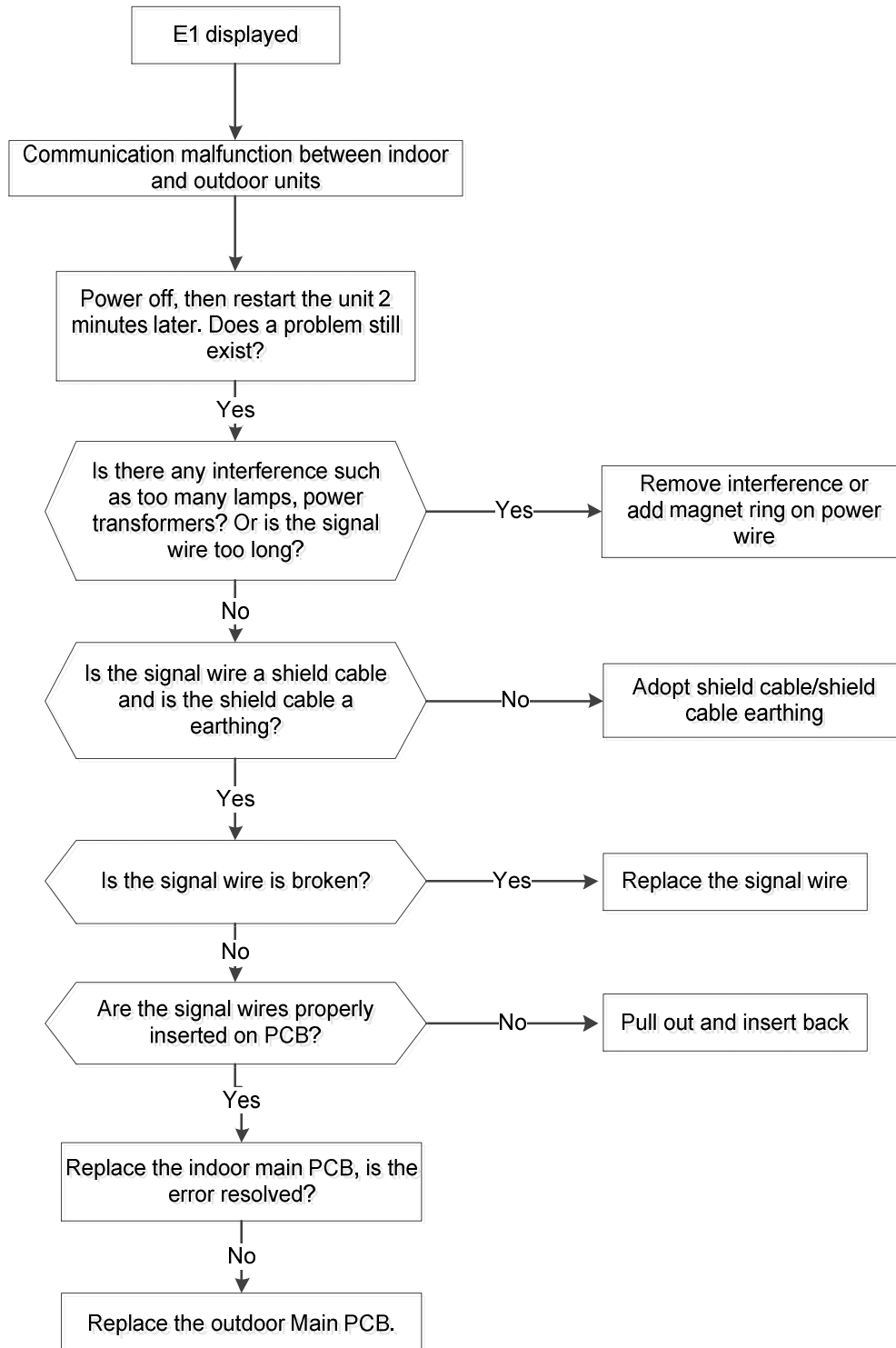
**Remark:**

Use a multimeter to test the resistance of the reactor which does not connect with capacitor.

The normal value should be around zero ohm. Otherwise, the reactor must have malfunction and need to be replaced.

**For 36K-48K:**

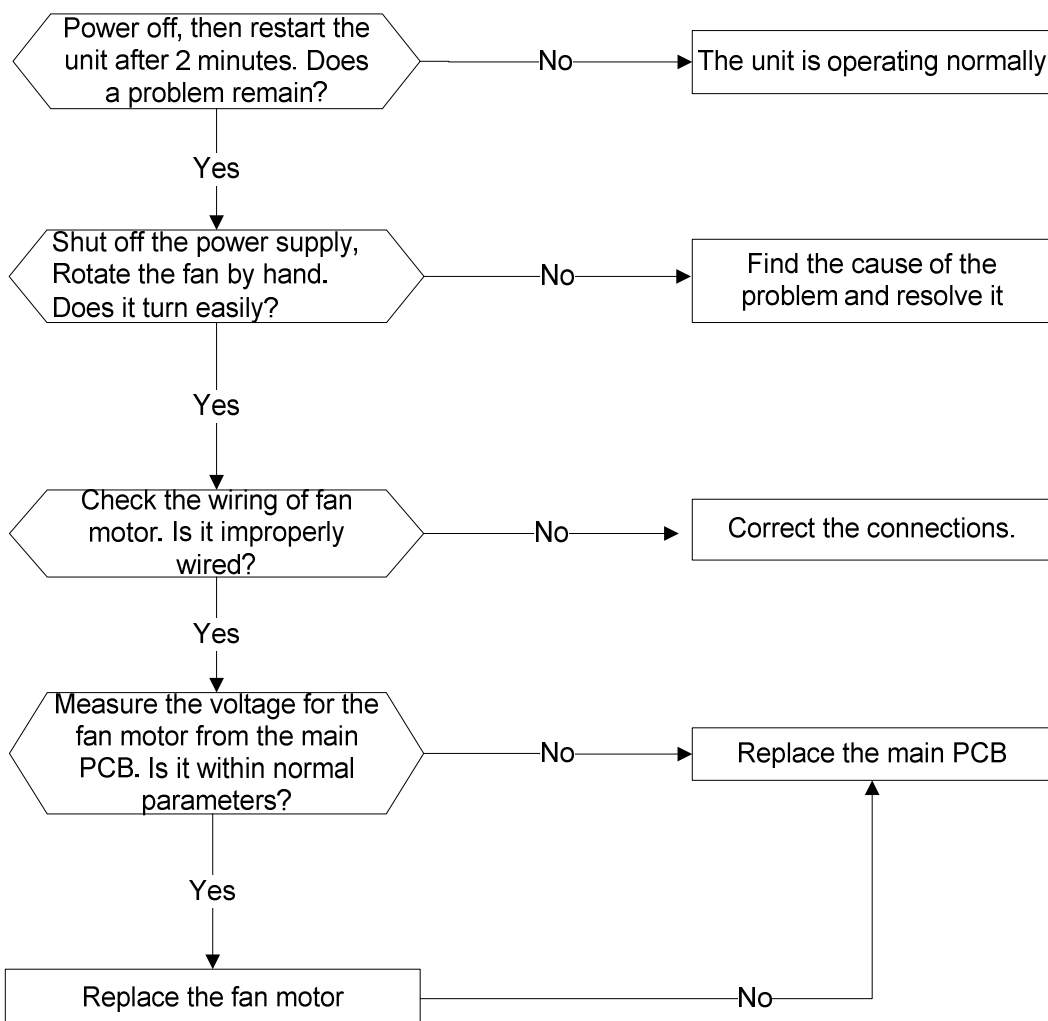
<b>Malfunction conditions</b>	Indoor unit does not receive feedback from outdoor unit for 60 seconds OR outdoor unit does not receive feedback from indoor unit for 120 seconds.
<b>Possible causes</b>	<ul style="list-style-type: none"> <li>● Wiring mistakes</li> <li>● Faulty indoor or outdoor PCB</li> </ul>



### 16.3.3 Fan speed malfunction diagnosis and solution (E3)

Error Code	<b>E3</b>
Malfunction conditions	When indoor fan speed is too low (300RPM) for a certain period of time, the unit ceases operation and the LED displays a failure code.
Potential Causes	<ul style="list-style-type: none"> <li>● Wiring mistake</li> <li>● Faulty fan assembly</li> <li>● Faulty fan motor</li> <li>● Faulty PCB</li> </ul>

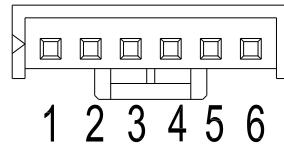
#### Trouble shooting:



Index 1:

1. Indoor DC fan motor (Control Chip is in Fan Motor)

Turn power on and while the unit is on standby, measure the voltage between pin1 and pin3 as well as between pin4 and pin3 in fan motor connector. If the value of the voltage is not within the range shown in the following table, the PCB may be experiencing problems and need to be replaced.



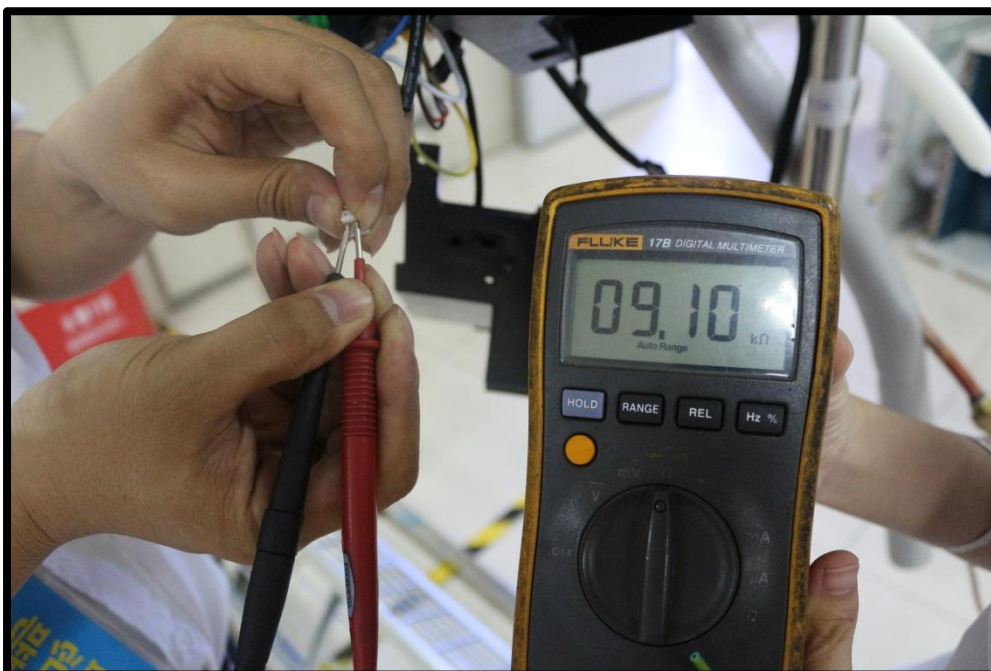
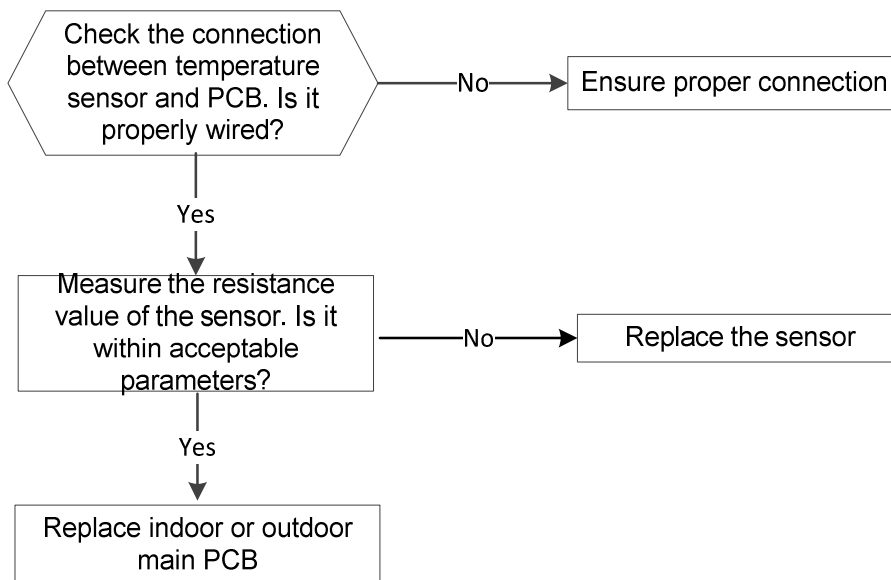
DC motor voltage input and output

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	200~380V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	13.5~16.5V
5	Yellow	Vsp	0~6.5V
6	Blue	FG	13.5~16.5V

#### 16.3.4 Open or short circuit of temperature sensor diagnosis and solution (E4/E5/F1/F2/F3)

Error Code	E4/E5/F1/F2/F3
Malfunction conditions	If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED displays a failure.
Potential causes	<ul style="list-style-type: none"><li>• Wiring mistake</li><li>• Faulty sensor</li></ul>

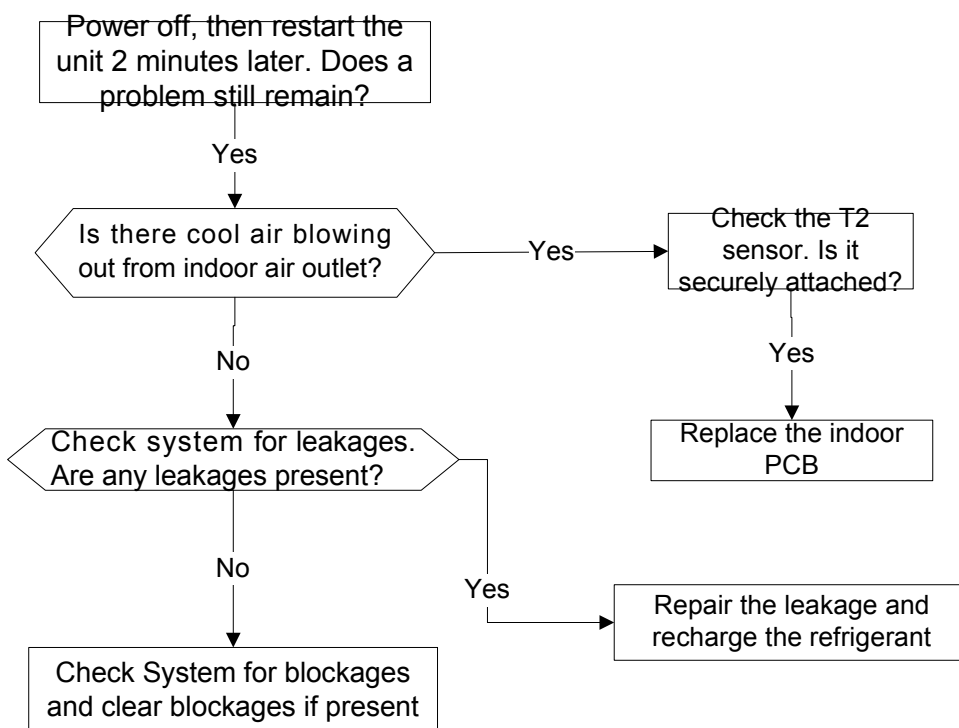
##### Trouble shooting:



### 16.3.5 Refrigerant Leakage Detection diagnosis and solution (EC)

Error Code	<b>EC</b>
Malfunction conditions	<p>Define the evaporator coil temperature T2 of the compressor starts running as Tcool.</p> <p>If the following occurs 3 times, the display shows "EC" and the unit switches off:</p> <p>In the first 8 minutes after the compressor starts up, if <math>T2 &lt; T_{cool} - 2^{\circ}\text{C}</math> is not maintained for 4 seconds and compressor</p>
Potential Causes	<ul style="list-style-type: none"> <li>● Faulty T2 sensor</li> <li>● Faulty indoor PCB</li> <li>● System problems, such as leakage or blockages</li> </ul>

#### Trouble shooting:

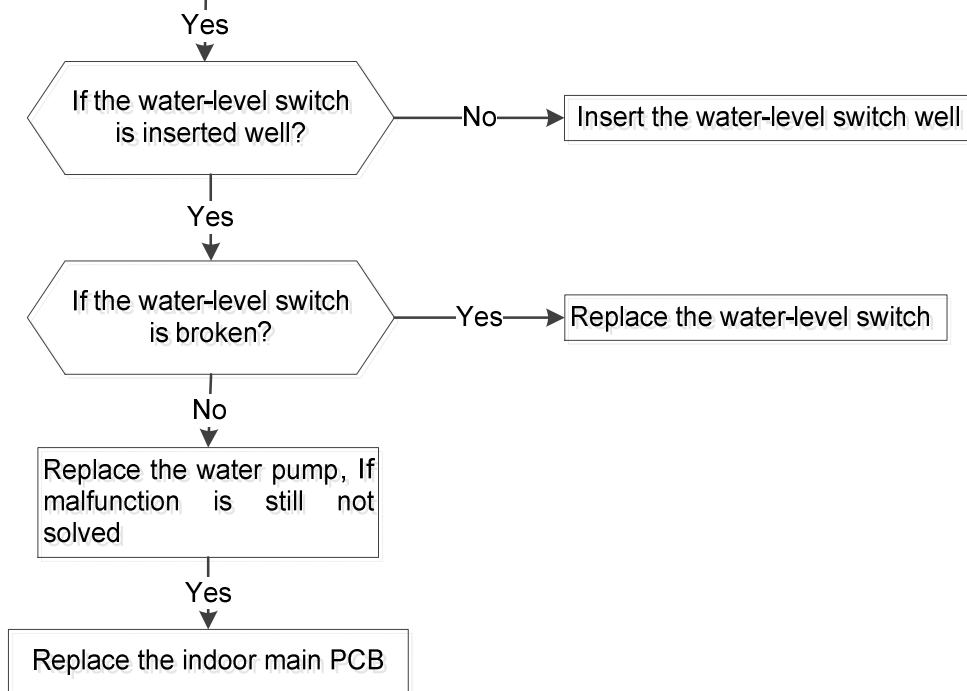




### 16.3.6 Water-level alarm malfunction diagnosis and solution

<b>Error Code</b>	<b>EE</b>
<b>Malfunction conditions</b>	If the sampling voltage is not 5V, the LED will display the failure code.
<b>Possible causes</b>	<ul style="list-style-type: none"> <li>● Wiring mistakes</li> <li>● Faulty water-level switch</li> <li>● Faulty water pump</li> <li>● Faulty indoor PCB</li> </ul>

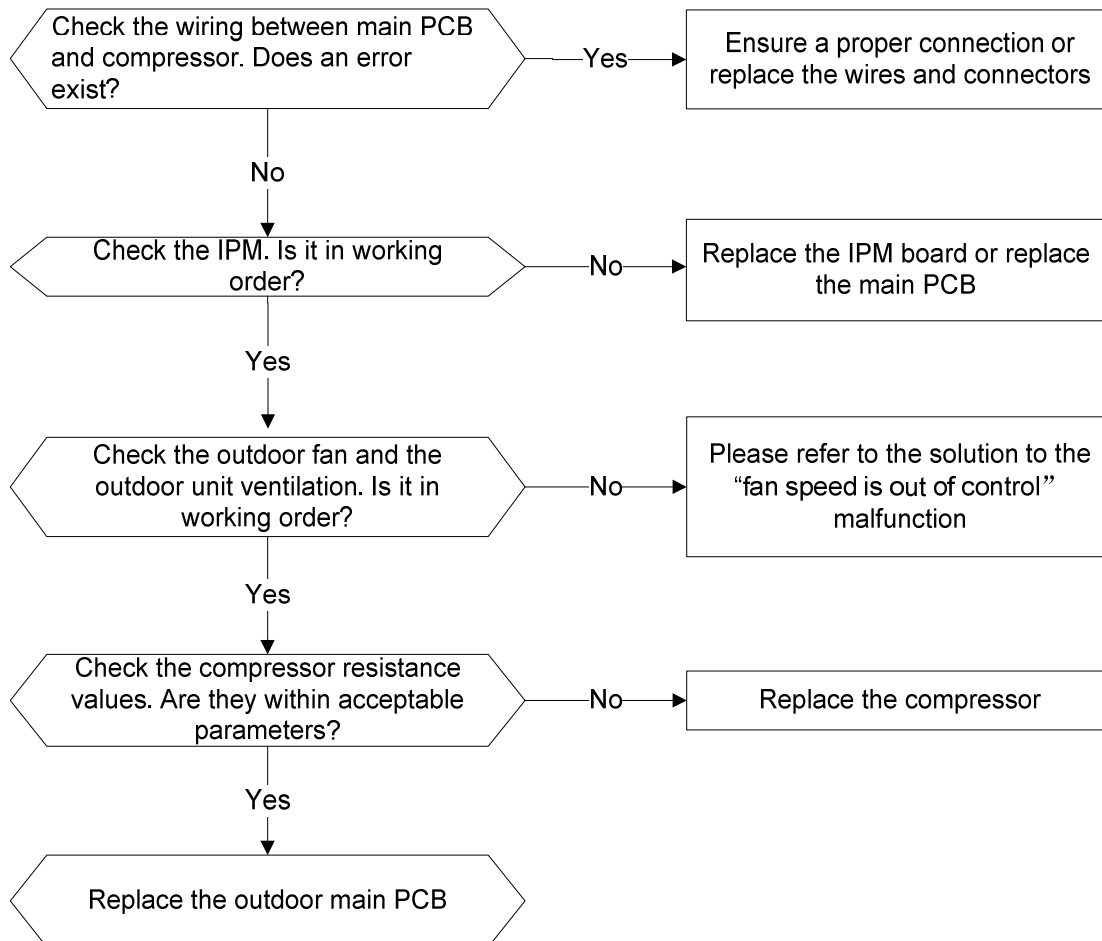
Power off, then restart the unit 3 minutes later. Is it still displaying the error code?

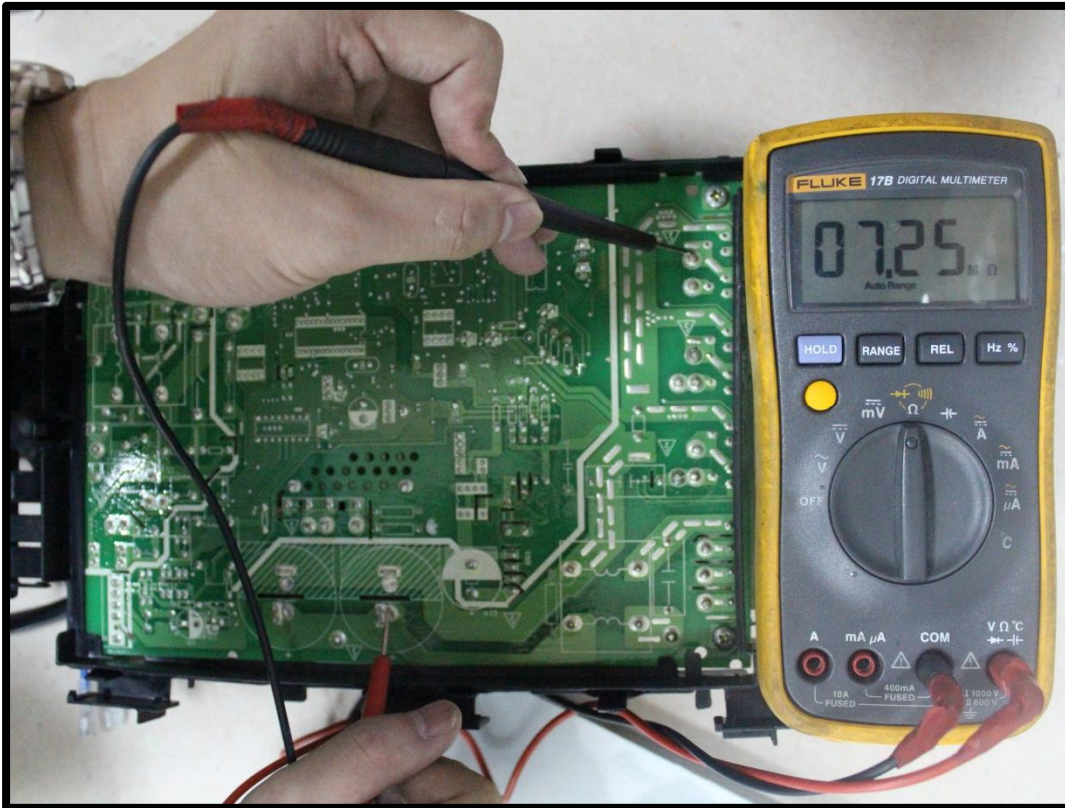


### 16.3.7 IPM malfunction or IGBT over-strong current protection diagnosis and solution (P0)

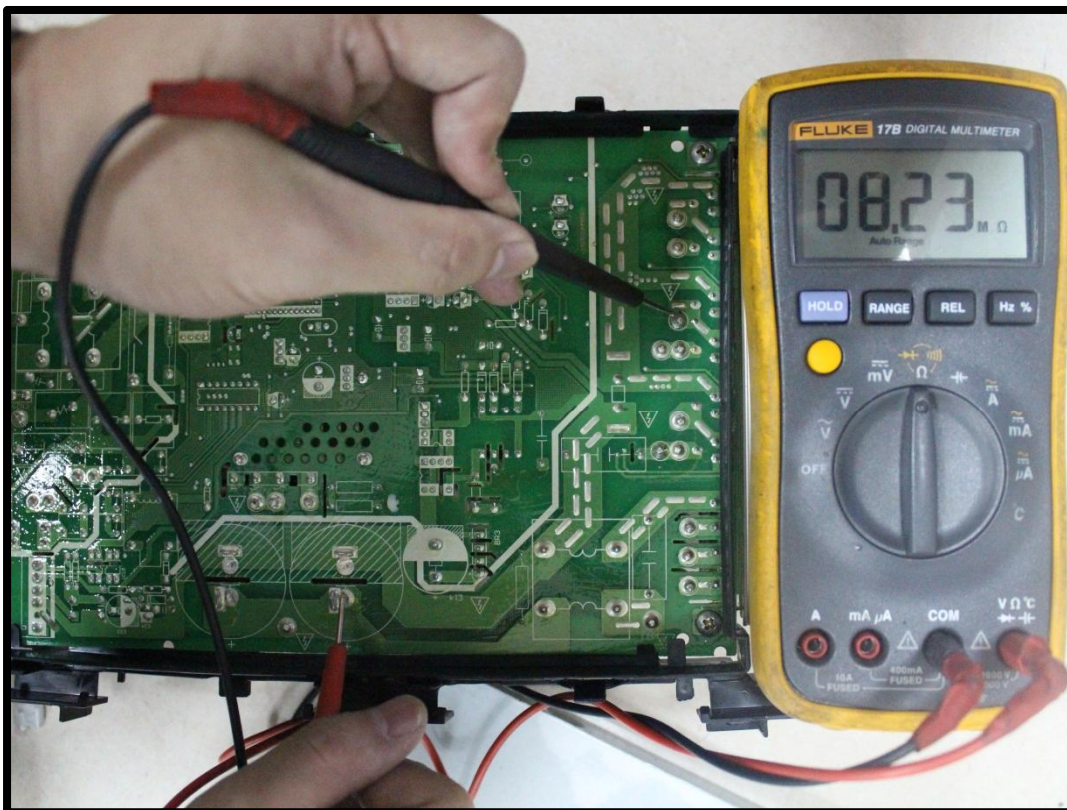
<b>Error Code</b>	<b>P0</b>
<b>Malfunction conditions</b>	When the voltage signal the IPM sends to the compressor drive chip is abnormal, the display LED shows “P0” and the AC turn
<b>Possible causes</b>	<ul style="list-style-type: none"> <li>• Wiring mistake</li> <li>• IPM malfunction</li> </ul>

#### Trouble shooting:



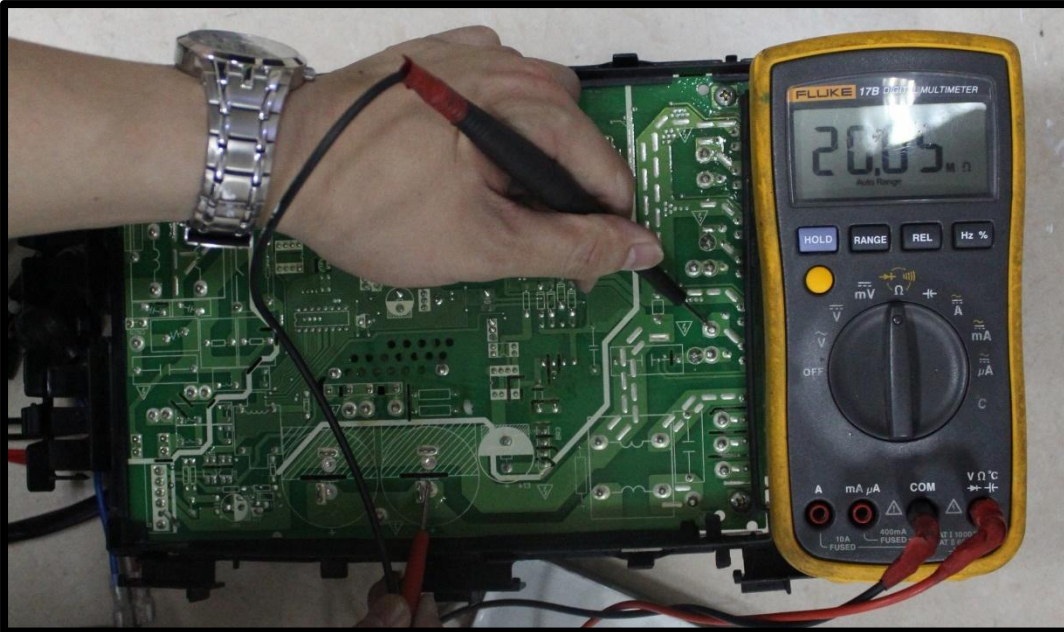


P-U

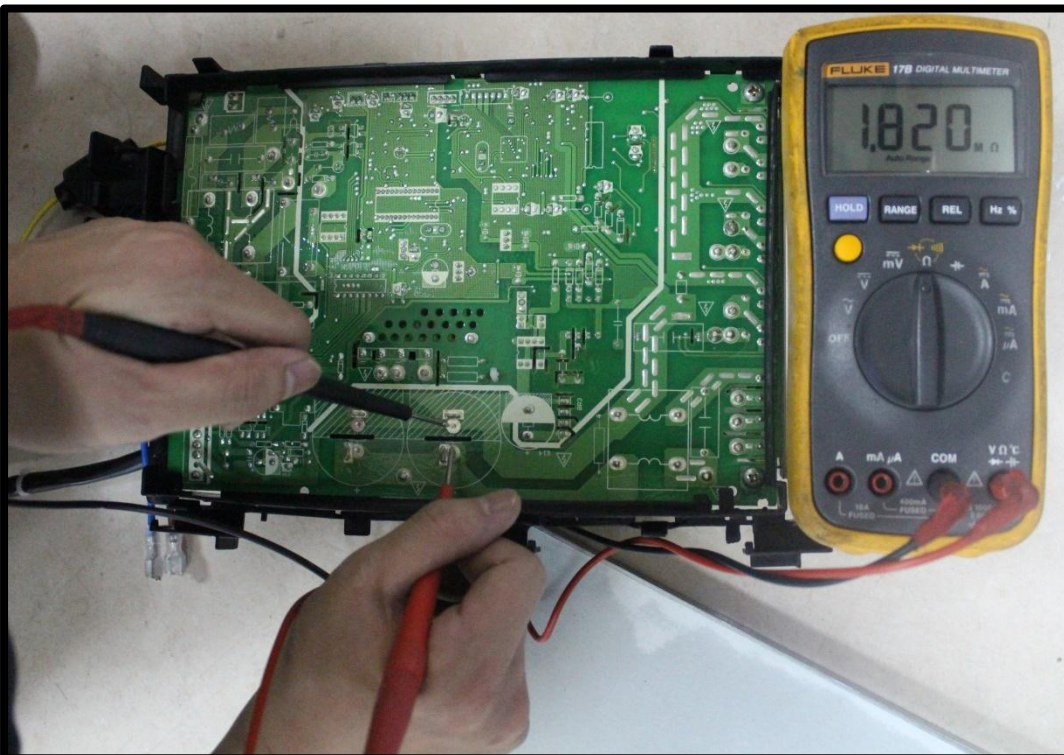


P-V





P-W

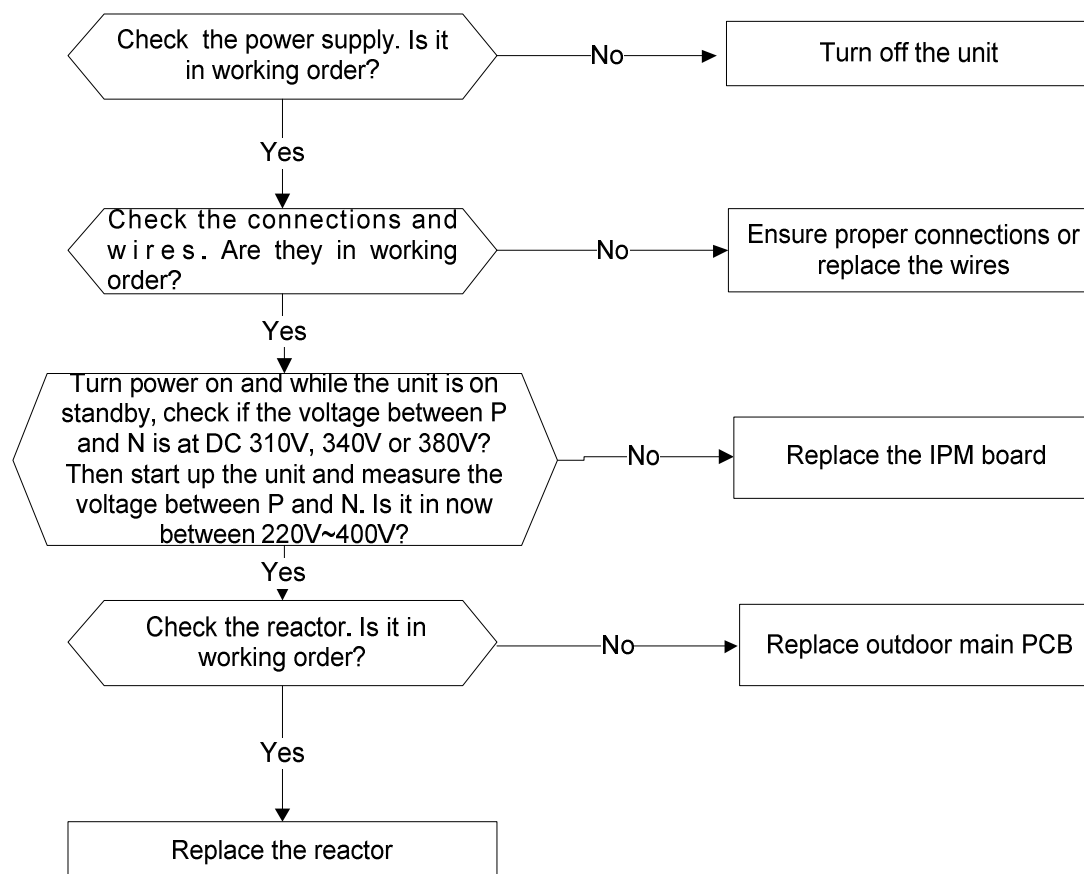


P-N

### 16.3.8 Over voltage or too low voltage protection diagnosis and solution (P1)

Error Code	<b>P1</b>
Malfunction conditions	Abnormal increases or decreases in voltage are detected by checking the specified voltage detection circuit.
Potential causes	<ul style="list-style-type: none"> <li>● Power supply issues</li> <li>● System leakage or blockage</li> <li>● Faulty PCB</li> </ul>

#### Trouble shooting:



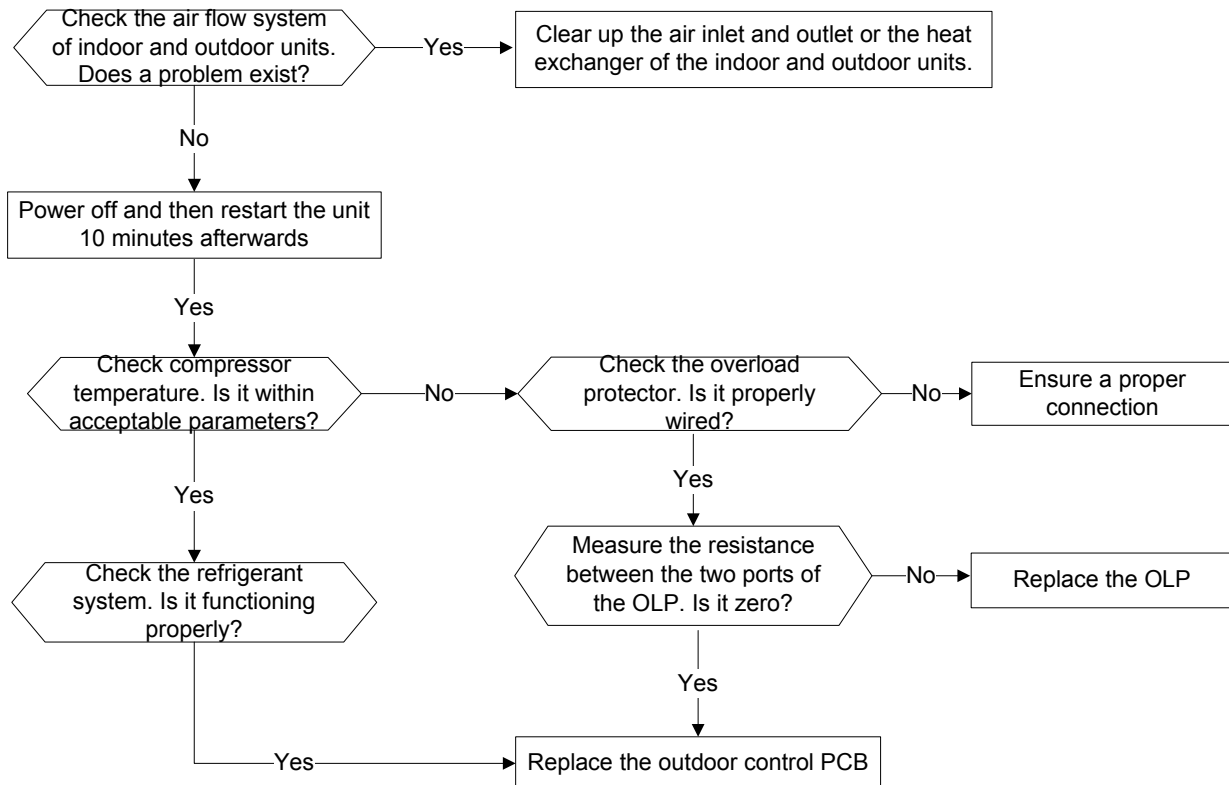
#### Remark:

Measure the DC voltage between P and N port. The normal value should be around 310V.340V or 380V

### 16.3.9 High temperature protection of compressor top diagnosis and solution (P2)

Error Code	<b>P2</b>
Malfunction decision conditions	If the sampling voltage is not 5V, the LED will display the failure.
Supposed causes	<ul style="list-style-type: none"> <li>• Power supply problems.</li> <li>• System leakage or block</li> <li>• PCB faulty</li> </ul>

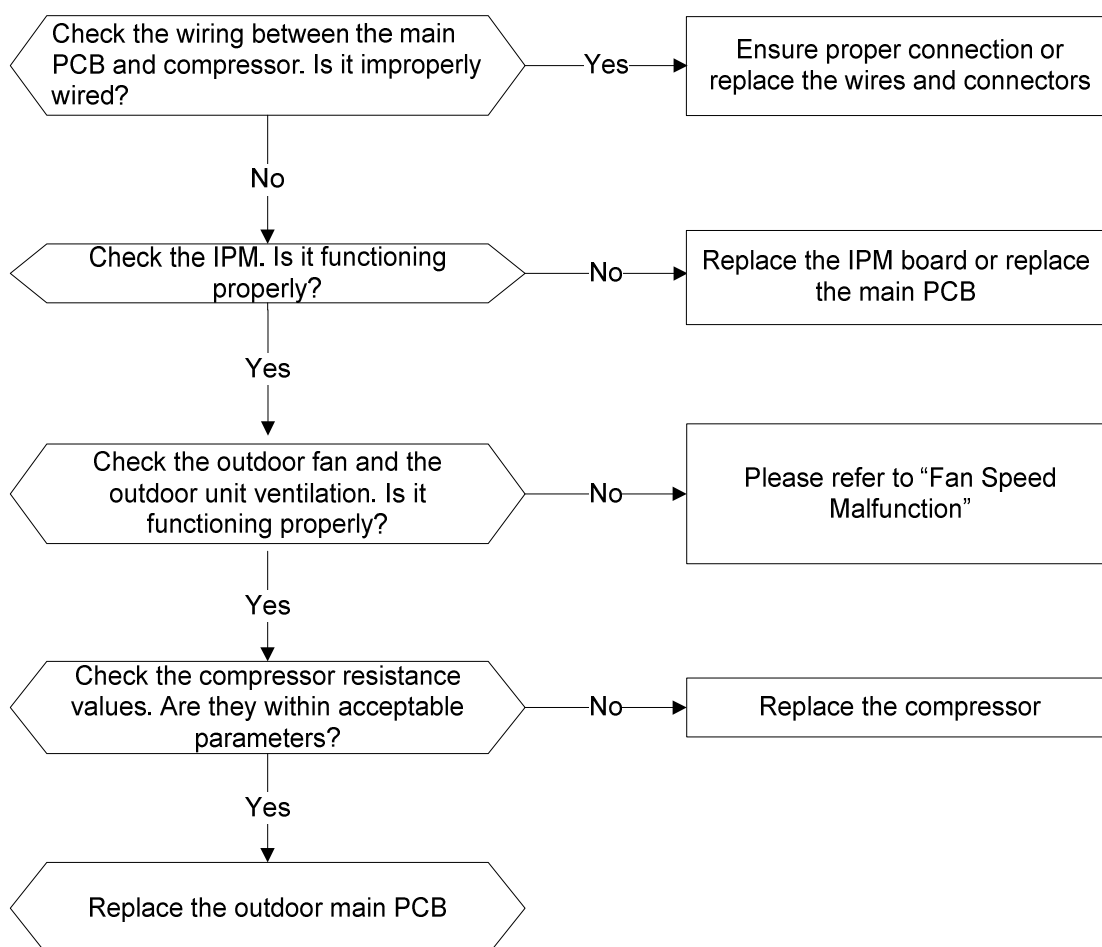
#### Trouble shooting:



### 16.3.10 Inverter compressor drive error diagnosis and solution(P4)

<b>Error Code</b>	<b>P4</b>
<b>Malfunction conditions</b>	<b>Abnormalities in the inverter compressor drive is detected by a special detection circuit, which can perform communication signal detection, voltage detection, and compressor rotation speed signal detection.</b>
<b>Potential causes</b>	<ul style="list-style-type: none"> <li>● <b>Wiring mistake</b></li> <li>● <b>IPM malfunction</b></li> <li>● <b>Faulty outdoor fan assembly</b></li> <li>● <b>Compressor malfunction</b></li> <li>● <b>Faulty outdoor PCB</b></li> </ul>

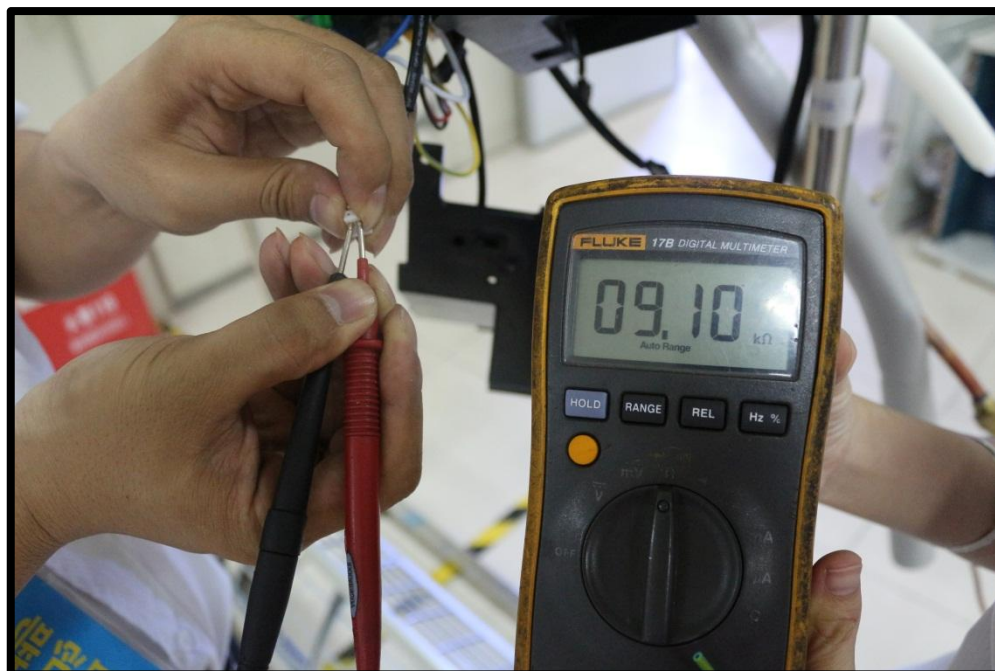
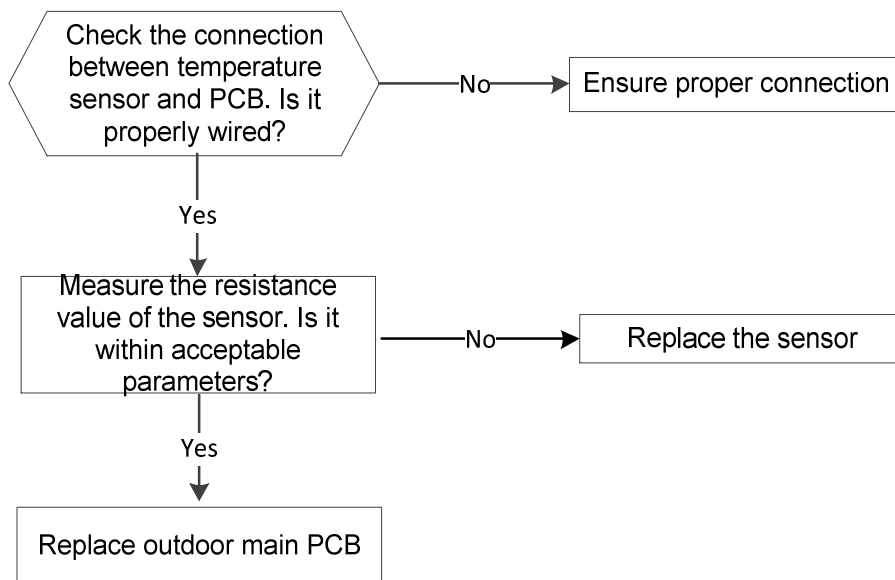
#### Trouble shooting:



### 16.3.11 Outdoor IPM module temperature sensor malfunction diagnosis and solution (P7)

Error Code	P7
Malfunction conditions	If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED displays a failure.
Potential causes	<ul style="list-style-type: none"> <li>• Wiring mistake</li> <li>• Faulty sensor</li> </ul>

#### Trouble shooting:

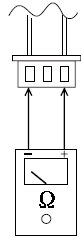




## 16.4 Main parts check

### 1. Temperature sensor checking

Disconnect the temperature sensor from PCB, measure the resistance value with a tester.



Tester

Temperature Sensors.

Room temp.(T1) sensor,

Indoor coil temp.(T2) sensor,

Outdoor coil temp.(T3) sensor,

Outdoor ambient temp.(T4) sensor,

Compressor discharge temp.(T5) sensor.

Measure the resistance value of each winding by using the multi-meter.

**Appendix 1** Temperature Sensor Resistance Value Table for T1,T2,T3,T4 (°C--K)

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	115.266	20	68	12.6431	60	140	2.35774	100	212	0.62973
-19	-2	108.146	21	70	12.0561	61	142	2.27249	101	214	0.61148
-18	0	101.517	22	72	11.5	62	144	2.19073	102	216	0.59386
-17	1	96.3423	23	73	10.9731	63	145	2.11241	103	217	0.57683
-16	3	89.5865	24	75	10.4736	64	147	2.03732	104	219	0.56038
-15	5	84.219	25	77	10	65	149	1.96532	105	221	0.54448
-14	7	79.311	26	79	9.55074	66	151	1.89627	106	223	0.52912
-13	9	74.536	27	81	9.12445	67	153	1.83003	107	225	0.51426
-12	10	70.1698	28	82	8.71983	68	154	1.76647	108	226	0.49989
-11	12	66.0898	29	84	8.33566	69	156	1.70547	109	228	0.486
-10	14	62.2756	30	86	7.97078	70	158	1.64691	110	230	0.47256
-9	16	58.7079	31	88	7.62411	71	160	1.59068	111	232	0.45957
-8	18	56.3694	32	90	7.29464	72	162	1.53668	112	234	0.44699
-7	19	52.2438	33	91	6.98142	73	163	1.48481	113	235	0.43482
-6	21	49.3161	34	93	6.68355	74	165	1.43498	114	237	0.42304
-5	23	46.5725	35	95	6.40021	75	167	1.38703	115	239	0.41164
-4	25	44	36	97	6.13059	76	169	1.34105	116	241	0.4006
-3	27	41.5878	37	99	5.87359	77	171	1.29078	117	243	0.38991
-2	28	39.8239	38	100	5.62961	78	172	1.25423	118	244	0.37956
-1	30	37.1988	39	102	5.39689	79	174	1.2133	119	246	0.36954
0	32	35.2024	40	104	5.17519	80	176	1.17393	120	248	0.35982
1	34	33.3269	41	106	4.96392	81	178	1.13604	121	250	0.35042
2	36	31.5635	42	108	4.76253	82	180	1.09958	122	252	0.3413
3	37	29.9058	43	109	4.5705	83	181	1.06448	123	253	0.33246
4	39	28.3459	44	111	4.38736	84	183	1.03069	124	255	0.3239
5	41	26.8778	45	113	4.21263	85	185	0.99815	125	257	0.31559
6	43	25.4954	46	115	4.04589	86	187	0.96681	126	259	0.30754
7	45	24.1932	47	117	3.88673	87	189	0.93662	127	261	0.29974
8	46	22.5662	48	118	3.73476	88	190	0.90753	128	262	0.29216
9	48	21.8094	49	120	3.58962	89	192	0.8795	129	264	0.28482
10	50	20.7184	50	122	3.45097	90	194	0.85248	130	266	0.2777
11	52	19.6891	51	124	3.31847	91	196	0.82643	131	268	0.27078
12	54	18.7177	52	126	3.19183	92	198	0.80132	132	270	0.26408
13	55	17.8005	53	127	3.07075	93	199	0.77709	133	271	0.25757
14	57	16.9341	54	129	2.95896	94	201	0.75373	134	273	0.25125
15	59	16.1156	55	131	2.84421	95	203	0.73119	135	275	0.24512
16	61	15.3418	56	133	2.73823	96	205	0.70944	136	277	0.23916
17	63	14.6181	57	135	2.63682	97	207	0.68844	137	279	0.23338
18	64	13.918	58	136	2.53973	98	208	0.66818	138	280	0.22776
19	66	13.2631	59	138	2.44677	99	210	0.64862	139	282	0.22231

**Appendix 2** Temperature Sensor Resistance Value Table for T5,TH (°C--K)

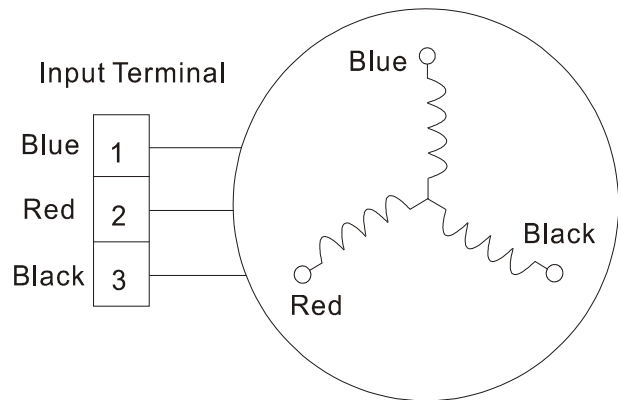
°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	542.7	20	68	68.66	60	140	13.59	100	212	3.702
-19	-2	511.9	21	70	65.62	61	142	13.11	101	214	3.595
-18	0	483	22	72	62.73	62	144	12.65	102	216	3.492
-17	1	455.9	23	73	59.98	63	145	12.21	103	217	3.392
-16	3	430.5	24	75	57.37	64	147	11.79	104	219	3.296
-15	5	406.7	25	77	54.89	65	149	11.38	105	221	3.203
-14	7	384.3	26	79	52.53	66	151	10.99	106	223	3.113
-13	9	363.3	27	81	50.28	67	153	10.61	107	225	3.025
-12	10	343.6	28	82	48.14	68	154	10.25	108	226	2.941
-11	12	325.1	29	84	46.11	69	156	9.902	109	228	2.86
-10	14	307.7	30	86	44.17	70	158	9.569	110	230	2.781
-9	16	291.3	31	88	42.33	71	160	9.248	111	232	2.704
-8	18	275.9	32	90	40.57	72	162	8.94	112	234	2.63
-7	19	261.4	33	91	38.89	73	163	8.643	113	235	2.559
-6	21	247.8	34	93	37.3	74	165	8.358	114	237	2.489
-5	23	234.9	35	95	35.78	75	167	8.084	115	239	2.422
-4	25	222.8	36	97	34.32	76	169	7.82	116	241	2.357
-3	27	211.4	37	99	32.94	77	171	7.566	117	243	2.294
-2	28	200.7	38	100	31.62	78	172	7.321	118	244	2.233
-1	30	190.5	39	102	30.36	79	174	7.086	119	246	2.174
0	32	180.9	40	104	29.15	80	176	6.859	120	248	2.117
1	34	171.9	41	106	28	81	178	6.641	121	250	2.061
2	36	163.3	42	108	26.9	82	180	6.43	122	252	2.007
3	37	155.2	43	109	25.86	83	181	6.228	123	253	1.955
4	39	147.6	44	111	24.85	84	183	6.033	124	255	1.905
5	41	140.4	45	113	23.89	85	185	5.844	125	257	1.856
6	43	133.5	46	115	22.89	86	187	5.663	126	259	1.808
7	45	127.1	47	117	22.1	87	189	5.488	127	261	1.762
8	46	121	48	118	21.26	88	190	5.32	128	262	1.717
9	48	115.2	49	120	20.46	89	192	5.157	129	264	1.674
10	50	109.8	50	122	19.69	90	194	5	130	266	1.632
11	52	104.6	51	124	18.96	91	196	4.849			
12	54	99.69	52	126	18.26	92	198	4.703			
13	55	95.05	53	127	17.58	93	199	4.562			
14	57	90.66	54	129	16.94	94	201	4.426			
15	59	86.49	55	131	16.32	95	203	4.294			
16	61	82.54	56	133	15.73	96	205	4.167			
17	63	78.79	57	135	15.16	97	207	4.045			
18	64	75.24	58	136	14.62	98	208	3.927			
19	66	71.86	59	138	14.09	99	210	3.812			

**Appendix 3:**

°C	10	11	12	13	14	15	16	17	18	19	20	21	22
°F	48	50	52	54	56	58	60	62	64	66	68	70	72
°C	23	24	25	26	27	28	29	30	31	32	33	34	35
°F	74	76	78	80	82	84	86	88	90	92	94	96	98

2. Compressor checking

Measure the resistance value of each winding by using the tester.



Position	Resistance Value			
	ASN98D22UFZ	ASM135D23UFZ	ATF235D22UMT	ATF250D22UMT
Blue - Red	1.57Ω	1.75 Ω	0.75 Ω	0.75 Ω
Blue - Black				
Red - Blue				

Position	Resistance Value		
	ATF310D43UMT	ATQ420D1UMU	ATM115D43UFZ2
Blue - Red	0.65 Ω	0.38Ω	1.87Ω
Blue - Black			
Red - Blue			



### 3. IPM continuity check

Turn off the power, let the large capacity electrolytic capacitors discharge completely, and dismount the IPM. Use a digital tester to measure the resistance between P and UVWN; UVW and N.

Digital tester		Normal resistance value	Digital tester		Normal resistance value
(+)Red	(-)Black	$\infty$ (Several M $\Omega$ )	(+)Red	(-)Black	$\infty$ (Several M $\Omega$ )
P	N		N	U	
	U			V	
	V			W	
	W			(+)Red	

### 4: Pressure on Service Port

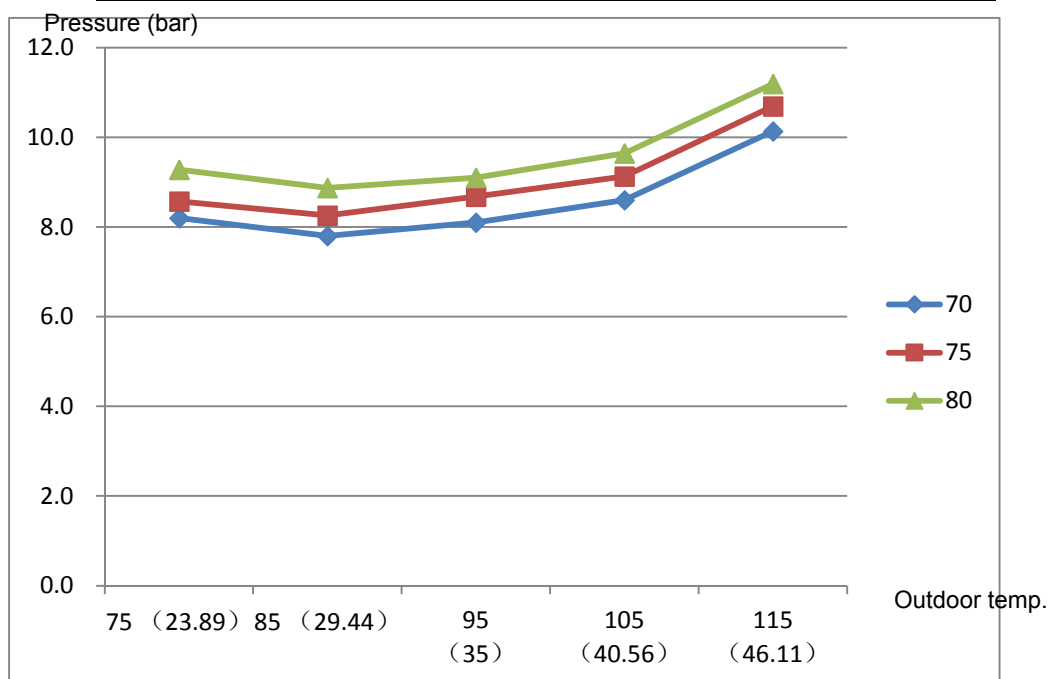
#### Cooling chart:

#### COOLING MODE

°F (°C)	Indoor Temp.	Outdoor temp.				
		75 (23.89)	85 (29.44)	95 (35)	105 (40.56)	115 (46.11)
BAR	70	8.2	7.8	8.1	8.6	10.1
BAR	75	8.6	8.3	8.7	9.1	10.7
BAR	80	9.3	8.9	9.1	9.6	11.2

PSI	70	119	113	117	125	147
PSI	75	124	120	126	132	155
PSI	80	135	129	132	140	162

MPA	70	0.82	0.78	0.81	0.86	1.01
MPA	75	0.86	0.83	0.87	0.91	1.07
MPA	80	0.93	0.89	0.91	0.96	1.12



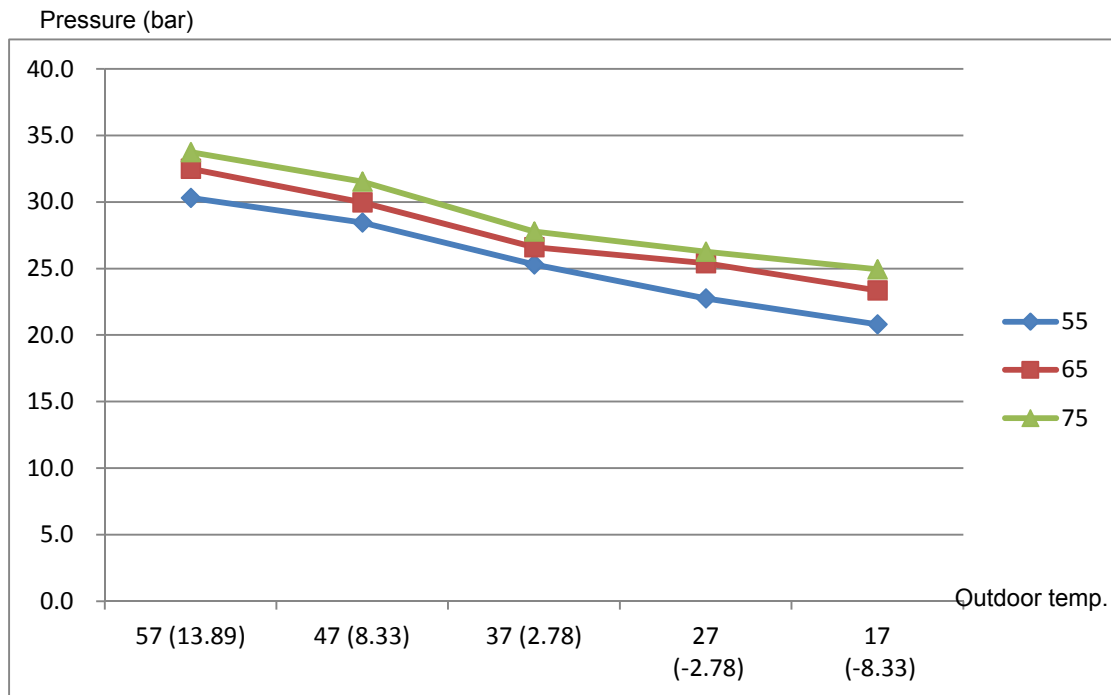
## Heating Chart:

### HEATING MODE

°F (°C)	Indoor Temp.	Outdoor temp.				
		57 (13.89)	47 (8.33)	37 (2.78)	27 (-2.78)	17 (-8.33)
BAR	55	30.3	28.5	25.3	22.8	20.8
BAR	65	32.5	30.0	26.6	25.4	23.3
BAR	75	33.8	31.5	27.8	26.3	24.9

PSI	55	439	413	367	330	302
PSI	65	471	435	386	368	339
PSI	75	489	457	403	381	362

MPA	55	3.03	2.85	2.53	2.28	2.08
MPA	65	3.25	3.00	2.66	2.54	2.33
MPA	75	3.38	3.15	2.78	2.63	2.49

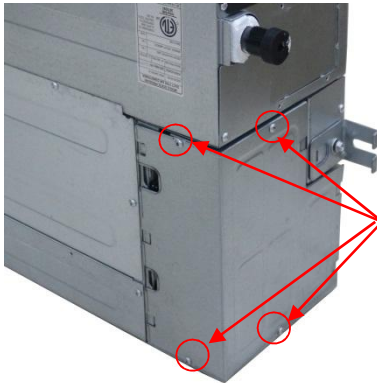
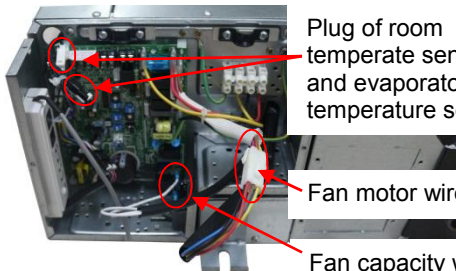
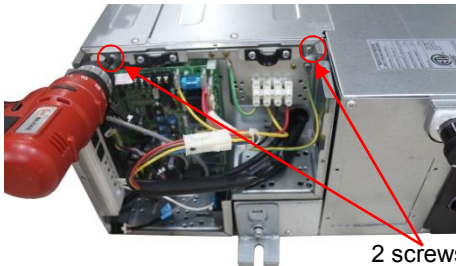




## 17. Disassembly Instructions

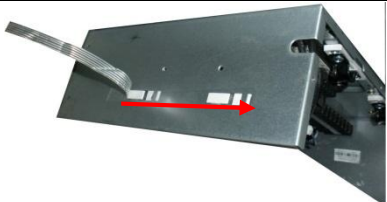


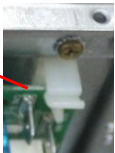

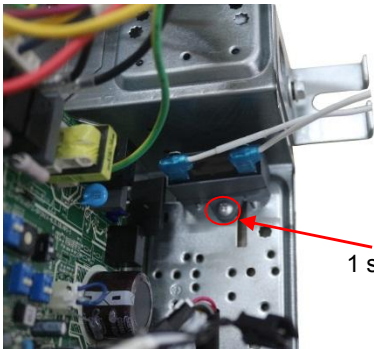
**Note:** This part is for reference, the photos may have slight difference with your machine.

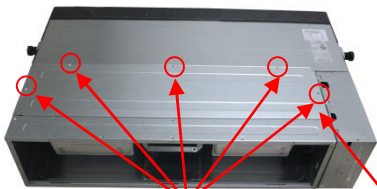




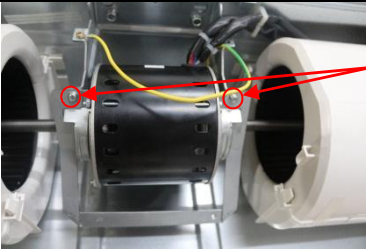

### 17.1 Indoor unit

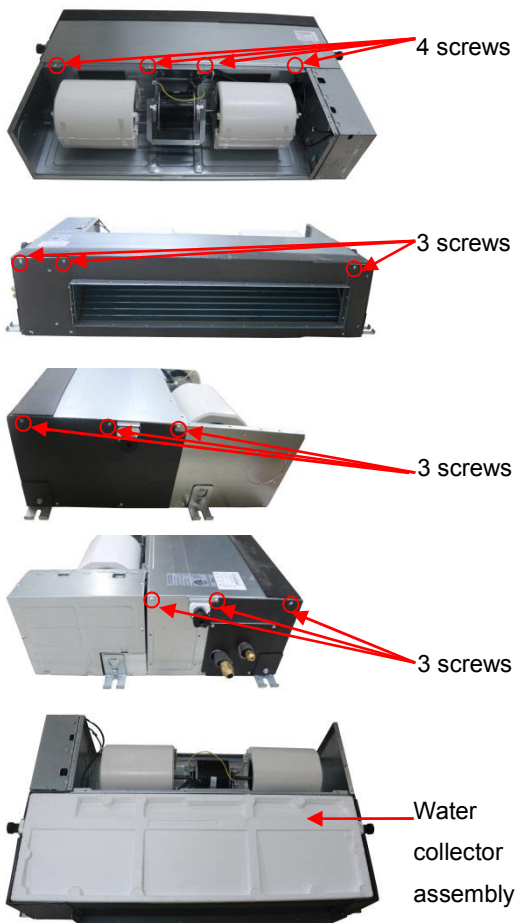

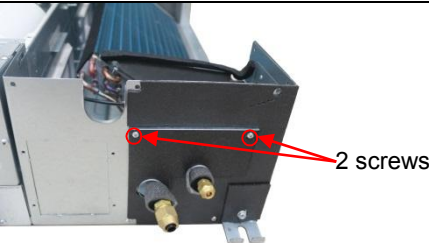
#### ➤ Duct Unit

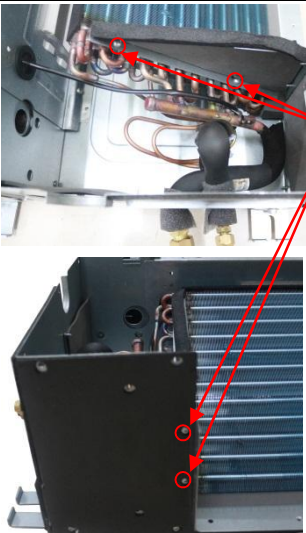

No.	Parts name	Procedures	Remarks
1	Remove the electronic control box	1) Screw off the screws to remove the cover of electronic control box	 <p>Four screws</p>
		2) Disconnect the fan motor wire, fan capacity wire, room temperature sensor wire and evaporator temperature sensor wire	 <p>Plug of room temperate sensor and evaporator temperature sensor Fan motor wire Fan capacity wire</p>
		3) Screw off the screws to remove electronic control box	 <p>2 screws</p>
2	Remove the display board	1) Remove the cover of electronic control box	Repeat the operation of step1 of No1
		2) Disconnect the display board wire connected to PCB	 <p>Connector</p>
		3) Remove the sticker	 <p>Sticker</p>



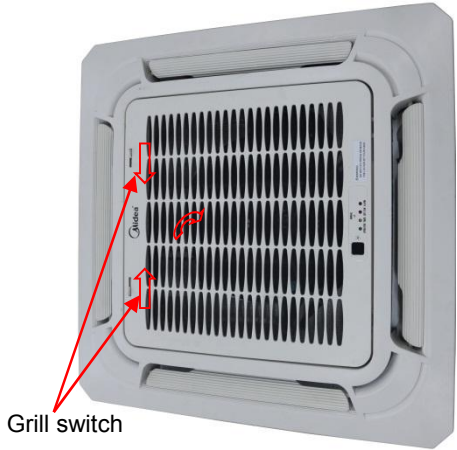
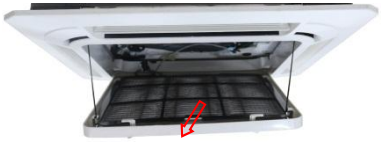
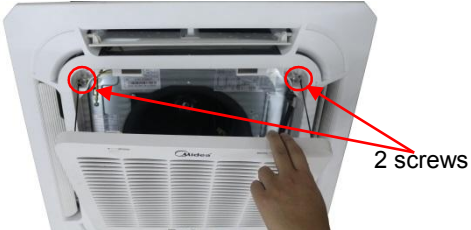
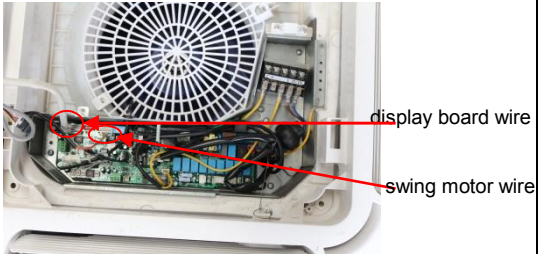
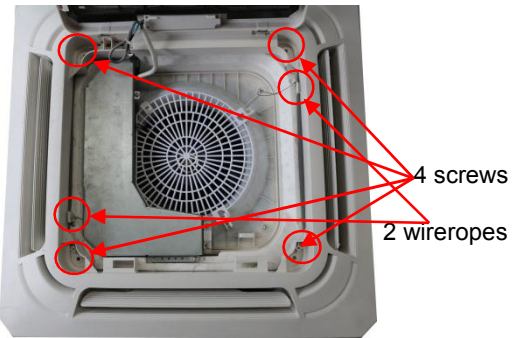

		3) Move the display board according to the arrow direction to disassemble it.	
3	Remove the PCB	1) Remove the cover of electronic control box	Repeat the operation of step1 of No1
		1) Pull out all the plugs or connectors connected to the PCB and remove the ground wire after remove the screw.	
		2) Remove the PCB from the electronic control box	  <p>Press the four fixing holders from four corners to remove the PCB</p>
			 <p>PCB</p>
4	Remove the fan capacitor	1) Remove the cover of electronic control box	Repeat the operation of step1 of No1
		2) Disconnect the fan capacity wire.	Repeat the operation of step2 of No1
		3) Screw off the screw to remove it	 <p>1 screw</p>

5	Remover the fan motor	1) Screw off the fixing screws to remove the rear cover board	 <p>5 screws      Rear cover board</p>
		2) Screw off the fixing screws to remove the rear beam	 <p>Rear beam Total four screws at the left side and right side</p>
		3) Remove room temperature sensor	 <p>Cut off the fastening belt to take off the room temperature sensor</p>
		4) Remove the sticker	 <p>Stickers</p>
		5) Remove the below volute shell	 <p>Press      Press Press the clips to take off the volute shell</p>
		6) Remove the fan motor wire from the electronic control box	Refer the operation of step2 of No.1
		7) Disassemble the fan motor fixing clamps to remove the fan motor assembly and fan wheel assembly	 <p>The fan motor assembly and fan wheel assembly can be removed after took off the 2screws used to fix the fan motor holder.</p>
		8) Disassemble the fan wheels, then you can remove the fan motor	 <p>Take off the screw to remove the fan wheel</p>

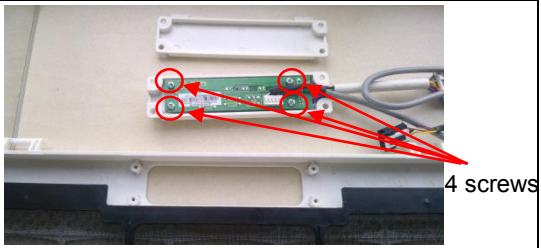
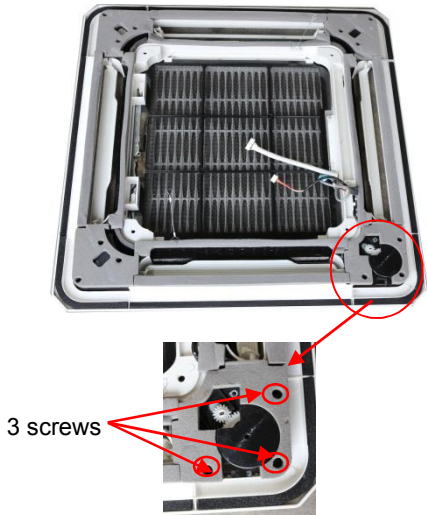
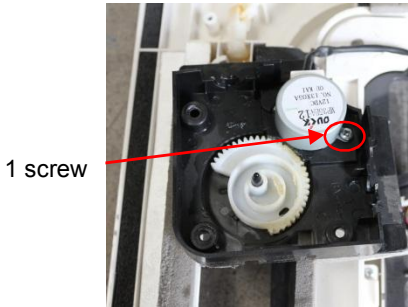
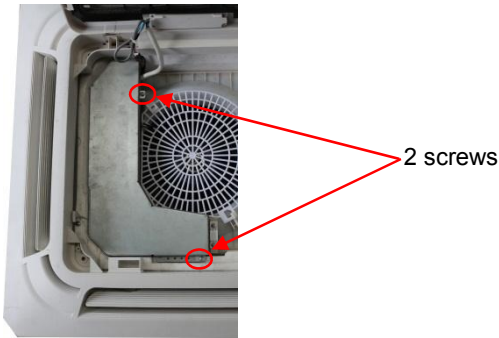
6	Remove the water collector assembly	1) Remove the rear cover board	Repeat the operation of step1 of No.5
		2) Screw off the screws to remove the water collector assembly	 <p>4 screws</p> <p>3 screws</p> <p>3 screws</p> <p>3 screws</p> <p>Water collector assembly</p>
7	Remove the evaporator	1) Remove the water collector	Repeat the operation of No.6
		2) Remove the evaporator sensor	 <p>Evaporator sensor</p>
		3) Remove the pipe clamp board	 <p>2 screws</p>

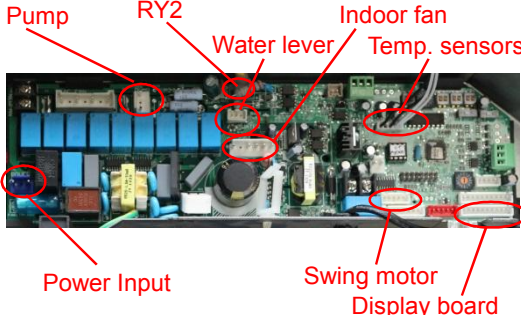


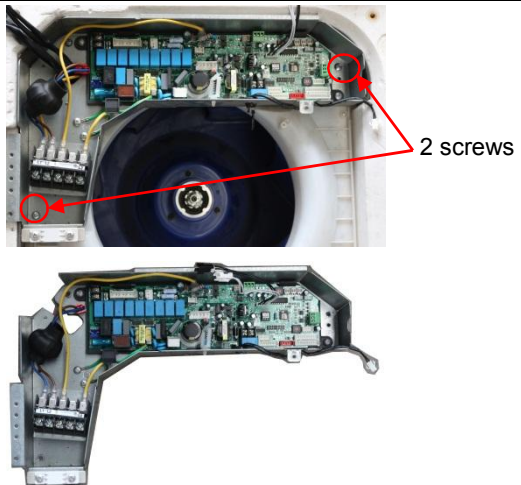
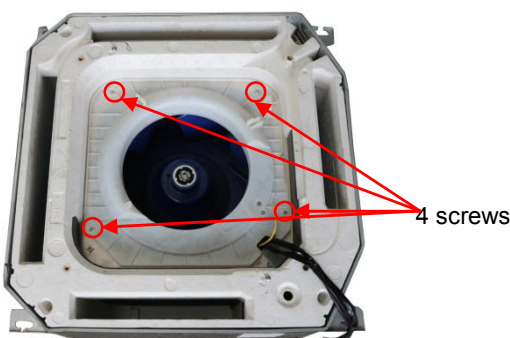
		<p><b>4) Remove the evaporator support board</b></p>	 <p>4 screws</p>
		<p><b>5) Screw off the fixing screws to remove the evaporator</b></p>	 <p>1 screw</p>




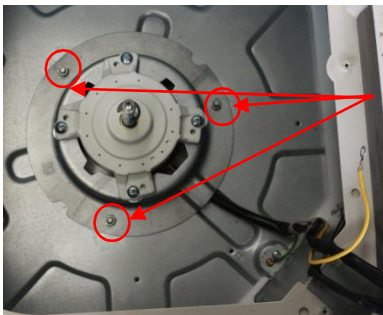
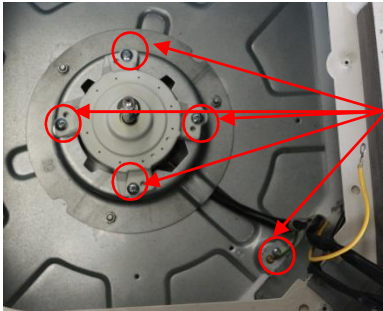
➤ **Cassette Unit**

No.	Parts name	Procedures	Remarks
1	Remove the filter	3) Open the grille	 <p>Grill switch</p>
		4) Remove the filter <b>Note:</b> the filter is easy to be damaged, be careful when removing it.	
2	Remove the panel	4) Open the grille	Repeat the operation of step1 of No.1
		5) Remove the grille <ul style="list-style-type: none"> <li>● Screw off two screws.</li> <li>● Disconnect the display board wire and swing motor wire connected to the PCB.</li> <li>● Remove the grille.</li> </ul>	 <p>2 screws</p>  <p>display board wire swing motor wire</p>
		5) Loose the four screws and two wireropes, then the panel can be disassembled.	 <p>4 screws 2 wireropes</p>
3	Remove the display board	1) Open the grille	Repeat the operation of step1 of No.1
		2) Remove the grille	Repeat the operation of step2 of No.2
		3) Disassemble the display board <ul style="list-style-type: none"> <li>● Remove the display</li> </ul>	 <p>4 screws</p>

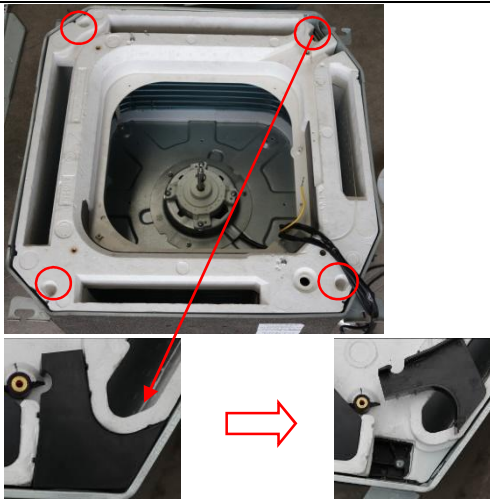


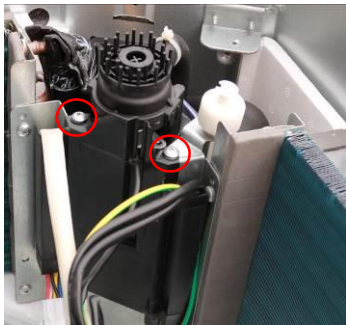






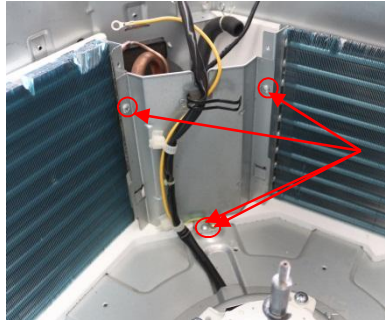

		<p>board cover(4 screws)</p> <ul style="list-style-type: none"> <li>● Remove the display board(4 screws)</li> </ul>	
4	Remove the swing motor	1) Remove the panel	Repeat the operation of step1,2,3 of No.2
		2) Screw off 3 screws to remove the swing motor assy.	
		3) Screw off 1 screws to remove the swing motor.	
5	Remove the PCB	1) Open the grille	Repeat the operation of step1 of No.1(No need to remove the panel)
		2) Disassemble the electronic control box cover after remove the 2 screws.	

		3) Pull out all the connection wires to other parts, then the PCB can be replaced.	
		4) There are 2 buckles fixing the PCB. To draw out the PCB, you should open them.	
6	Remove the electronic control box	1) Open the grille	Repeat the operation of step1 of No.1(No need to take down the panel)
		2) Remove the electronic control box cover	Repeat the operation of step 2 of No.5
		3) Pull out all the plugs or connectors connected to the electronic control box	
		4) Remove the electronic control box Remove the 2 screws to disassemble the electronic control box	
7	Remover the fan wheel	1) Repeat the operation of No.5	
		2) Remove the ventilation ring Release the 4 screws to disassemble it.	

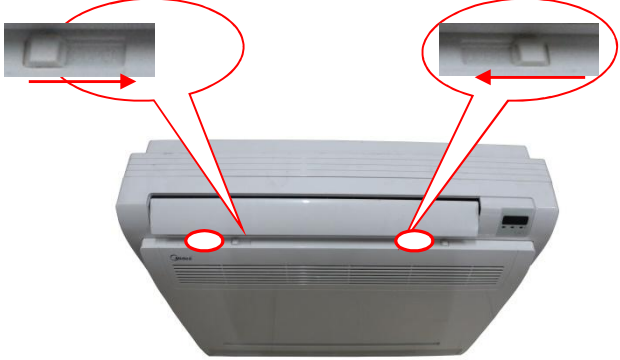
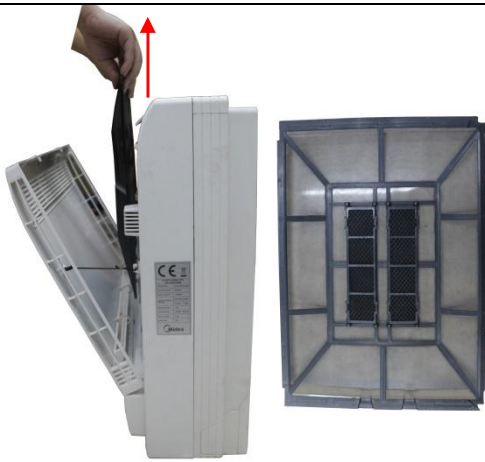

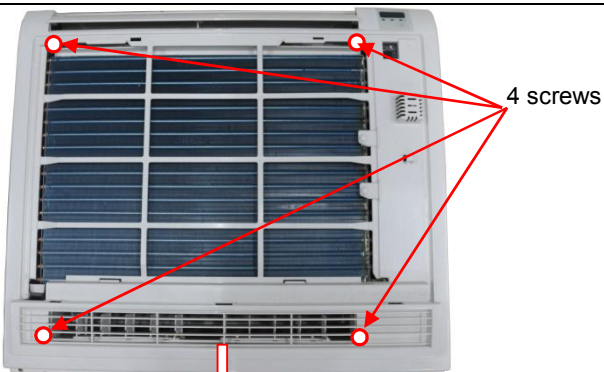
			
		3) Remove the fixing nut to disassemble the fan wheel	
		4) Pull out the fan wheel	
8	Remove the fan motor	1) Repeat the operation of No.6	
		2) Remove the fixing board of fan motor wire	
		3) Remove the 5 screws to disassemble the fan motor	
9	Remove the water collecting	6) Remove the panel	Repeat the operation of No.2
		7) Remove the electronic control box	Repeat the operation of No.6


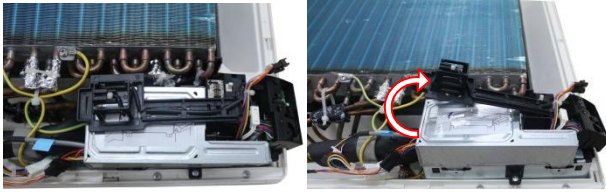
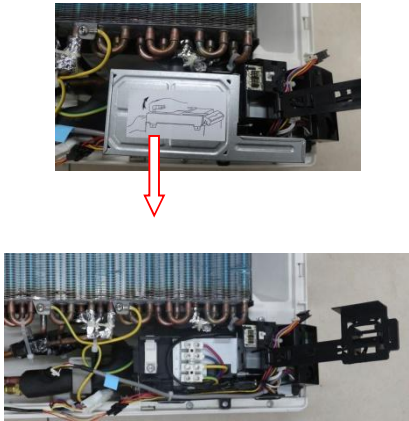
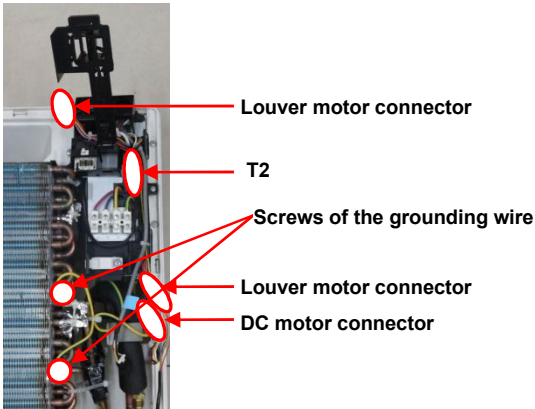


	assembly	8) Screw off the 4 screws inside 4 holes (1 is under a protection cover) to remove the water collecting assembly.	
		9) Take out the water collecting assembly	
10	Remove the draining pump	1) Remove the panel	Repeat the operation of No.2
		2) Remove the electronic control box	Repeat the operation of No.6
		3) Remove the water collecting assembly	Repeat the operation of No.9
		4) Disconnect the drain pipe.	
		5) Release 2 screws to remove the pump supporter. Be careful of the connection wires.	

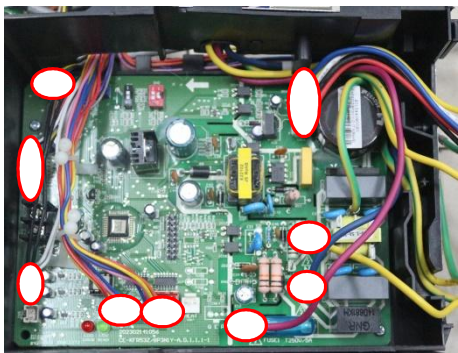
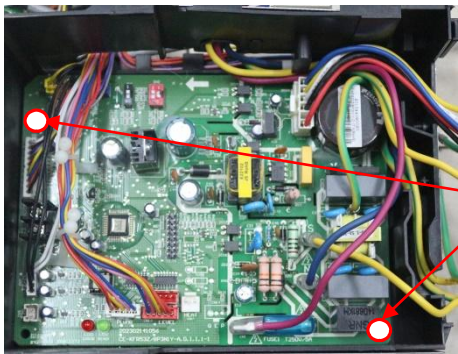

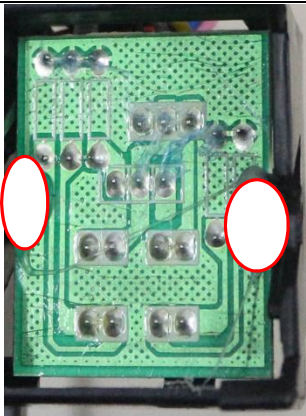
			
		6) There are 2 screws under the supporter to fixing the pump. Release them to take the pump out of the supporter.	 
11	Remove the evaporator	1) Remove the water collecting assembly	Repeat the operation of No.9
		2) Remove the seal board of evaporator	
		3) Remove the evaporator fixing board	
		4) Remove the evaporator fixing clamps to disassemble the evaporator.	



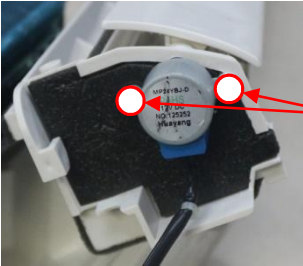
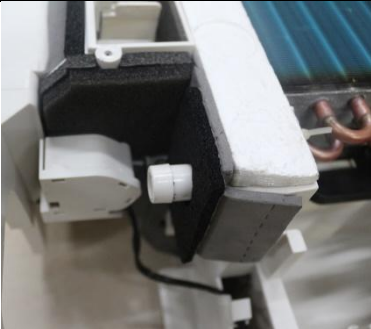
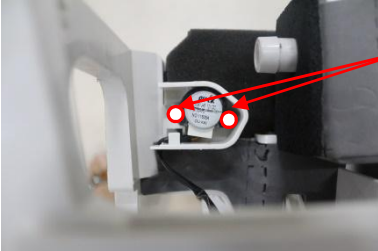
➤ Console Unit

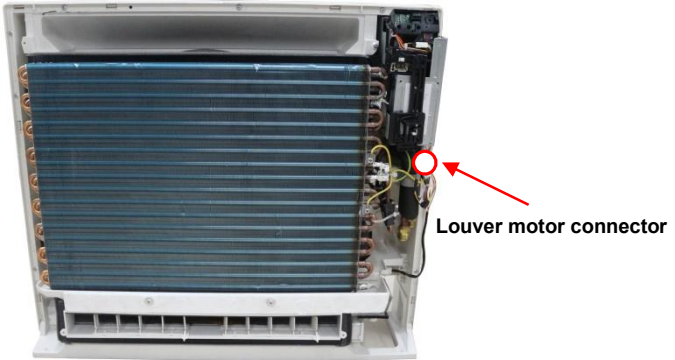

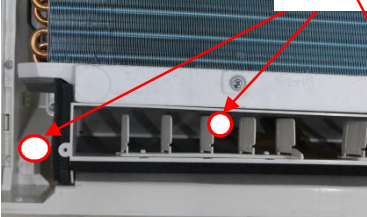


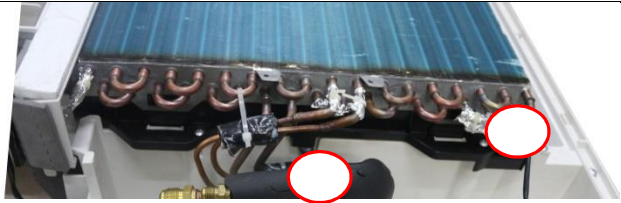
No.	Parts name	Procedures	Remarks
1	Remove the Filter	1) Slide the two stoppers on the left and right sides to open the front panel	
		2) Remove the filter.	
2	Remove the electronic control box	1) Remove the air front panel	<ul style="list-style-type: none"> <li>● Open the front panel Repeat the operation of step1 of No.1</li> <li>● Remove the string.</li> </ul>  <ul style="list-style-type: none"> <li>● Allowing the front panel to fall forward will enable you to remove it.</li> </ul>
		2) Remove the filter.	Repeat the operation of step 2 of No.1
		3) Remove four fixing screws to remove the panel frame assembly	




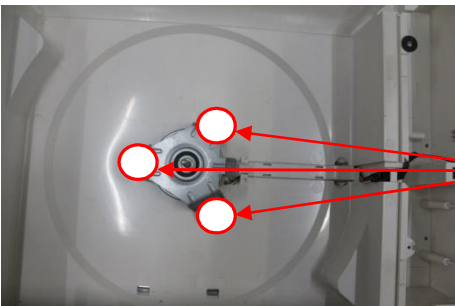
			
		4) Remove the installation plate of electric parts	
		5) Remove the fixing board of electronic control box	
		6) Disconnect the DC motor wire, 2 louver motor wires, evaporator coil temperature sensor(T2) wire, and two grounding wire (yellow-green) to remove the electronic control box	
3	Remove the PCB	1) Take out the electronic control box from the body and remove its cover	Repeat the operation of step1~ step6 of No2.



		2) Disconnect all the wires of plugs connected to the PCB	
		3) Remove two fixing screws to remove the PCB	 2 screws
4.	Remove the display board	1) Remove the electronic control box	Repeat the operation of step1~step of No2.
		2) Remove the fixing glue to remove the display board	
5	Remove the switch board	1) Remove the electronic control box	Repeat the operation of step1~step of No2.
		2) Remove the fixing glue to remove the display board	
7	Remove the air outlet grille assembly	1) Remove the front panel assembly and the panel frame assembly	Repeat the operation of step1, step2 and step3 of No 2.

		2) Remove the 1 fixing screw to remove air outlet grille assembly	
		3) Disconnect louver motor wire	
8	Remove the louver motor of air outlet assembly	1) Remove the air outlet grille assembly	Repeat the operation of No.7 to remove the air outlet grille assembly
		2) Screw off the screws to remove the motor	
9	Remove the louver motor of the water collector	1) Remove the front panel assembly and the panel frame assembly	Repeat the operation of step1, step2 and step3 of No 2.
		2) Remove the cover of louver motor	
		3) Screw off the screws to remove the motor	
10	Remove the water collector	1) Remove the front panel assembly and the panel frame assembly	Repeat the operation of step1, step2 and step3 of No 2.

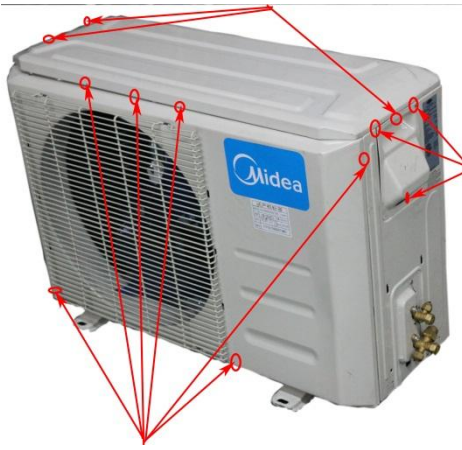

		2) Disconnect louver motor wire	 <p>Louver motor connector</p>
		3) Remove 4 fixing screws to disassemble the water collector	 <p>4 screws</p>   
11	Remove the evaporator assembly	1) Remove the electronic control box	Repeat the operation of No.2 to remove the electronic control box
		2) Remove the air outlet grille assembly	Repeat the operation of No.7 to remove the air outlet grille assembly
		3) Remove the evaporator sensor and release the pipe strap.	

		4) Remove the evaporator assembly	
12	Remove the centrifugal fan	1) Remove the electronic control box	Repeat the operation of No.2 to remove the electronic control box
		2) Remove the air outlet grille assembly	Repeat the operation of No.7 to remove the air outlet grille assembly
		3) Remove four fixing screws to remove the ventilation assembly	 <p>Each side has two screws</p>
		4) Remove the hex nut fixing the fan to remove the fan.	
13	Remove the fan motor	1) Remove the centrifugal fan	Repeat the operation of No.12 to remove the centrifugal fan
		2) Remove the fan motor after unfastening three fixing screws.	 <p>3 screws</p>



## 17.2 Outdoor unit

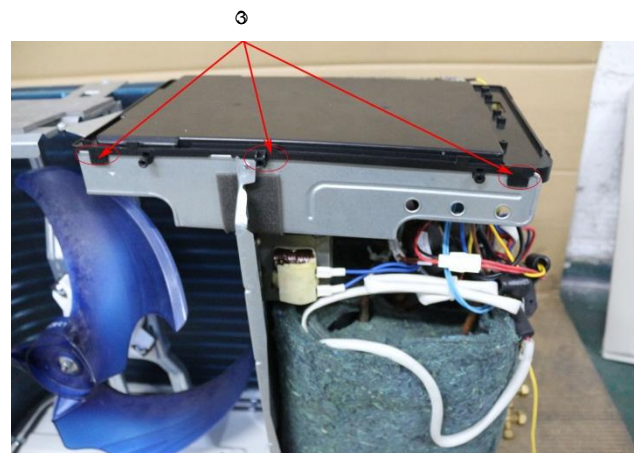
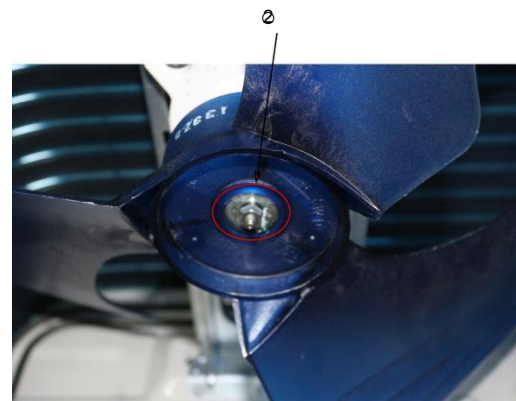
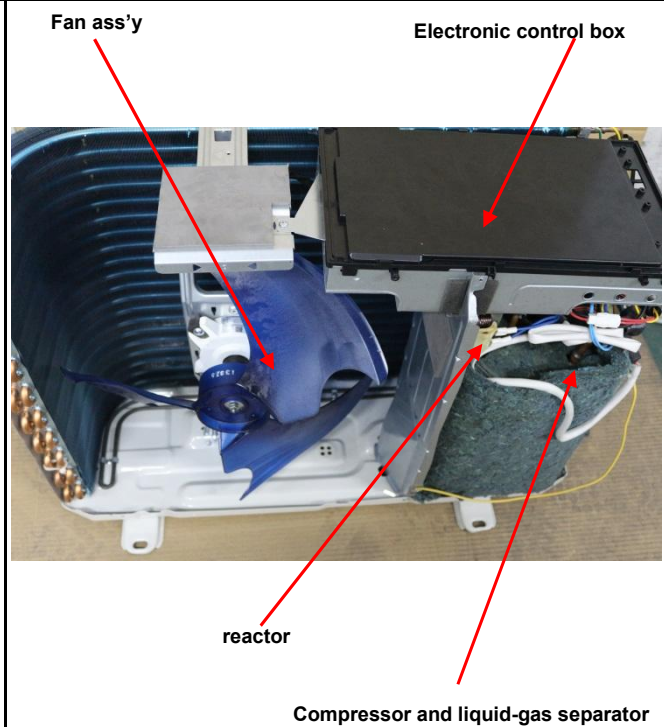
### ➤ MCHSU-09PHH2, MCHSU-12PHH2

No.	Part name	Procedures	Remarks
1	Panel plate	<p>How to remove the panel plate.</p> <p>1) Stop operation of the air conditioner and turn "OFF" the power breaker.</p> <p>2) Remove the big handle first, then remove the top cover (3 screws)</p> <p>3) Remove the screws of front panel (6 screws)</p> <p>(4) Remove the screws of the right side panel (6 screws)</p>	<p>Screws of top panel (3 screws, 1 screw is under the big handle)</p>  <p>3 screw of big handle</p> <p>Screws of front panel (6 screws)</p> 
2	Fan ass'y	How to remove the fan ass'y.	

1)After remove the panel plate following procedure 1

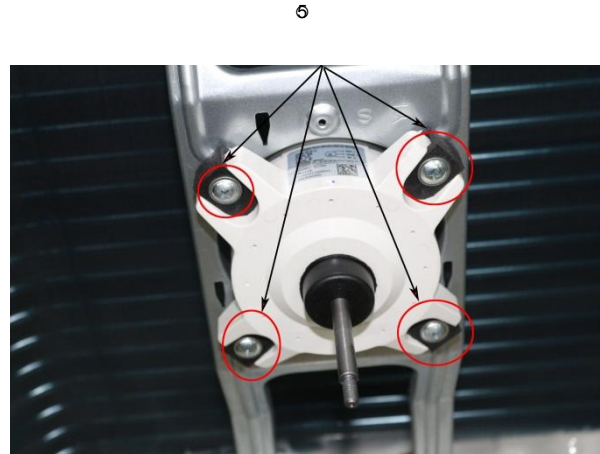
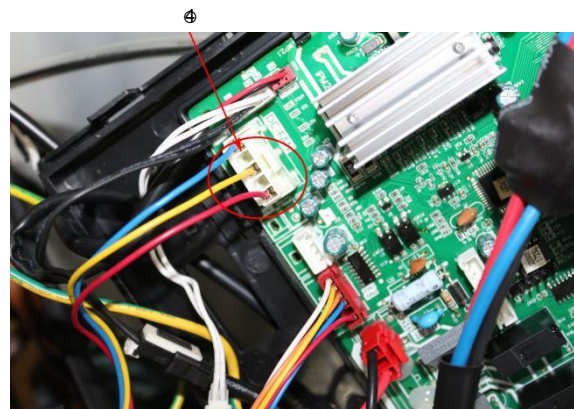
2) Remove the nut fixing the fan,and remove the fan.

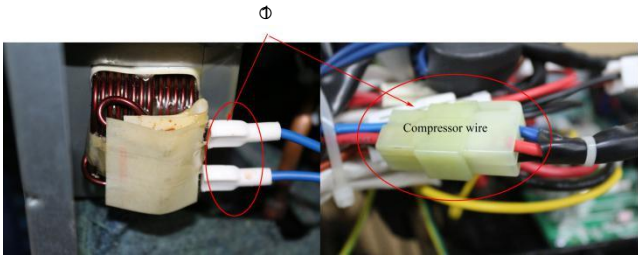
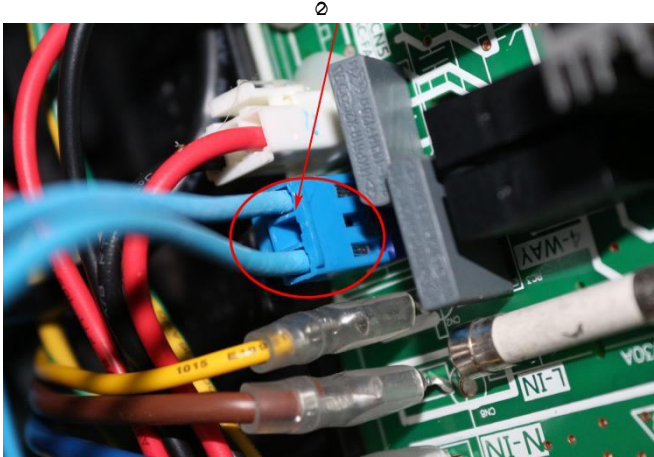
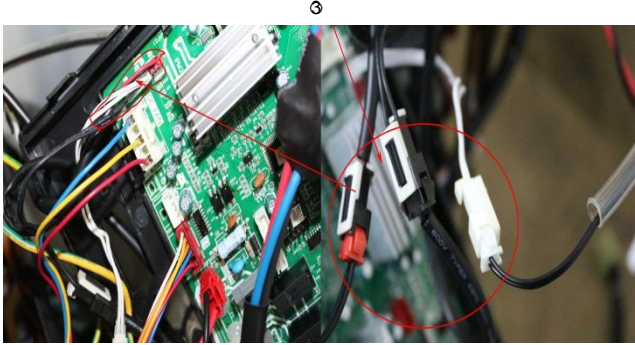
3) Unfix the hooks and then open the electronic control box cover.



4) Disconnect the connector for fan motor from the electronic control board.

5) Remove the four fixing screws of the fan motor, then remove the motor.



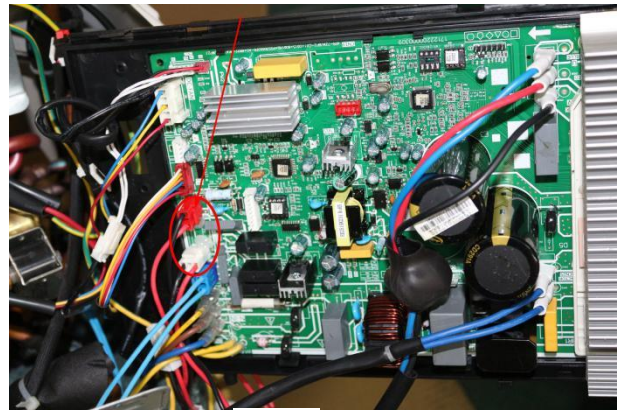
3	Electrical parts	<p>How to remove the electrical parts.</p> <p>2) After finish work of item 1 and item 2, remove the two connectors for the compressor and the reactors.</p> <p>3) Pull out the two blue wires connected with the four way valve.</p> <p>3) Pull out connectors of the compressor top temp. sensor, condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4) and discharge temp. sensor(T5).</p> <p>4)Disconnect the Compressor crankcase</p>	  
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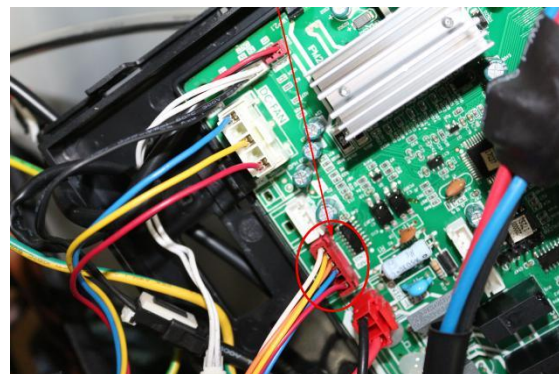
heater connector.

5) Disconnect the electronic expansion valve wire from the control board

④



⑤



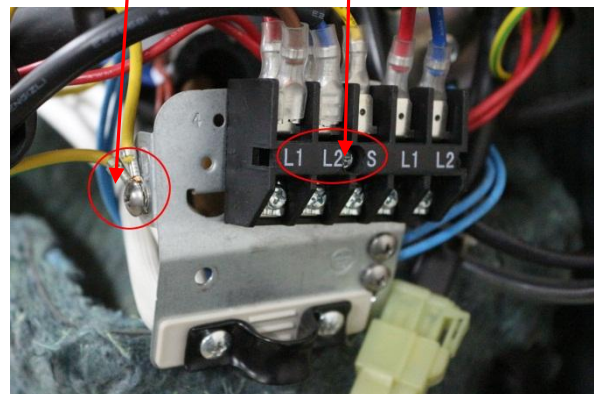
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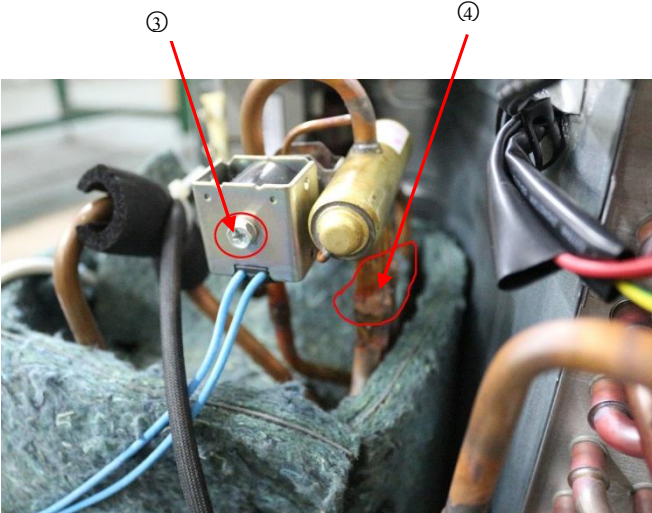

⑦

6) Remove the ground wires .

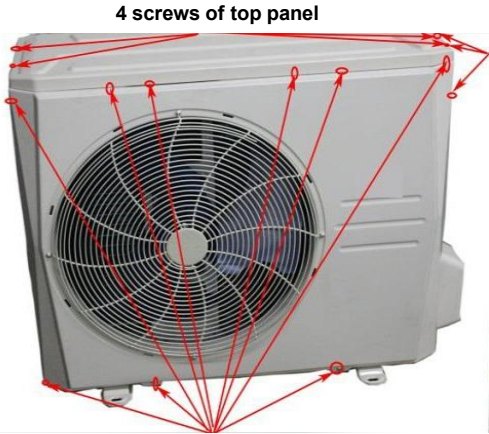
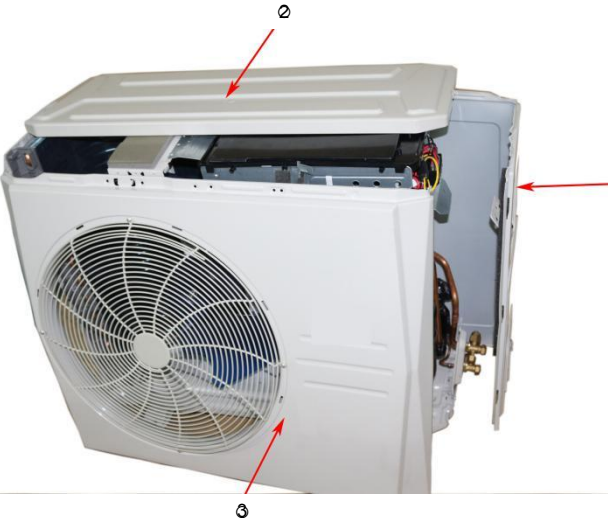
7) Remove the power supply wires(old label, L1,L2,S, new label 1,2,3).

8) Then remove the electronic control box.



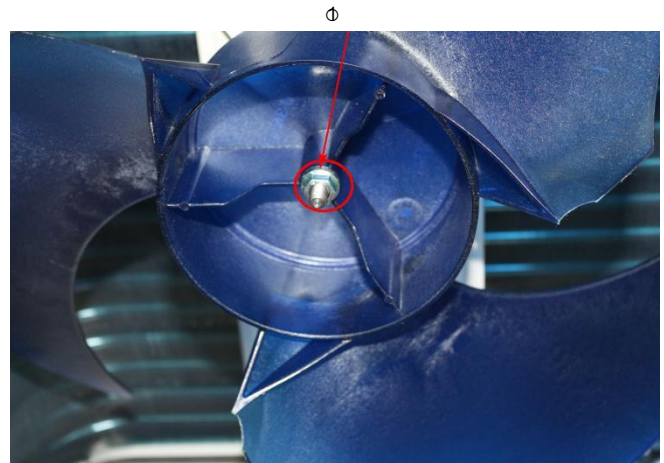
4	Four-way valve	<p>How to remove the four-way valve.</p> <ol style="list-style-type: none"> <li>1) Perform work of item 1,2,3.</li> <li>2) Recover refrigerant from the refrigerant circuit.</li> <li>3) Remove the screw of the coil and then remove the coil.</li> <li>4) Detach the welded parts of four-way valve and pipe.</li> <li>5) Then the four-way valve ass'y can be removed</li> </ol>	<p>The picture of four-way valve may be different from the one on your side.</p>  <p>A close-up photograph of a four-way valve assembly. Red circles and arrows highlight specific components: circle 3 points to a screw on the coil, and circle 4 points to a welded joint on the pipe.</p>
5	Compressor	<p>How to remove the compressor.</p> <ol style="list-style-type: none"> <li>1) After perform work of item 1,2,3.</li> <li>2) Remove the discharge pipe and suction pipe with a burner.</li> <li>3) Remove the hex nuts and washers fixing the compressor on bottom plate.</li> <li>4) Lift the compressor from the base pan assembly.</li> </ol>	 <p>Two photographs illustrating the removal of the compressor. The top photo shows the discharge and suction pipes being cut with a burner, with red circles and arrows labeled 2. The bottom photo shows the hex nuts and washers being removed from the bottom plate, with red circles and arrows labeled 3.</p>

➤ MCHSU-18PHH2

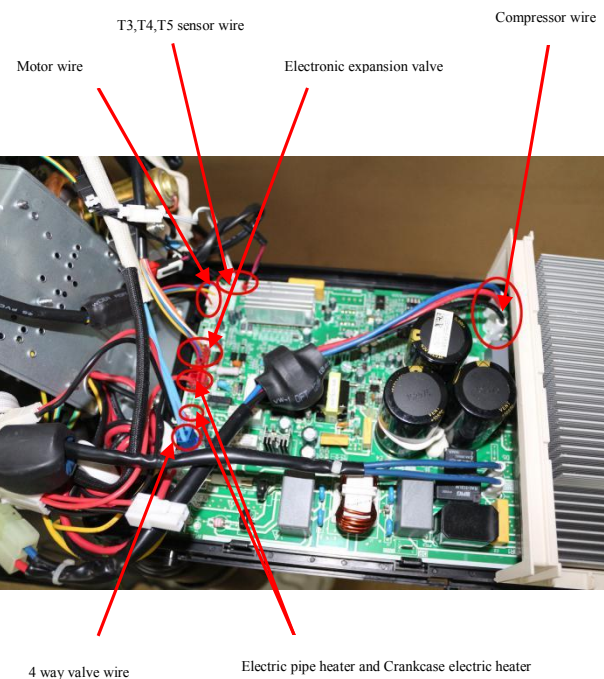
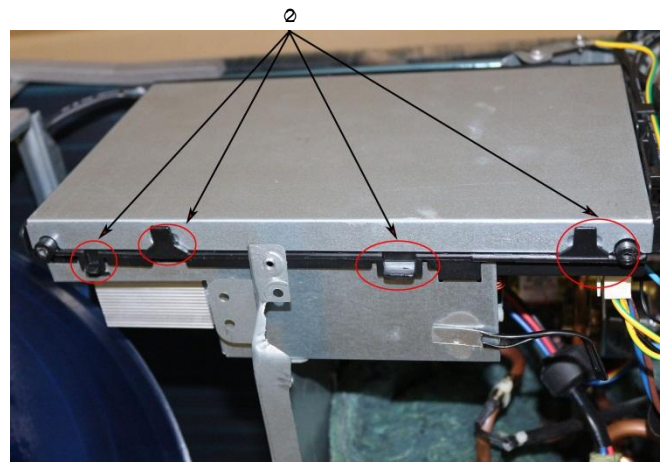
No.	Part name	Procedures	Remarks
	Panel plate	<p>How to remove the panel plate.</p> <p>1) Stop operation of the air conditioner and turn "OFF" the power breaker.</p> <p>2) Remove the top panel(7 screws).</p> <p>3) Remove the screws of front panel(9 screws)</p> <p>4) Remove the screws of the right side panel(10 screws)</p>	 <p>4 screws of top panel</p> <p>3 screws of big handle</p> <p>9 screws of front panel</p>  <p>2</p> <p>3</p> <p>4</p>
2	Fan ass'y	How to remove the fan ass'y.	



1) After remove the panel plate following procedure 1, remove the hex nut fixing the fan and then remove the fan.

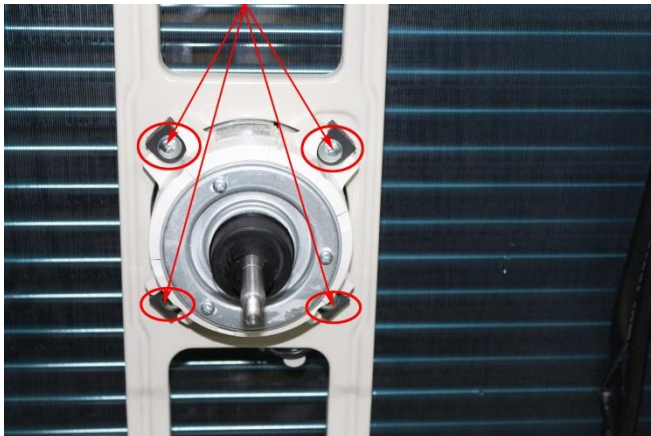
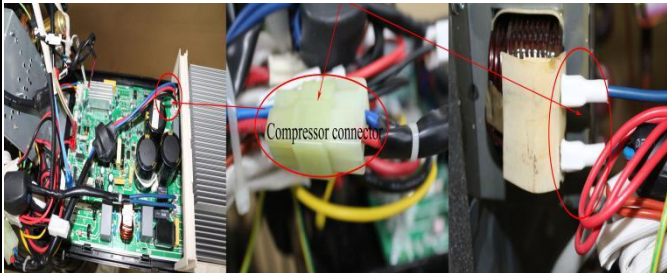



2) Unfix the hooks and then open the electronic control box cover.



3) Disconnect the



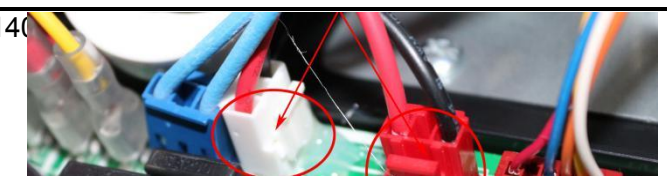
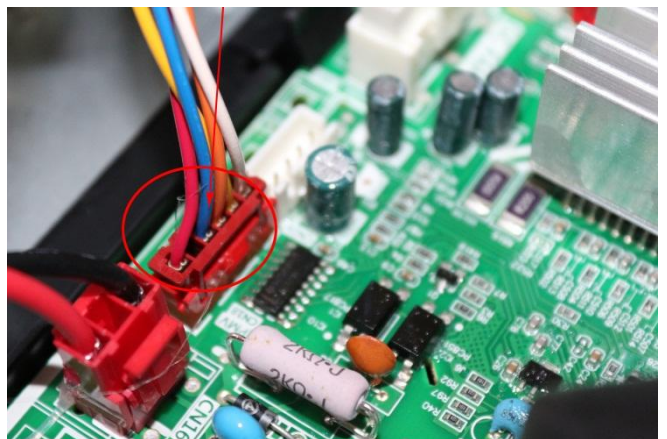
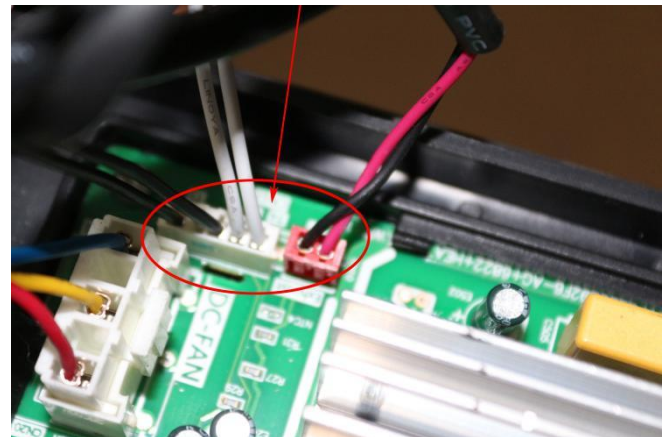
		<p>connector for fan motor from the electronic control board.</p> <p>4) Remove the four fixing screws of the fan motor.</p> <p>5) Then remove the fan motor.</p>	
3	Electrical parts	<p>How to remove the electrical parts.</p> <p>1) After finish work of item 1 and item 2, remove the connectors for the compressor and reactor.</p> <p>2) Pull out the two blue wires connected with the</p>	 

four way valve.

3) Pull out connectors of the compressor top temp. sensor, condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4) and discharge temp. sensor(T5).

4) disconnect the electronic expansion valve wire

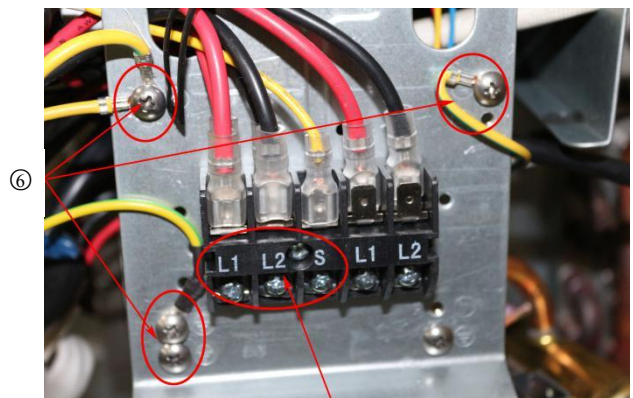
5) remove the compressor Crankcase electric heater

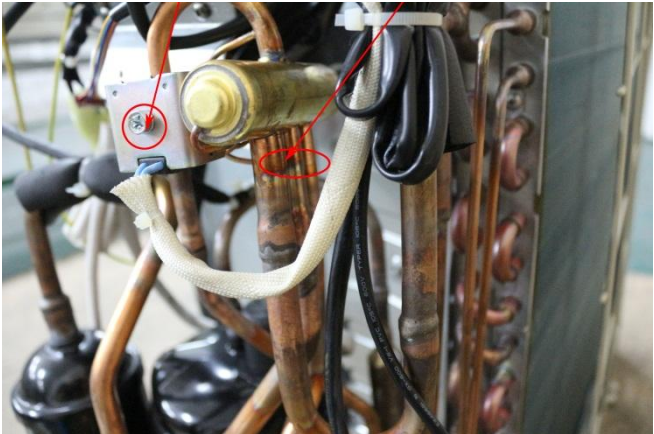



6) Remove the grounding screw.

7) Remove the power supply wires(old label, L1,L2,S; new label 1,2,3).

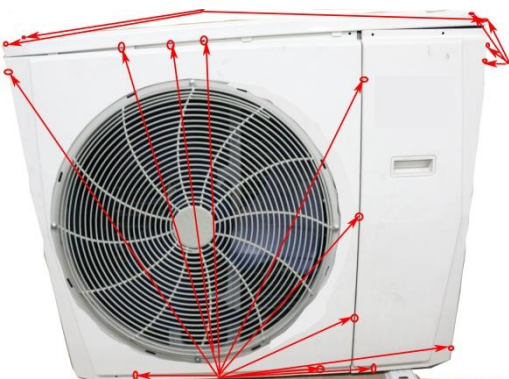

8) Then remove the electronic control box.



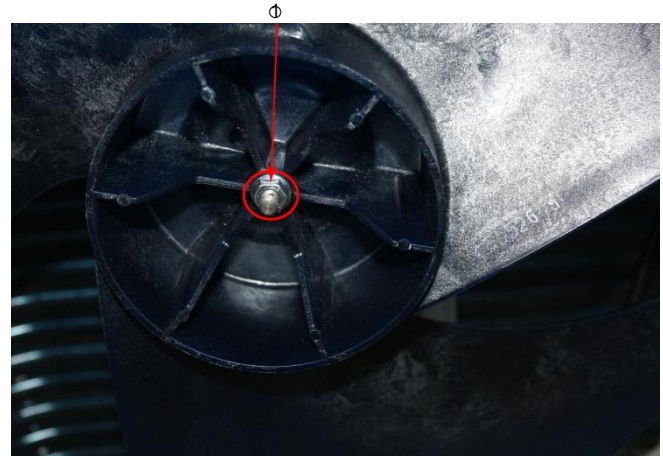
4	Four-way valve	<p>How to remove the four-way valve.</p> <ol style="list-style-type: none"> <li>1) Perform work of item 1,2,3.</li> <li>2) Recover refrigerant from the refrigerant circuit.</li> <li>3) Remove the screw of the coil and then remove the coil.</li> <li>4) Detach the welded parts of four-way valve and pipe.</li> <li>5) Then the four-way valve ass'y can be removed</li> </ol>	<p>The picture of four-way valve may be different from the one on your side.</p>  <p>A close-up photograph of a four-way valve assembly. Red circles highlight the connection points between the valve and the copper pipes. A red line points to a specific connection point.</p>
5	Compressor	<p>How to remove the compressor.</p> <ol style="list-style-type: none"> <li>1) After perform work of item 1,2,3.</li> <li>2) Remove the discharge pipe and suction pipe with a burner.</li> <li>3) Remove the hex nuts and washers fixing the compressor on bottom plate.</li> <li>4) Lift the compressor from the base pan assembly.</li> </ol>	 <p>Two photographs showing the compressor assembly. The top photo shows the compressor with red circles highlighting the connection points of the discharge and suction pipes. The bottom photo shows the compressor mounted on a base plate with red circles highlighting the hex nuts and washers used for mounting. Red lines point to specific connection points.</p>



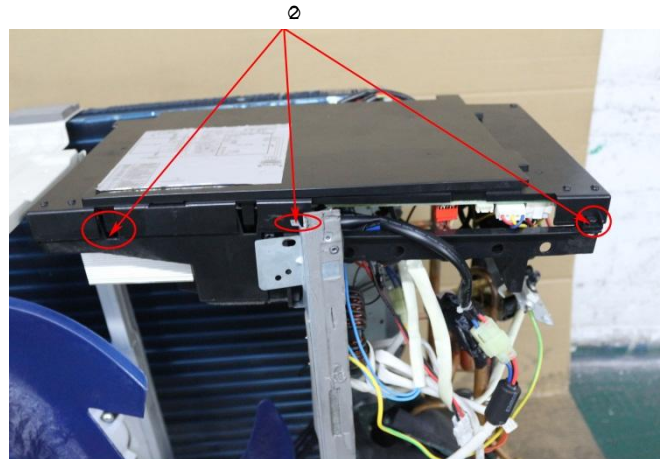
**MCHSU-24PHH2**

No.	Part name	Procedures	Remarks
	Panel plate	<p>How to remove the panel plate.</p> <p>1) Stop operation of the air conditioner and turn "OFF" the power breaker.</p> <p>2) Remove the big handle first, then remove the top panel( 7screws)</p> <p>3) Remove the screws of the front panel(11 screws)</p> <p>4) Remove the screws of the right side plate and remove the right side plate.(12 screws)</p>	<p>3 screws of top panel</p>  <p>4 screws of big handle</p> <p>11 screws of front panel</p> 
2	Fan ass'y	How to remove the fan ass'y.	

1) After remove the panel plate following procedure  
1, remove the hex nut fixing the fan and then remove the fan.

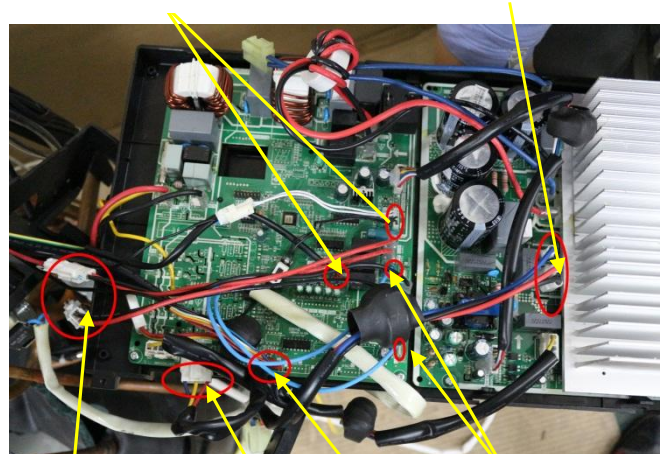


2) Unfix the hooks and screws, then open the electronic control box cover.



T3,T4,T5 sensor wire

Compressor wire

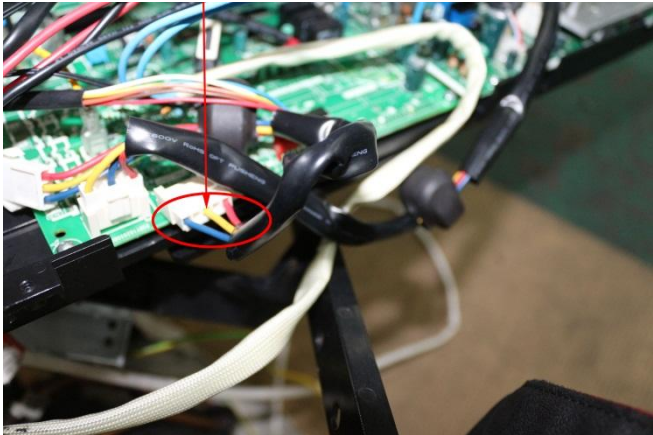
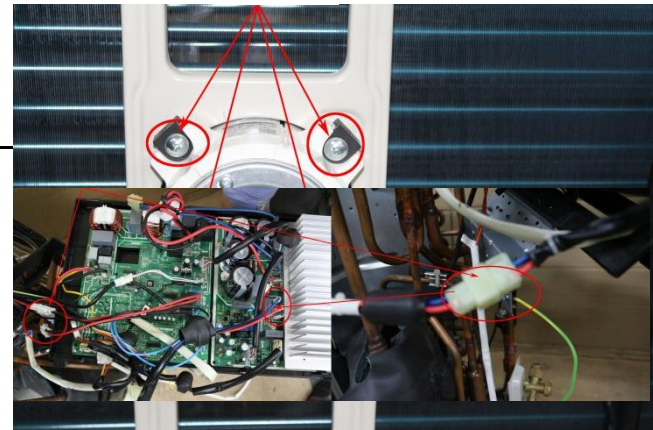
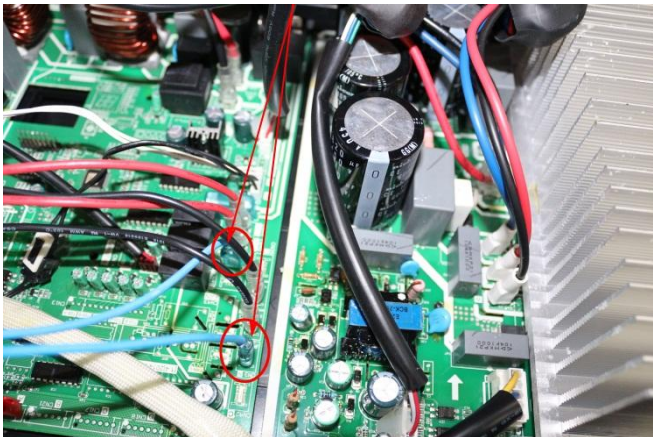


Electric pipe heater  
and Crankcase electric  
Heater wire

Motor wire

4 way valve  
Electronic expansion  
Valve wire

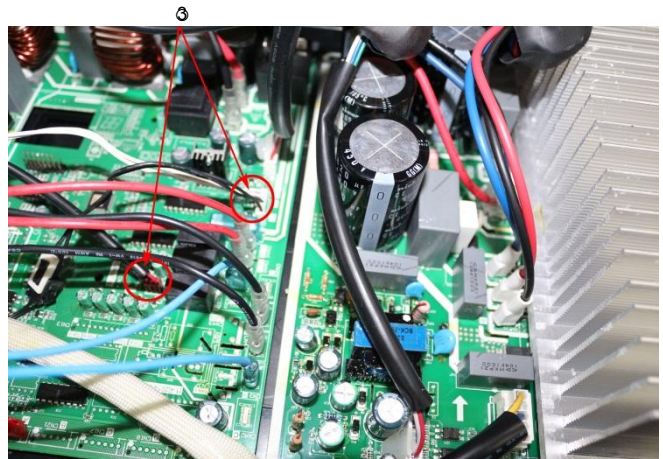
3) Disconnect the connector for fan motor from the electronic control board.

		<p>2) Remove the four fixing screws of the fan motor.</p> <p>3) Then remove the fan motor.</p>	  
3	Electrical parts	<p>How to remove the electrical parts.</p> <p>1) After finish work of item 1 and item 2, remove the three connectors for the compressor and the compressor crankcase heater and the electric heater.</p> <p>2) Pull out the two blue wires connected with the four way valve.</p> <p>3) Pull out connectors of the compressor top temp. sensor, condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4)</p>	



and discharge temp.  
sensor(T5).

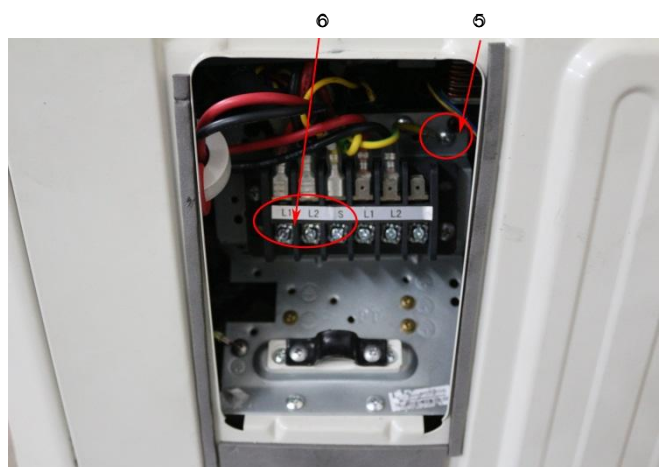
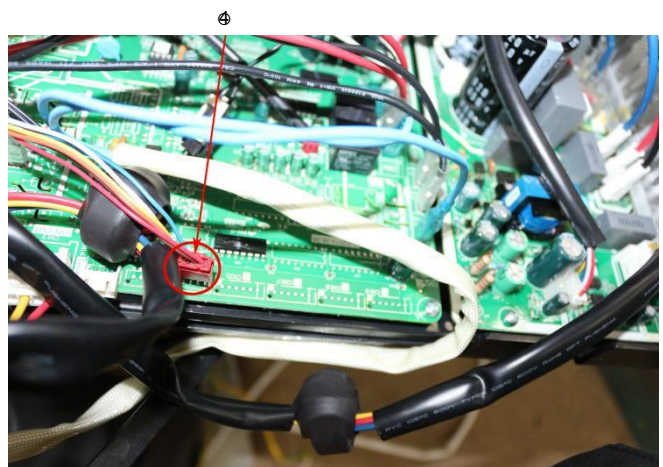
4) Disconnect the  
electronic expansion valve  
wire from the control board




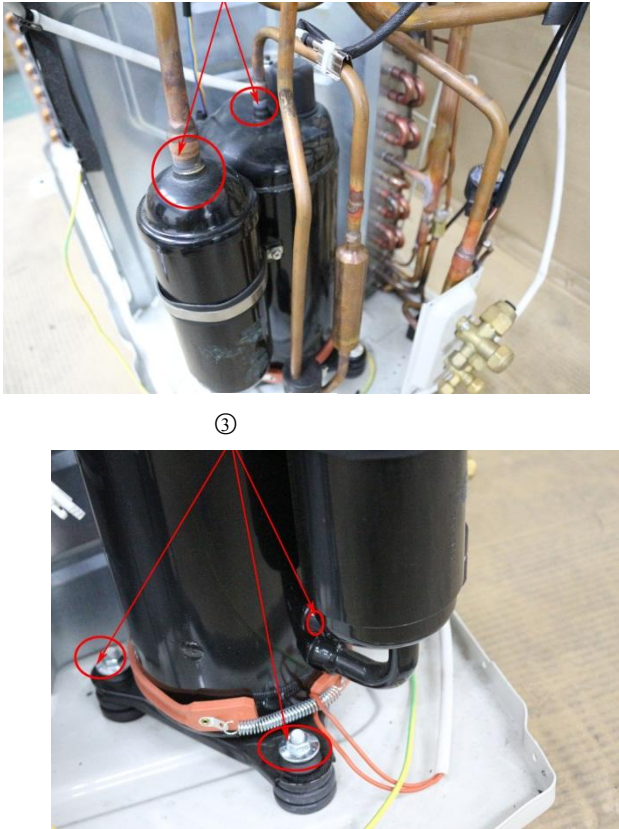
5) Remove the  
grounding screw.

6) Remove the power  
supply wires(old label,  
L1,L2,S; old label 1,2,3).

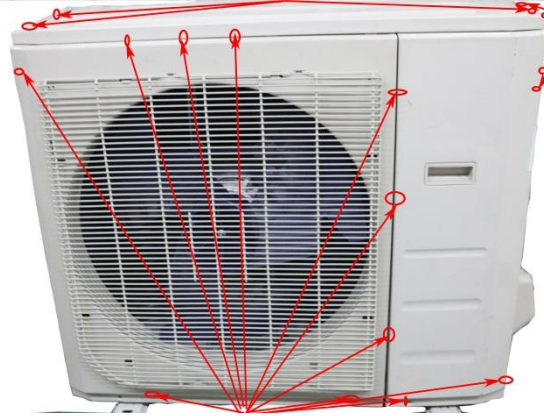
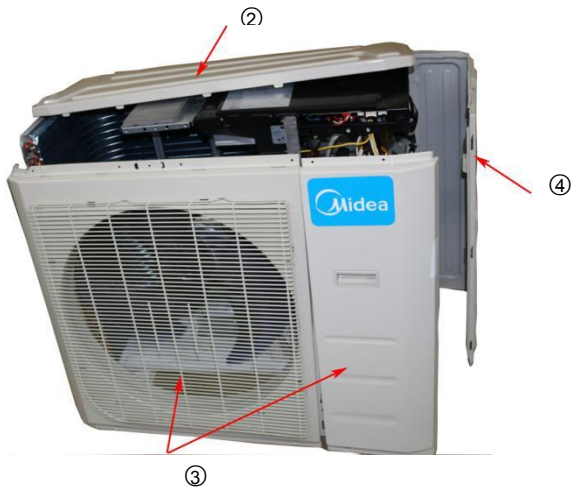
7) Then remove the  
electronic control box.

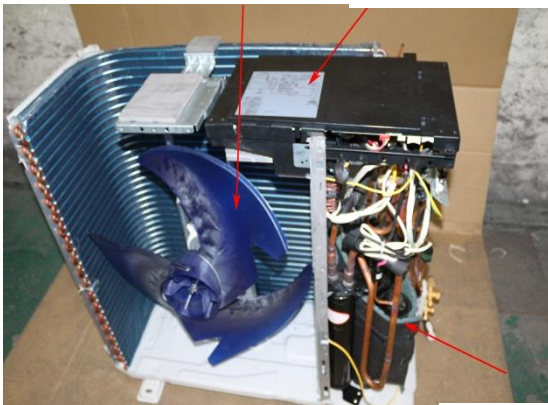

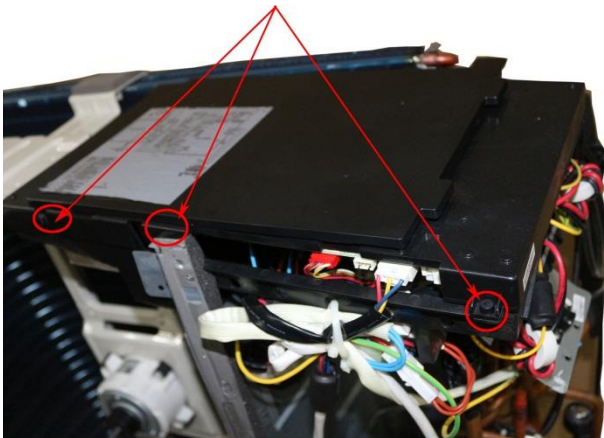




4	Four-way valve	<p>How to remove the four-way valve.</p> <ol style="list-style-type: none"> <li>1) Perform work of item 1,2,3.</li> <li>2) Recover refrigerant from the refrigerant circuit.</li> <li>3) Remove the screw of the coil and then remove the coil.</li> <li>4) Detach the welded parts of four-way valve and pipe.</li> <li>5) Then the four-way valve ass'y can be removed</li> </ol>	<p>The picture of four-way valve may be different from the one on your side.</p> 
5	Compressor	<p>How to remove the compressor.</p> <ol style="list-style-type: none"> <li>1) After perform work of item 1,2,3.</li> <li>2) Remove the discharge pipe and suction pipe with a burner.</li> <li>3) Remove the hex nuts and washers fixing the compressor on bottom plate.</li> <li>4) Lift the compressor from the base pan assembly.</li> </ol>	

➤ MCHSU-36CSH2

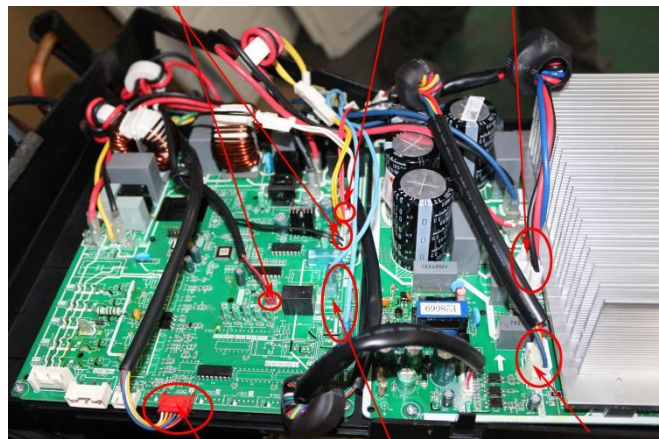
No.	Part name	Procedures	Remarks
1	Panel plate	<p>How to remove the panel plate.</p> <p>1) Stop operation of the air conditioner and turn "OFF" the power breaker.</p> <p>2) Remove the big handle first, then remove the top cover (7 screws)</p> <p>3) Remove the screws of front panel (11 screws)</p> <p>(4) Remove the screws of the right side panel (13 screws)</p>	<p>4 screws of big handle</p> <p>Screws of top panel (3 screws, 1 screw is under the big handle)</p>  <p>Screws of front panel (11 screws)</p> 

2	Fan ass'y	<p>How to remove the fan ass'y.</p> <p>1) After remove the panel plate following procedure 1</p> <p>2) Remove the nut fixing the fan, and remove the fan.</p> <p>3) Unfix the hooks and remove the screws, then open the electronic control box cover.</p>	<div data-bbox="798 246 1420 750"><p>fan      Electronic control box</p><p>compressor</p></div> <div data-bbox="798 862 1452 1332"><p>②</p></div> <div data-bbox="798 1355 1404 1836"><p>③</p></div>
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4) Disconnect the connector for fan motor from the electronic control board.

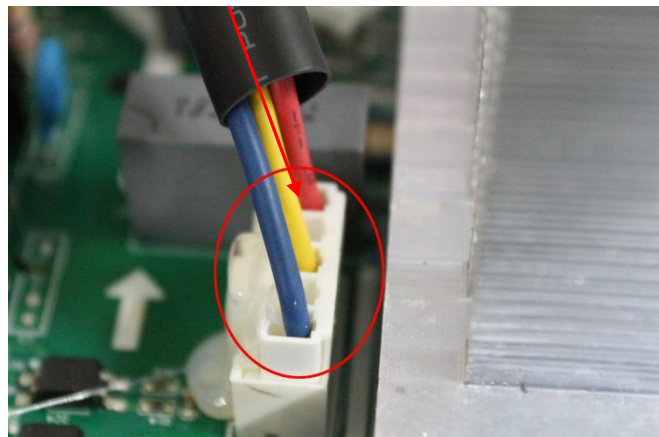
5) Remove the four fixing screws of the fan motor, then remove the motor.

T3,T4,T5,sensor    Pressure switch    Compressor wire



Electronic expansion    4 way valve    Motor wire

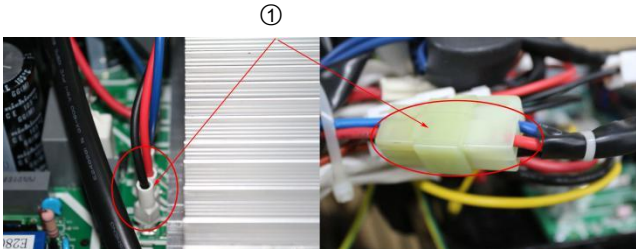
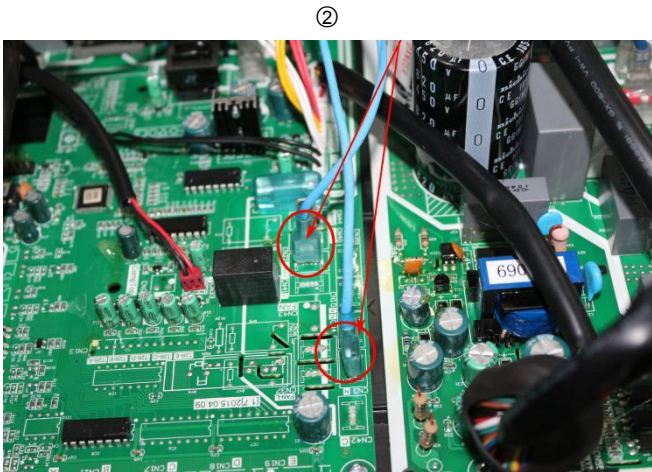
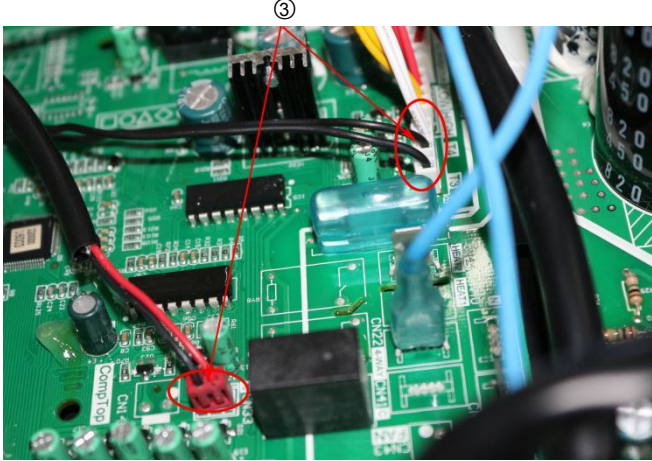
④



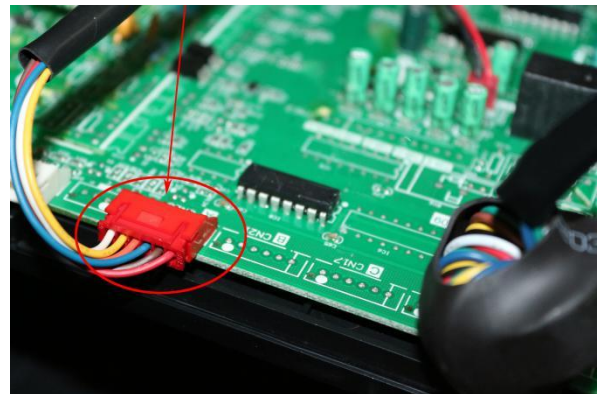
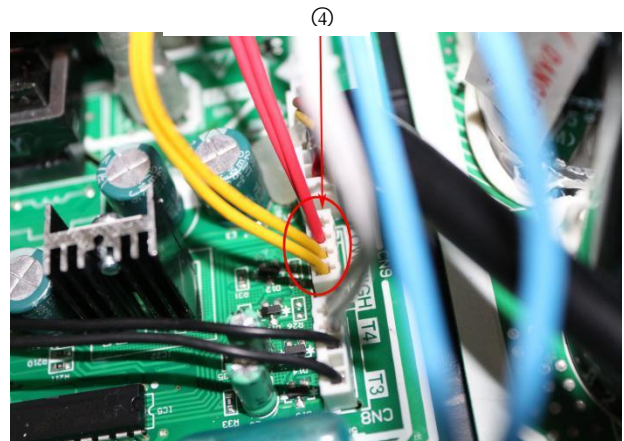
⑤





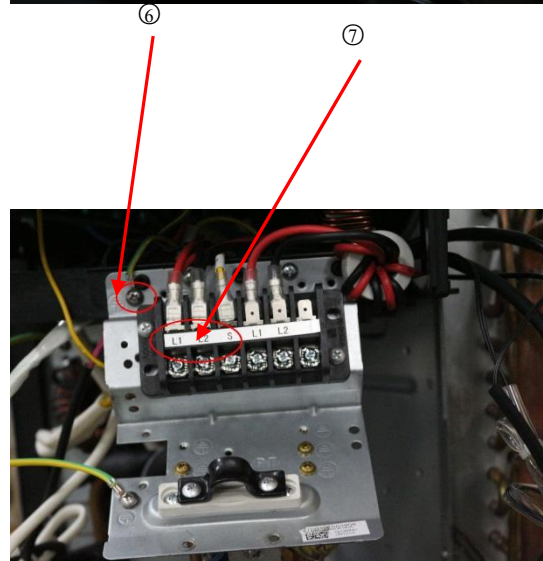
3	Electrical parts	<p>How to remove the electrical parts.</p> <p>1) After finish work of item 1 and item 2, remove the connector for the compressor</p> <p>2) Pull out the two blue wires connected with the four way valve.</p> <p>3) Pull out connectors of the, condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4) and discharge temp. sensor(T5).</p> <p>4)Disconnect the pressure switch connector.</p>	  
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5) Disconnect the electronic expansion valve wire from the control board

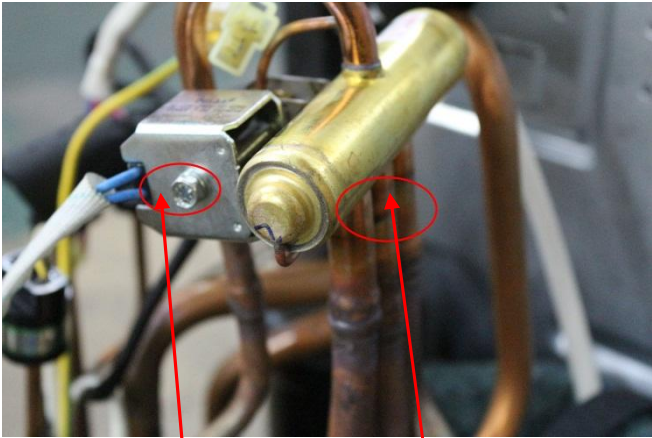



6) Remove the ground wires .


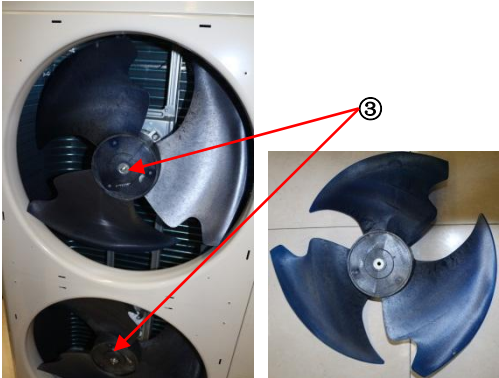
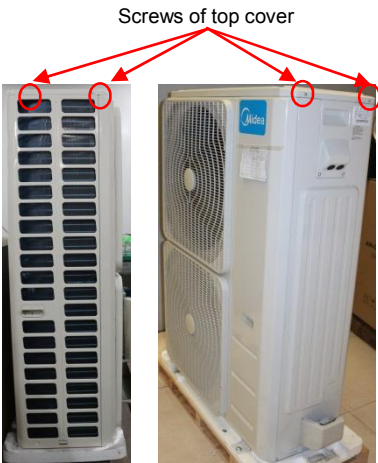
7) Remove the wires(1,2,3 or L1,L2,S).  
Then remove the electronic control box.



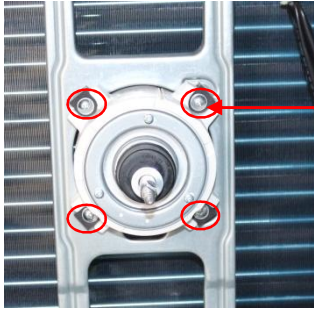



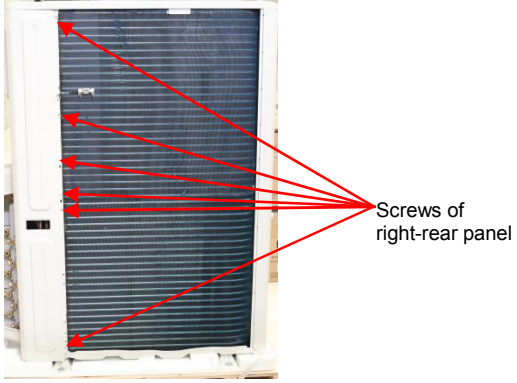
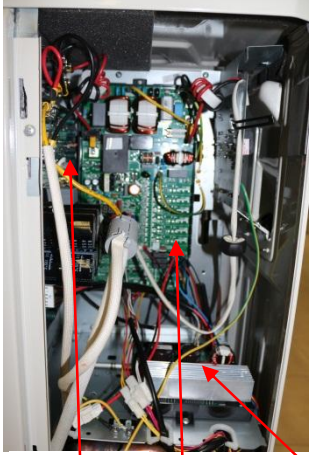
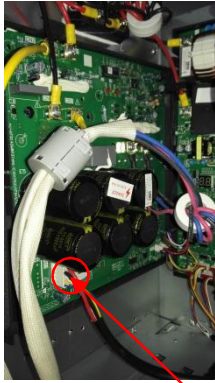


4	Four-way valve	<p>How to remove the four-way valve.</p> <ol style="list-style-type: none"> <li>1) Perform work of item 1,3.</li> <li>2) Recover refrigerant from the refrigerant circuit.</li> <li>3) Remove the screw of the coil and then remove the coil.</li> <li>4) Detach the welded parts of four-way valve and pipe.</li> <li>5) Then the four-way valve ass'y can be removed</li> </ol>	<p>The picture of four-way valve may be different from the one on your side.</p>  <p>③ ④</p>
5	Compressor	<p>How to remove the compressor.</p> <ol style="list-style-type: none"> <li>1) After perform work of item1,3. Recover refrigerant from the refrigerant circuit.</li> <li>2) Remove the discharge pipe and suction pipe with a burner.</li> <li>3) Remove the hex nuts and washers fixing the compressor on bottom plate.</li> <li>4) Lift the compressor from the base pan assembly.</li> </ol>	<p>②</p>  <p>③</p>

➤ MCHSU-48CSH2

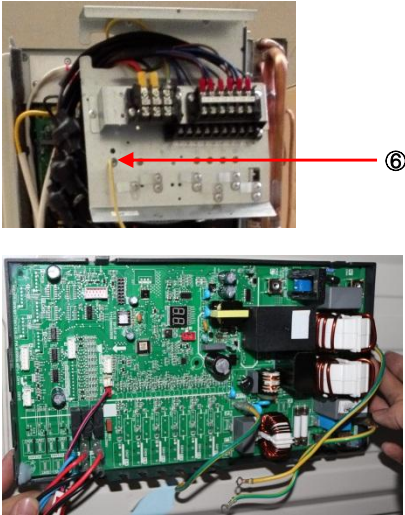
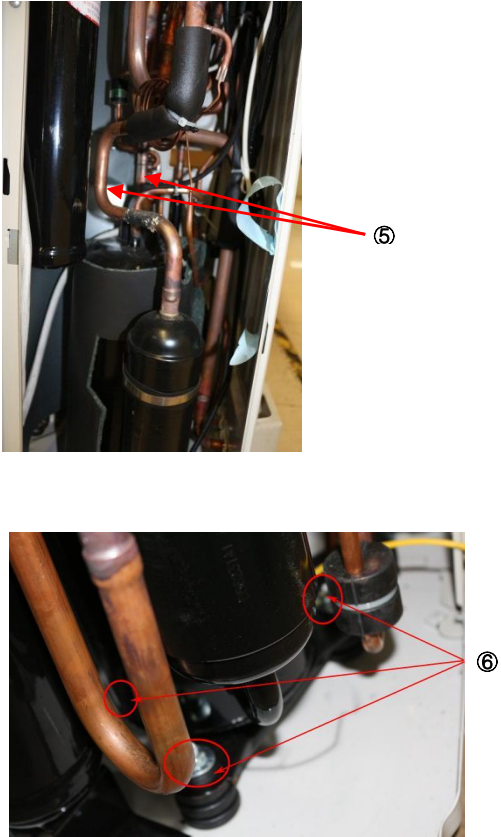
No.	Part name	Procedures	Remarks
1	Fan ass'y	<p>How to remove the fan ass'y.</p> <p>1) Stop operation of the air conditioner and turn "OFF" the power breaker.</p> <p>2) Remove the screws of air outlet grille(8 screws)</p> <p>3) Remove the hex nut fixing the fan.</p> <p>4) Remove the fan.</p> <p>5) Remove the screws of top cover, and remove the top cover. (4 screws)</p> <p>6) Remove the screws of right front side panel, and remove the right front side panel (1</p>	  

		<p>screw)</p> <p>7) Disconnect the fan motor connectors FAN1(3p,white) and FAN2(3p,white) from DC motor driver board.</p> <p>8) Remove the fan motor after unfastening fixing screws.</p>	 <p>⑥</p>  <p>⑦</p>  <p>⑧</p>
2	Panel plate	<p>How to remove the panel plate.</p> <p>1) Remove big handle.(2 screws) and water collector(2 screws)</p> <p>2) Remove two screws of terminal board and seven screws of right-rear panel, and remove the right-rear panel.</p>	 <p>Screws of big handle</p> <p>Screws of Water collector</p> <p>Screws of right-rear panel</p> <p>⑨</p>

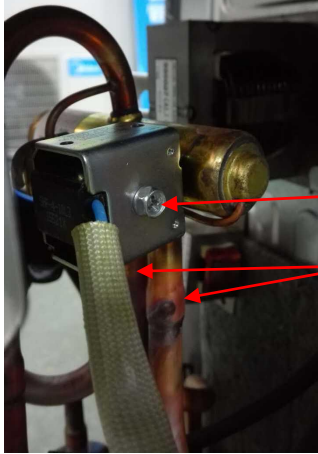

			
3	Electrical parts	<p>How to remove the electrical parts.</p> <p>1) Perform work of item 1 step 5~6 and item 2.</p> <p>2) Disconnect the fan motor connector(5p,white) from the IPM board.</p> <p>3) Disconnect following 8 pieces of connection wires and connectors between IPM and other parts.</p>	 <p>IPM board    PCB board    DC Fan Driver board</p>  <p>②</p>



		<div data-bbox="571 241 718 277" data-label="Text"> <p>CN2(yellow)</p> </div> <div data-bbox="571 315 683 351" data-label="Text"> <p>CN1(red)</p> </div> <div data-bbox="571 387 715 423" data-label="Text"> <p>CN6(black)</p> </div> <div data-bbox="571 459 730 495" data-label="Text"> <p>CN3(yellow)</p> </div> <div data-bbox="571 530 782 566" data-label="Text"> <p>U、V、W(black)</p> </div> <div data-bbox="571 602 774 638" data-label="Text"> <p>CN9(10p,white)</p> </div> <div data-bbox="885 168 1152 633" data-label="Image"> </div> <div data-bbox="451 734 858 909" data-label="Text"> <p>4) Remove the screws fixing the IPM board and remove the IPM board.</p> </div> <div data-bbox="885 667 1177 969" data-label="Image"> </div> <div data-bbox="451 947 839 1122" data-label="Text"> <p>5) Disconnect the connectors and wires connected from PCB and other parts.</p> </div> <div data-bbox="451 1155 603 1191" data-label="Text"> <p>Connectors:</p> </div> <div data-bbox="451 1209 839 1283" data-label="Text"> <p>CN8: Discharge temperature sensor (2p,white)</p> </div> <div data-bbox="451 1290 769 1364" data-label="Text"> <p>CN12: Heatsink temperature sensor(2p,red)</p> </div> <div data-bbox="451 1373 788 1447" data-label="Text"> <p>CN9:T3/T4 temperature sensor (2p/2p,white)</p> </div> <div data-bbox="451 1456 812 1529" data-label="Text"> <p>CN15: Electronic expansive valve (6p,red)</p> </div> <div data-bbox="451 1538 839 1612" data-label="Text"> <p>CN10: High and low pressure switch (2p/2p, white)</p> </div> <div data-bbox="885 1001 1364 1588" data-label="Image"> </div> <div data-bbox="451 1621 533 1655" data-label="Text"> <p>Wires:</p> </div> <div data-bbox="451 1664 847 1700" data-label="Text"> <p>CN17/CN18: 4-way valve (blue-blue)</p> </div> <div data-bbox="451 1706 852 1780" data-label="Text"> <p>CN19/CN20: connected to crankcase heating cable. (black-red)</p> </div> <div data-bbox="451 1787 778 1861" data-label="Text"> <p>CN24/CN25: Electric heater of chassis (orange-orange)</p> </div> <div data-bbox="451 1870 702 1906" data-label="Text"> <p>CN1:L-IN (red or white)</p> </div> <div data-bbox="451 1912 638 1948" data-label="Text"> <p>CN3:N-IN (black)</p> </div> <div data-bbox="885 1615 1136 1843" data-label="Image"> </div> <div data-bbox="1173 1684 1284 1796" data-label="Text"> <p>CN17/CN18 CN19/CN20 CN24/CN25</p> </div> <div data-bbox="451 2007 828 2045" data-label="Text"> <p>6) Disconnect the grounding</p> </div>
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		<p>wire (yellow-green) after removing the big handle.</p> <p>7) Remove the PCB board.</p>	
4	Compressor	<p>How to remove the compressor.</p> <p>1) Perform work of item 1 step 5~6 and item 2..</p> <p>2) Extract refrigerant gas.</p> <p>3) Remove the sound insulation material and crankcase heating cable.</p> <p>4) Remove terminal cover of compressor, and disconnect wires of crankcase electric heater and compressor from the terminal.</p> <p>5) Remove the discharge pipe and suction pipe with a burner.</p> <p>6) Remove the hex nuts and washers fixing the compressor to bottom plate.</p> <p>7) Lift the compressor.</p>	



5	The 4-way valve	<p>How to remove the 4-way valve</p> <ol style="list-style-type: none"> <li>1) Perform work of item 1 step 5~6 and item 2..</li> <li>2) Extract refrigerant gas.</li> <li>3) Remove the electrical parts from item 3.</li> <li>4) Remove fixing screw of the coil, and remove the coil.</li> <li>5) Detach the welded parts of 4-way valve and pipe.</li> </ol>	 <p>Coil</p> <p>Welded parts</p>
6	The expansion valve	<p>How to remove the expansion valve</p> <ol style="list-style-type: none"> <li>1) Perform work of item 1,2.</li> <li>2) Remove the electrical parts from item 3..</li> <li>3) Remove the coil.</li> <li>4) Detach the welded parts of expansion valves and pipes.</li> </ol>	 <p>Expansion valves</p>