

# INVERTER SERIE H5

Service manual

**MUPR-H5**



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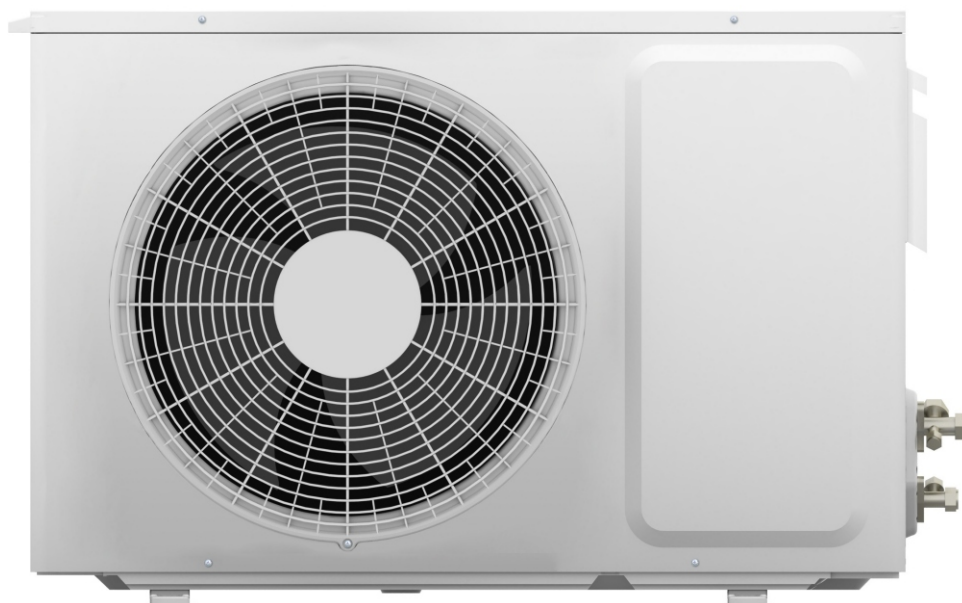
## *Chapter 1 Product Specification*

### 1.1 Photo of Product

Indoor unit



Outdoor unit



## 1.2 Outline Dimensions

### Indoor Unit

MODEL		9000BTU	12000BTU	18000BTU
<b>W</b>	mm	802	802	940
<b>D</b>	mm	265	265	300
<b>H</b>	mm	190	190	220

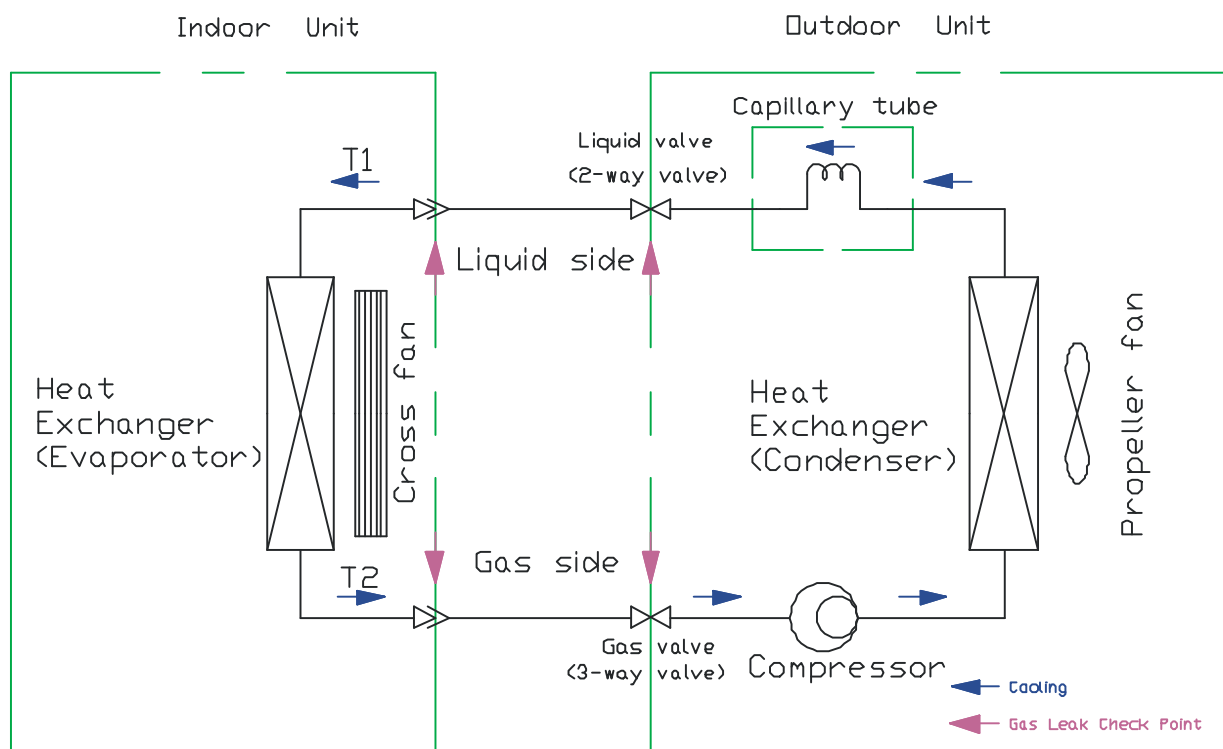
### Outdoor Unit

MODEL		9000BTU	12000BTU	18000BTU
<b>W</b>	mm	720	760	800
<b>D</b>	mm	255	260	300
<b>H</b>	mm	515	540	690

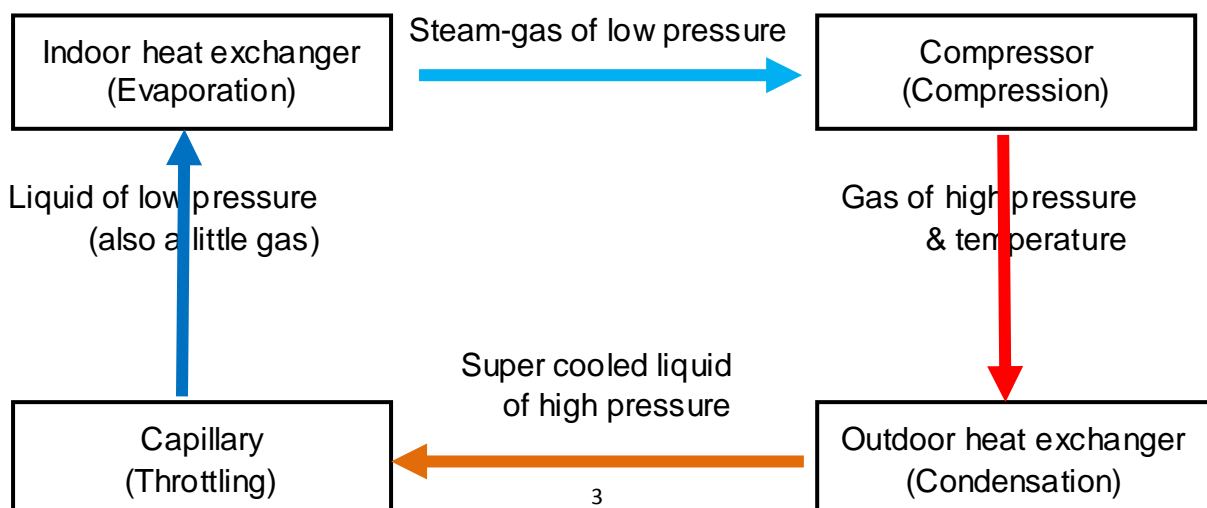
## Chapter 2 Refrigeration Diagrams

### 2.1 Cooling Only

#### Cooling Mode

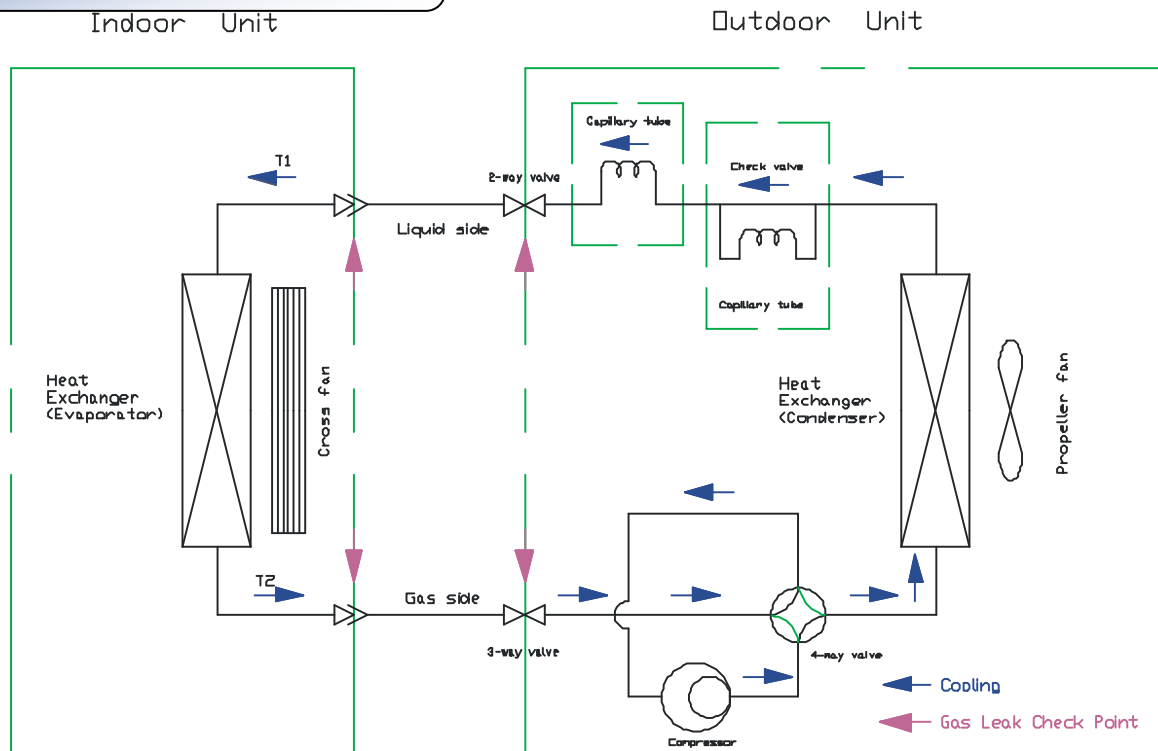


#### Cooling Cycle

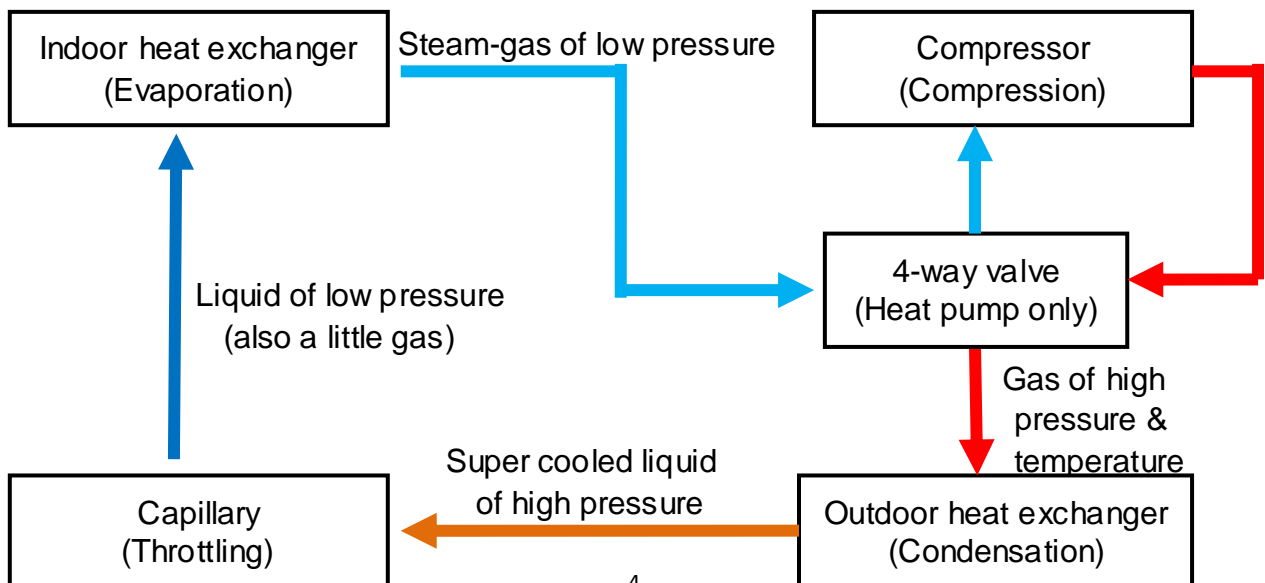


## 2.2 Cooling & Heating

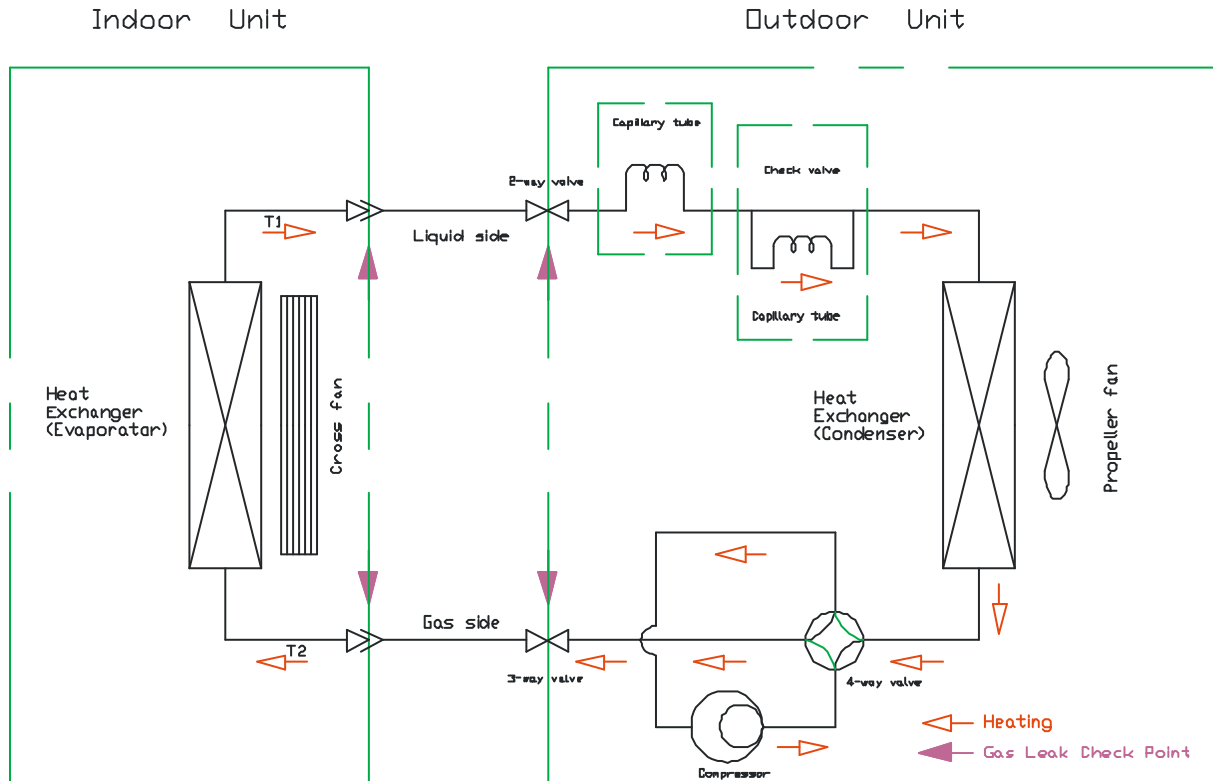
### Cooling Mode



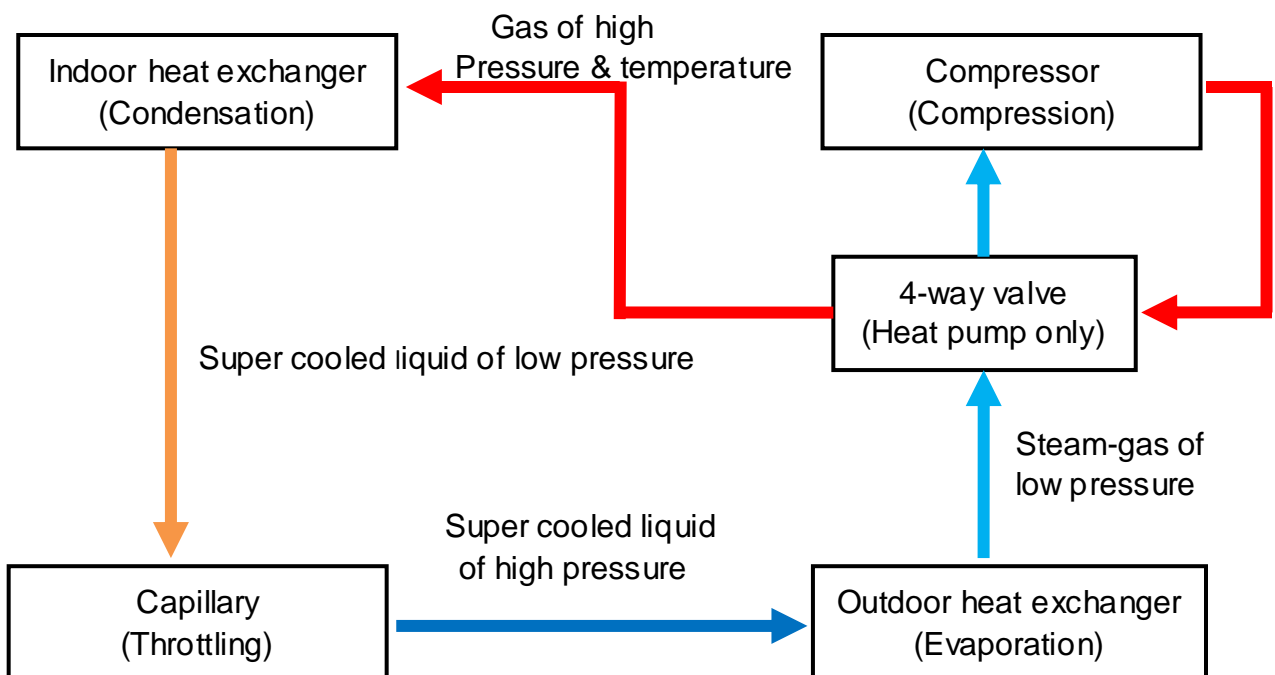
### Cooling Cycle



## Heating Mode



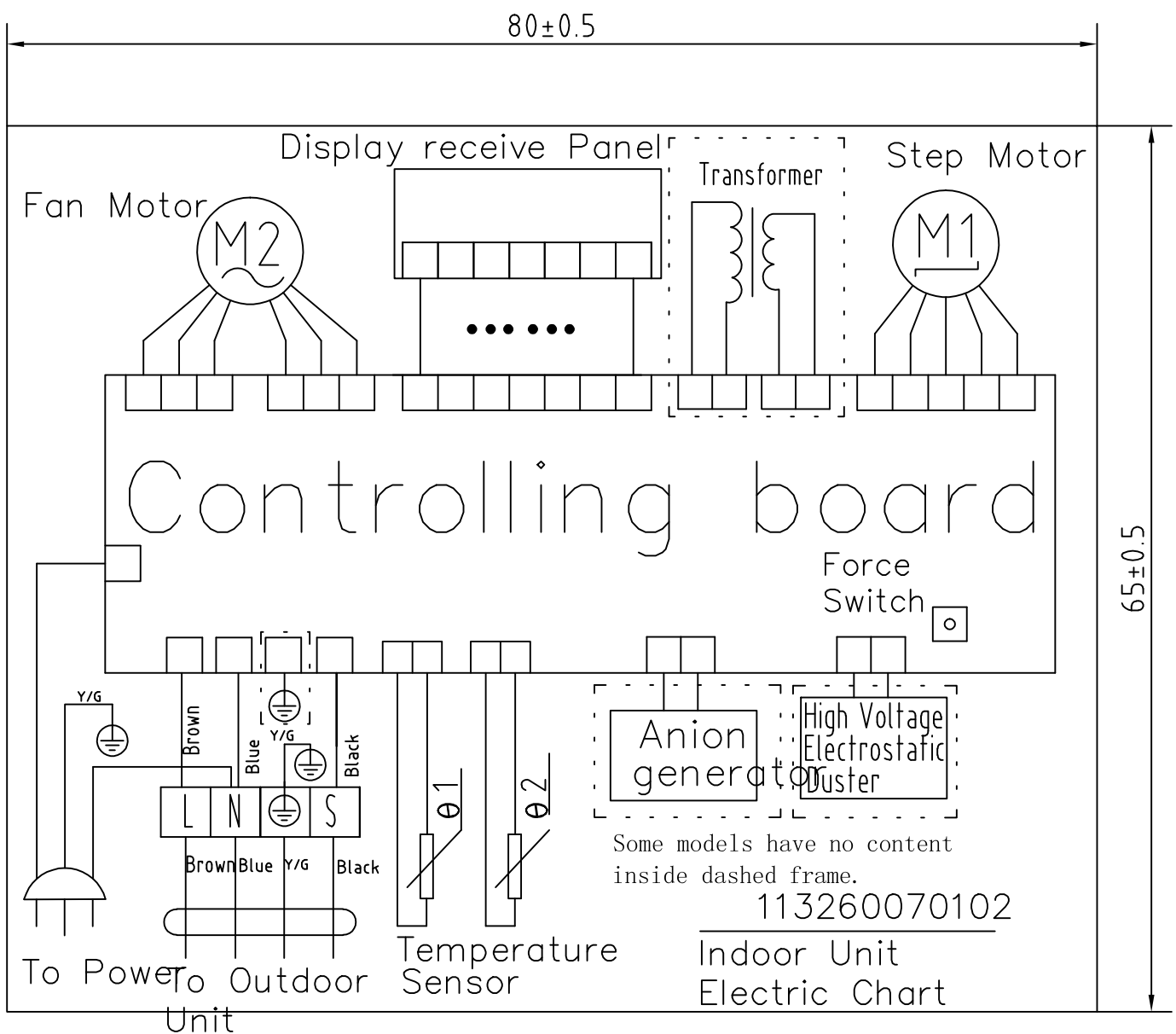
## Heating Cycle



## Chapter 3 Wiring Diagram

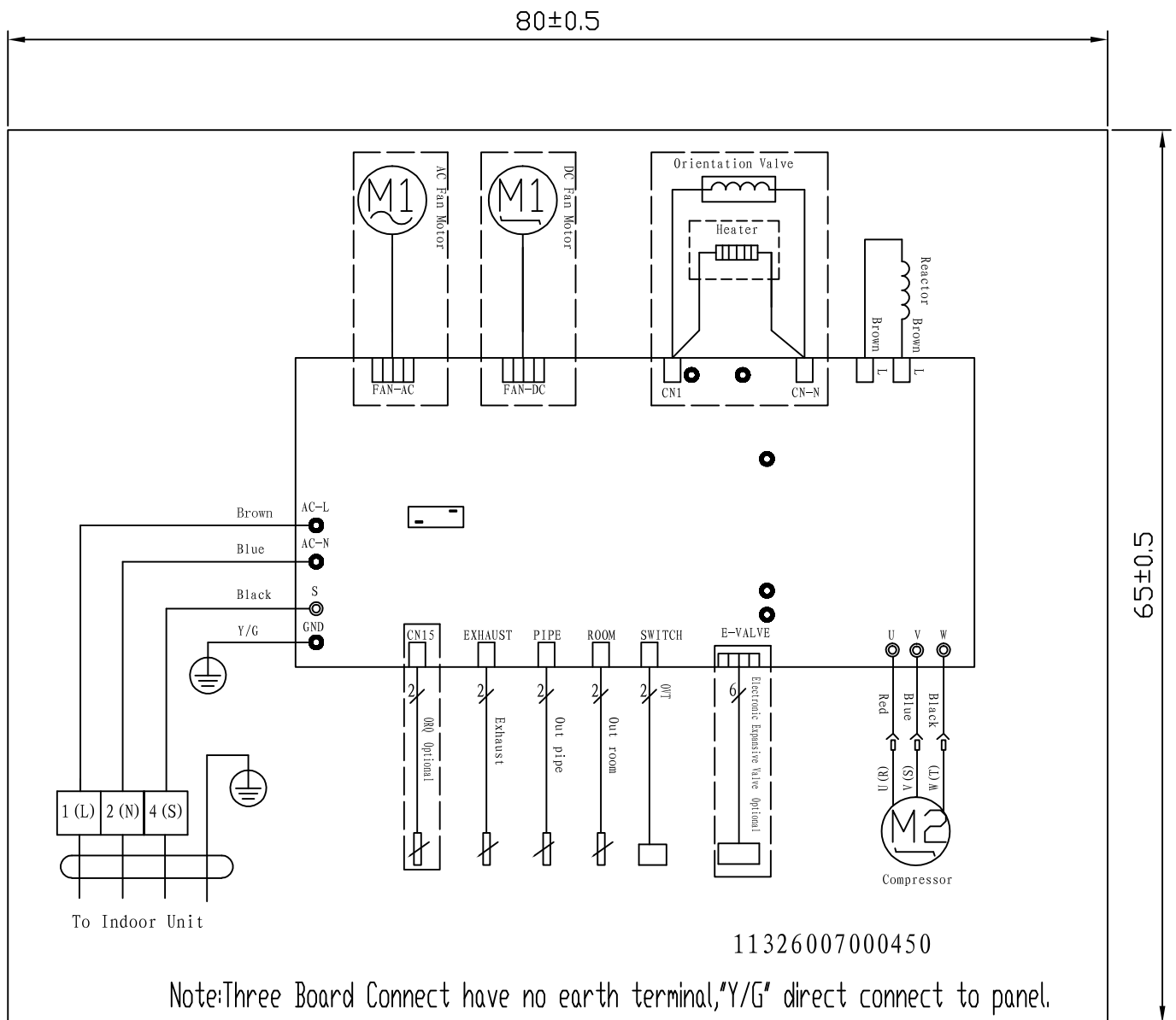
Electric chart for 09/12K

### Indoor unit



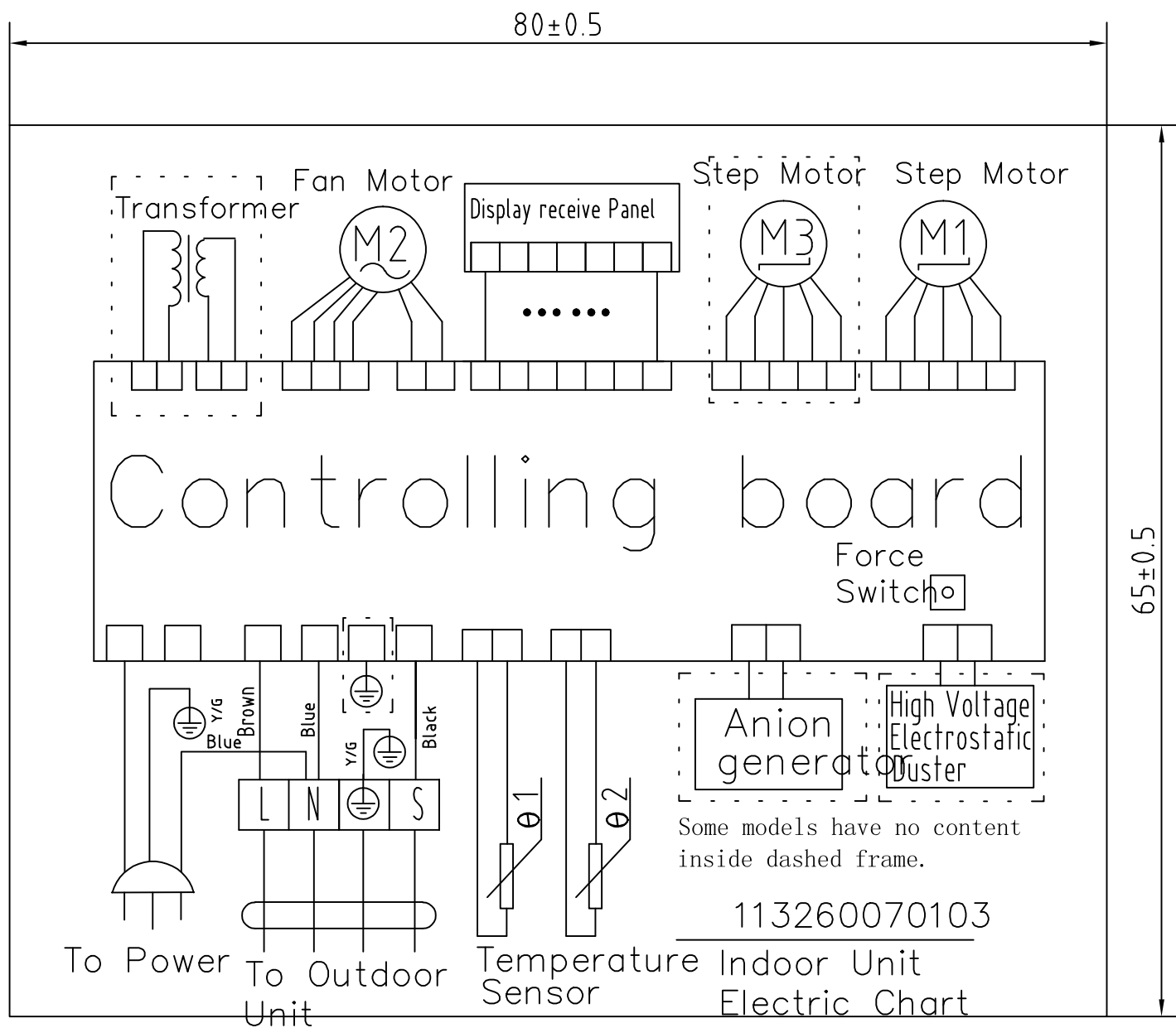


# Outdoor unit

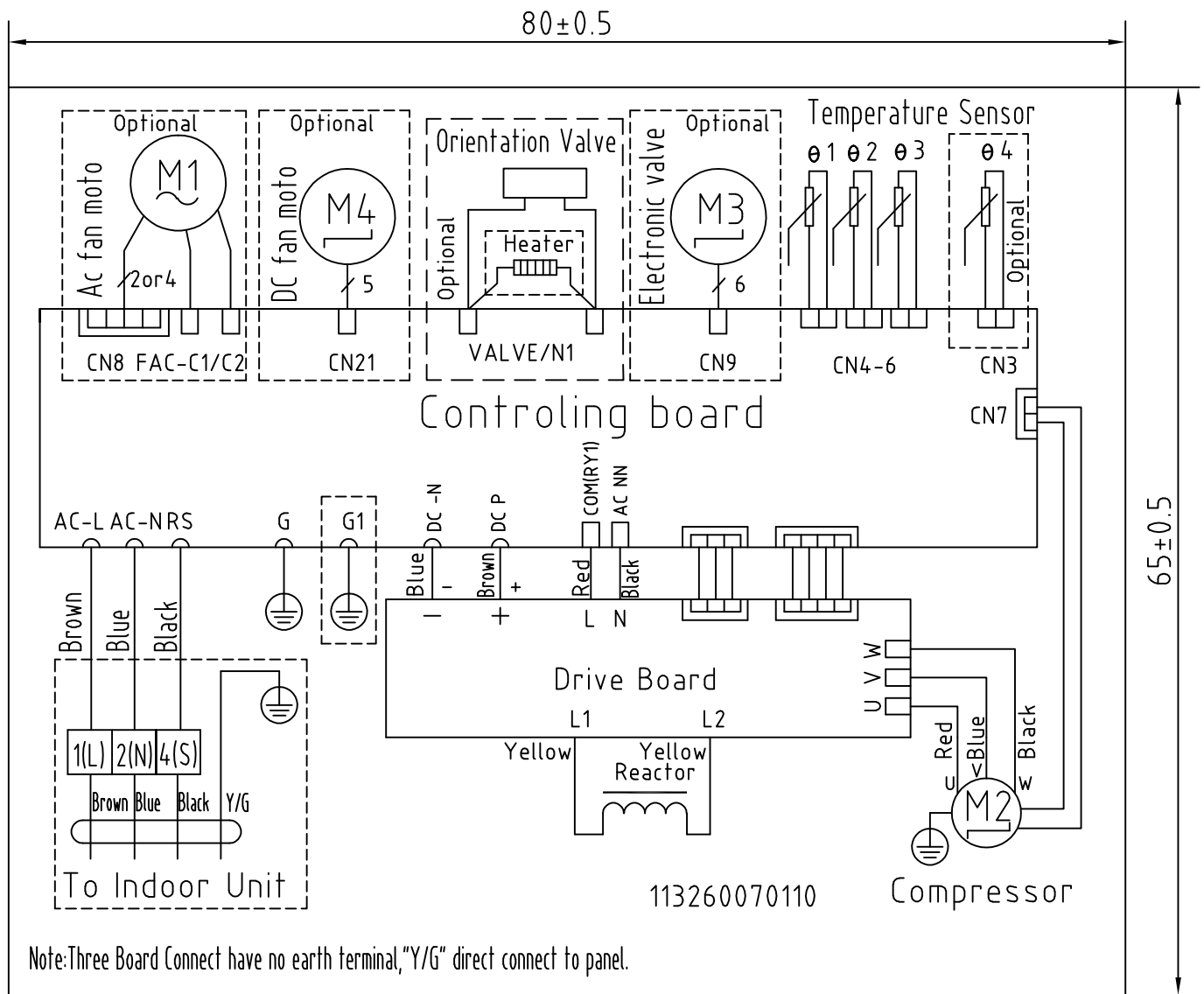


# Electric chart for 18K

## Indoor unit



# Outdoor unit



## Chapter 5 Troubleshooting Guide

### 5.1 Error Code

No.	Error Code	Problem
1	E1	Room temperature sensor fault
2	E2	Outdoor coil temperature sensor fault
3	E3	Indoor coil temperature sensor fault
4	E4	indoor fan motor or DC motor feedback fault
5	E5	indoor & outdoor communication fault
6	F0	Outdoor DC Fan motor fault
7	F1	IPM modular fault
8	F2	PFC modular fault
9	F3	Compressor operation fault
10	F4	Exhaust Temperature sensor fault
11	F5	Compressor top cover protection
12	F6	Outdoor ambient temp sensor fault
13	F7	Over/under voltage protection
14	F8	Outdoor modular communication fault
15	F9	Outdoor E <sup>2</sup> PROM fault
16	FA	Suction temperature sensor fault

## ***5.2 Troubleshooting Guide for 09-12K***

### **1. The Foremost Inspecting Items**

(1)The input voltage must be within +10% tolerance of the rated Voltage. If it is not the case, the air-conditioner will probably not work normally.

(2)Check the connecting cord between indoor unit and outdoor unit to see if it is properly connected. The connecting must be done according to the wiring diagram, please also notice that even different models may have the connecting cord of the same specification.

Please check if the marks at the connecting terminal and the marks on the cord can match, otherwise, the air-conditioner will not work normally.

(3)If the following phenomena are found, the problem is not from the air-conditioner itself.

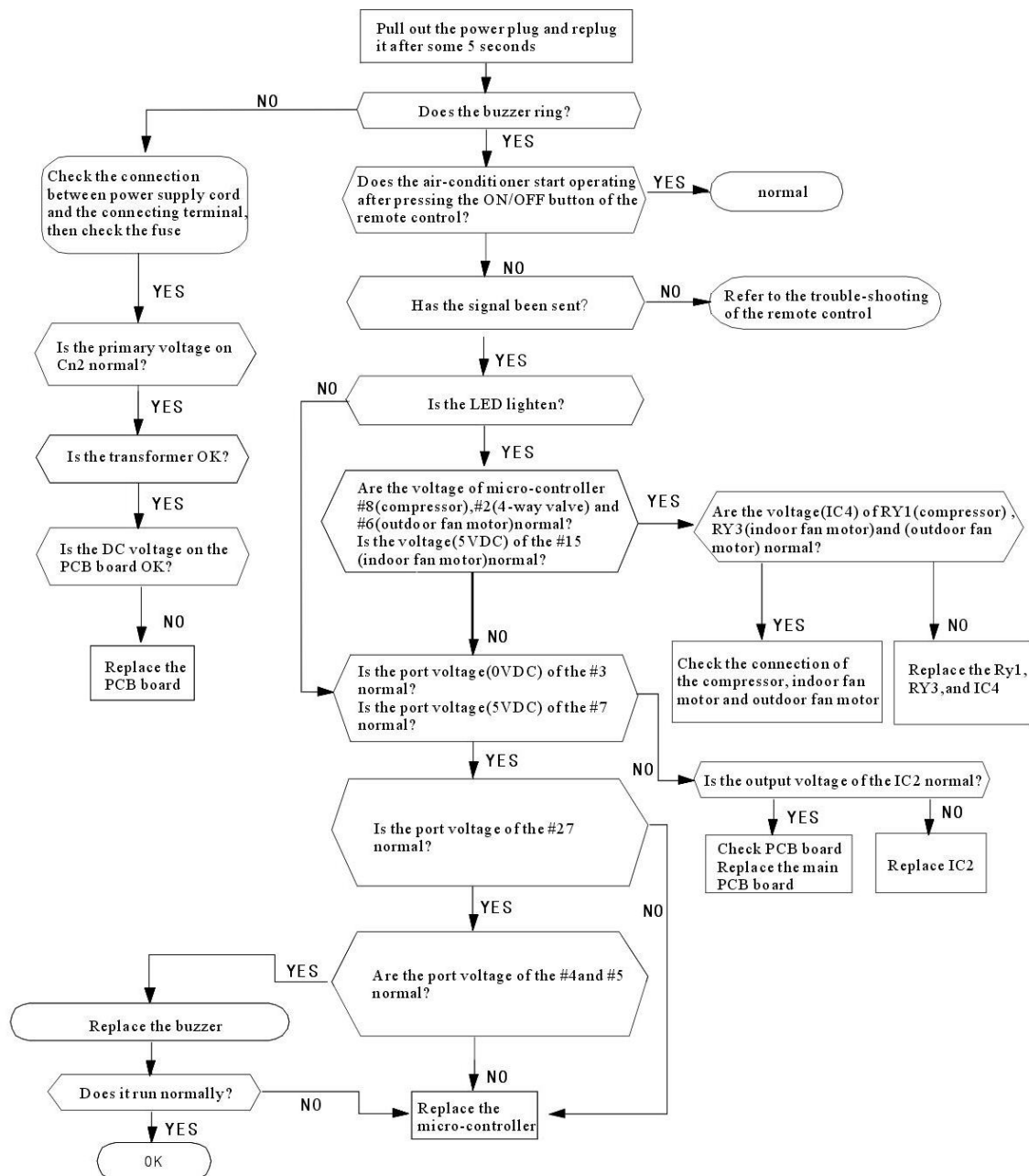
<b>NO.</b>	<b>Problems</b>	<b>Causes</b>
<b>1</b>	The motor is heard operating but the air-conditioner dose not work when the indoor unit is powered on	Since the air-conditioner is powered on, it will come to working condition as long as you press the ON/OFF button of the remote control and the Signal is well received.
<b>2</b>	The compressor stops running but the indoor fan motor keeps working when it is at cooling mode with the indoor temperature higher than set temperature.	If you turn off the air-conditioner and restart it immediately, it will return to normal in 3 minutes, after that, the air-conditioner will automatically adjust the indoor fan speed to what you set.
<b>3</b>	The compressor works discontinuously at dehumidifying mode.	The air-conditioner will automatically control the working of the compressor according to the inside temperature
<b>4</b>	The air-conditioner does not work while the LED display is on.	The TIMER is set with the air-conditioner; it will be in hold on condition. If the TIMER setting is cancelled, the air-conditioner will return to normal working condition
<b>5</b>	The compressor works discontinuously at cooling and dehumidifying mode, and the indoor fan motor slows down.	The compressor stops internally or the fan motor slows down to prevent the indoor heat exchanger from being frozen.

## 2. No Power Display

(1)Items

- Check if the input voltage is correct?
- Check if the AC power supply connecting is correct?
- Check if the output voltage of the manostat L7805 (IC2) is correct?

## (2)Trouble shooting procedure



### 3. The Indoor Fan Motor Does Not Work

#### (1) Items

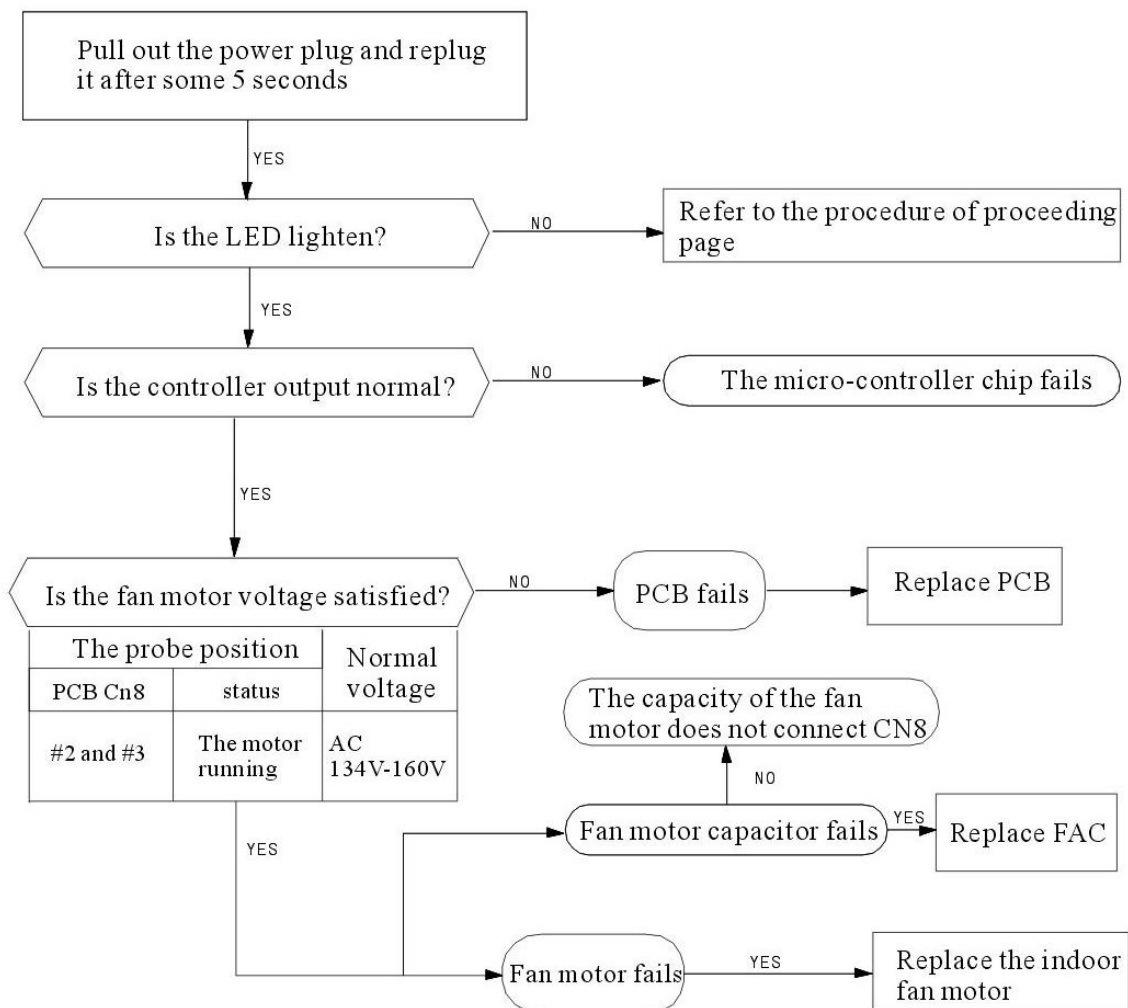
a) Check if the indoor fan motor is connected correctly to the connector (CN8)?

b) Check if the AC input voltage is correct?

c) Check if the IC of indoor fan motor is connected correctly to the connector (CN2)?

d) Check if the capacity of indoor fan motor is connected correctly to the connector (CN8)?

#### (2) Trouble shooting procedure



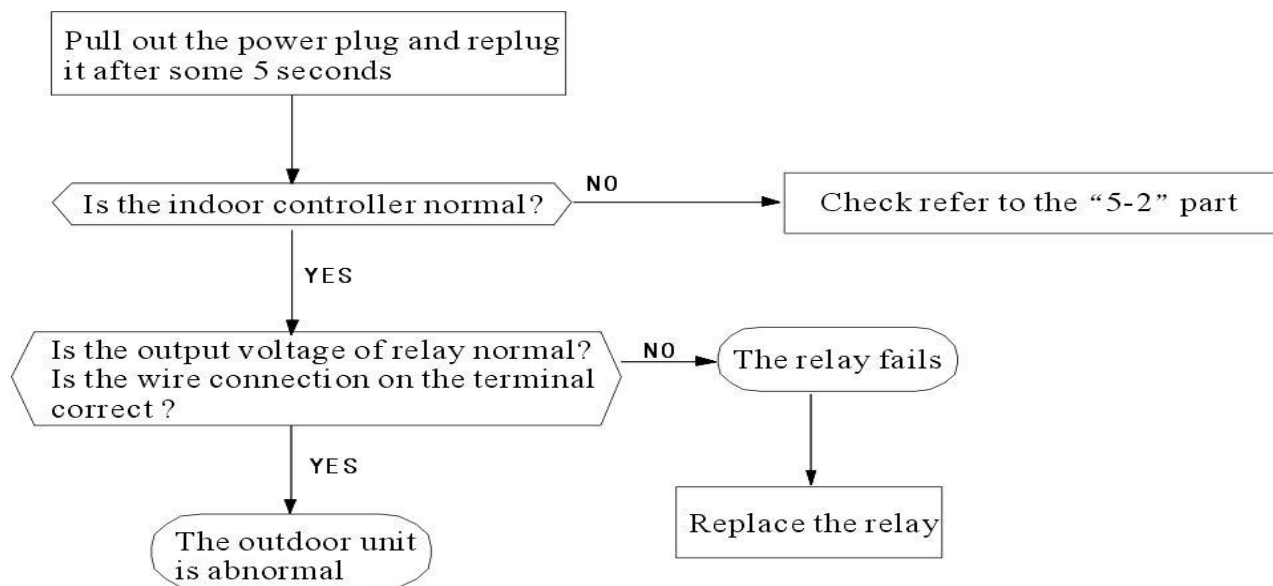


## 4. The Outdoor Unit Does Not Work

(1) Items

- a) Check if the input voltage is correct?
- b) Check if the wire connection of the outdoor connecting terminal is correct?

(2) Trouble shooting procedure



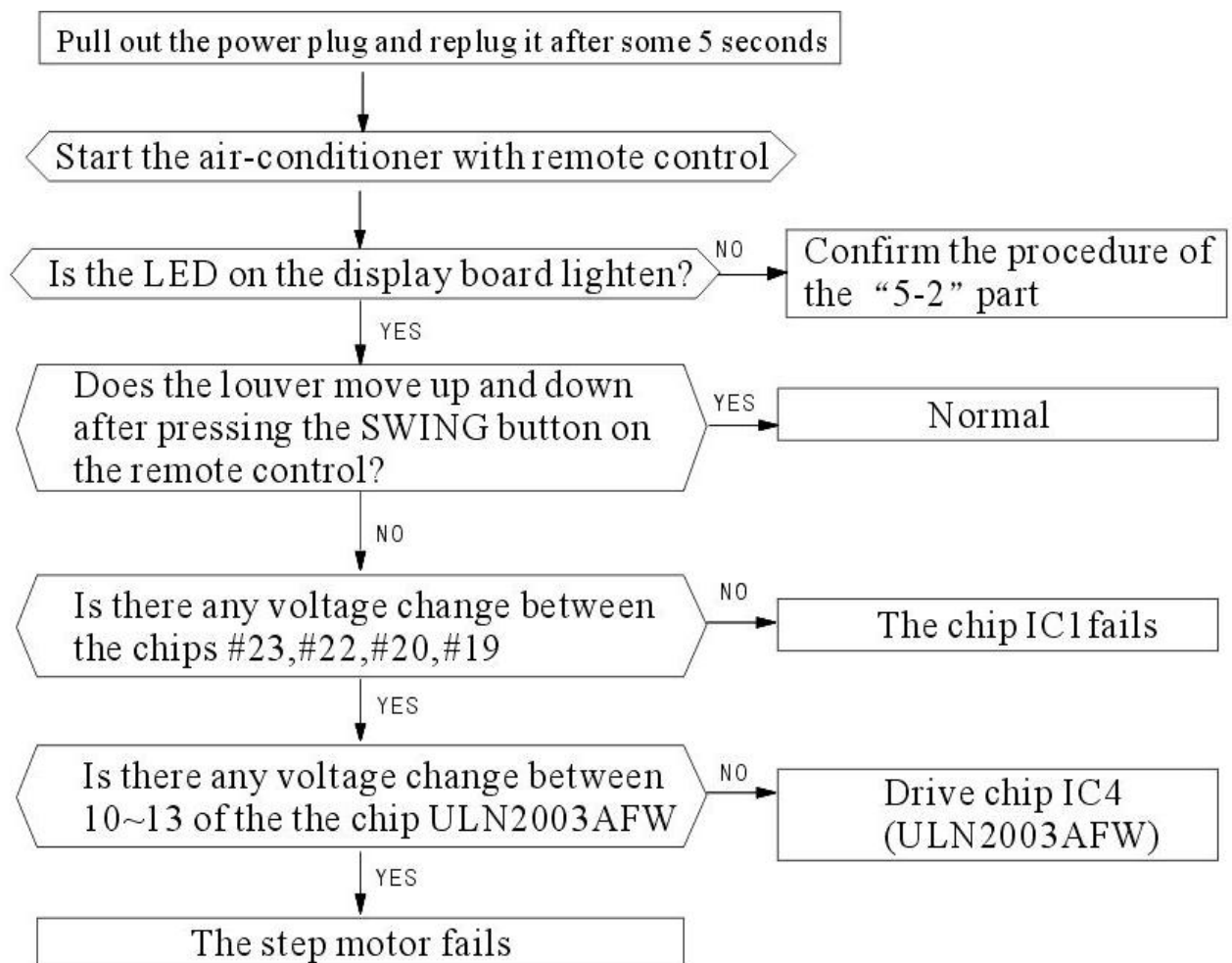
## 5. The Step Motor Does Not Work

### (1) Items

a) Check if the input voltage is correct?

b) Check if the step motor controlling the up-down movement firmly connected to Cn2?

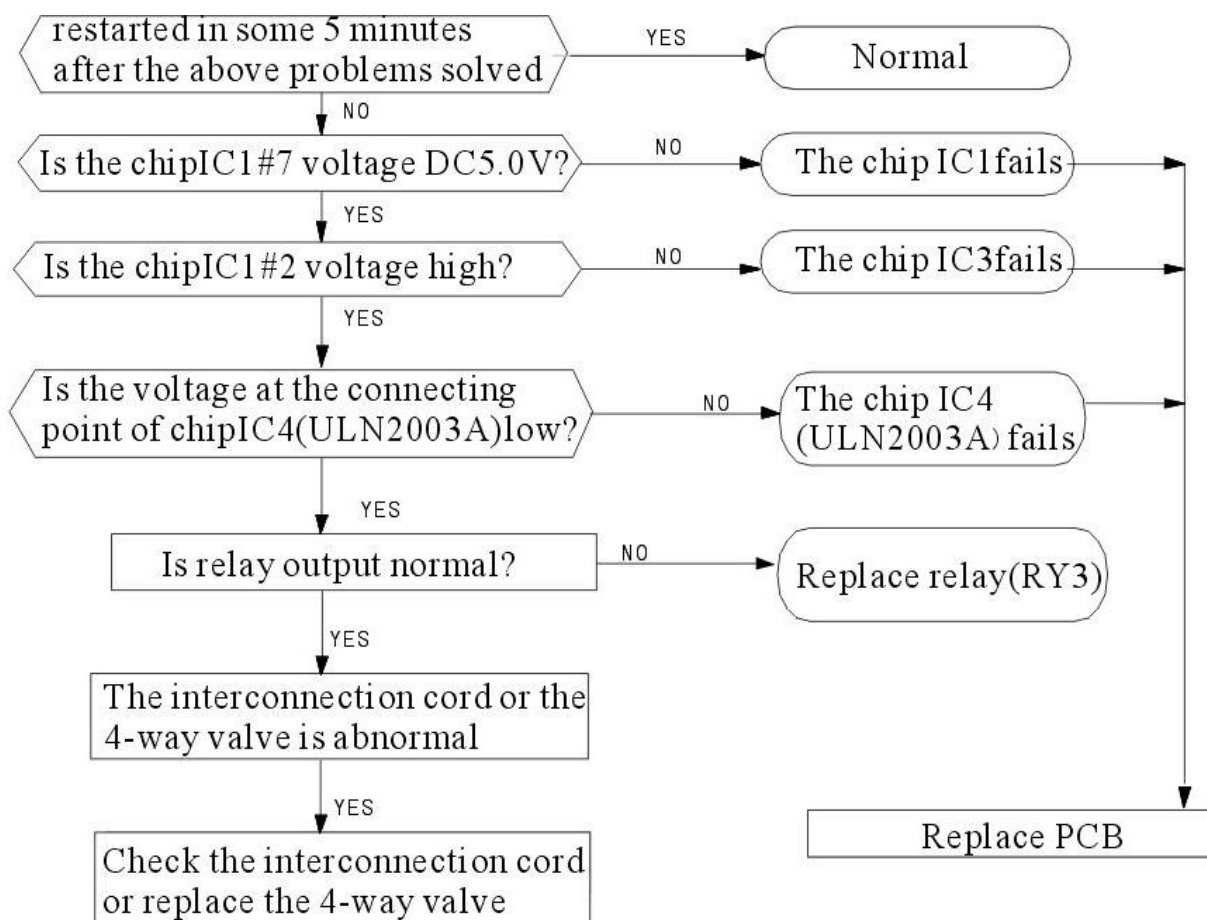
### (2) Trouble shooting procedure



## 6. Heating Mode Can Work, But No Hot Air Blow

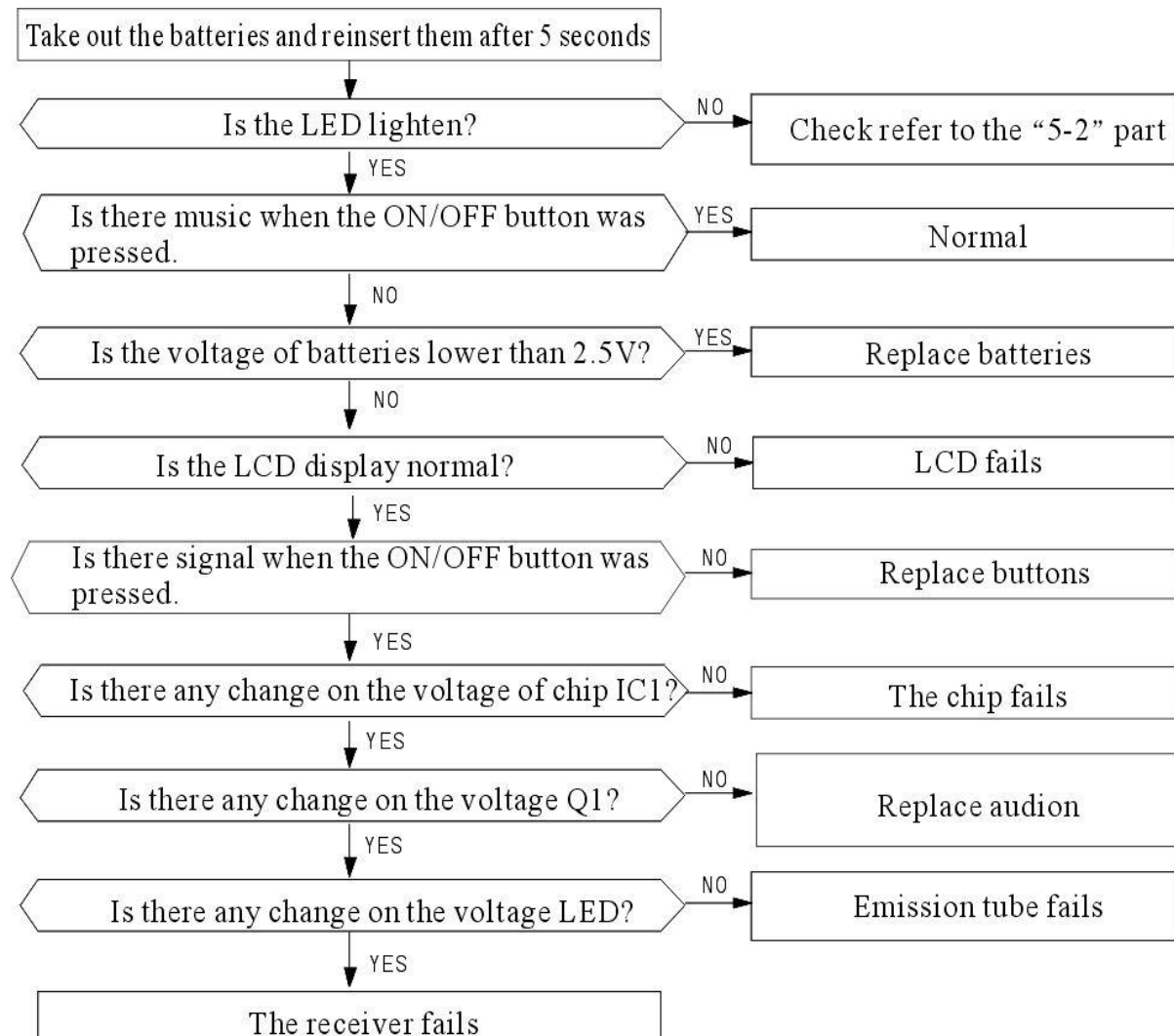
(1) Check if the set temperature is lower than the indoor temperature?

(2) Check if the indoor PCB is connected to the terminal correctly?



## 7. Remote Control Can Not Work

### Trouble shooting rocedure



## 8. The Failure Analysis of the Main Parts

Part	Analysis										
Heat exchanger	Measure resistance										
	Normal	Environment temperature		15℃	20℃	25℃	30℃	35℃	40℃		
		Resistance of transformer(KΩ)		7.45	6.08	5	4.13	3.43	2.86		
	Abnormal	∞: Turn-off ; 0Ω: Short-cut									
The indoor fan motor	Detecting the resistance between each connecting terminal										
	Normal	Environment temperature（10℃～30℃）									
		Between		1		2		3			
		Blue、yellow	Main	410Ω±10%		350Ω±10%		370Ω±10%			
		Blue、red	Auxiliary	325Ω±10%		270Ω±10%		300Ω±10%			
	Input		YYK13-4: 13W YYK19-4: 19W								
	Abnormal	∞: Turn-off ; 0Ω: Short-cut									
	Detecting the voltage between the signal wire of fan motor and ground										
	Normal	Between		Voltage							
Gray、Orange		0.5V～4.5V									
Yellow、Orange		5V									
	Abnormal	voltage<0, voltage>5 is abnormal									
Step motor	Normal	Environment temperature（10℃～30℃）									
		Between		1		2		-			
				24BYJ48		35BYJ412B		-			
		Blue、yellow	-	Above 300Ω		Around 120Ω		-			
		-	-	-		-		-			
	Input		1.5W		-		-				
	Abnormal	∞: Turn-off ; 0Ω: Short-cut									
The outdoor fan motor	Detecting the resistance between the red wire and every connecting end										
	Normal	When the temperature is20℃～30℃ ,around 300Ω and 120Ω									
	Abnormal	∞: Turn-off ; 0Ω: Short-cut									

## ***5.3 Troubleshooting Guide for 18-24K***

### **1. The Foremost Inspecting Items**

(1)The input voltage must be within +10% tolerance of the rated Voltage. If it is not the case, the air-conditioner will probably not work normally.

(2)Check the connecting cord between indoor unit and outdoor unit to see if it is properly connected. The connecting must be done according to the wiring diagram, please also notice that even different models may have the connecting cord of the same specification.

Please check if the marks at the connecting terminal and the marks on the cord can match, otherwise, the air-conditioner will not work normally.

(3)If the following phenomena are found, the problem is not from the air-conditioner itself.

NO.	Problems	Causes
1	The motor is heard operating but the air-conditioner dose not work when the indoor unit is powered on	Since the air-conditioner is powered on, it will come to working condition as long as you press the ON/OFF button of the remote control and the signal is well received.
2	The compressor stops running but the indoor fan motor keeps working when it is at cooling mode with the indoor temperature higher than set temperature.	If you turn off the air-conditioner and restart it immediately, it will return to normal in 3 minutes, after that, the air-conditioner will automatically adjust the indoor fan speed to what you set.
3	The compressor works discontinuously at dehumidifying mode.	The air-conditioner will automatically control the working of the compressor according to the inside temperature
4	The air-conditioner does not work while the LED display is on.	The TIMER is set with the air-conditioner; it will be in hold on condition. If the TIMER setting is cancelled, the air-conditioner will return to normal working condition.
5	The compressor works discontinuously at cooling and dehumidifying mode, and the indoor fan motor slows down.	The compressor stops internally or the fan motor slows down to prevent the indoor heat exchanger from being frozen.



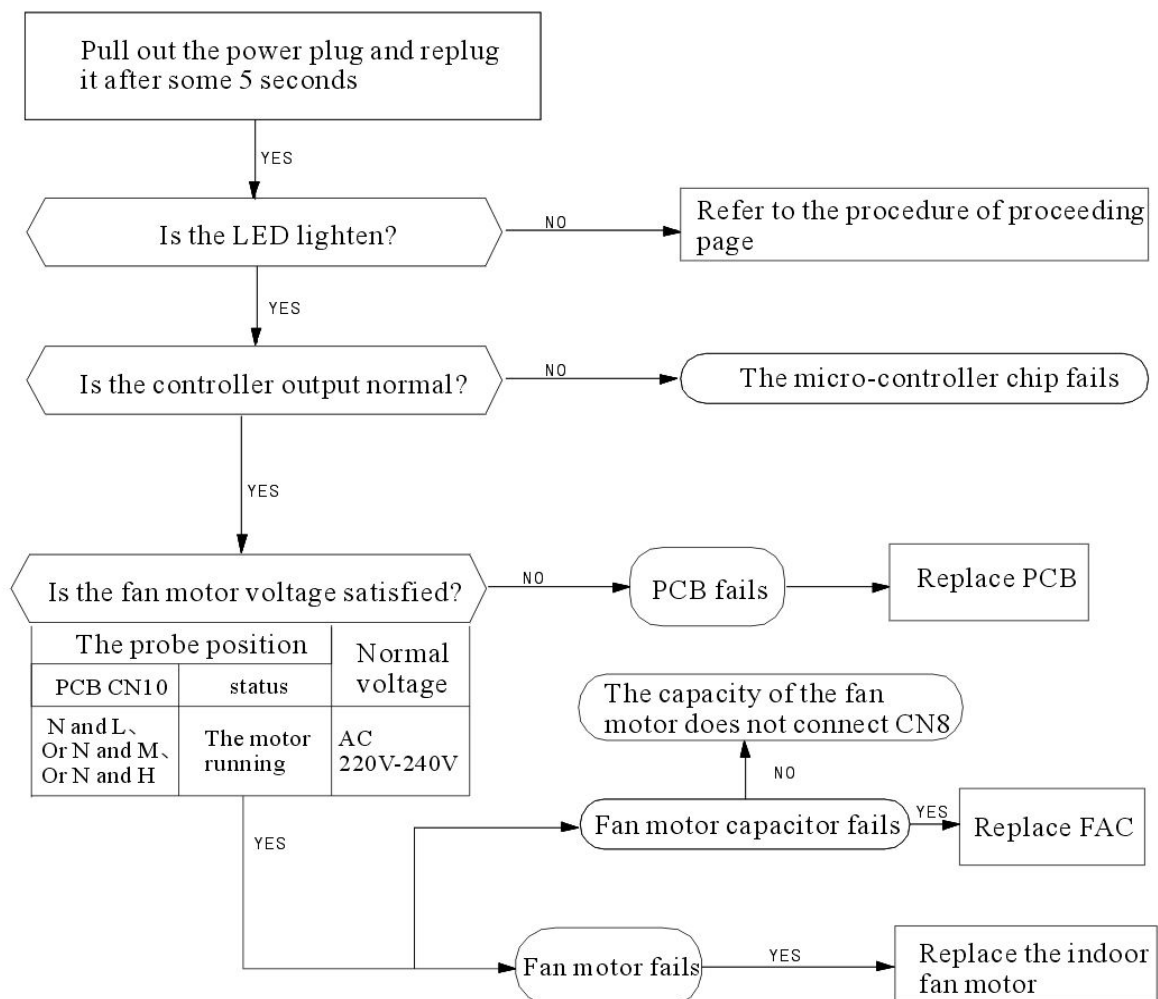


### 3. The Indoor Fan Motor Does Not Work

#### (1)Items

- ① Check if the indoor fan motor is connected correctly to the connector(CN8)?
- ② Check if the AC input voltage is correct?
- ③ Check if the IC of indoor fan motor is connected correctly to the connector(CN2)?
- ④ Check if the capacity of indoor fan motor is connected correctly to the connector(CN8)?

#### (2)Trouble shooting procedure

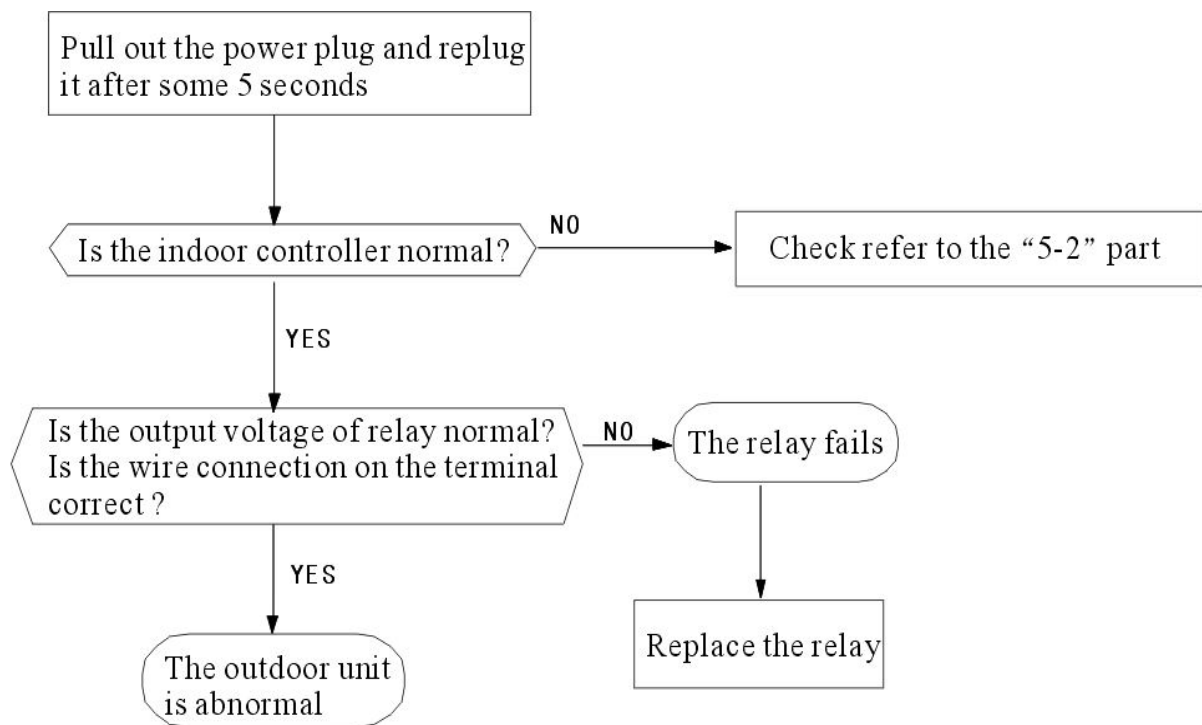


## 4. The Outdoor Unit Does Not Work

### (1) Items

- ① Check if the input voltage is correct?
- ② Check if the wire connection of the outdoor connecting terminal is correct?

### (2) Trouble shooting procedure



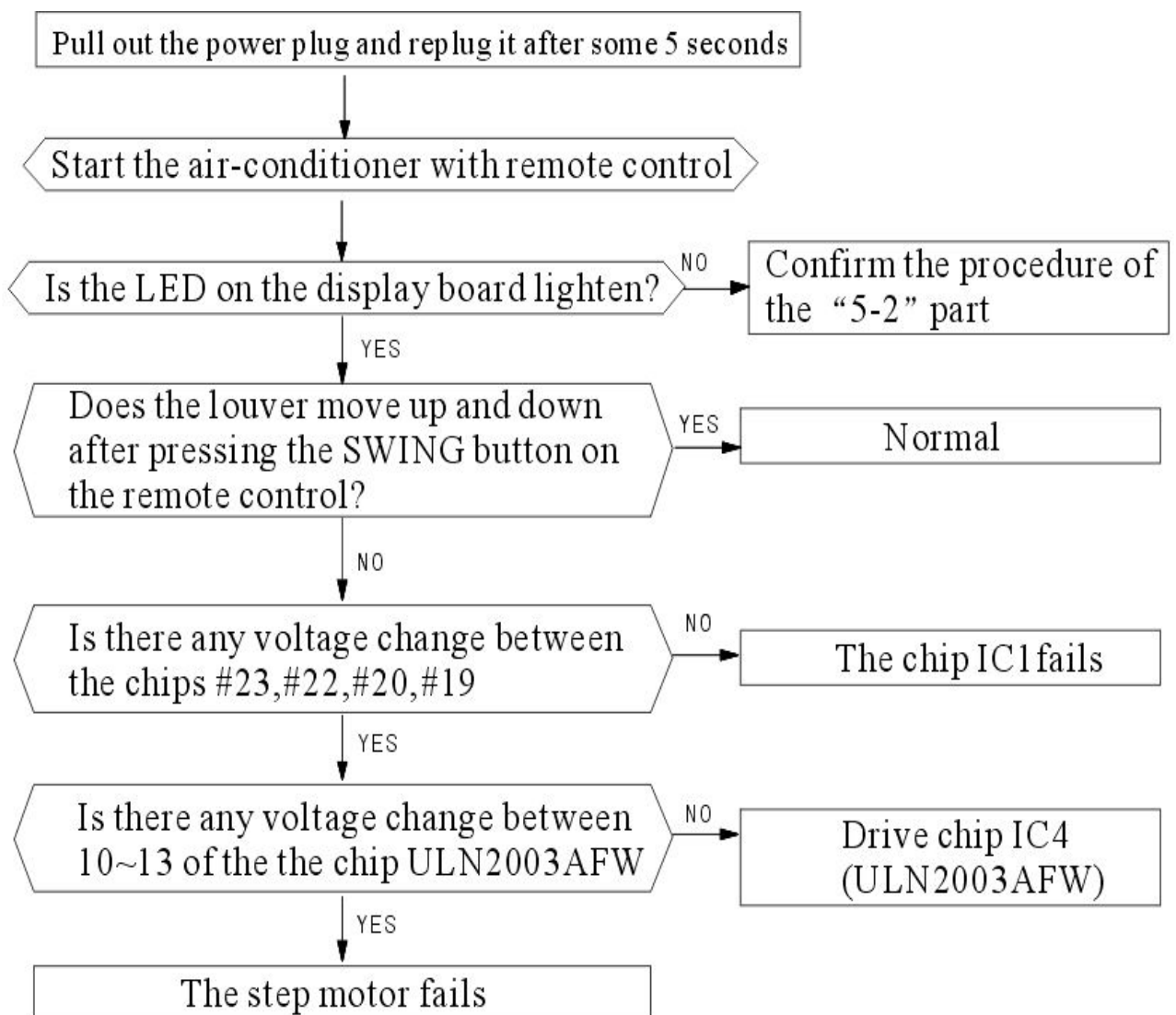
## 5. The Step Motor Does Not Work

### (1) Items

① Check if the input voltage is correct?

② Check if the step motor controlling the up-down movement firmly connected to Cn2?

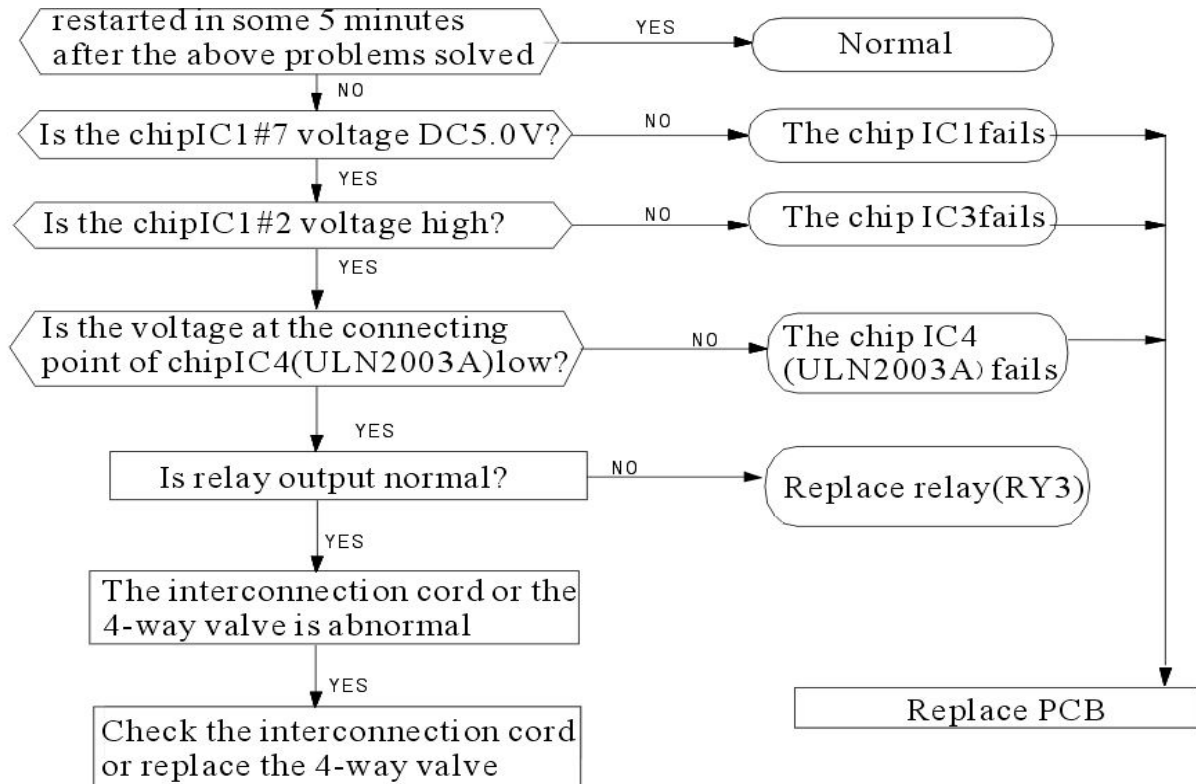
### (2) Trouble shooting procedure



## 6. Heating Mode Can Work, But No Hot Air Blow

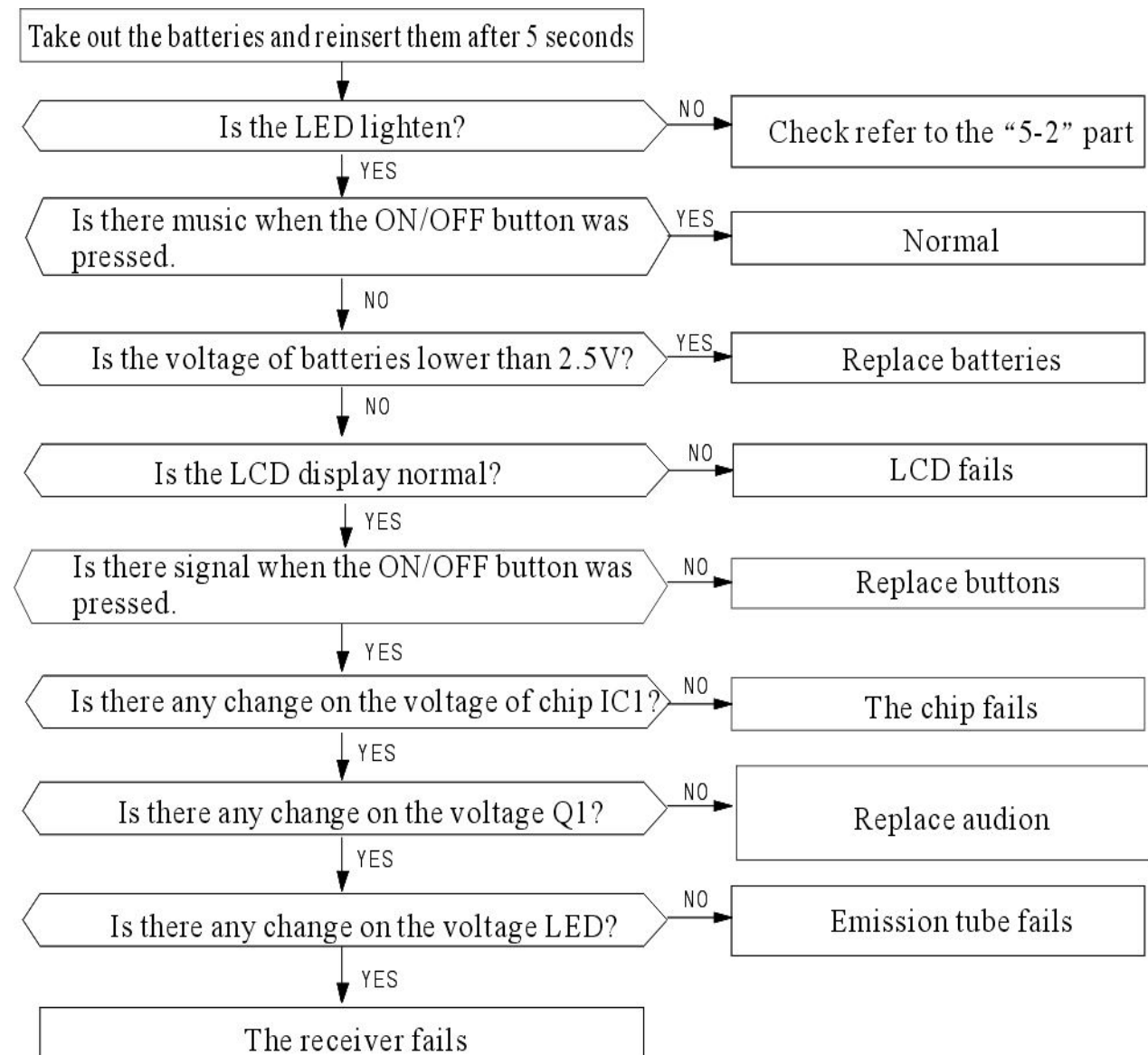
(1) Check if the set temperature is lower than the indoor temperature?

(2) Check if the indoor PCB is connected to the terminal correctly?



## 7. Remote Control Can Not Work

### Trouble shooting procedure



## 8. The Failure Analysis of the Main Parts

Part	Analysis																					
Transformer Heat exchanger	Measure resistance																					
	Normal	<table><tr><td>Environment temperature</td><td>15℃</td><td>20℃</td><td>25℃</td><td>30℃</td><td>35℃</td><td>40℃</td></tr><tr><td>Resistance of transformer(KΩ)</td><td>7.45</td><td>6.08</td><td>5</td><td>4.13</td><td>3.43</td><td>2.86</td></tr></table>							Environment temperature	15℃	20℃	25℃	30℃	35℃	40℃	Resistance of transformer(KΩ)	7.45	6.08	5	4.13	3.43	2.86
		Environment temperature	15℃	20℃	25℃	30℃	35℃	40℃														
	Resistance of transformer(KΩ)	7.45	6.08	5	4.13	3.43	2.86															
Abnormal	∞：Turn-off；0Ω：Short-cut																					
Step motor	Normal	Environment temperature（10℃～30℃）																				
		Between		1		2		—														
				24BYJ48		35BYJ412B		—														
		Blue、yellow	—	Above300Ω		Around120Ω		—														
		—	—	—		—		—														
		Input		1.5W		—		—														
	Abnormal	∞：Turn-off；0Ω：Short-cut																				
The outdoor fan motor	Detecting the resistance between the red wire and every connecting end																					
	Normal	When the temperature is20℃～30℃ ,around 300Ω and 120Ω																				
	Abnormal	∞：Turn-off；0Ω：Short-cut																				

## App1 Operation Details

### **Summarization**

This specification is used for E、Q、SA series whose capacity is 9000-24000 btu and lower one, this standard book include all of the functions of 9000-24000btu and lower styles , but to the single unit , it not always all of the functions, the specific functions need to correspond corresponding modes to decide, this specification's contents include same parts as below:

- 1、 the basic condition of electrical control using
- 2、 partition of electrical controller's function
- 3、 description of main functions
- 4、 technique index and demand

The products must conform this specification's technique index and demand, what do not conform to this specification should be sentenced to as nonconforming product

### **The basic condition of electrical control using**

- 1、 the suitable scope of electricity and voltage: input voltage 175V~253V;
- 2、 alternating current input voltage frequency: 50Hz;
- 3、 environment temperature of electronic control working: (-10~+70)°C;
- 4、 environment humidity of electronic control working: RH20%~RH90%;
- 5、 indoor fan for the PG plastic motor , three-pulse feedback signal;
- 6、 outdoor fan for the tap steel shell motor, first files is wind speed, the normal working electricity less than 1.5A;

- 7、the four-way valve working electricity less than 1A/220V;
- 8、the swing motor is DC12V, four-phase eight clap step motor ;
- 9、the compressor is single power, the normal working electricity less than 1.5A;

### **partition of electrical control's function**

controller's function constitute by some parts below:

- 1、remote control receive function
- 2、display function
- 3、forced running function
- 4、indoor fan's air blade automatic swing and location setting function
- 5、buzzer drive function
- 6、indoor fan drive function
- 7、timer ON/OFF function
- 8、compressor three minutes delayed protect function
- 9、under heating mode, the indoor heat exchanger high temperature protect function
- 10、under the heating mode, automatic defrost function and recover heating function
- 11、under the heating mode, prevent cold wind function
- 12、under cooling、drying mode, prevent freeze function
- 13、self-test function



## **Main function instruction**

### **1、 proper noun and expression**

TA: indoor environment temperature

TE: indoor evaporator temperature

TS: setting temperature

### **2、 mandatory switch**

when the air conditioner under the opening condition, press this button is closing phenomenon; when the air conditioner under the closing condition ,press this is opening phenomenon, and after opening by press this button ,the air conditioner operation under the automatic mode, the operation light flicker 20s, operation after the system designate the operation mode; the air conditioner according to the indoor temperature automatic choose cooling 、 drying 、 heating modes to operation.

### **3、 automatic mode**

when the remote controller choose the automatic mode, the operation light flicker 20s after opening and operation after the system designate the operation mode; the air conditioner according to the indoor temperature automatic choose cooling 、 drying 、 heating modes to operation.

### **4、 cooling mode**

setting the temperature by remote controller, the control scope of temperature is  $16^{\circ}\text{C} \sim 32^{\circ}\text{C}$ , press the “up”、 “down” button can adjust the temperature. Press the “wind speed choose” button can choose the automatic wind、 high speed wind、 middle speed wind、 low speed wind. Under this mode ,the four-way valve closed.

## **5、 drying mode**

under this mode ,the four-way valve always closed, the control scope of temperature is  $16^{\circ}\text{C} \sim 32^{\circ}\text{C}$ .

## **6、 ventilation mode**

under this mode, the outdoor conditioner always closed, indoor fan operation under the setting wind speed, the remote controller can choose high speed wind、 middle speed wind、 low speed wind, no automatic wind; the wind door operation condition same with cooling mode; there have timer 、 power off memory(reserved) 、 anion(reserved)function.

## **7、 heating mode**

setting the temperature by remote controller, the control scope of temperature is  $16^{\circ}\text{C} \sim 32^{\circ}\text{C}$ . press the “up”、 “down” button can adjust the temperature. Press the “wind speed choose” button can choose the automatic wind、 high speed wind、 middle speed wind、 low speed wind

## **8、 online detection of electric heating function**

when the heating mode normal operation, the compressor start、

outdoor fan operation、 valve circuit have power、 indoor fan open, and when satisfy the condition in the same time, the electric heating open.

## **9、 intelligent defrost function**

When this mode operation , the conditioner begin to defrost if satisfy the condition, the sleeping light flicker.

## **10、 sleep control function**

when automatic、 cooling、 drying、 heating operation, the sleeping function effective, after enter the sleeping, the indoor fan wind speed automatic reduce one files, sleeping light lighten.

Press “sleep” button enter into sleeping operation, for the cooling operation, the setting temperature automatic rise 1℃ after 1h; for the heating operation, the setting temperature drop 2℃ after 1h, for the cooling operation, the setting temperature rise 1℃ again; for the heating operation, the setting temperature drop 2℃ again. The sleeping mode closed after 7h.

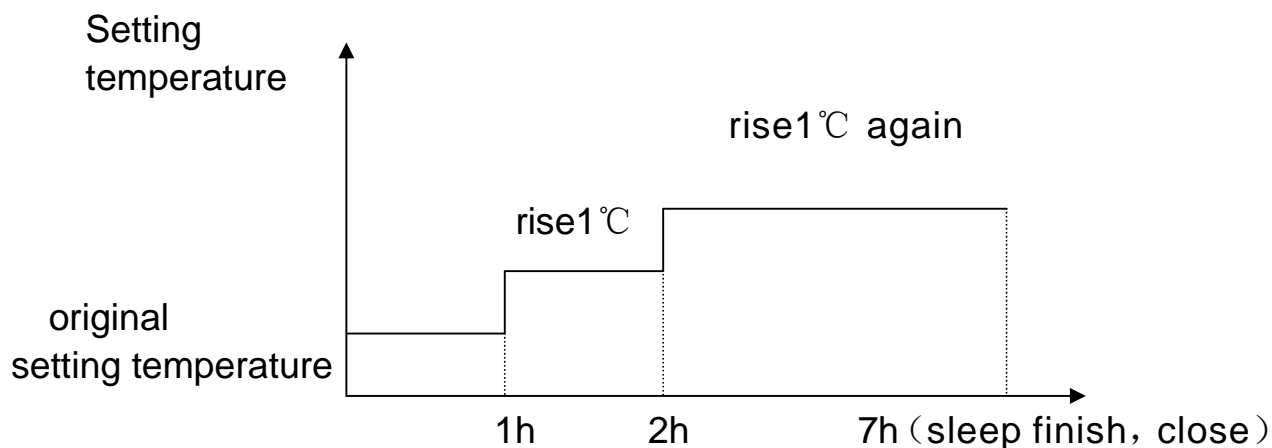
After enter the sleeping operation:

- ① mode change effective, but after change the mode, the sleeping function cancel
- ② if press “warming” button, the air conditioner will according “new setting temperature+ revise temperature” to operation.

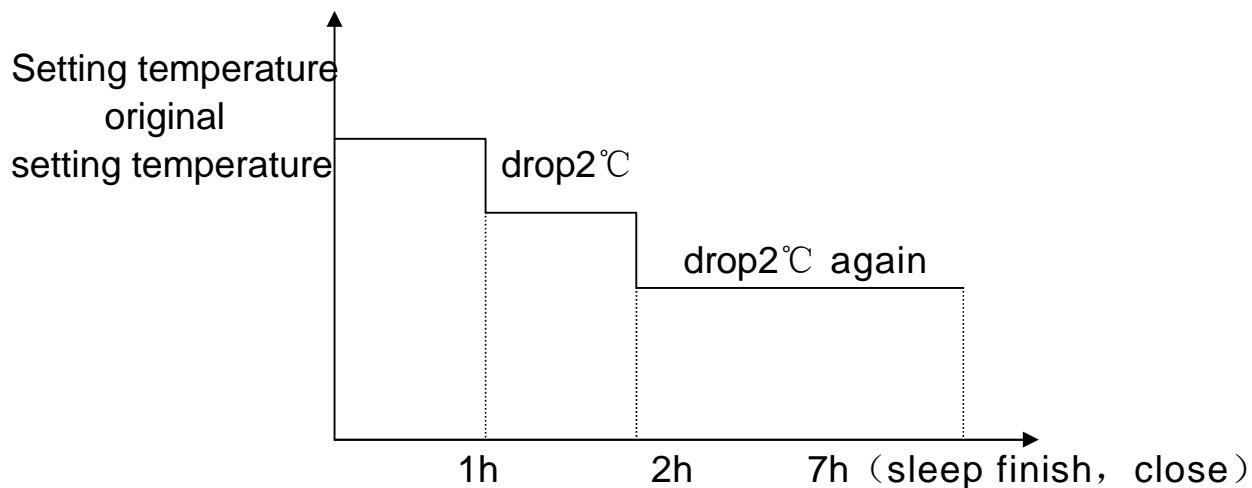
Under the sleeping condition, press the “sleep” button again、 mode choose button or close, the sleeping cancel, finish the sleeping

operation.

### Cooling operation sleeping:



### Heating operation sleeping:



## 11、 timing control function

The longest timing time is 24h, unit is 1min, single timing way, change the mode not cancel the timing function, after setting the timing mode, pointing light lighten.

### ① Setting the “off” timer time

Just setting under condition of air conditioner operation, the timing scope is 1min~12h, divide 12h a.m. and 12h p.m., when arriver the setting time, the conditioner automatic close.

### ③ Setting the “on” timer time

Just setting under condition of the air conditioner closed, the timing scope is 1min~12h, divide 12h a.m. and 12h p.m., when arriver the setting time, the conditioner automatic open.

Open or close the conditioner after setting timing, the intrinsic timing and sleeping automatic cancel.

Note: the sleeping and timing function can setting in the same time, when two functions setting in the same time, function of time for which the implementation of the first functions to be.

## 13、 fault indication

When the air conditioner breakdown, the nixie tube on the remote controller light board or LED light will according different fault to point homologous fault code, the detailed as follow:

Reason of fault	Way of display	phenomenon
PG feedback unusual	display“E4”or timing light flicker 4times or 8s	Closing down
TA unusual(open or short circuit)	display“E1” or timing light flicker 1times or 8s	Closing down
TE unusual(open or short circuit)	display“E3” or timing light flicker 3times or 8s	Closing down
Full-machine electricity protect	display“E6” or timing light flicker 6times or 8s	Closing down

Note: the nixie tube just display homologous fault code, if not have the nixie tube and just have the timing light, so the timing light point homologous fault code.

When the indoor fan motor add the voltage, if not detection pulse signal which feedback by the indoor fan motor, close the output voltage of power supply to the indoor fan motor on the remote controller , after standby 30s, offer the voltage to the indoor fan motor again, if also not detection pulse signal which feedback by the indoor fan motor in 10s, so the remote controller enter into the standby condition, meanwhile, the nixie tube display the homologous fault code E4, this moment, close the conditioner by remote controller, so the fault display relieve.

## **20、 automatic cleaning function**

This function as a special function, just can use under the closing condition, as long as the users choose this function, the full-machine procedure setting mode automatic operation, after operation automatic cleaning, the air conditioner operation according to the remote controller's require(close or timing open).



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