



Service Manual

MODEL:

CCT 50HINVi/o

CCT 70HINVi/o

CCT 100HINVi/o

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※The specifications, designs, and information in this book are subject to change without notice for product improvement.

Part 1

General Information

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1. Model Lists

1.1 Indoor Units

R410A (capacity multiplied by 1000Btu/h)

Type	Function	18	24	36
Super slim cassette	Cooling and heating	●	●	●
Duct	Cooling and heating	●	●	●
Ceiling-floor	Cooling and heating	●	●	●
New Four-way cassette (compact)	Cooling and heating	●		

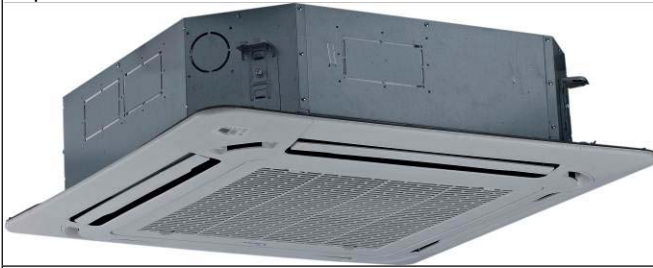
1.2 Outdoor Units

Universal Outdoor unit Model	Compressor type	Compressor Brand	Matched indoor units
CCT 50HINV _o	Rotary	GMCC	CCT 50HINV _i DCT 50HINV _i CFT 50HINV _i
CCT 70HINV _o	Rotary	GMCC	CCT 70HINV _i DCT 70HINV _i CFT 70HINV _i
CCT 100HINV _o	Rotary	Mitsubishi	CCT 100HINV _i DCT 100HINV _i CFT 100HINV _i

2. External Appearance

2.1 Indoor Units

Super slim cassette



Duct



Ceiling-Floor



Compact Four-way cassette



2.2 Outdoor Units



Single fan outdoor unit



Double fan outdoor unit

4. Features

- 4.1. To meet Europe A level, actual EER/COP of new product with BLDC motors of indoor & outdoor unit and DC compressor will be higher than 3.4.
- 4.2. Low ambient kit is standard for outdoor units
- 4.3. Network control function is standard for the indoor units.
- 4.4. Standard auto restart function and follow me function.
- 4.5. Slim cassette with standard remote controller, wire controller and CCM for optional. Med Duct and HESP duct with standard wired controller, remote controller and CCM for optional.
- 4.6. Standard anti-cold air function.
- 4.7. Standard auto defrosting function.
- 4.8. Standard self-diagnose function.
- 4.9. Standard timer function and sleep mode function controlled by controller.

Part 2

Indoor Units

Super Slim Cassette Type.....	7
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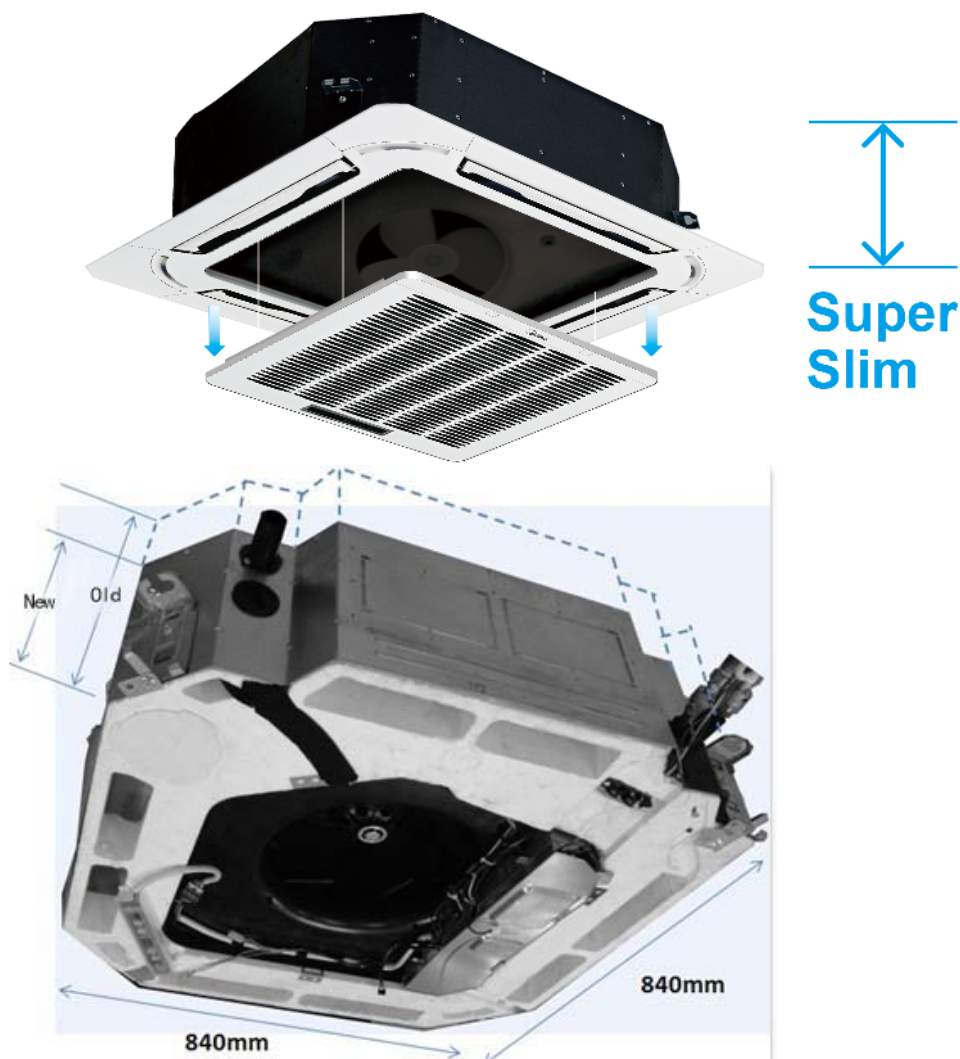
Super Slim Cassette Type

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1. Features

1.1 Overview

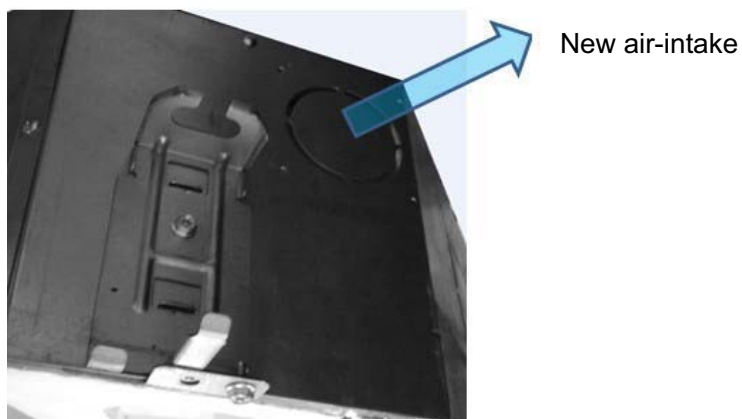
- Compact design, super slim body size, less space requiring in installation
- Each louver can be separately controlled, more comfort air blowing is possible.
- Auto-lifting panel design, more convenient to clean and maintain the filter.(optional)



	Old Cassette		New slim cassette		Volume change
Dimension	18K-24K:	840*230*840	18K-24K:	840*205*840	13.3%↓
	30K:	840*300*840	30K:	840*205*840	47.7%↓
	36K-48K:	840*300*840	36K-48K:	840*245*840	22.4%↓

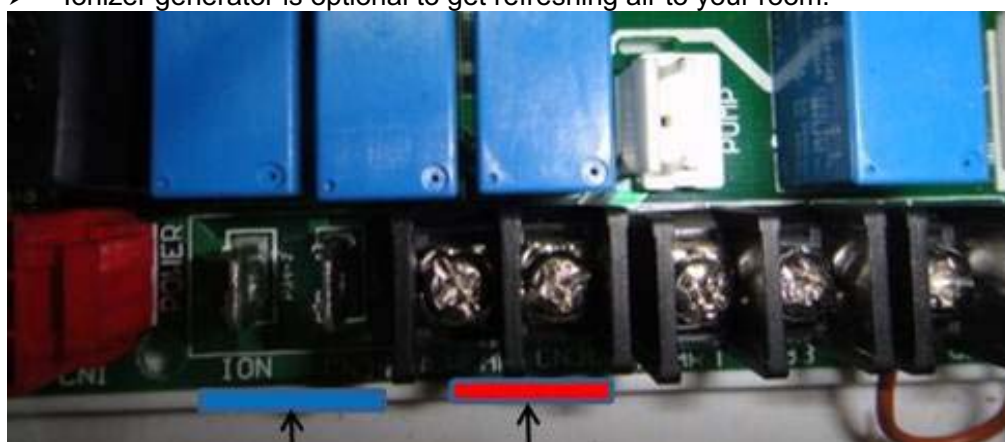
1.2 Fresh air intake function

- Fresh air fulfills air quality more healthy and comfortable.
- Ventilation motor is optional to increase the effect of fresh air.



1.3 Optional ionizer generator

- Ionizer generator is optional to get refreshing air to your room.



Ionizer generator
connector

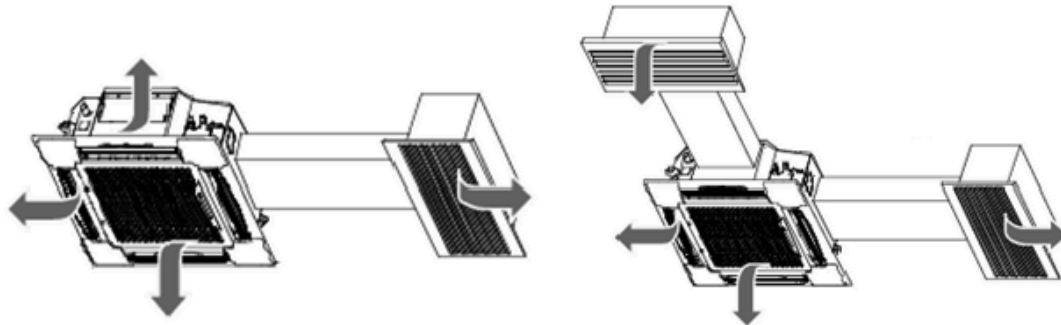
Ventilation motor
connector

- Ionizer can be switched on or off by remote controller. When pressing the Clean Air button on the remote controller, Ionizer will work and the indicator light on display board will shine.



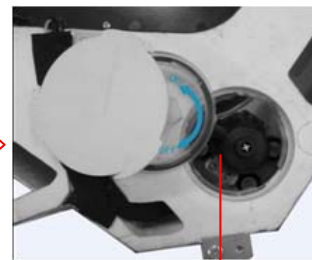
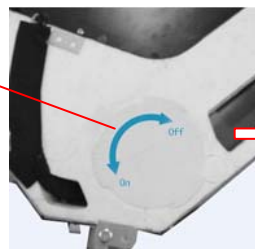
1.4 External air duct design

- Reserve external air duct, more flexible for the air supply.



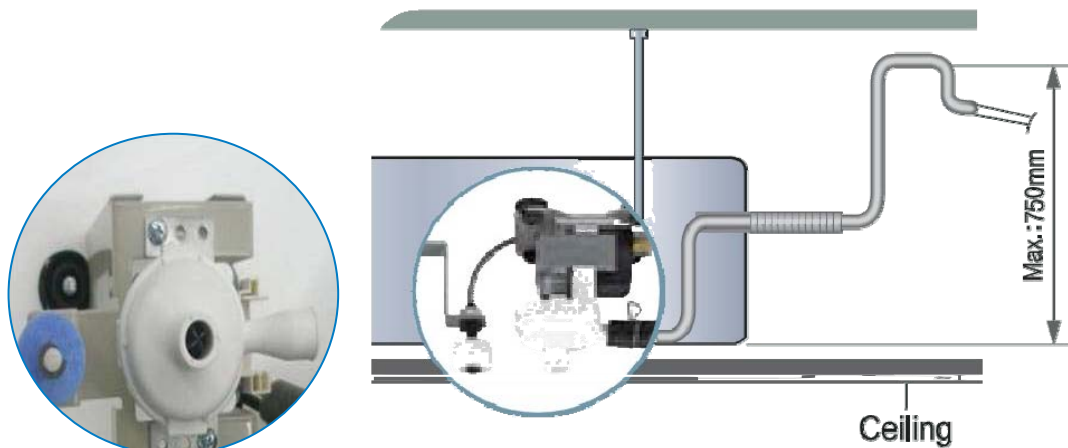
1.5 Built-in draining pump

- Due to the improvement of structure, more convenient to repair or replace the draining pump.



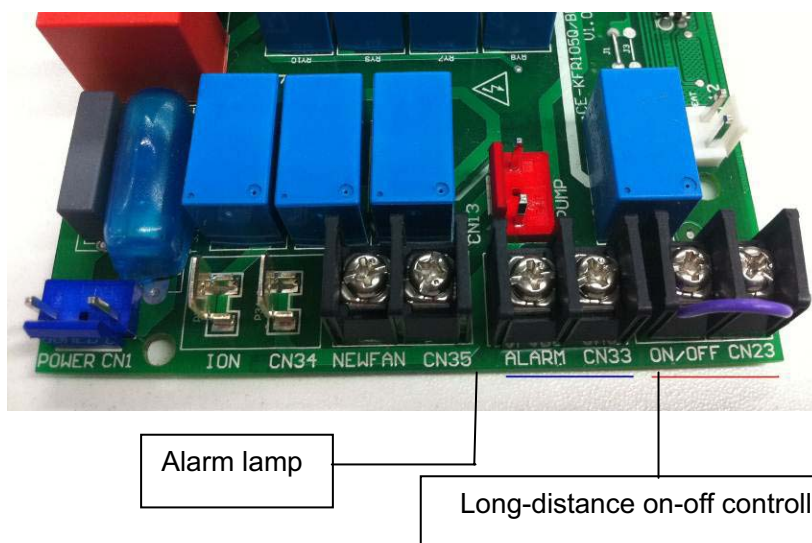
Draining Pump

- Built-in draining pump to make sure condensed water drain out reliably.



1.6 Terminals for alarm lamp and long-distance on-off controller connection are standard

- Reserve terminals for the connection of alarm lamp and long-distance on-off controller, more human control.



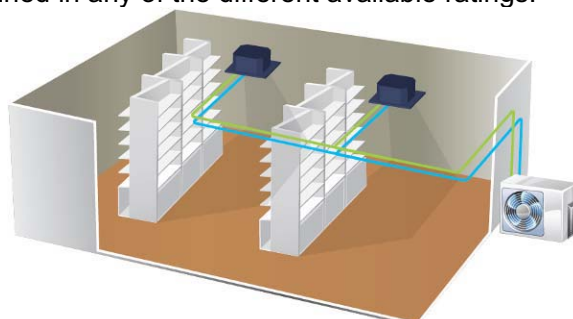
1.7 Optional touch-screen wired controller

- Touch screen wired controller is optional, with error code indication function. Better man-machine conversation interface.
- Undated structure design, 4-way wire layout design, no raised part at backside, more convenient to place the wires and install the device.

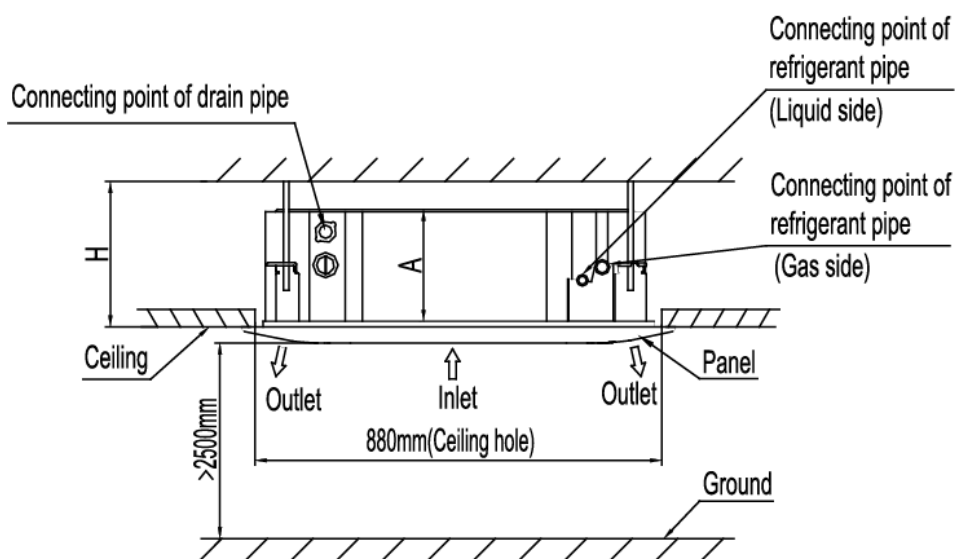
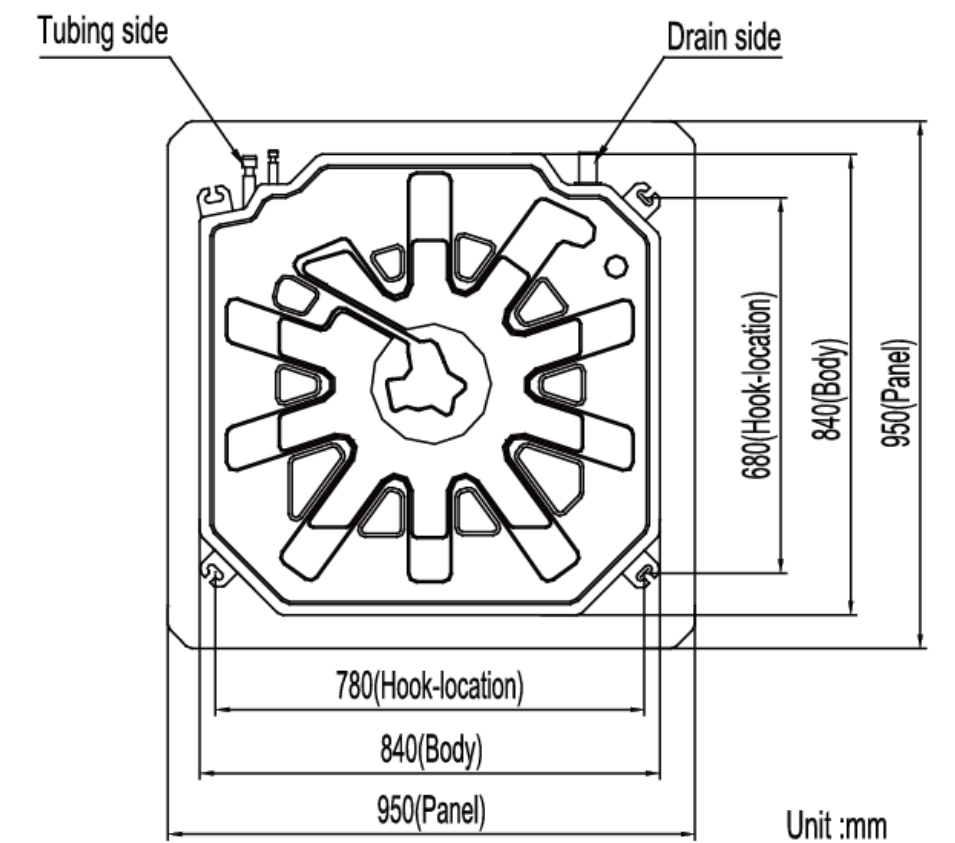


1.8 Twins Combination

- The units can be installed as Twin systems: one outdoor unit can connect with two indoor units. The indoor units can be combined in any of the different available ratings.

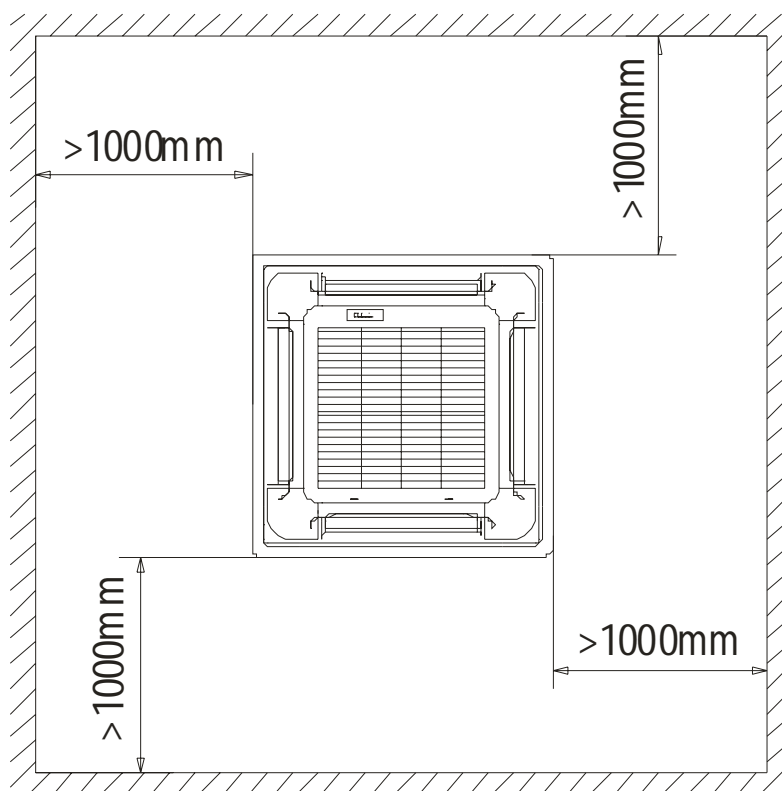


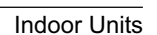
2. Dimensions



Model	A	H
18	205	>235
24	205	>235
36	245	>275

3. Service Space





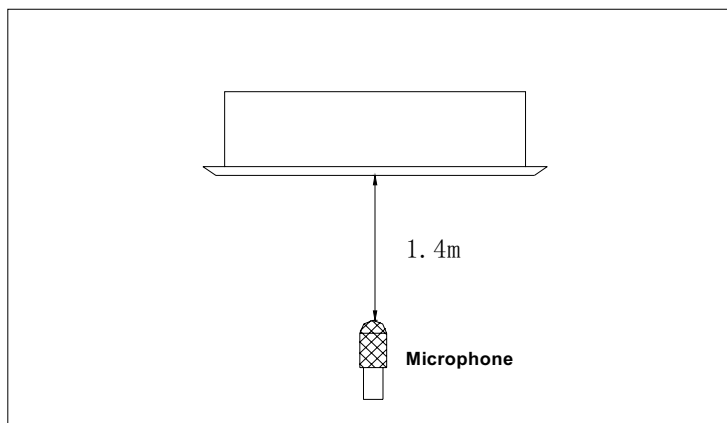
5. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
CCT50HINV _i	50	220-240	198	254	15
CCT70HINV _i	50	220-240	198	254	15
CC100HINV _i	50	220-240	198	254	15

Notes:

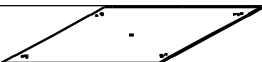













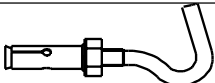
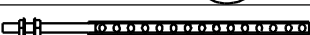
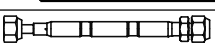
MFA: Max. Fuse Amps. (A)

6. Sound Levels



Model	Noise Power dB(A)	Noise level dB(A)		
		H	M	L
CCT 50HINVİ	58	47	43	36
CCT70HINVİ	59	48	44	40
CCT100HINVİ	64	54	50	45

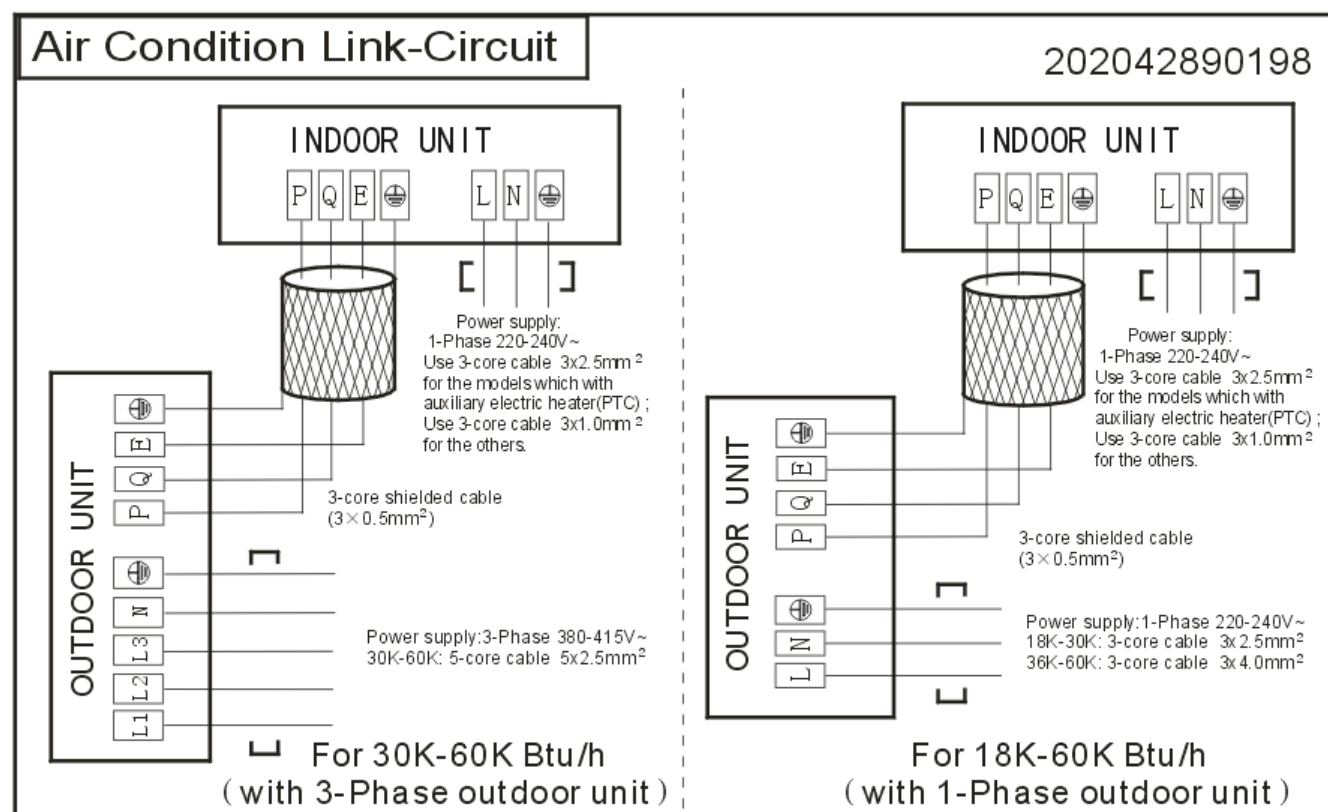
7. Accessories

	Name	Shape	Quantity
INSTALLATION FITTINGS	Installation paper board		1
	Bolt M5		4
Tubing & Fittings	Soundproof / insulation sheath		2
Drainpipe Fittings	Out-let pipe		1
	Out-let pipe sheath		1
	Out-let pipe clasp		1
Remote controller & Its Frame	Remote controller & Its Frame		1
	Remote controller holder		1
	Mounting screw(ST2.9×10-C-H)		2
	Remote controller manual		1
	Alkaline dry batteries (AM4)		2
Others	Owner's manual		1
	Installation manual		1
	Network wires		1
Installation accessory (The product you have might not be provided the following accessories	Expansible hook		4
	Installation hook		4
	Orifice		1

8. The Specification of Power

Model		18000-24000Btu/h	36000 Btu/h	
INDOOR UNIT POWER	Phase	1-phase	1-phase	
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	
	POWER WIRING (mm ²)	3×1.0	3×1.0	
	CIRCUIT BREAKER (A)	15	15	
OUTDOOR UNIT POWER	Phase	1-phase	3-phase	
	Frequency and Voltage	220-240V, 50Hz	380-420V, 50Hz	
	POWER WIRING (mm ²)	3×2.5	5×2.5	
	CIRCUIT BREAKER (A)	30	30	
Indoor/Outdoor Connecting Wiring (Weak Electric Signal) (mm ²)		3×0.5	3×0.5	
Indoor/Outdoor Connecting Wiring (Strong Electric Signal) (mm ²)		—————	—————	—————

9. Field Wiring

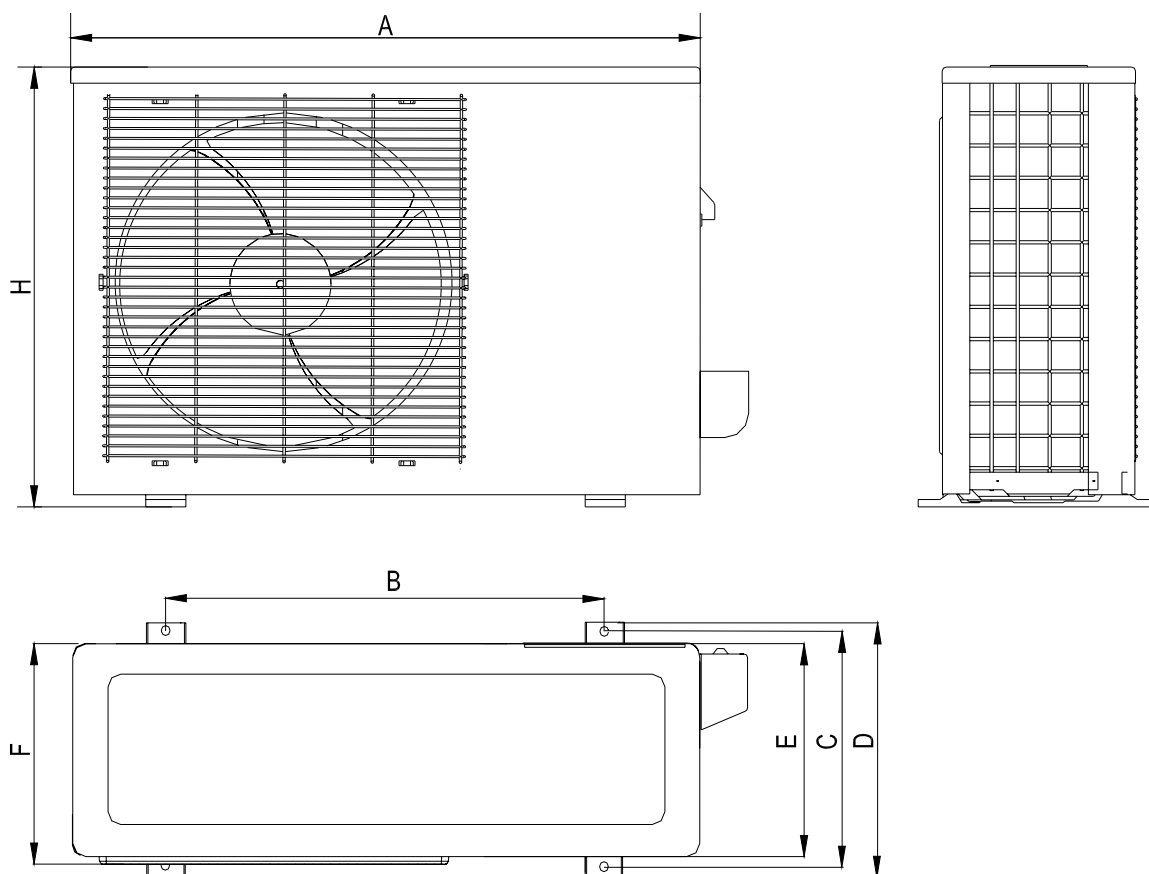


Part 3

Outdoor Units

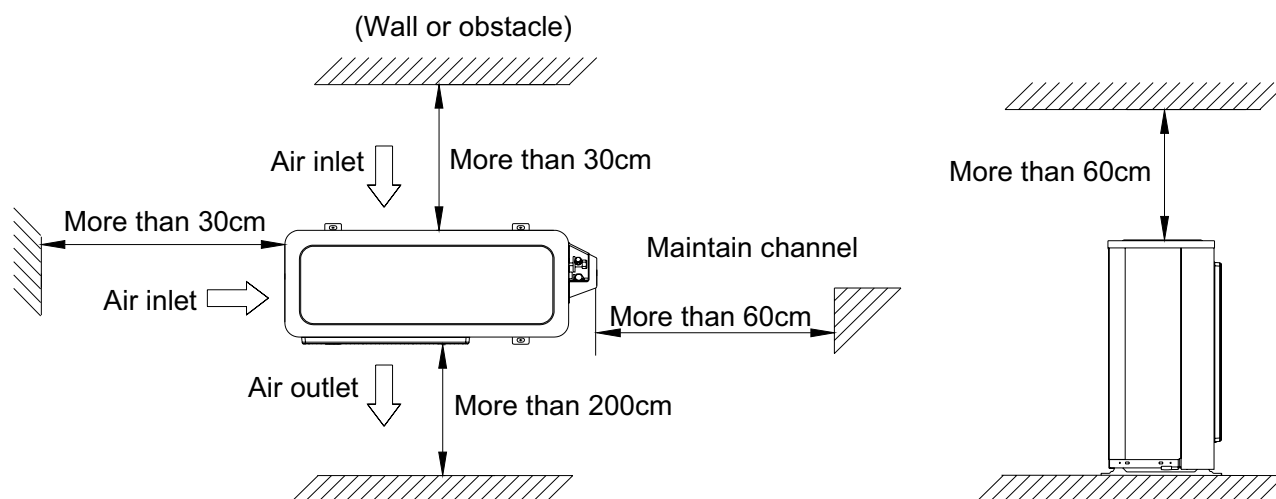
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1. Dimensions



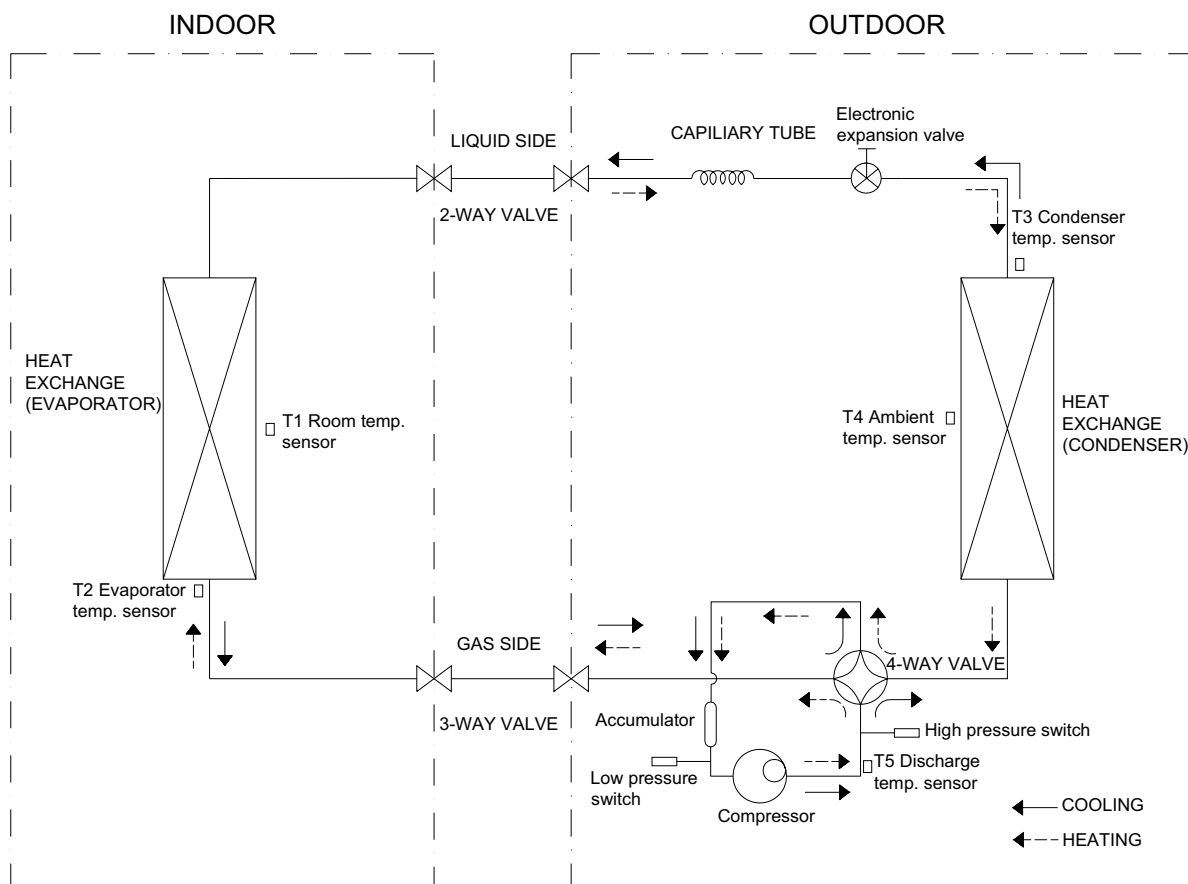
Model	Unit: mm						
	A	B	C	D	E	F	H
CCT 50HINV _o	842	560	335	360	312	324	695
CCT 70HINV _o	895	590	333	355	302	313	862
CCT 100HINV _o	990	624	366	396	340	354	966

2. Service Space

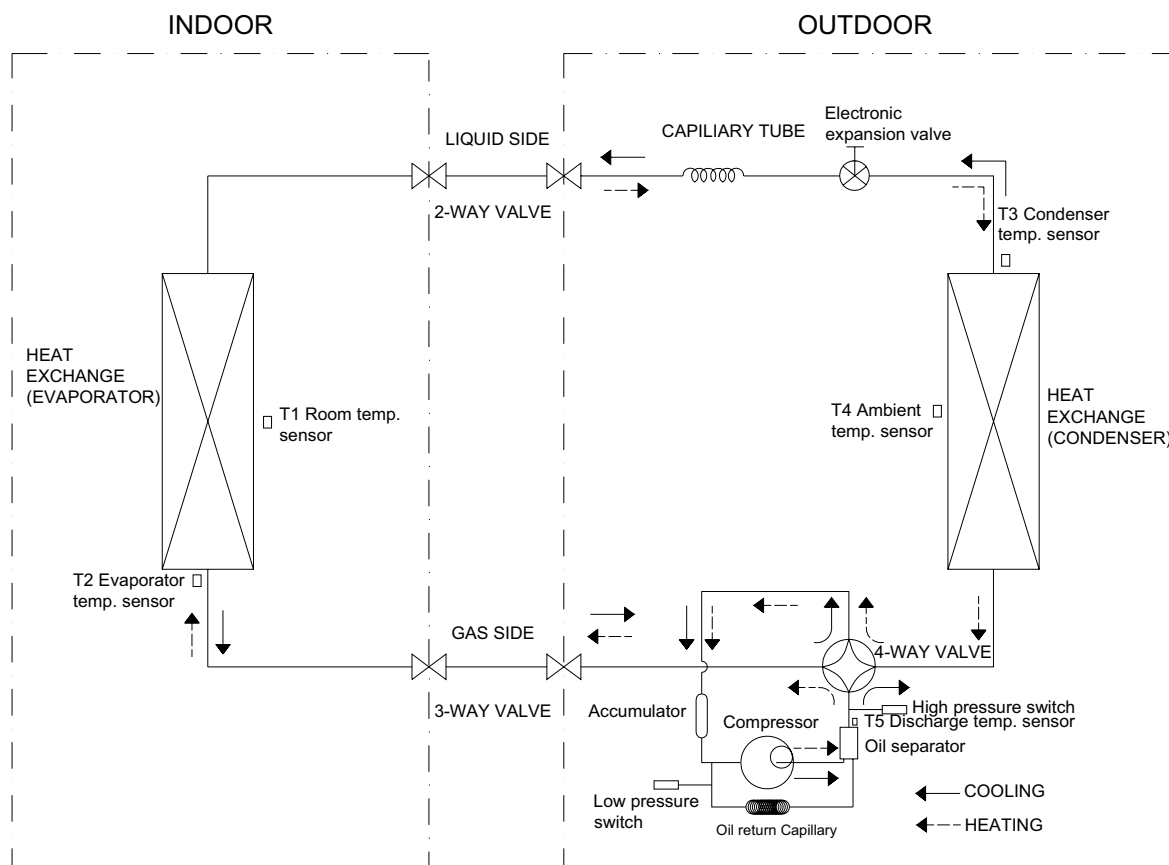


3. Piping Diagrams

CCT 50HINV_o CCT 70HINV_o



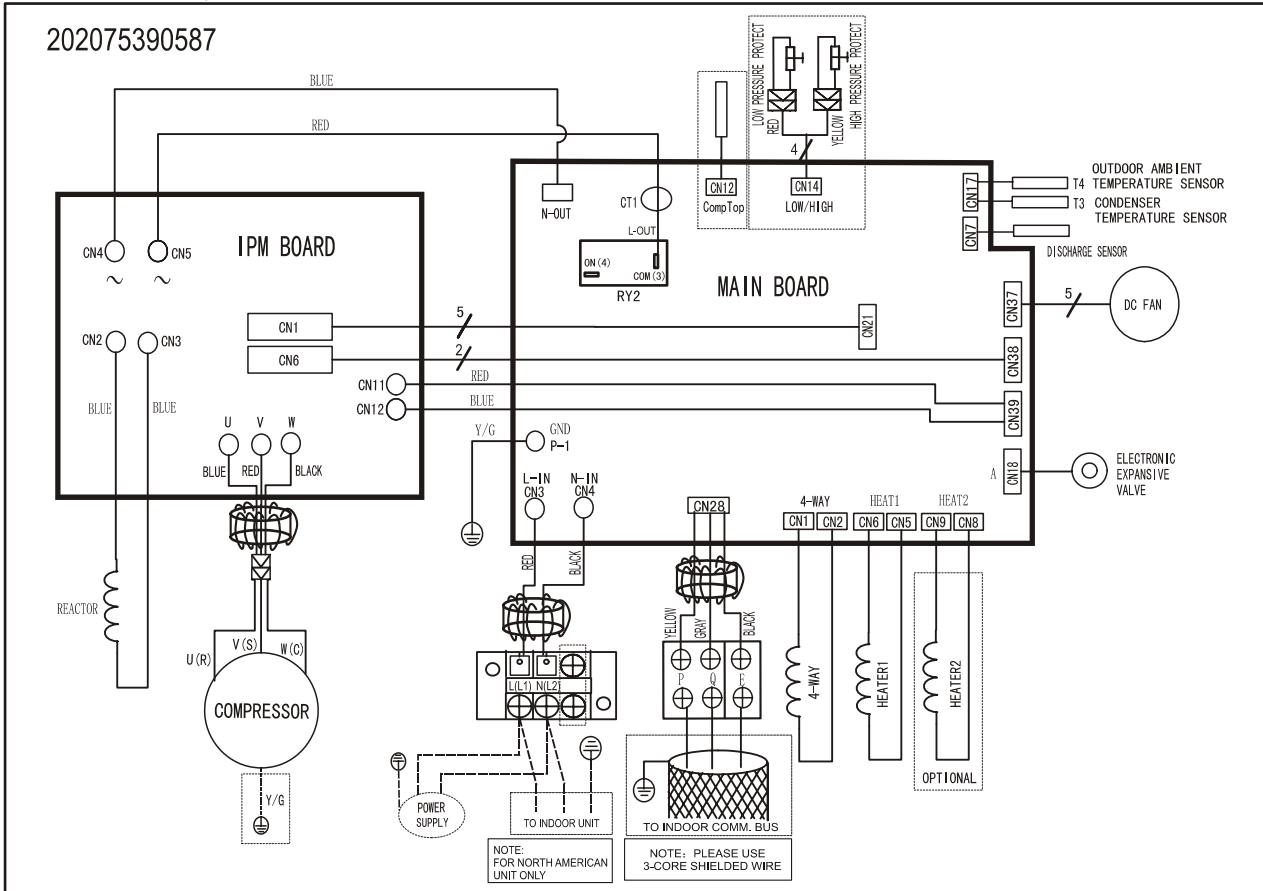
CCT 100HINV_o

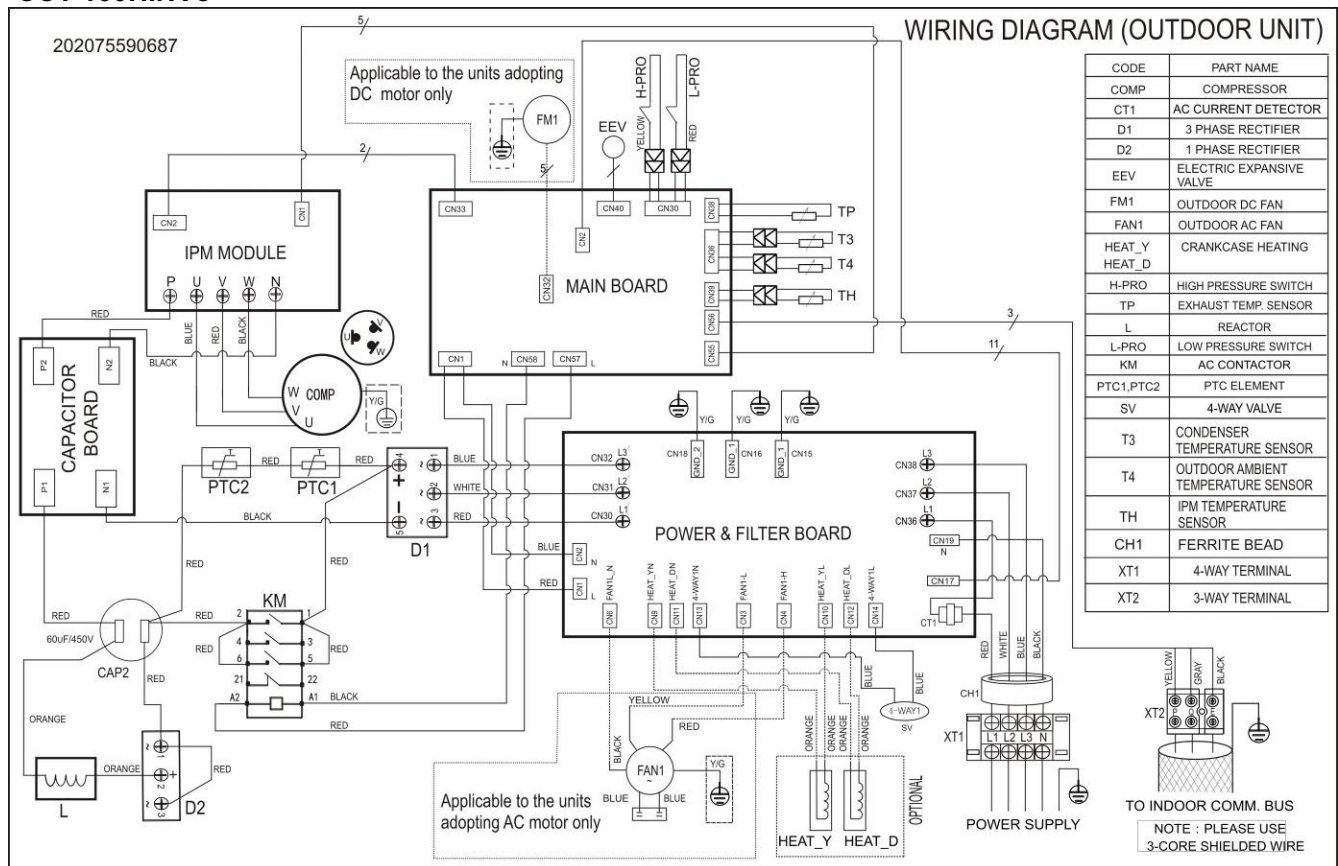


4. Wiring Diagrams

CCT 50HINV_o, CCT 70HINV_o

202075390587



CCT 100HINV₀

5. Electric Characteristics

Model	Outdoor Unit			
	Hz	Voltage	Min.	Max.
CCT50HINV _o	50	220-240V	198V	254V
CCT70HINV _o	50	220-240V	198V	254V
CCT100HINV _o	50	380-415V	342V	440V

6. Operation Limits

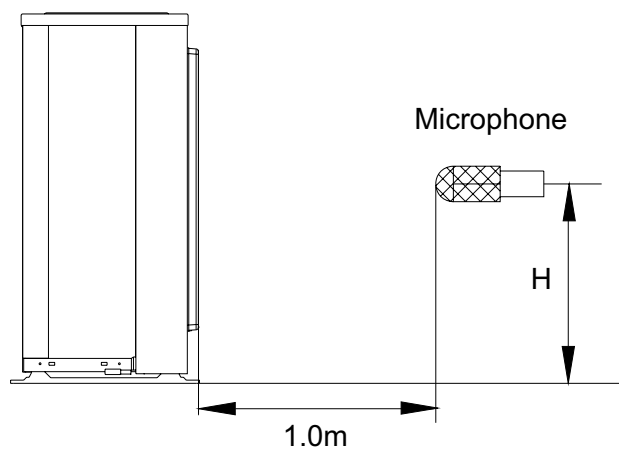
Mode \ Temperature	Cooling operation	Heating operation
Room temperature	$\geq 17^{\circ}\text{C}$	$\leq 30^{\circ}\text{C}$
Outdoor temperature	$-15^{\circ}\text{C} \sim 50^{\circ}\text{C}$	$-15^{\circ}\text{C} \sim 24^{\circ}\text{C}$

CAUTION:

1. If the air conditioner is used beyond the above conditions, certain safety protection features may come into operation and cause the unit to operate abnormally.
2. The room relative humidity should be less than 80%. If the air conditioner operates beyond this figure, the surface of the air conditioner may attract condensation. Please set the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.
3. The optimum performance will be achieved during this operating temperature zone.

7. Sound Levels

Outdoor Unit



Note: $H = 0.5 \times \text{height of outdoor unit}$

Model	Sound Power dB(A)
CCT 50HINV _o	65
CCT 70HINV _o	69
CCT 100HINV _o	70

11. Test operation

11.1 The test operation must be carried out after the entire installation has been completed.

11.2 Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop valves are both opened.
- The air conditioner is pre-heated by turning on the power.

11.3 Test operation

Set the air conditioner under the mode of "COOLING" by remote controller, and check the following points.

Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Part 5

Electrical Control System

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1. Electrical Control Function

1.1 Definition

T1: Indoor room temperature

T2: Coil temperature of indoor heat exchanger middle.

T2B: Coil temperature of indoor heat exchanger outlet.

T3: Coil temperature of condenser

T4: Outdoor ambient temperature

T5: Compressor discharge temperature

1.2 Main Protection

1.2.1 Time delay at restart for compressor.

1.2.2 Temperature protection of compressor top

The unit will stop working when the compressor top temp. protector cut off, and will restart after the compressor top temp. protector restart.

1.2.3 Temperature protection of compressor discharge

When the compressor discharge temp. is getting higher, the running frequency will be limited as below rules:

----If $102^{\circ}\text{C} < T5 < 115^{\circ}\text{C}$, decrease the frequency to the lower level every 2 minutes till to F1.

---If $T5 > 115^{\circ}\text{C}$ for 10 seconds, the compressor will stop and restart till $T5 < 90^{\circ}\text{C}$.

1.2.4 Sensor protection at open circuit and breaking disconnection.

1.2.5 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.

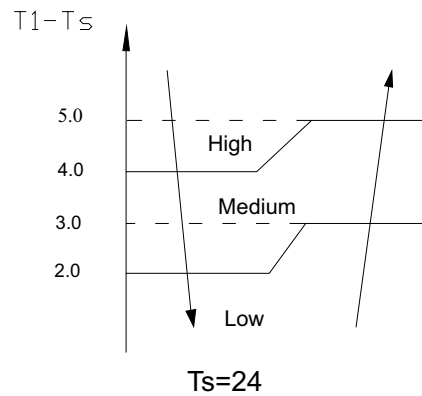
1.2.6 Fan Speed is out of control(for DC motor)

When Indoor Fan Speed keeps too low (For A5 duct&Ceiling&floor,300RPM,For Super slim cassette,200RPM) for 50s, the unit will stop and the LED will display the failure

1.3 Operation Modes and Functions

1.3.1 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:

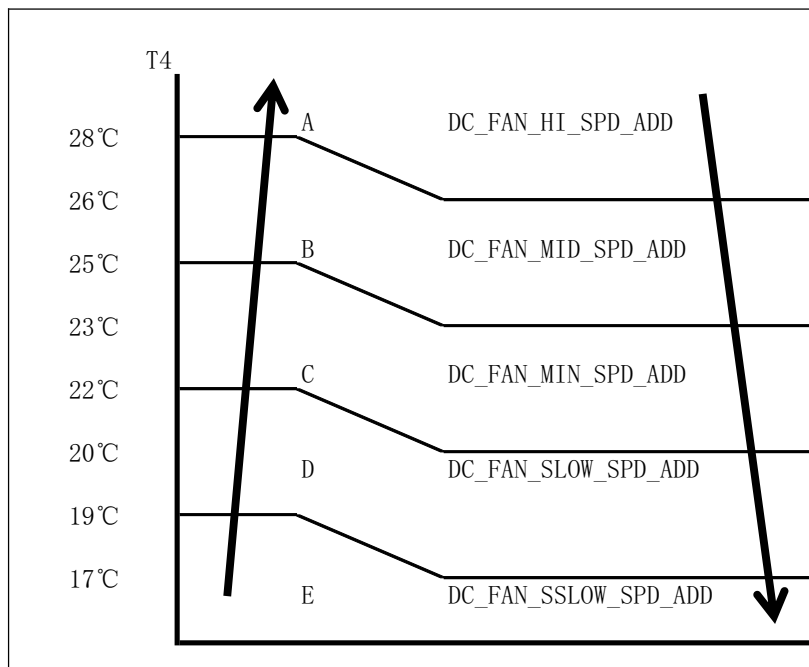


1.3.2 Cooling Mode

1.3.2.1 Outdoor PMW open angle control

The unit is working in cooling mode with the EXV open 300P for 3 minutes, then adjusting PMW open angle according to the temperature of compressor discharge every 2 minutes.

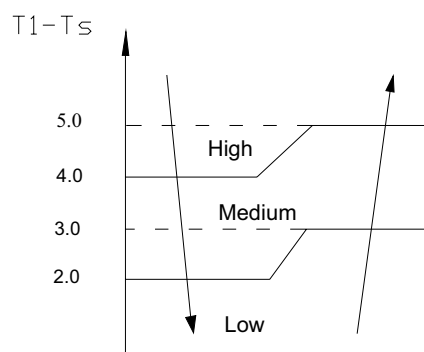
1.3.2.2 Outdoor fan running rules



1.3.2.3 Indoor fan running rules

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

The auto fan:



1.3.2.4 Evaporator low temperature T2 protection.

When $T2 < 2^{\circ}\text{C}$ and lasts for 3 minutes, the indoor has no capacity demand and resume till $T2 \geq 7^{\circ}\text{C}$.

1.3.2.5 Condenser high temperature T3 protection

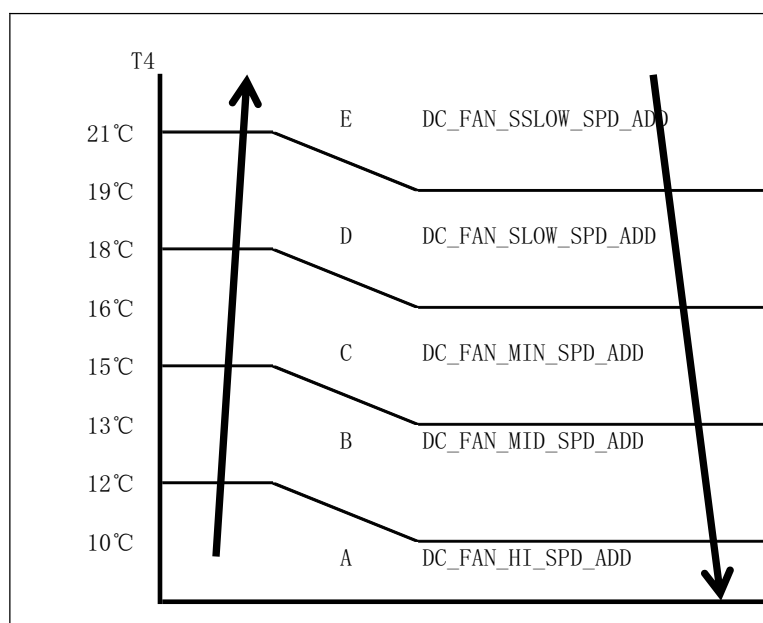
When $T3 \geq 65^{\circ}\text{C}$ for 3 seconds, the compressor will shut off. When $T3 < 52$, the compressor will restart.

1.3.3 Heating Mode

1.3.2.1 Outdoor PMW open angle control

The unit is working in heating mode with the EXV open 300P for 3 minutes, then adjusting PMW open angle according to the temperature of compressor discharge every 2 minutes.

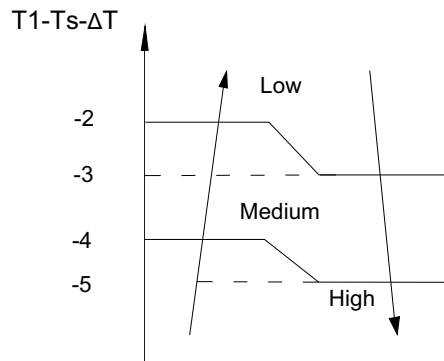
1.3.3.2 Outdoor fan running rules:



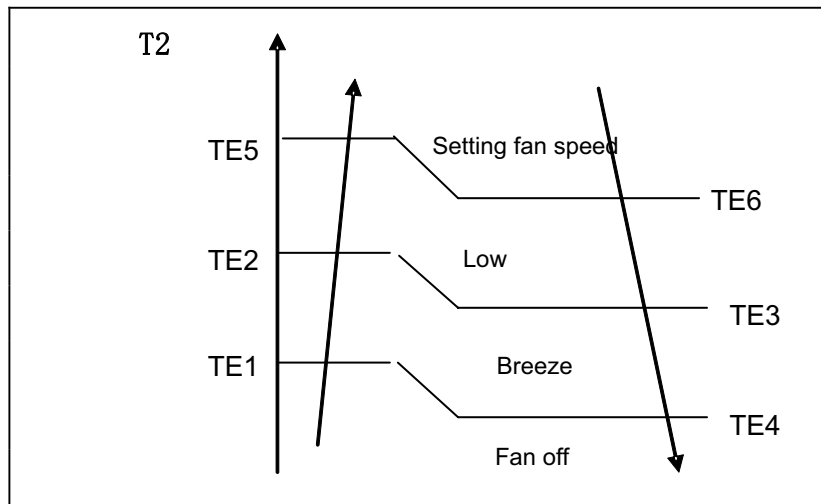
1.3.3.3 Indoor fan running rules:

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.

Auto fan action:

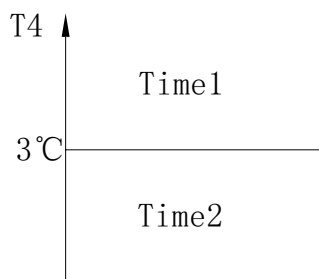


Anti-cold Wind Function:



1.3.3.4 Defrosting mode:

Condition of defrosting:



Time conditions:

time1

Time conditions(Meet the following conditions)

1. Running in heating mode
2. $T4 \geq 3^{\circ}\text{C}$
3. Compressor is on
4. $T3 \leq \text{TempEnterDefrost_ADD } ^{\circ}\text{C}$

Cleared conditions (Meet any one of the following conditions)

1. Compressor is off.
2. $T3 > \text{TempEnterDefrost_ADD } ^{\circ}\text{C}$

Time2

Time conditions(Meet the following conditions)

1. Running in heating mode

2. $T_4 < 3^{\circ}\text{C}$
3. Compressor is on
4. $T_3 \leq \text{TempEnterDefrost_ADD } ^{\circ}\text{C}$

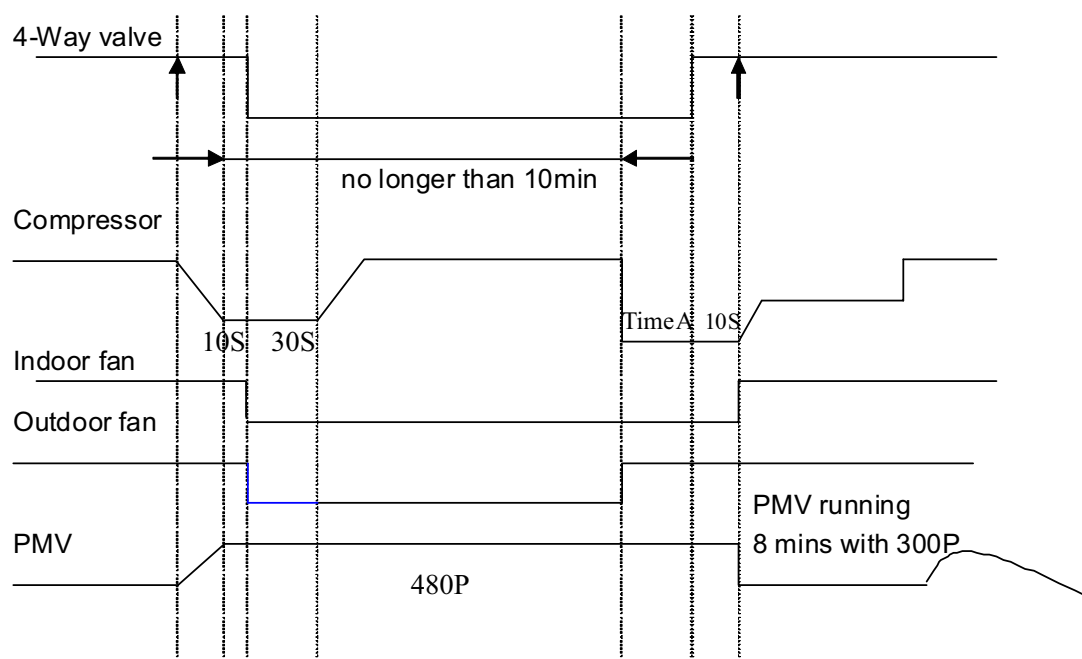
Cleared conditions (Meet any one of the following conditions)

1. Compressor is off and $T_3 > \text{TempEnterDefrost_ADD} + 2^{\circ}\text{C}$ last for 20 minutes
2. Running in cooling mode.
3. Compressor is off for 1 hour.

Condition of entry defrosting:

$\text{time1} + \text{time2} \geq 40$ minutes, When defrosting is end, time1 and time2 are cleared.

Defrosting action:



Condition of ending defrosting:

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

- ① The defrosting time achieves 10min;
- ② $T_3 \geq 15^{\circ}\text{C}$;
- ③ $T_3 \geq 7^{\circ}\text{C}$ for 60seconds.

1.3.3.5 High evaporator coil temp.T2 protection:

$T_2 > 60^{\circ}\text{C}$, the compressor will stop and restart when $T_2 < 54^{\circ}\text{C}$.

1.3.4 Auto-mode

This mode can be chosen with remote controller and the setting temperature can be changed between $17 \sim 30^{\circ}\text{C}$.

In auto mode, the machine will choose cooling, heating or fan-only mode according to ΔT ($\Delta T = T_1 - T_s$).

$\Delta T = T_1 - T_s$	Running mode
$\Delta T \geq 2^\circ\text{C}$	Cooling
$-1 \leq \Delta T < 2^\circ\text{C}$	Fan-only
$\Delta T < -1^\circ\text{C}$	Heating

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

The louver operates same as in relevant mode.

If the machine switches mode between heating and cooling, the compressor will keep stopping for 15 minutes and then choose mode according to $T_1 - T_s$.

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

1.3.5 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.

1.3.6 Timer function

1.3.6.1 Timing range is 24 hours.

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

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

1.3.6.4 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.

1.3.6.5 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.

1.3.6.6 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.

1.3.6.7 The setting time is relative time.

1.3.7 Economy function

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

1.3.7.2. Operation process in sleep mode is as follow:

When cooling, the setting temperature rises 1°C (be lower than 30°C) 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 (be higher than 17°C) 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).

1.3.7.3 Operation time in sleep mode is 7 hours. After 7 hours the AC quits this mode but doesn't turns off

1.3.7.4 Timer setting is available

1.3.8 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 Swing function) automatically after 3 minutes when power returns.

1.3.9 Drain pump control (For Duct & Cassette)

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) 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,

1.3.10 Follow me

- 1) If the indoor PCB receives the signal which results from pressing the FOLLOW ME button on 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 not respond according to the setting temperature from follow-me signal every 3 minutes.
- 3) The PCB will take action to the mode change information from remote controller signal, and the follow-me function will be turned off. (if the wired remote controller does not initiate follow me function).
- 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 collection function of room temperature sensor will be available, the PCB will control the unit according to the room temperature detected from its own room temperature sensor and setting temperature.
- 5) When the indoor PCB receives the follow-me signal from wired remote controller, the control is the same as that from wireless remote controller, but buzzer will not respond. When the PCB receives turning-off follow-me signal from wired remote controller, the unit will quit follow-me function at once. The follow-me function controlled by wired remote controller prevails that by wireless remote controller.

1.3.11 Point Check Function

There is a check switch in outdoor PCB.

Press the switch SW1 to check the states of unit when the unit is running.

Press the switch N times it will display the content corresponding to No. N. After getting into the check function, it will display No. N with 1.5s, meanwhile the low bit decimal of digit display flashing, indicated to get into the check function display. After 1.5s, it will display the content corresponding to No. N.

the digital display tube will display the follow procedure when push SW1 each time.

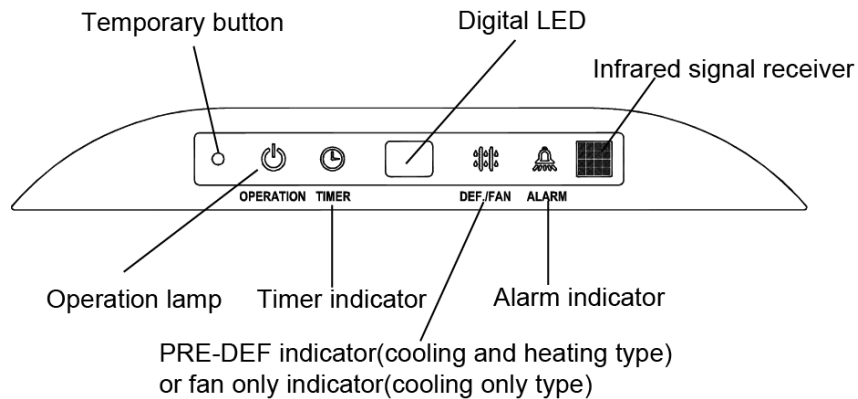
N	Display	Remark		
00	Normal display	Display running frequency, running state or malfunction code		
01	Indoor unit capacity demand code	Actual data*HP*10 If capacity demand code is higher than 99, the digital display tube will show single digit and tens digit. (For example, the digital display tube show “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			
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 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: “——”		
08	Outdoor ambient temp.(T4)			
09	Compressor discharge temp.(Tp)	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 Tp.	
		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.
19	Condenser pipe temp. 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 capacity demand is 0, , the digital display tube will show "0. If the indoor unit is not connected, the digital display tube will show: "——"(heating T2, cooling T2B)
20	Condenser pipe temp. of 2# indoor unit	
21	Condenser pipe temp. of 3# indoor unit	
22	1# 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). If the indoor unit is not connected, the digital display tube will show: "——"
23	2# Indoor unit capacity demand code	
24	3# Indoor unit capacity demand code	

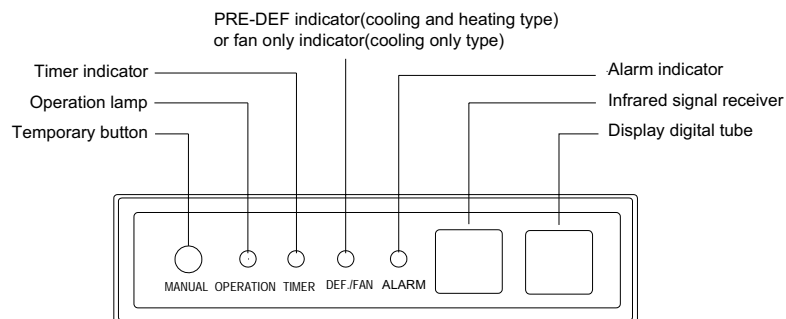
2. Troubleshooting

2.1 Display board

2.1.1 Icon explanation on indoor display board (Super slim cassette).



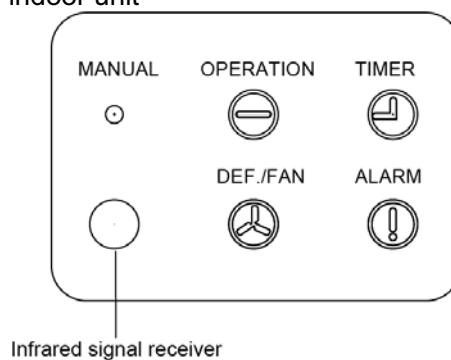
2.1.2 Icon explanation on indoor display board (A5 Duct)



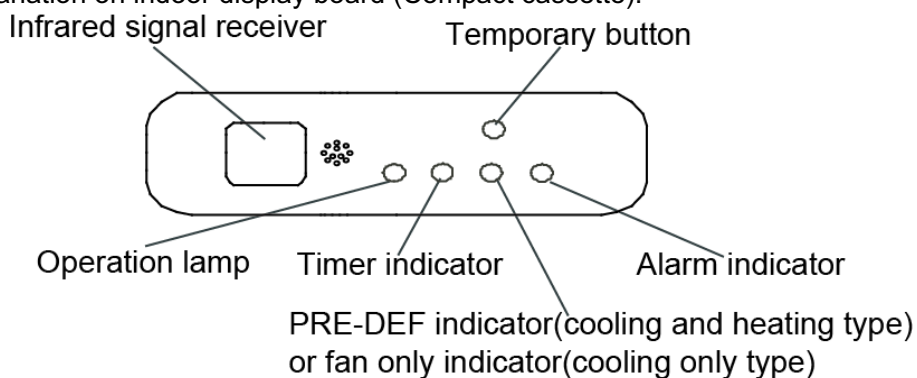
2.1.3 Auto-lifting panel of 4 way cassette



2.1.4 Display board of Ceiling-floor indoor unit



2.1.5 Icon explanation on indoor display board (Compact cassette).



2.2 Indoor unit malfunction

NO.	Malfunction	Defrosting lamp	Alarm lamp	Running lamp	Timer lamp	Display(digital tube)
1	Communication malfunction between indoor and outdoor units.	X	X	X	☆	E1
2	Open or short circuit of T1 temperature sensor	X	X	☆	X	E2
3	Open or short circuit of T2 temperature sensor	X	X	☆	X	E3
4	Open or short circuit of T2B temperature sensor	X	X	☆	X	E4
5	Full-water malfunction	X	☆	X	X	EE
6	Indoor EEPROM malfunction	☆	X	X	X	E7
7	Outdoor unit malfunction	X	◎	X	X	Ed
8	Indoor fan speed is out of control	☆	☆	X	X	E8
9	Communication malfunction between main PCB and up-down panel PCB	☆	☆	☆	X	F0
10	Up-down panel malfunction	☆	☆	X	☆	F1
11	Up-down panel is not closed	☆	☆	X	O	F2
12	Communication malfunction between master unit and slave unit	X	☆	X	☆	F3
13	Other malfunction of master unit or slave unit	X	☆	☆	X	F4
O (on) X(off) ☆(flash at 5Hz) ◎(flash at 0.5Hz)						

2.3 Outdoor unit malfunction

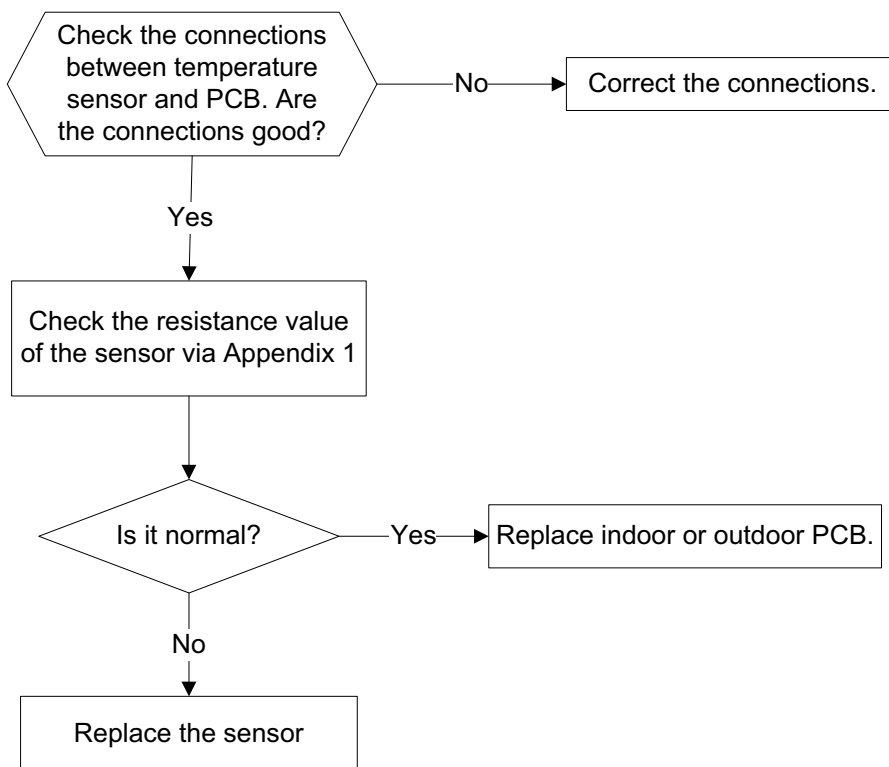
Display	Malfunction or Protection
E0	Outdoor EEPROM malfunction
E2	Indoor / outdoor units communication error
E3	Communication malfunction between IPM board and outdoor main board
E4	Open or short circuit of T3 or T4 temperature sensor
E5	Voltage protection of compressor
E6	PFC module protection (For MOU-36HFN1-QRC4,MOU-36HFN1-QRC8)
P0	Top temperature protection of compressor
P1	High pressure protection (For 36k models)
P2	Low pressure protection(For 36k models)
P3	Current protection of compressor
P4	Discharge temperature protection of compressor
P5	High temperature protection of condenser
P6	IPM module protection
P7	High temperature protection of evaporator

In low ambient cooling mode, the LED displays “LC” or alternative displays between running frequency and “LC”(each displays 0.5s)

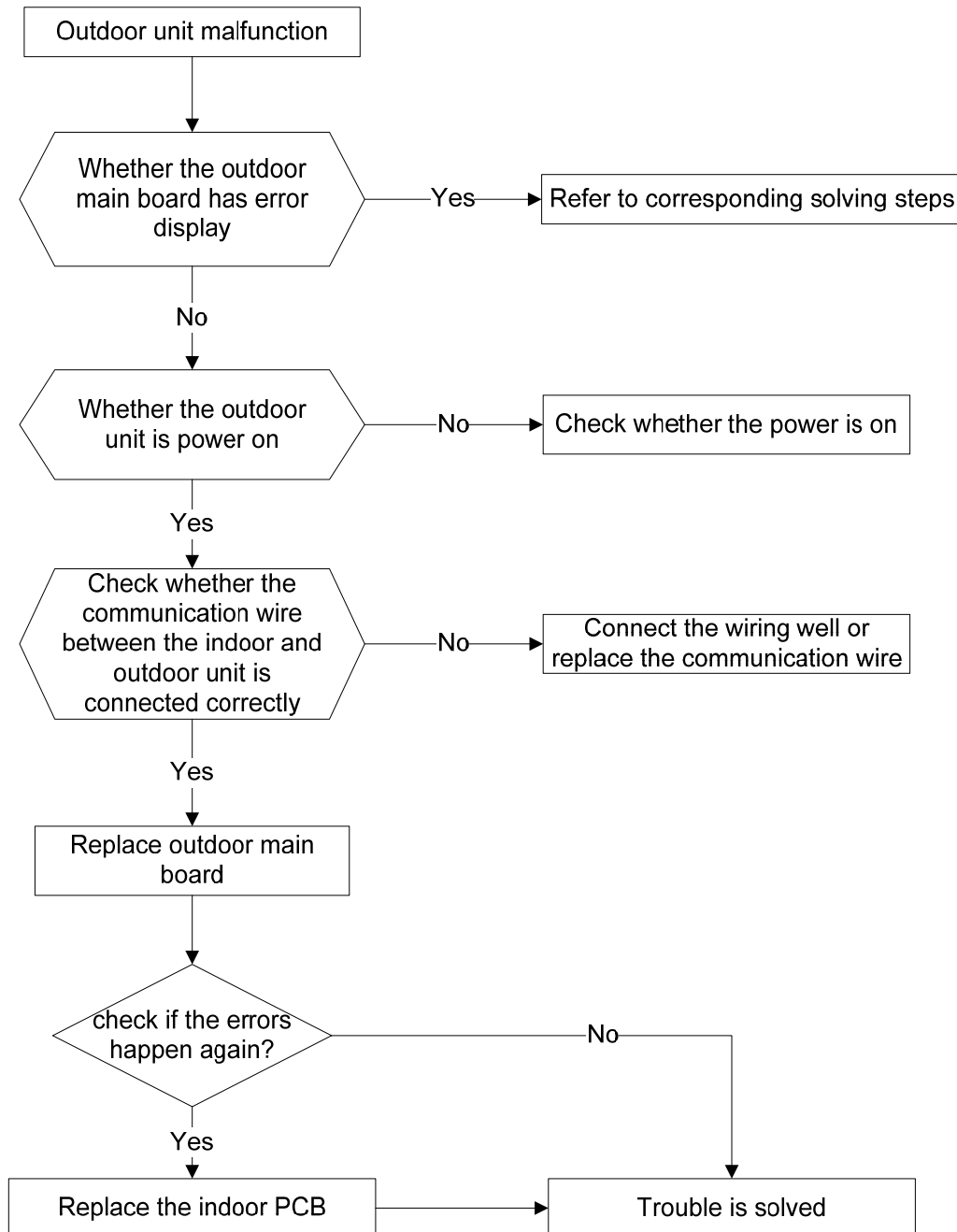
2.4 Solving steps for typical malfunction

2.4.1 For the indoor unit

2.4.1.1 Open or short circuit of temperature sensor

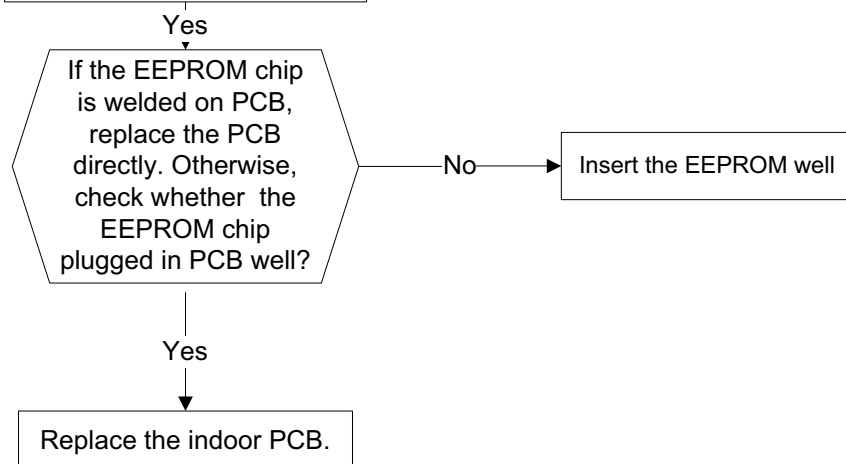


2.4.1.2. Outdoor unit malfunction

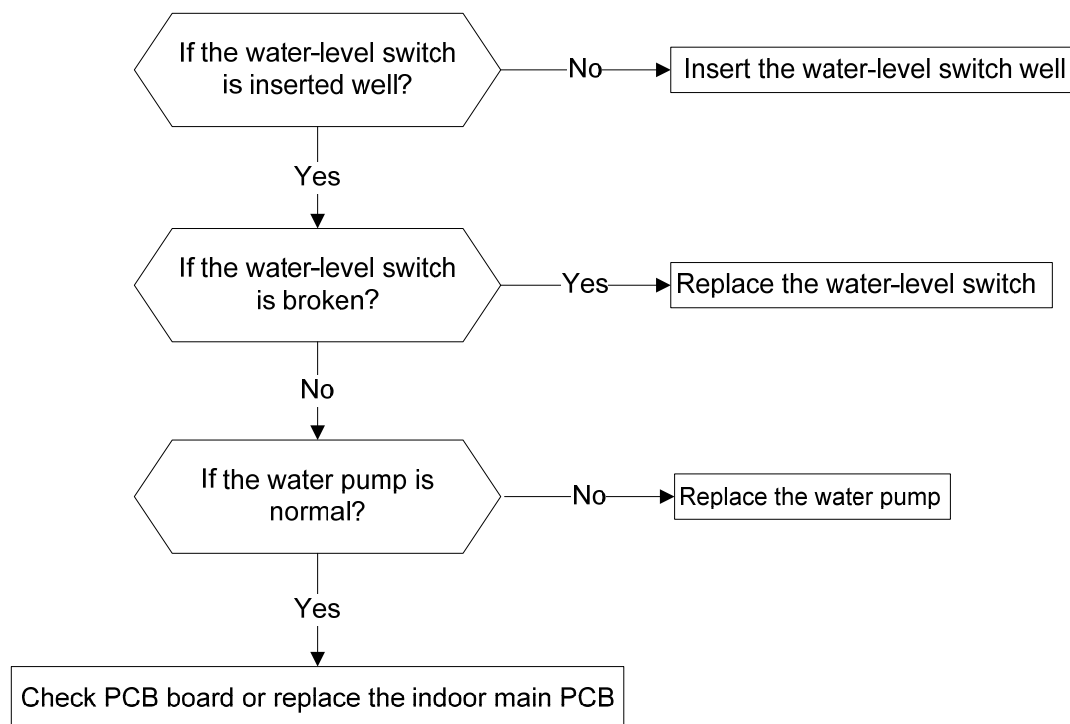


2.4.1.3. Indoor EEPROM malfunction

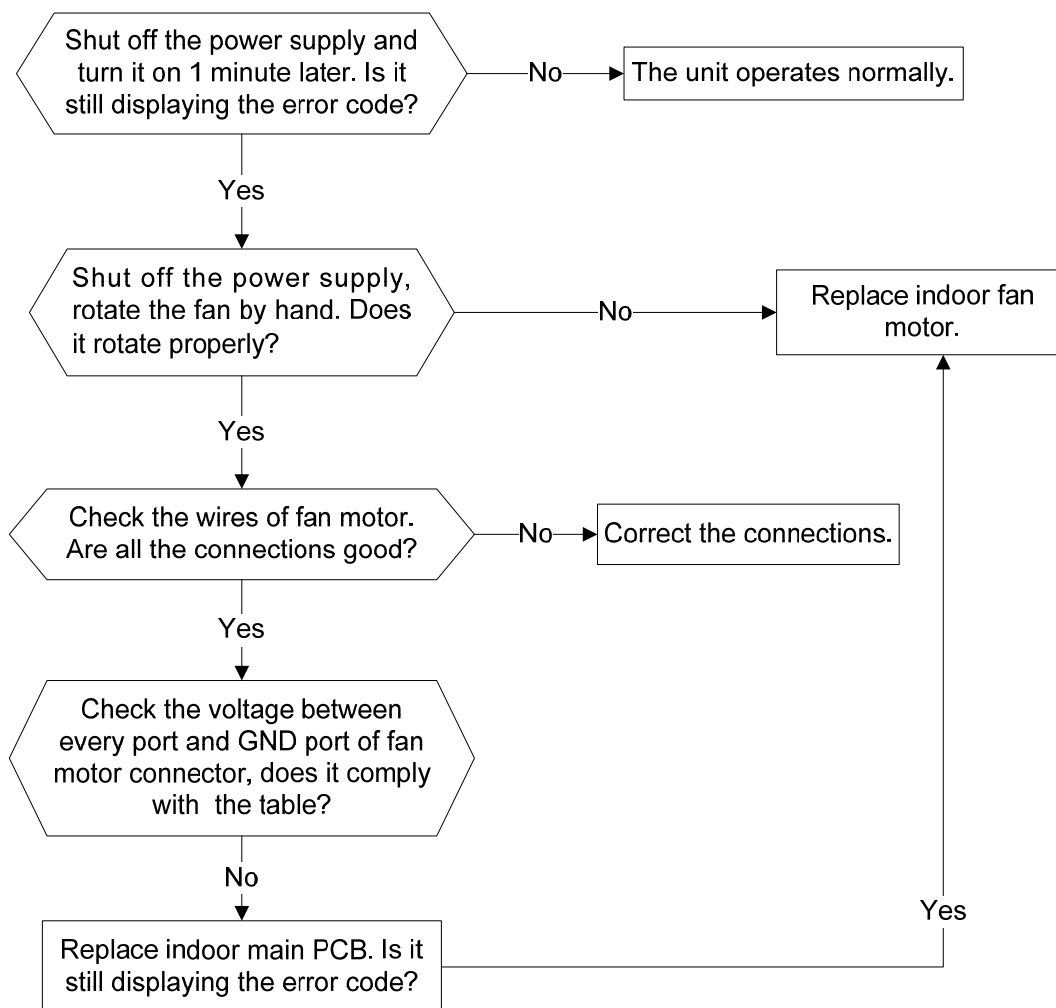
Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code?



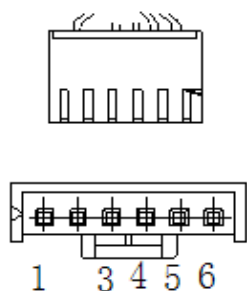
2.4.1.4. Full-water malfunction



2.4.1.5. Indoor fan Speed has been out of control. (Only for the units used DC motor)



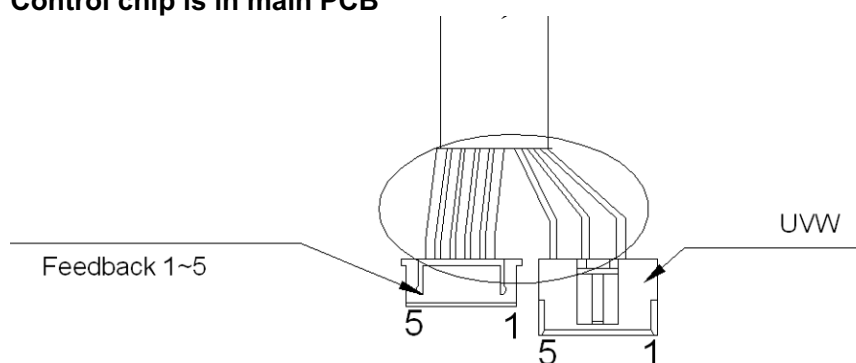
DC motor voltage input and output (control chip is inside the motor)



DC motor voltage input and output

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	192V~380V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	13.5-16.5V
5	Yellow	Vsp	0~6.5V
6	Blue	FG	15V

Control chip is in main PCB



NO.	1	2	3	4	5
Color	Orange	Grey	White	Pink	Black
Signal	Hu	Hv	Hw	Vcc	GND

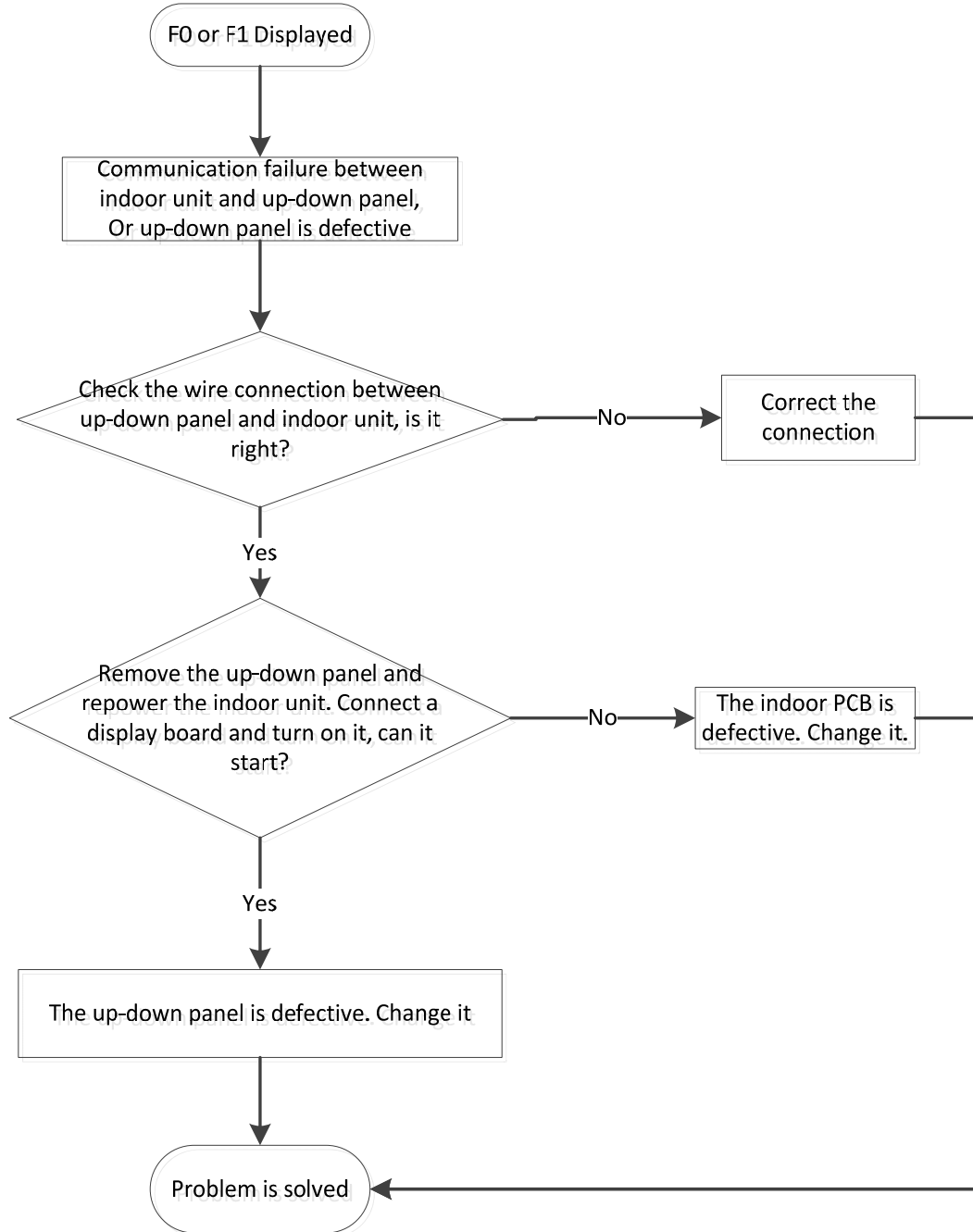
Color	Red	Blue	Yellow
Signal	W	V	U

- 1) Release the UWV connector. Measure the resistance of U-V, U-W, V-W. If the resistance is not equal to each other, the fan motor must have problems and need to be replaced. Otherwise, go to step 2.
- 2) Power on and when the unit is in standby, measure the voltage of pin4-5 in feedback signal connector. If the value is not 5V, change the PCB. Otherwise, go to step 3.
- 3) Rotate the fan by hand, measure the voltage of pin1-5, pin 2-5 and pin 3-5 in feedback signal connector. If any voltage is not positive voltage fluctuation, the fan motor must have problems and need to be replaced.

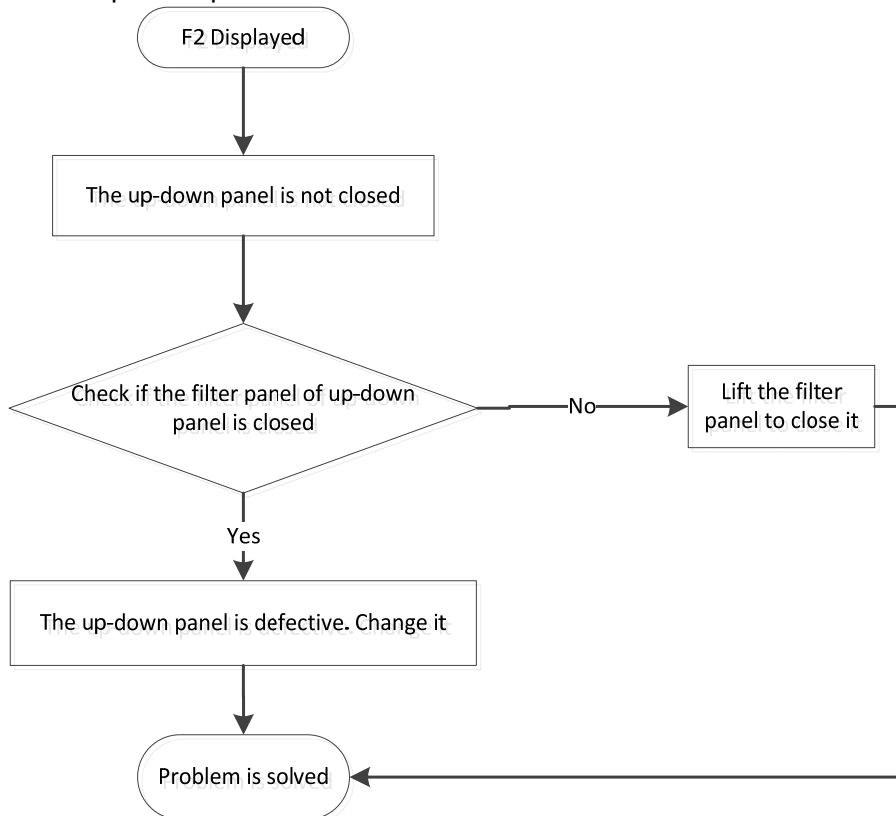
2.4.2 For the super-slim cassette with up-down panel

2.4.2.1 Communication error between indoor unit and up-down panel

2.4.2.2 Up-down panel is defective

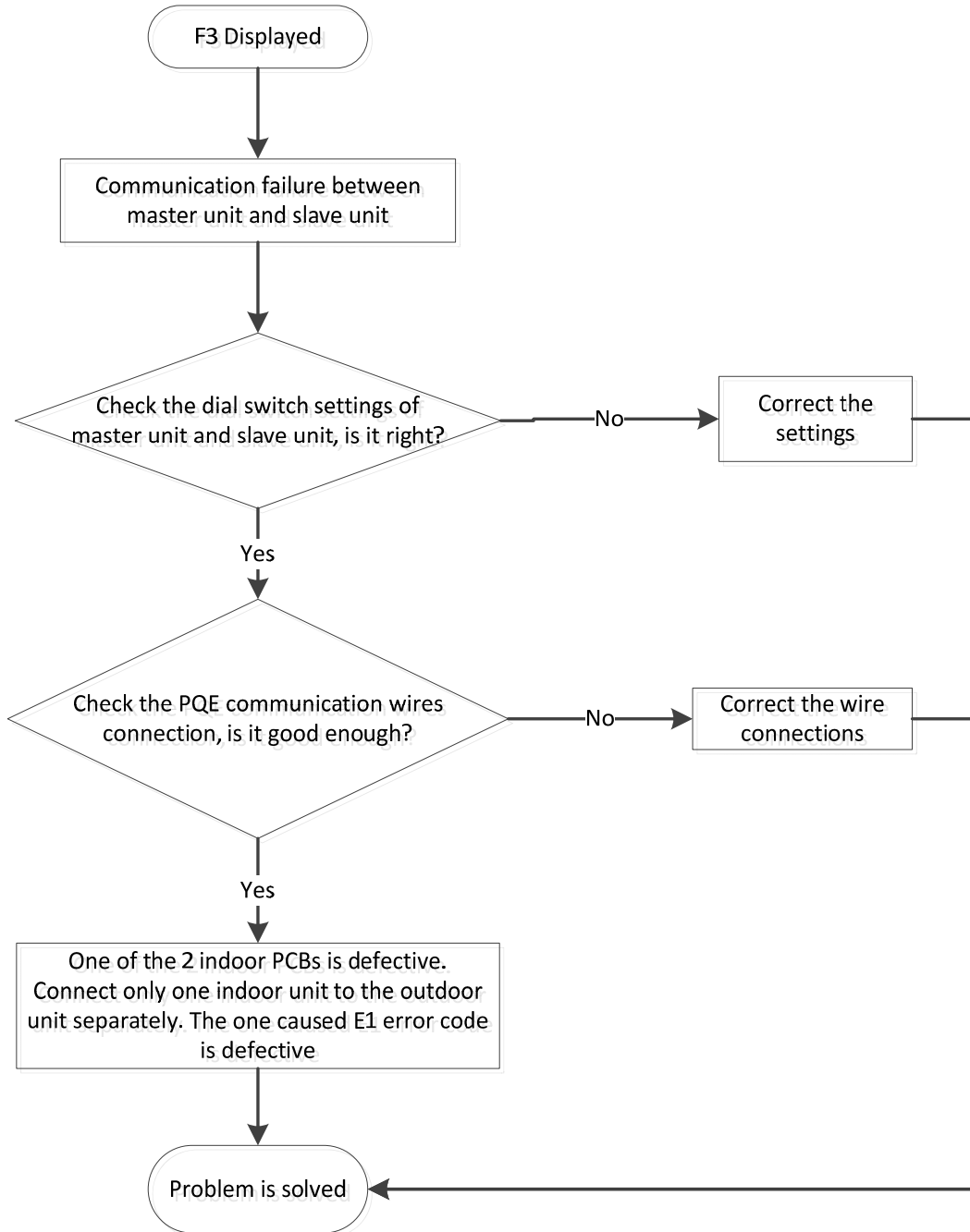


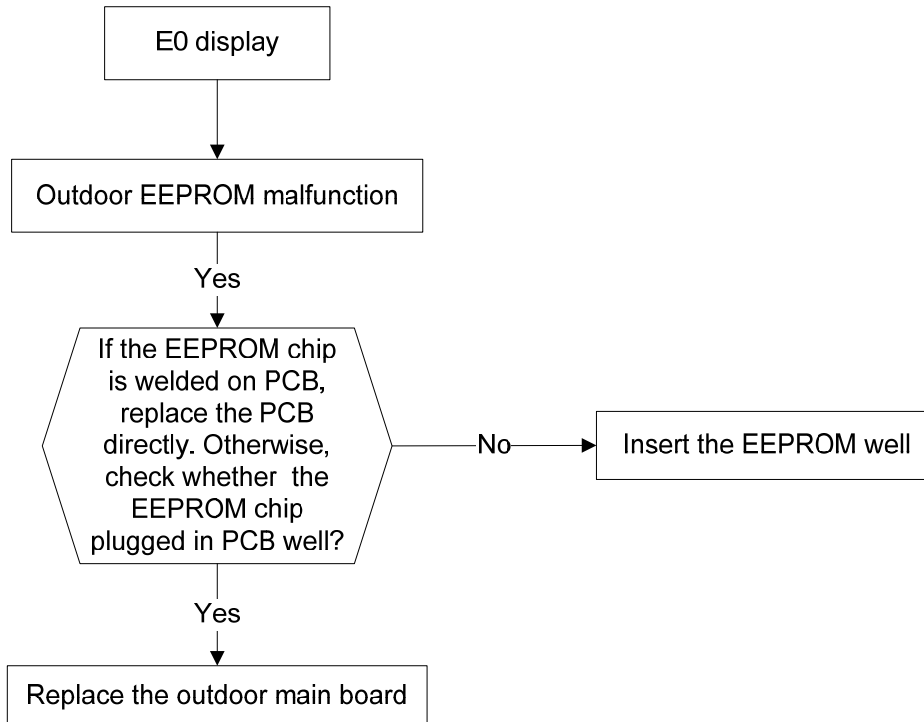
2.4.2.3 Up-down panel is not closed



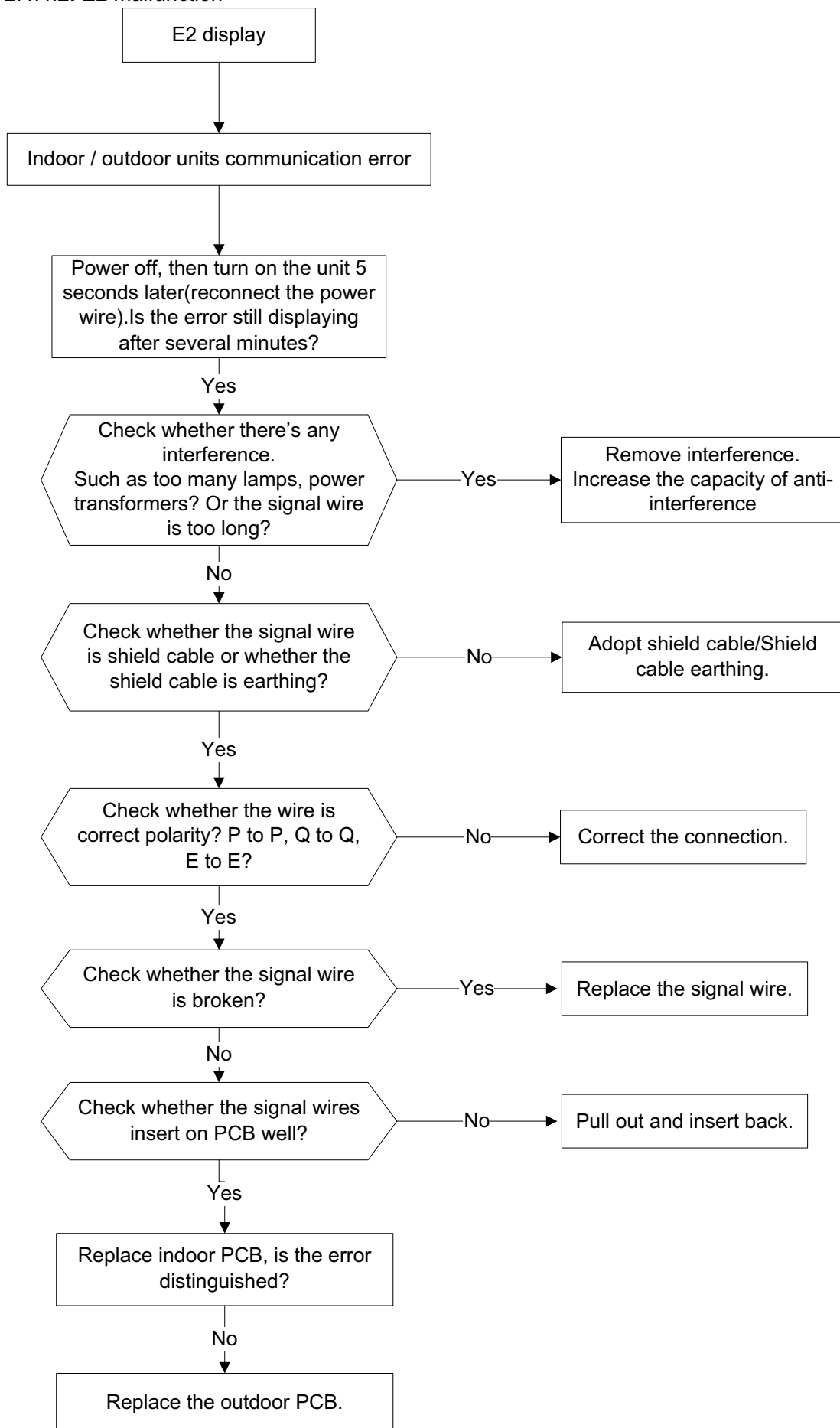
2.4.3 For the unit with TWINS function(For the super-slim cassette & A5 duct)

2.4.3.1 Communication failure between master unit and indoor unit

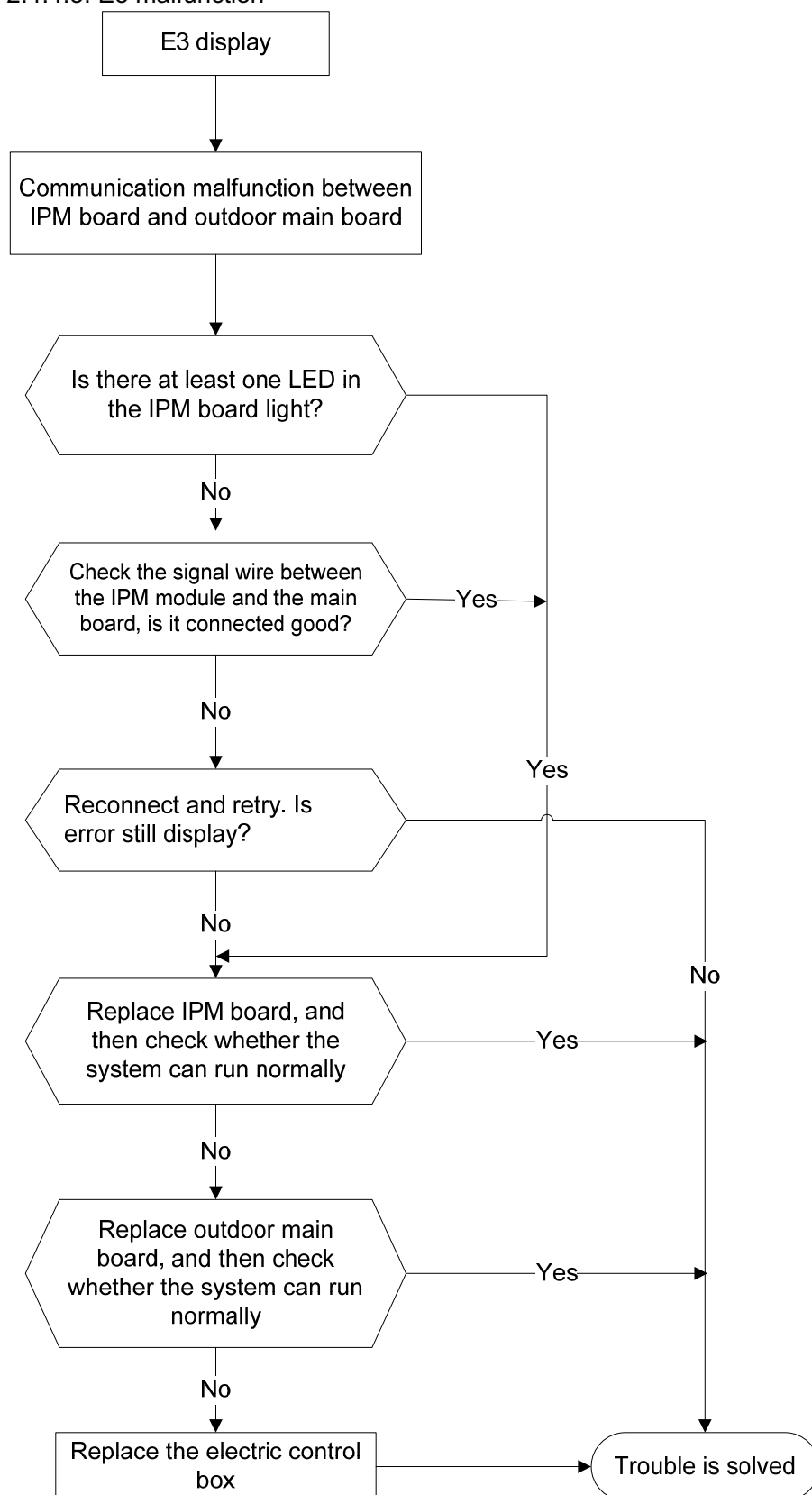


2.4.4 For the outdoor unit**2.4.4.1. E0 malfunction**

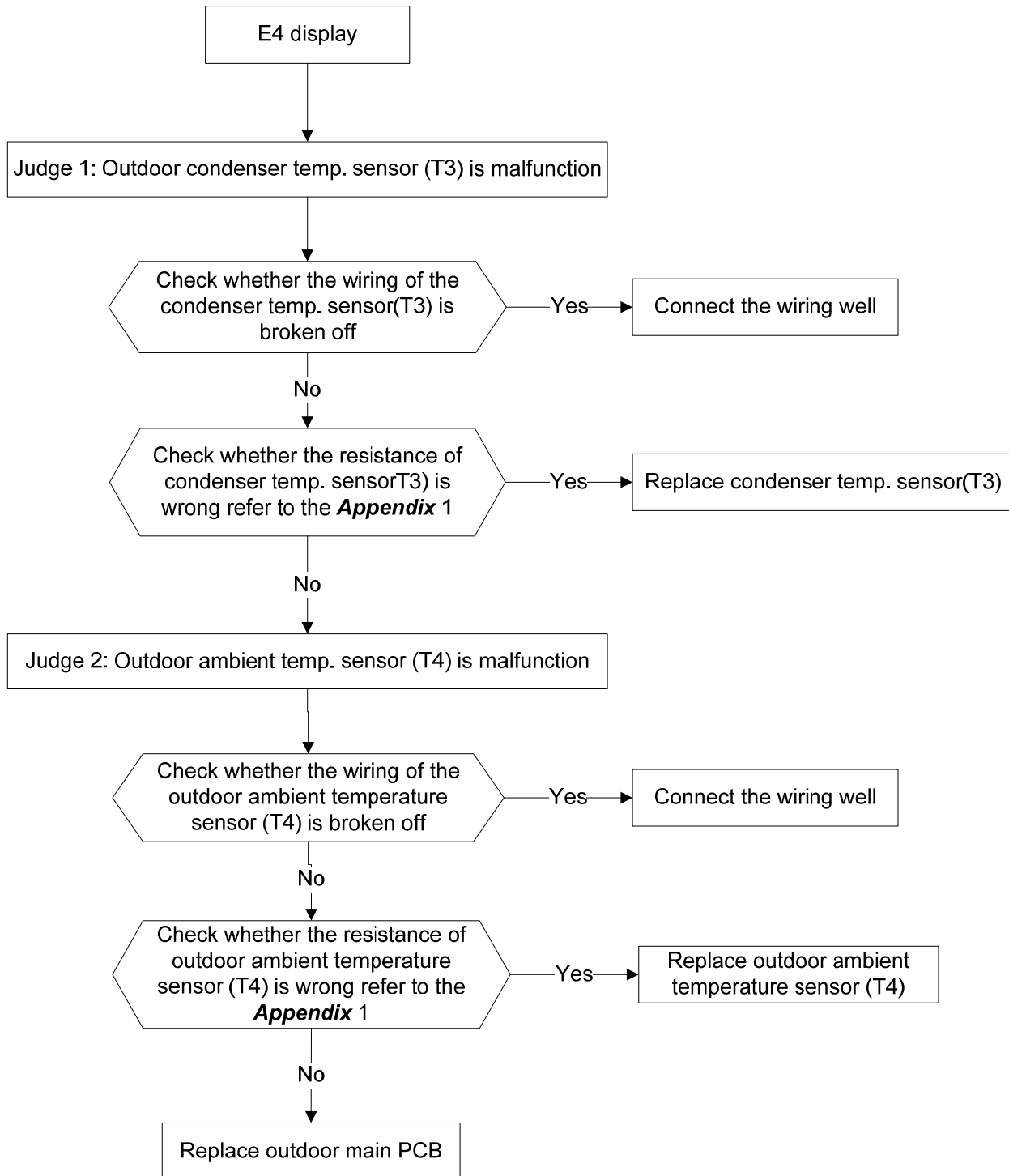
2.4.4.2. E2 malfunction



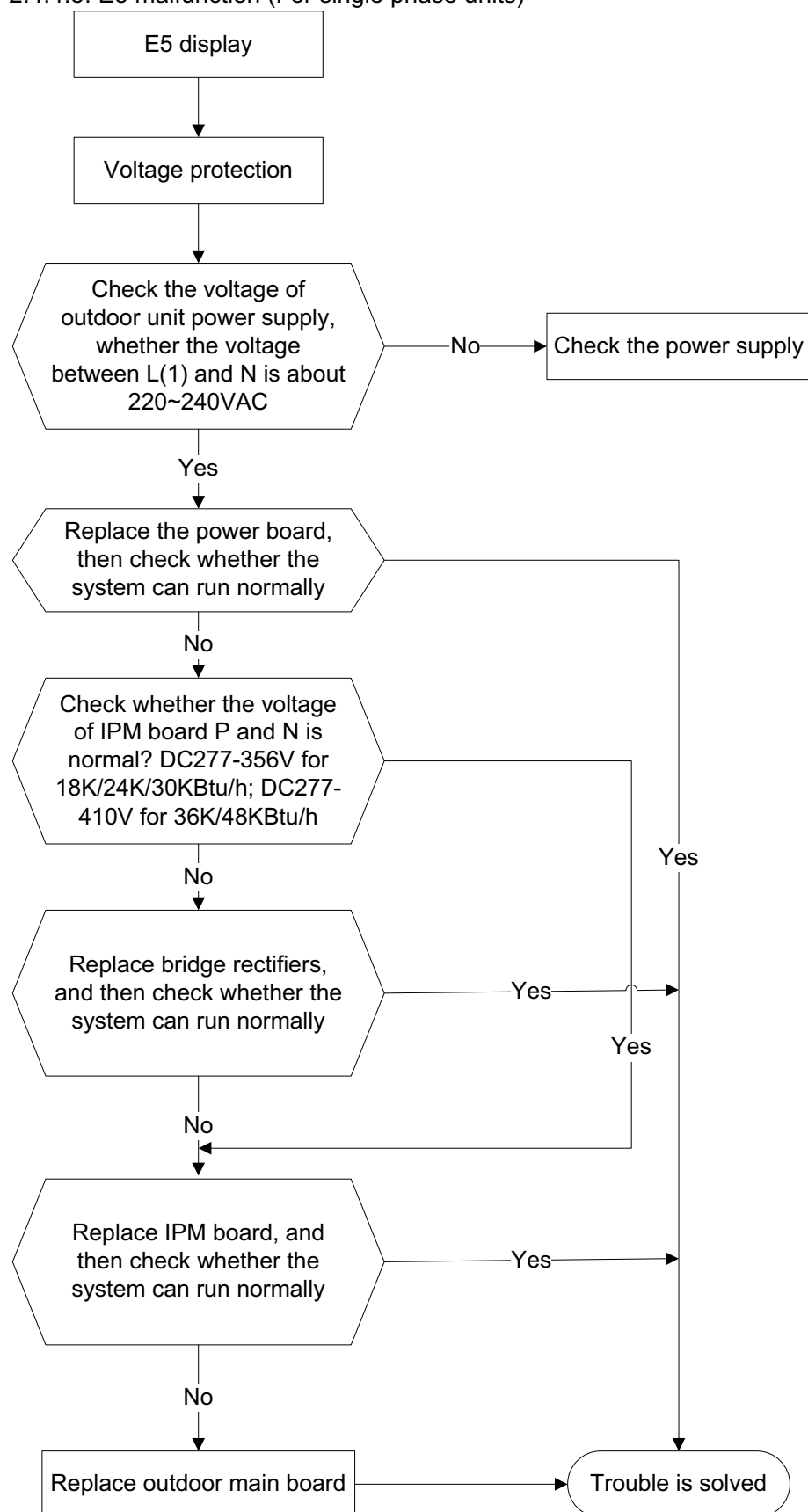
2.4.4.3. E3 malfunction



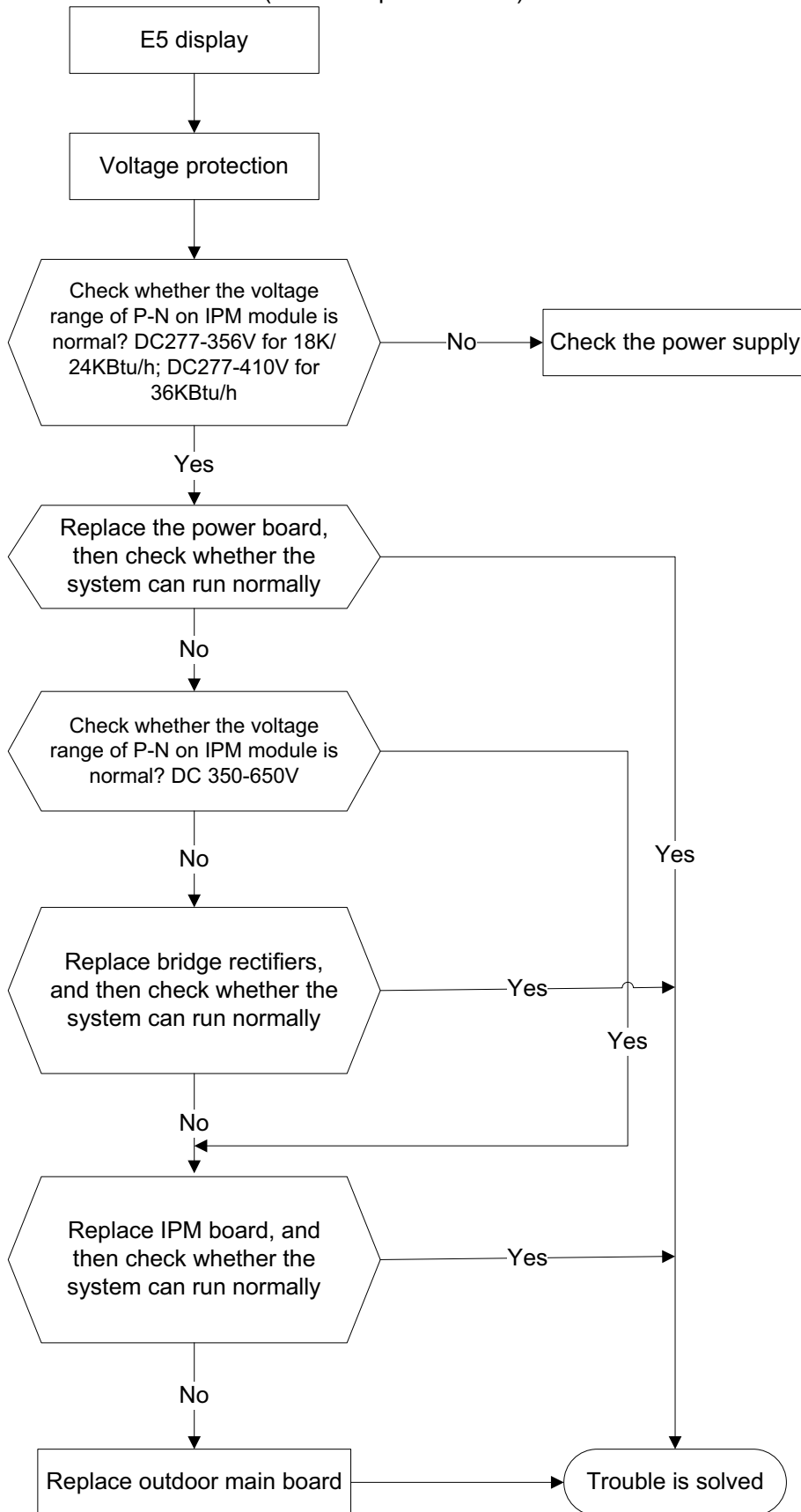
2.4.4.4. E4 malfunction



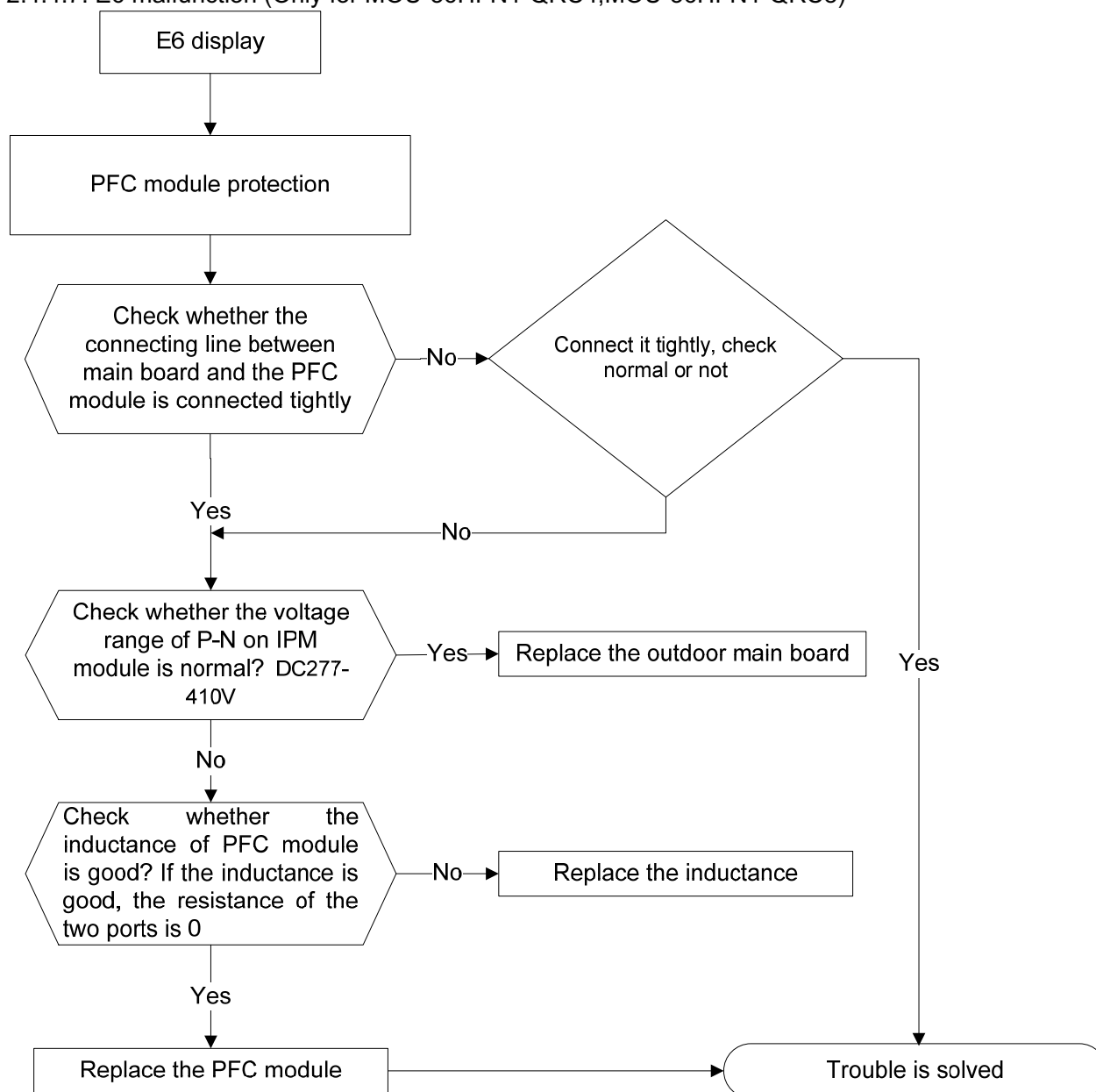
2.4.4.5. E5 malfunction (For single phase units)



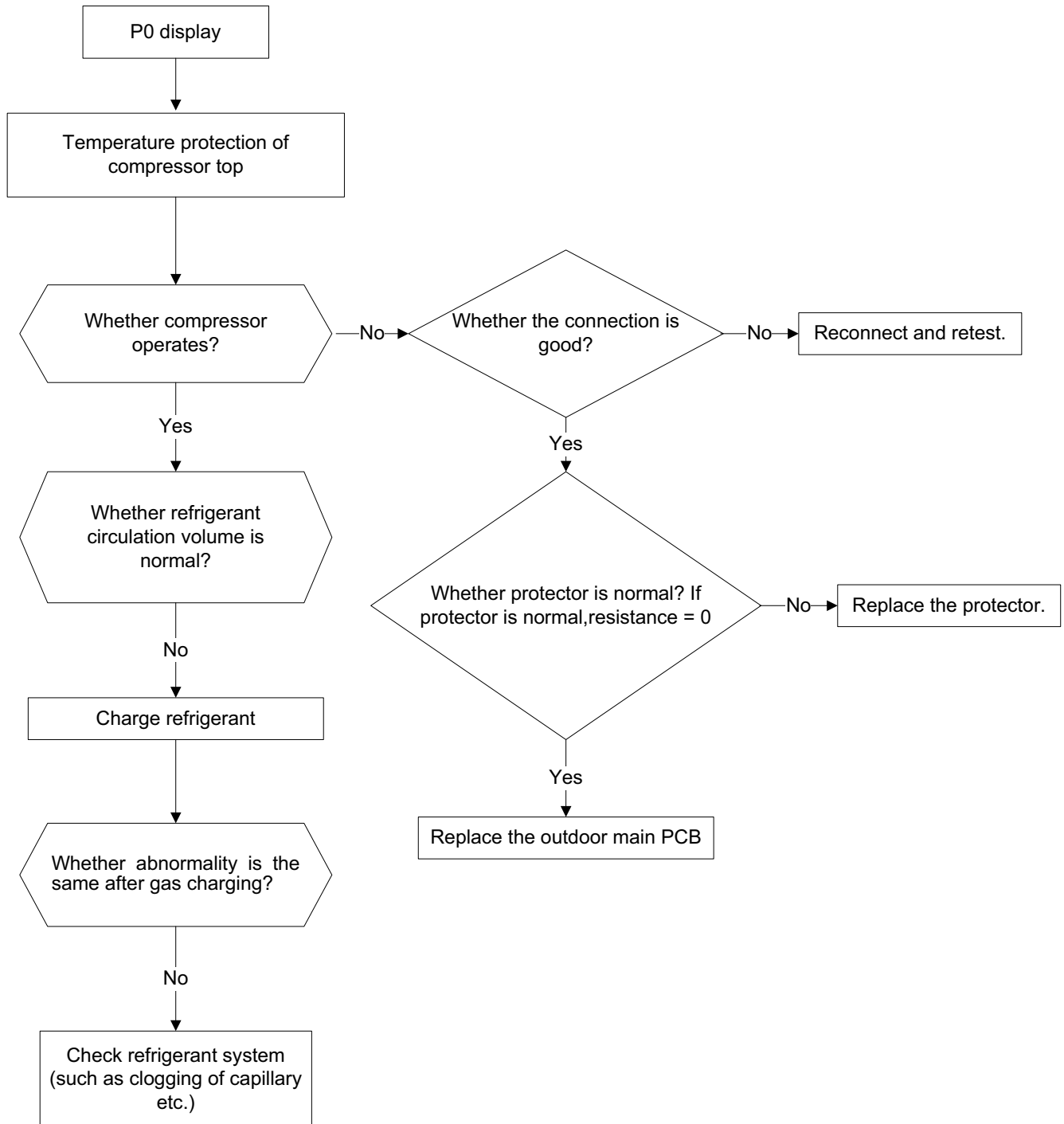
2.4.4.6. E5 malfunction (For three phases units)



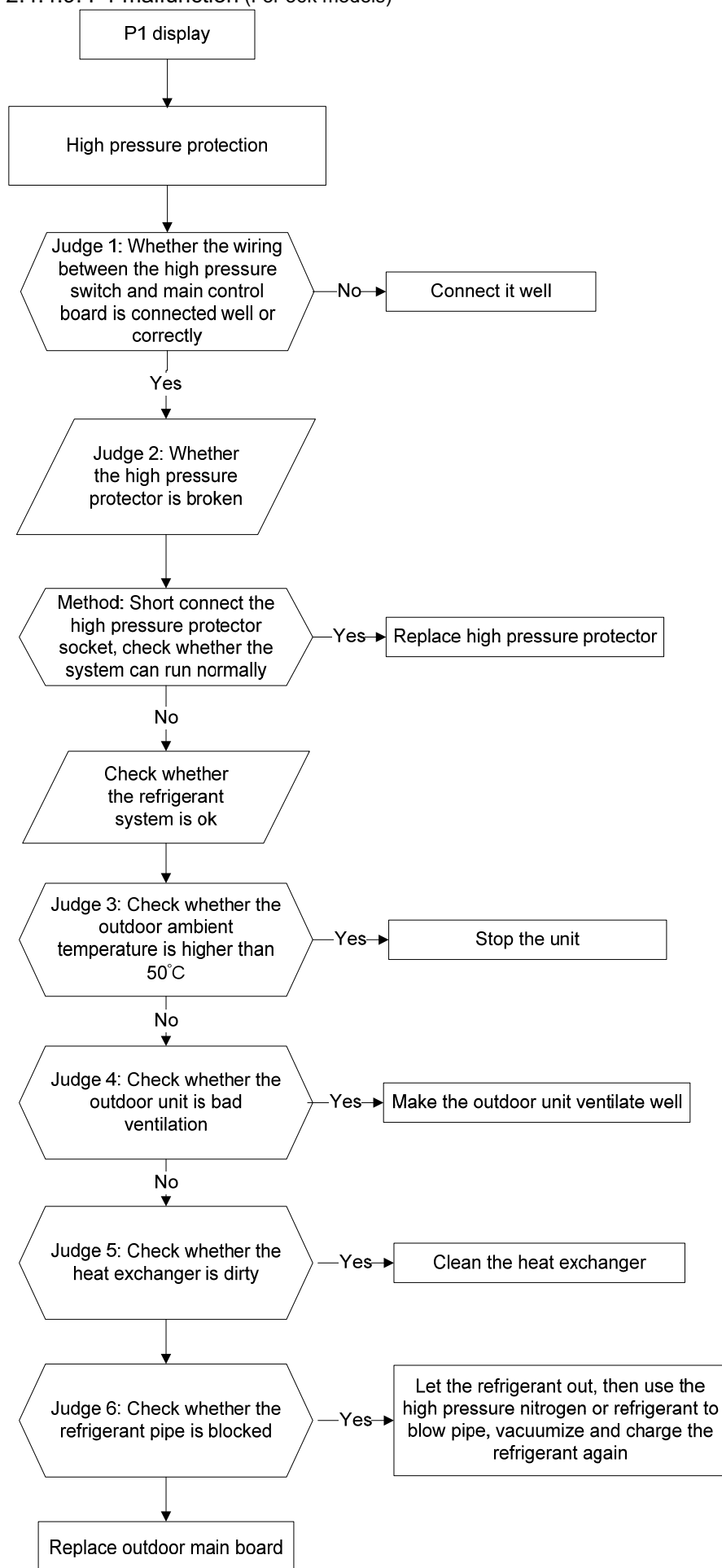
2.4.4.7. E6 malfunction (Only for MOU-36HFN1-QRC4,MOU-36HFN1-QRC8)



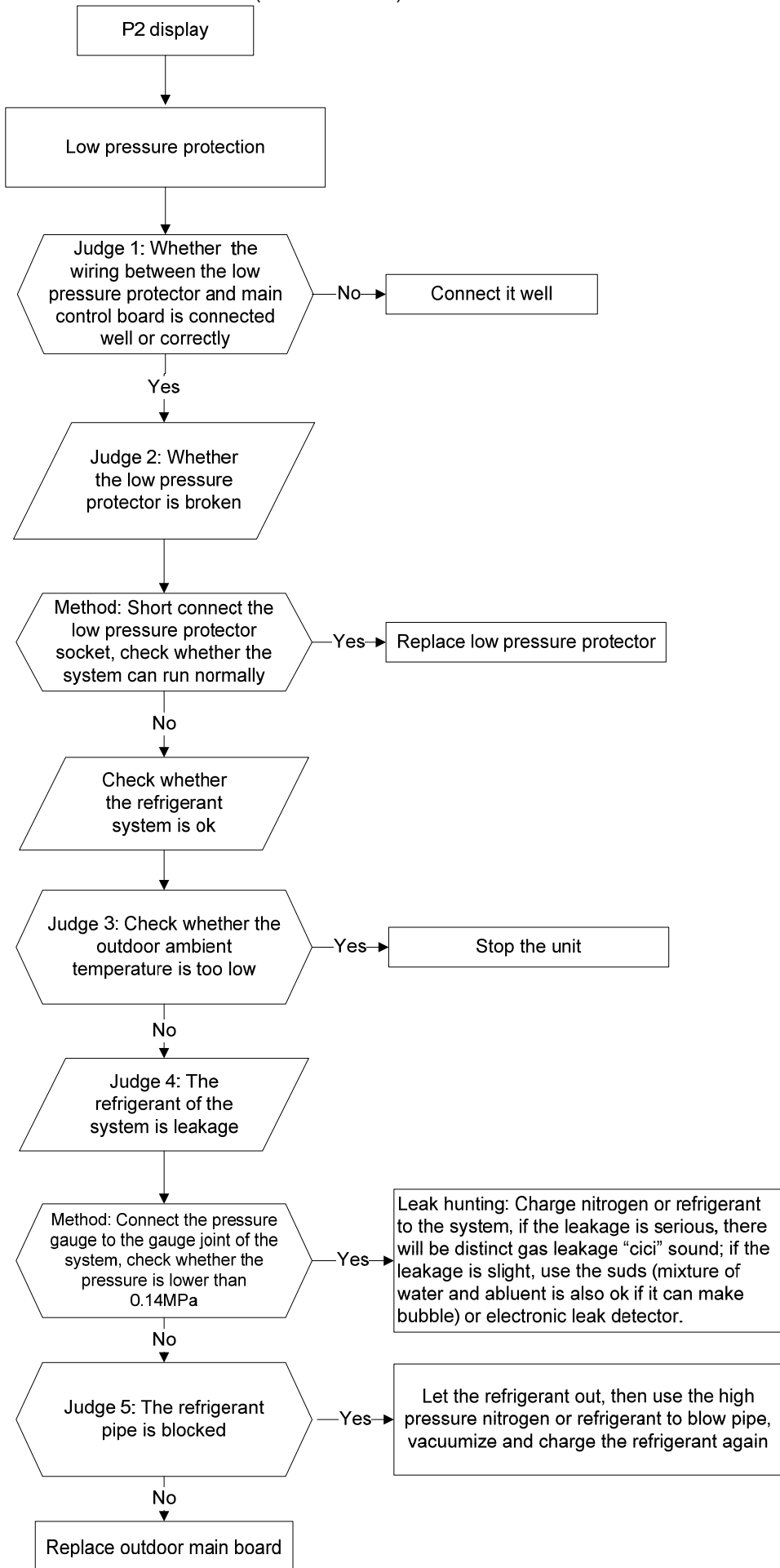
2.4.4.8. P0 malfunction



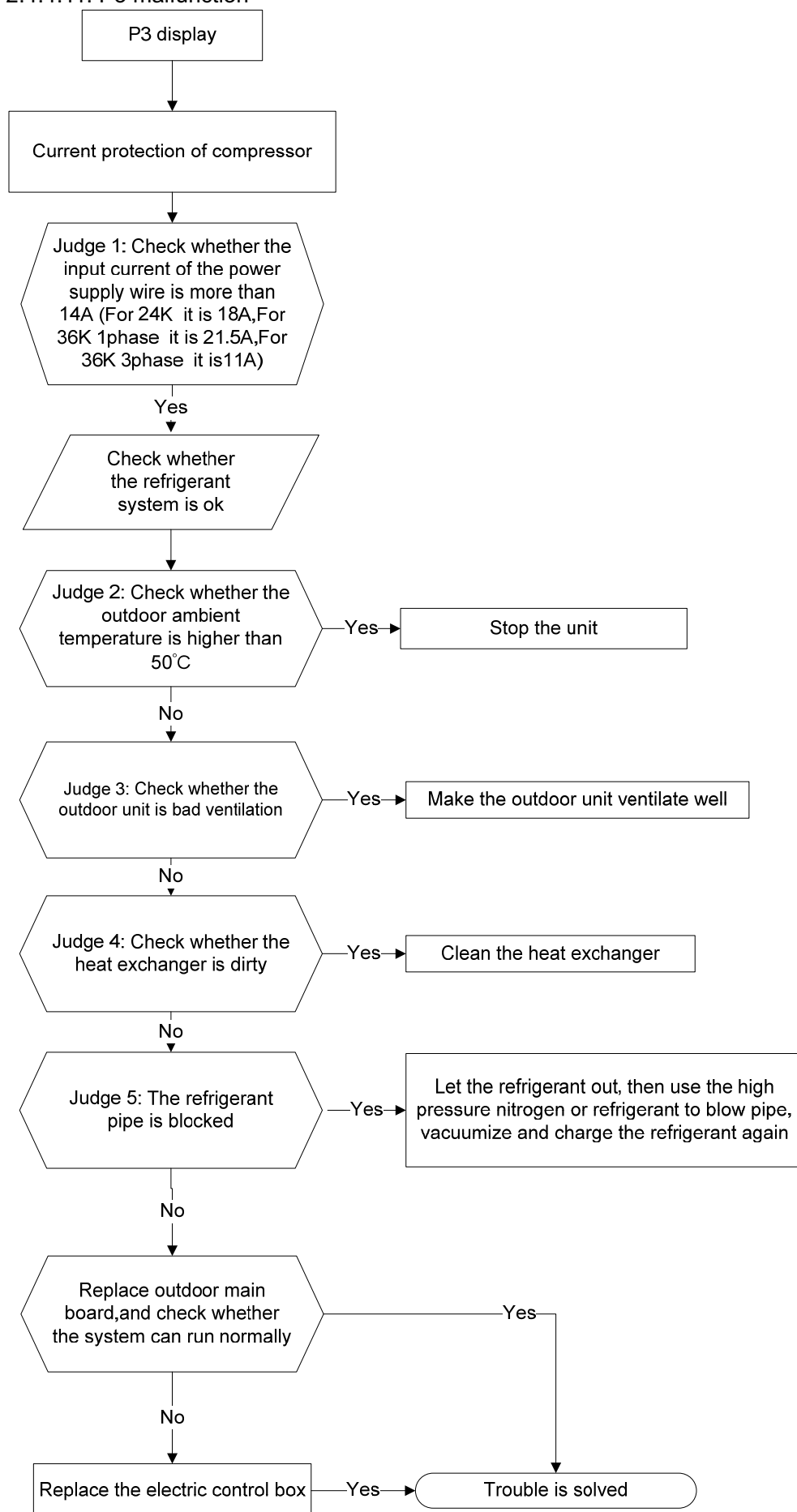
2.4.4.9. P1 malfunction (For 36k models)



2.4.4.10. P2 malfunction (For 36k models)

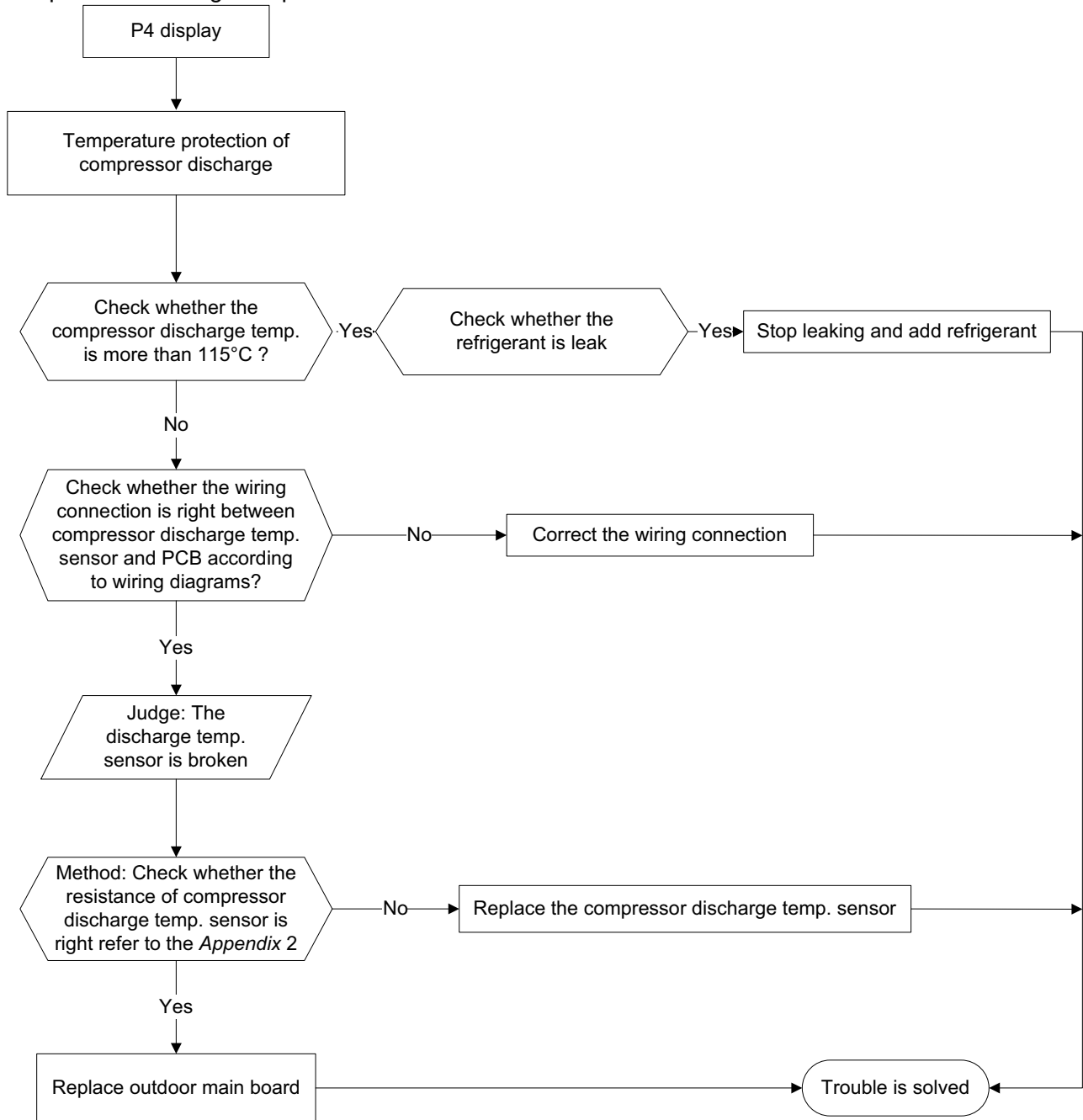


2.4.4.11. P3 malfunction



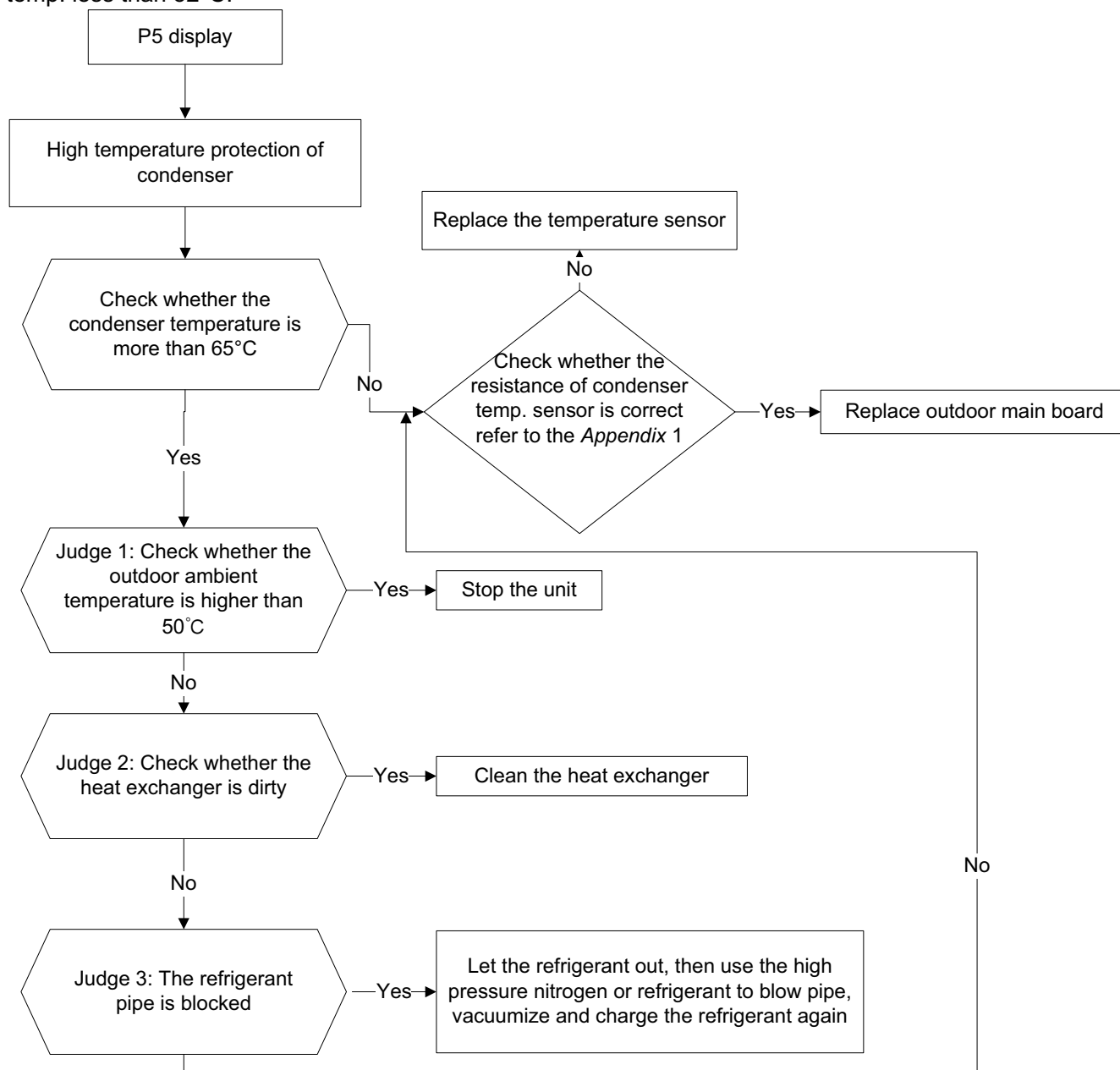
2.4.4.12. P4 malfunction

When compressor discharge temperature is higher than 115°C, the unit will stop, and unit runs again when compressor discharge temperature is lower than 90°C.



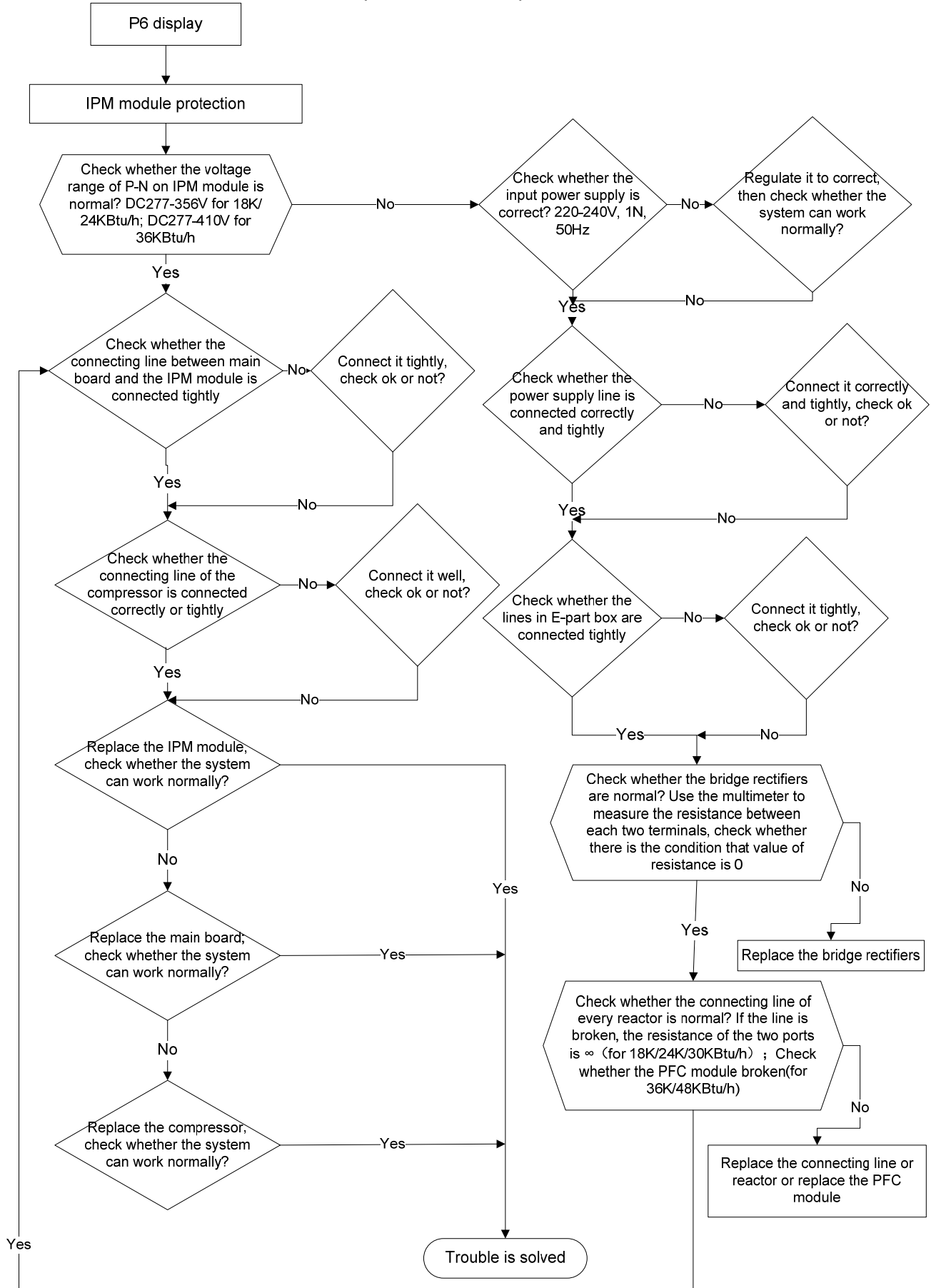
2.4.4.13. P5 malfunction

When condenser high temp. is more than 65°C, the unit will stop, and unit runs again when outdoor pipe temp. less than 52°C.



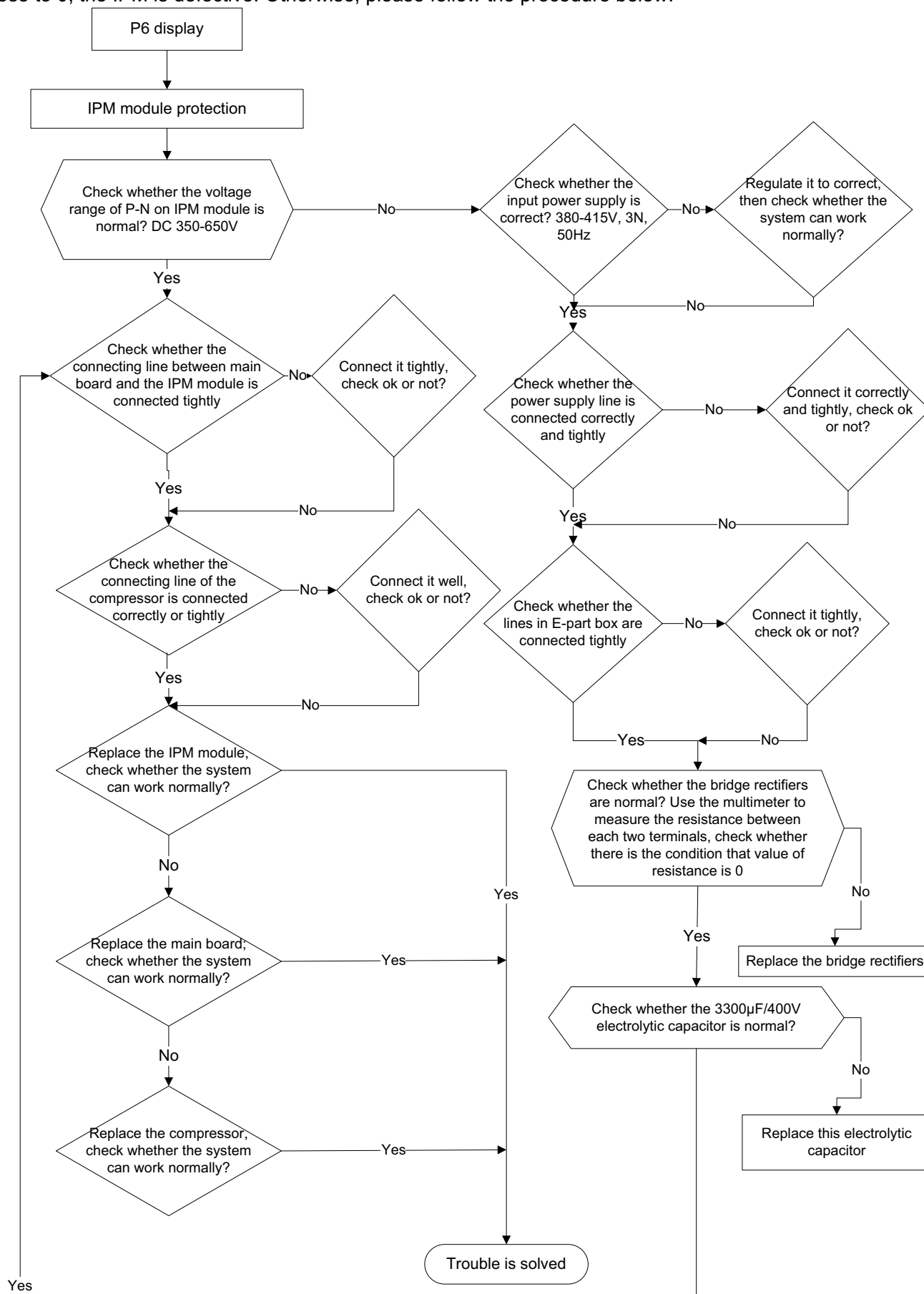
2.4.4.14. P6 malfunction (For single phase units)

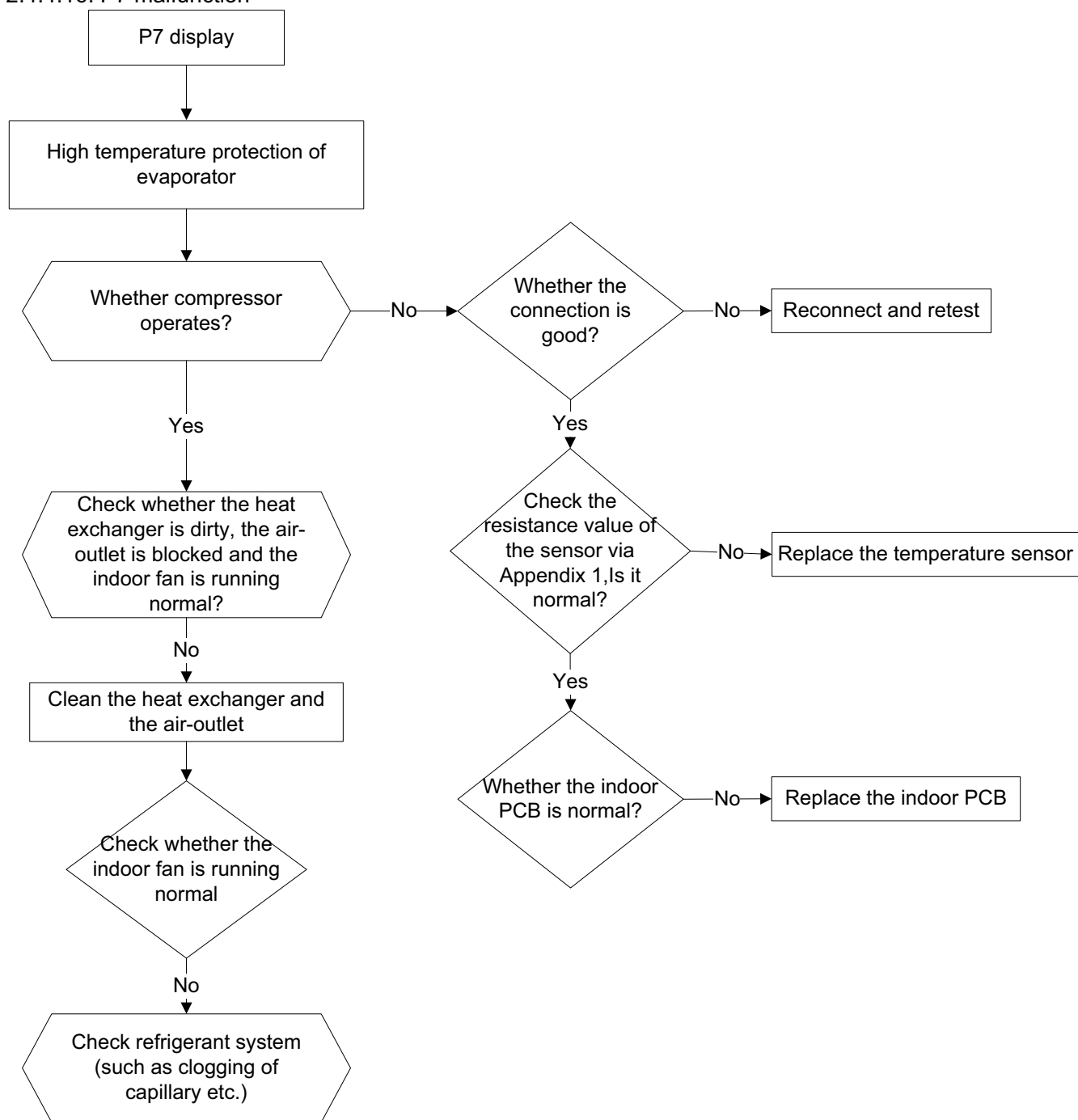
At first test the resistance between every two ports of U, V, W of IPM and P, N. If any result of them is 0 or close to 0, the IPM is defective. Otherwise, please follow the procedure below:



2.4.4.15. P6 malfunction (For three phases units)

At first test the resistance between every two ports of U, V, W of IPM and P, N. If any result of them is 0 or close to 0, the IPM is defective. Otherwise, please follow the procedure below:





Appendix 1 Temperature Sensor Resistance Value Table (°C--K)

°C	K Ohm	°C	K Ohm	°C	K Ohm	°C	K Ohm
-20	115.266	20	12.6431	60	2.35774	100	0.62973
-19	108.146	21	12.0561	61	2.27249	101	0.61148
-18	101.517	22	11.5000	62	2.19073	102	0.59386
-17	96.3423	23	10.9731	63	2.11241	103	0.57683
-16	89.5865	24	10.4736	64	2.03732	104	0.56038
-15	84.2190	25	10.000	65	1.96532	105	0.54448
-14	79.3110	26	9.55074	66	1.89627	106	0.52912
-13	74.5360	27	9.12445	67	1.83003	107	0.51426
-12	70.1698	28	8.71983	68	1.76647	108	0.49989
-11	66.0898	29	8.33566	69	1.70547	109	0.48600
-10	62.2756	30	7.97078	70	1.64691	110	0.47256
-9	58.7079	31	7.62411	71	1.59068	111	0.45957
-8	56.3694	32	7.29464	72	1.53668	112	0.44699
-7	52.2438	33	6.98142	73	1.48481	113	0.43482
-6	49.3161	34	6.68355	74	1.43498	114	0.42304
-5	46.5725	35	6.40021	75	1.38703	115	0.41164
-4	44.0000	36	6.13059	76	1.34105	116	0.40060
-3	41.5878	37	5.87359	77	1.29078	117	0.38991
-2	39.8239	38	5.62961	78	1.25423	118	0.37956
-1	37.1988	39	5.39689	79	1.21330	119	0.36954
0	35.2024	40	5.17519	80	1.17393	120	0.35982
1	33.3269	41	4.96392	81	1.13604	121	0.35042
2	31.5635	42	4.76253	82	1.09958	122	0.3413
3	29.9058	43	4.57050	83	1.06448	123	0.33246
4	28.3459	44	4.38736	84	1.03069	124	0.32390
5	26.8778	45	4.21263	85	0.99815	125	0.31559
6	25.4954	46	4.04589	86	0.96681	126	0.30754
7	24.1932	47	3.88673	87	0.93662	127	0.29974
8	22.5662	48	3.73476	88	0.90753	128	0.29216
9	21.8094	49	3.58962	89	0.87950	129	0.28482
10	20.7184	50	3.45097	90	0.85248	130	0.27770
11	19.6891	51	3.31847	91	0.82643	131	0.27078
12	18.7177	52	3.19183	92	0.80132	132	0.26408
13	17.8005	53	3.07075	93	0.77709	133	0.25757
14	16.9341	54	2.95896	94	0.75373	134	0.25125
15	16.1156	55	2.84421	95	0.73119	135	0.24512
16	15.3418	56	2.73823	96	0.70944	136	0.23916
17	14.6181	57	2.63682	97	0.68844	137	0.23338
18	13.9180	58	2.53973	98	0.66818	138	0.22776
19	13.2631	59	2.44677	99	0.64862	139	0.22231

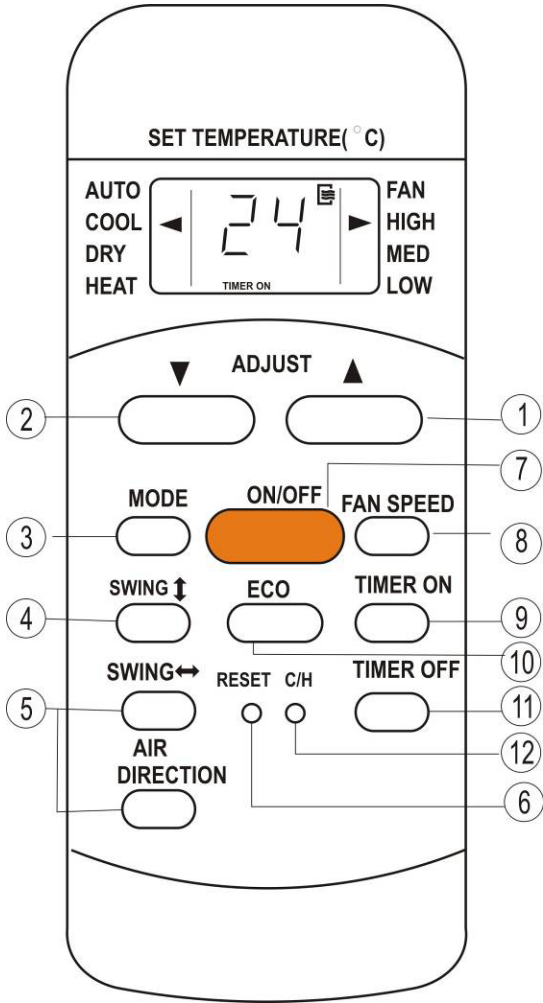
Appendix 2

Unit: °C---K				Discharge temp. sensor table			
-20	542.7	20	68.66	60	13.59	100	3.702
-19	511.9	21	65.62	61	13.11	101	3.595
-18	483	22	62.73	62	12.65	102	3.492
-17	455.9	23	59.98	63	12.21	103	3.392
-16	430.5	24	57.37	64	11.79	104	3.296
-15	406.7	25	54.89	65	11.38	105	3.203
-14	384.3	26	52.53	66	10.99	106	3.113
-13	363.3	27	50.28	67	10.61	107	3.025
-12	343.6	28	48.14	68	10.25	108	2.941
-11	325.1	29	46.11	69	9.902	109	2.86
-10	307.7	30	44.17	70	9.569	110	2.781
-9	291.3	31	42.33	71	9.248	111	2.704
-8	275.9	32	40.57	72	8.94	112	2.63
-7	261.4	33	38.89	73	8.643	113	2.559
-6	247.8	34	37.3	74	8.358	114	2.489
-5	234.9	35	35.78	75	8.084	115	2.422
-4	222.8	36	34.32	76	7.82	116	2.357
-3	211.4	37	32.94	77	7.566	117	2.294
-2	200.7	38	31.62	78	7.321	118	2.233
-1	190.5	39	30.36	79	7.086	119	2.174
0	180.9	40	29.15	80	6.859	120	2.117
1	171.9	41	28	81	6.641	121	2.061
2	163.3	42	26.9	82	6.43	122	2.007
3	155.2	43	25.86	83	6.228	123	1.955
4	147.6	44	24.85	84	6.033	124	1.905
5	140.4	45	23.89	85	5.844	125	1.856
6	133.5	46	22.89	86	5.663	126	1.808
7	127.1	47	22.1	87	5.488	127	1.762
8	121	48	21.26	88	5.32	128	1.717
9	115.2	49	20.46	89	5.157	129	1.674
10	109.8	50	19.69	90	5	130	1.632
11	104.6	51	18.96	91	4.849		
12	99.69	52	18.26	92	4.703		
13	95.05	53	17.58	93	4.562		
14	90.66	54	16.94	94	4.426		
15	86.49	55	16.32	95	4.294	B(25/50)=3950K	
16	82.54	56	15.73	96	4.167		
17	78.79	57	15.16	97	4.045	R(90°C)=5KΩ±3%	
18	75.24	58	14.62	98	3.927		
19	71.86	59	14.09	99	3.812		

3. Controller

3.1Wireless Remote Controller

3.1.1RG51Q1/BGE



General Function for wireless remote controller:

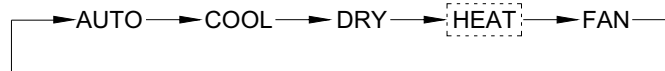
Model	RG51Q1/BGE
Rated voltage	3.0V(2pieces of LR03 7 # batteries)
Min voltage for sending signal of CPU	2.4V
Effective receiving distance	8m~11m
Operation condition	-5~60℃

Buttons and functions

1. Adjust ▼ : Decrease the set temp. Keeping pressing will decrease the temp with 1°C per 0.5s.

2. Adjust ▲ : Increase the set temp. Keeping pressing will increase the temp with 1°C per 0.5s.

3. MODE: Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.

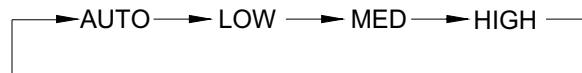
4. VERT SWING: Used to stop or start horizontal louver movement or set the desired up/down air flow direction. The louver changes 6 degree in angle for each press. If keep pushing more than 2 seconds, the louver will swing up and down automatically.

5. HORIZ SWING: Used to stop or start vertical louver movement.

6. AIR DIRECTION: Used to set the desired up/down air flow direction. The louver changes 6 degree in angle for each press.

7. ON/OFF: For turning on or turning off the air conditioner.

8. FAN SPEED: Fan speed will be selected in following sequence once pressing this button:



9. TIME ON: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

10. ECO: Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)

11. TIME OFF: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

Adjust the figure to 0.00 will cancel time ON setting.

12. C/H (inner located): Press this button with a needle of 1mm to shift the mode between Cooling only and Cooling & Heating according to the feature of the machine.

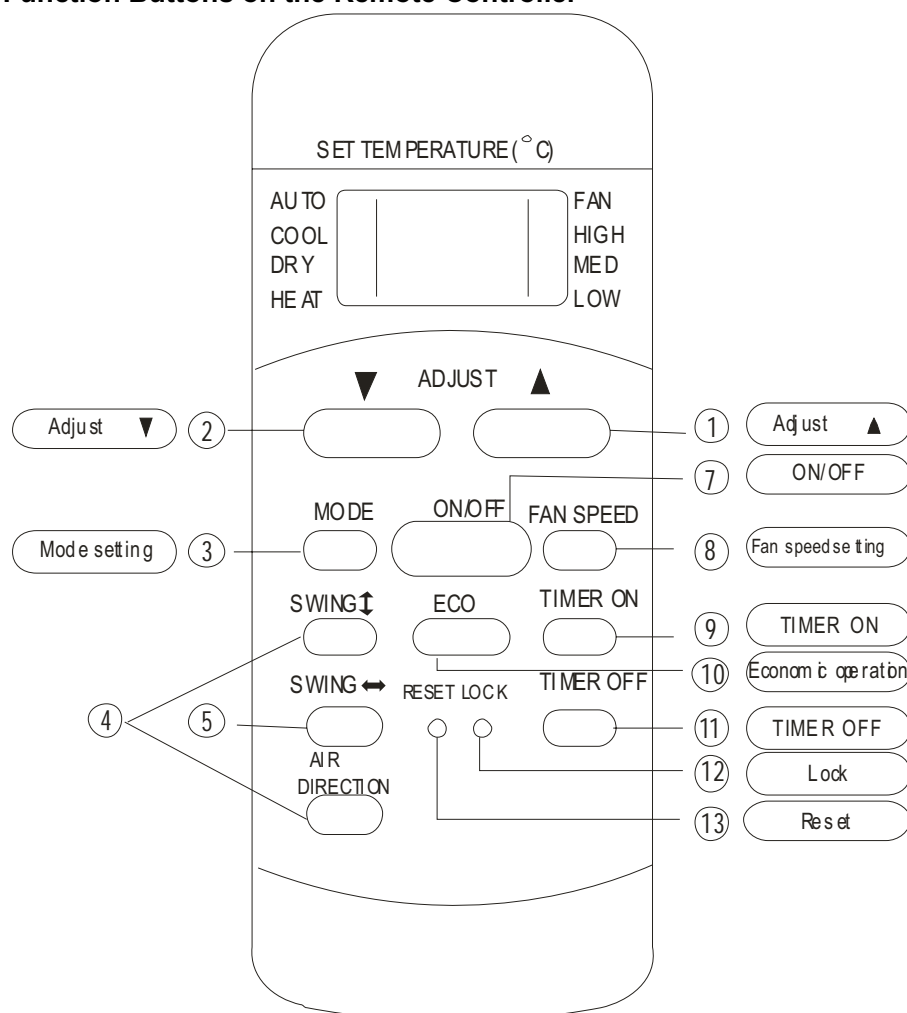
13. RESET (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

3.1.2 RG51C/E

Remote Controller Specifications

Model	RG51C/E
Rated Voltage	3.0V
Lowest Voltage of CPU Emitting Signal	2.0V
Reaching Distance	8m (when using 3.0 voltage, it can get 11m)
Environment Temperature Range	-5℃~60℃

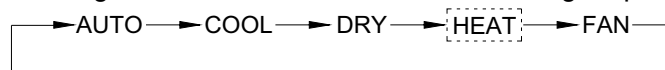
Introduction of Function Buttons on the Remote Controller



1. **Adjust ▼** : Decrease the set temp. Keeping pressing will decrease the temp with 1℃ per 0.5s.

2. **Adjust ▲** : Increase the set temp. Keeping pressing will increase the temp with 1℃ per 0.5s.

3. **MODE**: Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.

4. **VERT SWING**: Used to stop or start horizontal louver movement. The louver will swing up and down automatically if push this button.

AIR DIRECTION: Used to set the desired up/down air flow direction. The louver changes 6 degree in angle for each press.

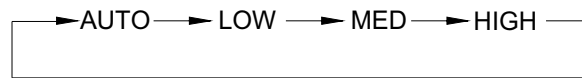
5. **HORIZ SWING**: Used to stop or start vertical louver movement.

6. **FAN SPEED+ MODE**: Press the Mode and Fan speed button simultaneously for 2 seconds. The remote

controls into faceplate setting state and the LCD shows F2. Press the TEMPUP(▲) to control the faceplate up and press the TEMP DOWN(▼) to control the faceplate down. Press any button to exit the faceplate setting state, then the LCD back to the normal display.

7. ON/OFF: For turning on or turning off the air conditioner.

8. FAN SPEED: Fan speed will be selected in following sequence once pressing this button:



9. TIME ON: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

10. ECO: Select this function during the sleeping time. It can maintain the most comfortable temperature and save energy. This function is available on COOL, HEAT or AUTO mode only .

NOTE: While the unit is running under Energy-saving mode, it would be cancelled if press MODE, FAN SPEED or ON/OFF button.

11. TIME OFF: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

Adjust the figure to 0.00 will cancel time ON setting.

12. LOCK (inner located): Push this button to lock in all the current settings, and the remote controller will not accept any operation except that of the LOCK. Use the LOCK mode when you want to prevent settings from being changed accidentally. Press the LOCK button again to cancel the LOCK function. A lock symbol will appear on the remote controller display when the lock function is activated.

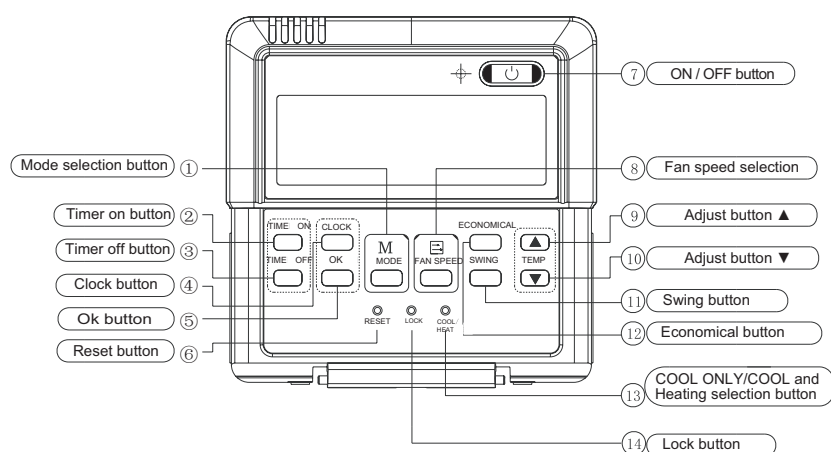
13. RESET (inner located): Once the recessed RESET button is pressed, all of the current settings will be cancelled and the controller will return to the initial settings..

3.2 Wired Remote Controller

3.2.1 KJR-10B

Name and functions of buttons on the wire controller

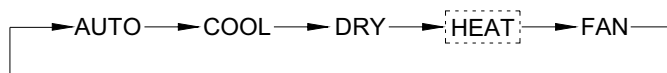
6. NAME AND FUNCTIONS OF BUTTONS ON WIRE CONTROLLER



1 mode selection button:

It is used to select mode, push the button one time, then the operation modes will change

In turn as follows:



Remark: no heating mode if wire controller is set as the cool only.

2 Timer on button:

Push the button to set TIMER ON, each time you push the button the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0

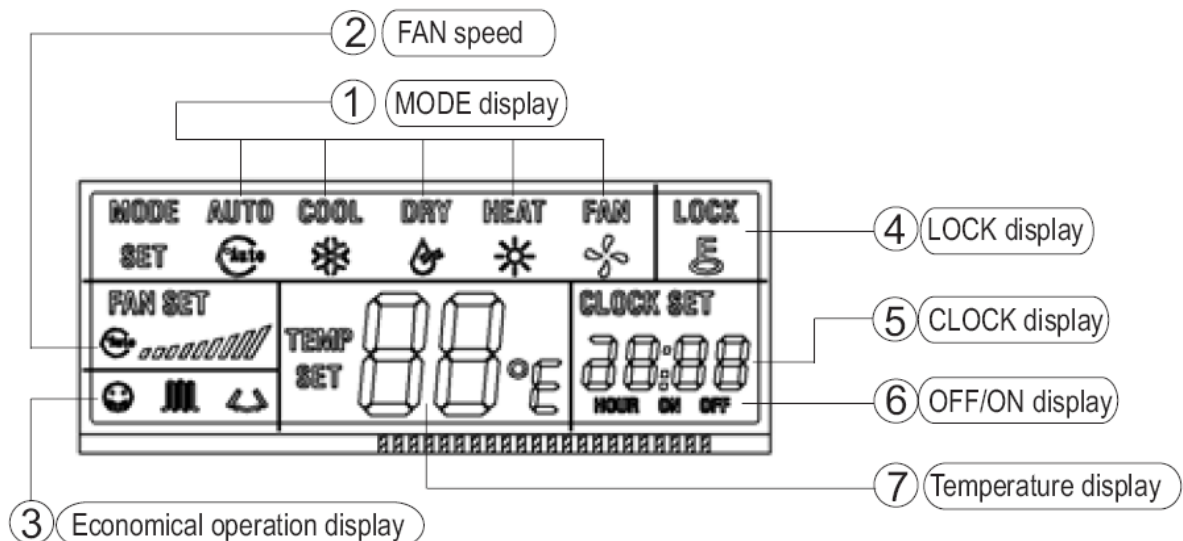
3 Timer off button:

Push the button to set TIMER OFF, each time you push the button the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0

4 CLOCK button:

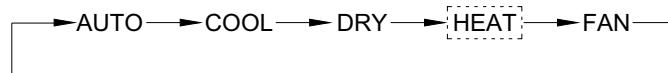
Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When push the button for 4 seconds, the hour part on the clock display flashes every 0.5 seconds, then push button and to adjust hour; push the button CLOCK again, the minute part flashes every 0.5 seconds, then push and button to adjust minute. When set clock or alter clock setting, must push the confirm button to complete the setting

Name and function of LCD on the wire controller



1 Mode select button (MODE):

Press MODE button to select "COOL", "DRY", "HEAT", or "FAN ONLY" mode. (HEAT is invalid for COOL ONLY wire controller.)



2 Fan speed button (FAN SPEED)

Press FAN SPEED to select fan speed from "AUTO", "LOW", "MED", and "HIGH". NOTE: some air conditioners have no MED fan speed, and then the MED is regarded as HIGH.

3 Economical operation displays:

Press ECONOMICAL to display economical operation, if press ECONOMICAL again then the display disappears

4 Lock display

Press LOCK to display the icon of LOCK. Press the button again then the icon of LOCK disappears. In the mode of LOCK, all the buttons are invalid except for LOCK button.

5 CLOCK display.

Usually display the clock set currently. Press the button CLOCK for 4 seconds, the HOUR part will flash, press button ▲ and ▼ to adjust HOUR. Press the button CLOCK again, the minute part flash, press button ▲ or ▼ to adjust MINUTE. After clock set or clock operation, it must press CONFIRM to complete the set.

6 TIMER ON/OFF display:

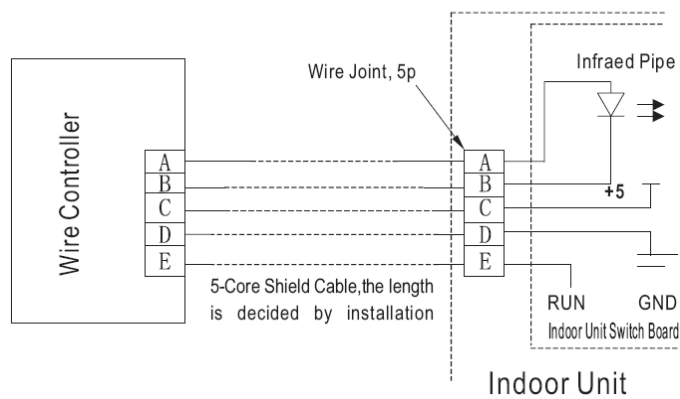
Display ON at the state of TIMER ON adjustment or after only set the TIMER ON; Display OFF at the state of TIMER OFF adjustment or after only set the TIMER OFF; Display ON/OFF if simultaneously set the mode of TIMER ON and TIMER OFF.

7 Temperature display area:

Usually display the set temperature. Press the buttons of and to set temperature, at the mode of FAN, there is no figure display in the area.

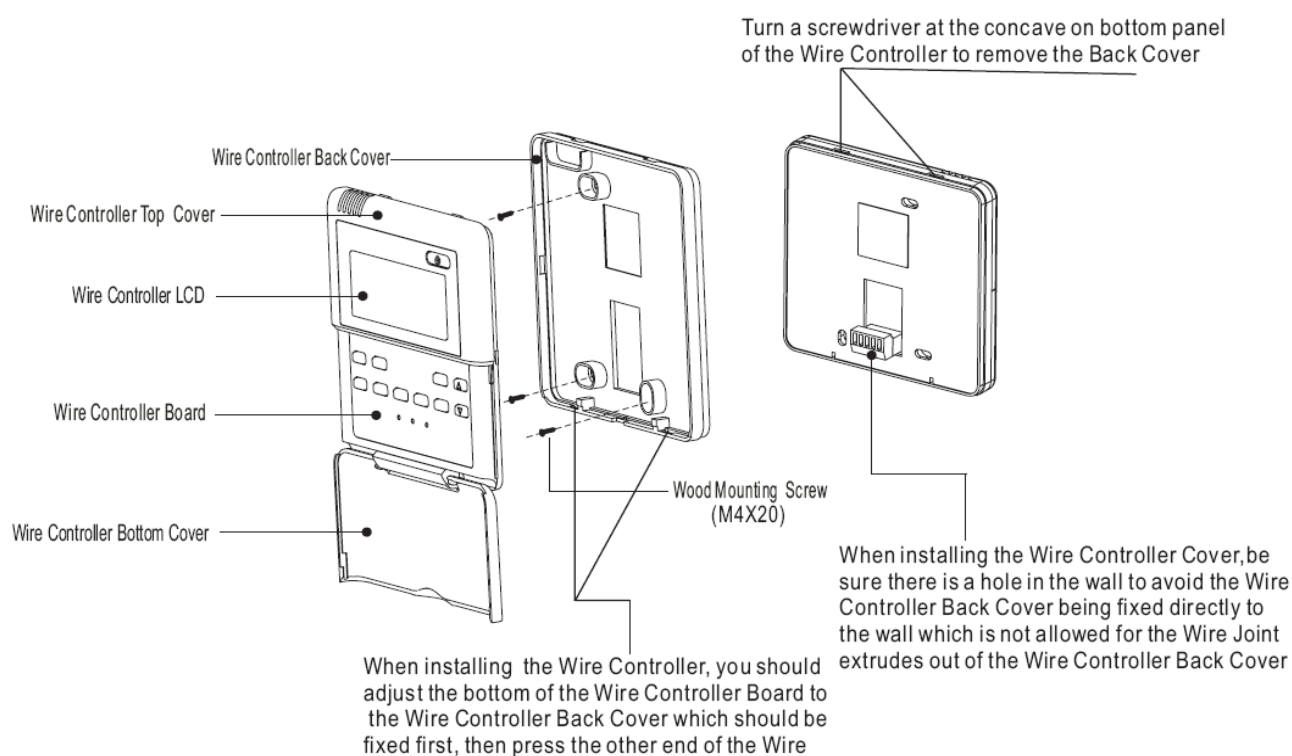
Installation

Wiring Principle Sketch:



Installation Notice:

When the air conditioner needs the constant frequency wire Controller, be sure adding a Wire Joint with 5 terminal named A, B, C, D, E in indoor unit, and fixing a infrared emitter whose anode and cathode connecting with A and B near the receiver in the Indoor Unit Switch Board, then connecting the terminal +5v, GND, Run in the Switch Board to C,D,E respectively.



NOTE

Never turn screws too tightly, or else the cover would be dented or the Liquid Crystal breaks.
Please leave enough long cable for maintenance of the Wire Controller Board.