



**SERVICE MANUAL**

**36 48 60K**

**LIGHT COMMERCIAL**

Cassette indoor unit



42QTD036DS\*  
42QTD048DS\*  
42QTD060DS\*

Under-ceiling indoor unit



42QZL036DS\*  
42QZL048DS\*  
42QZL060DS\*

Ducted indoor unit



42QSM036DS\*  
42QSM048DS\*  
42QSM060DS\*

Universal outdoor unit



38QUS036DS\*  
38QUS048DT\*  
38QUS060DT\*

# INDEX

---

PART1 GENERAL INFORMATION

PART1.1 DUCTED

PART1.2 CASSETTE

PART1.3 UNDERCEILING

PART1.4 OUTDOOR UNIT

PART2 ELECTRICAL DIAGRAM

PART3 TROUBLE SHOOTING

# PART – 1

## GENERAL INFORMATION





Part 1.1 DUCTED

Part 1.2 CASSETTE

Part 1.3 UNDER-CEILING

Part 1.4 OUTDOOR UNIT

# PRODUCT LINEUP

<p>Ducted Cassette Under-ceiling CDU</p>	<p>42QSM012DS* 42QTD012DS* - 38QUS012DS*</p>	<p>42QSM018DS* 42QTD018DS* 42QZL018DS* 38QUS018DS*</p>	<p>42QSM024DS* 42QTD024DS* 42QZL024DS* 38QUS024DS*</p>	<p>42QSM036DS* 42QTD036DS* 42QZL036DS* 38QUS036DS*</p>	<p>42QSM048DS* 42QTD048DS* 42QZL048DS* 38QUS048DS*</p>	<p>42QSM060DS* 42QTD060DS* 42QZL060DS* 38QUS060DS*</p>
<p>Ducted</p>	 700x635x210	 920x635x210	 920x635x270	 1200x865x300		
<p>Cassette</p>	 570x570x260		 840x840x245		 840x840x287	
<p>Under-ceiling</p>	<p>-</p>	 1068x675x235		 1650x675x235		
<p>CDU</p>	 810x310x558mm (W*D*H)		 845x320x700	 945x395x810	 938x392x1369	

# UNIT MODEL IDENTIFICATION

42	Q	U	S	018	D	S	2	*
----	---	---	---	-----	---	---	---	---

42, IDU
38, ODU

D, DC inverter
----------------

Q, Heat pump
--------------

S, Single phase
T, Three phase

U, ODU
H, High wall
S, Duct
T, Cassette
Z, Under-ceiling
F, Console
F, Floor-standing

2/3/4, Multi
--------------

Series name
-------------

Customer Code
B, Beijer
G, Germany
N, Nordic Model
...

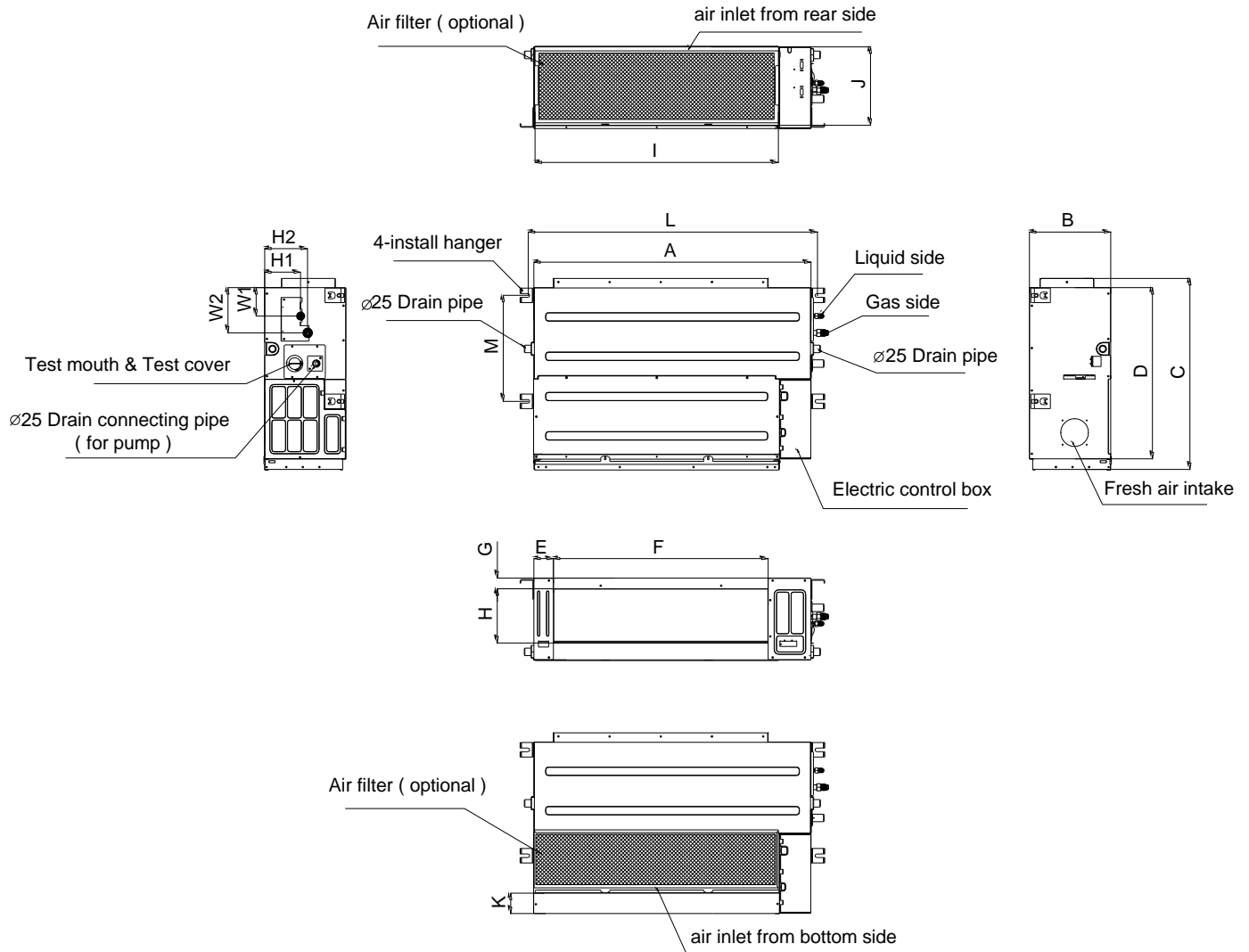
Capacity (KBtu/h)
-------------------

PART - 1

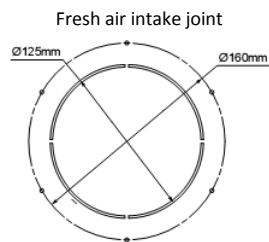
GENERAL INFORMATION

1.1 DUCTED

# DIMENSIONS



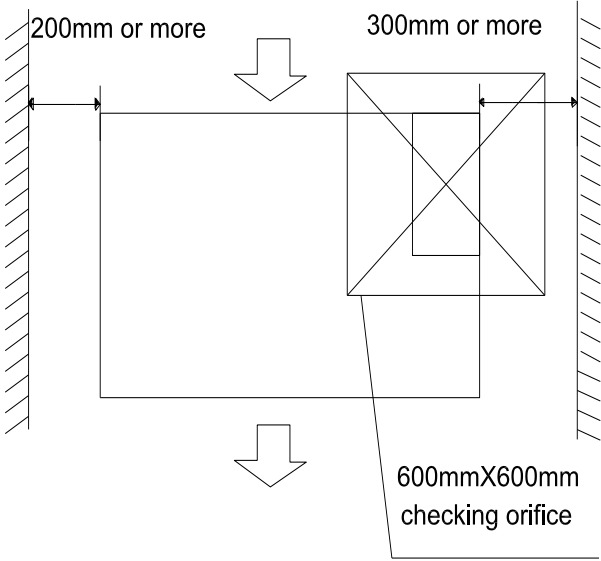
Note: standard product without filter														Unit: mm			
Model	Outline dimension(mm)				Air outlet opening size				Air return opening size			Size of install hanger		Size of refrigerant pipe			
	A	B	C	D	E	F	G	H	I	J	K	L	M	H1	H2	W1	W2
42QSM036/48/60DS*	1200	300	865	800	80	968	40	204	1094	288	45	1240	500	175	198	155	210





# INSTALLTION SPACE






---



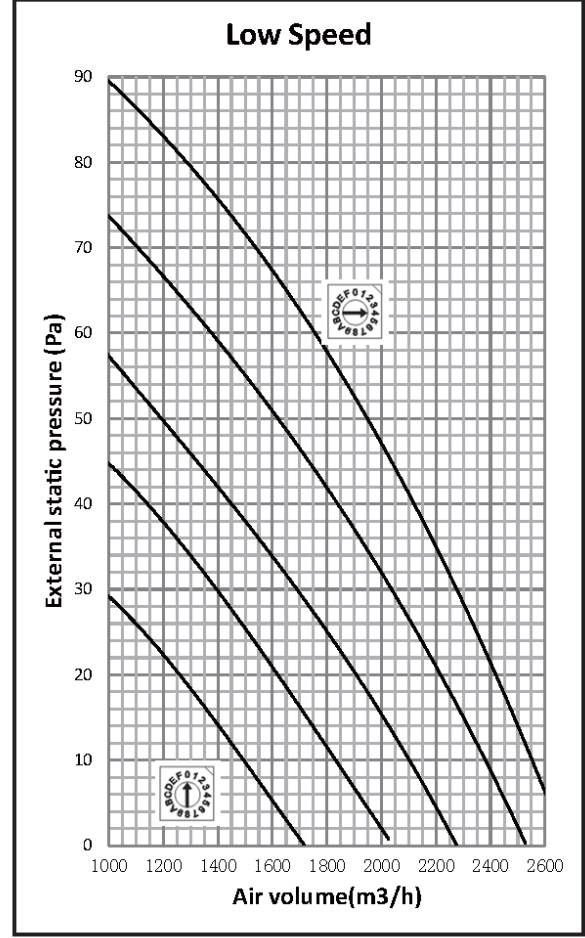
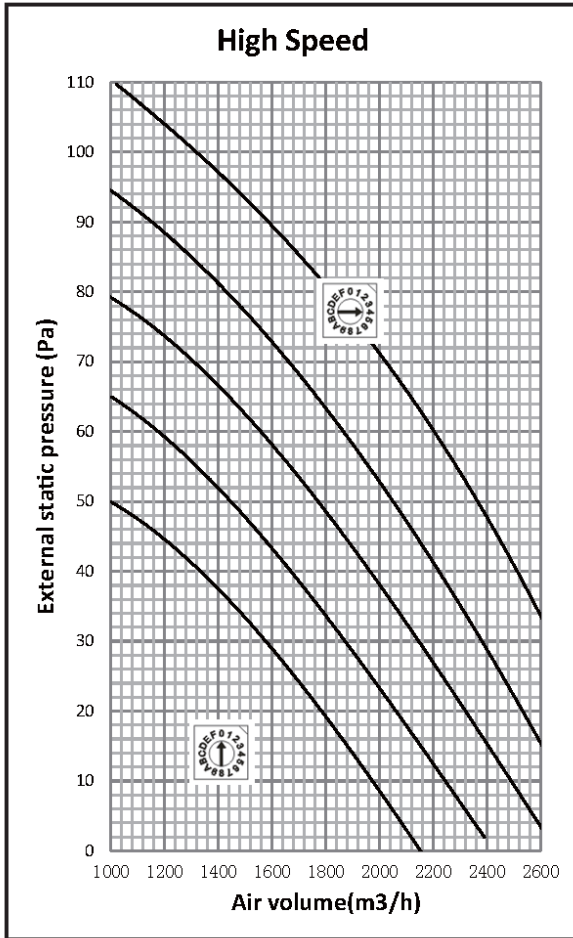
# STATIC PRESSURE

---

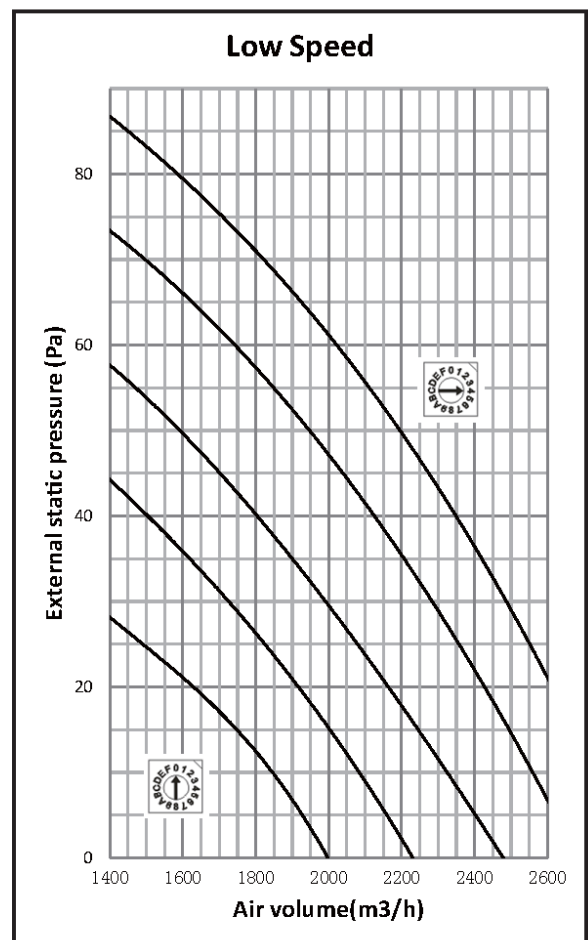
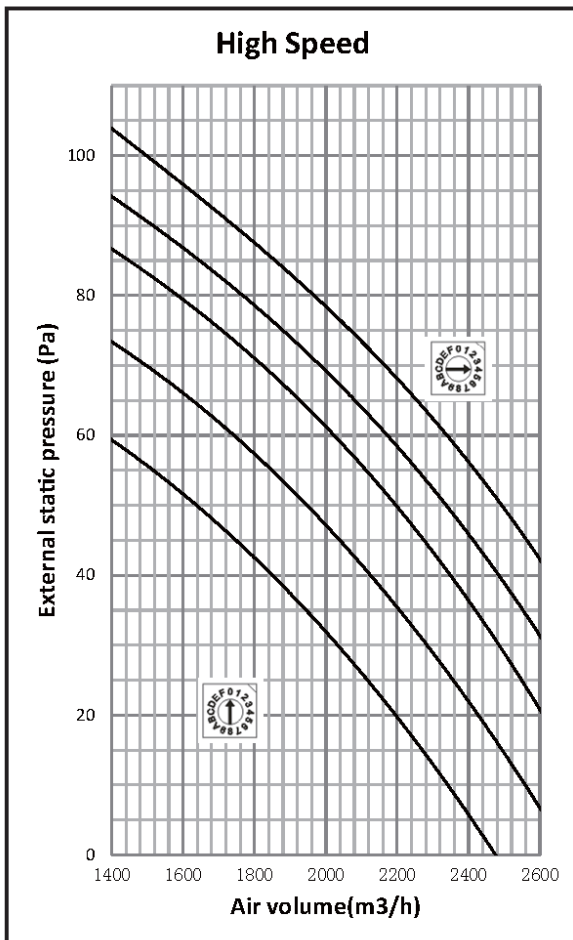
2.4.4 Static pressure can be re-set by dia switch ENC2 on control board.

ENC2					
CODE	0	1	2	3	4
42QSM012	0	10	20	30	40
42QSM018/024	10	25	40	55	70
42QSM036	20	35	50	65	80
42QSM048/060	20	35	50	65	80
DEFAULT SETTING			○		

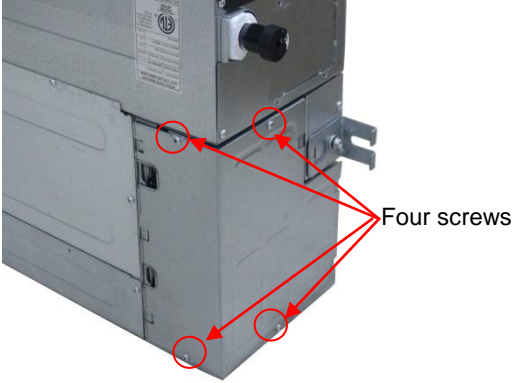
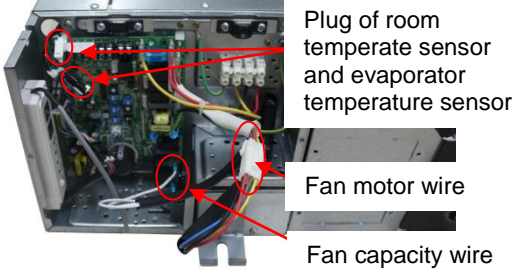
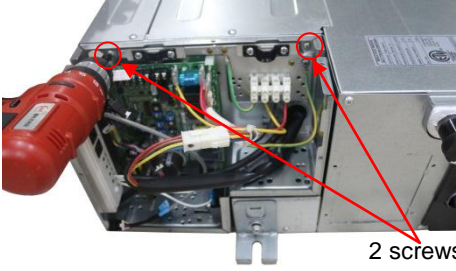
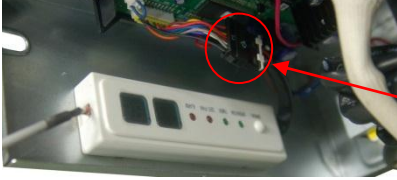

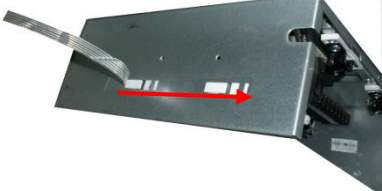
# STATIC PRESSURE-42QSM036DS

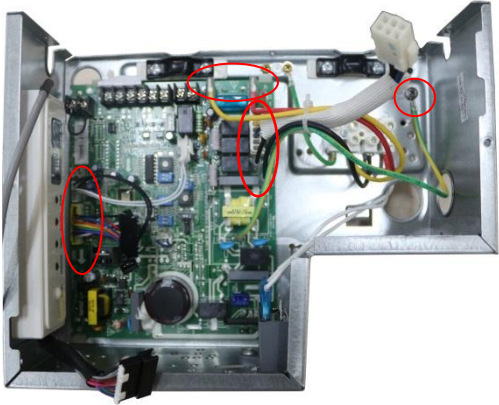
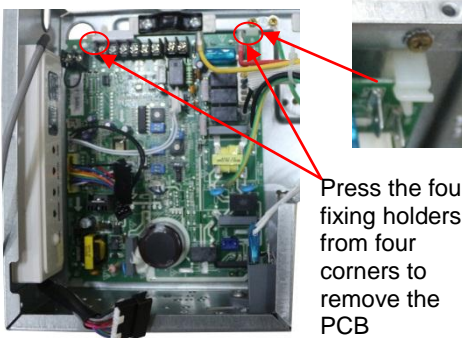
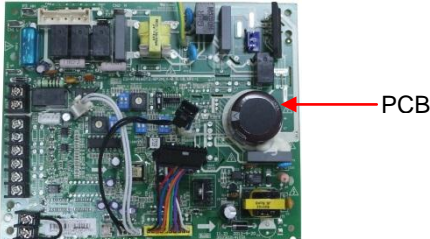
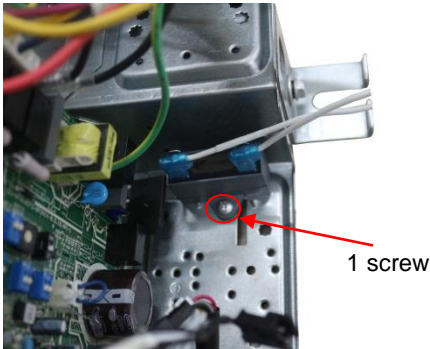
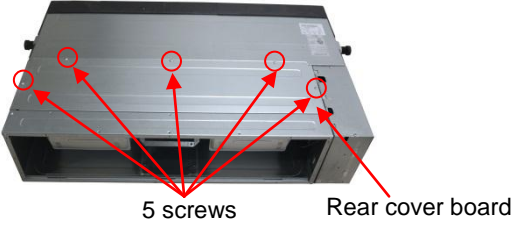


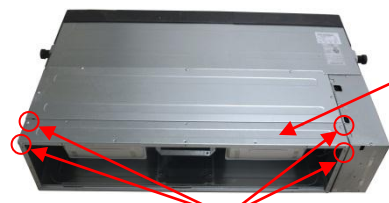

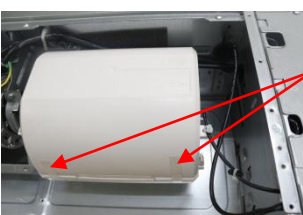
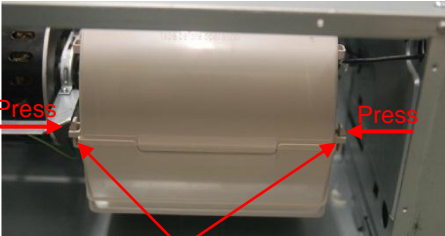
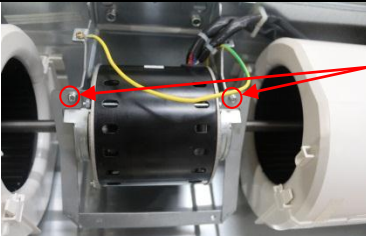

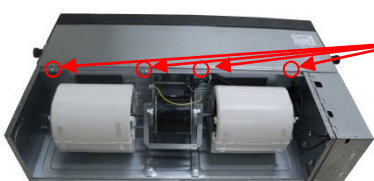
# STATIC PRESSURE-42QSM048/060DS



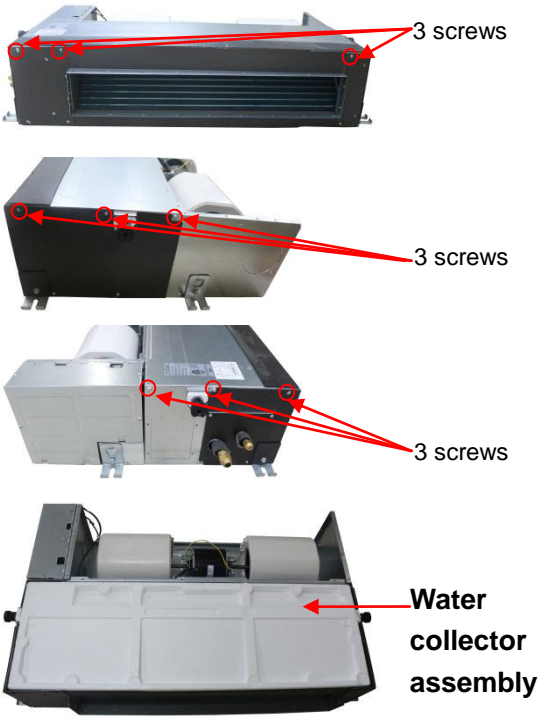
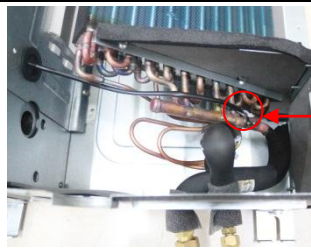
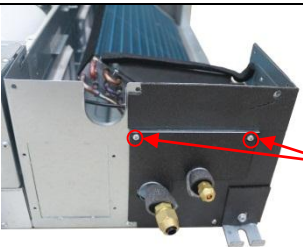
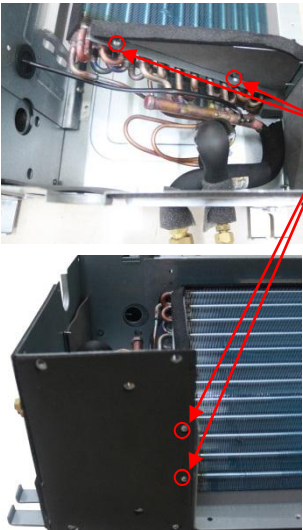
# DISASSEMBLY INSTRUCTION

No.	Parts name	Procedures	Remarks
1	Remove the electronic control box	1) Screw off the screws to remove the cover of electronic control box	
		2) Disconnect the fan motor wire, fan capacity wire, room temperature sensor wire and evaporator temperature sensor wire	
		3) Screw off the screws to remove electronic control box	
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	
		3) Remove the sticker	
		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.	
4	Remove the fan capacitor	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>
		3) Screw off the screw to remove it	 <p>1 screw</p>
5	Remove the fan motor	1) Screw off the fixing screws to remove the rear cover board	 <p>5 screws Rear cover board</p>

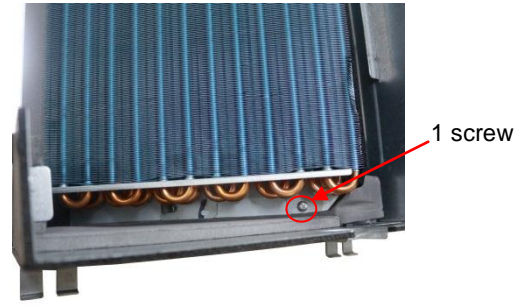
		<p>2) Screw off the fixing screws to remove the rear beam</p>	 <p>Rear beam</p> <p>Total four screws at the left side and right side</p>
		<p>3) Remove room temperature sensor</p>	 <p>Cut off the fastening belt to take off the room temperature sensor</p>
		<p>4) Remove the sticker</p>	 <p>Stickers</p>
		<p>5) Remove the below volute shell</p>	 <p>Press</p> <p>Press</p> <p>Press the clips to take off the volute shell</p>
		<p>6) Remove the fan motor wire from the electronic control box</p>	<p>Refer the operation of step2 of No.1</p>
		<p>7) Disassemble the fan motor fixing clamps to remove the fan motor assembly and fan wheel assembly</p>	 <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>
		<p>8) Disassemble the fan wheels, then you can remove the fan motor</p>	 <p>Take off the screw to remove the fan wheel</p>
<p>6</p>	<p>Remove the water collector assembly</p>	<p>1) Remove the rear cover board</p>	<p>Repeat the operation of step1 of No.5</p>
		<p>2) Screw off the screws to remove the water collector assembly</p>	 <p>4 screws</p>



			 <p>3 screws</p> <p>3 screws</p> <p>3 screws</p> <p><b>Water collector assembly</b></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>
		4) Remove the evaporator support board	 <p>4 screws</p>



**5) Screw off the fixing screws to remove the evaporator**

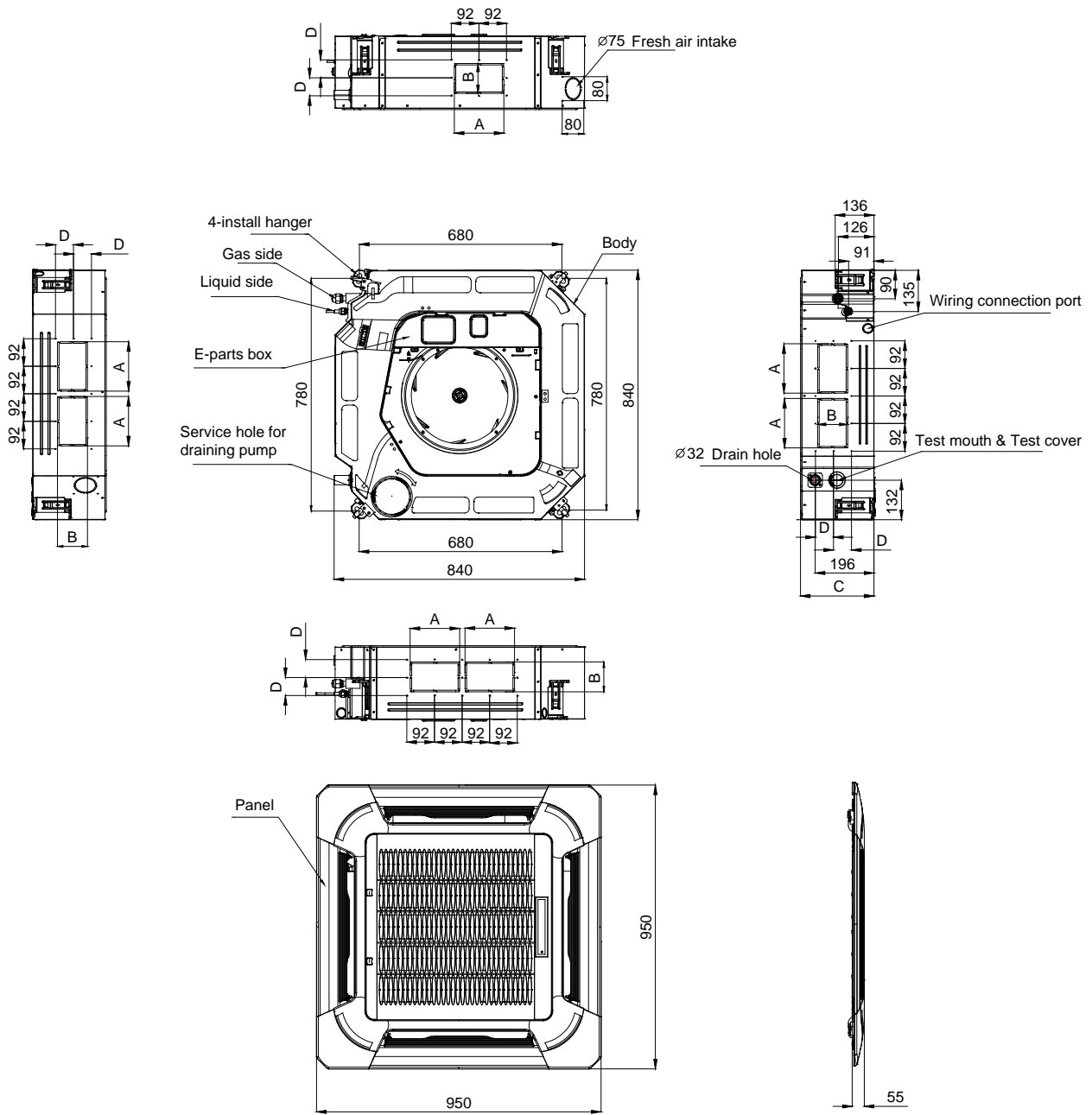


PART - 1

GENERAL INFORMATION

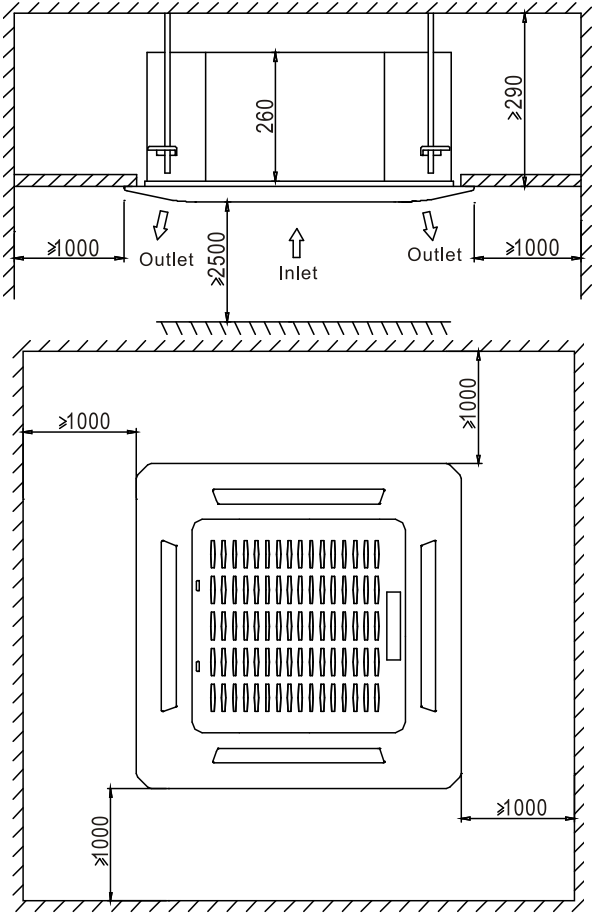
1.2 CASEETTE

# DIMENSIONS






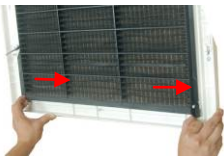
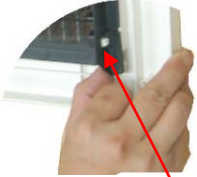




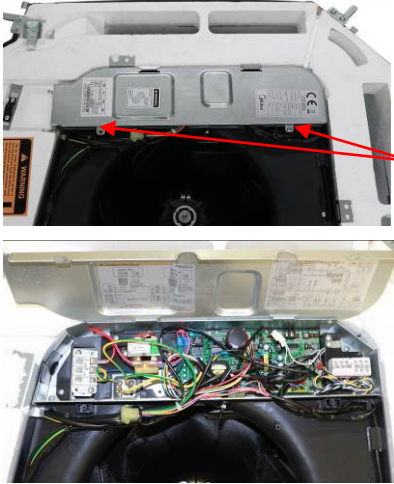

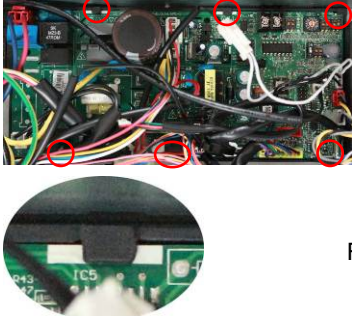
Unit: mm				
Model	A	B	C	D
42QTD036DS*	160	95	245	60
42QTD048/60DS*	160	95	287	60







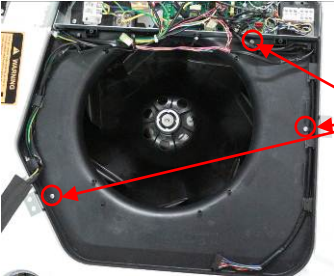
# INSTALLTION SPACE







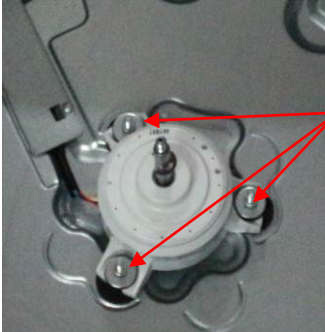
# DISASSEMBLY INSTRUCTION

No.	Parts name	Procedures	Remarks
1	Remove the filter	<b>1) Open the grille</b> Use two fingers to press the clips on the grille (pic.1), then hitch the grille and open it (pic.2, pic.3)	  Pic.1                      Pic.2  Pic.3
		<b>2) Remove the grille</b> <ul style="list-style-type: none"> <li>● Disconnect the display board wire connected to the PCB.</li> <li>● Move the grille up and down to remove the grille.</li> </ul>	 Disconnect the wires between control box and grille  Take down the grille from the clasps
		<b>3) Remove the filter</b> Press the filter slightly according to the arrow direction to let filter free from the clasp, then you can take off it.  <b>Note:</b> the filter is easy to be damaged, be careful when removing it.	  Press following the arrow                      Clasp 
2	Remove the	<b>1) Open the grille</b>	Repeat the operation of step1 of No. 1


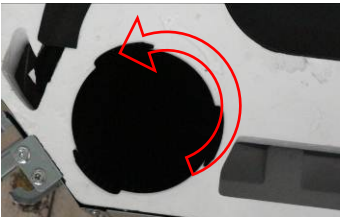





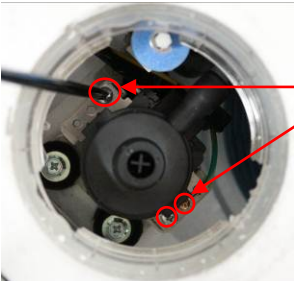

	<p><b>display board</b></p> <p><b>2) Remove the grille</b> In order to prevent the grille falling down, it's necessary to remove it.</p> <p><b>3) Disassemble the display board</b> Remove the two screws show in the picture to disassemble the display board</p>	<p>Repeat the operation of step2 of No. 1</p> 
<p><b>3</b></p> <p><b>Remove the PCB</b></p>	<p><b>1) Open the grille</b></p> <p><b>2) Disassemble the electronic control box cover</b> Remove the 2 screws to disassemble the electronic control box cover</p> <p><b>3) Pull out all the plugs or connectors connected to the PCB</b></p> <p><b>4) Remove the PCB from the fixing pins. There are white lines on the PCB to show the position of the pins.</b></p>	<p>Repeat the operation of step1 of No.1(No need to remove the panel)</p>    <p>Fixing pin</p>
<p><b>4</b></p> <p><b>Remove the electronic control box</b></p>	<p><b>1) Open the grille</b></p> <p><b>2) Remove the electronic control box cover</b></p>	<p>Repeat the operation of step1 of No.1(No need to take down the panel)</p> <p>Repeat the operation of step 2 of No.3</p>

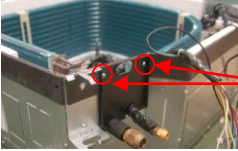
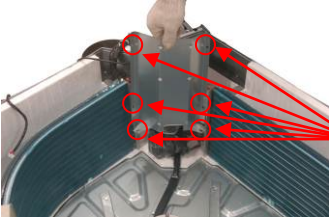
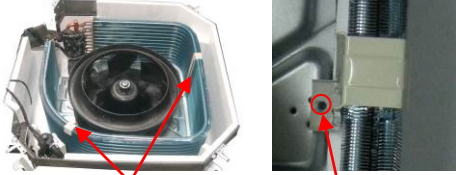
		<p>3) Pull out all the plugs or connectors connected to the electronic control box</p>	
		<p>4) Remove the electronic control box Remove the 3 screws to disassemble the electronic control box</p>	 <p>3 screws</p> 
5	Remove the panel	1) Open the grille	Repeat the operation of step1 of No.1
		2) Remove the grille	Repeat the operation of step2 of No.1
		3) Disassemble the four corner board	 <p>Disassemble the corner board</p>
		4) Loose the fixing screw to free the hooks.	 <p>Screw</p>
		5) Move the four hooks from the clamps, then the panel can be disassembled.	 <p>Hook                      Hook</p>
6	Remove the volute shell	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	Repeat the operation of No.4
		3) Screw off the 3 screws to remove the volute shell	 <p>3 screws</p>



			
7	Remover the fan wheel	1) Repeat the operation of No.6	
		2) Remove the hexagon nut to disassemble the fan wheel	
		3) Pull out the fan wheel	
8	Remove the fan motor	1) Repeat the operation of No.7	
		2) Remove the fixing board of fan motor wire	 Two screws
		3) Remove the 3 nuts to disassemble the fan motor	 3 nuts
9	Remove the water collector assembly	1) Remove the panel	Repeat the operation of No.5
		2) Remove the electronic control box	Repeat the operation of No.4
		3) Remove the volute shell	Repeat the operation of No.6



		4) Screw off the screws to remove the water connector assembly	
10	Remove the draining pump	1) Rotate the black cover counterclockwise to remove it.	 
		2) Rotate the transparent cover counterclockwise to remove it with a special tool for it is very tighten.	 
		3) Take off the fastening belt(or fixing clamp) and disconnect the water pipe	 Fastening belt  Water pipe
		4) Screw off the screws to remove the draining pump	 3 screws
		5) Take out the drain pump	
11	Remove the evaporator	1) Remove the water collector assembly	Repeat the operation of No.9

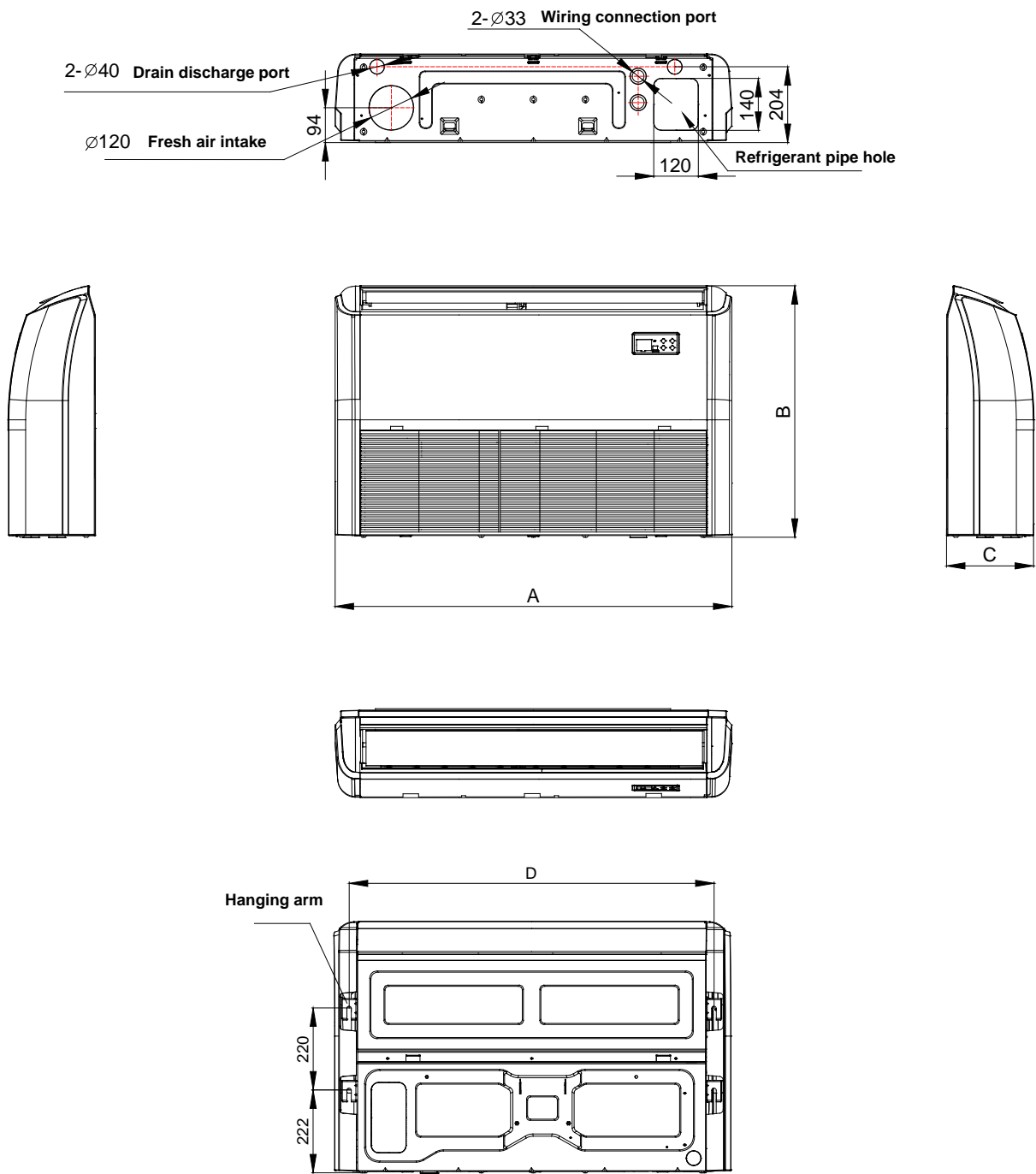
	<p><b>2) Remove the seal board of evaporator</b></p>	 <p>Two screws</p>
	<p><b>3) Remove the evaporator fixing board</b></p>	 <p>Six screws</p>
	<p><b>4) Remove the evaporator fixing clamps to disassemble the evaporator.</b></p>	 <p>Two fixing clamps      One screw</p>

# PART - 1

## GENERAL INFORMATION

### 1.3 UNDER-CEILING

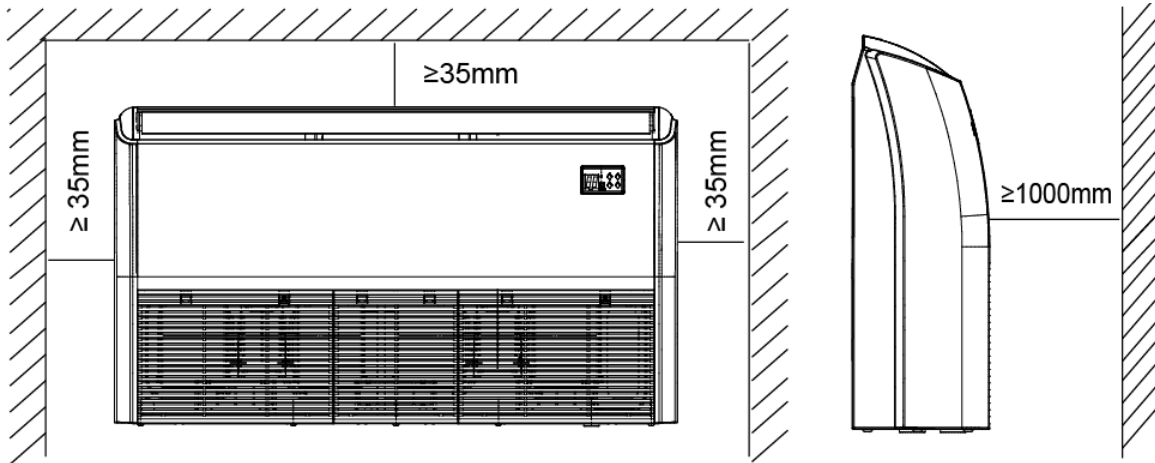
# DIMENSIONS



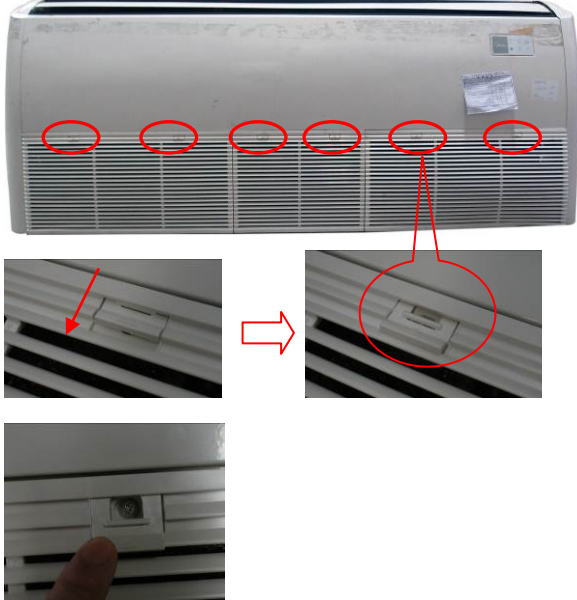
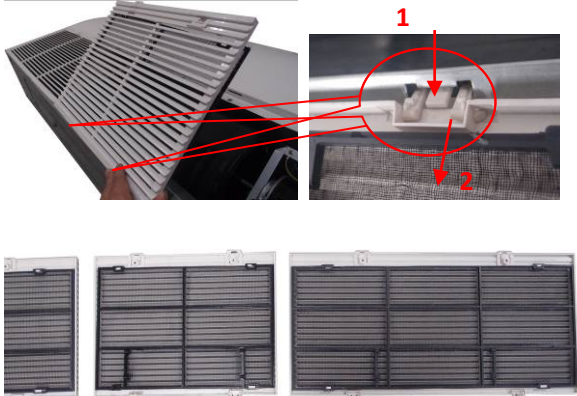
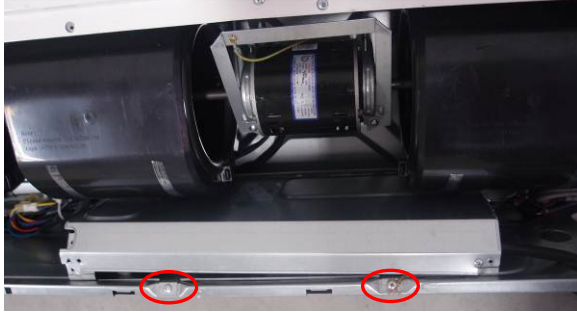

M0del	A	B	C	D
42QZL036/48/60DS*	1650	675	235	1565

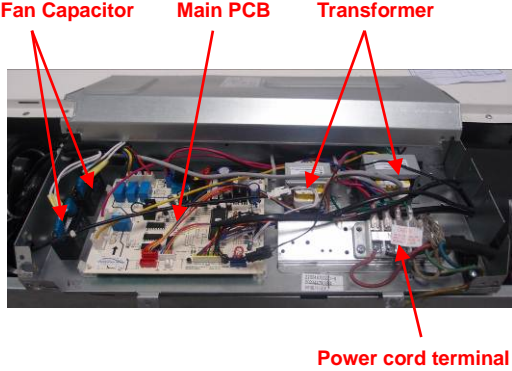
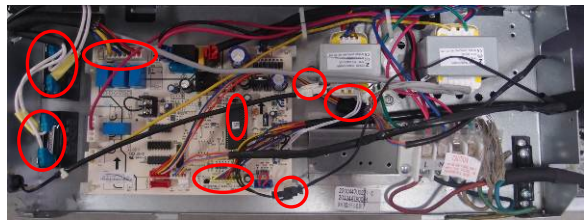
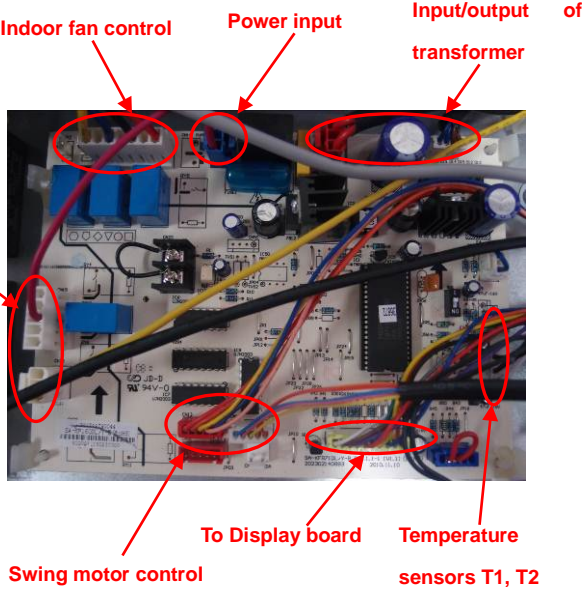
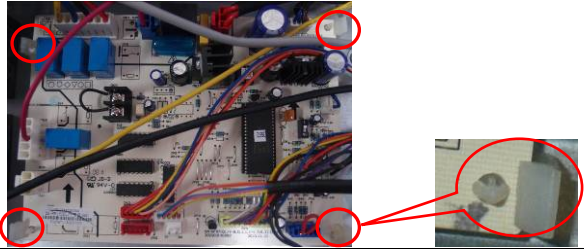
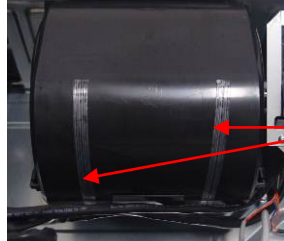
# INSTALLTION SPACE

---



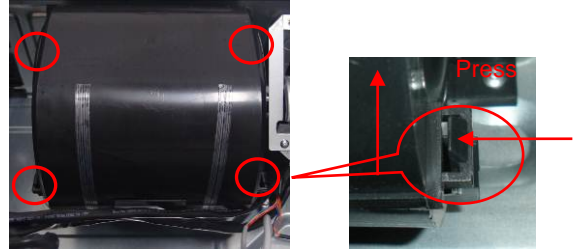
# DISASSEMBLY INSTRUCTION

No.	Parts name	Procedures	Remarks
1	Remove the air outlet grilles.	<p>1) Pull the grille locker till the screws appears, and release these screws.</p>	
		<p>2) Remove the air return grille (watch the lockers under the grilles).</p>	
2	Remove the control PCB	<p>1) Release 2 screws fixing the control box, and then take it out.</p>	
		<p>2) Screw off the 2 screws to remove the cover of the control box</p>	

			 <p>Fan Capacitor    Main PCB    Transformer</p> <p>Power cord terminal</p>
		3) Disconnect the fan motor wire, louver motor wire, room temperature and evaporator temperature wire, and display board wire to remove the electronic control box	
		4) Disconnect all the wires of plugs connected to the PCB	 <p>Indoor fan control    Power input    Input/output of transformer</p> <p>Control wires for outdoor unit</p> <p>Swing motor control    To Display board    Temperature sensors T1, T2</p>
		5) Remove the PCB from the fixing pins	
3	Remove the fan motor and fan wheel	1) Remove the stickers stick to the volute shell	 <p>Stickers</p>



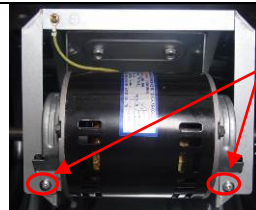
2) Remove the below volute shell



Press the clips to take off the volute shell



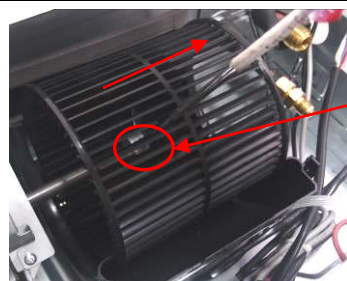
3) Disassemble the fan motor fixing clamps to remove the fan motor assembly and fan wheel assembly



The fan motor assembly and fan wheel assembly can be removed after took off the 2screws used to fix the fan motor fixing clamps.


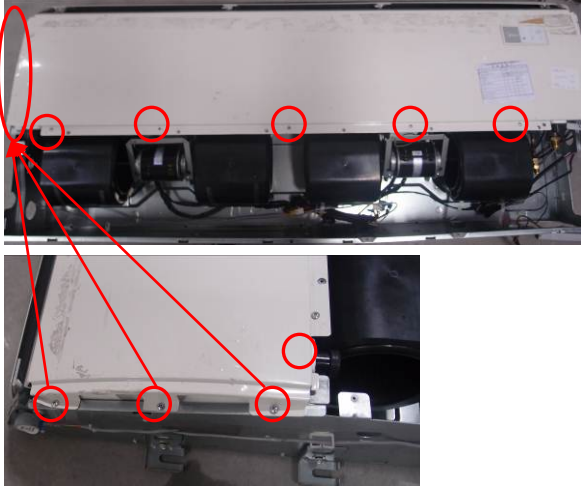


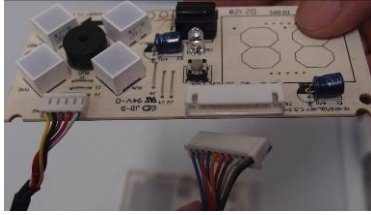
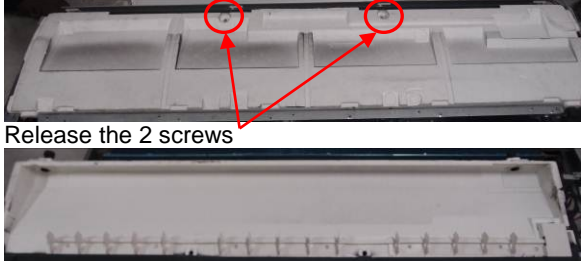






4) Release the screws locking the fan wheel on the shaft, you can remove the fan wheels.



Take off the screw to remove the fan wheel



<p><b>4</b></p> <p><b>Remove the display PCB</b></p>	<p><b>1) Release the 2 screws (both sides) and push the panel upwards to remove it</b></p>	 <p>Release the screw</p> <p>Push it upwards</p>
	<p><b>2) Release 11 screws (5 at the front and 6 at both sides).</b></p>	
	<p><b>3) Remove the front panel. The display board is on the back.</b></p>	
	<p><b>4) Release 2 screws fixing the display PCB</b></p>	
	<p><b>5) Unplug the wires</b></p>	
<p><b>5**</b></p> <p><b>Remove the vertical swing motor</b></p>	<p><b>1) Remove the drain pan assembly</b></p>	 <p>Release the 2 screws</p>

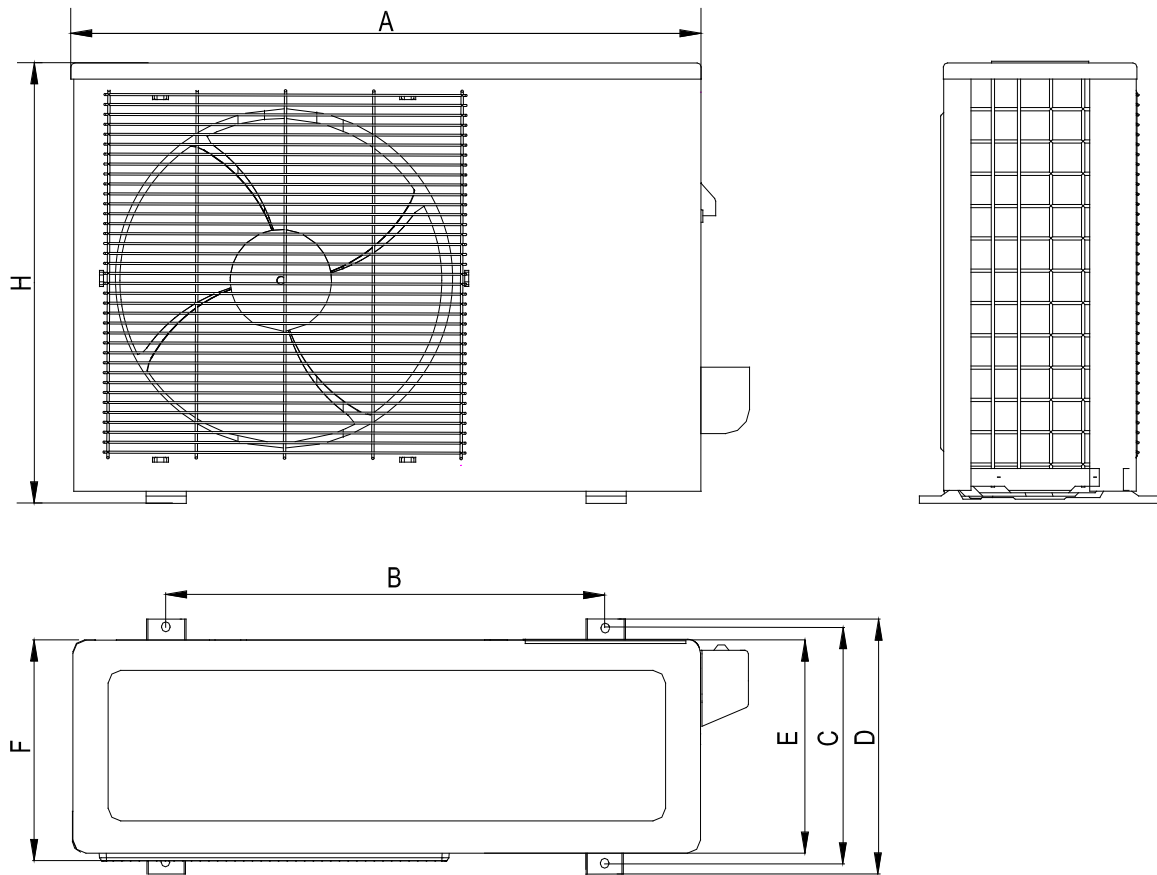
		<p>2) Remove the air outlet grille assembly by screwing of 8 screws</p>	 <p>release 8 screws</p>
		<p>3) Release 2 screws fixing the swing motor to remove it</p>	
<p>6</p>	<p>Remove 2 horizontal swing motors (on both sides off the unit)</p>	<p>1) Remove the motor protective cover</p> <p>2) Screw off the 2 fixing screws to remove swing motor</p>	 <p>2 screws</p>
<p>7</p>	<p>Remove the evaporator assembly</p>	<p>1) Remove the 4 screws (2 on left side and 2 on right side) fixing the evaporator on both sides of the unit.</p> <p>2) Remove the evaporator</p>	

# PART - 1

## GENERAL INFORMATION

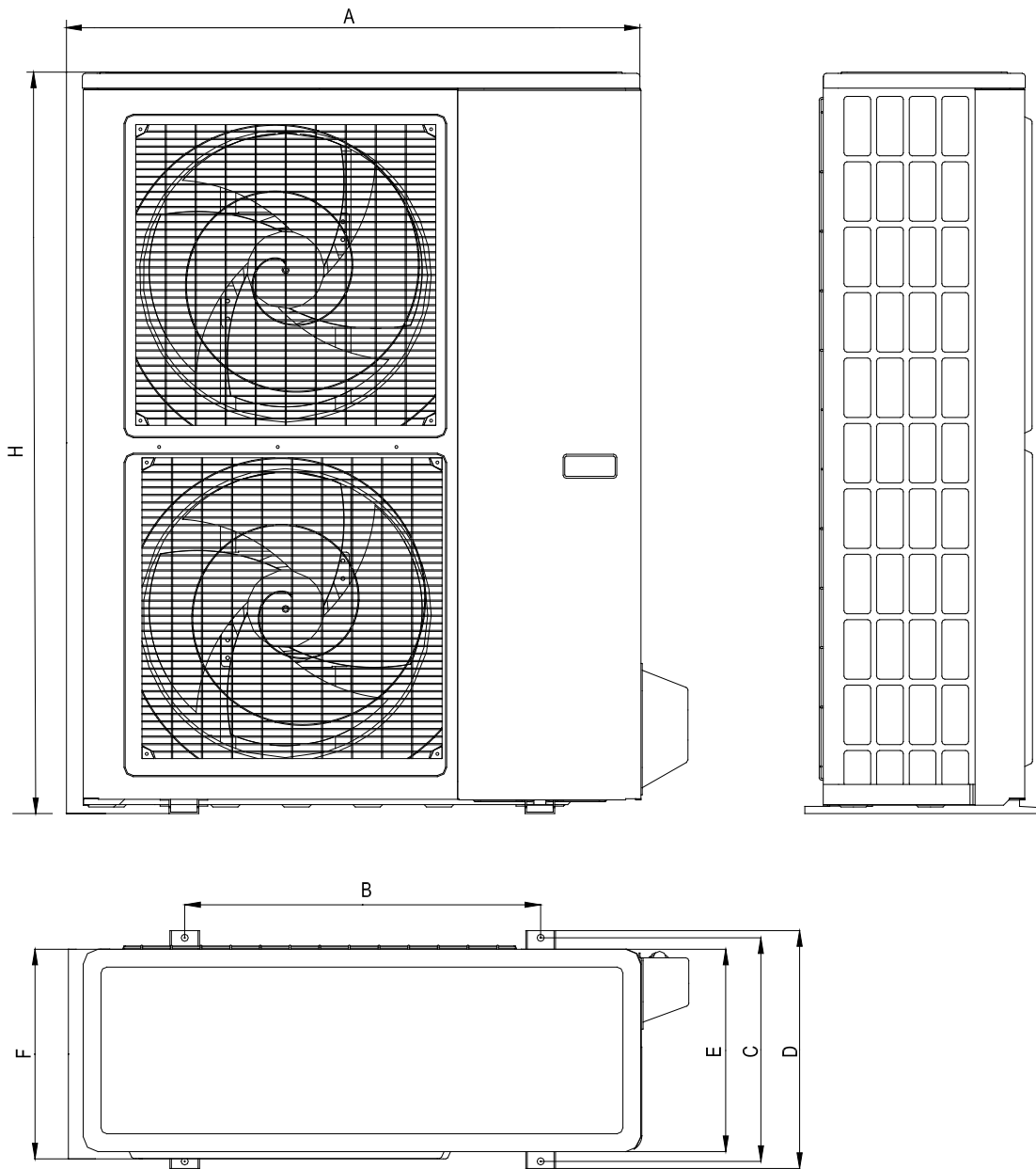
### 1.4 OUTDOOR UNIT

# DIMENSIONS



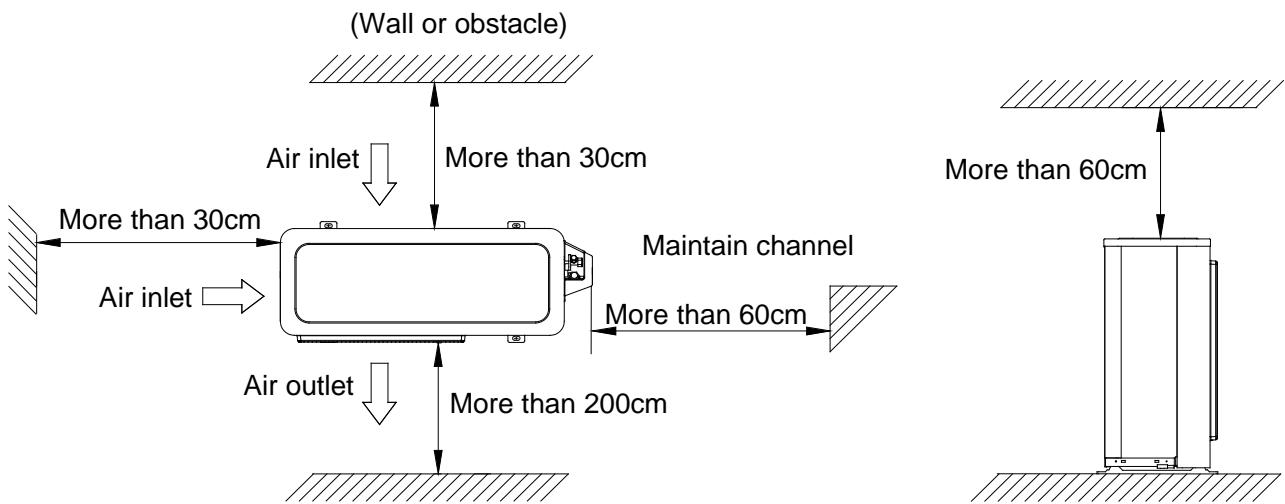
Model	Unit: mm						
	A	B	C	D	E	F	H
38QUS036DS*	945	640	405	448	385	170	810

# DIMENSIONS

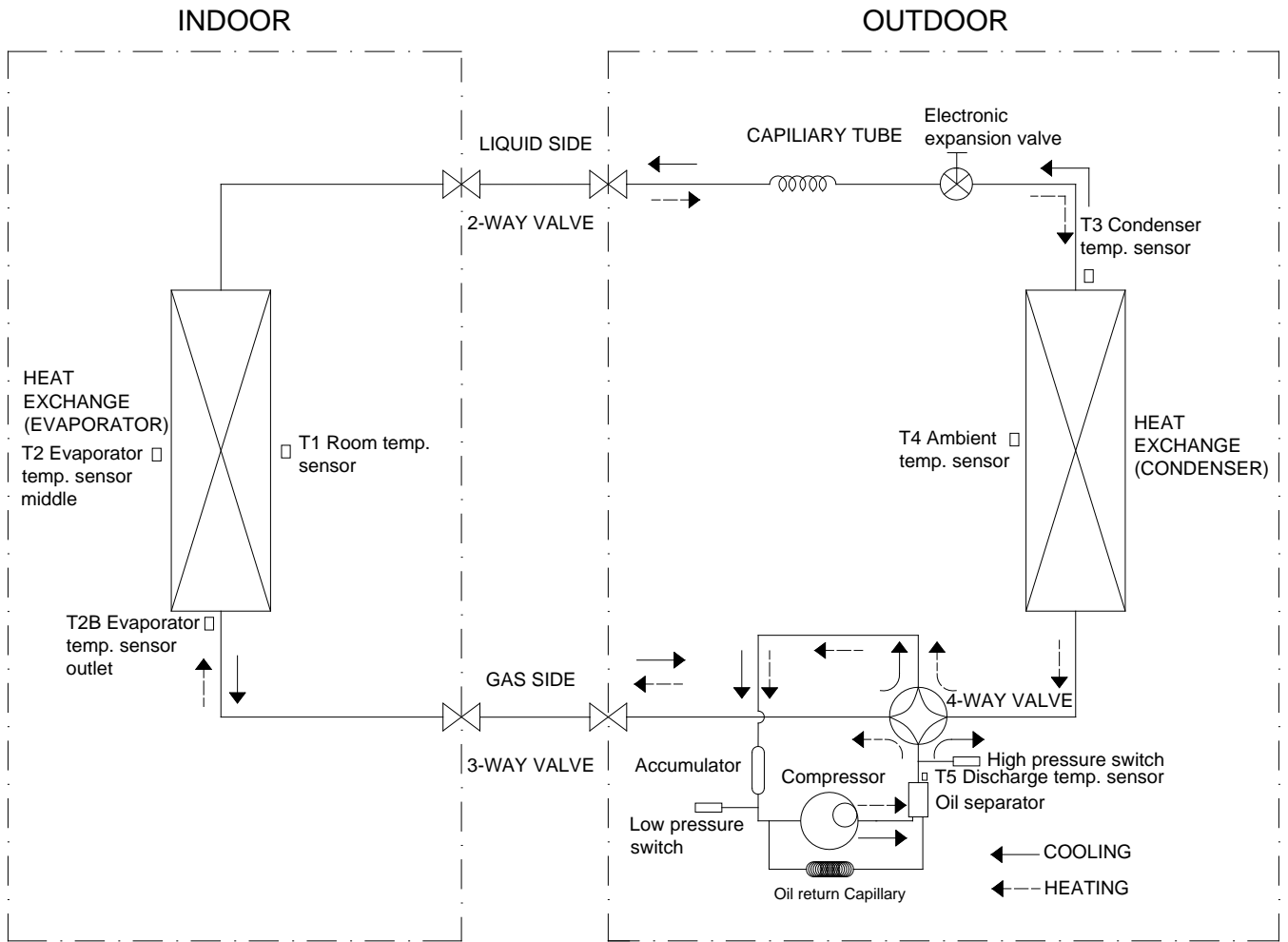


Model	Unit: mm						
	A	B	C	D	E	F	H
38QUS048/60DS*	938	634	404	448	370	392	1369

# INSTALLTION SPACE



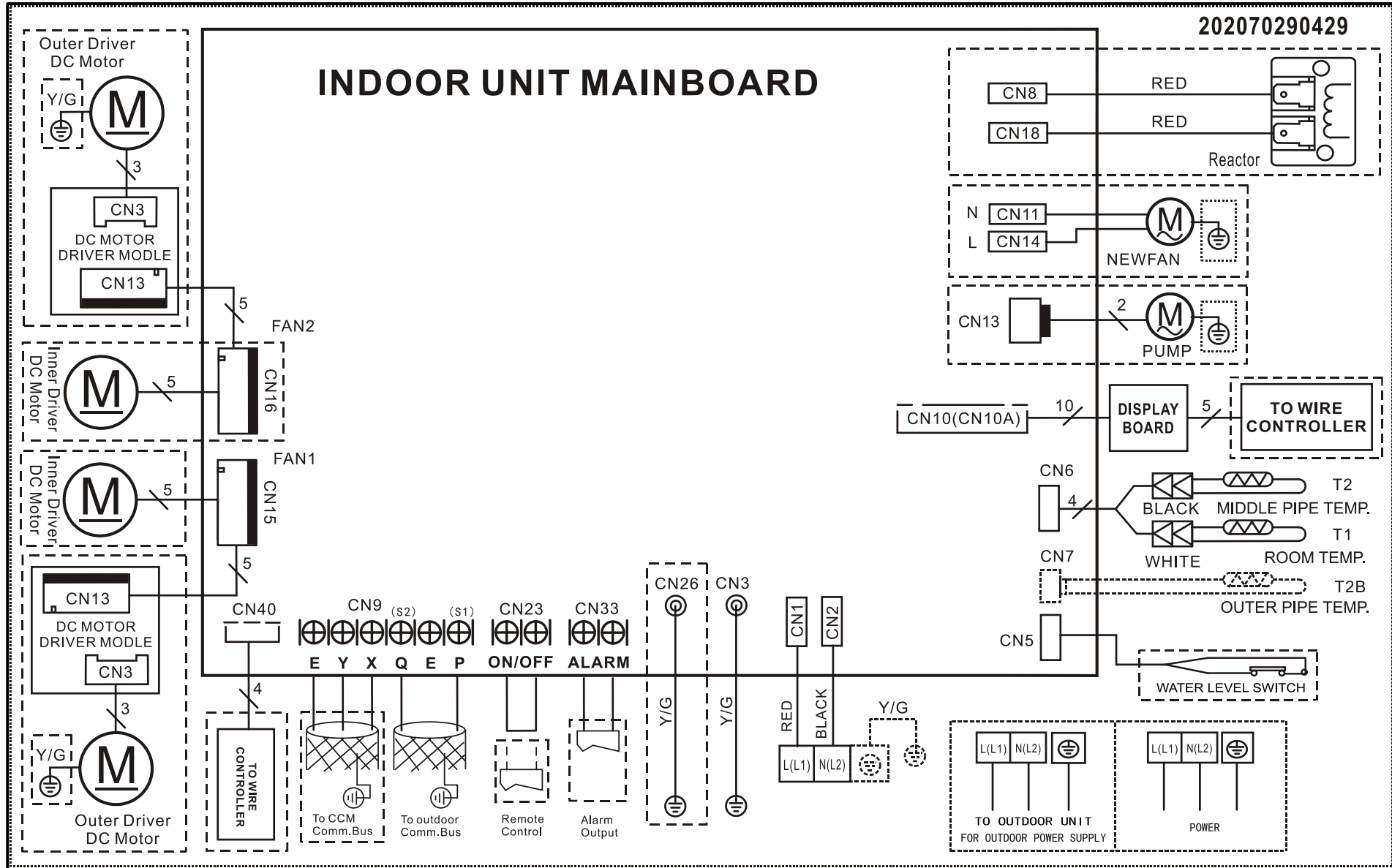
# REFRIGERANT CYCLE DIAGRAM



PART - 2  
ELECTRICAL DIAGRAM



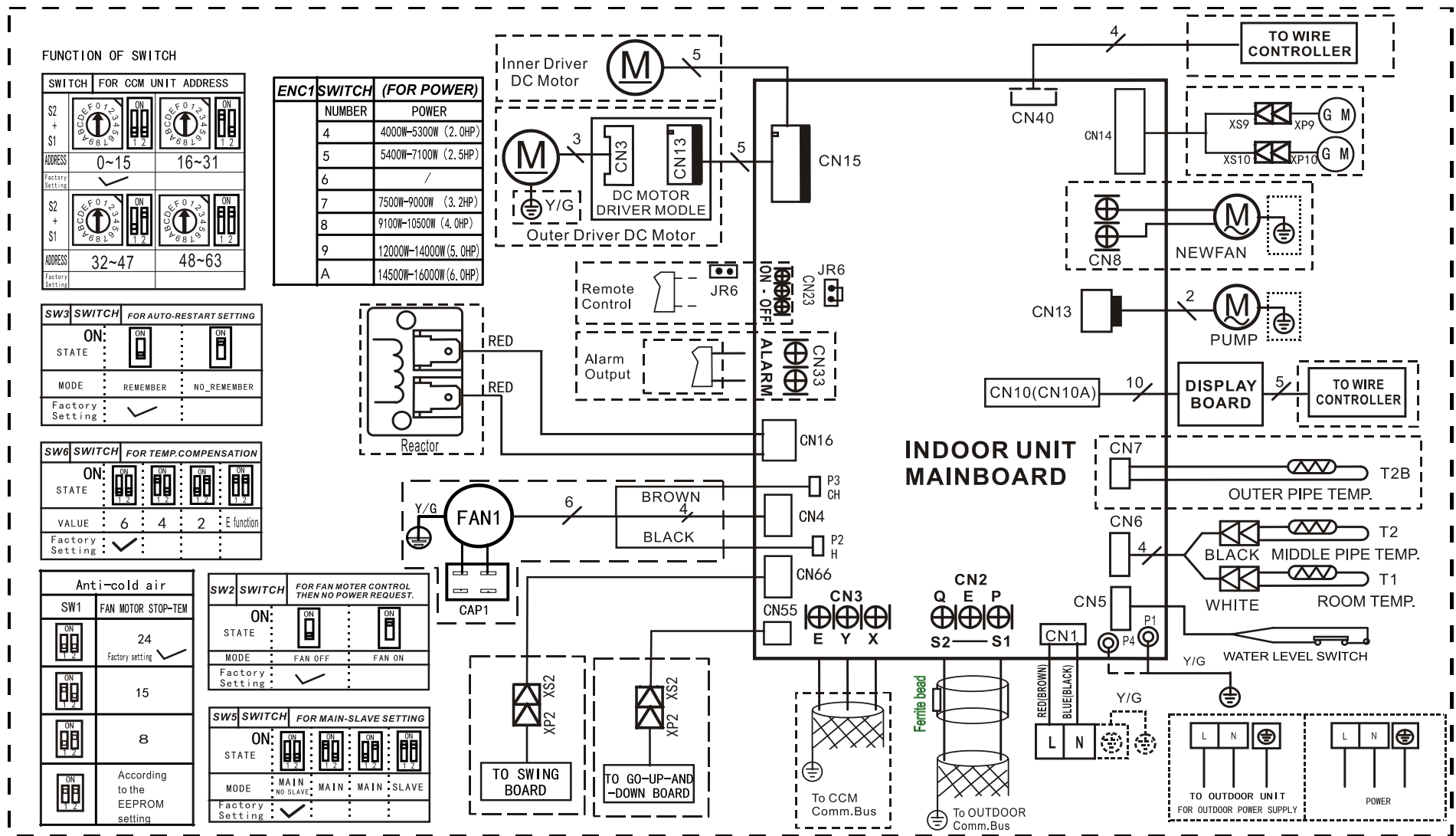
# WIRING DIAGRAM - 42QSM036/48/60DS



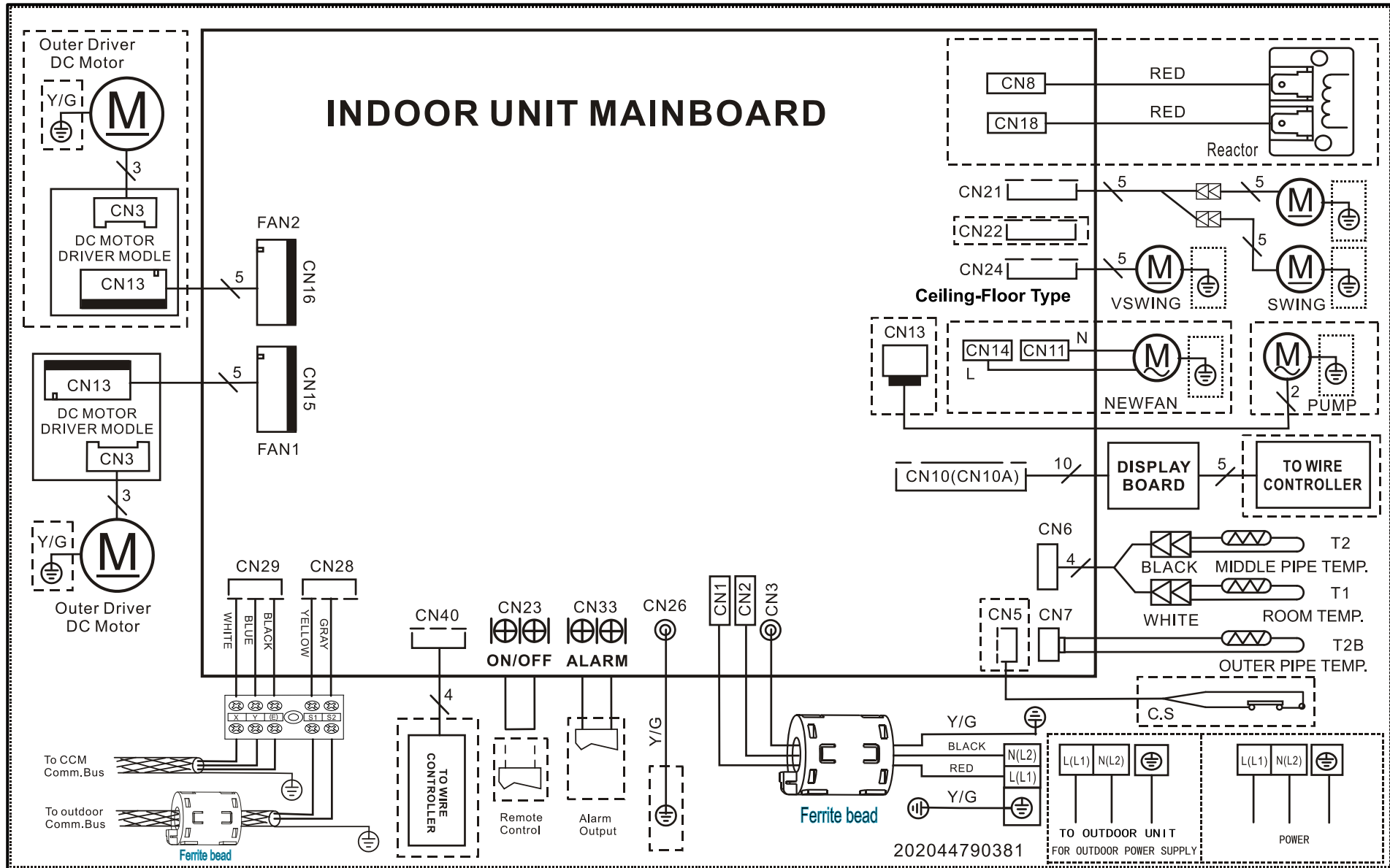
# PCB SETTING - 42QSM036/48/60DS

FOR SETTING POWER							FOR ANTI-COLD WIND					
ENC1								SW1				
CODE	4	5	7	8	9	A	B	TELO	24°C	15°C	Fan motor do not stop.	According to the E Function.
POWER	≤53	54~71	72~90	91~105	106~140	141~160	≥161	FACTORY SETTING	<input checked="" type="checkbox"/>			
FACTORY SETTING	ACCORDING TO RELATED MODEL.											
FOR SETTING NETADDRESS							FOR SETTING FAN MOTOR CONTROL THEN NO POWER REQUEST					
S1+S2									SW2			
CODE	0~F	0~F	0~F	0~F					MODE	FAN OFF	FAN ON	
NETADDRESS	0~15	16~31	32~47	48~63					FACTORY SETTING	<input checked="" type="checkbox"/>		
FACTORY SETTING	<input checked="" type="checkbox"/>											
FOR SETTING STATIC PRESSURE							FOR SETTING AUTO-RESTART					
ENC2						STATIC PRESSURE RANGE(Pa)			SW3			
MODEL (K Btu/h)	CODE	0	1	2	3	4	0-45(Pa)			AUTO-RESTART	ACTIVE	INACTIVE
	MODEL ≤12	0(Pa)	10(Pa)	20(Pa)	30(Pa)	40(Pa)	0-100(Pa)			FACTORY SETTING	<input checked="" type="checkbox"/>	
	12 < MODEL ≤24	10(Pa)	25(Pa)	40(Pa)	55(Pa)	70(Pa)	0-100(Pa)					
	24 < MODEL ≤60	20(Pa)	35(Pa)	50(Pa)	65(Pa)	80(Pa)	0-100(Pa)					
FACTORY SETTING			<input checked="" type="checkbox"/>									
FUNCTION SETTING INDICATION 202070590810							FOR TEMP. COMPENSATION					
							SW6					
							DUCT TYPE	6°C	2°C	4°C	According to E Function.	
							FACTORY SETTING	<input checked="" type="checkbox"/>				

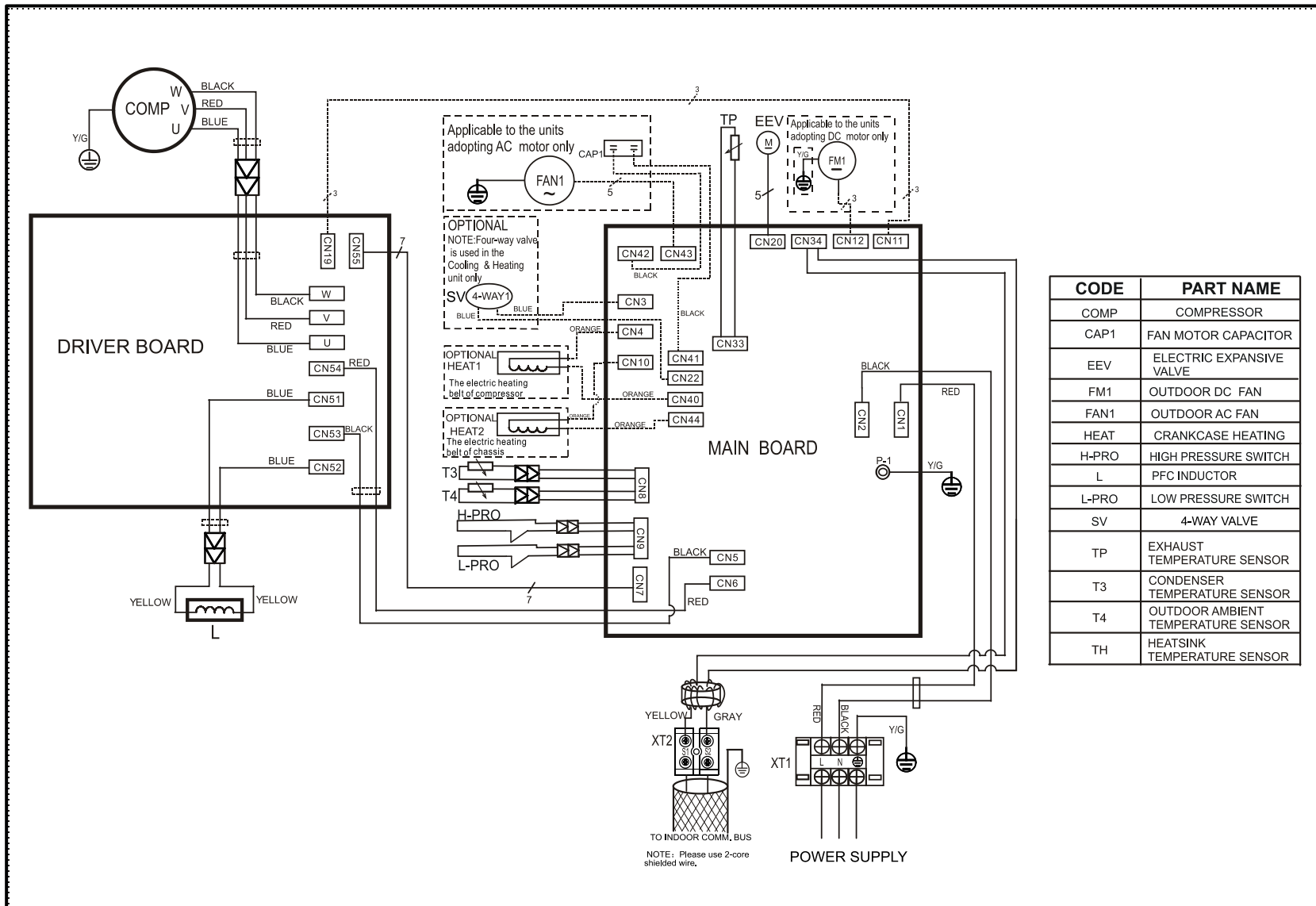
# WIRING DIAGRAM - 42QTD036/48/60DS



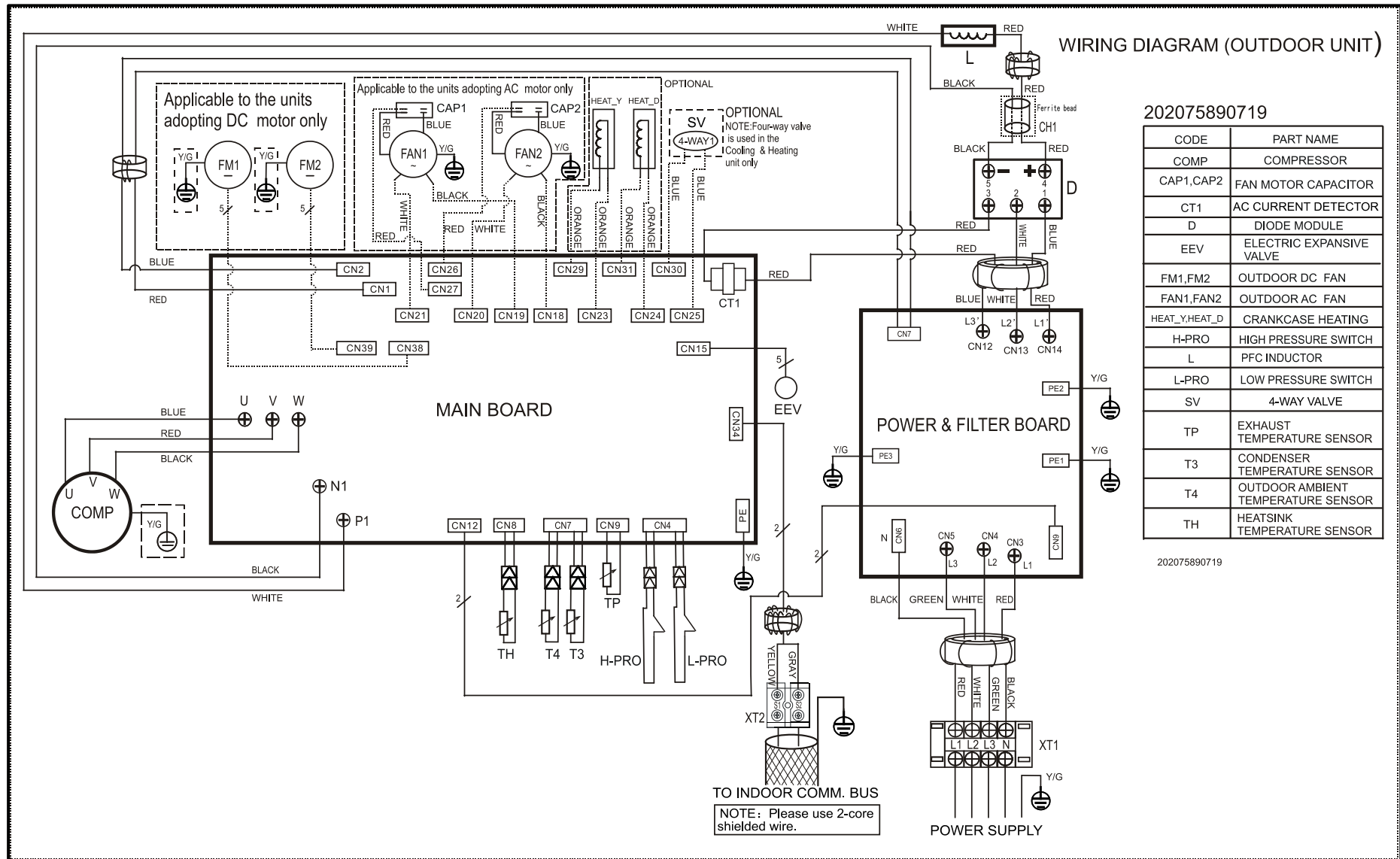
# WIRING DIAGRAM - 42QZL036/48/60DS



# WIRING DIAGRAM – 38QUS036DS



# WIRING DIAGRAM - 38QUS048/60DT

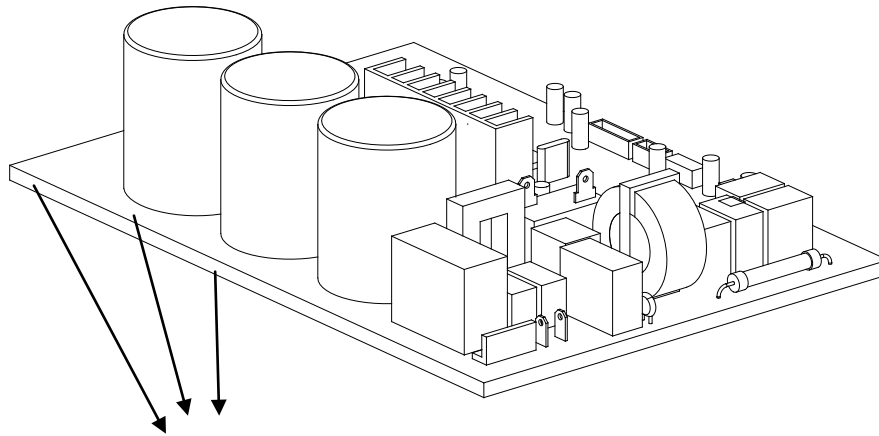


**PART – 3**

**TROUBLE SHOOTING**

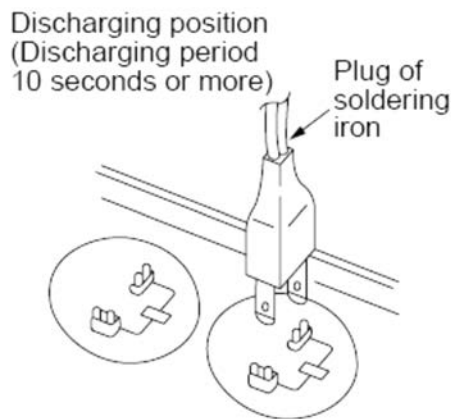
# SAFETY CAUTION

Electricity power is still kept in capacitors even the power supply is shut off. Do not forget to discharge the electricity power in capacitor.



**Electrolytic Capacitors**  
**(HIGH VOLTAGE! CAUTION!)**

Connect discharge resistance (approx.100Ω 40W) or soldering iron (plug) between +, - terminals of the electrolytic capacitor on the contrary side of the outdoor PCB.

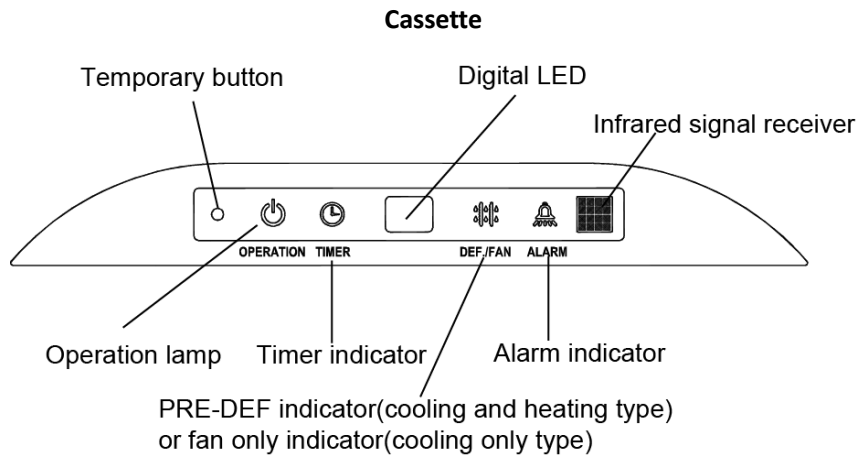


**Note: The picture above is only for reference. The plug of your side may be different.**

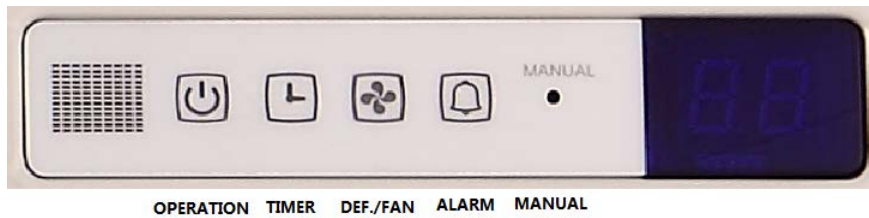


# ERROR CODE - IDU

## Display panel



## Under-ceiling



## Ducted



# ERROR CODE - IDU

Malfunction	Error Code	Timer Lamp	Operation Lamp (flashes)
Indoor EEPROM malfunction	E0	X	1
Communication malfunction between indoor and outdoor units	E1	X	2
Indoor fan speed is out of control	E3	X	4
Open or short circuit of T1 temperature sensor	E4	X	5
Open or short circuit of T2 temperature sensor	E5	X	6
Refrigerant leakage detection	EC	X	7
Water level alarm	EE	X	8
<del>Outdoor unit is faulty</del>	<del>E6</del>	<del>X</del>	<del>11</del>
Open or short circuit of T4 temperature sensor	F1	O	2
Open or short circuit of T3 temperature sensor	F2	O	3
Open or short circuit of T5 temperature sensor	F3	O	4
Outdoor EEPROM malfunction (For some units)	F4	O	5
Outdoor fan speed is out of control	F5	O	6
Open or short circuit of T2B temperature sensor	F6	O	7
IPM module malfunction	P0	☆	1
Over voltage or over low voltage protection	P1	☆	2
High temperature protection of top of compressor	P2	☆	3
Error rotor position protection of compressor	P4	☆	5
Low pressure protection of compressor	P6	☆	7
Sensor of outdoor IGBT is faulty	P7	☆	8
<b>O (on) X(off) ☆(flash at 2Hz)</b>			

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

# ERROR CODE - ODU



Display Code	Malfunction or Protection
E0	Outdoor EEPROM malfunction
E2	Communication error between indoor and outdoor units
E3	Communication error between IPM board and outdoor main board
E4	Open or short circuit of T3 or T4 temperature sensor
E5	Voltage protection of compressor
E8	Outdoor fan speed has been out of control
P0	Top temperature protection of compressor
P1	High pressure protection (Models specific)
P2	Low pressure protection (Models specific)
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).

- 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

# Trouble Shooting - IDU

## E0/F4: Indoor EEPROM malfunction

<b>Malfunction decision conditions</b>	<b>Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.</b>
<b>Supposed causes</b>	<ul style="list-style-type: none"><li>● Installation mistake</li><li>● PCB faulty</li></ul>

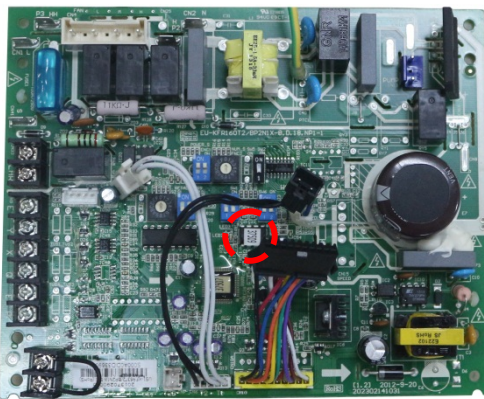
### Trouble shooting:

Power off, then restart the unit 2 minutes later.

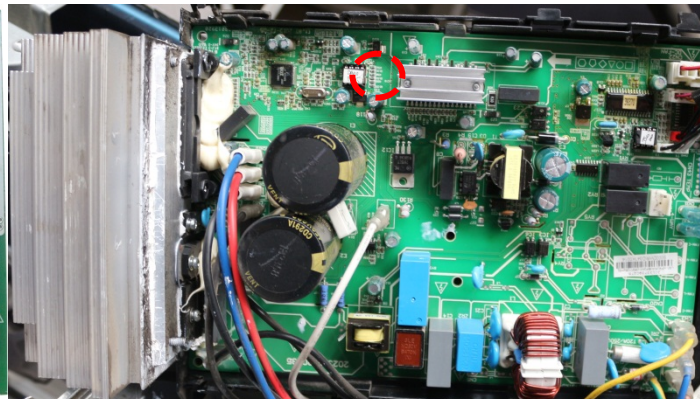
Yes

Replace the indoor/outdoor main PCB.

EEPROM: An electrically erasable programmable read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.



Indoor PCB

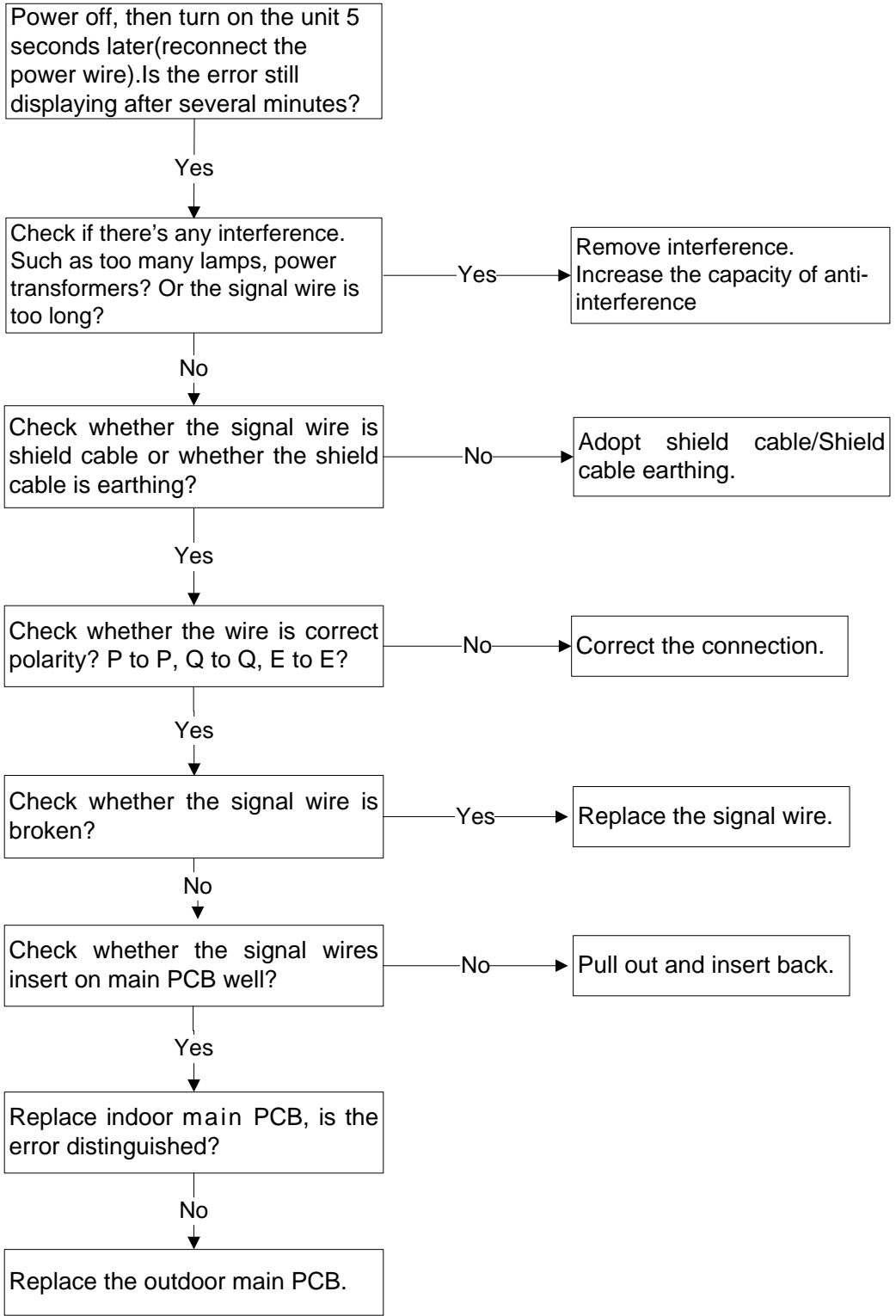


Outdoor PCB

**Note: The two photos above are only for reference, it's may be not same totally with the ones on your side.**

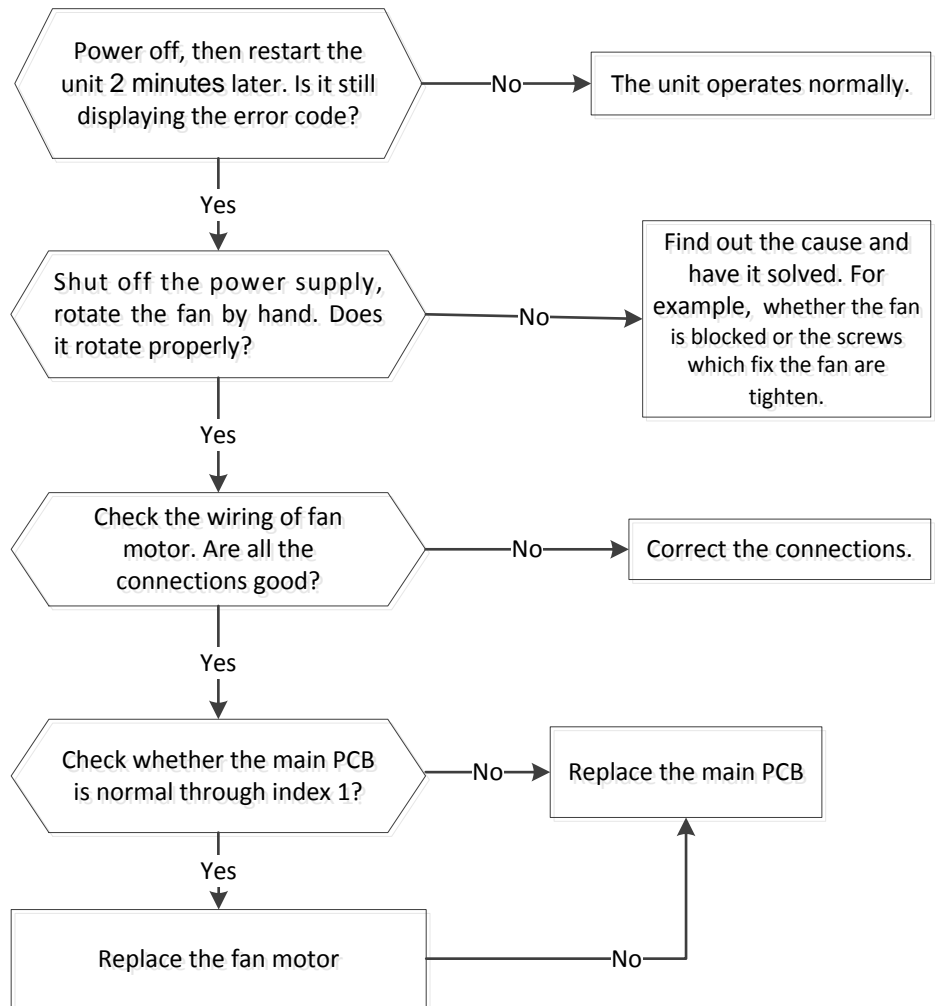
**E1: Communication error between indoor and outdoor units**

<b>Malfunction decision conditions</b>	<b>Indoor unit does not receive the feedback from outdoor unit during 110 seconds and this condition happens four times continuously.</b>
<b>Supposed causes</b>	<ul style="list-style-type: none"> <li>● <b>Wiring mistake</b></li> <li>● <b>Indoor or outdoor PCB faulty</b></li> </ul>



**E3: Indoor fan speed has been out of control**

<b>Malfunction decision conditions</b>	<b>When indoor fan speed keeps too low (300RPM) for certain time, the unit will stop and the LED will display the failure.</b>
<b>Supposed causes</b>	<ul style="list-style-type: none"> <li>● Wiring mistake</li> <li>● Fan ass’y faulty</li> <li>● Fan motor faulty</li> <li>● PCB faulty</li> </ul>



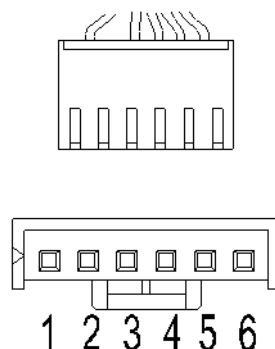
Index 1:

1. Indoor DC fan motor (control chip is inside fan motor)

Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, the PCB must have problems and need to be replaced.

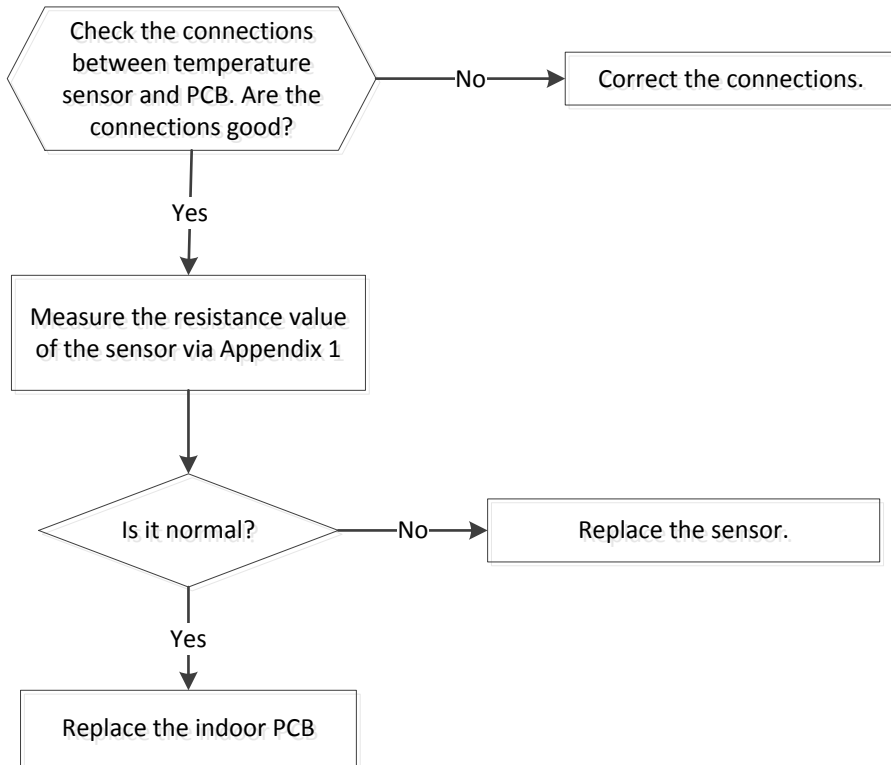
**DC motor voltage input and output**

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	200V~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



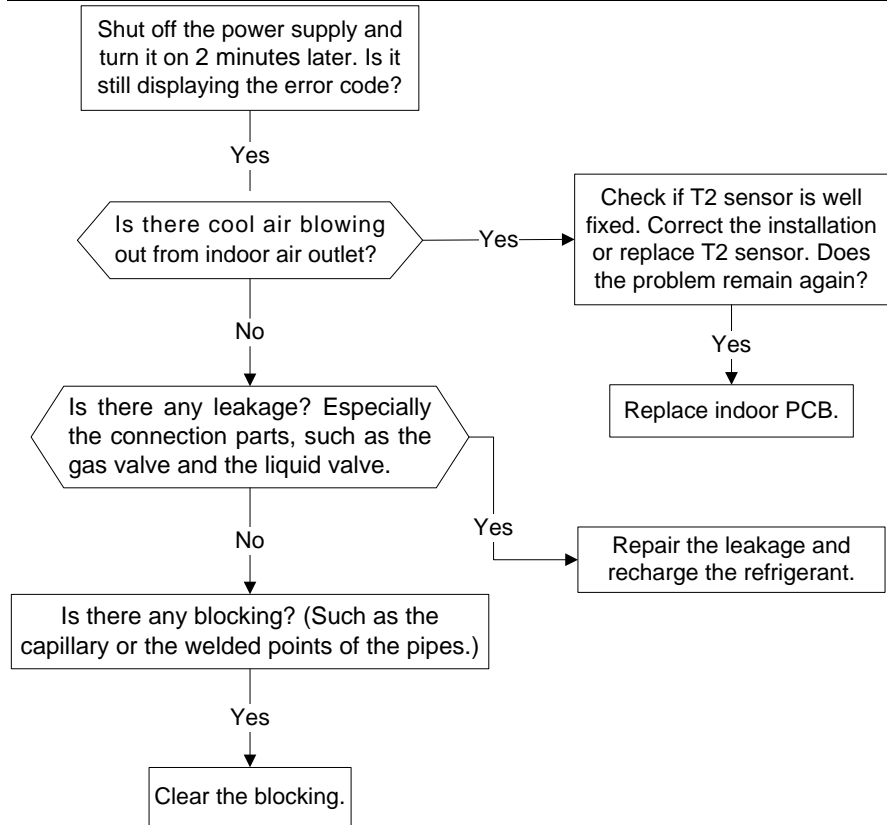
**E4/E5/F1/F2/F3/F6: Open or short circuit of temperature sensor**

<b>Malfunction decision conditions</b>	<b>If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED will display the failure.</b>
<b>Supposed causes</b>	<ul style="list-style-type: none"><li>● <b>Wiring mistake</b></li><li>● <b>Sensor faulty</b></li></ul>



**EC: Refrigerant Leakage Detection**

<p><b>Malfunction decision conditions</b></p>	<p>Define the evaporator coil temp.T2 of the compressor just starts running as Tcool.                  In the beginning 5 minutes after the compressor starts up, if <math>T2 &lt; Tcool - 2^{\circ}C</math> does not keep continuous 4 seconds and this situation happens 3 times, the display area will show "EC" and AC will turn off.</p>
<p><b>Supposed causes</b></p>	<ul style="list-style-type: none"> <li>● T2 sensor faulty</li> <li>● Indoor PCB faulty</li> <li>● System problems, such as leakage or blocking.</li> </ul>

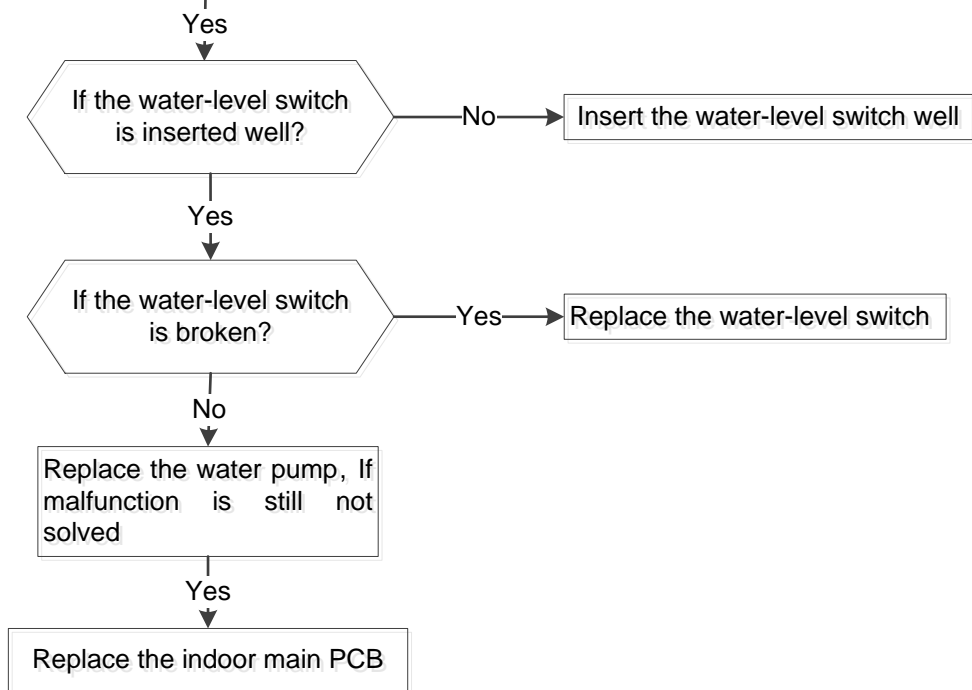




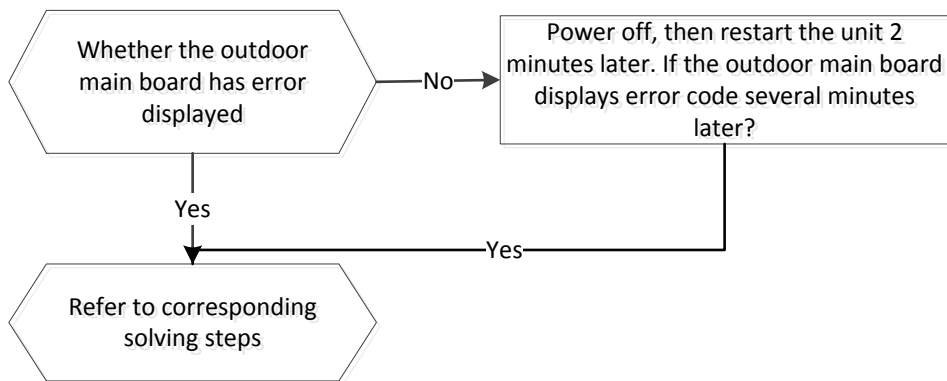
**EE: Water-level alarm malfunction**

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>● Wiring mistake</li> <li>● Water-level switch faulty</li> <li>● Water pump faulty</li> <li>● Indoor PCB faulty</li> </ul>

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

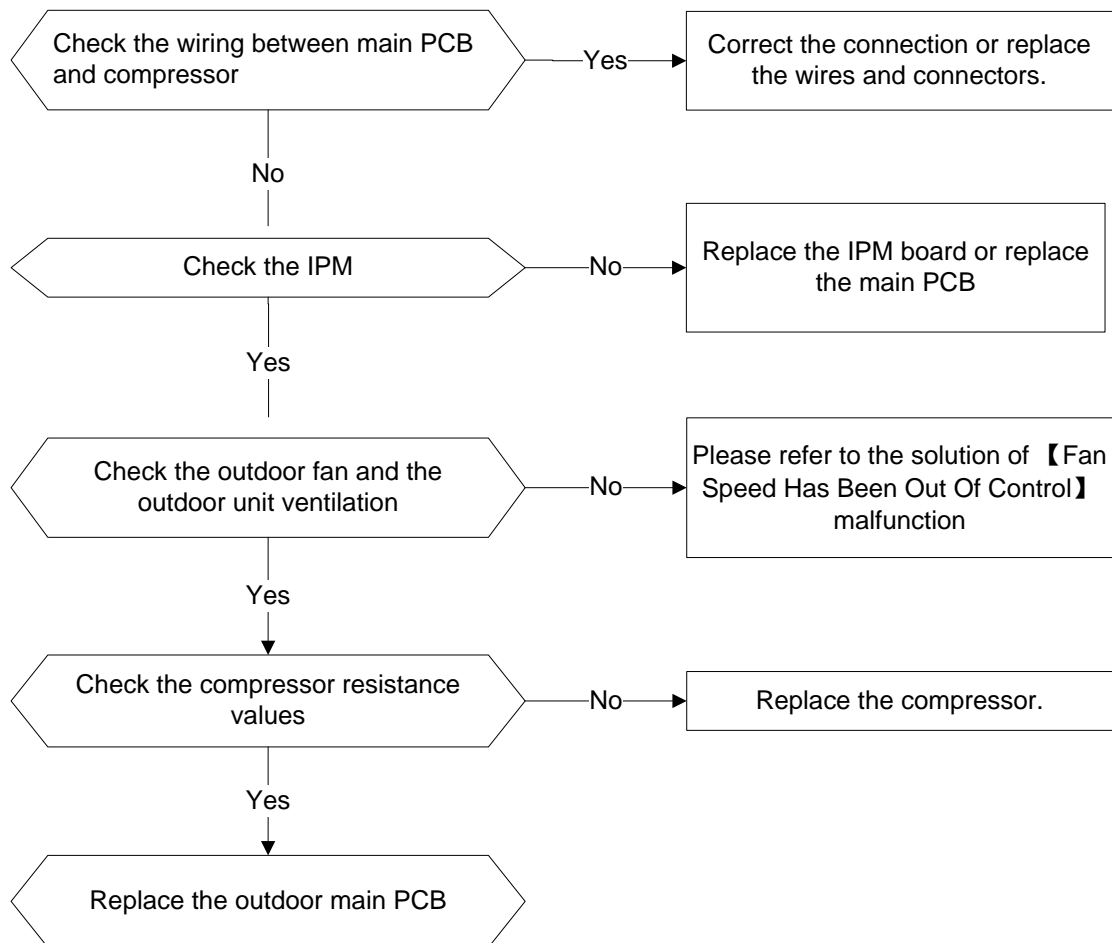


**Ed: Outdoor unit malfunction**



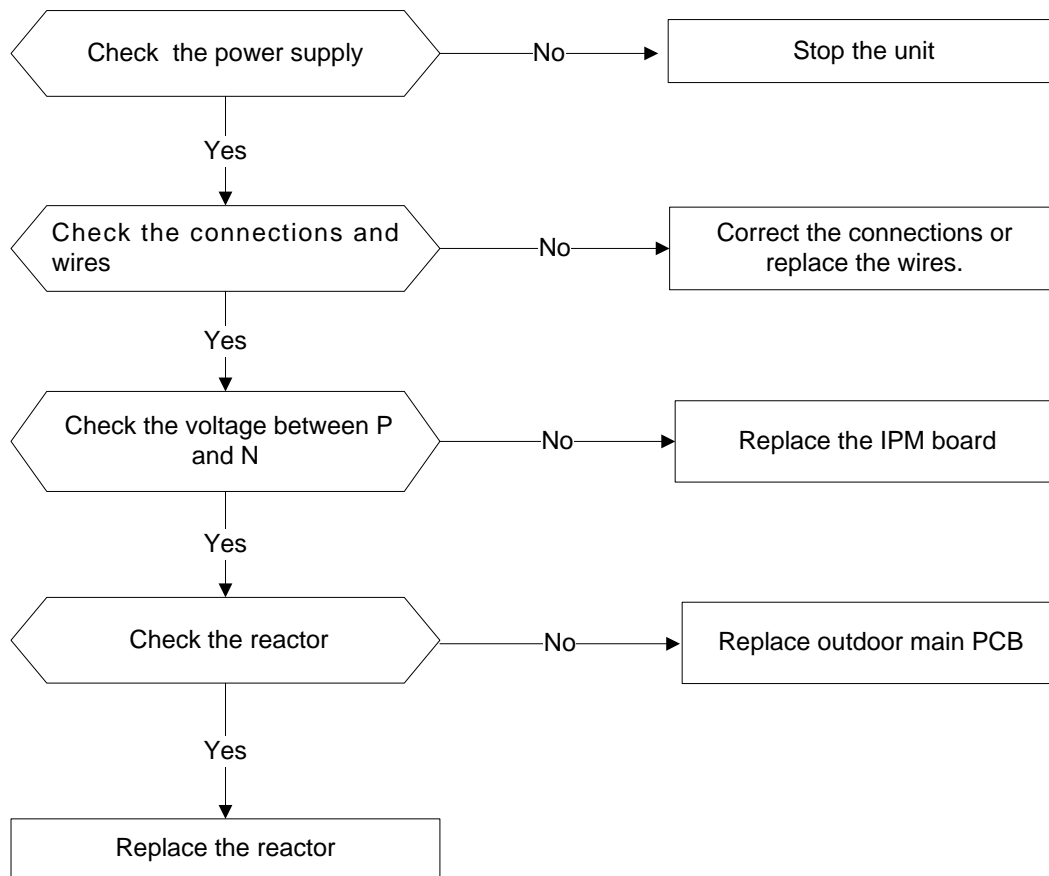
**P0: IPM malfunction or IGBT over-strong current protection**

<b>Malfunction decision conditions</b>	<b>When the voltage signal that IPM send to compressor drive chip is abnormal, the display LED will show "P0" and AC will turn off.</b>
<b>Supposed causes</b>	<b>Wiring mistake; IPM malfunction; Outdoor fan ass'y faulty Compressor malfunction; Outdoor PCB faulty</b>



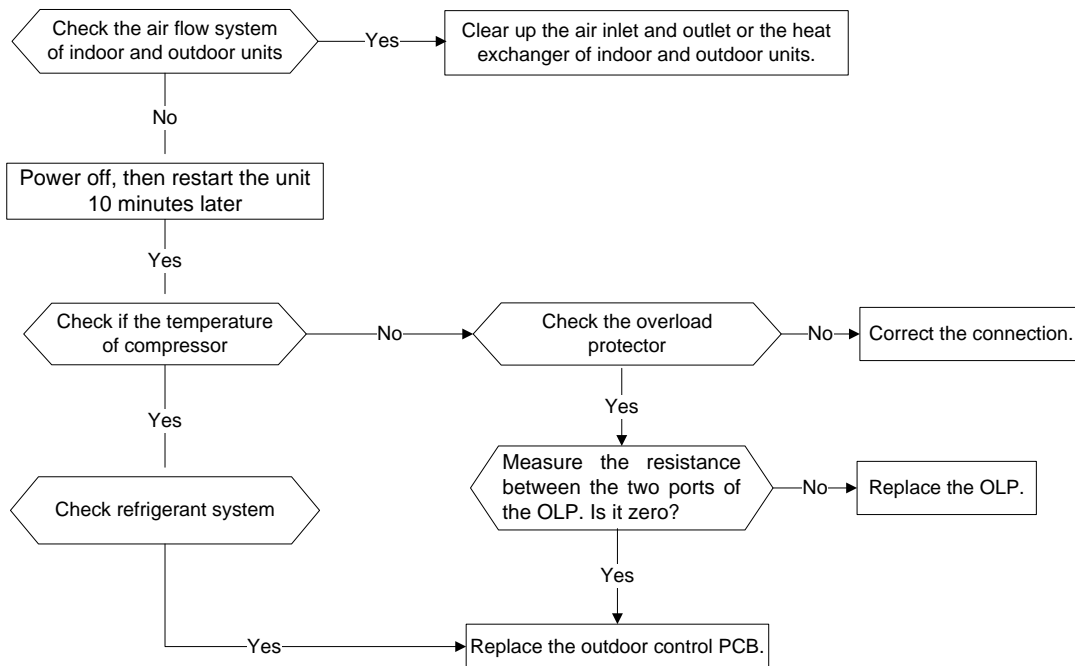
**P1: Over voltage or too low voltage protection**

<b>Malfunction decision conditions</b>	<b>An abnormal voltage rise or drop is detected by checking the specified voltage detection circuit.</b>
<b>Supposed causes</b>	<ul style="list-style-type: none"> <li>● Power supply problems.</li> <li>● System leakage or block</li> <li>● PCB faulty</li> </ul>



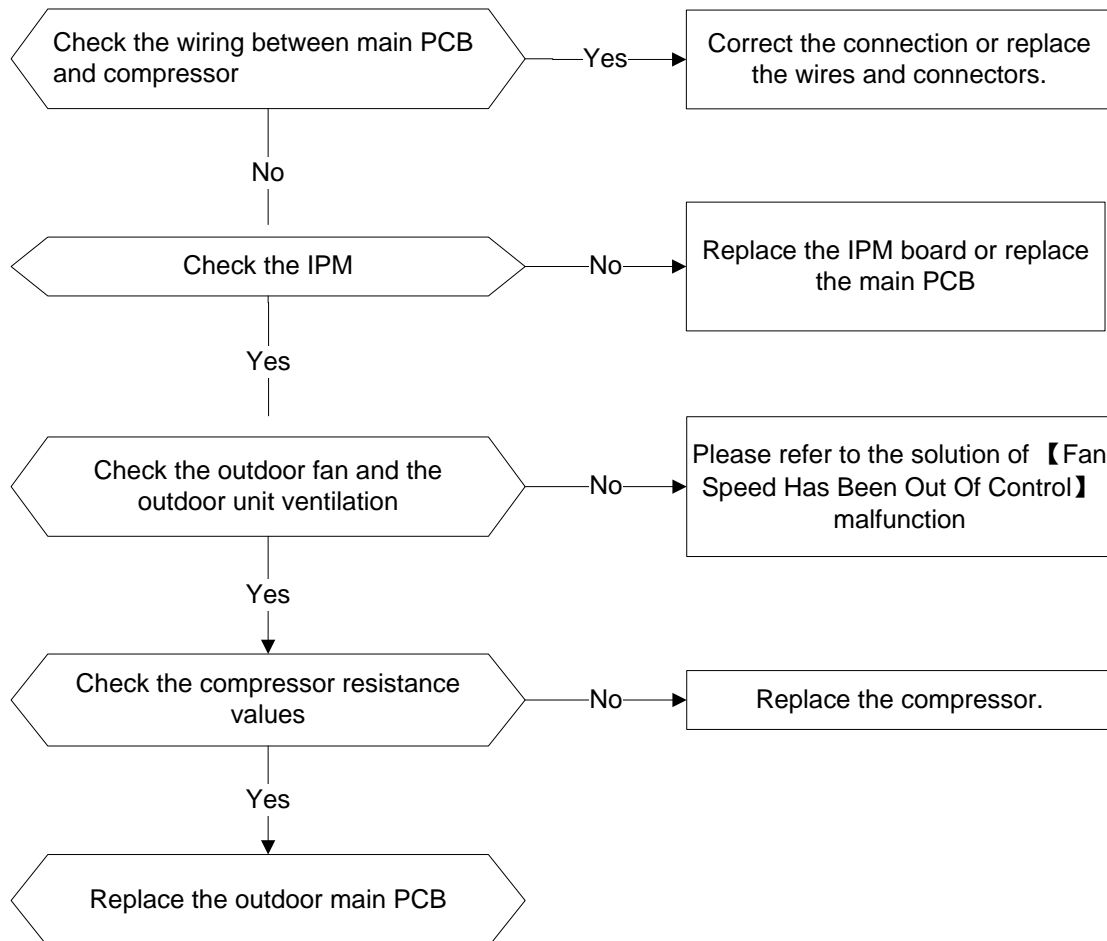
## P2: High temperature protection of compressor top

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



#### P4: Inverter compressor drive error diagnosis and solution

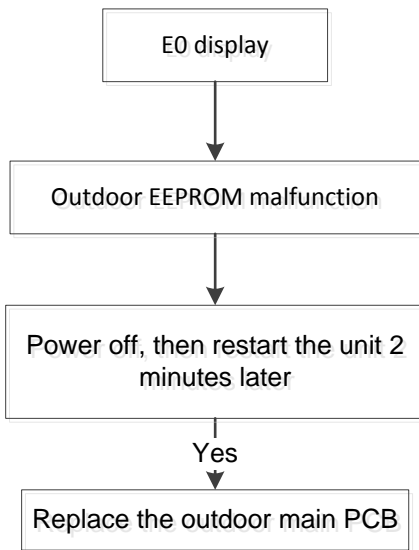
<b>Malfunction decision conditions</b>	An abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, compressor rotation speed signal detection and so on.
<b>Supposed causes</b>	Wiring mistake; IPM malfunction; Outdoor fan ass'y faulty Compressor malfunction; Outdoor PCB faulty



# Trouble Shooting - ODU

---

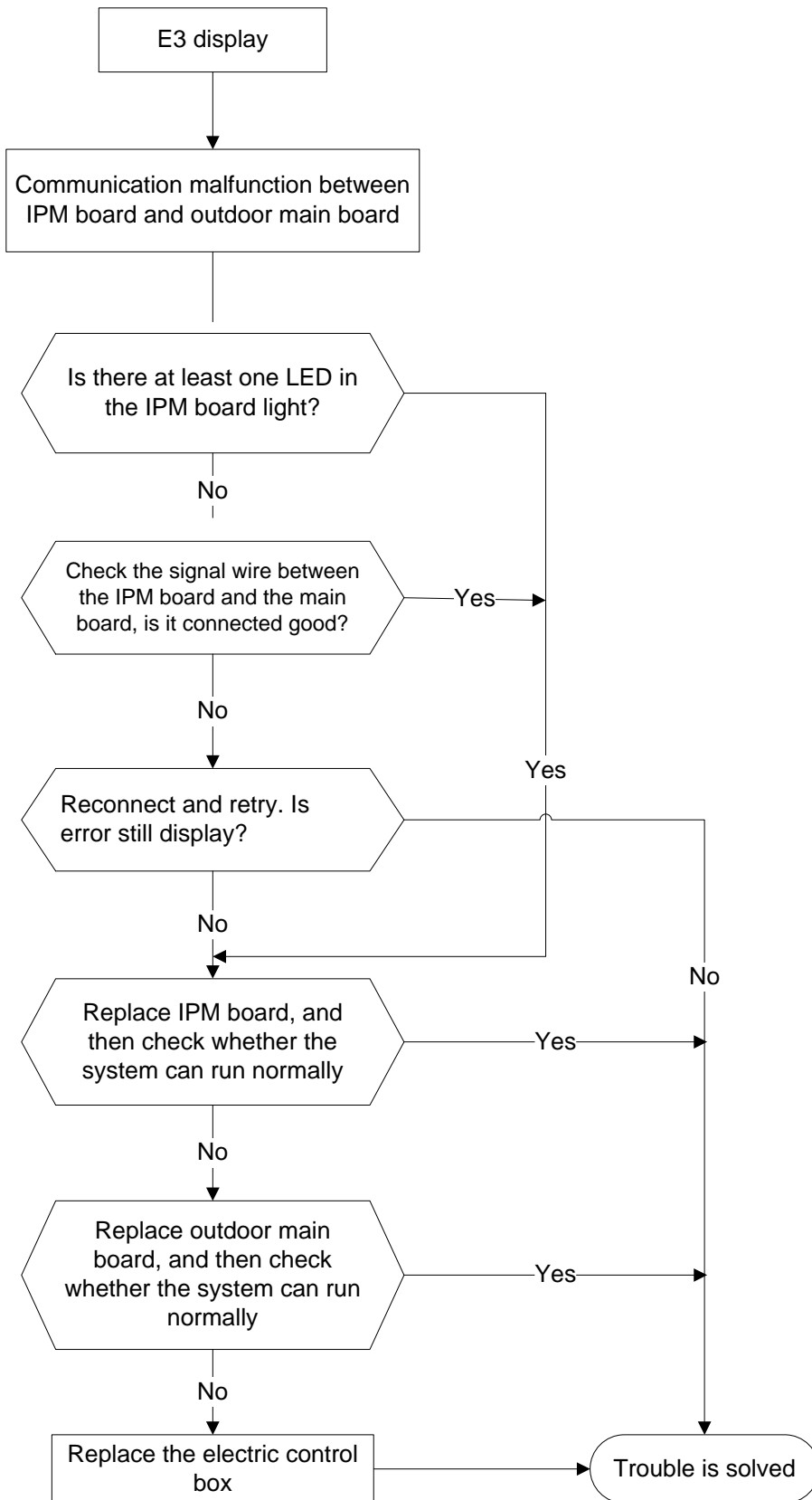
## E0: malfunction



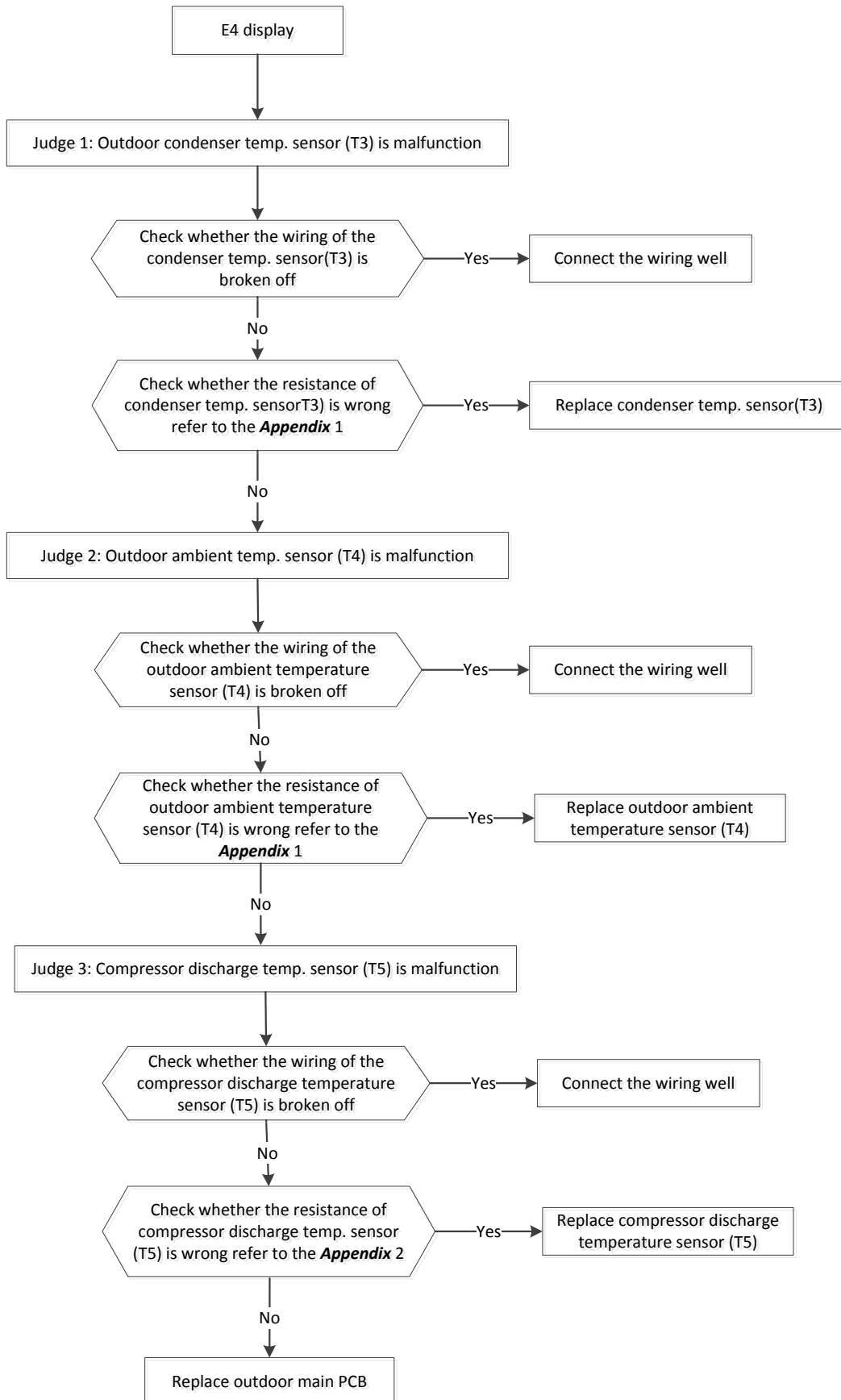
EEPROM: An electrically erasable programmable read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.

**E2: Communication error between indoor and outdoor units, Same as E1 of IDU.**

### E3: Communication error between IPM board and outdoor main board

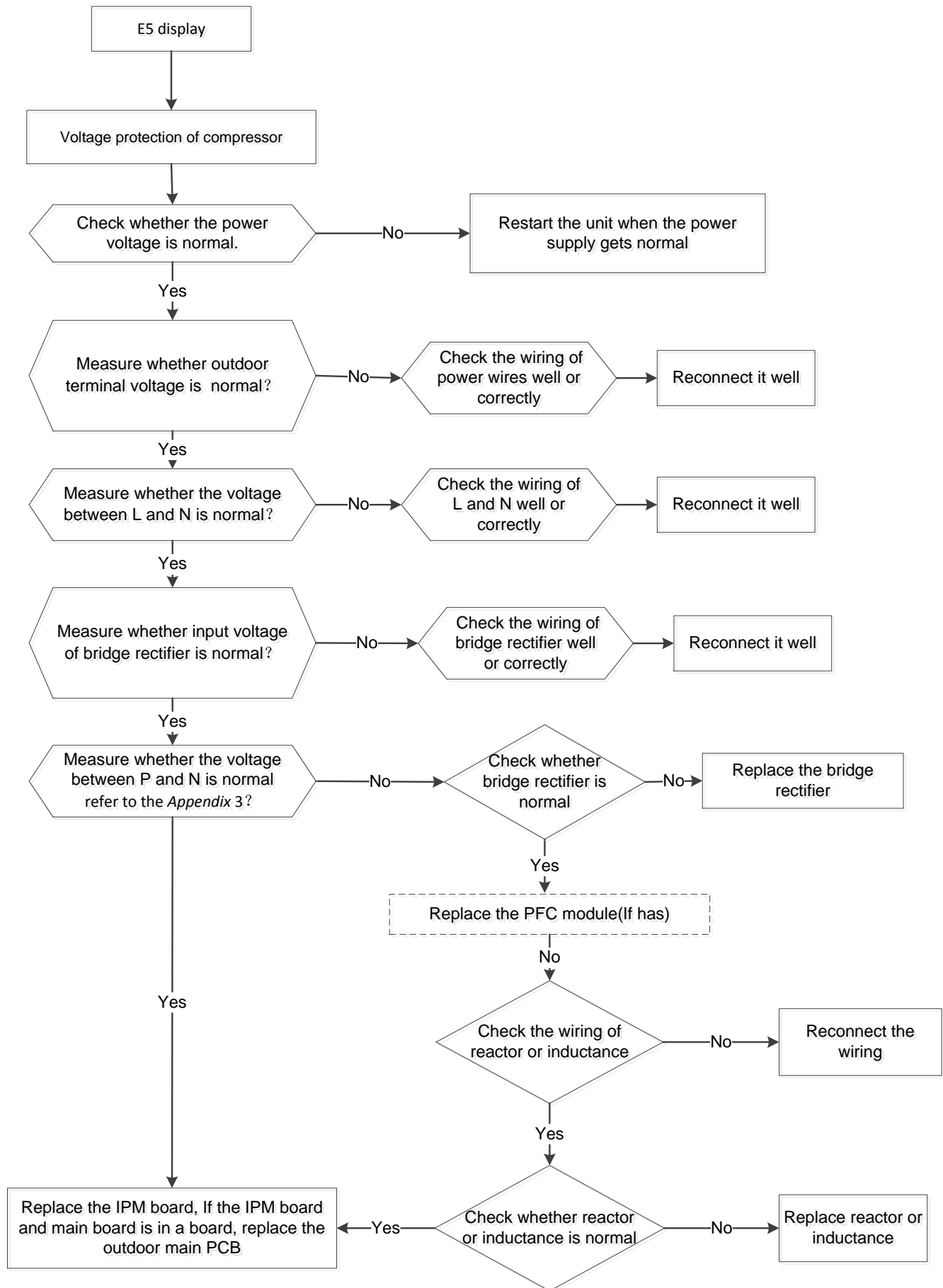


#### E4: Open or short circuit of T3 or T4 temperature sensor





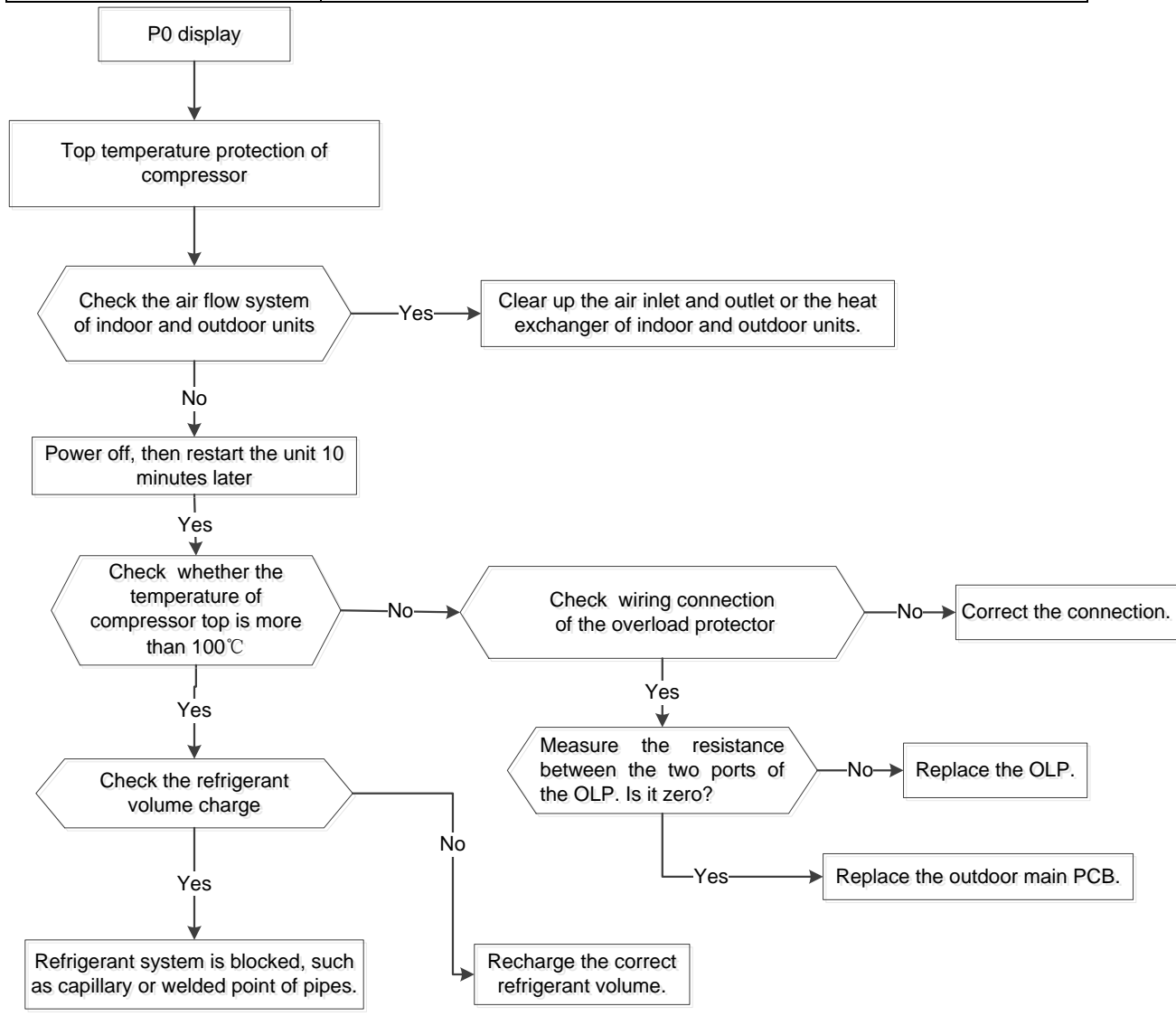
**E5: Voltage protection of compressor**



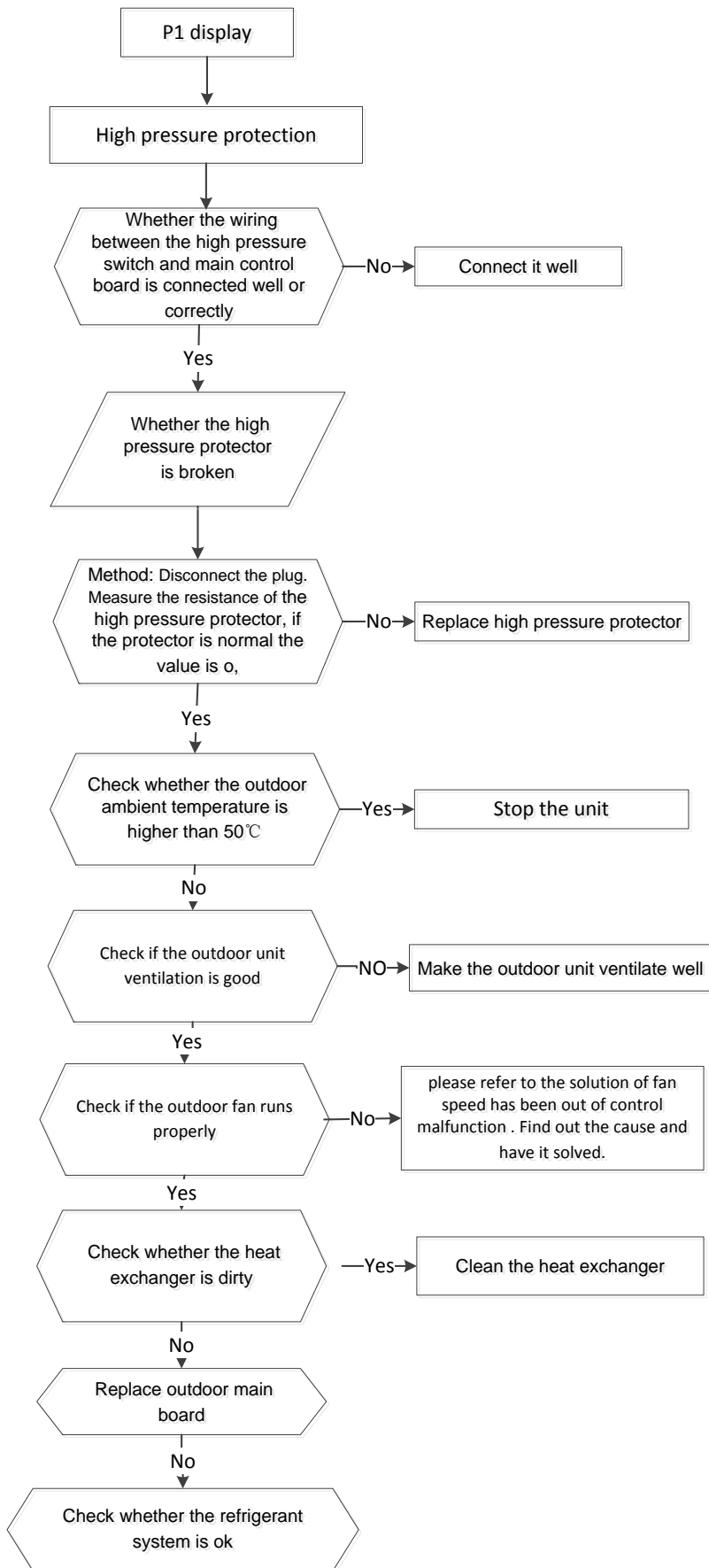
**E8: Outdoor fan speed has been out of control, same trouble shooting as E3 of IDU.**

**P0: Top temperature protection of compressor**

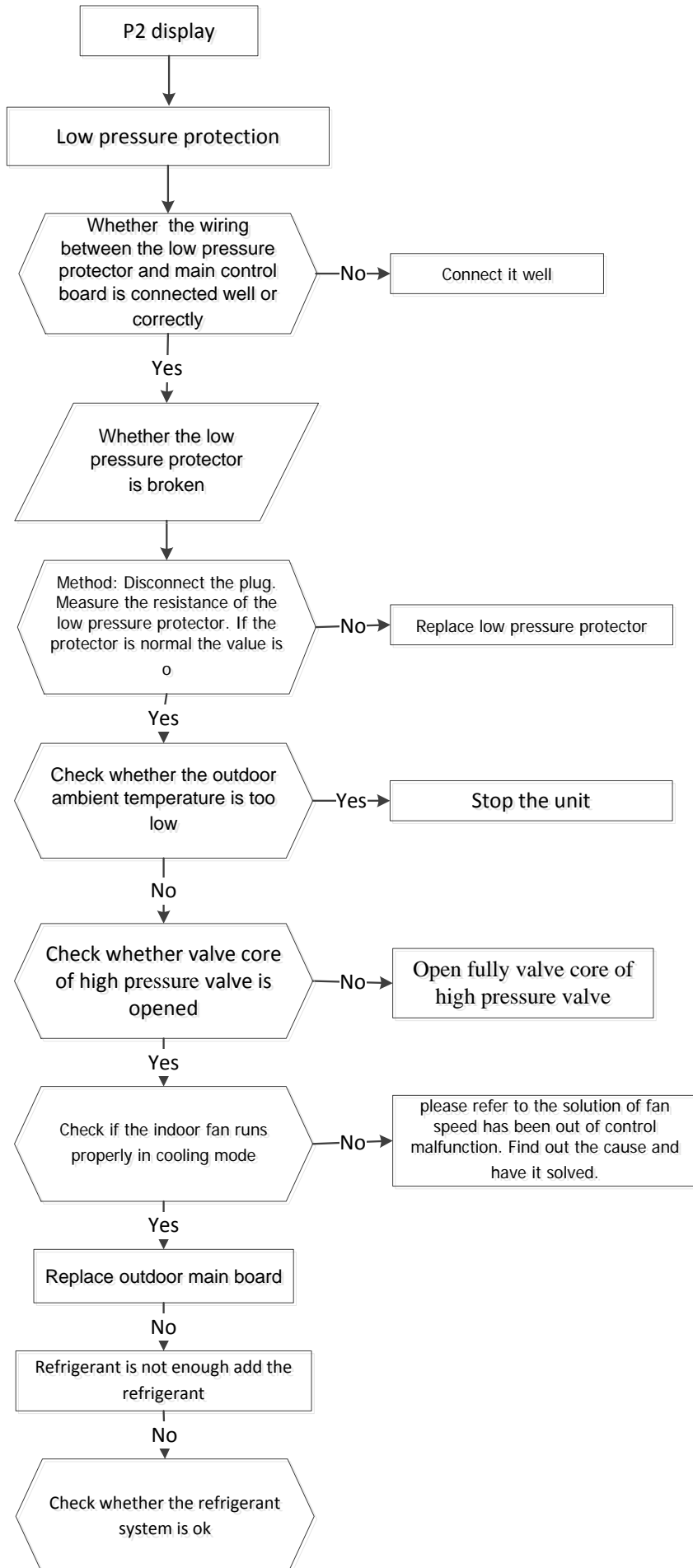
<b>Malfunction decision conditions</b>	<b>If the sampling voltage is not 5V, the LED will display the failure.</b>
<b>Supposed causes</b>	<ul style="list-style-type: none"> <li>● Power supply problems.</li> <li>● System leakage or block</li> <li>● PCB faulty</li> </ul>



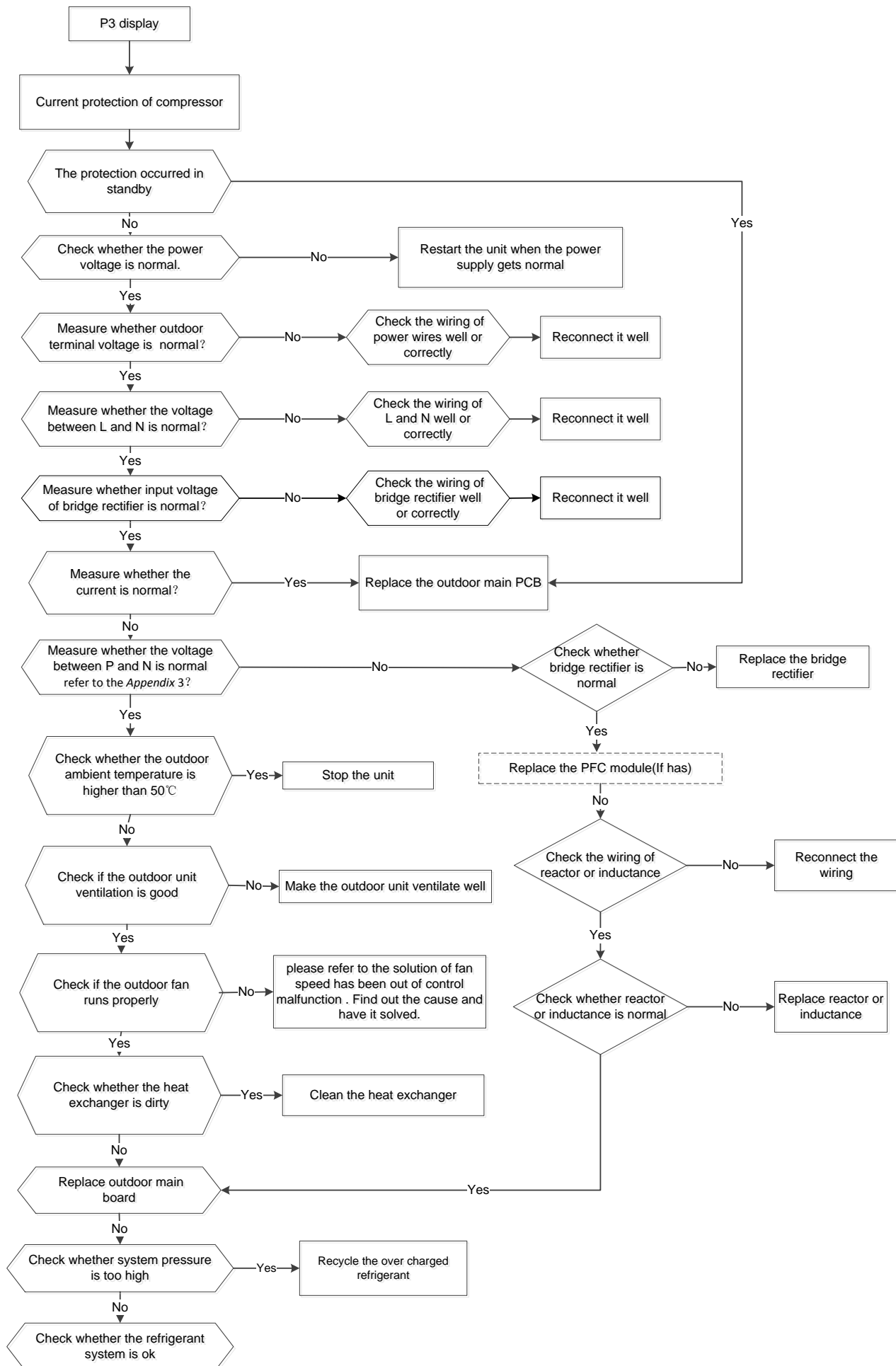
### P1: High pressure protection (Models specific)



## P2: Low pressure protection (Models specific)

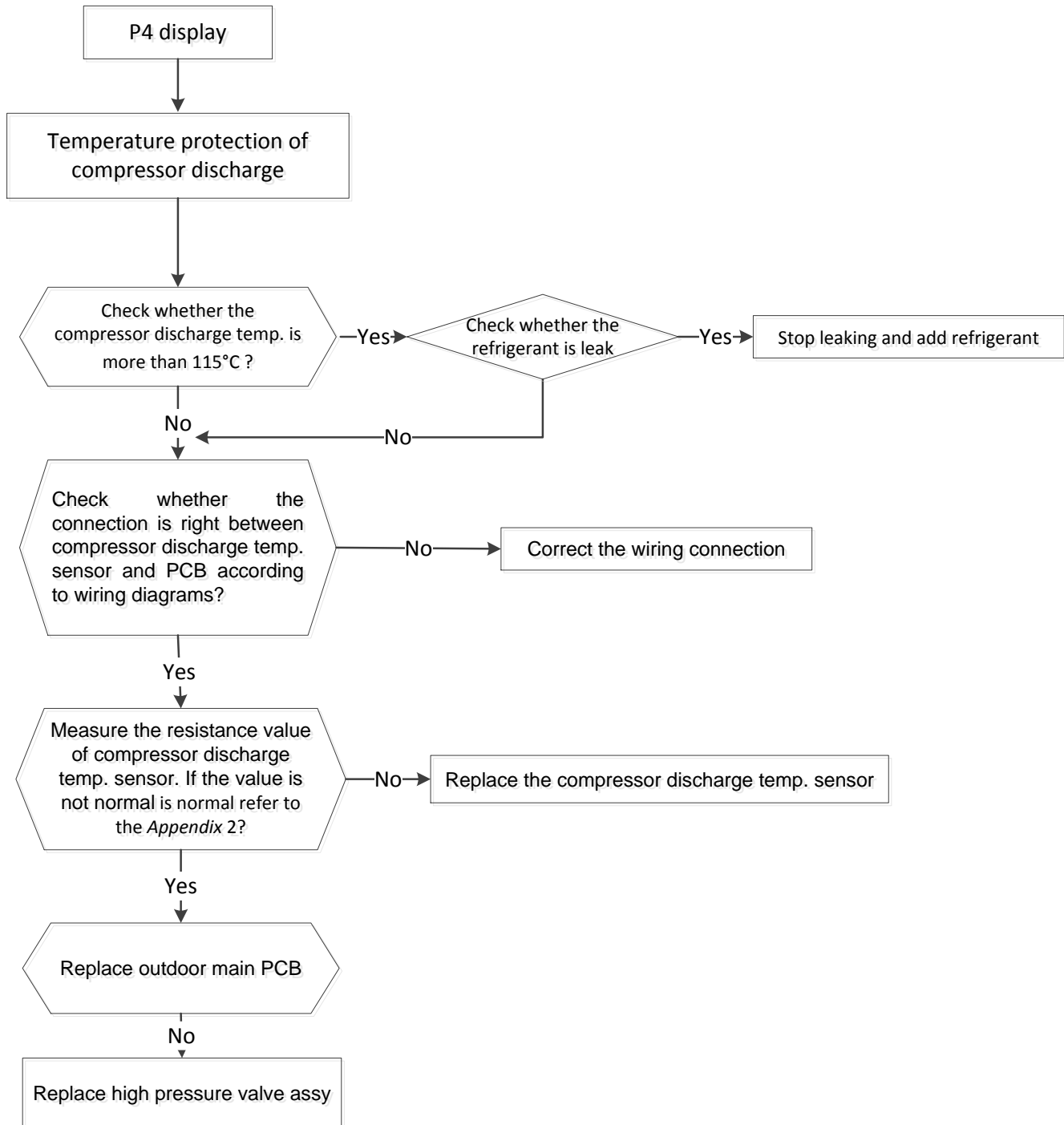


### P3: Current protection of compressor



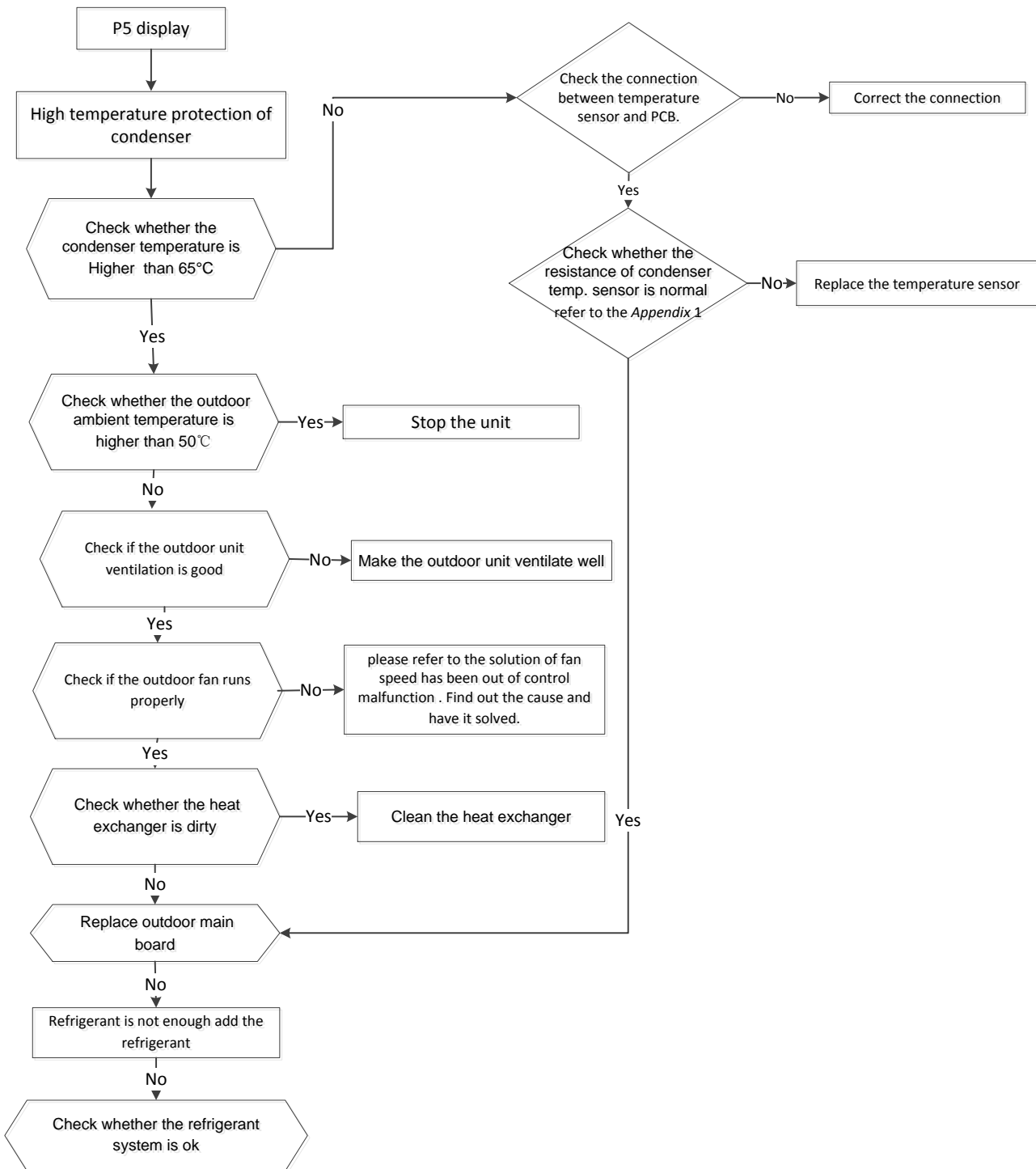
#### P4: Discharge temperature protection of compressor

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.



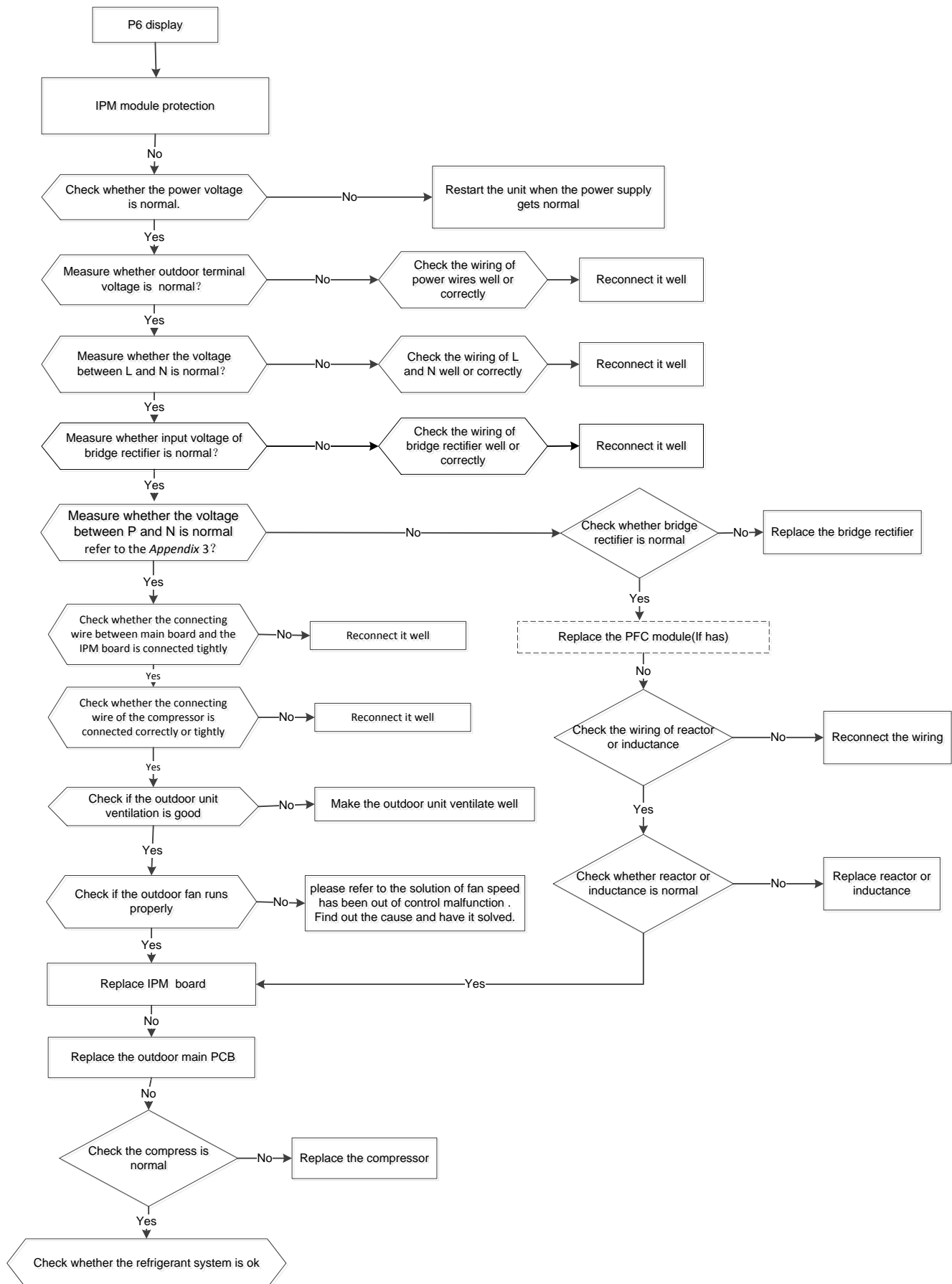
### P5: High temperature protection of condenser

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.



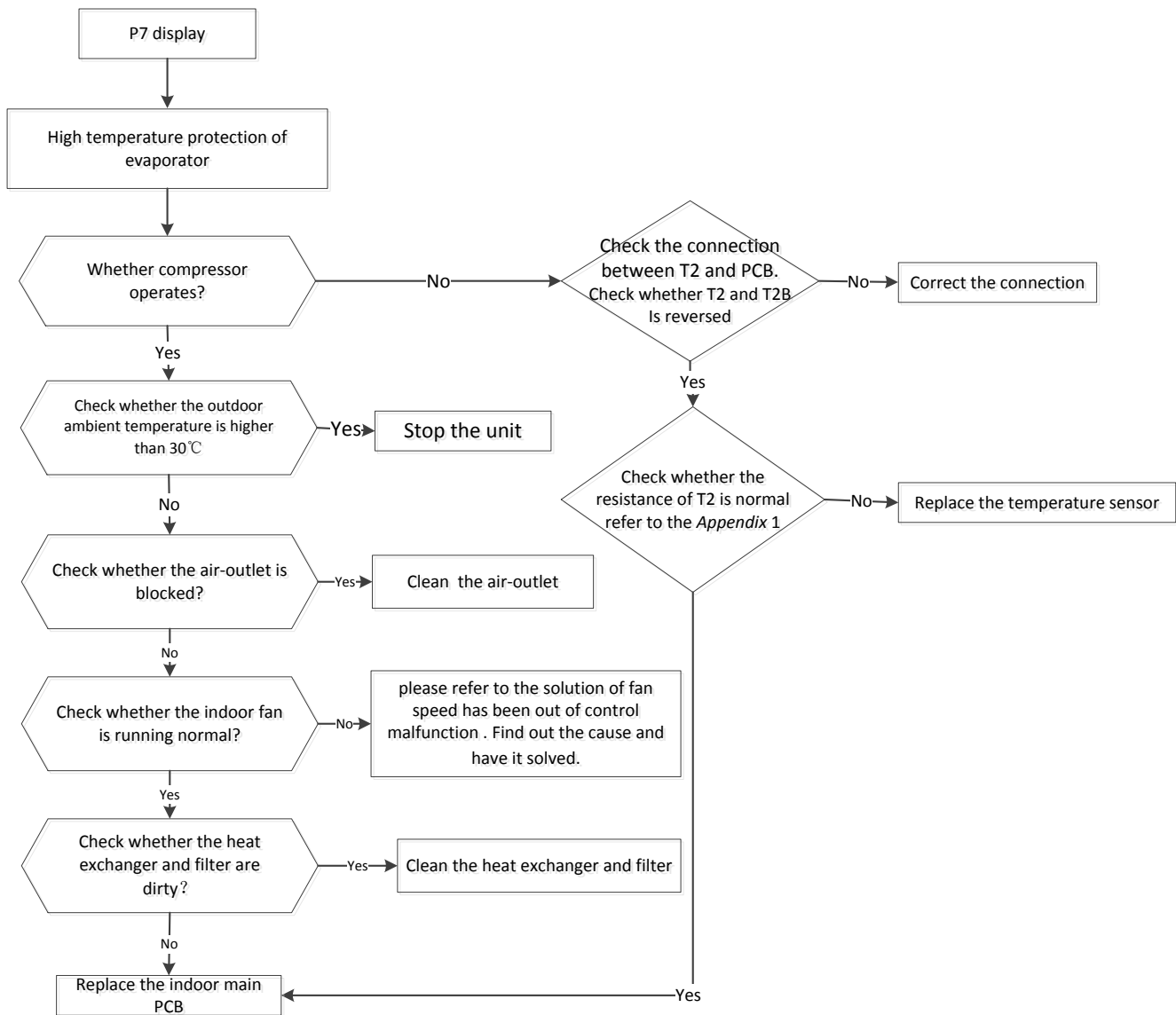
## P6: IPM module protection

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:





## P7: High temperature protection of evaporator



# APPENDIX 1

Temperature Sensor Resistance Value Table, B=4100K

℃	K Ohm	℃	K Ohm	℃	K Ohm	℃	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

Compressor Discharge Temperature Sensor Resistance Value Table, B=3950K

℃	K Ohm	℃	K Ohm	℃	K Ohm	℃	K Ohm
-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		
16	82.54	56	15.73	96	4.167		
17	78.79	57	15.16	97	4.045		
18	75.24	58	14.62	98	3.927		
19	71.86	59	14.09	99	3.812		

# APPENDIX 3

Normal voltage of P and N			
208-240V(1-phase,3-phase)		380-420V(3-phase)	
In standby			
around 310VDC		around 530VDC	
In operation			
With passive PFC module	With partial active PFC module	With fully active PFC module	/
>200VDC	>310VDC	>370VDC	>450VDC

