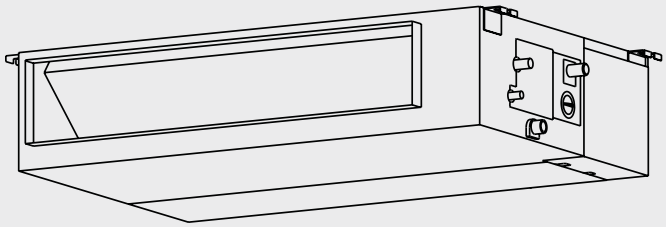
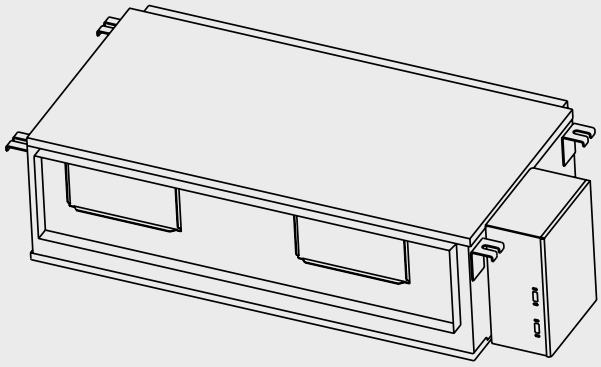
BOSCH

Service Manual

Ducted Type (Medium & High Static) Air Conditioner / Heat Pump

Climate 5000 Series





⚠ WARNING:

- **Installation must be performed by a licensed contractor, and per the instructions in the installation manual. Improper installation can cause water leakage, electrical shock, or fire.**
- **In North America, installation must be performed in accordance with the requirement of NEC (National Electric Code) and CEC (Canadian Electric Code) by licensed and qualified personnel only.**
- **Only contact a licensed contractor for repair or maintenance of this unit.**

BTC 769102303 B / 05.2025

Table of Contents

1 Key to Symbols and Safety Instructions

1.1 Key to Symbols

Warnings

Warnings in this document are identified by a warning triangle printed against a grey background.

Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and can be used in this document:

- **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.
- **NOTICE** is used to address practices not related to personal injury.

Important information

This symbol indicates important information where there is no risk to people or property.

1.2 Safety

Please read safety precautions before installation

Incorrect installation due to ignoring instructions can cause serious damage or injury.

WARNING: ELECTRICAL HAZARD

- Do not modify the length of the power supply cord or use an extension cord to power the unit.
- Do not share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.

WARNING: INSTALLATION REQUIREMENTS

- Installation must be performed by a licensed contractor, and per the instructions in the installation manual. Improper installation can cause water leakage, electrical shock, or fire.
- In North America, installation must be performed in accordance with the requirement of NEC (National Electric Code) and CEC (Canadian Electric Code) by licensed and qualified personnel only.
- Only contact a licensed contractor for repair or maintenance of this unit.
- Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
- Install the unit in a solid location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and/or damage.

WARNING:

- This product can expose you to chemicals including Lead and Lead components, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

WARNING: ELECTRICAL HAZARD

- For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. The power supply to the outdoor unit requires a service disconnect at the unit. Only use a dedicated circuit. Never share a power source connected to this system. Insufficient electrical capacity or defects in electrical work can cause electrical shock or fire.
- For all electrical work, use the specified cables. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- If the power supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons such as a licensed electrician in order to avoid a hazard.
- The product must be properly grounded at the time of installation, or electrical shock may occur.

CAUTION: BURN HAZARD

- For units that have an auxiliary electric heater, do not install the unit within 1 meter (3 feet) of any combustible materials.
- Do not install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
- Do not operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.

NOTICE: PROPERTY DAMAGE

- Install condensate drainage piping according to the instructions in this manual. Improper condensate drainage may cause water damage to your home and property.

CAUTION: CONTAINS REFRIGERANT

- This air-conditioning unit contains fluorinated gases. For specific information on the type of gas and the amount, please refer to the relevant label on the outdoor unit itself.
- Installation, service, maintenance and repair of this unit must be performed by a certified technician.
- Product removal and recycling must be performed by a certified technician.
- If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months.
- When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

2 Part Names and Model Numbers

2.1 Model Numbers

Voltage	Indoor Type	Capacity	Indoor Units	Regular Outdoor Units	Max Performance Outdoor Units	Light Commercial Outdoor Units
208-230V	Ducted	9k	BMS500-AAU009-1AHDXB	BMS500-AAS009-1CSXRC	BMS500-AAS009-1CSXHC	
		12k	BMS500-AAU012-1AHDXB	BMS500-AAS012-1CSXRC	BMS500-AAS012-1CSXHC	
		18k	BMS500-AAU018-1AHDXB	BMS500-AAS018-1CSXRC	BMS500-AAS018-1CSXHC	
		24k	BMS500-AAU024-1AHDXB	BMS500-AAS024-1CSXRC	BMS500-AAS024-1CSXHC	
		36k	BMS500-AAU036-1AHDXB			BMS500-AAS036-1CSXLC
		48k	BMS500-AAU048-1AHDXB			BMS500-AAS048-1CSXLC
		60k	BMS500-AAU060-1AHDXB			BMS500-AAS060-1CSXLC

Table 1

3 Dimensions & Clearances

3.1 Ducted Indoor Unit

3.1.1 Medium Static Pressure (9K, 12K, 18K, 24K, 36K & 48K)

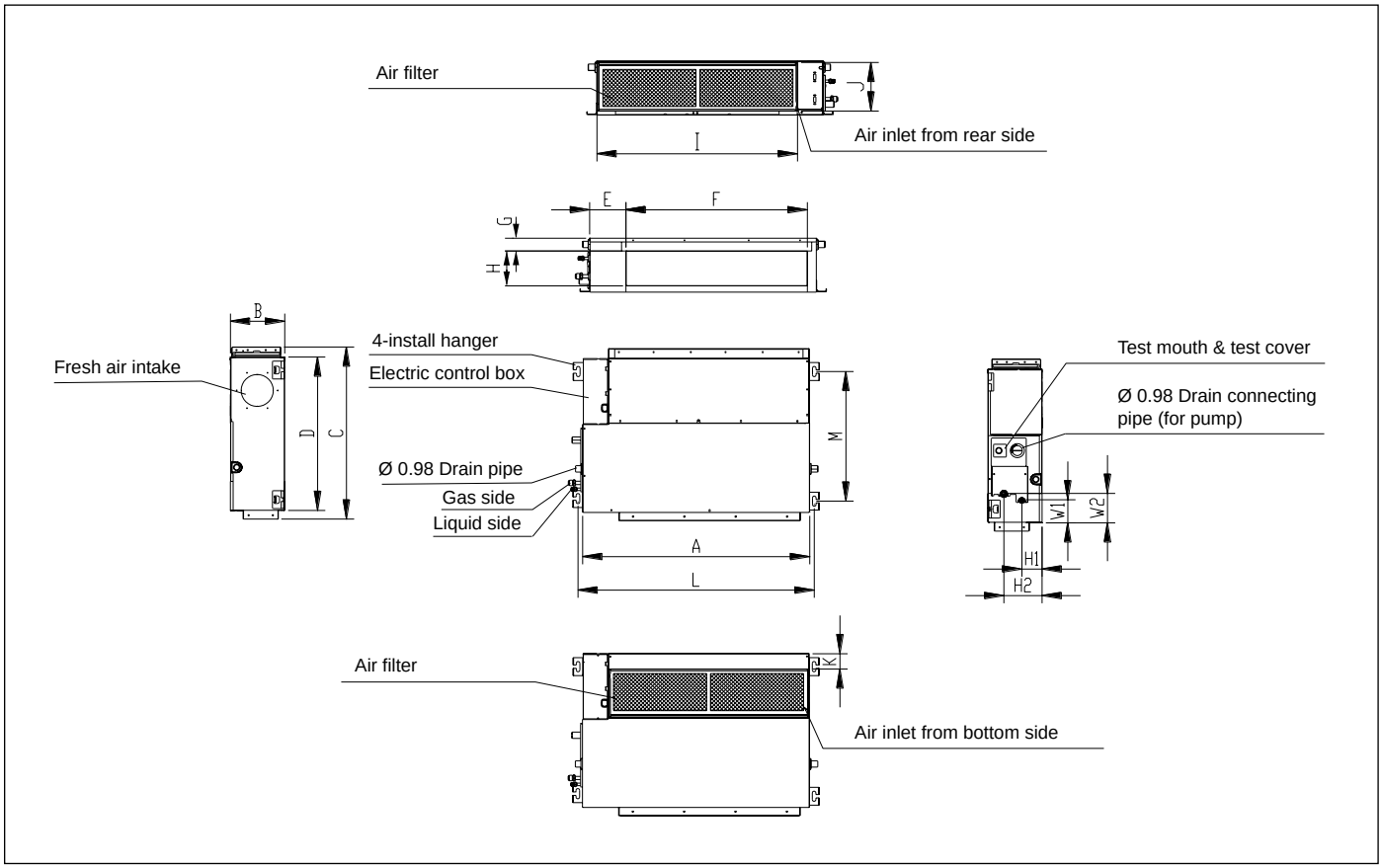


Figure 1

Capacity	unit	A	B	C	D	E	F	G	H	I	J	K	L	M	H1	H2	W1	W2
9k / 12k	inch	27.6	7.9	19.9	17.7	5.4	21.1	1.2	6.0	23.6	7.3	2.0	29.2	14.2	3.3	5.5	3.3	3.3
18k	inch	34.6	8.3	26.5	23.6	5.5	27.8	2.0	5.4	30.8	7.5	1.6	36.2	20.0	3.1	5.8	3.5	4.4
24k	inch	43.3	9.8	30.5	27.6	5.5	36.5	2.0	6.9	39.4	9.0	0.2	44.9	23.5	3.1	5.9	5.1	6.1
36k	inch	53.5	9.8	30.5	27.6	5.5	46.7	2.0	6.9	49.6	9.0	0.2	55.1	23.5	3.1	5.9	5.1	6.1
48k	inch	47.2	11.8	34.4	31.5	4.8	41.1	2.0	8.9	43.3	11.0	0.2	48.8	27.4	3.1	5.9	7.3	8.3

Table 2

3.1.2 High Static Pressure (60K)

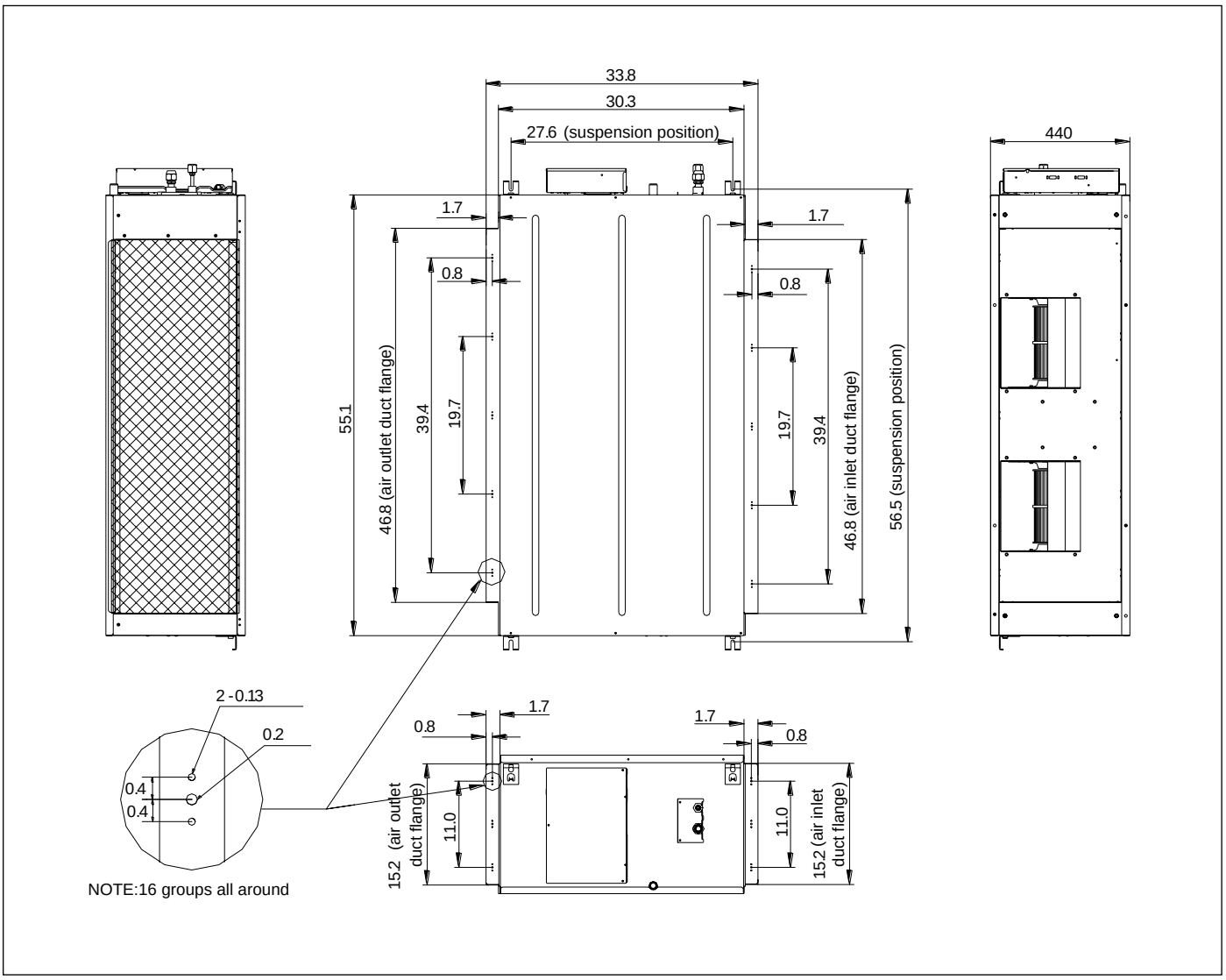


Figure 2

Dimensions in inches.

3.2 Outdoor Unit

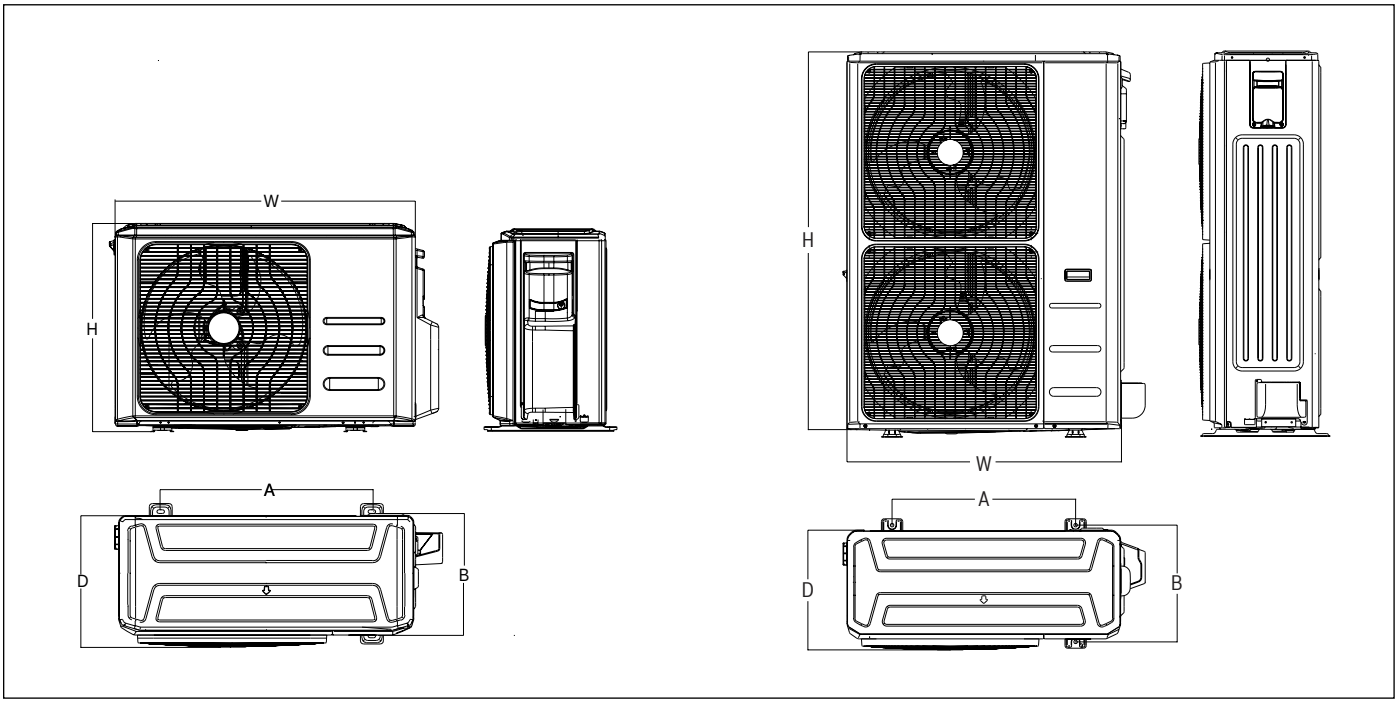


Figure 3

Outdoor Model	Outdoor Unit Dimensions mm (in.)	Mounting Dimensions	
	W x H x D	A mm (in.)	B mm (in.)
BMS500-AAS012-0CSXRC, BMS500-AAS009-1CSXRC, BMS500-AAS012-1CSXRC	765x555x303 (30.1”x 21.8”x 11.9”)	454 (17.8”)	286(11.3”)
BMS500-AAS009-1CSXHC, BMS500-AAS012-1CSXHC	805x554x330 (31.7”x 21.8”x 13.0”)	511 (20.1”)	317(12.5”)
BMS500-AAS018-1CSXRC, BMS500-AAS018-1CSXHC, BMS500-AAM018-1CSXRC	890x673x342 (35.0”x 26.5”x 13.5”)	663 (26.1”)	348 (13.7”)
BMS500-AAS030-1CSXRC, BMS500-AAS036-1CSXLC, BMS500-AAS036-1CSXRC, BMS500-AAS024-1CSXRC, BMS500-AAS024-1CSXHC, BMS500-AAM027-1CSXRC, BMS500-AAM036-1CSXRC, BMS500-AAM018-1CSXHC, BMS500-AAM027-1CSXHC	946x810x410 (37.2”x 31.9”x 16.1”)	673 (26.5”)	403 (15.9”)
BMS500-AAS060-1CSXLC, BMS500-AAS048-1CSXLC, BMS500-AAM048-1CSXRC, BMS500-AAM036-1CSXHC, BMS500-AAM048-1CSXHC	952x1333x415 (37.5”x 52.5”x 16.34”)	634 (25.0“)	404 (15.9”)

Table 3

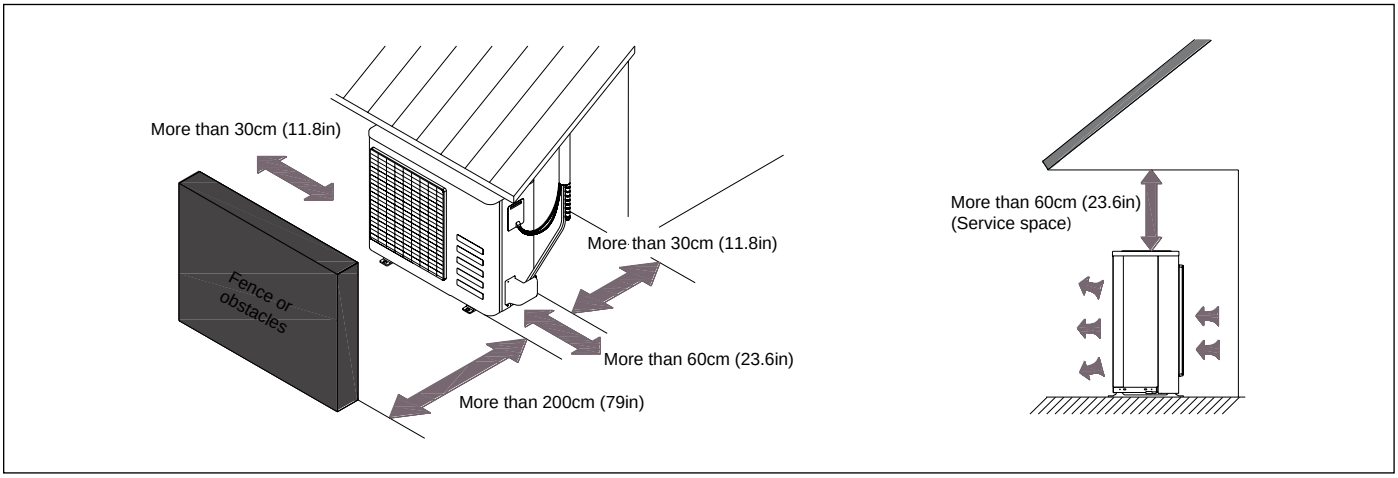


Figure 4 Outdoor Unit Clearances

4 Refrigerant Cycle Diagrams

4.1 115V 12K System, Regular 9K, 12K Systems, Max Performance 9K, 12K Systems

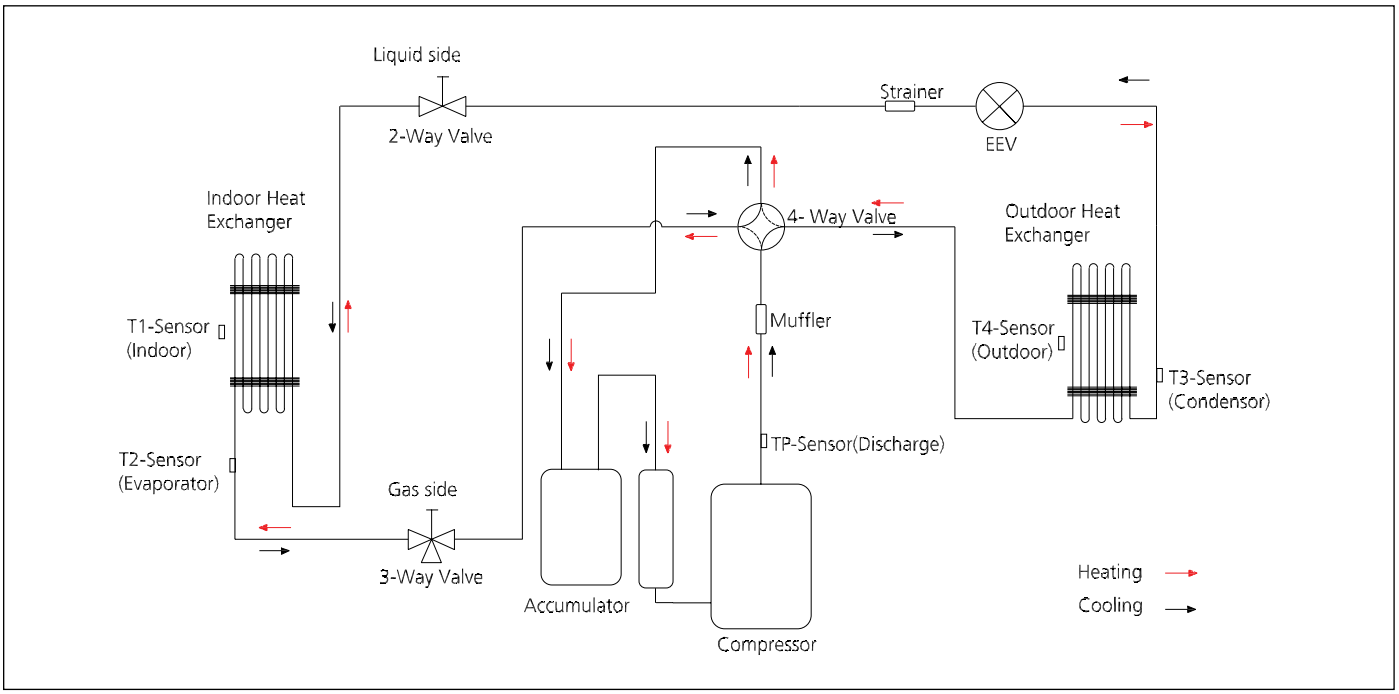


Figure 5

4.2 Regular and Max Performance 18K Systems

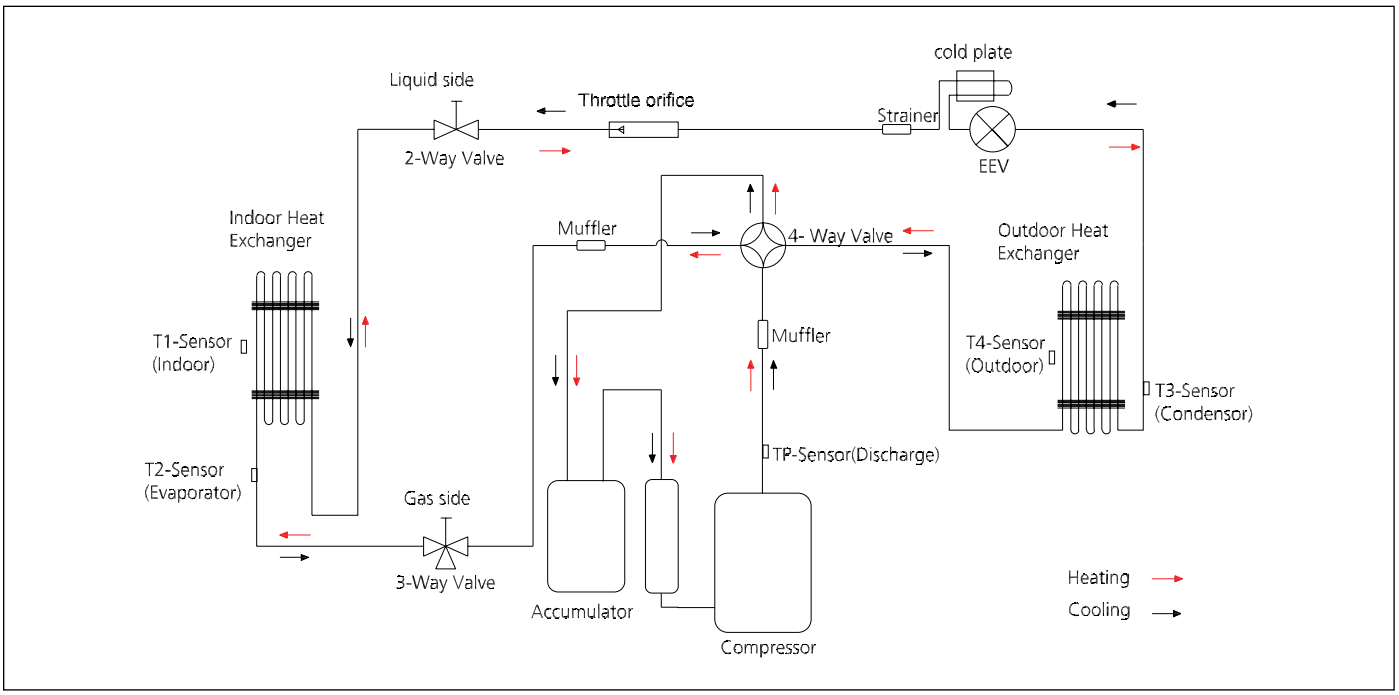


Figure 6

For Max Performance 9K, 12K, 18K System, there is no Accumulator.

4.3 Regular 24K, 30K Systems, Max Performance 24K System

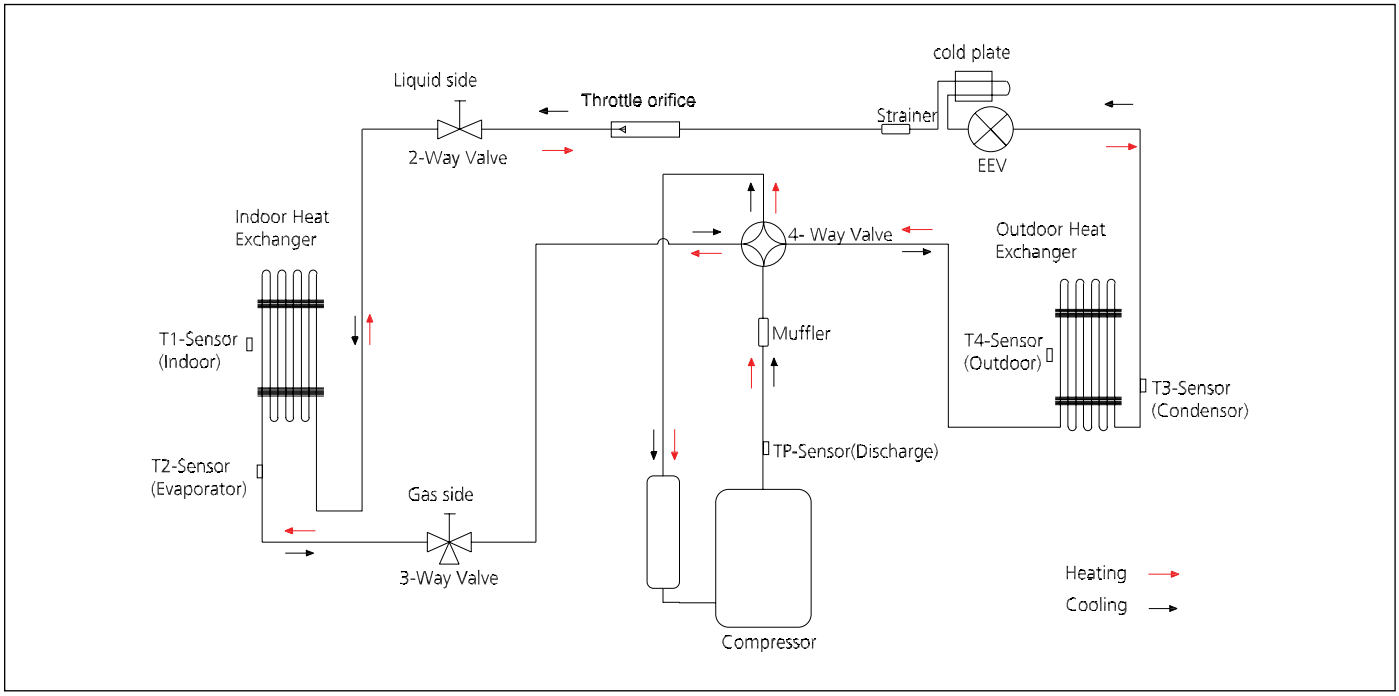


Figure 7

4.4 Regular 36K System

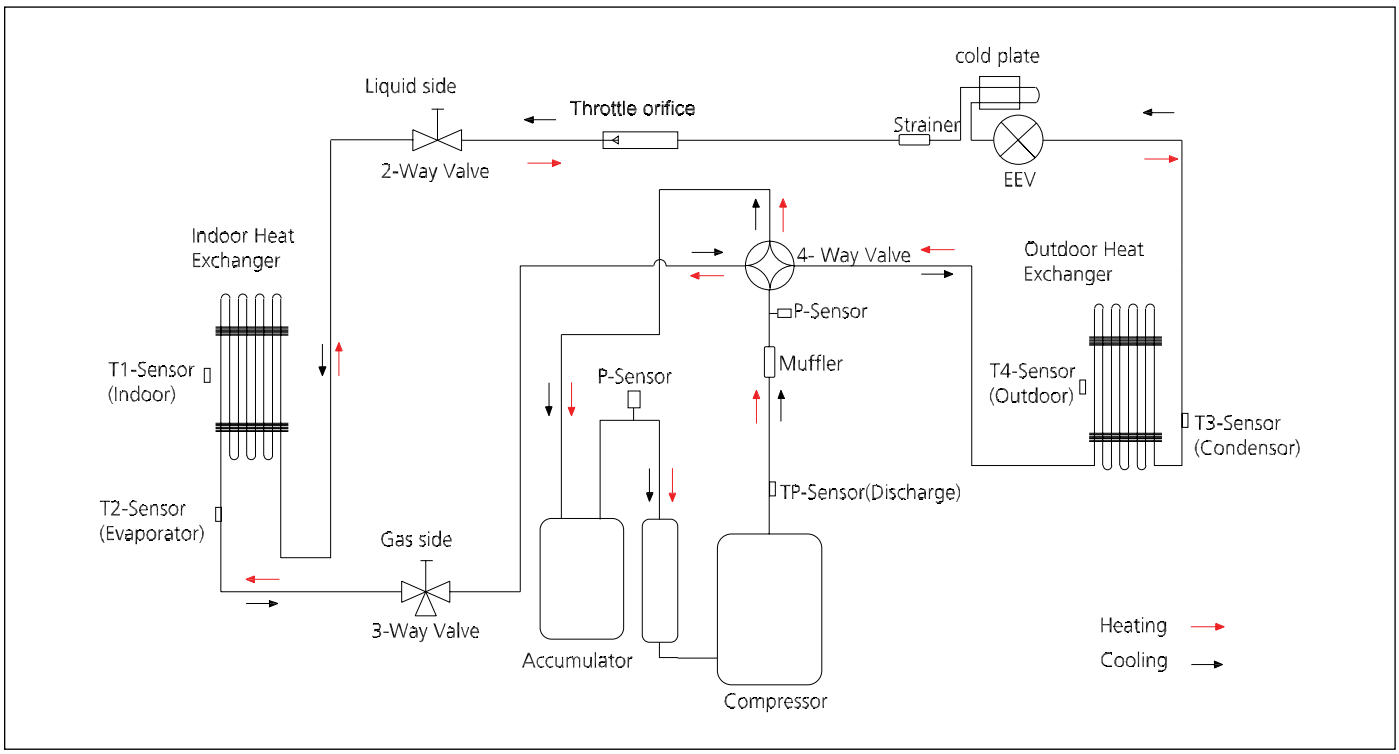


Figure 8

4.5 Light Commercial 36K, 48K, 60K Systems

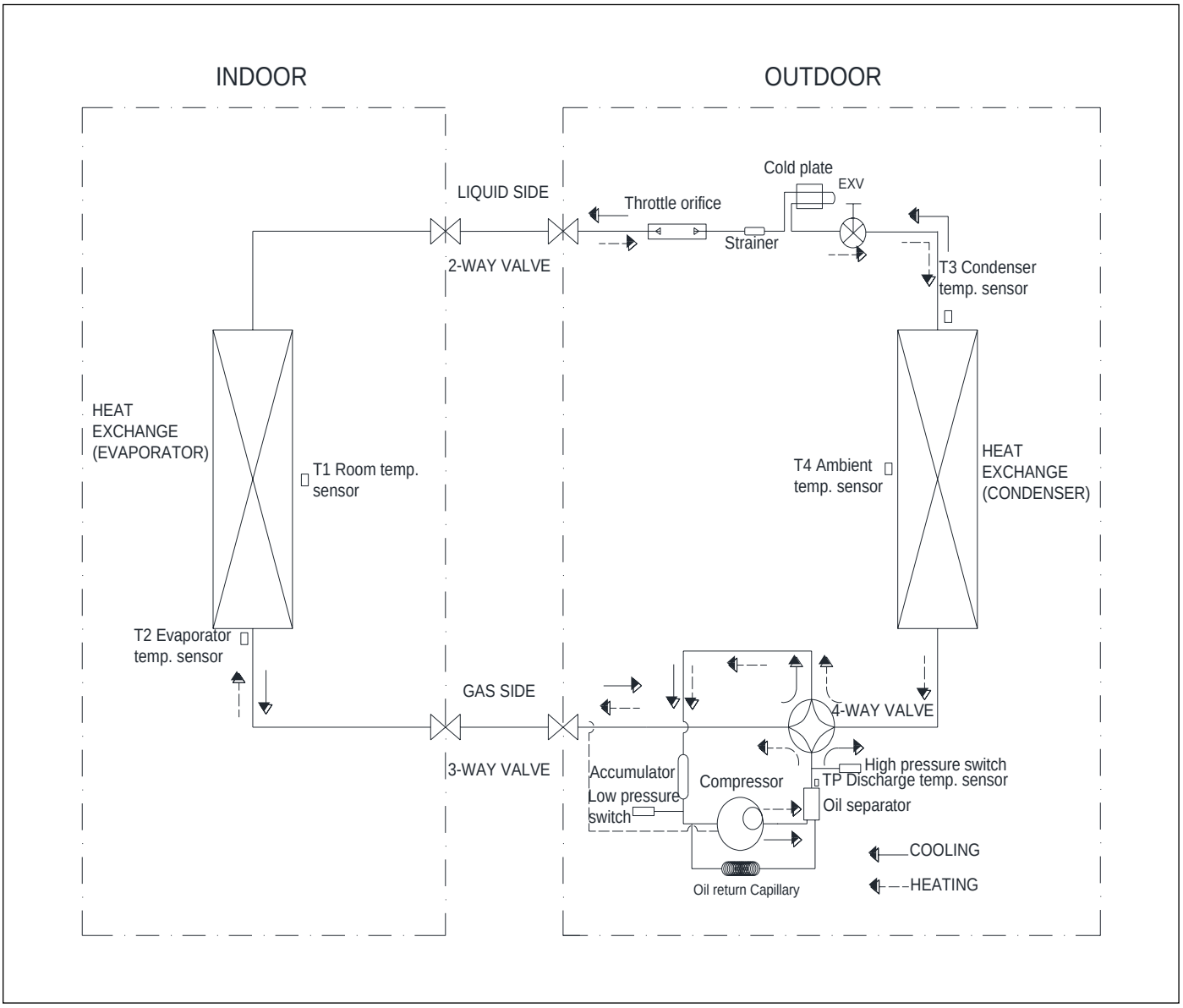


Figure 9

5 Installation Details

5.1 Torque Requirements

Pipe Diameter inch (mm)	Torque lb•ft (N•m)
1/4 (6.35)	13.3~14.8 (18~20)
3/8 (9.52)	23.6~28.8 (32~39)
1/2 (12.7)	36.1~43.5 (49~59)
5/8 (15.9)	42.0~52.4 (57~71)
3/4 (19)	49.4~74.5 (67~101)
7/8 (22)	62.7~81.1 (85~110)

Table 4

5.2 Connecting the Cables

The power cord should be selected according to the following specifications sheet.

- Cable type: SOOW type

Appliance Amps	AWG Wire Size
10	18
13	16
18	14
25	12
30	10

Table 5

The cable size and the current of the fuse or switch are determined by the maximum current indicated on the nameplate which is located on the side panel of the unit. Please refer to the nameplate before selecting the cable, fuse and switch. Recommended: A means of disconnecting the power, should be within 10 feet of the outdoor unit.

5.3 Pipe Length and Elevation

Capacity	Pipe size	
	Liquid side (in / mm)	Gas side (in / mm)
6K, 9K	1/4" / Φ6.35	3/8" / Φ9.52
12K	1/4" / Φ6.35	1/2" / Φ12.7
18K		
24K	3/8" / Φ9.52	5/8" / Φ15.9
30K		
36K		
48K		
60K	3/8" / Φ9.52	3/4" / Φ19

Table 6

Capacity	Precharged length (ft / m)	Max Pipe Length (ft / m)	Max difference in height (ft / m)	Additional charge for each ft (oz)
9K	25 / 7.6	98 / 30	66 / 20	0.16
12K				
18K				
24K		164 / 50	82 / 25	0.32
30K				
36K		213 / 65	98 / 30	
48K				
60K				

Table 7

5.4 First Time Installation

5.4.1 Air Purging with Vacuum Pump

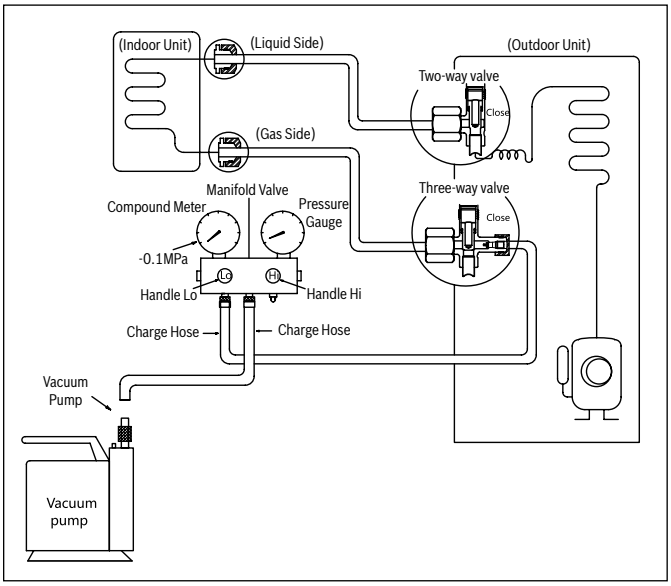


Figure 10

1. Tighten the flare nuts of the indoor and outdoor units, and confirm that both the 2- and 3-way valves are closed.
2. Connect the charge hose with the push pin of Handle Lo to the gas service port of the 3-way valve.
3. Connect another charge hose to the vacuum pump.
4. Fully open the Handle Lo manifold valve.
5. Using the vacuum pump, evacuate the system for 30 minutes.
    a. Check whether the compound meter indicates -0.1 MPa (14.5 Psi).
        - If the meter does not indicate -0.1 MPa (14.5 Psi) after 30 minutes, continue evacuating for an additional 20 minutes.
        - If the pressure does not achieve -0.1 MPa (14.5 Psi) after 50 minutes, check for leakage.
        - If the pressure successfully reaches -0.1 MPa (14.5 Psi), fully close the Handle Lo valve, then cease vacuum pump operations.
    b. Wait for 5 minutes then check whether the gauge needle moves after turning off the vacuum pump. If the gauge needle moves backward, check whether there is gas leakage.
6. Loosen the flare nut of the 3-way valve for 6 or 7 seconds and then tighten the flare nut again.
    a. Confirm the pressure display in the pressure indicator is slightly higher than the atmospheric pressure.
    b. Remove the charge hose from the 3-way valve.
7. Fully open the 2- and 3-way valves and tighten the cap of the 2- and 3-way valves.

Gas leak check (Use soap bubble method):
Apply soapy water or a liquid neutral detergent on the indoor unit connections or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping. If bubbles come out, the pipes are leaking.

5.5 Adding the Refrigerant to an Existing System

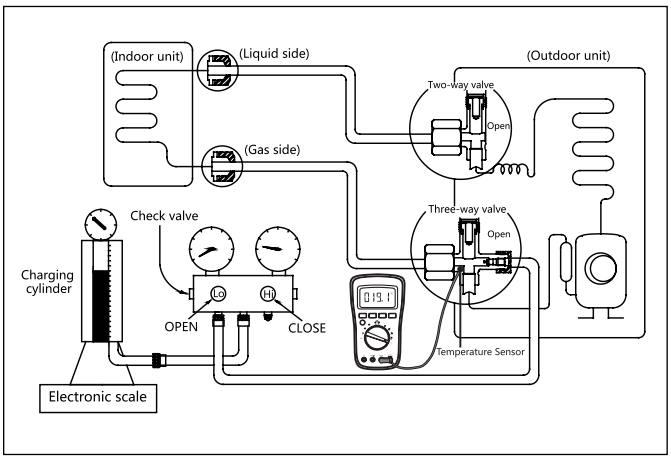


Figure 11

Procedure

1. Close both 2- and 3-way valves.
2. Slightly connect the Handle Lo charge hose to the 3-way service port.
3. Connect the charge hose to the valve at the bottom of the cylinder.
4. If the refrigerant is R410A/R32, invert the cylinder to ensure a complete liquid charge.
5. Open the valve at the bottom of the cylinder for 5 seconds to purge the air in the charge hose, then fully tighten the charge hose with push pin Handle Lo to the service port of 3-way valve.
6. Place the charging cylinder onto an electronic scale and record the starting weight.
7. Fully open the Handle Lo manifold valve, 2- and 3-way valves.
8. Operate the air conditioner in cooling mode to charge the system with liquid refrigerant.
9. When the electronic scale displays the correct weight (refer to the gauge and the pressure of the low side to confirm, the value of pressure refers to chapter **Appendix**), turn off the air conditioner, then disconnect the charge hose from the 3-way service port immediately.
10. Mount the caps of service port and 2- and 3-way valves.
11. Use a torque wrench to tighten the caps to a torque of 18 N.m.
12. Check for gas leakage.

5.6 Re-Installation / Indoor Unit Needs to be Repaired

Collecting the refrigerant into the outdoor unit (passive recovery)

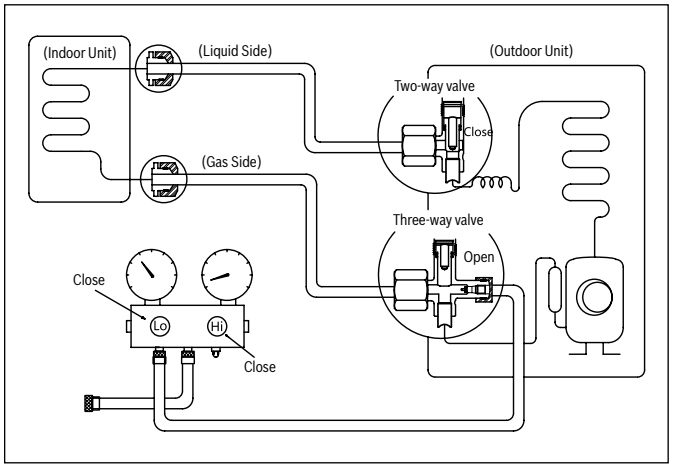


Figure 12

Procedure

1. Confirm that the 2- and 3-way valves are opened.
2. Connect the charge hose with the push pin of Handle Lo to the 3-way valve's gas service port.
3. Open the Handle Lo manifold valve to purge air from the charge hose for 5 seconds and then close it quickly.
4. Close the 2-way valve.
5. Operate the air conditioner in cooling mode. Cease operations when the gauge reaches 0.1 MPa (14.5 Psi).
6. Close the 3-way valve so that the gauge rests between 0.3 MPa (43.5 Psi) and 0.5 MPa (72.5 Psi).
7. Disconnect the charge set and mount the caps of service port and 2- and 3-way valves.
8. Use a torque wrench to tighten the caps to a torque of 18 N.m.
9. Check for gas leakage.

5.7 Re-Installation While the Outdoor Unit Needs to be Repaired

Evacuation for the whole system

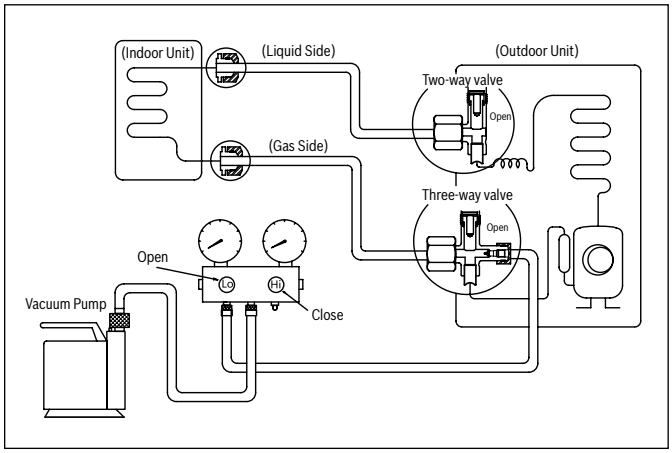


Figure 13

Procedure:

1. Confirm that the 2- and 3-way valves are opened.
2. Connect the vacuum pump to the 3-way valve's service port.
3. Evacuate the system for approximately one hour. Confirm that the compound meter indicates -0.1 MPa (14.5Psi).
4. Close the valve (Low side) on the charge set and turn off the vacuum pump.
5. Wait for 5 minutes then check whether the gauge needle moves after turning off the vacuum pump. If the gauge needle moves backward, check whether there is gas leakage.
6. Disconnect the charge hose from the vacuum pump.
7. Mount the caps of service port and 2- and 3-way valves.
8. Use a torque wrench to tighten the caps to a torque of 18 N.m.

5.8 Operation Characteristics

			COOL operation	HEAT operation	DRY operation
Room Temperature			63ºF - 90ºF 17ºC - 32ºC	32ºF - 86ºF 0ºC - 30ºC	50ºF - 90ºF 10ºC - 32ºC
Outdoor Temperature	Regular	BMS500-AAS012-0CSXRC BMS500-AAS009-1CSXRC BMS500-AAS012-1CSXRC BMS500-AAS018-1CSXRC BMS500-AAS024-1CSXRC	-13ºF - 122ºF -25ºC - 50ºC	-13ºF - 86ºF -25ºC - 30ºC	32ºF - 122ºF 0ºC - 50ºC
	Max Performance	BMS500-AAS006-1CSXHC BMS500-AAS009-1CSXHC BMS500-AAS012-1CSXHC BMS500-AAS018-1CSXHC BMS500-AAS024-1CSXHC	-22ºF - 122ºF -30ºC - 50ºC	-22ºF - 86ºF -30ºC - 30ºC	32ºF - 122ºF 0ºC - 50ºC
	Light Commercial	BMS500-AAS030-1CSXRC BMS500-AAS036-1CSXRC BMS500-AAS036-1CSXLC BMS500-AAS048-1CSXLC BMS500-AAS060-1CSXLC	5ºF - 122ºF -15ºC - 50ºC	5ºF - 86ºF -15ºC - 30ºC	32ºF - 122ºF 0ºC - 50ºC

Table 8

Equation to convert Celsius to Fahrenheit

(°F) = 1.8 x (°C) + 32

NOTICE:

- If the system is used beyond the above conditions, certain safety protection features may come into operation and cause the unit to operate abnormally.
- The room relative humidity should be less than 80%. If the system 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.
- The optimum performance will be achieved during this operating temperature zone.

6 Electronic Functions

6.1 Abbreviation

T1: Indoor room temperature

T2: Coil temperature of evaporator

T3: Coil temperature of condenser

T4: Outdoor ambient temperature

Tsc: Adjusted setting temperature

TP: Compressor discharge temperature

6.2 Display Function

6.2.1 Icon explanation on indoor display board.

6.2.1.1 Wall Mounted Units

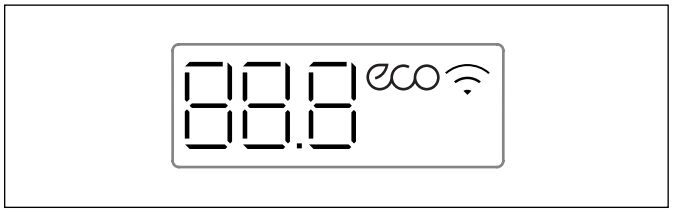


Figure 14

Display		Function
	ECO	ECO function (available on select units only)
		when Wireless Control feature is activated (some units)
88.8	Temperature value	Temperature
	ON	Timer ON is set. Activation of , Fresh, Swing, Turbo, ECO, Breeze away, ECO intelligent or Silence
	OF	Timer OFF is set. Cancellation of Fresh, Swing, Turbo, ECO, Breeze away, ECO intelligent or Silent
	dF	Defrost
	CL	Active Clean (For Inverter split type) or self-cleaning(For Fixedspeed type)
	FP	Heating in room temperature under 8°C

Table 9

6.2.1.2 Compact Cassette Units

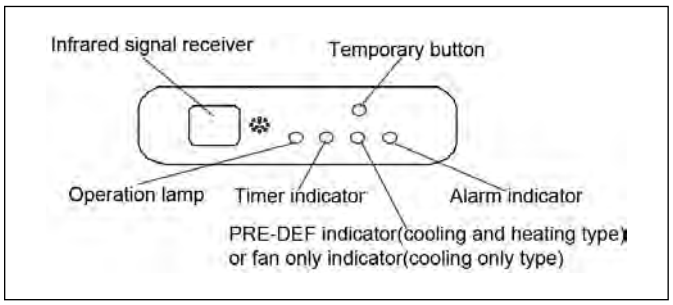


Figure 15

6.2.1.3 Slim Cassette Units

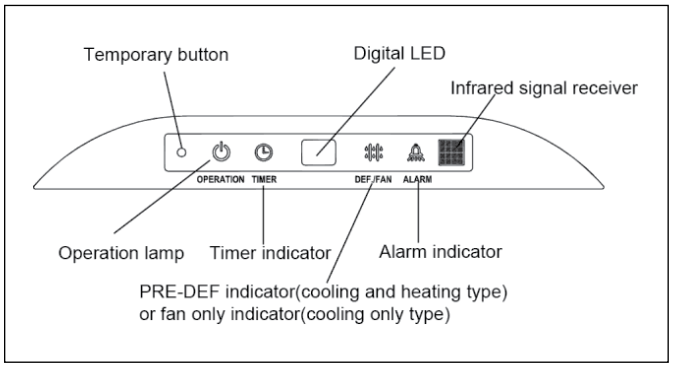


Figure 16

6.2.1.4 New Cassette Units

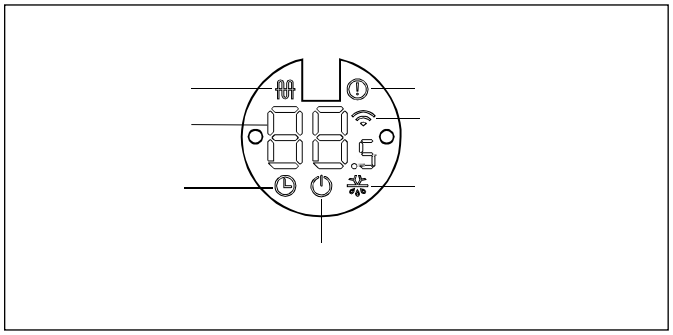


Figure 17

A guide on using the infrared remote is not included in this literature package. A separate user guide is available for the remote operations.

- Display may look different depending on IDU type.
- Display is not available with Compact Cassette (9K, 12K & 18k) indoor model.
- Ducted indoor model may have display; however, due to installation set up, it may not be visible.
- Please use Wired Wall Thermostat (optional accessory) to check system information easily.

6.3 Main Protection

6.3.1 Compressor three-minute delay at restart

Compressor functions are delayed for up to ten seconds upon the first startup of the unit, and are delayed for up to three minutes upon subsequent unit restarts.

6.3.2 Automatic shutoff based on discharge temperature

If the compressor discharge temperature exceeds a certain level for a period of time, the compressor ceases operation.

6.3.3 Automatic shutoff based on fan speed

If the indoor fan speed registers below 200RPM or over 2100RPM for an extended period of time, the unit ceases operation and the corresponding error code is displayed on the indoor unit.

6.3.4 Inverter module protection

The inverter module has an automatic shutoff mechanism based on the unit's current, voltage, and temperature. If automatic shutoff is initiated, the corresponding error code is displayed on the indoor unit and the unit ceases operation.

6.3.5 Indoor fan delayed operation

- When the unit starts, the louver is automatically activated and the indoor fan will operate after a period of setting time or the louver is in place.
- If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.

6.3.6 Compressor preheating

Preheating is automatically activated when T4 sensor is lower than setting temperature.

6 .3.7 Sensor redundancy and automatic shutoff

- If one temperature sensor malfunctions, the air conditioner continues operation and displays the corresponding error code, allowing for emergency use.
- When more than one temperature sensor is malfunctioning, the air conditioner ceases operation.

6.4 Operation Modes and Functions

6.4.1 Fan mode

1. Outdoor fan and compressor stop.
2. Temperature setting function is disabled and indoor room temperature is displayed.
3. Indoor fan can be set to 1%~100%, or auto.
4. The louver operates same as in cooling mode.
5. Auto fan: In fan-only mode, AC operates the same as auto fan in cooling mode with the temperature set at 24℃.(Tsc =24℃)

6.4.2 Cooling mode

6.4.2.1 Compressor running rules

Reach the configured temperature:

1. When the compressor runs continuously for within 120 minutes.
   - If the following conditions are satisfied, the compressor ceases operation.
   - Calculated frequency(fb) is less than minimum limit frequency (FminC).
     - Compressor runs at FminC more than 10 minutes
     - T1 is lower than or equal to (Tsc-CDIFTEMP-0.5℃)

CDIFTEMP is EEPROM setting parameter. It is 2℃ usually.

2. When the compressor runs continuously for more than 120 minutes.
   - If the following conditions are satisfied, the compressor ceases operation.
     - Calculated frequency(fb) is less than minimum limit
     - frequency(FminC)
     - Compressor runs at FminC more than 10 minutes.
     - T1 is lower than or equal to (Tsc-CDIFTEMP).

CDIFTEMP is EEPROM setting parameter. It is 2℃ usually.

3. If one of the following conditions is satisfied, not judge protective time.
   - Compressor running frequency(fr) is more than test frequency (TestFre).
   - Compressor running frequency is equal to test frequency, T4 is more than 15℃ or T4 fault.
   - Change setting temperature.
   - Turbo or sleep function on/off
   - Various frequency limit shutdown occurs.

6.4.2.2 Outdoor fan running rules

The outdoor unit will run at different fan speeds according to T4 and compressor running frequency. For different outdoor units, the fan speeds are different.

6.4.2.3 Indoor fan running rules

1. In cooling mode, the indoor fan operates continuously. The fan speed can be set to 1%-100%, or auto.
2. Auto fan

   For DC fan motor units:

   - Descent curve
     - When T1-Tsc is lower than or equal to 3.5℃, fan speed reduces to 80%;
     - When T1-Tsc is lower than or equal to 1℃, fan speed reduces to 60%;
     - When T1-Tsc is lower than or equal to 0.5℃, fan speed reduces to 40%;
     - When T1-Tsc is lower than or equal to 0℃, fan speed reduces to 20%;
     - When T1-Tsc is lower than or equal to -0.5℃, fan speed reduces to 1%.
   - Rise curve
     - When T1-Tsc is higher than 0℃, fan speed increases to 20%;
     - When T1-Tsc is higher than 0.5℃, fan speed increases to 40%;
     - When T1-Tsc is higher than 1℃, fan speed increases to 60%;
     - When T1-Tsc is higher than 1.5℃, fan speed increases to 80%;
     - When T1-Tsc is higher than 4℃, fan speed increases to 100%.

6.4.2.4 Condenser temperature protection

When the condenser temperature exceeds a configured value, the compressor ceases operation.

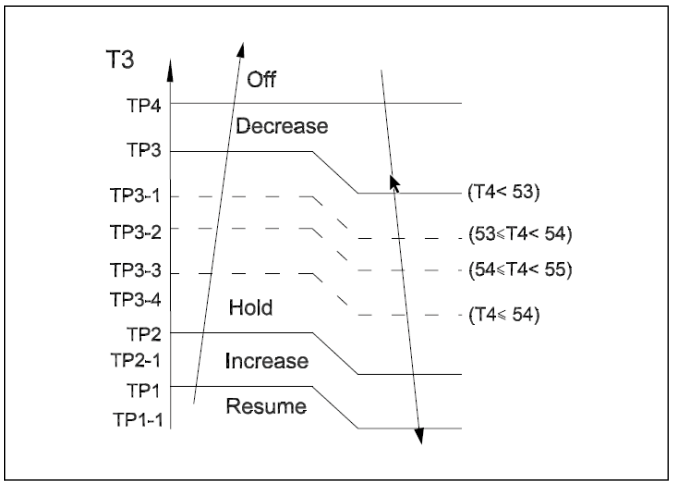


Figure 18

Legend:
TP1 = 54C
TP2 = 56C
TP3 = 60C
TP4 = 65C

6.4.2.5 Evaporator temperature protection

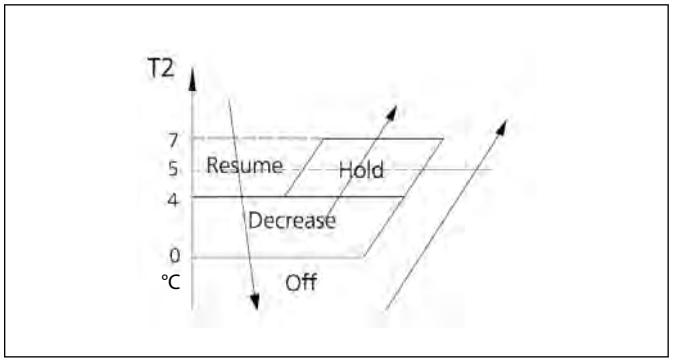


Figure 19

- Off: Compressor stops.
- Decrease: Decrease the running frequency to the lower level per 1 minute.
- Hold: Keep the current frequency.
- Resume: No limitation for frequency.

6.4.3 Heating mode

6.4.3.1 Compressor operation

1. Reach the configured temperature
   - If the following conditions are satisfied, the compressor ceases operation.
     - Calculated frequency(fb) is less than minimum limit frequency(FminH).
     - Compressor runs at FminH more than 10 minutes.
     - T1 is higher than or equal to Tsc+ HDIFTEMP2.

HDIFTEMP2 is EEPROM setting parameter. It is 2℃ usually.

   - If one of the following conditions is satisfied, not judge protective time.
     - Compressor running frequency(fr) is more than test frequency(TestFre)
     - When compressor running frequency is equal to test frequency, T4 is more than 15℃ or T4 fault
     - Change setting temperature
     - Turbo or sleep function on/off
2. When the current is higher than the predefined safe value, surge protection is activated, causing the compressor to cease operations.

6.4.3.2 Outdoor fan operation

The outdoor unit will be run at different fan speed according to T4 and compressor running frequency.

For different outdoor units, the fan speeds are different.

6.4.3.3 Indoor fan operation

1. In heating mode, the indoor fan operates continuously. The fan speed can be set to 1%-100%, or mute. The anti-cold wind function has the priority.
   - Anti-cold function : The indoor fan is controlled by the indoor temperature T1 and indoor unit coil temperature T2

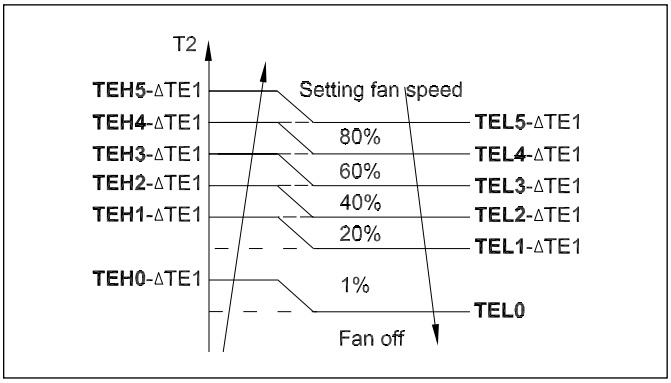


Figure 20

Legend:
TEH0=25C, TEH1=32C, TEH2=33C,
TEH3=34C, TEH4=35C, TEH5=36C

Indoor Room Temp. Condition	Indoor Fan Speed
T1 ≥ 19℃ (66.2℉)	ΔTE1=0
15℃ (59℉) ≤ T1 ≤ 19℃(66.2℉)	ΔTE1=19℃-T1 (34.2℉-T1)
T1<15℃ (59℉)	ΔTE1=4℃ (7.2℉)

Table 10

2. Auto fan

For DC fan motor units:

- Rise curve
  - When T1-Tsc is higher than -1.5℃, fan speed reduces to 80%;
  - When T1-Tsc is higher than 0℃, fan speed reduces to 60%;
  - When T1-Tsc is higher than 0.5℃, fan speed reduces to 40%;
  - When T1-Tsc is higher than 1℃, fan speed reduces to 20%.
- Descent curve
  - When T1-Tsc is lower than or equal to 0.5℃, fan speed increases to 40%;
  - When T1-Tsc is lower than or equal to 0℃, fan speed increases to 60%;
  - When T1-Tsc is lower than or equal to -1.5℃, fan speed increases to 80%;
  - When T1-Tsc is lower than or equal to -3℃, fan speed increases to 100%.

6.4.4 Defrost mode

System will enter the defrost mode according to the value of T3 ,T4 and also the compressor running time.

During the defrost mode, the compressor will run, indoor and outdoor motor will stop and defrost indicator lamp of the indoor unit will be lighted

"dF" will be displayed.

If any one of the following items is satisfied, the defrost cycle will finish and the system will turn to normal heating mode.

- T3 rises to be higher than TCDE 33.8℉ (1℃).
- T3 keeps to be higher than TCDE 35.6℉ (2℃) for 80 seconds.
- The machine has run for 15 minutes in defrosting mode.

If T4 is lower than or equal to -22℃ and compressor running time is more than TIMING_DEFROST_TIME, if any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:

- Unit runs for 10 minutes consecutively in defrosting mode.
- T3 rises above 10℃.

For some models:

- If T3 is lower than 3℃ and compressor running time is more than 120 minutes, at this time, if T3 is lower than TCDI1+4℃(39.2℉) for 3 minutes, the unit enters defrosting mode.

For some models:

- If any one of the following conditions is satisfied, the unit enters defrosting mode
  - If T3 or T4 is lower than -3℃ for 30 seconds,Ts-T1 is lower than 5℃ and compressor running time is more than EE_TIME_DEFROST7.
  - If T3 or T4 is lower than -3℃ for 30 seconds and compressor running time is more than EE_TIME_ DEFROST7+30.
- If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
  - T3 rises above TCDE1+4℃. (TCDE1=12C).
  - T3 maintained above TCDE2+4℃ for 80 seconds. (TCDE2=2C)
  - Unit runs for 15 minutes consecutively in defrosting mode.

6.4.4.1 Evaporator coil temperature protection

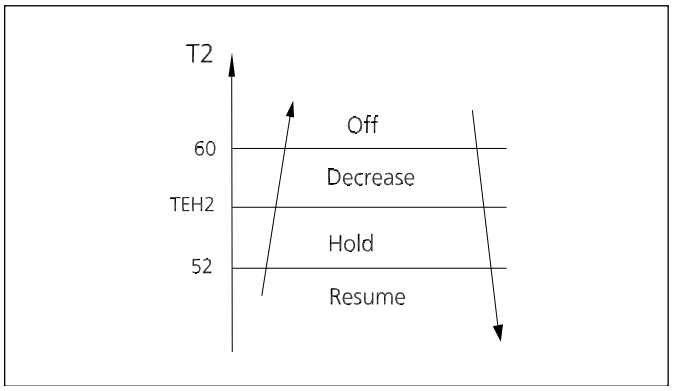


Figure 21

Off: Compressor stops.

Decrease: Decrease the running frequency to the lower level per 20 seconds.

Hold: Keep the current frequency.

Resume: No limitation for frequency.

6.4.5 Auto-mode

This mode can be chosen with the remote controller and the setting temperature can be changed between 61℉~86℉ (16℃~30℃)

In auto mode, the machine will choose cooling, heating or fan-only mode according to T1,Ts, T4 and relative humidity.

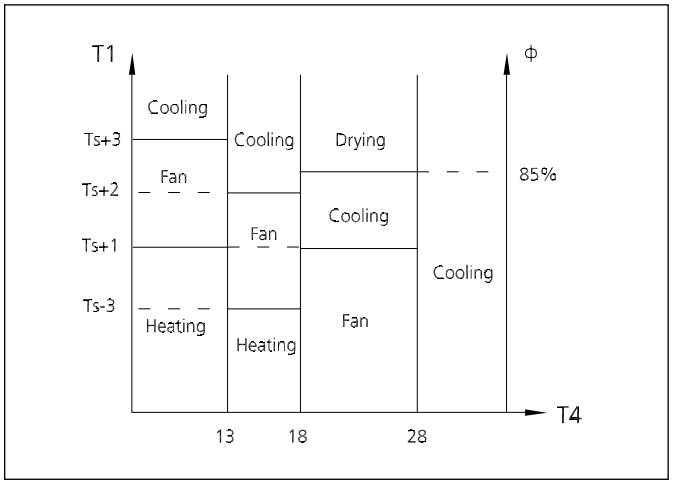


Figure 22

If the setting temperature is modified, the machine selects a new running function.

6.4.6 Dry mode

- In dry mode, AC operates the same as auto fan in cooling mode.
- All protections are activated and operate the same as they do that in cooling mode.
- Low Room Temperature Protection

If the room temperature is lower than 10℃, the compressor ceases operations and does not resume until room temperature exceeds 12℃.

6.4.7 Forced operation function

- **Forced cooling mode:** The compressor and outdoor fan continue to run(fixed at rated frequency), and the indoor fan runs at rated speed. After running for 30 minutes, the AC will switch to auto mode with a preset temperature of 24℃.
- **Forced auto mode:** Forced auto mode operates the same as normal auto mode with a preset temperature of 24℃.

  When AC receives signals, such as switch on, switch off, timer on, timer off, mode setting, temperature setting, fan speed setting, sleeping mode setting, follow me setting, it will quit the forced operation.
- **Forced defrosting mode:** Press AUTO/COOL button continuously for 5s under forced cooling mode to enter this mode. Indoor fan will stop, defrosting lamp will light on. Quit this mode and turn off the unit when: either quit normal defrosting, turn off by RC or Press AUTO/COOL button continuously for 5s again.

6.4.8 Timer function

- Timing range is 24 hours.
- Timer on. The machine will turn on automatically when reaching the setting time.
- Timer off. The machine will turn off automatically when reaching the setting time.
- 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.
- 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.
- The timer function will not change the system operation mode.
- The setting time is relative time.
- The system will quit the timer function when it has malfunction.

6.4.9 Sleep function

- The sleep function is available in cooling, heating or auto mode.
- Operation process in sleep mode is as follows:
  When cooling, the setting temperature rises 1.8℉ (1℃) (be lower than 86℉ (30℃)) 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 1.8℉ (1℃) (be higher than 62.6℉ (17℃)) 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).
- Operation time in sleep mode is 8 hours. After 8 hours, after which, the unit exits this mode.
- Timer setting is available

6.4.10 Auto-restart function

The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings and, in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.

If there is a power failure while the unit is running, the compressor starts 3 minutes after the unit restarts. If the unit was already off before the power failure, the unit stands by.

6.4.11 Refrigerant leakage detection

The indoor unit will automatically display "EL0C" when it detects refrigerant leakage.

6.4.12 Louver position memory function

When turning on your unit, the louver will automatically resume its former angle.

6.4.13 46.4°F (8°C) heating (optional)

In heating mode, the temperature can be set to as low as 8℃, preventing the indoor area from freezing if unoccupied during severe cold weather.

6.4.14 Active Clean function

The Active Clean Technology washes away dust, mold, and grease that may cause odors when it adheres to the heat exchanger by automatically freezing and then rapidly thawing the frost. The internal wind wheel then keeps operating to blow-dry the evaporator, thus preventing the growth of mold and keeping the inside clean.

When this function is turned on, the indoor unit display window appears “CL”, after 20 to 45 minutes, the unit will turn off automatically and cancel Active Clean function.

6.4.15 Follow me (optional)

- If you press “Follow Me” on the remote, the indoor unit will beep. This indicates the follow me function is active.
- Once active, the remote control will send a signal every 3 minutes, with no beeps. The unit automatically sets the temperature according to the measurements from the remote control.
- The unit will only change modes if the information from the remote control makes it necessary, not from the unit’s temperature setting.
- If the unit does not receive a signal for 7 minutes or you press “Follow Me,” the function turns off. The unit regulates temperature based on its own sensor and settings.

6.4.16 Silence operation (optional)

Press “Silence” on the remote control to enable the SILENCE function. While this function is active, the indoor unit will run at faint breeze(1% fan speed), which reduces noise to the lowest possible level.

6.4.17 ECO intelligent (single zone only)

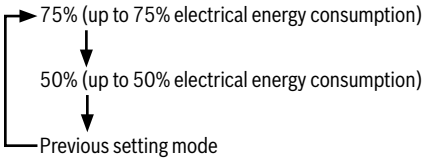
The system is controlled intelligently under Intelligent eye mode. It can detect the people’s activities in the room. In cooling/Heating/Auto mode, when you are away for 30 minutes, the unit will automatically lower the frequency to save energy. And the unit will automatically start and resume operation if sensing human activity again.

6.4.18 Humidity control (single zone only)

The unit is able to increase the comfortable level by lowering humidity in your home. The unit off ers a better temperature and humidity control solution in the dry mode, the room temperature can be maintained accurately as set temperature while the moisture is being removed.

6.4.19 Electrical energy consumption control function (optional)

Press the “Gear” button on remote controller to enter the energy efficient mode in a sequence of following:



Turn off the unit or activate ECO, sleep, Super cool, 8°C Heating, Silence or self clean function will quit this function.

6.4.20 Breeze away function (optional)

This feature avoids direct airflow blowing on the body and makes you feel indulging in silky coolness.

This feature is available under cooling mode, fan-only mode and drying mode.

6.4.21 Point check function (engineering troubleshooting mode)

To enter engineer mode, in power-on or standby mode, and in non-locked state, press the key combination “ON/OFF + Air Speed” for 7seconds.

After entering the engineer mode, the remote control will display icons of “Auto, Cool, Dry, Heat”, and the Battery icon; at the same time, it will also display the numeric code of the current engineer mode (for the initial engineer mode, the numeric code displayed is 0), and all other icons are inactive.

In engineer mode, the value of the current numeric code can be adjusted circularly through the Up/Down key, with the setting range of 0 to 30.

Code	Query Content	Additional Notes
0	Error Code	Refer to error code list
1	Room Temperature	T1 temperature
2	Indoor coil temperature	T2 temperature
3	Outdoor coil temperature	T3 temperature
4	Ambient temperature	T4 temperature
5	Discharge temperature	TP temperature
6	Compressor Target Frequency FT	Targeted Frequency
7	Compressor Running Frequency Fr	Actual Frequency
8	Unit Current dL	N/A
9	Outdoor AC Voltage Uo	N/A
10	Current indoor capacity test state Sn	N/A
11	Reserve	
12	Set Speed Pr of the outdoor fan	Outdoor fan speed=value*8
13	Opening Lr of EEV	EXV opening angle-value*8
14	Actual Running Speed ir of the indoor fan	Indoor fan speed=value*8
15	Indoor Humidity Hu	N/A
16	Set Temperature TT after compensation	N/A
17	Reserve	N/A
18	Reserve	N/A
19	/	N/A
20	Indoor Target Frequency oT	N/A
21	Reserve	
22		
23		
24		
25		
26		
27		
28		
29		
30		

Table 11

Exit of engineer mode:

1. In engineer mode, press the key combination of “On/Off + Air speed” for 2s;
2. The engineer mode will be exited if there are no valid key operations for continuous 60s.

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

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

Table 12

0 - FF is a hexidecimal display value. Not OFF.

7 Troubleshooting

Safety

WARNING: ELECTRICAL HAZARD

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

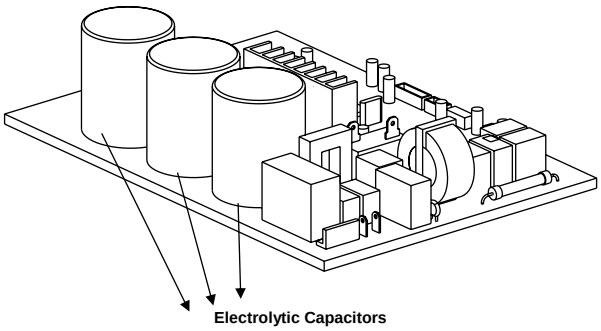


Figure 23

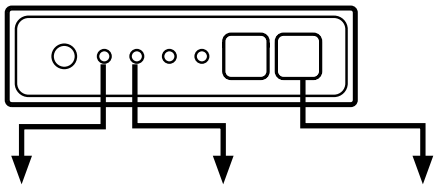
For other models, please connect discharge resistance (approx.100Ω 40W) between +, - terminals of the electrolytic capacitor on the opposite side of the outdoor PCB. A screwdriver will also work as a resistive element.

For reference the most common error codes are E1, P0, and P3.

7.1 Error Codes - Ducted Indoor Unit

NOTICE

- If below error codes appear, please turn off the system and contact an Authorized Service Provider.



Number	Cause	Operation indicator flashes	Timer indicator	Error Code
1	Indoor EEPROM (Electrically Erasable Programmable Read-Only Memory) error	1	Off	E0
2	Indoor and outdoor unit communication malfunction	2	Off	E1
3	Indoor fan speed malfunction	4	Off	E3
4	Indoor room temperature sensor error	5	Off	E4
5	Evaporator coil temperature sensor error	6	Off	E5
6	Refrigerant leak detection system malfunction	7	Off	EC
7	Water level alarm malfunction	8	Off	EE
8	Overload protection	1	On	F0
9	Outdoor temperature sensor error	2	On	F1
10	Outdoor condenser pipe sensor error	3	On	F2
11	Discharge air temperature sensor error	4	On	F3
12	Outdoor EEPROM (Electrically Erasable Programmable Read-Only Memory) error	5	On	F4
13	Outdoor fan speed (DC fan motor only) malfunction	6	On	F5
14	Inverter module IPM protection	1	Flash	P0
15	High/Low voltage protection	2	Flash	P1
16	Compressor top overheating protection	3	Flash	P2
17	Outdoor low temperature protection	4	Flash	P3
18	Compressor drive error	5	Flash	P4
19	Mode conflict	6	Flash	P5
20	Compressor low-pressure protection	7	Flash	P6
21	Outdoor IGBT sensor error	8	Flash	P7
22	Indoor unit communication malfunction	11	On	FA

Table 13

7.2 Quick Check by Error Codes

If you do not have the time to test which specific parts are faulty, you can directly change the required parts according the error code. You can find the parts to replace by error code in the following table.

The table below is applicable for Single Zone system only. For detailed trouble shooting guide, please refer to Diagnosis and Solution section.

Part requiring replacement	Error Code									
	EH 00/ EH 0A	EL 01	EH 02	EH 03	EH 60	EH 61	EH 0b	EL 0C	EC 56	PC 08
Indoor PCB	●	●	●	●	●	●	●	●		
Outdoor PCB		●							●	●
Display board							●			
Indoor fan motor				●						
T1 sensor					●					
T2 Sensor						●		●		
T2B Sensor									●	
Reactor		●								
Compressor										●
Additional refrigerant								●		

Part requiring replacement	Error Code									
	EC 53	EC 52	EC 54	EC 51	EC 07	PC 00	PC 01	PC 02	PC 03	PC 04
Outdoor PCB	●	●	●	●	●	●	●	●	●	●
Indoor fan motor										
Outdoor fan motor					●	●		●		●
T3 Sensor		●								
T4 Sensor	●									
TP Sensor			●							
Reactor							●			
Compressor						●				●
IPM module board						●	●	●		●
High pressure protector								●		
Low pressure protector									●	
Additional refrigerant									●	

Table 14

For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

7.3 ODU PCB & IPM

7.3.1 PCB: Regular 115V Single Zone 12K

BMS500-AAS012-0CSXRC

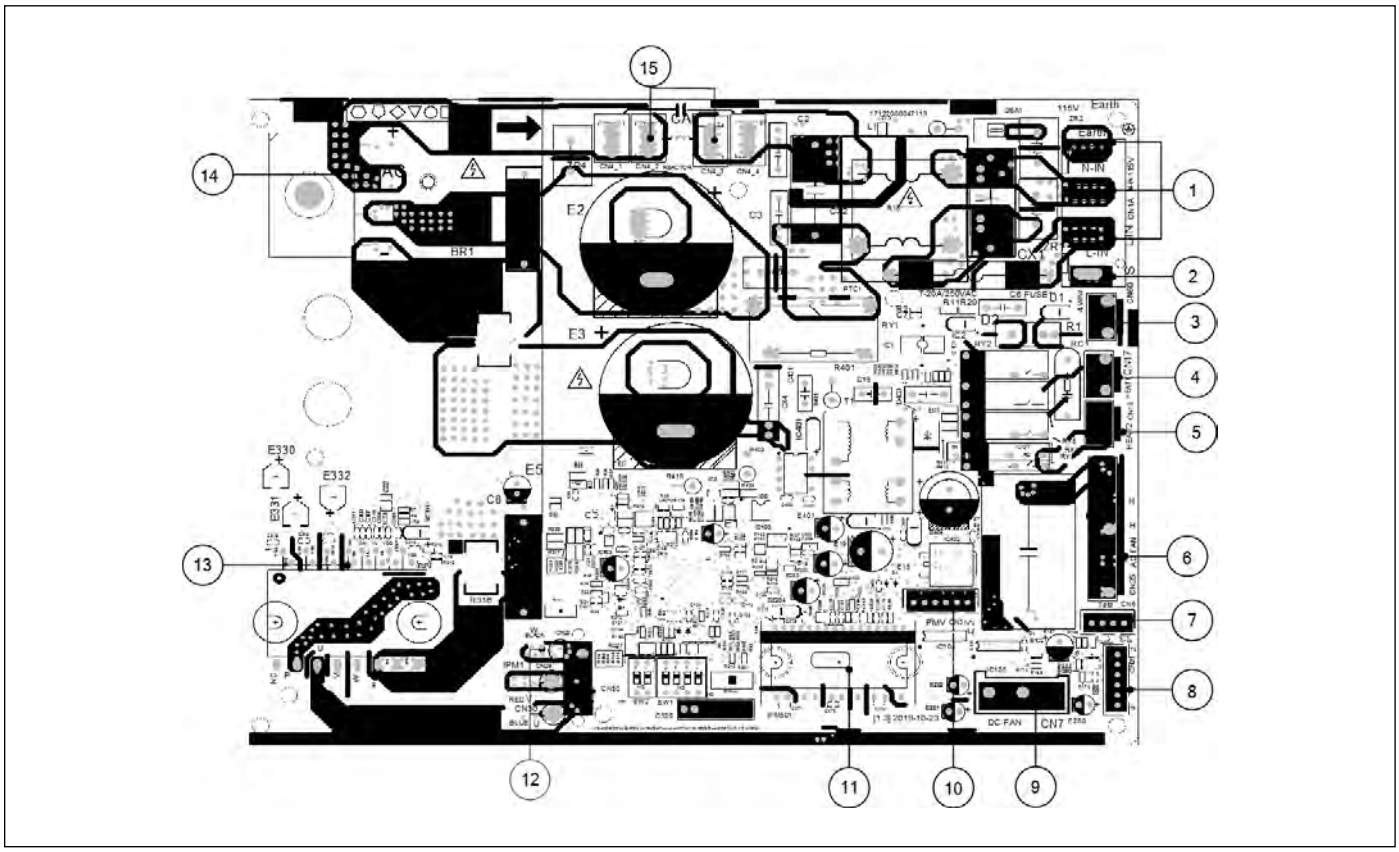


Figure 24

Number	Name	CN#	Description
1	Power Supply	CN3	Earth: connect to Ground
		CN1	N_in: connect to N-line (100-130V AC input)
		CN2	L_in: connect to L-line (100-130V AC input)
2	S	CN16	S: connect to indoor unit communication
3	4-WAY	CN60	connect to 4 way valve, 100-130V AC when is ON.
4	HEAT1	CN17	connect to compressor heater, 100-130V AC when is ON
5	HEAT2	CN15	connect to chassis heater, 100-130V AC when is ON
6	AC-FAN	CN25	connect to AC fan
7	TESTPORT	CN6	used for testing
8	TP T4 T3	CN21	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
9	DC-FAN	CN7	connect to DC fan
10	PMV	CN31	connect to Electric Expansion Valve
11	FAN_IPM	IPM 501	IPM for DC fan
12	W	CN28	connect to compressor
	V	CN29	0V AC (standby)
	U	CN30	10-230V AC (running)
13	COMP_IPM	IPM1	IPM for compressor
14	BR1	BR1	Bridge
15	CN4	CN4_2	connect to transformer
		CN4_3	

Table 15

7.3.2 PCB: Regular and Max Performance Single Zone 9K & 12K

BMS500-AAS009-1CSXRC, BMS500-AAS009-1CSXHC, BMS500-AAS012-1CSXRC, BMS500-AAS012-1CSXHC

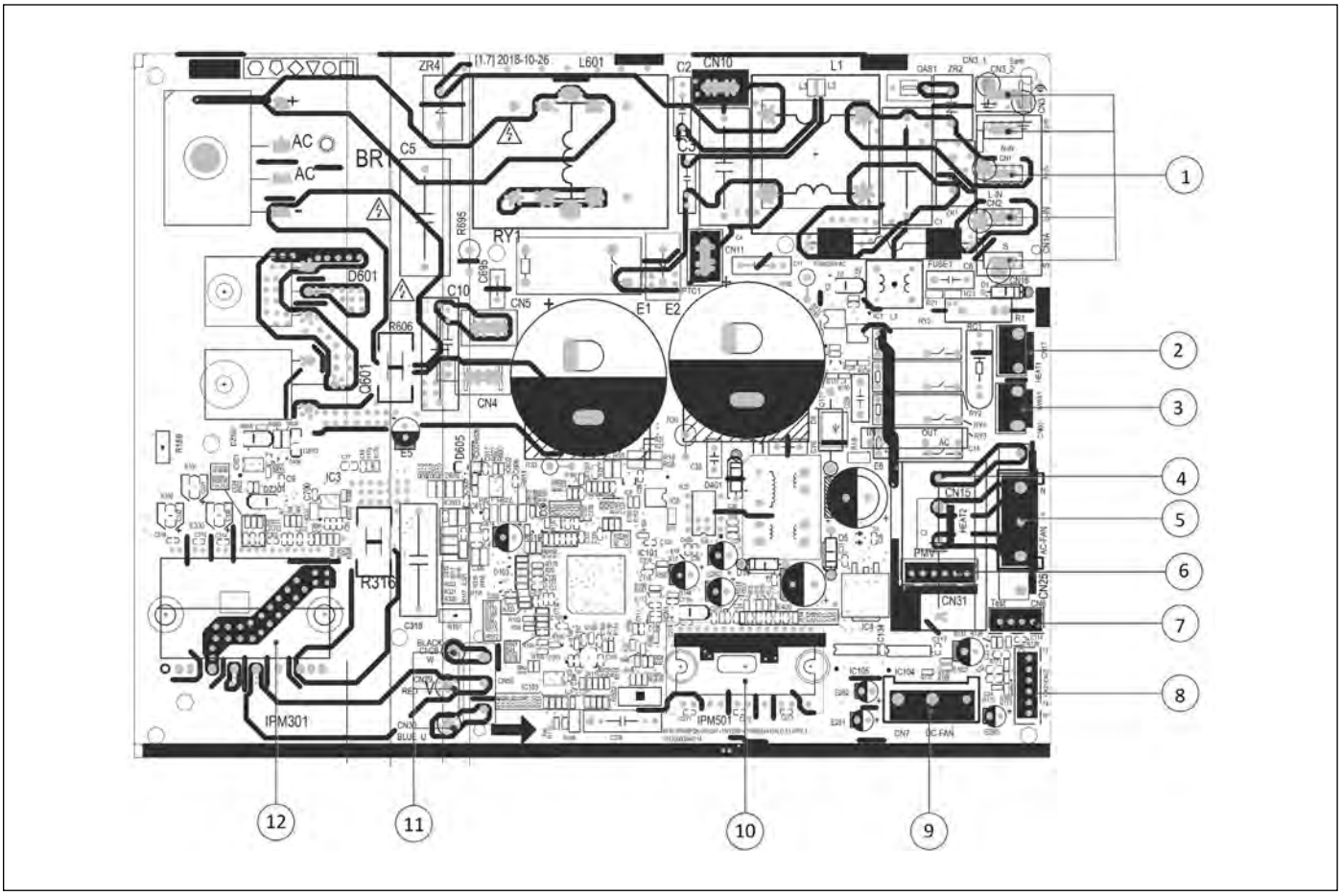


Figure 25

Number	Name	CN#	Description
1	Power Supply (CN1A)	CN3	Earth: connect to Ground
		CN1	N_in: connect to N-line (208-230V AC input)
		CN2	L_in: connect to L-line (208-230V AC input)
		CN16	S: connect to indoor unit communication
2	HEAT1	CN17	connect to compressor heater, 208-230V AC when is ON
3	4-WAY	CN60	connect to 4 way valve, 208-230V AC when is ON.
4	HEAT2	CN15	connect to chassis heater, 208-230V AC when is ON
5	AC-FAN	CN25	connect to AC fan
6	PMV	CN31	connect to Electric Expansion Valve
7	TESTPORT	CN6	used for testing
8	T5 T4 T3	CN21/CN22	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor T5
9	DC-FAN	CN7	connect to DC fan
10	FAN_IPM	IPM 501	IPM for DC fan
11	W	CN28	connect to compressor
	U	CN29	0V AC (standby)
	V	CN30	10-200V AC (running)
12	COMP_IPM	IPM 301	IPM for compressor

Table 16

7.3.3 PCB: Max Performance Single Zone 18K

BMS500-AAS018-1CSXHC

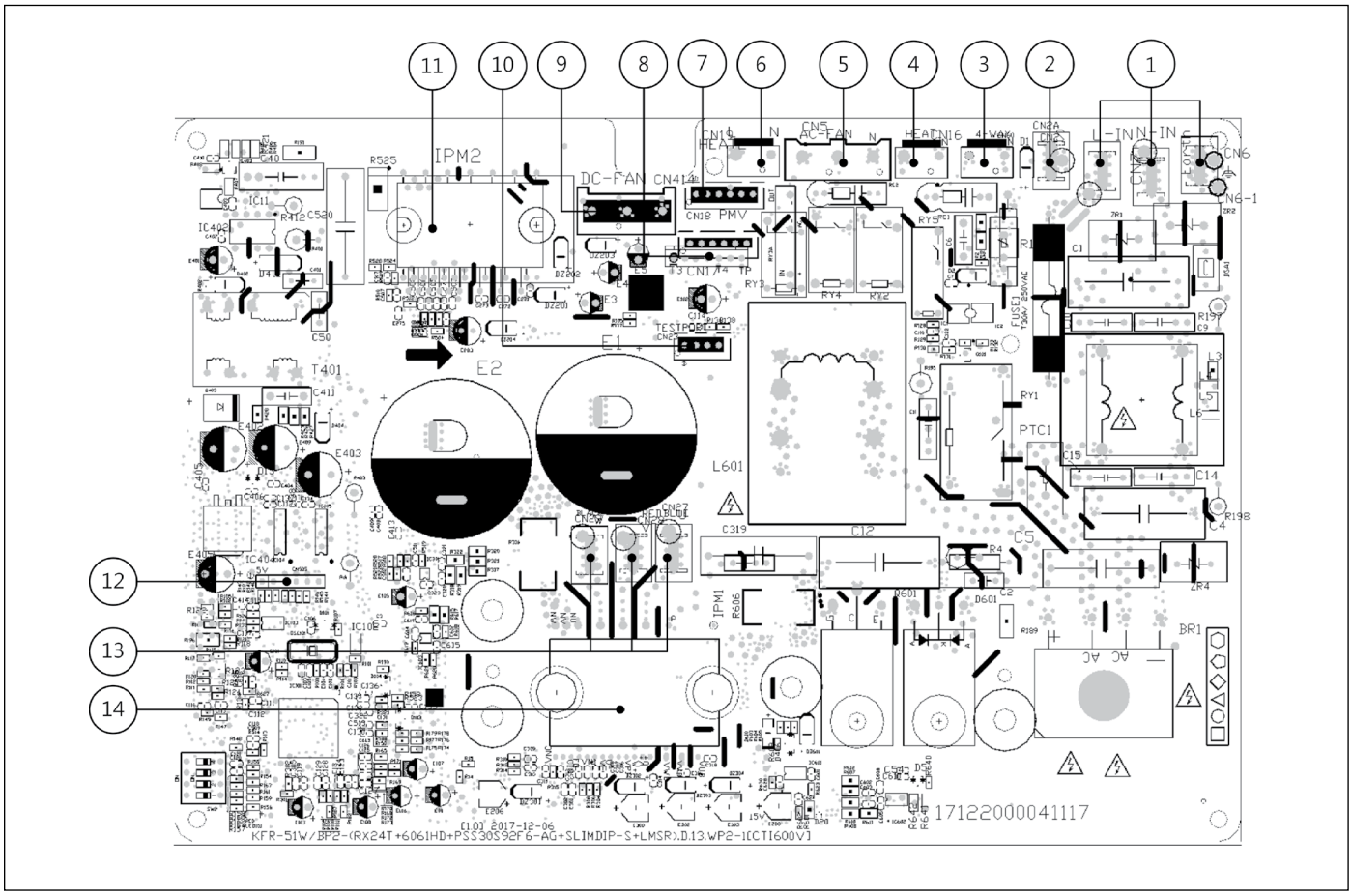


Figure 26

Number	Name	CN#	Description
1	Power Supply (CN3)	CN6	Earth: connect to Ground
		CN7	N_in: connect to N-line (208-230V AC input)
		CN8	L_in: connect to L-line (208-230V AC input)
2	S	CN2	S: connect to indoor unit communication
3	4-WAY	CN60	connect to 4 way valve, 208-230V AC when is ON.
4	HEAT1	CN16	connect to compressor heater, 208-230V AC when is ON
5	AC-FAN	CN5	connect to AC fan
6	HEAT2	CN19	connect to chassis heater, 208-230V AC when is ON
7	PMV	CN18	connect to Electric Expansion Valve
8	T5 T4 T3	CN17	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor T5
9	DC-FAN	CN41	connect to DC fan
10	TESTPORT	CN6	used for testing
11	FAN_IPM	IPM2	IPM for DC fan
12	EE_PORT	CN505	EEPROM programmer port
13	U	CN28	connect to compressor
	V	CN29	0V AC (standby)
	W	CN30	10-200V AC (running)
14	COMP_IPM	IPM 301	IPM for compressor

Table 17

7.3.4 PCB: Regular Single Zone 18K & 24K

BMS500-AAS018-1CSXRC, BMS500-AAS024-1CSXRC

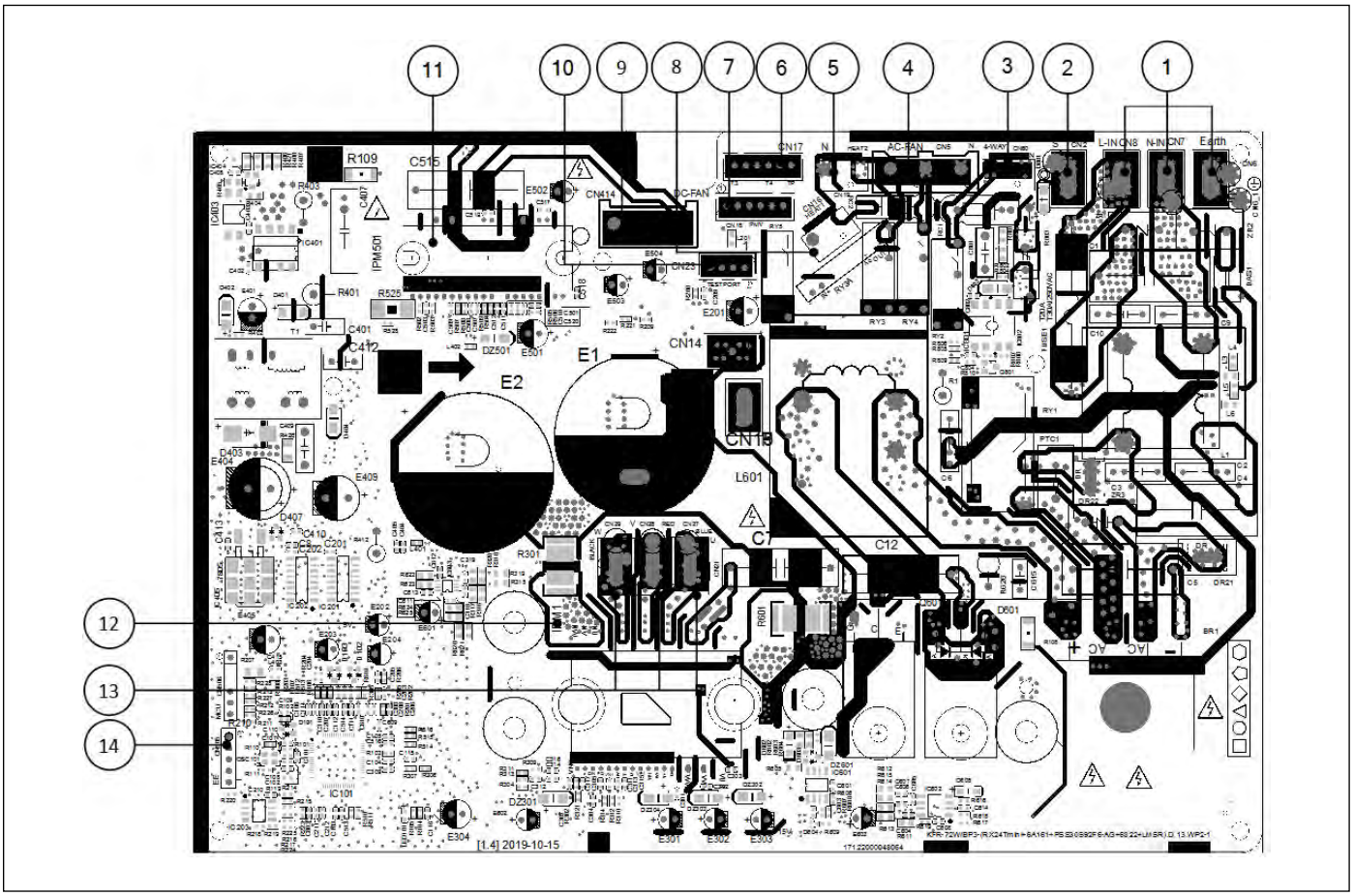


Figure 27

Number	Name	CN#	Description
1	Power Supply (CN3)	CN6	Earth: connect to Ground
		CN7	N_in: connect to N-line (208-230V AC input)
		CN8	L_in: connect to L-line (208-230V AC input)
2	S	CN2	S: connect to indoor unit communication
3	4-WAY	CN60	connect to 4 way valve, 208-230V AC when is ON.
4	AC-FAN	CN5	connect to AC fan
5	HEAT2	CN19	connect to chassis heater, 208-230V AC when is ON
6	T5 T4 T3	CN17	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor T5
7	PMV	CN18	connect to Electric Expansion Valve
8	HEAT1	CN16	connect to compressor heater, 208-230V AC when is ON
9	DC-FAN	CN414	connect to DC fan
10	TESTPORT	CN23	used for testing
11	FAN_IPM	IPM501	IPM for DC fan
12	COMP_IPM	IPM1	IPM for compressor
13	U	CN27	connect to compressor
	V	CN28	0V AC (standby)
	W	CN29	10-200V AC (running)
14	EE_PORT	CN505	EEPROM programmer port

Table 18

7.3.5 PCB: Max Performance Single Zone 24K

BMS500-AAS024-1CSXHC

7.3.6 PCB: Regular Single Zone (for Wall Mounted IDU) 30K & 36K

BMS500-AAS030-1CSXRC, BMS500-AAS036-1CSXRC

7.3.7 PCB: Light Commercial Single Zone (for Cassette and Ducted IDU)

36K BMS500-AAS036-1CSXLC

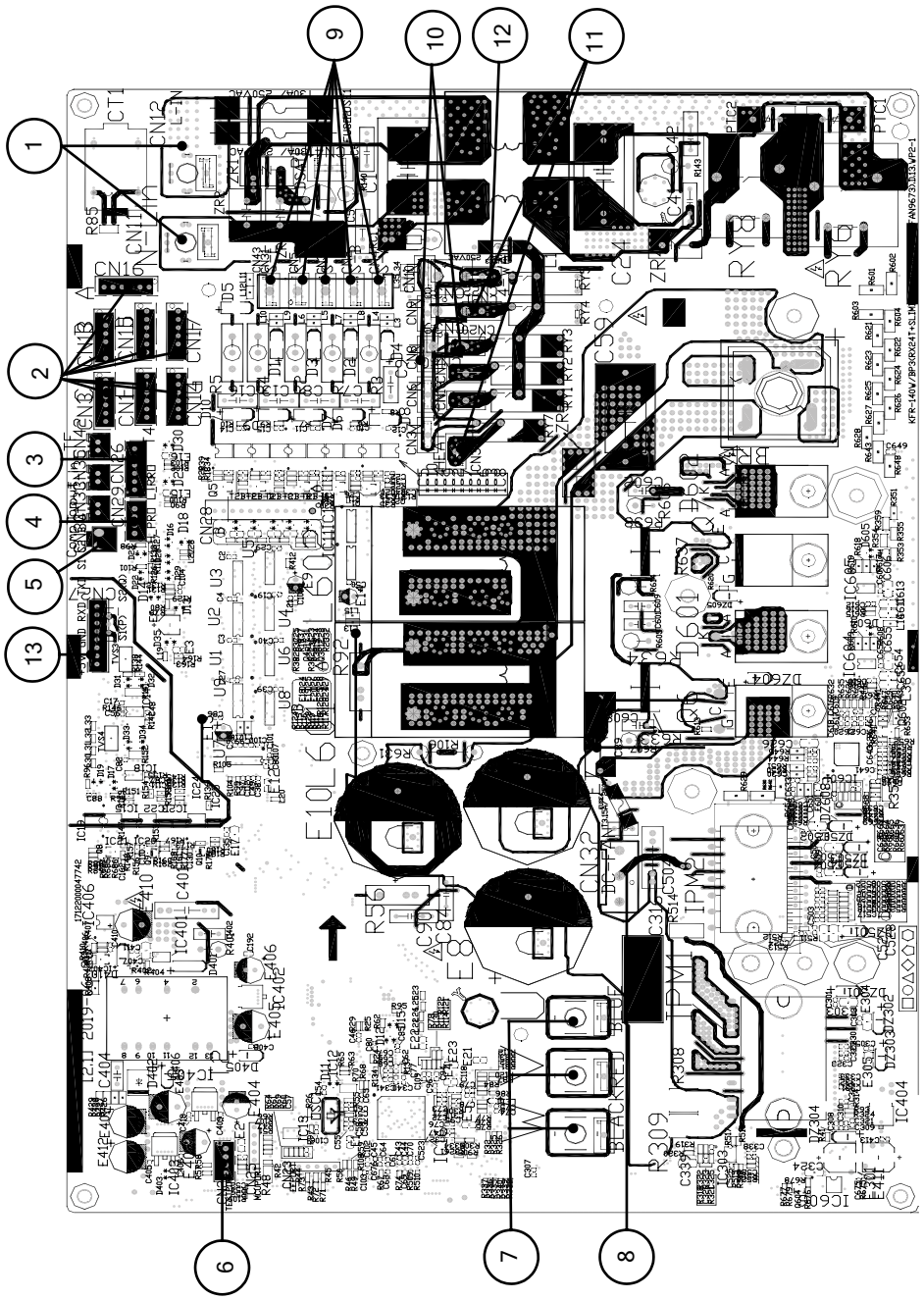


Figure 28

Number	Name	CN#	Description
1	Power Supply	CN11	N_in: connect to N-line (208-230V AC input)
			L_in: connect to L-line (208-230V AC input)
2	EEV-A	CN16	connect to 12V electric expansion valve
	EEV-B	CN13	
	EEV-C	CN3	
	EEV-D	CN15	
	EEV-E	CN1	
	EEV-F	CN17	
	EEV-G	CN14	
3	T3 T4 TP	CN26	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
4	H-PRO,L-RPO	CN29	connect to high and low pressure swtich(pin1-pin2&pin3-pin4:5VDC pulse wave)
5	OLP TEMP. SENSOR	CN30	connect to compressor top temp. sensor (5VDC Pulse wave)
6	TESTPORT	CN24	used for testing
7	COMPRESSOR	U	connect to compressor
		V	0V AC (standby)
		W	10-200V AC (running)
8	DC-FAN	CN32	connect to DC fan
9	S-E	CN31	S: connect to indoor unit communication(pin1-pin2: 24VDC Pulse wave; pin2-pin3: 208 230V AC input)
	S-D	CN5	
	S-C(mono)	CN34	
	S-B	CN2	
	S-A	CN4	
10	HEAT_D	CN8	connect to heater, 208-230V AC when is ON
		CN20	
11	HEAT_Y	CN21	connect to heater, 208-230V AC when is ON
		CN36	
12	4-WAY	CN38	connect to 4 way valve, 208-230V AC when is ON.
13	/	CN27	connect to key board CN1

Table 19

7.3.8 PCB: Light Commercial (for Cassette & Ducted IDU) 48K & 60K

BMS500-AAS048-1CSXLC, BMS500-AAS060-1CSXLC

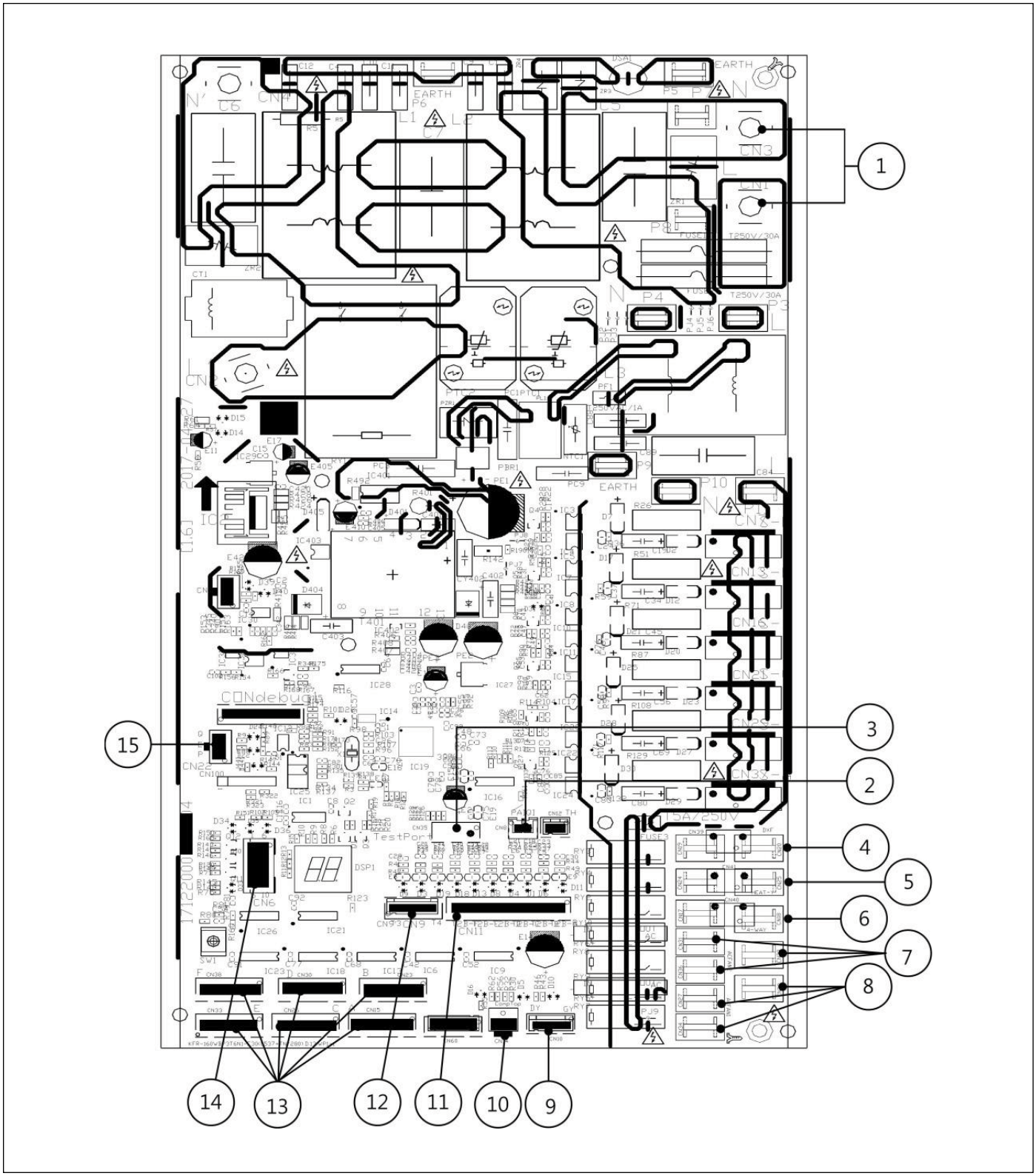


Figure 29

Number	Name	CN#	Description
1	Power Supply	CN1	L1_in: connect to L1-line (230V AC input)
		CN3	L2_in: connect to L2-line (230V AC input)
2	T5	CN8	Exhaust temp. sensor T5
3	TESTPORT	CN35	used for testing
4	HEAT1	CN19/CN20	connect to chassis heater, 208-230V AC when is ON
5	HEAT2	CN24/CN25	connect to compressor heater, 208-230V AC when is ON
6	4-WAY	CN17/CN18	connect to 4 way valve, 208-230V AC when is ON
7	AC-FAN2	CN31/CN36/CN28	connect to AC fan2
8	AC-FAN1	CN27/CN34/CN32	connect to AC fan1
9	H-PRO,L-RPO	CN10	connect to high and low pressure switch (pin1-pin2&pin3-pin4:5VDC pulse wave)
10	Compressor Top	CN14	connect to compressor top temperature sensor
11	T2B	CN11	connect to pipe temp. sensor T2B
12	T4 T3	CN9	connect to pipe temp. sensor T3, ambient temp. sensor T4
13	PMV	CN15/CN23/CN26/CN30/CN33/CN38	connect to Electric Expansion Valve(A~F)
14	/	CN6	connect to IPM&PFC board CN9
15	PQE	CN22	Communication to indoor unit

Table 20

7.4 Indoor Wiring Diagram

7.4.1 4-Ducted Unit - 9K, 12K, 18K & 24K models

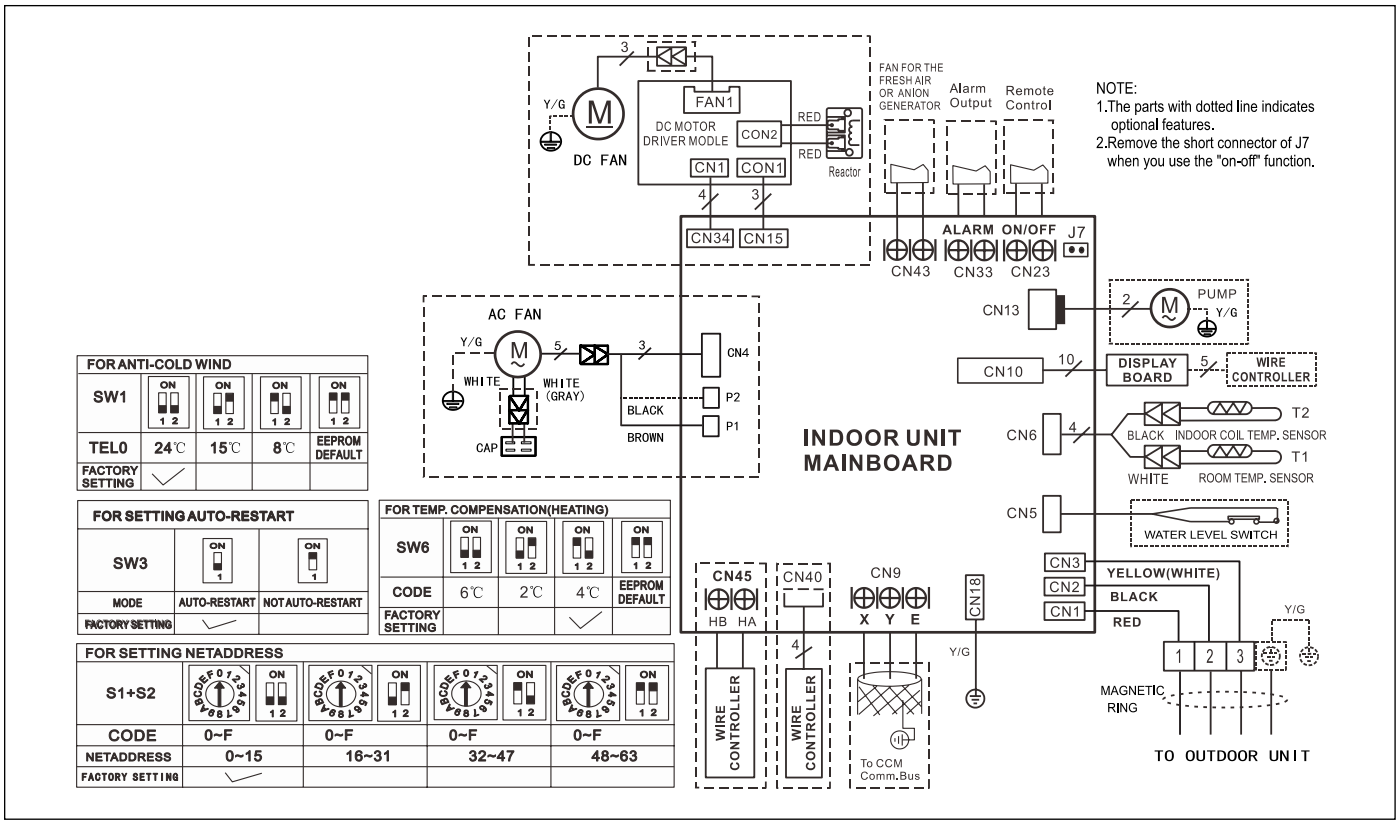


Figure 30

7.4.2 4-Ducted Unit - 36K, 48K & 60K models

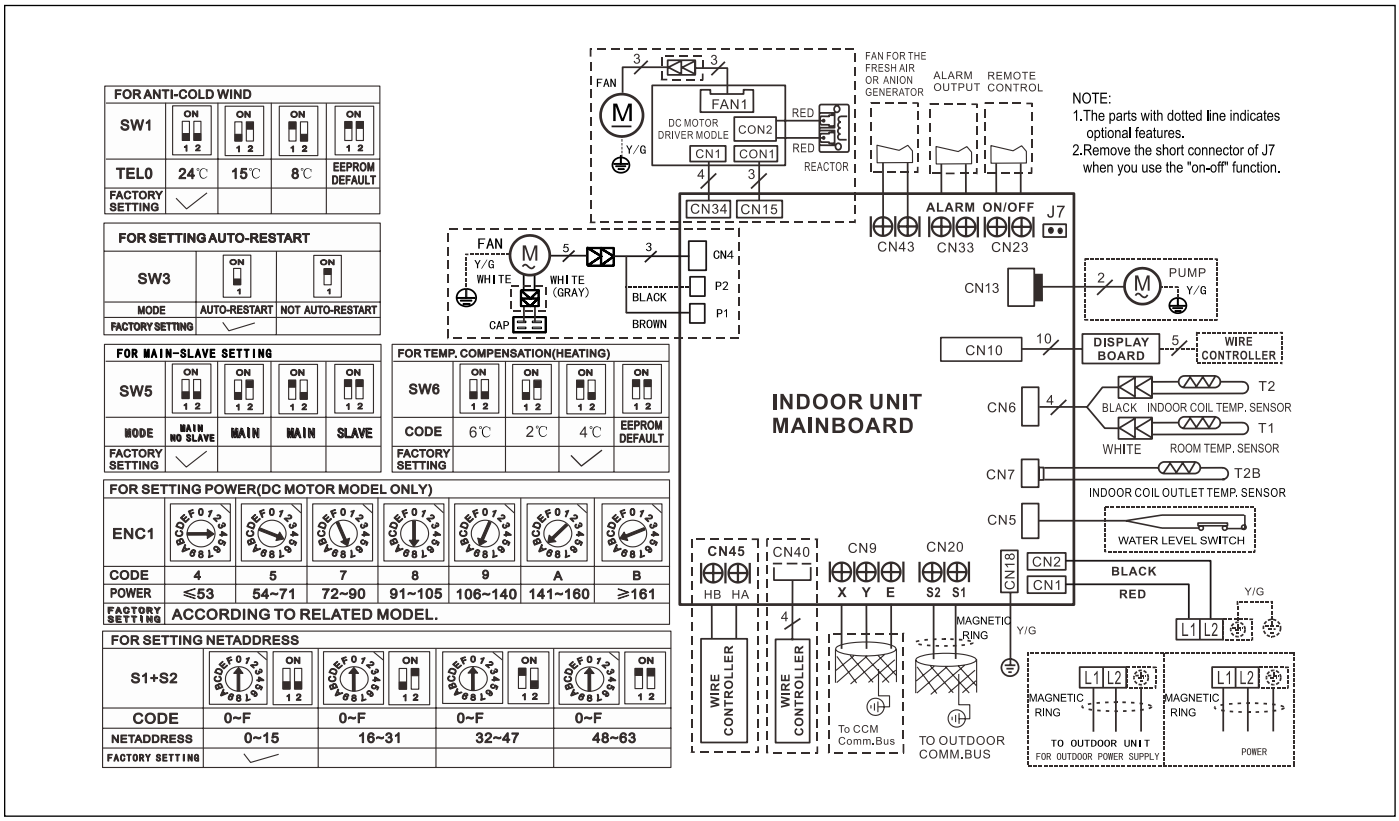


Figure 31

7.4.4 4-Way Cassette & Ducted IDU Connector & Dip-Switch Introduction

4-Way Cassette Unit Connector (9K ~ 48K)

For remote control (ON-OFF) terminal port CN23 and short connector of JR6:

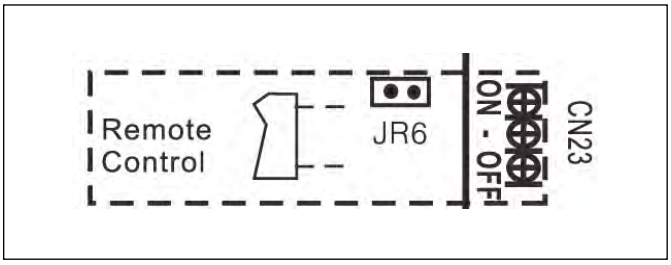


Figure 32

1. Remove the short connector of JR6 when you use ON-OFF function;
2. When remote switch is off (OPEN), the unit would be off;
3. When remote switch is on (CLOSE), the unit would be on;
4. When the remote switch is closed/open, the unit would respond to the demand within 2 seconds;
5. When the remote switches on, use remote controller/ wire controller to select the mode that you want; when the remote switches off, the unit will not respond to the demand from remote controller/wire controller. When the remote switch off, but the remote controller / wire controller are on, CP code will be shown on the display board.
6. The voltage of the port is 12V DC, design Max. current is 5mA.

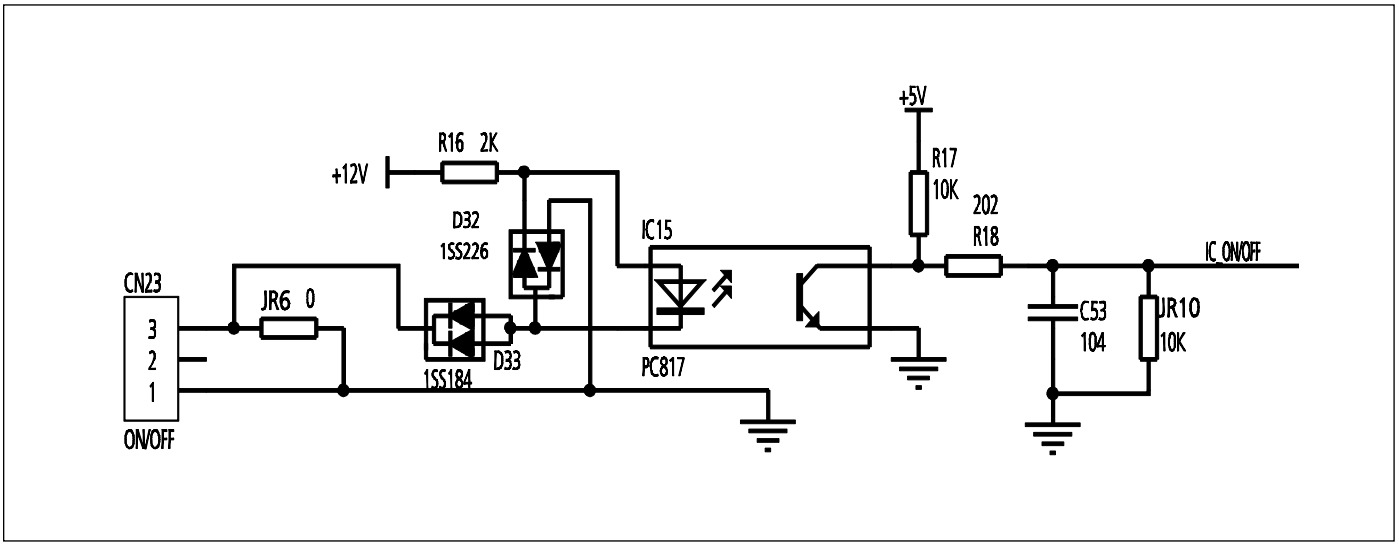


Figure 33

For ALARM terminal port CN33:

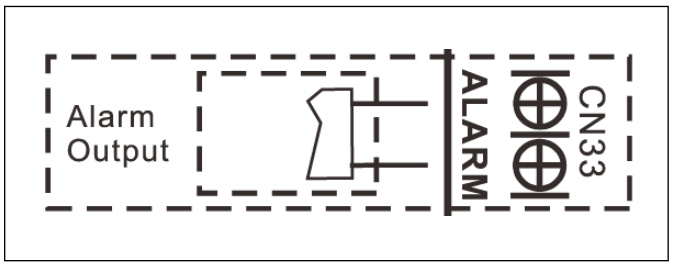


Figure 34

1. The terminal port is available to connect ALARM, but power supply is not from the Indoor Unit (Fig. 38).
2. Although design voltage can support higher voltage, it is strongly recommended to connect the power less than 24V, current less than 0.5A.
3. When there is a problem, the relay will close and ALARM will be activated.

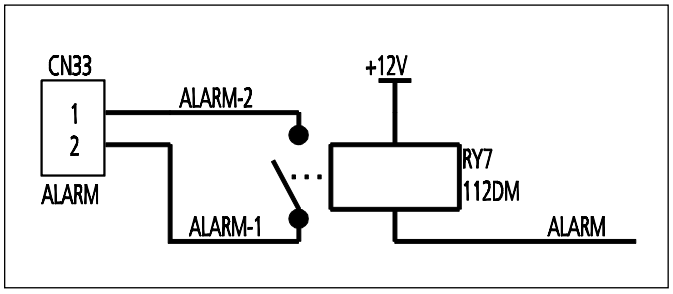


Figure 35

For fresh air intake motor (NEWFAN) terminal port CN8:

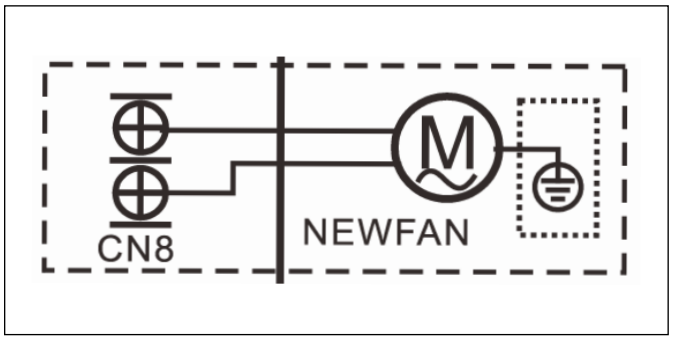


Figure 36

1. Connect the fan motor to the port;
2. The output voltage is the power supply;
3. The fresh air intake motor cannot exceed 200W or 1A, follow the smaller one;
4. The fresh air intake motor will only work with the indoor fan motor is in operation;
5. When the system is in force cooling or capacity testing mode, the fresh air intake motor will not work.

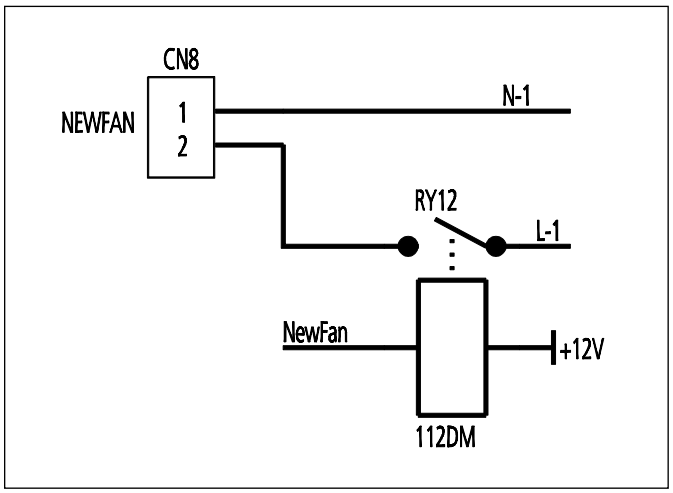


Figure 37

4-Way Cassette Unit Dip-Switch (9K ~ 24K)

Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

- Range: 24 °C, 15 °C, 8 °C, according to EEROM setting (reserved for special customizing).

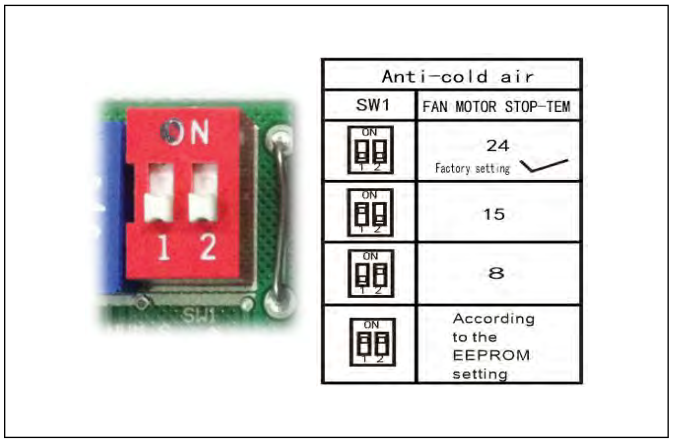


Figure 38

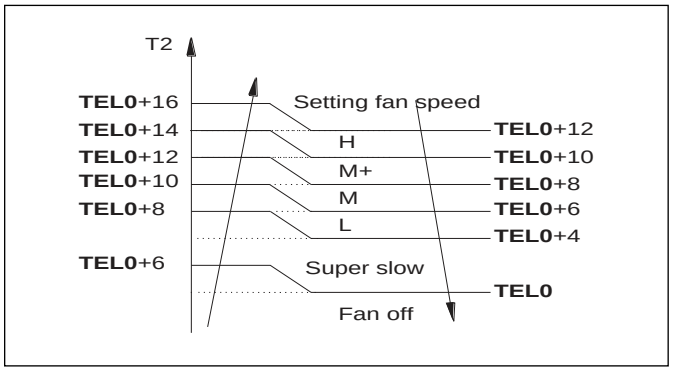


Figure 39

Legend:
TELO = fan stop temperature

Micro-switch SW2 is for selection of indoor FAN ACTION if room temperature reaches the set point and the compressor stops.

- Range: OFF (in 127s), Keep running

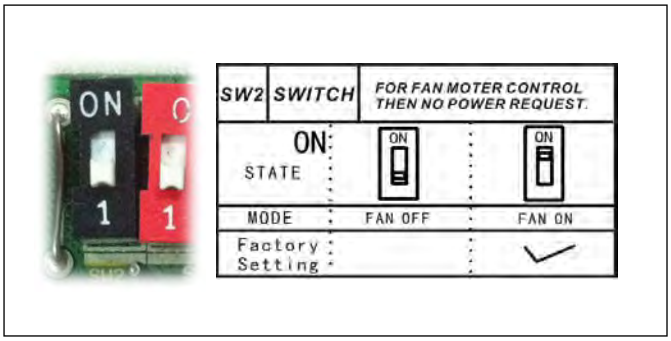


Figure 40

Micro-switch SW3 is for selection of auto-restart function.

- Range: Active, inactive

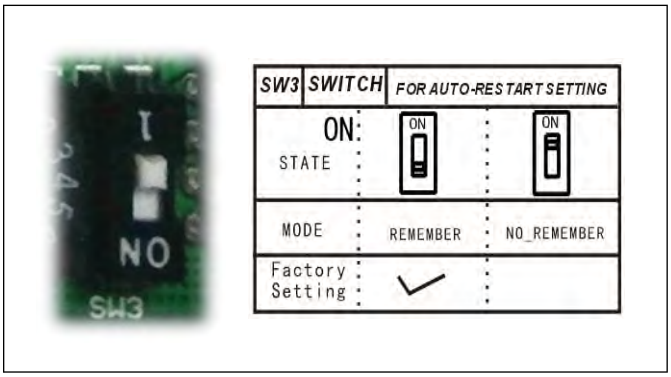


Figure 41

Micro-switch SW5 is for setting mode priority of multi connection.

- Range: Heat, cool

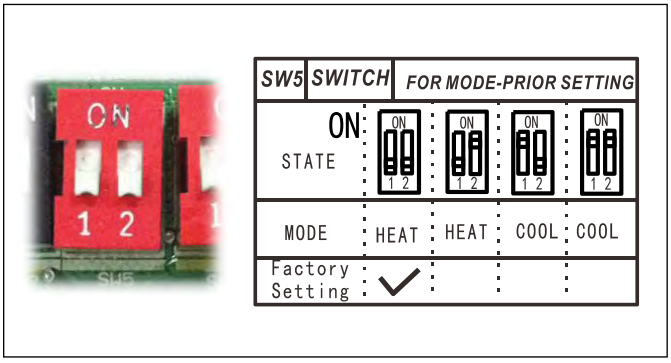


Figure 42

Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the height of installation is lower, a smaller value could be chosen.

- Range: 6 ℃, 4 ℃, 2 ℃, E function (reserved for special customizing)

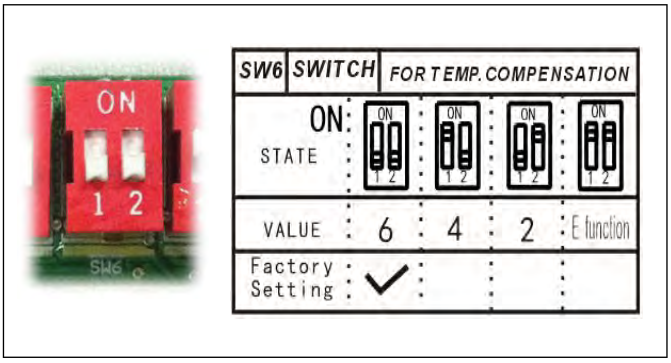


Figure 43

Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller.

- Range: 00-63

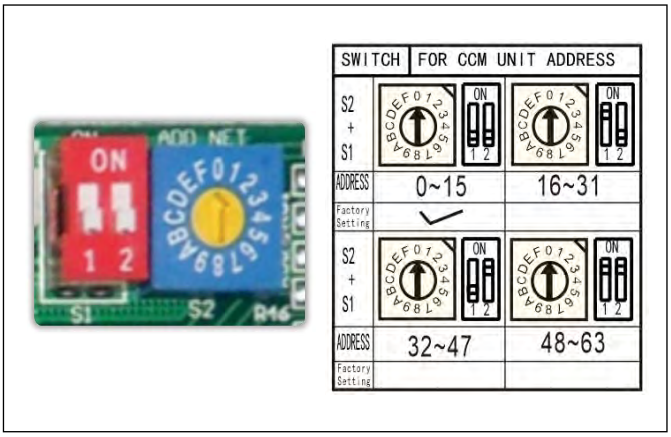


Figure 44

Ducted Unit connector (9K ~ 60K)

For fresh air intake motor (NEWFAN) terminal port (also for Anion generator) CN43:

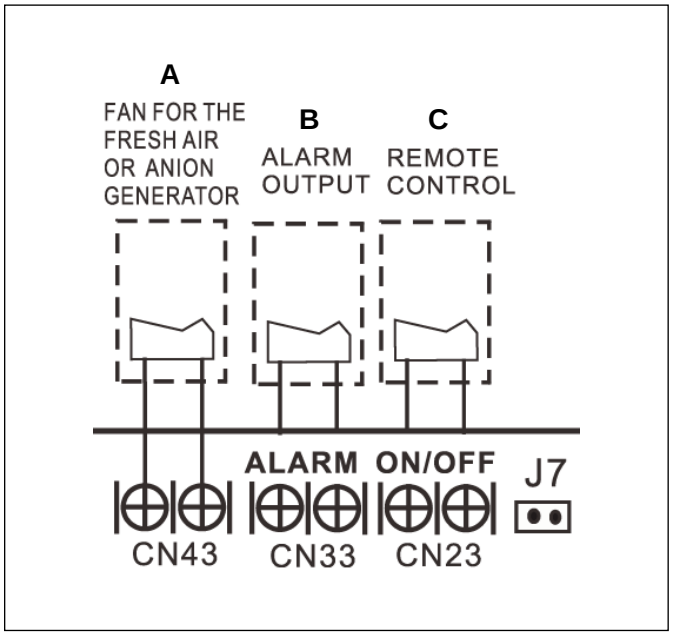


Figure 45

1. Connect the fan motor to the port;
2. The output voltage is the power supply;
3. The fresh air intake motor cannot exceed 200W or 1A, follow the smaller one;
4. The fresh air intake motor will only work with the indoor fan motor is in operation;
5. When the system is in force cooling or capacity testing mode, the fresh air intake motor will not work.

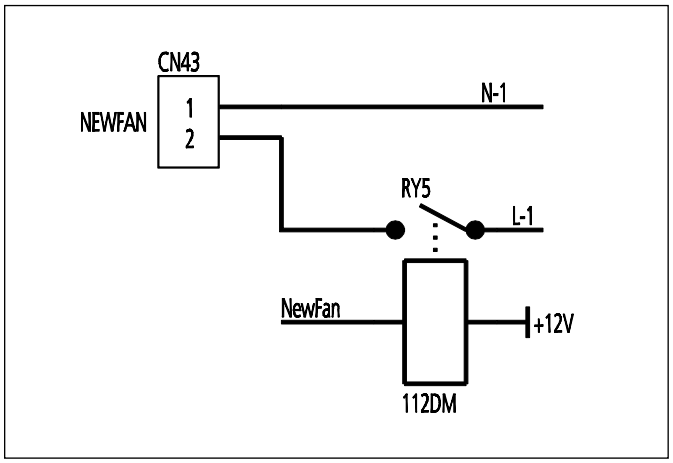


Figure 46

For ALARM terminal port CN33:

1. The terminal port is available to connect ALARM, but power supply is not from the Indoor Unit (Fig. 58).
2. Although design voltage can support higher voltage, it is strongly recommended to connect the power less than 24V, current less than 0.5A.
3. When there is a problem, the relay will close and ALARM will be activated.

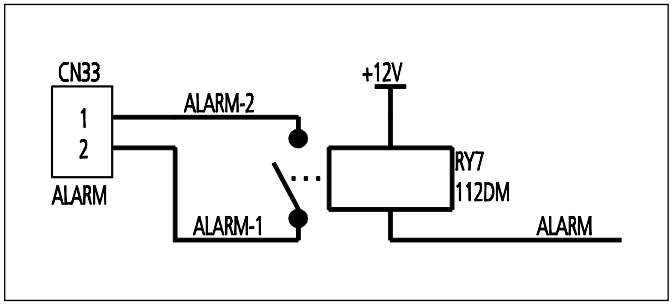


Figure 47

For remote control (ON-OFF) terminal port CN23 and short connector of J7

1. Remove the short connector of J7 when you use ON-OFF function;
2. When remote switch off (OPEN), the unit would be off;
3. When remote switch on (CLOSE), the unit would be on;
4. When close/open the remote switch, the unit would respond to the demand within 2 seconds;
5. When the remote switches on, you can use remote controller/wire controller to select the mode that you want; when the remote switches off, the unit will not respond to the demand from remote controller/wire controller.

   When the remote switch off, but the remote controller / wire controller are on, CP code would be shown on the display board.
6. The voltage of the port is 12V DC, design Max. current is 5mA.

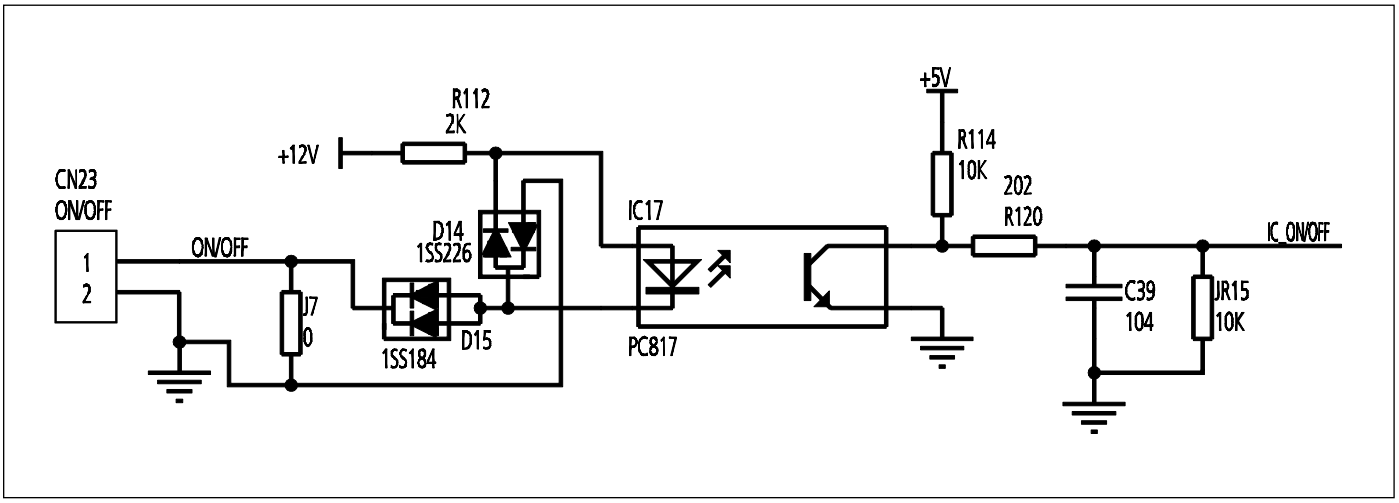
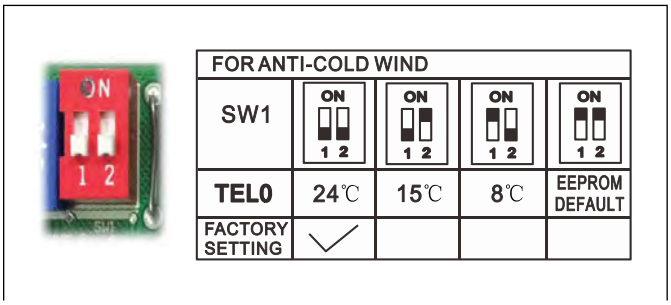


Figure 48

Ducted Unit Dip-Switch (9K ~ 24K)

Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

- Range: 24 ℃, 15 ℃, 8 ℃, according to EEROM setting (reserved for special customizing).



FOR ANTI-COLD WIND				
SW1	ON 1 2	ON 1 2	ON 1 2	ON 1 2
TEL0	24℃	15℃	8℃	EEPROM DEFAULT
FACTORY SETTING	✓			

Figure 49

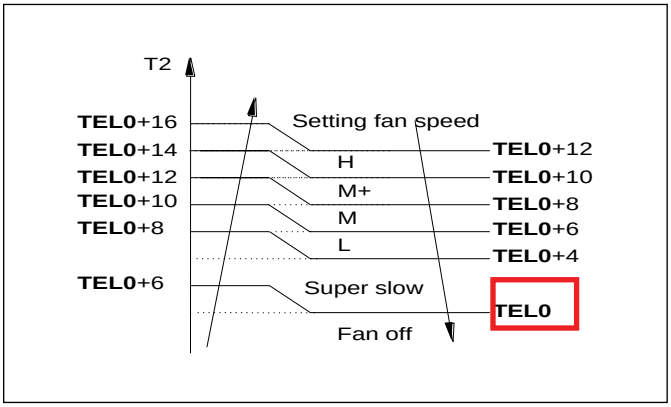


Figure 50

Legend:

TE1: T1 ≥ 19℃, ΔTE1=0; 15 ≤ T1 ≤ 18℃, ΔTE1=19 – T1, T1 – 15℃, ΔTE1=4

Micro-switch SW3 is for selection of auto-restart function.

- Range: Active, inactive

FOR SETTING AUTO-RESTART		
SW3	ON 1	ON 1
MODE	AUTO-RESTART	NOT AUTO-RESTART
FACTORY SETTING	✓	

Figure 51

Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the height of installation is lower, smaller value could be chosen.

- Range: 6 ℃, 4 ℃, 2 ℃, E function (reserved for special customizing)

FOR TEMP. COMPENSATION(HEATING)				
SW6	ON 1 2	ON 1 2	ON 1 2	ON 1 2
CODE	6℃	2℃	4℃	EEPROM DEFAULT
FACTORY SETTING			✓	

Figure 52

Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller.

- Range: 00-63

FOR SETTING NETADDRESS				
S1+S2	ON 1 2	ON 1 2	ON 1 2	ON 1 2
CODE	0~F	0~F	0~F	0~F
NETADDRESS	0~15	16~31	32~47	48~63
FACTORY SETTING	✓			

Figure 53

Ducted Unit Dip-Switch (36K~ 60K)

Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

- Range: 24 ℃, 15 ℃, 8 ℃, according to EEROM setting (reserved for special customizing).

FOR ANTI-COLD WIND				
SW1	ON 1 2	ON 1 2	ON 1 2	ON 1 2
TEL0	24℃	15℃	8℃	EEPROM DEFAULT
FACTORY SETTING	✓			

Figure 54

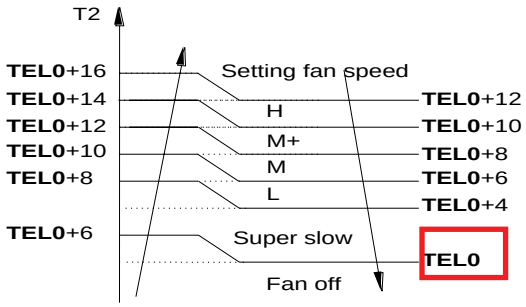


Figure 55

Micro-switch SW3 is for selection of auto-restart function.

- Range: Active, inactive

FOR SETTING AUTO-RESTART		
SW3	ON 1	ON 1
MODE	AUTO-RESTART	NOT AUTO-RESTART
FACTORY SETTING	✓	

Figure 56

Micro-switch SW5 is for setting the master or slave unit when the unit is in twin connection.

- Range: Master no slave (Normal 1 drive 1 connection), Master (2 positions without difference), Slave

FOR MAIN-SLAVE SETTING				
SW5	ON 1 2	ON 1 2	ON 1 2	ON 1 2
MODE	MAIN NO SLAVE	MAIN	MAIN	SLAVE
FACTORY SETTING	✓			

Figure 57

Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the height of installation is lower, smaller value could be chosen.

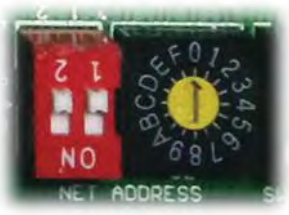
- Range: 6 ℃, 4 ℃, 2 ℃, E function (reserved for special customizing)

FOR TEMP. COMPENSATION(HEATING)				
SW6	ON 1 2	ON 1 2	ON 1 2	ON 1 2
CODE	6℃	2℃	4℃	EEPROM DEFAULT
FACTORY SETTING			✓	

Figure 58

Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller.

- Range: 00-63



FOR SETTING NETADDRESS				
S1+S2	ON 1 2	ON 1 2	ON 1 2	ON 1 2
CODE	0~F	0~F	0~F	0~F
NETADDRESS	0~15	16~31	32~47	48~63
FACTORY SETTING	✓			

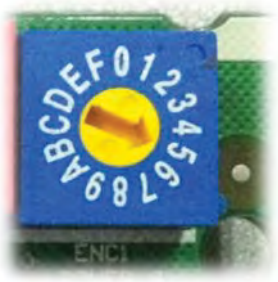
Figure 59

Dial-switch ENC1: The indoor PCB is universal designed for whole series units from 18K to 55K.

This ENC1 setting will tell the main program what size the unit is.

Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

"53" means 5.3kW (18K),"105" means 10.5kW (36K), and so on.



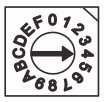
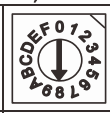
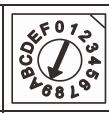
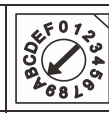
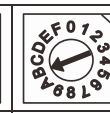
FOR SETTING POWER(FACTORY USE ONLY)							
ENC1							
CODE	4	5	7	8	9	A	B
POWER	⩽53	54~71	72~90	91~105	106~140	141~160	⩾161
FACTORY SETTING	ACCORDING TO RELATED MODEL.						

Figure 60

7.5 Outdoor Wiring Diagram

7.5.1 Regular Single Zone (115V 12K)

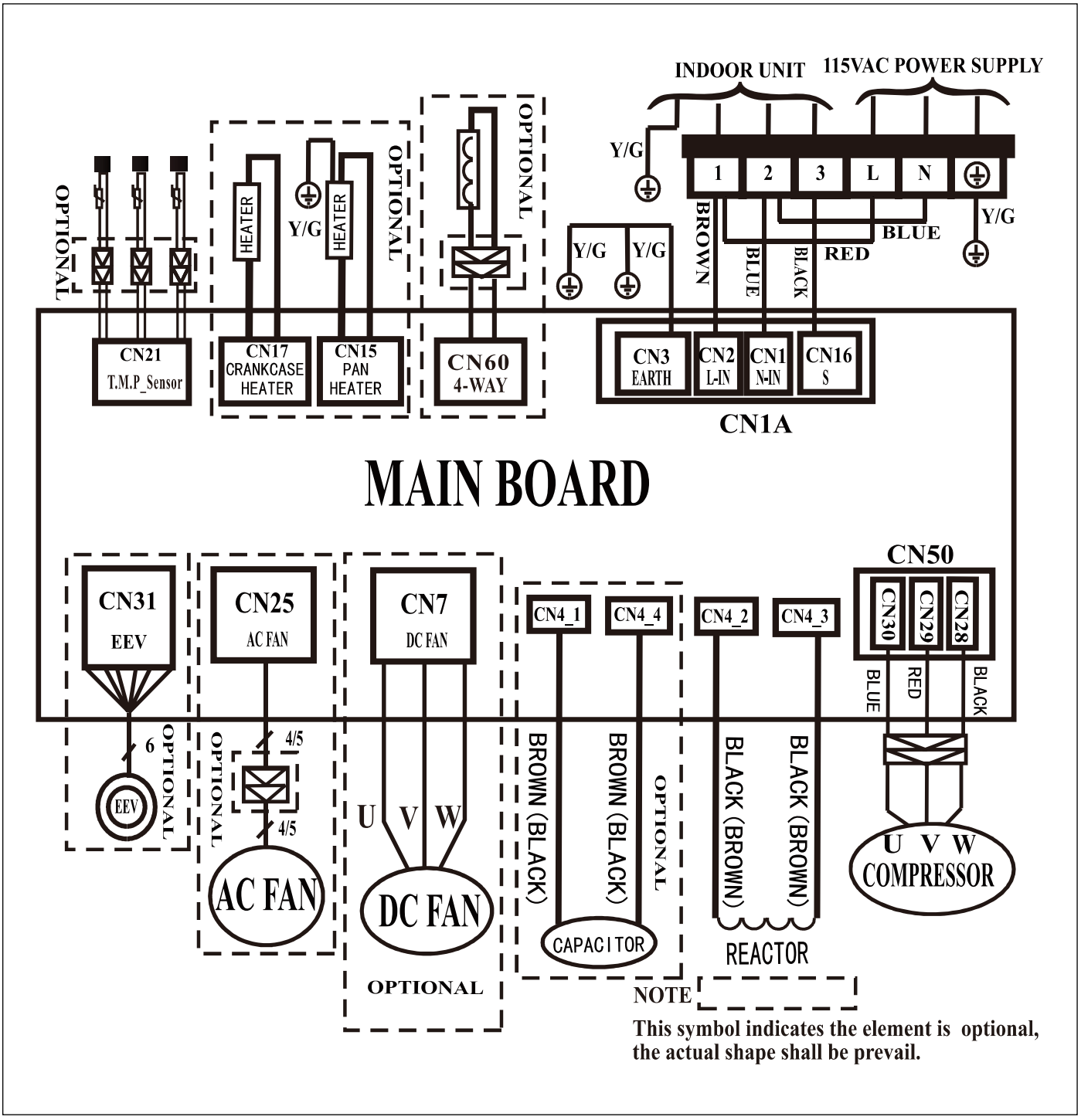


Figure 61

7.5.2 Regular & Max Performance Single Zone (9K & 12K)

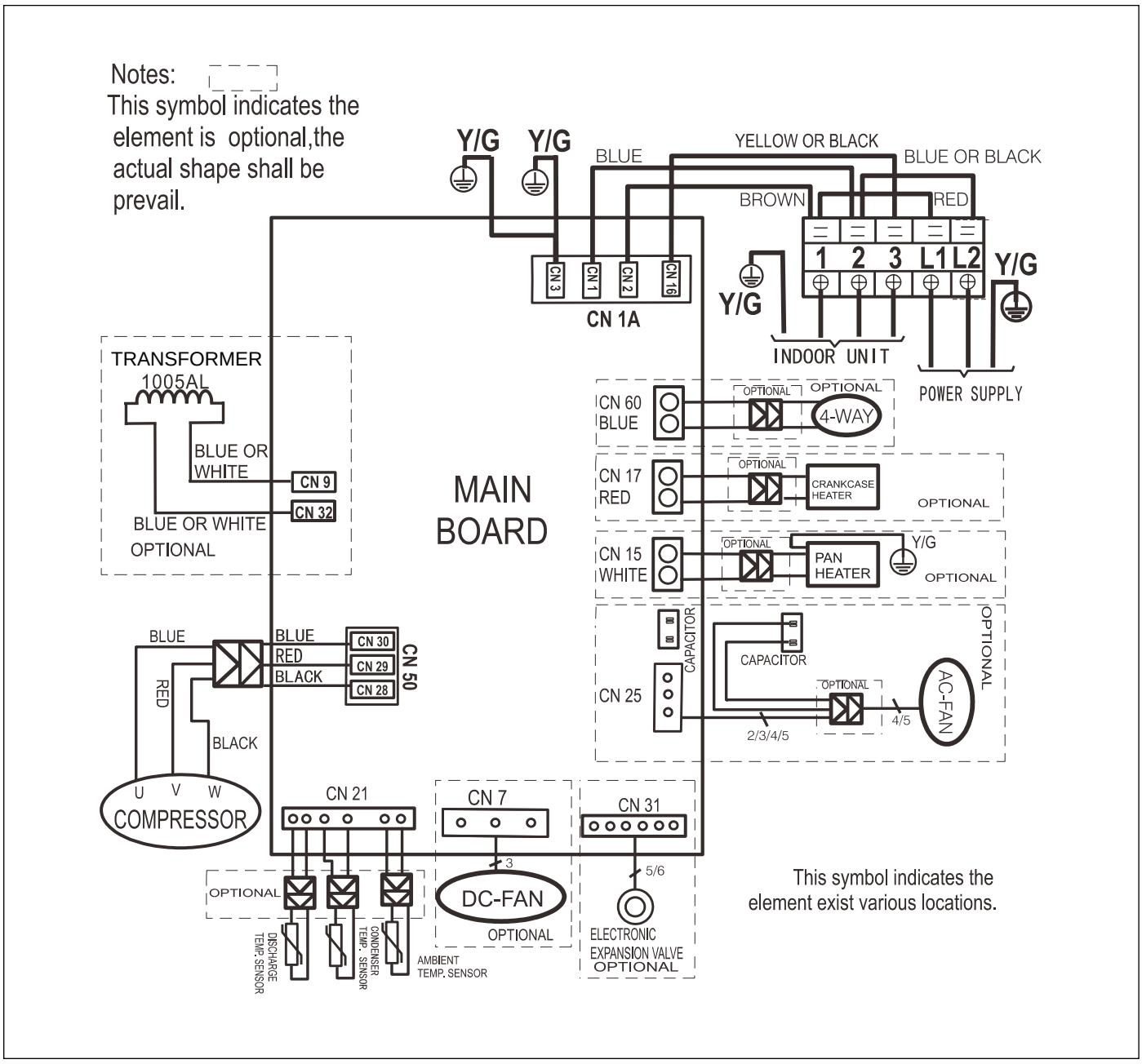


Figure 62

7.5.3 Regular Single Zone (18K & 24K) & Max Performance Single Zone (18K)

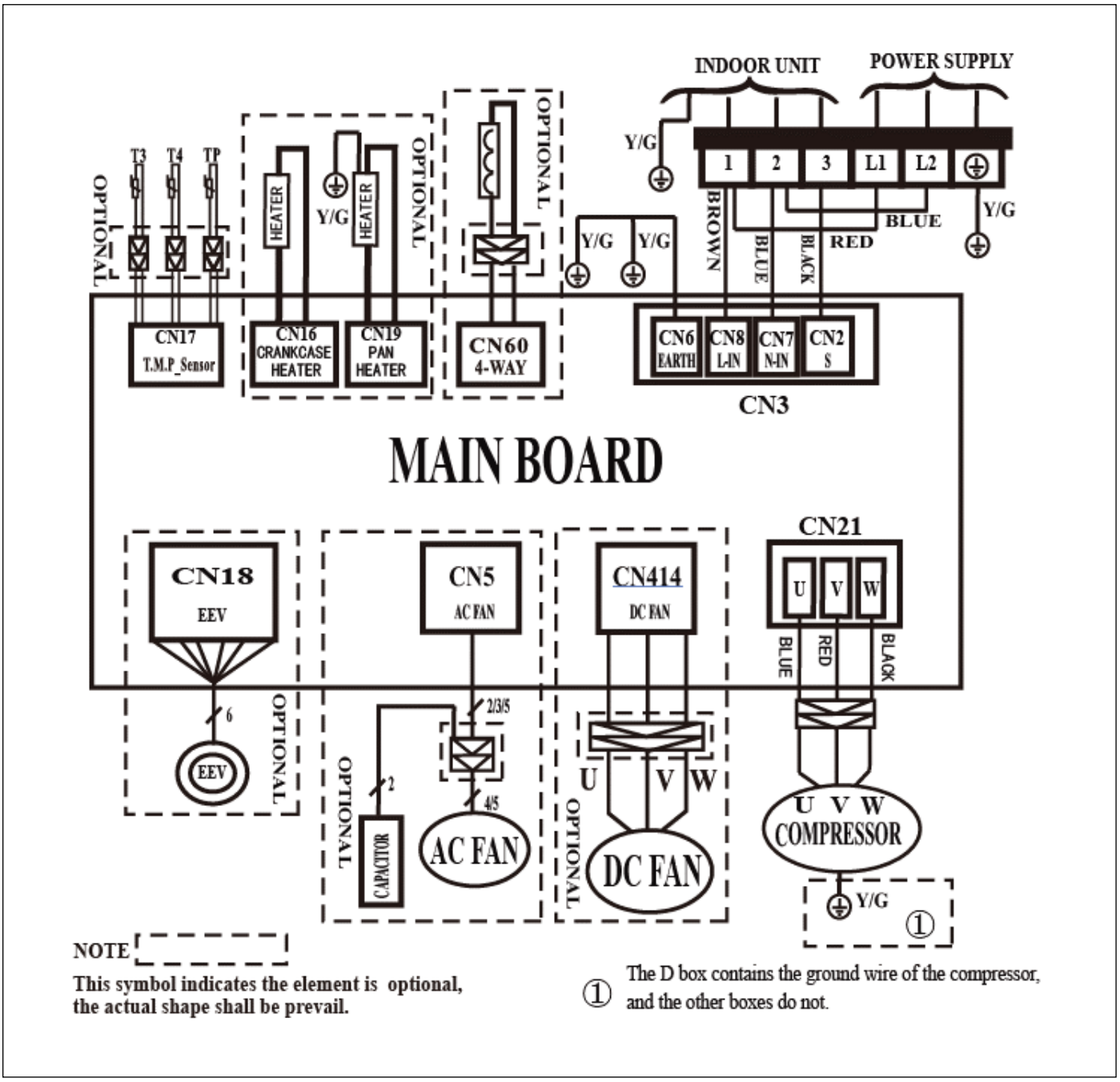
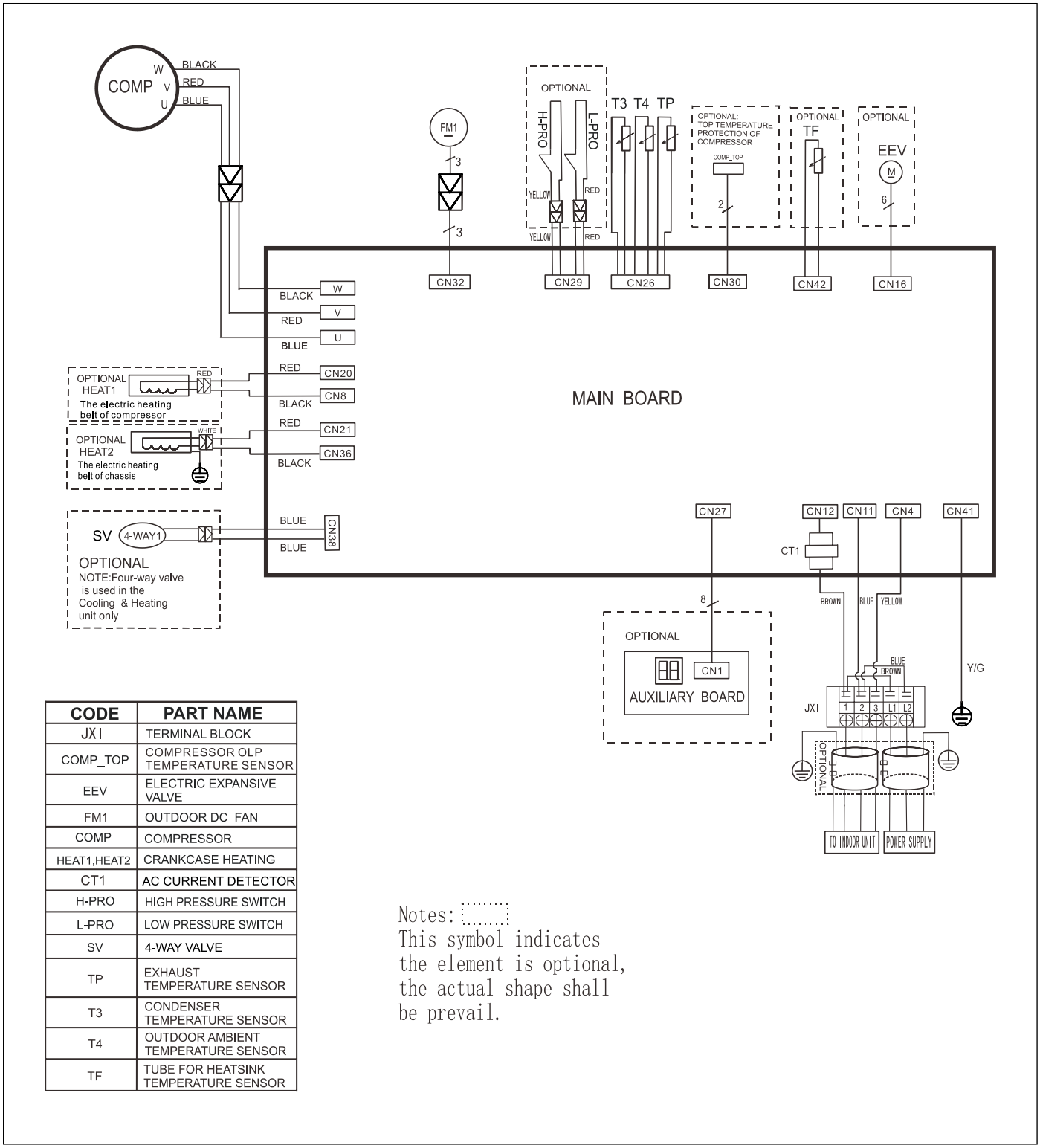


Figure 63

7.5.4 Max Performance Single Zone (24K)
Regular Single Zone (30K & 36K)

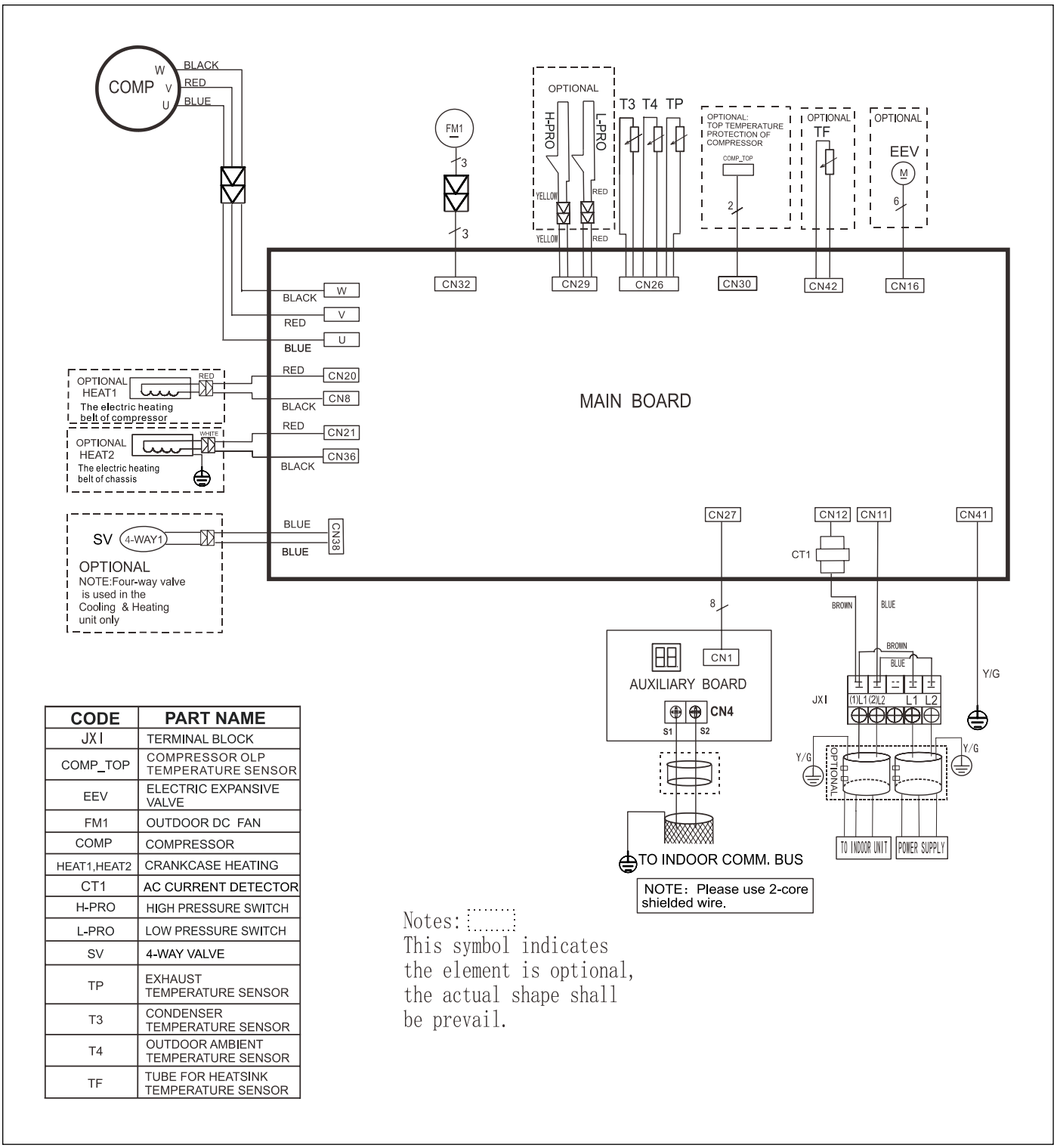


CODE	PART NAME
JXI	TERMINAL BLOCK
COMP_TOP	COMPRESSOR OLP TEMPERATURE SENSOR
EEV	ELECTRIC EXPANSIVE VALVE
FM1	OUTDOOR DC FAN
COMP	COMPRESSOR
HEAT1,HEAT2	CRANKCASE HEATING
CT1	AC CURRENT DETECTOR
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	4-WAY VALVE
TP	EXHAUST TEMPERATURE SENSOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
TF	TUBE FOR HEATSINK TEMPERATURE SENSOR

Notes:
This symbol indicates the element is optional, the actual shape shall be prevail.

Figure 64

7.5.5 Light Commercial Single Zone (36K for Cassette and Ducted IDU)

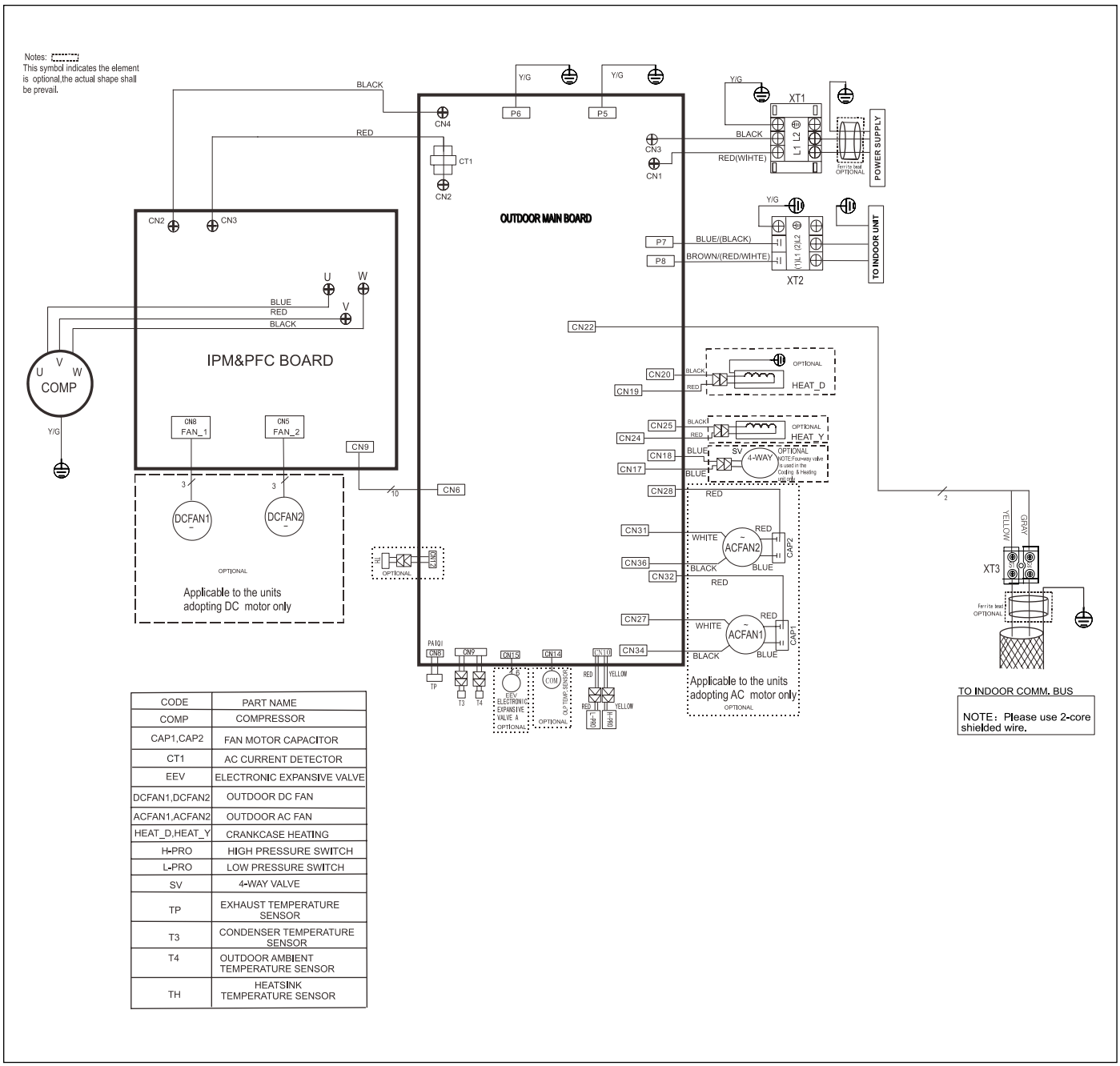


CODE	PART NAME
JX1	TERMINAL BLOCK
COMP_TOP	COMPRESSOR OLP TEMPERATURE SENSOR
EEV	ELECTRIC EXPANSIVE VALVE
FM1	OUTDOOR DC FAN
COMP	COMPRESSOR
HEAT1,HEAT2	CRANKCASE HEATING
CT1	AC CURRENT DETECTOR
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	4-WAY VALVE
TP	EXHAUST TEMPERATURE SENSOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
TF	TUBE FOR HEATSINK TEMPERATURE SENSOR

Notes:
This symbol indicates the element is optional, the actual shape shall be prevail.

Figure 65

7.5.6 Light Commercial Single Zone (48K & 60K)



CODE	PART NAME
COMP	COMPRESSOR
CAP1,CAP2	FAN MOTOR CAPACITOR
CT1	AC CURRENT DETECTOR
EEV	ELECTRONIC EXPANSIVE VALVE
DCFAN1,DCFAN2	OUTDOOR DC FAN
ACFAN1,ACFAN2	OUTDOOR AC FAN
HEAT_D,HEAT_Y	CRANKCASE HEATING
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	4-WAY VALVE
TP	EXHAUST TEMPERATURE SENSOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
TH	HEATSINK TEMPERATURE SENSOR

Figure 66

7.6 Wall Mounted Unit (IDU & ODU) Error Code Diagnosis and Solution

Running Lamp	Timer Lamp	Display	Information	Solution
--	--	dF	Defrost	Normal Display, not error code
--	--	CL	Filter cleaning reminder(power on display for 15 seconds)	
--	--	CL	Active clean	
--	--	F	Filter replacement reminder(power on display for 15 seconds)	
--	--	FP	Heating in room temperature under 8℃	
--	--	FC	Forced cooling	
--	--	AP	AP mode of WIFI connection	
--	--	CP	Remote switched off	
1 time	OFF	EH 00/EH 0A	Indoor unit EEPROM parameter error	TS01-IDU
2 times	OFF	EL 01	Indoor/outdoor unit communication error	TS02-S-INV
3 times	OFF	EH 02	Zero-crossing signal detection error	TS03
4 times	OFF	EH 03	The indoor fan speed is operating outside of the normal range	TS04-S-IDU
5 times	OFF	EC 51	Outdoor unit EEPROM parameter error	TS01-ODU
5 times	OFF	EC 52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS05-ODU
5 times	OFF	EC 53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS05-ODU
5 times	OFF	EC 54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS05-ODU
5 times	OFF	EC 56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited (for free-match indoor units)	TS05-ODU
6 times	OFF	EH 60	Indoor room temperature sensor T1 is in open circuit or has short circuited	TS05-IDU
6 times	OFF	EH 61	Evaporator coil middle temperature sensor T2 is in open circuit or has short circuited	TS05-IDU
12 times	OFF	EC 07	The outdoor fan speed is operating outside of the normal range	TS04-ODU
9 times	OFF	EH b0	Indoor PCB/Display board communication error	TS07
8 times	OFF	EL 0C	Refrigerant leakage detection	TS06-INV
7 times	FLASH	PC 00	IPM malfunction or IGBT over-strong current protection	TS09-S
2 times	FLASH	PC 01	Over voltage or over low voltage protection	TS10-S
3 times	FLASH	PC 02	Top temperature protection of compressor or High temperature protection of IPM module or High pressure protection	TS11-S-INV
5 times	FLASH	PC 04	Inverter compressor drive error	TS12-S
1 time	FLASH	PC 08	Current overload protection	TS08-S
6 times	FLASH	PC 40	"Communication error between outdoor main chip and compressor driven chip"	TS33
7 times	FLASH	PC 03	Low pressure protection	TS13-INV
1 times	ON	--	Indoor units mode conflict(match with multi outdoor unit)	TS14

Table 21

7.6.1 EEPROM parameter error diagnosis and solution (EH 00/EH 0R/EC 51)

Error Code	EH 00/EH 0R (Indoor) EC 51 (Outdoor)
Malfunction decision conditions	Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.
Supposed causes	▶ Incorrect installation of indoor to outdoor control wire or line voltage wiring ▶ PCB faulty

Table 22

Troubleshooting:

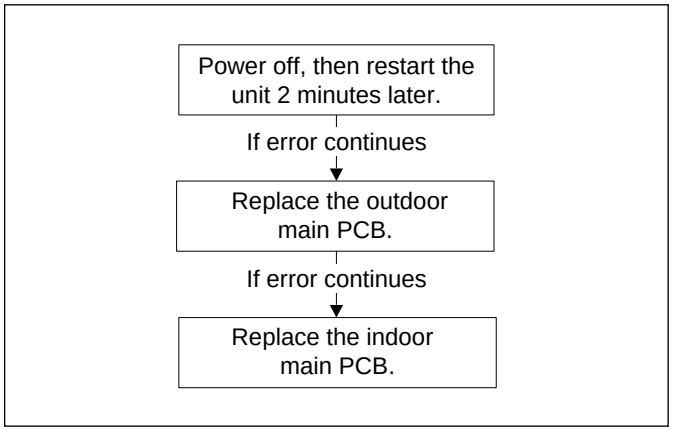


Figure 67

EEPROM: a read-only memory whose contents can be erased and reprogrammed using a pulsed voltage. For the location of EEPROM chip, please refer to the below photos.

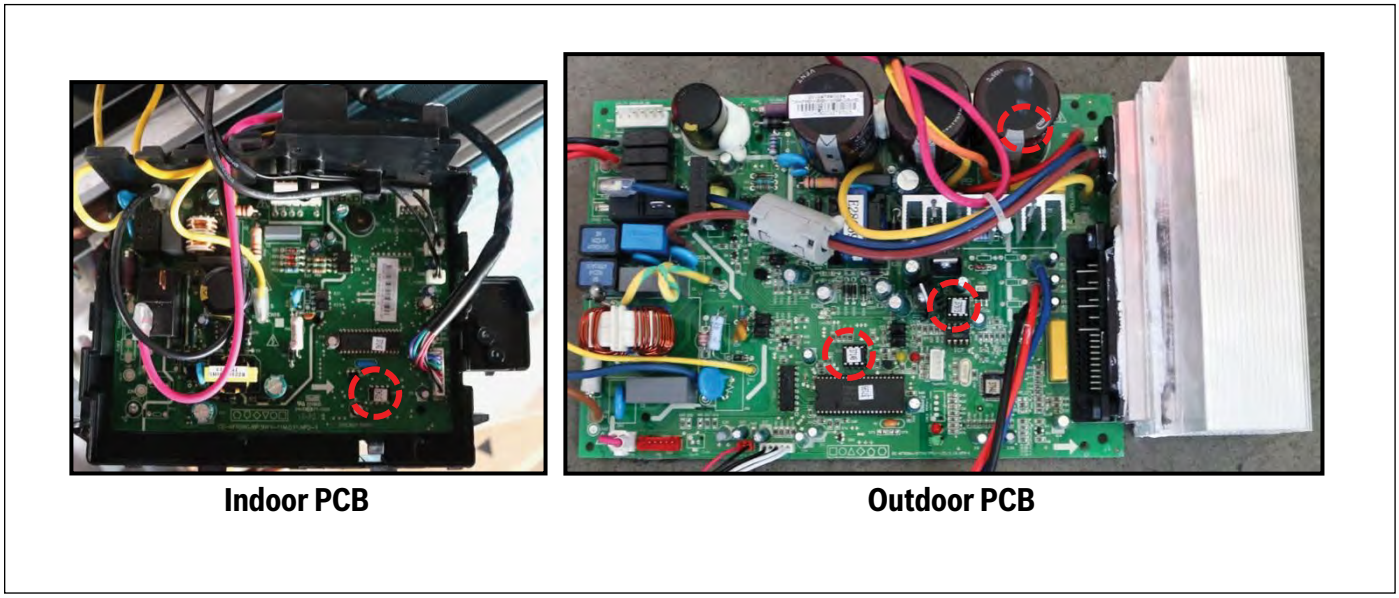


Figure 68

The two photos above are for reference only, they may not be identical to the PCBs shipped with your equipment.

7.6.2 Indoor / outdoor unit's communication diagnosis and solution (EL 01)

Error Code	EL 01
Malfunction decision conditions	Indoor unit does not receive the feedback from outdoor unit during 110 seconds and this condition happens four times continuously.
Supposed causes	▶ Incorrect installation of indoor to outdoor control wire ▶ Electromagnetic interference ▶ Indoor or outdoor PCB faulty

Table 23

Troubleshooting:

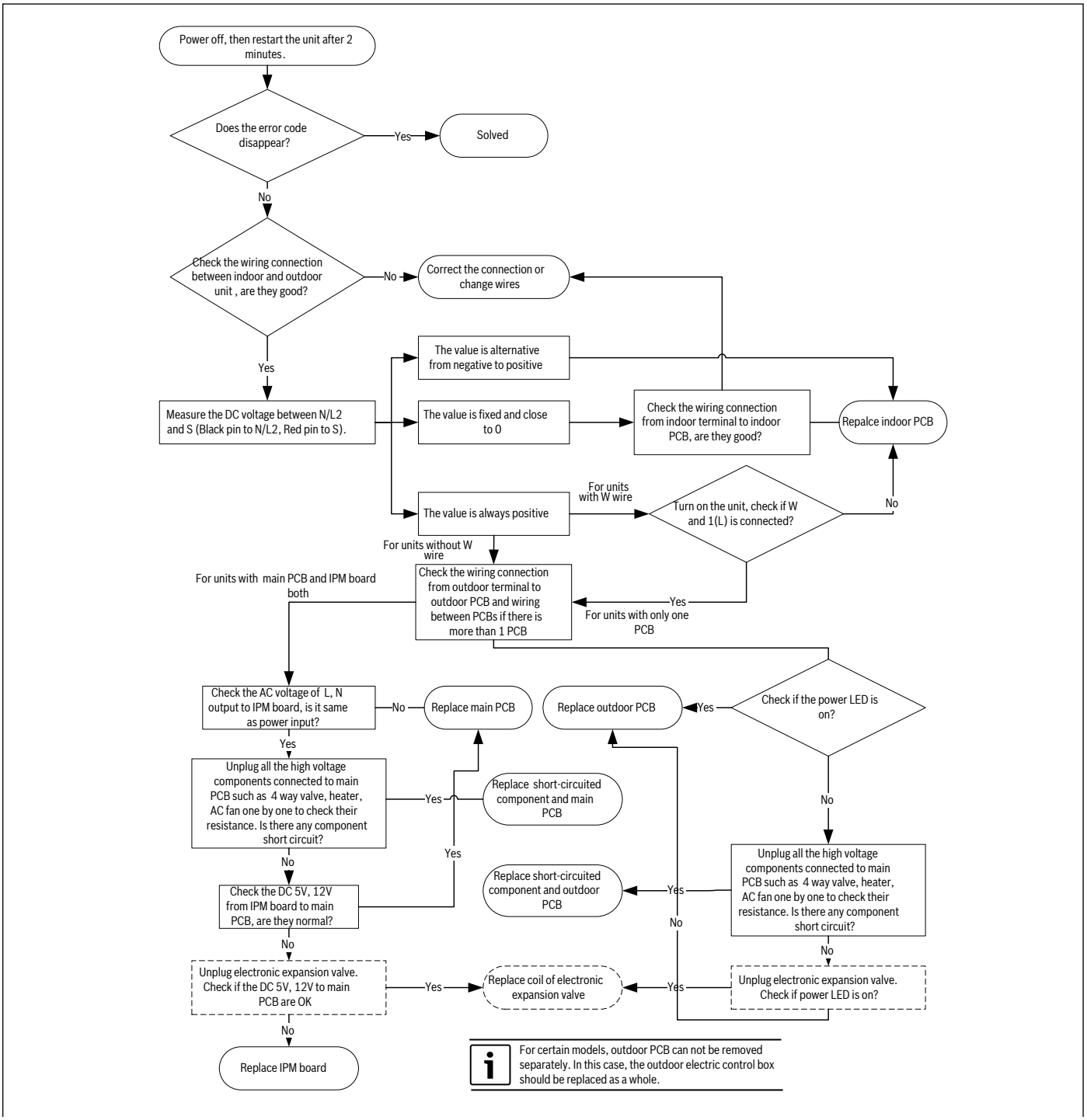


Figure 69

Remark:

- Use a multimeter to test the DC voltage between 2 port and 3 port of outdoor unit. The red pin of multimeter connects with 2 port while the black pin is for 3 port.
- When AC is normal running, the voltage will move alternately between -25VDC to 25VDC.
- If the outdoor unit has malfunctioned, the voltage will move alternately with positive value.
- While if the indoor unit has malfunction, the voltage will be a certain value.

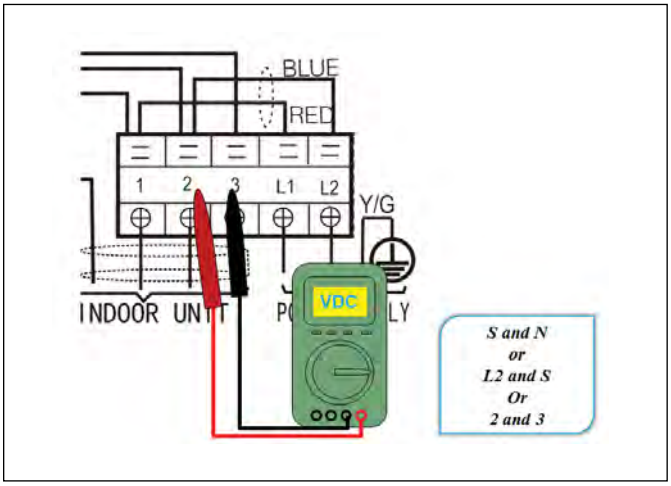


Figure 70

Remark:

- Use a multimeter to test the resistance of the transformer which does not connect with capacitor.
- The normal value should be around zero ohms. Otherwise, the reactor must have malfunctioned and may need to be replaced.

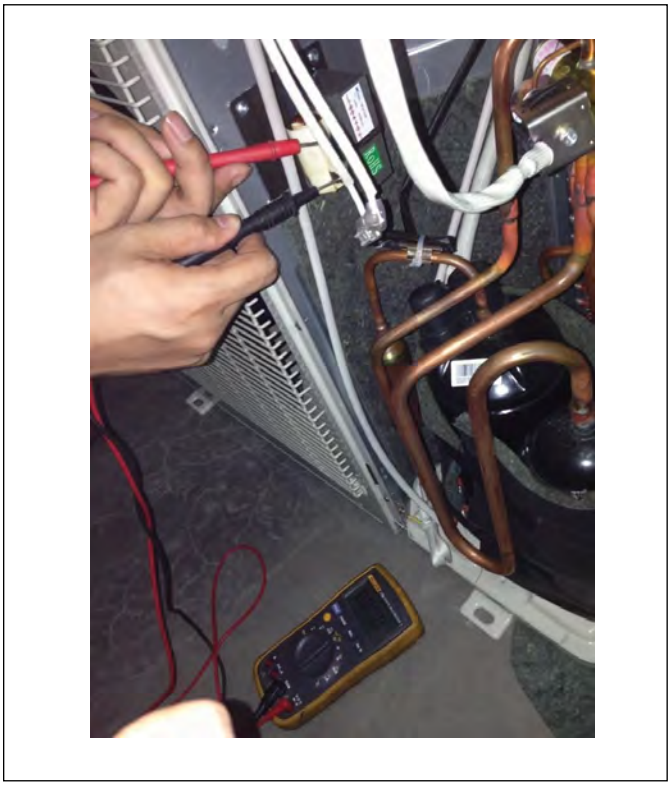


Figure 71

7.6.3 Zero crossing detection error diagnosis and solution (EH 02)

Error Code	EH 02
Malfunction decision conditions	When PCB does not receive zero crossing signal feedback for 4 minutes or the zero crossing signal time interval is abnormal.
Supposed causes	► Connection mistake ► Indoor PCB faulty

Table 24

Troubleshooting:

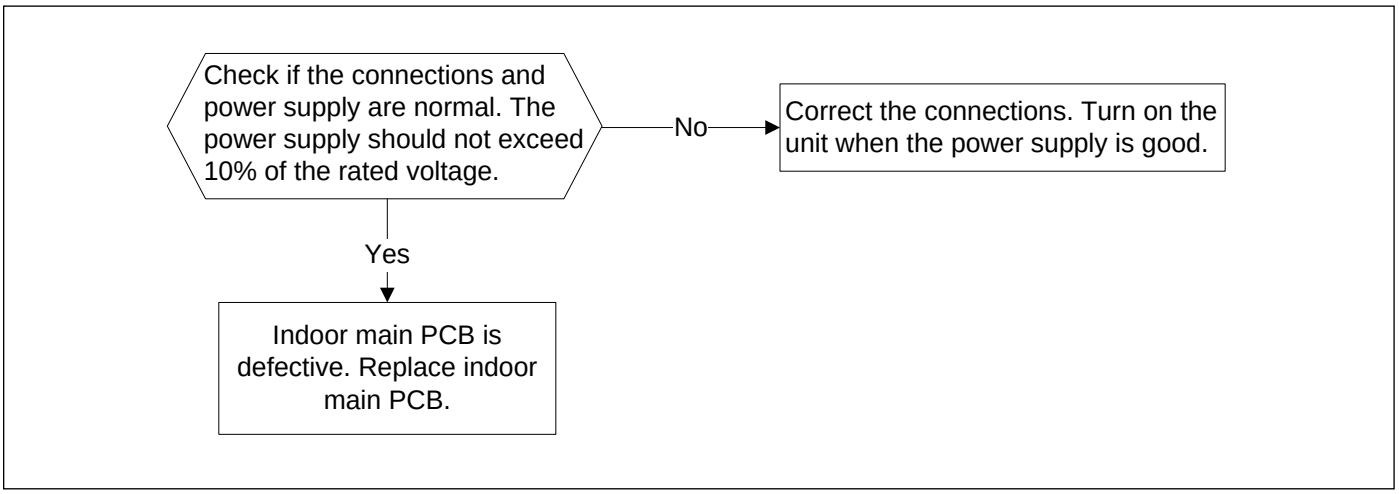


Figure 72

Zero crossing detection error is only valid for the unit with AC fan motor, for other models, this error is invalid.

7.6.4 Fan speed has been out of control diagnosis & solution (EH 03 /EC 07)

Error Code	EH 03 (indoor) / EC 07 (outdoor)
Malfunction decision conditions	When indoor / outdoor fan speed is too low or too high for certain time, the unit will stop and the LED will display the failure.
Supposed causes	▶ Wiring mistake ▶ Indoor / Outdoor Fan assembly faulty ▶ Indoor / Outdoor Fan motor faulty ▶ Indoor / Outdoor PCB faulty

Table 25

Troubleshooting:

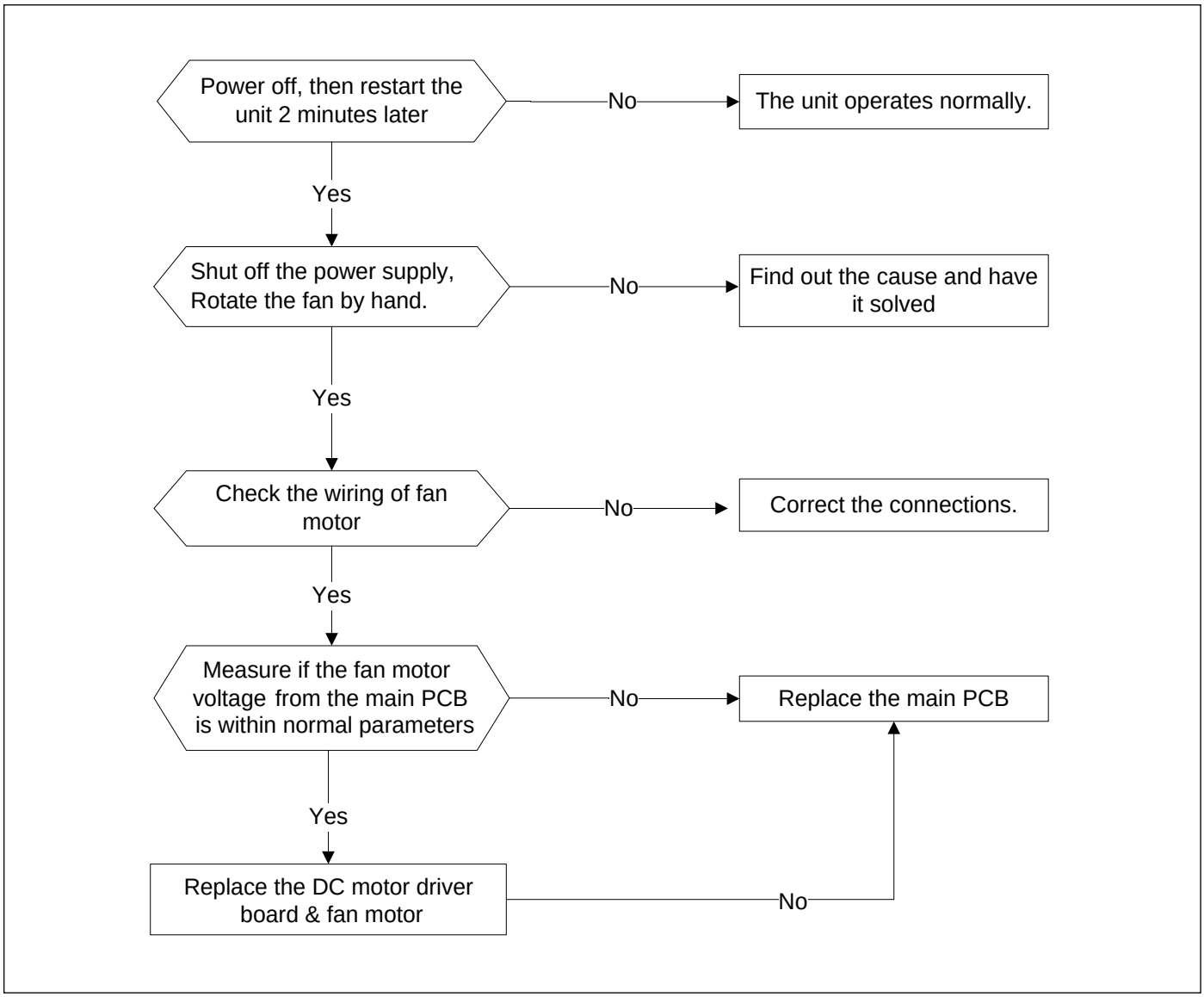


Figure 73

For certain models, outdoor PCB can not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

Index 1:

1. Indoor or Outdoor DC Fan Motor (control chip is in 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 needs to be replaced.

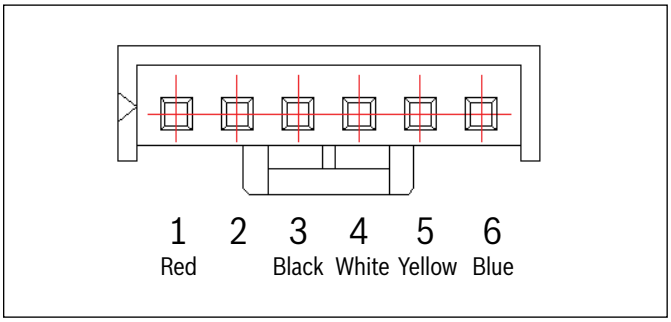


Figure 74

DC motor voltage input and output (voltage: 220-240V~)

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	280V~380V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	14-17.5V
5	Yellow	Vsp	0~5.6V
6	Blue	FG	14-17.5V

Table 26

DC motor voltage input and output (voltage :115V~)

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	140V~190V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	14-17.5V
5	Yellow	Vsp	0~5.6V
6	Blue	FG	14-17.5V

Table 27

2. Outdoor DC Fan Motor (control chip is in outdoor PCB)

   Release the UVW connector. Measure the resistance of U-V, U-W and V-W. If the three values are not equal, the fan motor has a problem and needs to be replaced.

   Otherwise, replace the ODU PCB.

3. Indoor AC Fan Motor

   a. Power off and disconnect fan motor power cord from PCB. Measure the resistance value of each winding by using the multi-meter. The normal value show as follows:

Model	YKFG-13-4-38L YKFG-13-4-38L-4	YKFG-15-4-28-1	YKFG-20-4-10L	YKFG-20-4-5-11
Brand	Welling	Welling	Welling	Welling
Black - Red Main	345Ω	75Ω	269Ω	388Ω
Blue - Black AUX	348Ω	150Ω	224Ω	360Ω

Table 28

Model	YKFG-20-4-5-19	YKFG-25-4-6-14	YKFG-28-4-3-7 YKFG-28-4-3-14	YKFG-28-4-6-5
Brand	Welling	Welling	Welling	Welling
Black - Red Main	444Ω	287Ω	231Ω	183.6Ω
Blue - Black AUX	470Ω	409Ω	414Ω	206Ω

Table 29

Model	YKFG-45-4-13	YKFG-45-4-22 YKFG-45-4-22-13	YKFG-60-4-2-6	YKFG-60-4-1
Brand	Dongfang	Welling	Welling	Welling
Black - Red Main	125.2Ω	168Ω	96Ω	68Ω
Blue - Black AUX	83.8Ω	141Ω	96Ω	53Ω

Table 30

Model	YKFG-45-4-13
Brand	Dongfang
Black - Red Main	450Ω
Blue - Black AUX	442Ω

Table 31

   b. Power on and set the unit running in fan mode at high fan speed. After running for 15 seconds, measure the voltage of pin1 and pin2. If the value of the voltage is less than 1 OOV(208-240V power supply) or 50V (115V power supply), the PCB must has problems and need to be replaced.

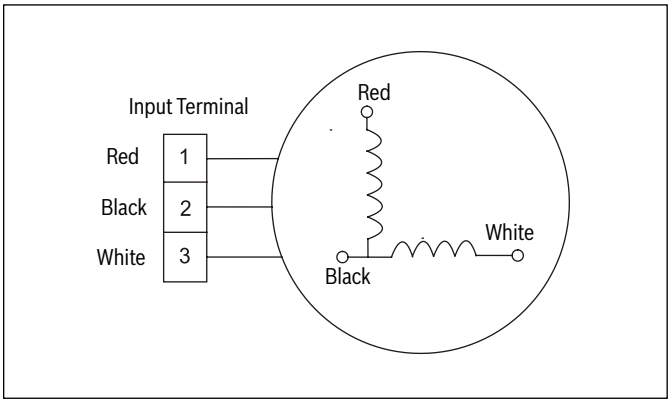


Figure 75

4. DC Fan Motor(for some double fan models)

   Power on and when the unit is in standby, measure the voltage of CON1, pin1-pin2 and pin3-pin2 of CN1 in DC motor driver board. If the value of the voltage is not in the range showing in below tables, the outdoor main PCB must has problems and need to be replaced.

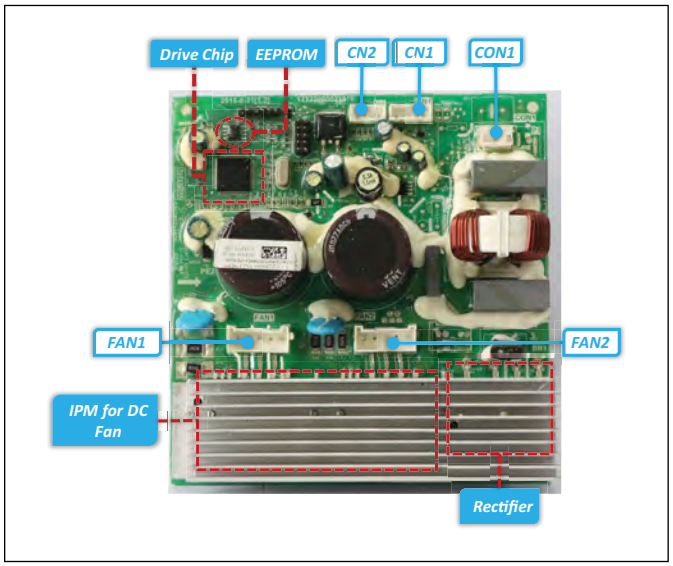


Figure 76

Part	Description	Parameter	Remark
CON1	Power input for the PCB	192-380V/DC	
CN1	Communication with main PCB	DC	
CN2	Test port	5V/DC	For debugging board
FAN1	UVW output for DC fan motor		
FAN2	UVW output for DC fan motor		

Table 32

CN1 Communication with main PCB

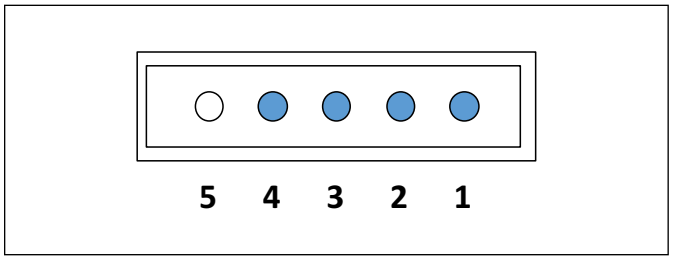


Figure 77

No.	Signal	Voltage
1	Vcc	13.5-16.5V
2	GND	0V
3	Vsp	0~6.5V
4	FG	13.5-16.5V
5	---	---

Table 33

7.6.5 Open circuit or short circuit of temperature sensor diagnosis and solution (EC 52/EC 53/EC 54/EC 56/EH 60/EH61)

Error Code	EC 52/EC 53/EC 54/EC 56/EH 60/EH61
Malfunction decision conditions	If the sampling voltage is lower than 0.06V DC or higher than 4.94V DC, the LED will display the failure.
Supposed causes	► Wiring mistake ► Sensor faulty ► Indoor / Outdoor PCB faulty

Table 34

Troubleshooting:

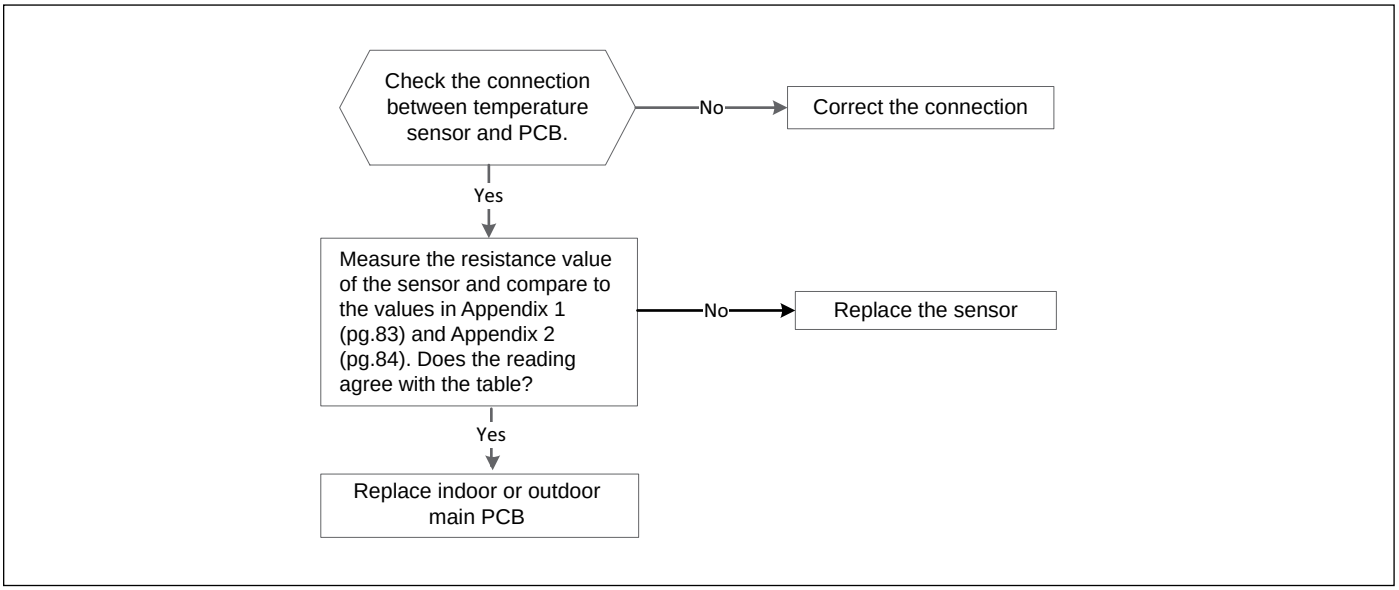


Figure 78

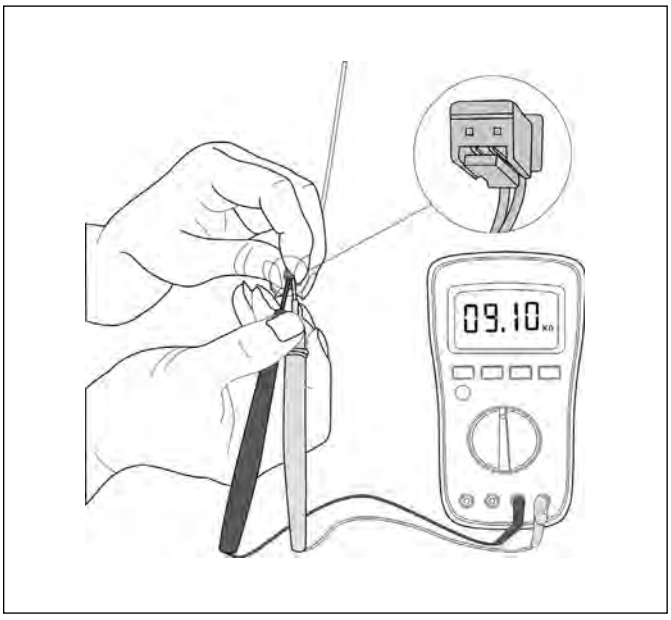


Figure 79

Some models, PCB could not removed separately, then entire outdoor electric control box should be replaced.

For certain models, outdoor unit uses combination sensor, T3,T4 and TP are the same of sensor.

7.6.6 Refrigerant Leakage Detection diagnosis and solution (EL 0C)

Error Code	EL 0C
Malfunction decision conditions	Judging the abnormality of the refrigeration system according to the number of compressor stops and the changes in operating parameters caused by excessive exhaust temperature.
Supposed causes	▶ T1 or T2 sensor faulty ▶ Indoor PCB faulty ▶ System problems, such as leakage or blocking

Table 35

Troubleshooting:

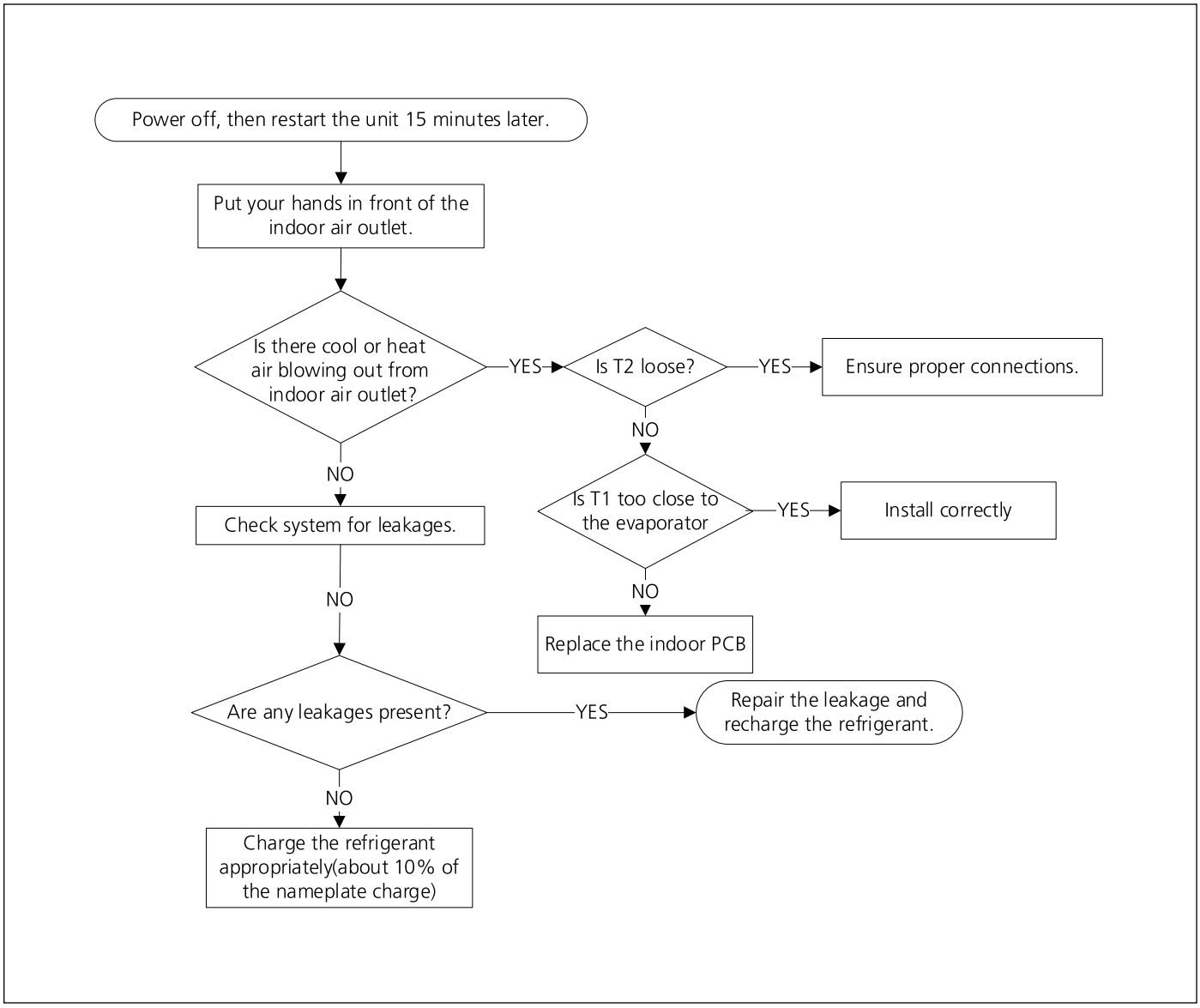


Figure 80

7.6.7 Indoor PCB / Display board communication error diagnosis and solution (EH 06)

Error Code	EH 06
Malfunction decision conditions	Indoor PCB does not receive feedback from the display board.
Supposed causes	► Wiring mistake ► Display board faulty ► Indoor PCB faulty

Table 36

Troubleshooting:

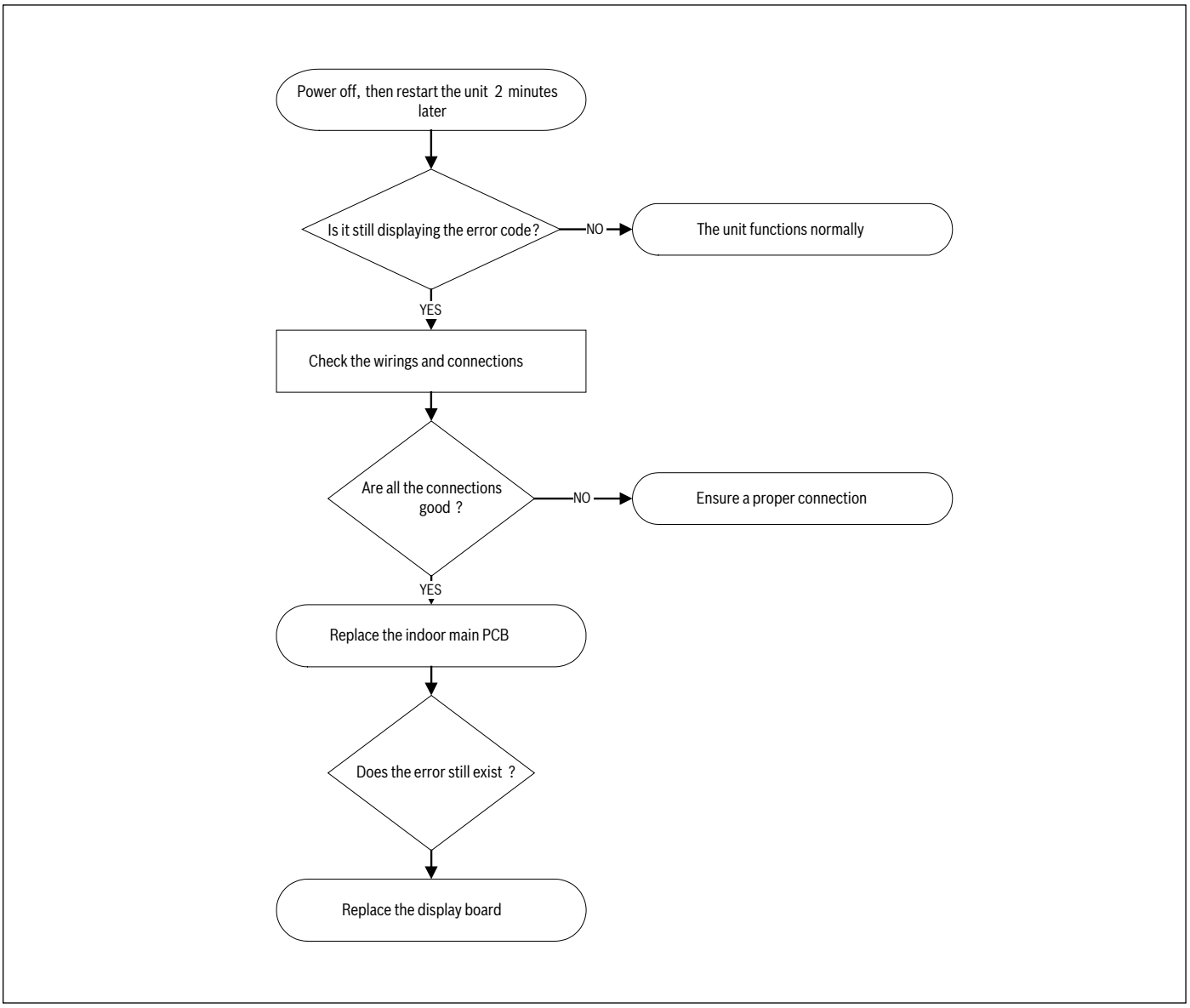


Figure 81

7.6.8 Overload current protection diagnosis and solution (PC 08)

Error Code	PC 08
Malfunction decision conditions	An abnormal current rise is detected by checking the specified current detection circuit.
Supposed causes	▶ Power supply problems ▶ System blockage ▶ Outdoor PCB faulty ▶ Wiring mistake ▶ Compressor malfunction

Table 37

Troubleshooting:

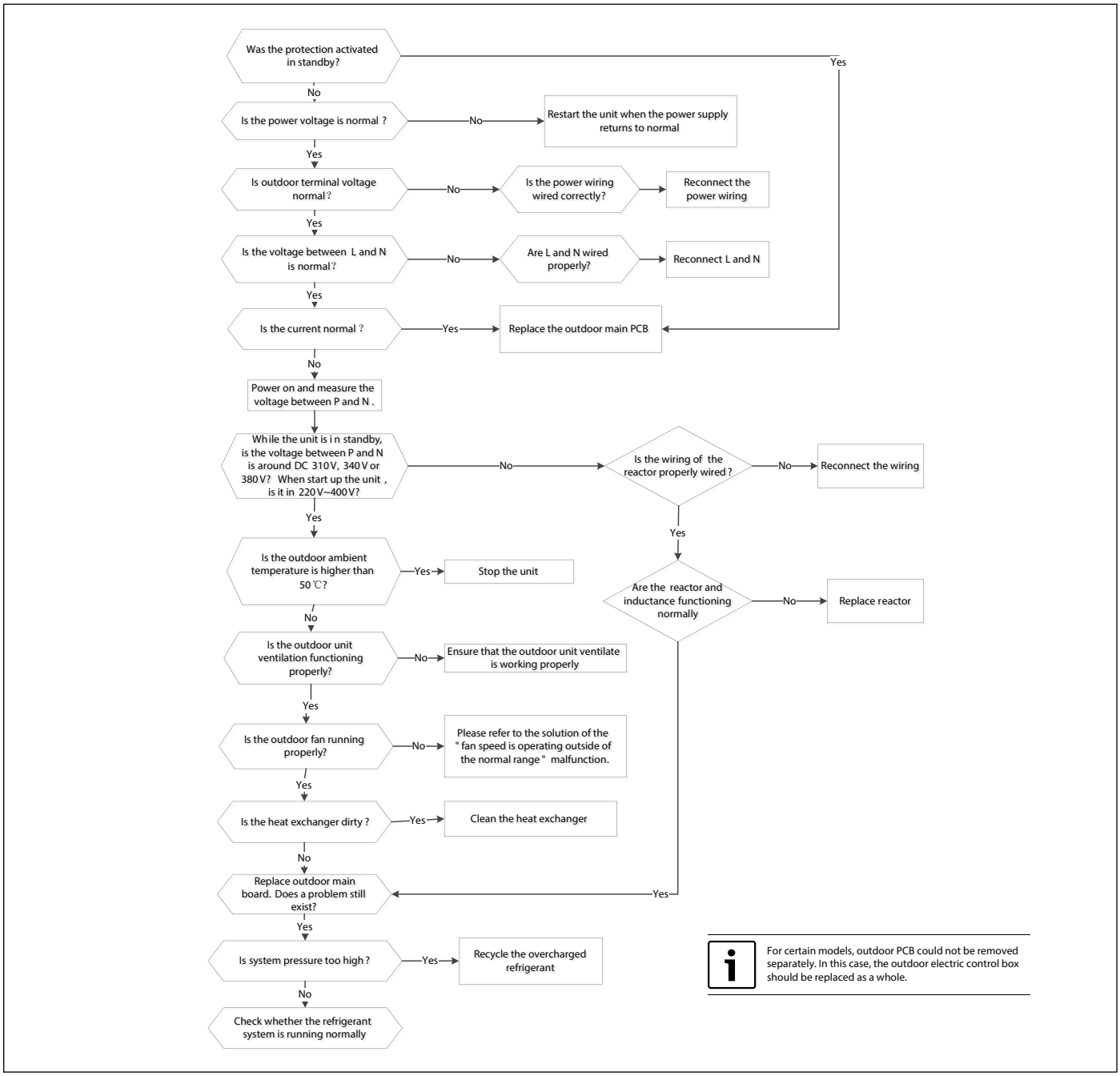


Figure 82

7.6.9 IPM malfunction or IGBT over-strong current protection diagnosis and solution (PC 00)

Error Code	PC 00
Malfunction decision conditions	When the voltage signal that IPM send to compressor drive chip is abnormal, the display LED will show the failure code and AC will turn off.
Supposed causes	► Wiring mistake ► IPM malfunction ► Outdoor fan assembly faulty ► Compressor malfunction ► Outdoor PCB faulty

Table 38

Troubleshooting:

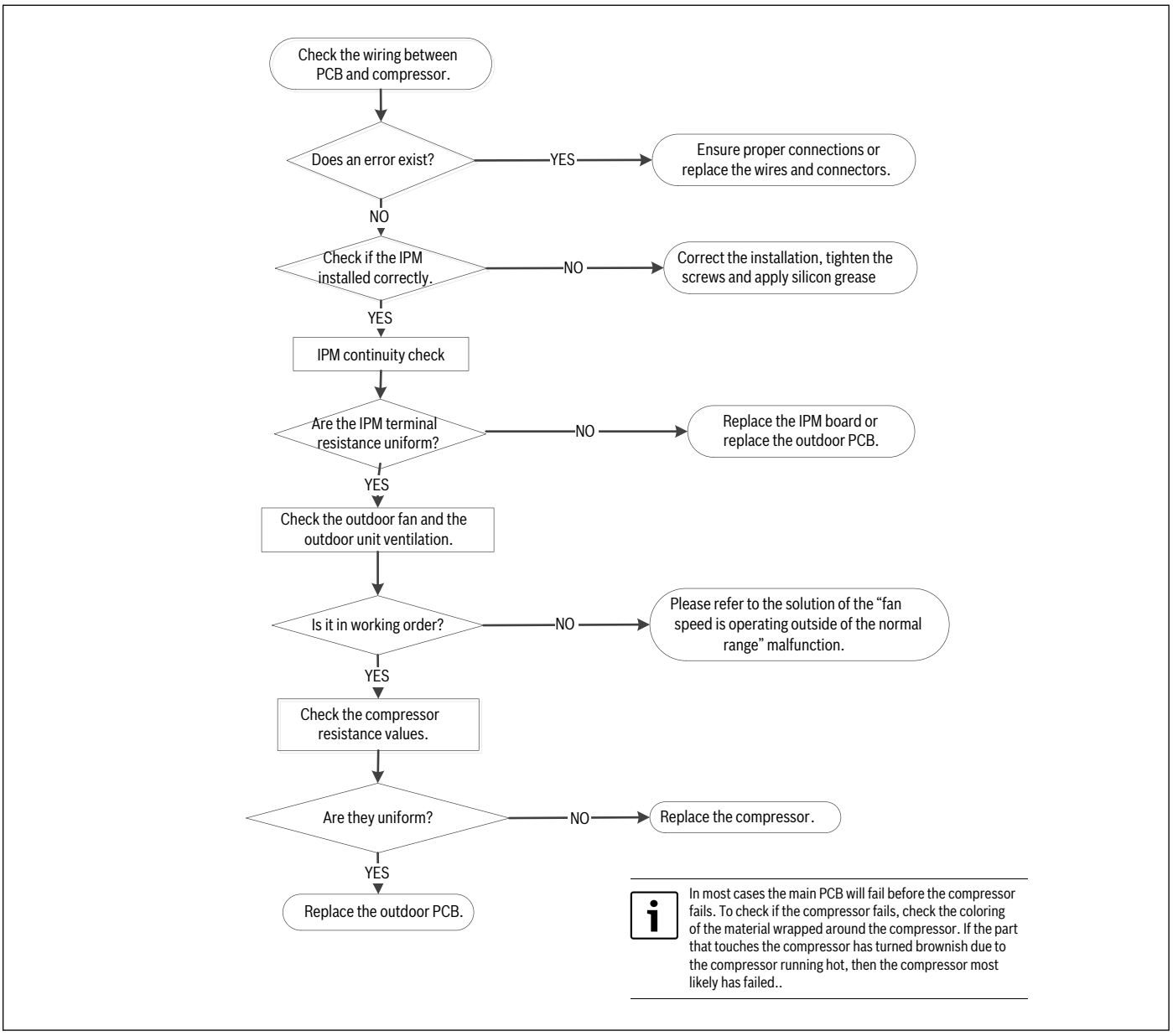


Figure 83

IPM Continuity Check

WARNING: ELECTRICAL SHOCK HAZARD

- Electricity remains in capacitors even when the power supply is off.
- Ensure the capacitors are fully discharged before troubleshooting.

1. Turn off outdoor unit and disconnect power supply.
2. Discharge electrolytic capacitors and ensure all energy-storage unit has been discharged.
3. Disassemble outdoor PCB or disassemble IPM board.
4. Measure the resistance value between P and U(V, W, N); U(V, W) and N.

Digital tester		Resistance value	Digital tester		Resistance value
(+)Red	(-)Black		(+)Red	(-)Black	
P	N	∞ (Several MΩ)	U	N	∞ (Several MΩ)
	U		V		
	V		W		
	W		–		

Table 39

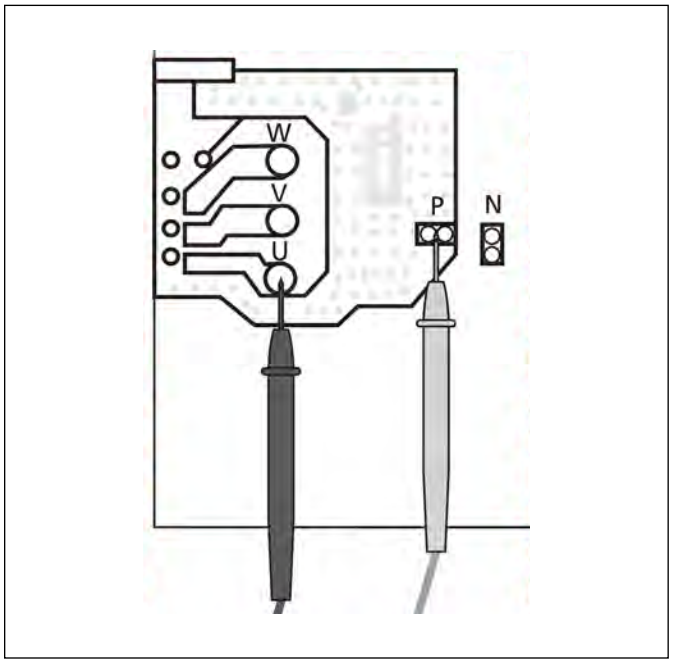


Figure 84

Compressor check

Disconnect the compressor and check the resistance between U-V, V-W and U-W, and all 3 values should be equal. If not, the compressor is faulty and should be replaced.

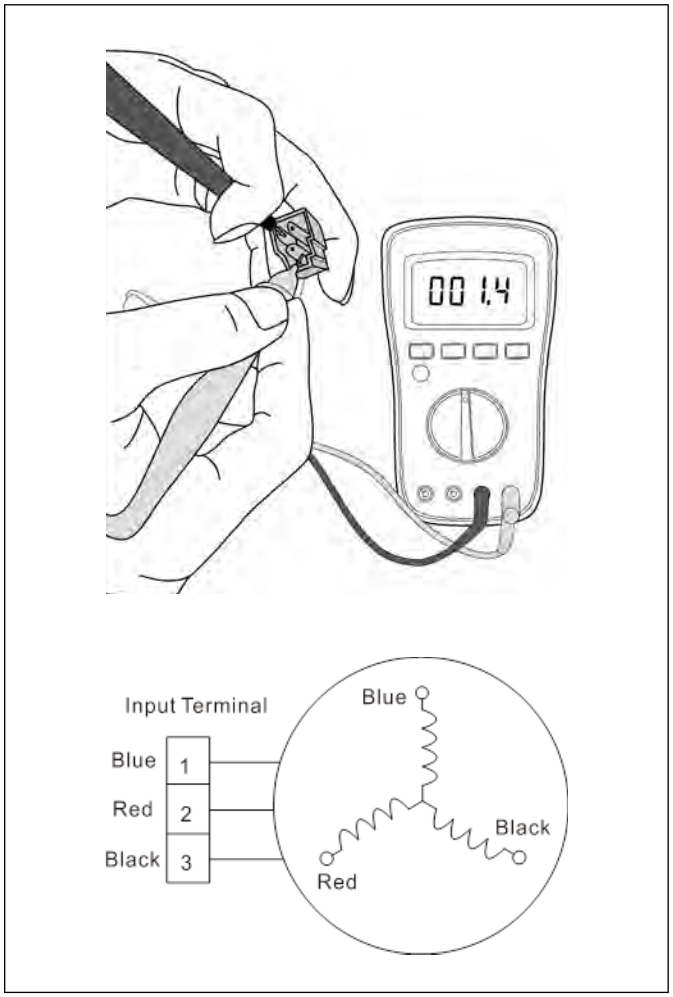


Figure 85

7.6.10 Over voltage or too low voltage protection diagnosis and solution (PC 01)

Error Code	PC 01
Malfunction decision conditions	An abnormal voltage rise or drop is detected by checking the specified voltage detection circuit.
Supposed causes	► Power supply problems ► System leakage or block ► Outdoor PCB faulty ► Transformer

Table 40

Troubleshooting:

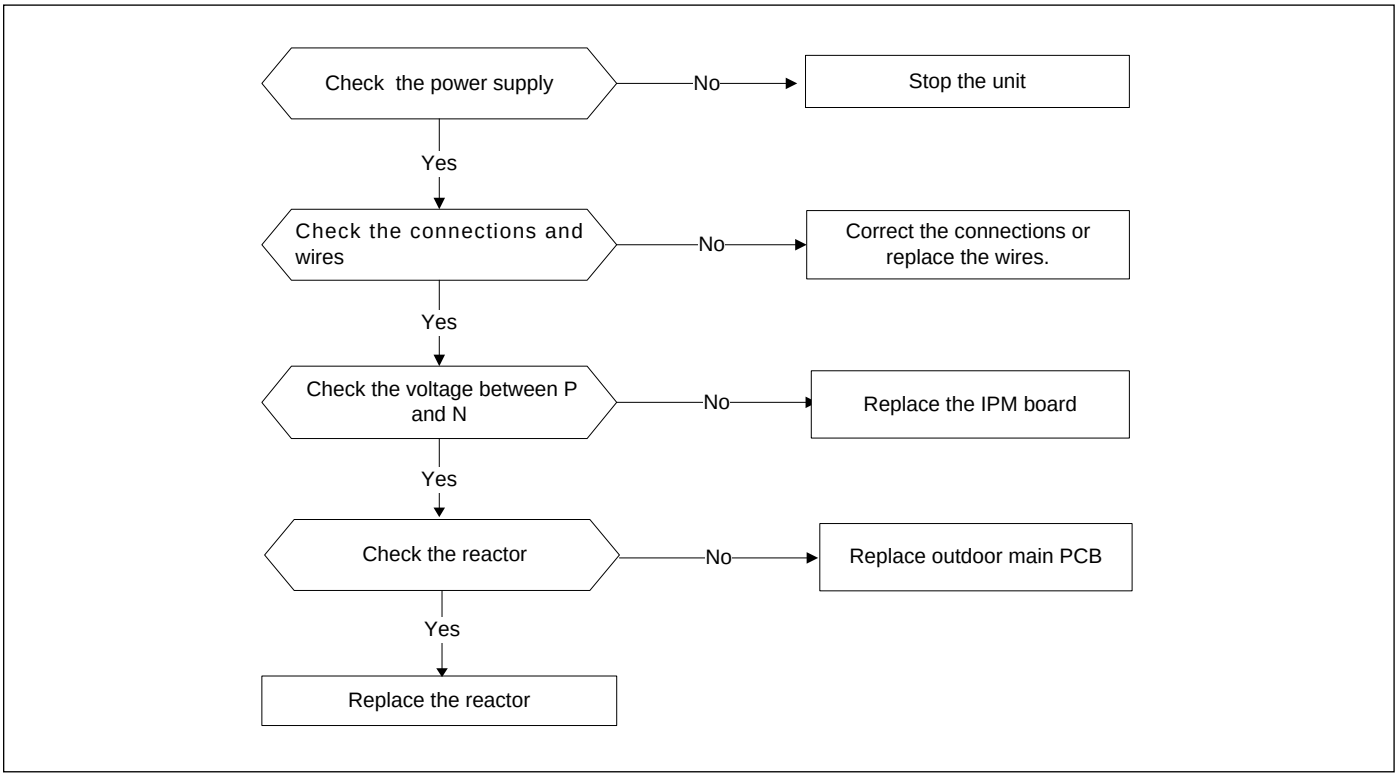


Figure 86

Measure the DC voltage between P and N port (Fig. 99). The normal value should be as shown below.

- When starting up the system, it is in 220V ~ 400V.
- When the system is in standby, 310V, 340V or 380V.

For certain models, outdoor PCB could not be removed separately. In this case, the outdoor electric control box should be replaced as a whole.

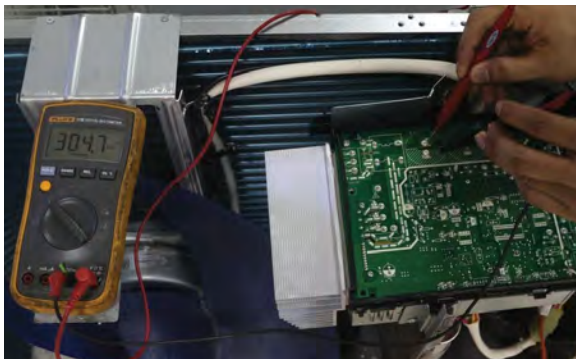


Figure 87

7.6.11 Top temperature protection of compressor or High temperature protection of IPM module or High pressure protection diagnosis and solution(PC 02)

Error Code	PC 02
Malfunction decision conditions	For some models with overload protection, If the sampling voltage is not 5V, the LED will display the failure. If the temperature of IPM module is higher than a certain value, the LED displays the failure code. For some models with high pressure switch, outdoor pressure switch cut off the system because high pressure is higher than 4.4 MPa, the LED displays the failure code.
Supposed causes	▶ Installation mistake ▶ Power supply problems ▶ System leakage or block ▶ Outdoor PCB faulty ▶ Over load protector (OLP) faulty

Table 41

Troubleshooting:

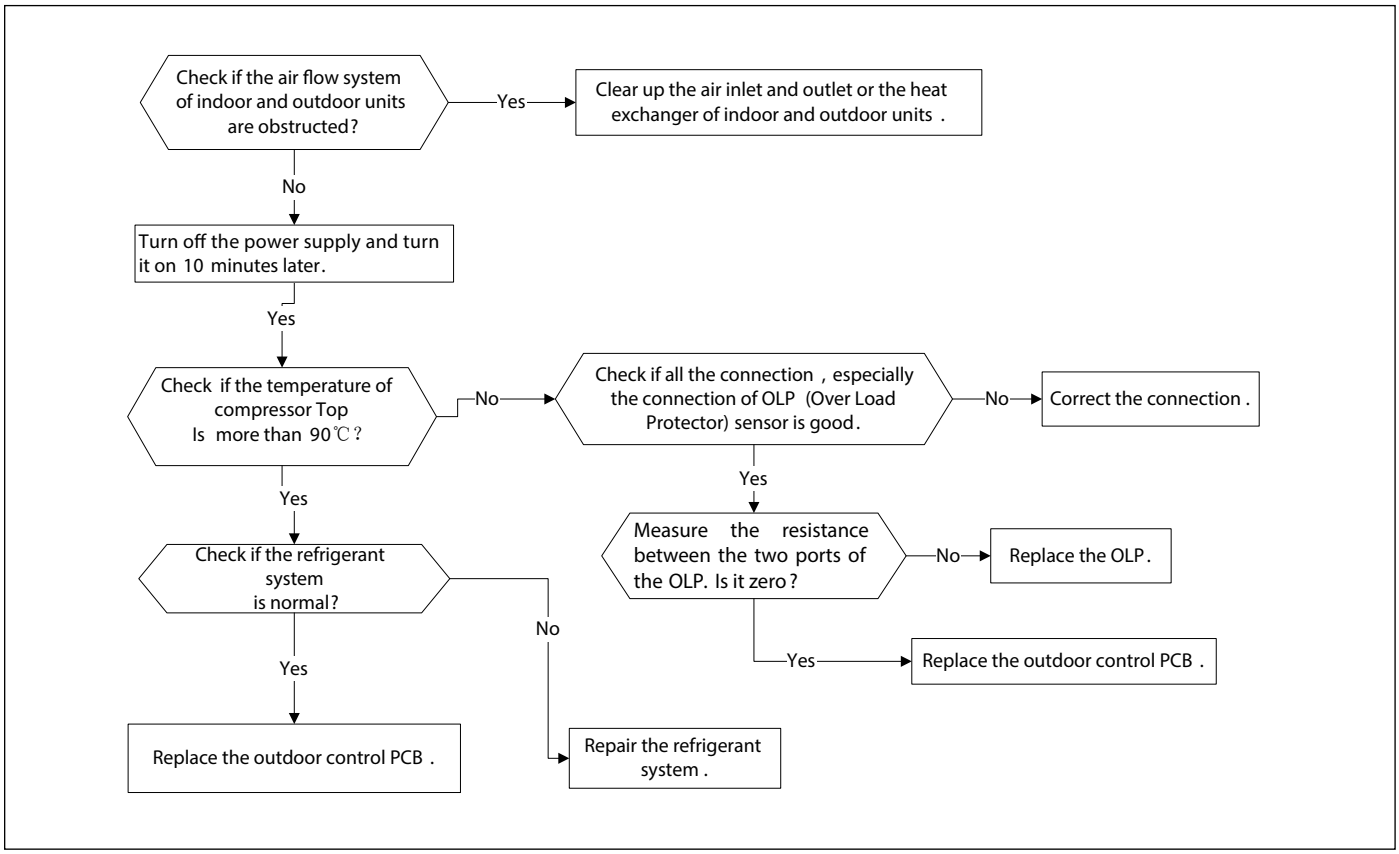


Figure 88

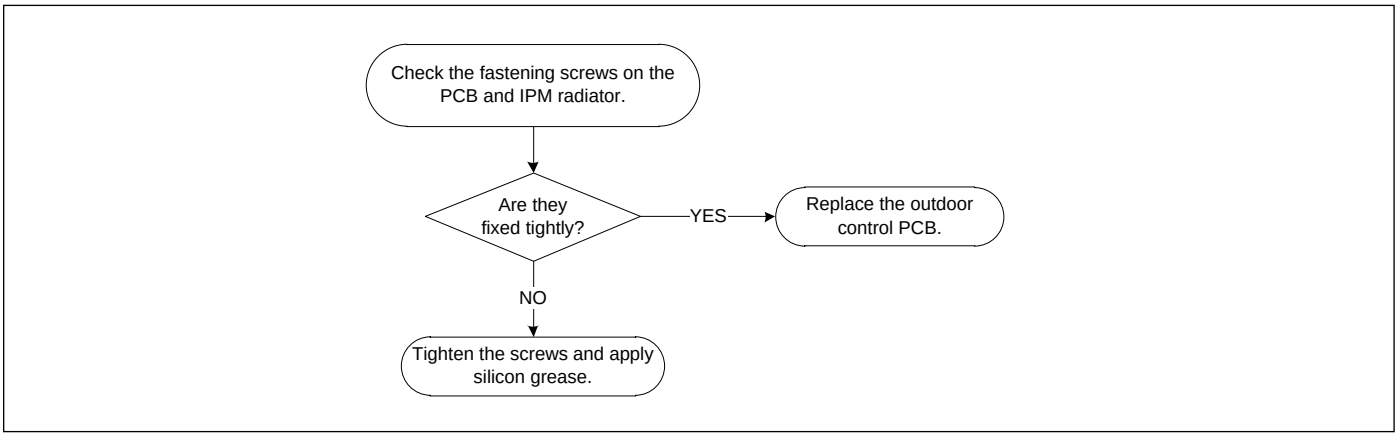


Figure 89

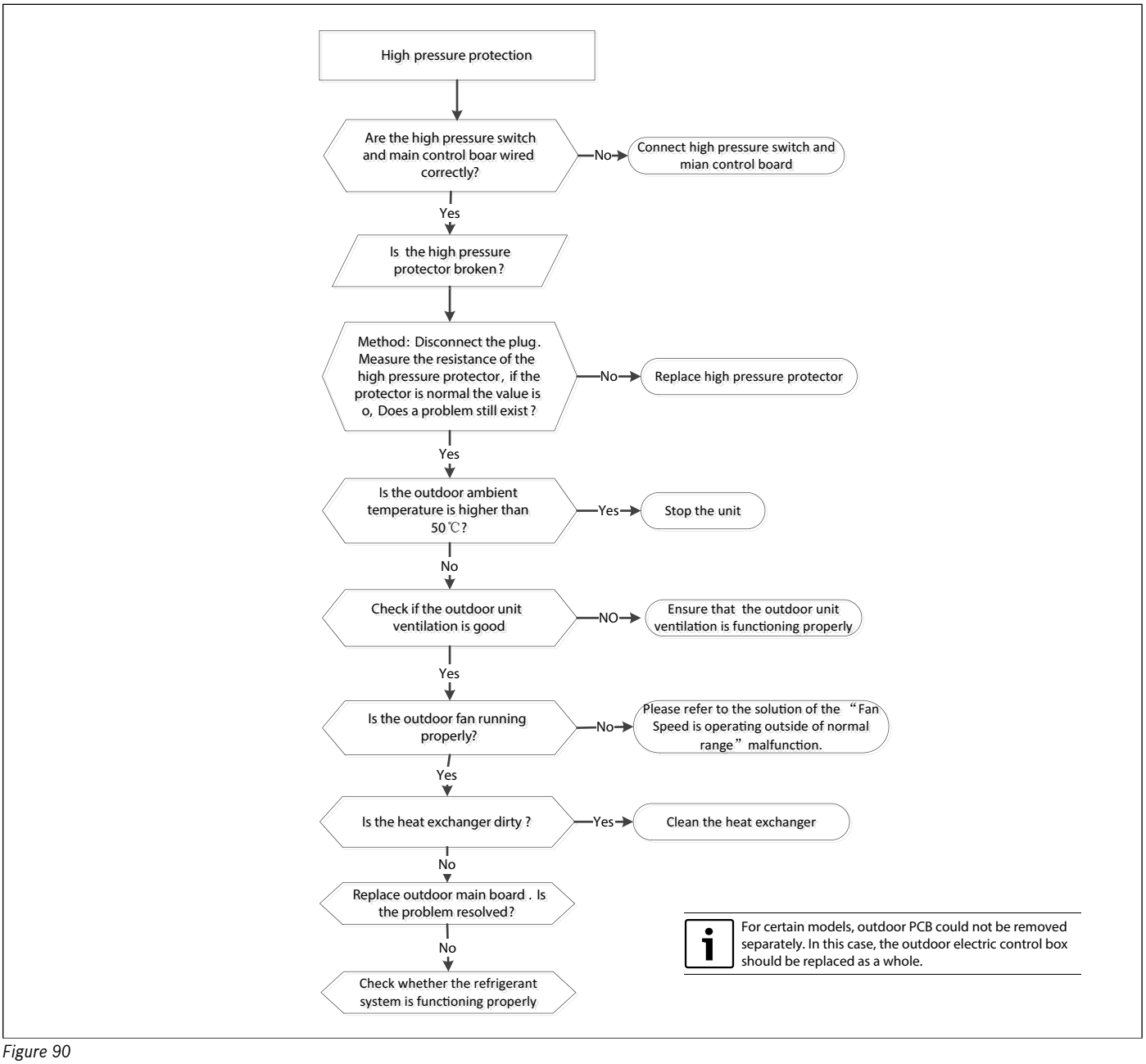


Figure 90

7.6.12 Inverter compressor drive error diagnosis and solution (PC 04)

Error Code	PC 04
Malfunction decision conditions	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.
Supposed causes	▶ Wiring mistake ▶ IPM malfunction ▶ Outdoor fan assembly faulty ▶ Compressor malfunction ▶ Outdoor PCB faulty

Table 42

Troubleshooting:

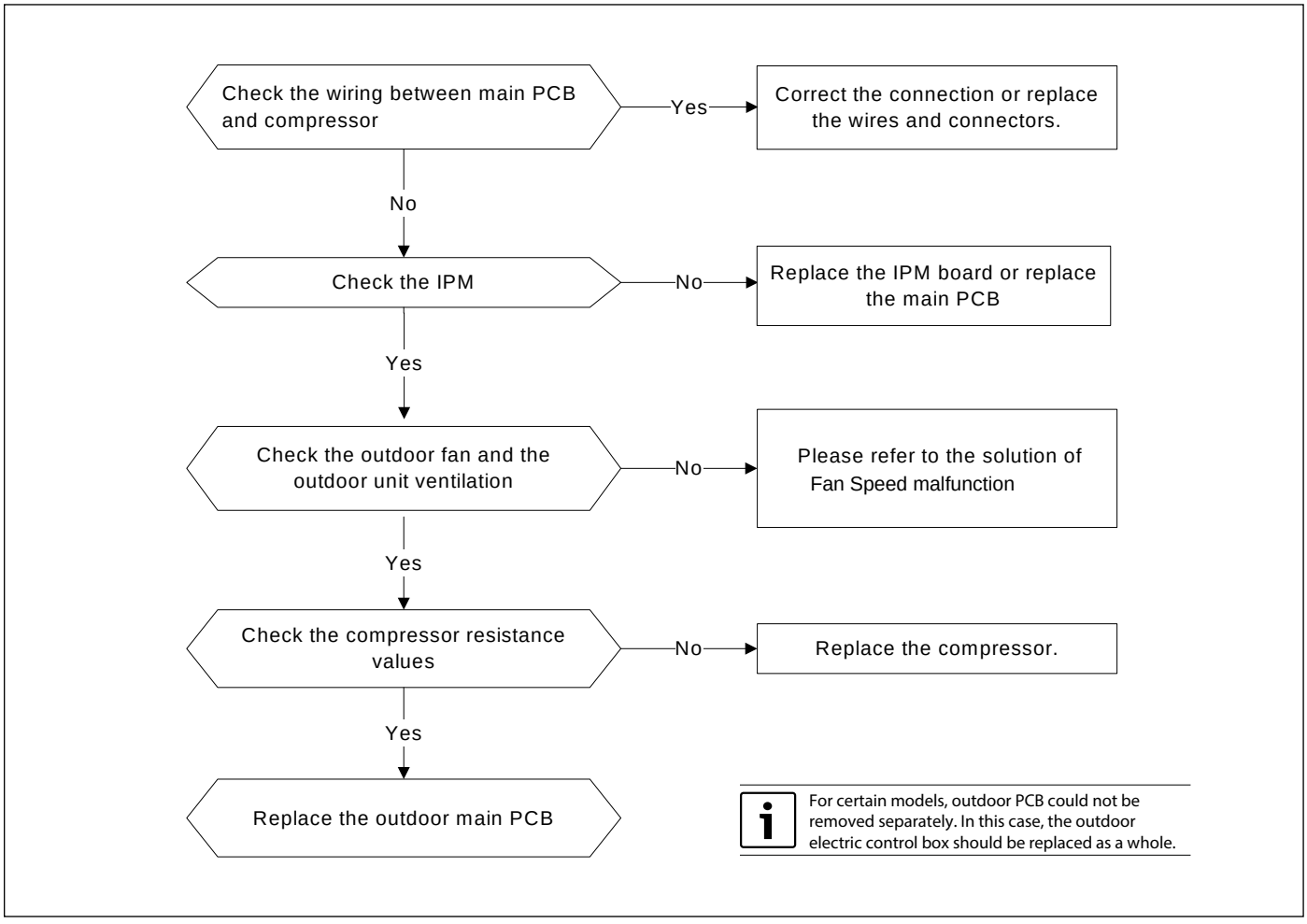


Figure 91

7.6.13 Low pressure protection diagnosis and solution (PC 03)

Error Code	PC 03
Malfunction decision conditions	Outdoor pressure switch cut off the system because low pressure is lower than 0.13 MPa, the LED displays the failure code.
Supposed causes	► Wiring mistake ► Pressure protector faulty ► Indoor fan motor faulty ► Outdoor PCB faulty ► Refrigerant leak

Table 43

Troubleshooting:

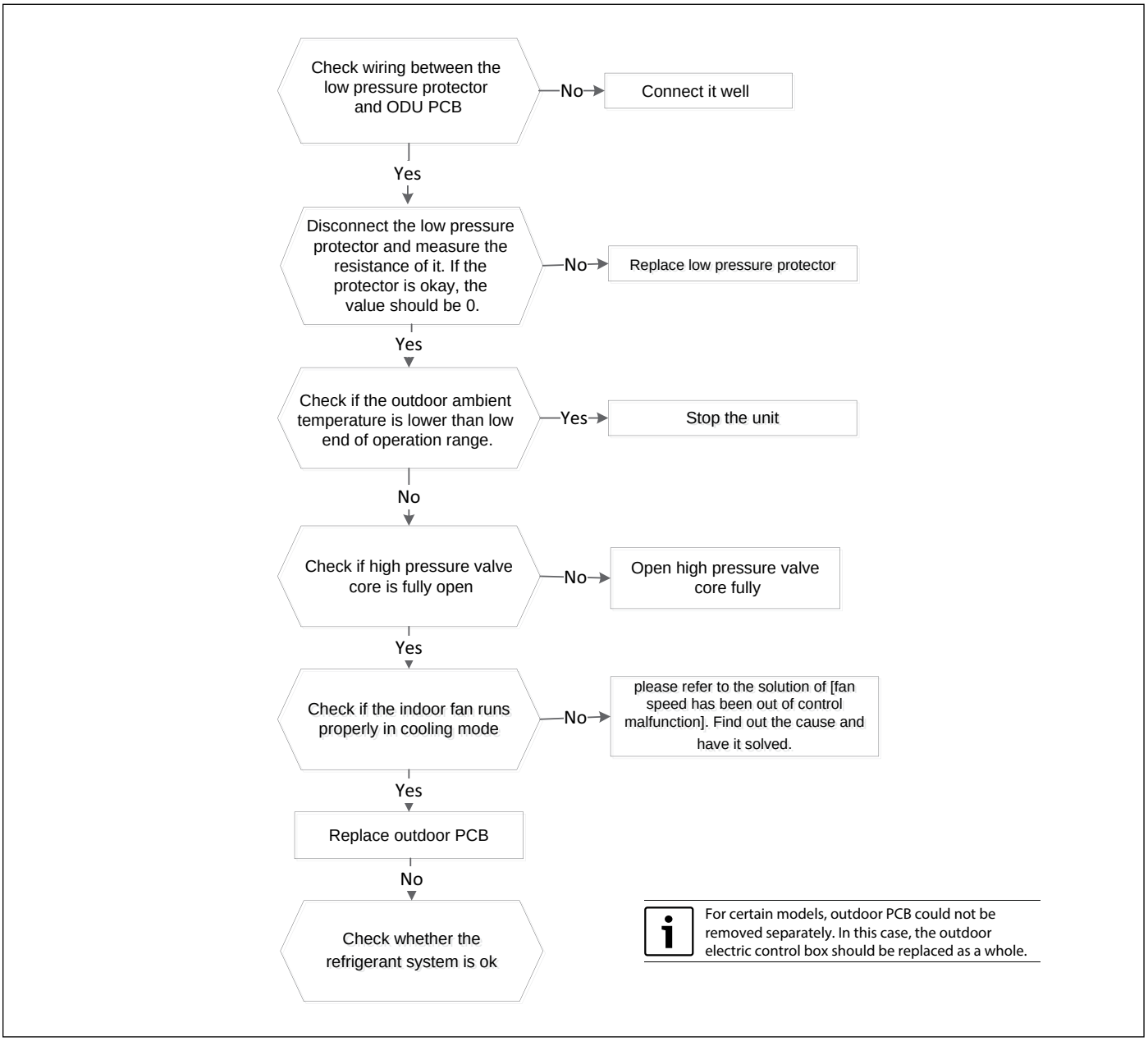


Figure 92

7.6.14 Communication error between outdoor unit main PCB and IPM control (PC 40)

Error Code	PC 40
Malfunction decision conditions	Communication error between outdoor PCB chip and compressor driven chip
Supposed causes	▶ Outdoor PCB faulty ▶ Outdoor electric control box faulty

Table 44

Troubleshooting:

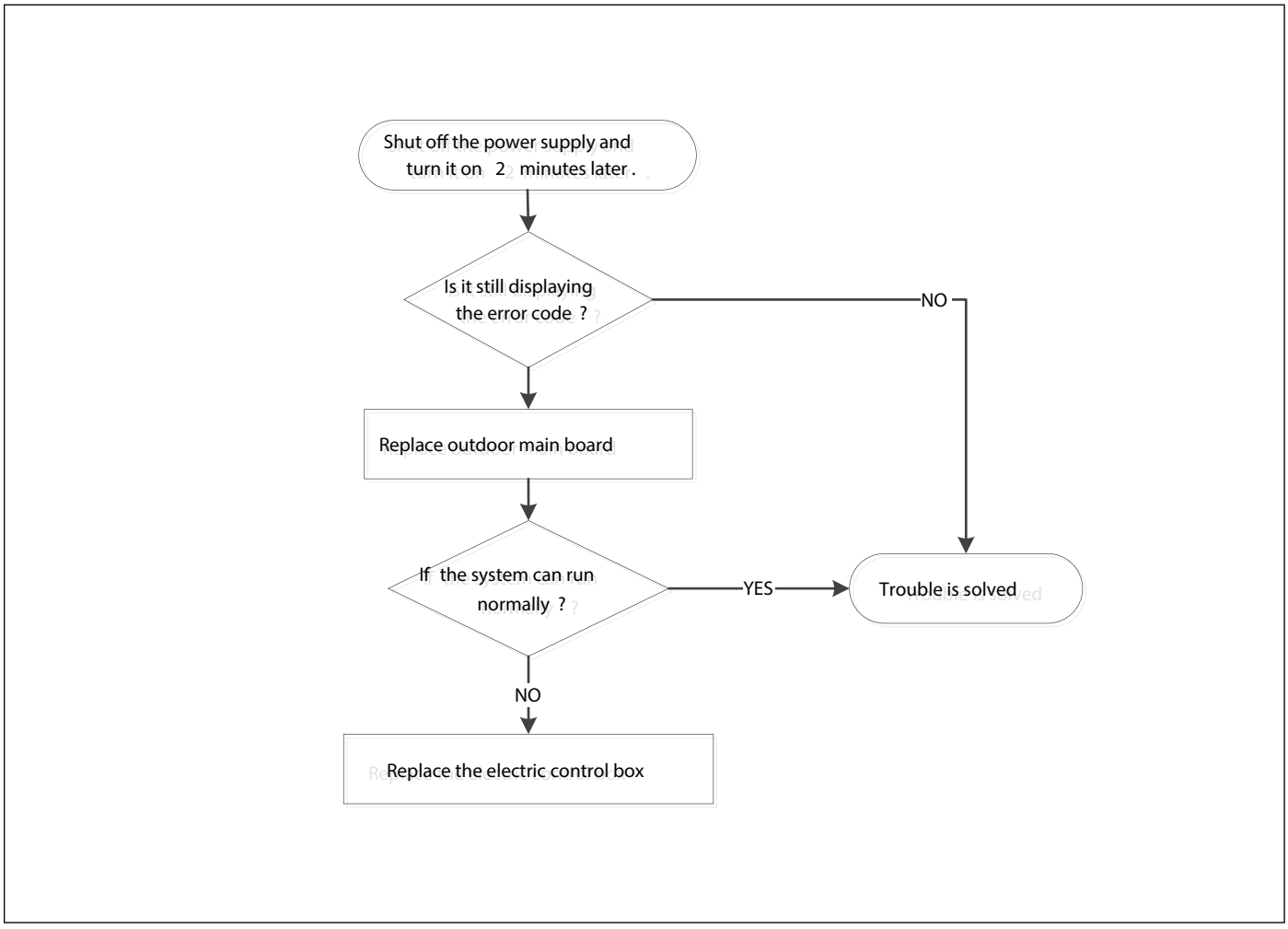


Figure 93

7.6.15 Main Parts Check

Temperature sensor check

WARNING: ELECTRICAL HAZARD

- Be sure to turn off all power supplies or disconnect all wires to avoid electric shock.

WARNING: PERSONAL INJURY

- Operate after compressor and coil have returned to normal temperature in case of injury.

1. Disconnect the temperature sensor from PCB.
2. Measure the resistance value of the sensor using a multi-meter.
3. Check corresponding temperature sensor resistance value table.

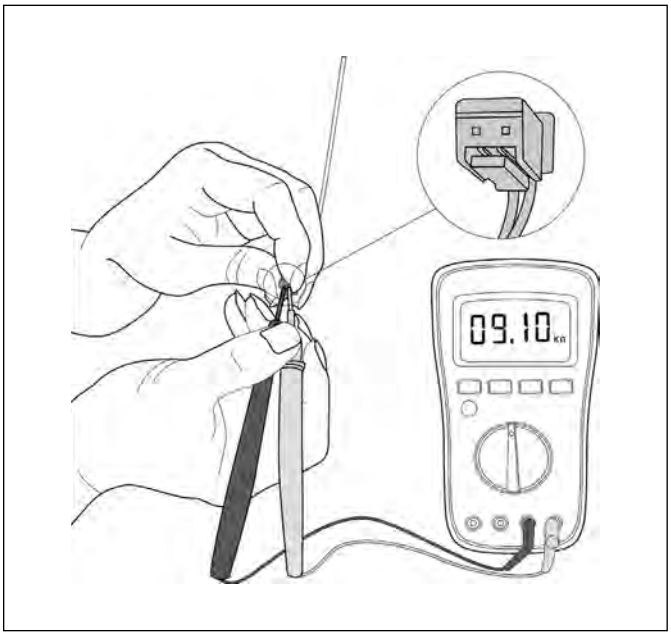


Figure 94

The picture and the value are only for reference, actual condition and specific value may vary.

Appendix 1 Resistance to Temperature value table for resistive sensors:
T1,T2,T3,T4 (°C/K Ohm)

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

Table 45

Appendix 2 Resistance to Temperature value table for resistive sensors: T5 (°C/K Ohm)

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

Table 46

Compressor check

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

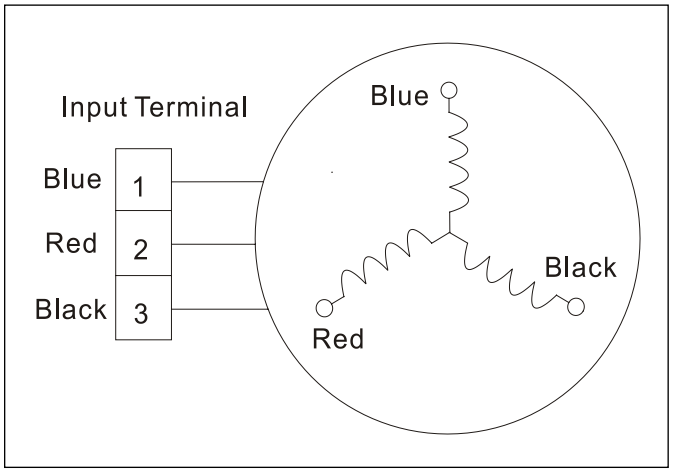


Figure 95

Figure 96

Position	Resistance Value						
	115V - 12K	9K Regular	12K Regular	18K Regular	24K Regular	30K Light Commercial	36K Light Commercial Wall Mounted
Blue - Red	2.13Ω	2.13Ω	2.13Ω	1.86Ω	1.03Ω	0.75Ω	0.75Ω
Blue - Black							
Red - Black							

Table 47

Position	Resistance Value								
	36K Light Commercial Cassette & Ducted	48K Light Commercial	60K Light Commercial	9K Max Performance	12K Max Performance	18K Max Performance	24K Max Performance	36K Max Performance	48K Max Performance
Blue - Red	0.65Ω	0.37Ω	0.37Ω	1.82Ω	1.82Ω	1.03Ω	1.03Ω	0.10Ω	0.10Ω
Blue - Black									
Red - Black									

Table 48

IPM continuity check

WARNING: ELECTRICAL HAZARD

- Electricity remains in capacitors even when the power supply is off. Ensure the capacitors are fully discharged before trouble shooting.

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

Digital tester		Normal resistance value	Digital tester		Normal resistance value
(+)Red	(-)Black		(+)Red	(-)Black	
P	N	∞ (Several MΩ)	U	N	∞ (Several MΩ)
	U		V		
	V		W		
	W		(+)Red		

Table 49

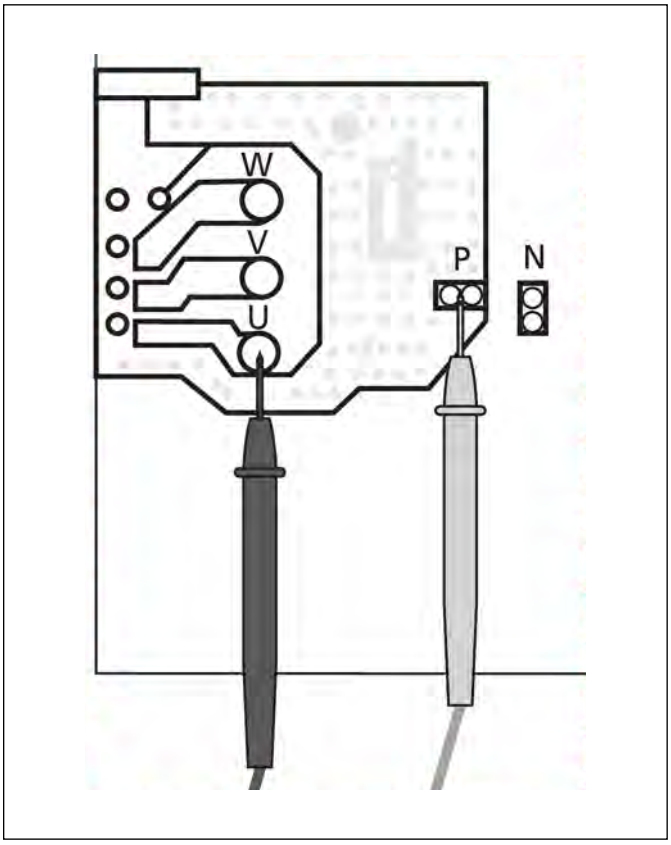


Figure 97

4-way Valve Check

1. Power on, use a digital tester to measure the voltage, when the unit operates in cooling, it is 0V. When the unit operates in heating, it is about 230VAC.

   If the value of the voltage is not in the range, the PCB must have problems and need to be replaced.

Figure 98

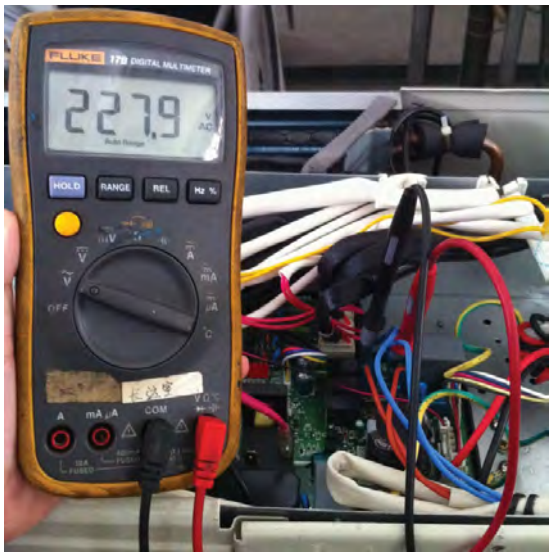


Figure 99

2. Turn off the power, use a digital tester to measure the resistance. The value should be 1.8~2.5 KΩ.

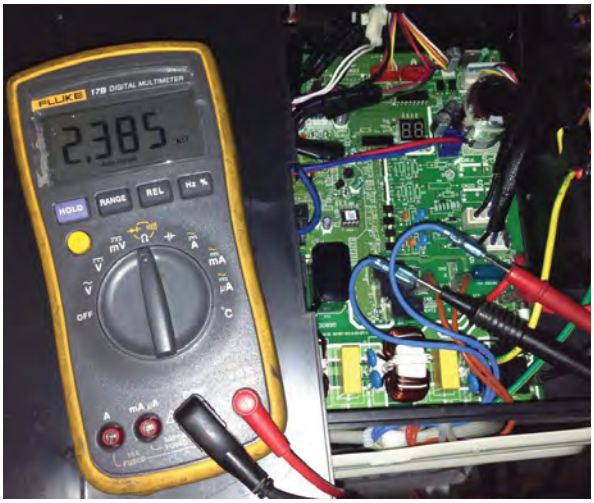


Figure 100

EXV Check

WARNING: ELECTRICAL SHOCK HAZARD

- Electricity remains in capacitors even when the power supply is off.
- Ensure the capacitors are fully discharged before troubleshooting.

1. Disconnect the connector from outdoor PCB.
2. Measure the resistance value of each winding using a multi-meter.

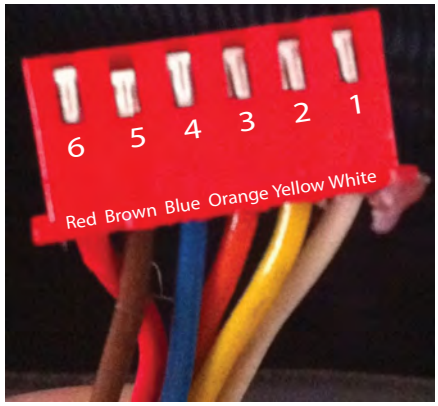


Figure 101

3. Check the resistance value of each winding in the following table.

Color of lead winding	Normal Value
Red - Blue	About 50Ω
Red - Yellow	
Brown - Orange	
Brown - White	

Table 50

Suction pressure at the service port

Cooling chart:

	Indoor Temp.	Outdoor Temp. ℉ (℃)				
		75 (23.89)	85 (29.44)	95 (35)	105 (40.56)	115 (46.11)
BAR	70	8.2	7.8	8.1	8.6	10.1
BAR	75	8.6	8.3	8.7	9.1	10.7
BAR	80	9.3	8.9	9.1	9.6	11.2
PSI	70	119	113	117	125	147
PSI	75	124	120	126	132	155
PSI	80	135	129	132	140	162
MPA	70	0.82	0.78	0.81	0.86	1.01
MPA	75	0.86	0.83	0.87	0.91	1.07
MPA	80	0.93	0.89	0.91	0.96	1.12

Table 51

Heating chart:

	Indoor Temp.	Outdoor Temp. ℉ (℃)				
		57 (13.89)	47 (8.33)	37 (2.78)	27 (-2.78)	17 (-8.33)
BAR	55	30.3	28.5	25.3	22.8	20.8
BAR	65	32.5	30.0	26.6	25.4	23.3
BAR	75	33.8	31.5	27.8	26.3	24.9
PSI	55	439	413	367	330	302
PSI	65	471	435	386	368	339
PSI	75	489	457	403	381	362
MPA	55	3.03	2.85	2.53	2.28	2.08
MPA	65	3.25	3.00	2.66	2.54	2.33
MPA	75	3.38	3.15	2.78	2.63	2.49

Table 52

8 Disassembly Guide

This part is for reference, the photos may have slight differences with your machine.

8.1 Indoor Unit - Medium & High Static Ducted Unit

8.1.1 How to remove the electrical control box

- Step 1: Remove 5 screws to remove the electrical control box cover.

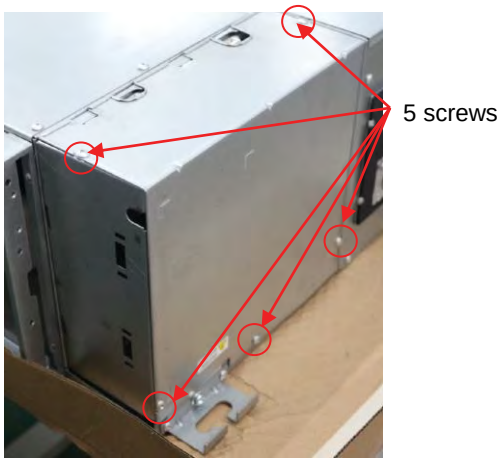


Figure 102

- Step 2: Disconnect connectors for fan motor, room temperature sensor and evaporator temperature sensor.

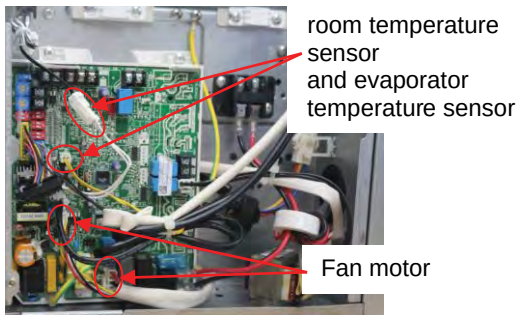


Figure 103

- Step 3: Remove 2 screws to disassemble the electrical control box.

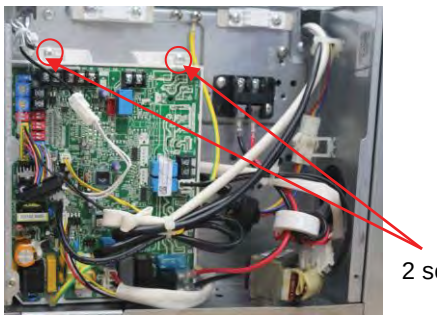


Figure 104

8.1.2 How to remove the PCB

- Step 1: Remove the electrical control box cover by following previous section.
- Step 2: Pull out all the connectors and remove 1 screw to disconnect the ground wire.

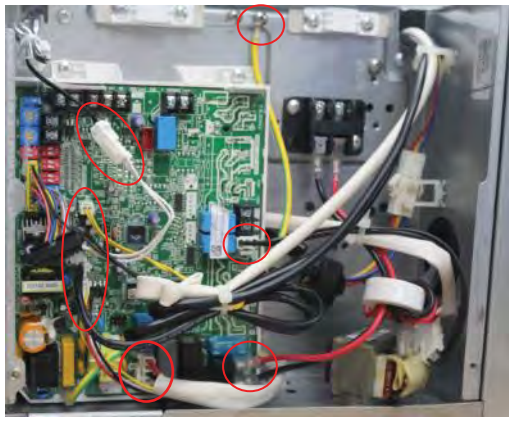


Figure 105

8.1.3 How to remove the reactance

- Step 1: Remove the electrical control box cover by following previous section.
- Step 2: Disconnect the reactance wire.

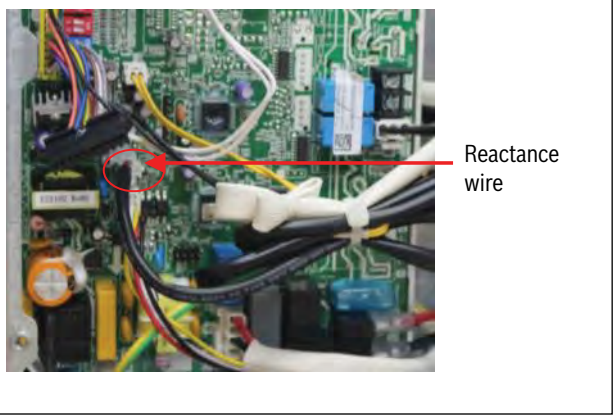


Figure 106

- Step 3: Remove 1 screw to disassemble the reactance

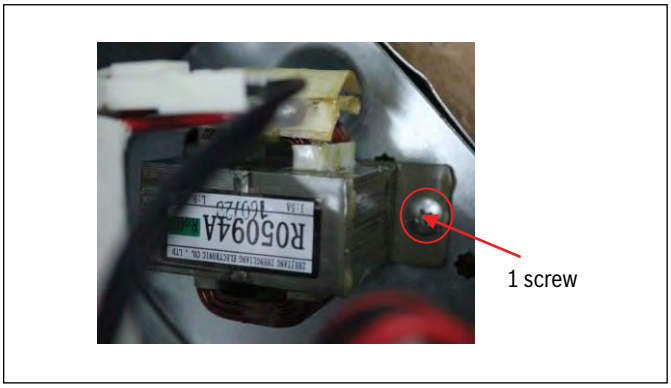


Figure 107

8.1.4 How to remove the drain pump

- Step 1: Remove the electrical control box cover by following previous section.
- Step 2: Disconnect the drain pump wire.

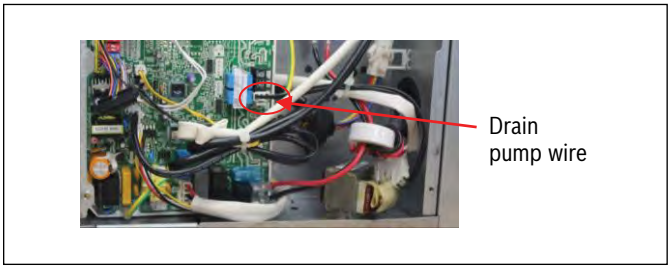


Figure 108

- Step 3: Remove 4 screws to disassemble the drain pump.

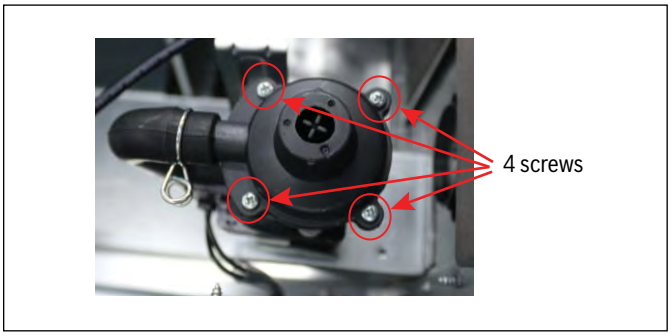


Figure 109

8.1.5 How to remove the fan and fan motor

- Step 1: Remove the electrical control box cover by following previous section.
- Step 2: Remove 10 screws to disassemble top cover.

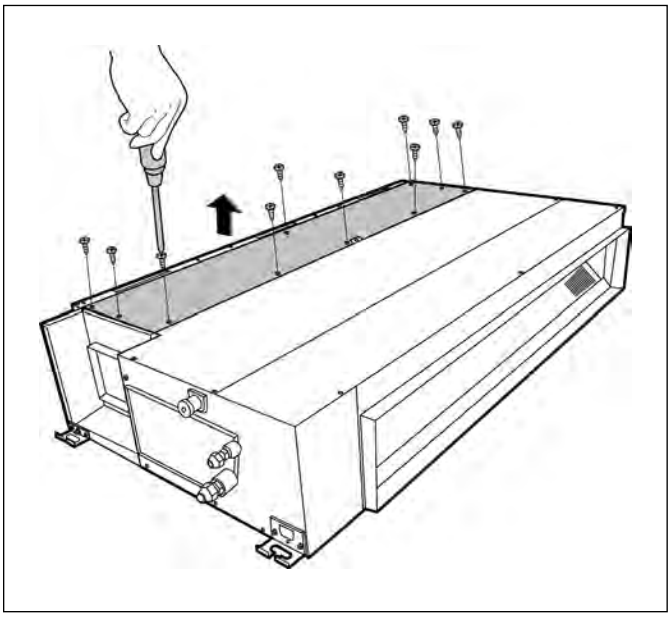


Figure 110

- Step 3: Release 8 hooks to remove the volute shell.

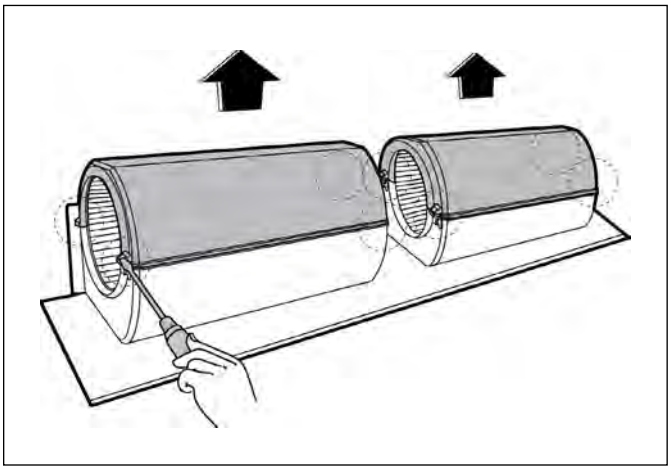


Figure 111

- Step 4: Remove 2 screws to disassemble fan.

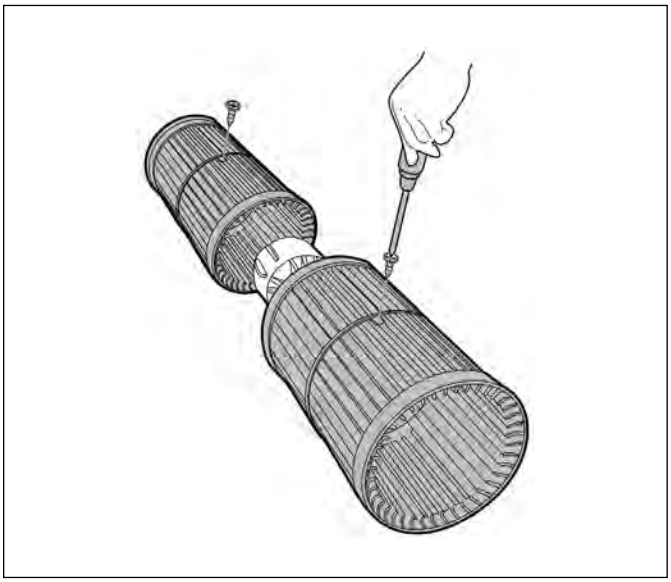


Figure 112

- Step 5: Remove 2 screws to disassemble fan motor.

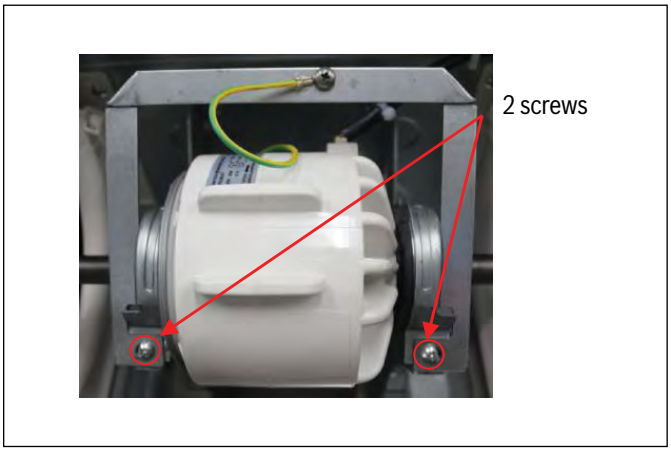


Figure 113

8.1.6 How to remove the water collecting assembly

- Step 1: Remove the top cover board by following previous section.
- Step 2: Remove 7 screws to disassemble the top cover and then remove the water collecting assembly.

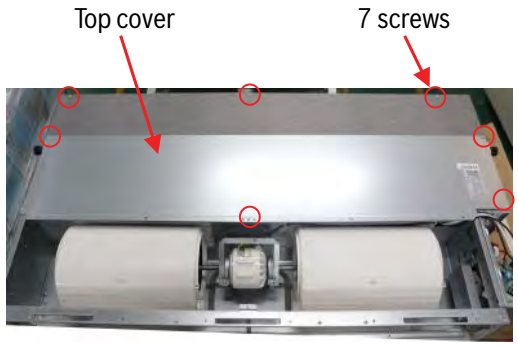


Figure 114

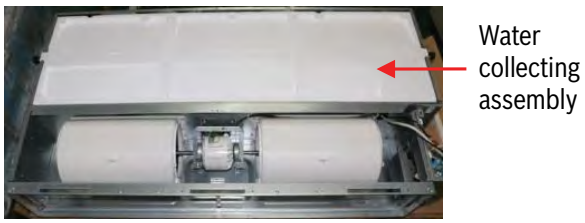


Figure 115

8.1.7 How to remove the evaporator

- Step 1: Remove the top cover board and water collecting assembly by following previous sections.
- Step 2: Remove the evaporator sensor.

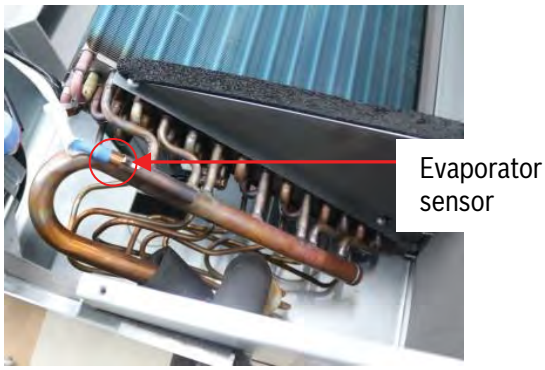


Figure 116

- Step 3: Remove 2 screws and disassemble the pipe clamp.

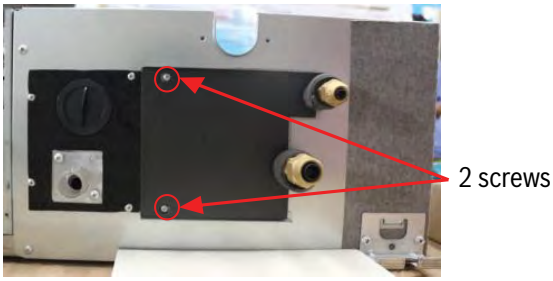


Figure 117

- Step 4: Remove 4 screws to disassemble the evaporator support board.

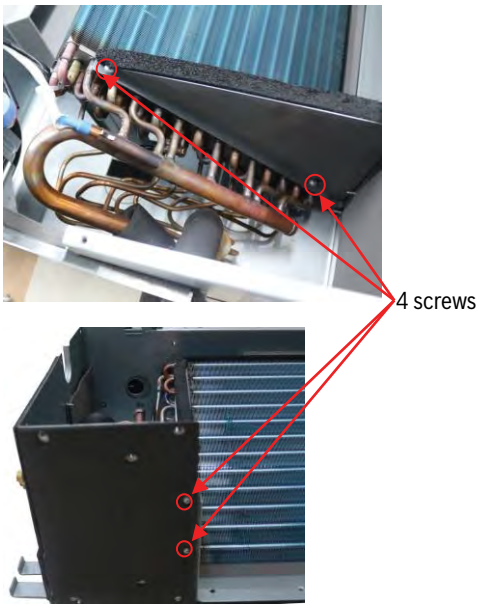


Figure 118

- Step 5: Remove 1 screw to disassemble the evaporator.

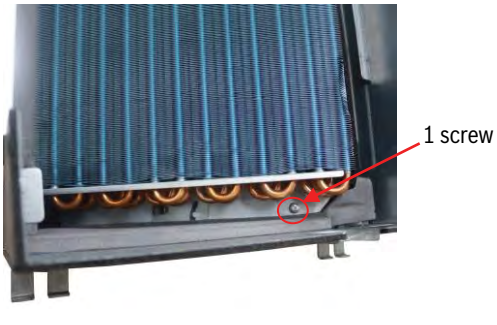


Figure 119

8.2 Outdoor Unit

Several outdoor unit parts are specific to individual models. Please see the following table to reference which part applies to which specific outdoor unit.

Outdoor Unit Model	Description	Panel Plate	PCB Board
BMS500-AAS012-0CSXRC	Minisplit 12kBTU Single Zone Condensing Section Regular 115V	X230	PCB Board 11
BMS500-AAS009-1CSXHC	Minisplit 9kBTU Single Zone Condensing Section Max Performance 230V	X330	PCB Board 9
BMS500-AAS009-1CSXRC	Minisplit 9kBTU Single Zone Condensing Section Regular 230V	X230	PCB Board 9
BMS500-AAS012-1CSXHC	Minisplit 12kBTU Single Zone Condensing Section Max Performance 230V	X330	PCB Board 9
BMS500-AAS012-1CSXRC	Minisplit 12kBTU Single Zone Condensing Section Regular 230V	X230	PCB Board 9
BMS500-AAS018-1CSXHC	Minisplit 18kBTU Single Zone Condensing Section Max Performance 230V	X430	PCB Board 6
BMS500-AAS018-1CSXRC	Minisplit 18kBTU Single Zone Condensing Section Regular 230V	X430	PCB Board 6
BMS500-AAS024-1CSXRC	Minisplit 24kBTU Single Zone Condensing Section Regular 230V	D30	PCB Board 6
BMS500-AAS024-1CSXHC	Minisplit 24kBTU Single Zone Condensing Section Max Performance 230V	D30	PCB Board 12
BMS500-AAS030-1CSXRC	Minisplit 30kBTU Single Zone Condensing Section Regular 230V	D30	PCB Board 12
BMS500-AAS036-1CSXRC	Minisplit 36kBTU Single Zone Condensing Section Regular 230V	D30	PCB Board 12

Table 53

8.2.1 Panel Plates

Panel Plate D30

1. Turn off the air conditioner and the power breaker.
2. Remove the screws of the big handle and then remove the big handle

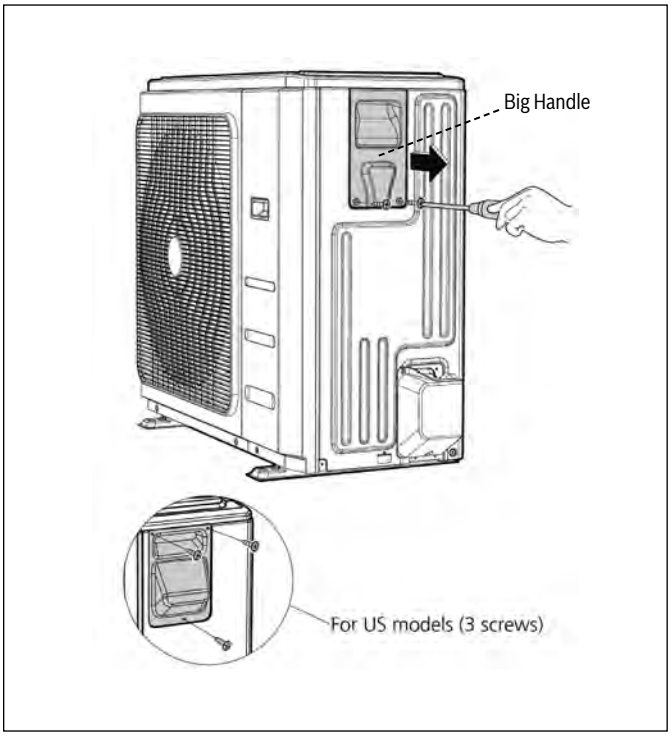


Figure 120

3. Remove the screws of the top cover and then remove the top cover (4 screws). Two of the screws are located underneath the big handle.

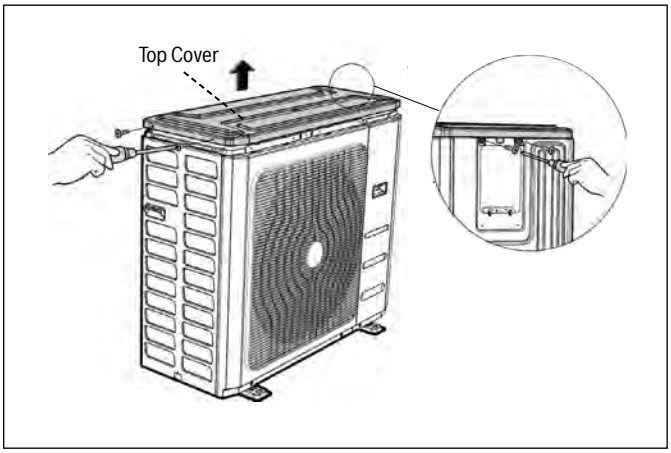


Figure 121

4. Remove the screws of the front right panel and then remove the front right panel (2 screws).

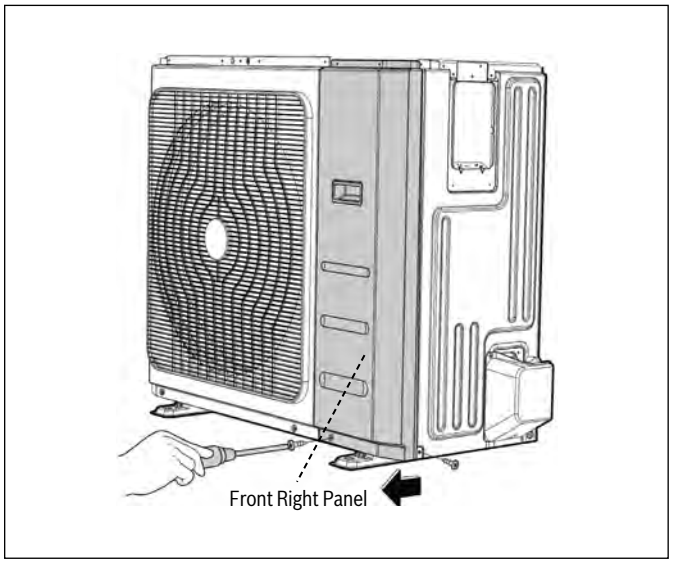


Figure 122

5. Remove the screws of the front panel and then remove the front panel (9 screws).

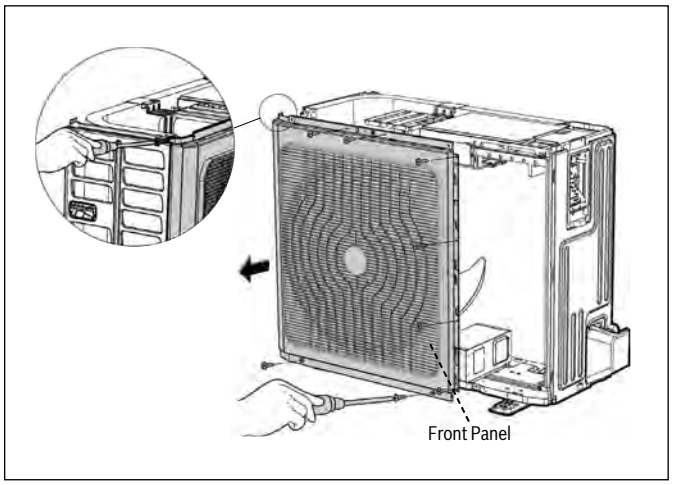


Figure 123

6. Remove the screws of water collecting cover and then remove the water collecting cover.

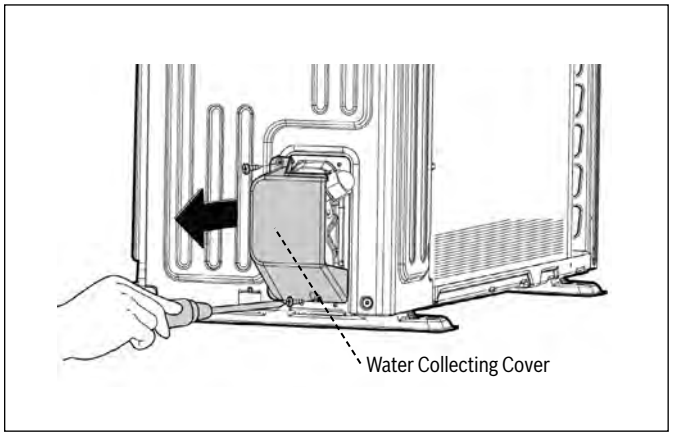


Figure 124

7. Remove the screws of the rear net and then remove the rear net (2 screws).

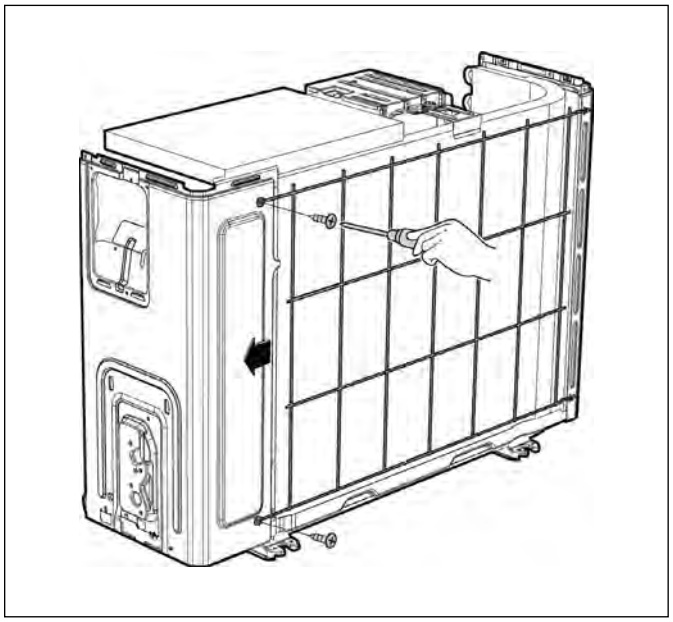


Figure 125

8. Remove the screws of the right panel and then remove the right panel.

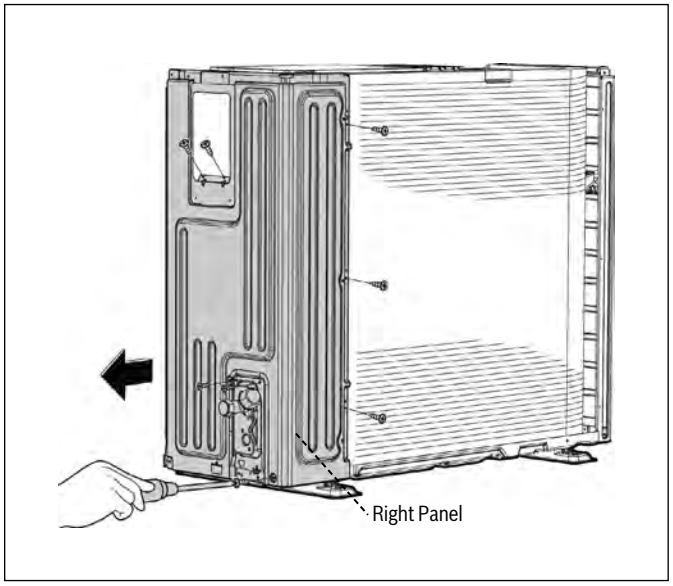


Figure 126

Panel Plate X230/X330

1. Turn off the air conditioner and the power breaker.
2. Remove the screw of the big handle and then remove the big handle (1 screws).

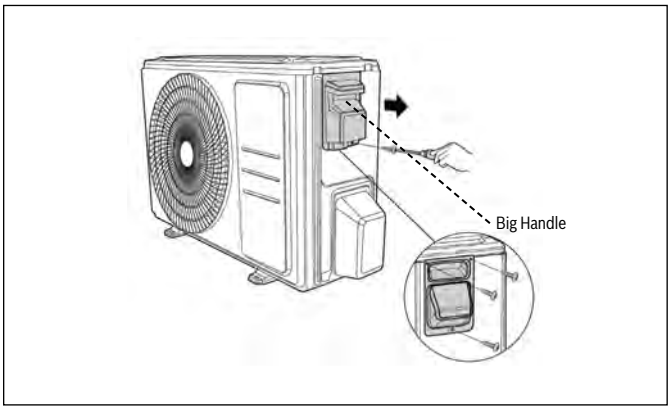


Figure 127

3. Remove the screws of the top cover and then remove the top cover (4 screws). One of the screws is located underneath the big handle.

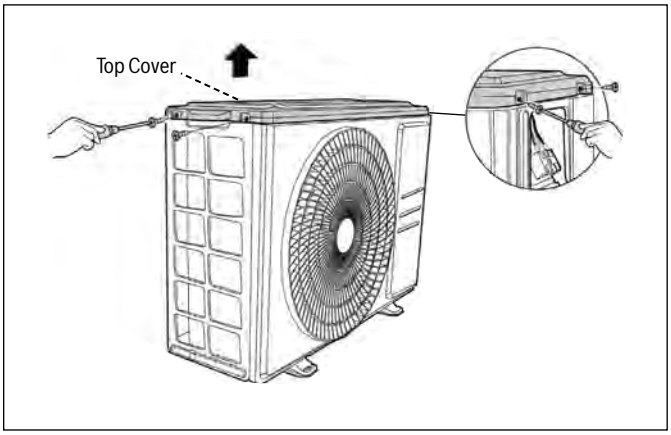


Figure 128

4. Remove the screws of water collecting cover and then remove the water collecting cover (2 screws).

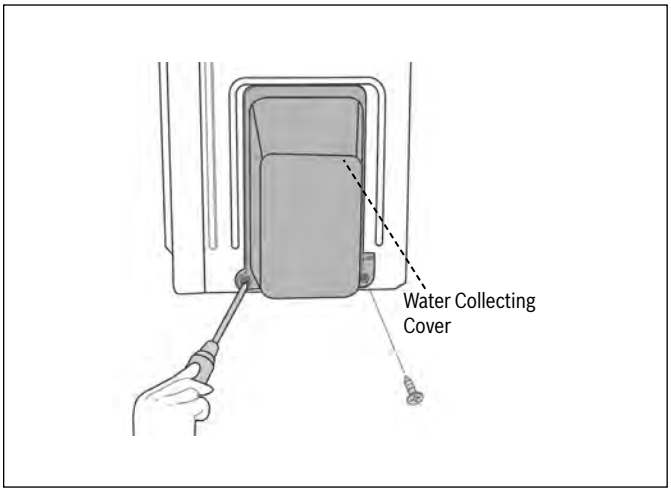


Figure 129

5. Remove the screws of the front panel and then remove the front panel (7 screws(onoff models) or 9 screws(inverter models).

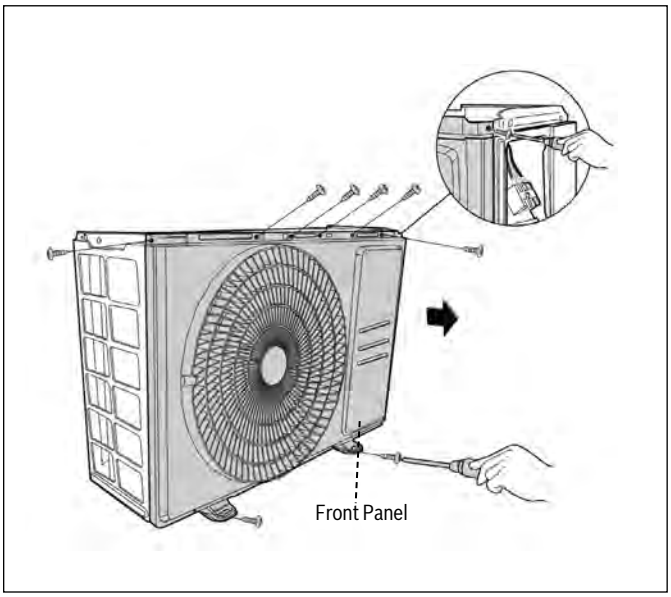


Figure 130

6. Remove the screws of the right panel and then remove the right panel (5 screws).

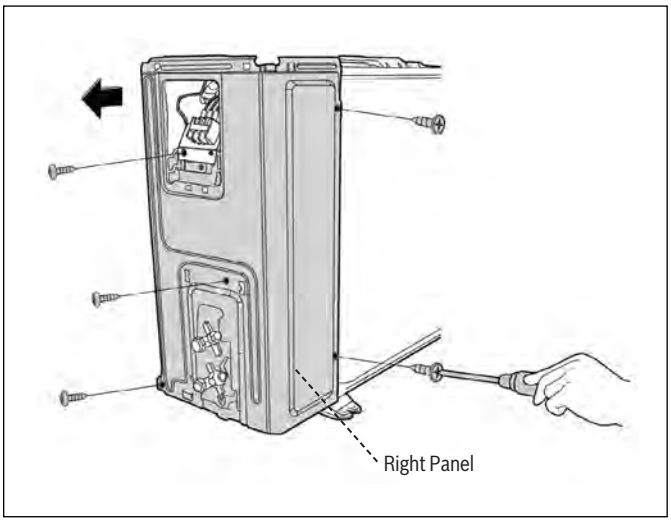


Figure 131

Panel Plate X430

1. Turn off the air conditioner and the circuit breaker.
2. Remove the screw of the big handle and then remove the big handle (1 screw).

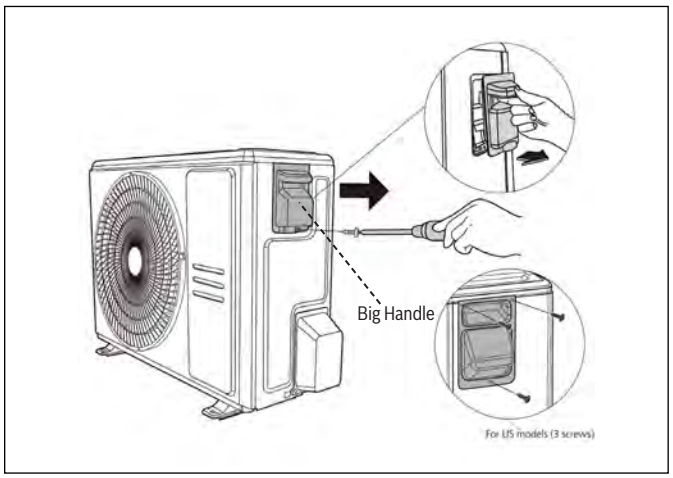


Figure 132

3. Remove the screws of the top cover and then remove the top cover (3 screws). One of the screws is located underneath the big handle.

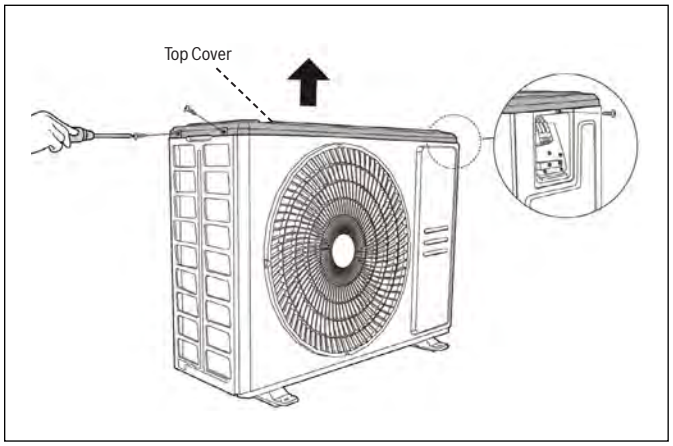


Figure 133

4. Remove the screws of water collecting cover and then remove the water collecting cover (2 screws).

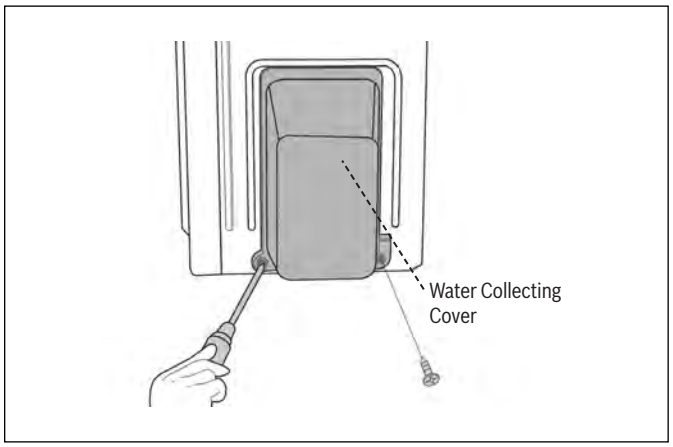


Figure 134

5. Remove the screws of the front panel and then remove the front panel (7 screws(onoff models) or 9 screws(inverter models).

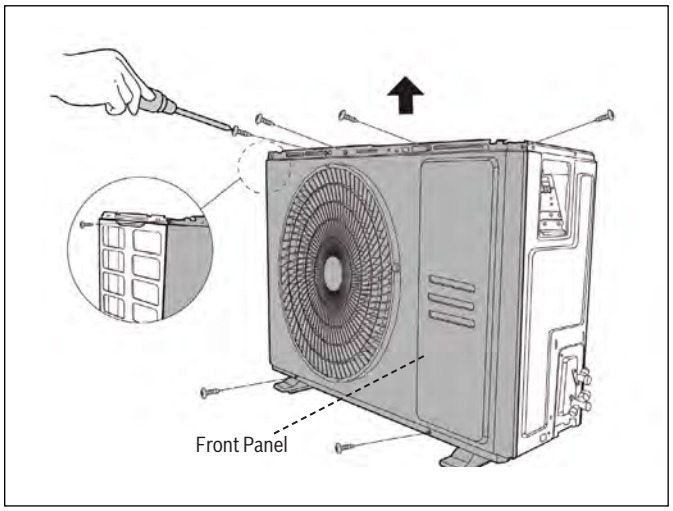


Figure 135

6. Remove the screws of the right panel and then remove the right panel (6 screws).

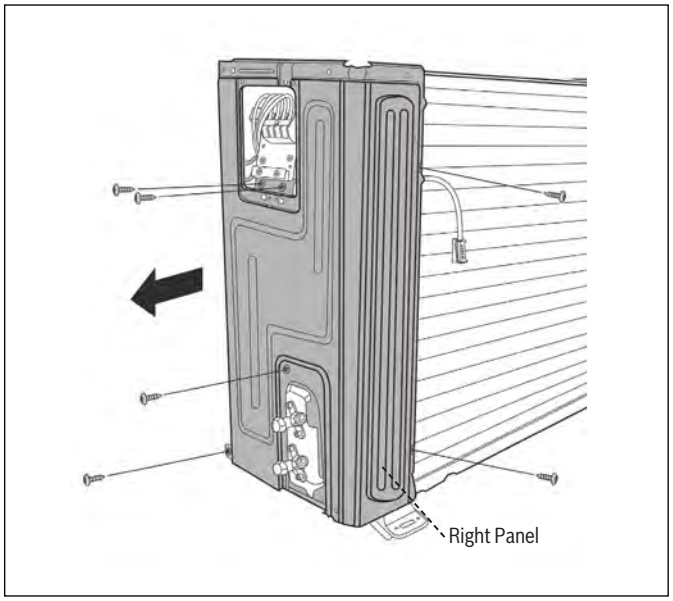


Figure 136

8.2.2 Electrical Parts

PCB Board 6

1. Remove the screws and unfix the hooks, then open the electronic control box cover (5 screws and 2 hooks).

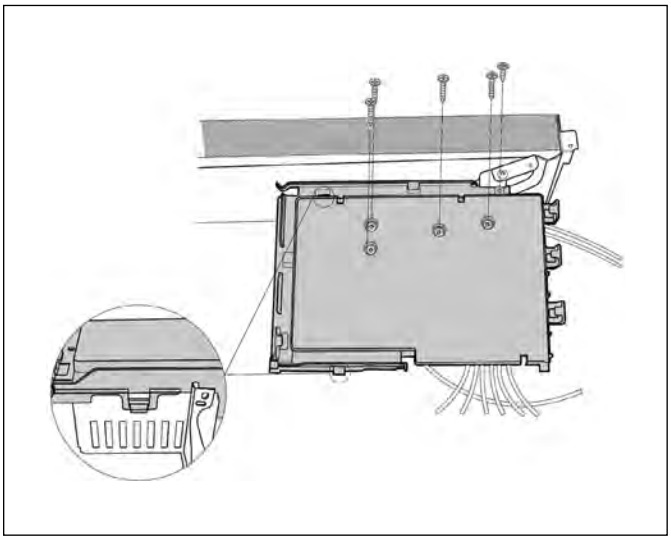


Figure 137

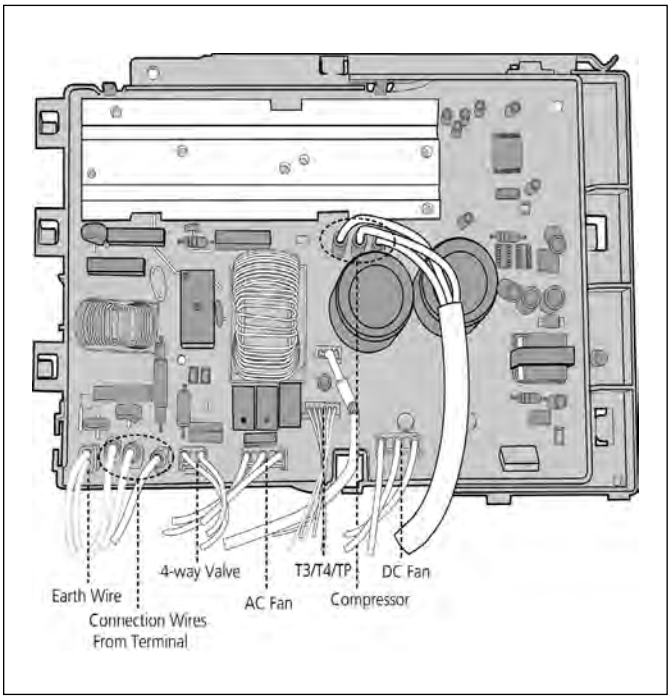


Figure 138

2. Disconnect the connector for fan motor from the electronic control board.
3. Remove the connector for the compressor.
4. Pull out the two blue wires connected with the four way valve.
5. Pull out connectors of the condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4) and discharge temp. sensor(TP).
6. Disconnect the electronic expansion valve wire.
7. Remove the connector for the DR and reactor.
8. Then remove the electronic control board.

PCB Board 9

1. Disconnect the connector for compressor and release the ground wire(1 screw).

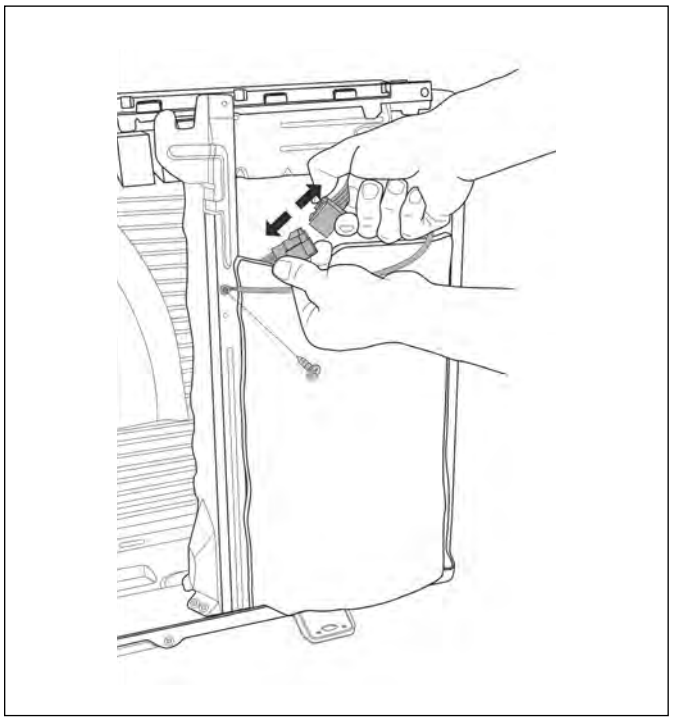


Figure 139

2. Pull out the wires from electrical supporting plate and turn over the electronic control assembly.

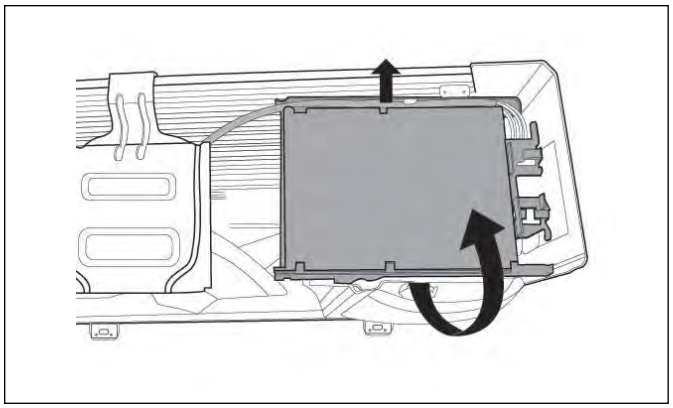


Figure 140

3. Remove the electronic installing box subassembly (4 hooks).

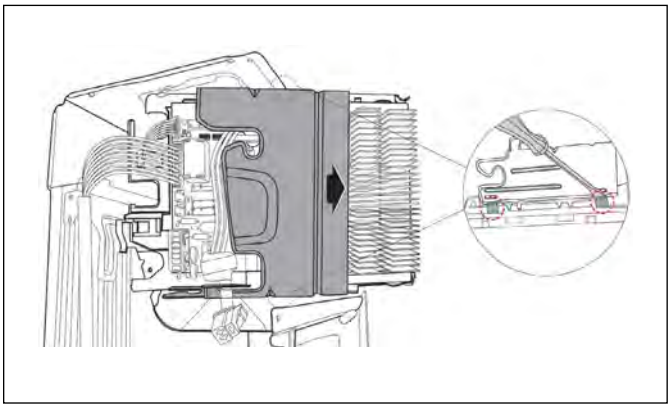


Figure 141

4. Remove the fixing board (2 hooks).

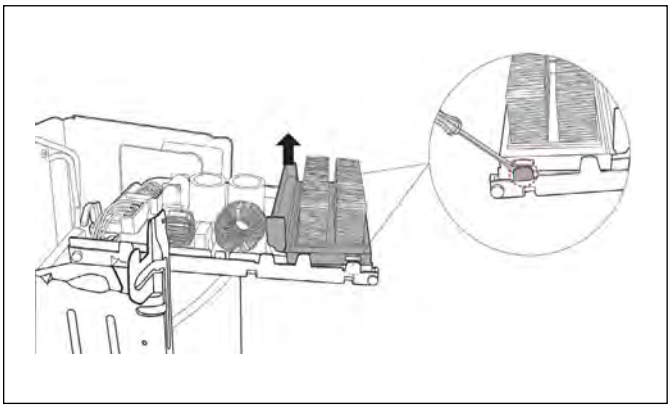


Figure 142

5. Disconnect the connectors from the electronic control board

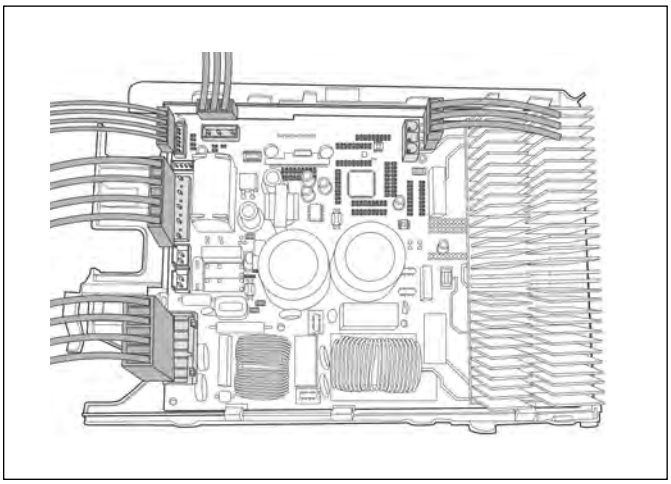


Figure 143

6. Then remove the electronic control board (4 hooks).

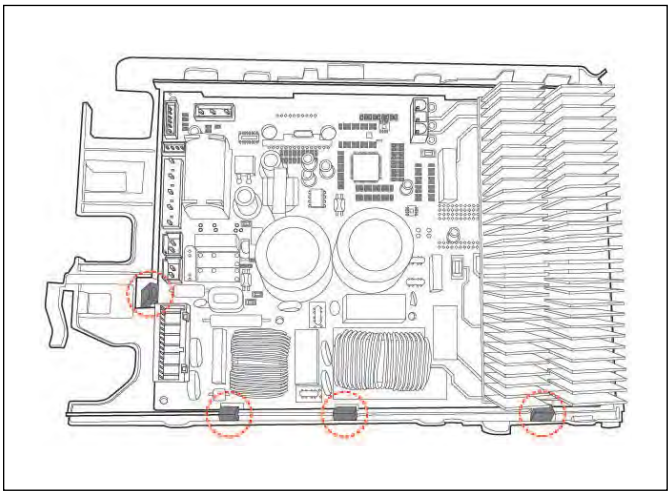


Figure 144

PCB Board 11

1. Disconnect the connector for compressor and release the ground wire(1 screw).

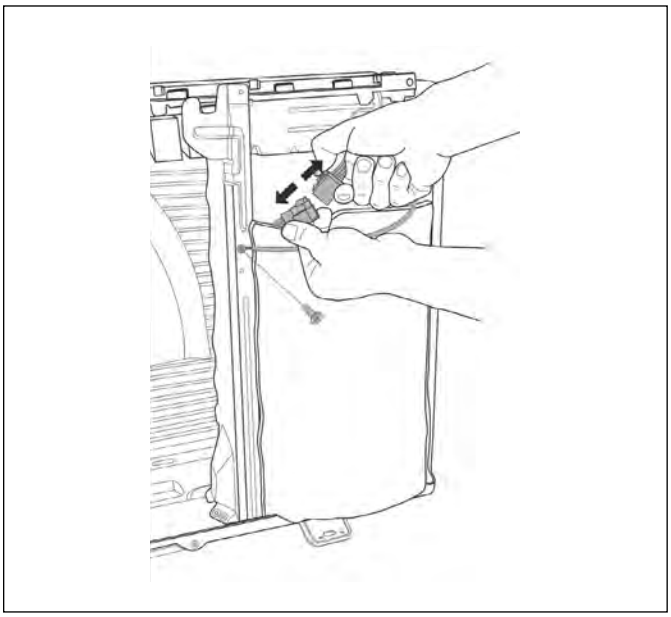


Figure 145

2. Pull out the wires from electrical supporting plate and turn over the electronic control assembly.

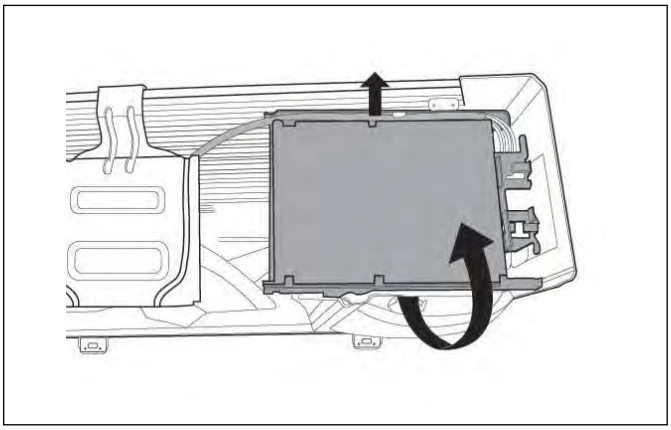


Figure 146

3. Remove the electronic installing box subassembly (4 hooks).

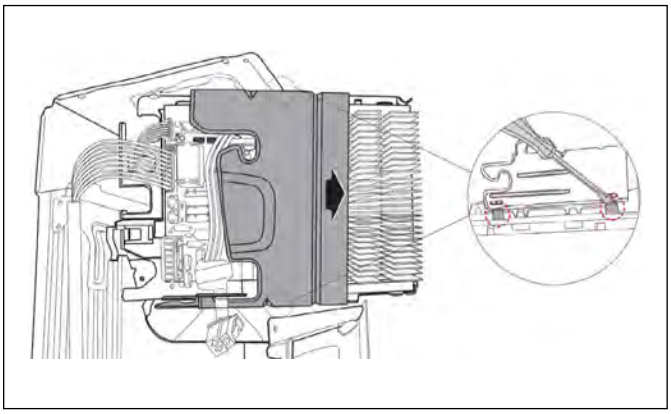


Figure 147

4. Remove the fixing board (2 hooks).

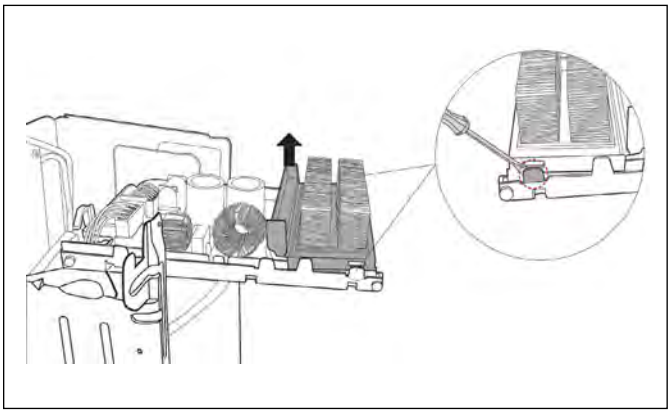


Figure 148

5. Disconnect the connectors from the electronic control board.

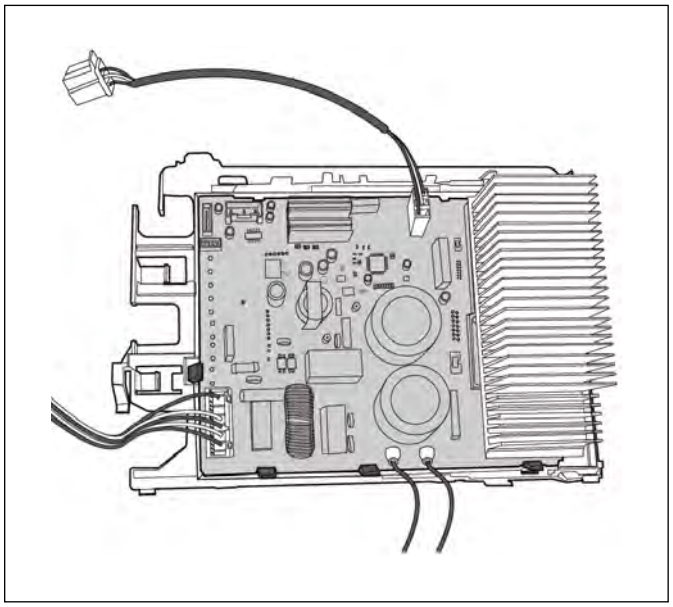


Figure 149

6. Then remove the electronic control board (4 hooks).

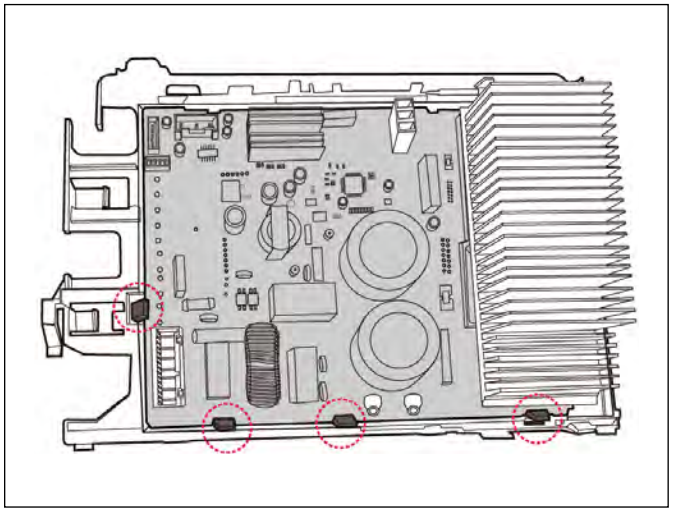


Figure 150

PCB Board 12

1. Unfix the hooks and then open the electronic control box cover (4 hooks).

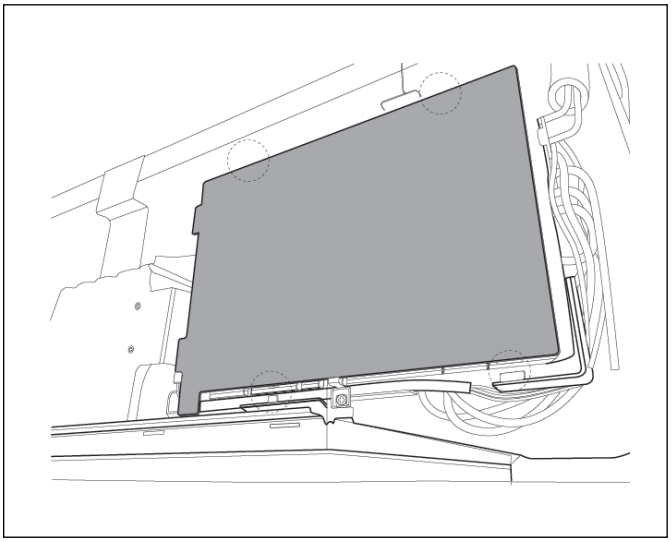


Figure 151

2. Remove 6 screws on the electronic control board and then turn over the electronic control board.

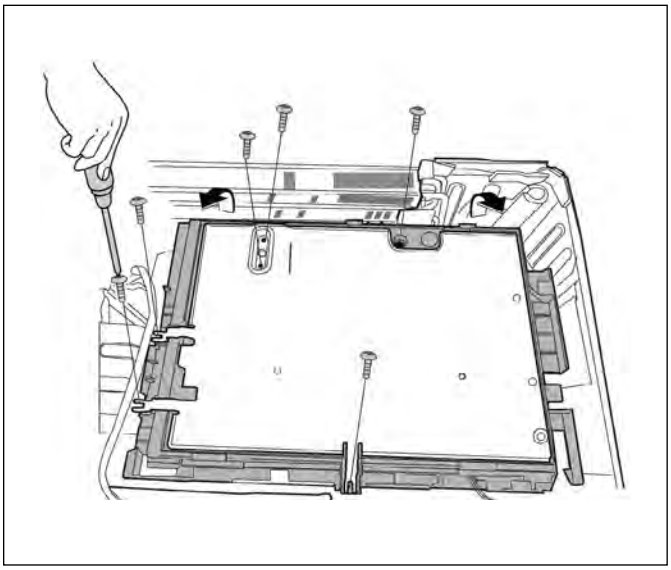


Figure 152

3. Pull out the connectors.
4. Remove the 4 screws and then remove the electronic control board.

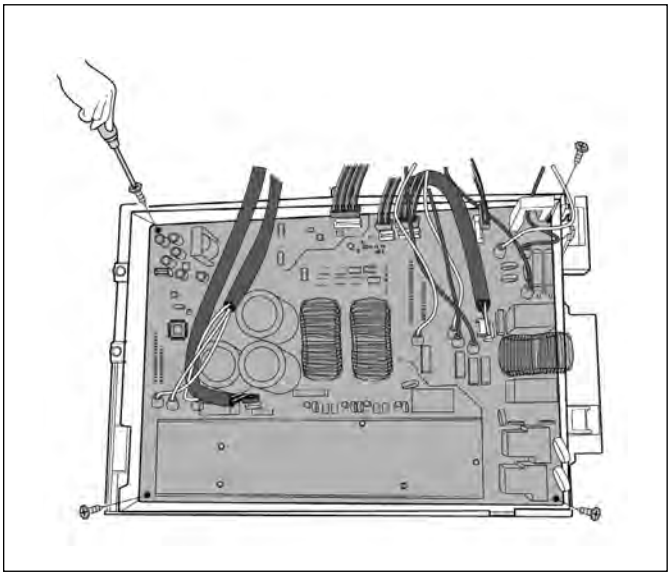


Figure 153

8.2.3 Fan Assembly

Remove the panel plate (refer to 9.4.1 Panel Plate) before disassembling fan.

1. Remove the nut securing the fan with a spanner.
2. Remove the fan.

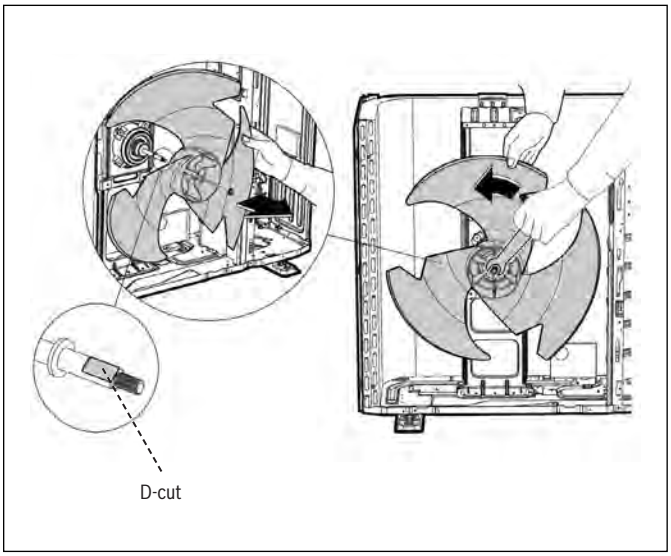


Figure 154

8.2.4 Fan Motor

Remove the panel plate,the connection of fan motor on PCB and fan assembley (refer to 9.4.1, 9.4.2 & 9.4.3) before disassembling fan motor.

1. Remove the fixing screws of the fan motor (4 screws).
2. Remove the fan motor.

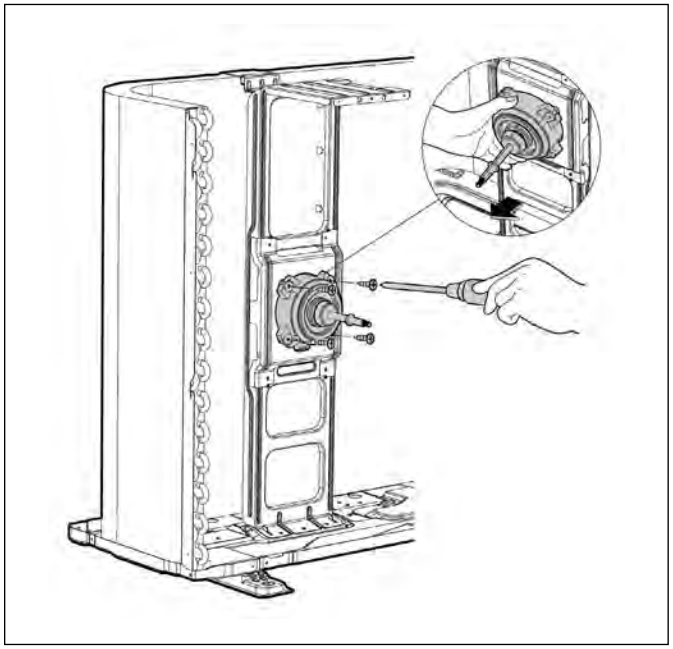


Figure 155

8.2.5 Sound Blanket

Remove the panel plate (refer to 9.41 Panel plate) before disassembling sound blanket.

1. Remove the sound blanket (side and top)

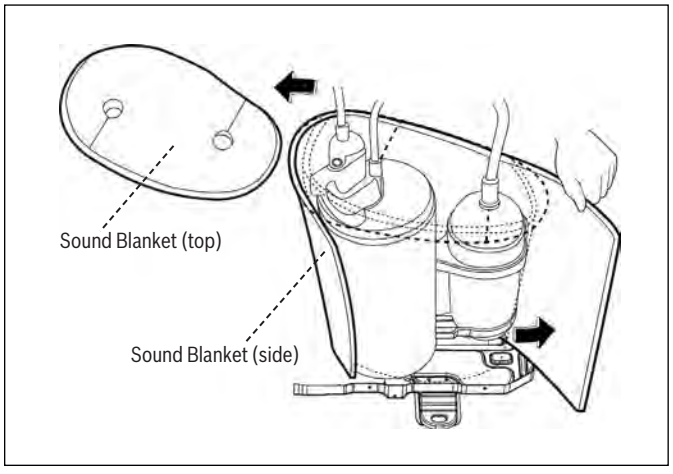


Figure 156

8.2.6 Four-Way Valve

WARNING: CONTAINS REFRIGERANT

- Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by HVAC professionals.

Remove the panel plate, connection of four-way valve on PCB (refer to 9.4.1 Panel plate and 9.4.2 Electrical parts) before disassembling sound blanket.

1. Heat up the brazed parts and then detach the the four-way valve and the pipe.
2. Remove the four-way valve assembly with pliers.

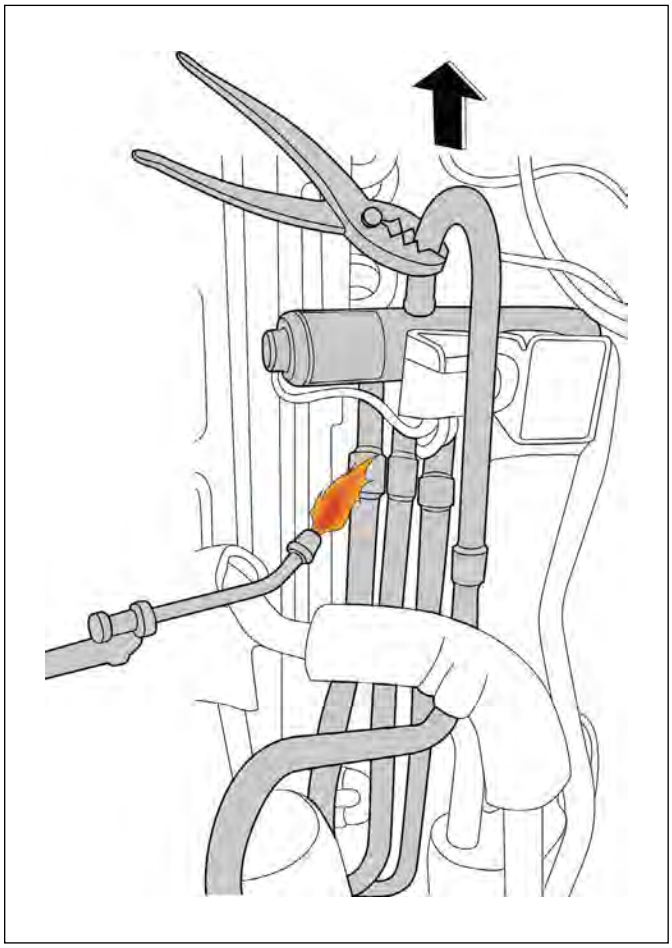


Figure 157

8.2.7 Compressor

WARNING: CONTAINS REFRIGERANT

- Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by HVAC professionals.

Remove the panel plate, connection of compressor on PCB (refer to 8.2.1 Panel plate and 8.2.2 Electrical parts) before disassembling sound blanket.

1. Remove the flange nut of terminal cover and remove the terminal cover.

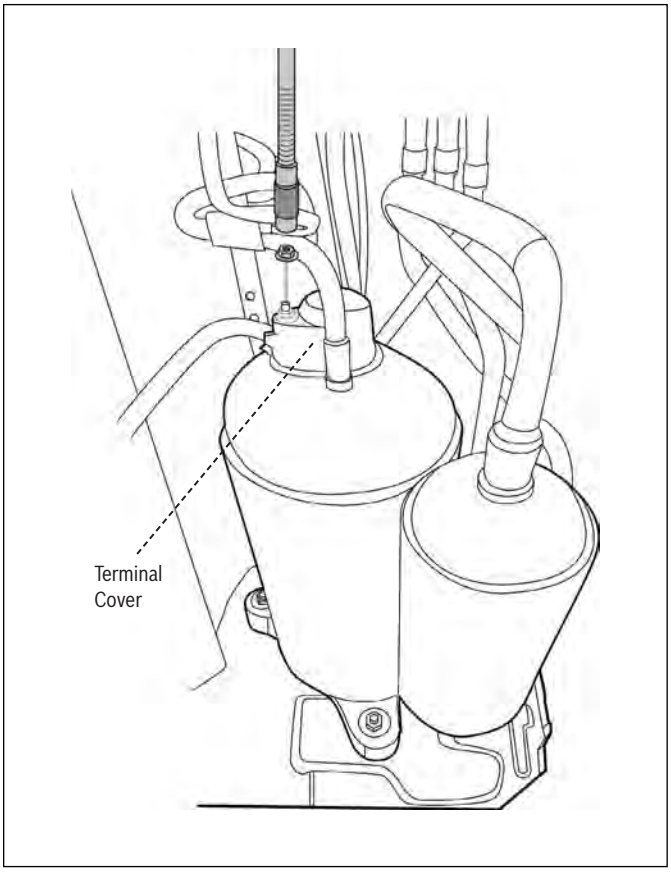


Figure 158

2. Disconnect the connectors.

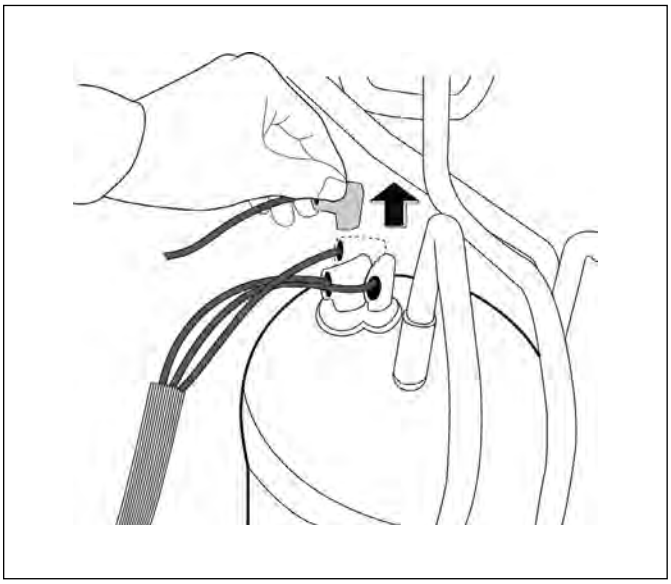


Figure 159

Online Help Resources

Alternatively, please visit our Service & Support webpage to find FAQs, videos, service bulletins, and more; bosch-homecomfort.us/service or use your cellphone to scan the code below.

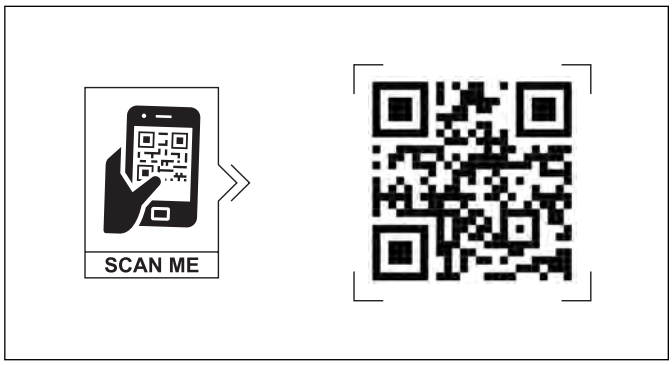


Figure 160

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