

Virtus

SERIES

SERVICE MANUAL

VIRTU-C-1218W-E/VIRTU-C-1218W

VIRTU-C-1818W-E/VIRTU-C-1818W

VIRTU-C-2418W-E/VIRTU-C-2418W

VIRTU-C-3618W-E/VIRTU-C-3618W

VIRTU-C-1218W-110-E/VIRTU-C-1218W-110

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1.Range & Conditions

Operating Range

Operating Modes	Temperature	Indoor Temperature	Outdoor Temperature
Cooling	Max.	32°C DB/27°C WB	43°C DB/26°C WB
	Min.	21°C DB/15°C WB	21°C DB

Operating Conditions

	Rated Operating Conditions	
	Indoor Temperature	Outdoor Temperature
Cooling	27°C DB/19°C WB	35°C DB/24°C WB

DB: Dry-bulb temperature

WB: Wet-bulb temperature

2. Control Specifications

2.1 Freeze-prevention control:

Pipe coil sensor detects the temperature of indoor heat exchanger. If the temperature is lower than the prescribed value, then the unit decreases the rotary speed of compressor to keep the indoor heat exchanger from freezing. If the temperature exceeds the lower limit value, then please stop decreasing frequency; If the temperature exceeds the upper limit value, then the unit will exist freeze-prevention protection. If the temperature is lower than certain prescribed value, the unit will stop.

2.2 Over current-prevention control

If the value of input current detected by outdoor current sensor is higher than the prescribed value, the rotary speed of compressor will be decreased and controlled in order to keep the current value not higher than the upper limit value; compressor will come to normal operation when the current value drops to the lower limit value; If current value is higher than the upper limit value, compressor will stop.

2.3 Cooling overload working

In cooling operation, if the temperature of outdoor heat exchanger is too high, the speed of compressor will be adjusted to a lower gear automatically, and sometimes compressor may be stopped.

2.4 Sleep control (Cooling mode)

Press "sleep" button on remote controller, the unit will control rotary speed of compressor and indoor fan motor and enters sleep operation:

Rotary speed of fan motor: medium level or low level

Rotary speed of compressor: decrease

The set temperature will increase 1°C automatically after running for 1 hour; After running for another 1 hour, the set temperature will go on increasing 1°C. But the set temperature displayed on LED will remain unchanged.

2.5 High-loaded control

Indoor pipe coil temperature sensor examines evaporator temperature, if temperature exceeds the prescribed value, the frequency does not increase; if temperature exceeds upper limit value, the rotary speed of compressor will be gradually decreased to avoid too high heat load; if temperature is lower than the prescribed value, the frequency does not decrease; if temperature is lower than lower limit value, unit will exist high-loaded control and enters normal operation.

2.6 Over current control

If the value of input current detected by outdoor current sensor is higher than the prescribed value, the rotary speed of compressor will be decreased and controlled in order to keep the current value not higher than the upper limit value; compressor will come to normal operation when the current value drops to the lower limit value; If current value is higher than the prescribed value, compressor stops.

2.7 Time lag protection function for compressor

In order to protect compressor (expect for defrost mode), there will be a 3-minute delay to restart when compressor stops from working condition. And there is still 3 minute delay when the compressor is firstly started.

2.8 UVC function (optional)

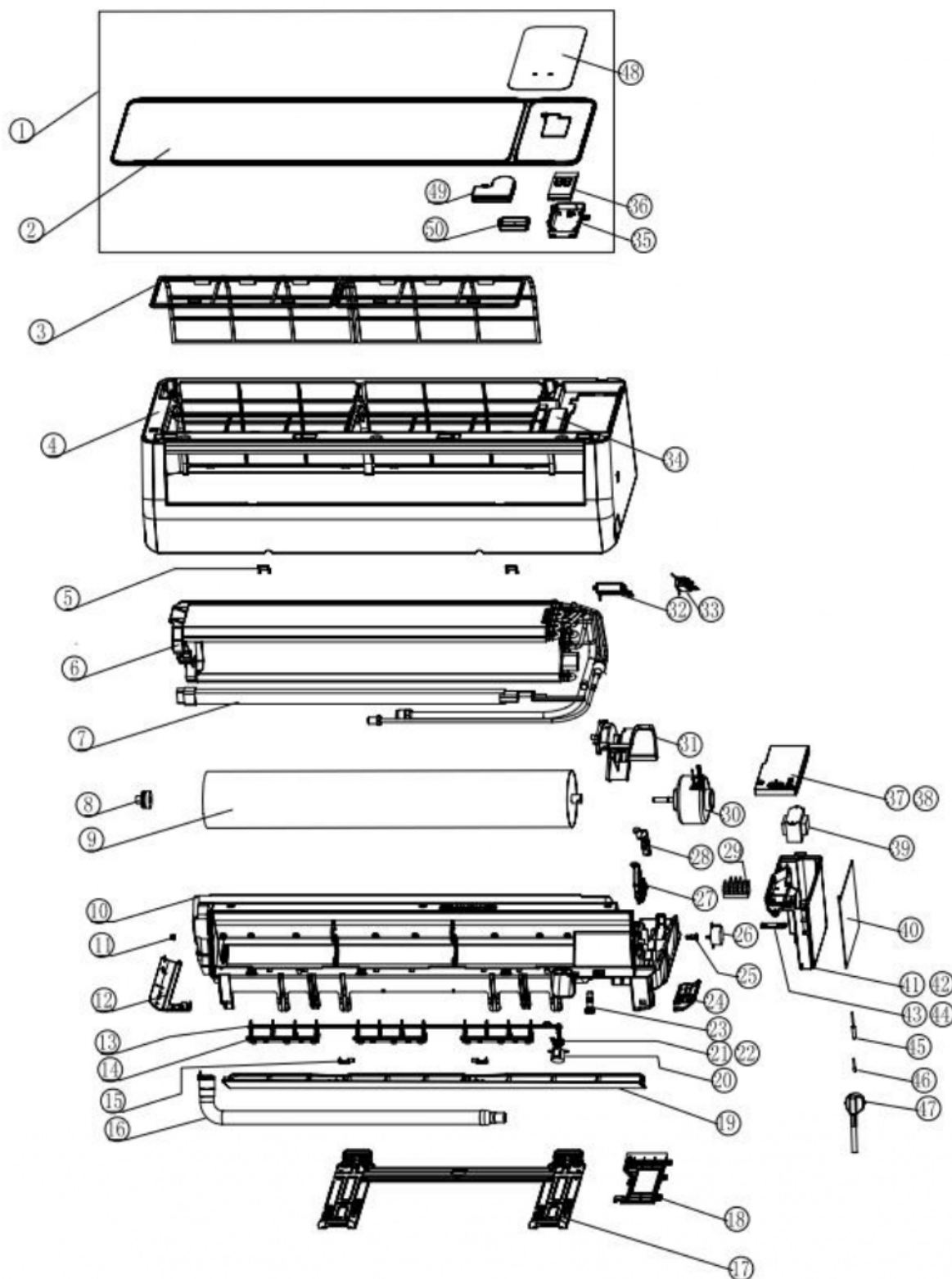
Press the UVC bottom on remote controller to start or stop UVC sterilize function.

Note:

1. This appliance contains a UVC lamp.
2. Unintended use of the appliance or damage to the housing may result in the escape of dangerous UVC radiation. UVC radiation may, even in small doses, cause harm to the eyes and skin.
3. Appliances that are obviously damaged must not be operated. Prior to cleaning or other maintenance, the appliance must be disconnected from the supply mains.

3. Exploded view

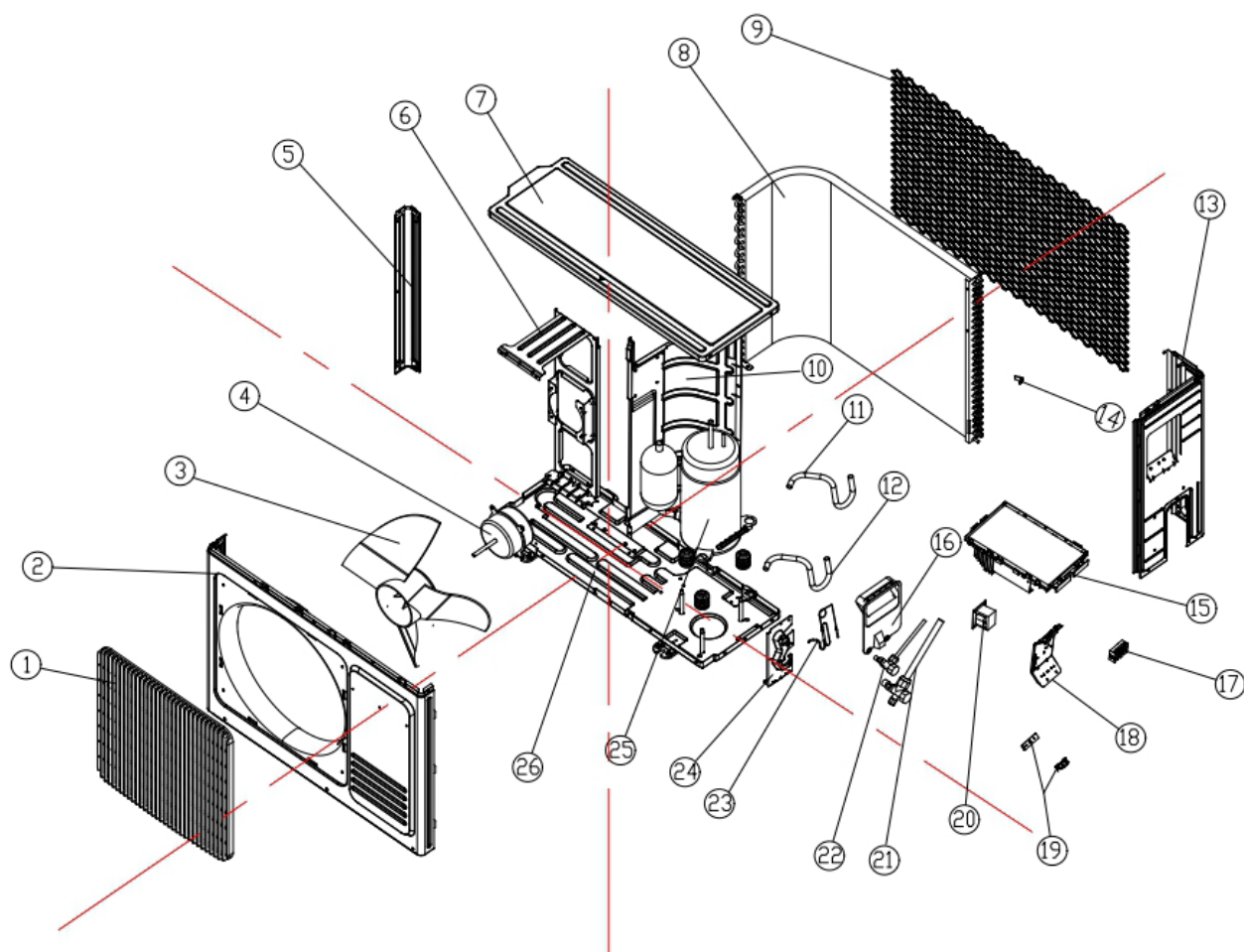
3.1 Exploded view for indoor unit



NO	Materials Description	NO	Materials Description
1	Front panel sub assembly	26	Swing vane motor
2	Front panel	27	Motor support seat
3	Air filter	28	Motor pressing plate
4	Medium frame	29	Terminal block
5	Screw cover	30	Fan motor
6	Evaporator sub assembly	31	Motor cover
7	Electric heating rod (optional)	32	Positive and negative ion generate (optional)
8	Bearing	33	UVC module (optional)
9	Cross flow fan	34	Wife module (optional)
10	Bottom frame sub assembly	35	Display box
11	Axle sleeve	36	Panel as-display sub assembly
12	Left decorative cover plate	37	Electric control box cover
13	Connecting rod	38	Electric control box cover
14	Air deflector	39	Transformer (optional)
15	Sliding shaft plate	40	P.C.B assembly
16	Hose as-drain sub assembly	41	Electric control box
17	Hanging wallboard	42	Electric control box
18	Piping pressing plate	43	Power cord pressing plate
19	Swing leaf	44	Power cord pressing plate
20	Stepping motor (optional)	45	Pipe temperature sensor
21	Crankshaft	46	Room temperature sensor
22	Crankshaft	47	Power line
23	Water shutoff plug (optional)	48	Display window
24	Right decorative cover plate	49	Voice box assembly
25	Anti electric shaft	50	Microphone box assembly

NOTE:Actual product may be different from above graphics,please refer to actual products.

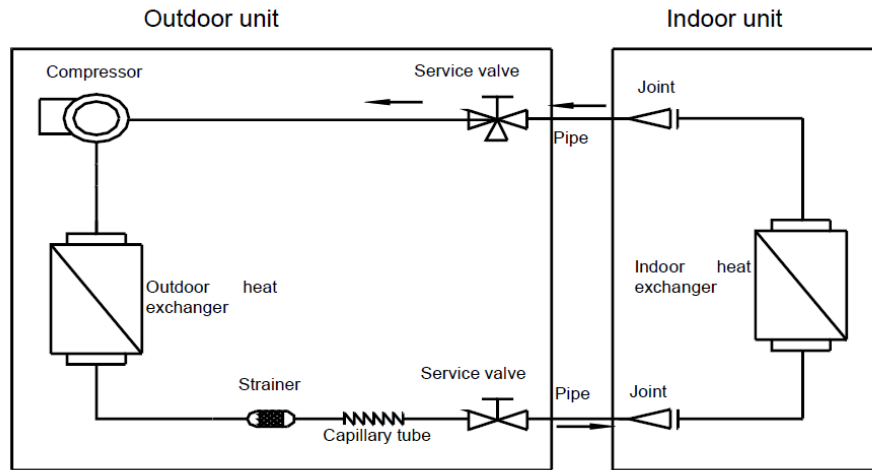
3.2 Exploded view for outdoor unit



NO.	Materials Description
1	front net cover
2	front plate sub assembly
3	propeller fan
4	fan motor
5	Metal support
6	motor bracket sub assembly
7	Top cover assembly
8	condenser sub assembly
9	rear net cover
10	partition board
11	suction tube
12	discharge tube
13	Lateral plate assembly
14	Sensor holder
15	outdoor electric control sub assembly
16	electric cover sub assembly
17	Platen
18	Terminal seat
19	Electrical instillation board
	Electrical installation board
20	reactor
21	cut-off valve 3/8
22	cut-off valve 1/4
23	capillary sub assembly
24	Valve mounting plate
25	compressor
26	bottom plate sub assembly

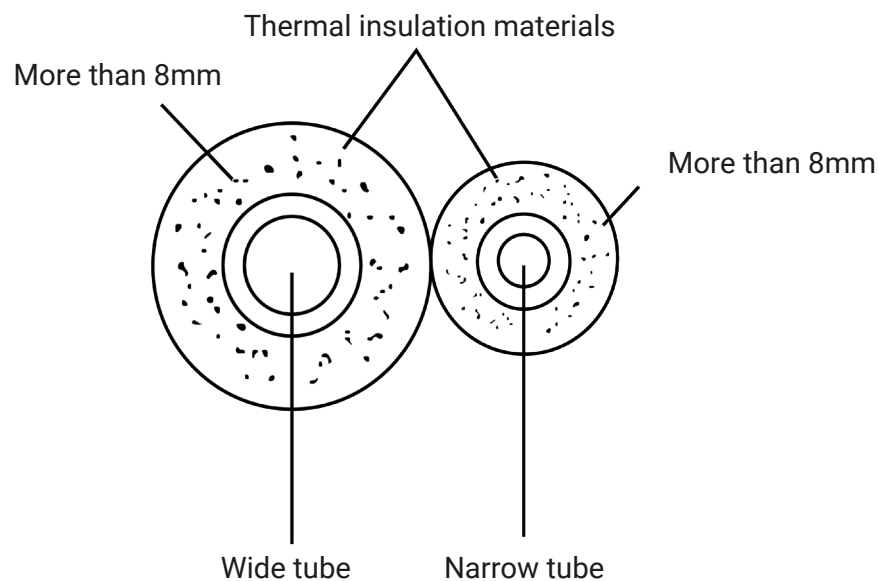
NOTE:Actual product may be different from above graphics,please refer to actual products.

4. Refrigerant Flow Diagram



Thermal insulating of refrigerant pipeline

To prevent heat loss and condensed water from dropping on the floor, the wide and narrow tube of air conditioner should be wrapped with thermal insulating materials. For using capillary tube, and the tubes are in low temperature, the thickness of thermal insulating materials shall be more than 8mm.

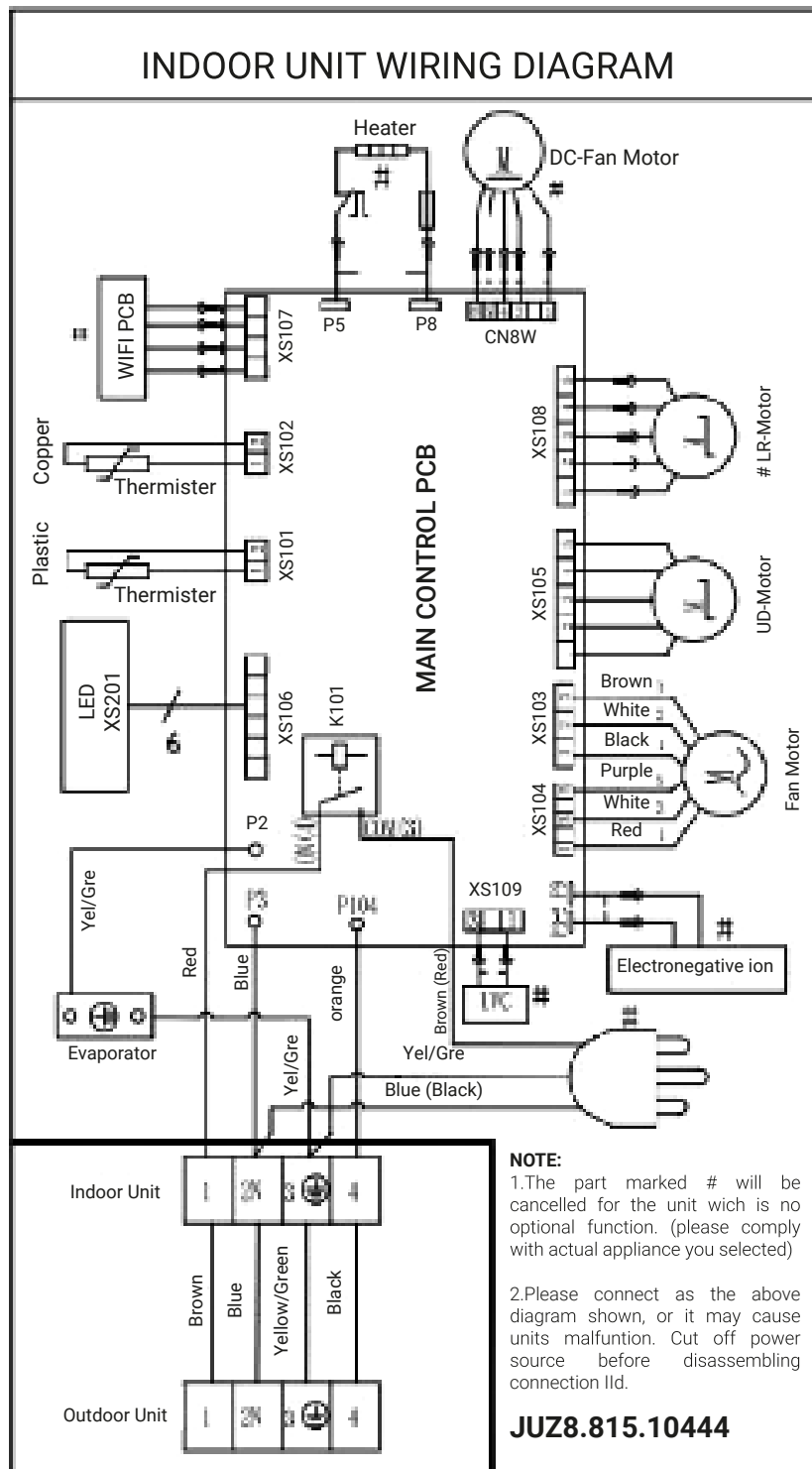


5. Circuit Diagram

5.1 Electrical wiring diagram for indoor unit

WARNING

To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning Warning any electrical parts.

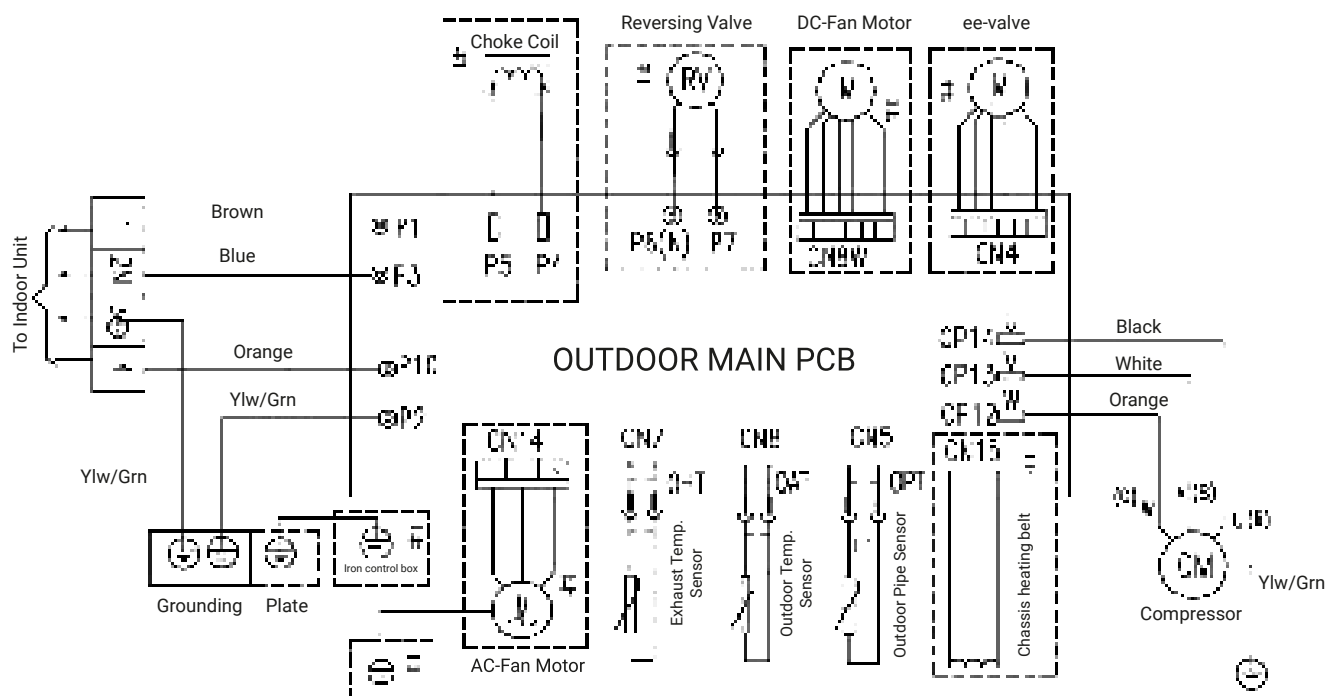


5.2 Electrical wiring diagram for outdoor unit

WARNING

To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning Warning any electrical parts.

OUTDOOR UNIT WIRING DIAGRAM



NOTE:

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

JUZ8.815.706

6. Troubleshooting

6.1 Check before troubleshooting

WARNING

**High-voltage will result in electric shock or death.
Always cut off the power before checking and maintaining.**

Check power line

To check whether the power line is connected correctly according to the wiring diagram.



Caution:

Please connect as the above diagram shown, or it may cause units malfunction. Cut off power source before disassembling connection lid.

6.1.2 Check unit wiring

To check whether the inter-unit wires are connected correctly.

6.1.3 .Check power supply

To check whether the power supply is in the specified range.

To check whether the power supply is being supplied.

6.1.4 Check connector and lead wire of indoor and outdoor units.

To check whether the insulating cover of the lead wire is damaged.

To check whether the lead wire and the connector are connected well

To check wires.

6.1.5 Errors and protections (Users can press test code 17 to check the errors codes or protection codes)

ERROR CODES			
IDU display	Fault Details	Failure Cause	Action
EE	Indoor unit EEPROM fault	IDU main PCB is damaged.	Replace a new IDU main PCB
F0	Indoor fan motor fault	IDU fan is blocked.	Clean the fan's block
		IDU fan motor is damaged.	Replace a new IDU fan motor
		IDU main PCB is damaged.	Replace a new IDU main PCB
E1	Indoor PCB Zero crossing fault	IDU main PCB is damaged.	Replace a new IDU main PCB
F3	Indoor coil sensor fault	IDU coil sensor is loose 、 short circuit or open circuit.	Loose : connect it well again ; Short circuit or open circuit: replace a new IDU coil sensor
		IDU main PCB is damaged.	Replace a new IDU main PCB
F1	Indoor room temperature sensor fault	IDU room temperature sensor is loose、 short circuit or open circuit.	Loose : connect it well again ; Short circuit or open circuit: replace a new IDU room temperature sensor
		IDU main PCB is damaged.	Replace a new IDU main PCB.
F6	Indoor and outdoor communication fault	The IDU and ODU connecting wire were connected in wrong order when installation.	Check the connecting wire to confirm it correct.
		Poor contact between the connecting wire cable and the terminal block	Connect it well again.
		The connecting wire is damaged	Replace a new connecting wire
		No ODU rated voltage output or IDU main PCB is damaged	Check the power supply voltage or replace a new IDU main PCB
		ODU main PCB is damaged.	Replace a new ODU main PCB
EF	Outdoor unit EEPROM fault	ODU main PCB is damaged.	Replace a new ODU main PCB
E4	Compressor starting abnormal (Phase failure,reverse)	ODU compressor connecting wire is loose or damaged	Connect the wire well, or replace a new compressor connecting wire.
		ODU compressor connecting wire sequence is wrong	Check the ODU compressor connecting wire sequence
		ODU main PCB is damaged.	Replace a new ODU main PCB
E3	Compressor out of	ODU main PCB is damaged.	Replace a new ODU main PCB

	step fault		
F9	IPM module fault intelligent power module	ODU main PCB is damaged.	Replace a new ODU main PCB
F5	Exhaust temperature sensor fault	ODU exhaust temperature sensor is loose、short circuit or open circuit	Loose : connect it well again ; Short circuit or open circuit: replace a new ODU exhaust temperature sensor
		ODU main PCB is damaged.	Replace a new ODU main PCB
F4	Outdoor coil temperature sensor fault	ODU coil temperature sensor is loose、short circuit or open circuit	Loose : connect it well again ; Short circuit or open circuit: replace a new ODU coil temperature sensor
		ODU main PCB is damaged.	Replace a new ODU main PCB
F2	Outdoor ambient temperature sensor fault	ODU ambient temperature sensor is loose、short circuit or open circuit	Loose : connect it well again ; Short circuit or open circuit: replace a new ODU ambient temperature sensor
		ODU main PCB is damaged.	Replace a new ODU main PCB
E2	Outdoor DC fan motor fault	DC fan motor fault	Replace a new DC fan motor
		ODU main PCB is damaged or fan model selection in EEPROM is wrong.	Replace a new ODU main PCB
PROTECTIONS			
PE	Heating outdoor ambient temperature over-high protection	Normal phenomenon,it is the self-protection of the air conditions	The system run in high load may lead to following protections ; Also a wrong sensor may lead to the protections too, you can check the sensor according to error codes
P4	Heating indoor coil overheat protection		
P5	Cooling indoor coil anti-freezing protection		
P9	IPM over-high temperature protection	Normal phenomenon,it is the self-protection of the air conditions	The system run in high load, the devices temperature is too high
P7	Outdoor unit over-high/over-low AC voltage protection	Power supply voltage is too high or too low	Check the power supply voltage, the voltage range is136-276V

7. Checking Electrical Components

7.1 Measure insulation resistance

The insulation is in good condition if the resistance exceeds 2 MΩ.

7.1.1 Power supply wires

Clamp the ground pins of the power plug with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 1)

Then measure the resistance between the ground wire and the other power wire. (Fig. 1)

7.1.2 Indoor unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw on the terminal plate. (Fig. 2)

Note that the ground line terminal should be skipped for the check.

7.1.3 Outdoor unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw where power supply lines are connected on the terminal plate. (Fig. 2)

Fig. 1

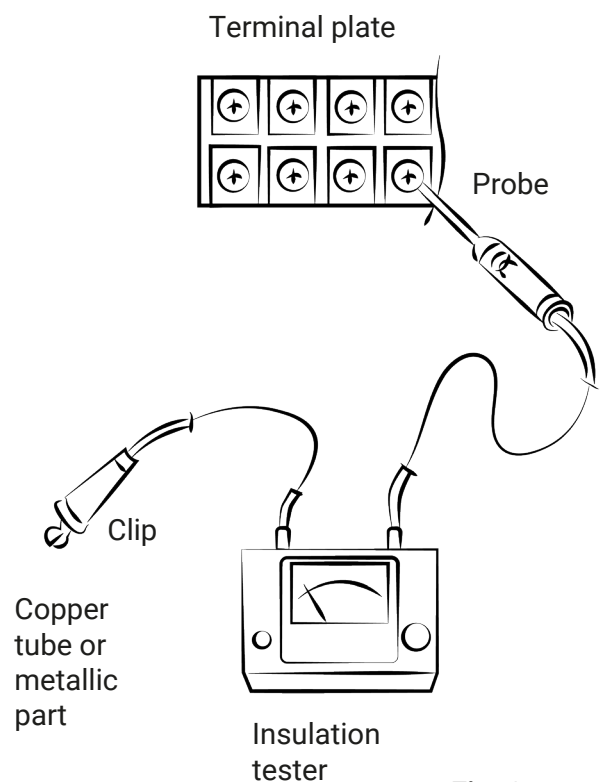
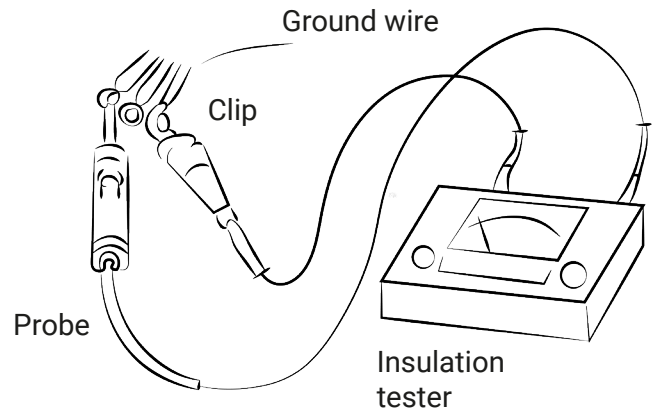


Fig. 2

7.1.4 Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate. Capacitor, etc.

Similarly disconnect the connector. Then measure the insulation resistance. (Fig. 3 and 4)

NOTE: Refer to electric wiring diagram. If the probe can't enter the poles because the hole is too narrow then use a probe with a thinner pin.

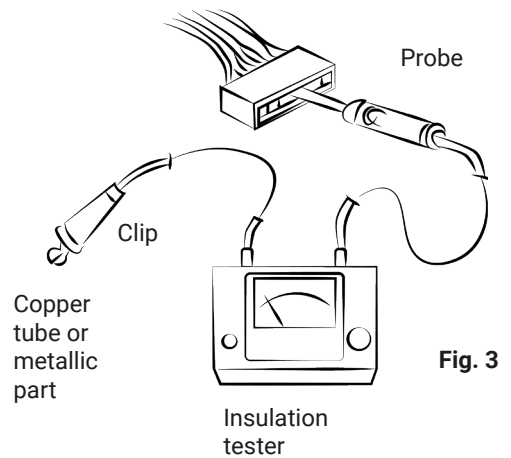


Fig. 3

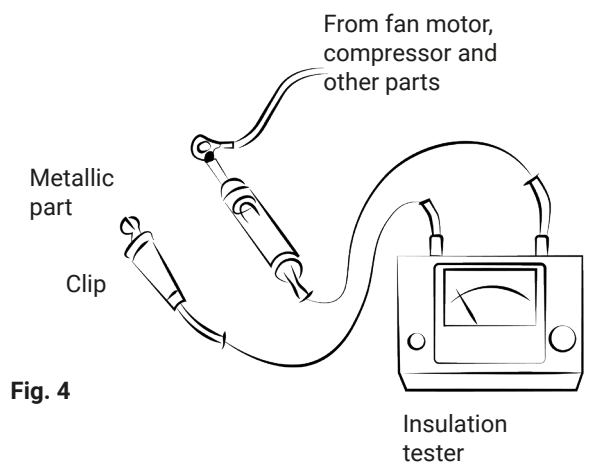


Fig. 4

7.2 Checking continuity of fuse on PCB ass'y

Remove the PCB ass'y from the electrical component box. Then pull out the fuse from the PCB ass'y. (Fig. 5)

Check for continuity using a multimeter as shown in Fig. 6

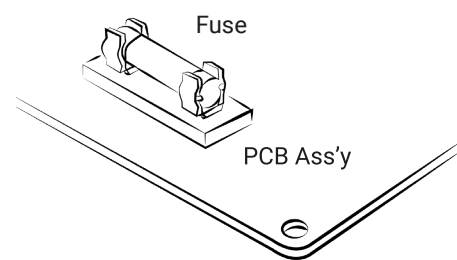


Fig. 5

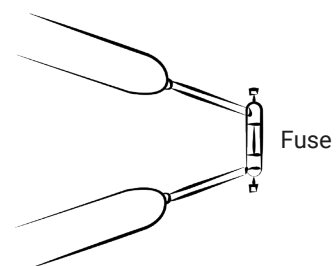


Fig. 6