TuTToKool

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Service manual

Air Handler Unit (ECM/PSC)

1. System instructions

1.1 Refrigerant Circuit

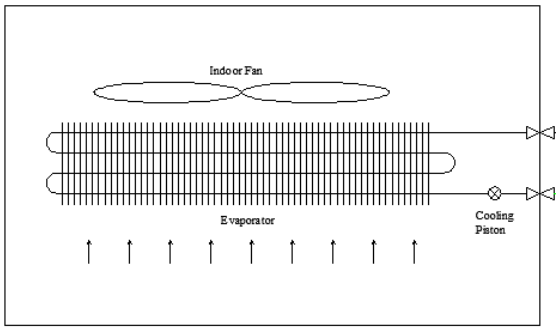
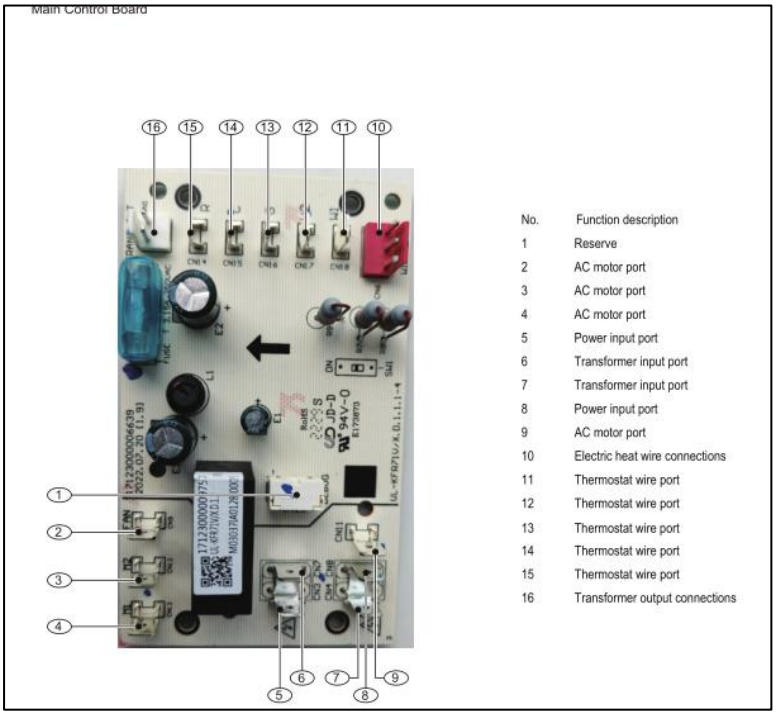


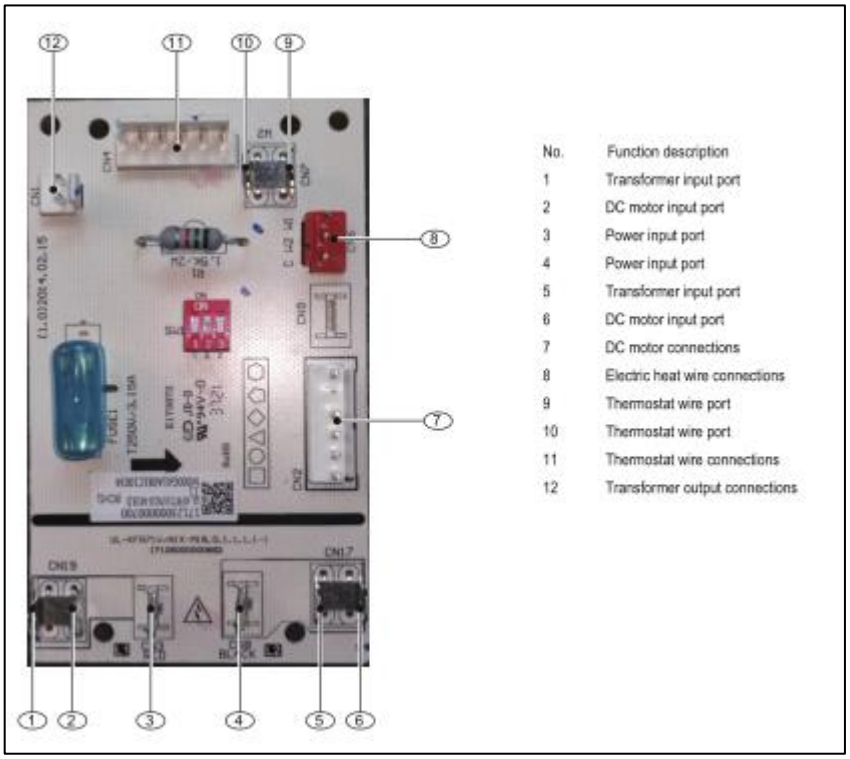
Fig. 1 Refrigerant Circuit

2. PCB Board

PCB Board for PSC unit

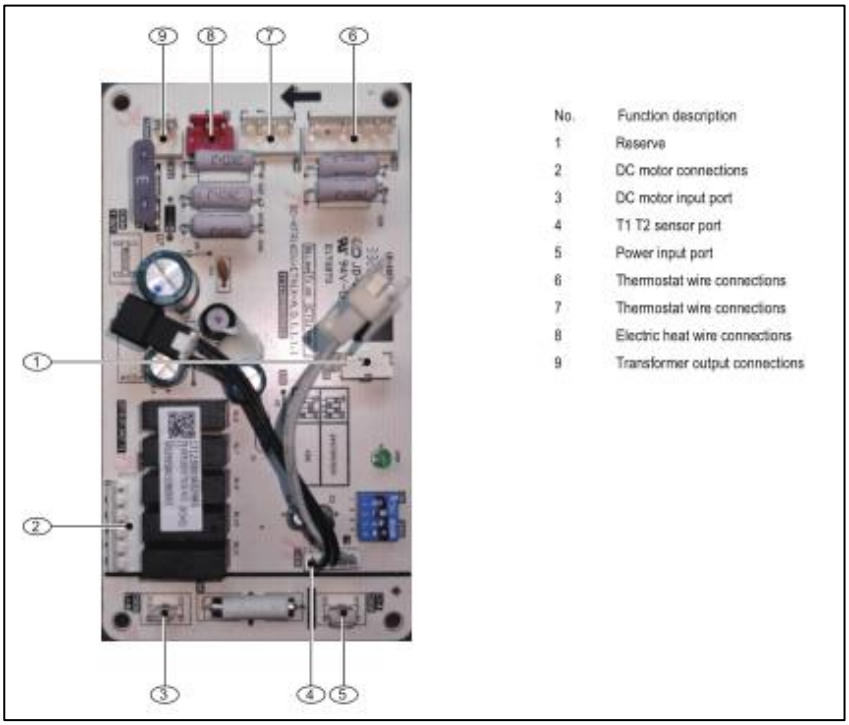


PCB Board for 24/36/60 ECM Unit



No.	Function description
1	Transformer input port
2	DC motor input port
3	Power input port
4	Power input port
5	Transformer input port
6	DC motor input port
7	DC motor connections
8	Electric heat wire connections
9	Thermostat wire port
10	Thermostat wire port
11	Thermostat wire connections
12	Transformer output connections

PCB Board for 61 Kbtu/h ECM Unit



No.	Function description
1	Reserve
2	DC motor connections
3	DC motor input port
4	T1 T2 sensor port
5	Power input port
6	Thermostat wire connections
7	Thermostat wire connections
8	Electric heat wire connections
9	Transformer output connections

3. Wired controller

3.1 Wired Controller: KJR-25B1/BK-E

KJR-25B1/BK-E

3.1.1 Wired controller specifications

Model	KJR-25B1/BK-E
Power Supply Voltage	24V AC
Ambient Humidity Range	RH40%~RH90%

3.1.2 Performance Features

1. Operating mode: Cool, heat, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).
5. Easy to installation, connect with indoor unit via the four ports of W1,G, R, C.
6. Remote receiving function.

4. Wiring and Fan Speed Setting

4.1 For PSC Unit

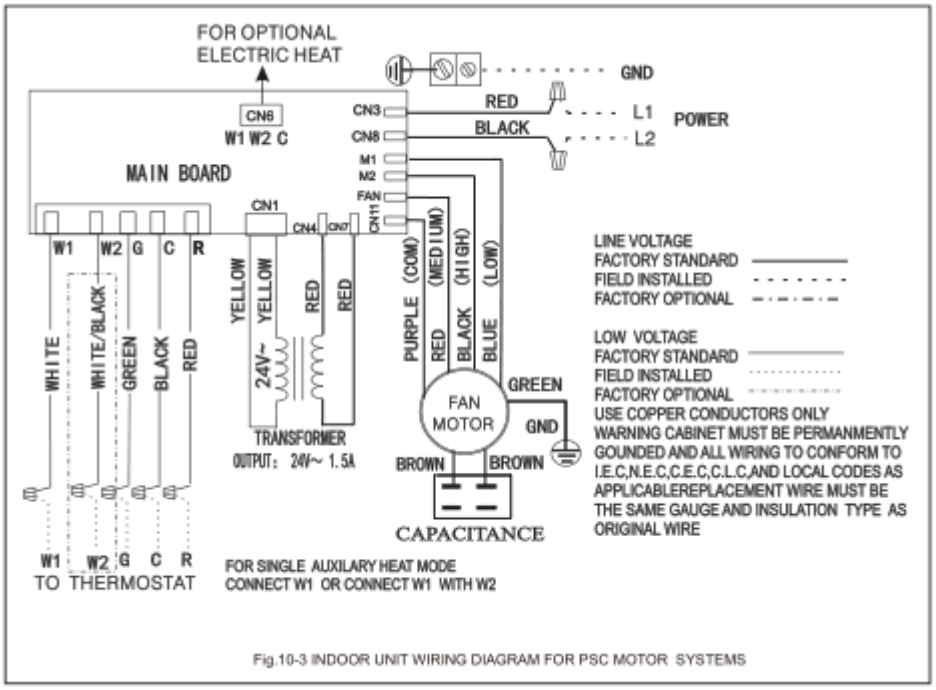


Fig.10-3 INDOOR UNIT WIRING DIAGRAM FOR PSC MOTOR SYSTEMS

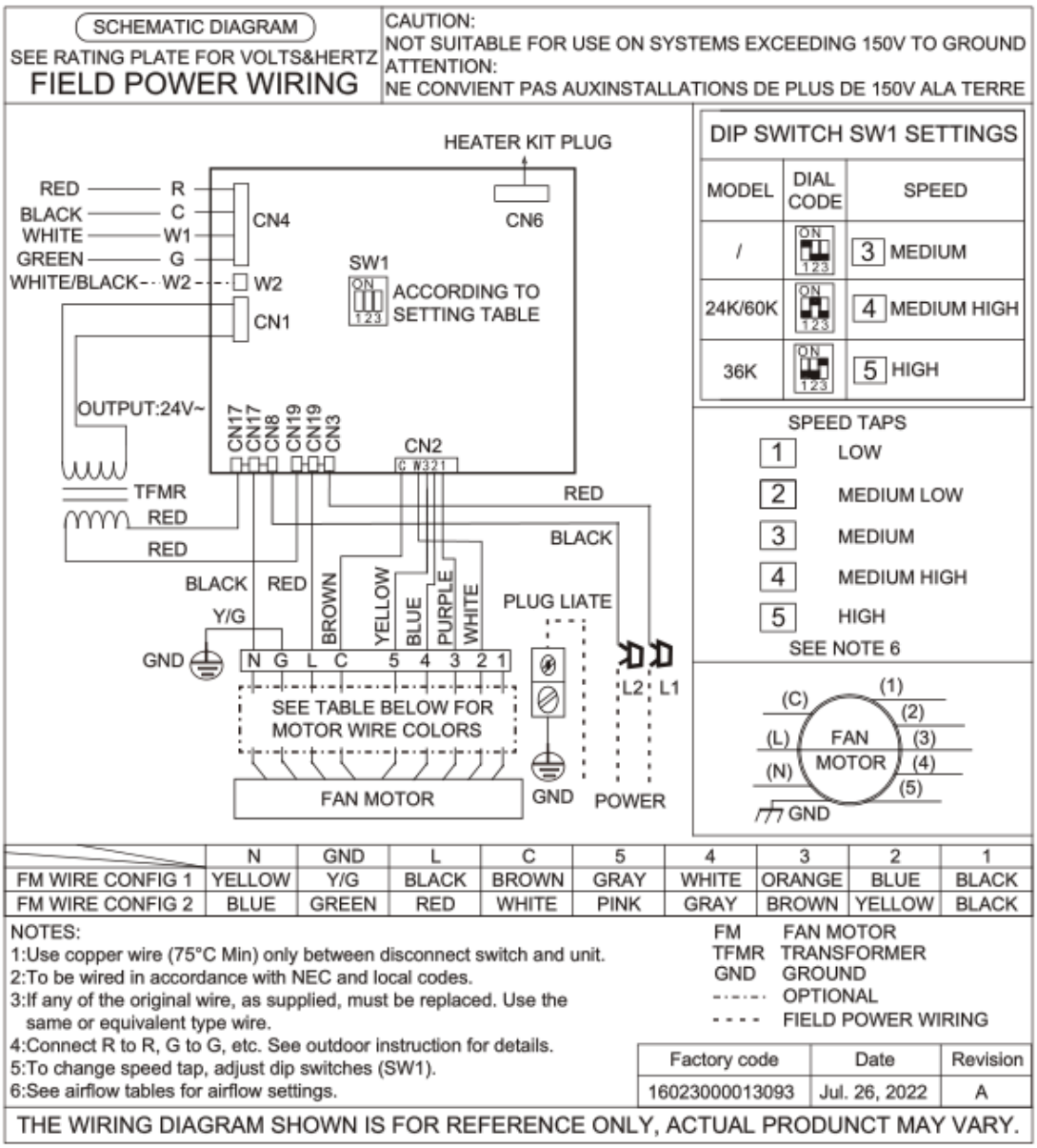
Description of fan speed switch:

1. Default as medium speed of factory settings.
2. High speed wiring: Switch to high speed (black wire) and connect with FAN terminal, while medium speed (red wire) connect with M2 terminal.
3. Low speed wiring: Switch to low speed (blue wire) and connect with FAN terminal, while medium speed (red wire) connect with M1 terminal.

Terminal / Fan speed	Fan	M1	M2
Medium	Red	Blue	Black
High	Black	Blue	Red
Low	Blue	Red	Black

4.2 For ECM Unit

4.2.1 24/36/60 Kbtu/h ECM Fan Unit



	N	GND	L	C	5	4	3	2	1
FM WIRE CONFIG 1	YELLOW	Y/G	BLACK	BROWN	GRAY	WHITE	ORANGE	BLUE	BLACK
FM WIRE CONFIG 2	BLUE	GREEN	RED	WHITE	PINK	GRAY	BROWN	YELLOW	BLACK

NOTES:
1:Use copper wire (75°C Min) only between disconnect switch and unit.
2:To be wired in accordance with NEC and local codes.
3:If any of the original wire, as supplied, must be replaced. Use the same or equivalent type wire.
4:Connect R to R, G to G, etc. See outdoor instruction for details.
5:To change speed tap, adjust dip switches (SW1).
6:See airflow tables for airflow settings.

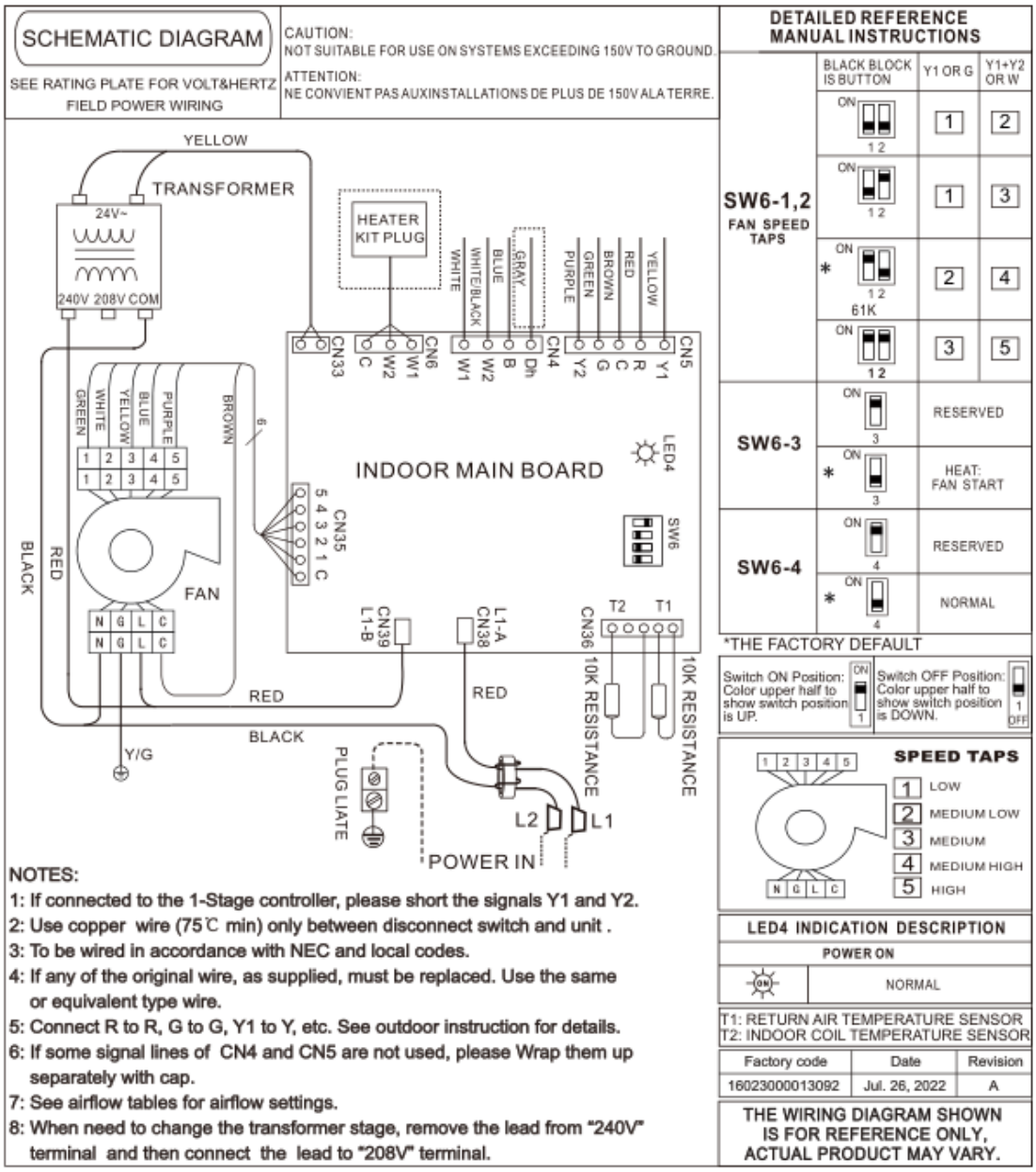
FM FAN MOTOR
TFMR TRANSFORMER
GND GROUND
-·-·- OPTIONAL
- - - - FIELD POWER WIRING

Factory code	Date	Revision
16023000013093	Jul. 26, 2022	A

THE WIRING DIAGRAM SHOWN IS FOR REFERENCE ONLY, ACTUAL PRODUNCT MAY VARY.

For ECM Unit, fan speed can be switched by SW1.

4.2.2 61 Kbtu/h ECM Fan Unit



For ECM Unit, fan speed can be switched by SW6-1/2.

5. TXV replace

If necessary, the spool can be replaced with a thermal expansion valve

Unit model	TXV kit model
18,24,36	TR6-3TON(067U3467)
48	TR6-4TON(067U3016)
60	TR6-5TON(067U3477)

TXV-Replace Steps:

Step 1: Remove the screws and front coil panel.

Step 2: Remove the rubber plugs from the liquid and vapor lines

Step 3: Unwrap copper strap on sensing bulb and dismount the sensing bulb

Step 4: Using a backup wrench to loose the nut of TXV

Step 5: Take off TXV mounting clip ring.

Step 6: Use wet rag to protect pipe in coil, Al-Copper transition section (The black section of vapor line)

Step 7: Braze and take off two pipes from TXV, Be extra care not to overheat the pipes

Step 8: Wrap the new TXV with a wet rag to prevent overheating. Connect and braze pipe to new TXV. While brazing, use nitrogen flow and braze all connections

Step 9: Replace a new sealing ring to the pipe joint, connect the TXV with pipe joint and tight the nut to 22 (±2) ft-lb .

Step 10: Allow tube to cool and pressurize line sets with 150 PSI of nitrogen to check braze connections for leaks Make repairs if needed.

Step 11: Use the supplied copper straps to secure the TXV sensing bulb on top of the vapor line as pictured.

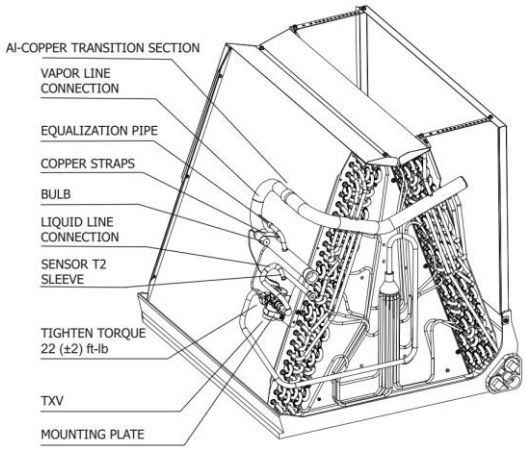
Step 12: Use clip ring to hold TXV on mounting plate.

Step 13: Insulate the entire vapor line and sensing bulb. It is also recommended to insulate the TXV and liquid line to prevent condensation in hot humid environments.

Step 14: Replace the front coil pance and secure in place

Step 15: Follow the steps in the installation guide for vacuum requirements and system start up procedures.

Step 16: Allow system to run for an additional 10 minutes to verify the subcooling and superheat readings.

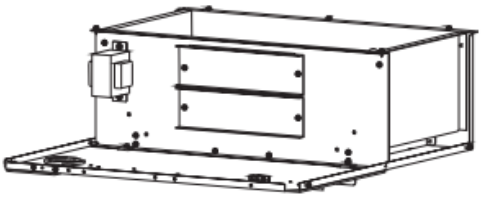


6. ELECTRIC HEATER KITS INSTALLATION

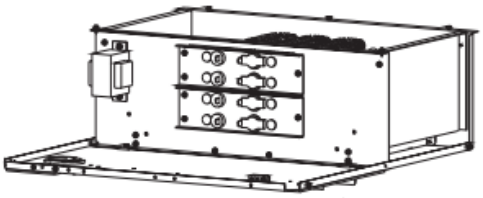
ELECTRIC HEATER KITS INSTALL INFORMATION

NOTE:
When the unit is installed in a hot and humid place, If the humidity inside the installation space might exceed 86℉ and RH 80%, if install electric heater kits, the extra gaskets shall be installed as below.

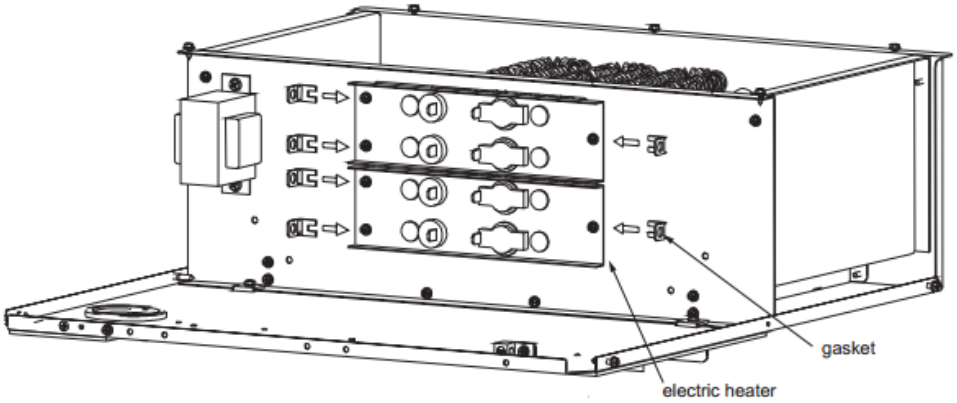
Step 1: Remove the screws and panels



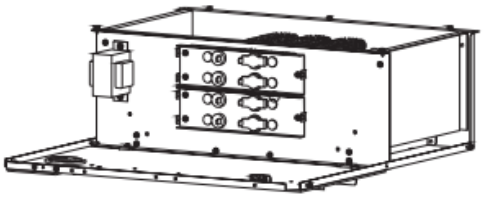
Step 2: Install electric heater and screws .
Don't tighten screws



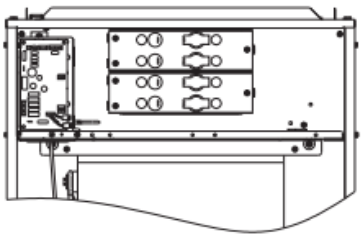
Step 3: Add gasket under electric heater to enlarge gap, The gaskets are in accessory bag that be bought separately.



Step 4: Tighten screws



Step 5: Finished view



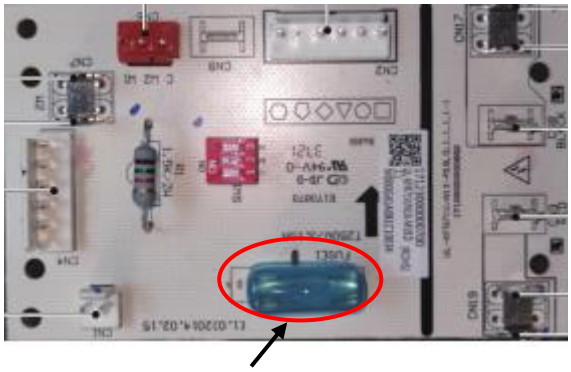
ELECTRIC HEATER KITS INSTALL INFORMATION
(panel removed "view")

7. Troubleshooting

7.1 Fuse check

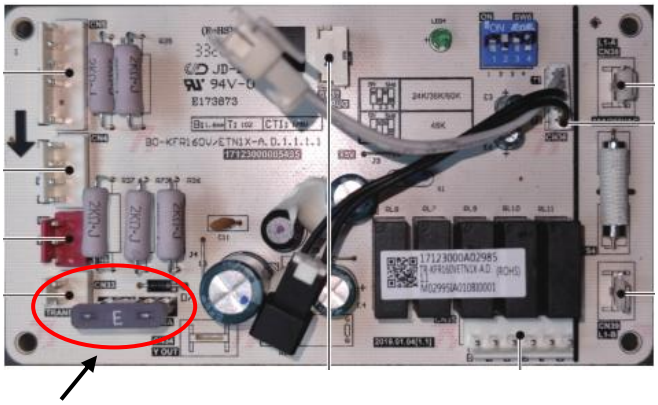
If indoor unit can't operate normally , check the fuse first.

Fuse for 24/36/60 Kbtu/h ECM Unit



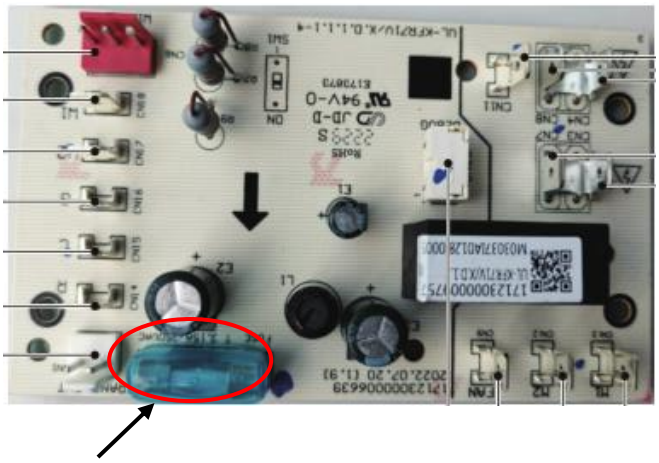
Fuse (3A)

Fuse for 61 Kbtu/h ECM Unit



Fuse (3A)

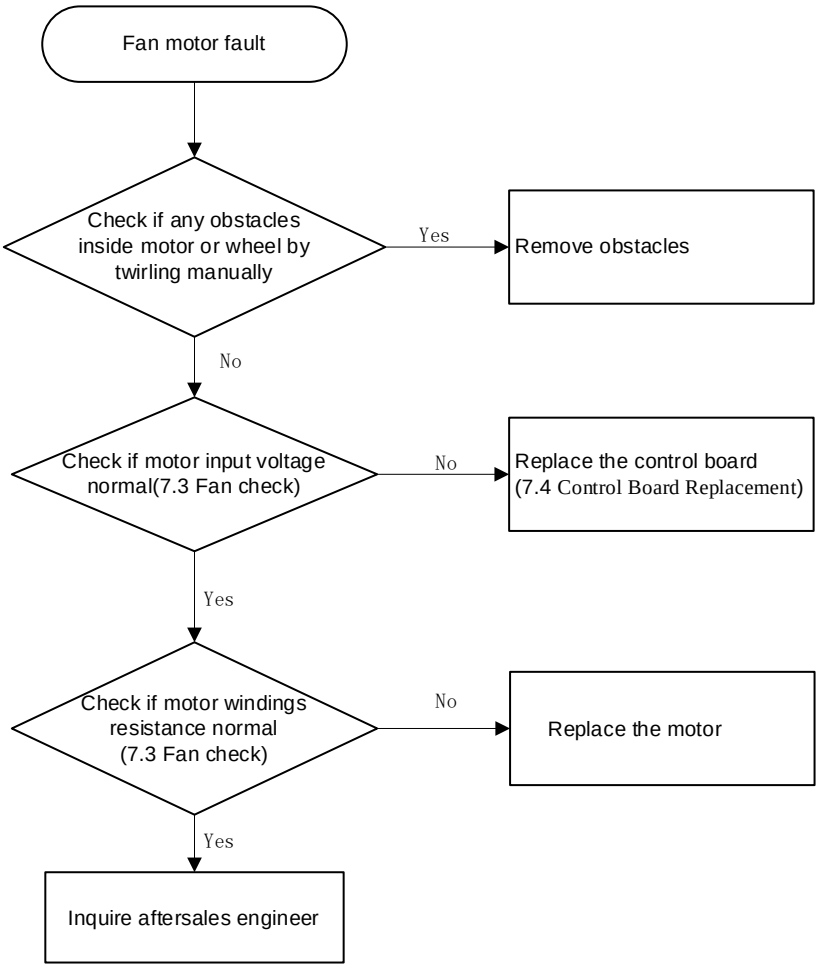
Fuse for PSC Unit



Fuse (3A)

7.2 Fan motor failure

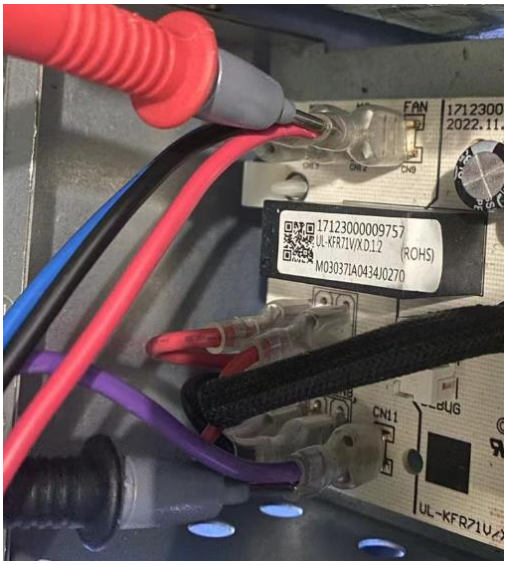
If the fuse is normal, but the fan still cannot start normally, refer to the following process to troubleshoot the fault.



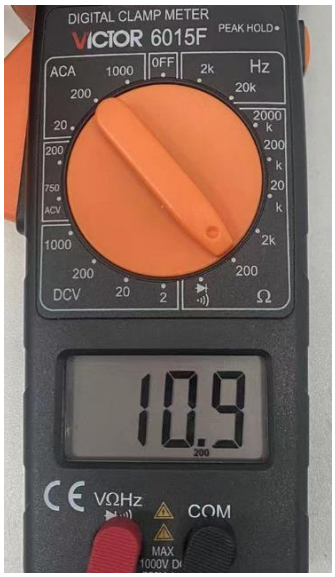
7.3 Fan check

For PSC Fan

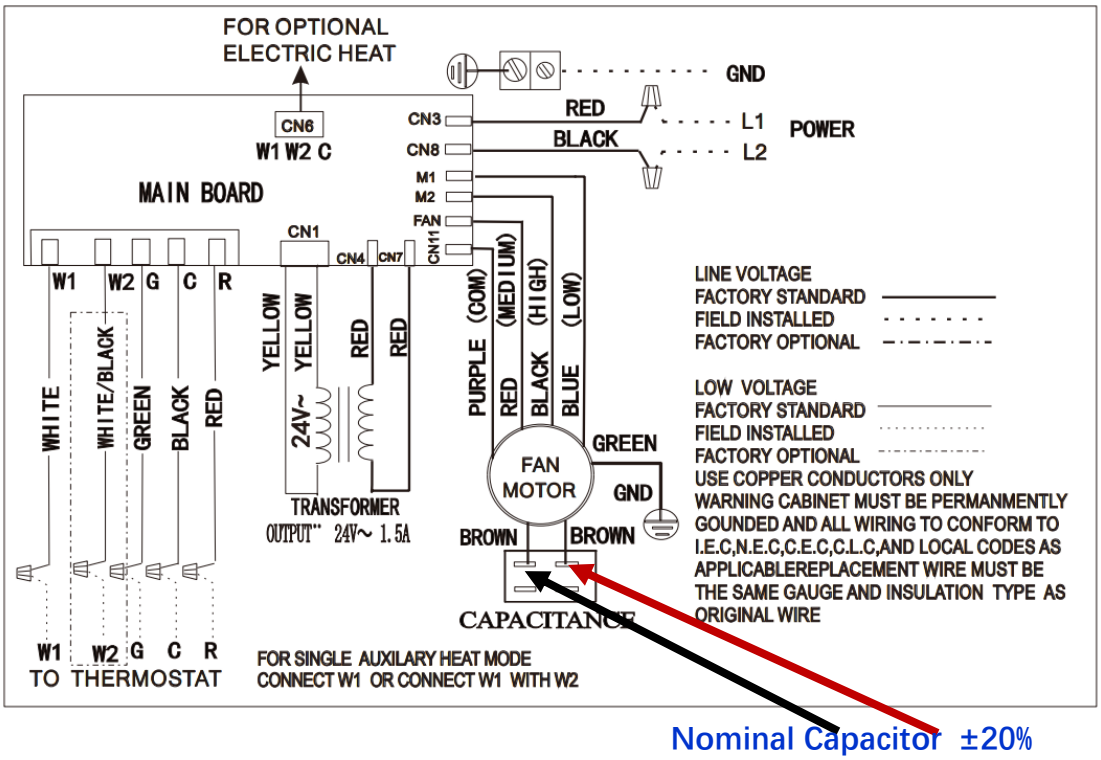
1. Measure the motor input voltage, use multi-meter to measure voltage between terminals **FAN**(on board) and **CN11**(on transformer) , the normal voltage should be around 220V AC.
2. Measure resistance of motor windings, between COM&HIGH, COM&MEDIUM, COM&LOW, their normal resistance value should be 5~100Ω(depends on different models).



Example: Measure resistance of motor winding



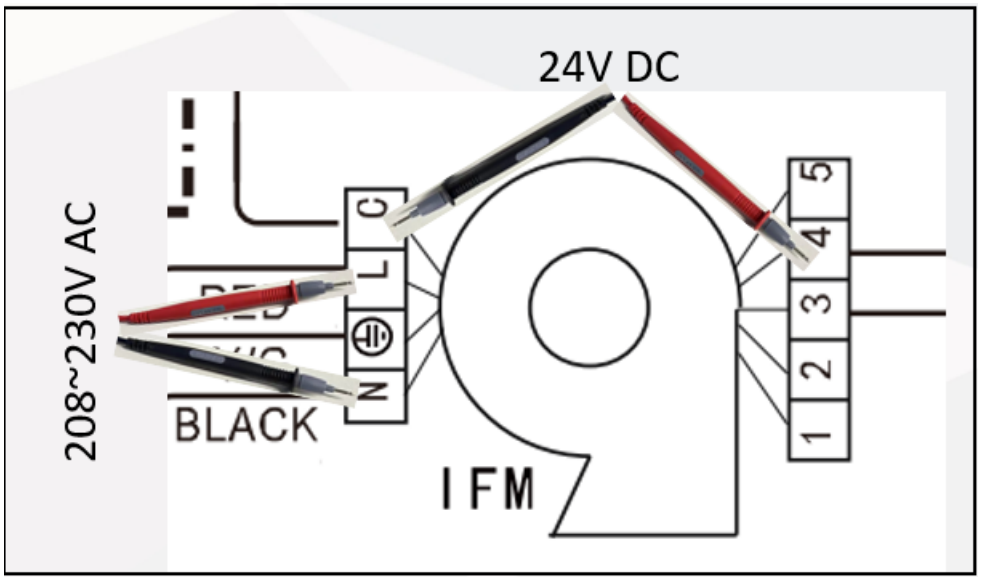
3. Measure the capacitor: discharged the capacitor then disconnect it then measure, it's normal value is nominal capacitance ±20%.



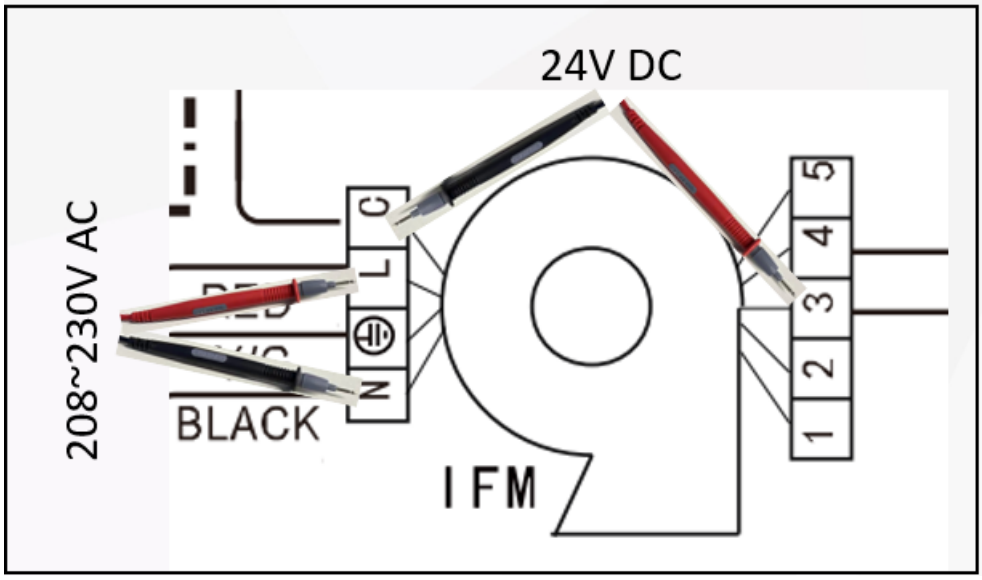
For ECM Fan

1. Measure the motor speed signal, use multi-meter to measure voltage between terminals C&3 or C&4, the normal voltage should be 24V DC when the fan turns on.

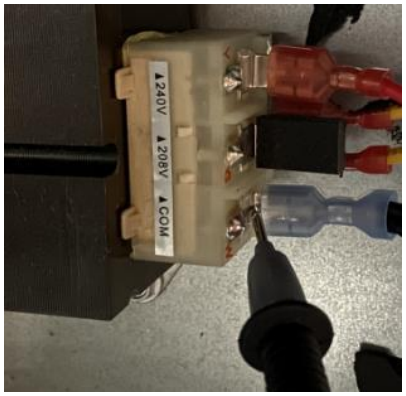
When terminal 4 energized

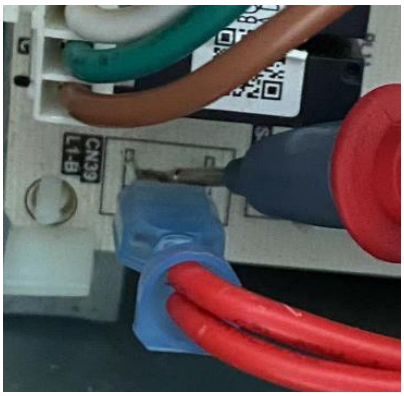


When terminal 3 energized



2. Measure the motor speed signal, use multi-meter to measure voltage between terminals C&3 or C&4, the normal voltage should be 24V DC when the fan turns on.
3. Measure the resistance of motor winding, the normal resistance value should be 5~100Ω





7.4 Control Board Replacement

1. Remove front panel screws

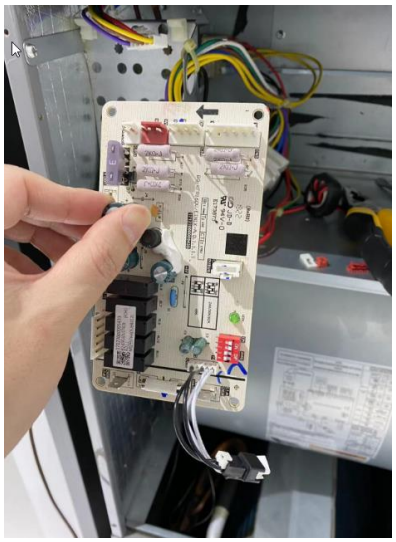
2. Remove front panel

3. Take picture of wiring

4. Detach all wires

5. Press the fixture and loosen the board

6. Take out the board



7. Install a new board, set the capacity dip-switch per the wire diagram on the unit.