
ComfortStar®
Service manual
APARTMENT FAN COIL UNIT



1. System instructions

1.1 Refrigerant Circuit

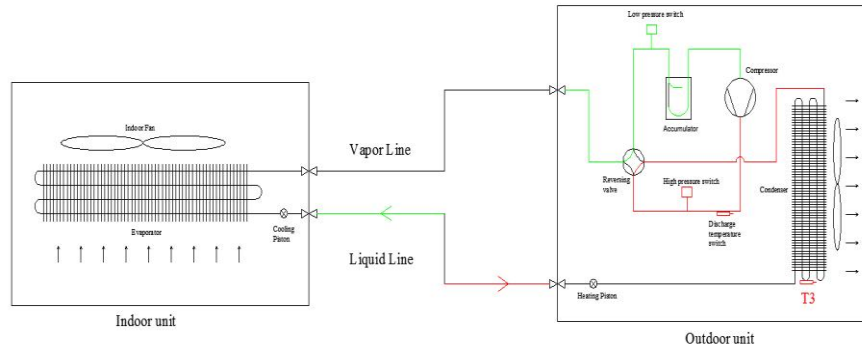
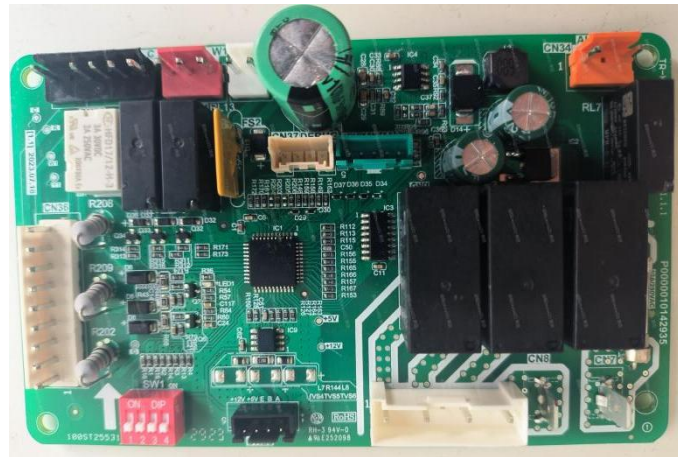


Fig. 1 Refrigerant Circuit

2. PCB Board

2.1 PCB Board for PSC unit



| Label | Port code | Content | Port voltage |
|-------|-----------|---------------------------|--------------|
| 1 | CN7 | Power supply line | 208-230V AC |
| 2 | CN8 | Power supply line | 208-230V AC |
| 3 | CN17 | PSC Motor line | 208-230V AC |
| 4 | CN26 | Refrigerant leak detector | 0-5V AC |
| 5 | CN36 | Thermostat signal line | 0-24V AC |
| 6 | CN14 | Signal port to ODU | 208-230V AC |
| 7 | CN11 | Signal port to heater | 0-24V AC |
| 8 | CN33 | Signal power source | 0-24V AC |
| 9 | CN34 | Passive alarm signal port | Max 1A |

2.2 PCB Board for ECM unit



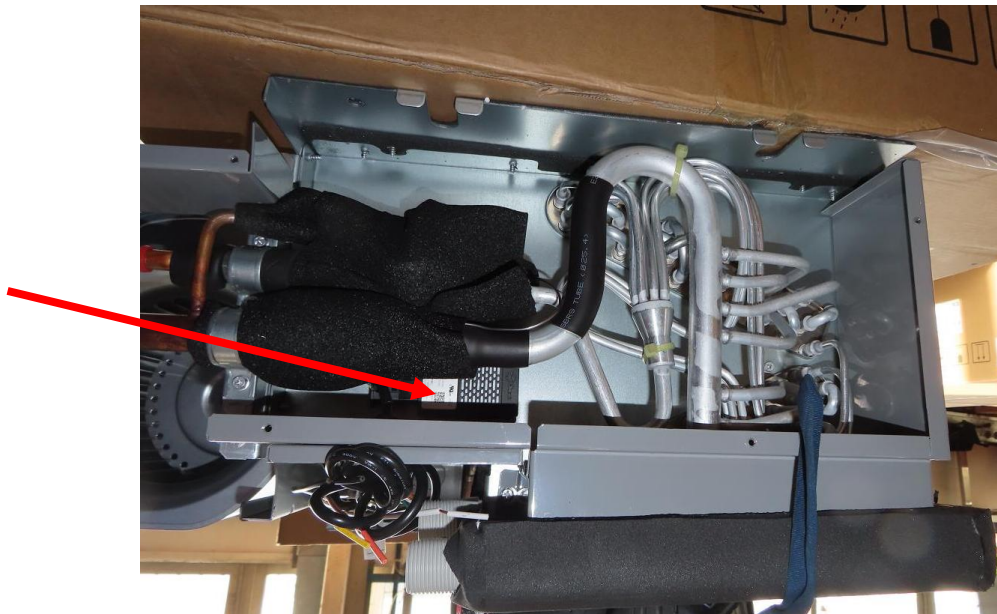
| Label | Port code | Content | Port voltage |
|-------|-----------|--------------------------------|--------------|
| 1 | CN7 | Power supply line | 208-230V AC |
| 2 | CN8 | Power supply line | 208-230V AC |
| 3 | CN12 | ECM motor power supply line | 208-230V AC |
| 4 | CN15 | ECM motor power supply line | 208-230V AC |
| 5 | CN35 | ECM motor speed control signal | 0-24V AC |
| 6 | CN26 | Refrigerant leak detector | 0-5V AC |
| 7 | CN36 | Thermostat signal line | 0-24V AC |
| 8 | CN14 | Signal port to ODU | 208-230V AC |
| 9 | CN11 | Signal port to heater | 0-24V AC |
| 10 | CN33 | Signal power source | 0-24V AC |
| 11 | CN34 | Passive alarm signal port | Max 1A |

3. Refrigerant leak sensor

3.1 Sensor model: 7 -R454B-L

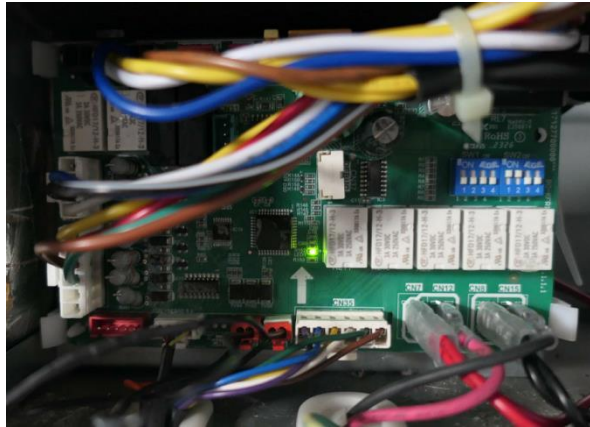


3.2 Installation location



| Content | Description |
|-----------------------------|--------------|
| Refrigerant | R454B |
| Detection range | 0 ~ 100%LFL |
| DTLV | 10% LFL |
| Operating temperature range | -40°C ~ 80°C |
| Operating humidity range | 0-95% RH |
| Service life | 15years |
| Voltage | 5V DC |
| Max current | < 100mA |
| Output port | RS485 |

4. Fault indication



Green light LED on PCB board

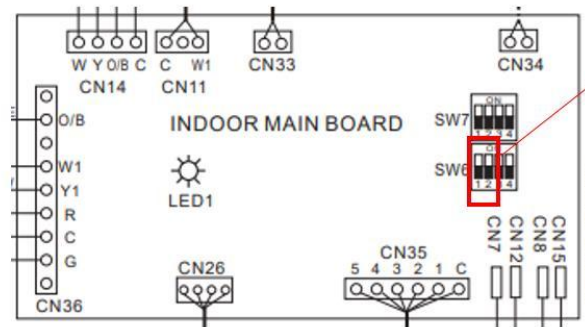
| No. | Mode | Description |
|-----|---------------|--|
| 1 | Steady on | Normal Operation |
| 2 | Keep flashing | Refrigerant leak Protection |
| 3 | OFF | Power supply failure |
| 4 | 3 FLASH/CYCLE | R454B Refrigerant sensor Fault |
| 5 | 4 FLASH/CYCLE | R454B Refrigerant sensor communication Fault |
| 6 | 8 FLASH/CYCLE | R454B Refrigerant sensor Over Service Life |

5. Dip switch

5.1 Dip switch for ECM unit

The blower speed (ECM) is selected through the dip switch (SW6-1, 2) on the PCB board as shown below.

In particular, when the electrical heater (with W1 signal) is turned on, the blower speed will turn into the HIGH speed.



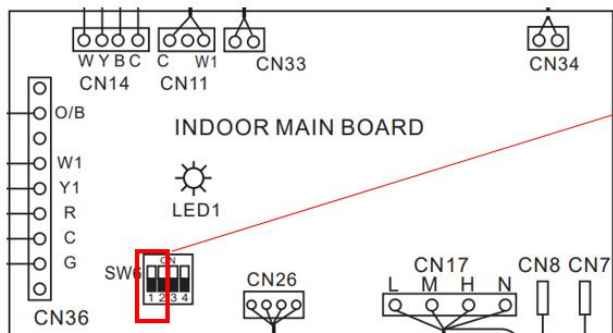
| DETAILED REFERENCE MANUAL INSTRUCTIONS | | | |
|--|---|------|--|
| BLACK BLOCK IS BUTTON | G | W/W1 | |
| | 2 | 3 | |
| 18K | | | |
| | 3 | 4 | |
| 24K | | | |
| | 4 | 5 | |
| 30K | | | |
| | 5 | 5 | |
| 36K | | | |

| SPEED TAPS | |
|------------|-------------|
| 1 | LOW |
| 2 | MEDIUM LOW |
| 3 | MEDIUM |
| 4 | MEDIUM HIGH |
| 5 | HIGH |

5.2 Dip switch for PSC unit

The blower speed (ECM) is selected through the dip switch (SW6-1,2) on the PCB board as shown below.

In particular, when the electrical heater (with W1 signal) is turned on, the blower speed will turn into the HIGH speed.



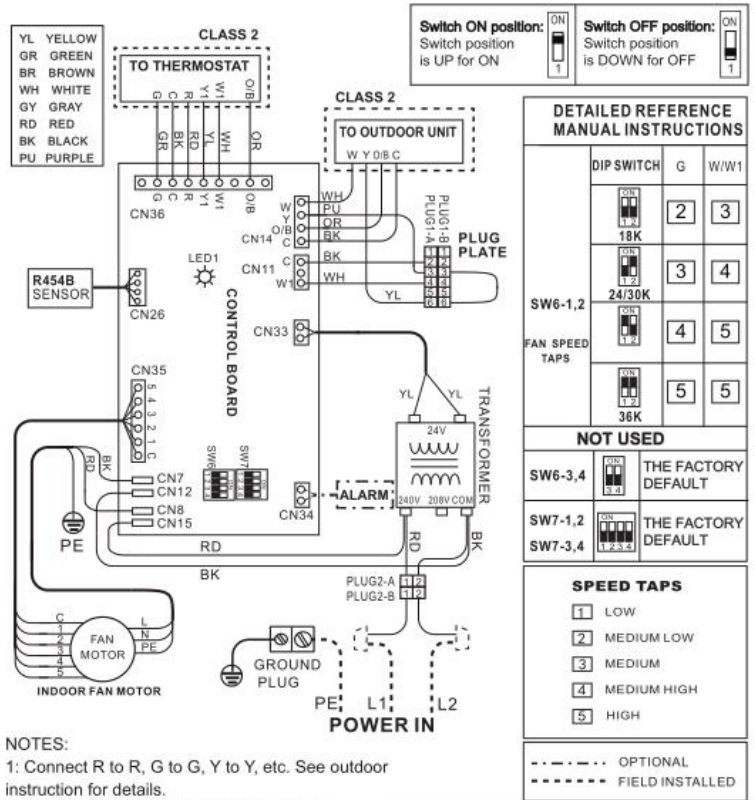
| DETAILED REFERENCE MANUAL INSTRUCTIONS | | | |
|--|---|------|--|
| BLACK BLOCK IS BUTTON | G | W/W1 | |
| | L | H | |
| SW6-1,2 | | | |
| | L | H | |
| FAN SPEED TAPS | | | |
| | M | H | |
| 18/24/30/36K | | | |
| | H | H | |

| SPEED TAPS | |
|------------|--------|
| L | LOW |
| M | MEDIUM |
| H | HIGH |

----- OPTIONAL
 ----- FIELD INSTALLED

6. Replacing parts

Wiring diagram for ECM unit



NOTES:

1: Connect R to R, G to G, Y to Y, etc. See outdoor instruction for details.

2: If some signal lines of **CN36** are not used, please wrap them up separately with **CAP**.

⚠ CAUTION:

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 wires, as supplied, must be replaced. Use the same or equivalent type wires.

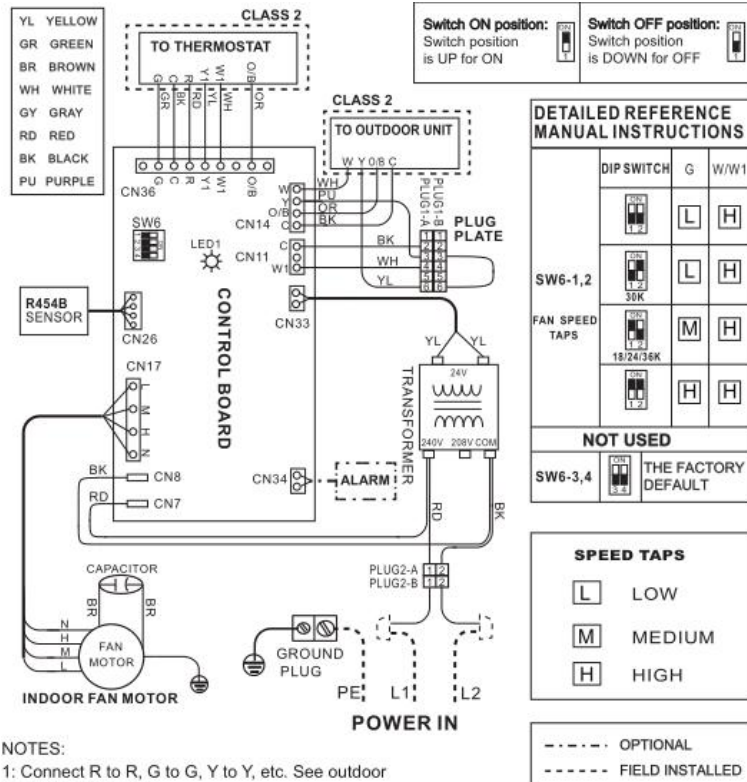
4: If the input voltage is 208 V, please change the transformer tap by taking the red wire to **208V** terminal.

5: The rated operating condition of **Alarm** is 24 VAC/1A or 30 VDC/1A or 250 VAC/1A.

| LED1 STATUS | CONTENT |
|-------------------|--|
| ☀ STEADY ON | NORMAL OPERATION |
| ☀ OFF | POWER SUPPLY FAILURE |
| ☀ STEADY FLASHING | REFRIGERANT LEAK PROTECTION |
| ☀ 3 FLASH/CYCLE | R454B REFRIGERANT SENSOR FAULT |
| ☀ 4 FLASH/CYCLE | R454B REFRIGERANT SENSOR COMMUNICATION FAULT |
| ☀ 8 FLASH/CYCLE | R454B REFRIGERANT SENSOR OVER SERVICE LIFE |

| Factory code | Date | Revision |
|----------------|-----------------|----------|
| 16023000014748 | Jan. 26th, 2024 | B |

Wiring diagram for PSC unit



NOTES:

1: Connect R to R, G to G, Y to Y, etc. See outdoor instruction for details.

2: If some signal lines of **CN36** are not used, please wrap them up separately with **CAP**.

CAUTION:

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 wires, as supplied, must be replaced. Use the same or equivalent type wires.

4: If the input voltage is 208 V, please change the transformer tap by taking the red wire to **208V** terminal.

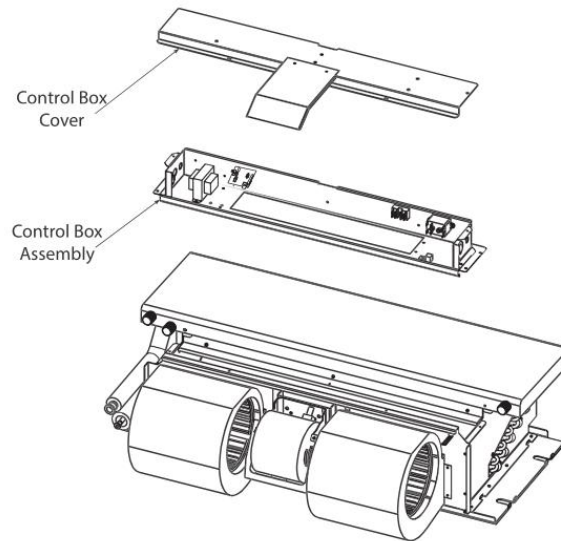
5: The rated operating condition of **Alarm** is 24 VAC/1A or 30 VDC/1A or 250 VAC/1A.

| LED1 STATUS | CONTENT |
|--------------------|--|
| ☀️ STEADY ON | NORMAL OPERATION |
| ☀️ OFF | POWER SUPPLY FAILURE |
| ☀️ STEADY FLASHING | REFRIGERANT LEAK PROTECTION |
| ☀️ 3 FLASH/CYCLE | R454B REFRIGERANT SENSOR FAULT |
| ☀️ 4 FLASH/CYCLE | R454B REFRIGERANT SENSOR COMMUNICATION FAULT |
| ☀️ 8 FLASH/CYCLE | R454B REFRIGERANT SENSOR OVER SERVICE LIFE |

| Factory code | Date | Revision |
|----------------|-----------------|----------|
| 16023000014750 | Jan. 26th, 2024 | B |

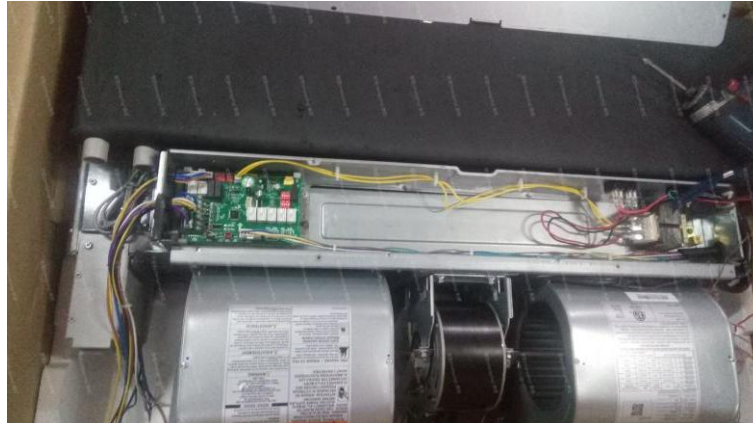
6.1 Replacing motor for ECM/PSC unit

1. Make sure power to unit is off.
2. Remove the control box cover plate.
3. Remove the blower motor wires attached to the control box.
4. Remove the blower assembly.
5. Replace a new blower motor.
6. Reinstall the blower assembly onto the fan coil
7. Attach the wires following the wiring diagram
8. Reinstall the control box cover plate.



6.2 Replacing PCB board for ECM/PSC unit

1. Make sure power to unit is off.
2. Remove the control box cover plate.
3. Leaving the wires attached to the PCB board.
4. Replace a new PCB board
5. Attach the wires following the wiring diagram
6. Reinstall the control box cover plate.



6.3 Replacing refrigerant leak sensor for ECM/PSC unit

1. Make sure power to unit is off.
2. Remove the control box cover plate.
3. Leaving the wires of refrigerant leak sensor attached to the PCB board.
4. Remove the refrigerant leak sensor assembly (might do it as the following picture)
5. Replace a new refrigerant leak sensor.
6. Reinstall the refrigerant leak sensor assembly onto the fan coil
5. Attach the wires following the wiring diagram
6. Reinstall the control box cover plate.



1 step: Remove the screw



2 step: Remove sensor assembly



4 step: Reinstall the sensor assembly



3 step: Replace or Repair the sensor



5 step: Attach the screw

