

# SUPER INVERTER H8

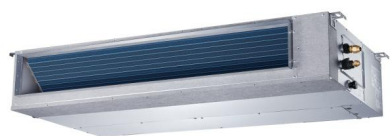
Service manual

**MUCSR-H8**

**MUSTR-H8**

**MUCR-H8**

**MUCOR-H8**



|   |            |
|---|------------|
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※The specifications, designs, and information in this book are subject to change without notice for product improvement.

# Part 1

## General Information

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# 1. Model Lists

## 1.1 Indoor Units

R410A (capacity multiplied by 1000Btu/h)

| Type                       | Function            | 12 | 18 | 24 | 30 | 36 | 48 | 60 |
|----------------------------|---------------------|----|----|----|----|----|----|----|
| Super slim cassette        | Cooling and heating |    |    | •  | •  | •  | •  | •  |
| Duct                       | Cooling and heating | •  | •  | •  | •  | •  | •  | •  |
| Ceiling-floor              | Cooling and heating |    | •  | •  | •  | •  | •  | •  |
| Four-way cassette(compact) | Cooling and heating | •  | •  |    |    |    |    |    |
| Floor standing             | Cooling and heating |    |    |    |    |    |    | •  |

## 1.2 Outdoor Units

| Universal Outdoor unit Model                            | Compressor type | Compressor Brand | Matched indoor units   |
|---|-----------------|------------------|--|
| UE –<br>MUCR-12-H8 /<br>MUCSR-12-H8                     | Rotary          | GMCC             | MUCR-12-H8<br>MUCSR-12-H8  |
| UE –<br>MUCR-18-H8 /<br>MUCSR-18-H8 /<br>MUSTR-18-H8    | Rotary          | GMCC             | MUCSR-18-H8<br>MUCR-18-H8<br>MUSTR-18-H8   |
| UE –<br>MUCR-24-H8 /<br>MUCSR-24-H8 /<br>MUSTR-24-H8    | Rotary          | GMCC             | MUCSR-24-H8<br>MUCR-24-H8<br>MUSTR-24-H8   |
| UE –<br>MUCR-30-H8 /<br>MUCSR-30-H8 /<br>MUSTR-30-H8    | Rotary          | GMCC             | MUCSR-30-H8<br>MUSTR-30-H8<br>MUCR-30-H8   |
| UE –<br>MUCR-36-H8<br>/ MUCSR-36-H8<br>/ MUSTR-36-H8    | Rotary          | GMCC             | MUCSR-36-H8<br>MUCR-36-H8<br>MUSTR-36-H8   |
| UE - MUCR-48-H8 / MUCSR-48-H8 /<br>MUSTR-48-H8          | Rotary          | GMCC             | MUCSR-48-H8 /<br>MUCSR-48-H8T<br>MUSTR-48-H8 /<br>MUSTR-48-H8T<br>MUCR-48-H8 / MUCR-48-H8T                 |
| UE –<br>MUCR-48-H8T /<br>MUCSR-48-H8T /<br>MUSTR-48-H8T | Rotary          | GMCC             |  |
| UE –<br>MUCR-60-H8T /<br>MUCSR-60-H8T /<br>MUSTR-60-H8T | Rotary          | GMCC             | MUCOR-60-H8T<br>MUCSR-60-H8 /<br>MUCSR-60-H8T<br>MUCR-60-H8 / MUCR-60-H8T<br>MUSTR-60-H8 /<br>MUSTR-60-H8T |



## 2. External Appearance

### 2.1 Indoor Units

Super slim cassette



Duct



Ceiling-Floor



Compact Four-way cassette



Floor standing



## 2.2 Outdoor Units



Single fan outdoor unit (Models 12 to 36)



Double fan outdoor unit (Models 48 to 60)

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# Part 2

## Indoor Units

|  |           |
|--|-----------|
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# MUCSR-H8 (24 to 60) Cassette Type

|   |           |
|---|-----------|
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# 1. Features

## 1.1 Overview

- Compact design, super slim body size, less space requiring in installation
- Each louver can be separately controlled, more comfort air blowing is possible.
- Auto-lifting panel design, more convenient to clean and maintain the filter. (optional)

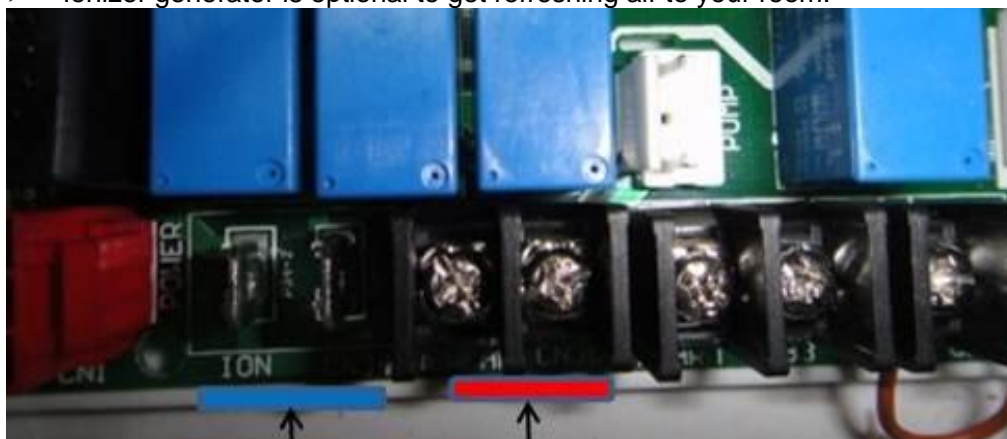
## 1.2 Fresh air intake function

- Fresh air fulfills air quality more healthy and comfortable.
- Ventilation motor is optional to increase the effect of fresh air.



## 1.3 Optional ionizer generator

- Ionizer generator is optional to get refreshing air to your room.



Ionizer generator  
connector

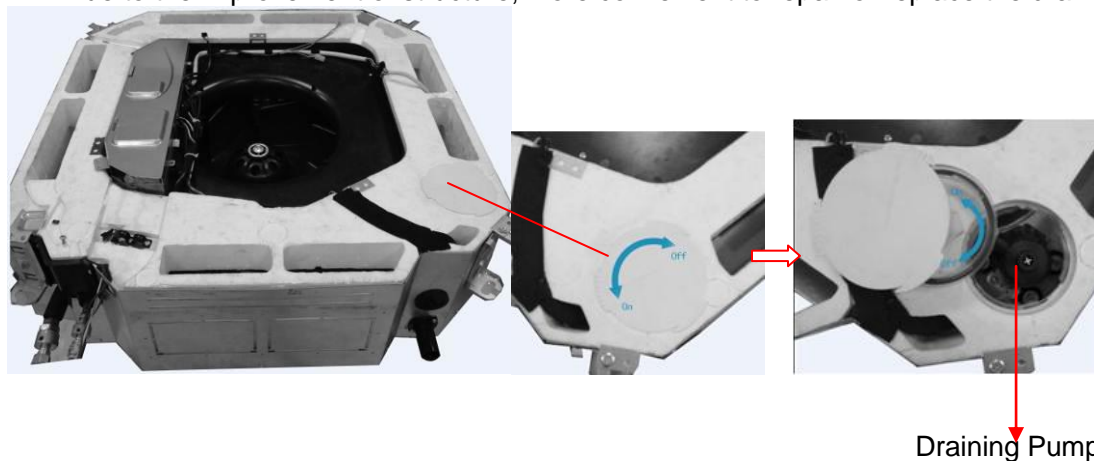
Ventilation motor  
connector

- Ionizer can be switched on or off by remote controller. When pressing the Clean Air button on the remote controller, Ionizer will work and the indicator light on display board will shine.

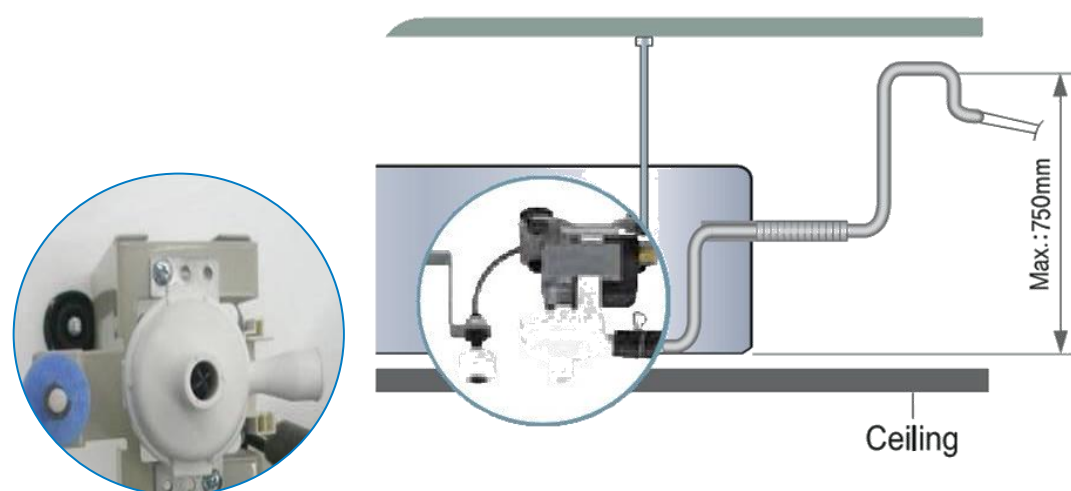


## 1.4 Built-in draining pump

- Due to the improvement of structure, more convenient to repair or replace the draining pump.

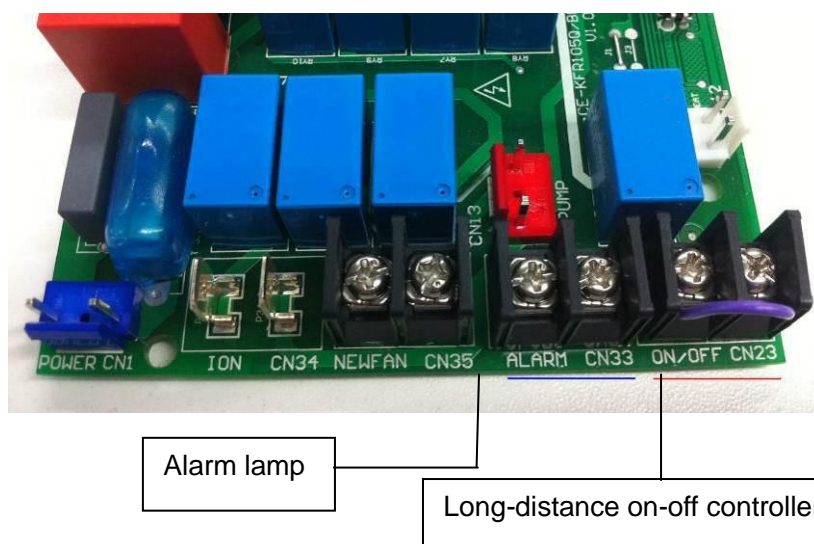


- Built-in draining pump to make sure condensed water drain out reliably.



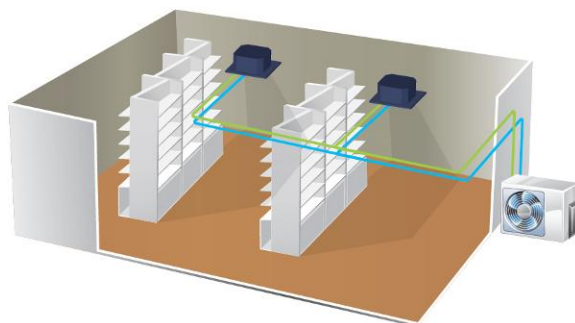
## 1.5 Terminals for alarm lamp and long-distance on-off controller connection are standard

- Reserve terminals for the connection of alarm lamp and long-distance on-off controller, more human control.

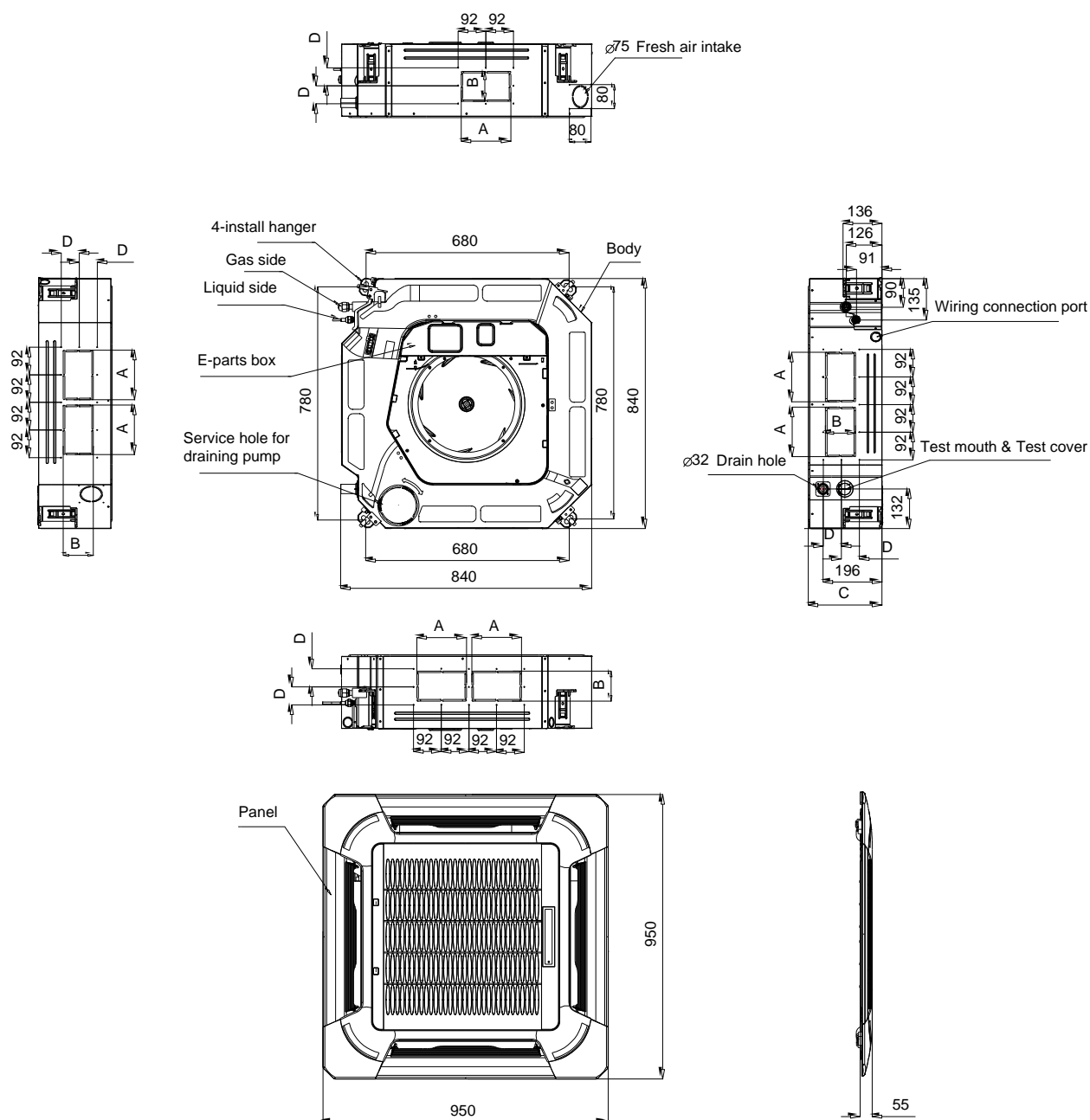


### 1.6 Twins Combination (18k-30k)

- The units can be installed as Twin systems: one outdoor unit can connect with two indoor units. The indoor units can be combined in any of the different available ratings.



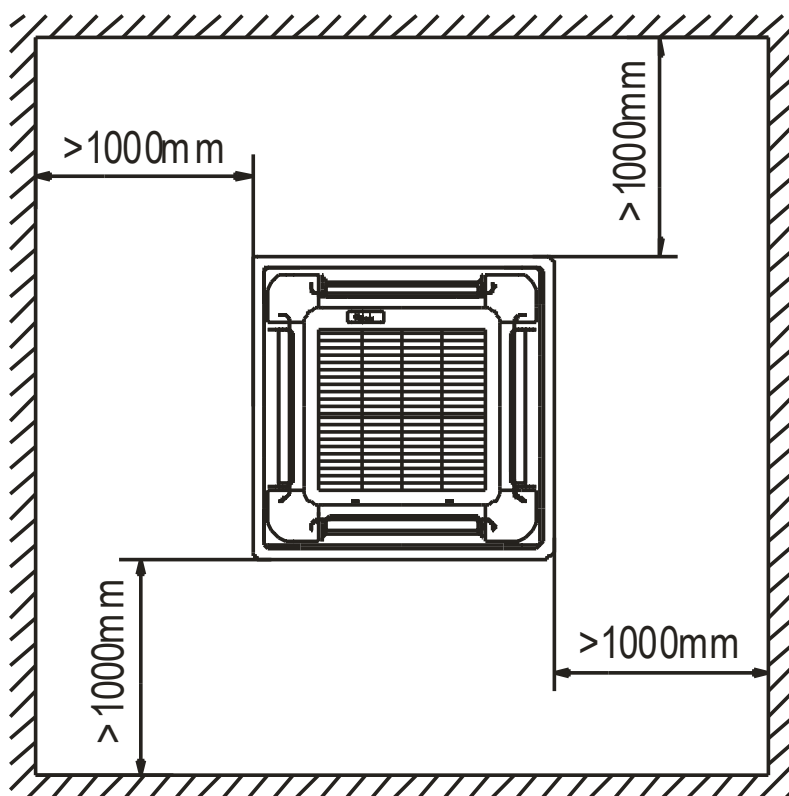
## 2. Dimensions



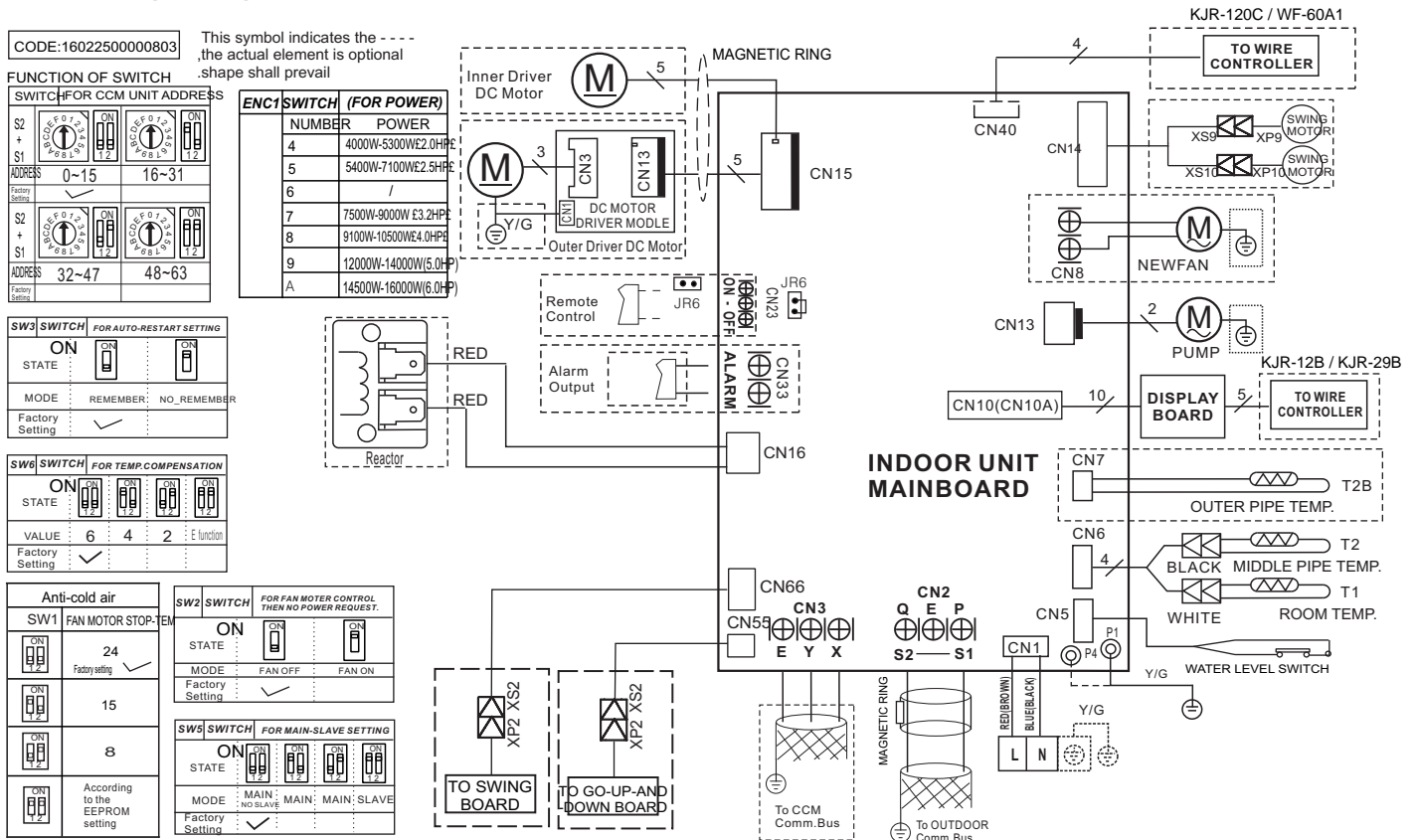
| Unit: mm      |     |    |     |    |
|---------------|-----|----|-----|----|
| Model(kBtu/h) | A   | B  | C   | D  |
| 24~36         | 160 | 95 | 245 | 60 |
| 48~60         | 160 | 95 | 287 | 60 |



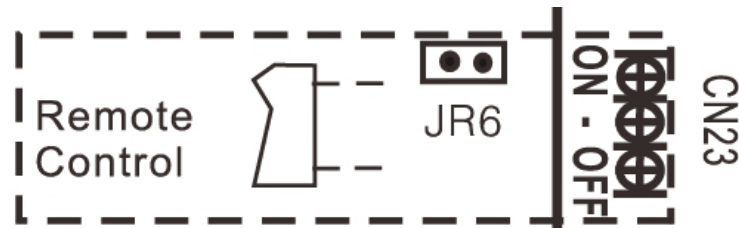
### 3. Service Space



## 4. Wiring Diagrams



## 4.1 Some connectors introduce:

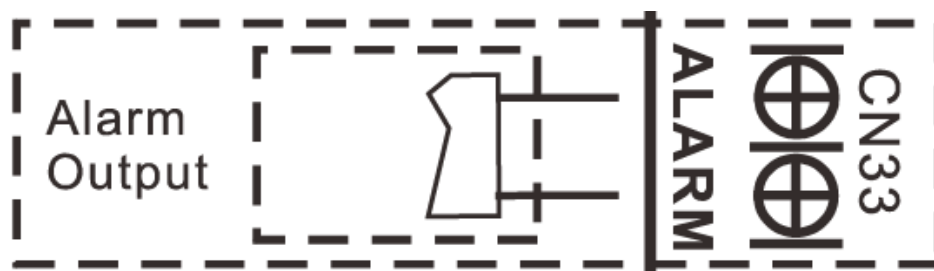
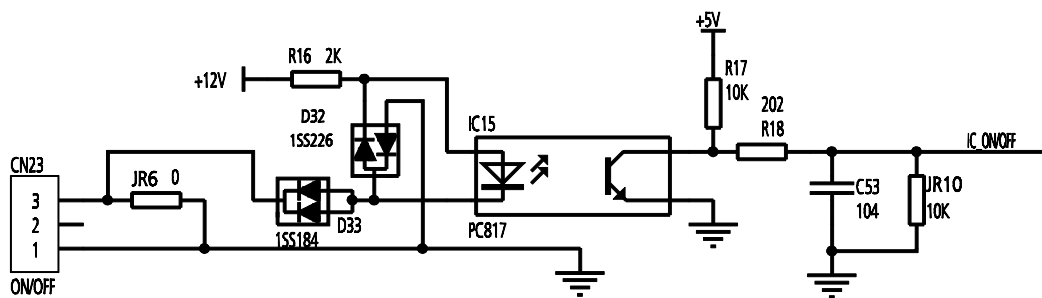


A For remote control (ON-OFF) terminal port CN23 and short connector of JR6

1. Remove the short connector of JR6 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 be responded the demand within 2 seconds;
5. When the remote switch on. You can use remote controller/wire controller to select the mode what you want; when the remote switch off, the unit would not respond the demand from remote controller/wire controller.

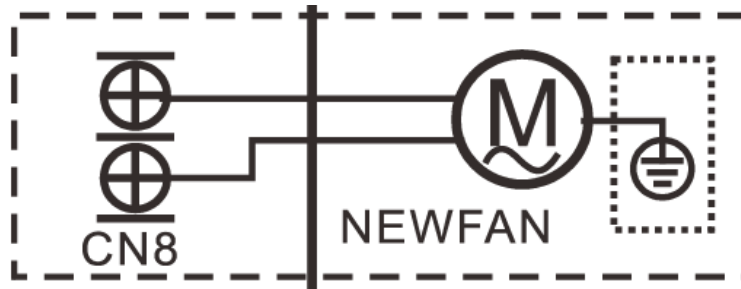
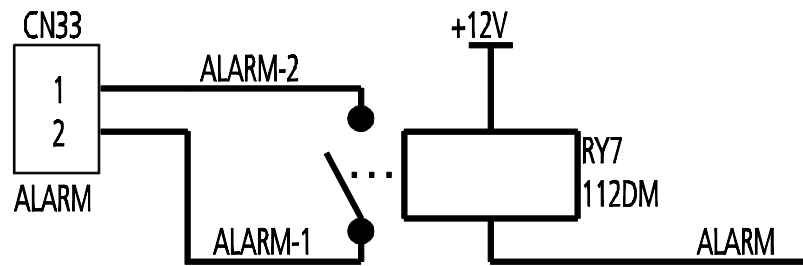
When the remote switch off, but the remote controller/wire controller are on, CP code would be shown on the display board.

6. The voltage of the port is 12V DC, design Max. current is 5mA.



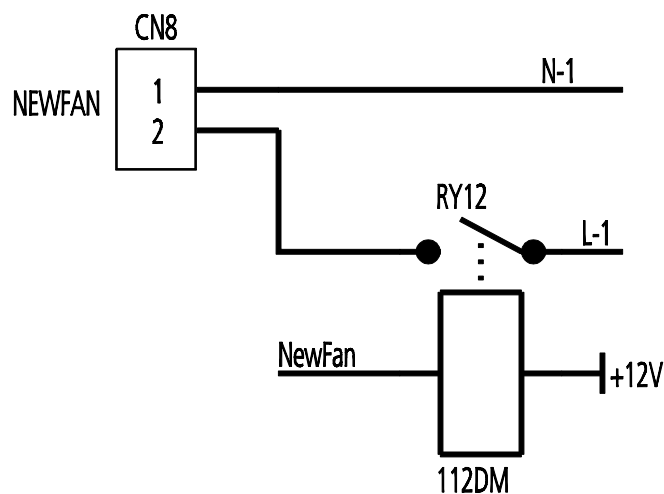
B For ALARM terminal port CN33

1. Provide the terminal port to connect ALARM, but no voltage of the terminal port , the power from the ALARM system (not from the unit )
2. Although design voltage can support higher voltage, but we strongly ask you connect the power less than 24V, current less than 0.5A
3. When the unit occurs the problem, the relay would be closed, then ALARM works

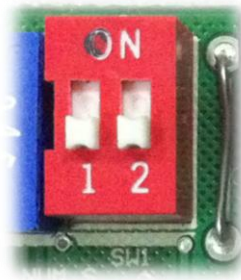


C. For new fresh motor terminal port CN8

1. Connect the fan motor to the port, no need care L/N of the motor;
2. The output voltage is the power supply;
3. The fresh motor cannot excess 200W or 1A, follow the smaller one;
4. The new fresh motor will be worked when the indoor fan motor work ;when the indoor fan motor stops, the new fresh motor would be stopped;
5. When the unit enter force cooling mode or capacity testing mode, the fresh motor isn't work.



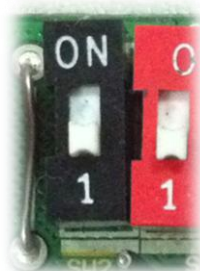
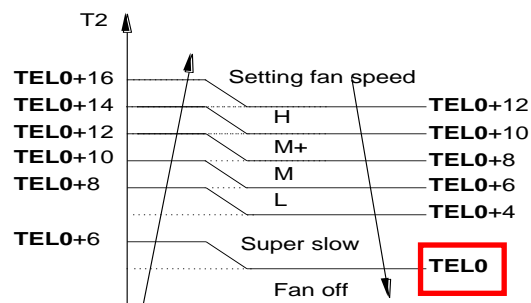
## 4.2 Micro-Switch Introduce:



| Anti-cold air |                                 |
|---------------|---------------------------------|
| SW1           | FAN MOTOR STOP-TEM              |
|               | 24<br>Factory setting ✓         |
|               | 15                              |
|               | 8                               |
|               | According to the EEPROM setting |

A. 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).



| SW2             | SWITCH  | FOR FAN MOTER CONTROL THEN NO POWER REQUEST. |  |
|-----------------|---------|--|--|
| ON:             |         |  |  |
| STATE           |         |  |  |
| MODE            | FAN OFF | FAN ON                                       |  |
| Factory Setting | ✓       |  |  |

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

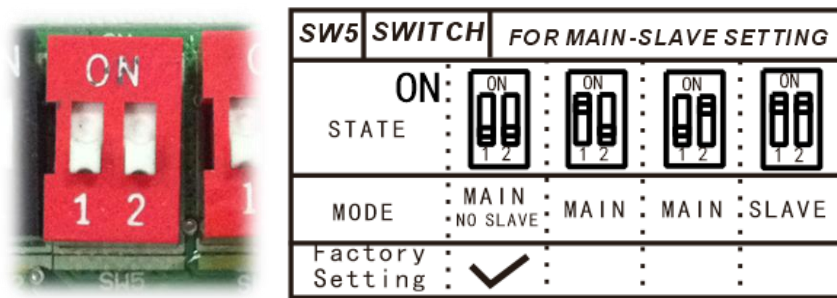
Range: OFF (in 127s), Keep running.



| SW3             | SWITCH   | FOR AUTO-RESTART SETTING |  |
|-----------------|----------|--------------------------|--|
| ON:             |          |                          |  |
| STATE           |          |                          |  |
| MODE            | REMEMBER | NO_REMEMBER              |  |
| Factory Setting | ✓        |                          |  |

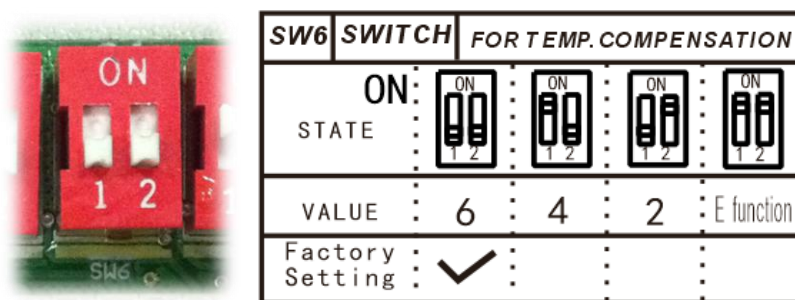
C. Micro-switch SW3 is for selection of auto-restart function.

Range: Active, inactive



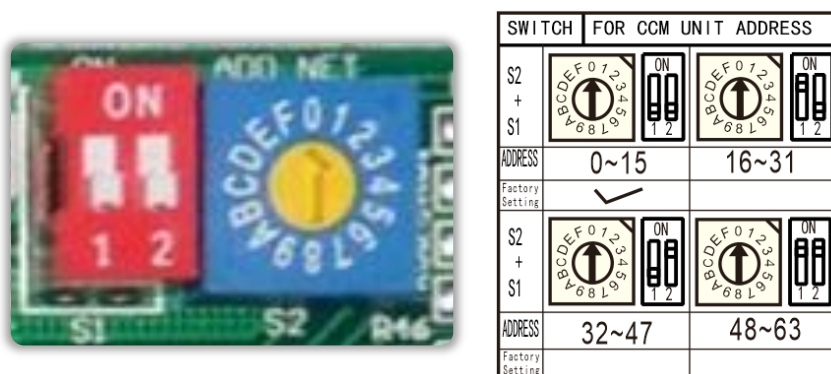
D. Micro-switch SW5 is for setting the master or slave unit when the unit is in twin connection.

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



E. 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°C, 4°C, 2°C, E function (reserved for special customizing)



F. 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



| ENC1 | SWITCH | (FOR POWER)           |
|------|--------|-----------------------|
|      | NUMBER | POWER                 |
|      | 4      | 4000W-5300W (2.0HP)   |
|      | 5      | 5400W-7100W (2.5HP)   |
|      | 6      | /                     |
|      | 7      | 7500W-9000W (3.2HP)   |
|      | 8      | 9100W-10500W (4.0HP)  |
|      | 9      | 12000W-14000W (5.0HP) |
|      | A      | 14500W-16000W (6.0HP) |

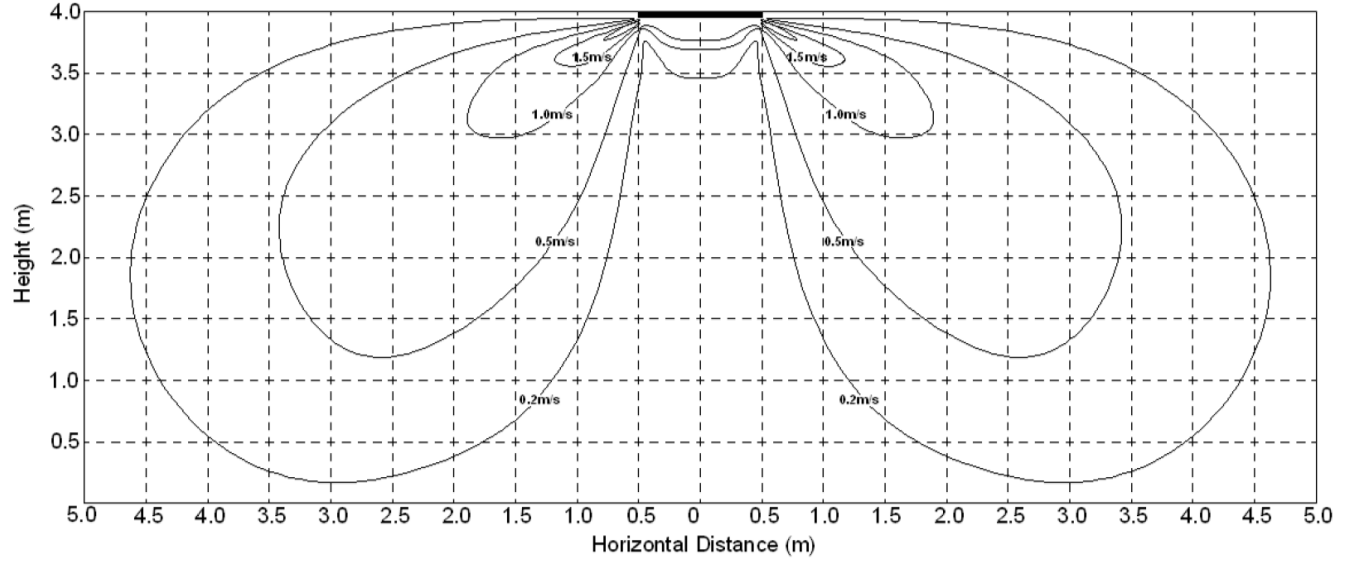
G. Dial-switch ENC1: The indoor PCB is universal designed for whole series units from 18K to 55K. This ENC1 setting will tell the main program what size the unit is.

NOTE: 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.

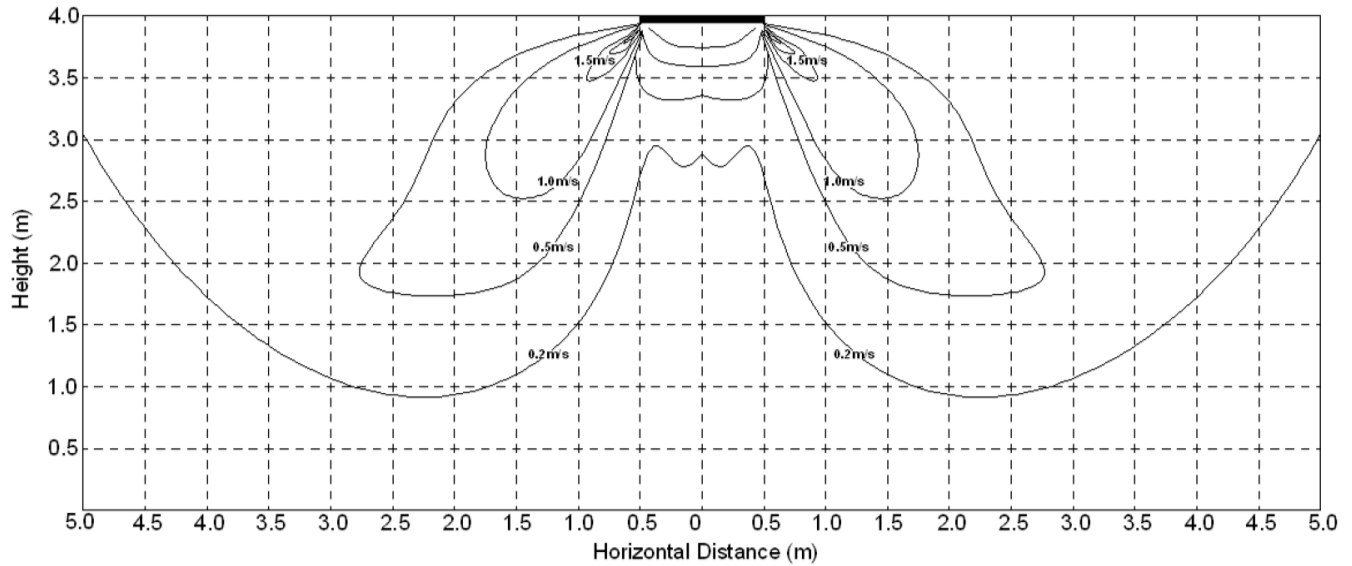
## 5. Air Velocity Distributions (Reference Data)

24K:

Cooling:

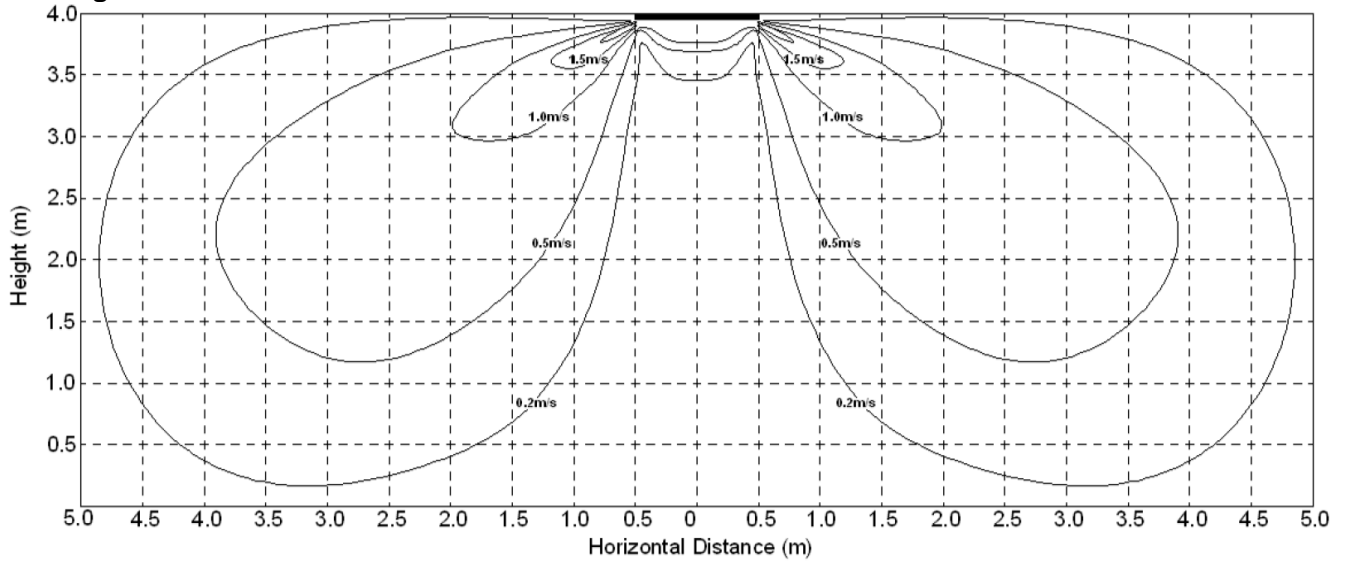


Heating:

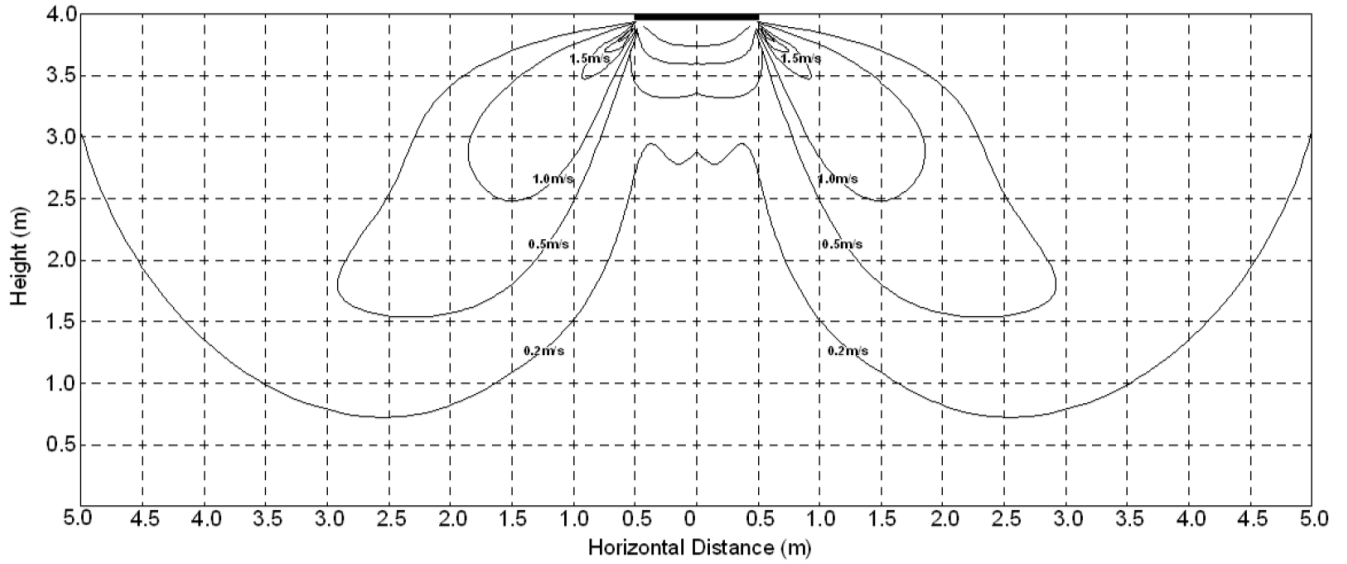




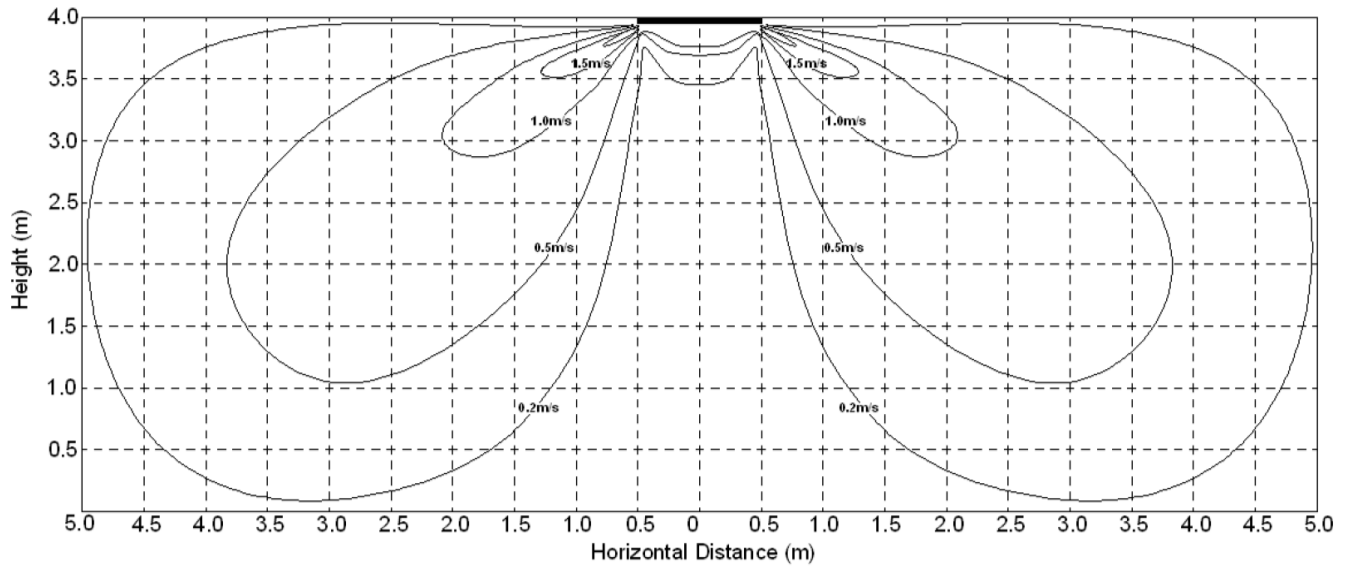
**30-36K:  
Cooling:**



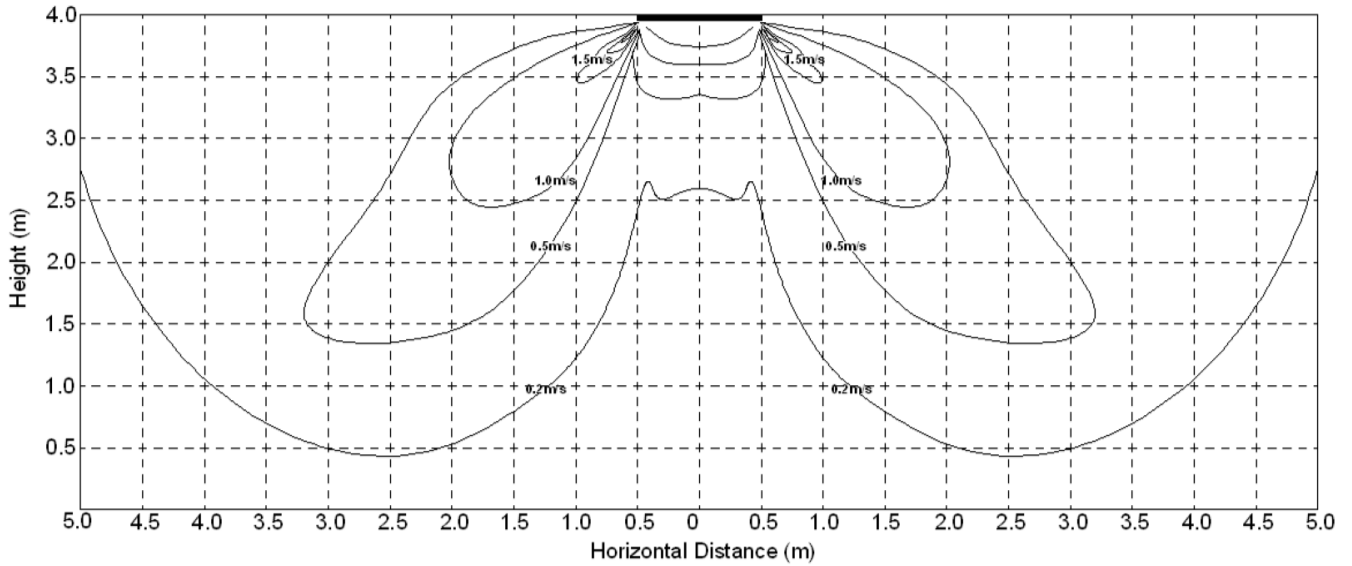
**Heating:**



**48-60K:  
Cooling:**



**Heating:**



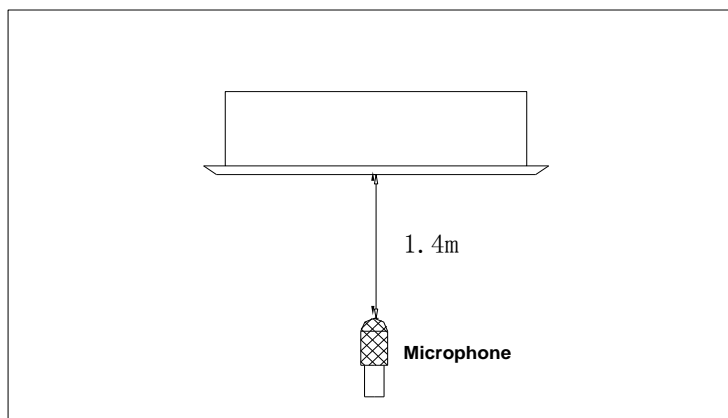
## 6. Electric Characteristics

| Model                      | Indoor Unit |          |      |      | Power Supply |
|----------------------------|-------------|----------|------|------|--------------|
|                            | Hz          | Voltage  | Min  | Max  | MFA          |
| MUCSR-24-H8                | 50          | 220-240V | 198V | 254V | /            |
| MUCSR-30-H8                | 50          | 220-240V | 198V | 254V | /            |
| MUCSR-36-H8                | 50          | 220-240V | 198V | 254V | /            |
| MUCSR-48-H8 / MUCSR-48-H8T | 50          | 220-240V | 198V | 254V | /            |
| MUCSR-60-H8 / MUCSR-60-H8T | 50          | 220-240V | 198V | 254V | /            |

Notes:



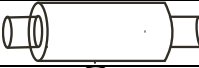







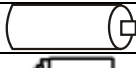


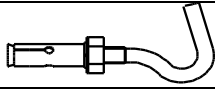


MFA: Max. Fuse Amps. (A)

## 7. Sound Levels



| Model                         | Noise Power dB(A) | Noise level dB(A) |    |    |
|-------------------------------|-------------------|-------------------|----|----|
|                               |                   | H                 | M  | L  |
| MUCSR-24-H8                   | 62                | 46                | 42 | 39 |
| MUCSR-30-H8                   | 65                | 53                | 48 | 44 |
| MUCSR-36-H8                   | 65                | 56                | 52 | 48 |
| MUCSR-48-H8 /<br>MUCSR-48-H8T | 65                | 55                | 51 | 48 |
| MUCSR-60-H8 /<br>MUCSR-60-H8T | 69                | 52                | 49 | 46 |

## 8. Accessories

|   | Name                           | Shape   | Quantity |
|---|--------------------------------|---|----------|
| <b>Installation Fittings</b>  | Installation paper board       |     | 1        |
| <b>Tubing &amp; Fittings</b>  | Soundproof / insulation sheath |     | 1        |
| <b>Drainpipe Fittings</b>   | Out-let pipe sheath            |     | 1        |
|   | Out-let pipe clasp             |    | 1        |
|   | Drain joint                    |    | 1        |
|   | Seal ring                      |    | 1        |
| <b>Remote controller &amp; Its Frame<br/>(The product you have might not be provided the following accessories)</b> | Remote controller & Its Frame  |    | 1        |
|   | Remote controller holder       |    | 1        |
|   | Mounting screw(ST2.9x10-C-H)   |    | 2        |
|   | Remote controller manual       |    | 1        |
|   | Alkaline dry batteries (AM4)   |     | 2        |
| <b>Others</b>   | Owner's manual                 |   | 1        |
|   | Installation manual            |  | 1        |
| <b>Installation accessory<br/>(The product you have might not be provided the following accessories)</b>            | Expansible hook                |   | 4        |
|   | Installation hook              |   | 4        |
|   | Orifice                        |   | 1        |

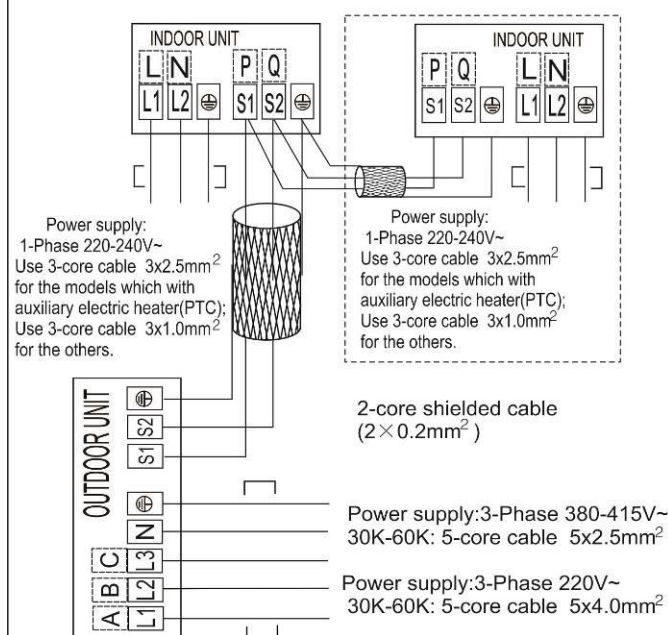
## 9. The Specification of Power

| Model(Btu/h)   |                                 | 24000                                       | 30000                                       | 36000                                       |
|--|---------------------------------|---|---|---|
| POWER  | Phase                           | 1-phase                                     | 1-phase                                     | 1-phase                                     |
|  | Frequency and Voltage           | 220-240V, 50Hz                              | 220-240V, 50Hz                              | 220-240V, 50Hz                              |
|  | POWER WIRING (mm <sup>2</sup> ) | 3×2.5                                       | 3×2.5                                       | 3×4.0                                       |
| CIRCUIT BREAKER/Fuse (A)   |                                 | 30/20                                       | 40/30                                       | 40/30                                       |
| Indoor/Outdoor Connecting Wiring (Weak Electric Signal) (mm <sup>2</sup> )   |                                 | 2×0.2                                       | 2×0.2                                       | 2×0.2                                       |
| Indoor/Outdoor Connecting Wiring (Strong Electric Signal) (mm <sup>2</sup> ) |                                 | 3×1.0(3×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) |

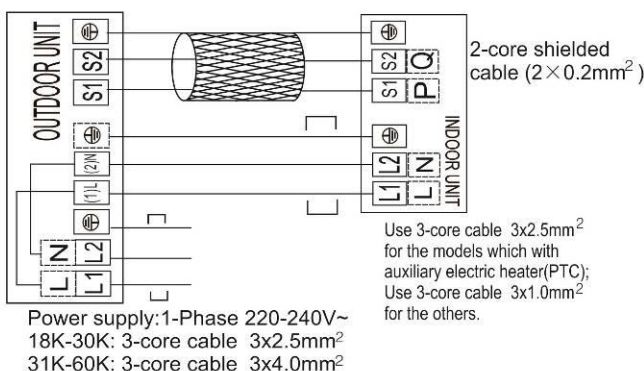
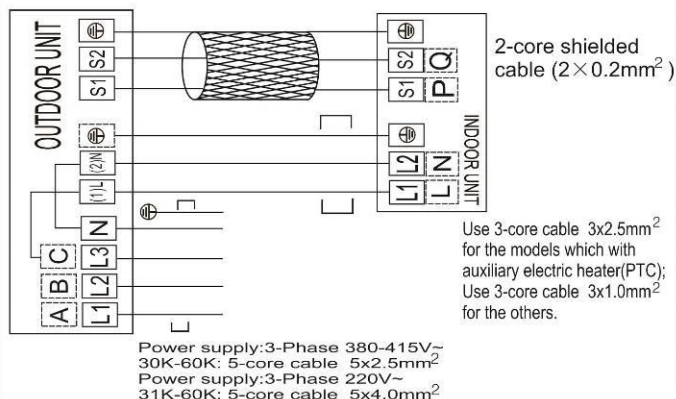
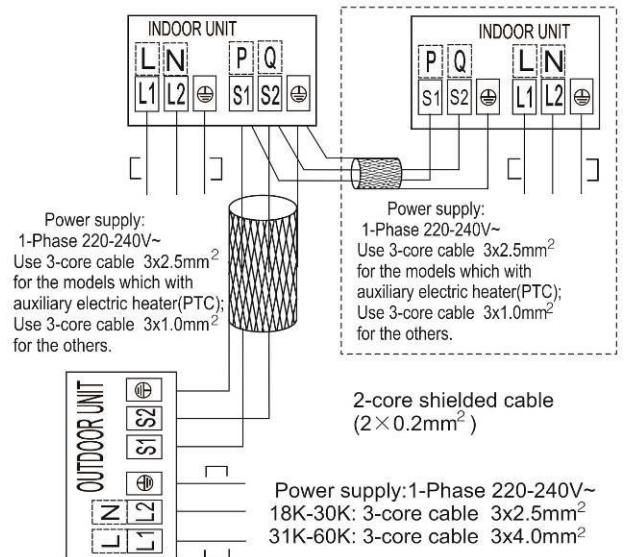
| Model(Btu/h)  |                                 | 48000                                       | 48000~60000                                 |
|---|---------------------------------|---|---|
| POWER   | Phase                           | 1-phase                                     | 3-phase                                     |
|   | Frequency and Voltage           | 220-240V, 50Hz                              | 380-415V, 50Hz                              |
|   | Power Wiring (mm <sup>2</sup> ) | 3×4.0                                       | 5×2.5                                       |
| Circuit Breaker/Fuse(A)   |                                 | 40/35                                       | 30/25                                       |
| Indoor/Outdoor Connecting Wiring(Weak Electric Signal) (mm <sup>2</sup> )   |                                 | 2×0.2                                       | 2×0.2                                       |
| Indoor/Outdoor Connecting Wiring(Strong Electric Signal) (mm <sup>2</sup> ) |                                 | 3×1.0(3×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) |

## 10. Field Wiring

## Air Condition Link-Circuit



202044790380



# MUCR-H8 Duct Type

|  |           |
|--|-----------|
| <b>1. Features.....</b>                    | <b>27</b> |
| <b>2. Dimensions .....</b>                 | <b>30</b> |
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| <b>8. Accessories.....</b>                 | <b>46</b> |
| <b>9. The Specification of Power .....</b> | <b>47</b> |
| <b>10. Field Wiring .....</b>              | <b>48</b> |



# 1. Features

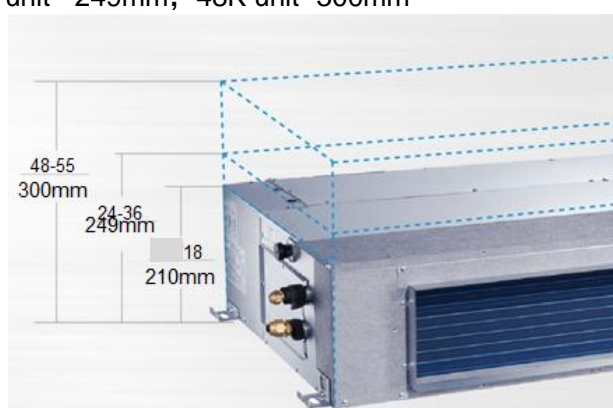
## 1.1 Higher Static Pressure

- As a ducted air conditioner with medium static pressure, it has the widest static pressure range.
- The maximum static pressure reaches 160 Pa



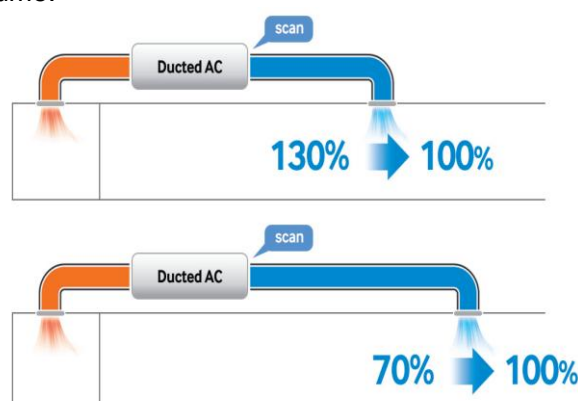
## 1.2 Slim Design

- The industry lowest height is designed to be fitted into tight roof spaces.
- \*18K unit - 210mm, 24K/36K unit - 249mm, 48K unit - 300mm



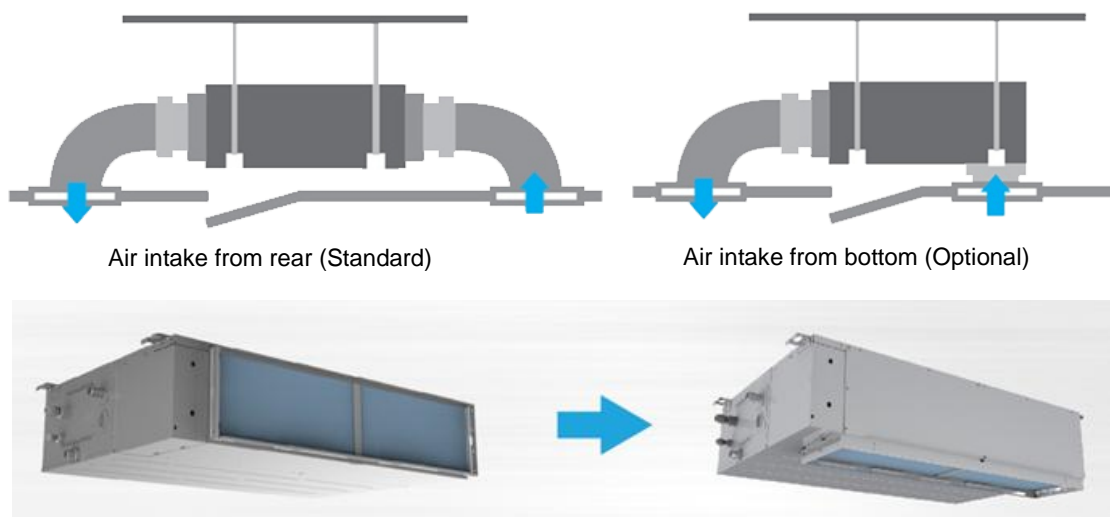
## 1.3 Constant air volume control

- For ordinary duct, when the static pressure exceeds the expected range, it is fairly difficult even for an experienced installer to calculate and adjust the air volume precisely.
- With constant air volume control technology, the duct will automatically adjust to perfect static pressure and keep constant air volume.



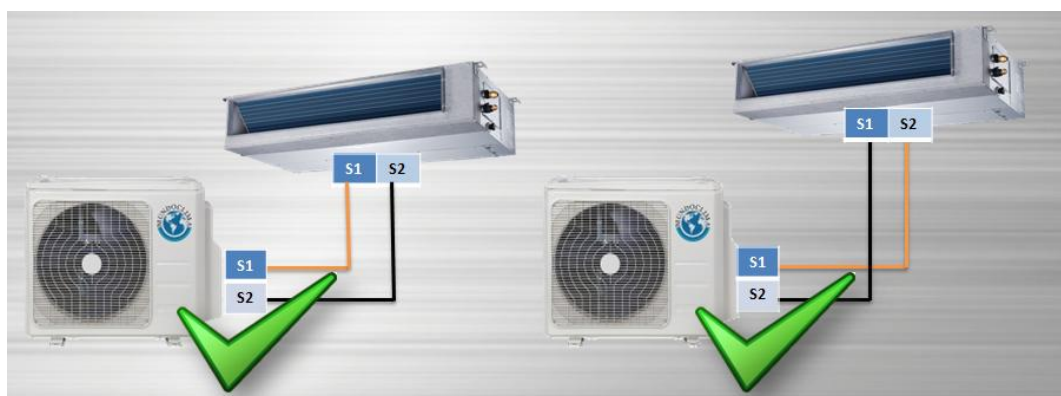
## 1.4 Flexible Air Intake Way (Bottom side or Rear side)

- The frame size of air inlet in rear and bottom is the same. It's very easy to switch to match different application.



### 1.5 Communication wire connection

- MUCR-H8 uses two wires without polarity connection way, which almost has no mistake during the installation.



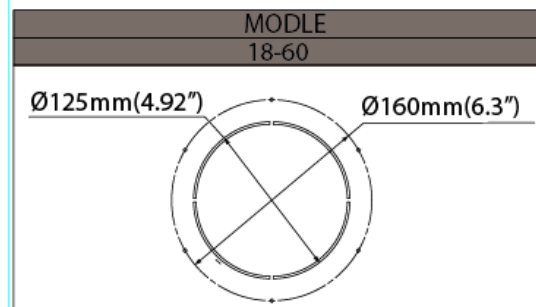
### 1.6 Easy Clean

- With a larger window design, once the motor and the blower wheels have been detached, heat exchanger and water receiver tray in behind can be seen very clearly. Dust can be easily removed from the inside by vacuum



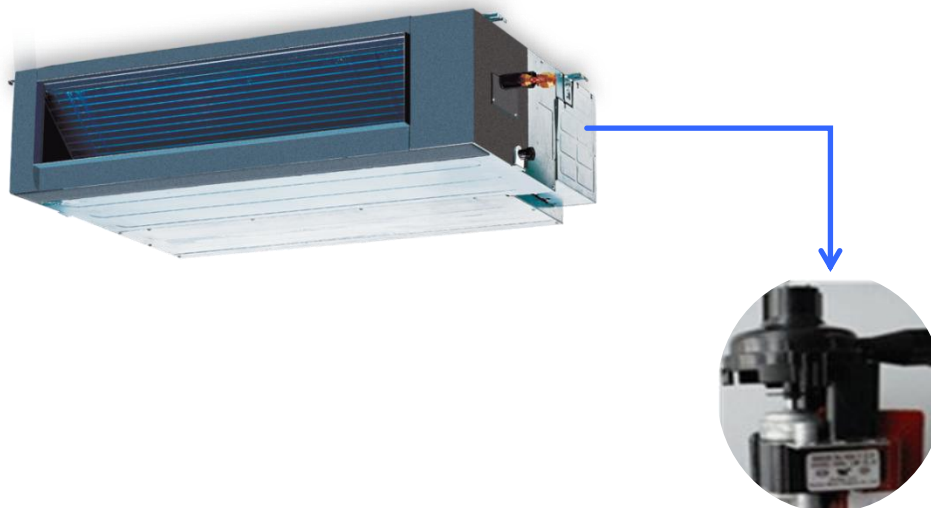
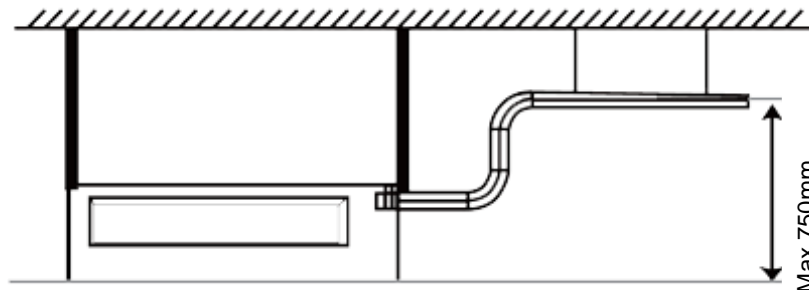
### 1.7 Fresh air intake function

- Install one duct from the reserved fresh-air intake to outdoor. Continually inhale the fresh air to improve the quality of the indoor air, fulfills air quality more healthy and comfortable.
- A ventilation motor (provided by the installer) can be installed inside the fresh air duct to improve the fresh air volume. There are reserved ports for this motor on main PCB.

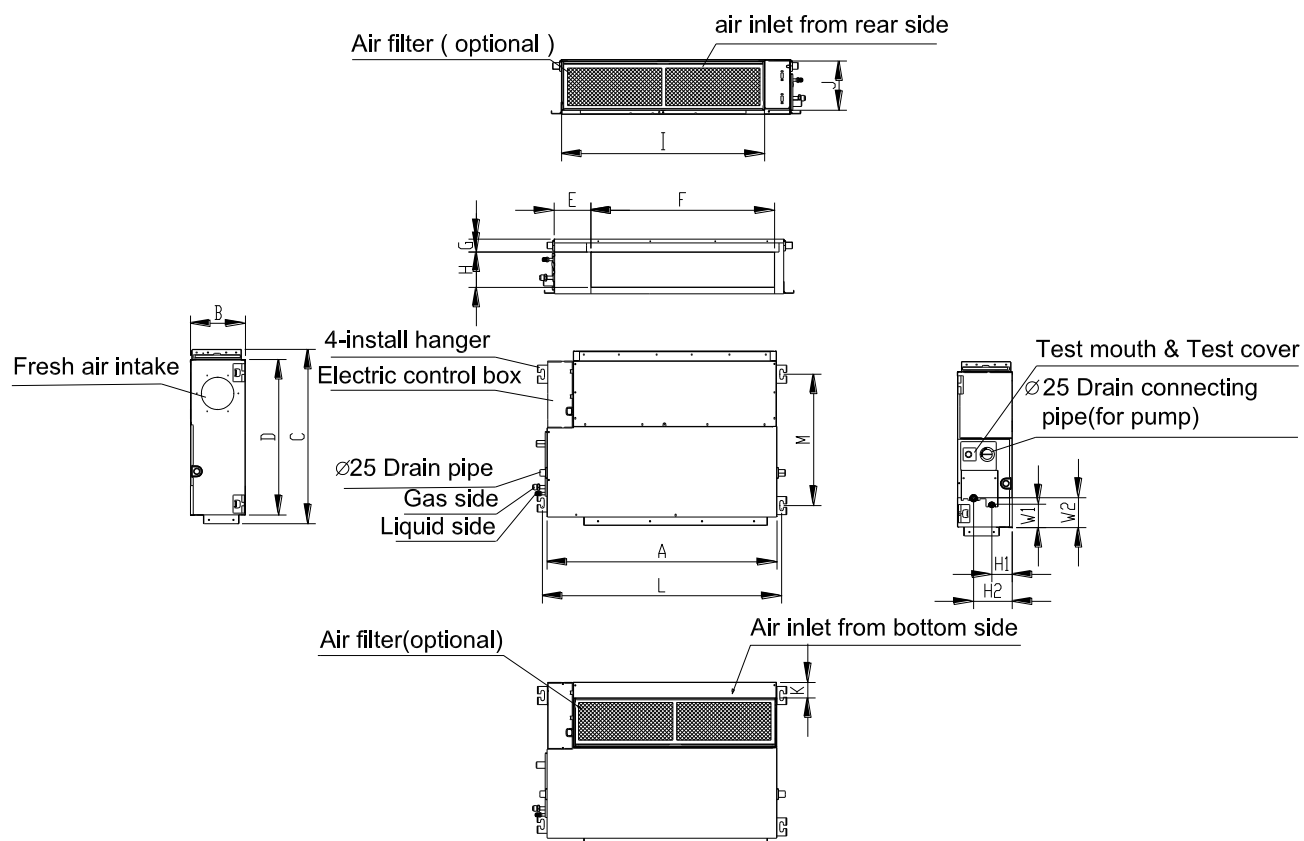


### 1.8 Built-in drain pump (Optional)

- Built-in drain pump can lift the water to 750mm upmost, which widens the drainage piping range.



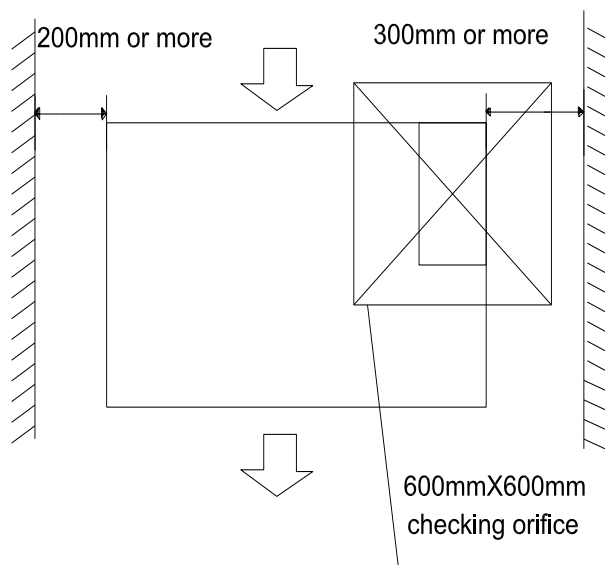
## 2. Dimensions



| Model<br>(KBtu/h) | unit | A     | B     | C     | D     | E    | F     | G    | H    | I     | J     | K    | L     | M     | H1   | H2   | W1   | W2   |
|-------------------|------|-------|-------|-------|-------|------|-------|------|------|-------|-------|------|-------|-------|------|------|------|------|
| 12                | mm   | 700   | 200   | 506   | 450   | 137  | 537   | 30   | 152  | 599   | 186   | 50   | 741   | 360   | 84   | 140  | 84   | 84   |
|                   | 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  |
| 18                | mm   | 880   | 210   | 674   | 600   | 140  | 706   | 50   | 136  | 782   | 190   | 40   | 920   | 508   | 78   | 148  | 88   | 112  |
|                   | inch | 34.65 | 8.27  | 26.54 | 23.62 | 5.51 | 27.80 | 1.97 | 5.35 | 30.79 | 7.48  | 1.57 | 36.22 | 20.00 | 3.07 | 5.83 | 3.46 | 4.41 |
| 24                | mm   | 1100  | 249   | 774   | 700   | 140  | 926   | 50   | 175  | 1001  | 228   | 5    | 1140  | 598   | 80   | 150  | 130  | 155  |
|                   | inch | 43.31 | 9.80  | 30.47 | 27.56 | 5.51 | 36.46 | 1.97 | 6.89 | 39.41 | 8.98  | 0.20 | 44.88 | 23.54 | 3.15 | 5.91 | 5.12 | 6.10 |
| 30/36             | mm   | 1360  | 249   | 774   | 700   | 140  | 1186  | 50   | 175  | 1261  | 228   | 5    | 1400  | 598   | 80   | 150  | 130  | 155  |
|                   | inch | 53.54 | 9.80  | 30.47 | 27.56 | 5.51 | 46.69 | 1.97 | 6.89 | 49.65 | 8.98  | 0.20 | 55.12 | 23.54 | 3.15 | 5.91 | 5.12 | 6.10 |
| 48/60             | mm   | 1200  | 300   | 874   | 800   | 123  | 1044  | 50   | 227  | 1101  | 280   | 5    | 1240  | 697   | 80   | 150  | 185  | 210  |
|                   | inch | 47.24 | 11.81 | 34.41 | 31.5  | 4.84 | 41.1  | 1.97 | 8.94 | 43.35 | 11.02 | 0.20 | 48.82 | 27.44 | 3.15 | 5.91 | 7.28 | 8.27 |

### 3. Service Space

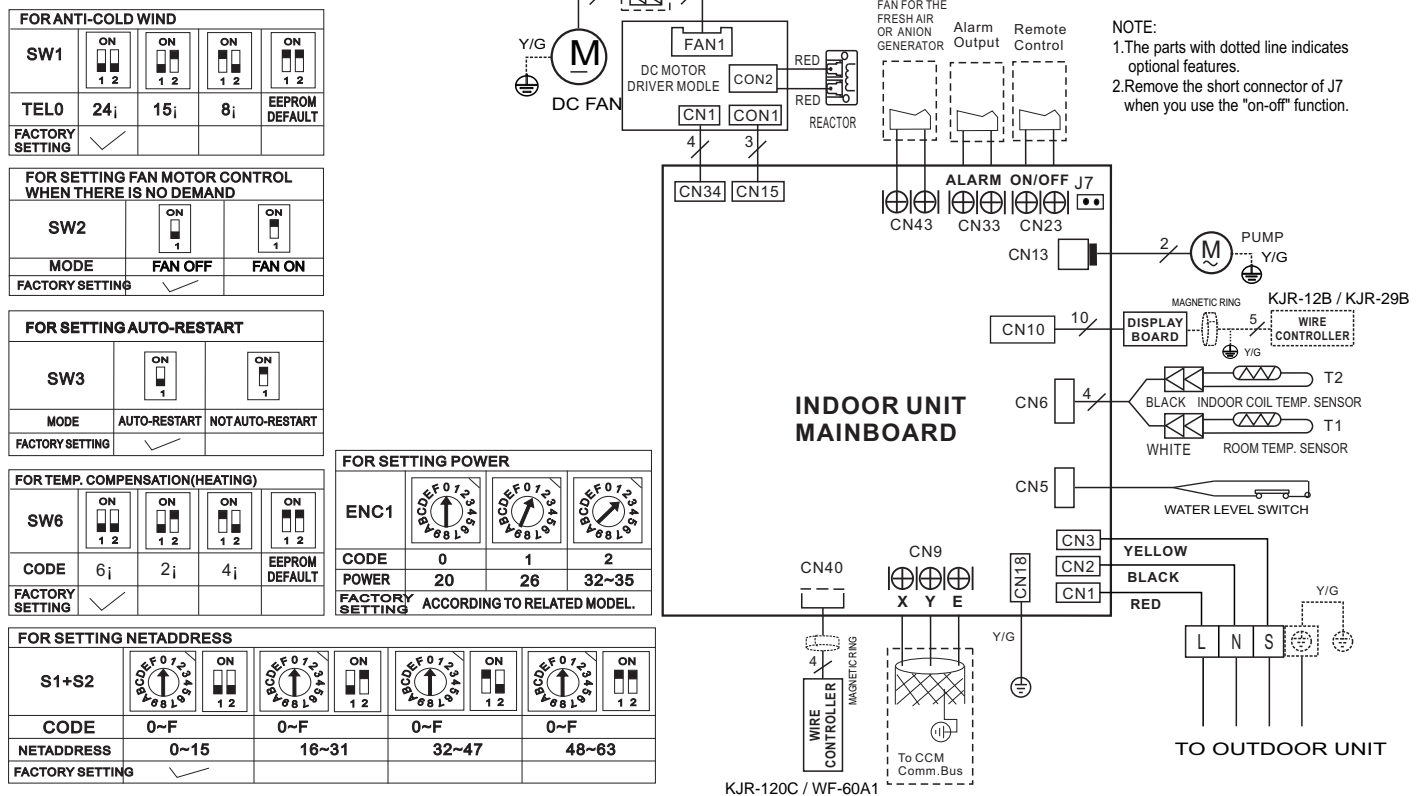
Ensure enough space required for installation and maintenance.



## 4. Wiring Diagrams

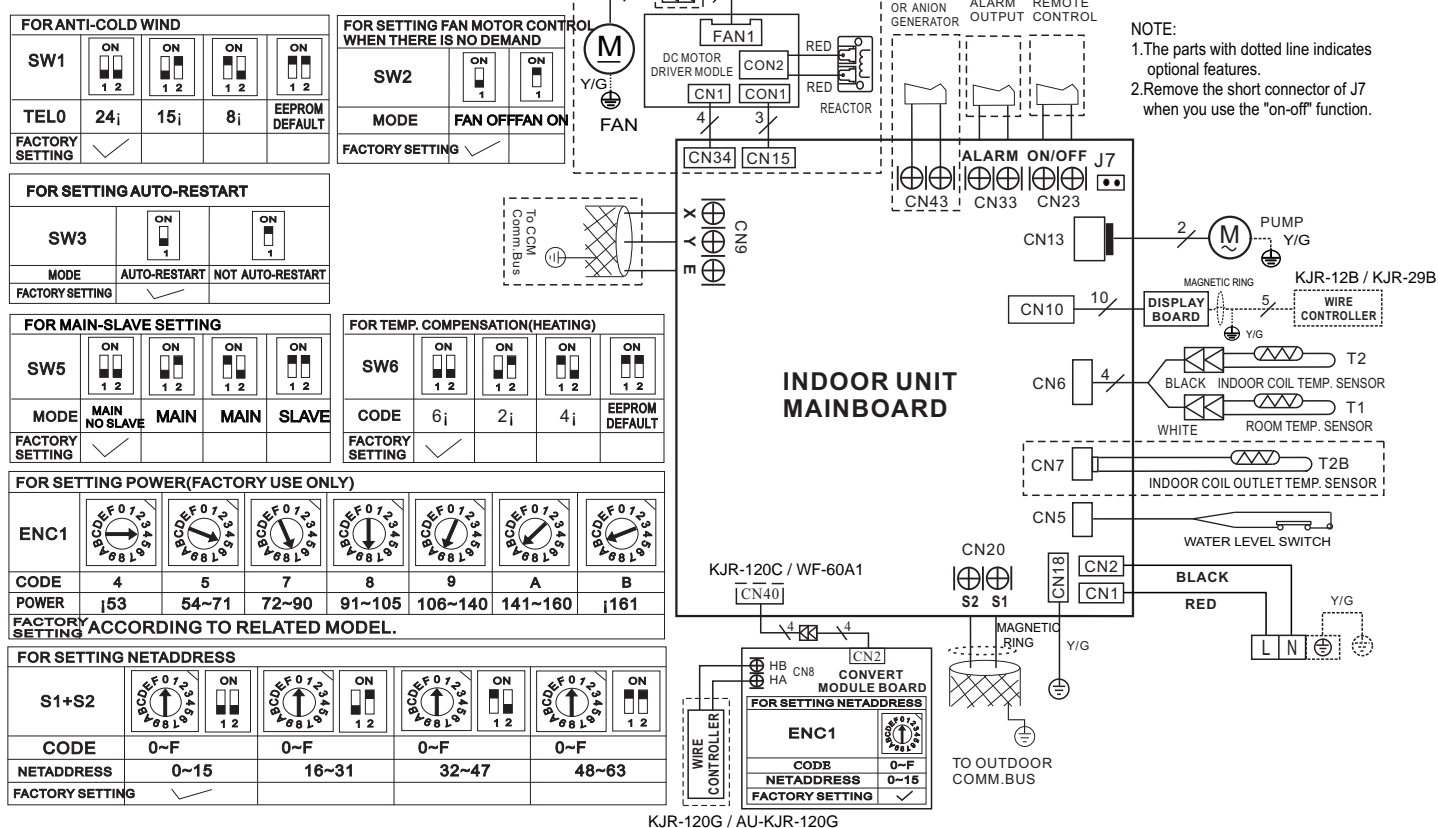
12k

16023000007861 WIRING DIAGRAM

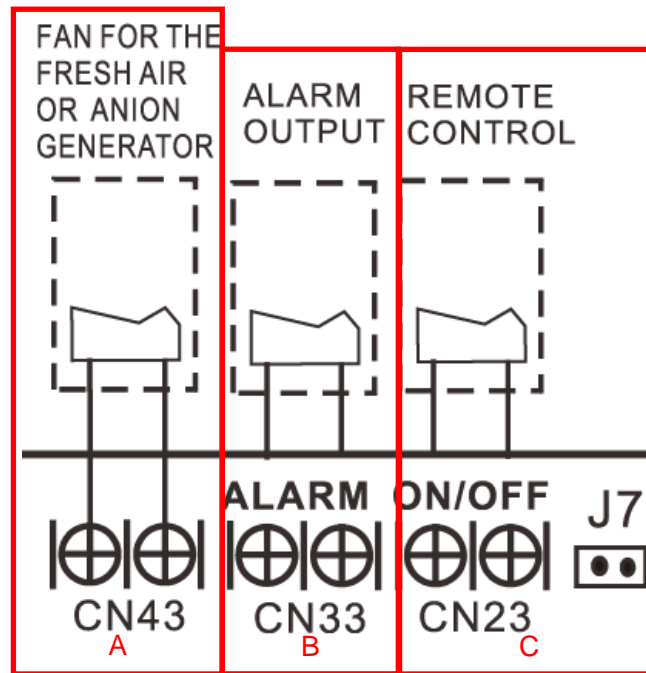


**18k~60k**

16023000A36627 WIRING DIAGRAM

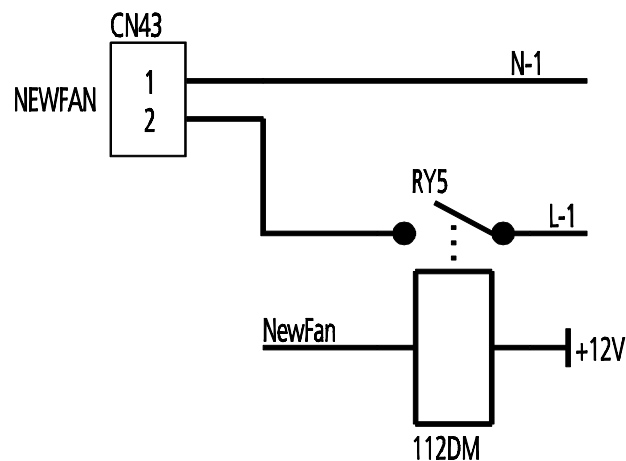


#### 4.1 Some connectors introduce:



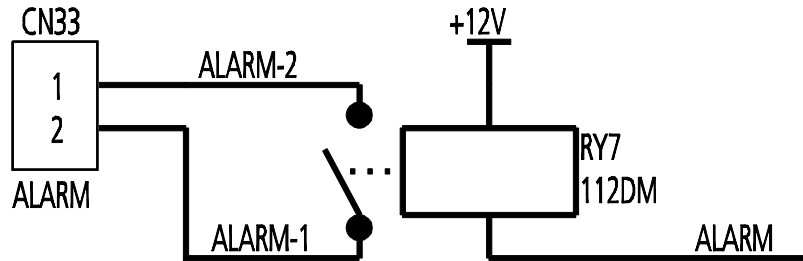
A. For new fresh motor terminal port (also for Anion generator) CN43:

1. Connect the fan motor to the port, no need care L/N of the motor;
2. The output voltage is the power supply;
3. The fresh motor cannot exceed 200W or 1A, follow the smaller one;
4. The new fresh motor will be worked when the indoor fan motor work; when the indoor fan motor stops, the new fresh motor would be stopped;
5. When the unit enter force cooling mode or capacity testing mode, the fresh motor isn't work.



### B For ALARM terminal port CN33

1. Provide the terminal port to connect ALARM, but no voltage of the terminal port, the power from the ALARM system (not from the unit)
2. Although design voltage can support higher voltage, but we strongly ask you connect the power less than 24V, current less than 0.5A.
3. When the unit occurs the problem, the relay would be closed, then ALARM works.

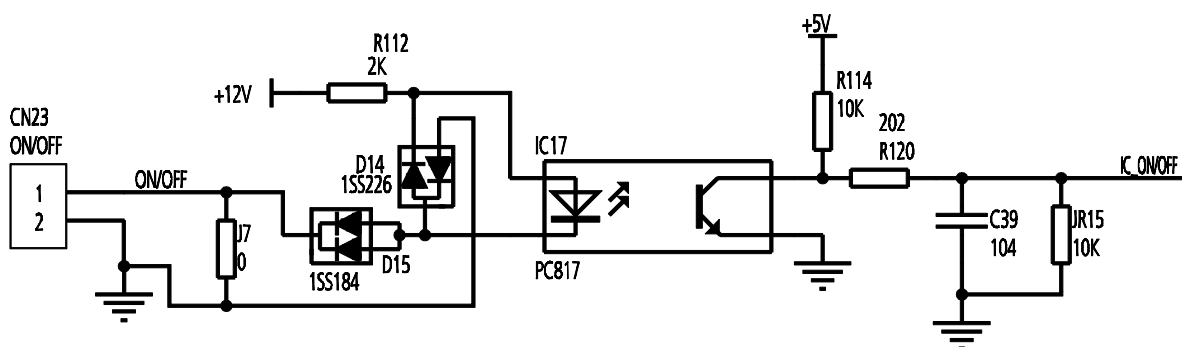


### C. For remote control (ON-OFF) terminal port CN23 and short connector of J7

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 be responded the demand within 2 seconds;
5. When the remote switch on. You can use remote controller/wire controller to select the mode what you want; when the remote switch off, the unit would not respond the demand from remote controller/wire controller.

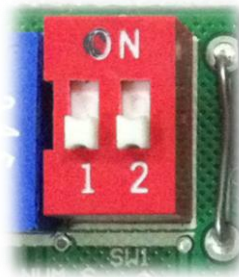
When the remote switch off, but the remote controller / wire controller are on, CP code would be shown on the display board.





6. The voltage of the port is 12V DC, design Max. current is 5mA.





## 4.2 Micro-Switch Introduce:

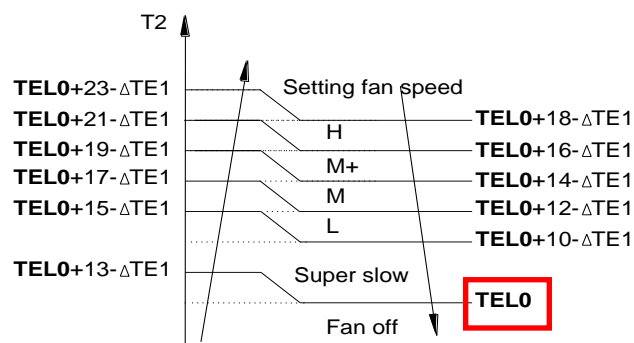


| FOR ANTI-COLD WIND |   |   |   |   |
|--------------------|---|---|---|---|
| SW1                |  |  |  |  |
| TELO               | 24°C  | 15°C  | 8°C   | EEPROM<br>DEFAULT   |
| FACTORY<br>SETTING | ✓   |   |   |   |

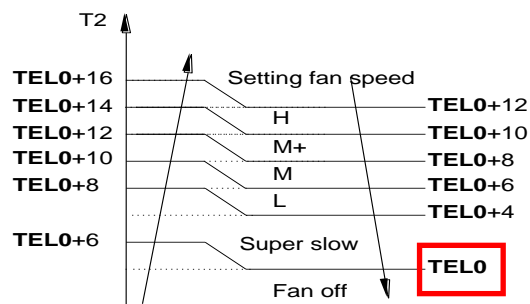
A. Micro-switch SW1 is for selection of indoor fan stop temperature (TELO) when it is in anti-cold wind action in heating mode.



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

For 12K:



For 18K~60K:



| FOR SETTING FAN MOTOR CONTROL<br>WHEN THERE IS NO DEMAND |   |   |
|--|---|---|
| SW2  |  |  |
| MODE   | FAN OFF   | FAN ON  |
| FACTORY<br>SETTING                                       | ✓   |   |

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

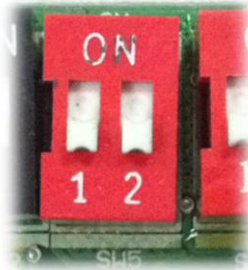
Range: OFF (in 127s), Keep running.



| FOR SETTING AUTO-RESTART |              |                  |
|--------------------------|--------------|------------------|
| SW3                      |              |                  |
| MODE                     | AUTO-RESTART | NOT AUTO-RESTART |
| FACTORY SETTING          | ✓            |                  |

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

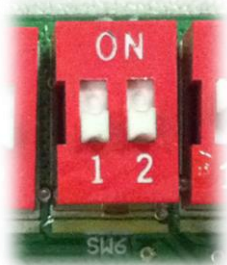
Range: Active, inactive



| FOR MAIN-SLAVE SETTING |               |      |      |       |
|------------------------|---------------|------|------|-------|
| SW5                    |               |      |      |       |
| MODE                   | MAIN NO SLAVE | MAIN | MAIN | SLAVE |
| FACTORY SETTING        | ✓             |      |      |       |

D. Micro-switch SW5 is for setting the master or slave unit when the unit is in twin connection.  
(Only for 18K~60K)

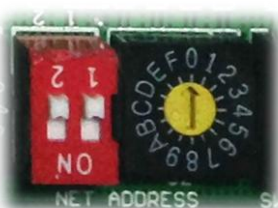
Range: Master no slave (Normal 1 drive 1 connection), Master (2 positions without difference), Slave



| FOR TEMP. COMPENSATION(HEATING) |     |     |     |                |
|---------------------------------|-----|-----|-----|----------------|
| SW6                             |     |     |     |                |
| CODE                            | 6°C | 2°C | 4°C | EEPROM DEFAULT |
| FACTORY SETTING                 | ✓   |     |     |                |

E. 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.

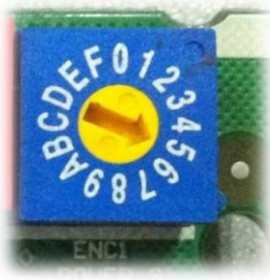
Range: 6°C, 4°C, 2°C, E function (reserved for special customizing)

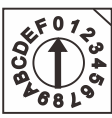
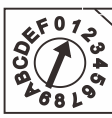
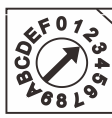



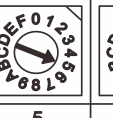
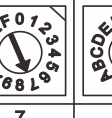

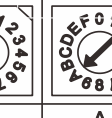
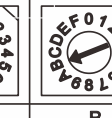
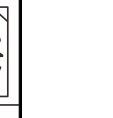
| FOR SETTING NETADDRESS |      |       |       |       |     |     |     |
|------------------------|------|-------|-------|-------|-----|-----|-----|
| S1+S2                  |      |       |       |       |     |     |     |
| CODE                   | 0~F  | 0~F   | 0~F   | 0~F   | 0~F | 0~F | 0~F |
| NETADDRESS             | 0~15 | 16~31 | 32~47 | 48~63 |     |     |     |
| FACTORY SETTING        | ✓    |       |       |       |     |     |     |

F. 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 POWER |   |  | 12K   |
|-------------------|---|--|---|
| ENC1              |  |  |  |
| CODE              | 0   | 1  | 2   |
| POWER             | 20  | 26   | 32~35   |
| FACTORY SETTING   | ACCORDING TO RELATED MODEL.   |  |   |

| FOR SETTING POWER(FACTORY USE ONLY) |   |   |   |   |  |   | 18K~55K   |
|-------------------------------------|---|---|---|---|--|---|---|
| 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.   |   |   |   |  |   |   |

G. Dial-switch ENC1: The indoor PCB is universal designed for whole series units from 7K to 18k and from 18K to 60K. This ENC1 setting will tell the main program what size the unit is.

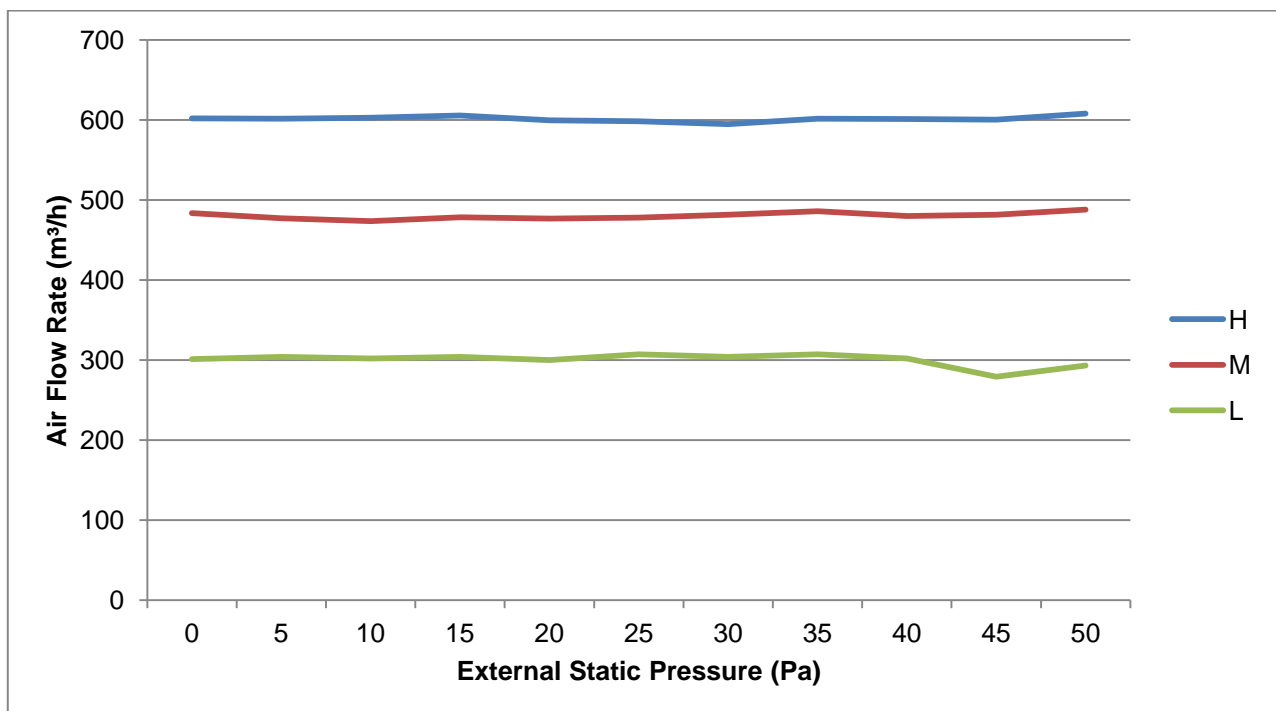
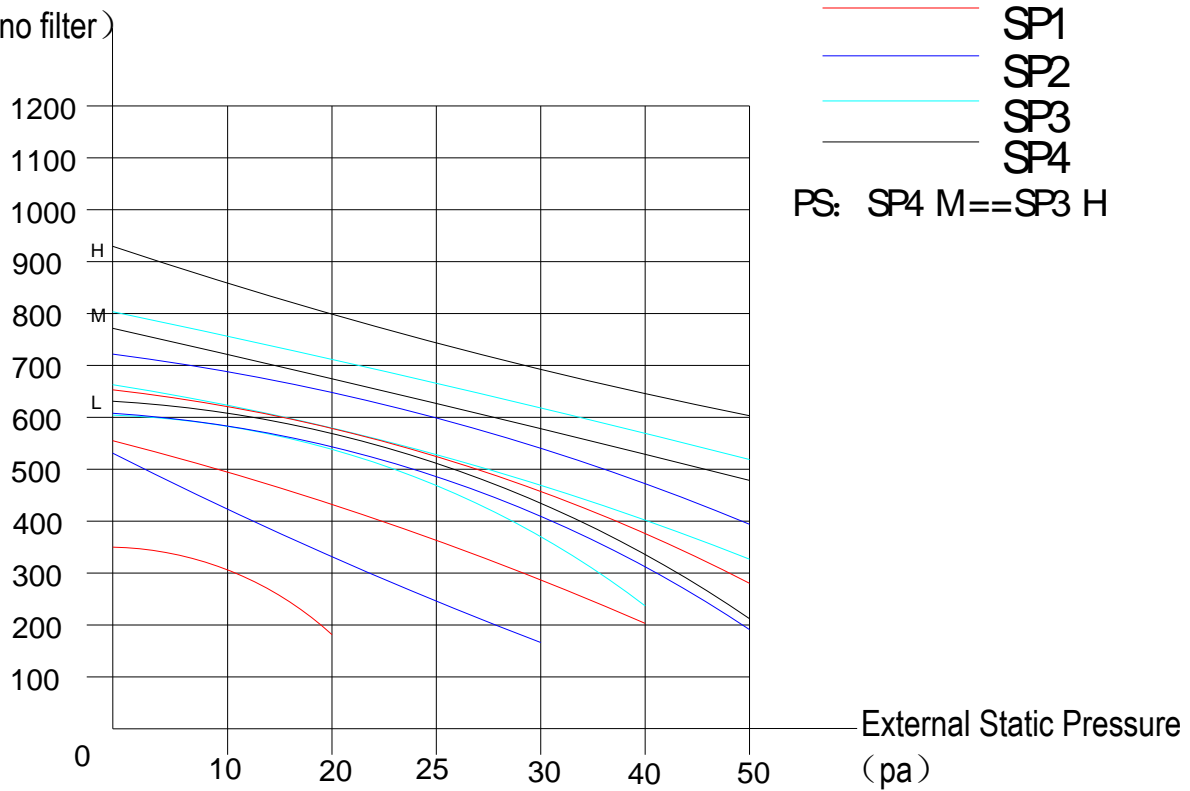
NOTE: Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

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

## 5. Static Pressure

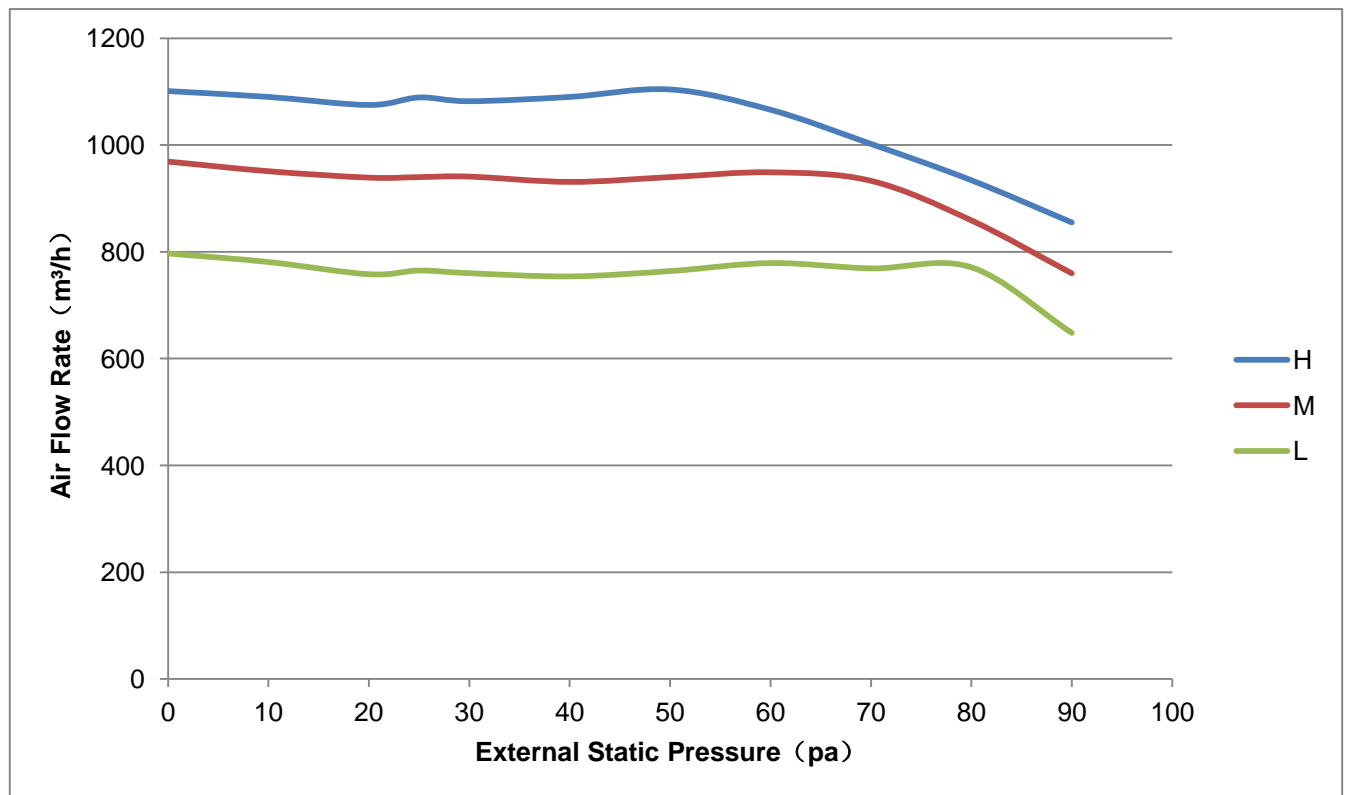
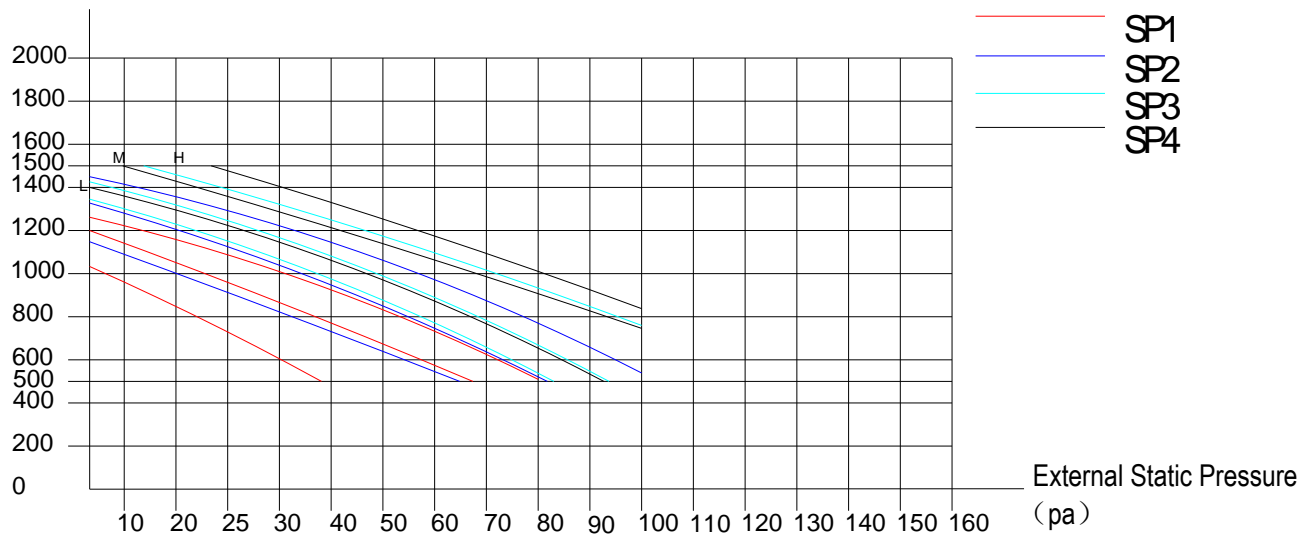
MUCR-12-H8

Air flow rate(m<sup>3</sup>/h)  
(no filter)



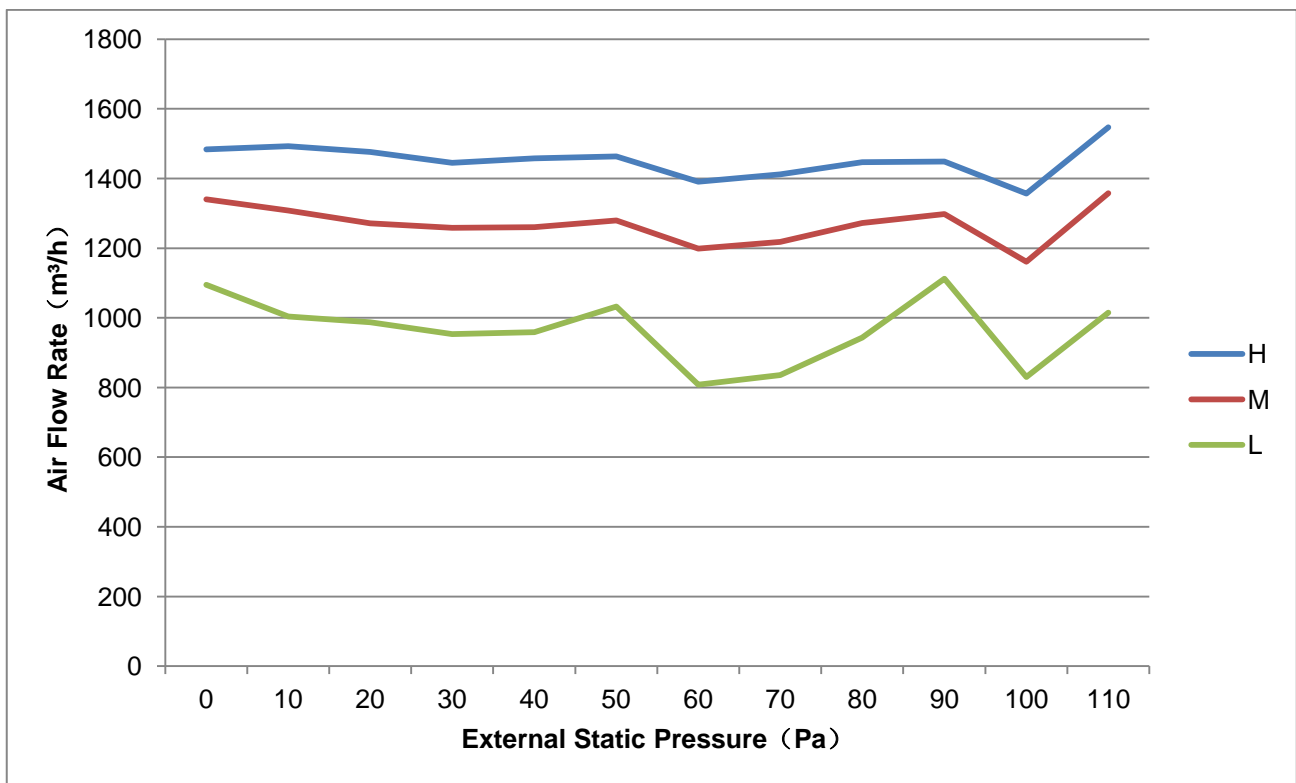
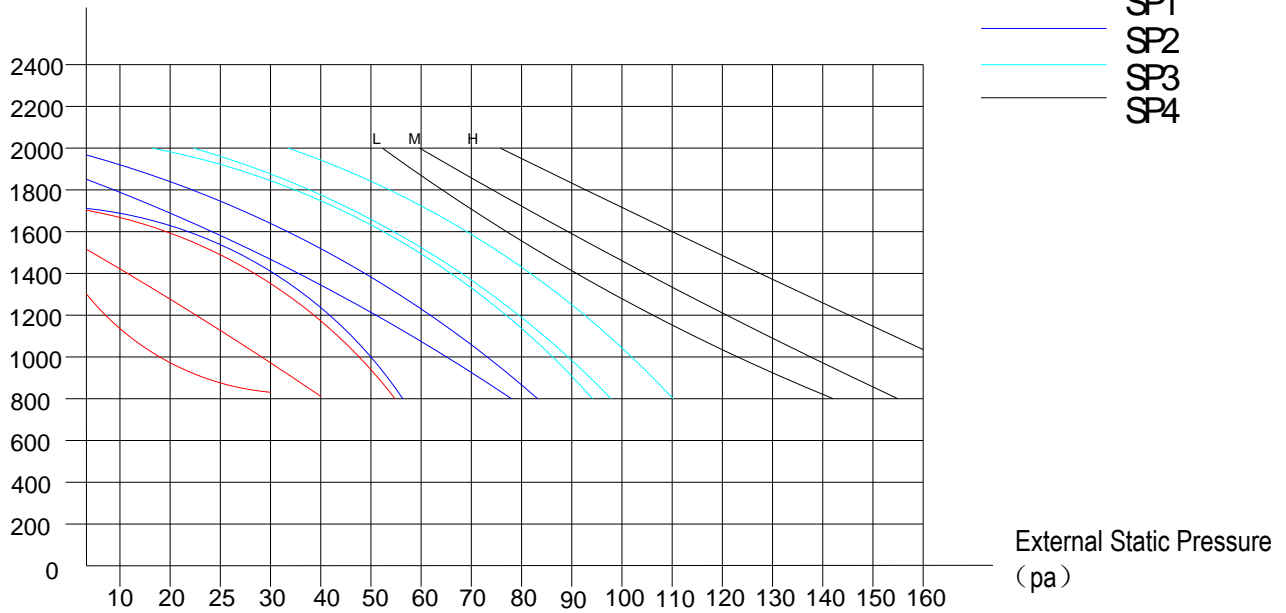
MUCR-18-H8

Air flow rate (m<sup>3</sup>/h)  
(no filter)



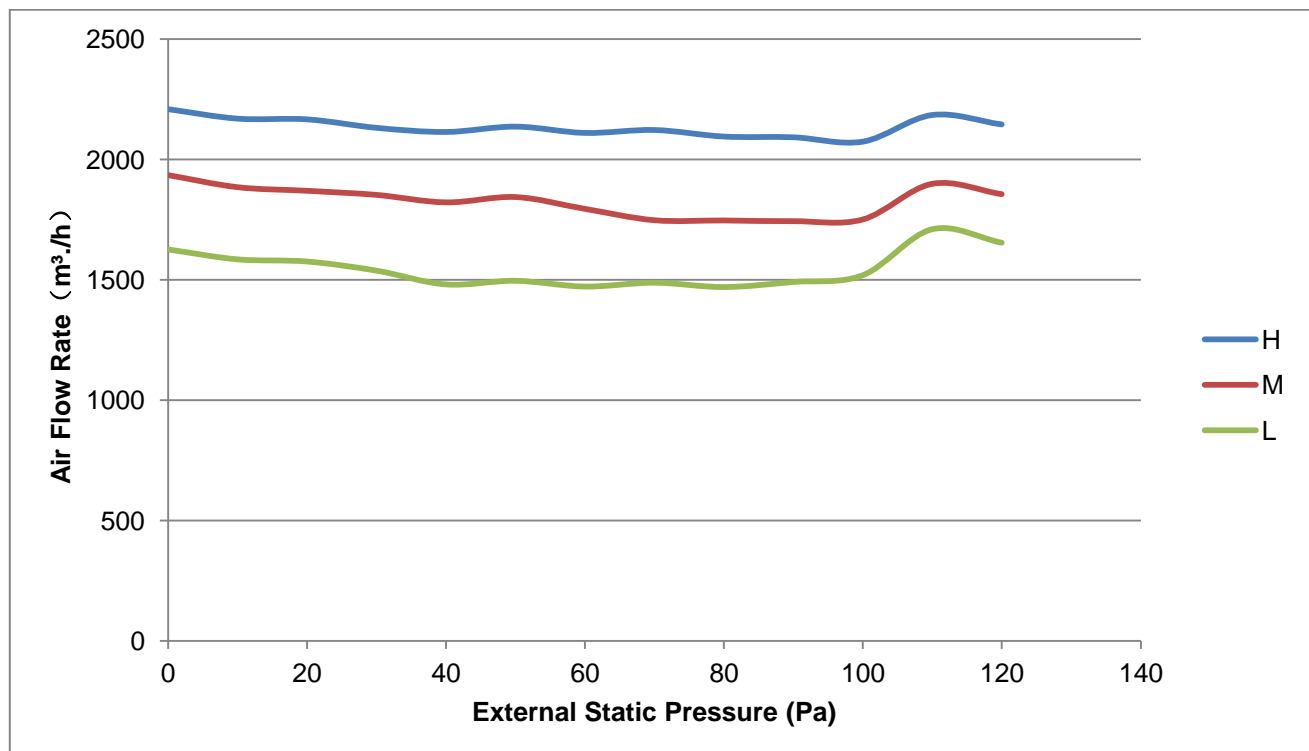
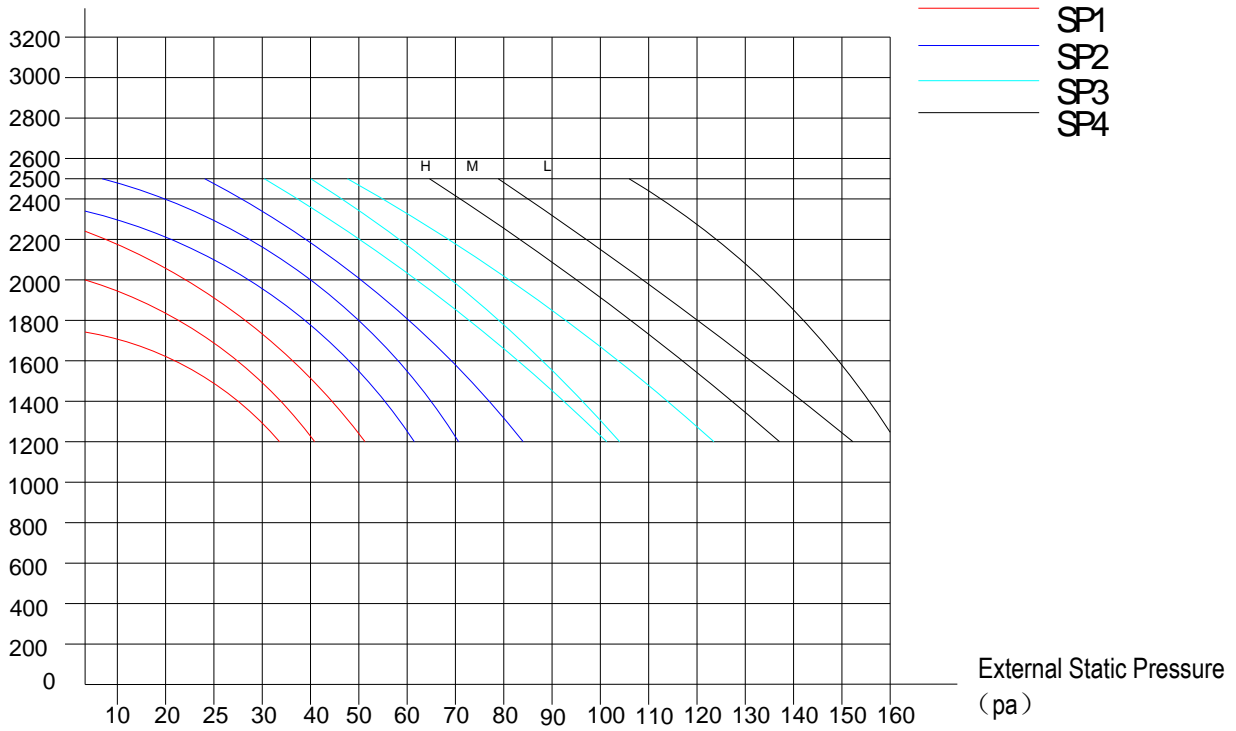
MUCR-24-H8

Air flow rate(m<sup>3</sup>/h)  
(no filter)



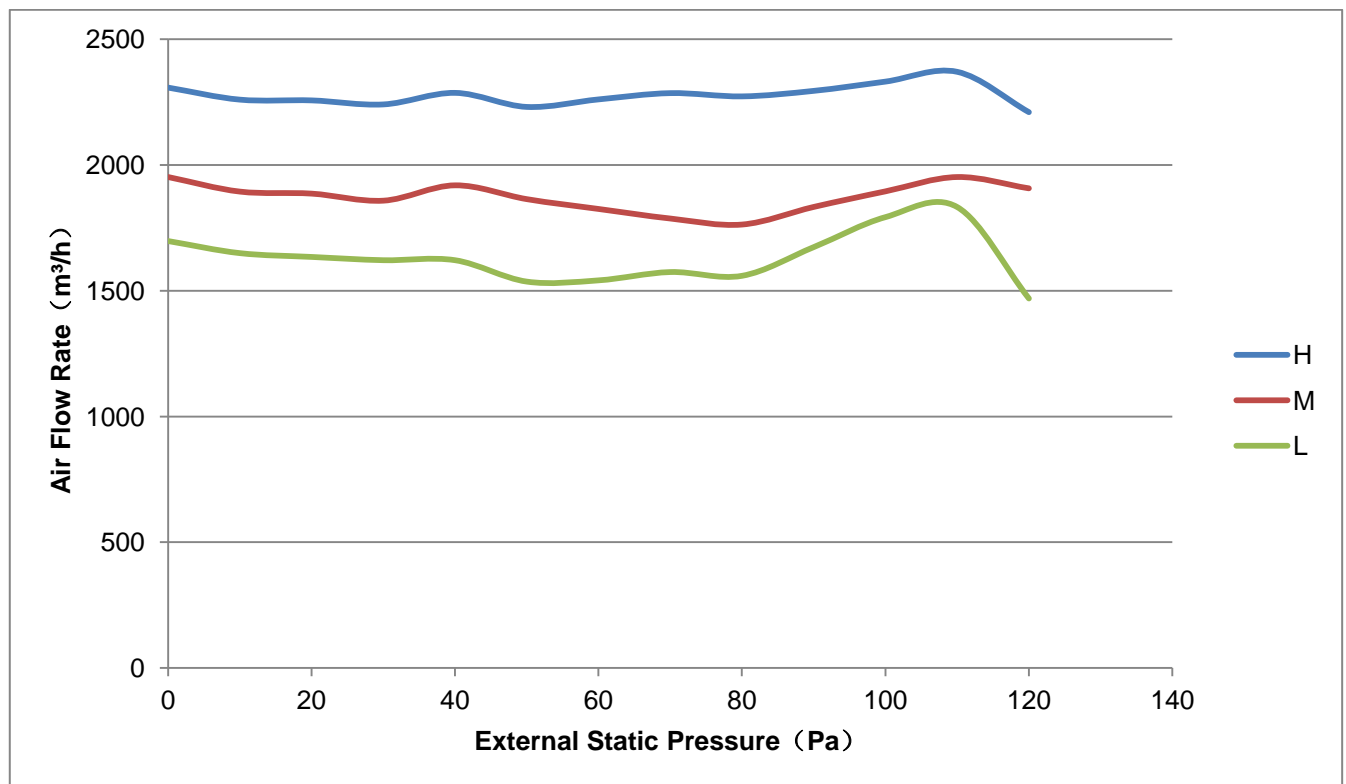
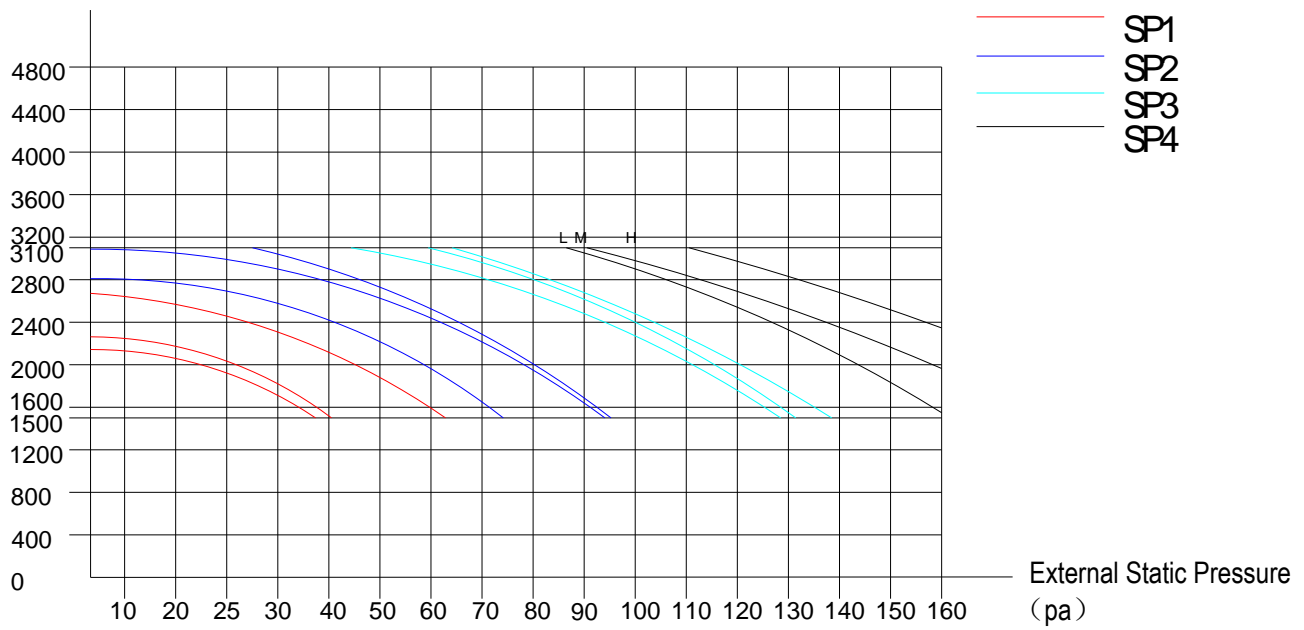
MUCR-30-H8 / MUCR-36-H8

Air flow rate(m<sup>3</sup>/h)  
(no filter)



MUCR-48-H8 / MUCR-48-H8T

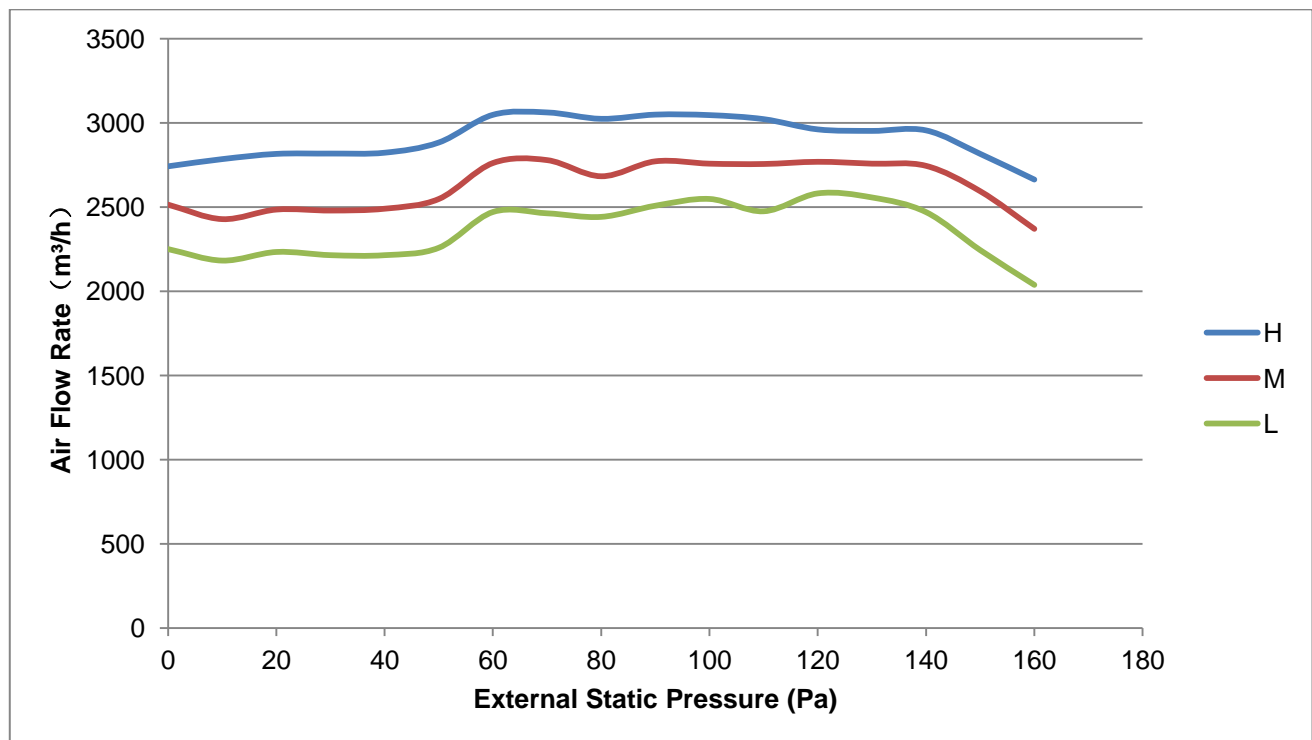
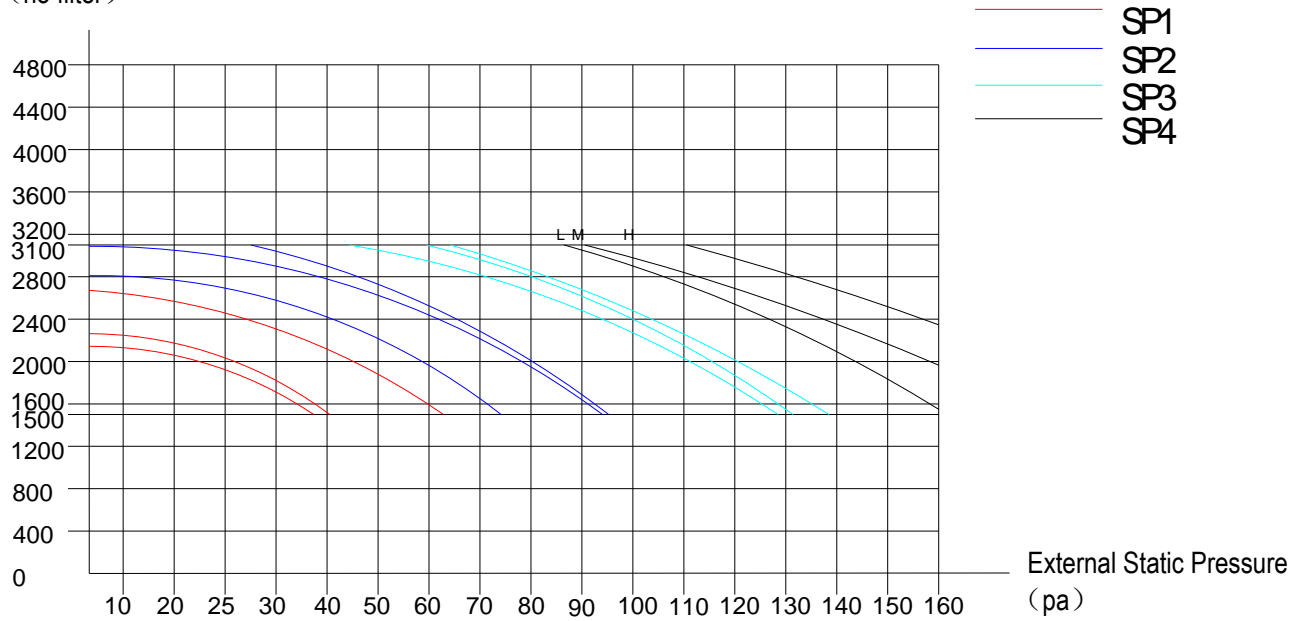
Air flow rate(m<sup>3</sup>/h)  
(no filter)





MUCR-60-H8 / MUCR-60-H8T

Air flow rate(m<sup>3</sup>/h)  
(no filter)



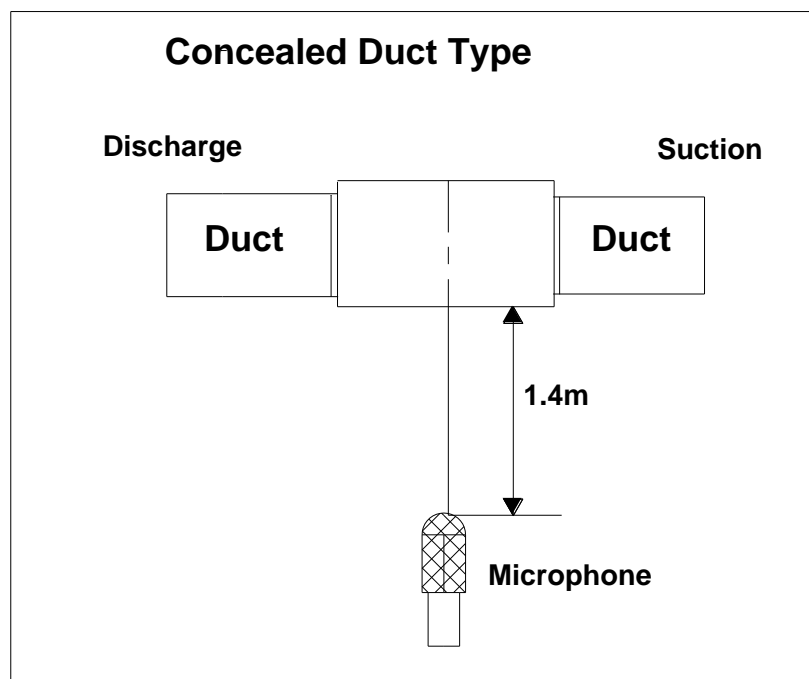
## 6. Electric Characteristics

| Model                       | Indoor Unit |          |      |      | Power Supply |
|-----------------------------|-------------|----------|------|------|--------------|
|                             | Hz          | Voltage  | Min. | Max. | MFA          |
| MUCR-12-H8                  | 50          | 220-240V | 198V | 254V | /            |
| MUCR-18-H8                  | 50          | 220-240V | 198V | 254V | /            |
| MUCR-24-H8                  | 50          | 220-240V | 198V | 254V | /            |
| MUCR-30-H8                  | 50          | 220-240V | 198V | 254V | /            |
| MUCR-36-H8                  | 50          | 220-240V | 198V | 254V | /            |
| MUCR-48-H8 /<br>MUCR-48-H8T | 50          | 220-240V | 198V | 254V | /            |
| MUCR-60-H8 /<br>MUCR-60-H8T | 50          | 220-240V | 198V | 254V | /            |

**Note:**




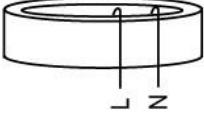







MFA: Max. Fuse Amps. (A)

## 7. Sound Levels



| Model                    | Sound Power<br>dB(A) | Noise level dB(A) |    |    |
|--------------------------|----------------------|-------------------|----|----|
|                          |                      | H                 | M  | L  |
| MUCR-12-H8               | 59                   | 40                | 34 | 28 |
| MUCR-18-H8               | 58                   | 42                | 40 | 38 |
| MUCR-24-H8               | 62                   | 42                | 39 | 36 |
| MUCR-30-H8               | 63                   | 41                | 40 | 37 |
| MUCR-36-H8               | 62                   | 42                | 40 | 39 |
| MUCR-48-H8 / MUCR-48-H8T | 71                   | 52                | 50 | 48 |
| MUCR-60-H8 / MUCR-60-H8T | 75                   | 57                | 56 | 54 |

## 8. Accessories

|   | Name   | Shape   | Quantity          |
|---|--|---|-------------------|
| Tubing & Fittings                             | Soundproof / insulation sheath   |    | 2                 |
|   | Drain joint  |    | 1                 |
| Drainpipe Fittings<br>(for cooling & heating) | Seal ring  |    | 1                 |
|   | Magnetic ring<br>(twist the electric wires L and N around the magnetic ring to five circles) |    | 1                 |
| Wired controller & Its Frame                  | Wired controller   |    | 1                 |
|   | Owner' s manual of wired controller  |    | 1                 |
|   | Wired controller installation manual   |    | 1                 |
| Others  | Owner' s manual  |    | 1                 |
|   | Installation manual  |    | 1                 |
|   | Connecting wire for display (2m)   |  | 1(on some models) |
|   | Cord protection rubber ring  |  | 1(on some models) |

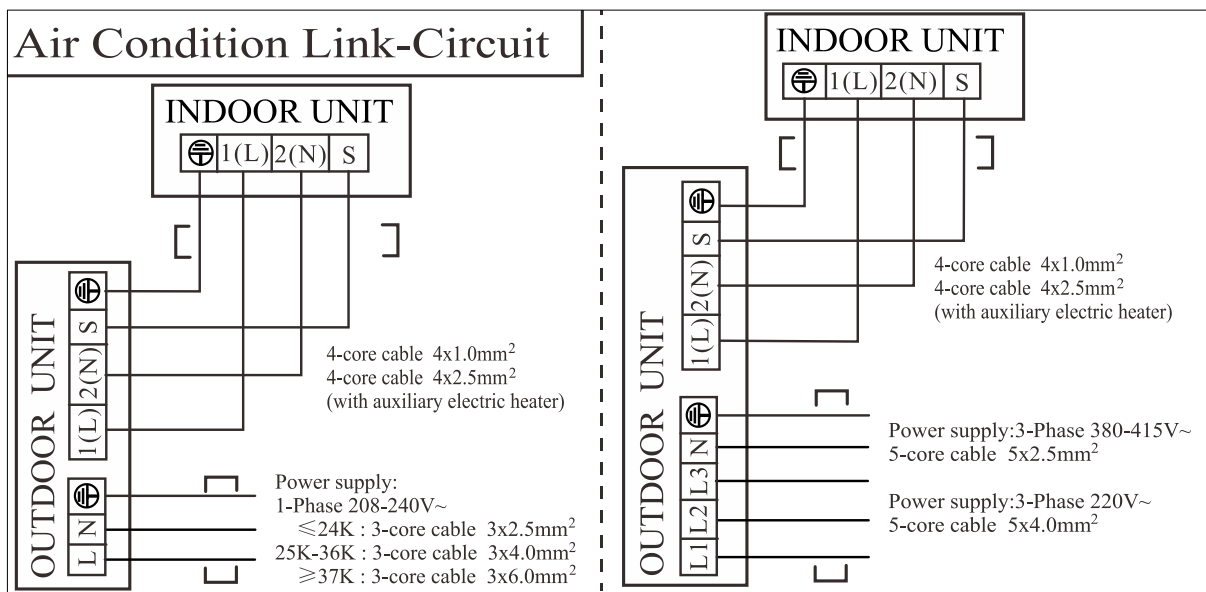
## 9. The Specification of Power

|   |                                 |   |   |   |   |   |
|---|---------------------------------|---|---|---|---|---|
| Model(Btu/h)  |                                 | 12000                                       | 18000-24000                                 | 30000                                       | 36000                                       | 36000                                       |
|   | Frequency and Voltage           | 220-240V, 50Hz                              | 220-240V, 50Hz                              | 220-240V, 50Hz                              | 220-240V, 50Hz                              | 380-415V, 50Hz                              |
|   | POWER WIRING (mm <sup>2</sup> ) | 3×2.5                                       | 3×2.5                                       | 3×2.5                                       | 3×4.0                                       | 5×2.5                                       |
| CIRCUIT BREAKER/Fuse (A)  |                                 | 20/16                                       | 30/20                                       | 40/30                                       | 40/30                                       | 30/20                                       |
| Indoor/Outdoor Connecting Wiring(Weak Electric Signal) (mm <sup>2</sup> )   |                                 | ————  | 2×0.2                                       | 2×0.2                                       | 2×0.2                                       | 2×0.2                                       |
| Indoor/Outdoor Connecting Wiring(Strong Electric Signal) (mm <sup>2</sup> ) |                                 | 4×1.0(4×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) |

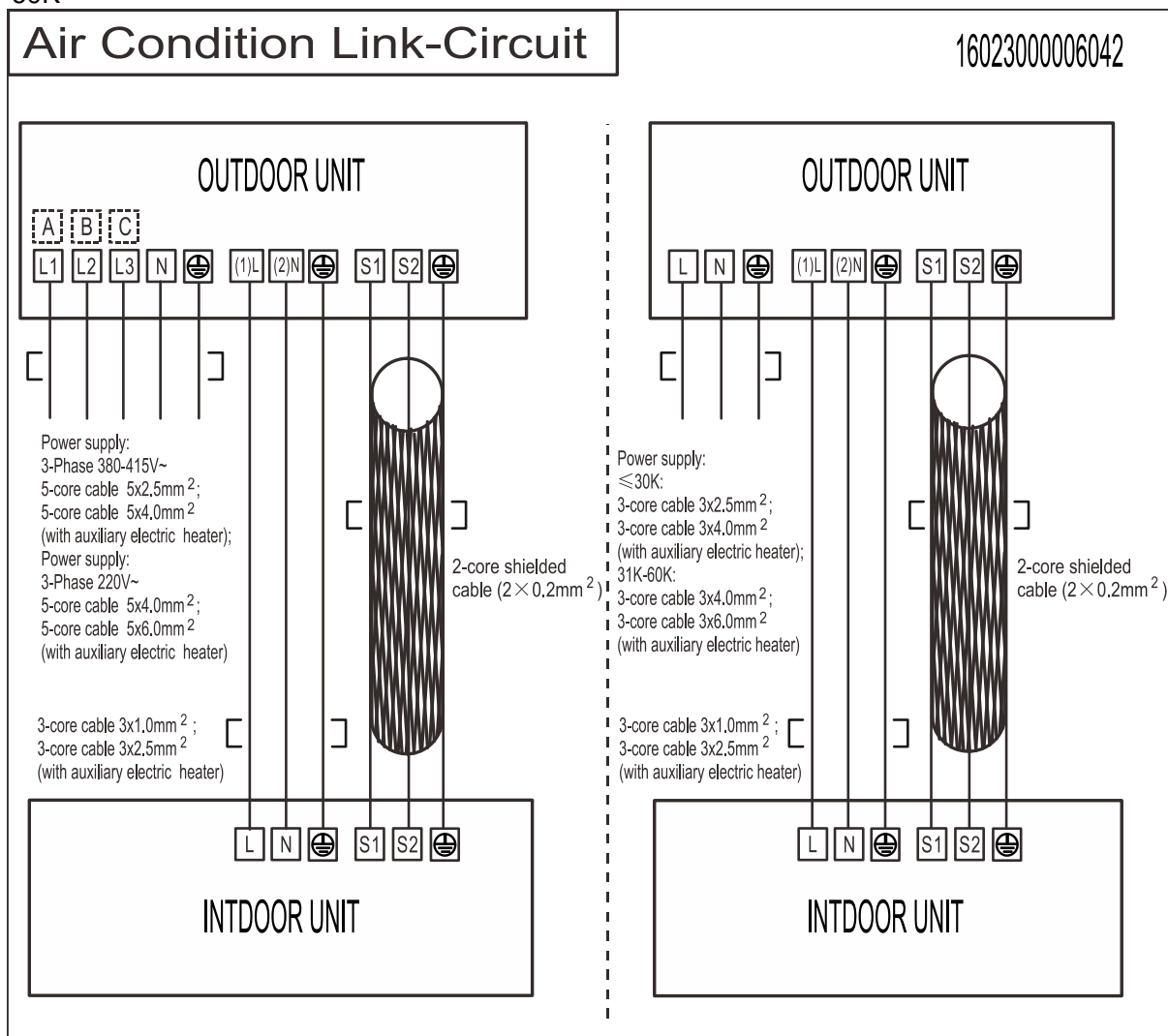
|   |                                 |   |   |
|---|---------------------------------|---|---|
| Model(Btu/h)  |                                 | 48000                                       | 48000-60000                                 |
| POWER   | Phase                           | 1-phase                                     | 3-phase                                     |
|   | Frequency and Voltage           | 220-240V, 50Hz                              | 380-415V, 50Hz                              |
|   | Power Wiring (mm <sup>2</sup> ) | 3×4.0                                       | 5×2.5                                       |
| Circuit Breaker/Fuse(A)   |                                 | 40/35                                       | 30/25                                       |
| Indoor/Outdoor Connecting Wiring(Weak Electric Signal) (mm <sup>2</sup> )   |                                 | 2×0.2                                       | 2×0.2                                       |
| Indoor/Outdoor Connecting Wiring(Strong Electric Signal) (mm <sup>2</sup> ) |                                 | 3×1.0(3×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) |

## 10. Field Wiring

12K



18K~60K



# MUSTR-H8 Ceiling and Floor Type

|   |    |
|---|----|
| 1. Features.....  | 50 |
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## 1. Features

### 1.1. New design, more modern and elegant appearance.

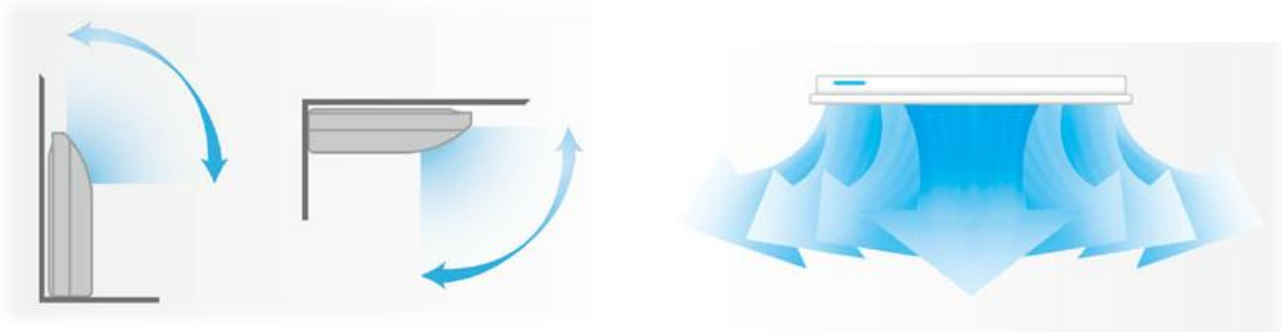


### 1.2. Convenient installation

- The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow
- It is especially useful when installation of an air conditioner in the center of the ceiling is impossible due to a structure such as one lighting.

### 1.3. Two direction auto swing (vertical & horizontal) and wide angle air flow,

- Air flow directional control minimizes the air resistance and produces wider air flow to vertical direction.
- The range of horizontal air discharge is widened which secures wider air flow distribution to provide more comfortable air circulation no matter where the unit is set up



### 1.4. Three level fan speed, more humanism design, meets different air-supply requirement.

### 1.5. New foam drain pan with plastic-spraying inner surface

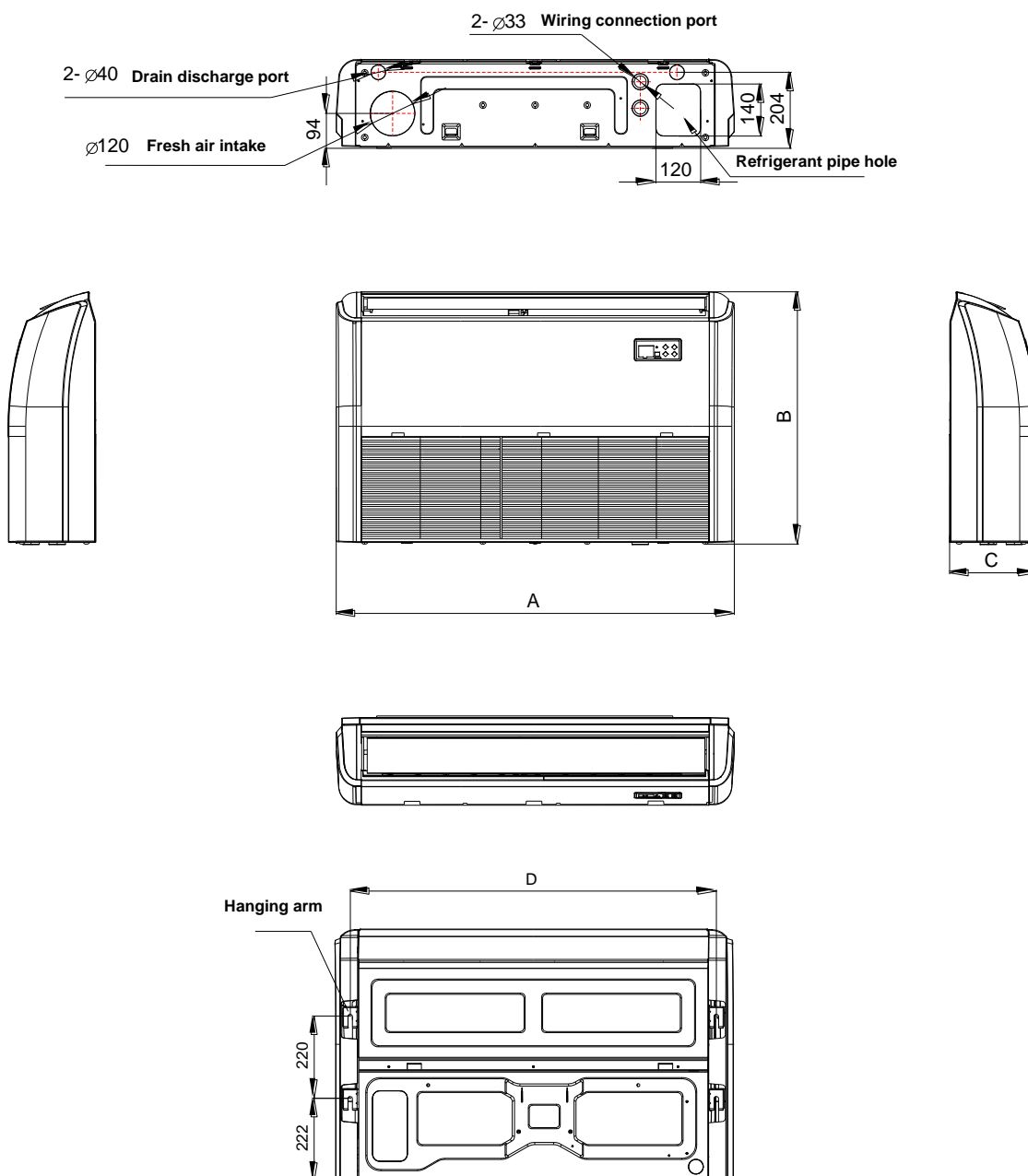


### 1.6. Easy operation.

### 1.7. Remote control and optional wired control method.

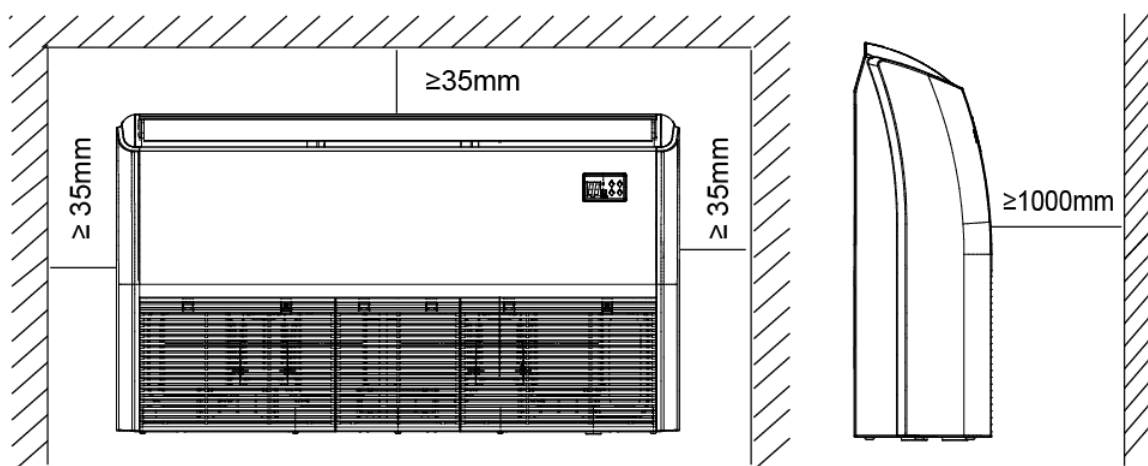


## 2. Dimensions



| Capacity (KBtu/h) | A    | B   | C   | D    |
|-------------------|------|-----|-----|------|
| 18/24             | 1068 | 675 | 235 | 983  |
| 30                | 1285 | 675 | 235 | 1200 |
| 36/48/60          | 1650 | 675 | 235 | 1565 |

### 3. Service Space



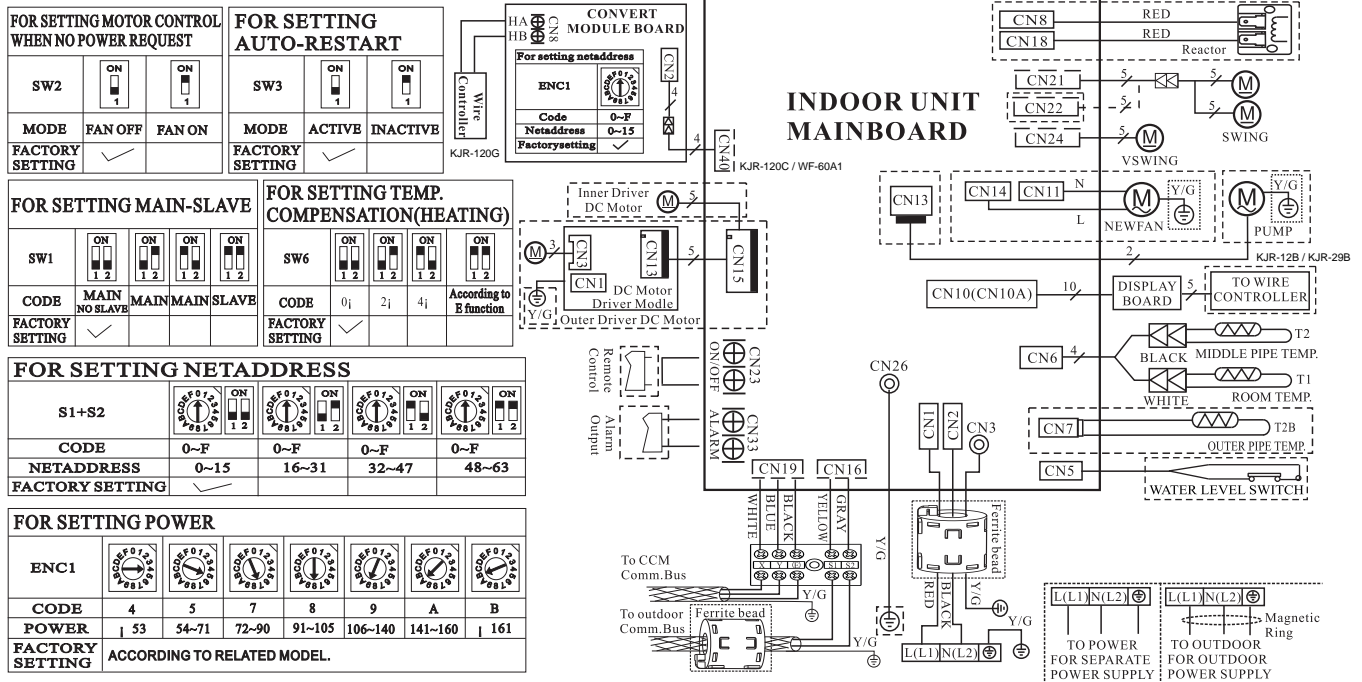
## 4. Wiring Diagrams

### MUSTR-18-H8 / MUSTR-24-H8 / MUSTR-30-H8

#### WIRING DIAGRAM (INDOOR UNIT)

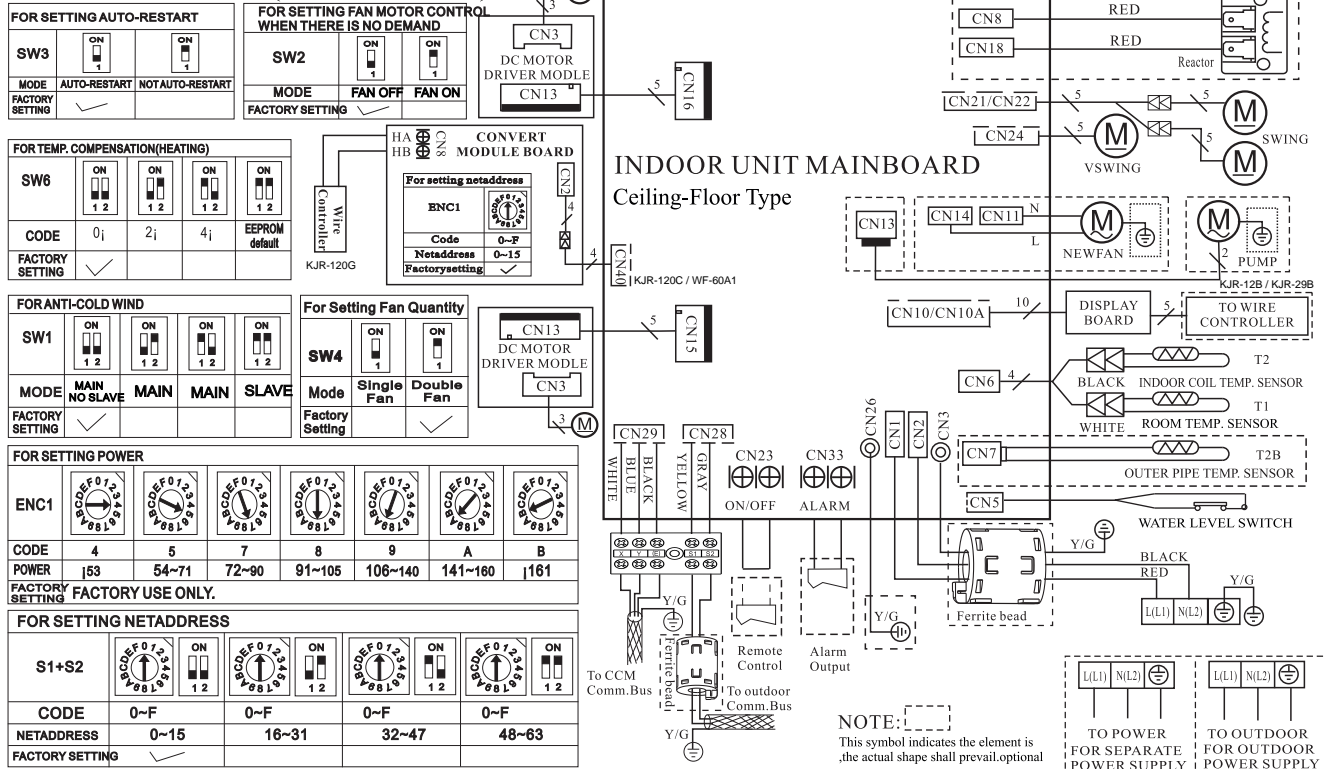
NOTE:

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

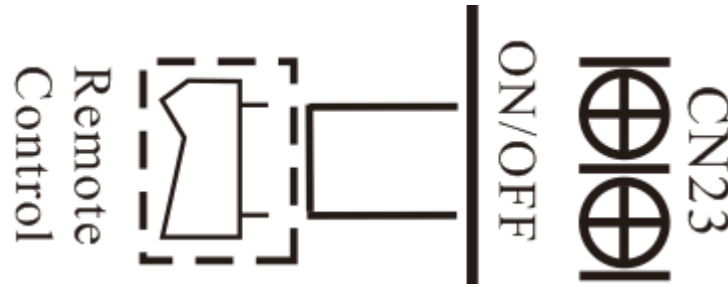


### MUSTR-36-H8 / MUSTR-48-H8 / MUSTR-48-H8T / MUSTR-60-H8 / MUSTR-60-H8T

#### WIRING DIAGRAM(INDOOR UNIT)



#### 4.1 Some connectors introduce:

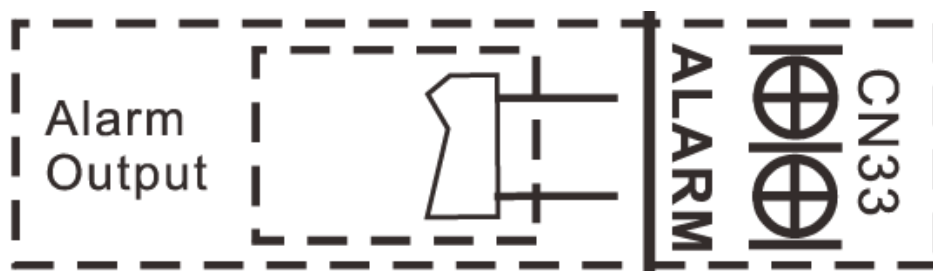
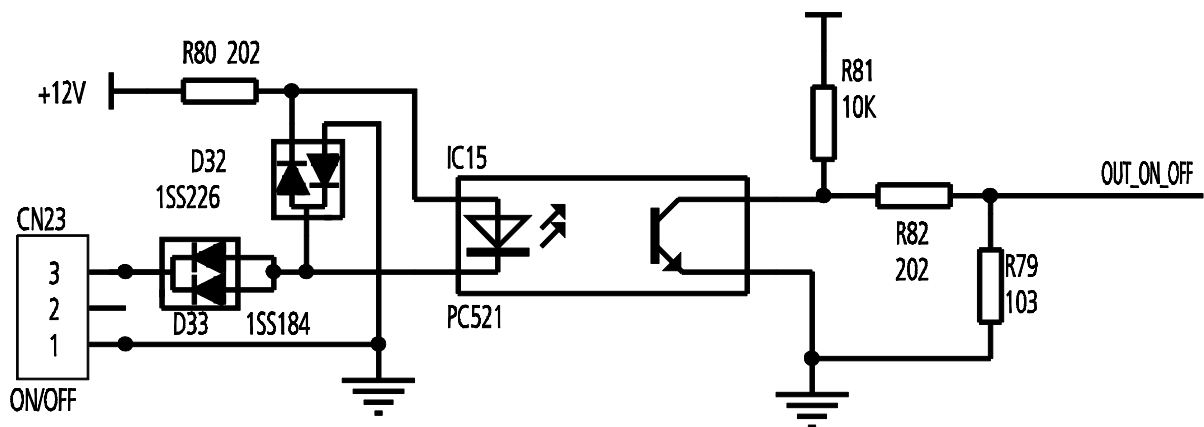


A For remote control (ON-OFF) terminal port CN23

1. Remove the short connector in CN23 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 be responded the demand within 2 seconds;
5. When the remote switch on. You can use remote controller/wire controller to select the mode what you want; when the remote switch off, the unit would not respond 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.

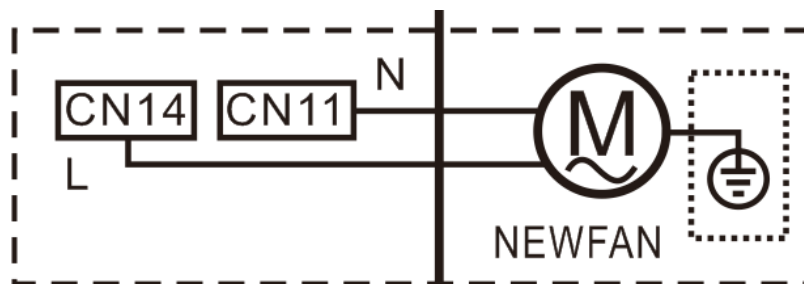
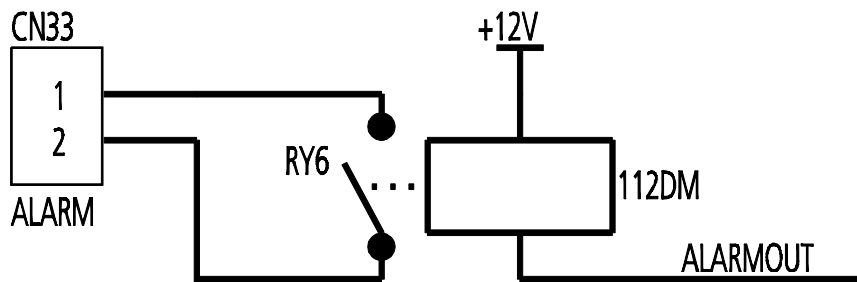
6. The voltage of the port is 12V DC, design Max. current is 5mA.



B For ALARM terminal port CN33

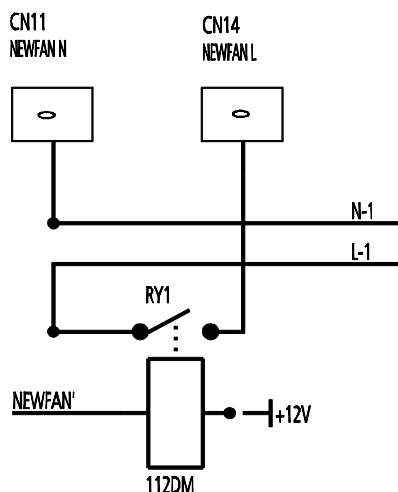
1. Provide the terminal port to connect ALARM, but no voltage of the terminal port , the power from the ALARM system (not from the unit )

2. Although design voltage can support higher voltage, but we strongly ask you connect the power less than 24V, current less than 0.5A
3. When the unit occurs the problem, the relay would be closed, then ALARM works

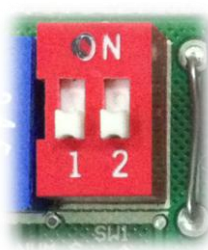


C. For new fresh motor terminal port CN14&CN14

1. Connect the fan motor to the port, no need care L/N of the motor;
2. The output voltage is the power supply;
3. The fresh motor cannot exceed 200W or 1A, follow the smaller one;
4. The new fresh motor will be worked when the indoor fan motor work ;when the indoor fan motor stops, the new fresh motor would be stopped;
5. When the unit enter force cooling mode or capacity testing mode, the fresh motor isn't work.



## 4.2 Micro-Switch Introduce:



| FOR SETTING MAIN-SLAVE |                  |      |      |       |
|------------------------|------------------|------|------|-------|
| SW1                    |                  |      |      |       |
| CODE                   | MAIN<br>NO SLAVE | MAIN | MAIN | SLAVE |
| FACTORY<br>SETTING     | ✓                |      |      |       |

A. Micro-switch SW1 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 SETTING FAN MOTOR CONTROL<br>WHEN THERE IS NO DEMAND |         |        |
|--|---------|--------|
| SW2  |         |        |
| MODE   | FAN OFF | FAN ON |
| FACTORY SETTING  | ✓       |        |

B. Micro-switch SW2 is for selection of indoor FAN ACTION if room temperature reaches the setpoint and the compressor stops.  
Range: OFF (in 127s), Keep running.



| FOR SETTING AUTO-RESTART |              |                  |
|--------------------------|--------------|------------------|
| SW3                      |              |                  |
| MODE                     | AUTO-RESTART | NOT AUTO-RESTART |
| FACTORY SETTING          | ✓            |                  |

C. Micro-switch SW3 is for selection of auto-restart function.  
Range: Active, inactive



| For Setting Fan Quantity |            |            |
|--------------------------|------------|------------|
| SW4                      |            |            |
| Mode                     | Single Fan | Double Fan |
| Factory Setting          |            | ✓          |

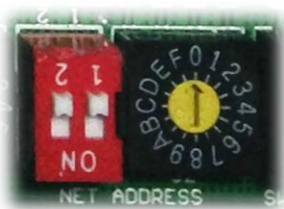
D. Micro-switch SW4 is for selection of quantity of fan motors. Same as size selection switch, this switch is for making the PCB suitable for all series units. DO NOT change it at random unless you want to use the PCB as a spare part  
Range: Single Fan, Double Fan



| FOR SETTING TEMP. COMPENSATION(HEATING) |           |           |           |                         |
|---|-----------|-----------|-----------|-------------------------|
| SW6                                     | ON<br>1 2 | ON<br>1 2 | ON<br>1 2 | ON<br>1 2               |
| CODE                                    | 0℃        | 2℃        | 4℃        | According to E function |
| FACTORY SETTING                         | ✓         |           |           |                         |

E. 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 unit is on-floor installed, 0 should be chosen.

Range: **0℃, 2℃, 4℃**, E function (reserved for special customizing)



| FOR SETTING NETADDRESS |                               |                               |                               |                               |
|------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| S1+S2                  | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 |
| CODE                   | 0~F                           | 0~F                           | 0~F                           | 0~F                           |
| NETADDRESS             | 0~15                          | 16~31                         | 32~47                         | 48~63                         |
| FACTORY SETTING        | ✓                             |                               |                               |                               |

F. 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 POWER(FACTORY USE ONLY) |                               |                               |                               |                               |                               |                               |                               |
|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| ENC1                                | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 | BCDEF0123456789A<br>ON<br>1 2 |
| 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.   |                               |                               |                               |                               |                               |                               |

G. 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.

NOTE: 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.

## 5. Electric Characteristics

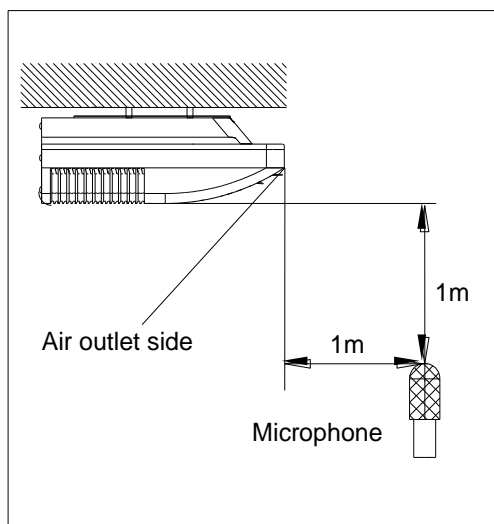
| Model                         | Indoor Units |          |      |      | Power Supply |
|-------------------------------|--------------|----------|------|------|--------------|
|                               | Hz           | Voltage  | Min. | Max. | MFA          |
| MUSTR-18-H8                   | 50           | 220-240V | 198V | 254V | /            |
| MUSTR-24-H8                   | 50           | 220-240V | 198V | 254V | /            |
| MUSTR-30-H8                   | 50           | 220-240V | 198V | 254V | /            |
| MUSTR-36-H8                   | 50           | 220-240V | 198V | 254V | /            |
| MUSTR-48-H8 /<br>MUSTR-48-H8T | 50           | 220-240V | 198V | 254V | /            |
| MUSTR-60-H8 /<br>MUSTR-60-H8T | 50           | 220-240V | 198V | 254V | /            |

**Note:**

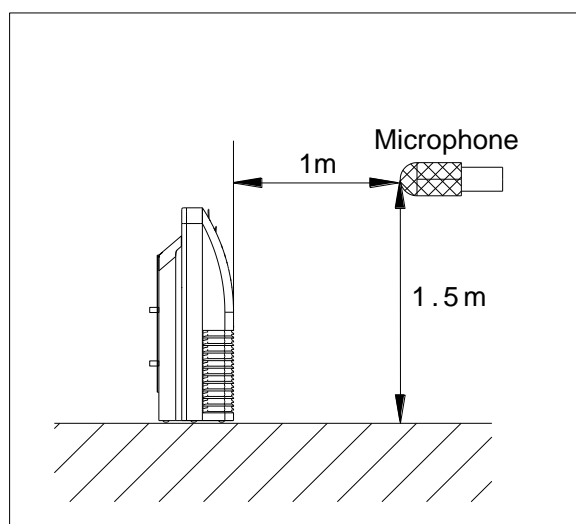
MFA: Max. Fuse Amps. (A)



## 6. Sound Levels



**Ceiling**



**Floor**

| Model                      | Sound Power<br>dB (A) | Noise level dB(A) |    |    |
|----------------------------|-----------------------|-------------------|----|----|
|                            |                       | H                 | M  | L  |
| MUSTR-18-H8                | 56                    | 44                | 39 | 34 |
| MUSTR-24-H8                | 64                    | 53                | 48 | 42 |
| MUSTR-30-H8                | 65                    | 54                | 49 | 44 |
| MUSTR-36-H8                | 65                    | 56                | 53 | 50 |
| MUSTR-48-H8 / MUSTR-48-H8T | 68                    | 56                | 48 | 41 |
| MUSTR-60-H8 / MUSTR-60-H8T | 70                    | 55                | 50 | 45 |

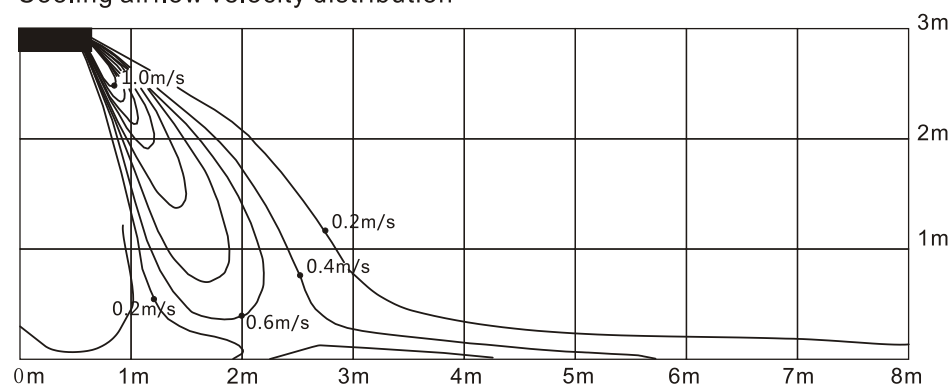
## 7. Air Velocity and Temperature Distributions (Reference Data)

**Model: 18k, 24k**

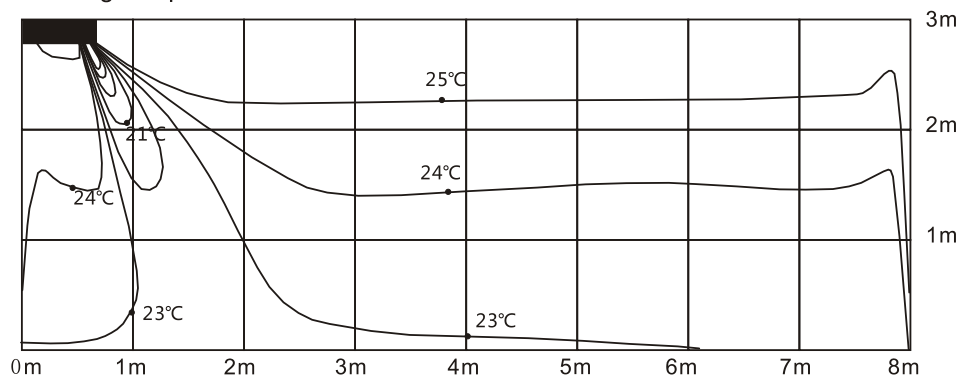
**Ceiling installation:**

Discharge angle 17°

Cooling airflow velocity distribution

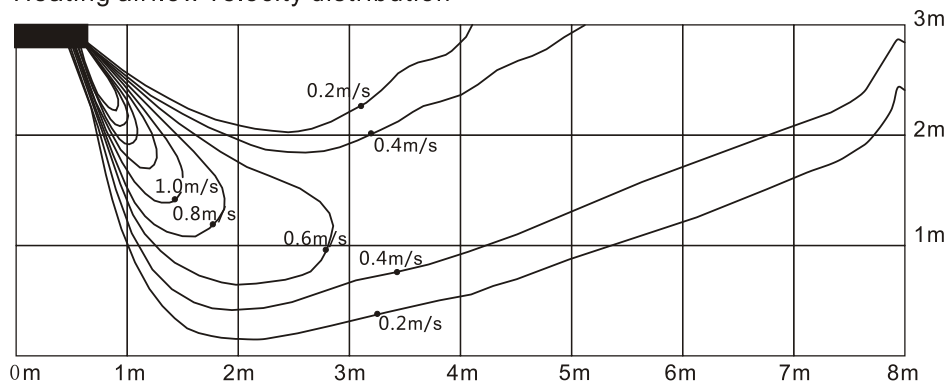


Cooling temperature distribution

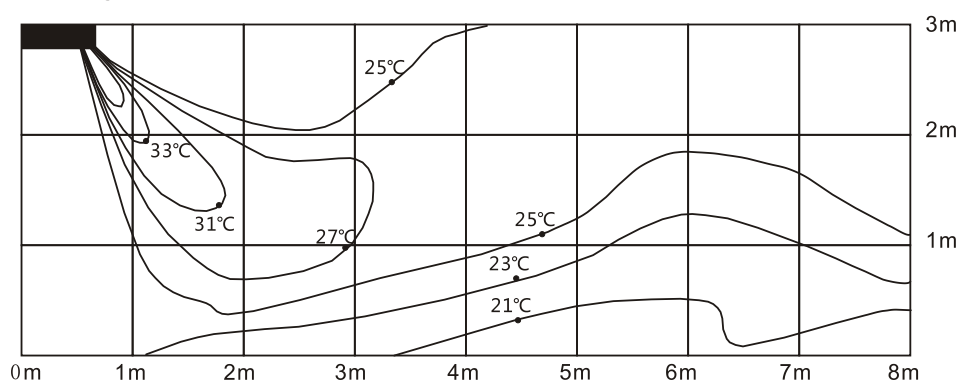


Discharge angle 50°

Heating airflow velocity distribution



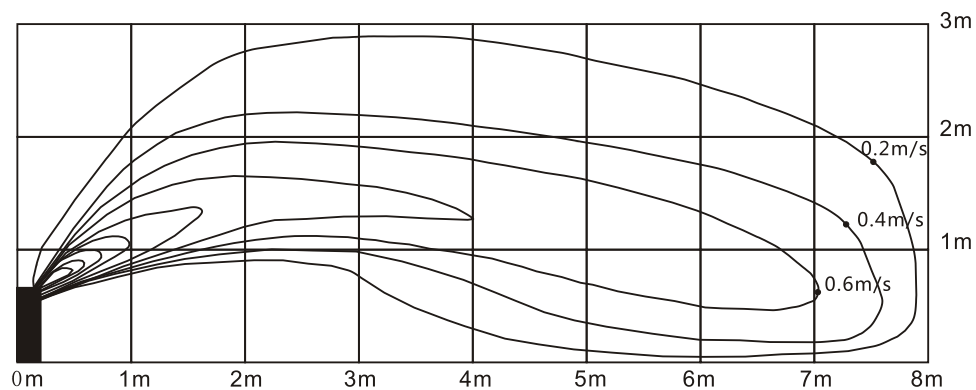
Heating temperature distribution



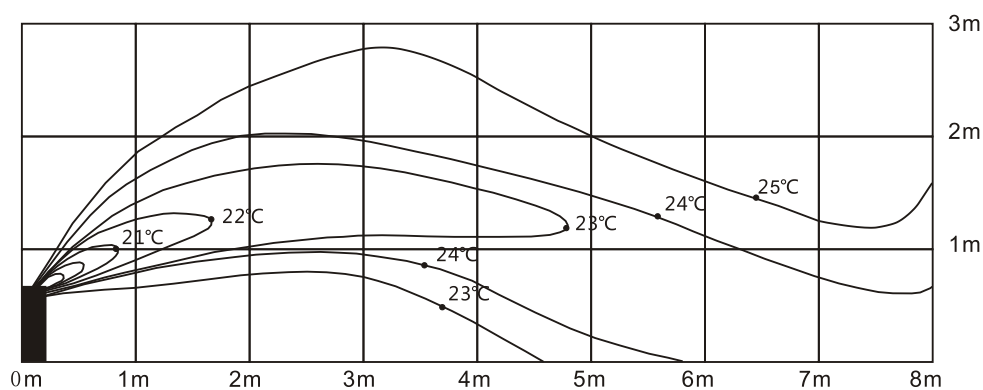
### Floor installation:

Discharge angle 17°

Cooling airflow velocity distribution

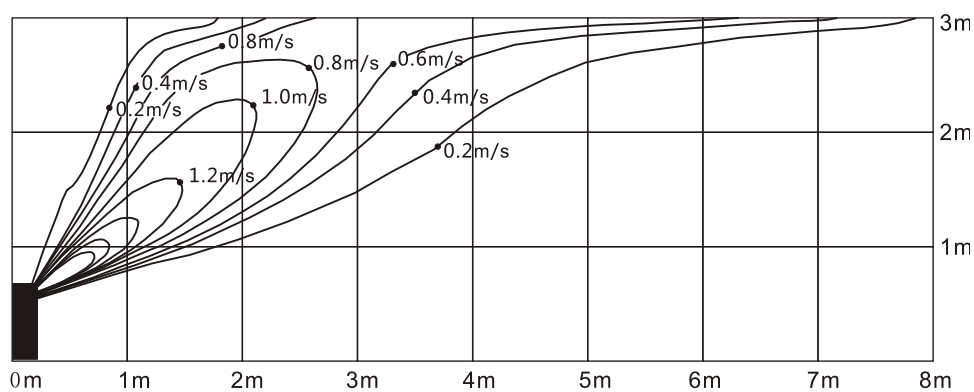


Cooling temperature distribution

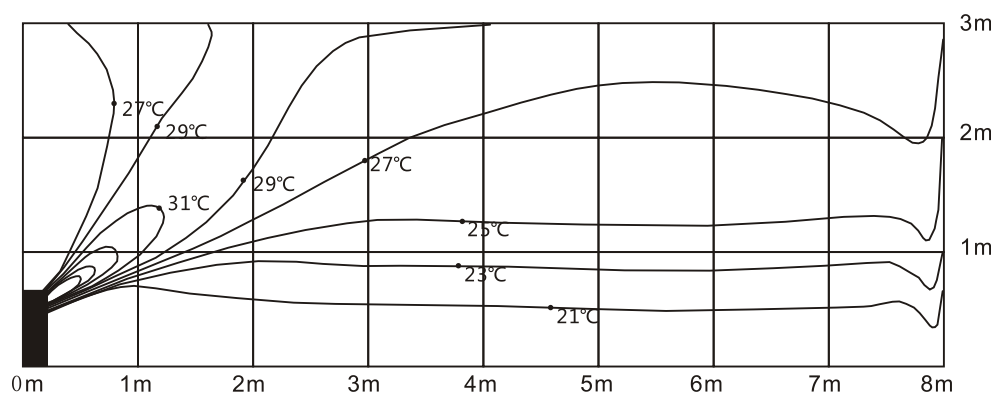


Discharge angle 50°

Heating airflow velocity distribution



Heating temperature distribution

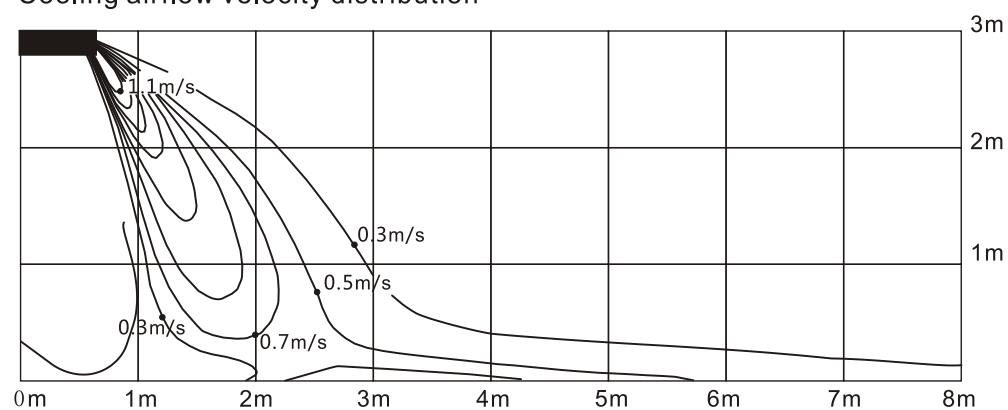


**Model: 30k, 36k**

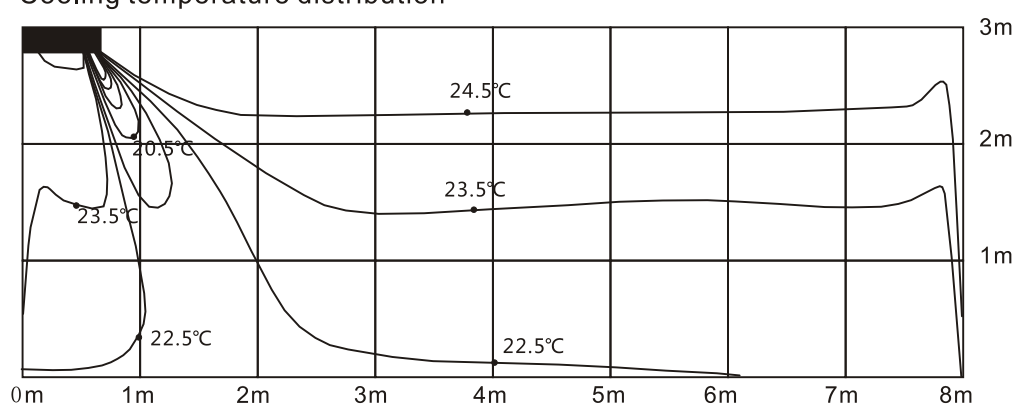
**Ceiling installation:**

Discharge angle 17°

Cooling airflow velocity distribution

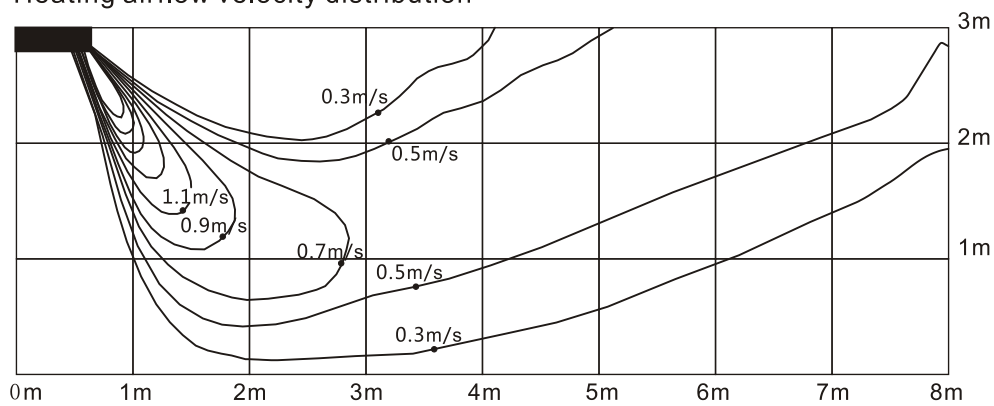


Cooling temperature distribution

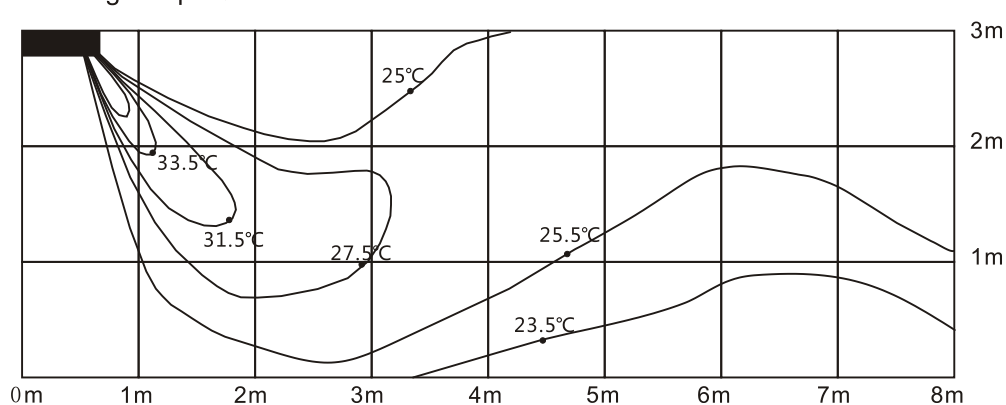


Discharge angle 50°

Heating airflow velocity distribution



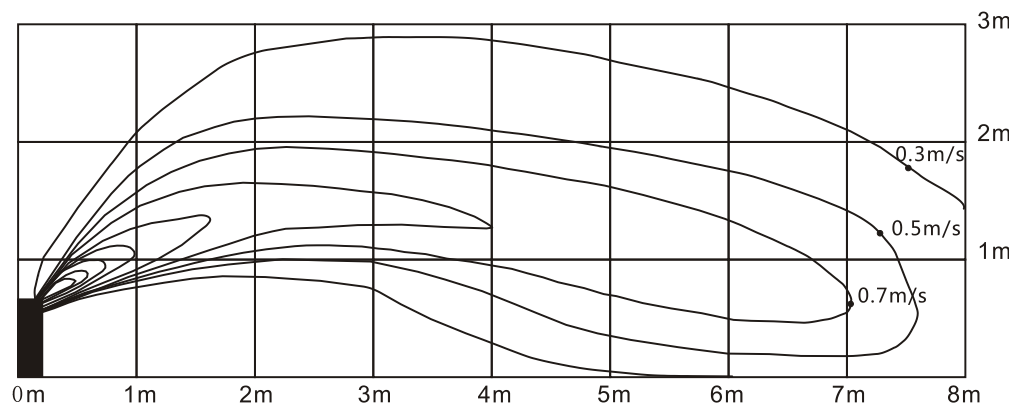
Heating temperature distribution



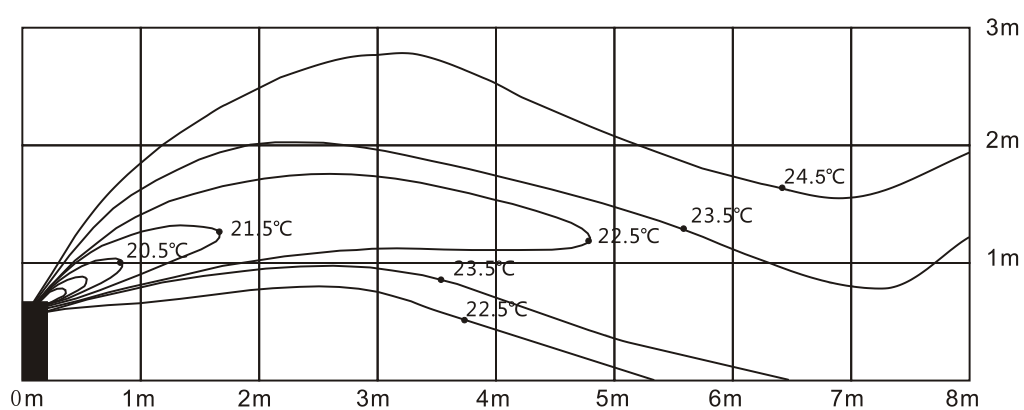
### Floor installation:

Discharge angle 17°

Cooling airflow velocity distribution

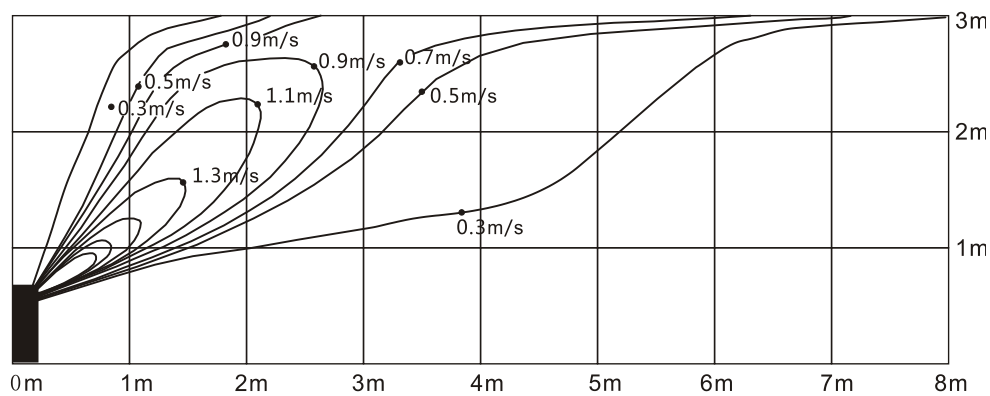


Cooling temperature distribution

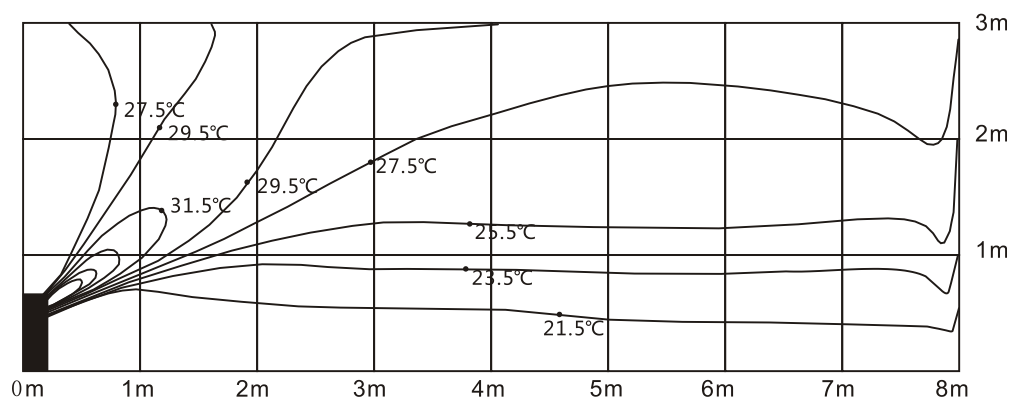


Discharge angle 50°

Heating airflow velocity distribution



Heating temperature distribution

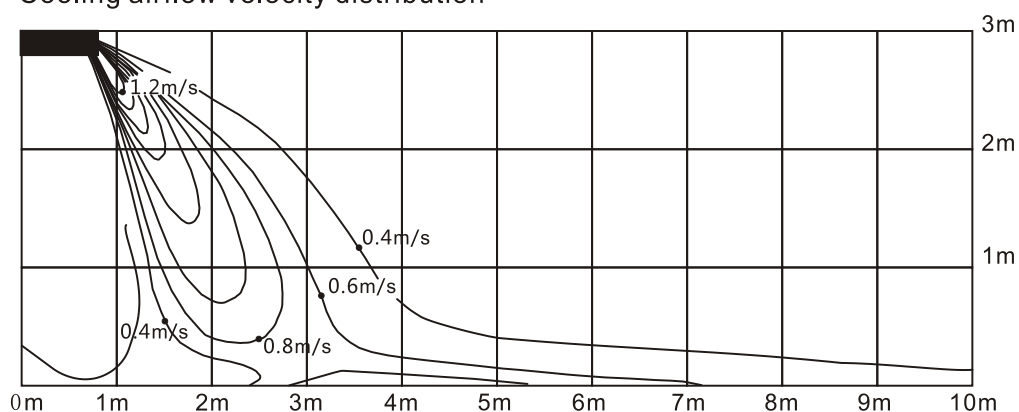


**Model: 48k, 60k**

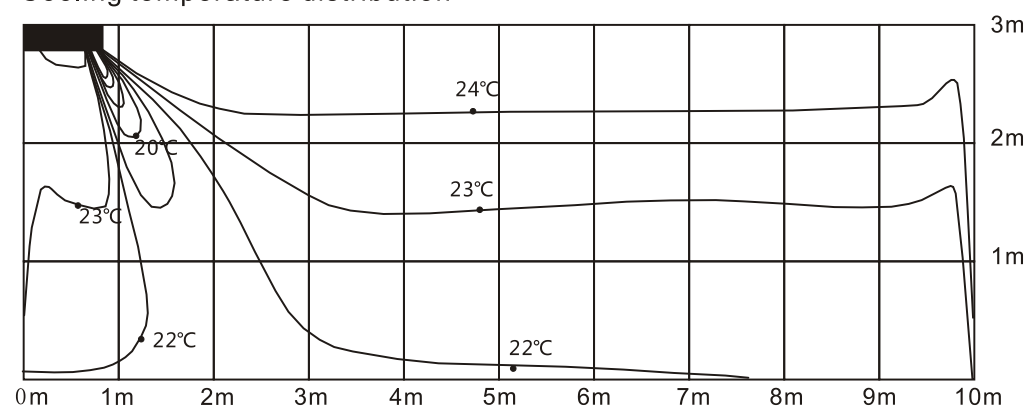
**Ceiling installation:**

Discharge angle 17°

Cooling airflow velocity distribution

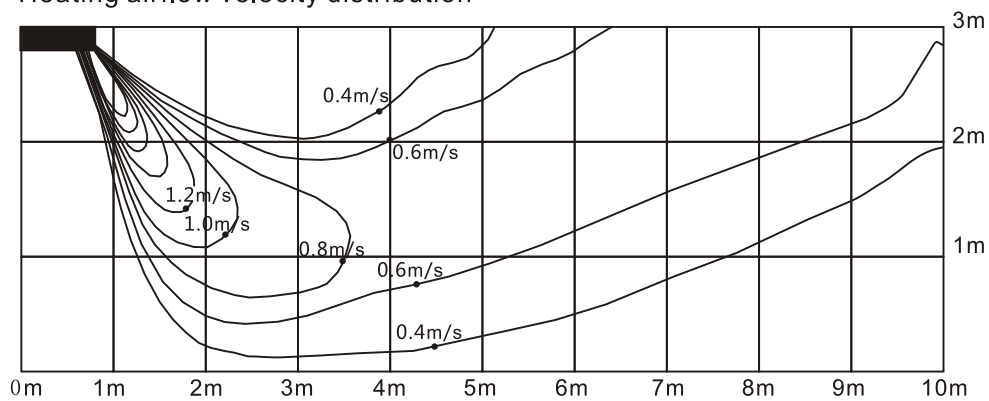


Cooling temperature distribution

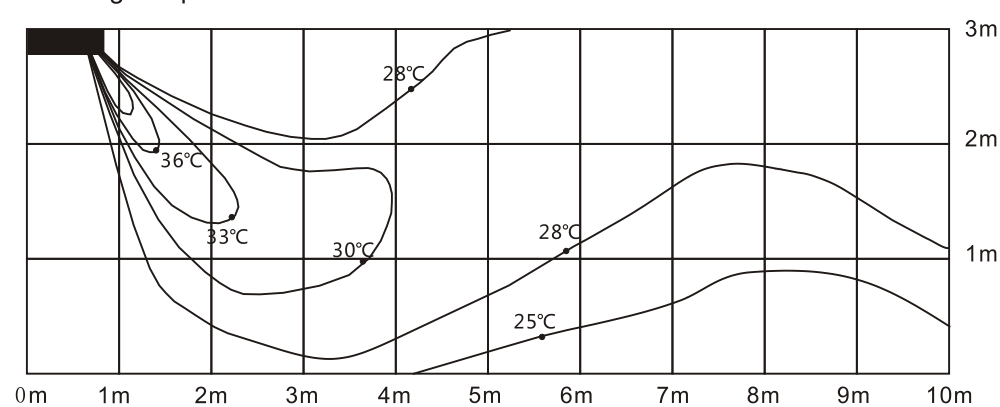


Discharge angle 50°

Heating airflow velocity distribution



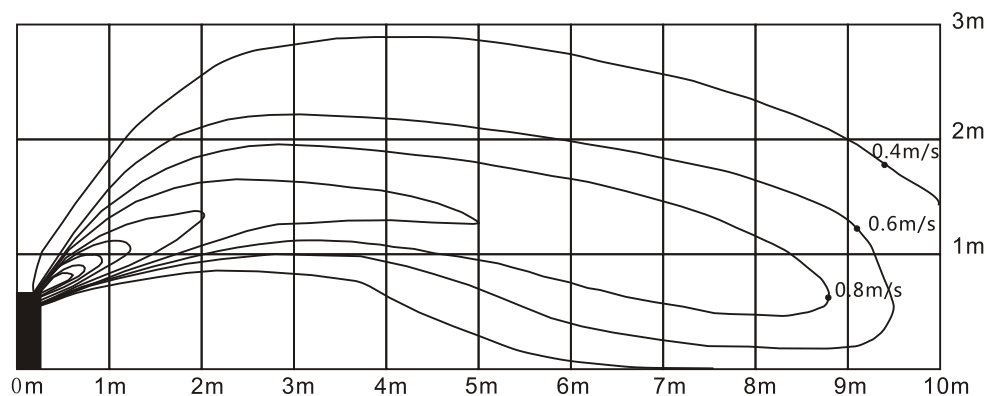
Heating temperature distribution



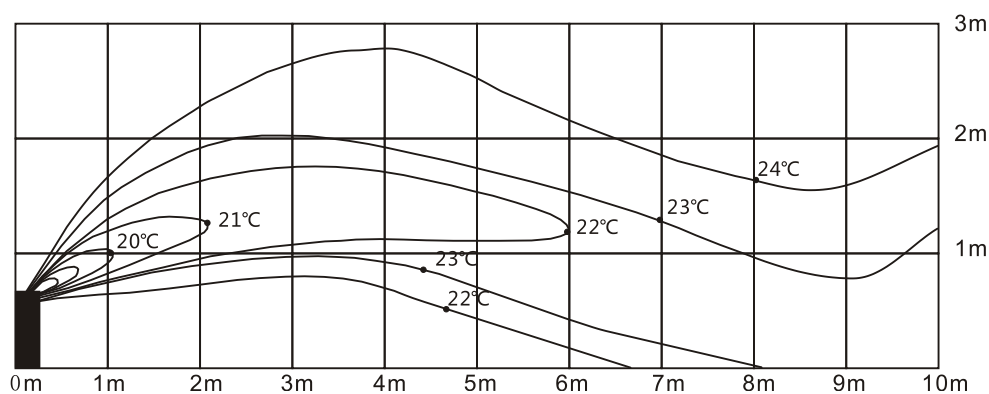
### Floor installation:

Discharge angle 17°

Cooling airflow velocity distribution

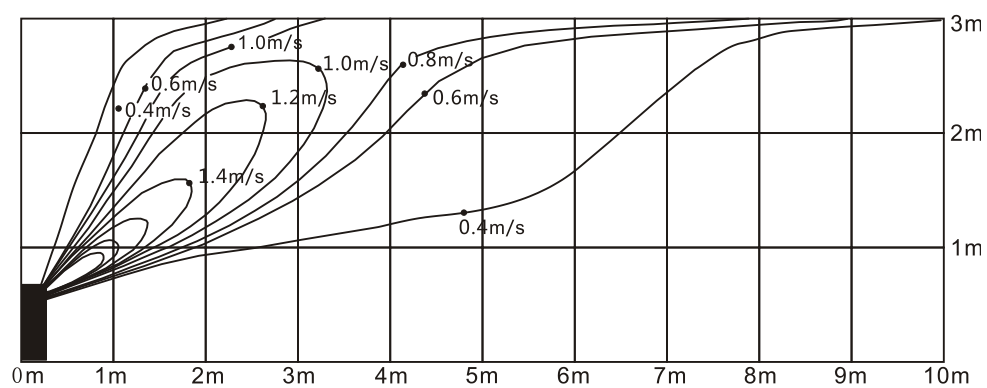


Cooling temperature distribution

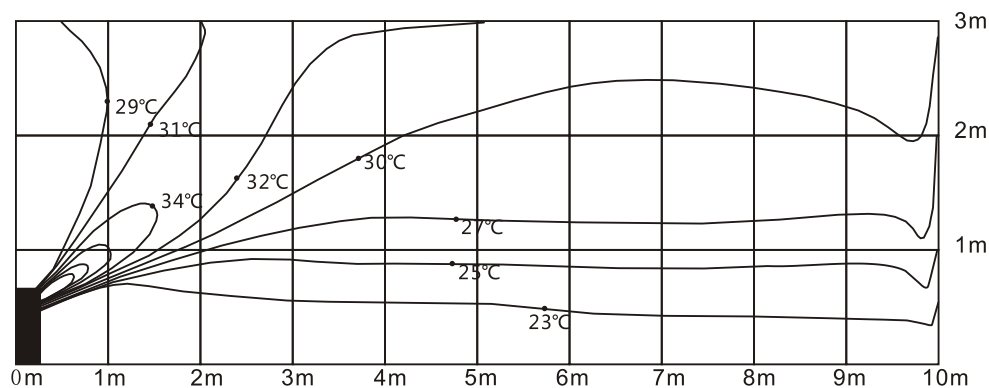


Discharge angle 50°




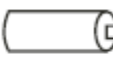



Heating airflow velocity distribution



Heating temperature distribution



## 8. Accessories

|   | Name                             | Shape   | Quantity |
|---|----------------------------------|---|----------|
| <b>Remote controller &amp; Its holder(The product you have might not be provided the following accessories)</b> | 1. Remote controller             |  | 1        |
|   | 2. Remote controller holder      |  | 1        |
|   | 3. Mounting screw (ST2.9x10-C-H) |  | 2        |
|   | 4. Alkaline dry batteries (AM4)  |   | 2        |
| <b>Others</b>   | 5. Owner's manual                |   | 1        |
|   | 6. Installation manual           |   | 1        |
|   | 7. Remote controller manual      |   | 1        |

## 9. The Specification of Power

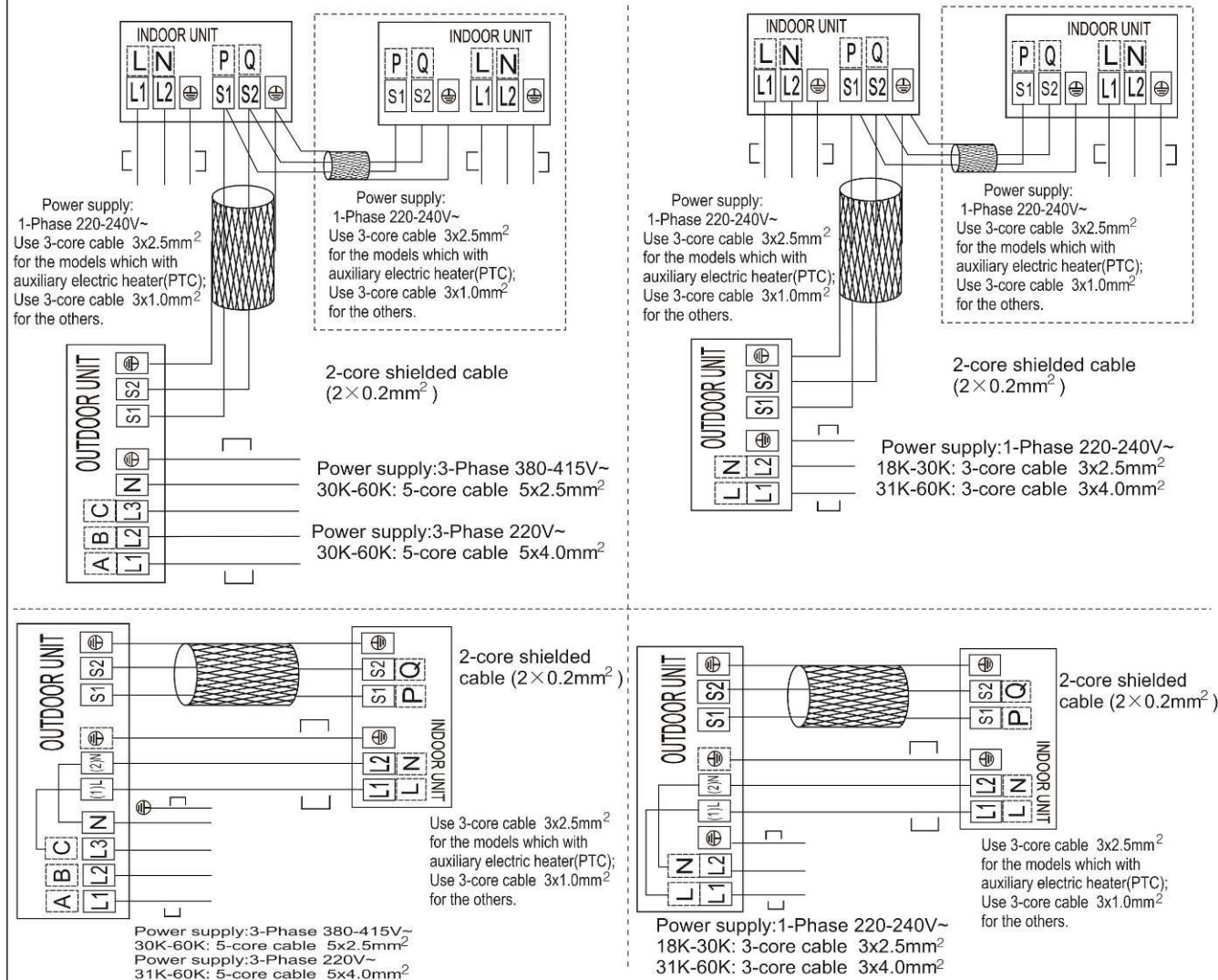
| Model(Btu/h)   |                                 | 18000-24000                                 | 30000                                       | 36000                                       |
|--|---------------------------------|---|---|---|
| POWER  | Phase                           | 1-phase                                     | 1-phase                                     | 1-phase                                     |
|  | Frequency and Voltage           | 220-240V, 50Hz                              | 220-240V, 50Hz                              | 220-240V, 50Hz                              |
|  | POWER WIRING (mm <sup>2</sup> ) | 3x2.5                                       | 3x2.5                                       | 3x4.0                                       |
| CIRCUIT BREAKER/Fuse (A)   |                                 | 30/20                                       | 40/30                                       | 40/30                                       |
| Indoor/Outdoor Connecting Wiring (Weak Electric Signal) (mm <sup>2</sup> )   |                                 | 2x0.2                                       | 2x0.2                                       | 2x0.2                                       |
| Indoor/Outdoor Connecting Wiring (Strong Electric Signal) (mm <sup>2</sup> ) |                                 | 3x1.0(3x2.5 with auxiliary electric heater) | 3x1.0(3x2.5 with auxiliary electric heater) | 3x1.0(3x2.5 with auxiliary electric heater) |

| Model(Btu/h)  |                                 | 48000                                       | 48000~60000                                 |
|---|---------------------------------|---|---|
| POWER   | Phase                           | 1-phase                                     | 3-phase                                     |
|   | Frequency and Voltage           | 220-240V, 50Hz                              | 380-415V, 50Hz                              |
|   | Power Wiring (mm <sup>2</sup> ) | 3x4.0                                       | 5x2.5                                       |
| Circuit Breaker/Fuse (A)  |                                 | 40/35                                       | 30/25                                       |
| Indoor/Outdoor Connecting Wiring(Weak Electric Signal) (mm <sup>2</sup> )   |                                 | 2x0.2                                       | 2x0.2                                       |
| Indoor/Outdoor Connecting Wiring(Strong Electric Signal) (mm <sup>2</sup> ) |                                 | 3x1.0(3x2.5 with auxiliary electric heater) | 3x1.0(3x2.5 with auxiliary electric heater) |



## 10. Field Wiring

## Air Condition Link-Circuit



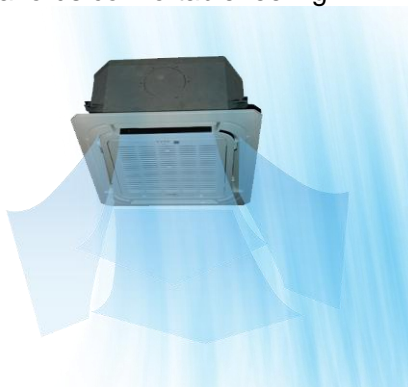
## MUCSR-H8 (12 to 18) Cassette Type (Compact)

|  |    |
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## 1. Features

### 1.1 New panel

- 360°surrounding air outlet design, affords comfortable feeling



### 1.2 Compact design

- The body size is 570×260×570mm, it's just smaller than the ceiling board, so it's very easy for installation and will not damage the decoration. The panel size is 647×50×647mm.
- The hooks are designed in the four corners of the body, which can save installation space.



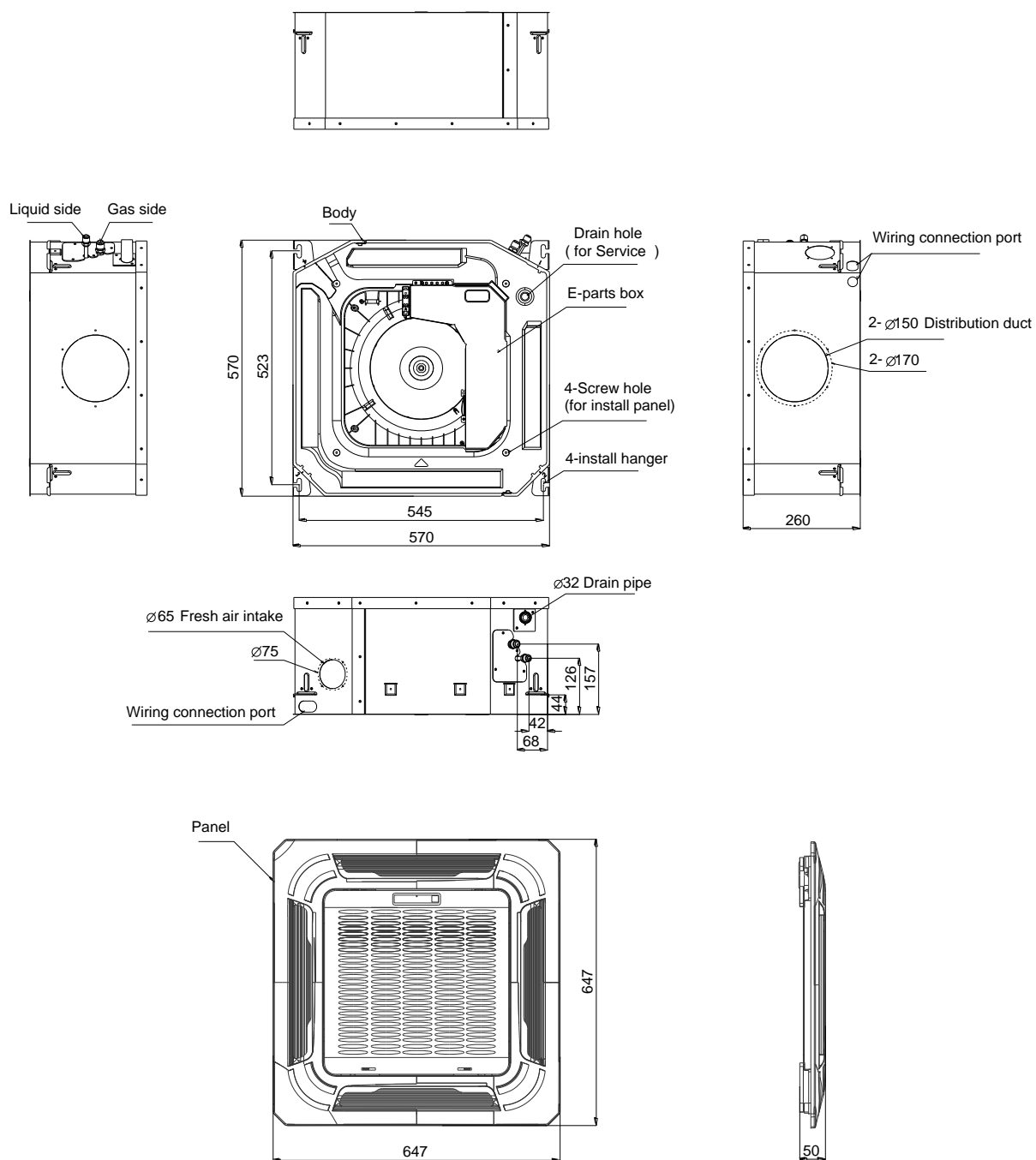
### 1.3 Electric control box built-in design

- The E-box is simply and safely built inside the indoor unit. It's convenient for installation and maintenance. Can check the control part easily, you only need to open the air return grille.

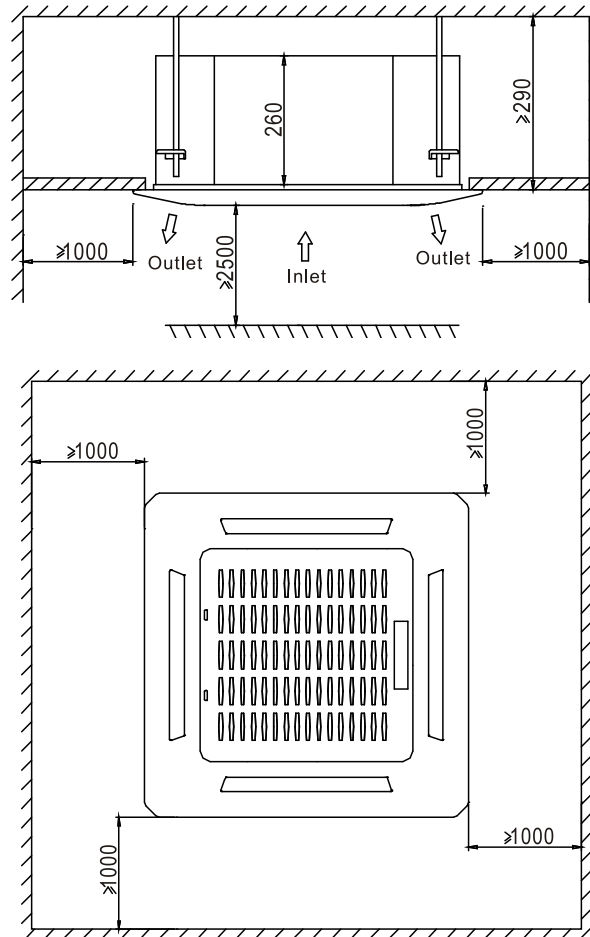


## 2. Dimensions

### MUCSR-12-H8 / MUCSR-18-H8



### 3. Service Space



## 4. Wiring Diagrams

### MUCSR-12-H8

#### FUNCTION OF SWITCH

| SWITCH FOR CCM UNIT ADDRESS |       |
|-----------------------------|-------|
| S2 + S1                     | ON    |
| ADDRESS                     | 0~15  |
| Factory Setting             | ✓     |
| S2 + S1                     | ON    |
| ADDRESS                     | 16~31 |
| Factory Setting             | ✓     |
| S2 + S1                     | ON    |
| ADDRESS                     | 32~47 |
| Factory Setting             | ✓     |
| S2 + S1                     | ON    |
| ADDRESS                     | 48~63 |
| Factory Setting             | ✓     |

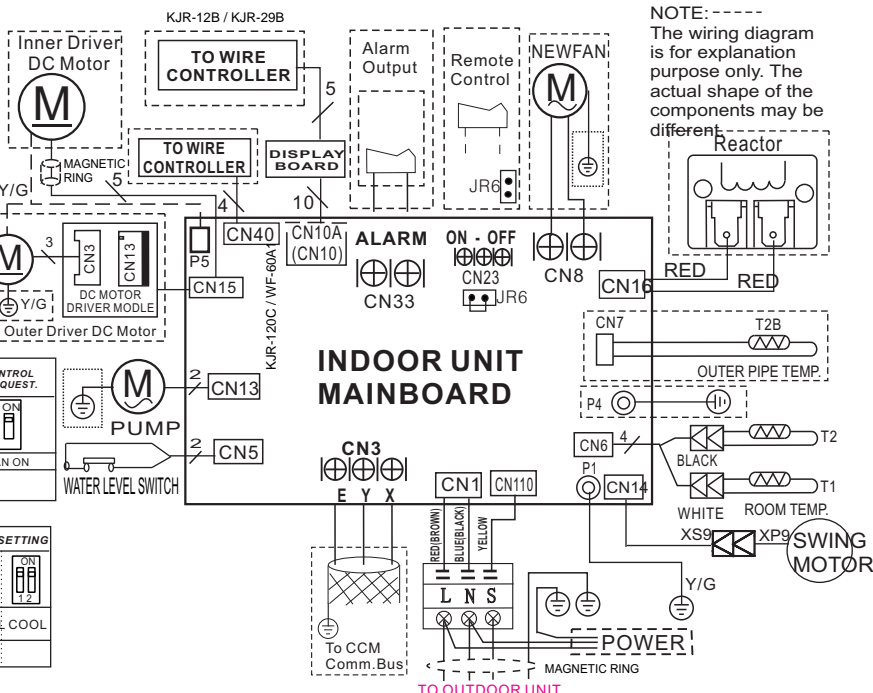
| SW3 SWITCH FOR AUTO-RESTART SETTING |             |
|-------------------------------------|-------------|
| ON                                  | STATE       |
| MODE                                | REMEMBER    |
| Factory Setting                     | ✓           |
| ON                                  | STATE       |
| MODE                                | NO_REMEMBER |
| Factory Setting                     | ✓           |

| SW6 SWITCH FOR TEMP. COMPENSATION |       |
|-----------------------------------|-------|
| ON                                | STATE |
| VALUE                             | 6     |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| VALUE                             | 4     |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| VALUE                             | 2     |
| Factory Setting                   | ✓     |

| Anti-cold air   |                                 |
|-----------------|---------------------------------|
| SW1             | FAN MOTOR STOP-TEM              |
| ON              | 24                              |
| Factory setting | ✓                               |
| ON              | 15                              |
| ON              | 8                               |
| ON              | According to the EEPROM setting |

| SW2 SWITCH FOR FAN MOTOR CONTROL THEN NO POWER REQUEST. |         |
|---|---------|
| ON  | STATE   |
| MODE  | FAN OFF |
| Factory Setting   | ✓       |
| ON  | STATE   |
| MODE  | FAN ON  |
| Factory Setting   | ✓       |

| SW5 SWITCH FOR MODE-PRIOR SETTING |       |
|-----------------------------------|-------|
| ON                                | STATE |
| MODE                              | HEAT  |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| MODE                              | HEAT  |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| MODE                              | COOL  |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| MODE                              | COOL  |
| Factory Setting                   | ✓     |



### MUCSR-18-H8

CODE:16022500000803

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

#### FUNCTION OF SWITCH

| SWITCH FOR CCM UNIT ADDRESS |       |
|-----------------------------|-------|
| S2 + S1                     | ON    |
| ADDRESS                     | 0~15  |
| Factory Setting             | ✓     |
| S2 + S1                     | ON    |
| ADDRESS                     | 16~31 |
| Factory Setting             | ✓     |
| S2 + S1                     | ON    |
| ADDRESS                     | 32~47 |
| Factory Setting             | ✓     |
| S2 + S1                     | ON    |
| ADDRESS                     | 48~63 |
| Factory Setting             | ✓     |

| ENC1 SWITCH (FOR POWER) |                       |
|-------------------------|-----------------------|
| NUMBER                  | POWER                 |
| 4                       | 4000W-5300W(E2.0HP)   |
| 5                       | 5400W-7100W(E2.5HP)   |
| 6                       | /                     |
| 7                       | 7500W-9000W(E3.2HP)   |
| 8                       | 9100W-10600W(E4.0HP)  |
| 9                       | 12000W-14000W(E5.0HP) |
| A                       | 14500W-16000W(E6.0HP) |

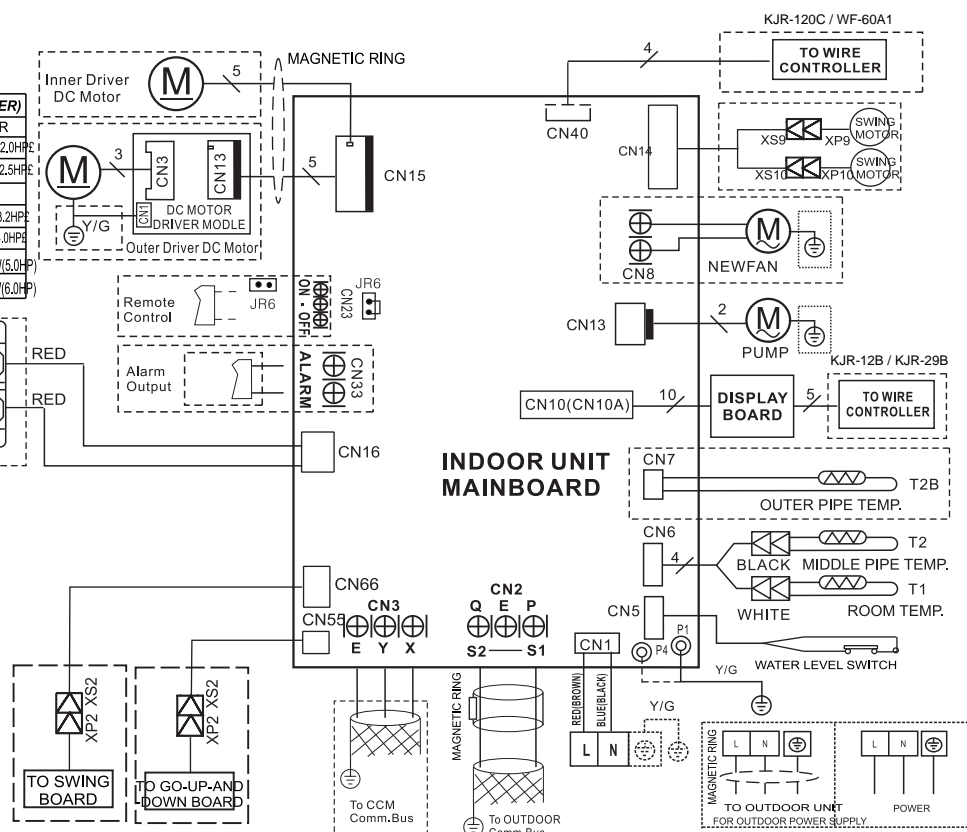
| SW3 SWITCH FOR AUTO-RESTART SETTING |             |
|-------------------------------------|-------------|
| ON                                  | STATE       |
| MODE                                | REMEMBER    |
| Factory Setting                     | ✓           |
| ON                                  | STATE       |
| MODE                                | NO_REMEMBER |
| Factory Setting                     | ✓           |

| SW6 SWITCH FOR TEMP. COMPENSATION |       |
|-----------------------------------|-------|
| ON                                | STATE |
| VALUE                             | 6     |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| VALUE                             | 4     |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| VALUE                             | 2     |
| Factory Setting                   | ✓     |

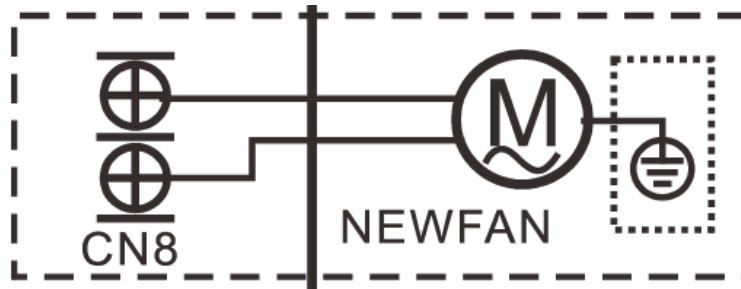
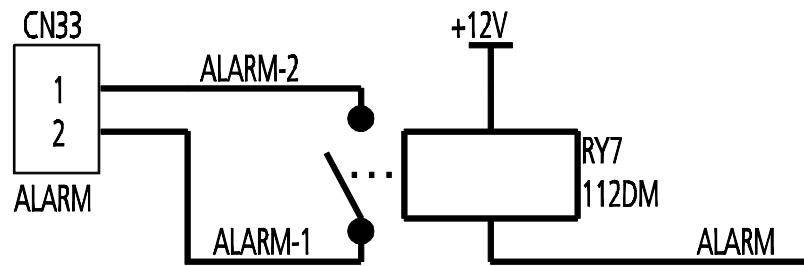
| Anti-cold air   |                                 |
|-----------------|---------------------------------|
| SW1             | FAN MOTOR STOP-TEM              |
| ON              | 24                              |
| Factory setting | ✓                               |
| ON              | 15                              |
| ON              | 8                               |
| ON              | According to the EEPROM setting |

| SW2 SWITCH FOR FAN MOTOR CONTROL THEN NO POWER REQUEST. |         |
|---|---------|
| ON  | STATE   |
| MODE  | FAN OFF |
| Factory Setting   | ✓       |
| ON  | STATE   |
| MODE  | FAN ON  |
| Factory Setting   | ✓       |

| SW5 SWITCH FOR MAIN-SLAVE SETTING |       |
|-----------------------------------|-------|
| ON                                | STATE |
| MODE                              | MAIN  |
| Factory Setting                   | ✓     |
| ON                                | STATE |
| MODE                              | SLAVE |
| Factory Setting                   | ✓     |

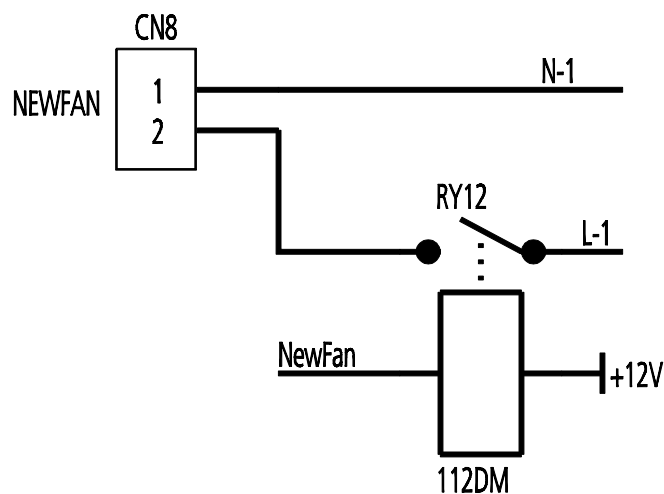






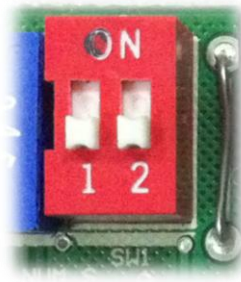
C. For new fresh motor terminal port CN8

1. Connect the fan motor to the port, no need care L/N of the motor;
2. The output voltage is the power supply;
3. The fresh motor cannot excess 200W or 1A, follow the smaller one;
4. The new fresh motor will be worked when the indoor fan motor work; when the indoor fan motor stops, the new fresh motor would be stopped;
5. When the unit enter force cooling mode or capacity testing mode, the fresh motor isn't work.





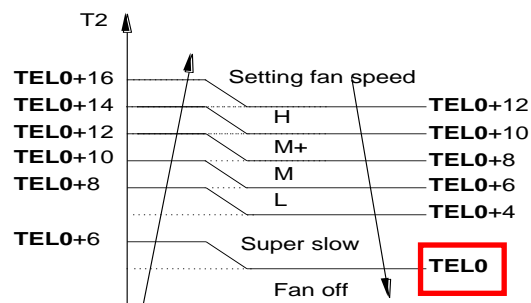
## 4.2 Micro-Switch Introduce:



| Anti-cold air |                                 |
|---------------|---------------------------------|
| SW1           | FAN MOTOR STOP-TEM              |
|               | 24<br>Factory setting ✓         |
|               | 15                              |
|               | 8                               |
|               | According to the EEPROM setting |

A. 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).



| SW2             | SWITCH  | FOR FAN MOTER CONTROL THEN NO POWER REQUEST. |  |
|-----------------|---------|--|--|
| ON:             |         |  |  |
| STATE           |         |  |  |
| MODE            | FAN OFF | FAN ON                                       |  |
| Factory Setting | ✓       |  |  |

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

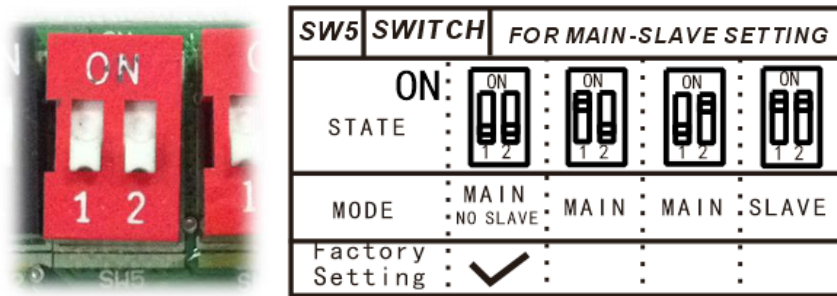
Range: OFF (in 127s), Keep running.



| SW3             | SWITCH   | FOR AUTO-RESTART SETTING |  |
|-----------------|----------|--------------------------|--|
| ON:             |          |                          |  |
| STATE           |          |                          |  |
| MODE            | REMEMBER | NO_REMEMBER              |  |
| Factory Setting | ✓        |                          |  |

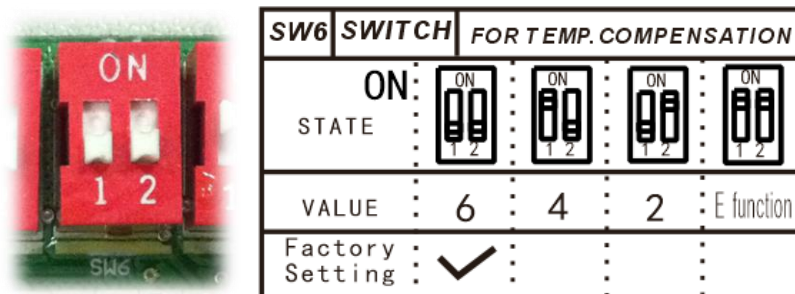
C. Micro-switch SW3 is for selection of auto-restart function.

Range: Active, inactive



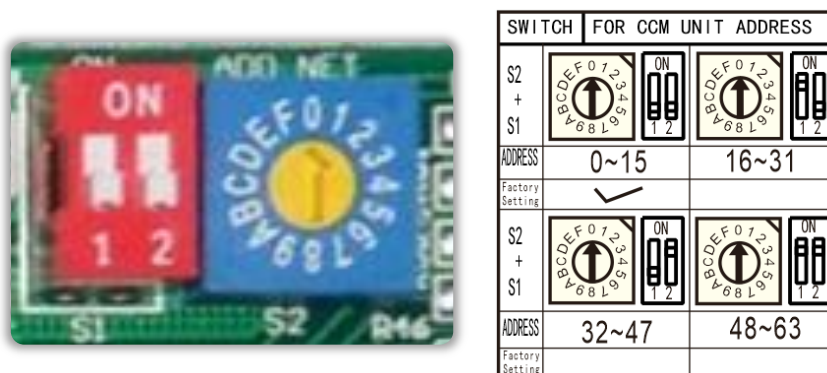
D. Micro-switch SW5 is for setting the master or slave unit when the unit is in twin connection.

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



E. 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°C, 4°C, 2°C, E function (reserved for special customizing)



F. 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



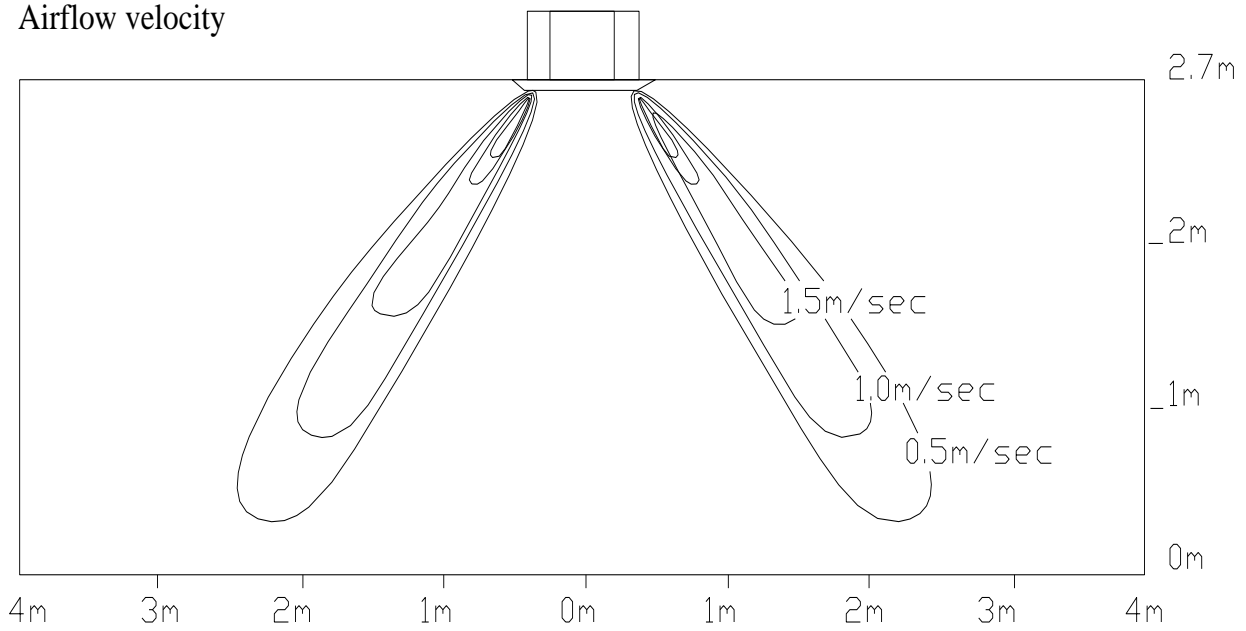
| ENC1 | SWITCH | (FOR POWER)           |
|------|--------|-----------------------|
|      | NUMBER | POWER                 |
|      | 4      | 4000W-5300W (2.0HP)   |
|      | 5      | 5400W-7100W (2.5HP)   |
|      | 6      | /                     |
|      | 7      | 7500W-9000W (3.2HP)   |
|      | 8      | 9100W-10500W (4.0HP)  |
|      | 9      | 12000W-14000W (5.0HP) |
|      | A      | 14500W-16000W (6.0HP) |

G. 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.

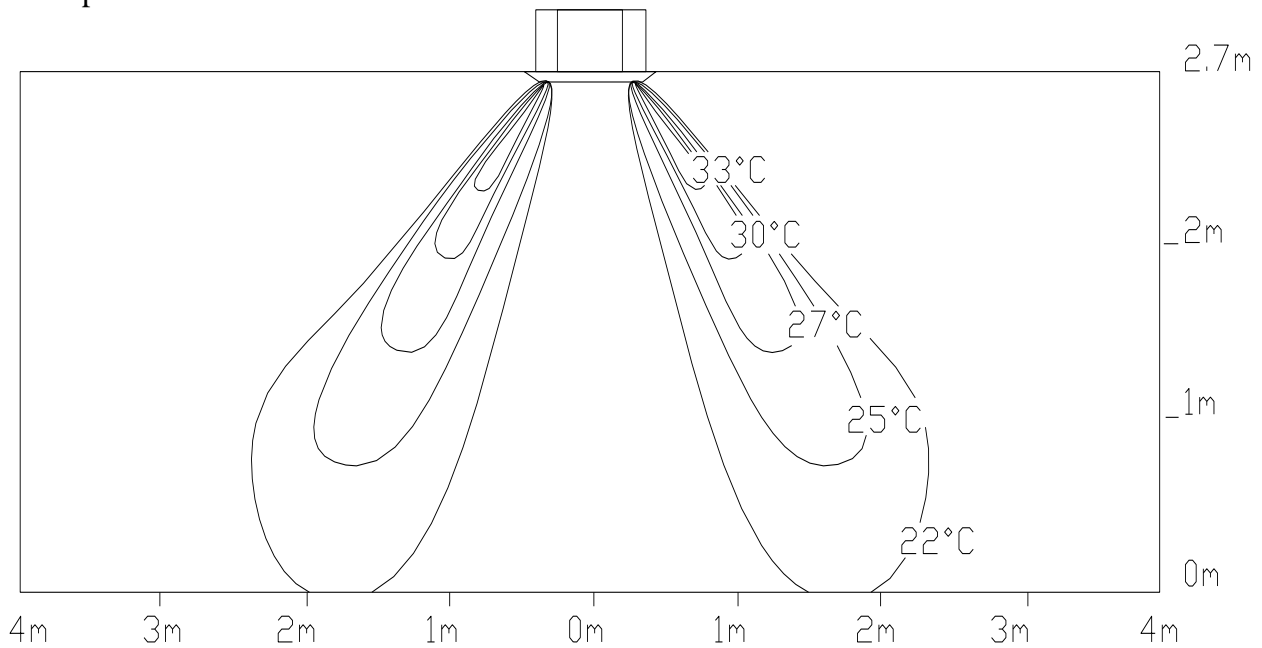
NOTE: Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

## 5. Air Velocity and Temperature Distributions (Reference Data)

Airflow velocity



Temperature



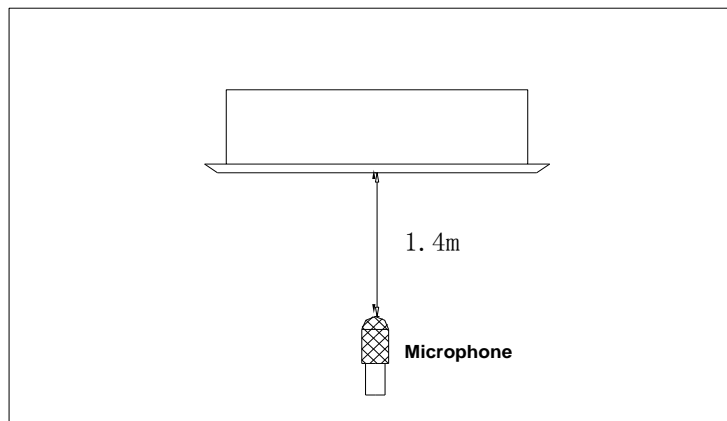
## 6. Electric Characteristics

| Model       | Indoor Units |          |      |      | Power Supply |
|-------------|--------------|----------|------|------|--------------|
|             | Hz           | Voltage  | Min. | Max. | MFA          |
| MUCSR-12-H8 | 50           | 220-240V | 198V | 254V | /            |
| MUCSR-18-H8 | 50           | 220-240V | 198V | 254V | /            |

**Note:**



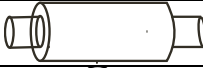










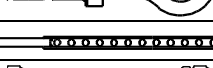
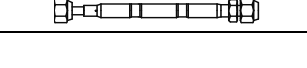

MFA: Max. Fuse Amps. (A)

## 7. Sound Levels



| Model       | Noise Power dB(A) | Noise level dB(A) |    |    |
|-------------|-------------------|-------------------|----|----|
|             |                   | H                 | M  | L  |
| MUCSR-12-H8 | 57                | 43                | 39 | 35 |
| MUCSR-18-H8 | 59                | 46                | 42 | 38 |

## 8. Accessories

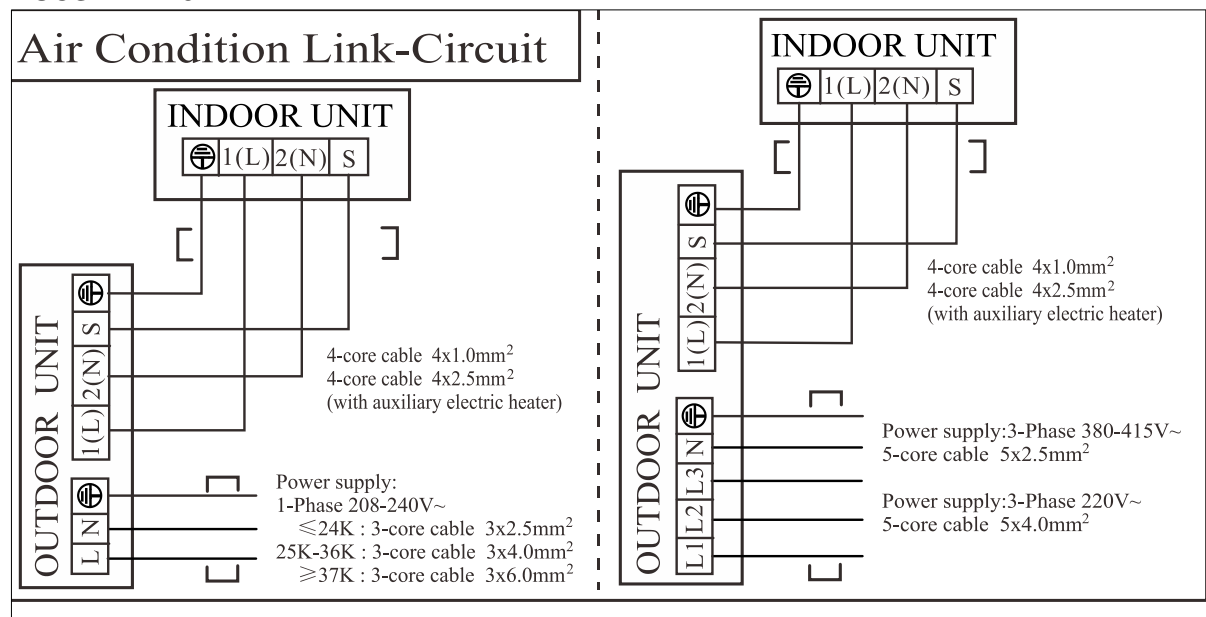
|   | Name                           | Shape   | Quantity |
|---|--------------------------------|---|----------|
| Installation Fittings   | Installation paper board       |     | 1        |
| Tubing & Fittings   | Soundproof / insulation sheath |     | 1        |
| Drainpipe Fittings  | Out-let pipe sheath            |     | 1        |
|   | Out-let pipe clasp             |    | 1        |
|   | Drain joint                    |    | 1        |
|   | Seal ring                      |    | 1        |
| Remote controller & Its Frame<br>(The product you have might not be provided the following accessories) | Remote controller & Its Frame  |    | 1        |
|   | Remote controller holder       |    | 1        |
|   | Mounting screw(ST2.9×10-C-H)   |    | 2        |
|   | Remote controller manual       |    | 1        |
|   | Alkaline dry batteries (AM4)   |     | 2        |
| Others  | Owner's manual                 |   | 1        |
|   | Installation manual            |  | 1        |
| Installation accessory<br>(The product you have might not be provided the following accessories)        | Expansible hook                |   | 4        |
|   | Installation hook              |   | 4        |
|   | Orifice                        |   | 1        |

## 9. The Specification of Power

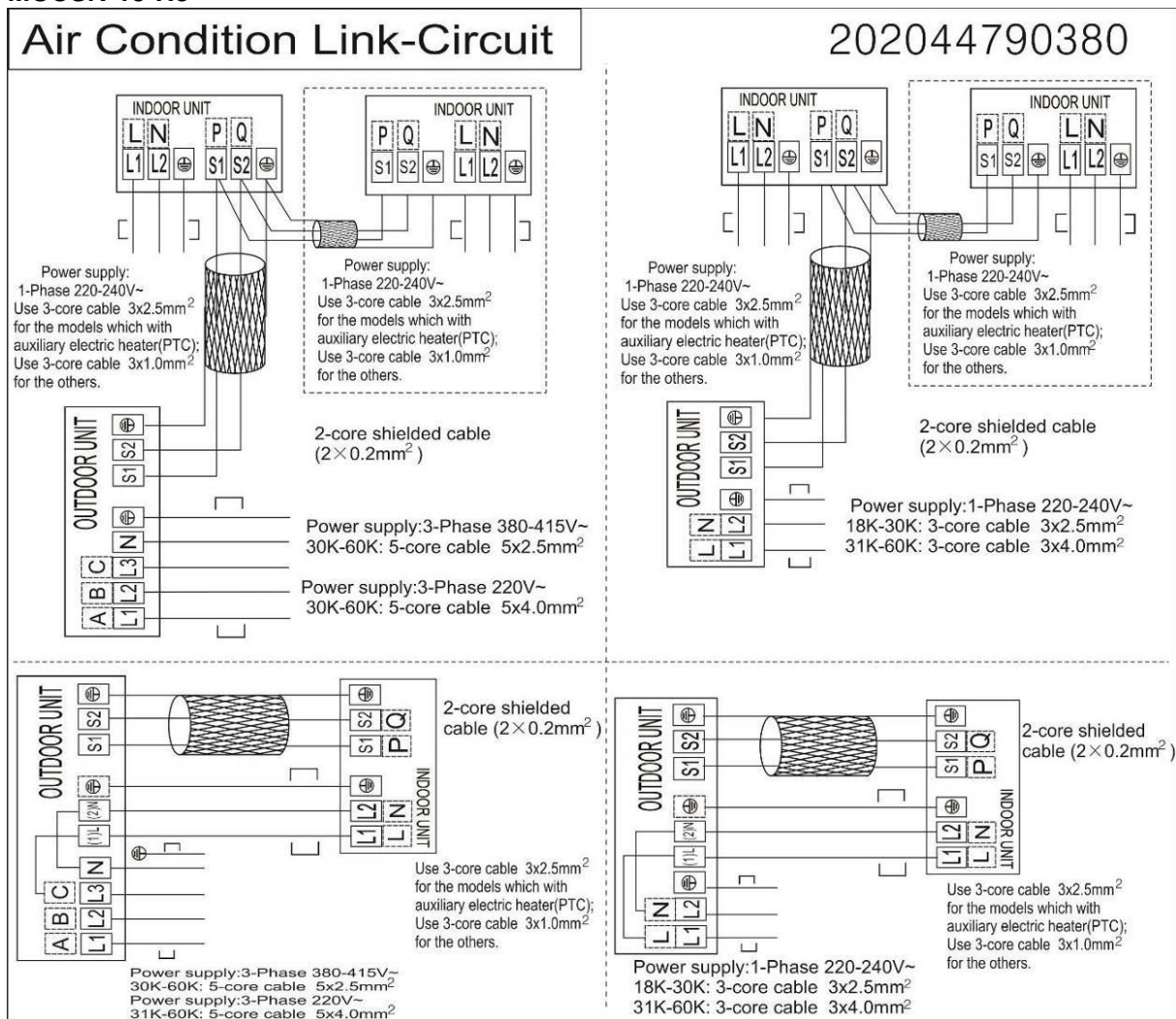
|  |                                 |   |   |
|--|---------------------------------|---|---|
| Model(Btu/h)   |                                 | 12000                                       | 18000                                       |
| POWER  | Phase                           | 1-phase                                     | 1-phase                                     |
|  | Frequency and Voltage           | 220-240V, 50Hz                              | 220-240V, 50Hz                              |
|  | POWER WIRING (mm <sup>2</sup> ) | 3×2.5                                       | 3×2.5                                       |
| CIRCUIT BREAKER/Fuse (A)   |                                 | 20/16                                       | 30/20                                       |
| Indoor/Outdoor Connecting Wiring(Weak Electric Signal) (mm <sup>2</sup> )  |                                 | ———   | 2×0.2                                       |
| Indoor/Outdoor Connecting Wiring(Strong Electric Signal)(mm <sup>2</sup> ) |                                 | 4×1.0(4×2.5 with auxiliary electric heater) | 3×1.0(3×2.5 with auxiliary electric heater) |

## 10. Field Wiring

### MUCSR-12-H8



### MUCSR-18-H8



# MUCOR-H8 Floor Standing Type

|   |    |
|---|----|
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## 1. Features

### 1.1. Fashionable design, more modern and elegant appearance.



### 1.2. Air Outlet Dustproof

When turned off, the air outlet louver of the unit can be closed manually to prevent the dust falling in.

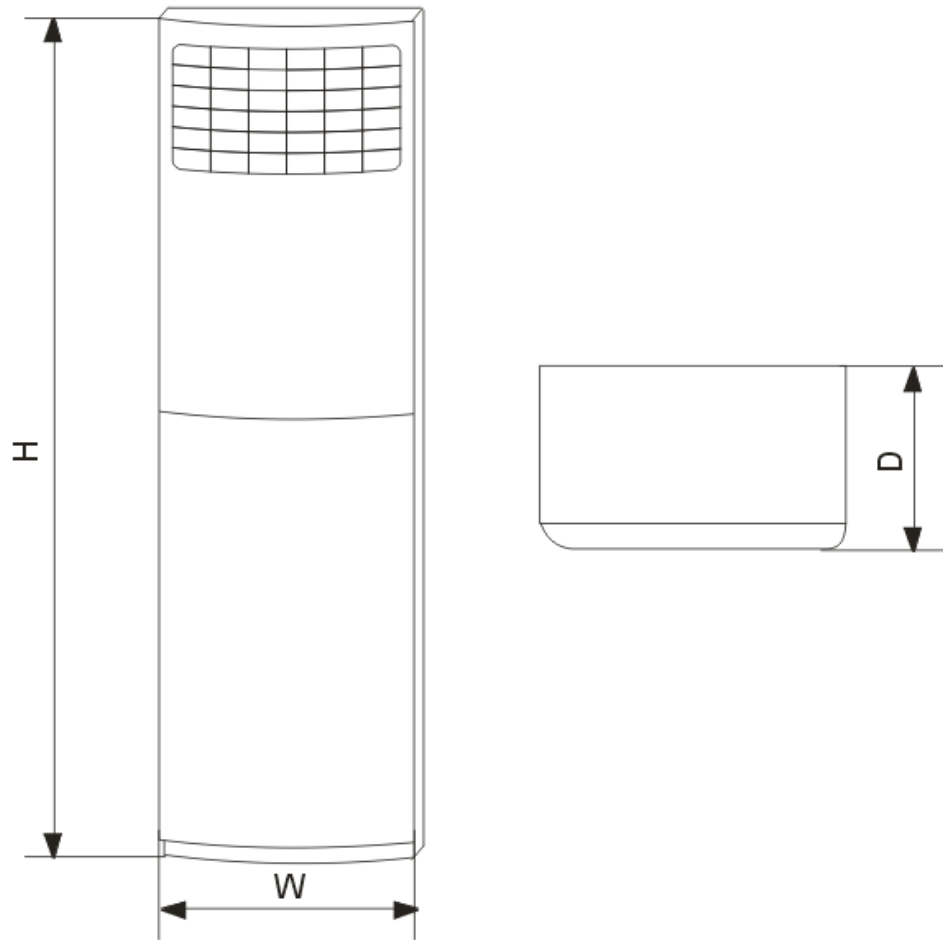
### 1.3. Simple and bright panel

Adopts simple and bright style panel, MUCOR-H8 series are suitable for most different space, and show in good taste.

### 1.4. Big LCD display, easy to read and to operate

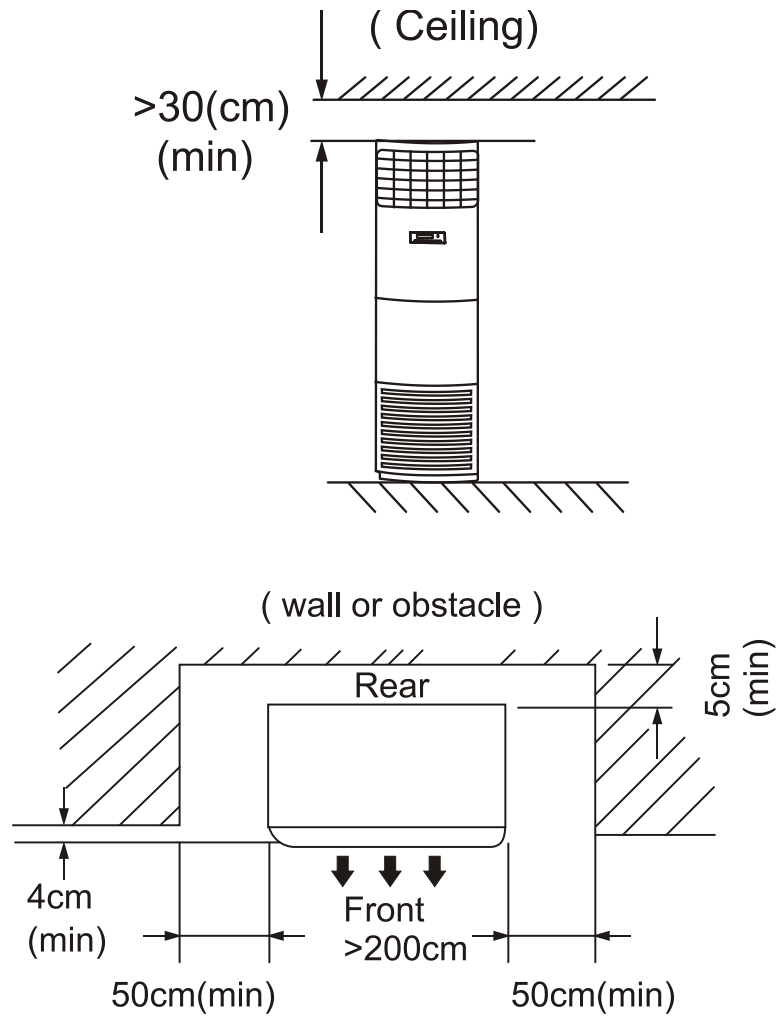


## 2. Dimensions



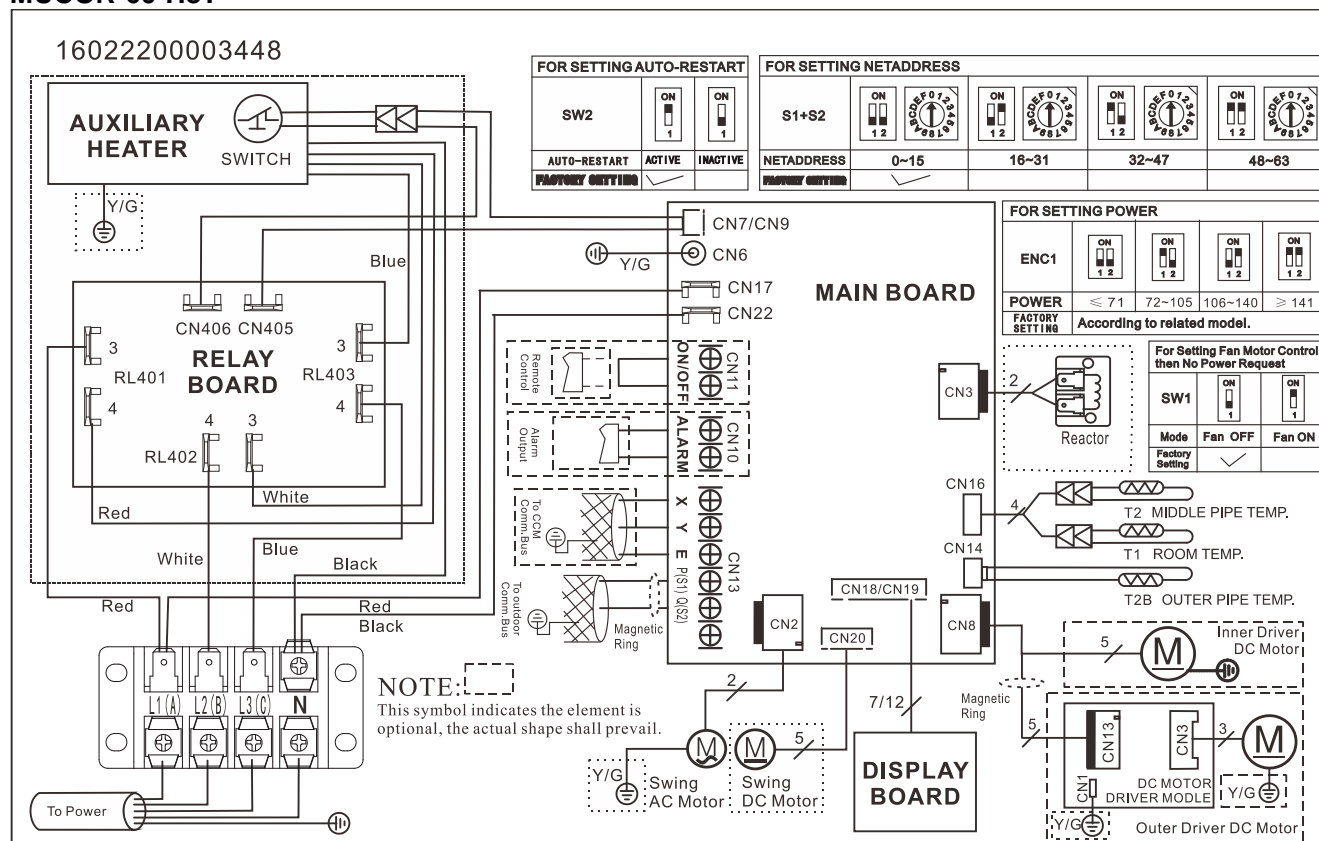
| <b>Mode \ Dimension</b> | <b>W(mm)</b> | <b>D(mm)</b> | <b>H(mm)</b> |
|-------------------------|--------------|--------------|--------------|
| MUCOR-60-H8T            | 610          | 390          | 1925         |

### 3. Service Space



## 4. Wiring Diagrams

### MUCOR-60-H8T



#### 4.1 Micro-Switch Introduce:



| For Setting Fan Motor Control then No Power Request |         |         |
|---|---------|---------|
| SW1   | ON<br>1 | ON<br>1 |
| Mode  | Fan OFF | Fan ON  |
| Factory Setting                                     | ✓       |         |

A. Micro-switch SW1 is for selection of indoor FAN ACTION if room temperature reaches the setpoint and the compressor stops.

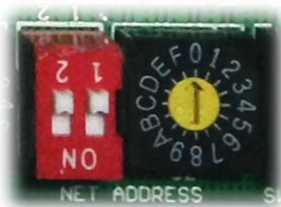
Range: OFF (in 127s), Keep running.



| FOR SETTING AUTO-RESTART |         |          |
|--------------------------|---------|----------|
| SW2                      | ON<br>1 | ON<br>1  |
| AUTO-RESTART             | ACTIVE  | INACTIVE |
| FACTORY SETTING          | ✓       |          |

B. Micro-switch SW2 is for selection of auto-restart function.

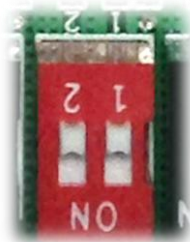
Range: Active, inactive



| FOR SETTING NETADDRESS |           |           |           |           |
|------------------------|-----------|-----------|-----------|-----------|
| S1+S2                  | ON<br>1 2 | ON<br>1 2 | ON<br>1 2 | ON<br>1 2 |
| NETADDRESS             | 0~15      | 16~31     | 32~47     | 48~63     |
| FACTORY SETTING        | ✓         |           |           |           |

C. 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 POWER |                             |           |           |           |
|-------------------|-----------------------------|-----------|-----------|-----------|
| ENC1              | ON<br>1 2                   | ON<br>1 2 | ON<br>1 2 | ON<br>1 2 |
| POWER             | ≤ 71                        | 72~105    | 106~140   | ≥ 141     |
| FACTORY SETTING   | According to related model. |           |           |           |

D. Dial-switch ENC1: The indoor PCB is universal designed for whole series units from 24K to 55K. This ENC1 setting will tell the main program what size the unit is.

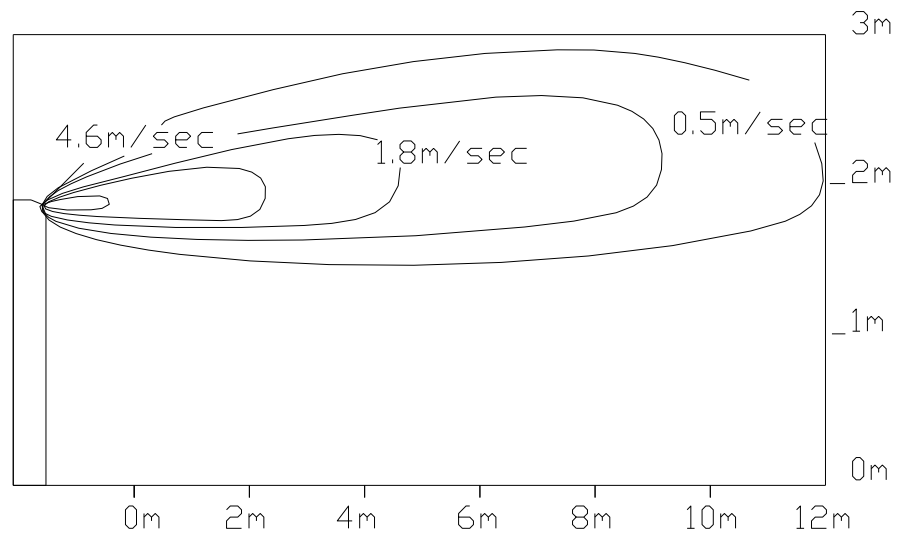
NOTE: Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

“71” means 7.1kW (24K), “105” means 10.5kW(36K), and so on.

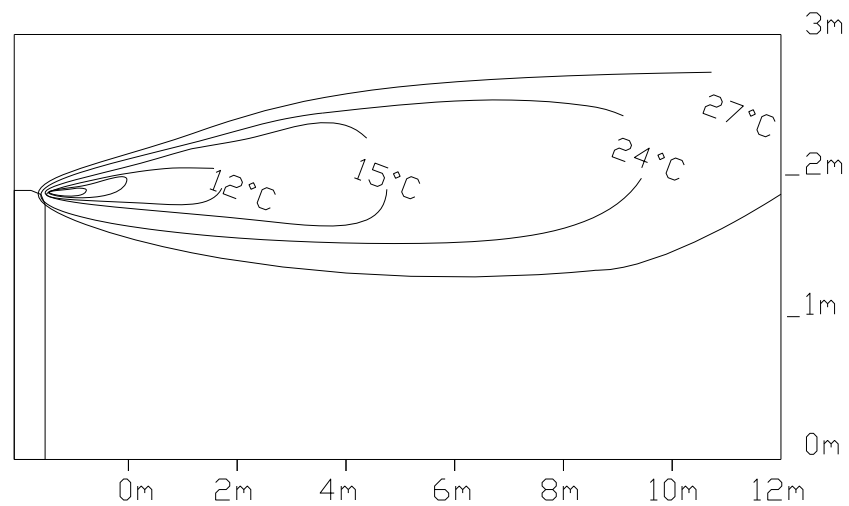
## 5. Air Velocity and Temperature Distributions (Reference Data)

Model 60K:

Airflow velocity



Temperature



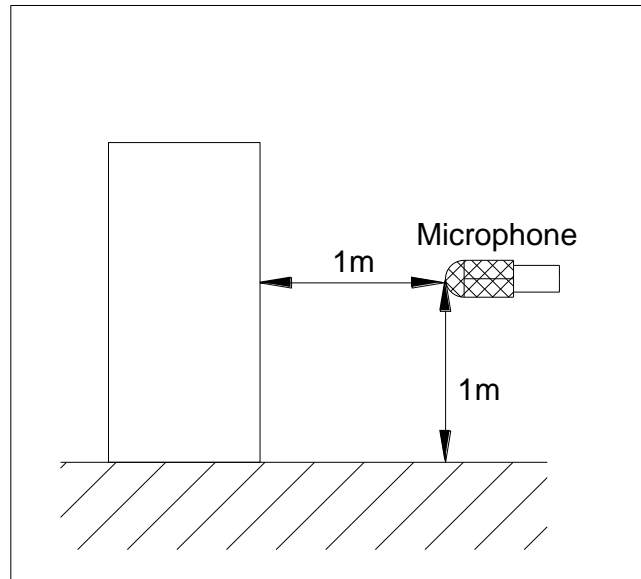
## 6. Electric Characteristics

| Model        | Indoor Units |          |      |      | Power Supply |
|--------------|--------------|----------|------|------|--------------|
|              | Hz           | Voltage  | Min. | Max. | MFA          |
| MUCOR-60-H8T | 50           | 380-415V | 342V | 440V | 25           |

**Note:**

MFA: Max. Fuse Amps. (A)








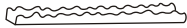
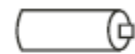
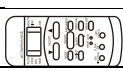




## 7. Sound Levels



| Model        | Sound Power Level dB(A) | Noise level dB(A) |    |    |
|--------------|-------------------------|-------------------|----|----|
|              |                         | H                 | M  | L  |
| MUCOR-60-H8T | 67                      | 59                | 53 | 47 |



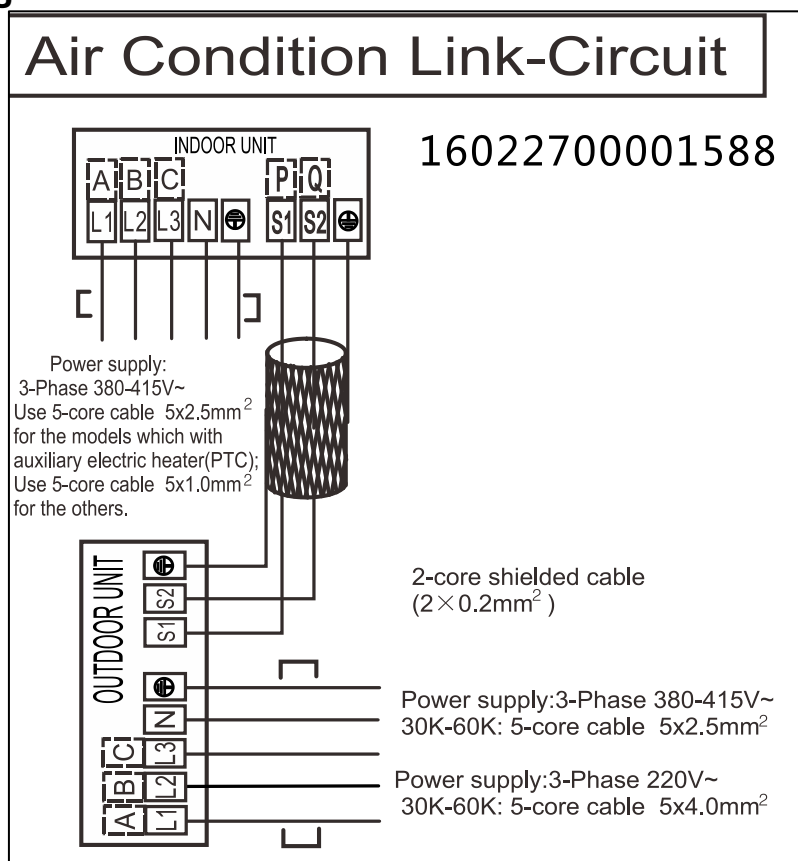
## 8. Accessories

| NO. | Part Name                     | Shape  | Quantity |
|-----|-------------------------------|--|----------|
| 1   | Safety Lock                   |  | 1        |
| 2   | Self-tapping Screw 3.9x25     |  | 2        |
| 3   | Flat Washers                  |  | 2        |
| 4   | Bushing-Sleeve Cover          |  | 1        |
| 5   | Sound/Heat Insulation Sleeves |  | 2        |
| 6   | Seal                          |  | 1        |
| 7   | Drain joint                   |  | 1        |
| 8   | Pipe - hole - protection Ring |  | 1        |
| 9   | Remote Battery                |  | 2        |
| 10  | Remote Controller             |  | 1        |
| 11  | Connection Cables             |  | 1        |
| 12  | Remote controller manual      |  | 1        |
| 13  | User's manual                 |  | 1        |
| 14  | Installation manual           |  | 1        |

## 9. The Specification of Power

|   |                           |   |
|---|---------------------------|---|
| Model   |                           | 60  |
| Indoor Power  | Phase                     | 3-phase                                     |
|   | Frequency and Voltage     | 380-415V, 50Hz                              |
|   | Circuit Breaker/ Fuse (A) | 32/25                                       |
| Outdoor Power                                       | Phase                     | 3-phase                                     |
|   | Frequency and Voltage     | 380-415V, 50Hz                              |
|   | Circuit Breaker/ Fuse (A) | 32/25                                       |
| Indoor Unit Power Wiring (mm <sup>2</sup> )         |                           | 5×1.5(5×2.5 with auxiliary electric heater) |
| Indoor/Outdoor Connecting Wiring (mm <sup>2</sup> ) | Ground Wiring             | 2.5   |
|   | Outdoor Unit Power Wiring | 5×2.5                                       |
|   | Strong Electric Signal    | ———   |
|   | Weak Electric Signal      | (2×0.2)                                     |

## 10.Field Wiring



# Part 3

## Outdoor Units

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2. Service Space.....97

3. Wiring Diagrams .....98

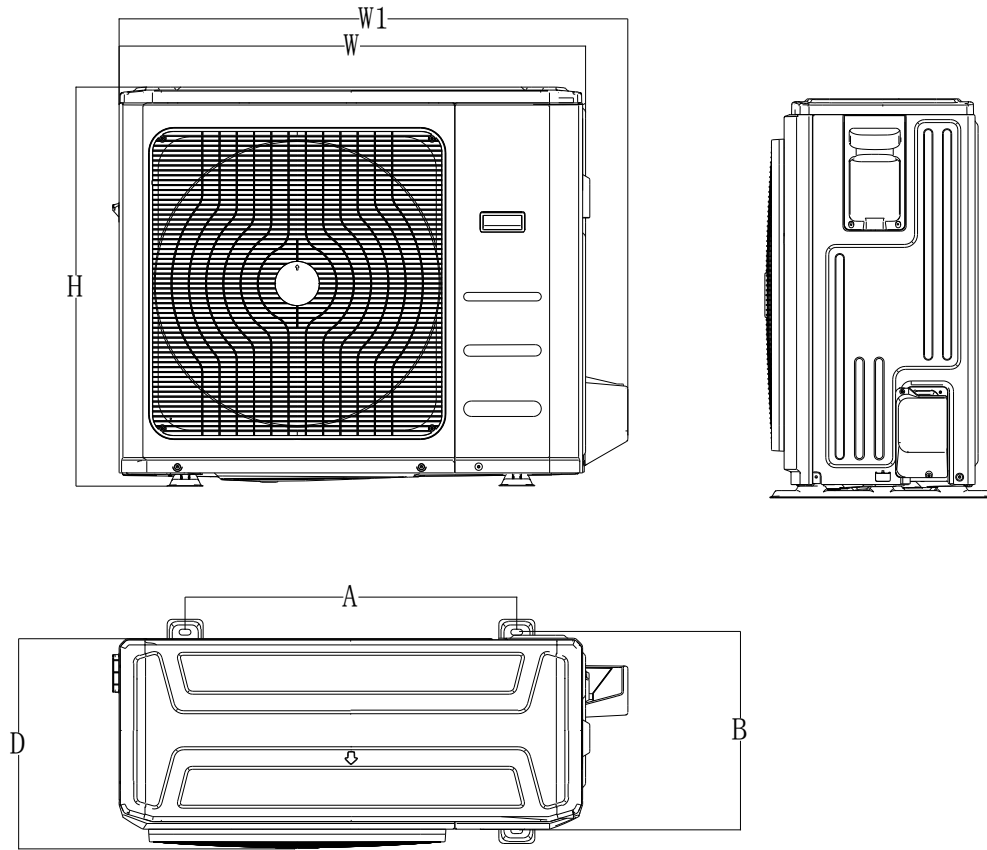
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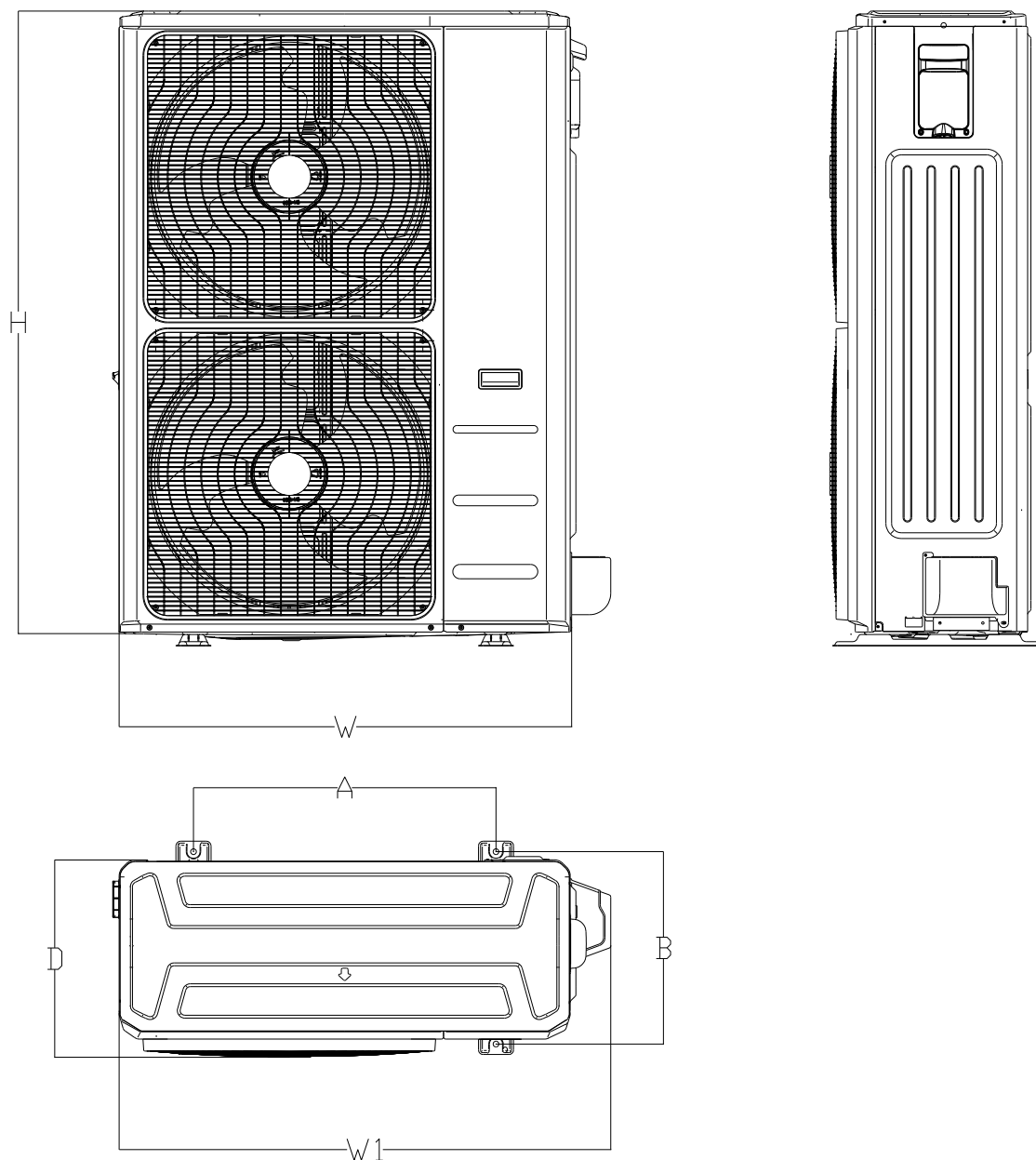
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## 1. Dimensions

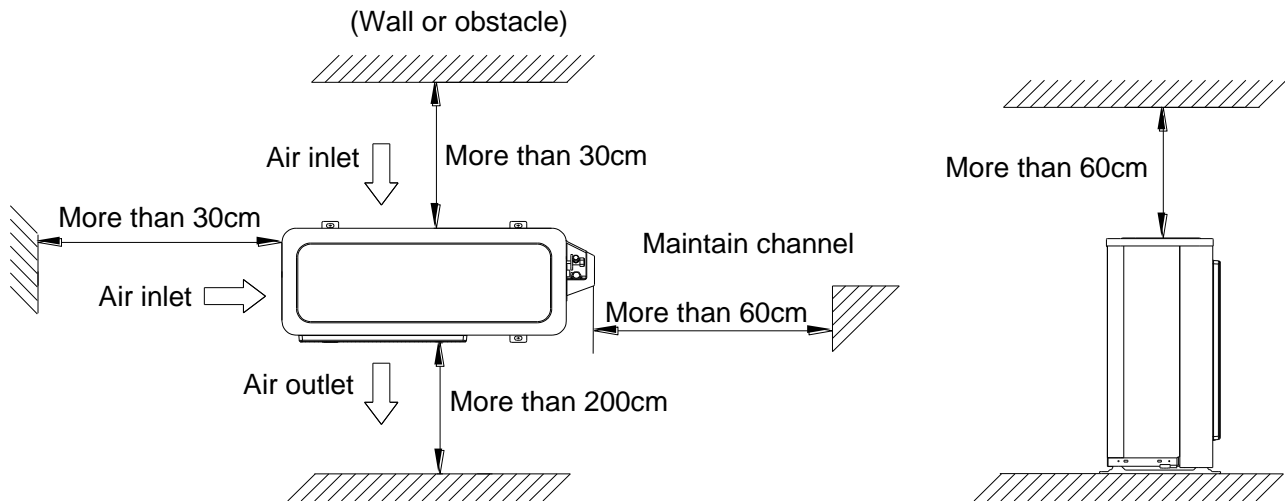


| Model | Unit: mm |     |     |      |     |     |
|-------|----------|-----|-----|------|-----|-----|
|       | W        | D   | H   | W1   | A   | B   |
| 12/18 | 800      | 333 | 554 | 870  | 514 | 340 |
| 24    | 845      | 363 | 702 | 914  | 540 | 350 |
| 30/36 | 946      | 410 | 810 | 1030 | 673 | 403 |



| Model | Unit: mm |     |      |      |     |     |
|-------|----------|-----|------|------|-----|-----|
|       | W        | D   | H    | W1   | A   | B   |
| 48/60 | 952      | 415 | 1333 | 1045 | 634 | 404 |

## 2. Service Space

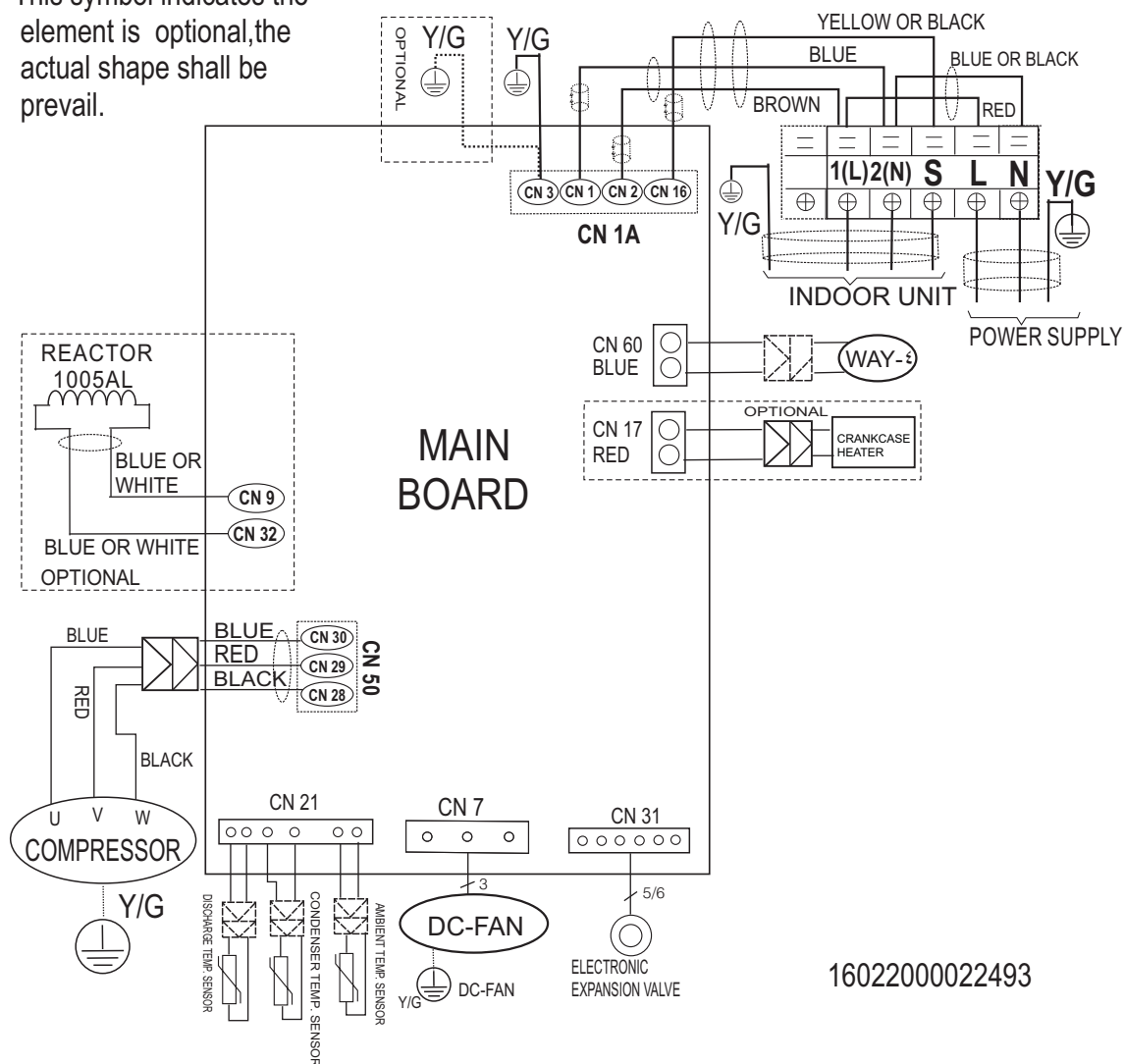


### 3. Wiring Diagrams

UE - MUCR-12-H8 / MUCSR-12-H8

Notes: -----

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



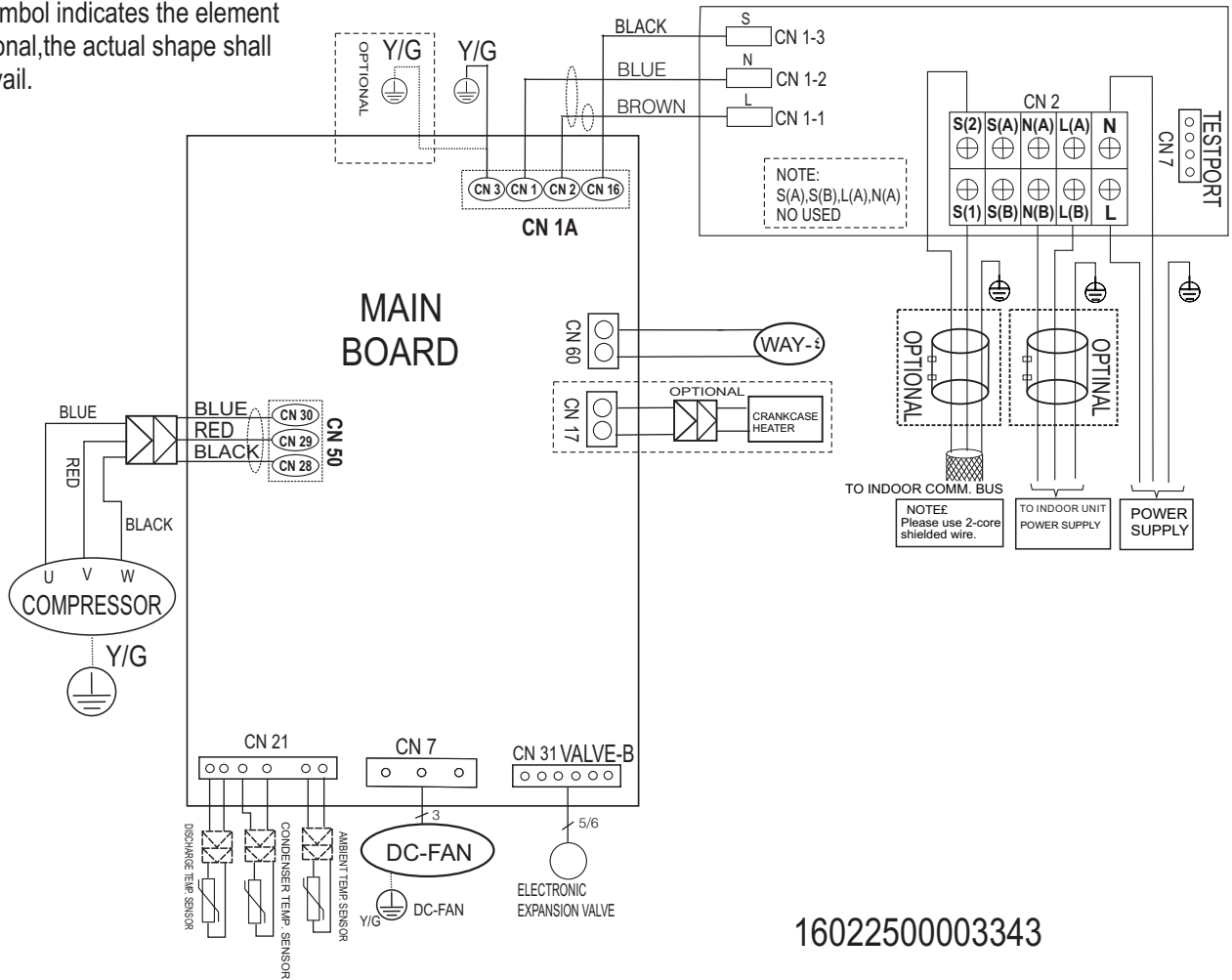
16022000022493



UE - MUCR-18-H8 / MUCSR-18-H8 / MISTR-18-H8

Notes: -----

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

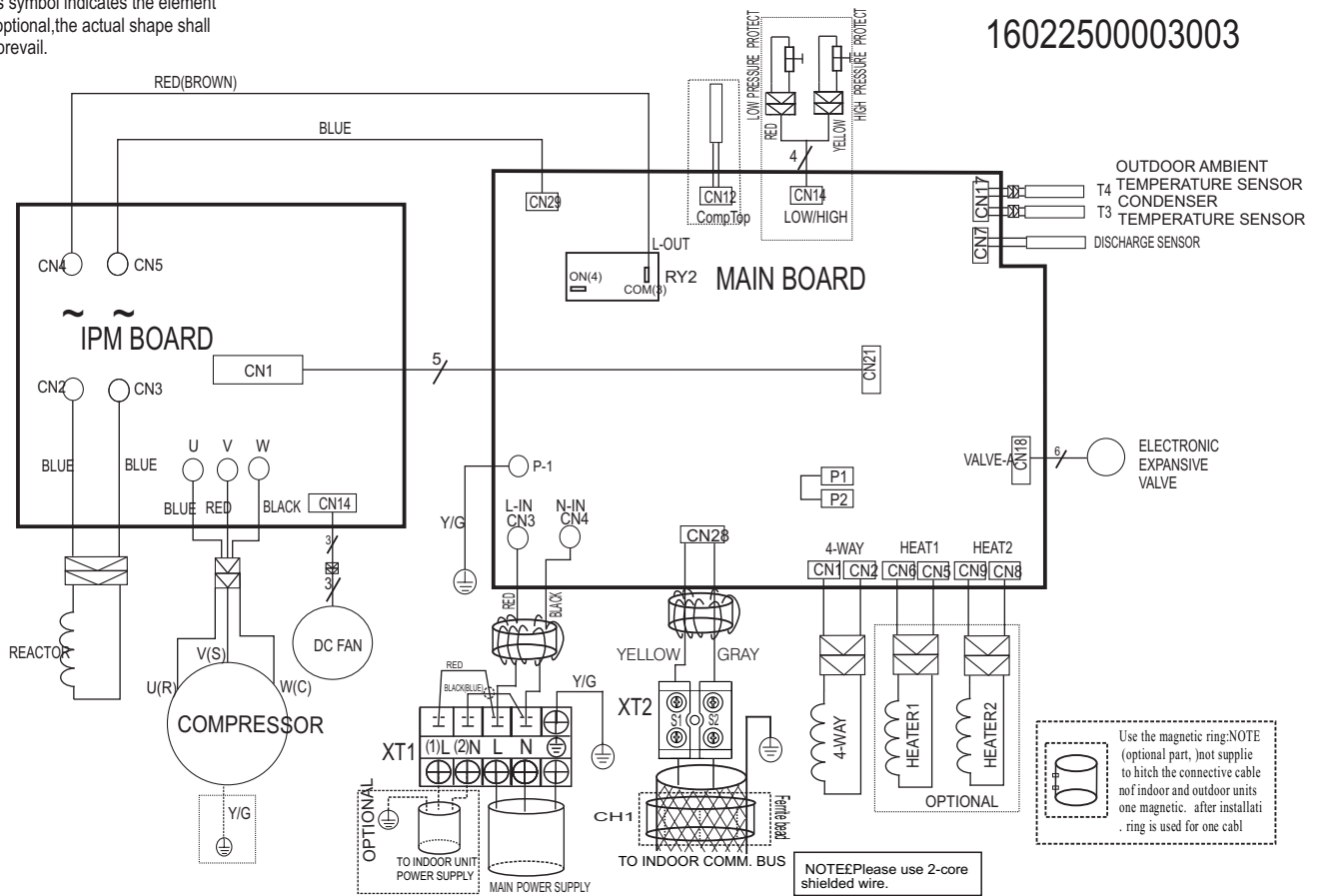


**UE - MUCR-24-H8 / MUCSR-24-H8 / MISTR-24-H8, UE - MUCR-30-H8 / MUCSR-30-H8 / MISTR-30-H8**

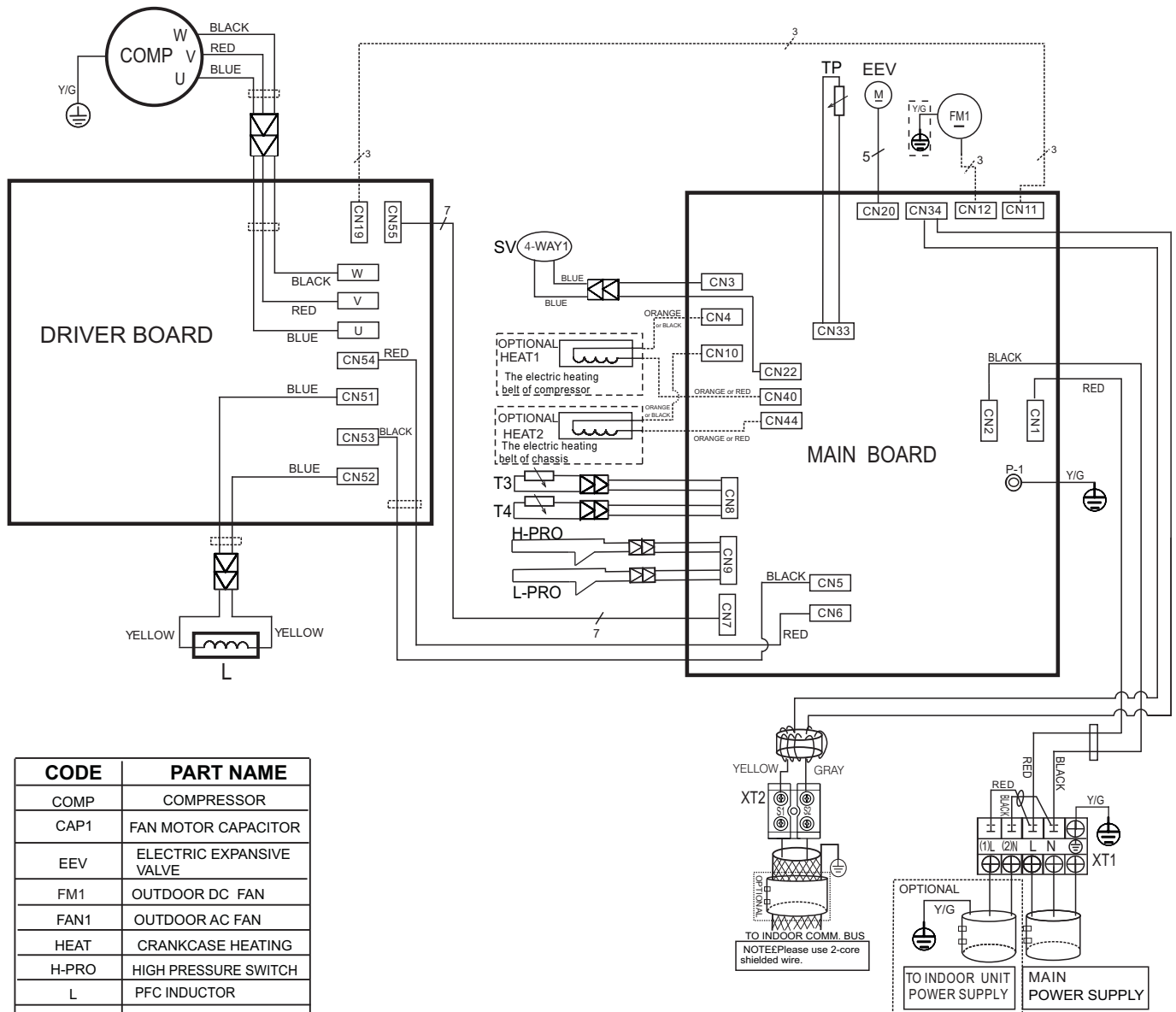
16022500003003

Notes: -----

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



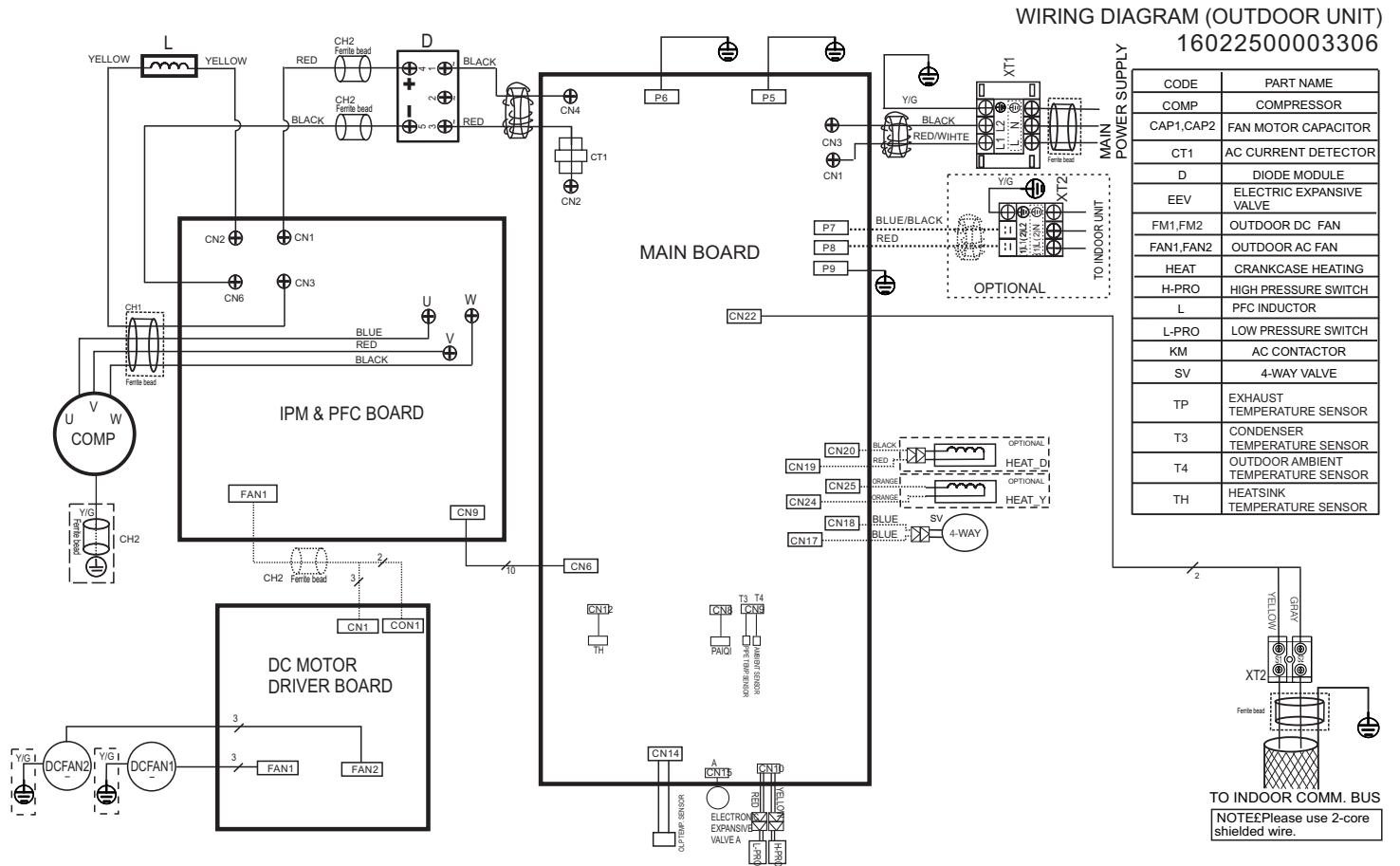
**UE MUCR 36 H8 / MUCSR 36 H8 / MUSTR 36 H8**



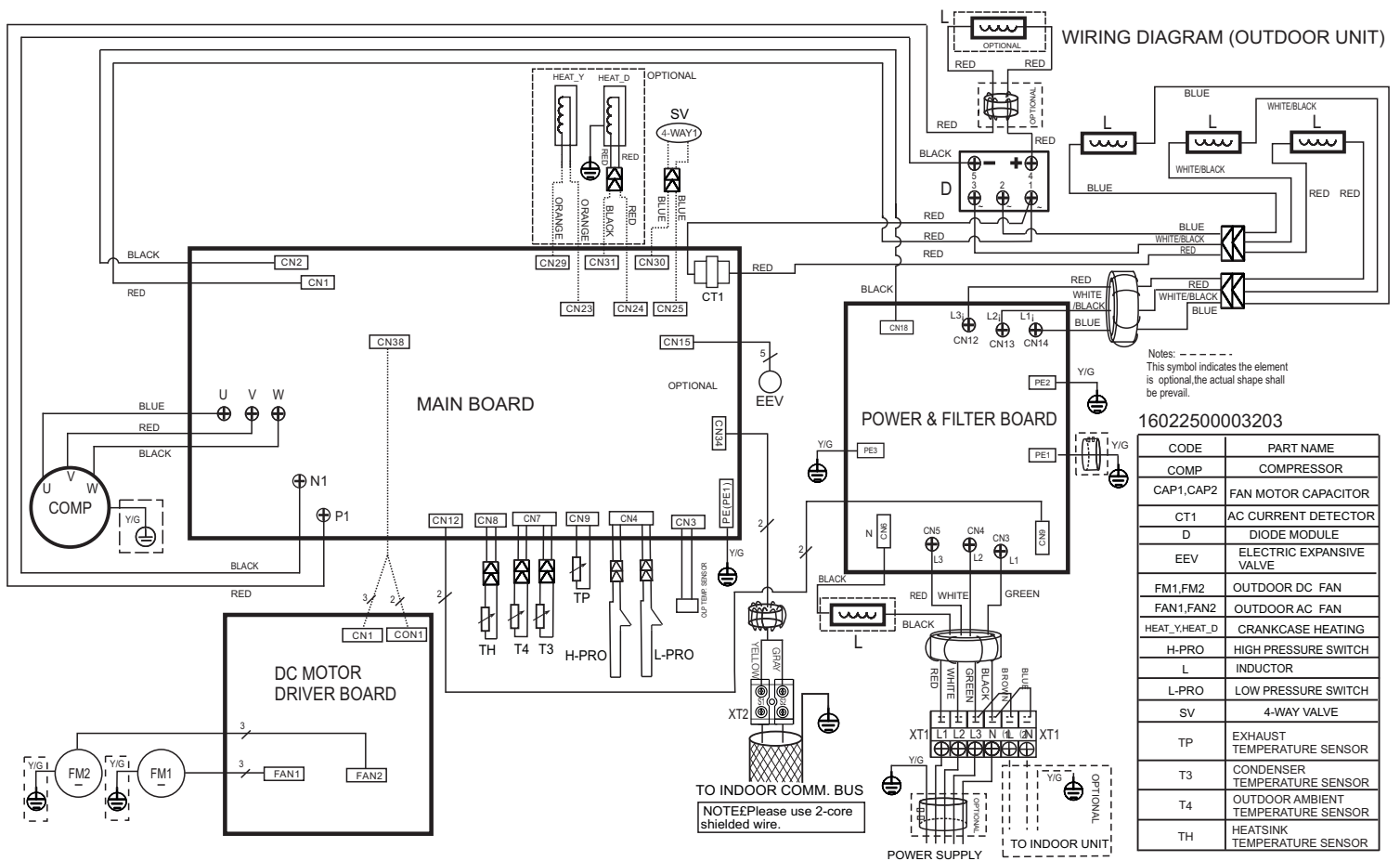
| CODE  | PART NAME                          |
|-------|------------------------------------|
| COMP  | COMPRESSOR                         |
| CAP1  | FAN MOTOR CAPACITOR                |
| EEV   | ELECTRIC EXPANSIVE VALVE           |
| FM1   | OUTDOOR DC FAN                     |
| FAN1  | OUTDOOR AC FAN                     |
| HEAT  | CRANKCASE HEATING                  |
| H-PRO | HIGH PRESSURE SWITCH               |
| L     | PFC INDUCTOR                       |
| 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        |

16022700000792

UE - MUCR-48-H8 / MUCSR-48-H8 / MISTR-48-H8



UE - MUCR-48-H8T / MUCSR-48-H8T / MISTR-48-H8T, UE - MUCR-60-H8T / MUCSR-60-H8T / MISTR-60-H8T

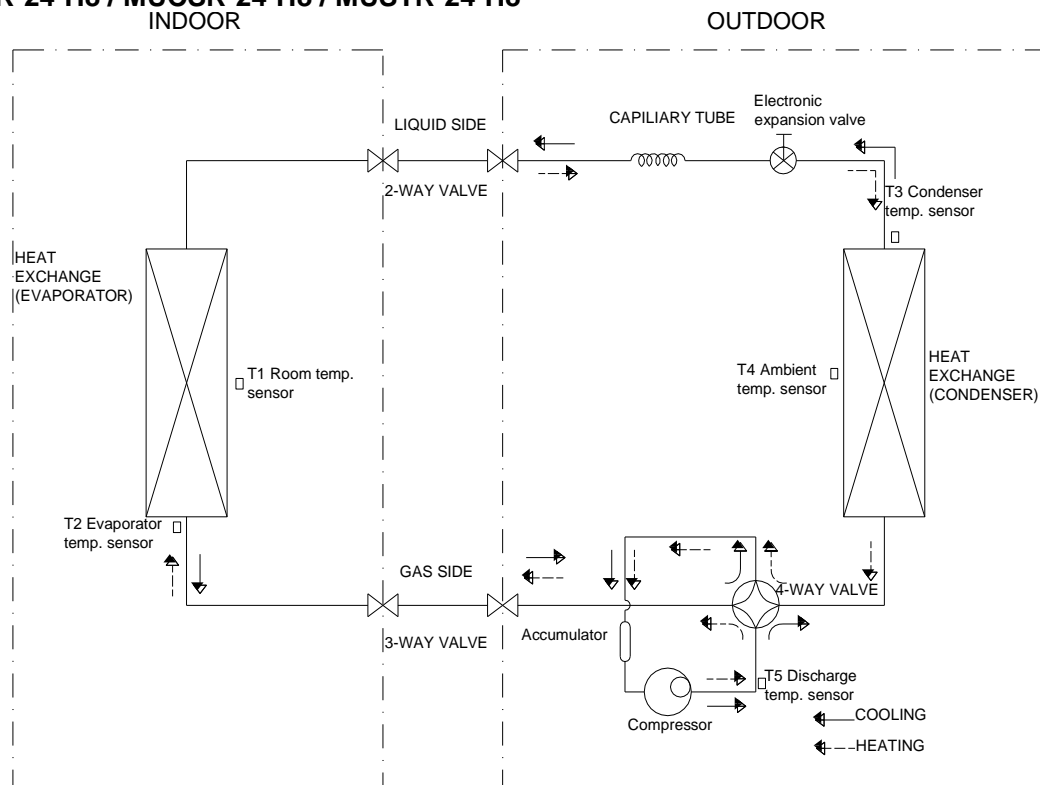


## 4. Piping Diagrams

UE - MUCR-12-H8 / MUCSR-12-H8

UE - MUCR-18-H8 / MUCSR-18-H8 / MISTR-18-H8

UE - MUCR-24-H8 / MUCSR-24-H8 / MISTR-24-H8



For UE - MUCR-24-H8 / MUCSR-24-H8 / MISTR-24-H8, there is no accumulator.

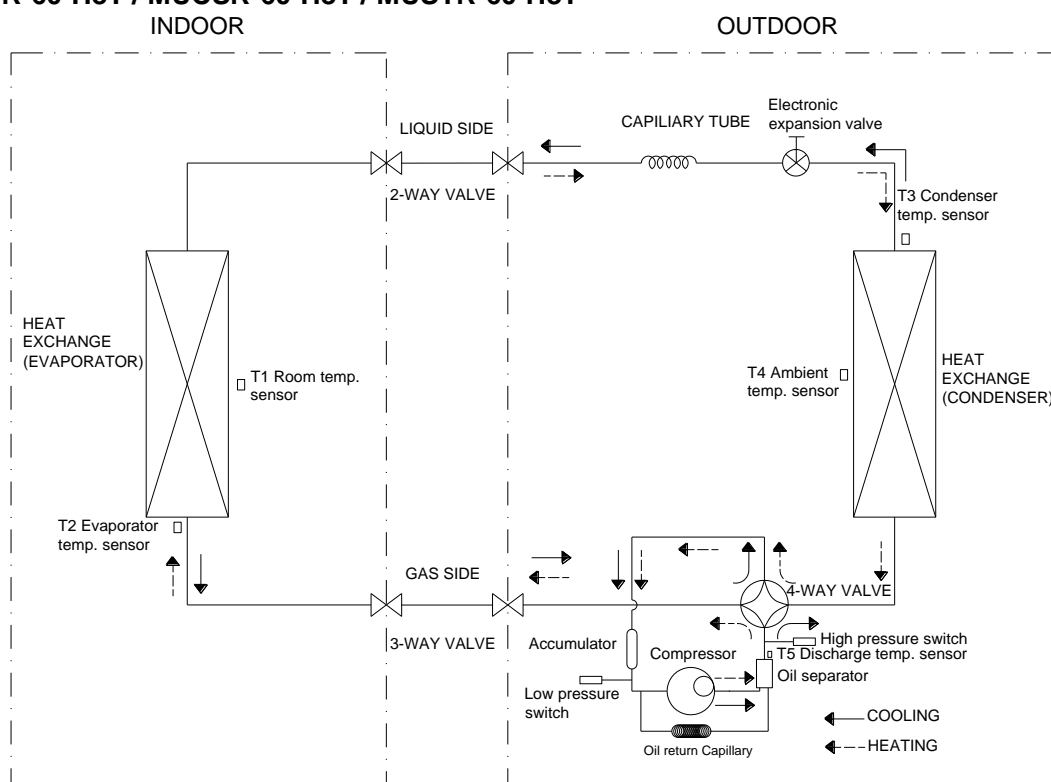
UE - MUCR-30-H8 / MUCSR-30-H8 / MISTR-30-H8

UE - MUCR-36-H8 / MUCSR-36-H8 / MISTR-36-H8

UE - MUCR-48-H8 / MUCSR-48-H8 / MISTR-48-H8

UE - MUCR-48-H8T / MUCSR-48-H8T / MISTR-48-H8T

UE - MUCR-60-H8T / MUCSR-60-H8T / MISTR-60-H8T



For UE - MUCR-30-H8 / MUCSR-30-H8 / MISTR-30-H8, there are no oil separator and oil return capillary.

## 5. Electric Characteristics

| Model  | Outdoor Unit |          |      |      | Power Supply |
|--|--------------|----------|------|------|--------------|
|  | Hz           | Voltage  | Min. | Max. | MFA          |
| UE - MUCR-12-H8 /<br>MUCSR-12-H8                     | 50           | 220-240V | 198V | 254V | 16           |
| UE - MUCR-18-H8 /<br>MUCSR-18-H8 /<br>MUSTR-18-H8    | 50           | 220-240V | 198V | 254V | 20           |
| UE - MUCR-24-H8 /<br>MUCSR-24-H8 /<br>MUSTR-24-H8    | 50           | 220-240V | 198V | 254V | 20           |
| UE - MUCR-30-H8 /<br>MUCSR-30-H8 /<br>MUSTR-30-H8    | 50           | 220-240V | 198V | 254V | 30           |
| UE - MUCR-36-H8 /<br>MUCSR-36-H8 /<br>MUSTR-36-H8    | 50           | 220-240V | 198V | 254V | 30           |
| UE - MUCR-48-H8 /<br>MUCSR-48-H8 /<br>MUSTR-48-H8    | 50           | 220-240V | 198V | 254V | 35           |
| UE - MUCR-48-H8T /<br>MUCSR-48-H8T /<br>MUSTR-48-H8T | 50           | 380-415V | 342V | 440V | 25           |
| UE - MUCR-60-H8T /<br>MUCSR-60-H8T /<br>MUSTR-60-H8T | 50           | 380-415V | 342V | 440V | 25           |

Notes:

MFA: Max. Fuse Amps. (A)

## 6. Operation Limits

| Mode \ Temperature  | Cooling operation | Heating operation | Drying operation |
|---------------------|-------------------|-------------------|------------------|
| Room temperature    | 17°C~32°C         | 0°C~30°C          | 17°C~32°C        |
| Outdoor temperature | -15°C~50°C        | -15°C~24°C        | 0°C~50°C         |

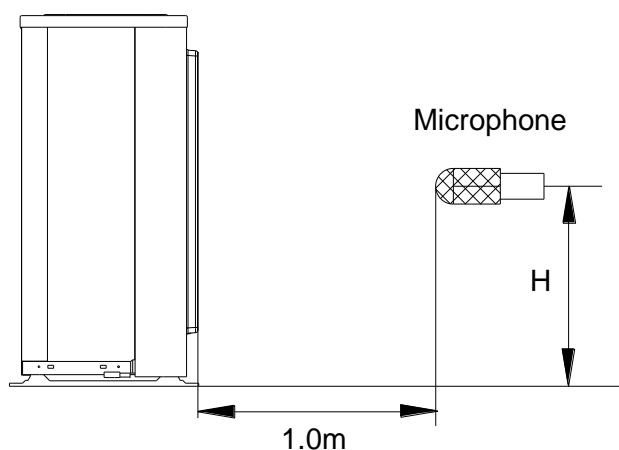
### CAUTION:

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



## 7. Sound Levels

Outdoor Unit



**Note:**  $H = 0.5 \times \text{height of outdoor unit}$

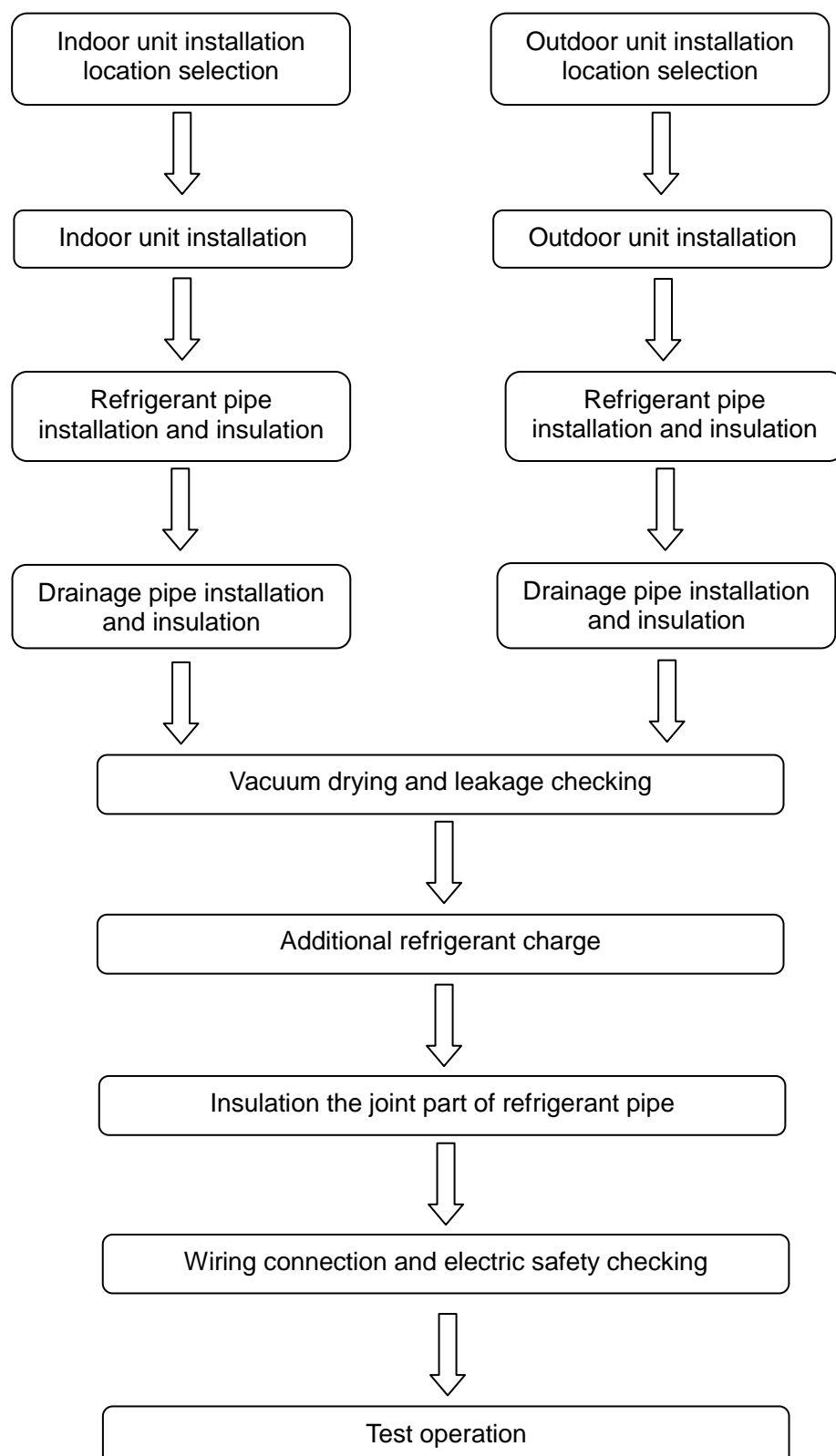
| Model  | Noise Power dB(A) | Noise level dB(A) |
|--|-------------------|-------------------|
| UE - MUCR-12-H8 / MUCSR-12-H8                  | 62                | 56                |
| UE - MUCR-18-H8 / MUCSR-18-H8 / MUSTR-18-H8    | 64                | 57                |
| UE - MUCR-24-H8 / MUCSR-24-H8 / MUSTR-24-H8    | 65                | 61                |
| UE - MUCR-30-H8 / MUCSR-30-H8 / MUSTR-30-H8    | 66                | 60                |
| UE - MUCR-36-H8 / MUCSR-36-H8 / MUSTR-36-H8    | 66                | 61                |
| UE - MUCR-48-H8 / MUCSR-48-H8 / MUSTR-48-H8    | 72                | 65                |
| UE - MUCR-48-H8T / MUCSR-48-H8T / MUSTR-48-H8T | 72                | 65                |
| UE - MUCR-60-H8T / MUCSR-60-H8T / MUSTR-60-H8T | 75                | 63                |

# Part 4

## Installation

|   |            |
|---|------------|
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| <b>4. Outdoor unit installation (Side Discharge Unit) .....</b> | <b>126</b> |
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## 1. Installation Procedure



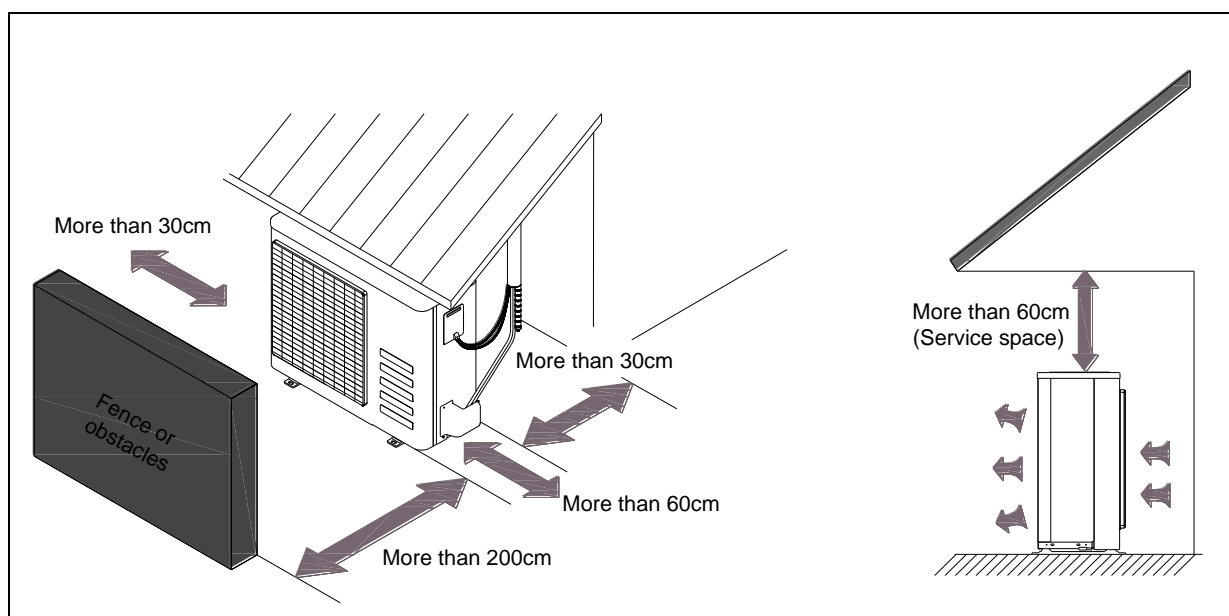
## 2. Location selection

### 2.1 Indoor unit location selection

- The place shall easily support the indoor unit's weight.
- The place can ensure the indoor unit installation and inspection.
- The place can ensure the indoor unit horizontally installed.
- The place shall allow easy water drainage.
- The place shall easily connect with the outdoor unit.
- The place where air circulation in the room should be good.
- There should not be any heat source or steam near the unit.
- There should not be any oil gas near the unit
- There should not be any corrosive gas near the unit
- There should not be any salty air near the unit
- There should not be strong electromagnetic wave near the unit
- There should not be inflammable materials or gas near the unit
- There should not be strong voltage vibration.

### 2.2 Outdoor unit location selection

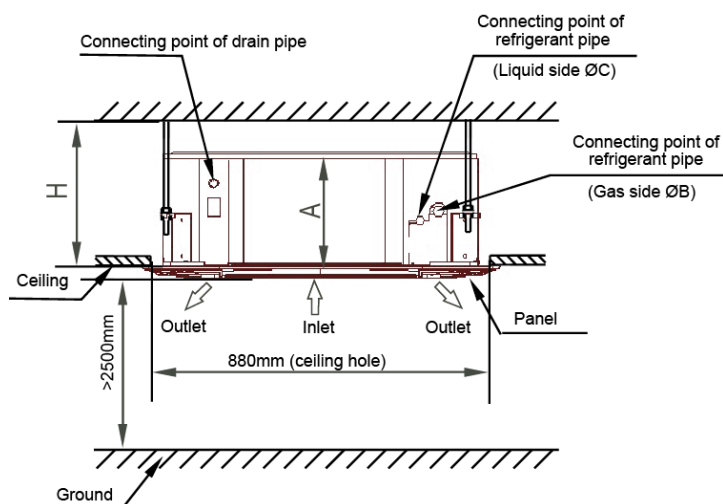
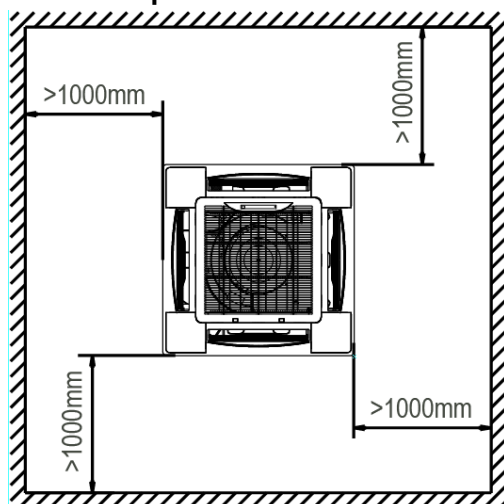
- The place shall easily support the outdoor unit's weight.
- Locate the outdoor unit as close to indoor unit as possible
- The piping length and height drop can not exceed the allowable value.
- The place where the noise, vibration and outlet air do not disturb the neighbors.
- There is enough room for installation and maintenance.
- The air outlet and the air inlet are not impeded, and not face the strong wind.
- It is easy to install the connecting pipes and cables.
- There is no danger of fire due to leakage of inflammable gas.
- It should be a dry and well ventilation place
- The support should be flat and horizontal
- Do not install the outdoor unit in a dirty or severely polluted place, so as to avoid blockage of the heat exchanger in the outdoor unit.
- If is built over the unit to prevent direct sunlight, rain exposure, direct strong wind, snow and other scraps accumulation, make sure that heat radiation from the condenser is not restricted.



### 3. Indoor unit installation

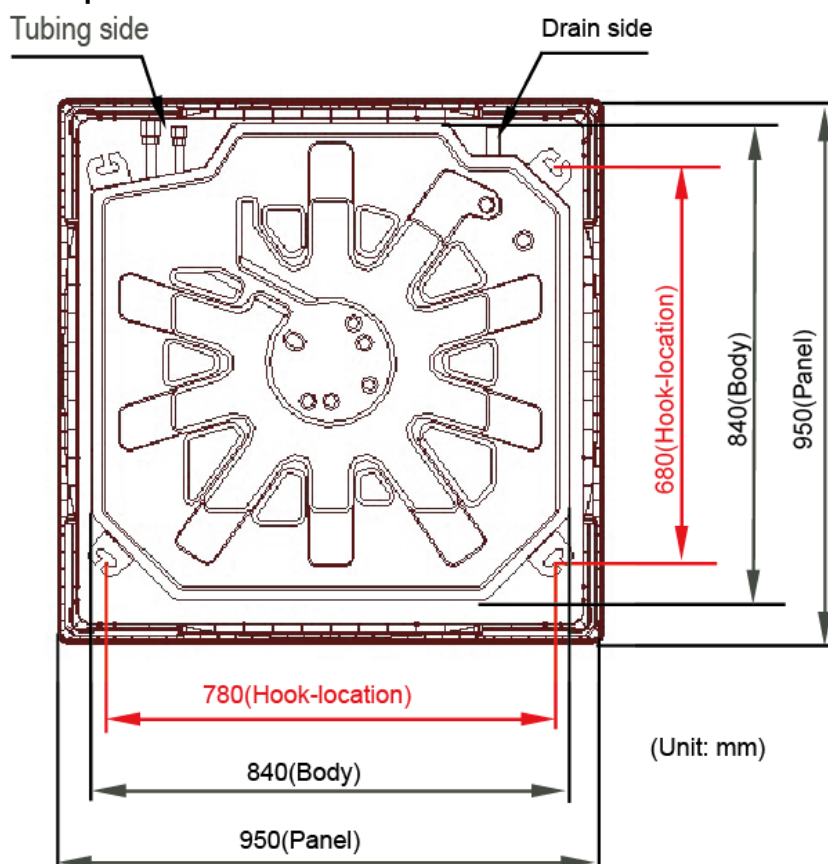
#### 3.1 Super slim cassette (MUCSR-24 to 60-H8) indoor unit installation

##### 3.1.1 Service space for indoor unit



| Model | A   | H    |
|-------|-----|------|
| 18    | 205 | >235 |
| 24~36 | 245 | >275 |
| 48/60 | 287 | >317 |

##### 3.1.2 Bolt pitch



##### 3.1.3 Install the pendant bolt

Select the position of installation hooks according to the hook holes positions showed in upper picture. Drill four holes of  $\varnothing 12\text{mm}$ , 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).

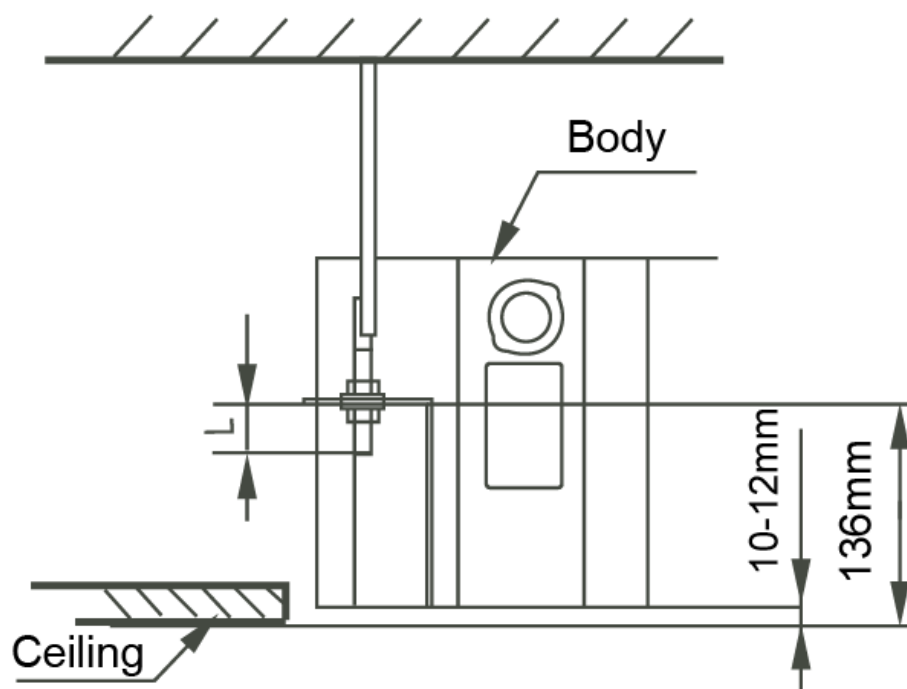


### 3.1.4 Install the main body

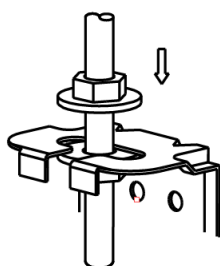
Make the 4 suspender through the 4 hanger of the main body to suspend it. Adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body. Use a leveling instrument to make sure the levelness of the main body is within  $\pm 1^\circ$ .



Adjust the position to ensure the gaps between the body and the four sides of ceiling are even. The body's lower part should sink into the ceiling for 10~12 mm. In general, L is half of the screw length of the installation hook.

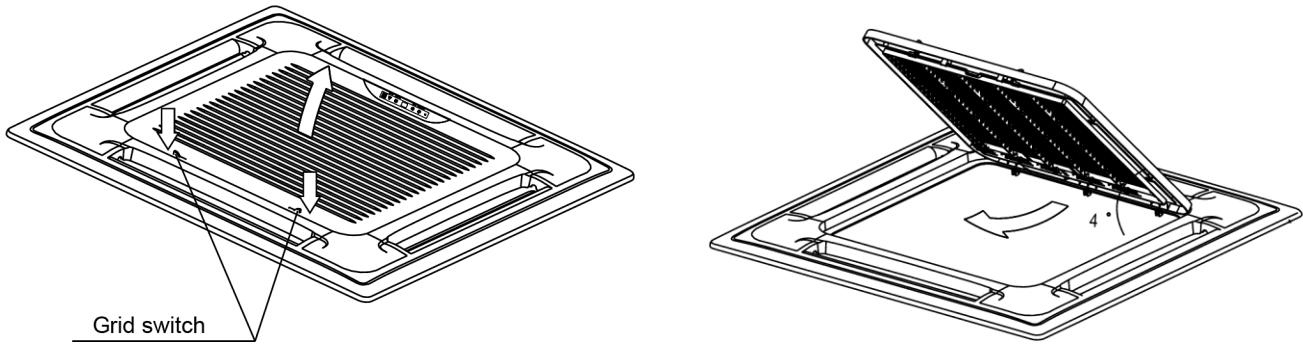


Locate the air conditioner firmly by wrenching the nuts after having adjusted the body's position well.

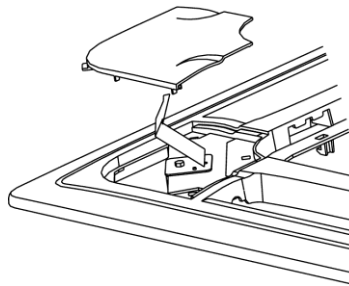


### 3.1.5 Install the panel

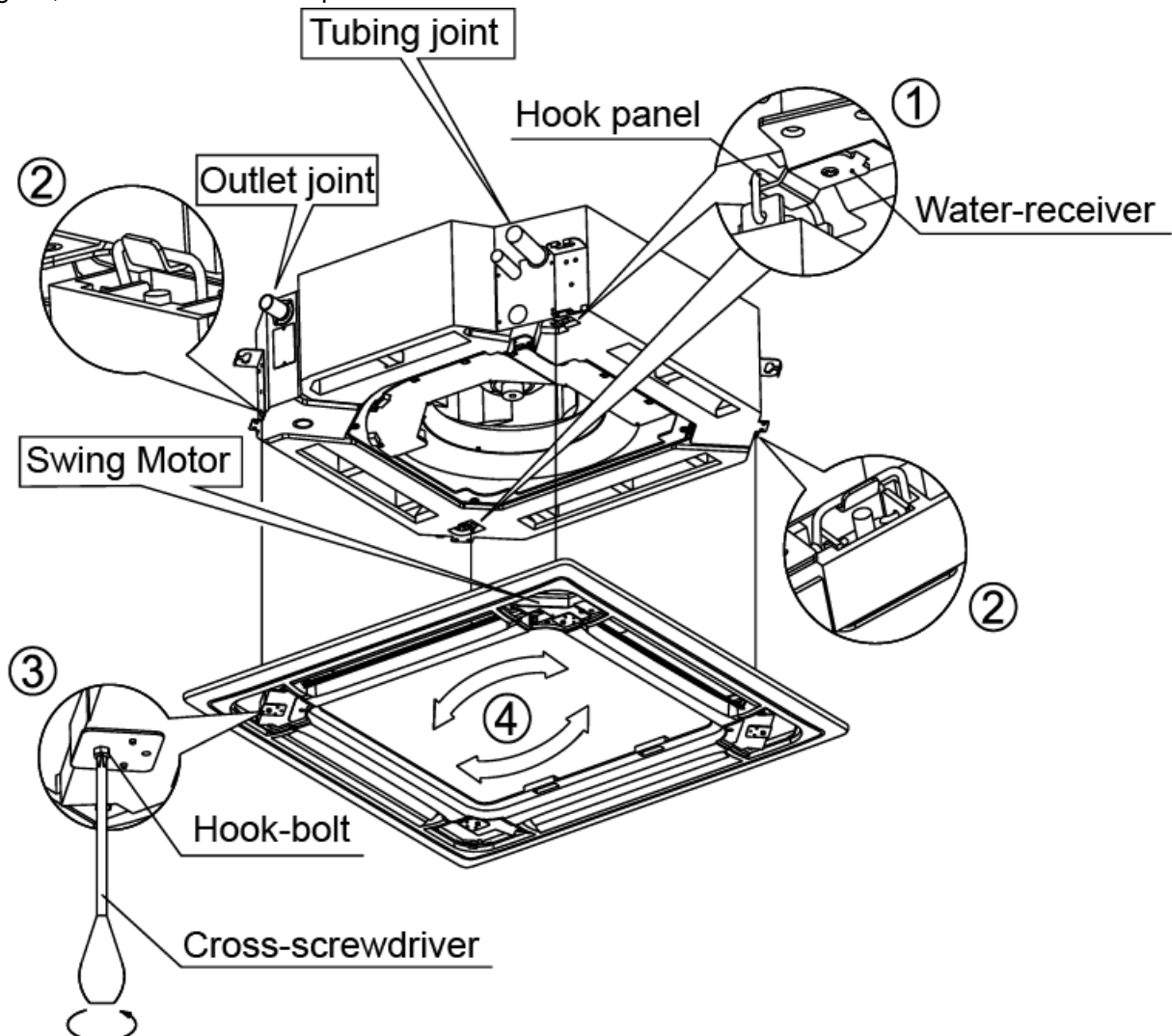
Remove the grille



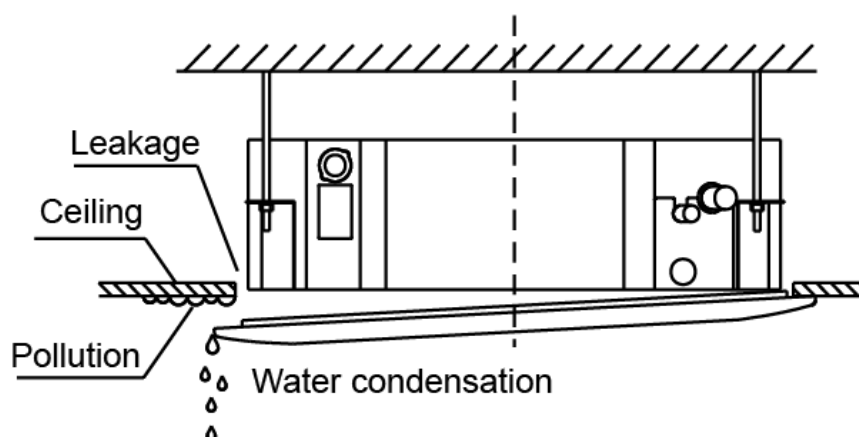
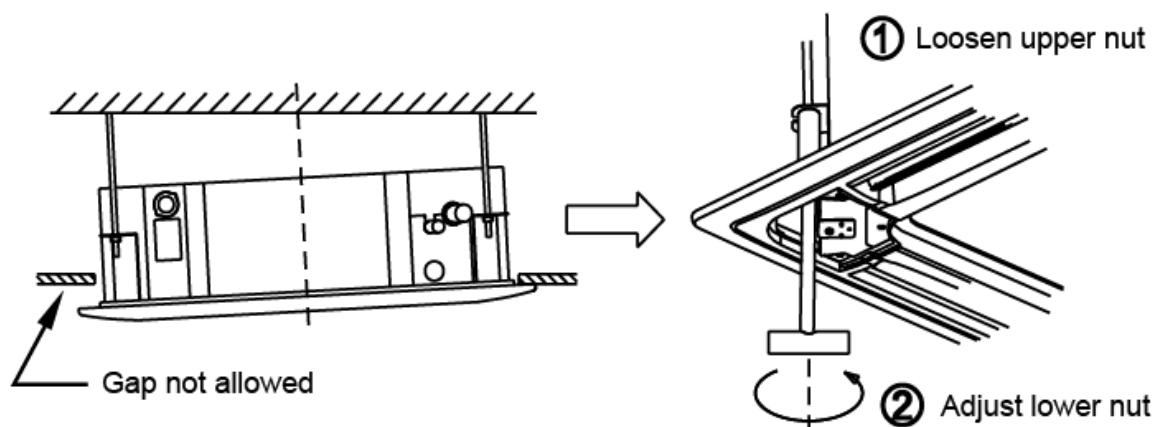
Remove the 4 corner covers.



Hang the panel to the hooks on the mainbody. If the panel is with auto-lift grille, please watch the ropes lifting the grille, DO NOT make the ropes enwinded or blocked.

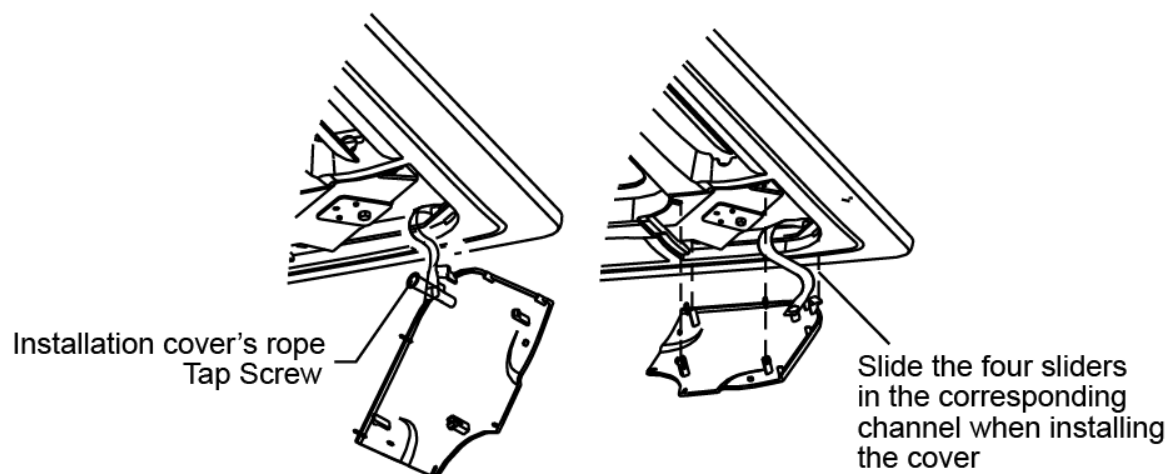


Tighten the screws under the panel hooks till the panel closely stick on the ceiling to avoid condensate water.



Hang the air-in grill to the panel, then connect the lead terminator of the swing motor and that of the control box with corresponding terminators on the body respectively.

Install the 4 corner covers back.

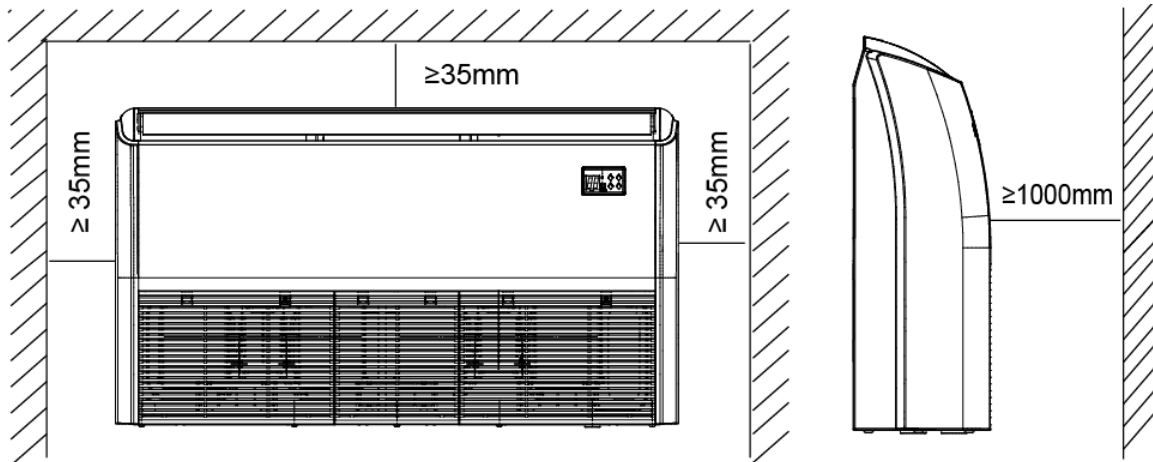


**Note:** The panel shall be installed after the wiring connected.



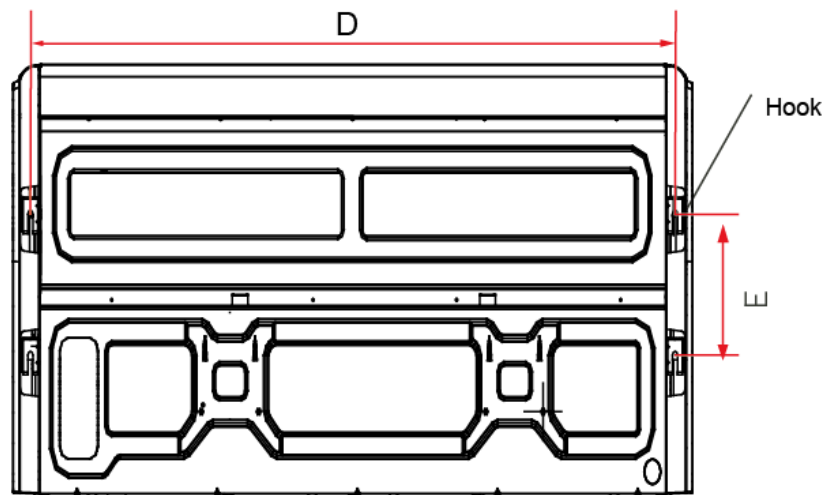
### 3.2 Ceiling & floor (MUSTR-18 to 60-H8) indoor unit installation

#### 3.2.1 Service space for indoor unit



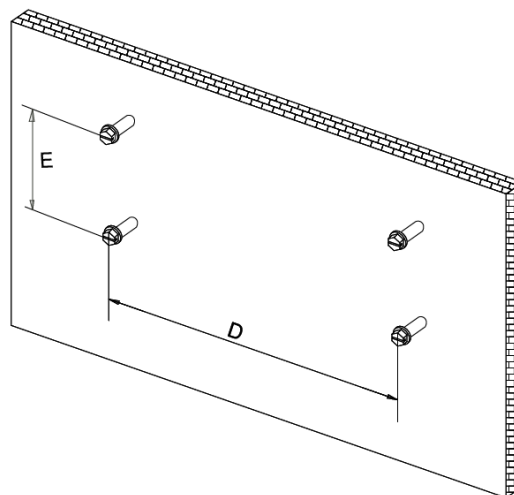
#### 3.2.2 Bolt pitch

##### ① Ceiling installation



| Capacity (KBtu/h) | D    | E   |
|-------------------|------|-----|
| 18/24             | 983  | 220 |
| 30K               | 1200 | 220 |
| 36~60             | 1565 | 220 |

##### ② Wall-mounted installation



### 3.2.3 Install the pendant bolt

#### ① Ceiling installation

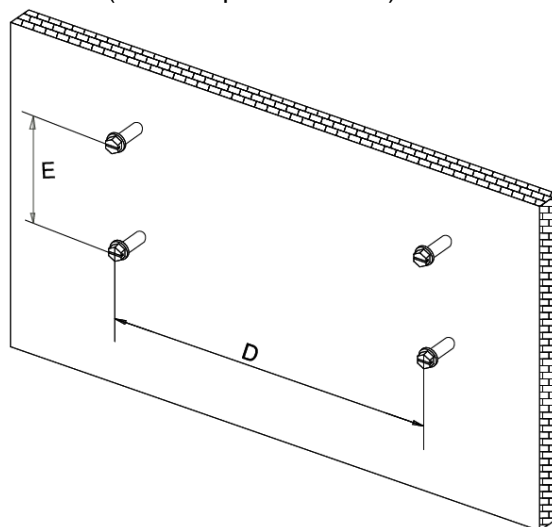
Select the position of installation hooks according to the hook holes positions showed in upper picture.

Drill four holes of  $\varnothing 12\text{mm}$ , 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).



#### ② Wall-mounted installation

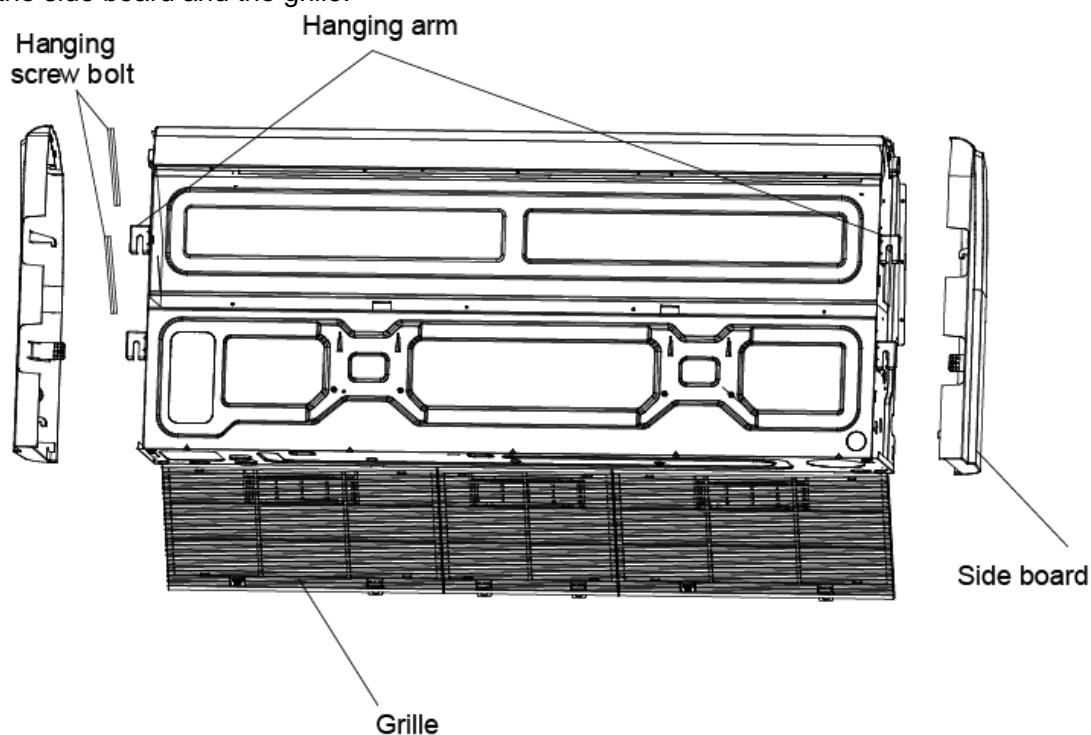
Install the tapping screws onto the wall.(Refer to picture below)



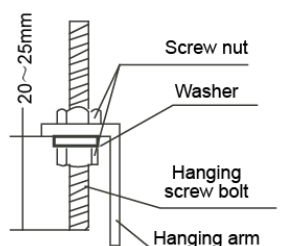
### 3.2.4 Install the main body

#### ① Ceiling installation (The only installation method for the unit with drain pump)

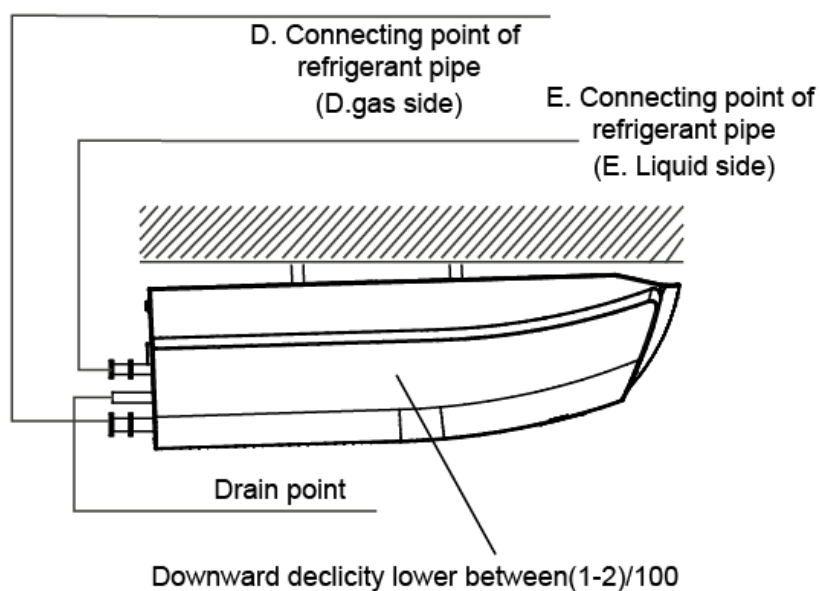
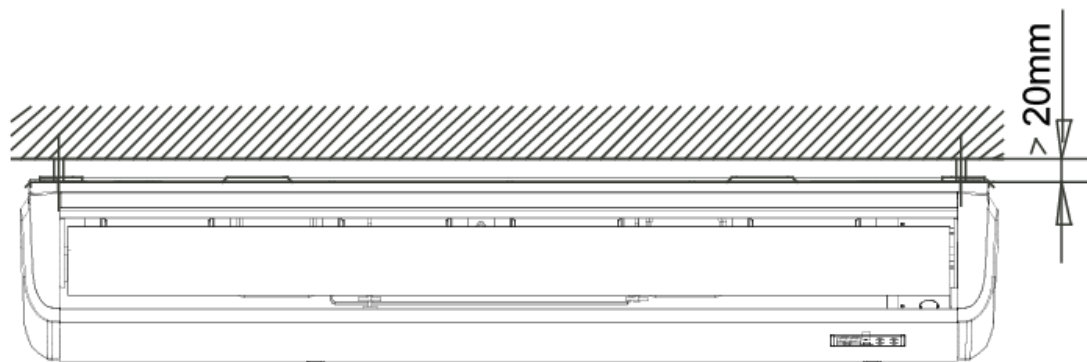
Remove the side board and the grille.



Locate the hanging arm on the hanging screw bolt. Prepare the mounting bolts on the unit.

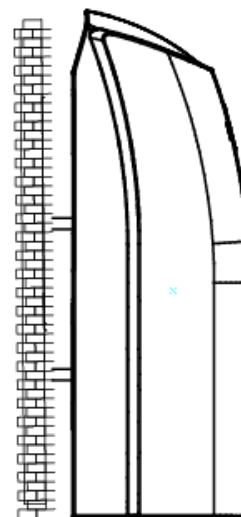
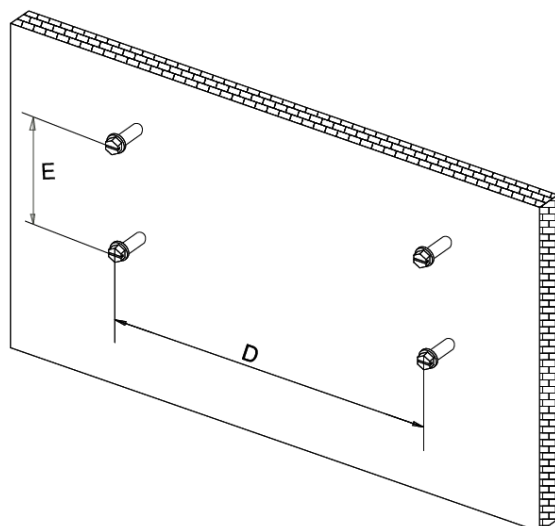


Put the side panels and grilles back.



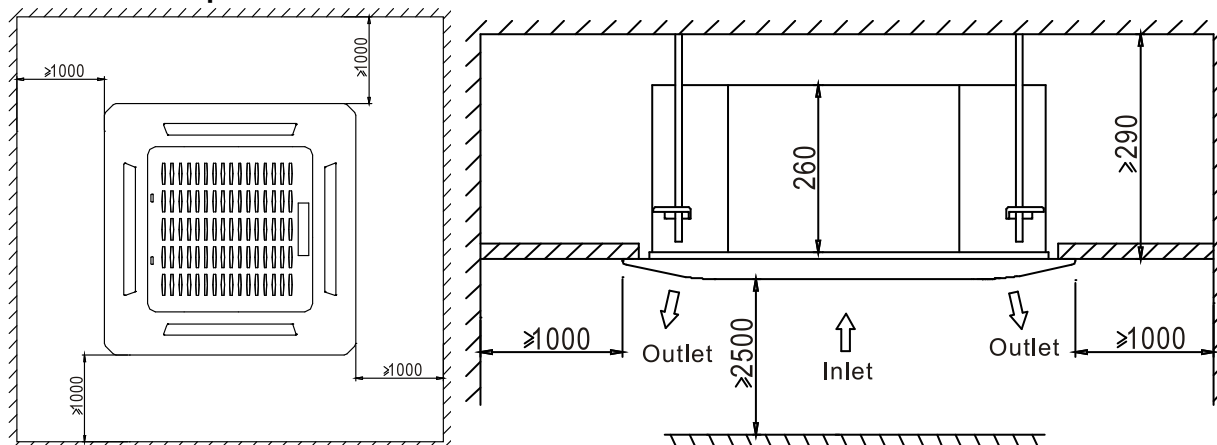
## ② Wall-mounted installation

Hang the indoor unit by insert the tapping screws into the hanging arms on the main unit. (The bottom of body can touch with floor or suspended, but the body must install vertically.)

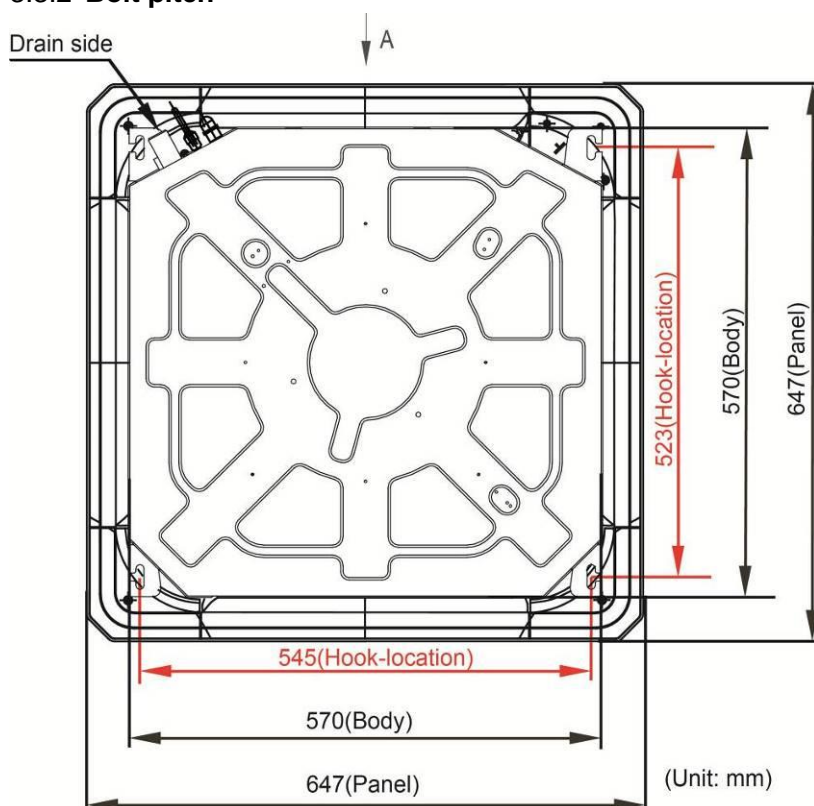


### 3.3 Compact cassette (MUCSR-12 to 18-H8) indoor unit installation

#### 3.3.1 Service space for indoor unit



#### 3.3.2 Bolt pitch



#### 3.3.3 Install the pendant bolt

Select the position of installation hooks according to the hook holes positions showed in upper picture. Drill four holes of  $\varnothing 12\text{mm}$ , 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).

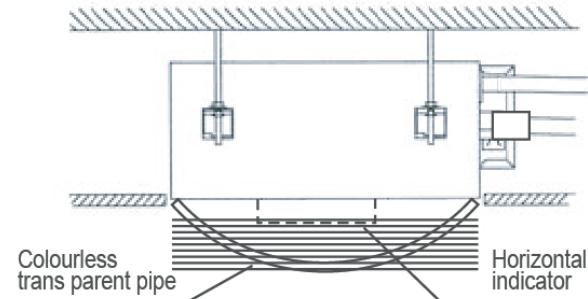


Face the concave side of the installation hooks toward the expansible hooks. Determine the length of the installation hooks from the height of ceiling, then cut off the unnecessary part.

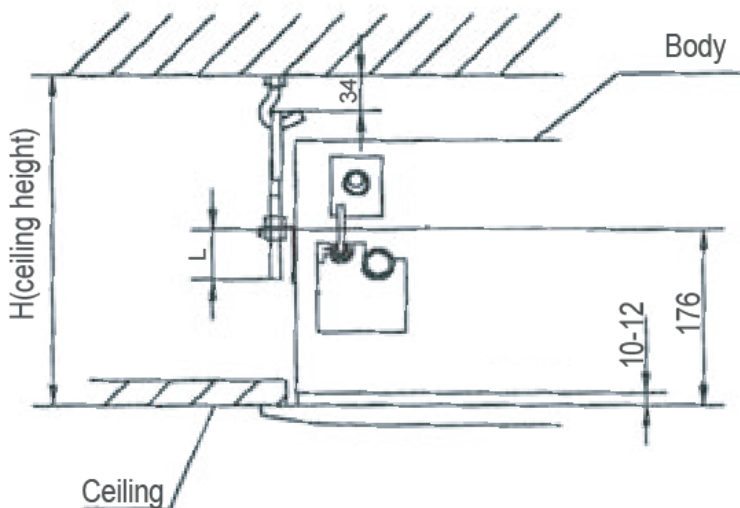
If the ceiling is extremely high, please determine the length of the installation hook depending on the real situation.

### 3.3.4 Install the main body

Make the 4 suspender through the 4 hanger of the main body to suspend it. Adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body. Use a leveling instrument to make sure the levelness of the main body is within  $\pm 1^\circ$ .



Adjust the position to ensure the gaps between the body and the four sides of ceiling are even. The body's lower part should sink into the ceiling for 10~12 mm. In general, L is half of the screw length of the installation hook.

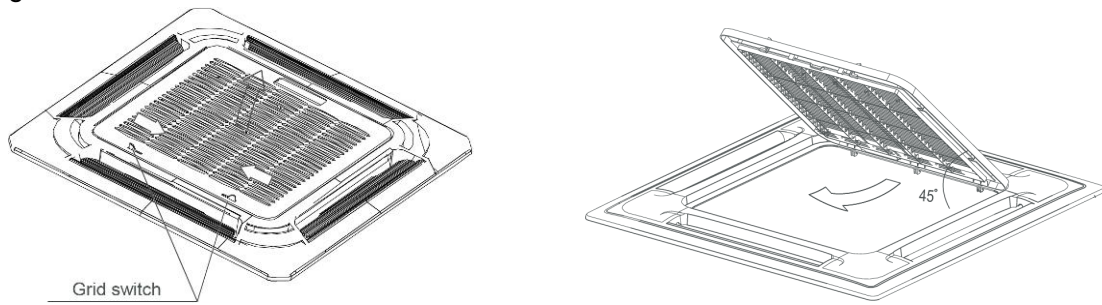


Locate the air conditioner firmly by wrenching the nuts after having adjusted the body's position well.

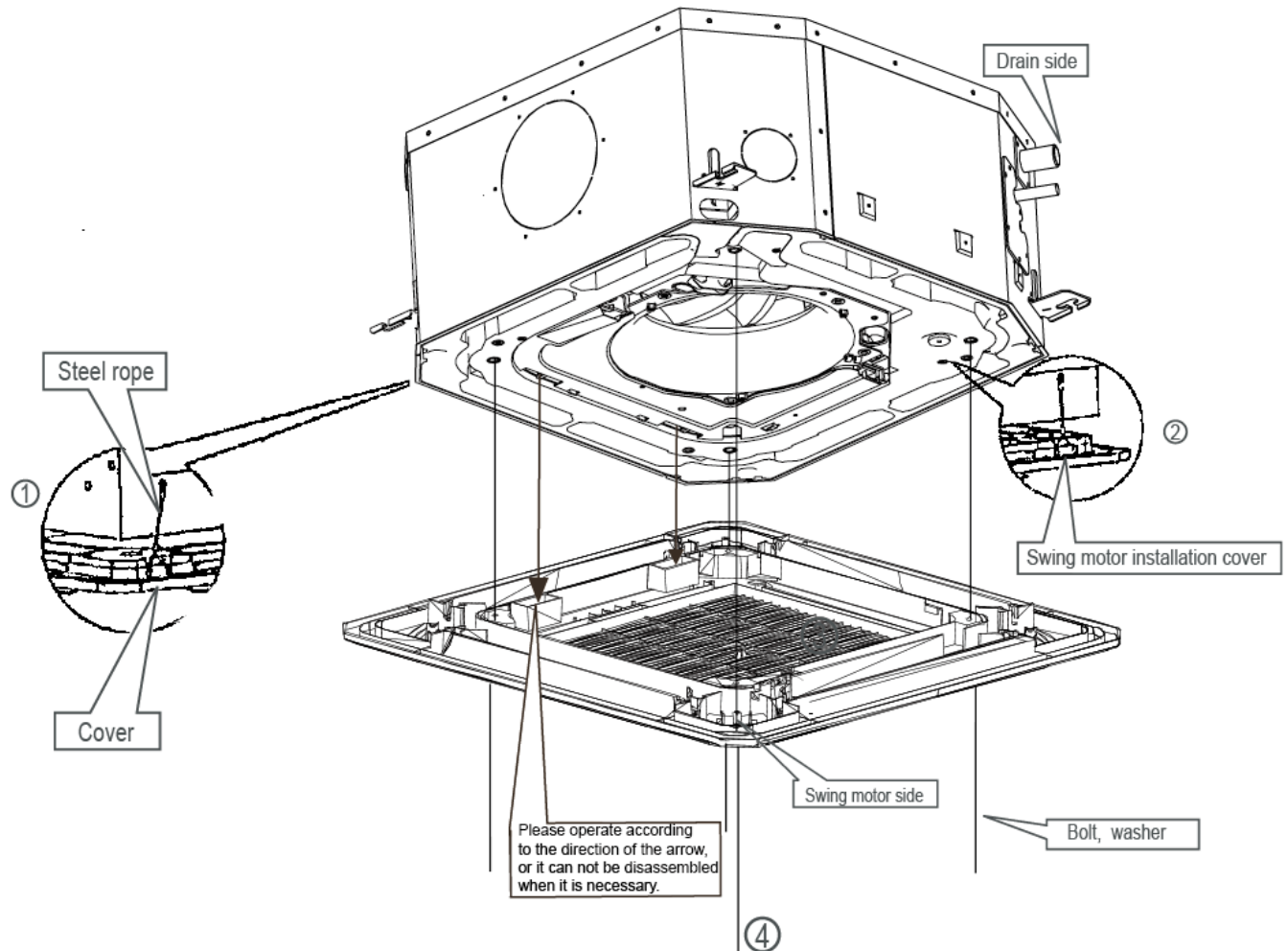


### 3.3.5 Install the panel

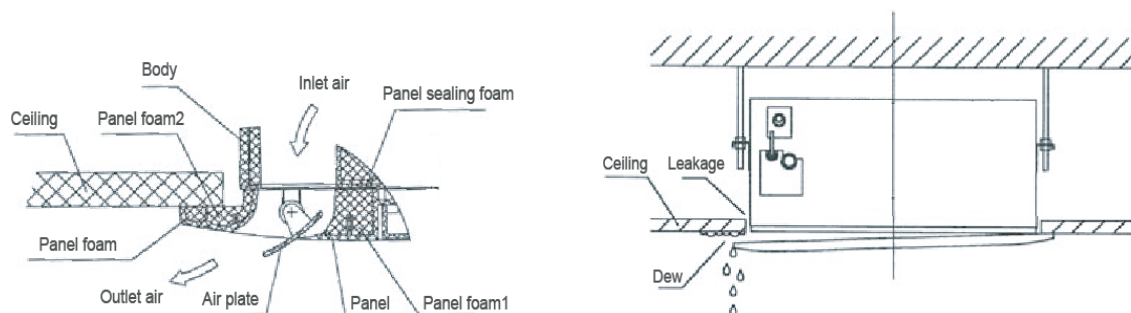
Remove the grille



Hang the panel to the hooks on the mainbody.



Tighten the screws under the panel hooks till the panel closely stick on the ceiling to avoid condensate water.



Hang the air-in grill to the panel, then connect the lead terminator of the swing motor and that of the control box with corresponding terminators on the body respectively.

**Note: The panel shall be installed after the wiring connected.**



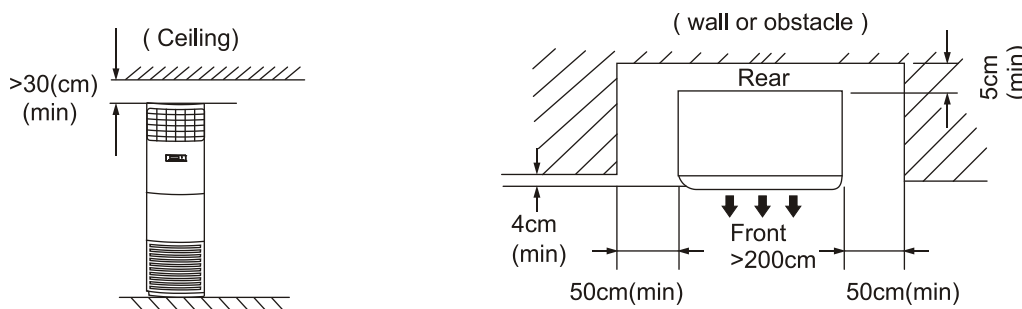
### 3.4 Floor standing (MUCOR-H8) indoor unit installation

#### 3.4.1 Service space for indoor unit

- A place which provides the spaces around the indoor unit as required above in the diagram.
- A place where is no obstacle near the inlet and outlet area.
- A place which can bear the weight of the indoor unit.
- A place which allows the air filter to be removed downward.
- A place where the reception range is not exposed to direct sunlight.
- In the center of the room where possible.

3.6.1.1 Please stand the unit in hard and flat ground;

Please reserve space for installation and maintenance.

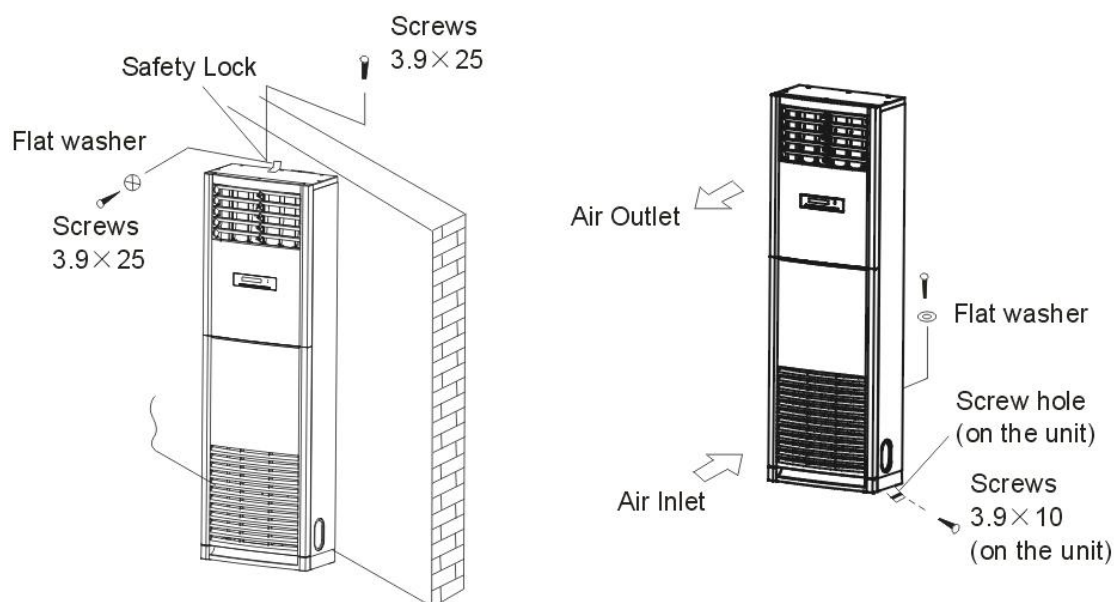


#### 3.4.2 Installing

##### 3.4.2.1. Anti-falling;

To prevent the indoor unit from falling, you must:

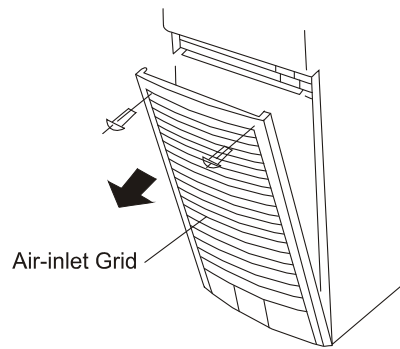
- Pay full attention to the unit because its long outer shape makes it easy to fall;
- Firmly fix the unit to the wall or in the ground to avoid accidental falling.



##### 3.4.2.2. Dismounting the lower front panel

Please take off the air-inlet grid before connecting the pipes/wires.

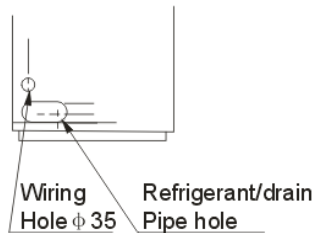
Pull down the two knobs on the grille, take off the two screws, then the air-inlet grille goes free.



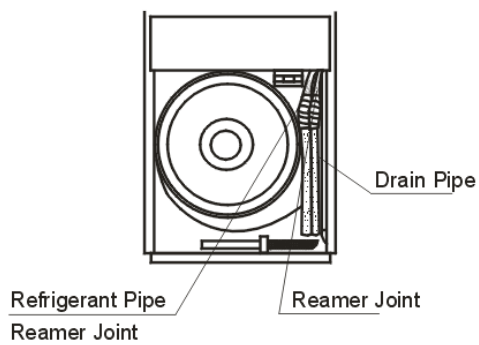
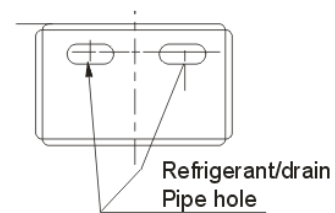
3.4.2.3. Take the Pipe Clip off before connecting the pipes and wiring; fit it when these finished.

Use accessories to connect the pipes/wires on both sides and back side.

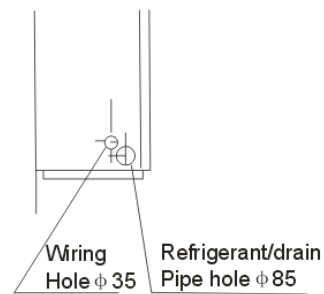
Pipe/wire-hole position on back side



Pipe/wire-hole position on the bottom



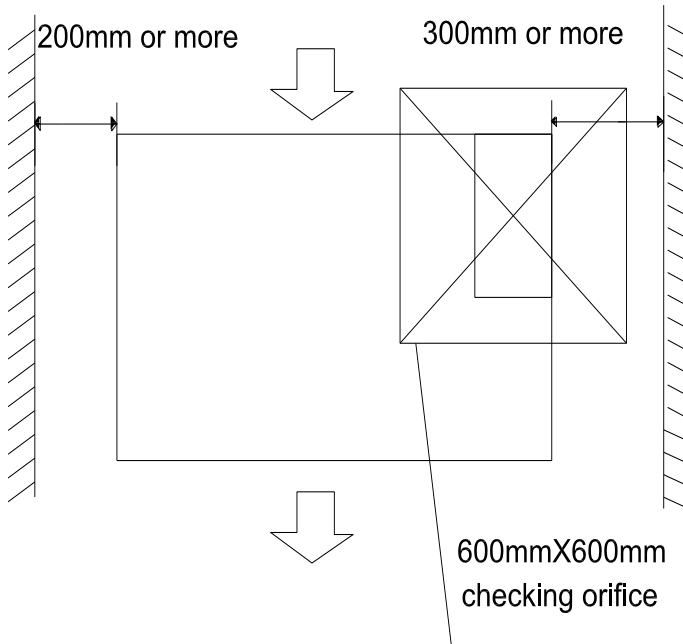
Pipe/wire-hole positions on both sides



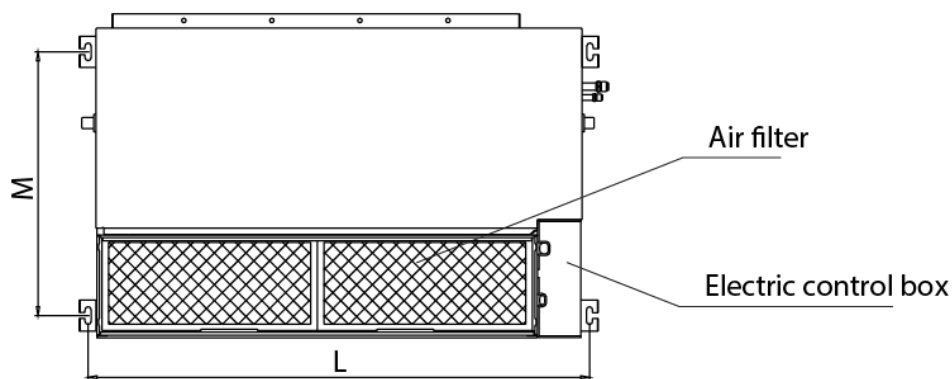


### 3.5 Duct (MUCR-H8) indoor unit installation

#### 3.5.1 Service space for indoor unit



#### 3.5.2 Bolt pitch

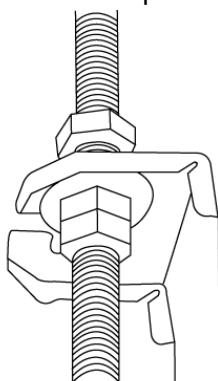


| Capacity(KBtu) | Size of outline dimension mounted lug |     |
|----------------|---------------------------------------|-----|
|                | L                                     | M   |
| 18             | 920                                   | 508 |
| 24             | 1140                                  | 598 |
| 36             | 1400                                  | 598 |

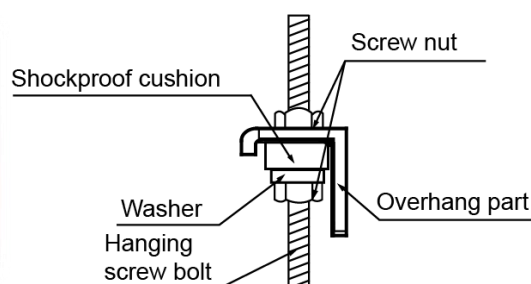
#### 3.5.3 Hang indoor unit

1. Please refer to the upper data to locate the four positioning screw bolt hole on the ceiling. Be sure to mark the areas where ceiling hook holes will be drilled.
2. Install and fit pipes and wires after you have finished installing the main body. When choosing where to start, determine the direction of the pipes to be drawn out. Especially in cases where there is a ceiling involved, align the refrigerant pipes, drain pipes, and indoor and outdoor lines with their connection points before mounting the unit.
3. Install hanging screw bolts.
  - Cut off the roof beam.
  - Strengthen the place that has been cut off, and consolidate the roof beam.
4. After you select an installation location, align the refrigerant pipes, drain pipes, as well as indoor and outdoor wires with their connection points before mounting the unit.

5. Drill 4 holes 10cm (4") deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
6. Secure the bolt using the washers and nuts provided.
7. Install the four suspension bolts.
8. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the washers and nuts provided.



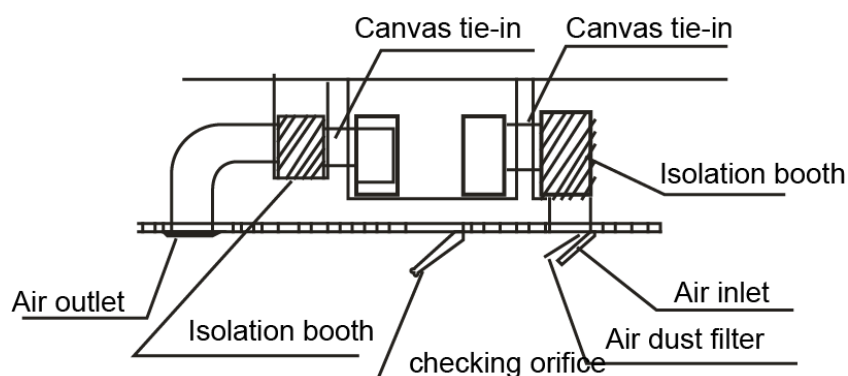
9. Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks.



Note: Confirm the minimum drain tilt is 1/100 or more.

#### 3.5.4 Duct and accessories installation

1. Install the filter (optional) according to the size of the air inlet.
2. Install the canvas tie-in between the body and the duct.
3. Air inlet and air outlet duct should be apart far enough to avoid air passage short-circuit.
4. Connect the duct according to the following diagram.



5. Please refer to the following static pressure to install..

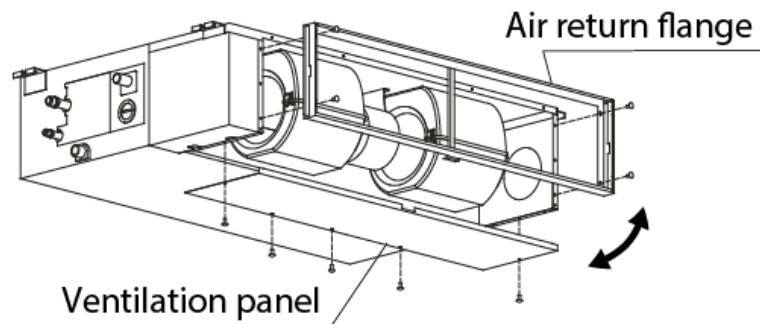
| Model(KBtu/h) | Static Pressure(Pa) |
|---------------|---------------------|
| 18            | 0-100               |
| 24            | 0-160               |
| 36            | 0-160               |

Change the fan motor static pressure corresponding to external duct static pressure.

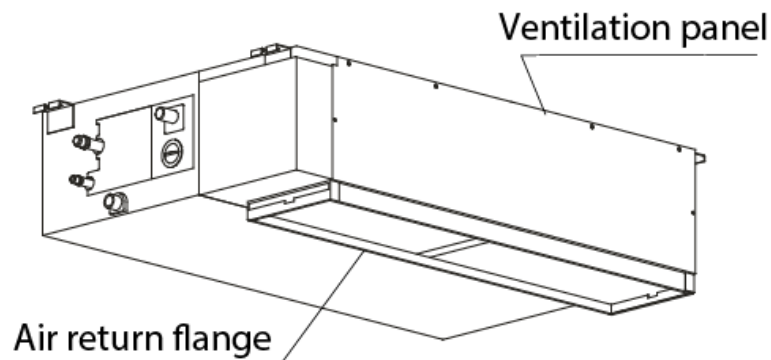
- NOTE: 1. Do not put the connecting duct weight on the indoor unit.  
 2. When connecting duct, use inflammable canvas tie-in to prevent vibrating.  
 3. Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct underlayer can be added to reduce noise, if the end-user requires.

### 3.5.5 Adjust the air inlet direction (From rear side to under-side.)

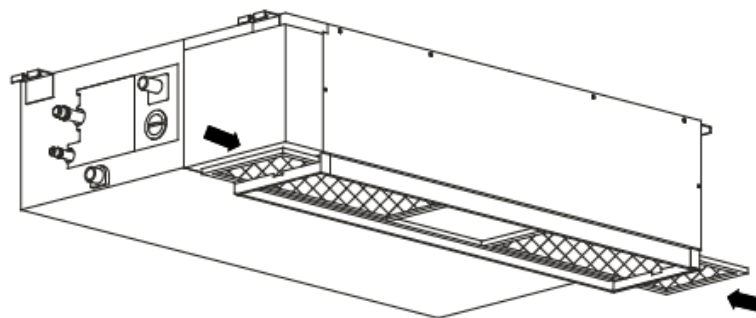
- ① Take off ventilation panel and flange, cut off the staples at side rail



- ② Change the mounting positions of ventilation panel and air return flange .



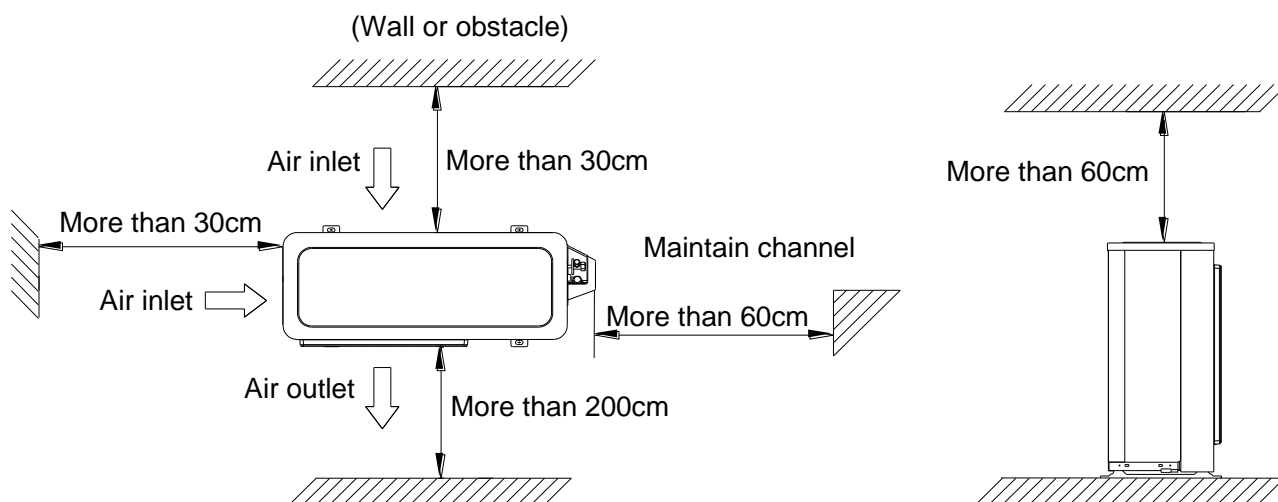
- ③ When installing the filter mesh, fit it into the flange as illustrated in the following figure.



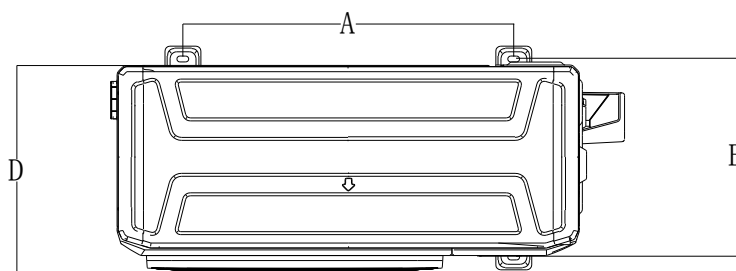
NOTE: All the figures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased.

## 4 Outdoor unit installation (Side Discharge Unit)

### 4.1 Service space for outdoor unit



### 4.2 Bolt pitch



| Model | A   | B   | D   |
|-------|-----|-----|-----|
| 12/18 | 514 | 340 | 333 |
| 24    | 540 | 350 | 363 |
| 30/36 | 673 | 403 | 410 |
| 48/60 | 634 | 404 | 415 |

### 4.3 Install the Unit

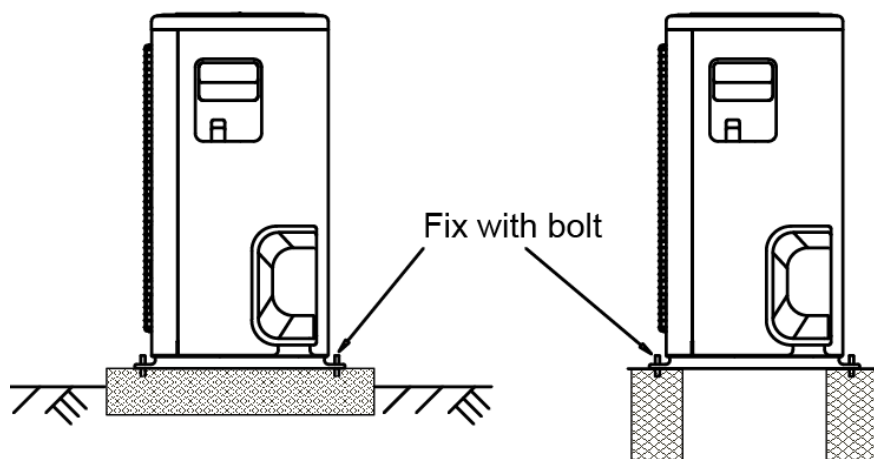
Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling. Never hold the inlet of the outdoor unit to prevent it from deforming.

Do not touch the fan with hands or other objects.

Do not lean it more than 45°, and do not lay it sidelong.

Make concrete foundation according to the specifications of the outdoor units.

Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.



## 5 Refrigerant pipe installation

### 5.1 Maximum pipe length and height drop

Considering the allowable pipe length and height drop to decide the installation position. Make sure the distance and height drop between indoor and outdoor unit not exceeded the data in the following table.

| Model                    | Max. Length | Max. Elevation |
|--------------------------|-------------|----------------|
| 12,000Btu/h              | 25m         | 10m            |
| 18,000Btu/h              | 30m         | 20m            |
| 24,000Btu/h~30,000Btu/h  | 50m         | 25m            |
| 36,000Btu/h ~60,000Btu/h | 65m         | 30m            |

### 5.2 The procedure of connecting pipes

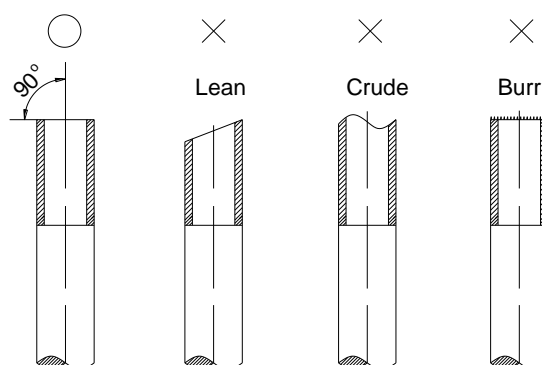
5.2.1 Choose the pipe size according to the specification table.

5.2.2 Confirm the cross way of the pipes.

5.2.3 Measure the necessary pipe length.

5.2.4 Cut the selected pipe with pipe cutter

- Make the section flat and smooth.

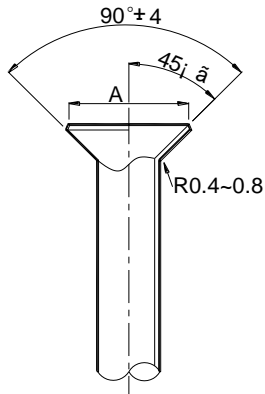


#### 5.2.5 Insulate the copper pipe

- Before test operation, the joint parts should not be heat insulated.

#### 5.2.6 Flare the pipe

- Insert a flare nut into the pipe before flaring the pipe
- According to the following table to flare the pipe

| Pipe diameter | Flare dimension A (mm) |      | Flare shape   |
|---------------|------------------------|------|---|
|               | Min                    | Max  |   |
| 1/4" (6.35)   | 8.3                    | 8.7  |  |
| 3/8" (9.52)   | 12.0                   | 12.4 |   |
| 1/2" (12.7)   | 15.4                   | 15.8 |   |
| 5/8" (15.9)   | 18.6                   | 19.1 |   |
| 3/4" (19)     | 22.9                   | 23.3 |   |

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.

### 5.2.7 Drill holes if the pipes need to pass the wall.

### 5.2.8 According to the field condition to bend the pipes so that it can pass the wall smoothly.

### 5.2.9 Bind and wrap the wire together with the insulated pipe if necessary.

### 5.2.10 Set the wall conduit

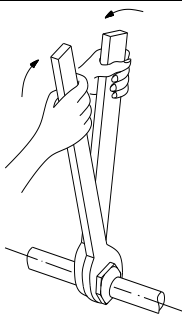
### 5.2.11 Set the supporter for the pipe.

### 5.2.12 Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

### 5.2.13 Connect the pipe to indoor unit and outdoor unit by using two spanners.

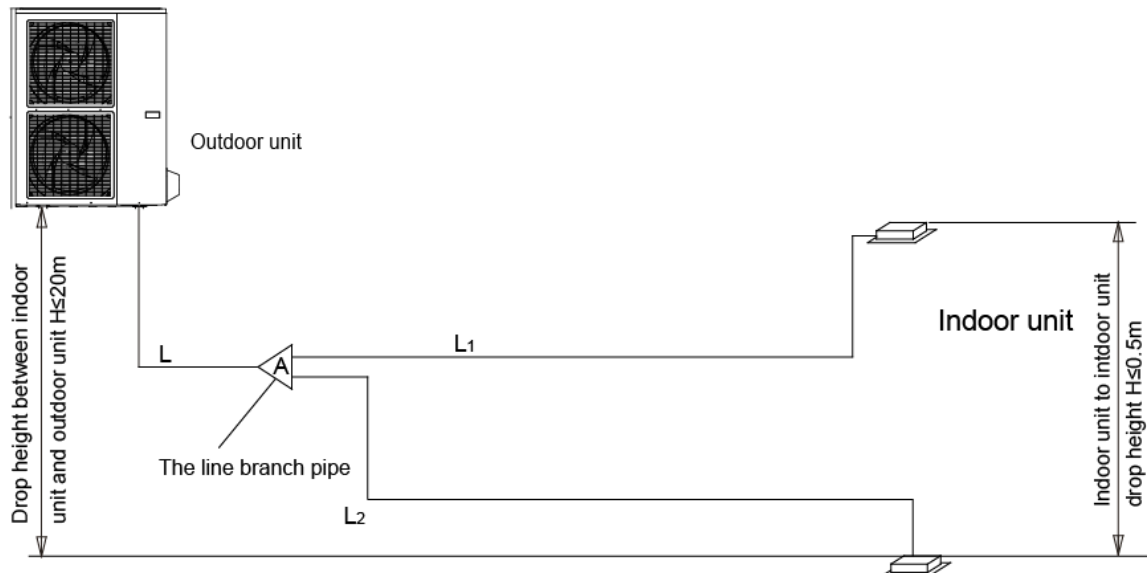
- Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the bellmouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

| Pipe Diameter | Torque   |            | Sketch map  |
|---------------|----------|------------|---|
|               | (kgf.cm) | (N.cm)     |   |
| 1/4" (6.35)   | 144~176  | 1420~1720  |  |
| 3/8" (9.52)   | 333~407  | 3270~3990  |   |
| 1/2" (12.7)   | 504~616  | 4950~6030  |   |
| 5/8" (15.9)   | 630~770  | 6180~7540  |   |
| 3/4" (19)     | 990~1210 | 9270~11860 |   |

## 5.3 For Units with Twins Function

### 5.3.1 Length and drop height permitted of the refrigerant piping

**Note:** Reduced length of the branching tube is the 0.5m of the equivalent length of the pipe.



**Note: All used branch pipe must be produced by MUNDOCLIMA, otherwise it causes malfunction. The indoor units should be installed equivalently at the both side of the U type branch pipe.**

|             |   | Permitted Value |      | Piping  |
|-------------|---|-----------------|------|---------|
| Pipe Length | Total pipe length (Actual)                                  | 18K+18K         | 30m  | L+L1+L2 |
|             |   | 24K+24K         | 50m  |         |
|             |   | 30K+30K         | 50m  |         |
|             | Max. branch pipe length                                     |                 | 15m  | L1, L2  |
|             | Max. branch pipe length difference                          |                 | 10m  | L1-L2   |
| Drop Height | Max. height difference between indoor unit and outdoor unit |                 | 20m  | H1      |
|             | Max. height difference between indoor units                 |                 | 0.5m | H2      |

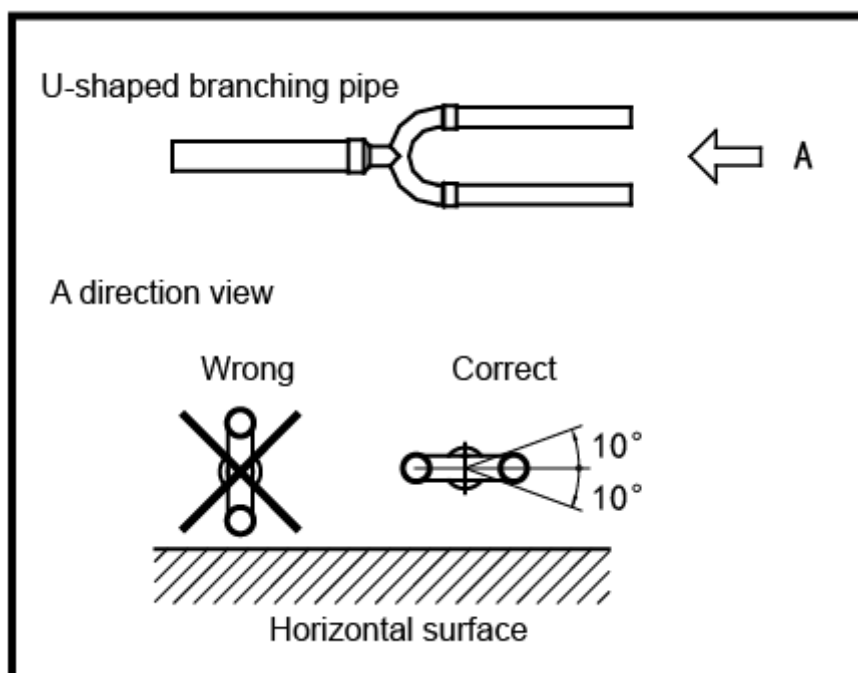
### 5.3.2 Size of joint pipes for indoor unit (R410a)

| Capacity of indoor unit (A) | Size of main pipe(mm) |             |                          |
|-----------------------------|-----------------------|-------------|--------------------------|
|                             | Gas side              | Liquid side | Available branching pipe |
| 18K                         | Φ12.7                 | Φ6.35       | CE-FQZHN-01C             |
| 24K                         | Φ15.9                 | Φ9.5        | CE-FQZHN-01C             |
| 30K                         | Φ15.9                 | Φ9.5        | CE-FQZHN-01C             |

### 5.3.3 Size of joint pipes for outdoor unit (R410a)

| Model | the size of main pipe(mm) |             |                        |
|-------|---------------------------|-------------|------------------------|
|       | Gas side                  | Liquid side | The 1st branching pipe |
| 36K   | Φ15.9                     | Φ9.5        | CE-FQZHN-010           |
| 48K   | Φ15.9                     | Φ9.5        | CE-FQZHN-010           |
| 60K   | Φ15.9                     | Φ9.5        | CE-FQZHN-010           |

5.3.4 The branching pipe must be installed horizontally, error angle of it should not large than 10°. Otherwise, malfunction will be caused.





## 6 Drainage pipe installation

Install the drainage pipe as shown below and take measures against condensation. Improperly installation could lead to leakage and eventually wet furniture and belongings.

### 6.1 Installation principle

- Ensure at least 1/100 slope of the drainage pipe
- Adopt suitable pipe diameter
- Adopt nearby condensate water discharge

### 6.2 Key points of drainage water pipe installation

#### 6.2.1 Considering the pipeline route and elevation

- Before installing condensate water pipeline, determine its route and elevation to avoid intersection with other pipelines and ensure slope is straight.

#### 6.2.2 Drainage pipe selection

- The drainage pipe diameter shall not small than the drain hose of indoor unit
- According to the water flowrate and drainage pipe slope to choose the suitable pipe, the water flowrate is decided by the capacity of indoor unit.

#### Relationship between water flowrate and capacity of indoor unit

| Capacity (x1000Btu) | Water flowrate (l/h) |
|---------------------|----------------------|
| 12                  | 2.4                  |
| 18                  | 4                    |
| 24                  | 6                    |
| 30                  | 7                    |
| 36                  | 8                    |
| 42                  | 10                   |
| 48                  | 12                   |
| 60                  | 14                   |

According to the above table to calculate the total water flowrate for the confluence pipe selection.

#### For horizontal drainage pipe (The following table is for reference)

| PVC pipe | Reference value of inner diameter of pipe (mm) | Allowable maximum water flowrate (l/h) |             | Remark                            |
|----------|--|--|-------------|-----------------------------------|
|          |  | Slope 1/50                             | Slope 1/100 |                                   |
| PVC25    | 20   | 39                                     | 27          | For branch pipe                   |
| PVC32    | 25   | 70                                     | 50          |                                   |
| PVC40    | 31   | 125                                    | 88          | Could be used for confluence pipe |
| PVC50    | 40   | 247                                    | 175         |                                   |
| PVC63    | 51   | 473                                    | 334         |                                   |

Attention: Adopt PVC40 or bigger pipe to be the main pipe.

#### For Vertical drainage pipe (The following table is for reference)

| PVC pipe | Reference value of inner diameter of pipe (mm) | Allowable maximum water flowrate (l/h) | Remark                            |
|----------|--|--|-----------------------------------|
| PVC25    | 20   | 220                                    | For branch pipe                   |
| PVC32    | 25   | 410                                    |                                   |
| PVC40    | 31   | 730                                    | Could be used for confluence pipe |
| PVC50    | 40   | 1440                                   |                                   |
| PVC63    | 51   | 2760                                   |                                   |
| PVC75    | 67   | 5710                                   |                                   |
| PVC90    | 77   | 8280                                   |                                   |

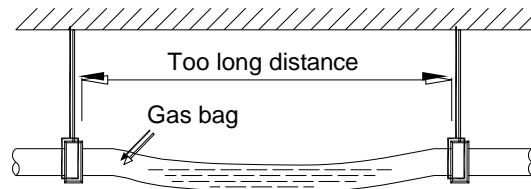
Attention: Adopt PVC40 or bigger pipe to be the main pipe.

### 6.2.3 Individual design of drainage pipe system

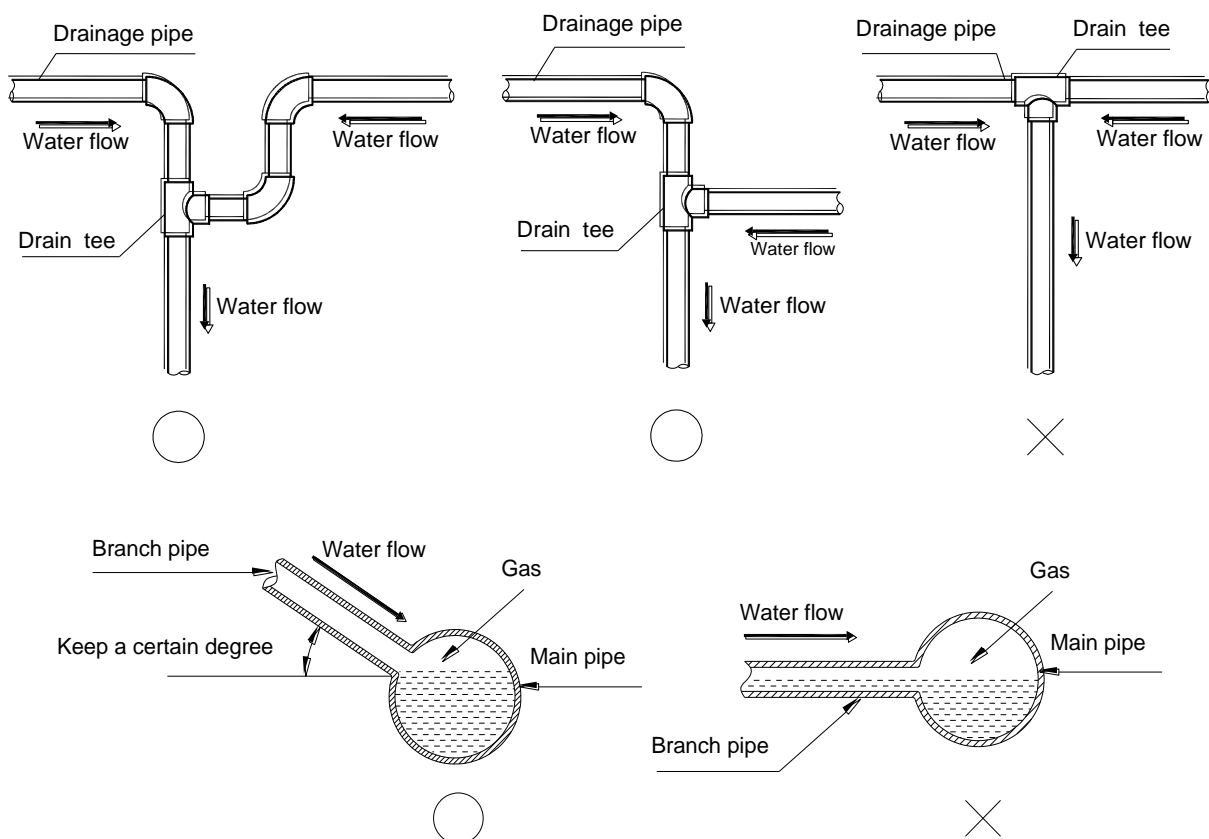
- The drainage pipe of air conditioner shall be installed separately with other sewage pipe, rainwater pipe and drainage pipe in building.
- The drainage pipe of the indoor unit with water pump should be apart from the one without water pump.

### 6.2.4 Supporter gap of drainage pipe

- In general, the supporter gap of the drainage pipe horizontal pipe and vertical pipe is respectively 1m~1.5m and 1.5m~2.0m.
- Each vertical pipe shall be equipped with not less than two hangers.
- Overlarge hanger gap for horizontal pipe shall create bending, thus leading to air block.



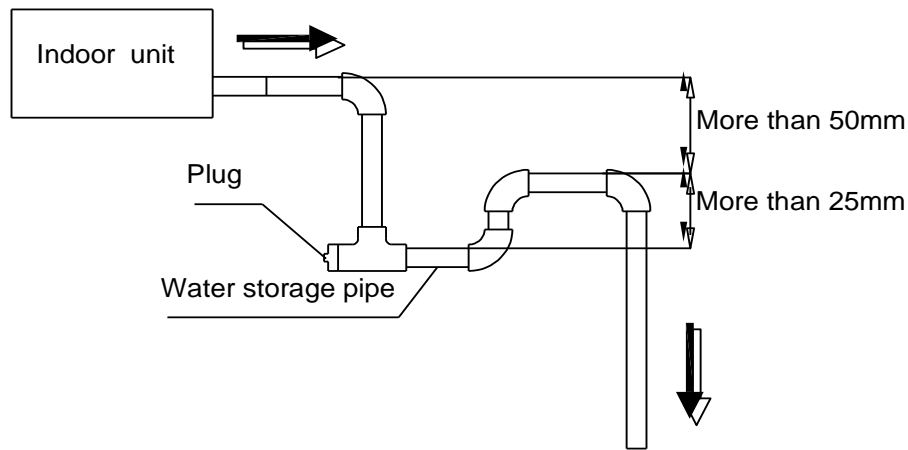
### 6.2.5 The horizontal pipe layout should avoid converse flow or bad flow



- The correct installation will not cause converse water flow and the slope of the branch pipes can be adjusted freely
- The false installation will cause converse water flow and the slope of the branch pipe can not be adjusted.

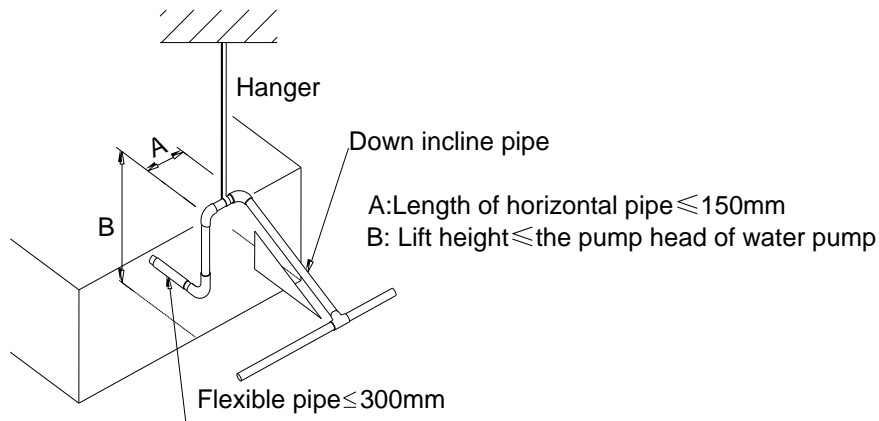
### 6.2.6 Water storage pipe setting

- If the indoor unit has high extra static pressure and without water pump to elevate the condensate water, such as high extra static pressure duct unit, the water storage pipe should be set to avoid converse flow or blow water phenomena.



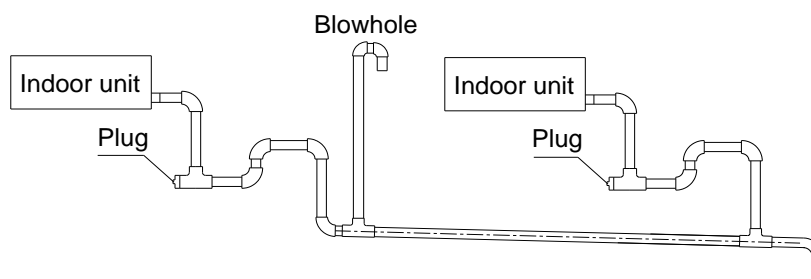
### 6.2.7 Lifting pipe setting of indoor unit with water pump

- The length of lifting pipe should not exceed the pump head of indoor unit water pump.  
Pump head of big four way cassette: 750mm  
Pump head of compact four way cassette: 500mm
- The drainage pipe should be set down inclined after the lifting pipe immediately to avoid wrong operation of water level switch.
- Refer the following picture for installation reference.



### 6.2.8 Blowhole setting

- For the concentrated drainage pipe system, there should design a blowhole at the highest point of main pipe to ensure the condensate water discharge smoothly.
- The air outlet shall face down to prevent dirt entering pipe.
- Each indoor unit of the system should be installed it.
- The installation should be considering the convenience for future cleaning.



### 6.2.9 The end of drainage pipe shall not contact with ground directly.

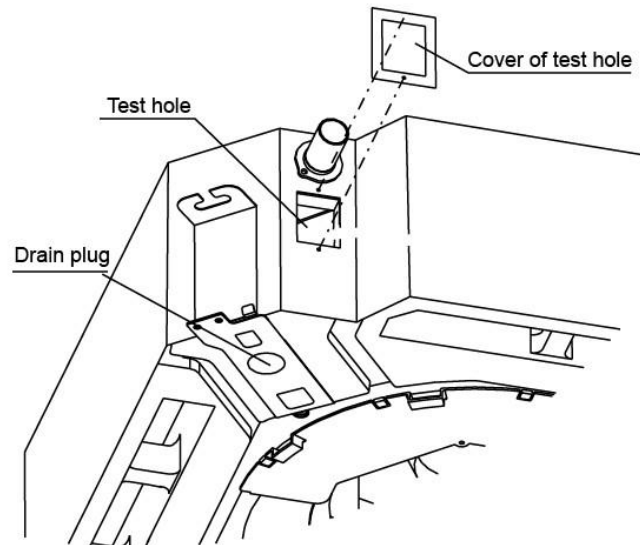
## 6.3 Drainage test

### 6.3.1 Water leakage test

After finishing the construction of drainage pipe system, fill the pipe with water and keep it for 24 hours to check whether there is leakage at joint section.

### 6.3.2 Water discharge test

1. Natural drainage mode(the indoor unit with outdoor drainage pump)  
Infuse above 600ml water through water test hole slowly into the water collector, observe whether the water can discharge through the transparent hard pipe at drainage outlet.
2. Pump drainage mode  
2.1 Disconnect the plug of water level switch, remove the cover of water test hole and slowly infuse about 2000ml water through the water test hole, be sure that the water will not touch the motor of drainage pump.



- 2.2 Power on and let the air conditioner operate for cooling. Check operation status of drainage pump, and then connect the plug of water level switch, check the operation sound of water pump and observe whether the water can discharge through the transparent hard pipe at drainage outlet. (In light of the length of drainage pipe, water shall be discharged about 1 minute delayed)
- 2.3 Stop the operation of air conditioner, power off the power supply and put the cover of water test hole back to the original place.
  - a. After stopped the air conditioner 3 minutes, check whether there is anything abnormal. If drainage pipes have not been distributed properly, over back-flow water shall cause the flashing of alarm indicator at remote-controlled receiving board and even water shall run over the water collector.
  - b. Continuously infusing water until water level alarmed, check whether the drainage pump could discharge water at once. If water level does not decline under warning water level 3 minutes later, it shall cause shutdown of unit. When this situation happens, the normal startup only can be recovered by turning down power supply and eliminating accumulated water.

**Note:** Drain plug at the main water-containing plate is used for eliminating accumulated water in water-containing plate when maintaining air conditioner fault. During normal operation, the plug shall be filled in to prevent leakage.

## 6.4 Insulation work of drainage pipe

Refer the introduction to the insulation engineering parts.

## 7 Vacuum Drying and Leakage Checking

### 4.1 Purpose of vacuum drying

- Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation. Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

### 4.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

### 4.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

#### 7.3.1 Ordinary vacuum drying

1. When conduct first vacuum drying, connect pressure gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1 hour (vacuum degree of vacuum pump shall be reached -755mmHg).
2. If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is moisture or leakage in pipeline system and need to go on with drying for half an hour.
3. If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.
4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

#### 7.3.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

1. Finding moisture during flushing refrigerant pipe.
2. Conducting construction on rainy day, because rain water might penetrated into pipeline.
3. Construction period is long, and rain water might penetrated into pipeline.
4. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

1. Vacuum drying for 1 hour.
2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm<sup>2</sup> .  
Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.
3. Vacuum drying again for half an hour.  
If the pressure reached -755mmHg, start to pressure leakage test. If it cannot reached the value, repeat vacuum damage and vacuum drying again for 1 hour.
4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

## 8 Additional refrigerant charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe between indoor and outdoor unit. Refer the following formula to calculate the charge volume.

|                              |                        |                        |
|------------------------------|------------------------|------------------------|
| Diameter of liquid pipe (mm) | Φ6.35                  | Φ9.52                  |
| Formula                      | $V=15g/m \times (L-5)$ | $V=30g/m \times (L-5)$ |

V: Additional refrigerant charge volume (g).

L : The length of the liquid pipe (m).

### Note:

- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

## 9 Engineering of insulation

### 9.1 Insulation of refrigerant pipe

#### 9.1.1 Operational procedure of refrigerant pipe insulation

Cut the suitable pipe → insulation (except joint section) → flare the pipe → piping layout and connection → vacuum drying → insulate the joint parts

#### 9.1.2 Purpose of refrigerant pipe insulation

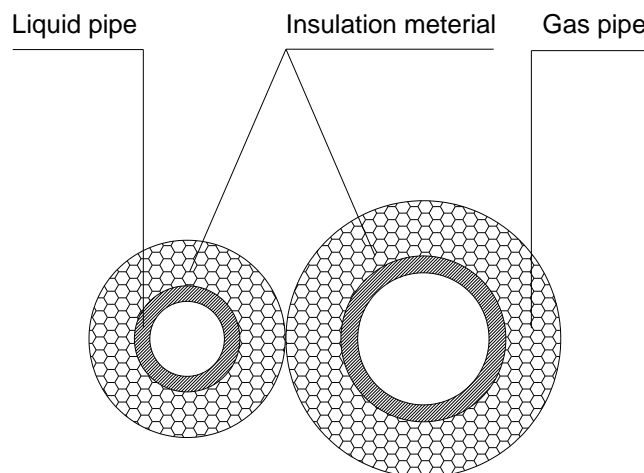
- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not enough, it shall form dew and cause leakage.
- Temperature of gas pipe is very high (generally 50-100°C) during heating. Insulation work must be carried out to prevent hurt by carelessness touching.

#### 9.1.3 Insulation material selection for refrigerant pipe

- The burning performance should over 120°C
- According to the local law to choose insulation materials
- The thickness of insulation layer shall be above 10mm. If in hot or wet environment place, the layer of insulation should be thicker accordingly.

#### 9.1.4 Installation highlights of insulation construction

- Gas pipe and liquid pipe shall be insulated separately, if the gas pipe and liquid pipe were insulated together; it will decrease the performance of air conditioner.



- The insulation material at the joint pipe shall be 5~10cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The insulation material at the joint pipe shall be banded to the gap pipe and liquid pipe tightly.
- The linking part should be use glue to paste together
- Be sure not bind the insulation material over-tight, it may extrude out the air in the material to cause bad insulation and cause easy aging of the material.

### 9.2 Insulation of drainage pipe

#### 9.2.1 Operational procedure of refrigerant pipe insulation

Select the suitable pipe → insulation (except joint section) → piping layout and connection → drainage test → insulate the joint parts

#### 9.2.2 Purpose of drainage pipe insulation

The temperature of condensate drainage water is very low. If insulation is not enough, it shall form dew and cause leakage to damage the house decoration.

**Insulation material selection for drainage pipe**

- The insulation material should be flame retardant material, the flame retardancy of the material should be selected according to the local law.
- Thickness of insulation layer is usually above 10mm.
- Use specific glue to paste the seam of insulation material, and then bind with adhesive tape. The width of tape shall not be less than 5cm. Make sure it is firm and avoid dew.

**9.2.3 Installation and highlights of insulation construction**

- The single pipe should be insulated before connecting to another pipe, the joint part should be insulated after the drainage test.
- There should be no insulation gap between the insulation material.

**10 Engineering of electrical wiring****10.1 Highlights of electrical wiring installation**

- All field wiring construction should be finished by qualified electrician.
- Air conditioning equipment should be grounded according to the local electrical regulations.
- Current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of signal wire.
- When power wire is parallel with signal wire, put wires to their own wire tube and remain at least 300mm gap.
- According to table in indoor part named “the specification of the power” to choose the wiring, make sure the selected wiring not small than the data showing in the table.
- Select different colors for different wire according to relevant regulations.
- Do not use metal wire tube at the place with acid or alkali corrosion, adopt plastic wire tube to replace it.
- There must be not wire connect joint in the wire tube If joint is a must, set a connection box at the place.
- The wiring with different voltage should not be in one wire tube.
- Ensure that the color of the wires of outdoor and the terminal No. are same as those of indoor unit respectively.



## 11 Test operation

**11.1 The test operation must be carried out after the entire installation has been completed.**

**11.2 Please confirm the following points before the test operation.**

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop valves are both opened.
- The air conditioner is pre-heated by turning on the power.

### 11.3 Test operation

Set the air conditioner under the mode of "COOLING" by remote controller, and check the following points.

#### Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

#### Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

# Part 5

## Electrical Control System

- 1. Electrical Control Function .....141
- 2. Troubleshooting .....153
- 3. Controller .....191

# 1. Electrical Control Function

## 1.1 Abbreviation

T1: Indoor room temperature

T2: Middle indoor heat exchanger coil temperature

T2B: Indoor heat exchanger exhaust coil temperature

T3: Outdoor heat exchanger pipe temperature

T4: Outdoor ambient temperature

T5: Compressor discharge temperature

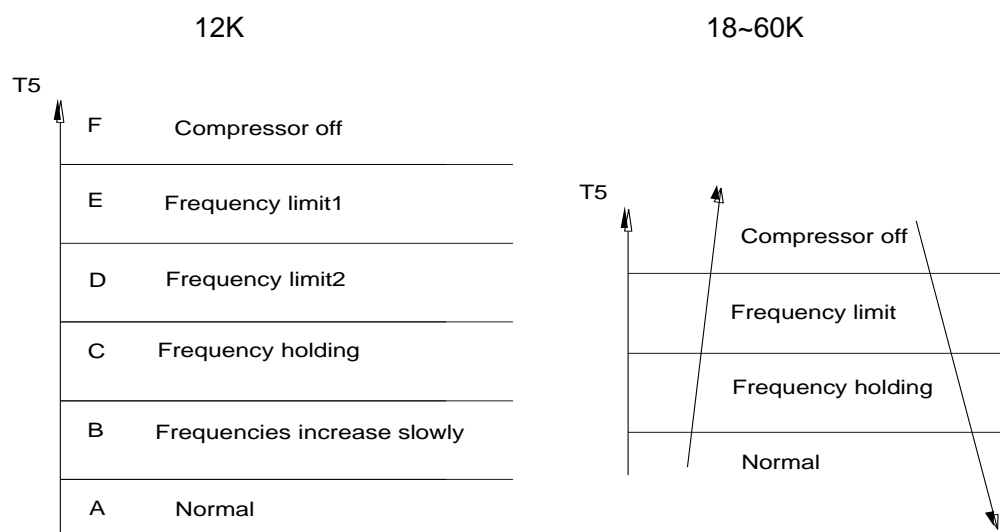
## 1.2 Main Protection

### 1.2.1 Compressor three-minute delay at restart

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

### 1.2.2 Automatic shutoff based on discharge temperature

When the discharge temperature of compressor rises, the running frequency is limited according to the following rules:



### 1.2.3 Automatic shutoff based on compressor top temperature

The unit ceases operation when the compressor top temperature exceeds a pre-determined threshold. The unit will restart after the temperature guard of the compressor top restarts.

### 1.2.4 Indoor Fan Delayed Open Function

When the unit starts up, the louver is immediately active. The indoor fan opens 7 seconds later. If the unit runs in heating mode, the indoor fan is also regulated by the anti-cold wind function.

### 1.2.5 Fan Speed Malfunction

For MUCR-H8:

If a fault occurs on the air volume regulator or the regulator enters protection mode, it sends the error message CF and an instruction to reduce fan speed to the master. The message and the instruction can be inquired with the remote controller or the wired controller. (Fault and protection information are displayed for one minute). After a fault occurs, the master unit shows the error code E3 and the fault count for one minute. If the fault occurs three times, then the fan is unable to resolve the problem independently. External shutdown by a remote controller, wired controller, or central controller must be used to clear the fan fault and fault count. The fan runs normally for 5 minutes while clearing fault count.

|  |
|--|
| 0: No malfunction  |
| 1: P0 Overcurrent  |
| 2: Overpressure  |
| 3: Overload  |
| 4: Over speed  |
| 5: Startup malfunction   |
| 6: Lack of phase   |
| 7: DC voltage too low  |
| 8: Communication fault   |
| 9: Parameter fault   |
| 10: L3 Current limited   |
| 11: L5 Voltage limited   |
| 12: Target speed cannot be met during the static pressure calculation process. |

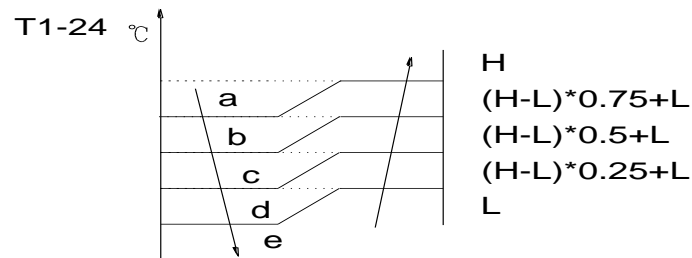
For other models:

If the indoor fan speed is lower than 300 RPM for 50 seconds or more, it shuts off and restarts in 30 seconds. If this happens 3 times, the unit stops and the LED displays the failure code.

### 1.3 Operation Modes and Functions

#### 1.3.1 Fan Mode

- (1) Outdoor fan and compressor cease operation.
- (2) Temperature setting function is disabled, and no preset temperature is displayed.
- (3) Louver operates the same as in cooling mode.
- (4) Auto fan:  
When it fan-only mode, operates the same as auto fan in cooling mode with the temperature set at 24°C.



#### 1.3.2 Cooling Mode

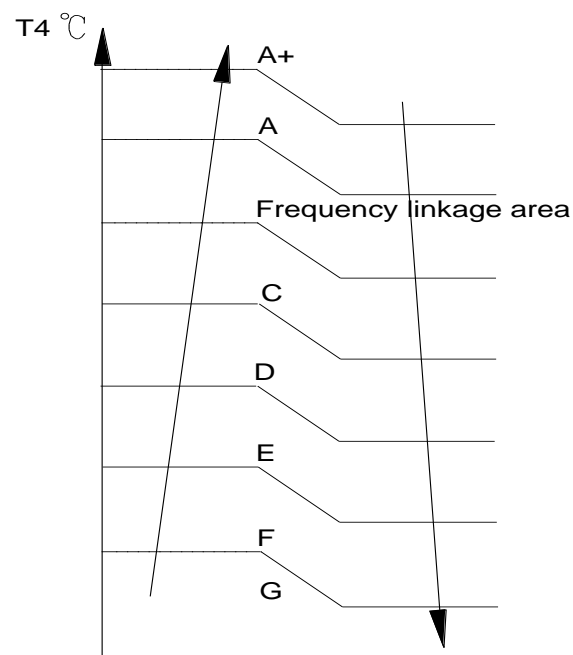
##### 1.3.2.1 Outdoor Fan Running Guidelines

The outdoor unit can run at different fan speeds depending on T4.

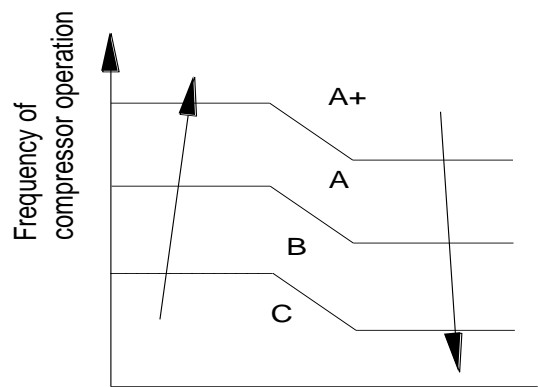
Fan speeds vary with the model of air conditioner.

12K

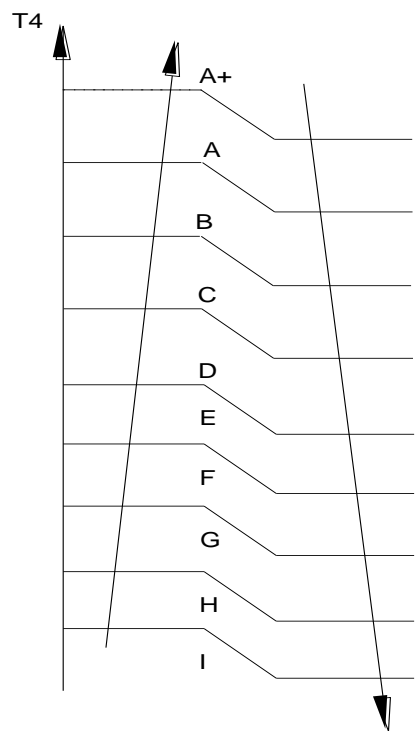
Fan speed is regulated according to T4 and compressor frequency.



Frequency linkage area:



18~60K

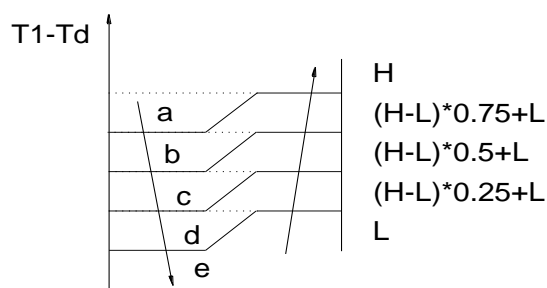


1.3.2.3 Indoor Fan Running Guidelines

In cooling mode, the indoor fan runs continuously and You can select the following speeds: high, medium, low, auto or silent. When the compressor is running, The indoor fan is regulated as illustrated as in the following figure:

| Setting fan speed | T1-Td °C(°F) | Actual fan speed |
|-------------------|--------------|------------------|
| H                 | A            | H+ (H+=H+G)      |
|                   | B            | H (=H)           |
|                   | C            | H- (H-=H-G)      |
| M                 | D            | M+ (M+=M+Z)      |
|                   | E            | M (M=M)          |
|                   | F            | M- (M-=M-Z)      |
| L                 | G            | L+ (L+=L+D)      |
|                   | H            | L (L=L)          |
|                   | I            | L- (L-=L-D)      |

The auto fan in cooling mode acts as follows:



### 1.3.2.3 Evaporator Low Temperature T2 Protection.

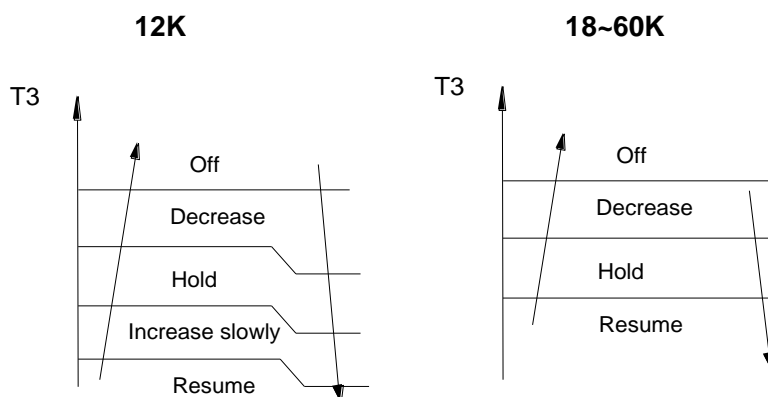
--- $T2 < 0^{\circ}\text{C}$ , the compressor stops and restarts only when  $T2 \geq 5^{\circ}\text{C}$ .

--- $0^{\circ}\text{C} \leq T2 < 4^{\circ}\text{C}$ , the compressor frequency is limited and decreases to a lower level

--- $4^{\circ}\text{C} \leq T2 < 7^{\circ}\text{C}$ , the compressor maintains its current frequency.

--- $T2 > 7^{\circ}\text{C}$ , the compressor frequency is not limited.

### 1.3.2.4 High Condenser Coil Temperature Protection

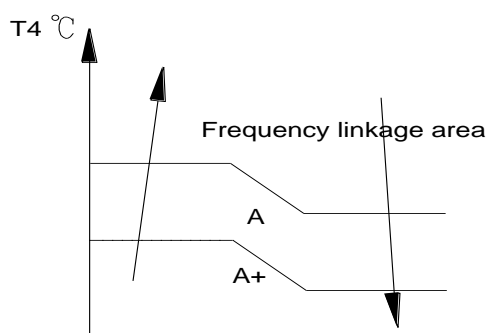


## 1.3.3 Heating Mode

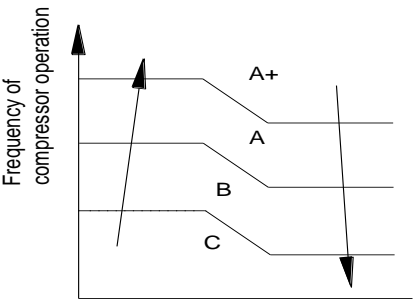
### 1.3.3.1 Outdoor Fan Running Guidelines

12K

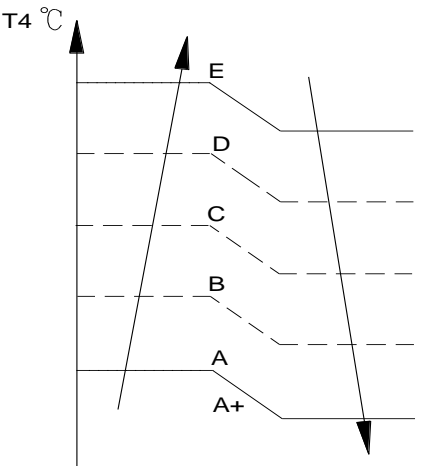
Fan speed is regulated according to  $T4$  and compressor frequency.



Frequency linkage area:



18~60K:



1.3.3.2 Indoor Fan Running Guidelines

In heating mode, indoor fan speed can be set at high, medium, low, or auto fan, and the anti-cold-wind function is preferential.

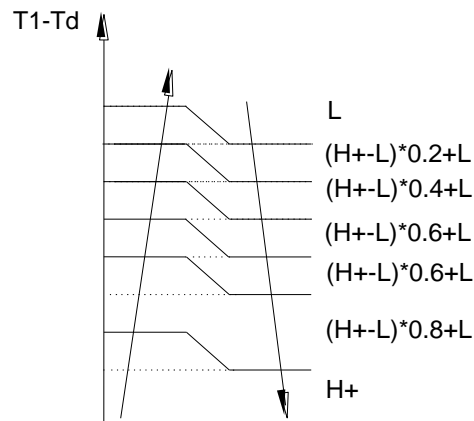
When the compressor is running, The indoor fan is regulated as illustrated as in the following figure:

| Setting fan speed | T1-Td°C | Actual fan speed |
|-------------------|---------|------------------|
| H                 |         | H- (H=H-G)       |
|                   |         | H (=H)           |
|                   |         | H+(H+=H+G)       |
| M                 |         | M- (M=M-Z)       |
|                   |         | M(M=M)           |
|                   |         | M+(M+=M+Z)       |
| L                 |         | L- (L=L-D)       |
|                   |         | L(L=L)           |
|                   |         | L+(L+=L+D)       |

When the indoor temp reaches the preset temperature, the compressor stops and the indoor fan motor runs at the minimum speed (The anti-cold-wind is valid).



The auto fan in heating mode acts as follows:



### 1.3.3.3 Defrosting Control:

#### Conditions for defrosting:

---the unit enters the defrosting mode according to the value of  $T3$  and  $T4$  as well as the compressor running time.

#### Defrost Stop Conditions:

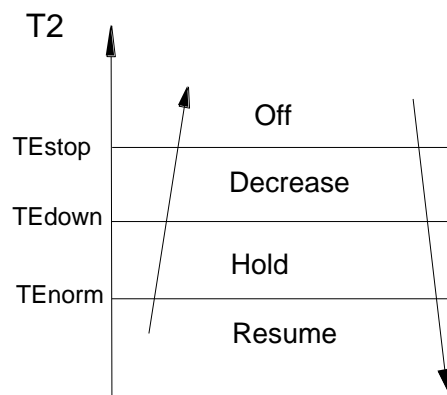
If any one of the following conditions is satisfied, defrosting ends and the unit returns to heating mode.

--- $T3$  rises above than  $TCDE1^{\circ}C$ .

--- $T3$  remains at  $TCDE2^{\circ}C$  or above for 80 seconds.

---The machine runs for 10 consecutive minutes in defrosting mode.

### 1.3.3.4 High Evaporator Coil Temperature T2 Protection:



Off: Compressor stops.

Decrease: Decreases the running frequency.

Hold: Maintains the current frequency.

Resume: No limitation is applied to frequency.

.

### 1.3.4 Auto-mode

You can choose this mode with the remote control and adjust to temperature to between 17-30.

In auto mode, the machine chooses cooling, heating or fan-only mode according to  $\Delta T$  ( $\Delta T = T_1 - T_s$ ).

| $\Delta T = T_1 - T_s$               | Running mode |
|--------------------------------------|--------------|
| $\Delta T > 2^\circ\text{C}$         | Cooling      |
| $-2 < \Delta T \leq 2^\circ\text{C}$ | Fan-only     |
| $\Delta T \leq -2^\circ\text{C}$     | Heating      |

The indoor fan runs at auto fan in each mode.

The louver operates the same in each mode.

If the machine switches mode between heating and cooling, the compressor stops for 15 minutes and then selects a mode again according to  $T_1 - T_s$ .

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

### 1.3.5 Dehumidifier Mode

The indoor fan speed is fixed at breeze and can't be changed.

All protections are activated and operate the same as they do in cooling mode.

### 1.3.6 Timer Function

1.3.6.1 The timing range is 24 hours.

1.3.6.2 Timer On. The machine turns on automatically at the preset time.

1.3.6.3 Timer Off. The machine turns off automatically at the preset time.

1.3.6.4 Timer On/Off. The machine turns on automatically at the preset On Time, and then turns off automatically at the preset Off Time.

1.3.6.5 Timer Off/On. The machine turns on automatically at the preset Off Time and then turns off automatically at the preset On Time.

1.3.6.6 The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately after the "timer off" function is set. When the setting time is reached, the timer LED switches ioff and the unit running mode remains unchanged.

1.3.6.7 The timer uses relative time, not clock time.

### 1.3.7 Sleep Mode

1.3.7.1 The sleep function is available in cooling, heating or auto mode.

1.3.7.2. The operational process in sleep mode is as follows:

When cooling, the temperature rises  $1^\circ\text{C}$  (to not higher than  $30^\circ\text{C}$ ) every hour, 2 hours later the temperature stops rising and the indoor fan is fixed to low speed.

When heating, the temperature decreases  $1^\circ\text{C}$  (to not lower than  $17^\circ\text{C}$ ) every hour, 2 hours the temperature stops decreasing and the indoor fan is fixed at low speed. (Anti-cold wind function takes priority).

1.3.7.3 Sleep mode lasts a maximum of 7 hours. After 7 hours, the unit does not switch off., but for console, the unit switches off.

1.3.7.4 The timer uses relative time, not clock time.

### 1.3.8 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 (not including the Swing setting) and, in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.

### 1.3.9 Drain Pump Control (For Duct and Cassette)

Use the water-level switch to control drain pump.

The system checks the water level every 5 seconds.

---When the A/C operates in cooling (including auto cooling) or forced cooling mode, the pump begins running immediately and continuously until cooling stops.

---If the water level increases up to the control point, the LED displays an alarm code and the drain pump opens and continually monitors the water level. If the water level falls and LED alarm code is no longer displayed (drain pump close delay is 1 minute), the unit goes back into its last mode. Otherwise, the entire system (including the pump) stops and the LED displays an alarm again after 3 minutes.

### 1.3.10 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.

### 1.3.11 Outdoor Unit Point Check Function (Excluding 12K)

A check switch is included on the outdoor PCB.

Push SW1 to check the unit's status while running. The digital display shows the following codes each time the SW1 is pushed.

| N  | Display   | Remark   |
|----|---|--|
| 00 | Normal display  | Displays running frequency, running state, or malfunction code   |
| 01 | Indoor unit capacity demand code                                    | Actual data*HP*10<br><br>If a capacity demand code is higher than 99, the digital display shows single and double digits.<br><br>For example, if the digital display shows "5.0", the capacity demand is 15. If the digital display tube shows "60", the capacity demand is 6.0. |
| 02 | Amendatory capacity demand code                                     |  |
| 03 | The frequency after the capacity requirement transfer               |  |
| 04 | The frequency after the frequency limit                             |  |
| 05 | The frequency of sending to 341                                     |  |
| 06 | Indoor unit evaporator outlet temperature (heating T2, cooling T2B) | If the temperature is lower than -9 °C, the digital display shows "-9." If the temperature is higher than 70 °C, the digital display shows "70." If the indoor unit is not connected, the digital display shows: "—"   |
| 07 | Condenser pipe temperature (T3)                                     |  |
| 08 | Outdoor ambient temperature (T4)                                    |  |
|    |   |  |

|    |  |   |   |  |
|----|--|---|---|--|
| 09 | Compressor discharge temperature (T5)        | <p>The display value is between 0–129 °C. If the temperature is higher than 99 °C, the digital display shows single and double digits.</p> <p>For example, if the digital display shows “0.5”, the compressor discharge temperature is 105 °C.</p> <p>If the digital display shows “1.6,” the compressor discharge temperature is 116 °C.</p> |   |  |
| 10 | AD value of current                          | The display value is a hexadecimal number.  |   |  |
| 11 | AD value of voltage                          |   |   |  |
| 12 | Indoor unit running mode code                | Off:0, Fan only: 1,Cooling: 2, Heating: 3, Forced cooling: 4, Dry: 6, Self-clean: 8, Forced defrosting: 10  |   |  |
| 13 | Outdoor unit running mode code               | Off:0, Fan only: 1,Cooling: 2, Heating: 3, Forced cooling: 4, Dry: 6, Self-clean: 8, Forced defrosting:10   |   |  |
| 14 | EXV open angle                               | <p>Actual data/4.</p> <p>If the value is higher than 99, the digital display shows single and double digits.</p> <p>For example, if the digital display shows “2.0”, the EXV open angle is 120×4=480p.</p>  |   |  |
| 15 | Frequency limit symbol                       | Bit7  | Frequency limit caused by IGBT radiator | The display value is a hexadecimal number. For example, the digital display show 2A, then Bit5=1, Bit3=1, and Bit1=1. It means frequency limit may be caused by T4, T3 or the current. |
|    |  | Bit6  | Frequency limit caused by PFC           |  |
|    |  | Bit5  | Frequency limit caused by T4.           |  |
|    |  | Bit4  | Frequency limit caused by T2.           |  |
|    |  | Bit3  | Frequency limit caused by T3.           |  |
|    |  | Bit2  | Frequency limit caused by T5.           |  |
|    |  | Bit1  | Frequency limit caused by current       |  |
|    |  | Bit0  | Frequency limit caused by voltage       |  |
| 16 | DC fan motor speed                           | 0: Off, 1: Turbo, 2: High, 3: Medium, 4: Low, 5: Breeze, 6: Supper breeze   |   |  |
| 17 | IGBT radiator temperature                    | <p>The display value is between 0–30 °C. If the temperature is higher than 99 °C, the digital display shows single and double digits.</p> <p>For example, if the digital display shows “0.5”, the IGBT radiator temperature is 105 °C.</p> <p>If the digital display shows “1.6”, the IGBT radiator temperature is 116 °C.</p>                |   |  |
| 18 | Indoor unit number                           | The indoor unit can communicate with outdoor unit. General: 1, Twins: 2   |   |  |
| 19 | Condenser pipe temperature of #1 indoor unit | If the temperature is lower than 0 °C, the digital display shows “0”. If the temperature is higher than 70 °C, the digital display shows “70.”  |   |  |
| 20 | Condenser pipe temperature of #2 indoor unit |   |   |  |
| 21 | Reserved                                     | <p>If the capacity demand is 0, the digital display shows “0”.</p> <p>If the indoor unit is not connected, the digital display shows: “——”(heating T2, cooling T2B)</p>   |   |  |
| 22 | #1 Indoor unit capacity demand code          | Actual data*HP*10   |   |  |
| 23 | #2 Indoor unit capacity demand code          | If a capacity demand code is higher than 99, the digital display shows single and double digits.  |   |  |
| 24 | Reserved                                     | <p>For example, if the digital display reads “5.0”, the capacity demand is 15.</p> <p>If the digital display shows “60”, the capacity demand is 6.0.</p> <p>If the indoor unit is not connected, the digital display shows:“——”</p>   |   |  |

|    |   |  |
|----|---|--|
| 25 | Indoor room temperature of #1 indoor unit | <p>If the temperature is lower than <math>-9^{\circ}\text{C}</math>, the digital display shows "9".</p> <p>If the temperature is higher than <math>70^{\circ}\text{C}</math>, the digital display shows "70".</p> <p>If the capacity demand is 0, the digital display shows "0".</p> <p>If the indoor unit is not connected, the digital display shows: "____"</p> |
| 26 | Indoor room temperature of #2 indoor unit | <p>If the temperature is lower than <math>0^{\circ}\text{C}</math>, the digital display shows "0".</p> <p>If the temperature is higher than <math>70^{\circ}\text{C}</math>, the digital display shows "70".</p> <p>If the capacity demand is 0, the digital display shows "0".</p> <p>If the indoor unit is not connected, the digital display shows: "____"</p>  |
| 27 | Average of indoor room temperature        | <p>If the temperature is lower than <math>0^{\circ}\text{C}</math>, the digital display shows "0".</p> <p>If the temperature is higher than <math>70^{\circ}\text{C}</math>, the digital display shows "70".</p>   |
| 28 | Shutdown cause                            | Refer to Appendix  |
| 29 | T2B of #1 indoor unit                     | <p>If the temperature is lower than <math>-9^{\circ}\text{C}</math>, the digital display shows "9".</p> <p>If the temperature is higher than <math>70^{\circ}\text{C}</math>, the digital display shows "70".</p> <p>If the capacity demand is 0, the digital display shows "0".</p> <p>If the indoor unit is not connected, the digital display shows: "____"</p> |
| 30 | T2B of #2 indoor unit                     | <p>If the temperature is lower than <math>0^{\circ}\text{C}</math>, the digital display shows "0".</p> <p>If the temperature is higher than <math>70^{\circ}\text{C}</math>, the digital display shows "70".</p> <p>If the capacity demand is 0, the digital display shows "0".</p> <p>If the indoor unit is not connected, the digital display shows: "____"</p>  |

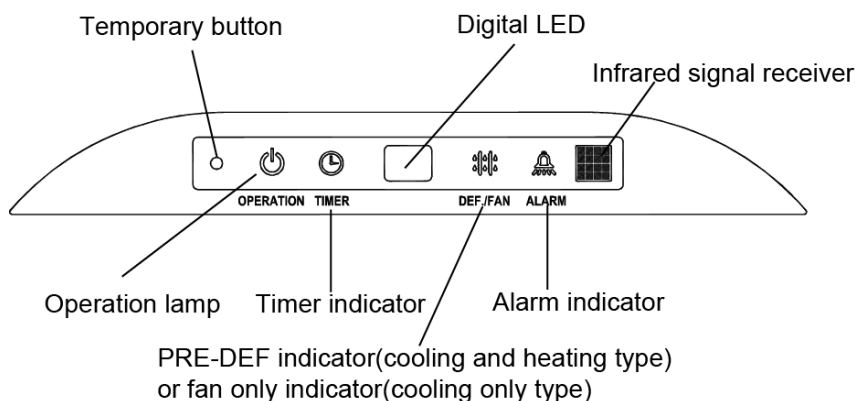
**Appendix**

| <b>Shutdown Causes</b>   | <b>Code</b> |
|--|-------------|
| Frequency limit caused by current  | 1           |
| Frequency limit caused by T2 in cooling  | 2           |
| Frequency limit caused by T2 in heating  | 3           |
| Preset temperature reached   | 4           |
| Frequency limit caused by T4   | 5           |
| Defrosting   | 6           |
| Mode switching   | 7           |
| High discharge temperature protection  | 9           |
| High evaporator coil temperature T2 protection                                 | 10          |
| Evaporator low temperature T2 protection                                       | 11          |
| Condenser high temperature T3 protection                                       | 12          |
| Low indoor room temperature protection in drying mode                          | 13          |
| Low ambient temperature protection   | 14          |
| Refrigerant leakage detection  | 15          |
| Communication malfunction between indoor and outdoor units                     | 16          |
| Communication error between outdoor main chip and compressor driven chip IR341 | 17          |
| AC power input voltage protection  | 18          |
| Top temperature protection of compressor                                       | 19          |
| Outdoor EE Malfunction   | 20          |
| Fan speed malfunction  | 21          |
| Temperature sensor open or short circuit                                       | 22          |
| Overcurrent protection   | 23          |
| IMP overcurrent protection   | 24          |
| Compressor lack of phase   | 25          |
| Compressor malfunction   | 26          |
| Low pressure protection of 311   | 27          |
| Fan current protection   | 28          |
| Fan lack of phase  | 29          |
| Fan zero speed protection  | 30          |
| PFC module protection  | 31          |
| High pressure protection of 311  | 32          |
| Zero speed malfunction   | 33          |
| PWM malfunction  | 34          |
| MCE malfunction  | 35          |
| Compressor overcurrent protection  | 36          |
| Compressor EE malfunction  | 37          |
| Compressor start-up malfunction  | 38          |
| 311 fan speed has been malfunction   | 39          |
| Low pressure protection  | 40          |
| High pressure protection   | 41          |
| PFC module malfunction   | 42          |
| Shutdown stop  | 49          |
| Electrical disconnect  | 50          |
| DR stop  | 51          |

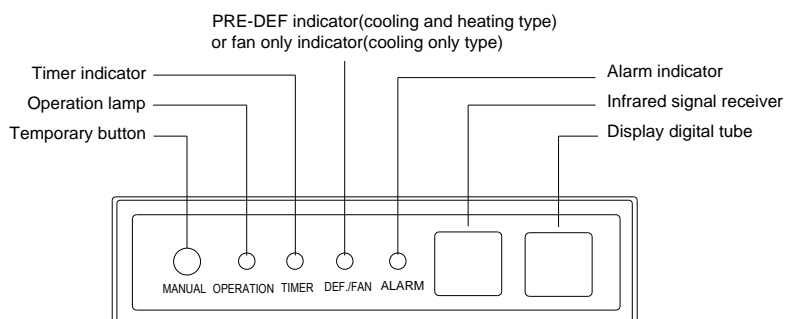
## 2. Troubleshooting

### 2.1 Display board

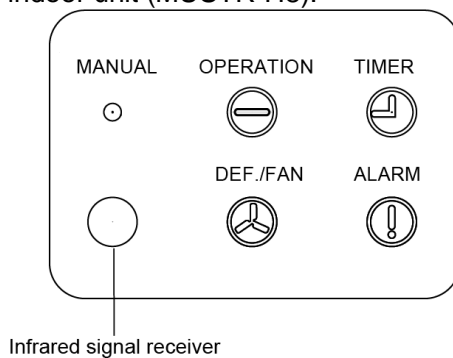
2.1.1 Icon explanation on indoor display board (Super slim cassette (MUCSR-24 TO 60-H8)).



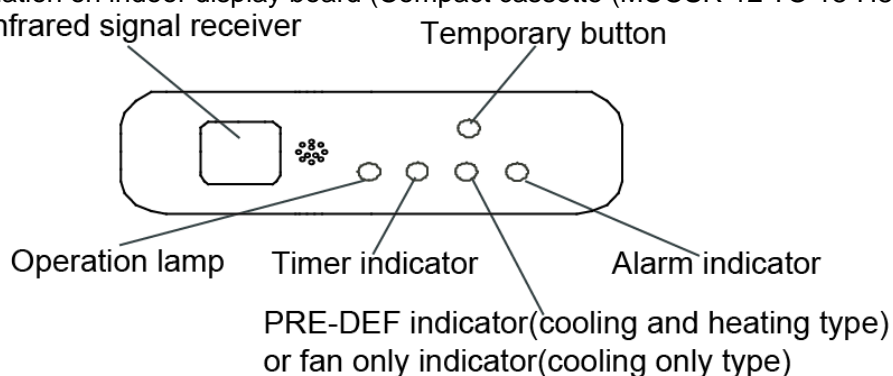
2.1.2 Icon explanation on indoor display board (MUCR-H8)



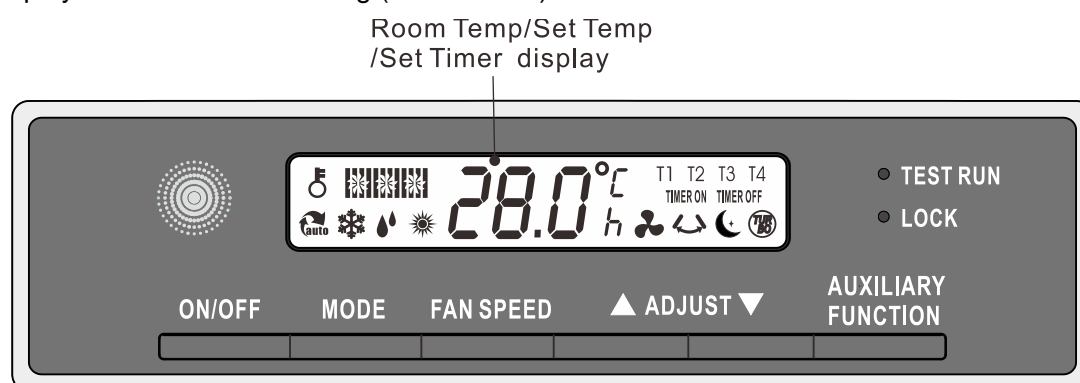
2.1.3 Display board of Ceiling-floor indoor unit (MUSTR-H8).



## 2.1.4 Icon explanation on indoor display board (Compact cassette (MUCSR-12 TO 18-H8)).



## 2.1.5 Display board of Floor standing (MUCOR-H8)



### Indicators

Auto operation display

Cooling operation display

Dry operation display

Heating operation display

Fan operation display

Swing operation display

Sleep operation display

Turbo operation display

TIMER ON On timer operation display

TIMER OFF Off timer operation display

Lock operation display

Fan speed display



## 2.2 Indoor Unit Malfunctions

### For Floor Standing (MUCOR-H8):

| Malfunction  | Error Code |
|--|------------|
| Indoor EEPROM malfunction                                  | E0         |
| Communication malfunction between indoor and outdoor units | E1         |
| Indoor fan speed malfunction                               | E3         |
| T1 temperature sensor open or short circuit                | E4         |
| T2 temperature sensor open or short circuit                | E5         |
| Refrigerant leakage detection                              | EC         |
| Outdoor unit is faulty (for old communication protocol)    | Ed         |
| Overcurrent protection (for some units)                    | F0         |
| T4 temperature sensor open or short circuit                | F1         |
| T3 temperature sensor open or short circuit                | F2         |
| T5 temperature sensor open or short circuit                | F3         |
| Outdoor EEPROM malfunction (for some units)                | F4         |
| Outdoor fan speed malfunction                              | F5         |
| T2B temperature open or short circuit                      | F6         |
| IPM module malfunction                                     | P0         |
| DC voltage too high/too low protection                     | P1         |
| High temperature protection of compressor top              | P2         |
| Low ambient temperature protection                         | P3         |
| Inverter compressor drive protection                       | P4         |
| Outdoor IGBT sensor is faulty                              | P7         |

### For Other types (12K)

| Malfunction  | Error Code | Timer Lamp | Operation Lamp (flashes) |
|--|------------|------------|--------------------------|
| Indoor EEPROM malfunction  | E0         | X          | 1                        |
| Communication malfunction between indoor and outdoor units           | E1         | X          | 2                        |
| Indoor fan speed malfunction   | E3         | X          | 4                        |
| T1 temperature sensor open or short circuit                          | E4         | X          | 5                        |
| T2 temperature sensor open or short circuit                          | E5         | X          | 6                        |
| Refrigerant leakage detection  | EC         | X          | 7                        |
| Water level alarm  | EE         | X          | 8                        |
| Communication error between master and slave unit (for twins system) | E8         | X          | 9                        |
| Another indoor unit malfunction (for twins system)                   | E9         | X          | 10                       |
| Overcurrent protection (for some units)                              | F0         | O          | 1                        |
| T4 temperature sensor open or short circuit                          | F1         | O          | 2                        |
| T3 temperature sensor open or short circuit                          | F2         | O          | 3                        |
| T5 temperature sensor open or short circuit                          | F3         | O          | 4                        |
| Outdoor EEPROM malfunction (for some units)                          | F4         | O          | 5                        |
| Outdoor fan speed malfunction  | F5         | O          | 6                        |
| T2B temperature open or short circuit                                | F6         | O          | 7                        |
| Communication malfunction between indoor two chips(For MUCR-H8)      | FA         | O          | 11                       |
| IPM module malfunction   | P0         | ☆          | 1                        |
| DC voltage too high/too low protection                               | P1         | ☆          | 2                        |
| Low ambient temperature protection                                   | P3         | ☆          | 4                        |
| Inverter compressor drive protection                                 | P4         | ☆          | 5                        |
| Compressor low pressure protection                                   | P6         | ☆          | 7                        |
| Outdoor IGBT sensor is faulty  | P7         | ☆          | 8                        |
| O (on) X(off) ☆(flash at 2Hz)  |            |            |                          |

**For Other Types (18K-60K):**

| Malfunction  | Error Code | Timer Lamp | Operation Lamp (flashes) |
|--|------------|------------|--------------------------|
| Indoor EEPROM malfunction  | E0         | X          | 1                        |
| Communication malfunction between indoor and outdoor units                       | E1         | X          | 2                        |
| Indoor fan speed malfunction   | E3         | X          | 4                        |
| T1 temperature sensor open or short circuit                                      | E4         | X          | 5                        |
| T2 temperature sensor open or short circuit                                      | E5         | X          | 6                        |
| Refrigerant leakage detection  | EC         | X          | 7                        |
| Water level alarm malfunction  | EE         | X          | 8                        |
| Communication error between master and slave unit (for twins system)             | E8         | X          | 9                        |
| Another indoor unit malfunction (for twins system)                               | E9         | X          | 10                       |
| Outdoor unit is faulty (for old communication protocol)                          | Ed         | X          | 11                       |
| Overcurrent protection (for some units)  | F0         | O          | 1                        |
| T4 temperature sensor open or short circuit                                      | F1         | O          | 2                        |
| T3 temperature sensor open or short circuit                                      | F2         | O          | 3                        |
| T5 temperature sensor open or short circuit                                      | F3         | O          | 4                        |
| Outdoor EEPROM malfunction (for some units)                                      | F4         | O          | 5                        |
| Outdoor fan speed malfunction  | F5         | O          | 6                        |
| T2B temperature open or short circuit (for free-match indoor units)              | F6         | O          | 7                        |
| Communication error between auto-lifting panel and slim cassette                 | F7         | O          | 8                        |
| Auto-lifting panel is faulty (for slim cassettes with an auto-lifting panel)     | F8         | O          | 9                        |
| Auto-lifting panel is not closed (for slim cassettes with an auto-lifting panel) | F9         | O          | 10                       |
| IPM module malfunction   | P0         | ☆          | 1                        |
| DC voltage too high/too low protection   | P1         | ☆          | 2                        |
| High temperature protection of compressor top                                    | P2         | ☆          | 3                        |
| Low ambient temperature protection   | P3         | ☆          | 4                        |
| Inverter compressor drive protection   | P4         | ☆          | 5                        |
| Compressor low pressure protection   | P6         | ☆          | 7                        |
| Outdoor IGBT sensor is faulty  | P7         | ☆          | 8                        |
| O (on) X(off) ☆(flash at 2Hz)  |            |            |                          |

## 2.3 Outdoor Unit Malfunctions

For 18~60K:

| Display | Malfunction or Protection  |
|---------|--|
| E1      | Communication malfunction between indoor and outdoor units               |
| F0      | Overcurrent protection   |
| F1      | Ambient temperature sensor (T4) malfunction                              |
| F2      | Outdoor heat-exchanger temperature sensor (T3) malfunction               |
| F3      | Discharge temperature sensor (T5) malfunction                            |
| F4      | Outdoor EEPROM malfunction   |
| F5      | Outdoor fan speed malfunction  |
| P0      | IPM module protection  |
| P1      | DC voltage too high/too low protection                                   |
| P2      | High temperature protection of compressor top                            |
| P3      | Ultra-low ambient temperature protection                                 |
| P4      | Compressor rotor position protection                                     |
| J0      | Evaporator high temperature protection                                   |
| J1      | Condenser high temperature protection                                    |
| J2      | High discharge temperature protection                                    |
| J3      | PFC module protection  |
| J4      | Communication error between outdoor main chip and compressor driven chip |
| J5      | High pressure protection   |
| J6      | Low pressure protection  |
| P7      | IGBT sensor malfunction  |
| J8      | AC power input voltage protection  |

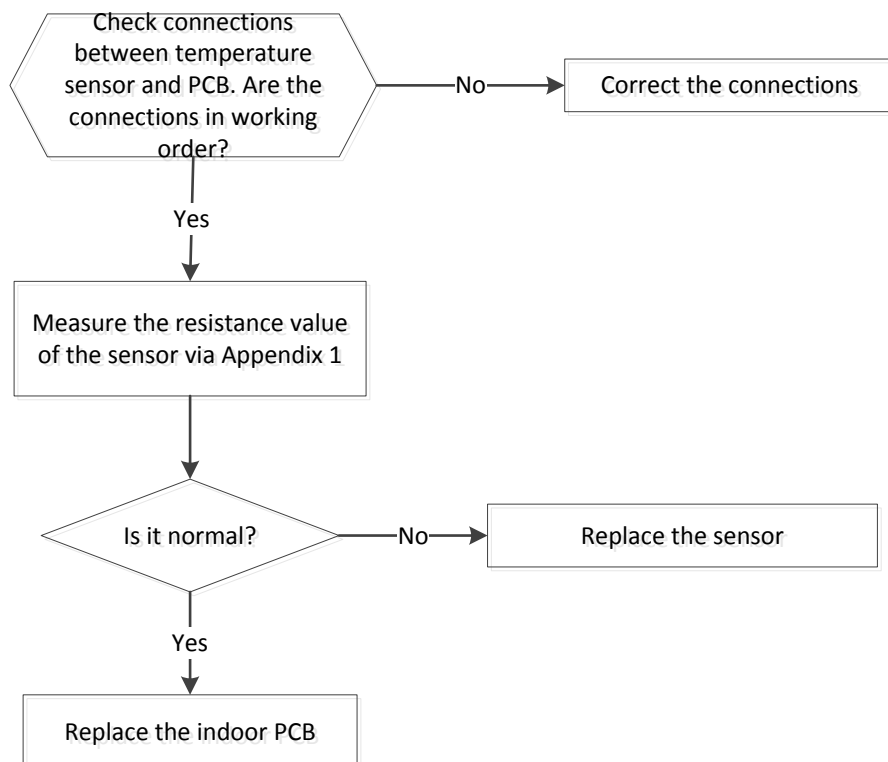
In low ambient cooling mode, the LED displays "LC" or alternates between running frequency and "LC" (each appears for 0.5s).

## 2.4 Resolving Typical Malfunctions

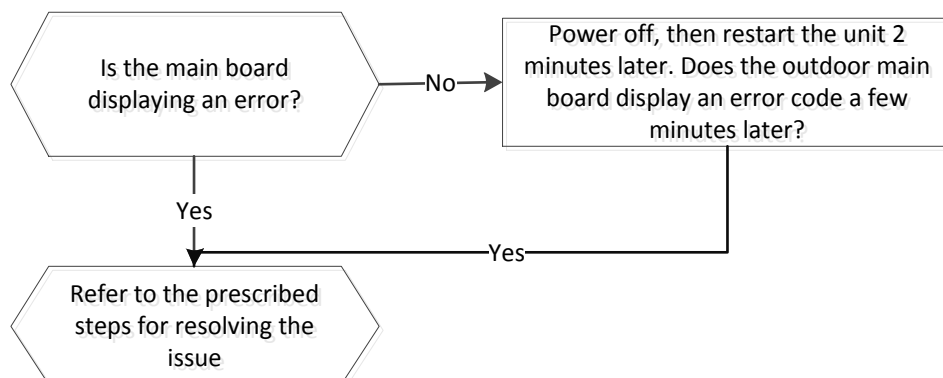
### 2.4.1 For Indoor Units

#### 2.4.1.1 Temperature Sensor Open or Short Circuit

|                               |  |
|-------------------------------|--|
| <b>Malfunction conditions</b> | If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED will display the failure.                |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Wiring mistakes</li> <li>● Faulty sensor</li> <li>● Faulty PCB</li> </ul> |

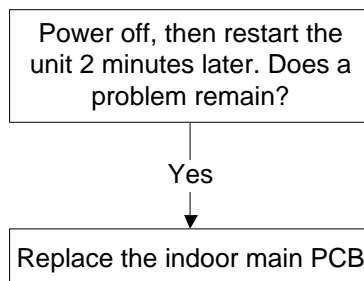


#### 2.4.1.2. Outdoor Unit Malfunction



### 2.4.1.3. Indoor EEPROM Malfunction

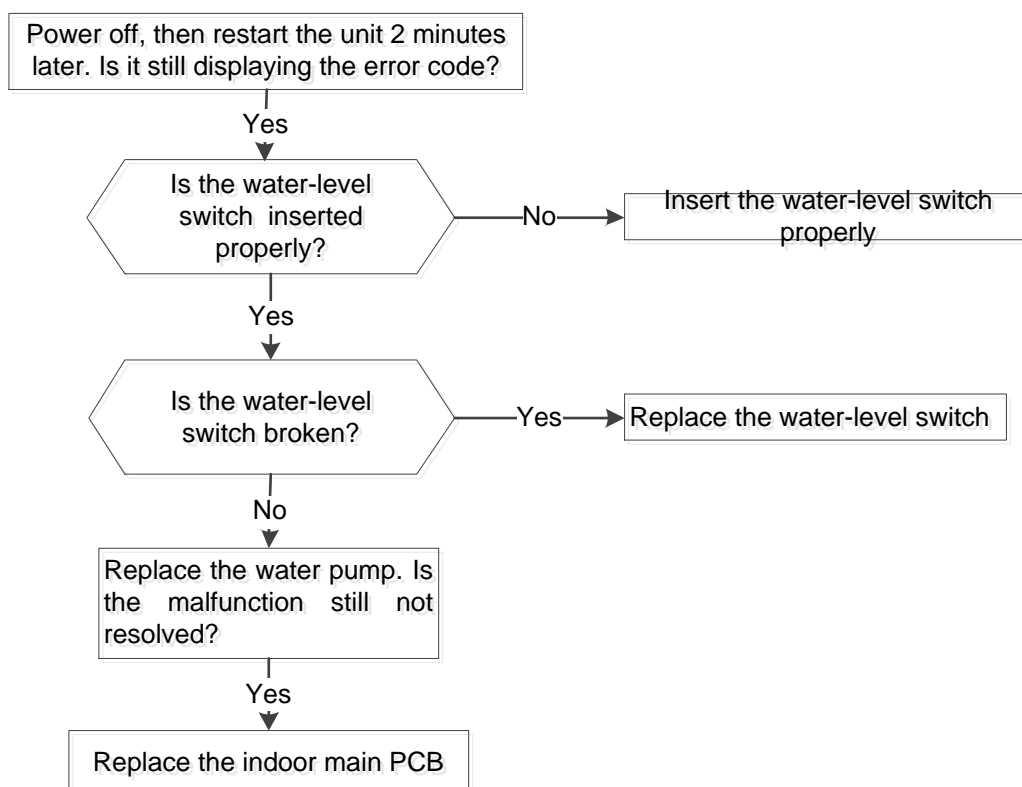
|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | Main PCB chip does not receive feedback from EEPROM chip  |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Installation mistakes</li> <li>● Faulty PCB</li> </ul> |



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

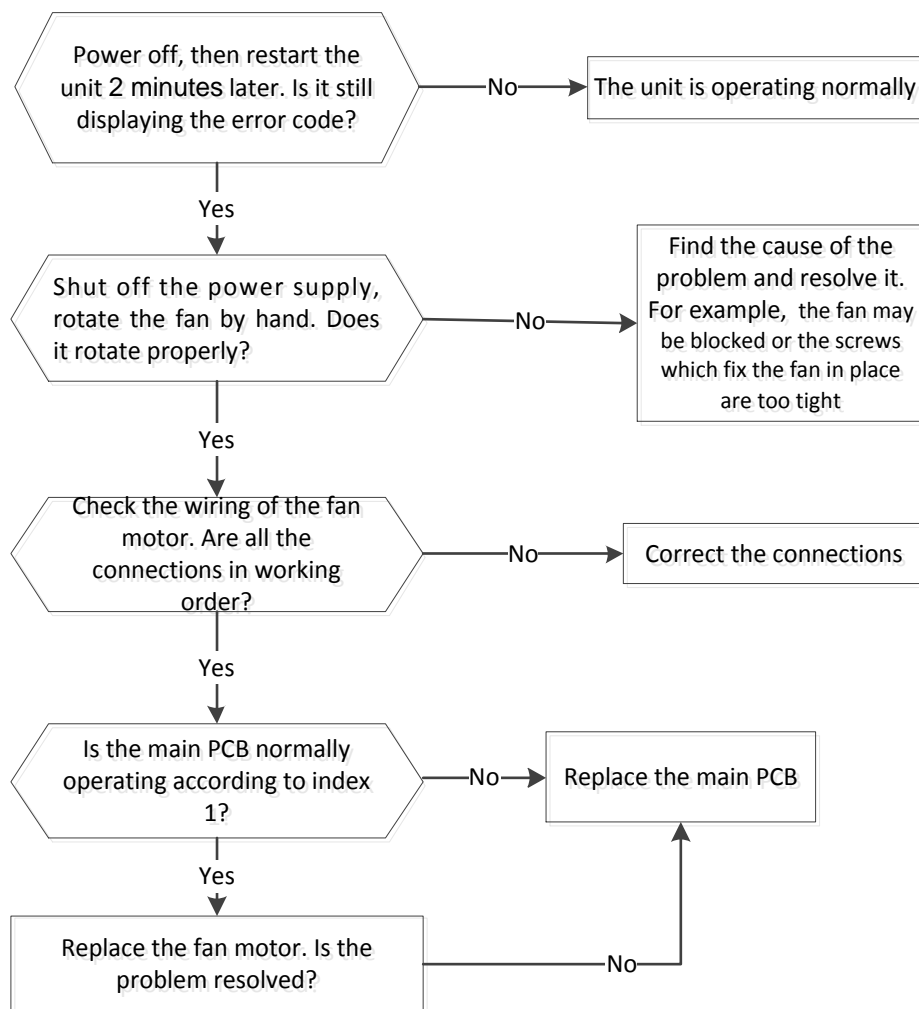
### 2.4.1.4. Water-Level Alarm Malfunction

|                               |  |
|-------------------------------|--|
| <b>Malfunction conditions</b> | If the sampling voltage is not 5V, the LED will display the failure code.  |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Wiring mistakes</li> <li>● Faulty water-level switch</li> <li>● Faulty water pump</li> <li>● Faulty indoor PCB</li> </ul> |



## 2.4.1.5. Indoor Fan Speed Malfunction

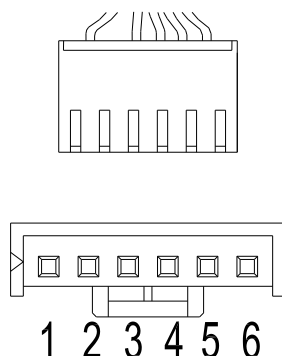
|                               |  |
|-------------------------------|--|
| <b>Malfunction conditions</b> | When indoor fan speed continues to run at too low a speed (300RPM) for a certain period of time, the unit will stop and the LED will display a failure code. |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Wiring mistakes</li> <li>● Faulty fan assembly</li> <li>● Faulty fan motor</li> <li>● Faulty PCB</li> </ul>         |



Index 1:

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

Power on and when the unit is on standby, measure the voltage of pin1-pin3, pin4-pin3 in the fan motor connector. If the value of the voltage is not within the range shown in the following table, the PCB may be experiencing problems and may need to be replaced.

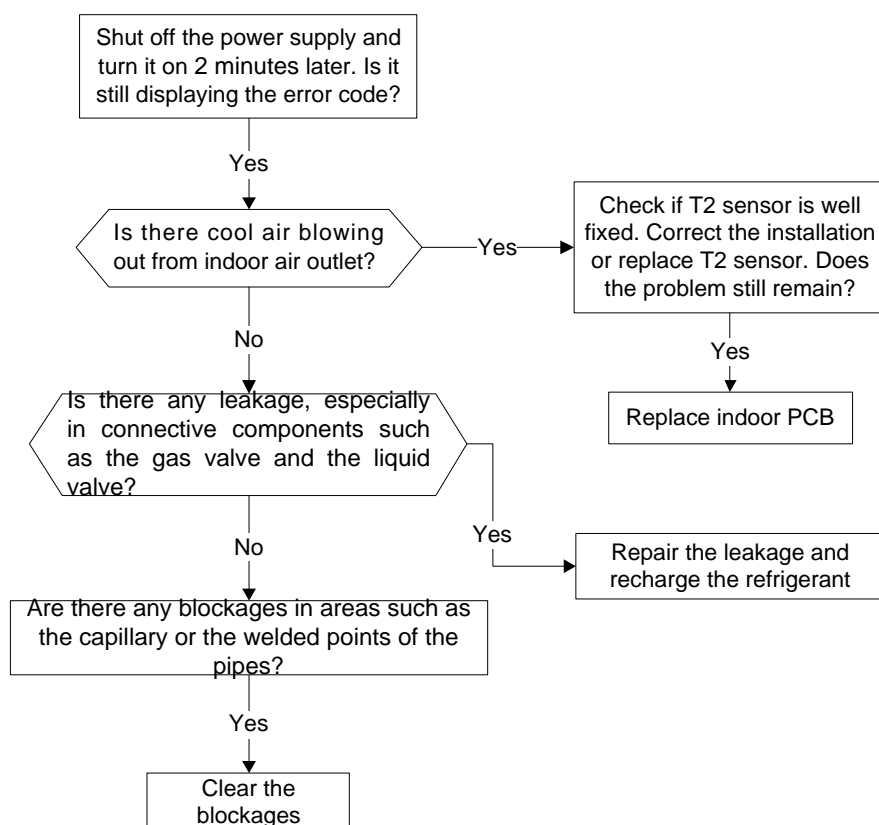


## DC motor voltage input and output

| NO. | Color  | Signal | Voltage    |
|-----|--------|--------|------------|
| 1   | Red    | Vs/Vm  | 200V~380V  |
| 2   | ---    | ---    | ---        |
| 3   | Black  | GND    | 0V         |
| 4   | White  | Vcc    | 13.5-16.5V |
| 5   | Yellow | Vsp    | 0~6.5V     |
| 6   | Blue   | FG     | 13.5-16.5V |

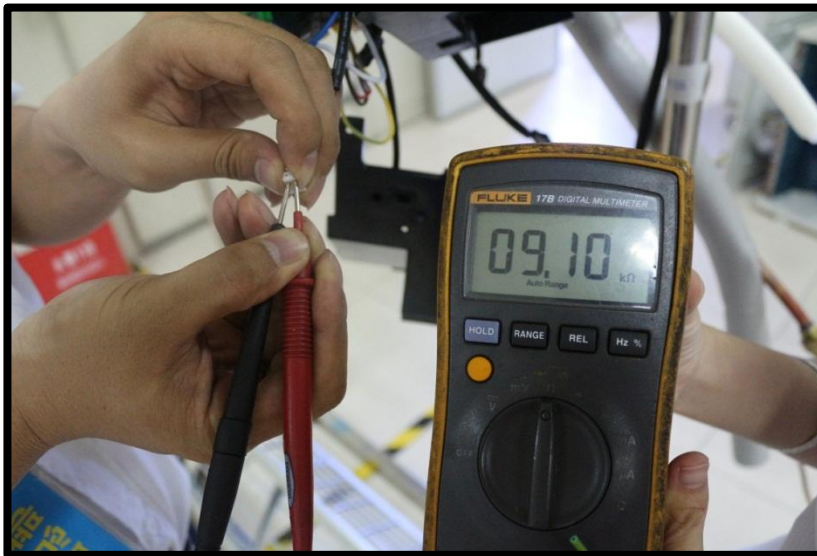
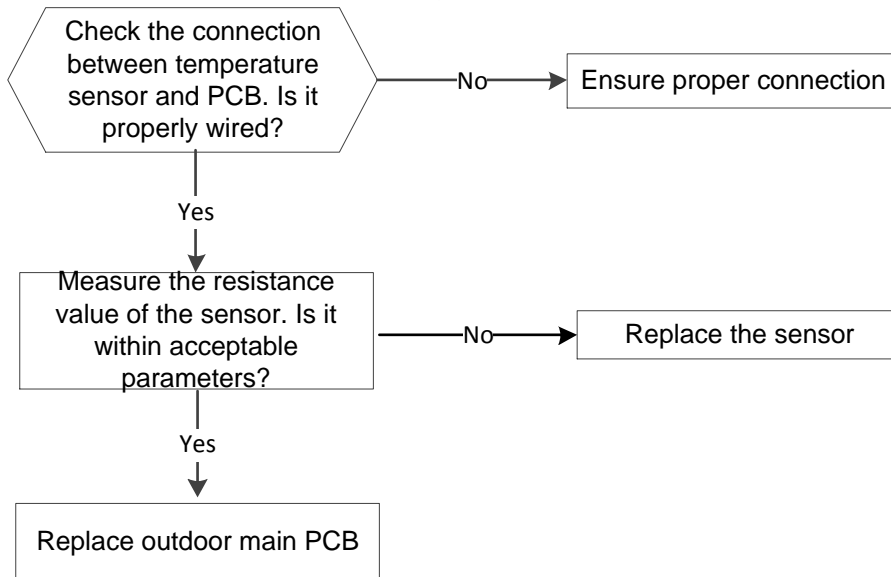
### 2.4.1.6. Refrigerant Leakage Detection

|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | <p>Define the evaporator coil temperature T2 of the compressor starts running as Tcool.</p> <p>If the following occurs 3 times, the display shows "EC" and the unit switches off:</p> <p>In the first 8 minutes after the compressor starts up, if <math>T2 &lt; T_{cool} - 2^{\circ}\text{C}</math> is not maintained for 4 seconds and compressor running frequency is not higher than 50Hz for 3 minutes</p> |
| <b>Potential causes</b>       | <ul style="list-style-type: none"> <li>● T2 sensor error</li> <li>● Indoor PCB error</li> <li>● Refrigerant system error, such as leakage or blockages</li> </ul>   |





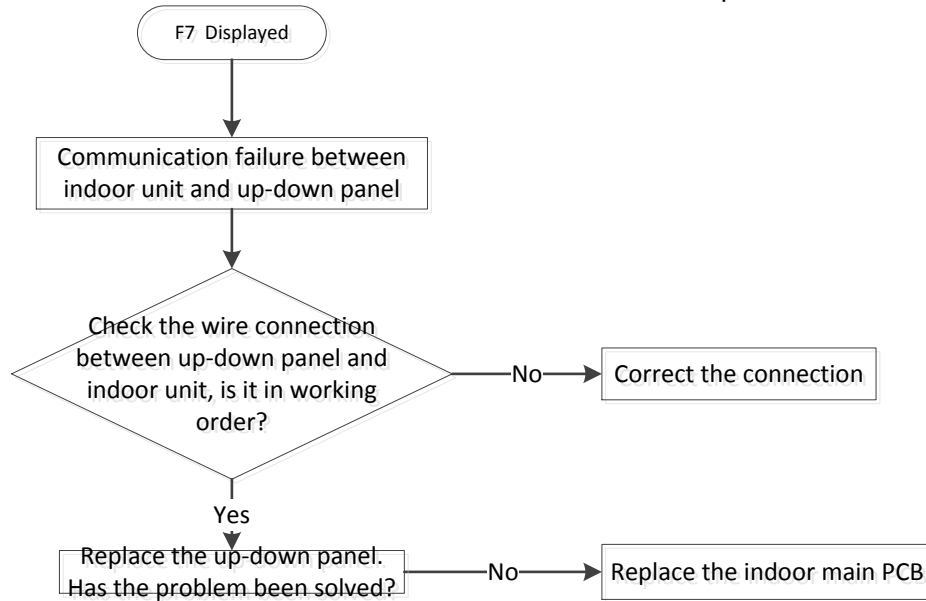
## 2.4.1.7 Outdoor IGBT sensor is faulty



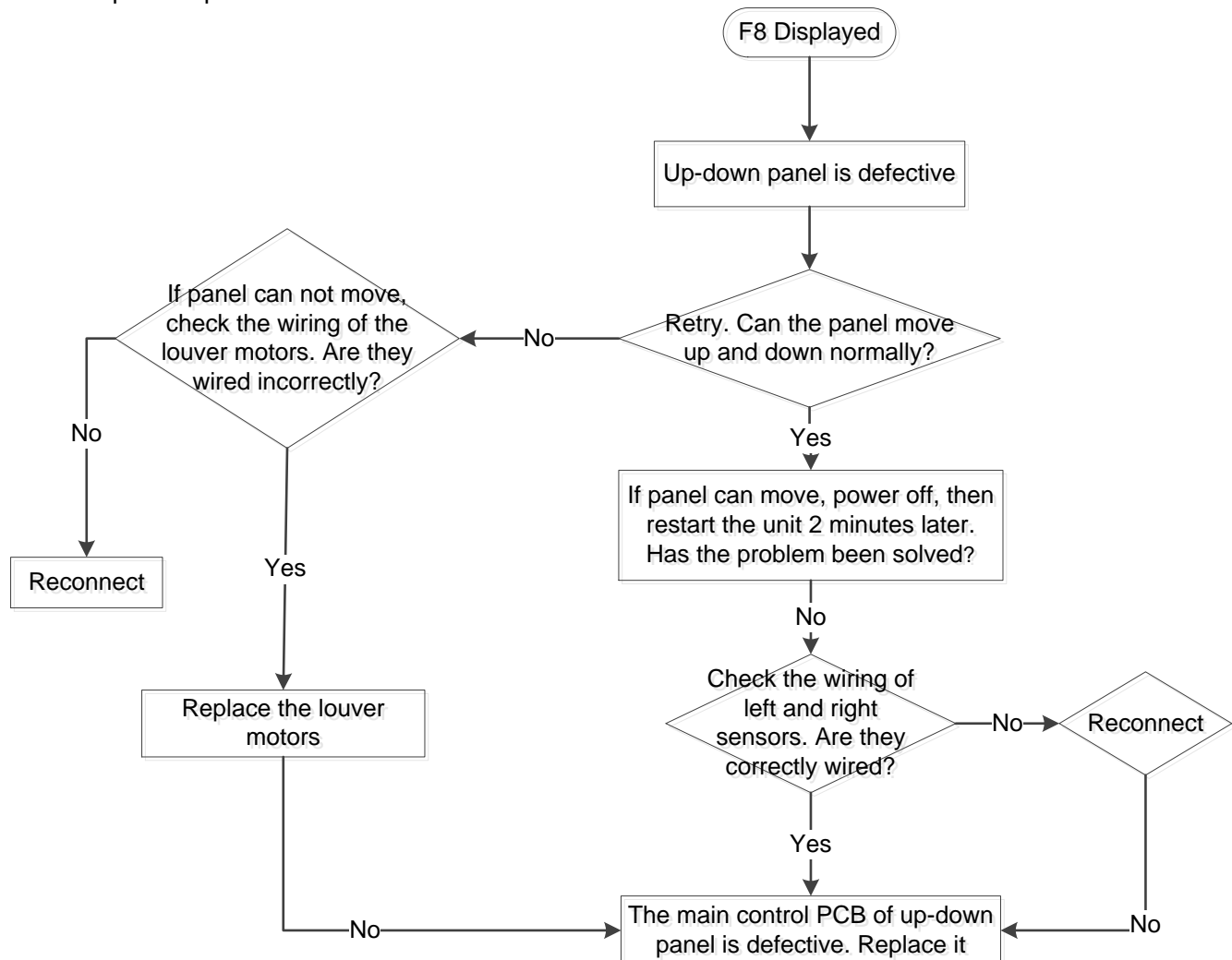
2.4.1.8 Communication malfunction between indoor and outdoor units  
The same as E1 in outdoor.

## 2.4.2 Super-Slim Cassettes with an Up-Down Panel

### 2.4.2.1 Communication Errors between Indoor Unit and Up-Down Panel

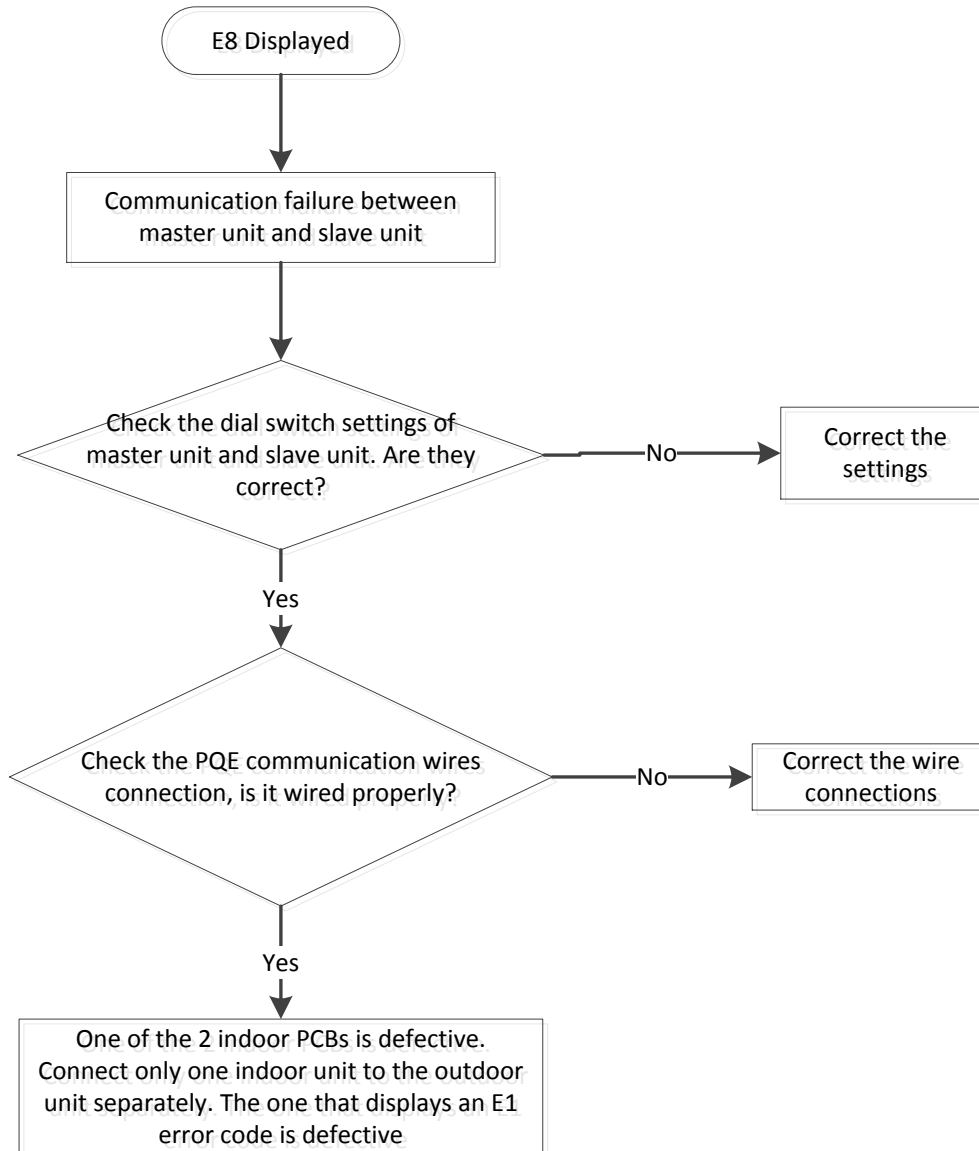


### 2.4.2.2 Up-down panel is defective



### 2.4.3 Units with TWINS Function

#### 2.4.3.1 Communication Malfunction between Master Unit and Indoor Unit



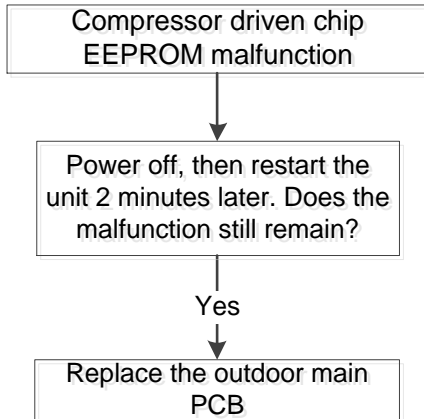
#### 2.4.3.2 Other Malfunction between Master Unit and Indoor Unit

One indoor unit displays "E9", which means the other indoor unit is faulty. Check the other indoor unit's error code and then follow the prescribed solutions to resolve the malfunction.

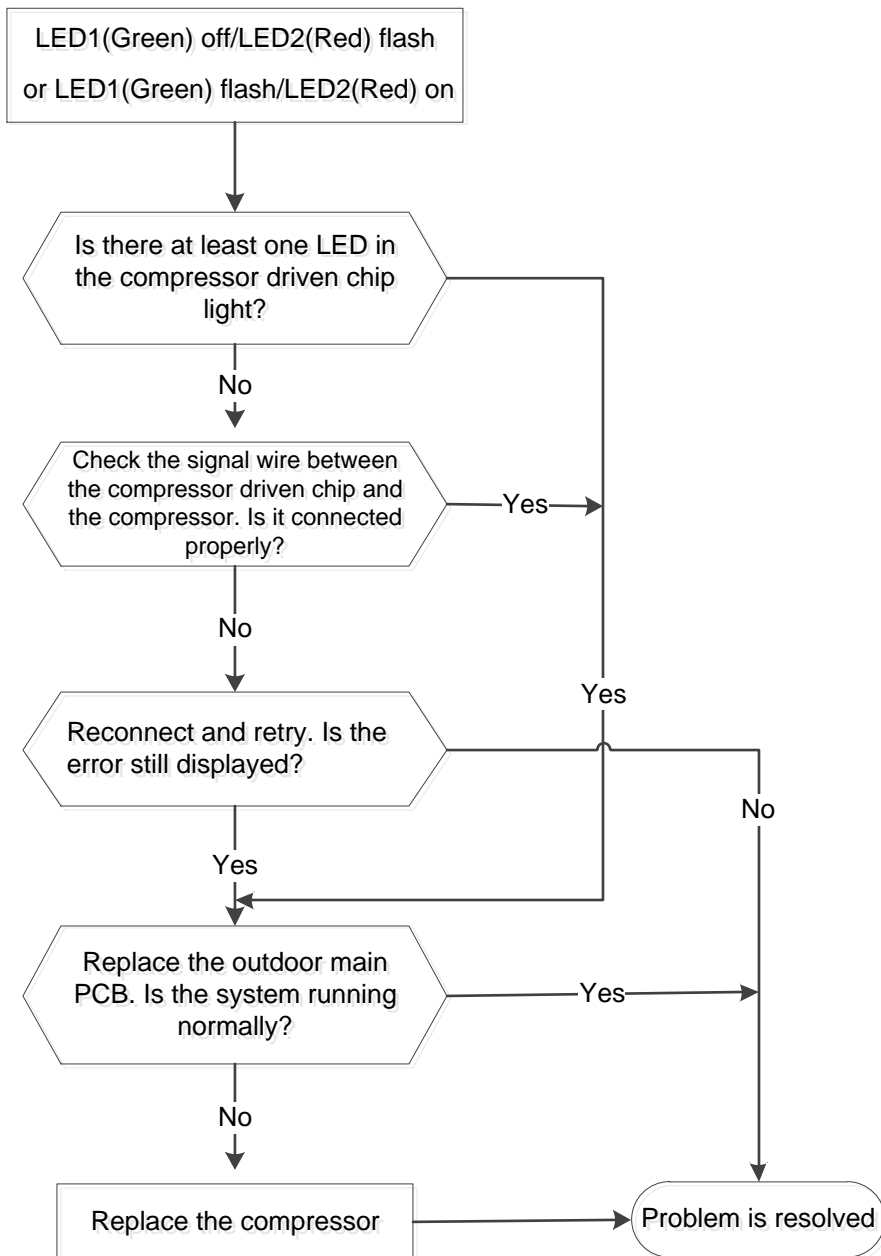
## 2.4.4 Outdoor Units

### 2.4.4.1. Compressor Driven Chip EEPROM Malfunction

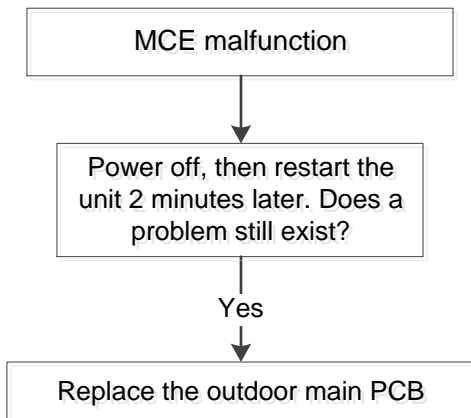
|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | Main PCB chip does not receive feedback from EEPROM chip  |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Installation mistakes</li> <li>● Faulty PCB</li> </ul> |



### 2.4.4.2 Compressor Speed Malfunction/ Zero Speed Protection / Synchronous Fault Protection



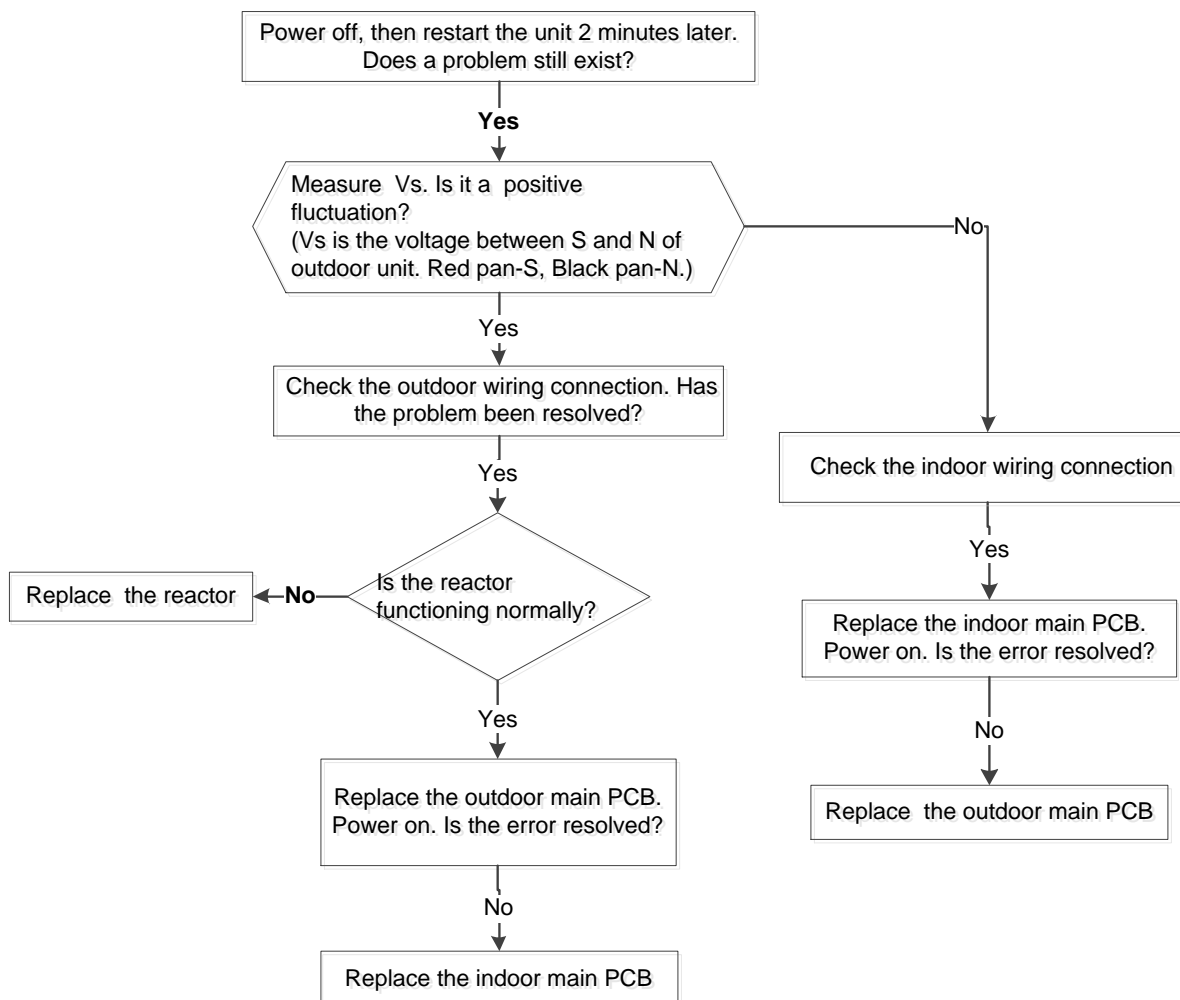
## 2.4.4.3 MCE Malfunction



#### 2.4.4.4. E1 malfunction

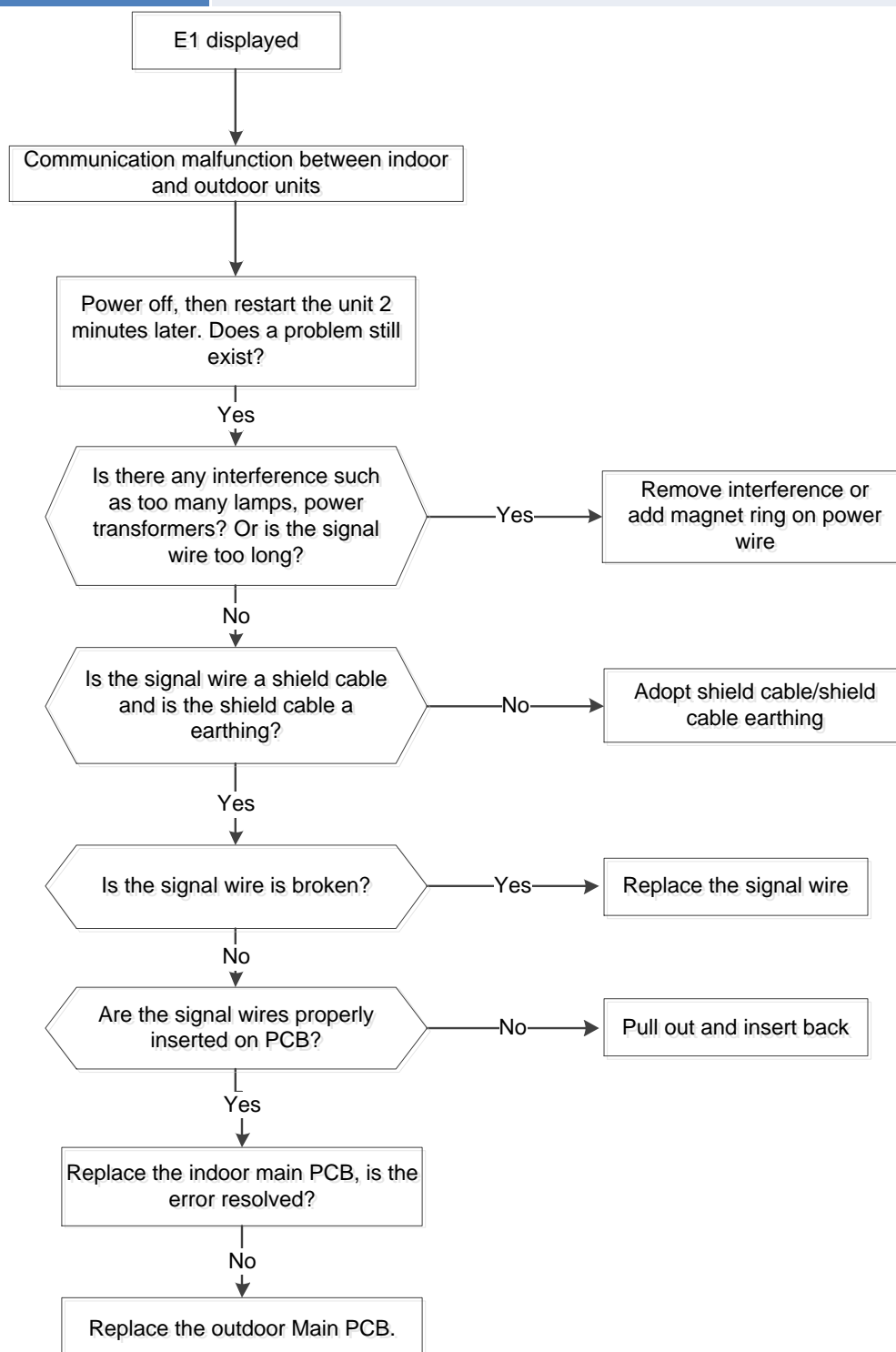
Current loop communication (LNS only 12k):

|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | <b>Indoor unit does not receive feedback from outdoor unit for 110 seconds. This occurs 4 times in a row.</b> |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Wiring mistakes</li> <li>● Faulty indoor or outdoor PCB</li> </ul>   |



## For 485 Communication (S1 S2 only 18 to 60k)

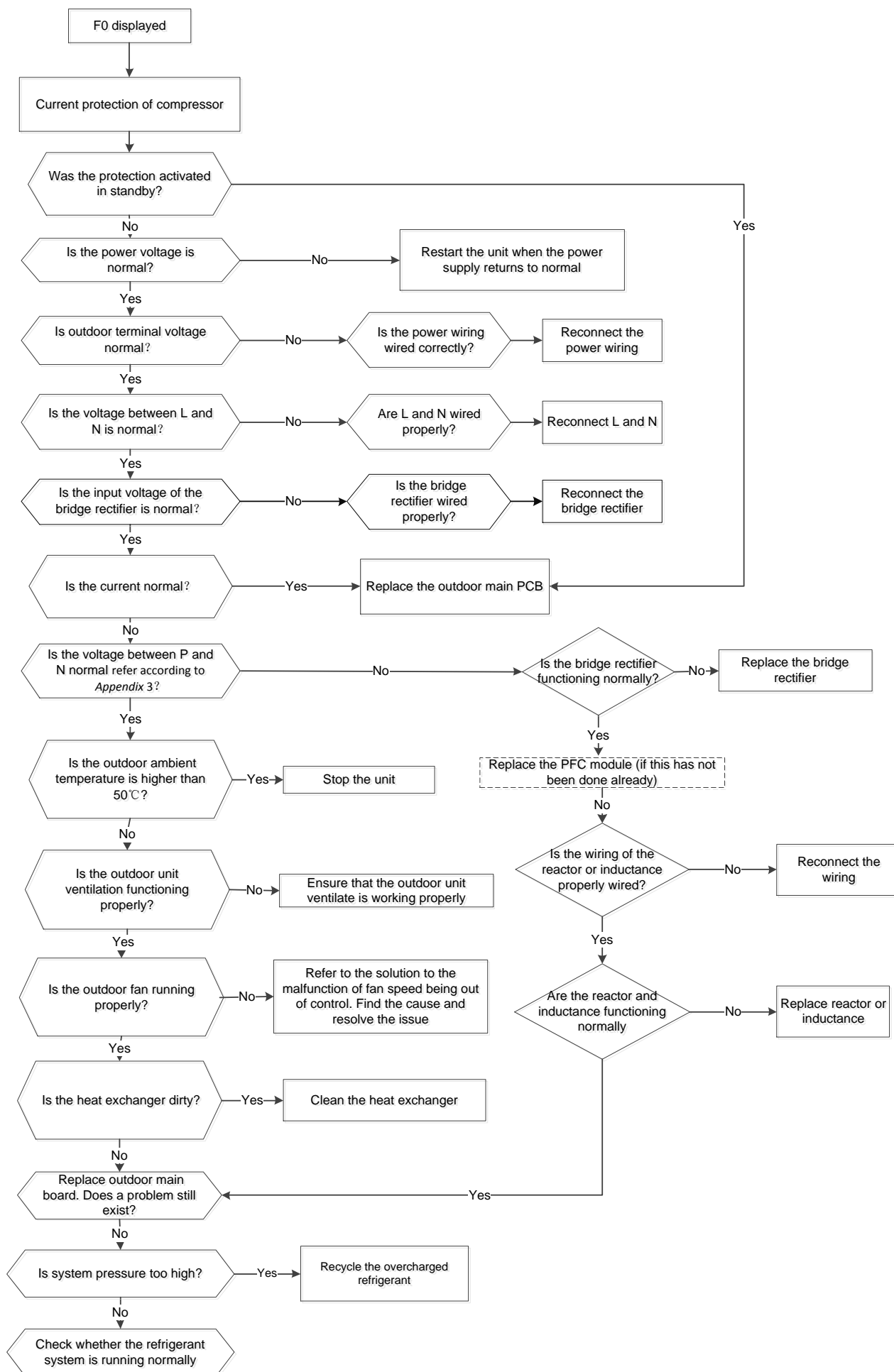
|                               |  |
|-------------------------------|--|
| <b>Malfunction conditions</b> | Indoor unit does not receive feedback from outdoor unit for 60 seconds OR outdoor unit does not receive feedback from indoor unit for 120 seconds. |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Wiring mistakes</li> <li>● Faulty indoor or outdoor PCB</li> </ul>  |



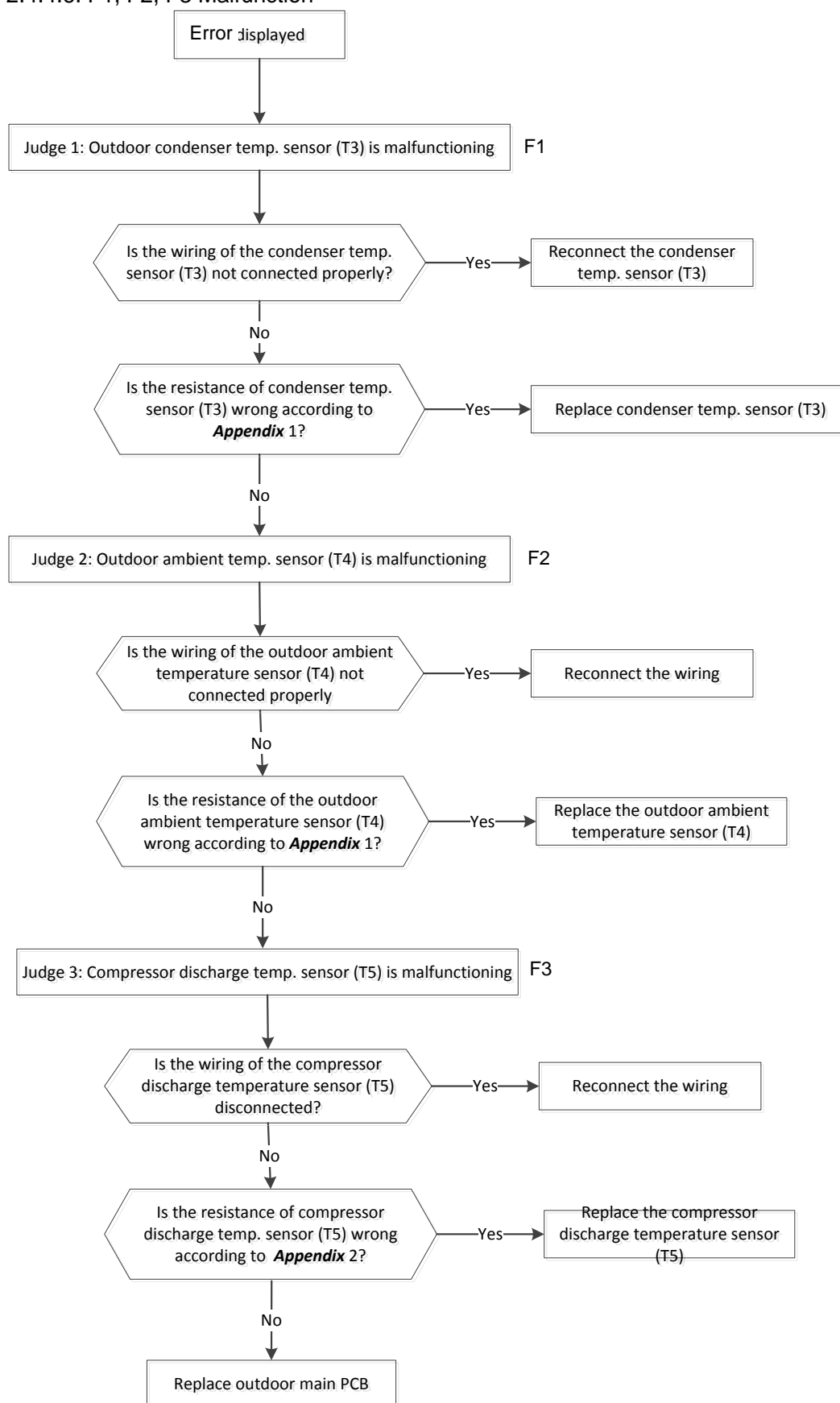


## 2.4.4.5. F0 Malfunction

|                        |   |
|------------------------|---|
| Malfunction conditions | If the outdoor current exceeds the current limit value, the LED displays a failure code.  |
| Possible causes        | <ul style="list-style-type: none"><li>● Wiring mistakes</li><li>● Faulty bridge rectifier</li><li>● System blockages</li><li>● Faulty outdoor PCB</li></ul> |

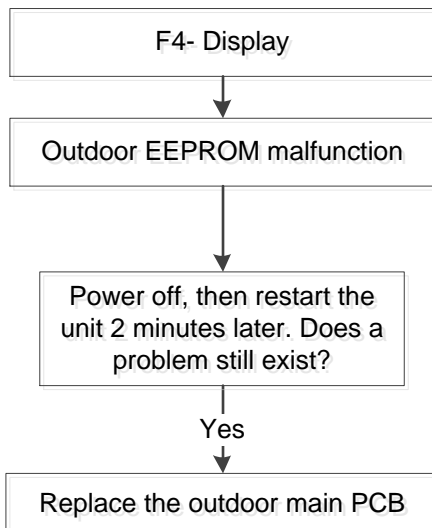


## 2.4.4.6. F1, F2, F3 Malfunction



#### 2.4.4.7. F4 Malfunction

|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | Main PCB chip does not receive feedback from EEPROM chip  |
| Possible causes               | <ul style="list-style-type: none"> <li>● Installation mistakes</li> <li>● Faulty PCB</li> </ul> |



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

#### 2.4.4.8. F5 Malfunction

The same as E3 in indoor unit.

## 2.4.4.9. P0 Malfunction

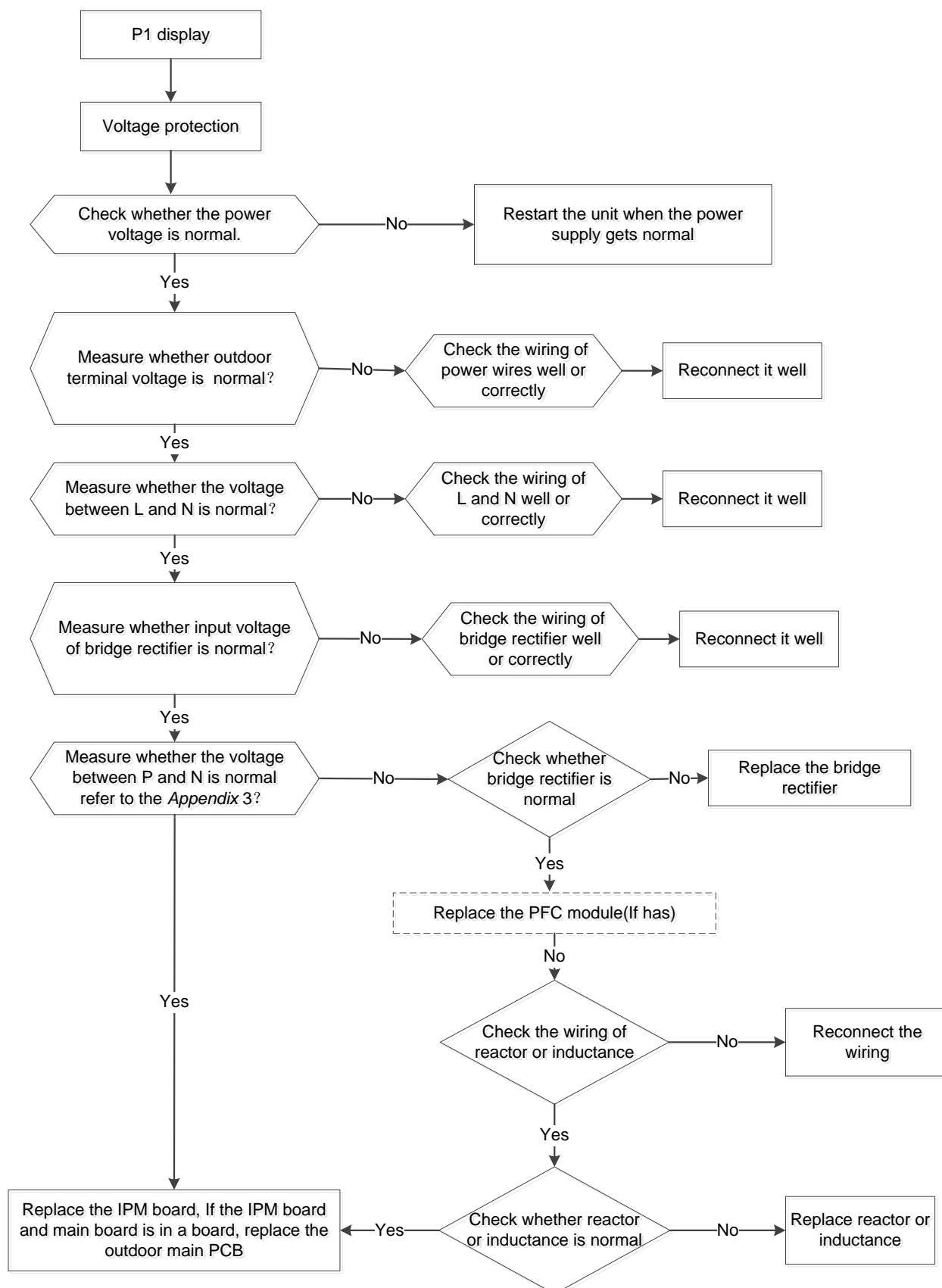
|                               |  |
|-------------------------------|--|
| <b>Malfunction conditions</b> | When the voltage signal the IPM sends to compressor drive chip is not normal, the LED displays “P0” and the unit turns off.  |
| <b>Possible causes</b>        | <ul style="list-style-type: none"><li>● Wiring mistakes</li><li>● Faulty IPM board</li><li>● Faulty outdoor fan assembly</li><li>● Compressor malfunction</li><li>● Faulty outdoor PCB</li></ul> |

First, test the resistance between every two ports of U, V, the W of the IPM and P, N. If any of the results is 0 or close to 0, the IPM is defective. If not, follow the following procedure:



## 2.4.4.10. P1 malfunction

| Malfunction conditions | decision | An abnormal voltage rise or drop is detected by checking the specified voltage detection circuit.  |
|------------------------|----------|--|
| Supposed causes        |          | <ul style="list-style-type: none"> <li>● Abnormal power supply</li> <li>● Wiring mistake</li> <li>● Faulty bridge rectifier</li> <li>● Faulty IPM board</li> </ul> |

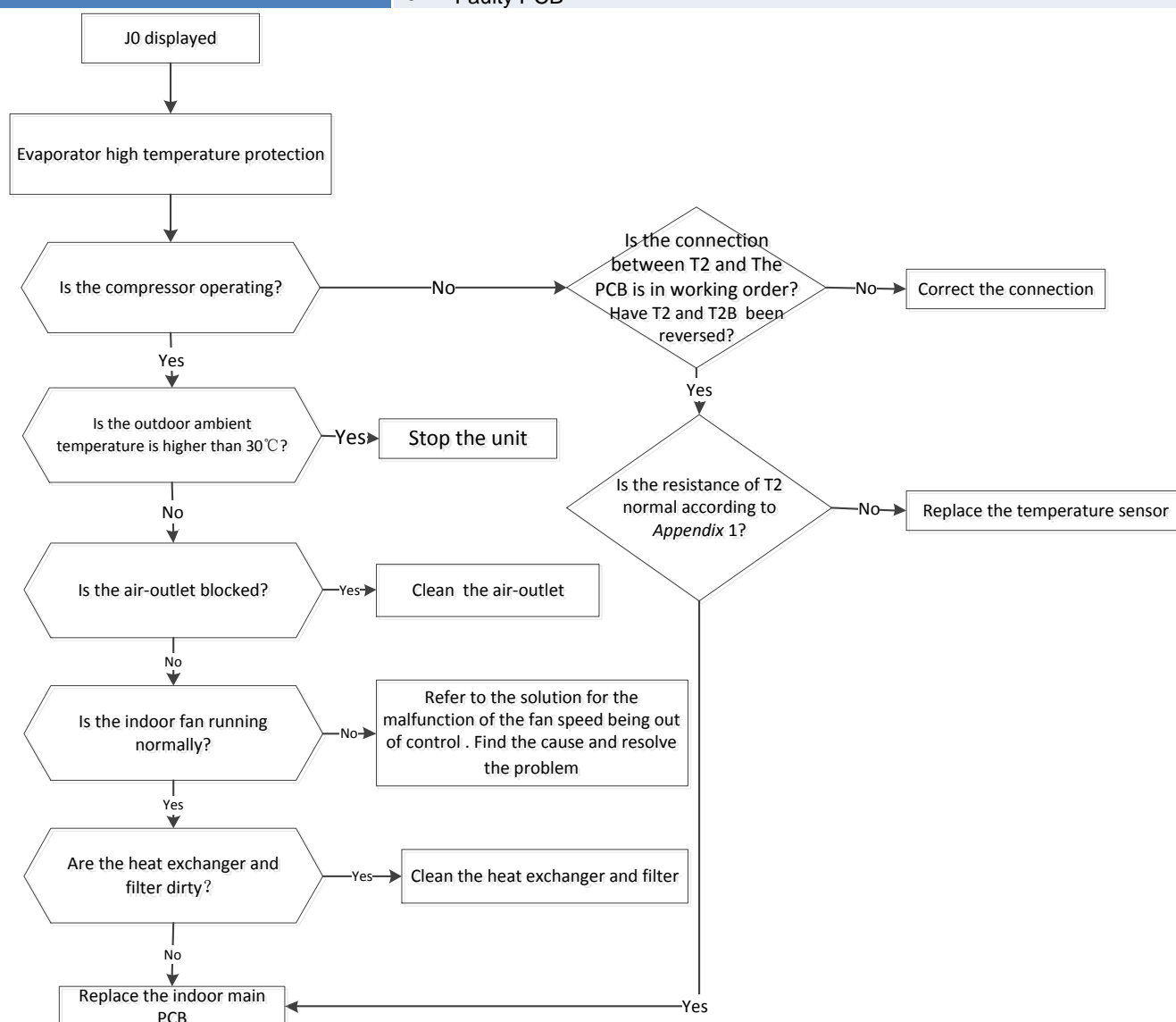


## 2.4.4.11. P4 Malfunction

The troubleshooting is same as the “IPM module protection”

## 2.4.4.12. J0 Malfunction

|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | When evaporator coil temperature is more than 60°C, the unit stops. It starts again only when the evaporator coil temperature is less than 54°C                   |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>Faulty evaporator coil temperature sensor</li> <li>Dirty heat exchanger</li> <li>Faulty fan</li> <li>Faulty PCB</li> </ul> |





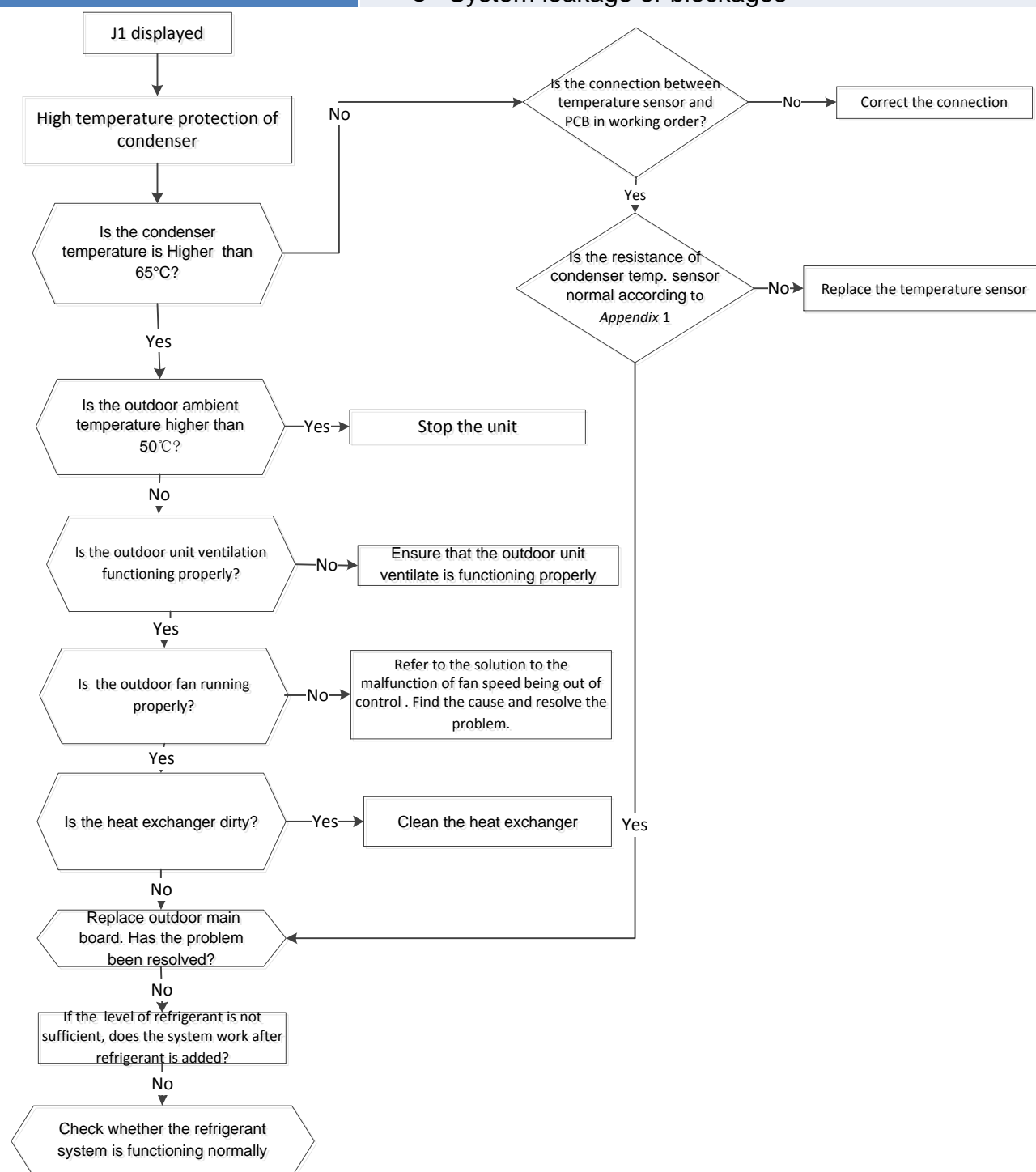
## 2.4.4.13. J1 Malfunction

## Malfunction conditions

When the outdoor pipe temperature is more than 65°C, the unit stops. It starts again only when the outdoor pipe temperature is less than 52°C.

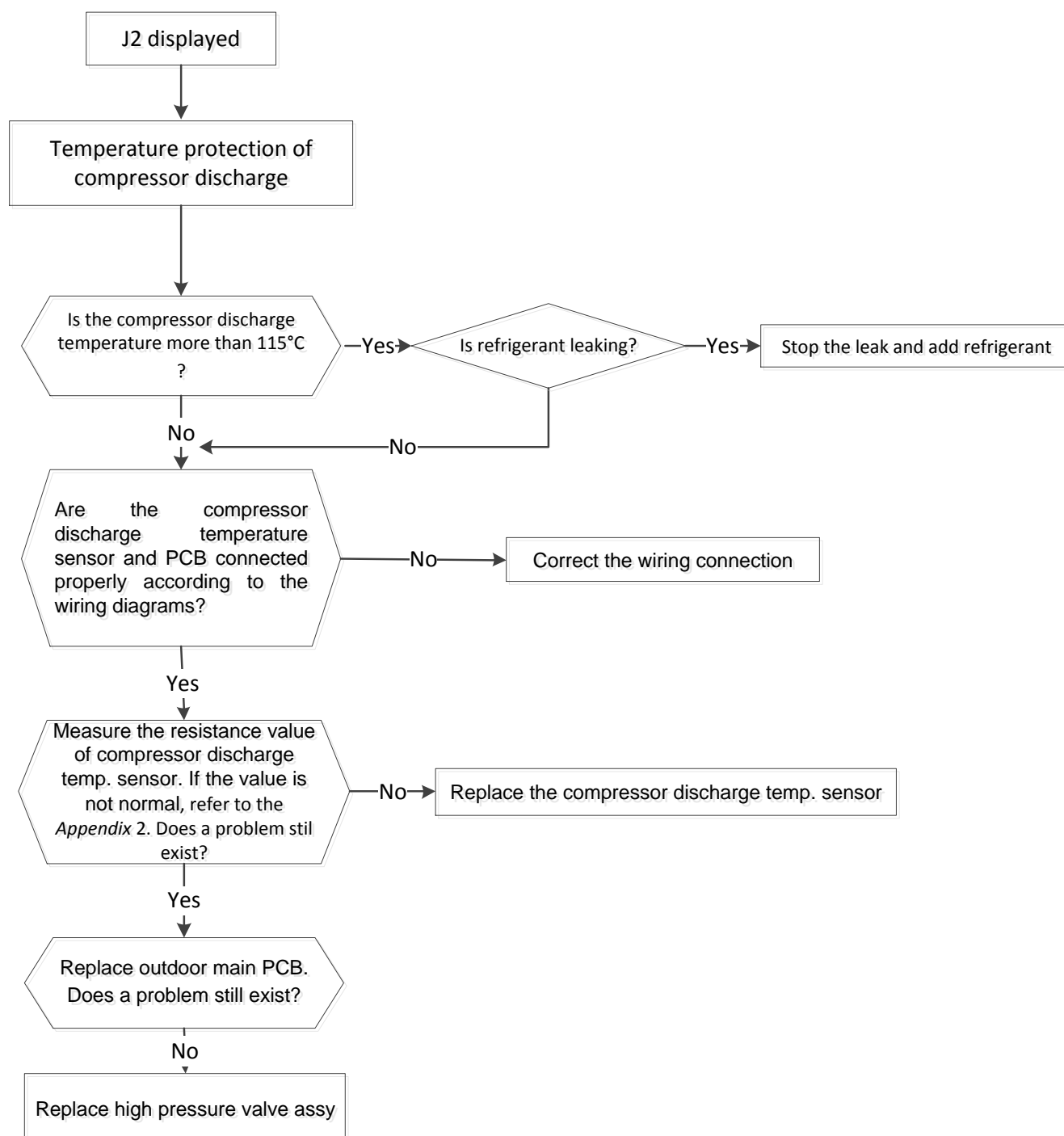
## Possible causes

- Faulty condenser temperature sensor
- Dirty heat exchanger
- System leakage or blockages



## 2.4.4.14. J2 Malfunction

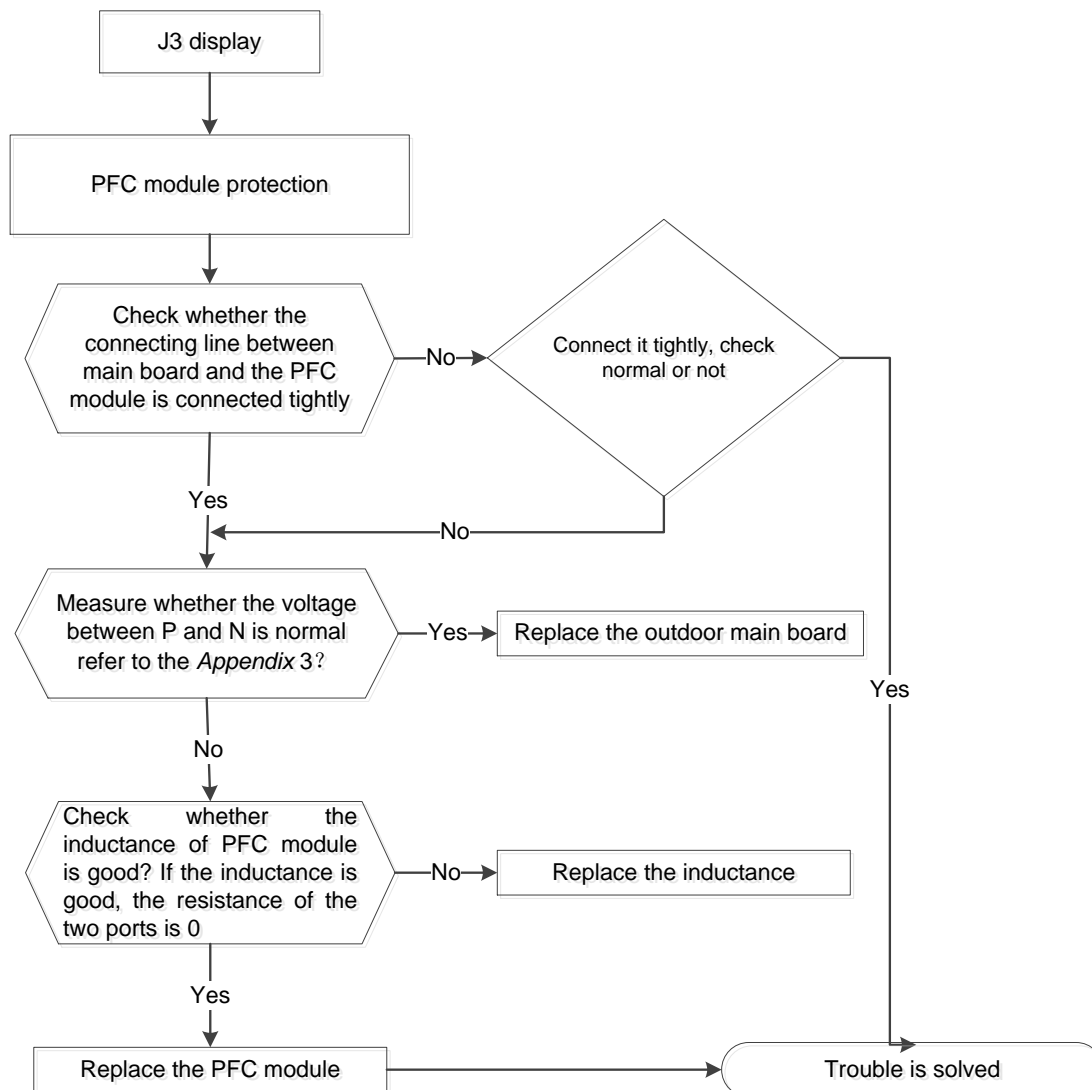
|                               |  |
|-------------------------------|--|
| <b>Malfunction conditions</b> | When the compressor discharge temperature (T5) is more than 115°C for 10 seconds, the compressor will stop and not restart until T5 is less than 90°C.                         |
| <b>Possible causes</b>        | <ul style="list-style-type: none"> <li>● Refrigerant leakage</li> <li>● Wiring mistake</li> <li>● Faulty discharge temperature sensor</li> <li>● Faulty outdoor PCB</li> </ul> |



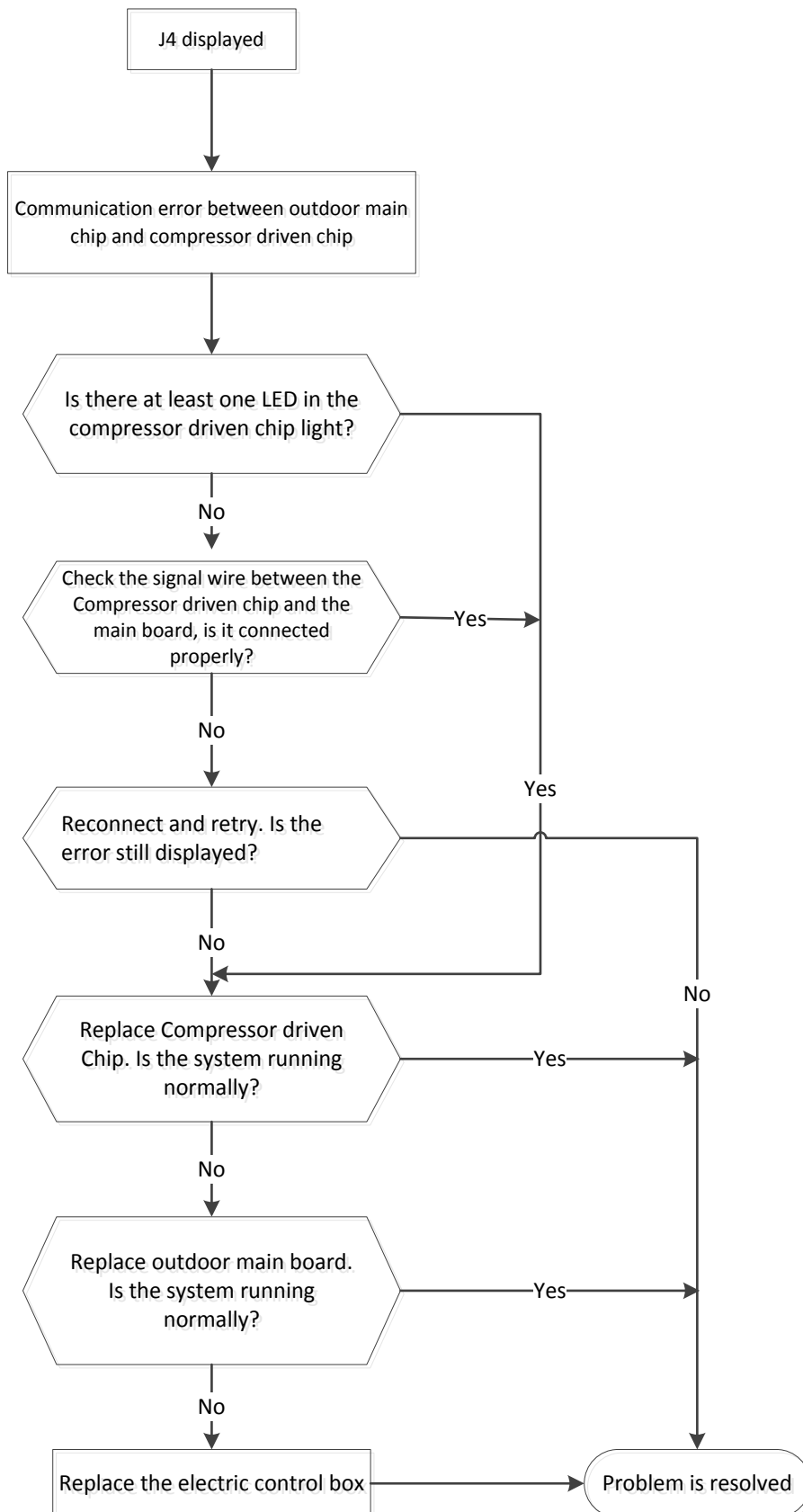
## 2.4.4.15. J3 Malfunction

|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | When the voltage signal that IPM send to compressor drive chip is abnormal, the display LED will show “J3” and AC will turn off.  |
| <b>Supposed causes</b>        | <ul style="list-style-type: none"> <li>● Wiring mistake</li> <li>● Faulty IPM board</li> <li>● Faulty outdoor fan assembly</li> <li>● Compressor malfunction</li> <li>● Faulty outdoor PCB</li> </ul> |

At first test the resistance between every two ports of U, V, W of IPM and P, N. If any result of them is 0 or close to 0, the IPM is defective. Otherwise, please follow the procedure below:



## 2.4.4.16. J4 Malfunction



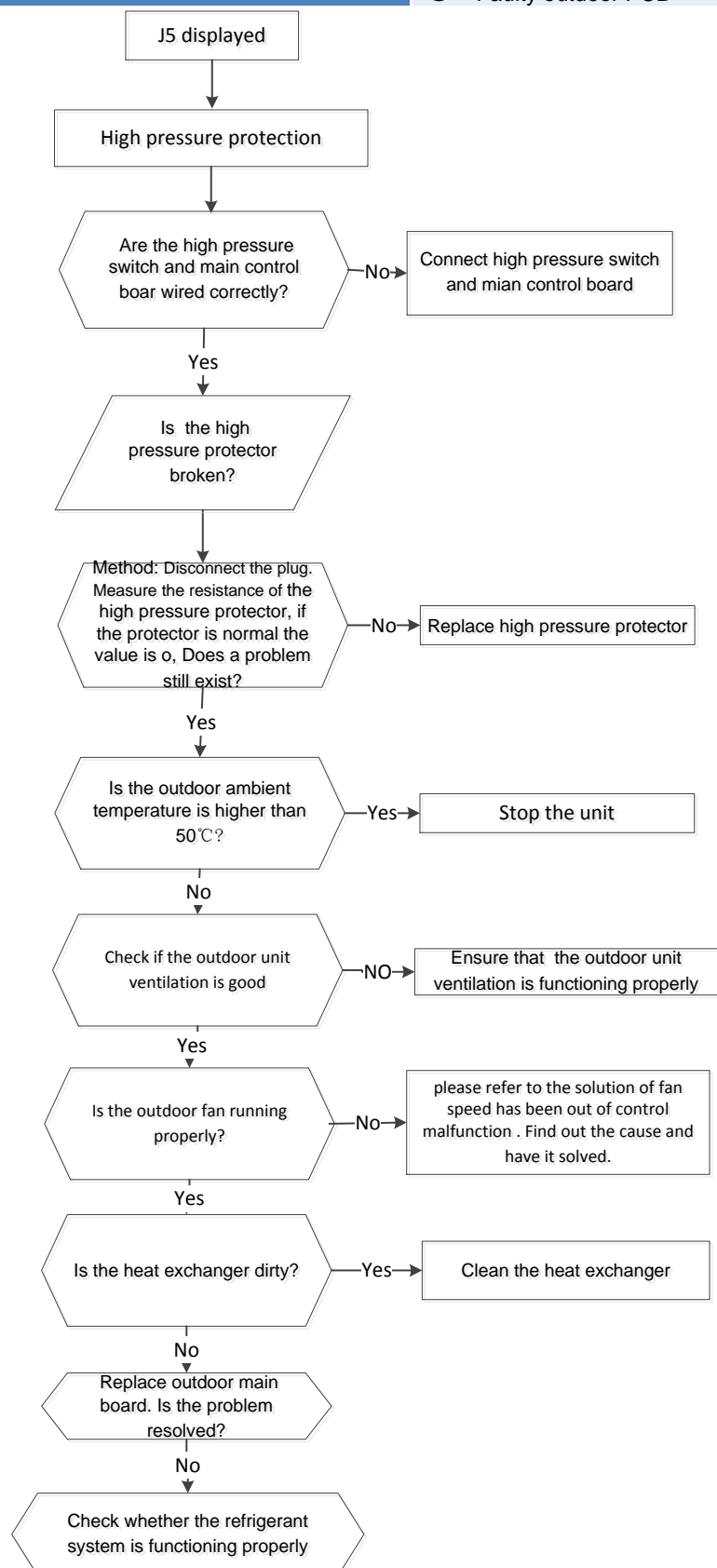
## 2.4.4.17. J5 Malfunction

**Malfunction conditions**

If the sampling voltage is not 5V, the LED displays a failure code.

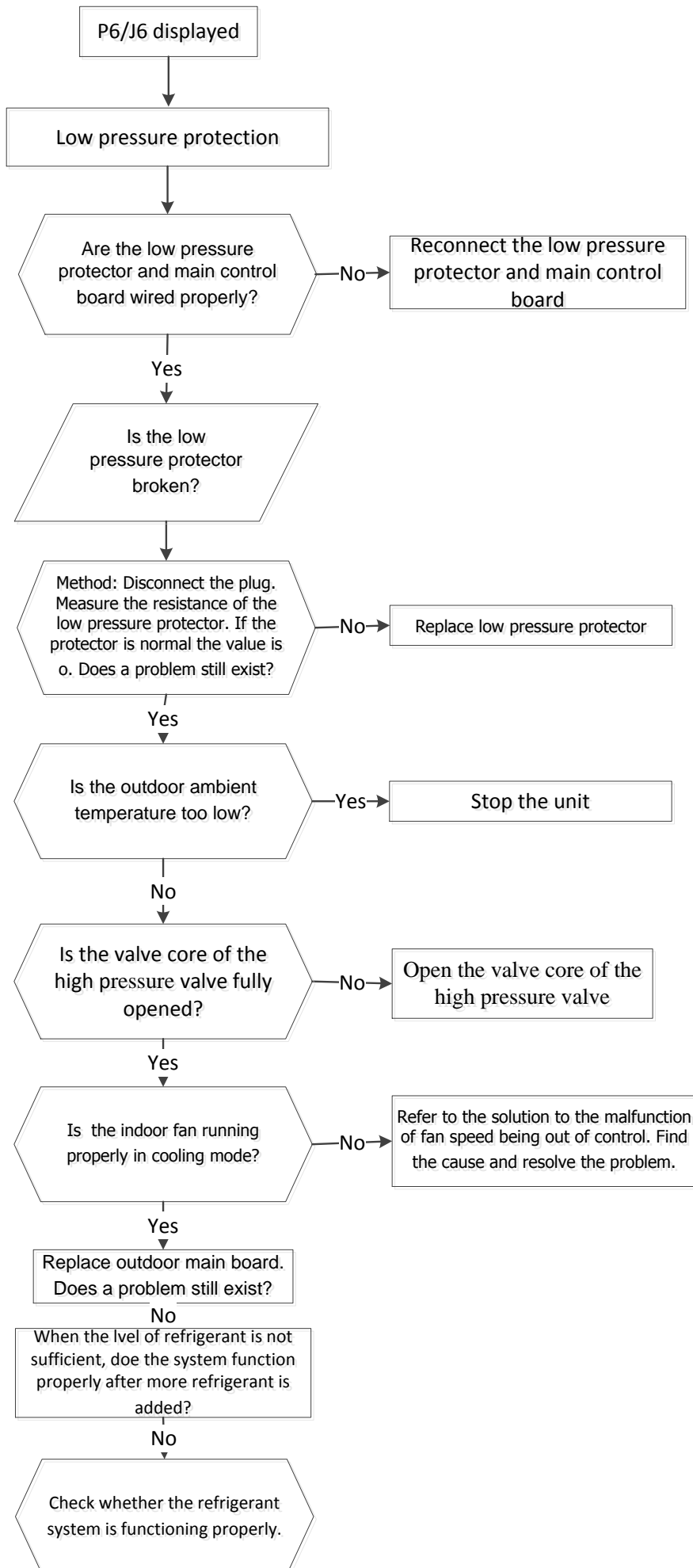
**Possible causes**

- Wiring mistakes
- Faulty overload protector
- System blockages
- Faulty outdoor PCB



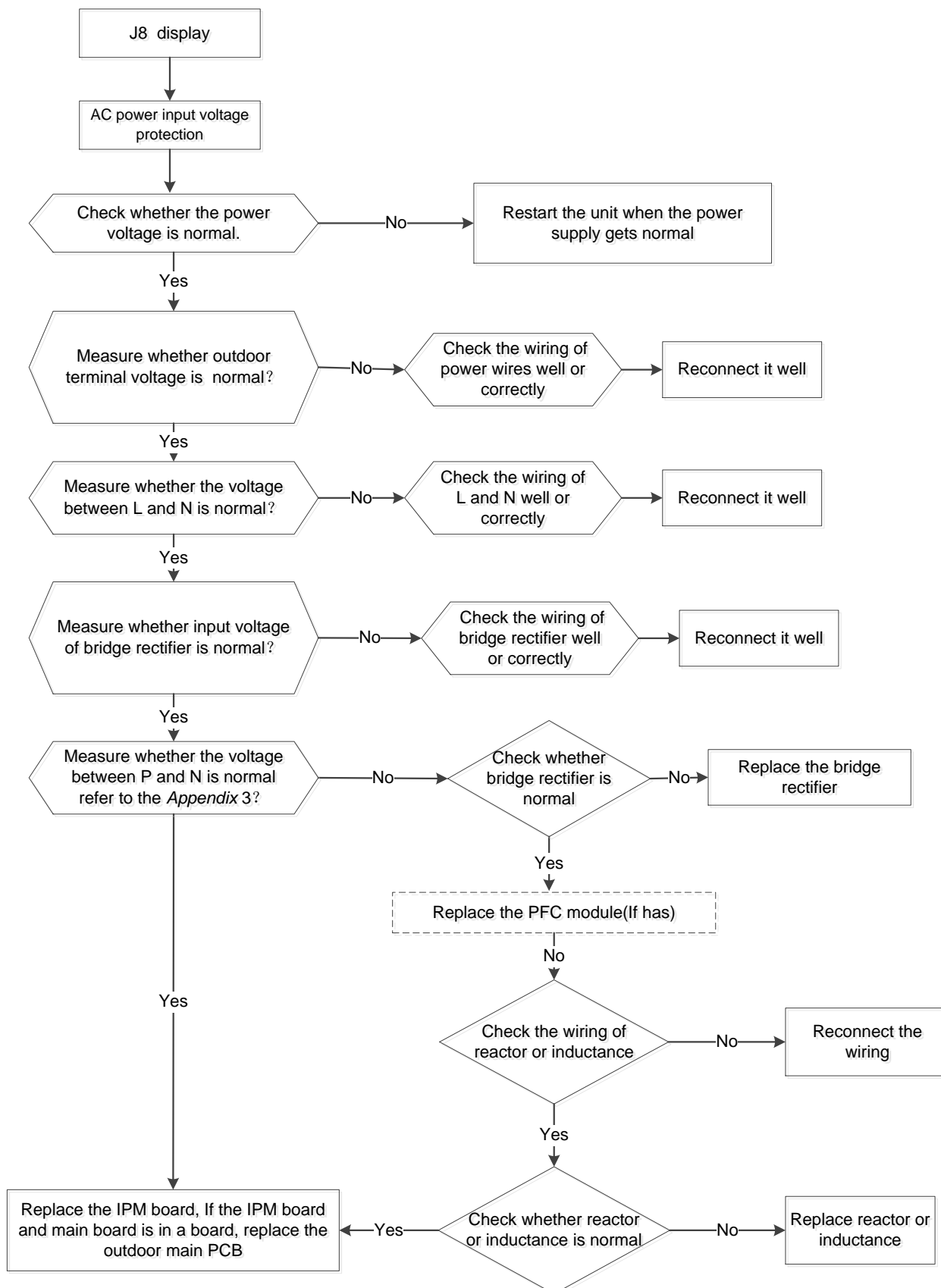
## 2.4.4.18. P6/J6 Malfunction

|                               |   |
|-------------------------------|---|
| <b>Malfunction conditions</b> | If the sampling voltage is not 5V, the LED displays a failure code.   |
| <b>Possible causes</b>        | <ul style="list-style-type: none"><li>● Wiring mistake</li><li>● Faulty over load protector</li><li>● System blockages</li><li>● Faulty outdoor PCB</li></ul> |



# 2.4.4.19. J8 malfunction

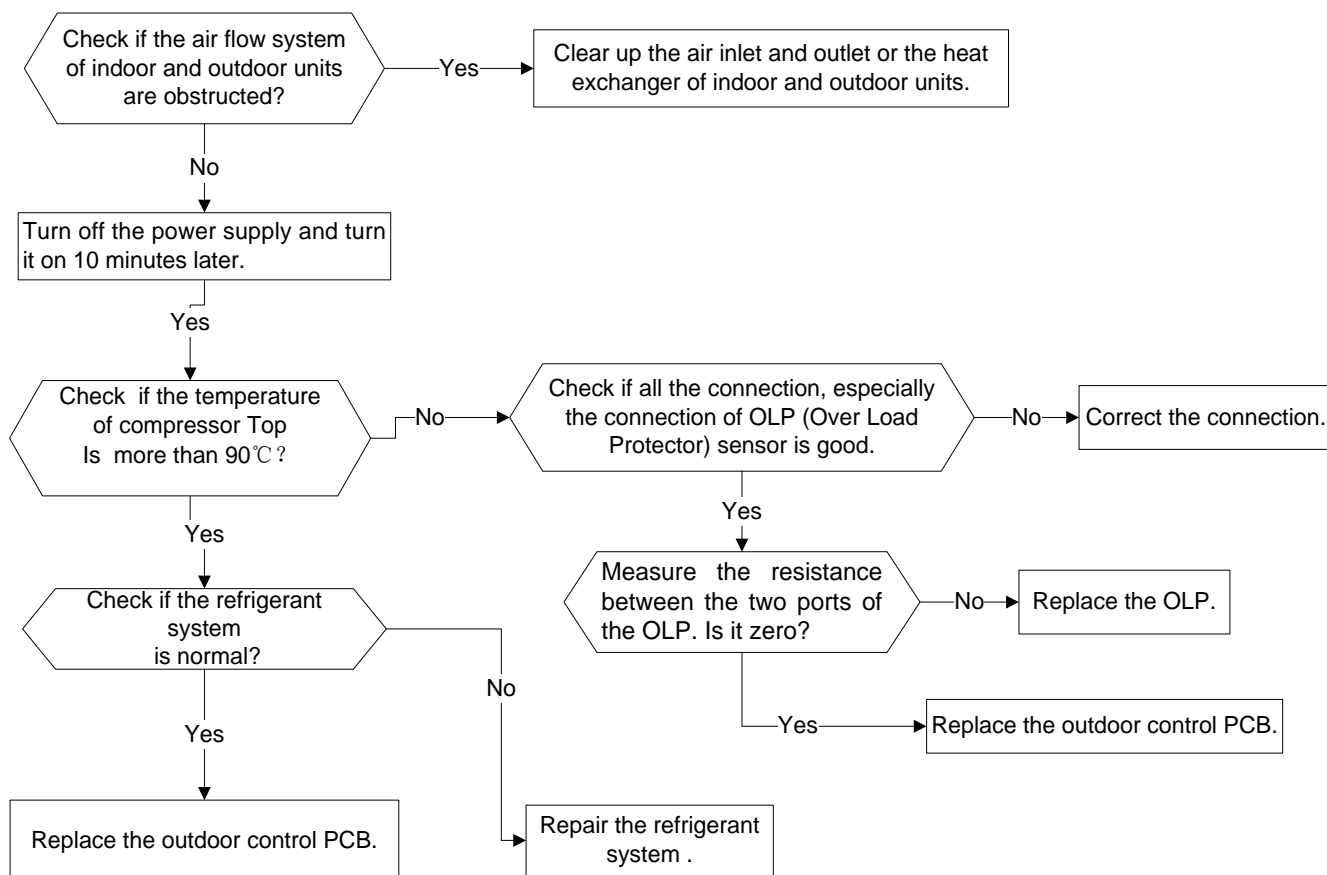
|                               |                 |  |
|-------------------------------|-----------------|--|
| <b>Malfunction conditions</b> | <b>decision</b> | An abnormal voltage rise or drop is detected by checking the specified voltage detection circuit.  |
| <b>Supposed causes</b>        |                 | <ul style="list-style-type: none"> <li>● Abnormal power supply</li> <li>● Wiring mistake</li> <li>● Faulty bridge rectifier</li> <li>● Faulty IPM board</li> </ul> |





#### 2.4.4.20. P2 malfunction

| Malfunction conditions | decision | If the sampling voltage is not 5V, the LED will display the failure.   |
|------------------------|----------|--|
| Supposed causes        |          | <ul style="list-style-type: none"> <li>Faulty overload protector</li> <li>Wiring mistake</li> <li>System leakage or block</li> <li>Faulty PCB</li> </ul> |



**Appendix 1** Temperature Sensor (T1, T2, T3, T4) Resistance Value Table (°C--K)

| °C  | K Ohm   | °C | K Ohm   | °C | K Ohm   | °C  | K Ohm   |
|-----|---------|----|---------|----|---------|-----|---------|
| -20 | 115.266 | 20 | 12.6431 | 60 | 2.35774 | 100 | 0.62973 |
| -19 | 108.146 | 21 | 12.0561 | 61 | 2.27249 | 101 | 0.61148 |
| -18 | 101.517 | 22 | 11.5000 | 62 | 2.19073 | 102 | 0.59386 |
| -17 | 96.3423 | 23 | 10.9731 | 63 | 2.11241 | 103 | 0.57683 |
| -16 | 89.5865 | 24 | 10.4736 | 64 | 2.03732 | 104 | 0.56038 |
| -15 | 84.2190 | 25 | 10.000  | 65 | 1.96532 | 105 | 0.54448 |
| -14 | 79.3110 | 26 | 9.55074 | 66 | 1.89627 | 106 | 0.52912 |
| -13 | 74.5360 | 27 | 9.12445 | 67 | 1.83003 | 107 | 0.51426 |
| -12 | 70.1698 | 28 | 8.71983 | 68 | 1.76647 | 108 | 0.49989 |
| -11 | 66.0898 | 29 | 8.33566 | 69 | 1.70547 | 109 | 0.48600 |
| -10 | 62.2756 | 30 | 7.97078 | 70 | 1.64691 | 110 | 0.47256 |
| -9  | 58.7079 | 31 | 7.62411 | 71 | 1.59068 | 111 | 0.45957 |
| -8  | 56.3694 | 32 | 7.29464 | 72 | 1.53668 | 112 | 0.44699 |
| -7  | 52.2438 | 33 | 6.98142 | 73 | 1.48481 | 113 | 0.43482 |
| -6  | 49.3161 | 34 | 6.68355 | 74 | 1.43498 | 114 | 0.42304 |
| -5  | 46.5725 | 35 | 6.40021 | 75 | 1.38703 | 115 | 0.41164 |
| -4  | 44.0000 | 36 | 6.13059 | 76 | 1.34105 | 116 | 0.40060 |
| -3  | 41.5878 | 37 | 5.87359 | 77 | 1.29078 | 117 | 0.38991 |
| -2  | 39.8239 | 38 | 5.62961 | 78 | 1.25423 | 118 | 0.37956 |
| -1  | 37.1988 | 39 | 5.39689 | 79 | 1.21330 | 119 | 0.36954 |
| 0   | 35.2024 | 40 | 5.17519 | 80 | 1.17393 | 120 | 0.35982 |
| 1   | 33.3269 | 41 | 4.96392 | 81 | 1.13604 | 121 | 0.35042 |
| 2   | 31.5635 | 42 | 4.76253 | 82 | 1.09958 | 122 | 0.3413  |
| 3   | 29.9058 | 43 | 4.57050 | 83 | 1.06448 | 123 | 0.33246 |
| 4   | 28.3459 | 44 | 4.38736 | 84 | 1.03069 | 124 | 0.32390 |
| 5   | 26.8778 | 45 | 4.21263 | 85 | 0.99815 | 125 | 0.31559 |
| 6   | 25.4954 | 46 | 4.04589 | 86 | 0.96681 | 126 | 0.30754 |
| 7   | 24.1932 | 47 | 3.88673 | 87 | 0.93662 | 127 | 0.29974 |
| 8   | 22.5662 | 48 | 3.73476 | 88 | 0.90753 | 128 | 0.29216 |
| 9   | 21.8094 | 49 | 3.58962 | 89 | 0.87950 | 129 | 0.28482 |
| 10  | 20.7184 | 50 | 3.45097 | 90 | 0.85248 | 130 | 0.27770 |
| 11  | 19.6891 | 51 | 3.31847 | 91 | 0.82643 | 131 | 0.27078 |
| 12  | 18.7177 | 52 | 3.19183 | 92 | 0.80132 | 132 | 0.26408 |
| 13  | 17.8005 | 53 | 3.07075 | 93 | 0.77709 | 133 | 0.25757 |
| 14  | 16.9341 | 54 | 2.95896 | 94 | 0.75373 | 134 | 0.25125 |
| 15  | 16.1156 | 55 | 2.84421 | 95 | 0.73119 | 135 | 0.24512 |
| 16  | 15.3418 | 56 | 2.73823 | 96 | 0.70944 | 136 | 0.23916 |
| 17  | 14.6181 | 57 | 2.63682 | 97 | 0.68844 | 137 | 0.23338 |
| 18  | 13.9180 | 58 | 2.53973 | 98 | 0.66818 | 138 | 0.22776 |
| 19  | 13.2631 | 59 | 2.44677 | 99 | 0.64862 | 139 | 0.22231 |

## Appendix 2

| Unit: °C---K |       |    |       | Discharge temperature (T5) sensor table |       |                |       |
|--------------|-------|----|-------|---|-------|----------------|-------|
| -20          | 542.7 | 20 | 68.66 | 60                                      | 13.59 | 100            | 3.702 |
| -19          | 511.9 | 21 | 65.62 | 61                                      | 13.11 | 101            | 3.595 |
| -18          | 483   | 22 | 62.73 | 62                                      | 12.65 | 102            | 3.492 |
| -17          | 455.9 | 23 | 59.98 | 63                                      | 12.21 | 103            | 3.392 |
| -16          | 430.5 | 24 | 57.37 | 64                                      | 11.79 | 104            | 3.296 |
| -15          | 406.7 | 25 | 54.89 | 65                                      | 11.38 | 105            | 3.203 |
| -14          | 384.3 | 26 | 52.53 | 66                                      | 10.99 | 106            | 3.113 |
| -13          | 363.3 | 27 | 50.28 | 67                                      | 10.61 | 107            | 3.025 |
| -12          | 343.6 | 28 | 48.14 | 68                                      | 10.25 | 108            | 2.941 |
| -11          | 325.1 | 29 | 46.11 | 69                                      | 9.902 | 109            | 2.86  |
| -10          | 307.7 | 30 | 44.17 | 70                                      | 9.569 | 110            | 2.781 |
| -9           | 291.3 | 31 | 42.33 | 71                                      | 9.248 | 111            | 2.704 |
| -8           | 275.9 | 32 | 40.57 | 72                                      | 8.94  | 112            | 2.63  |
| -7           | 261.4 | 33 | 38.89 | 73                                      | 8.643 | 113            | 2.559 |
| -6           | 247.8 | 34 | 37.3  | 74                                      | 8.358 | 114            | 2.489 |
| -5           | 234.9 | 35 | 35.78 | 75                                      | 8.084 | 115            | 2.422 |
| -4           | 222.8 | 36 | 34.32 | 76                                      | 7.82  | 116            | 2.357 |
| -3           | 211.4 | 37 | 32.94 | 77                                      | 7.566 | 117            | 2.294 |
| -2           | 200.7 | 38 | 31.62 | 78                                      | 7.321 | 118            | 2.233 |
| -1           | 190.5 | 39 | 30.36 | 79                                      | 7.086 | 119            | 2.174 |
| 0            | 180.9 | 40 | 29.15 | 80                                      | 6.859 | 120            | 2.117 |
| 1            | 171.9 | 41 | 28    | 81                                      | 6.641 | 121            | 2.061 |
| 2            | 163.3 | 42 | 26.9  | 82                                      | 6.43  | 122            | 2.007 |
| 3            | 155.2 | 43 | 25.86 | 83                                      | 6.228 | 123            | 1.955 |
| 4            | 147.6 | 44 | 24.85 | 84                                      | 6.033 | 124            | 1.905 |
| 5            | 140.4 | 45 | 23.89 | 85                                      | 5.844 | 125            | 1.856 |
| 6            | 133.5 | 46 | 22.89 | 86                                      | 5.663 | 126            | 1.808 |
| 7            | 127.1 | 47 | 22.1  | 87                                      | 5.488 | 127            | 1.762 |
| 8            | 121   | 48 | 21.26 | 88                                      | 5.32  | 128            | 1.717 |
| 9            | 115.2 | 49 | 20.46 | 89                                      | 5.157 | 129            | 1.674 |
| 10           | 109.8 | 50 | 19.69 | 90                                      | 5     | 130            | 1.632 |
| 11           | 104.6 | 51 | 18.96 | 91                                      | 4.849 |                |       |
| 12           | 99.69 | 52 | 18.26 | 92                                      | 4.703 |                |       |
| 13           | 95.05 | 53 | 17.58 | 93                                      | 4.562 |                |       |
| 14           | 90.66 | 54 | 16.94 | 94                                      | 4.426 |                |       |
| 15           | 86.49 | 55 | 16.32 | 95                                      | 4.294 | B(25/50)=3950K |       |
| 16           | 82.54 | 56 | 15.73 | 96                                      | 4.167 |                |       |
| 17           | 78.79 | 57 | 15.16 | 97                                      | 4.045 | R(90°C)=5KΩ±3% |       |
| 18           | 75.24 | 58 | 14.62 | 98                                      | 3.927 |                |       |
| 19           | 71.86 | 59 | 14.09 | 99                                      | 3.812 |                |       |

**Appendix 3**

| Normal voltage of P and N |                                |                              |                   |
|---------------------------|--------------------------------|------------------------------|-------------------|
| 208-240V(1-phase,3-phase) |                                |                              | 380-415V(3-phase) |
| In standby                |                                |                              |                   |
| around 310VDC             |                                |                              | around 530VDC     |
| In operation              |                                |                              |                   |
| With passive PFC module   | With partial active PFC module | With fully active PFC module | /                 |
| >200VDC                   | >310VDC                        | >370VDC                      | >450VDC           |

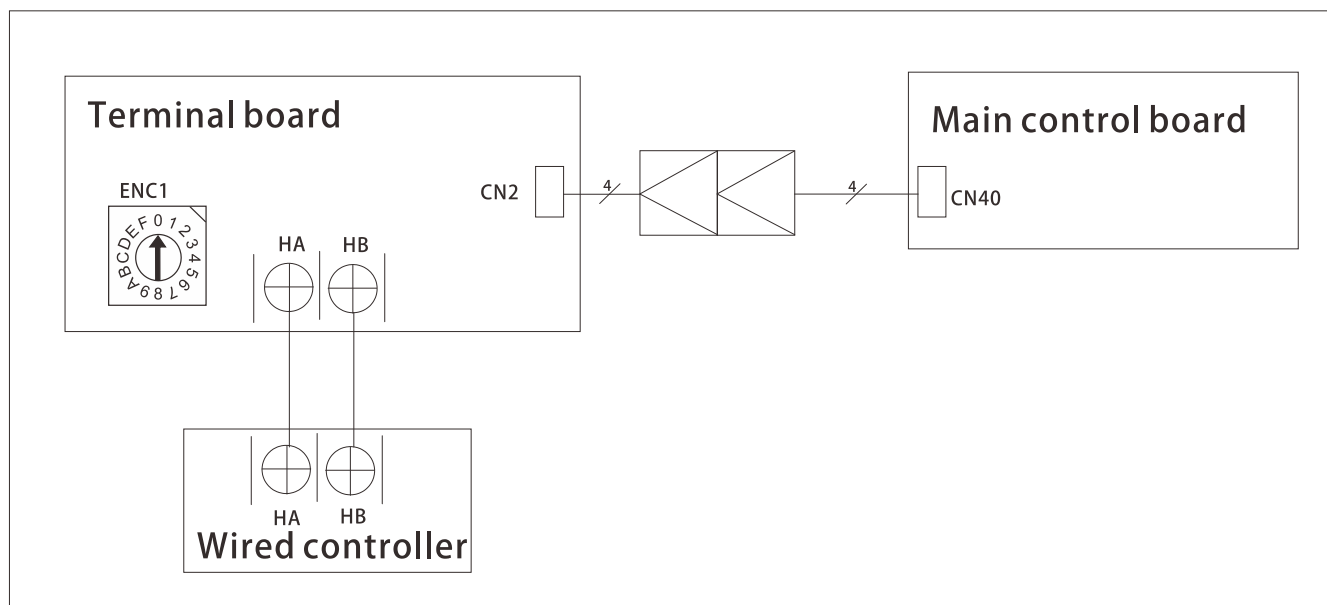
### 3. Controller

#### 3.1 Two-wired non-polarity wired controller (KJR-120G (CL94907 Optional))

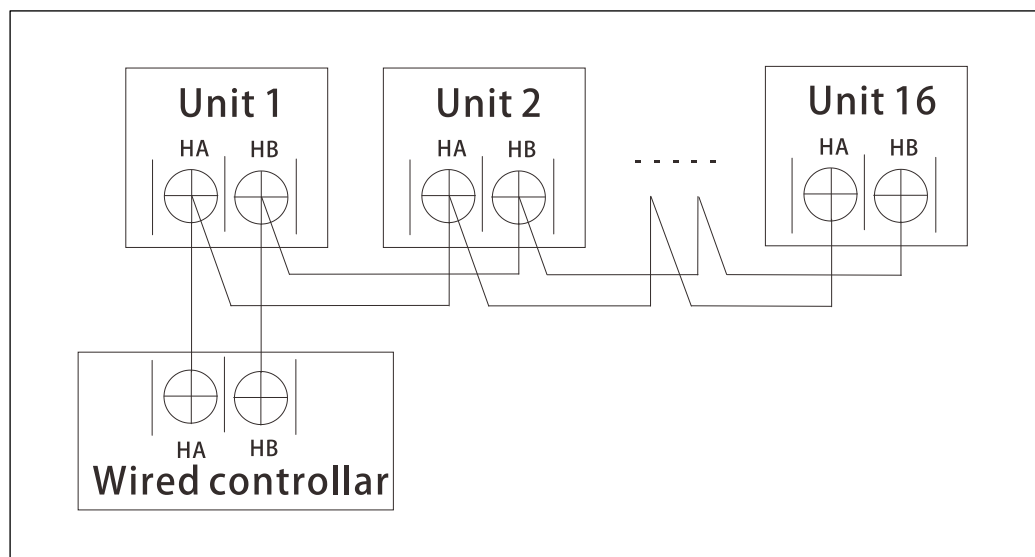
##### 1.Connection

For Duct, Ceiling& floor

The wired controller connects to terminal board, terminal board connects to main control board.



##### 2.Address setting



One non-polarity controller can control up to 16 indoor units.

When the non-polarity controller is connected to several units, every air-conditioner in network has only one network address to distinguish each other.

Address code of air-conditioner in LAN is set by code switch ENC1 of the indoor unit, and the set range is 0-15.

Note: The indoor units are controlled at the same time, not independently. The purpose of setting network address is identify the unit when error occurs.

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