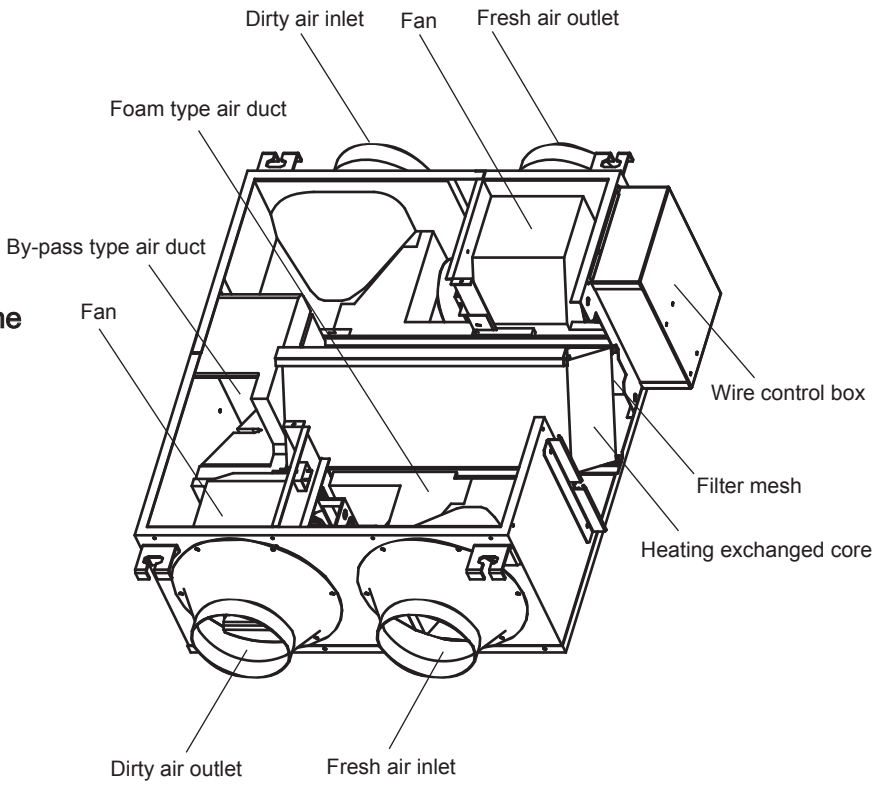
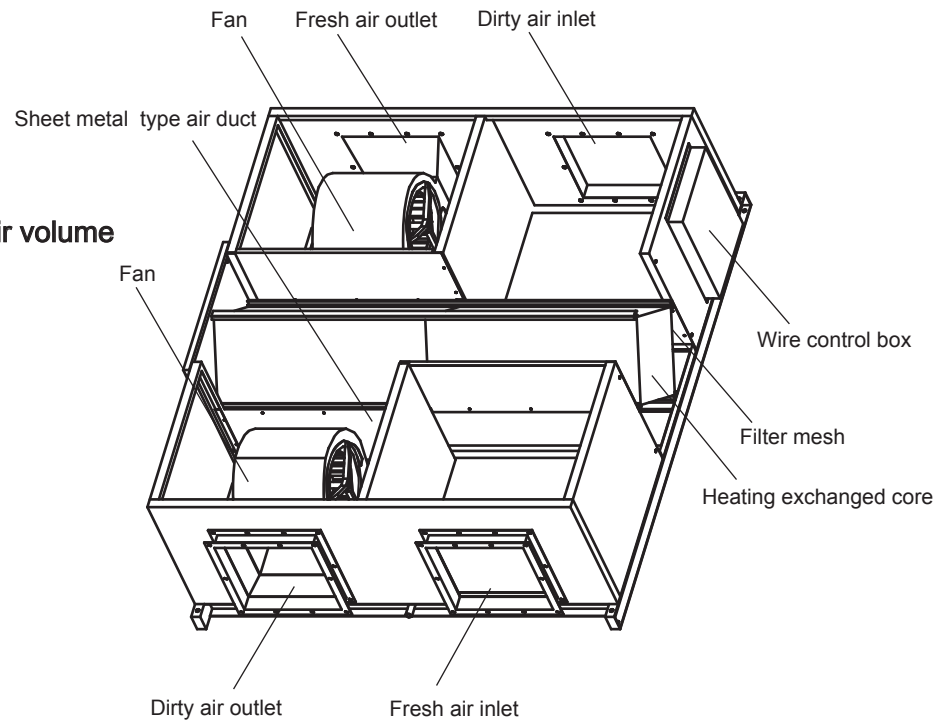
# ERVD(B)-D Series
# Energy Recovery Ventilator
## Installation Manual


## MAIN PARTS OF THE UNIT

200-1000 Air volume




1500、2000 Air volume



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# 1. PRECAUTIONS

**To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage. The appliance shall be so installed that it is not possible to be accessed by general public.**

The safty precautions listed here are divided into two categories. In either case, important safty information is listed which must be read carefully.

**WARNING**

Failure to observe a warning may result in electric shock, fire hazard or personal injury

**CAUTION**

Failure to observe a caution may result injury or damage to the equipment.

**WARNING**

- Ask your dealer or qualified personnel to carry out installa tion work. Do not try to install the machine yourself. Improper installation may result in leakage, electric shocks or fire.
- Installation should be done following the installation manual and no changes should be made to the unit. Incorrect installation may cause leaking, electric shock, or incorrect installation may cause leaking, electric shocks, or fire. Injuries may result if the ERVD falls.
- Install the unit on a foundation strong enough to withstand the weight of the unit. A foundation of insufficient strength may result in the equipment falling and causing injuries.
- Do not allow exhaust air to enter the outside air intake vent. This may cause the air of the room to become contami nated, harming the health.
- Locate the outside air intake vent so that it does not take in exhaust air which contains combustion air, etc. Incorrect installation may cause a loss of oxygen in the room, leading to serious accidents.
- Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this installation manual. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire. Insufficient power supply capacity or incorrect wiring may cause electrical shocks or fire.
- Make sure Earth Leakage Breaker is the type of all poles drop-out.
- Be sure to ground. Do not connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Incomplete grounding may result in electric shocks.
- Make sure that all wiring is secured, the specified wires are used, and no external forces act on the terminal connections or wires. Improper connections or installation may result in overheating or fore.
- When wiring the power supply and connecting the remote controller wiring and transmission wiring, position the wires so that the electric parts box lid can be securely fastened. Improper positioning of the electric parts box lid may result in electric shocks, fire or the terminals overheating.

**CAUTION**

- Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electric shocks.
- Install the indoor and outdoor units, power supply wiring and connecting wires at least 1 meter away from television or radio in order to prevent image interference or noise. (Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.)
- Install the two outdoor ducts with down slope to prevent rainwater from entering the unit. If this is not done completely, water may enter the building, may damage furniture, etc.
- Insulate the duct and the wall electrically when a metal duct is to be penetrated through the metal lattice and wire lattice or metal lining of a wooden structure wall. Improper duct work may cause electric shocks or short circuits.
- Make sure that a snow protection measure is taken. If no protection snow may enter through the outdoor ducts, and cause damaging furniture and electric shock and fire.

# 2. ACCESSORY

Table 2-1

| Name | Qty. | Shape | Purpose |
|---|---|---|---|
| Installation and owner's manual | 1 | This manual | must be delivered to the customer |
| Butt-joint wire of wire control display panel (6 meters) (RoHS) | 1 | —— | For connect wire control and display control box |
| ERVD wire controller (RoHS) | 1 |  | For controling ERV units |

Local procuring assemblies

Table 2-2

| Name | Purpose |
|---|---|
| PVC drain pipe | For connecting unit's drain pipe, which length is selected according to your actual requirement (Model 090, 120 are available) |
| Damper | For vibration damping, when lift the unit. |

# 3. INSTALLSTION

## 3.1 Installation Preparation

**WARNING**

The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them.

- Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.
- Hold the unit by the hanger brackets when opening the crate and moving it, and do not lift it holding on to any other part (especially the duct connecting flange).

**NOTE**

Be sure to instruct customers how to properly operate the unit (especially maintenance of air filter, and operation procedure) by having them carry out operations themselves while looking at the, manual.

## 3.2 Select The Installation Site

**CAUTION**

When moving the unit during or after unpacking, make sure to lift it by holding its hanger brackets. Do not exert any pressure on other parts, especially duct connecting flange.

- Select an installation site where the following conditions are fulfilled and meet with your customer's approval.
  - ERVD should be installed far away from office, recreation or any other place silent requiring environment (install that in special machine room or wash room is recommended)
  - install in a place which has sufficient strength and stability. (Beam, ceiling and other locations capable of fully supporting the weight of the unit.) Insufficient strength is dangerous. It may also cause vibration and unusual operating noise.
  - Do not install the unit directly against a ceiling or wall. (If the unit is in contact with the ceiling or wall, it can cause vibration.)
  - Where sufficient clearance for maintenance and service can be ensured.

**CAUTION**

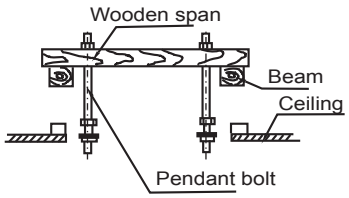
- Install the units, power supply wiring and connecting wires at least 1 meter away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the electric noise.)
- The bellows may not be able to be used in some districts, so exercise caution. (Contact your local government office or fire department for details.)
- When discharging exhaust air to a common duct, the Building Standard Law requires the use of fire proof materials, so attach a 2m copper plate standing duct.
- Do not install the unit in the following locations:
  - Place subjected to high temperature or direct flame. May result in fire or overheating.
  - Place such as machinery plant and chemical plate where gas, which contains noxious gas or corrosive components of materials such as acid, alkali organic solvent and plaint, is generated. Place where combus tible gas leakage is likely.
    Copper piping and brazed joins may corrode, causing refrigerant to leak or poisoning and fore due to leaked gas.
  - Place such as bathroom subjected to moisture.
    Electric leak or electric shocks and other failure can be caused.
  - Near machinery emitting electromagnetic waves.
    Electromagnetic waves may disturb the operation of the control system and result in a malfunction of the equipment.

## 3.3 Preparations Before Installation

- Confirm the positional relationship between the unit and suspension bolts.
  Leave space for servicing the unit and include inspection hatches. (Always open a hole on the side of the electric parts box so that the air filters, heat exchange elements, fans, can easily be inspected and serviced.)
- Make sure the range of the unit's external static pressure is not exceeded.
- Open the installation hole (Pre-setting ceilings)
  Once the installation hole is opened in the ceiling where the unit is to be installed, pass transmission wiring, and remote controller wiring to the unit's wiring holes.
  After opening the ceiling hole, make sure ceiling is level if needed. It might be necessary to reinforce the ceiling frame to prevent shaking.
  Please consult architect or woodworker, if necessary.
- Install the suspension bolts. (Use M10 to M12 suspension bolts.) Use a hole-in anchor, sunken insert anchor for existing ceilings, or other parts to be procures in the field to reinforce the ceiling to bearing the weight of the unit.
- Install vibration damping feet. (For vibration damping)

**Wooden structure**

Put rectangular sticks across the beams, and set pendant bolts.




**Old concrete roughcast**

Use embedded bolts and embedded pulling plugs.

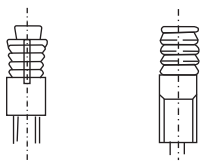


*Fig. 3-1*

## 3.4 Installation

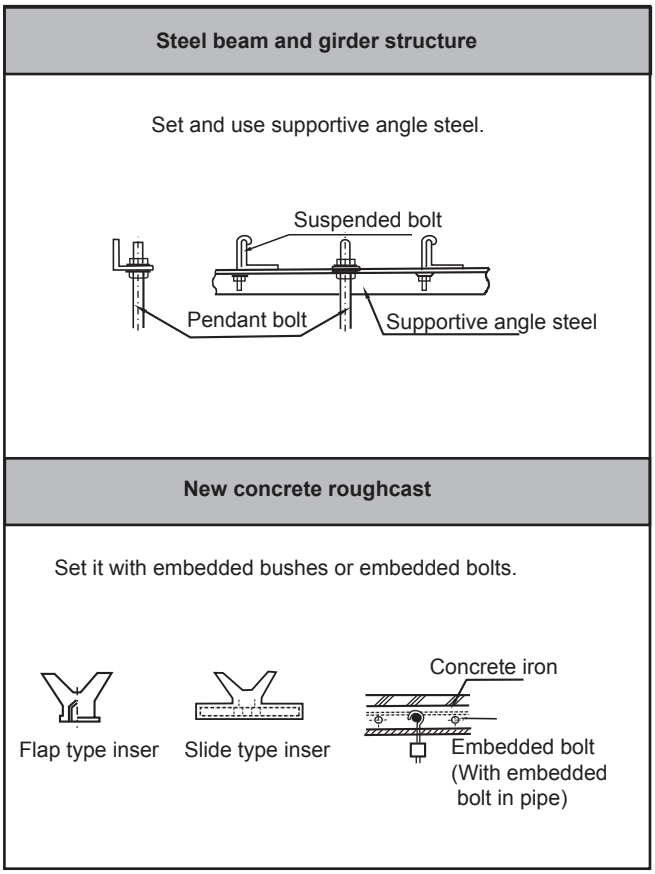



*Fig. 3-2*

- Before installation, please confirm all external parts are stand in their place and without damage.
- The surrounding environment of the unit, especially the sides of wiring cabinet and water collecting side should reserve sufficient wiring and maintenance and space; additionally, one should ensure the removing space for filter griller.
- Unit should mount steadily and without sustain the weight form condensate water pipe and air duct. The vents of air inlet/outlet and return should be connected with flexible tube.
- Unit in AC 220-240V/50Hz、220-240V/60Hz、380-415V/50Hz or 380-415V/60Hz, reliable grounding; each one possesses of independent cut-off and protection device.
- The installation dimension and maintenance space. (See the following attached picture Fig.3-3 )
- Operating conditions

For proper performance, run the air conditioner under the following temperature conditions:

| | | |
|---|---|---|
| OPERATION | Outdoor air TEMP. | -7 ℃~43 ℃ |
| | Room TEMP. | -7 ℃~43 ℃ |
| | Room humidity | Lower than 80%<br>If higher than 80%, the surface of indoor unit may be condensed or the condensate will be blown from air outlet. |

Protection device may start if running the unit outside the above condition, which will prevent the unit from operation.

Unit：mm

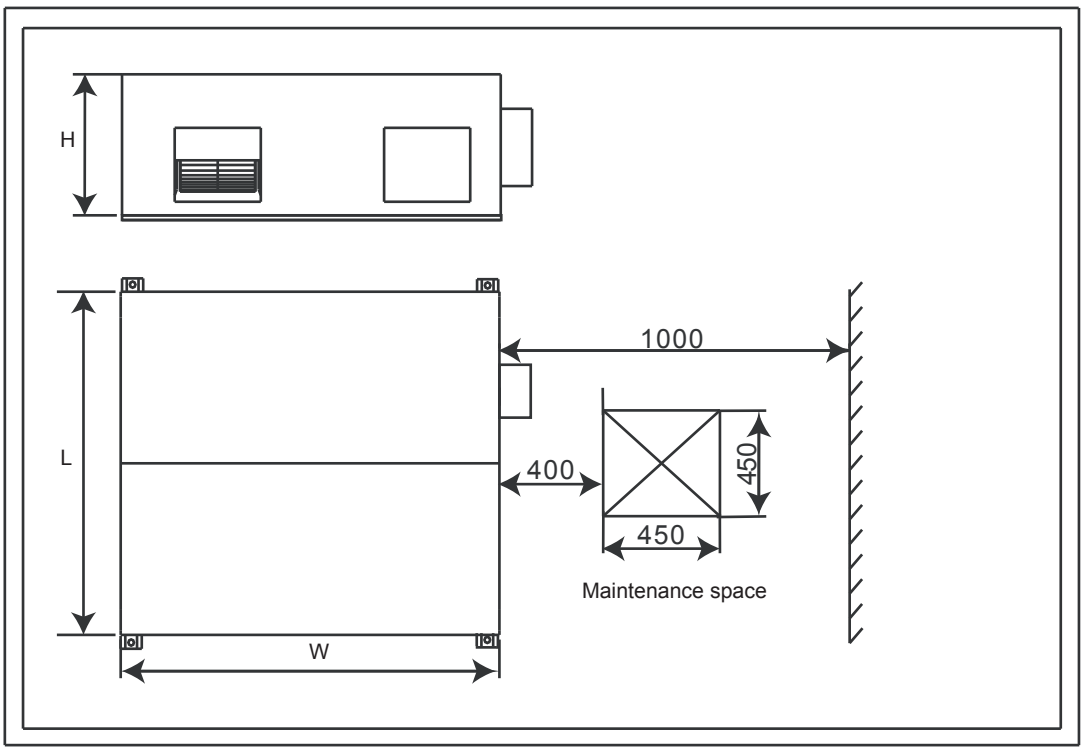



*Fig. 3-3 Detail structure specification and maintenance space*

6. Key dimensions of the unit and air duct installation. (See the following attached picture *Fig.3-4~3.7* & Table 3-1 )

## ERVD010A3N-DCN020

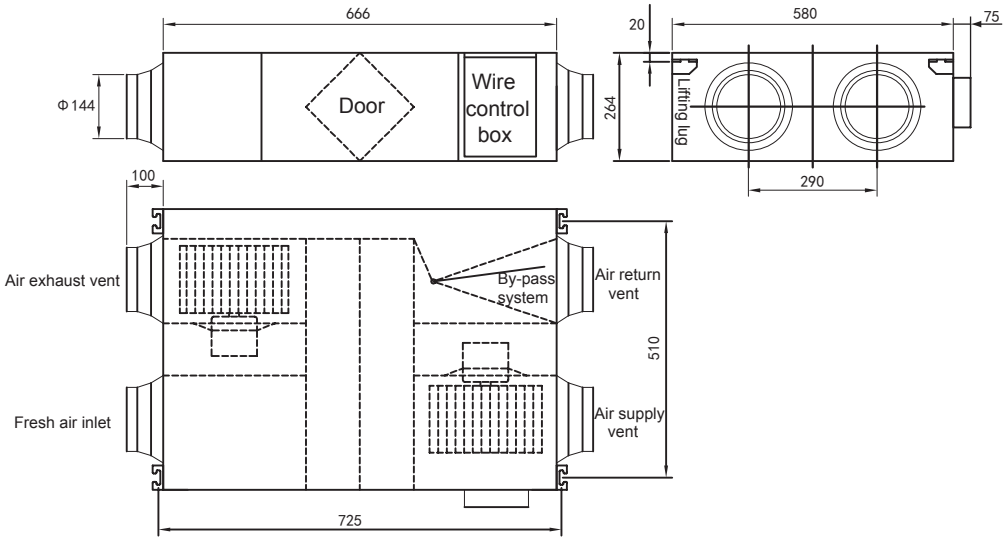



*Fig. 3-4*

## ERVD015A3N-DCN030 ~ ERVD060A3N-DCN100

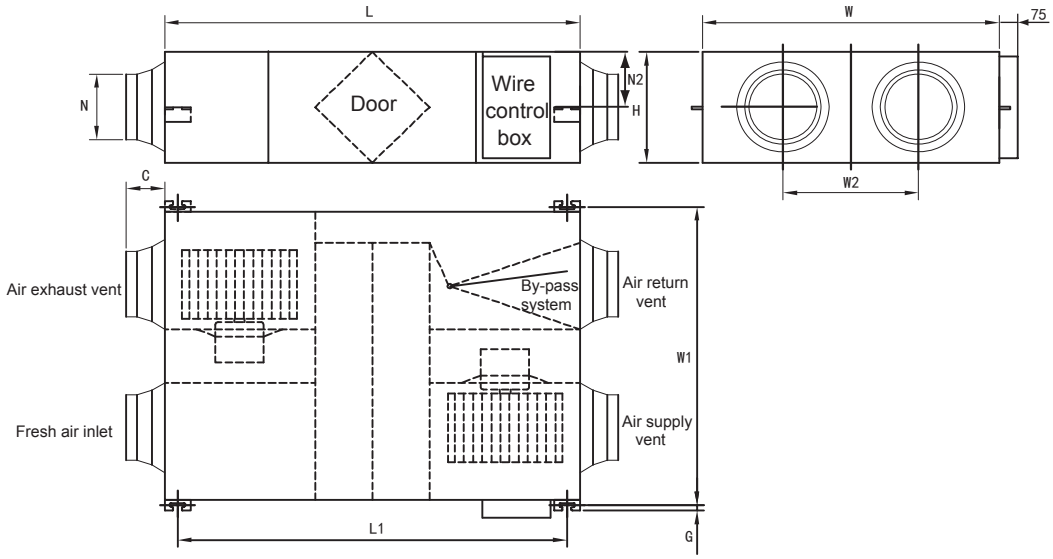



*Fig. 3-5*

Table 3-1

| Model | L | L1 | W | W1 | W2 | H | C | G | N | N2 |
|---|---|---|---|---|---|---|---|---|---|---|
| ERVD015A3N-DCN030 | 744 | 675 | 599 | 657 | 315 | 270 | 100 | 19 | Φ144 | 111 |
| ERVD020A3N-DCN040 | 744 | 675 | 804 | 862 | 480 | 270 | 100 | 19 | Φ144 | 111 |
| ERVD030A3N-DCN050 | 824 | 754 | 904 | 960 | 500 | 270 | 107 | 19 | Φ194 | 111 |
| ERVD050A3N-DCN080 | 1116 | 1045 | 884 | 940 | 428 | 388 | 85 | 19 | Φ242 | 170 |
| ERVD060A3N-DCN100 | 1116 | 1045 | 1134 | 1190 | 678 | 388 | 85 | 19 | Φ242 | 170 |

## ERVB090A7N-DCN150

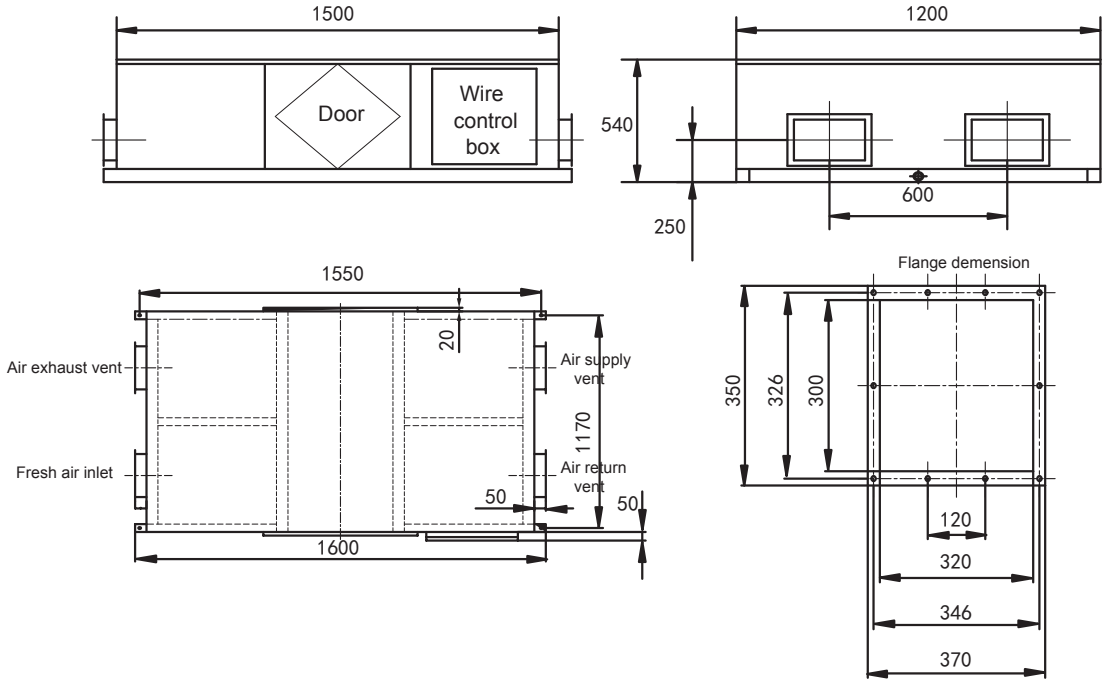



*Fig. 3-6*

## ERVB120A7N-DCN200

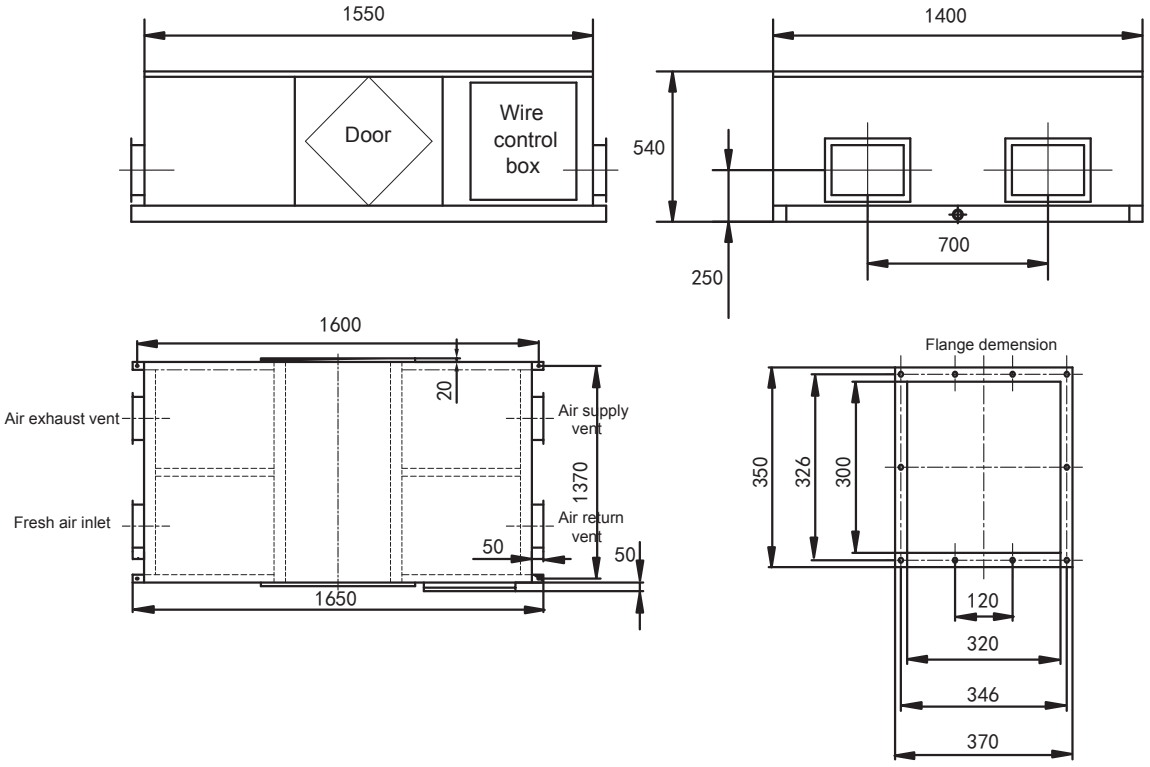



*Fig. 3-7*

# 4. WIRING

**WARNING**

Before obtaining access to terminal device, all power supply circuits must be interrupted.

## 4.1 Precautions When Laying Power Supply Wiring

A circuit breaker of shutting down power supply to the entire system be installed.

A single switch can be used to supply power to units on the same system. However, branch switches and circuit breakers must be selected carefully.

Fit the power supply wiring of each unit with a switch and fuse as shown in the drawing.

Install a wiring interrupter or ground-fault circuit interrupter for the power wiring.

Make sure the ground resistance is no greater than 100Ω. This value can be as high as 500Ω when using a grounding fault circuit interrupter since the protective ground resistance can be applied.

Be sure to give the electric grounding (earth) connection.

Do not let the grounding wire should come in contact with gas pipes, water pipes, lighting rods, or telephone ground wires.

- Gas pipes: gas leaks can cause explosions and fire. Water pipes: can not be grounded if hard vinyl pipes are used.
- Telephone grounded and lightning rods: the ground potential when struck by lightning gets extremely high.

Do no turn on the power supply (wiring interrupter or ground-fault circuit interrupter) until all other work is done. Tightening torque for the terminal screws.

Use the correct screwdriver for lighting the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the will not be properly tightened.
If the terminal screws are tightened too hard, screws might be damaged.

Refer to the table below for the tightening torque of the terminal screws.

Table 4-1

| | Tightening torque (N•m) |
|---|---|
| Terminal base of remote controller/ Signal transmission wire (X2M) | 0.79-0.97 |
| Terminal base of power supply (XIM) | 1.18-1.44 |
| Grounding terminal (M4) | 1.44-1.94 |

- After wiring, please confirm all connections are correct, and then power to the unit.
- Pay attention to the power supply wire of three-phase model; confirm the phase sequence of which is correct.

## 4.2 Power Specification

Table 4-2

| Model ERVD- | | 010, 015, 020, 030, 050, 060 | 090, 120 |
|---|---|---|---|
| Power supply | Phase | Signal phase | Three phases |
| | Frequency /voltage | 220-240V/50Hz 220-240V/60Hz | 380-415V/50Hz 380-415V/60Hz |
| Input current Main switch /fuse(A) | | 15/15 | 15/15 |
| Power supply wire Dimension | Wire's qty | 3 (Yellow/green wire is grounding wire) | 5 (Yellow/green wire is grounding wire) |
| | Code wire cross -section ($mm^2$) | 2.5 | 2.5 |

## 4.3 System connection diagram

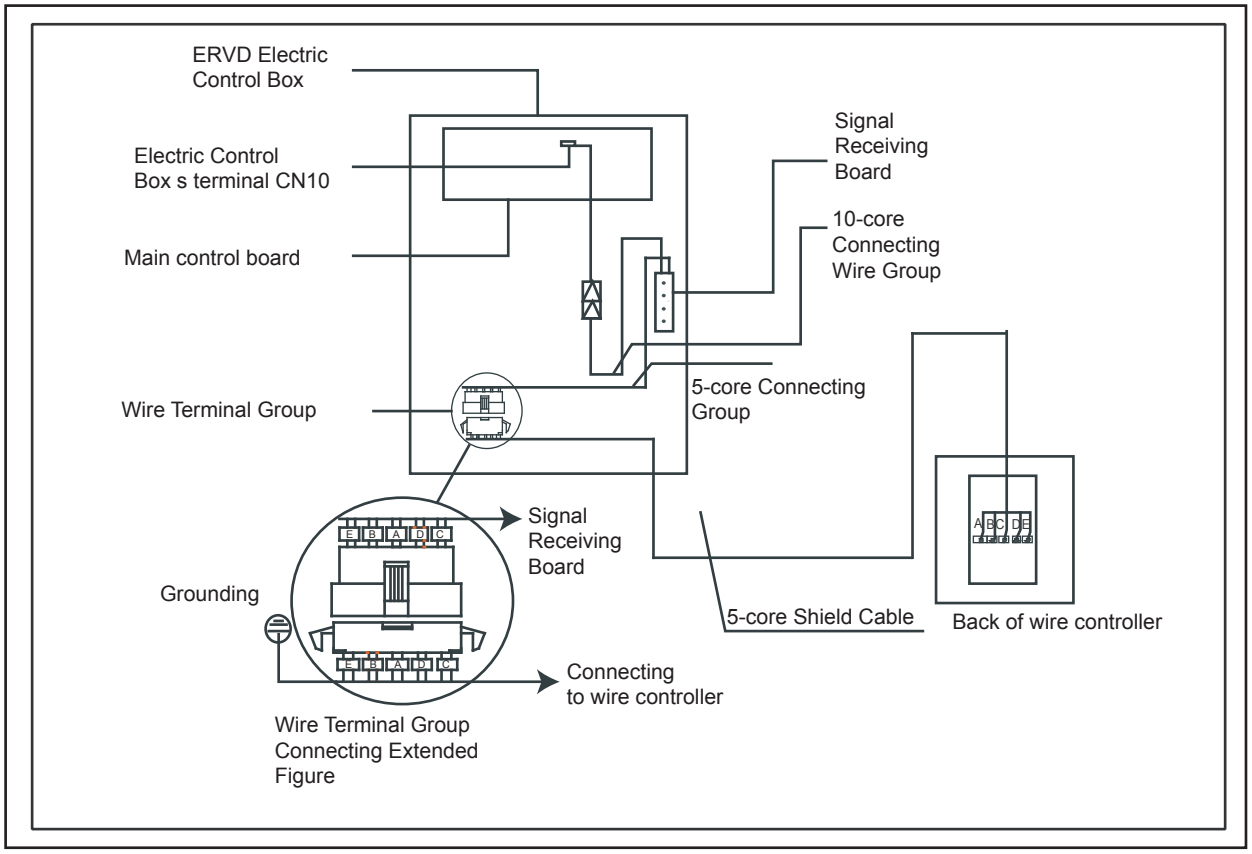



*Fig. 4-1*

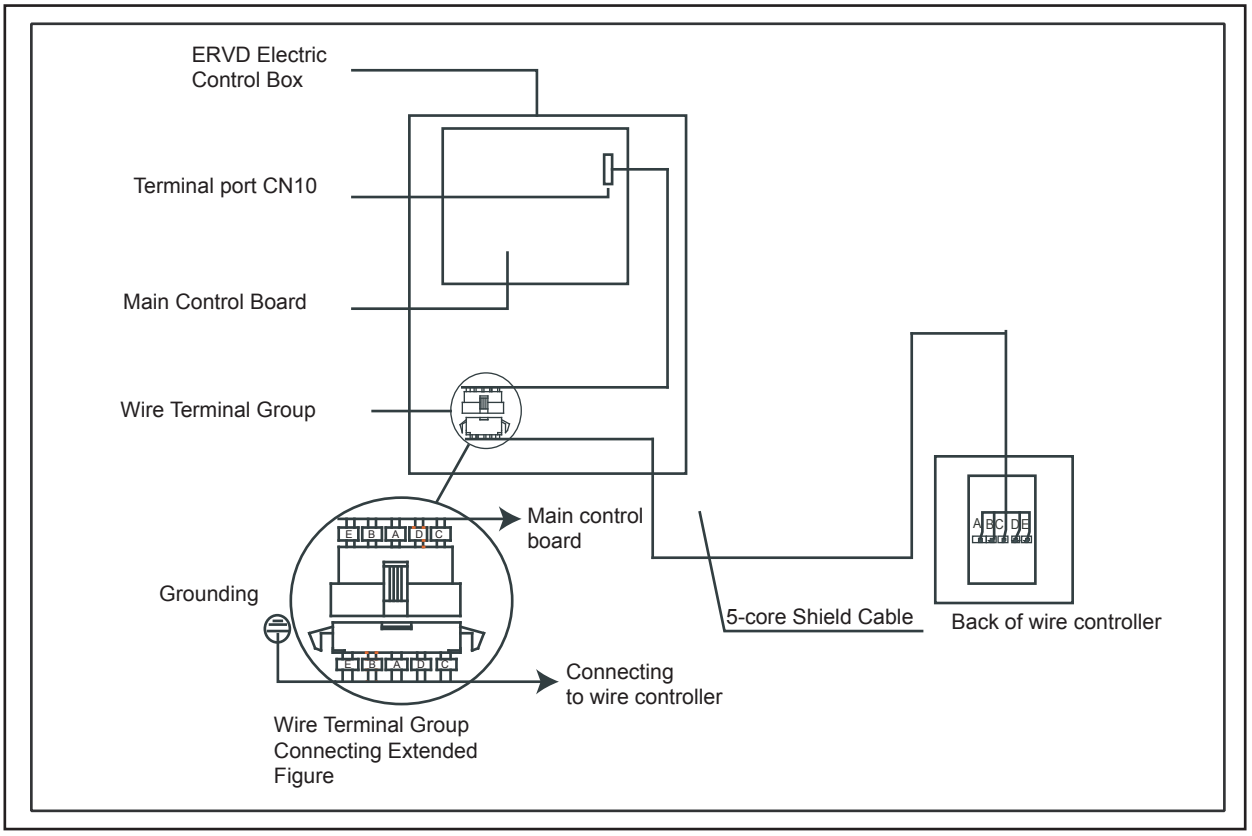



*Fig. 4-2*

Note:
1. For the old version,Fig4-1,the wire controller connected to the Signal Receiving Board.
2. For the new verson,Fig4-2,the wire controller connected to the Main Control Board directly.

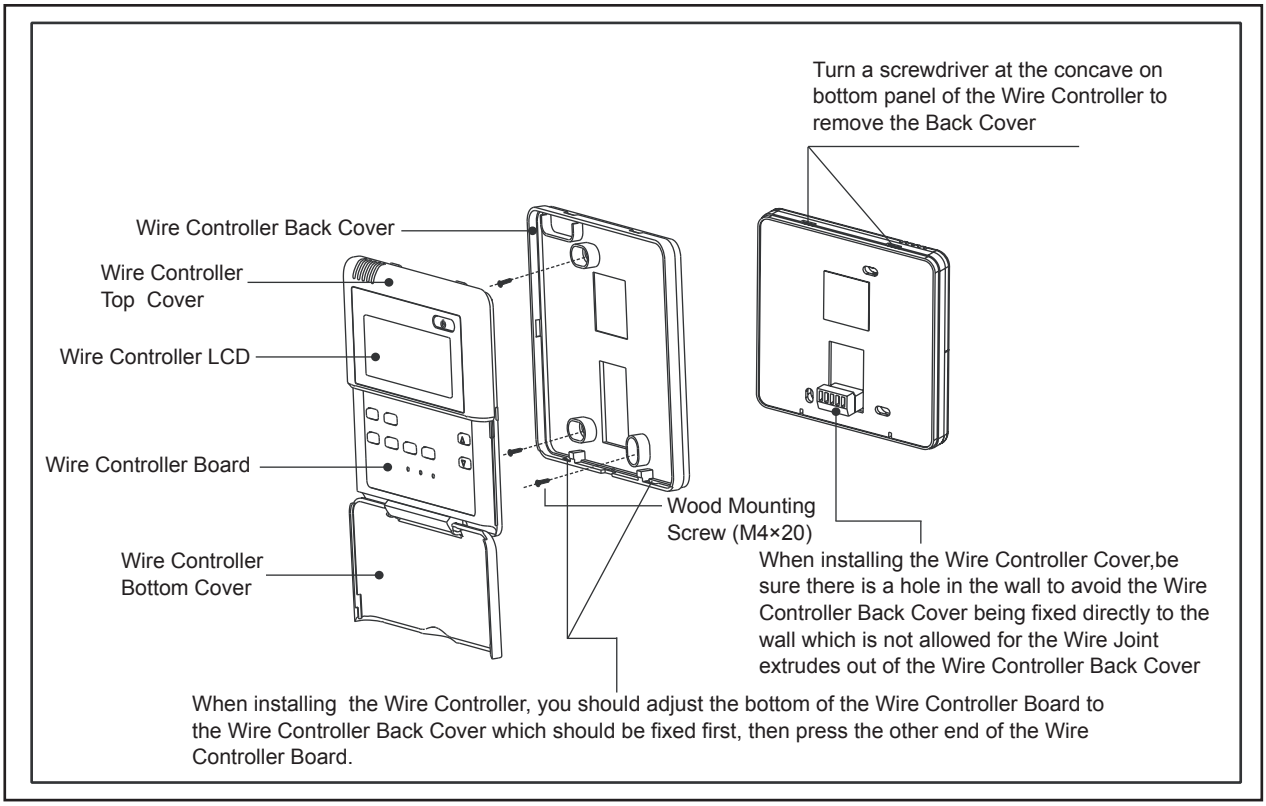



*Fig. 4-3*

## CAUTION

1. Never turn screws too tightly, or else the cover would be dented or the Liquid Crystal breaks.
2. Please leave enough space for maintain and upkeep the wire controller.

4.4 Wiring diagram

Signal phase wiring diagram(220-240V/50Hz、220-240V/60Hz)

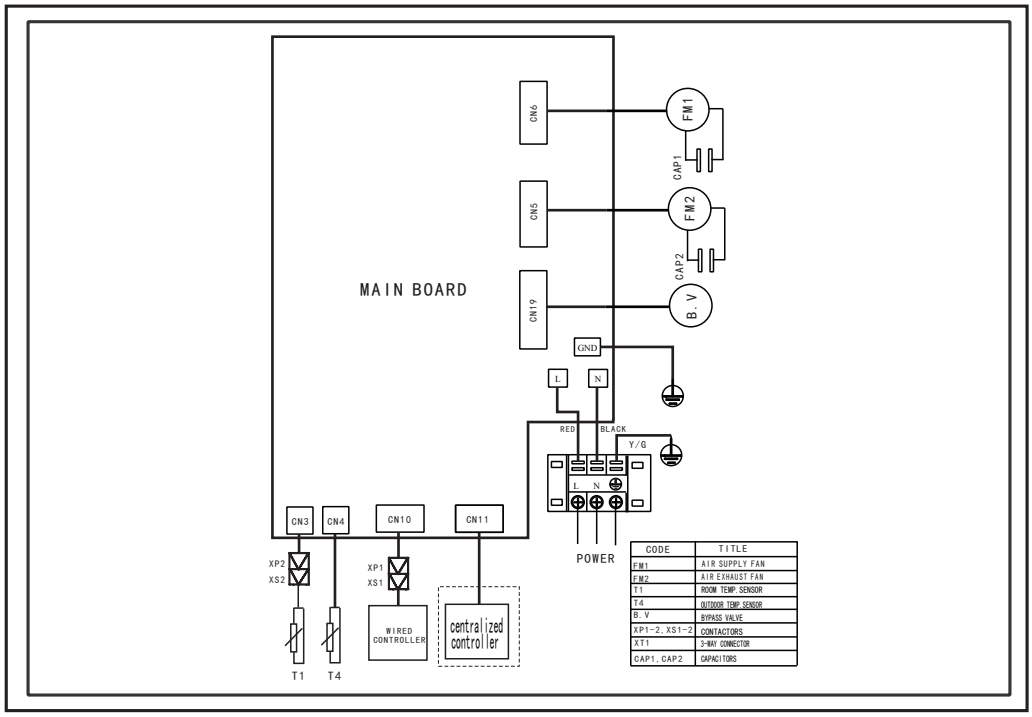



*Fig. 4-4*

Signal phase wiring diagram(220-240V/50Hz、220-240V/60Hz)

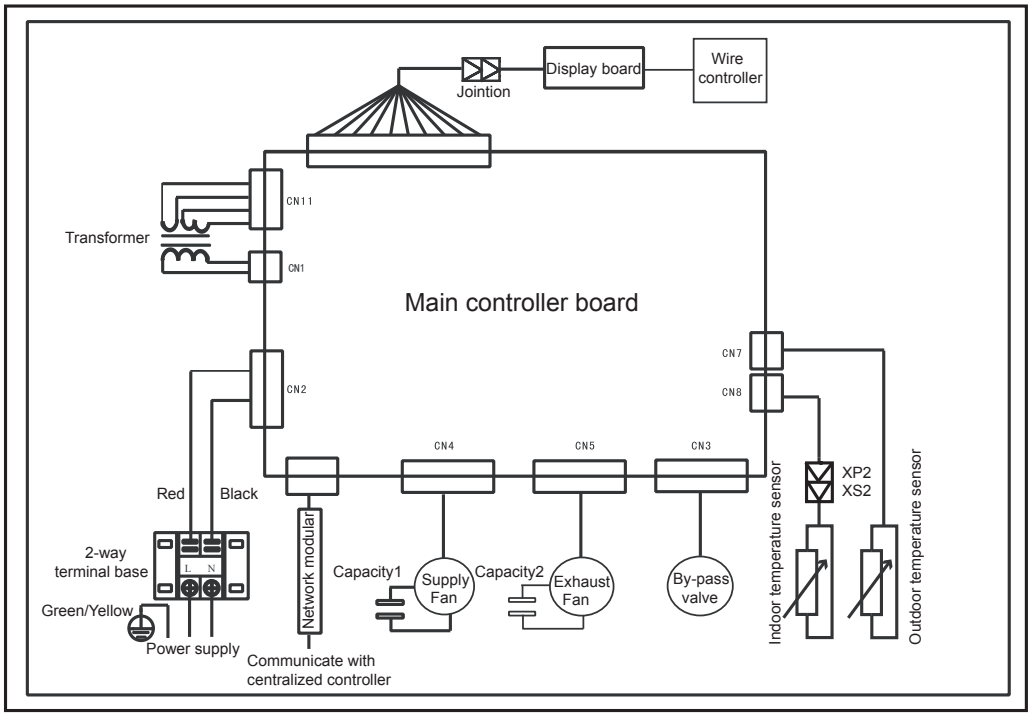



*Fig. 4-5*

## Three phases wiring diagram(380-415V/50Hz)

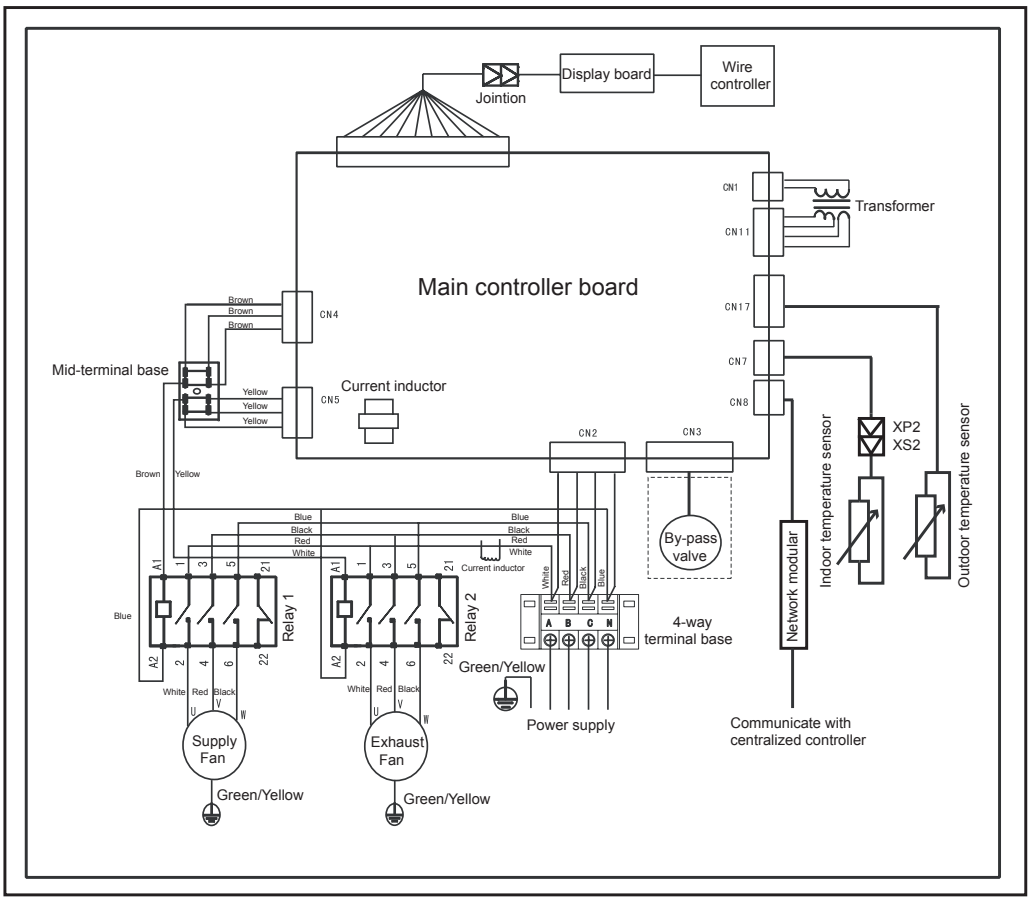



*Fig. 4-6*

## Three phases wiring diagram(380-415V/50Hz,380-415V/60Hz)

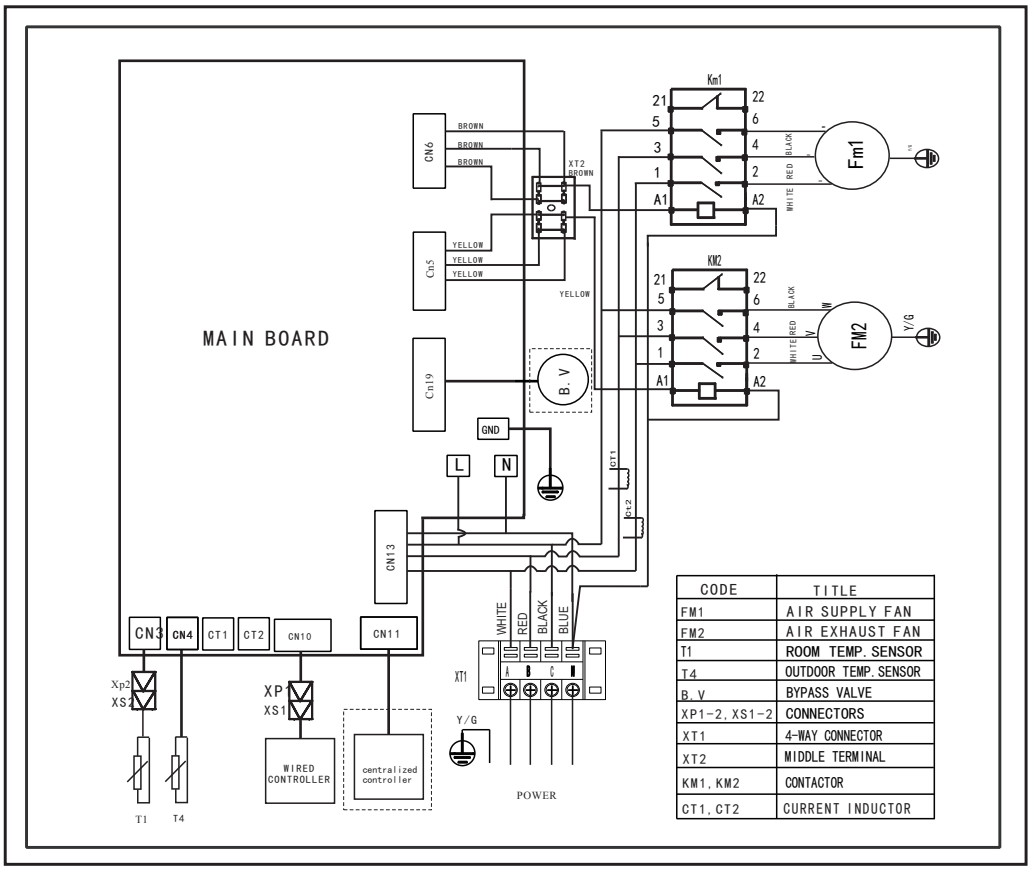



*Fig. 4-7*

4.5 Error code

### 4.5.1 Error code for Old version

The old verson electric control box contains a Signal Receiving Board,that inclued four LED indicator to show operating status or Error code.

Table 4-3

| No. | Operation lamp | Timer lamp | Defrosting lamp | Alarm lamp | Explanation |
|---|---|---|---|---|---|
| 1 | ★ | ○ | ○ | ○ | T4 sensor error |
| 2 | ★ | ★ | ○ | ○ | T1 sensor error |
| 3 | ★ | ○ | ★ | ○ | Current protection |
| 4 | ★ | ○ | ○ | ★ | Phase absent, phase error |

Note: ● : Light，○: Extinguish，☆: Slow flash，★: Quick flash

### 4.5.2 Error code for New version

The New verson electric control box has no Signal Receiving Board,and the LED indicator on the Main control Board shows operating status or Error code.

Table 4-4

| No. | Operation lamp | Flash NO. | Explanation |
|---|---|---|---|
| 1 | ● | | Nromal operating |
| 2 | ○ | | Turn off |
| 3 | ★ | 2 | T1 sensor error |
| 4 | ★ | 4 | T4 sensor error |
| 5 | ★ | 6 | EEPROM error |
| 6 | ★ | 8 | Phase absent,phase error |
| 7 | ★ | 10 | CT1 Current protection |
| 8 | ★ | 12 | CT2 Current protection |
| 9 | ★ | 14 | NO address |

Note: ● : Light，○: Extinguish，★: Quick flash

# 5. SPECIFICATION PARAMETER

## 5.1 Specification Parameter

Table 5-1

| Model | Power supply | Outline demension | Air outlet vent's demen-sion (mm) | Weight (kg) | Static pressure (Pa) | Nominal air flow ($m^3/h$) |
|---|---|---|---|---|---|---|
| ERVD015A3N-DCN030 | 220-240V～ 50Hz/ 220-240V～ 60Hz | 866×655×264 | Φ144 | 23 | 75 | 200 |
| ERVD015A3N-DCN030 | | 944×722×270 | Φ144 | 26 | 75 | 300 |
| ERVD020A3N-DCN040 | | 944×927×270 | Φ144 | 31 | 80 | 400 |
| ERVD030A3N-DCN050 | | 1038×1026×270 | Φ194 | 41 | 80 | 500 |
| ERVD050A3N-DCN080 | | 1286×1006×388 | Φ242 | 62 | 100 | 800 |
| ERVD060A3N-DCN100 | | 1286×1256×388 | Φ242 | 79 | 100 | 1000 |
| ERVB090A7N-DCN150 | 380-415V 3N~ 50Hz/ 380-415V 3N~ 60Hz | 1600×1270×540 | 346×326 | 163 | 160 | 1500 |
| ERVB120A7N-DCN200 | | 1650×1470×540 | 346×326 | 182 | 170 | 2000 |

Table 5-2

| Model | Cooling | | Heating | | Input power(kW) | | Current(A) | |
|---|---|---|---|---|---|---|---|---|
| | Nominal temp. efficiency | Nominal enthalpy efficiency | Nominal temp. efficiency | Nominal enthalpy efficiency | 50Hz | 60Hz | 50Hz | 60Hz |
| ERVD010A3N-DCN020 | 60 | 50 | 65 | 55 | 0. 09 | / | 0. 42 | / |
| ERVD015A3N-DCN030 | 60 | 50 | 65 | 55 | 0. 12 | / | 0. 55 | / |
| ERVD020A3N-DCN040 | 60 | 50 | 65 | 60 | 0. 14 | 0. 20 | 0. 7 | 1. 0 |
| ERVD030A3N-DCN050 | 60 | 50 | 70 | 60 | 0. 19 | 0. 26 | 0. 9 | 1. 2 |
| ERVD050A3N-DCN080 | 60 | 50 | 70 | 60 | 0. 43 | 0. 50 | 2. 0 | 2. 3 |
| ERVD060A3N-DCN100 | 60 | 50 | 70 | 60 | 0. 48 | 0. 58 | 2. 5 | 2. 8 |
| ERVB090A7N-DCN150 | 60 | 50 | 70 | 60 | 0. 93 | 1. 74 | 2. 8 | 5. 9 |
| ERVB120A7N-DCN200 | 60 | 50 | 70 | 60 | 1. 12 | 1. 83 | 2. 9 | 6. 1 |

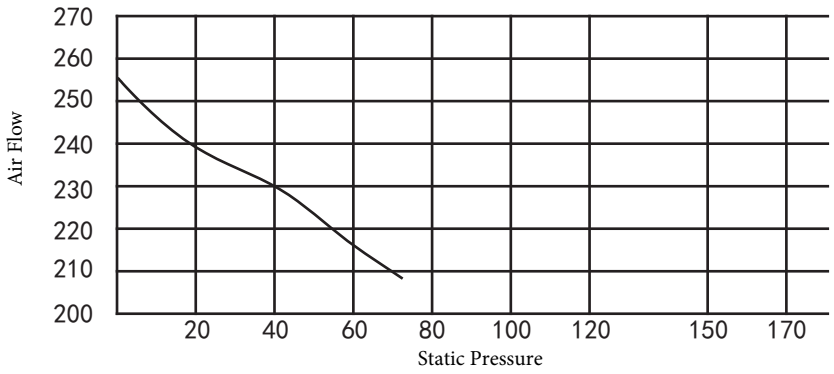
note：

1、For the units model of ERV-*(*=010～060)，there are 3-speed adjustable air-volume （Hi、Med、Low），but for the units model of ERV-*(*=090～120)，there are only 1-speed air-volume which do not be adjust.

2、For the units model of ERV-*(*=010～060)，all the parameters in the manual is measured at the high speed air-volume.

### 5.2 Blast Pressure Graphic

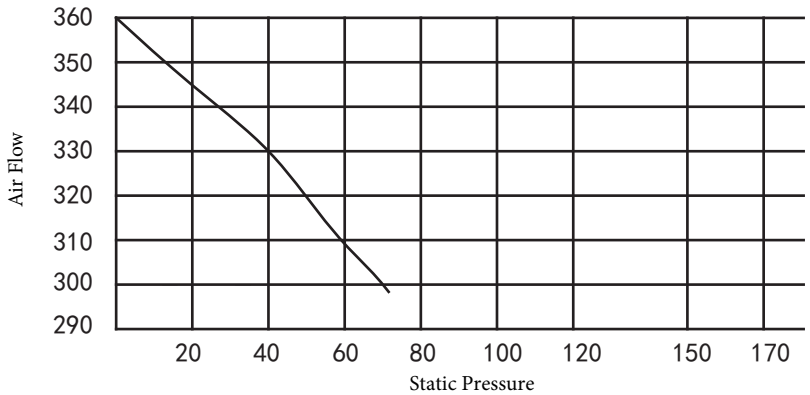
| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 75 | 207 | 20 |
| 60 | 215 | 20. 3 |
| 40 | 320 | 21 |
| 20 | 241 | 21. 3 |
| 0 | 255 | 22 |




ERVD010A3N-DCN020

*Fig. 5-1*

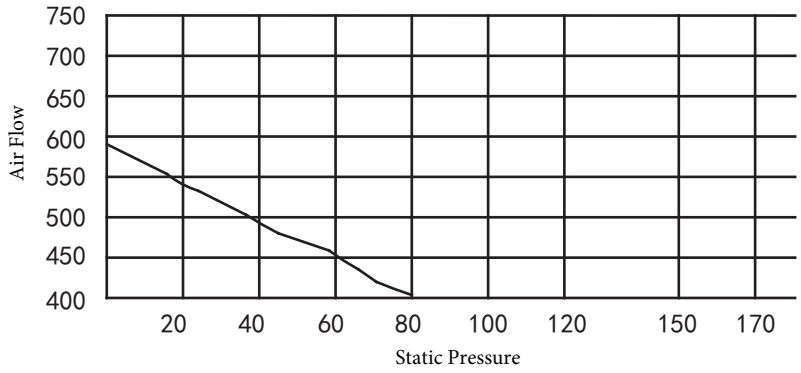
| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 75 | 297 | 39 |
| 60 | 309 | 40 |
| 40 | 331 | 41 |
| 20 | 346 | 42 |
| 0 | 366 | 43 |




ERVD015A3N-DCN030

*Fig. 5-2*

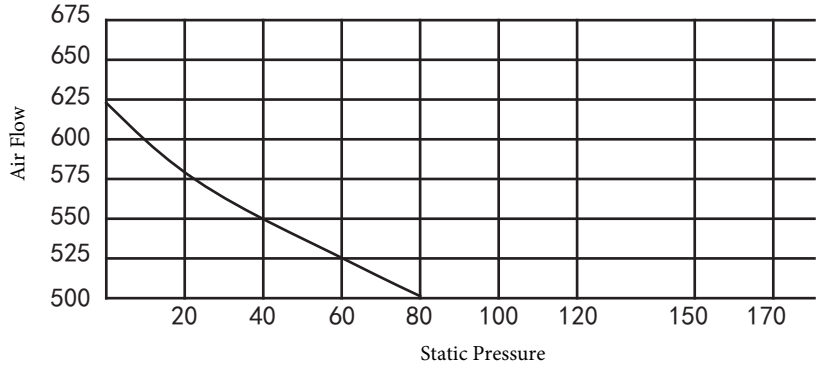
| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 80 | 407 | 79 |
| 60 | 454 | 81 |
| 40 | 499 | 83 |
| 20 | 543 | 84 |
| 0 | 586 | 87 |




ERVD020A3N-DCN040

*Fig. 5-3*

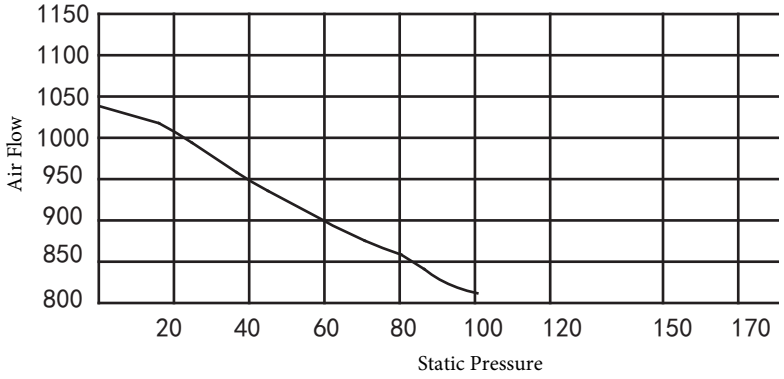
| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 80 | 507 | 118 |
| 60 | 527 | 120 |
| 40 | 560 | 124 |
| 20 | 580 | 126 |
| 0 | 620 | 130 |




ERVD030A3N-DCN050

*Fig. 5-4*

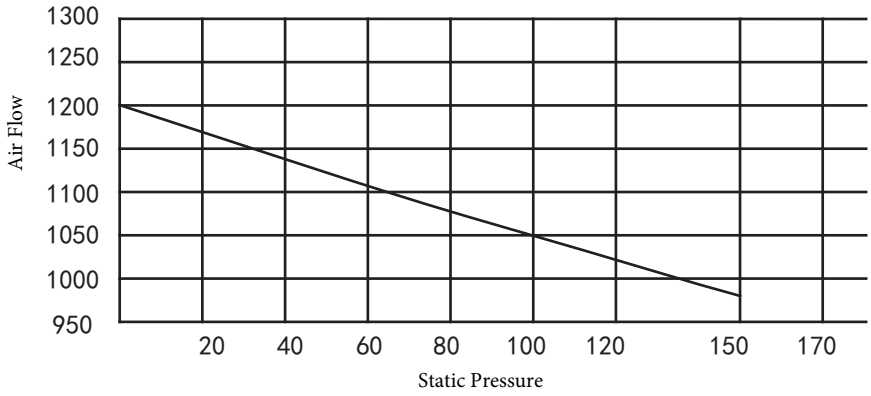
| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 100 | 829 | 357 |
| 80 | 862 | 363 |
| 50 | 923 | 375 |
| 25 | 966 | 381 |
| 0 | 1021 | 392 |




ERVD050A3N-DCN080

*Fig. 5-5*

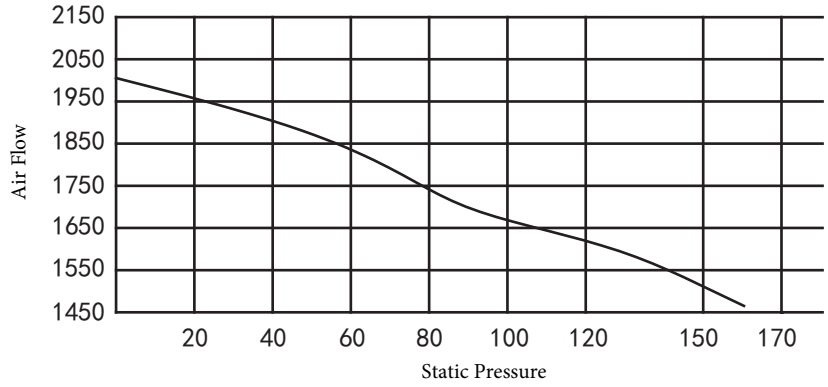
| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 150 | 980 | 358 |
| 120 | 1020 | 382 |
| 75 | 1090 | 405 |
| 40 | 1140 | 431 |
| 0 | 1206 | 454 |




ERVD060A3N-DCN100

*Fig. 5-6*

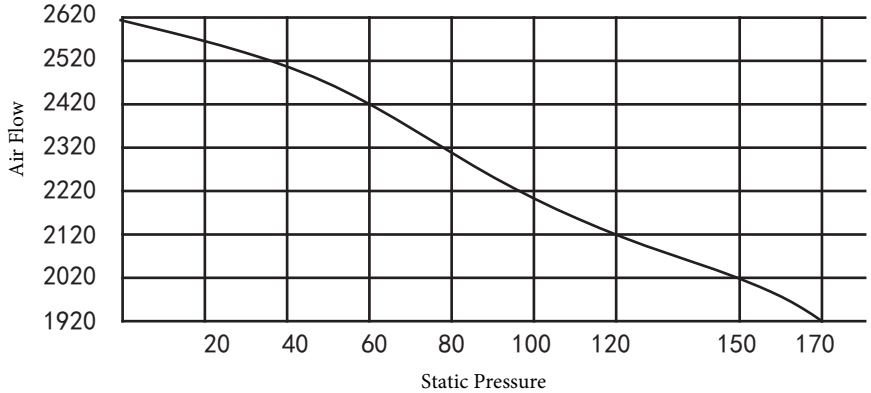
| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 160 | 1460 | 885 |
| 130 | 1590 | 944 |
| 90 | 1700 | 1000 |
| 50 | 1880 | 1064 |
| 0 | 2006 | 1120 |




ERVB090A7N-DCN150

*Fig. 5-7*

| Static pressure (Pa) | Air flow (m3/h) | Brake power (W) |
|---|---|---|
| 170 | 1920 | 1072 |
| 130 | 2090 | 1144 |
| 90 | 2235 | 1213 |
| 50 | 2472 | 1289 |
| 0 | 2618 | 1360 |




ERVB120A7N-DCN200

*Fig. 5-8*

# 6. ERVD APPLICATION 6.1

### Operation Priciple

ERVD series——ERV (Energy Recovery Ventilation) employ advanced technique and technics, the heat exchanged core forming by special paper that be processed with chemical treatment, which could create the optimum result in temperature, humidity and cooling recovery.
High efficiency heat exchanged core: When air flow formed by exhaust air and outdoor air through the heat exchanged core in cross way, because of temperature difference in the two sides of flat partition board, the heat transmission is occurred. In summer, outdoor air acquire cooling from air exhaust to decrease environment temperature; In winter, outdoor air acquire heating from air exhaust to increase temperature, that is to say, it realizing the energy recovery during air exhaust process to exchange the heating in heat exchanged core to outdoor air.

### 6.2 Pay Attention To The Following Item Before Operation

6.2.1. Before drive-up, please clean up the duct and check whether all air valves and devices are normal.

6.2.2. Carefully adjust the system air valves when start-up, control the current of motor in rated range.

6.2.3. Three-phase model without by-pass function, therefore the fan would delay 30 seconds to start up.

6.2.4. Connect the wire controller
Wire controller should install according to erv wire controller owner's manual, installation manual (Attached in the package box in wire controller).

6.2.5. When connect the ERV to centralized controller,

- LCD display of centralized controller corresponding to ERV mode as following:
- Centralized cooling mode vs. ERV heating recovery mode （HEAT RECOVERY）
- Centralized heating mode vs. ERV heating by-pass mode （BYPASS）
- Centralized air supply mode vs. ERV air supply mode （SUPPLY）

# 7 MAINTENANCE AND UPKEEP

7.1 During new use stage, one should check the fan operation regularly.

7.2 The cleaning regulation for filter mesh depend on local environment. It could be clean by vacuum dirt exhauster or water, if heavy dust accumulates, it should use neutral detergent to clean it, and then dry it in shady and cool place for 20 to 30 minutes and replace it.

7.3 Clean the core at least 2 years a time by vacuum dirt exhauster to remove dust and foreign substance in the unit assemblies, do not touch the assemblies by exhauster and flush by water to avoid core damage.

7.4 Check the fan every half a year to maintain the well balance of it and check whether the axletree has loosed.

# 8. TRIAL RUN

### 8.1 Please Confirm The Following Points Before The Test Operation:

8.1.1 The unit is installed correctly completed.
8.1.2 Tubing and wiring are correctly completed.
8.1.3 The drainage is unimpeded.
8.1.4 The heating insulation works well.
8.1.5 The ground wiring is connected correctly.
8.1.6 The power voltage fits the rated voltage of ERV.
8.1.7There is no obstacle at the outlet and inlet of ERV.

### 8.2 Control The ERV By Wire Control, Operate It According To Wire Controller Owner's Manual.

8.2.1 Whether the switch on the remote controller works well.
8.2.2 Whether the room temperature is adjusted well.
8.2.3 Whether the indicator lights normally.
8.2.4 Whether there is vibration or abnormal noise during operation.

# 13. Installation

## 13.1 Installation Preparation

Warning: The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them.

1) Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.

2) Hold the unit by the hanger brackets when opening the crate and moving it, and do not lift it holding on to any other part (especially the duct connecting flange).

Note: Be sure to instruct customers how to properly operate the unit (especially maintenance of air filter, and operation procedure) by having them carry out operations themselves while looking at the, manual.

## 13.2 Select the Installation Site

1) Select an installation site where the following conditions are fulfilled and meet with your customer's approval.

a. HRV should be installed far away from office, recreation or any other place silent requiring environment (install that in special machine room or wash room is recommended)

b. install in a place which has sufficient strength and stability. (Beam, ceiling and other locations capable of fully supporting the weight of the unit.) Insufficient strength is dangerous. It may also cause vibration and unusual operating noise.

c. Do not install the unit directly against a ceiling or wall. (If the unit is in contact with the ceiling or wall, it can cause vibration.)

d. Where sufficient clearance for maintenance and service can be ensured.

Caution:

- Install the units, power supply wiring and connecting wires at least 1 meter away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the electric noise.)
- The bellows may not be able to be used in some districts, so exercise caution. (Contact your local government office or fire department for details.)
- When discharging exhaust air to a common duct, the Building Standard Law requires the use of fire proof materials, so attach a 2m copper plate standing duct.

2) Do not install the unit in the following locations:

- Place subjected to high temperature or direct flame. May result in fire or overheating.
- Place such as machinery plant and chemical plate where gas, which contains noxious gas or corrosive components of materials such as acid, alkali organic solvent and plaint, is generated. Place where combustible gas leakage is likely.

Copper piping and brazed joins may corrode, causing refrigerant to leak or poisoning and fore due to leaked gas.

- Place such as bathroom subjected to moisture.

Electric leak or electric shocks and other failure can be caused.

- Near machinery emitting electromagnetic waves.

Electromagnetic waves may disturb the operation of the control system and result in a malfunction of the equipment.

## 13.3 Preparations before Installation

1. Confirm the positional relationship between the unit and suspension bolts.

Leave space for servicing the unit and include inspection hatches. (Always open a hole on the side of the electric parts box so that the air filters, heat exchange elements, fans, can easily be inspected and serviced.)

2. Make sure the range of the unit's external static pressure is not exceeded.

3. Open the installation hole (Pre-setting ceilings)

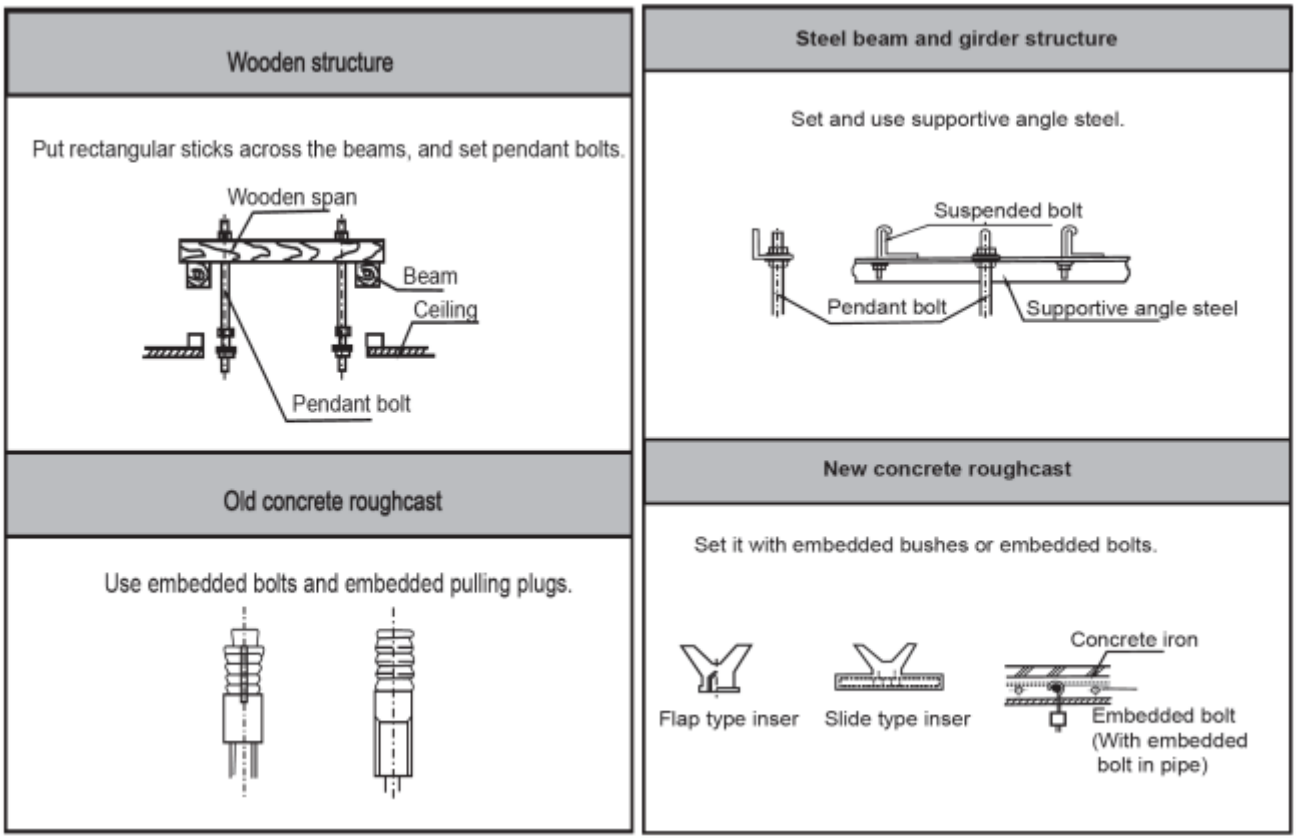
Once the installation hole is opened in the ceiling where the unit is to be installed, pass transmission wiring, and remote controller wiring to the unit's wiring holes.

After opening the ceiling hole, make sure ceiling is level if needed. It might be necessary to reinforce the ceiling frame to prevent shaking.

Please consult architect or woodworker, if necessary.

4. Install the suspension bolts. (Use M10 to M12 suspension bolts.) Use a hole-in anchor, sunken insert anchor for existing ceilings, or other parts to be procures in the field to reinforce the ceiling to bearing the weight of the unit.

5. Install vibration damping feet. (For vibration damping)




**13.4 Installation the Unit**

1. Before installation, please confirm all external parts are stand in their place and without damage.
2. The surrounding environment of the unit, especially the sides of wiring cabinet and water collecting side should reserve sufficient wiring and maintenance and space; additionally, one should ensure the removing space for filter griller.
3. Unit should mount steadily and without sustain the weight form condensate water pipe and air duct. The vents of air inlet/outlet and return should be connected with flexible tube.
4. Unit in AC 220V/50Hz or 380V/50Hz, reliable grounding; each one possesses of independent cut-off and protection device.
5. The installation dimension and maintenance space. (See the maintenance space.)

## 14. Wiring

Warning: Before obtaining access to terminal device, all power supply circuits must be interrupted.

**14.1 Precautions When Laying Power Supply Wiring**

A circuit breaker of shutting down power supply to the entire system be installed.
A single switch can be used to supply power to units on the same system. However, branch switches and circuit breakers must be selected carefully.
Fit the power supply wiring of each unit with a switch and fuse as shown in the drawing.
Install a wiring interrupter or ground-fault circuit interrupter for the power wiring.
Make sure the ground resistance is no greater than 100Ω.
This value can be as high as 500Ω when using a grounding fault circuit interrupter since the protective ground resistance can be applied.
Be sure to give the electric grounding (earth) connection.
Do not let the grounding wire should come in contact with gas pipes, water pipes, lighting rods, or telephone ground wires.

- Gas pipes: gas leaks can cause explosions and fire.

Water pipes: cannot be grounded if hard vinyl pipes are used.

- Telephone grounded and lightning rods: The ground potential when struck by lightning gets extremely high.

Do no turn on the power supply (wiring interrupter or ground-fault circuit interrupter) until all other work is done.
Tightening torque for the terminal screws.
Use the correct screwdriver for lighting the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the will not be properly tightened.
If the terminal screws are tightened too hard, screws might be damaged.
Refer to the table below for the tightening torque of the terminal screws.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