

# SYSVRF2 CEILING



Ceiling/Floor VRF indoor unit  
INSTALLATION MANUAL



systemair

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# 1. PRECAUTIONS

- Comply with local, national and international laws and regulations.
- Read "PRECAUTIONS" carefully before installation.
- The following precautions include important safety items. Strictly follow them.
- Keep this manual with the owner's manual in a handy place for future reference.

The safety precautions listed here are divided into two categories. Read both carefully.



## WARNING

Failure to observe a warning may result in death.



## CAUTION

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

After completing the installation, ensure that the unit operates properly during start-up. Instruct the customer on how to operate the unit and keep it maintained. Also, inform customers that they should store this installation manual along with the owner's manual for future reference.



## WARNING

**Only qualified service personnel can install, repair, or service the equipment.**

Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, fire or other damage to the equipment.

**Strictly perform installation according to these installation instructions.**

Faulty installation may cause water leaks, electric shocks and fires.

**When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage.**

Contact the place of purchase for more information.

Excessive refrigerant in a closed ambient environment can lead to oxygen deficiency.

**Only use the attached accessories parts and specified parts for installation.**

Otherwise, the set may fall and cause water leaks, electric shocks and fire.

**Install at a strong and firm location that can bear the set's weight.**

If the installation area is not strong enough or installation is not properly done, the set may fall and cause injury.

**The appliance should not be installed in a laundry room.**

**Before obtaining access to terminals, all supply circuits must be disconnected.**

**The appliance must be positioned so that the plug is accessible.**

**The enclosure of the appliance must be marked by word or symbols, including the direction of fluid flow.**

**For electrical work, follow the national wiring standards, regulations, and these installation instructions. An independent circuit and single outlet must be used.**

If the electric circuit capacity is insufficient or electrical work is defective, an electrical fire may result.

**Use the specified cable, connect it tightly and clamp the cable so that no external force will act on the terminal.**

If connection or fixing is imperfect, over-heating or a fire at the connection point may occur.

**Wiring routing must be properly arranged so that the control board cover is fixed properly.**

If the control board cover is fixed imperfectly, it may cause overheating at the connection point of the terminal, a fire, or electric shocks.

**If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or a similarly qualified person to avoid a hazard.**

**A disconnection switch with at least 3mm separation should be connected in the fixed wiring of all poles.**

**When connecting the pipes, do not let air get into the refrigeration cycle.**

Otherwise, it will lower capacity and may cause abnormally high pressure in the refrigeration cycle, an explosion, and injury.

**Do not modify the length of the power supply cord or use an extension cord, and do not share the single outlet with other electrical appliances.**

Otherwise, it may cause a fire or electric shocks.

**Carry out the specified installation work after considering the possibility of strong winds, typhoons or earthquakes.**

Improper installation work may result in the equipment falling and causing accidents.

**If the refrigerant leaks during installation, ventilate the area immediately.**

Toxic gas may be produced if the refrigerant comes into contact with fire.

**The temperature of the refrigerant circuit will be high, so please keep the interconnection cable away from the copper tube.**

**After completing the installation work, check that the refrigerant does not leak.**

Toxic gas may be produced if the refrigerant leaks into the room and comes into contact with a source of fire such as a fan heater, stove or cooker.



## CAUTION

### Ground the air conditioner.

Do not connect the ground wire to gas or water pipes, lightning rods, or a telephone ground wire. Incomplete grounding may result in electric shocks.

### Be sure to install an earth leakage breaker.

Failure to install an earth leakage breaker may result in electric shocks.

### Connect the outdoor unit wires, then connect the indoor unit's wires.

Do not connect the air conditioner with the power source until the wiring and piping is completed.

### When following the instructions in this installation manual, install drain piping to ensure proper drainage and insulate piping to prevent condensation.

Improper drain piping may result in water leaks and property damage.

### Install the indoor and outdoor units, power supply wiring and connecting wires at least 1 m away from televisions or radios to prevent image interference or noise.

Depending on the radio waves, a distance of 1 m may not be sufficient to eliminate noise.

### The appliance is not intended for use by young children or the elderly without supervision.

### Do not install the air conditioner in the following locations:

- Where there is petroleum.
- There is salty air surrounding (near the coast). If this cannot be avoided, choose an anticorrosive model.
- Where there is caustic gas (e.g., sulfide, such as near a hot spring).
- Where the voltage vibrates greatly (in factories).
- In buses or cabinets.
- In kitchens due to oil vapor.
- Where there is a strong electromagnetic wave.
- Where there are inflammable materials or gas.
- Where acid or alkaline liquid evaporates.
- Other special conditions.
- The appliance should not be installed in a laundry room.

## 2. INSTALLATION INFORMATION








- To install the unit properly, please read this Installation Manual.
- The air conditioner must be installed by qualified personnel.
- When installing the indoor unit or its tubing, follow this manual as strictly as possible.
- If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant standards for electrical appliances.
- When all the installation work is completed, please turn on the power only after it has been thoroughly checked.
- Notice will not be given regarding any changes to this manual due to product improvements.

## INSTALLATION ORDER

- Select the location;
- Install the indoor unit;
- Install the outdoor unit;
- Install the connecting pipe ;
- Connect the drain pipe;
- Wiring;
- Test operation.

## 3. ATTACHED FITTINGS

Please check whether all the following fittings have been included. If there are some spare fittings, please store them carefully.

Name of Accessories	Qty	Outline	Usage
Installation manual	1	(This manual)	_____
Hook	2		_____
Hanging arm	2		_____
Weak electric cable group	1		_____
Drainage pipe	1		Drainage
Bolt assembly	4		_____
Copper	1		Use for pipe connection of engineering installation
Snapping	1		Use for fastening the drainage pipe



## CAUTION

- Never throw or strike the controller.
- Before installation, test the remote controller to determine its location in a reception range.
- Keep the remote controller at least 1 m away from the nearest TV set or stereo. (It is necessary to prevent image and noise interference.)
- Do not install the remote controller in direct sunlight or close to a heating source such as a stove.
- Note that the positive and negative poles are in the right positions when loading batteries.



## NOTE

This manual is subject to changes due to technological improvement without further notice.

## 4. INDOOR UNIT INSTALLATION

4.1 The units may be mounted vertically providing that the correct clearances for positioning are maintained. (Refer to Fig. 4-1)

Version I

### WOODEN CONSTRUCTION

Place the square timber transversely over the roof beam. Then install the hanging screw bolts.

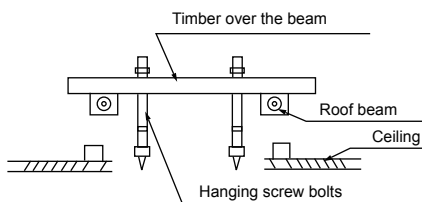


Fig.4-1

### NEW CONCRETE BRICKS

Inlaying or embedding the screw bolts.

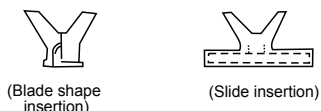


Fig.4-2

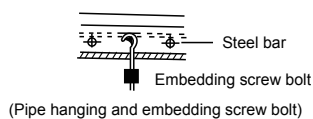


Fig.4-3

### FOR ORIGINAL CONCRETE BRICKS

Install the hanging hook with expansible bolt into the concrete deep to 45~50mm to prevent loose.

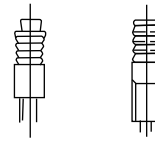


Fig.4-4

## 4.2 Wall Mounting Installation

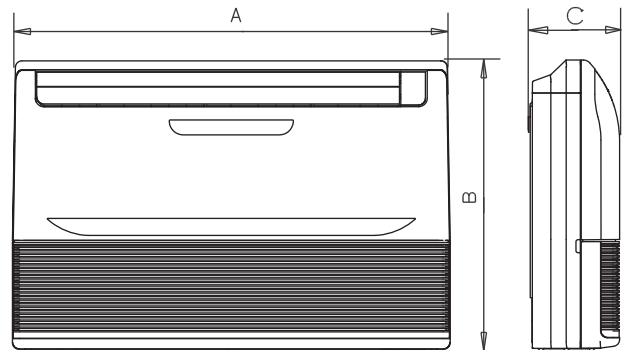
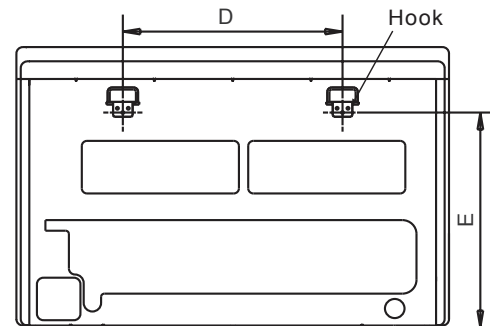


Fig. 4-5



1. Fix the hook with tapping screw onto the wall. (Refer to Fig. 4-8)

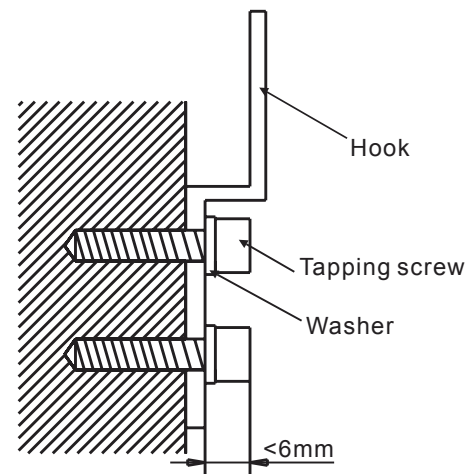


Fig. 4-6

2. Hang the indoor unit on the hook.

### 4.3 Ceiling Installation

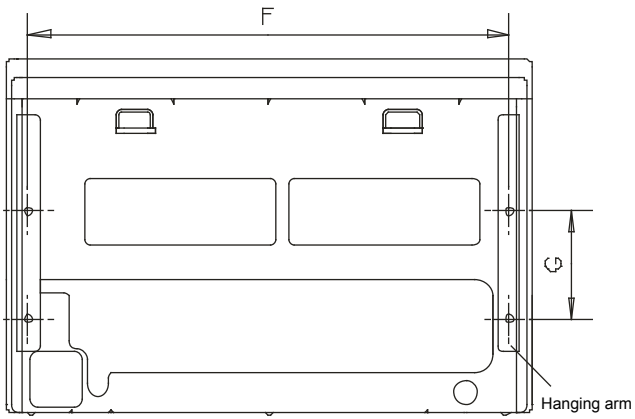


Fig. 4-7

- Remove the side board and the grille. (Refer to Fig. 4-8) (For models 112 and 140, do not remove the grille.)

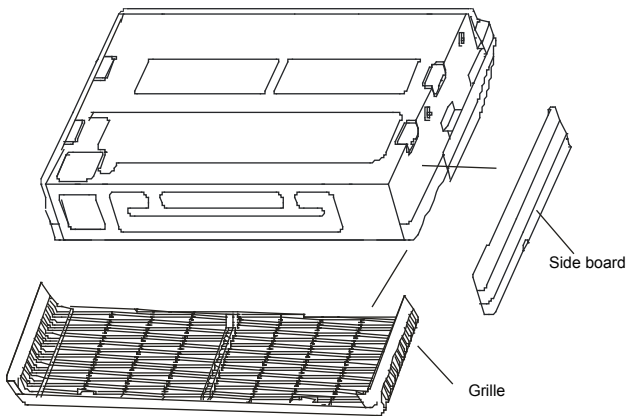


Fig. 4-8

- Locate the hanging arm on the hanging screw bolt. (Refer to Fig. 4-9) Prepare the mounting bolts on the unit. (Refer to Fig. 4-10)

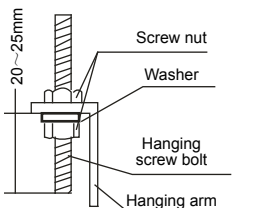


Fig. 4-9

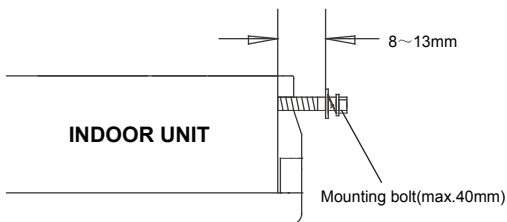
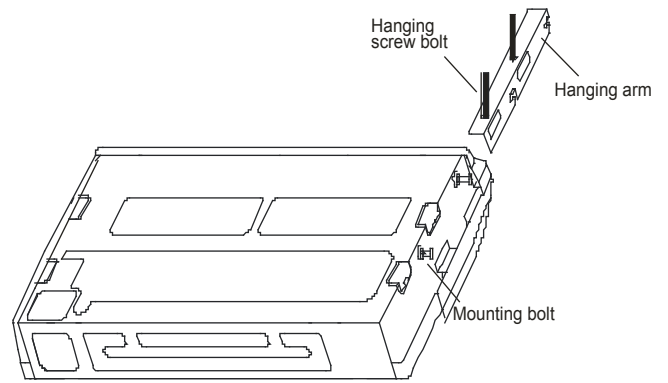


Fig. 4-10

Hang the unit on the hanging arm by sliding backward. Securely tighten the mounting bolts on both sides. (Refer to Fig. 4-11)

3. Hang the unit on the hanging arm by sliding backward. Securely tighten the mounting bolts on both sides.



(model 36 ~ 140)

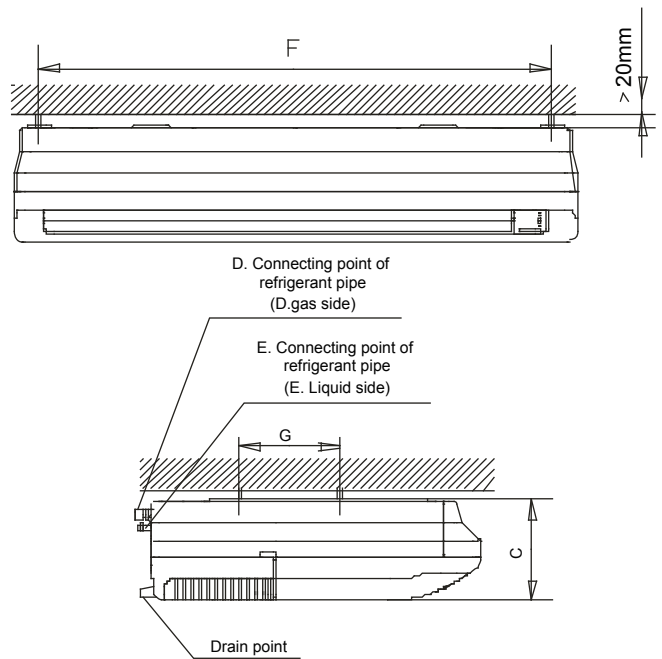


Fig. 4-11



### CAUTION

The figures above are based on model 45 as rated capacity, which may differ from the unit you purchased.

### 4.4 The dimension of the unit (Unit: mm)

Table 4-1

MODEL	A	B	C	D	E	F	G
36~71	990	660	203	505	506	907	200
80~90	1280	660	203	795	506	1195	200
112~140	1670	680	244	1070	450	1542	200

## 4.5 Material and size of the piping

Table 4-2

Pipe Material		Copper Pipe for Air Conditioner		
Mode (R22/R407 C)		36~45	56~90	112~140
Size(mm)	I(Liquid side)	Φ6.4	Φ9.5	Φ9.5
	J(Gas side)	Φ12.7	Φ15.9	Φ19.1

Table 4-3

Pipe Material		Copper Pipe for Air Conditioner	
Mode (R410A)		36~45	56~140
Size(mm)	I(Liquid side)	Φ6.4	Φ9.5
	J(Gas side)	Φ12.7	Φ15.9

## 5. Install the connecting pipe



### CAUTION

Do not let air, dust, or other impurities enter the pipe system during installation.  
 The connecting pipe should not be installed until the indoor and outdoor units have been fixed.  
 Keep the connecting pipe dry and do not let moisture in during installation.  
 The temperature of the refrigerant circuit will be high, so please keep the interconnection cable away from the copper tube.

### 5.1 The Procedure of Connecting Pipes

5.1.1 Measure the necessary length of the connecting pipe, and make it as follows.

- 1) Connect the indoor unit at first and then the outdoor unit.
  - a. Bend the tubing in proper way. Do not damage them.



### CAUTION

1. Coat the surfaces of the flare pipe and the joint nuts with frozen oil. Turn by hand 3-4 times and then fasten them with a wrench.
2. Use two wrenches simultaneously when you connect or disconnect the pipes.

2) The stop valve of the outdoor unit should be fully closed (as per the original state). Every time you connect the pipes, first loosen the nuts at the stop valve. Then connect the flare pipe (within in 5 minutes). If the nuts have been loosened for a long time, dust and other impurities may enter the pipe system and cause a fault. Expel the air out of the pipe with refrigerant before connecting it.

3) Expel the air (refer to the "Expel The Air") after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair points.

#### ■ Note for Bendable Pipes.

- The bending angle should not exceed 90°.
- The bending position is preferably for the bendable pipe. The larger it is, the better it is.
- Do not bend the pipe more than three times.

#### ■ Bend the connecting pipe of a small wall thickness.

- Cut out a desired concave at the bending part of the insulating pipe.
- Then expose the pipe (cover it with tape after bending). To prevent collapsing or deformation. Bend the pipe at its widest radius.
- Use a bender on low radius pipes.

#### ■ Use a normal brass pipe.

Use the same insulating materials for the brass pipe. (More than 9 mm thick)

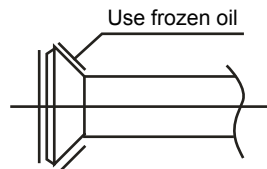


Fig. 5-1

Bend the pipe with your thumb



Min-radius 100mm

Fig. 5-2

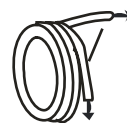


Fig. 5-3

#### 2. Locate the Pipe

- 1) Drill a hole in the wall (suitable just for the size of the wall conduit, 90 mm in general), then set on the fittings such as the wall conduit and its cover.
- 2) Bind the connecting pipe and the cables together tightly with binding tape. Do not let air in to avoid leaks due to condensation.
- 3) Pass the bound connecting pipe through the wall conduit from outside. Consider the pipe allocation to do no damage to the tubing.
3. Connect the pipes.
4. Then, open the stem of the stop valves of the outdoor unit to ensure regular flow in the refrigerant pipe that connects the indoor and outdoor units.
5. Ensure there are no leaks by checking with a leak detector or soapy water.
6. Cover the joint of the connecting pipe to the indoor unit with the soundproof/insulating sheath (fittings), and bind it well with tape to prevent leaks.

## 6. CONNECTING THE DRAIN PIPE

### 6.1 Install the drainpipe of the indoor unit

The outlet has a PTI screw bread. Use sealing materials and a pipe sheath (fitting) when connecting PVC pipes.



#### CAUTION

- The drain pipe and connections of the indoor unit must be heat insulated, or it attracts condensation.
- A hard PVC binder must be used to connect the pipes. Ensure there are no leaks.
- When connecting to the indoor unit, do not put pressure on the side of the indoor unit's pipes.
- Avoid winding when the declivity of the drain pipe in the downwards direction is over 1/100.
- The total length of the drain pipe when pulled out must not exceed 20 m. When the pipe is too long, install a prop stand to prevent winding.
- Refer to the Fig.8-1 for the installing the pipes.

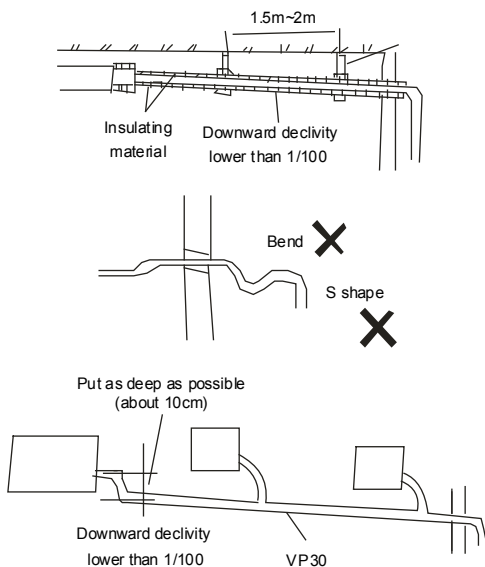


Fig. 6-1

### 6.2 Drainage test

- Check whether the drainpipe is unhindered.
- Newly built house should be tested before decorating the ceiling.

## 7. WIRING

- Specified power cables should be used. Do not apply any pressure on the terminals that will be connected. Improper connection may cause a fire.
- Grounding must be properly done. The grounding wire should be away from gas pipes, water pipes, telephones, lightning rods or other grounding wires. Improper grounding may cause electric shocks.
- Wiring must be done by professionals. Use a separate circuit according to national regulations. If the wiring capacity is not enough, electric shocks or fire may occur.



#### CAUTION

1. Be sure to Install Current Leakage Protection Switch, Or electric shock may occur.
2. Power cord is to be selected according to national regulations.
3. An all-pole disconnection device which has at least a 3 mm separation distance between all poles and a residual current device (RCD) with a rating above 10 mA must be incorporated in the fixed wiring according to national regulations.
4. Select and connect outdoor unit power cords according to the outdoor unit installation manual.
5. Wiring should be away from high temperature components, or the insulation layer of the wires may melt.
6. Use a wire clamp to fix the wires and terminal block after connection.
7. Control wire should be wrapped together with heat insulated refrigerant pipes.
8. Connect the indoor unit to power only after the refrigerant has been vacuumed.
9. Don't connect the power wire to the signal wire connection end.

### 7.1 The specification of power

Table 7-1

TYPE (W)		3600-14000W
Power	Phase	1-PHASE
	Frequency & volt	220-240V~ 50Hz 220-240V~ 50/60Hz
Circuit breaker/fuse (a)		5/3      5/5
Indoor unit power wiring(mm2)		1.0
Indoor/outdoor connecting wire (mm <sup>2</sup> )	Ground wiring(mm <sup>2</sup> )	1.0
	Weak electric signal	0.75



#### CAUTION

A disconnection device having an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National Wiring Regulation.

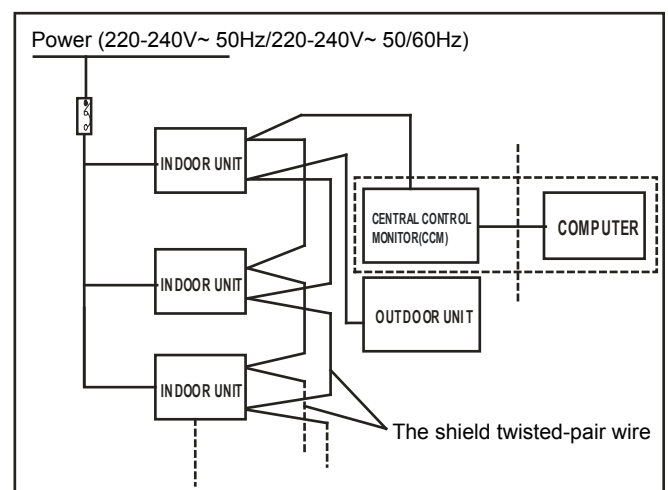


Fig. 7-1



#### CAUTION

The reserved function is indicated in broken line table, users can select it when necessary

## 7.2 Indoor/outdoor unit signal wire

- Connect the wire according to their numbers.
- Incorrect connection may cause an error.

## 7.3 Wiring connection

- Seal the wiring connection with the insulation material, or the condensation will be caused.

## 7.4 Panel Wiring

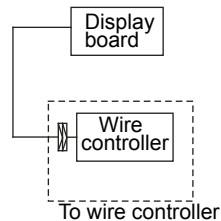
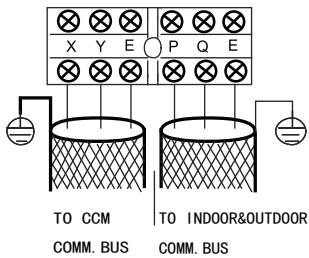
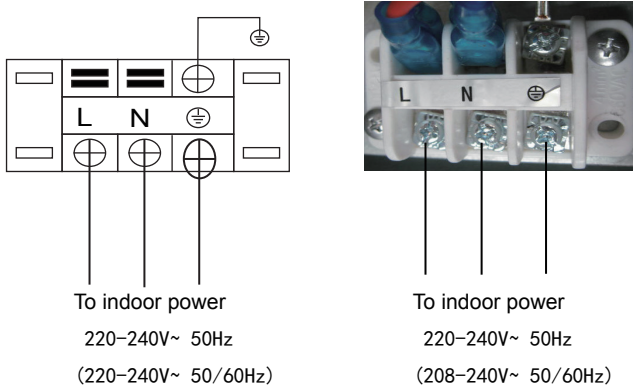
Connect the Swing Motor terminal block according to the Panel Installation Manual.

## 7.5 Terminal Board Diagram

Please refer to the indoor unit wiring diagram.

Note: The air conditioners can connect to the Central Control Monitor (CCM). Before use, ensure the wiring is correct and set the system address and network address for the indoor units.

Signal-phase power supply model



Use the shielded twisted-pair wire, and connect the shielded layer to (E)

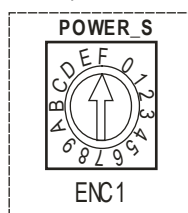
The reserved wire control function is indicated in the broken line table. The user can purchase the wire controller if necessary.

Fig. 7-2

# 8. CONTROL OPERATION

## 8.1 Horsepower set

Horsepower code



Base on different purposes to setting the switch cords on PC panel of indoor electrical control box. Once finish the setting, please cut off the main power, and then input power again, otherwise, setting function could not work.

Table: 8-1

ENC1	Switch	For setting the cooling output
Note: No one are permitted to alter the cooling output which be set before shipping from factory, except licensed maintain personnel.	Code	Capacity
	0	2200 W
	1	2800 W
	2	3600 W
	3	4500 W
	4	5600 W
	5	7100 W
	6	8000 W
	7	9000 W
	8	10000 W
	9	11200 W
A	12500 W	
B	14000 W	



## CAUTION

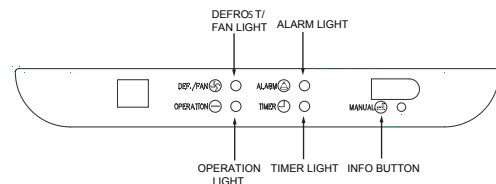
The system comprises 64 units (0-63) Each has a unique address. A repeated address in the same system will cause an error.

Switch off the power before changing a setting or an error may occur.

## 8.2 Network address set

- 1) The network address is set based on communication between the indoor and outdoor units. The address is the same as the indoor address, and there is no need to set them separately.
- 2) The central control of indoor units can be done on an outdoor unit. There is no need to control indoor unit separately. For details, please refer to V4+ outdoor unit manual.
- 3) For previous control of the indoor units, the network can be set by connecting (X, Y, E) terminals. There is no need to set the network address. The network can also be set by outer network module and main board (CN20).

## 8.3 DISPLAY BOARD





## 8.4 Main board Code designation

0/1 definition of each dial code switch:

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### SW1 definition

	<ul style="list-style-type: none"> <li>● 0 means cooling mode temperature compensation is 0°C (default)</li> <li>● 1 means cooling mode temperature compensation is 2°C</li> </ul>
	<ul style="list-style-type: none"> <li>● 0 means EXV positions 96 (steps) in standby in heat mode (default)</li> <li>● 1 means EXV positions 72 (steps) in standby in heat mode</li> </ul>

### SW2 definition

	<ul style="list-style-type: none"> <li>● 00 means external static pressure mode 1 (default)</li> </ul>
	<ul style="list-style-type: none"> <li>● 01 means external static pressure mode 2</li> </ul>
	<ul style="list-style-type: none"> <li>● 10 means external static pressure mode 3</li> </ul>
	<ul style="list-style-type: none"> <li>● 11 means external static pressure mode 4</li> </ul>

### SW3 definition

	<ul style="list-style-type: none"> <li>● 0 means no action (default)</li> <li>● 1 means clear indoor unit address</li> </ul>
	<ul style="list-style-type: none"> <li>● Reserved (defaults 0)</li> </ul>

### SW4 definition

	<ul style="list-style-type: none"> <li>● 00 means the time of stopping TERMAL fan is 4 mintue (default)</li> </ul>
	<ul style="list-style-type: none"> <li>● 01 means the time of stopping TERMAL fan is 8 mintue</li> </ul>
	<ul style="list-style-type: none"> <li>● 10 means the time of stopping TERMAL fan is 12 mintue</li> </ul>
	<ul style="list-style-type: none"> <li>● 11 means the time of stopping TERMAL fan is 16 mintue</li> </ul>

### SW5 definition

	<ul style="list-style-type: none"> <li>● 00 means shutting down the unit to "stop cold air" at 15°C (default)</li> </ul>
	<ul style="list-style-type: none"> <li>● 01 means shutting down the unit to "stop cold air" at 20°C</li> </ul>
	<ul style="list-style-type: none"> <li>● 10 means shutting down the unit to "stop cold air" at 24°C</li> </ul>
	<ul style="list-style-type: none"> <li>● 11 means shutting down the unit to "stop cold air" at 26°C</li> </ul>

### SW6 definition

	<ul style="list-style-type: none"> <li>● 00 means temp. compensation value is 6°C under heat mode (default)</li> </ul>
	<ul style="list-style-type: none"> <li>● 01 means temp. compensation value is 2°C under heat mode</li> </ul>
	<ul style="list-style-type: none"> <li>● 10 means temp. compensation value is 4°C under heat mode</li> </ul>
	<ul style="list-style-type: none"> <li>● 11 means temp. compensation value is 0°C under heat mode (follow me)</li> </ul>

### SW7 definition

	<ul style="list-style-type: none"> <li>● Reserved (defaults 0)</li> </ul>
	<ul style="list-style-type: none"> <li>● 0 means low power setting (1.8kW - 25.2kW) (default)</li> <li>● 1 means high power setting (28kW - 112kW)</li> </ul>

### J1 definition

	<ul style="list-style-type: none"> <li>● Without jumper "J1" for auto restart function</li> </ul>
	<ul style="list-style-type: none"> <li>● With jumper "J1" for manual restart function</li> </ul>

## Error Code List

FE	No address when first time power on
H0	M-Home not matched error(Reserved)
E0	Mode conflict
E1	Communication error of indoor and outdoor units
E2	Error of indoor temp. sensor (T1)
E3	Error of pipe temp. sensor (T2)
E4	Error of pipe temp. sensor (T2B)
E5	Reserved
E6	DC FAN error
E7	EEPROM error
Eb	Error of electronic expansion valve
Ed	Outdoor unit error
EE	Water level alarm

- 2) The outdoor unit
  - a. Whether there is vibration or abnormal noise during operation.
  - b. Whether the generated wind, noise, or condensation produced by the air conditioner affect your neighbors.
  - c. Whether any refrigerant leaks.



### CAUTION

A protection feature prevents the air conditioner from being activated for approximately 3 minutes when it restarts after shut off.

## 9. TEST OPERATION

- 1 Testing must be carried out after installation is completed.
- 2 Please confirm the following points before the test:
  - The indoor unit and outdoor unit are installed properly.
  - The tubing and wiring have been correctly completed.
  - The refrigerant pipe system has been checked for leaks.
  - Drainage is unimpeded.
  - The heating insulation works well.
  - 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 open.
  - The air conditioner is pre-heated by turning on the power.
- 3 According to the user's requirements, install the remote controller frame where the remote controller's signal can smoothly reach the indoor unit.
- 4 Test operation
  - Set the air conditioner in "COOLING" mode with the remote controller, and check the following points. If there is an error, please resolve it according to the chapter "Troubleshooting" in the "Owner's Manual".
    - 1) The indoor unit
      - a. Whether the switch on the remote controller is working well.
      - b. Whether the buttons on the remote controller is working well.
      - c. Whether the air flow louver moves normally.
      - d. Whether the room temperature is adjusted properly.
      - e. Whether the indicator lights normally.
      - f. Whether the temporary buttons works well.
      - g. Whether drainage is normal.
      - h. Whether there is vibration or abnormal noise during operation.
      - i. Whether the air conditioner heats well in HEATING/COOLING mode.

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