



**SPSKLIMA**  
Strategic Products and Services

# INSTALLATION      MANUAL

## *One-way Cassette Type*

Digital Scroll and DC/AC Inverter Commercial Air-conditioner

*The Digital Scroll and DC/AC Inverter share the same indoor units.*

Thank you very much for purchasing our air conditioner,  
please read this manual carefully and keep it for future reference.

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## 1. INSTALLATION PRECAUTION

- Please read this installation manual carefully before installation.
- The air conditioner must be installed by qualified service person.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- When installing the indoor unit, please follow this manual as strictly as possible.
- Check the piping is accomplished perfectly before electrifying the unit.
- This manual is subject to changes due to technological improvement without further notices.



### NOTE

Note: The installer should illustrate to users how to correctly use and maintain the appliance and remind the users carefully reading and keeping both installation manual and owner's Manual after the installation.

## 2. ACCESSORIES

Table.2-1

Name	Q'ty	Outline	Function
Installation manual	1	This manual	_____
Insulation pipe	2		Insulation for pipe connection part
Remote controller (including operation manual)	1		_____
Alkaline dry batteries (Am4)	2		_____
Holder for remote controller	1		Hold the remote controller
Mounting screw (ST2.9x10-C-H)	2		Insulation Holder for remote controller

Screw M4*16(including flat spring gasket)	5		For fixing the installation pattern paper and panel (only for 2800-3600W type)
Installation pattern paper	1		Adjust ceiling hole and position of indoor unit (only for 2800-3600W type)
Installation indicator	1		Adjust main unit position (only for 4500-7100W type)
Fixing belt	10		Fixing and tightening
	1		Drainage
Big gasket	8		Hang the indoor unit

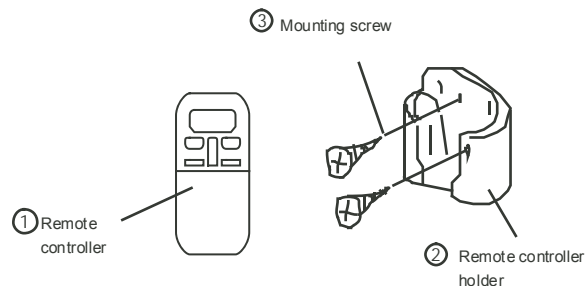


Fig.2-1

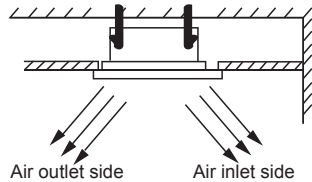
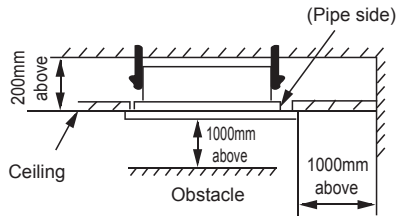
- Don't throw the remote controller or give it big impact.
- The remote controller should be in the reception range, and the transmittal part should point to the orientation of indoor unit receptor.
- Before installation, operate the remote controller to determine its location in a reception range.
- Keep the remote controller at least 1m apart from the nearest TV set or stereo equipment. (It is necessary to prevent image disturbances or noise interferences.)
- Do not install the remote controller in a place exposed to direct sunlight or close to a heating source, such as a stove.
- Note that the positive and negative poles are right positions when loading batteries.

## 3. INSTALLATION LOCATION

- Please avoid installing in the following places
  - A place with flammable gas or material.
  - A saline place such as a seashore vicinity
  - A place with sulphur gas.
  - A place with oil gas, such as kitchen.
  - A place with high-humidity air.
  - An unbearable place.
  - A place where high-frequency waves are generated.
- The appliance shall not be installed in the laundry.
- Please comply with the related national electric standard to make electric insulation for construction and metal parts of air-conditioner.
- Please choose the place where the ventilation is good.

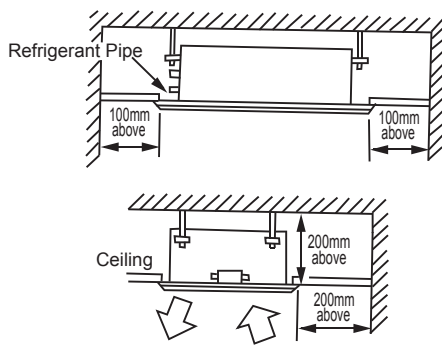
## 4. INSTALLATION SPACE

- The appliance must be installed 2.3mm above floor.



4500-7100W type

Fig.4-1



2800-3600W type

Fig.4-2

## 5. INDOOR UNIT INSTALLATION

- Please refer to the following figure for the hanging screw bolts distance.

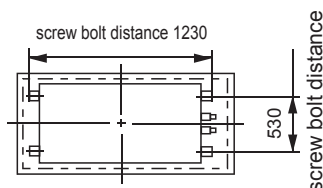
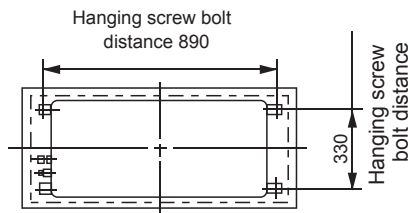


Fig.5-1

- Please install with  $\Phi 10$  hanging screw bolts.
- The handling to the ceiling varies from the constructions, consult the construction person for the specific condition.
- The size of the ceiling to be handled----- Do keep the ceiling flat. Consolidate the roof beam for possible vibration.
- Cut off the roof beam.
- Strengthen the place that has been cut off, and consolidate the roof beam.
- Connect wires and pipes inside the ceiling after the air conditioner is hung.
- After the selection of installation location, position the refrigerant pipes, drain pipes, indoor & outdoor wires to the connection places before hanging up the machine.
- The installation of hanging screw bolts.

### Wooden construction

Put the square timber over the roof beam, then install the hanging screw bolts.

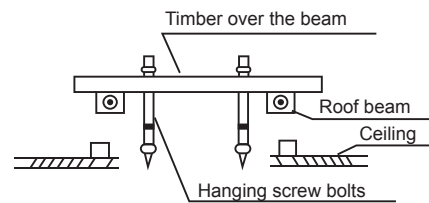
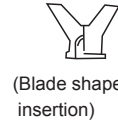


Fig.5-2

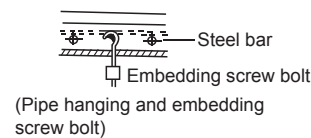
- New Concrete Bricks  
Inlaying or embedding the screw bolts.



(Blade shape insertion)



(Slide insertion)



(Pipe hanging and embedding screw bolt)

Fig.5-3

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

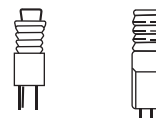


Fig.5-4

- Steel roof beam structure  
Install the supporting angle steel.

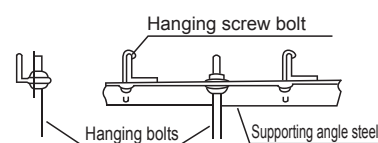


Fig.5-5

- Overhanging the indoor unit
- Adjust the gasket (down side) to 137mm over the ceiling for 2800-3600W type and for 4500-7100W type adjust that to 130mm.

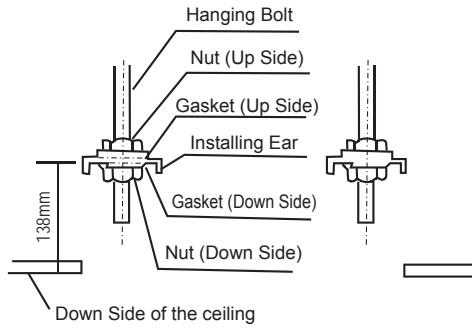


Fig.5-6

- Fasten the upside nut

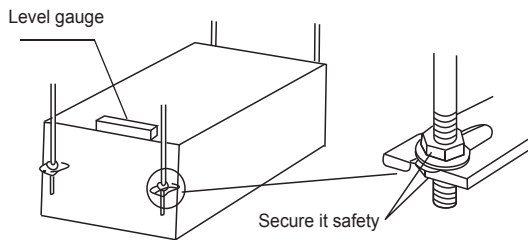


Fig.5-7

- Install the hanging bolt into U groove of the hanging tool. Overhang the indoor unit and ensure it is level using a level gauge.
- 2800-3600W type
- Adjust the relative position between indoor unit and ceiling hole with the pattern paper again.

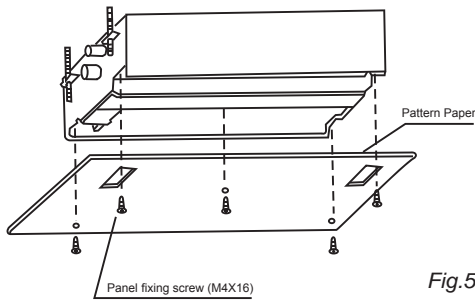


Fig.5-8

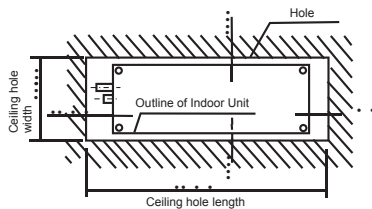


Fig.5-9

- Fix the pattern paper to the down side of indoor unit with panel fixing screw. Adjust the size of ceiling hole according to pattern paper.

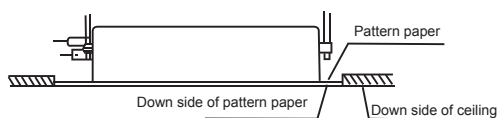


Fig.5-10

- Down side of ceiling must be level with down side of the pattern paper.

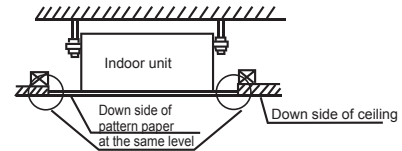


Fig.5-11

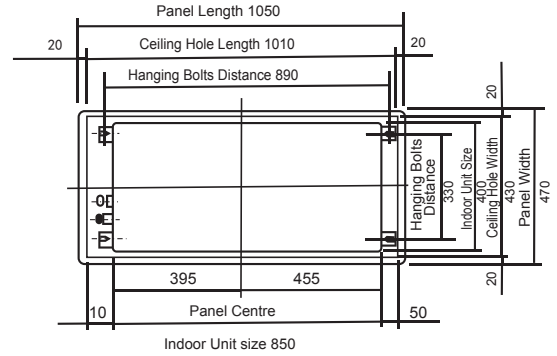


Fig.5-12

- 4500-7100W type

- Install the hanging nut into U groove of the hanging tool. Overhang the indoor unit and ensure it is level using a level gauge.
- Use the installation paper pattern to confirm the position between the body and the ceiling opening
- Please refer to the following figure to install.

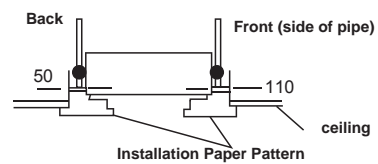
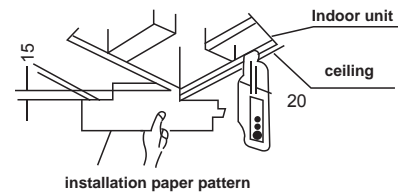


Fig.5-13

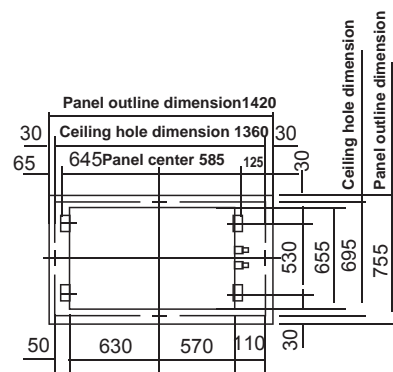


Fig.5-14

- Install the panel
- The panel and the ceiling, the panel and the unit body should be connected closely, or air leakage, water leakage and condensate dew will be caused.
- Please refer to the panel installation manual to install the panel.
- Please confirm if the installation places of unit body and panel are proper.

## 6. DRAINPIPE INSTALLATION

When connecting the pipe, please use the sealing material and pipe glove.



### CAUTION

- The drain pipe of indoor unit must be heat insulated, or it will condense dew, as well as the connections of the indoor unit.
- Make sure the connections is no leakage.
- With the connection part to the indoor unit, please note not to impose pressure on the side of indoor unit pipes.
- When the declivity of the drain pipe downwards is over 1/100, there should not be any winding.
- The total length of the drain pipe when pulled out breadthwise shall not exceed 20m. When the pipe is over long, a bracket must be installed to prevent winding.
- Refer to the following figures to install the pipes.

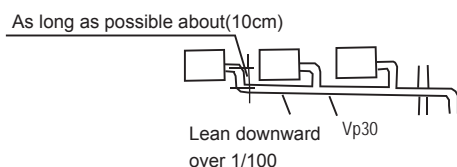


Fig.6-1

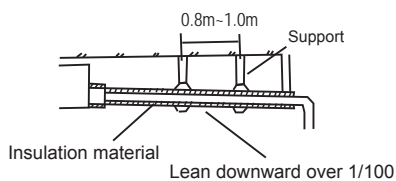


Fig.6-2

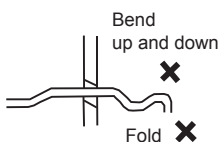


Fig.6-3

- Upward drainage
- In case the drainpipe outlet is higher than pumping connective pipe of the main body, the drainpipe must be arranged upwards vertically by using connective assembly of the water outlet for vertical bending, and the height of the drainpipe shall set to the defrosting pan surface no more than 1000mm, otherwise, too much backflow while shutdown would leads to overflow (Refer to Fig.6-4).

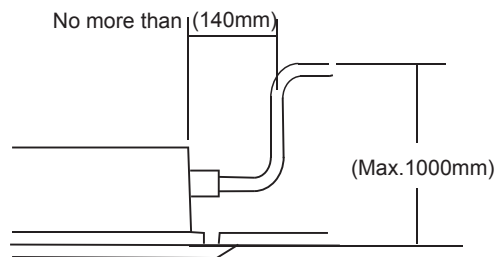


Fig.6-4

- After upward piping, the lead drain pipe must slant downward immediately. (over 1/100)
- Drainage test
- Stow 600-800cc water with pot or hose from outlet slowly.
- The drainage test is doing during checking the drain pump motor running sound .
- After the preparation work , disconnect the water level switch, power 220-240VAC to (L) (N) of terminal board, and the drain pump start up immediately.
- Confirm the running sound of drainage pump motor ,and carry out the drainage test.(If the sound is variable from continuous ,it is normal.)
- Reset the water level switch connector to original position after the drainage test .

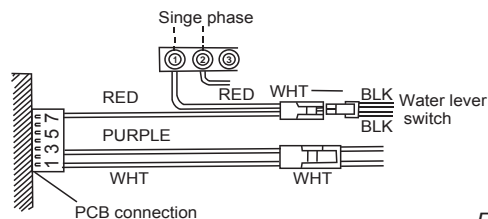


Fig.6-5

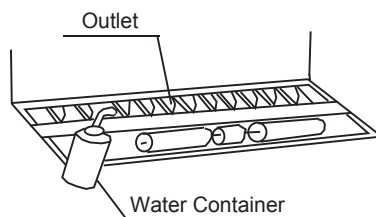
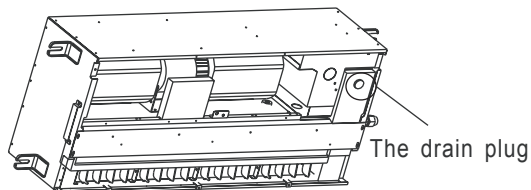


Fig.6-6



### WARNING

- The drain plug is used to empty the water-receiver for maintenance of the air conditioner.
- Please stuff it imposition at all times during operation to avoid leakage.



NOTE: just apply for the improved production.

Fig.6-7

## 7. INSTALL THE CONNECTING PIPE

- Check whether the height drop between the indoor unit and outdoor unit, the length of refrigerant pipe, and the number of the bends meet the following requirements:  
 The max height drop.....10m  
 The length of refrigerant pipe.....less than 30m  
 The number of bends.....Less than 10

- Do not let air, dust, or other impurities fall in the pipe system during the time of installation.

- The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.

- Keep the connecting pipe dry, and do not let moisture in during installation.

- The Procedure of Connecting Pipes  
 Measure the necessary length of the connecting pipe, and make it by the following way.

- Connect the indoor unit at first, then the outdoor unit.

① Bend the tubing in proper way. Don't harm them.

② Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds with hands before fasten the flare nuts. (Refer to Fig.7-1)

③ Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

- The stop valve of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop valve, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

- 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.

- Notices For Benable pipe.

- The bending angle should not exceed 90°C
- Bending position is preferably in the bendable pipe. The larger the better it is .

- Do not bend the pipe more than three times.

- Bend the connecting pipe of small wall thickness.

- Cut out a desired concave at the bending part of the insulating pipe.

- Then expose the pipe(cover it with tapes after bending).

- To prevent collapsing of deforming, please bend the pipe at its biggest radius.

- Use bender to get a small radius pipes.

- Use the market brass pipe.  
 Be sure to use the same insulating materials when you buy the brass pipe. (More than 9mm thick)

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

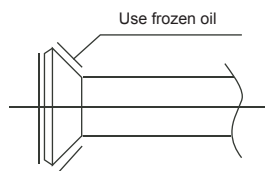


Fig.7-1

Bend the pipe with thumb



Fig.7-2

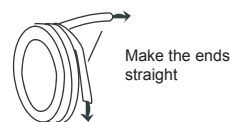


Fig.7-3

- Locate The Pipe

- Drill a hole in the wall (suitable just for the size of the wall conduit, 90mm in general), then set on the fittings such as the wall conduit and its cover.

- Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

- Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe all ocation to do no damage to the tubing.

- Connect the pipes.

- Then, open the stem of stop valves of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit fluently flow.

- Be sure of no leakage by checking it with leak detector or soap water.

- Cover the joint of the connecting pipe to the indoor unit with the sound proof/insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

## 8. REFRIGERANT PIPE CONNECTION

- Flaring

- Cut a pipe with a pipe cutter.
- Insert a flare nut into a pipe and flare the pipe.

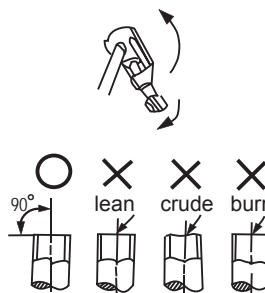


Fig.8-1

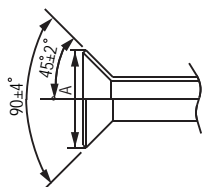


Fig.8-2

Table.8-1

Outside diameter	A(mm)	
	Max	Min
Φ6.4mm	8.7	8.3
Φ9.5mm	12.4	12.0
Φ12.7mm	15.8	15.4
Φ15.9mm	19.0	18.6

- Fasten the nut
  - Put the connecting tubing at the proper position, wrench the nuts with hands then fasten it with a wrench. (Refer to Fig.8-3)
  - Too large torque will harm the bellmouthing and too small will cause leakage. Please determine the torque according to Table.8-2.

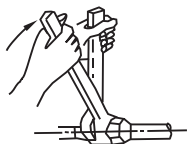


Fig.8-3

Table.8-2

Tubing size	Torque
Φ6.4mm	14.2~17.2 N.m (144~176 kgf.cm)
Φ9.5mm	32.7~39.9 N.m (333~407 kgf.cm)
Φ12.7mm	49.5~60.3 N.m (504~616 kgf.cm)
Φ15.9mm	61.8~75.4 N.m (630~770 kgf.cm)

- Material and Size of the Pipes  
Three length (3m,5m,10m) of pipes are available to purchase.

Table.8-3

Pipe Material	Copper Pipe for Air Conditioner	
Size(mm)	Gas side	Φ12.7
	Liquid side	Φ6.4
	Gas side	Φ15.9
	Liquid side	Φ9.5

- The necessary filling amount of refrigerant
  - When the length of the one-way pipe is under 5m, the quantity of filling fluorine will be subject to the nameplate.
  - When the length of the one-way pipe is over 5m, the quantity to be added is as follows:  
Capacity≤8000W: 0.03x(L-5) (Unit: kg)  
Capacity≥9000W: 0.065x(L-5) (Unit: kg)  
L: The length of the pipe
  - Please record the quantity added and store it carefully for future maintenance.

- Air Purging
  - Use a vacuum pump, to vacuum from the gas side refrigerant adding mouth of the outdoor unit.
  - Don't use the refrigerant of the outdoor unit to do the vacuum. (A certain volume of refrigerant had been added into the outdoor unit in factory.)
- Open/Close the valves  
Open/Close the spools or the valves of outdoor unit with a 5mm hexagon spanner.
- Leakage Test  
Test if there is any leakage on the connections of the piping with soap water.
- Heat Insulation
  - Heat insulation for the gas and liquid pipe separately.
  - Heat insulation should be fully and carefully done, because the liquid side pipe and gas side pipe are easy to condense water due to low temperature when cooling.
  - Heat proof above 120℃ material should be used at the gas side pipe.
  - The indoor unit connection parts should be no-gap heat-insulated with the attached heat insulation materials.

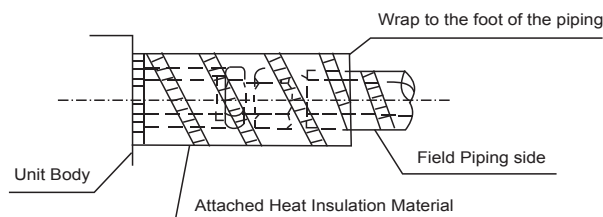


Fig.8-4

## 9. WIRING

- Attaching wiring
  - The air conditioner should use separate power supply with rated voltage.
  - The external power supply to the air conditioner should have ground wiring, which is linked to the ground wiring of the indoor and outdoor unit.
  - The wiring work should be done by qualified persons according to circuit drawing.
  - an all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD) with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule.
  - Be sure to locate the power wiring and the signal wiring well to avoid cross-disturbance and their contact with connecting pipe or stop valve body.
  - The wiring attached to this air conditioner is 10m long. Be sure to prolong it with wiring of the same type and proper length if necessary. Generally, do not twist two wiring together unless the joint is soldered well and covered with insulator tape.
  - Do not turn on the power until you have checked carefully after wiring.

■ The specification of power

Table.9-1

Model(W)		2200~7100
Power	Phase	1-Phase
	Frequency and volt	220-240V~50/60Hz
Circuit breaker/fuse (A)		5/3
Indoor unit power wiring (mm <sup>2</sup> )		2×2.0
Indoor/outdoor connecting wiring (mm <sup>2</sup> )	Ground wiring(mm <sup>2</sup> )	1×2.0
	Electric signal	3×0.75(Shielded wire)

■ Indoor unit power supply and the signal wire wiring

- The indoor unit power source should not be shared with outdoor unit.
- The indoor units that connect to the same outdoor unit should use the same power source, creepage protector and main switch.
- The indoor power wire should be connected to the L、N terminal , and the indoor/outdoor signal wire should adopt the 2-core screened wire . The indoor /outdoor signal wire should be connected to A、B terminal and should be corresponding with the A、B of the outdoor terminal. Connect the screened layer to (E).

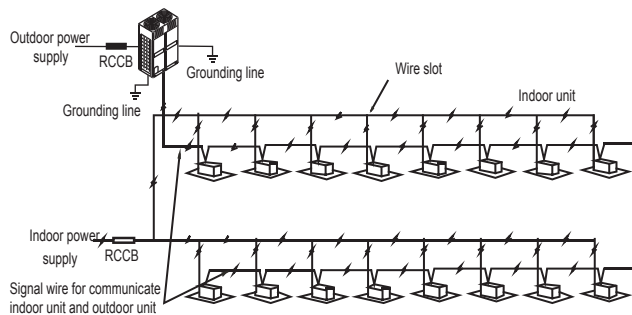


Fig.9-1



**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.

■ Wiring chart

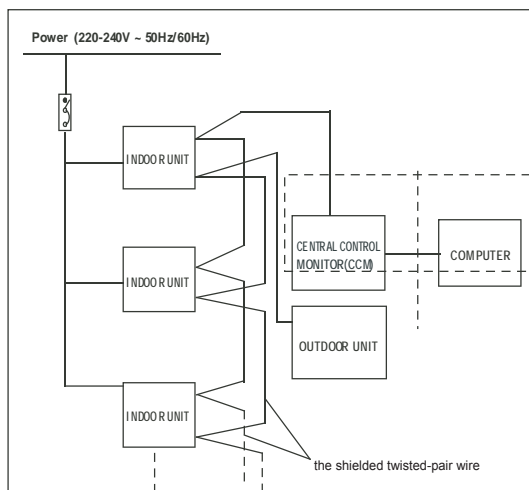


Fig.9-2



**CAUTION**

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

- Terminal board diagram  
Please refer to the indoor unit wiring diagram for the wiring.



**NOTE**

The air-conditioners can connect with Central Control Monitor (CCM). Before operation, please wiring correctly and set system address and network address of indoor units.

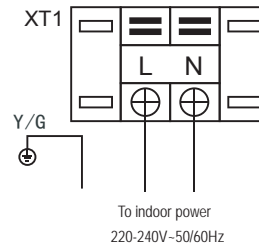


Fig.9-3

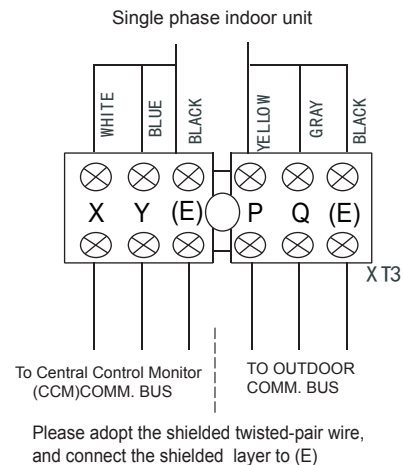
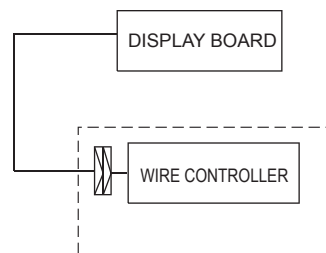


Fig.9-4



To wire controller  
The reserved wire control function is indicated in broken line table,users can purchase the wire controller when necessary

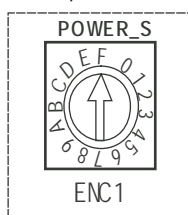
Fig.9-5



## 10. CONTROL OPERATION

### ■ 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.10-1

ENC1	Toggle switch	For set horsepower
Note: The horsepower has been set before leaving the factory , anyone can't modify it except the maintenance person.	Code	Capacity(Horsepower)
	0	2200W(0.8HP)
	1	2800W(1.0HP)
	2	3600W(1.2HP)
	3	4500W(1.5HP)
	4	5600W(2.0HP)
	5	7100W(2.5HP)



### CAUTION

The system together have 64units(0-63),everyone has only system addresscode,If two addresses are the same in one system , the abnormal operation will occur.







Please switch off the power before setting,otherwise the unexpected error will occur.

### ■ Network address set









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

## ■ Main board Code designation





### SW1 definition

ON 	<ul style="list-style-type: none"> <li>● 1 means factory test mode</li> <li>● 0 means add. auto searching mode (default setting)</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 01 means DC fan static pressure is 1 (reserved)</li> </ul>
ON 	<ul style="list-style-type: none"> <li>● 1 means DC fan Is chosen</li> <li>● 0 means AC fan Is chosen</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 10 means DC fan static pressure is 2 (reserved)</li> </ul>
ON 	<ul style="list-style-type: none"> <li>● 00 means DC fan static pressure is 0 (reserved)</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 11 means DC fan static pressure is 3 (reserved)</li> </ul>




### SW2 definition

ON 	<ul style="list-style-type: none"> <li>● 00 means the temperature is 15 degrees when shutting down the unit for cold wind proof.</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 00 means the time of stopping TERMAL fan is 4 minutes</li> </ul>
ON 	<ul style="list-style-type: none"> <li>● 01 means the temperature is 20 degrees when shutting down the unit for cold wind proof.</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 01 means the time of stopping TERMAL fan is 8 minutes</li> </ul>
ON 	<ul style="list-style-type: none"> <li>● 10 means the temperature is 24 degrees when shutting down the unit for cold wind proof.</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 10 means the time of stopping TERMAL fan is 12 minutes</li> </ul>
ON 	<ul style="list-style-type: none"> <li>● 11 means the temperature is 26 degrees when shutting down the unit for cold wind proof.</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 11 means the time of stopping TERMAL fan is 16 minutes</li> </ul>




### SW5 definition

ON 	<ul style="list-style-type: none"> <li>● 00 means temperature compensation is 6 degrees under heating mode</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 10 means temperature compensation is 4 degrees under heating mode</li> </ul>
ON 	<ul style="list-style-type: none"> <li>● 01 means temperature compensation is 2 degrees under heating mode</li> </ul>	ON 	<ul style="list-style-type: none"> <li>● 11 means temperature compensation is 8 degrees under heating mode</li> </ul>

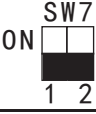
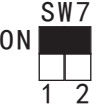
### SW6 definition

ON 	<ul style="list-style-type: none"> <li>● 1 means old display panel</li> <li>● 0 means new display panel</li> </ul>
ON 	<ul style="list-style-type: none"> <li>● 1 means auto wind under auto mode</li> <li>● 0 means auto wind under non auto mode</li> </ul>
ON 	reserved



### J1, J2 definition

J1 	J1 no Jumpers means power off memory function
J1 	J1 Jumpers means no power off memory function
J2 	reserved

## SW7 definition

	Standard configure
	Last one in the network

## 0/1 definition

	Means 0
	Means 1

- The 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.
- Whether the air conditioner heats well in the case of the HEATING/COOLING type.
- The outdoor unit
- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed water by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

## 11. TEST OPERATION

- The test operation must be carried out after the entire installation has been completed.
- 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 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 and indoor units.
  - The gas-side and liquid-side stop values are both opened.
  - The air conditioner is pre-heated by turning on the power.
- According to the user's requirement, install the remote controller frame where the remote controller's signal can reach the indoor unit smoothly.
- Test operation  
Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points per the "Owner's Manual". If there is any malfunction, please resolve it through chapter "Troubles And Causes" in the "Owner's Manual".



### CAUTION

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