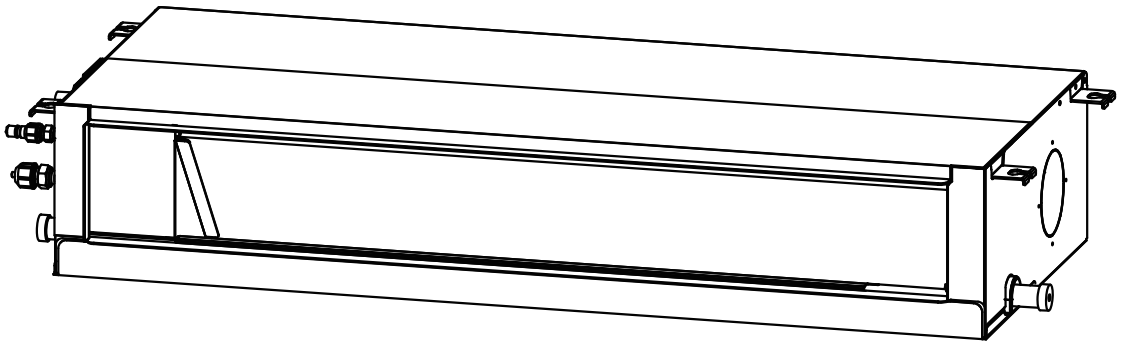
ComfortStar®

User's Manual

Indoor Unit : DKP32-18 (31W)
DKP32-24 (31X)
DKP32-36 (31Y)
DKP32-48 (31Z)
DKP32-60 (321)



⚠ RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION

ATTENTION INSTALLING PERSONNEL

Prior to installation, thoroughly familiarize yourself with this Installation Manual. Observe all safety warnings.
During installation or repair, caution is to be observed
It is your responsibility to install the product safely and to educate the customer on its safe use

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Content

1.Safety

Caution Statements

Alert Symbols:

⚠ DANGER : The symbol refers to a hazard which can result in severe personal injury or death.

⚠ WARNING : The symbol refers to a hazard or an unsafe practice which may result in severe personal injury or death.

⚠ CAUTION : The symbol refers to a hazard or an unsafe practice which may result in personal injury, product or property damage.

NOTE : It refers to the remarks and instruction to the operation, maintenance, and service.

- This air-conditioner should be installed properly by qualified personnel in accordance with the installation instructions provided with the unit.
- Before installation, check if the voltage of the power supply at installation site is the same as the voltage shown on the nameplate.

⚠ DANGER

- You must not carry on any transformation to this product, otherwise, it may cause water leakage, breakdown, short-circuit, electric shock, fire, and so on.
- Piping, welding and other such works should be carried out far away from the flammable explosive material vessels, including the air-conditioner refrigerant, to guarantee the security of the site.
- To protect the air-conditioner from heavy corrosion, avoid installing the outdoor unit where sea water can splash directly onto it or in sulphurous air near a spa. Do not install the air-conditioner where excessively high heat-generating objects are placed.

⚠ WARNING

- If the supply cord is damaged, it must be replaced by the factory or its service department in case of danger.
- The place where this product is installed must have the reliable electrical grounding facility and protection. Please do not connect the grounding of this product to various kinds of air-feeding ducts, drain piping, lightning protection facility as well as other piping lines to avoid receiving an electric shock and damages caused by other factors.
- Wiring must be done by a qualified electrician. All the wiring must comply with the local electrical codes.
- Consider the capacity of the electric current of your electrical meter and socket before installation.
- The power wire where this product is installed is supposed to have the independent leakage protective device and the electric current over-load protection device which are provided for this product.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- Means for disconnection, which can provide full disconnection in all poles, must be incorporated in the fixed wiring in accordance with the wiring rules .

- **Read this manual carefully before using this air-conditioner. If you still have any difficulties or problems, consult your dealer for help.**
- **The air-conditioner is designed to provide you with comfortable room conditions. Use this unit only for its intended purpose as described in this instruction manual.**

1.Safety

⚠ WARNING

- Never use gasoline or other inflammable gas near the air-conditioner, which is very dangerous.
- When the air conditioner operation is abnormal, such as burnt smell, deformation, fire, smoke, and so on, it is forbidden to continue using the air conditioner, the main power switch of the air conditioner must be cut off immediately and the agent must be contacted.

⚠ CAUTION

- Do not turn the air-conditioner on or off from the main power switch. Use the ON/OFF operation button.
- Do not stick anything into the air inlet and air outlet of both the indoor and outdoor units. This is dangerous because the fan is rotating at a high speed.
- Do not cool or heat the room too much if babies or invalids are present.
- The method of connection of the appliance to the electrical supply and interconnection of separate components, and the wiring diagram with a clear indication of the connections and wiring to external control devices and supply cord are detailed in below parts.
- The cord of the H07RN-F type or the electrically equivalent type must be used for power connection and interconnection between outdoor unit and indoor unit. The size of the cord is detailed in outdoor instruction manual.
- Type and rating of circuit breakers / ELB are detailed in outdoor instruction manual.
- The information of dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures is detailed in below parts.

NOTE:

- **Storage condition: Temperature -25~60**℃(-13°F~140°F)
  Humidity 30%~80%
- **Heating and electric heater function are not available for cooling only models.**

Safety Precautions

Precautions for using R32 refrigerant

The basic installation work procedures are the same as the conventional refrigerant (R22 or R410A). However, pay attention to the following points:

⚠ WARNING

1. **Transport of equipment containing flammable refrigerants.**
Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment, permitted to be transported together will be determined by the applicable transport regulations.

2. **Marking of equipment using signs**
Signs for similar appliances (containing flammable refrigerants) used in a work area generally are addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location. All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs. The effectiveness of signs should not be diminished by too many signs being placed together. Any pictograms used should be as simple as possible and contain only essential details.

3. **Disposal of equipment using flammable refrigerants**
Compliance with national regulations

4. **Storage of equipment/appliances**
The storage of equipment should be in accordance with the manufacturer's instructions.

5. **Storage of packed (unsold) equipment**
- Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge.
- The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

6. **Information on servicing**

6-1 **Checks to the area**
Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions should be complied with prior to conducting work on the system.

6-2 **Work procedure**
Work shall be undertaken under a controlled procedure so as to minimise the risk of flammable gas or vapour being present while the work is being performed.

6-3 **General work area**
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

6-4 **Checking for presence of refrigerant**
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

6-5 **Presence of fire extinguisher**
- If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.
- Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

6-6 **No ignition sources**
- No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

6-7 **Ventilated area**
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
- A degree of ventilation shall continue during the period that the work is carried out.
- The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

6-8 **Checks to the refrigeration equipment**
- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.
- At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

⚠ WARNING

•The following checks shall be applied to installations using flammable refrigerants:

– The charge size is in accordance with the room size within which the refrigerant containing parts are installed;

– The ventilation machinery and outlets are operating adequately and are not obstructed;

– If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

–Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

–Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

6-9 Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
- This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include:
- That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- That there no live electrical components and wiring are exposed while charging, recovering or purging the system;
- That there is continuity of earth bonding.

7. Repairs to sealed components

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.
- If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected.
- This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE: The use of silicon sealants may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

8. Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer.
- Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

9. Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

⚠ WARNING

10. **Detection of flammable refrigerants**
- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.

11. **Leak detection methods**

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants:
- Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/ extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

12. **Removal and evacuation**
- When breaking into the refrigerant circuit to make repairs – or for any other purpose –conventional procedures shall be used.
- However, it is important that best practice is followed since flammability is a consideration.
- The following procedure shall be adhered to:

  Remove refrigerant;
  Purge the circuit with inert gas;
  Evacuate;
  Purge again with inert gas;
  Open the circuit by cutting or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders.
- The system shall be “flushed” with OFN to render the unit safe.
- This process may need to be repeated several times.
- Compressed air or oxygen shall not be used for this task.
- Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
- This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- This operation is absolutely vital if brazing operations on the pipe-work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

13. **Charging procedures**
- In addition to conventional charging procedures, the following requirements shall be followed:
  - Ensure that contamination of different refrigerants does not occur when using charging equipment.
  - Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
  - Cylinders shall be kept upright.
  - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill the refrigeration system.
  - Prior to recharging the system it shall be pressure tested with OFN.
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

14. **Decommissioning**

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.
It is recommended good practice that all refrigerants are recovered safely.

⚠ WARNING

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:
- Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- All personal protective equipment is available and being used correctly;
- The recovery process is supervised at all times by a competent person;
- Recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturer's instructions.
h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

15. **Labelling**

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.
The label shall be dated and signed.
Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

16. **Recovery**

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge is available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

1.Safety

⚠ WARNING

•Appliance shall be installed, operated and stored in a room with a floor area larger than X (X see below).
•The installation of pipe-work shall be kept to a a room with a floor area larger than X (X see below).
•The pipe-work shall be compliianced with national gas regulations.
• When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
• Do not place any other electrical products or household belongings under indoor unit or outdoor unit.
• Condensation dripping from the unit might get them wet, and may cause damage or malfunction of your property.
• Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
• The appliance shall be stored in a room without continuously operating ignition sources （for example: open flames, an operating gas appliance or an operating electric heater).
• Do not pierce or burn.
• Be aware that refrigerants may not contain an odour.
• To keep ventilation openings clear of obstruction.
• The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
• The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
• Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authoriaes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
• Servicing shall only be performed as recommended by the equipment manufacturer.
• Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
• The appliance shall be installed and stored so as to prevent mechanical damage from occurring.
• Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated.
• The installation of pipe-work shall be kept to a minimum.
• Mechanical connections shall be accessible for maintenance purposes.

Explanation of symbols displayed on the indoor unit or outdoor unit.

	**WARNING**	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	**CAUTION**	This symbol shows that the operation manual should be read carefully.
	**CAUTION**	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	**CAUTION**	This symbol shows that information is available such as the operating manual or installation manual.

2.1 Indoor unit:

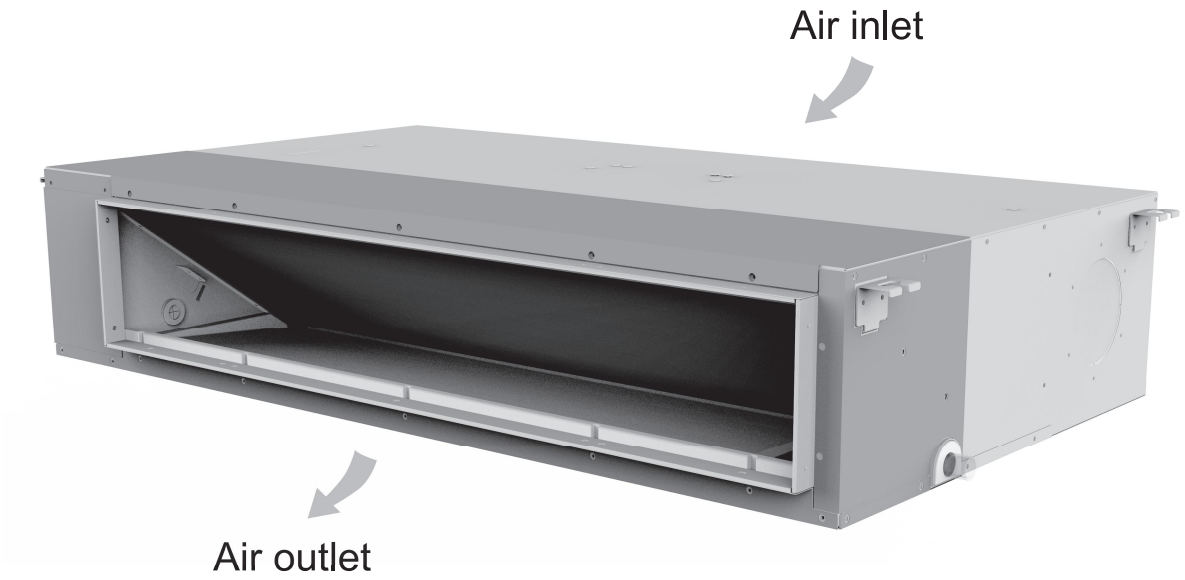


Figure 1

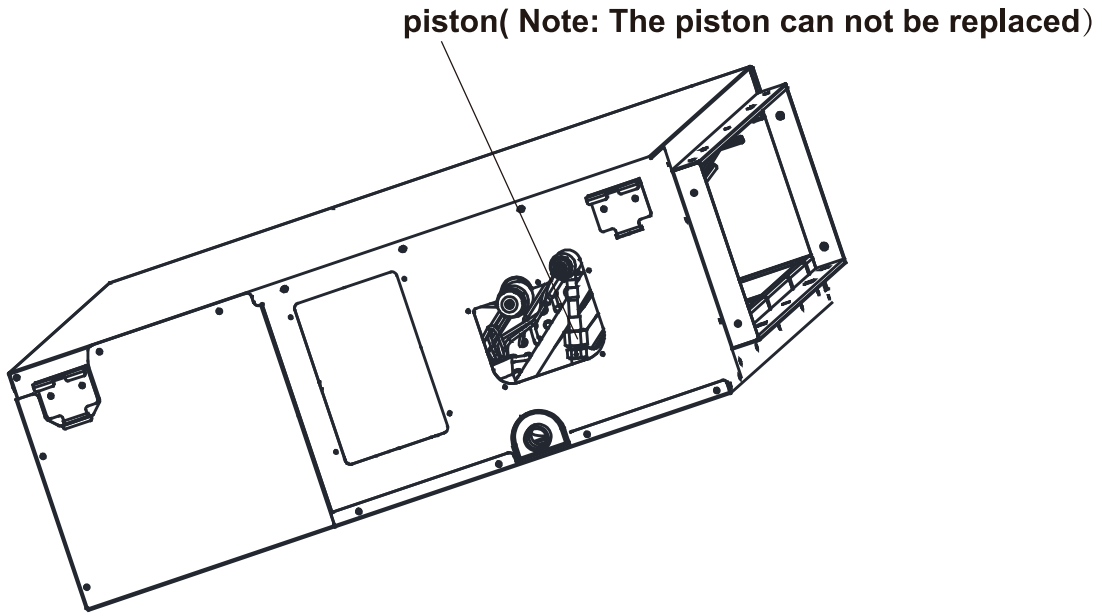
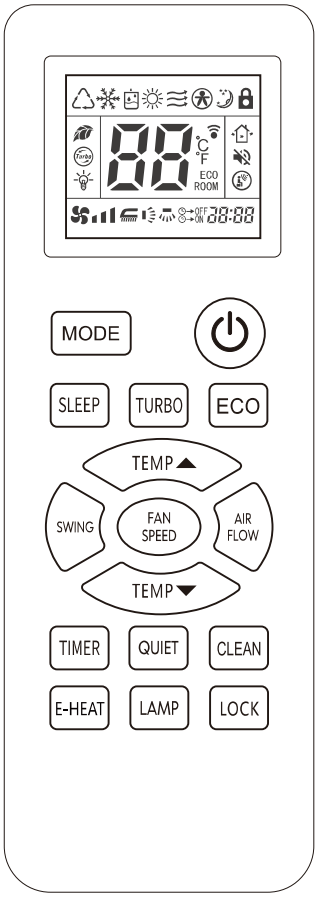


Figure 2

3.Introduction for remote controller and light board

3.1 Introduction for remote controller and light board (standard)

Remote controller (RS485 Comm. Mode)



Button	Function Description
MODE	This button changes the operation mode:AUTO, COOL,DRY,HEAT,FAN.
⏻	This button, when pressed starts operation and stops when repressed.
SLEEP	This button changes to SLEEP operation.
TURBO	This button changes to TURBO operation (It does not work in AUTO,DRY,and FAN mode.)
ECO	This button is used to open and close the ECO(energy saving)operation function, which can only be entered when the remote control is set to power on, and the ECO mode switches between 0, 1, 2, 3. Every time change the ECO mode, the remote control shows the corresponding ECO mode for 10s (0 is not displayed, ECO1 shows C1, ECO2 shows C2, ECO3 shows C3),
TEMP▲ TEMP▼	This button sets the room temperature.
SWING	This button changes the flap mode:swing or fixed wind.
FAN SPEED	This button set air rate.
AIR FLOW	This button used for selection of the left/right air flow direction, whenever pressed the in flap will swing or fix(It just works on three-dimensional air flow model.)
TIMER	This button is used to set the switch-on or switch-off and the timer time.
E-HEAT	Only for models with electrical auxiliary heater This button used to control the auxiliary electric heating funcion, and the button only valid in the HEAT mode. Press the button to switch the auxiliary heating function between “auxiliary heat on → auxiliary heat off → automatic auxiliary heating”.

3.Introduction for remote controller and light board

Button	Function Description
QUIET	Press this button to make the AC keep quiet.
LAMP	Press this button to turn off the indications on the device.
CLEAN	Press this button to CLEAN when the device and remote control are OFF, and the cleaning icon will be displayed on the remote control. The cleaning icon shows that it will disappear automatically in 6 minutes, and the air conditioner will enter standby mode after the cleaning is completed logically. Press this button during the cleaning process to cancel the cleaning function. If the user implements the mode change and shutdown operation during the cleaning mode, the cleaning function will be terminated and the air conditioner will run according to the new mode.
LOCK	Press this button to lock or unlock the keyboard.
TURBO + TEMP▲	℃/℉ function: Press TURBO button and TEMP▲ button at the same time to switch to Fahrenheit or Celsius temperature display on the remote control.
TURBO + TEMP▼	10℃ HEAT function: Press TURBO button and TEMP▼ button at the same time to start or stop the 10℃ HEAT function.

NOTE:

◯ Above figure shows all indications for the purpose of explanation, but practically only the pertinent parts are indicated. When air-conditioner is cooling-only model, the"Heat"mode is for Fan only.

◯ When TURBO operation is selected, room temperature is not controlled with operation being continually. If you feel the room temperature is too cool or too hot, please cancel the TURBO operation.

◯ Buttons design might be slightly different from the actual one.

3.Introduction for remote controller and light board

Notices for remote controller:

①Do not place the remote controller near the high temperature heat sources such as electric carpet or heating oven.

②Do not put the remote controller at the position directly exposed to the sunshine.

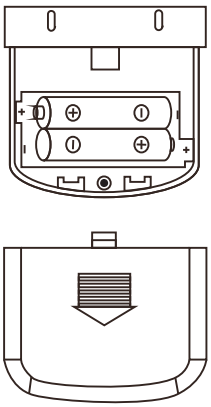
③Be careful not to drop off from high position; otherwise it may be damaged.

④There must have no barrier between signal receiver and remote controller of air conditioner which may affect the receiving and transmitting of signal.

⑤Do not splash the liquid such as water onto the remote controller.

⑥Do not place the weight onto the remote controller.

Note: In case of operation failure of remote controller, please replace with new battery and repeat the operation; if the failure still exists, please run the air conditioner in emergency operation method, and contact the dealer or special maintenance points.



Remove the back cover

Replacement of remote controller battery

In case of following conditions, it indicates the battery is used up; take out the used battery and replace with new one.

①There is no air conditioner receiving sound after transmitted the signal.

②The display screen becomes obscure.

In case of above conditions, it indicates the battery is used up; take out the used battery and replace with new one.

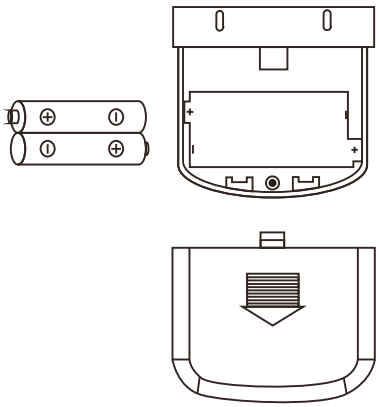
A. Remove rear cover and take out the used battery.

B. Replace the battery; notice the "+" and "-" electrode marks of battery.

C. Close the rear cover.

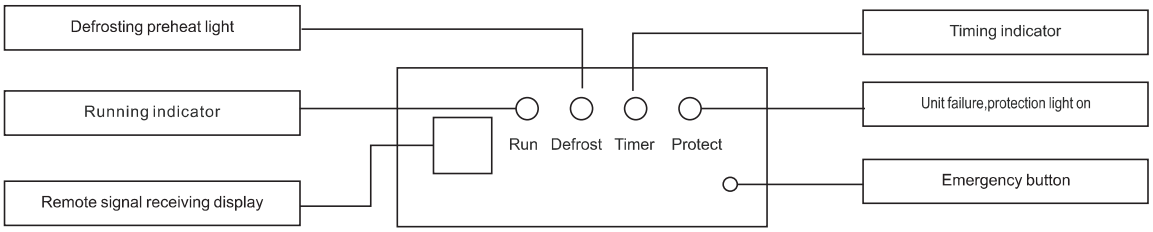
Note:

1. The new and used batteries must not be mixed.
2. Please take out the battery if the remote controller is not used for long time.



Note the alignment of "+", "-" pole

Indicator plate(light board must be used associated with remote controller)

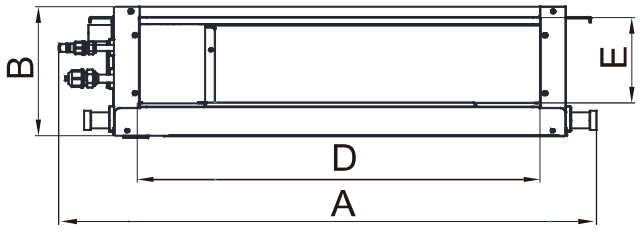


Remote controller does not work! You can press this button for emergency operations.

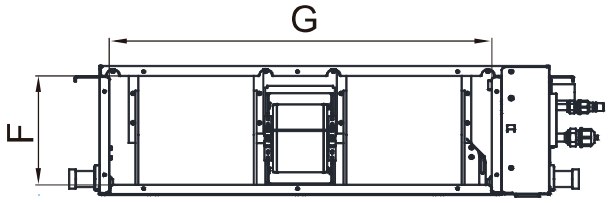
Wizard universal remote controller (They can respectively be used associated with the remote controller or light board).

4.Installation guide

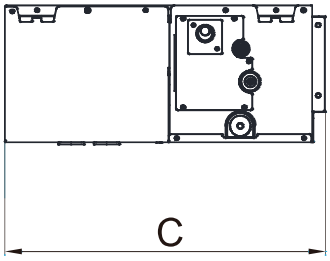
Unit dimensions and outlet dimensions



Size of return air outlet (rear return air mode):



Size of return air outlet (lower return air mode) and hoisting spacing:



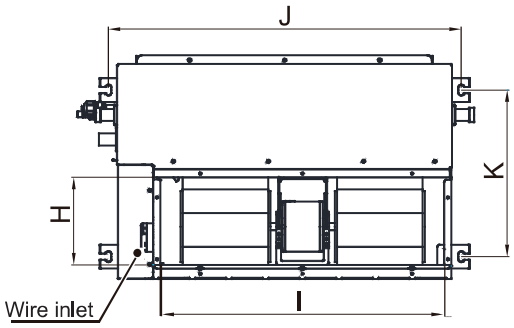


Figure 3

Model	Body size			Air outlet		Return air outlet		Down air outlet		Hoisting size	
	A	B	C	D	E	F	G	H	I	J	K
18K	1015	200	470	825	140	170	795	185	795	940	350
24K	1215	200	470	1025	140	170	995	185	995	1140	350
36K-60K	1375	255	730	1075	192	210	1125	215	1125	1290	600

Note:The actual size of the product shall prevail.

4.Installation guide

Installation of indoor unit

1. The selection of install location

(1) Sufficient strength to ensure that on top hanging parts to bear the weight of the unit.

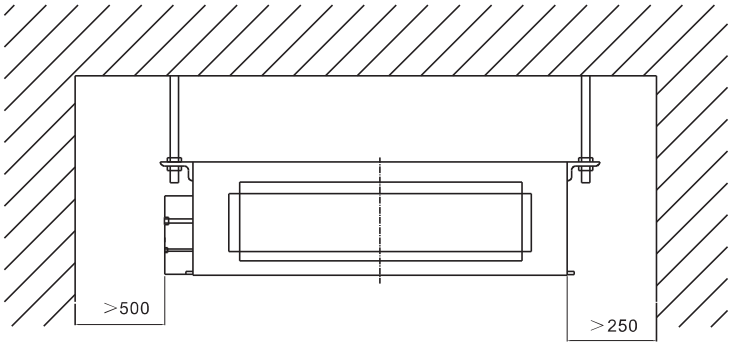
(2) Water is easily discharged from the drain.

(3) Accessible in import and export, to maintain good air circulation.

(4) In indoor unit, the install distance required in figure 7 must be ensured to make sure the space required by repair and maintenance is kept.

(5) Away from place of heat, flammable gas leakage and smoke.

(6) The machine is ceiling mounted (ceiling built-concealed installation).



From the groud≥2. 2m

Figure 4

(7)Indoor, outdoor, power cord, connecting wires should keep at least 1 m away from the TV, radio. This is to prevent image interference and noise in above mentioned home appliances. (Even with a distance of 1 m, if the generated wave is strong, it may occur noises)

4.Installation guide

2.The installation of the indoor unit

a.Insert M10 expansion bolt into the hole, then knock the nails into the bolt, for the pitch referring to figure 8.1, the installation of expansion bolts is shown in figure 8.1.

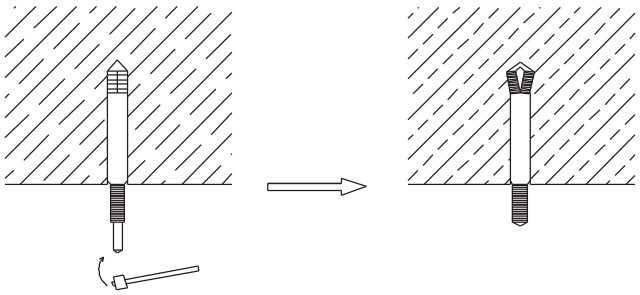


Figure 5.1

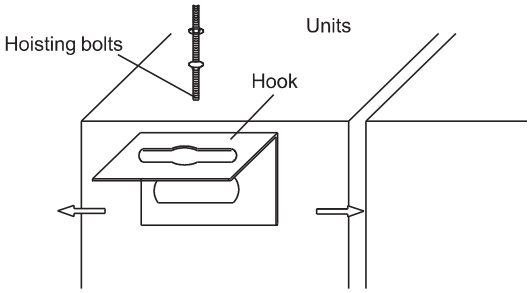


Figure 5.2

b.Install the hook onto the indoor unit, shown in Figure 8.2.

c.The indoor unit is mounted on the ceiling, See Figure 9 .

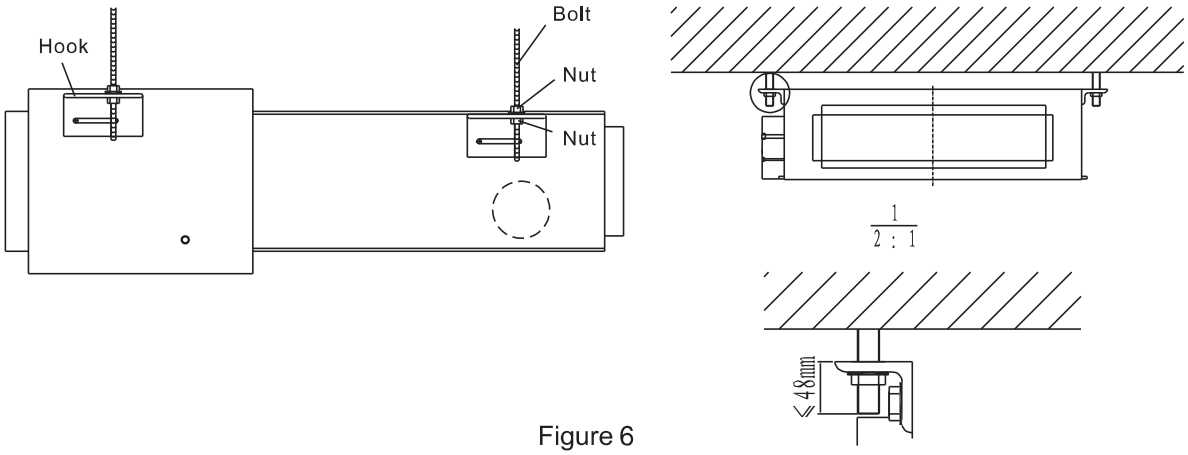


Figure 6

Notice

1. Before installation, first complete the preparatory work of all pipes (refrigerant, drainage) and wires (line controller connection, indoor and outdoor unit connecting wire) which need to be connected with the indoor unit to immediately be able to connect with the indoor unit after installation.
2. An opening is cut in the ceiling, and the ceiling is possibly to be reinforced to maintain the ceiling level, and prevent vibration of the ceiling. For details, please consult the user or builders.
3. If the ceiling is not strong enough, an angle iron can be used to set up a transom bracket, or put the unit on the beam for fixation.

Connection and installation of indoor, outdoor unit refrigerant pipe

1.Pipeline inspection

Before connecting the pipes, they must be checked, and be installed after meeting the following requirements.

1) Inside the tube it must be clean and free of dirt.

2) Bell port and spiral port on both ends must be intact.

2.Pipe connections

On operation of connecting the condenser tubes of the indoor unit, the operation is required to be done quickly. During field installation, operation time for connecting two tubes should not exceed 5 minutes.

1) When connecting the connector on the bell port, be sure to make two pipes concentric and aligned, and then nested the spiral port, and screwed it in, finally tightened with a wrench, shown in figure 15:

Connect the solid brass, before operation, regulate the torque wrench according to tightening force parameters listed in Table 7.

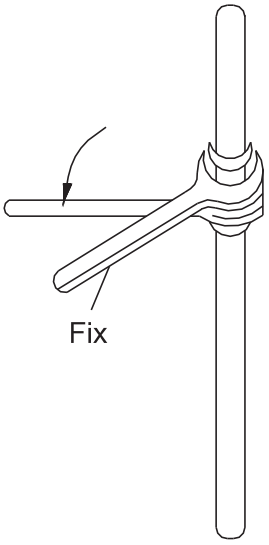


Figure 7

Notes:

Use two wrenches, ordinary wrench, torque wrench each one.

Table 7

Pipe diameter(mm)	Tightening force (kgf • m)
6.35 (1/4)	1.4 ~1.7
9.52 (3/8)	1.4 ~1.7
12.7 (1/2)	4.8 ~6.2
15.88 (5/8)	4.8 ~6.2
19.05 (3/4)	6.9 ~9.9

2) Through the wall: upon the wall penetration, the pipeline for indoor and outdoor unit must be equipped with wall cannula, to avoid damage of pipes and wires, as shown in Figure 16:

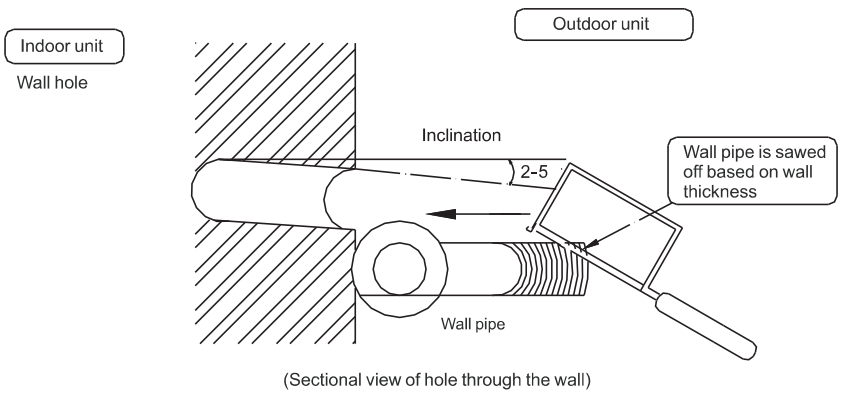


Figure 8

3) Eliminate the negative pressure, evacuation, leaks in the connecting pipe, pipeline of indoor unit:
After installation of the unit connecting pipe and the indoor unit, first fill nitrogen into the connecting pipes and the indoor unit pipe up to 2.4-3.0Mpa (absolute pressure); and maintain this pressure for 24 hours, the change of this pressure should not be less than 0.03Mpa; Also check with soap bubbles for any leaks on the connecting head and the welding position, the nitrogen is discharged after confirmation of no leakage, after evacuated, the pressure should reach 130Pa (absolute pressure), and maintain this pressure for 24 hours, the variation of this pressure should not be greater than 20Pa, then open the valve to perform a trial run, if the parameters of the condenser exceeds conventional regulations it needs additional of refrigerant, the following methods can be referred to:

• Record the amount of refrigerant charged and retain the record for use during future maintenance.

Connecting pipe length	Air elimination method	Add refrigerant	
≤ 5m	With the vacuum pump	Needless	
＞5m		Fluid pipe diameter: φ6.35 or φ6	Fluid pipe diameter: φ9.52 or φ9
		R410a: (Pipe length-5)×30g	R410a: (Pipe length-5)×50g
		R32: (Pipe length-5)×24g	R32: (Pipe length-5)×40g

Note: Upon sipping of the outdoor unit, the refrigerant has not been emptied, during installation, it should be evacuated with vacuum pump.

4)Thermal insulation. After leak check of the pipeline and completion of the pressure test, and everything is normal, the insulation layer can be wrapped, the requirements of the insulation layer is as following:

a. Piping insulation layer must be tightly wrapped, no crack is allowed.

b. Thickness not less than 8 mm.

c. After wrap of the insulation layer, the outer surface must be treated against rain, moisture (generally wrap outside with cable ties).

d. When the air conditioner system is in cooling run, dew is definitely not allowed to be condensed on the outer surface of the connecting copper pipe.

Accessory pipe in the pipeline

Because of different mounting positions of the air conditioning, the required accessory pipe can be long or short, to avoid affecting the amount from too long cooling pipe, please select a reasonable tube length according to table 8, try to select the location of the short lines for the installation.

1. The maximum allowable operating distance away from the pipe

Table 8

Value \ Rated refrigerating capacity	<18K	18K~24K	≥36K
A Pipeline length (one-way)	Maximum length 15m	Maximum length 20m	Maximum length 50m
B Height difference(one-way)	Maximum length 8m	Maximum length 10m	Maximum length 20m
C Pipeline bends quantity	Up to 10	Up to 10	Up to 15

Note: On condition that 80% of the cooling capacity is guaranteed, in the above parameters, the cooling capacity loss and return oil has been fully considered.

2. The use of oil return elbow

When the height difference between the indoor and outdoor unit is greater than 5 m, in order to facilitate oil return of the compressor, oil return elbow must be used. Upon site operations, the following typical installation methods can be referred to (see Figure 17).

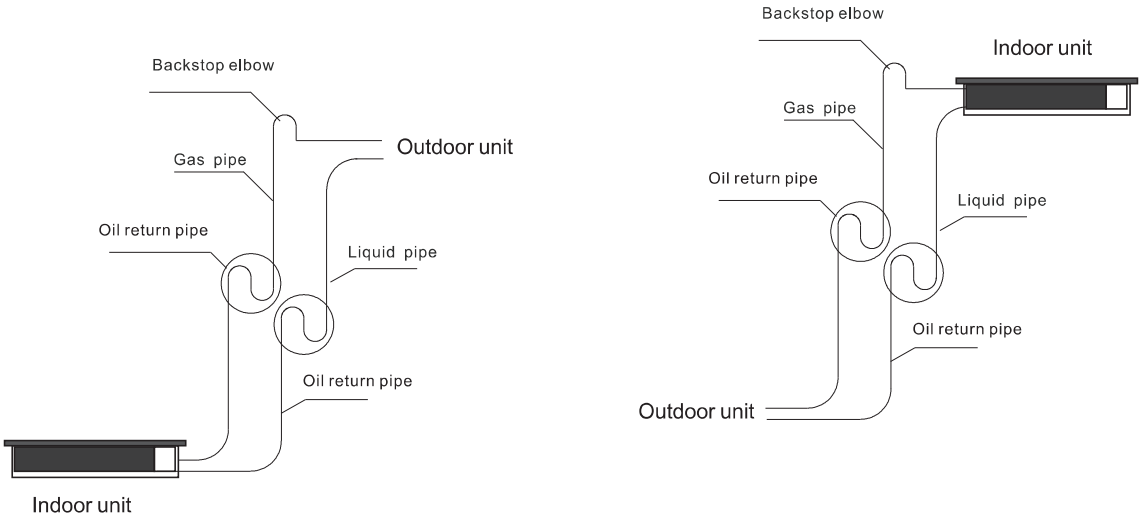


Figure 9

Note: Oil return elbow radius R =100mm, oil return elbows must be located per 5m as shown above; when the height difference between indoor and outdoor unit exceeds five meters, oil reserve elbow and backstop elbow should be set according to the relative position of outdoor unit and indoor unit.

Installation of condensate pipes

As for the cold condensate pipe of central air conditioning indoor unit, the following factors were considered major:

(1) Displacement of large condensate;
(2) Incidental loss of cooling capacity;
(3) Maintenance is inconvenient during installation, wind cross can occur from this location.

1. The material of condensate pipe can be chosen among U-PVC pipe or galvanization pipes. Health, rust and other issues should be considered, U-PVC pipe is recommended to be adopted.

2. The installation requirements:

1) Water seal must be installed at the outdoor drain and be fixed.
2) The slope of drain pipe should be =1%.
3) Indoor section of the condensate pipe should put on a pipe insulation or be wrapped with cotton insulation.
4) After condensate pipe installation, irrigation leak test must be performed. Confirm no water leakage in various joints and smooth drainage. The installation can be performed with reference to figure 18:

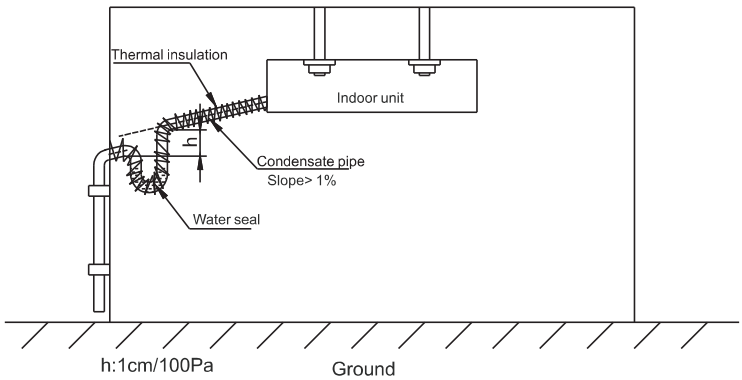


Figure 10

Production and installation of the air duct

1. Production of the air duct

The air duct can be produced refer to the relevant requirements in metal air duct section of GB50243-97 specification.

2. The installation of new air duct

1) Entry of new air duct can be directly selected at a place of clean, no dust pollution. Rain louver and filter must be installed at the outdoor air intake. Air volume control valve is recommended to be installed at new air duct section; It's appropriate if the fresh air accounts for 0 ~ 15 % of the total air volume, shown in figure 19:

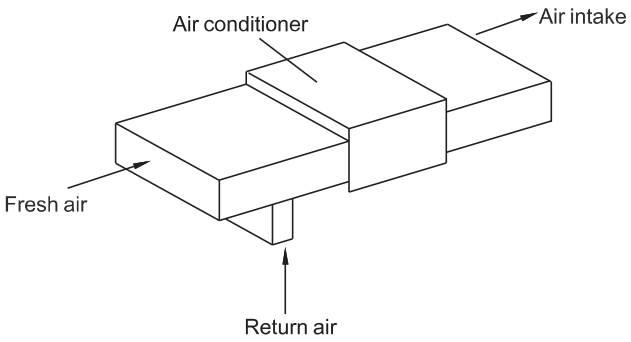


Figure 11

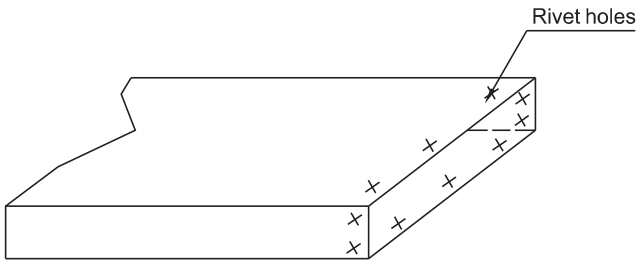


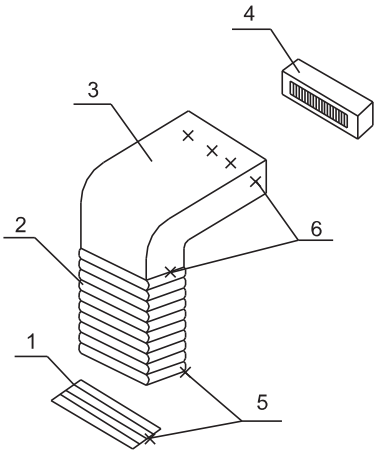
Figure 12

2) Installation of air duct

Rectangular air intake duct can be directly connected with the outlet of the indoor unit, and connected with the diffuser, with a total length no more than 6m. The velocity of each air outlet at diffuser should be adjusted to basically the same in order to meet the indoor air conditioner requirements, shown in figure 20:

3) Installation of return air duct

Connect the air return duct to the return air intake of indoor unit with a rivet, and the other end is connected to indoor return air intake, a short soft air duct in material of fireproof canvas can be made, and be penetrated and connected with 8 # wire to form a fold shape, which can be freely adjusted according to the indoor ceiling height, as shown in figure 21:



1 - Indoor return air intake
2 - Fireproof canvas air duct
3 - Air return duct
4 - Indoor unit
5 - Wood screws
6 - Rivet

Figure 13

4) Thermal insulation of air duct

Insulation layer should be equipped on both air intake duct and return air duct, there are two kinds of insulation materials as rubber PE and glass wool. Insulation material of rubber PE is adopted, firstly the duct surface should be wiped clean, and then paste PE insulation materials to pipe using associated glue; when glass wool insulation is adopted, firstly the plastic nail is bonded to the air duct, and then attach the cotton insulation with a layer of tin tube paper, cover it with plastic nail, and finally seal the connection port with tin filling tape, as shown in figure 22:

Note:

1. Bonding density of the retaining plastic nails as shown in table 9;
2. Please note when attaching the insulation layer: during cooling running, dew is absolutely not allowed on the outer surface of insulation layer.

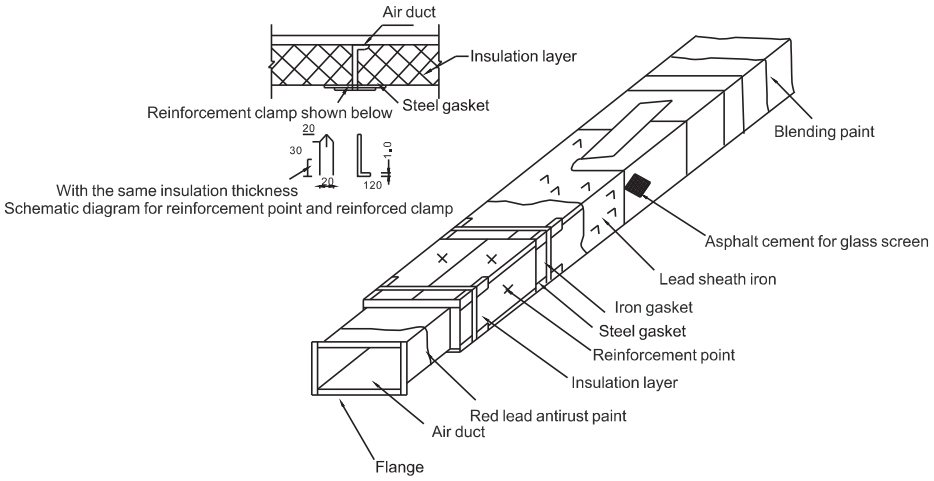


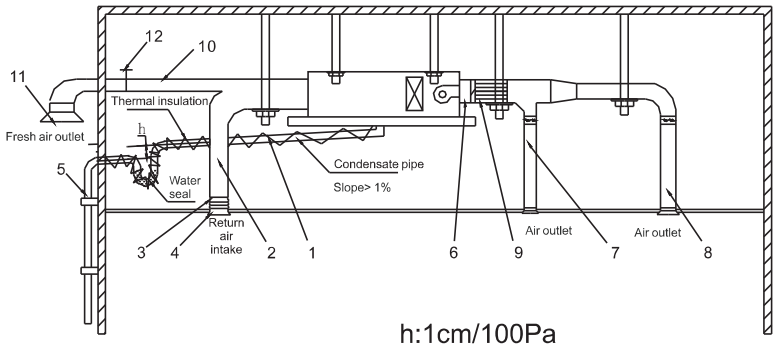
Figure 14: Lashing thermal insulation for rectangular air duct sheet

Table 9

On the side and below of air duct	Above the air duct
12 pieces/m^2	5 pieces/m^2

5) Other The distance from the edge of the return air to the wall is recommended to be 150 mm or more.

Figure 23: Lifting diagram for low static pressure air duct unit:



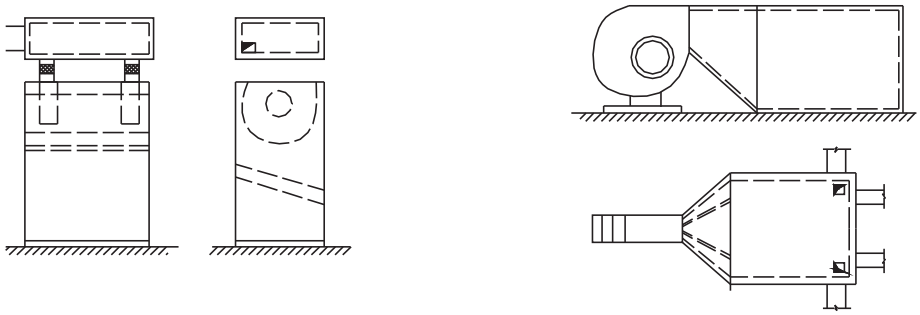
1 - Hook
2 - Air return duct
3 - Canvas air duct
4 - Air return louvers
5 - Drain pipe
6 - Transition air duct
7 - Outlet air duct
8 - Diffuser
9 - Muffler
10 - New air duct
11 - Rain louver
12 - Damp

Figure 15

Plenum chamber

1. The location and function of the plenum chamber

Plenum is set outside the outlet of the unit, and sound-absorbing material is affixed on it, so that it can both stabilize the airflow, but also effectively attenuate the fan noise by using the mutation on the box section and t he sound absorption effect of the cabinet inner surface, as shown in figure 24.



(a) Anechoic chamber is mounted on the outlet

(b) Application of the air conditioning unit, which also has the functin as sub-wind plenum box

Figure 16 Application of the plenum chamber

2. Installation of the plenum chamber

1) Relevant provisions on equipment static tube

a. For equipment in which air out static pressure is greater than 30Pa, hydrostatic tank must be installed on its wind pipe, for its specifications and installation, please see related provisions in GB50243-2002.

b. Plenum chamber should be located in the pipe section with a smooth flow in air duct system, when the air flow velocity in the air duct system is less than 8 m/s, the plenum chamber should be located on main pipe section; when the airflow speed is more than 8m/ s, they should be installed in the respective branch pipes respectively.

c. Plenum chamber is not directly installed in the air conditioner room, nor directly in the outdoors, to avoid being penetrated by the noise outside and into the pipe downstream the plenum chamber. In situations where there may be external noise, the sound insulation capability of the duct should be verified.

d. The flow rate of air passing the plenum chamber shouldn't exceed the following values:
Negative plenum chamber 5-10m/s (in high requirements:4-6 m/s);
Resonance plenum chamber 5 m/s, silencer elbow 6-8 m/s.

e. Plenum chamber is mainly used to reduce the noise from the dynamic air, anti-vibration measures should be taken to solve the noise caused by ventilator vibration.

2) Installation requirements of plenum chamber;

a. Direction of plenum chamber is installed correctly. Pay attention to loss prevention and anti-moisture.

b. The surface of perforated plates remain clean, non-corrosive, no clogging in the hole.

c. Separate brackets should be installed both in plenum chamber and in silencer corners.

d. The screws used to fasten hydrostatic tank must be uniform, smooth, no loosening, shedding in the seams.

e. The glass fiber cloth packed outside the muffler piece should be smooth, without visible scratches and corrosion.

A variety of measures to prevent cross sound between two rooms

When a main air duct is fed to multiple rooms (Figure 25a), in order to prevent "cross sound" between rooms, each program shown in Figure 25, (a) - (e) can be referred to and adopted to prevent.

1) Expand the distance between the air outlet of two chambers (see figure b);
2) Paste the sound-absorbing material (see figure c);
3) Elbow is added on air manifold in room B (see figure d);
4) Air is sent via two-way (see figure e).

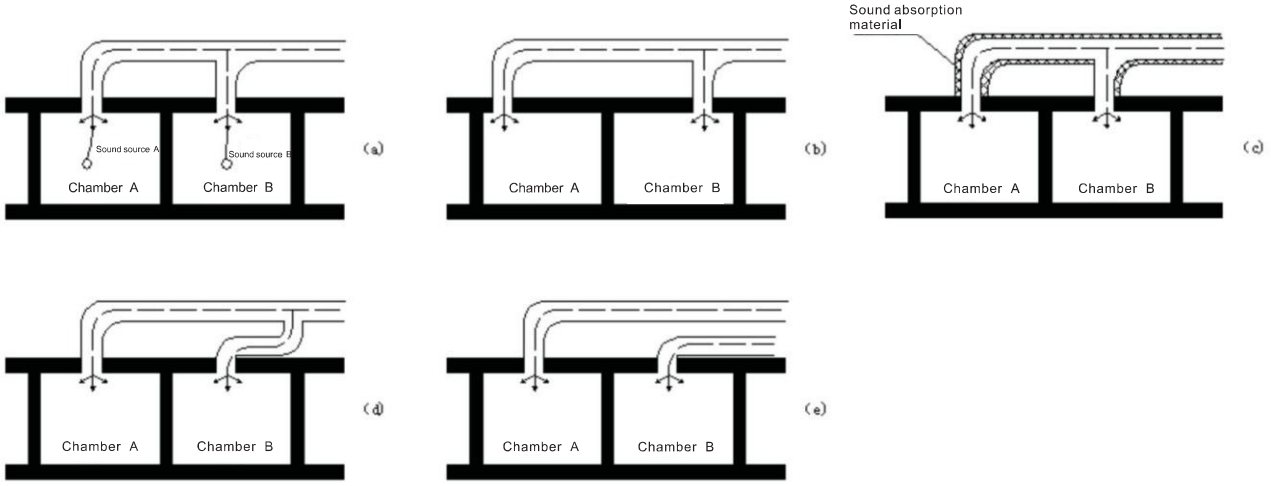


Figure 17

Note:

After completion of the installation of the unit, be sure to notify our sales staff to perform the adjustment, otherwise all the consequences arising therefrom will be borne by the user or installer side.

5.Electrical Installation

General Check

⚠ CAUTION

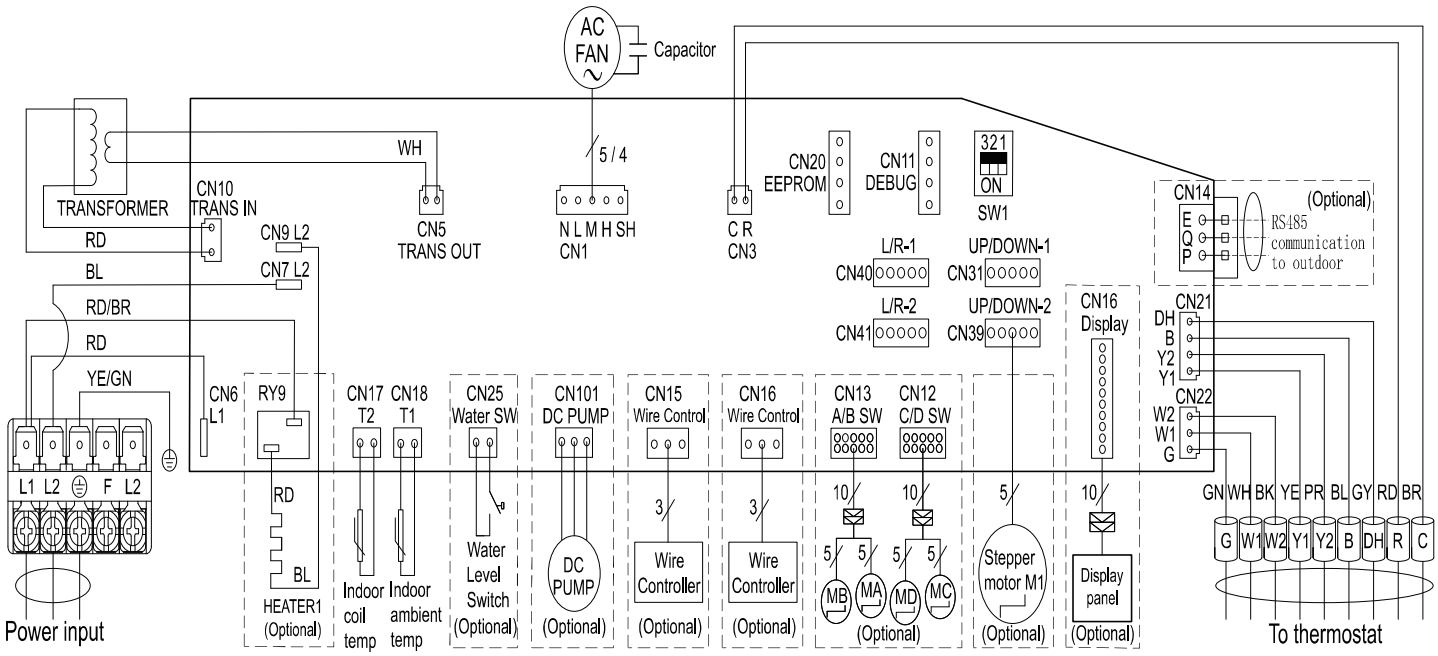
- When clamping the wiring, to prevent external pressure being exerted on the wiring connections, use the clamping material and fix firmly.
- When performing the wiring work, ensure that the wiring is proper and does not cause the control box lid to open up, if so close the cover firmly. When attaching the control lid, make sure that the wires are not affected.
- Outside the unit, keep the weak wiring (remote controller and transmission wiring) and strong wiring (earth and power supply wiring) at least 50 mm away so that they do not pass through the same place together. Proximity may cause electrical interference malfunction and breakage.

⚠ WARNING

- If the fuses blow, please call the service dealer. Please do not replace them by yourself, as it may lead to electric shock and other injuries.

(1) Remove the screws on the control box.
(2) Connect the power cord and earth wire to the main terminal.
(3) Connect the remote control wire to the subsidiary terminal box according to electric wiring diagram.
(4) Connect the power supply of the indoor and outdoor units to the main terminal.
(5) Tie the wire in the control box with the clamp tightly.
(6) After completing the wiring, seal the wiring hole with the sealing material (with the lid) to prevent the condensed water and insects entering the wiring space.

Wiring Diagrams



DIP switch status Indicate	
ON / OFF 1	This Indicate OFF(the DIP switch is dialed to the digital side)
ON / OFF 1	This Indicate ON(the DIP switch is dialed to Non-digital side)

SW1 DIP switch selection		
SW1.1	OFF	24V Control
	ON	RS485 Comm. Mode
SW1.2	OFF	Anti-Cold Air Delay 90S
	ON	Disable Anti-Cold Air Delay
SW1.3	OFF	T1 from main board
	ON	T1 from thermostat

Wire Color Code	
RD RED	OR ORANGE
BL BLUE	GN GREEN
BR BROWN	GY GRAY
BK BLACK	YE YELLOW
WH WHITE	PR PURPLE

Line annotation

- Factory wiring
- Engineering connection
- Physical appearance
- Dashed box

5.3 Specific Wiring Methods

When using a 24v thermostat, please refer to the non-communicating wiring diagrams that follow:

Connection method

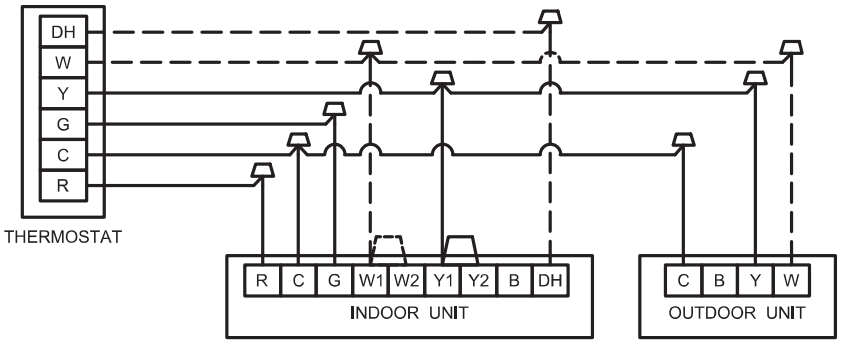
The following wiring diagram are suitable for the IDU and ODU with 24V thermostat.

no heat pump system model

Wiring for 1H and 1C thermostat (no heat pump system model)

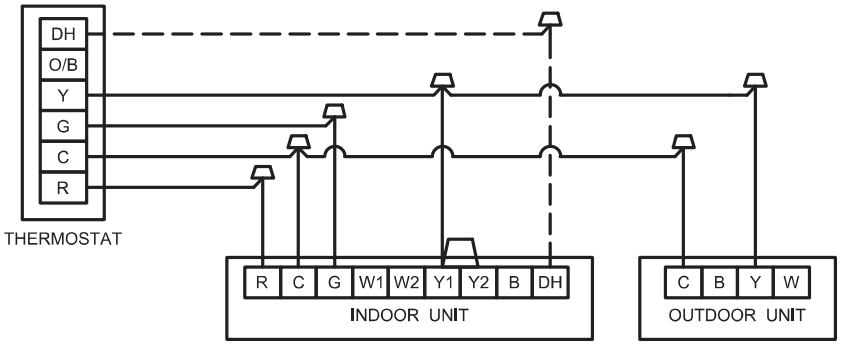
Note:Because Y1 and Y2 are jumped, the indoor fan will only run in high stage.

Note: Any time the electric heat elements are active. the indoor fan will run in high stage.



Wiring for 1H and 1C thermostat (no heat pump system model)

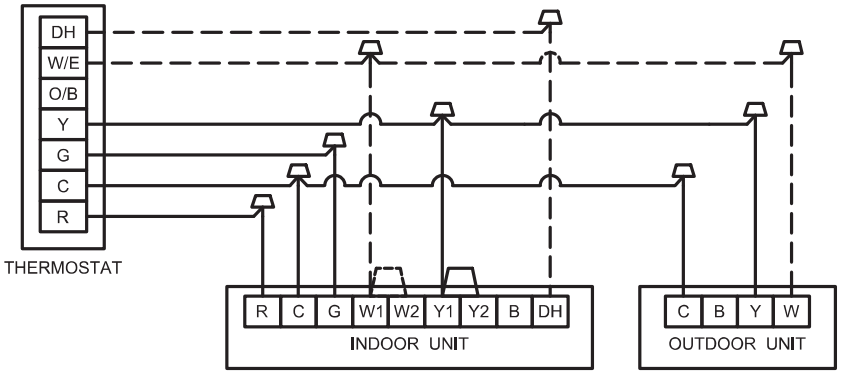
Note:Because Y1 and Y2 are jumped, the indoor fan will only run in high stage.



Wiring for 2H and 1C thermostat (no heat pump system model)

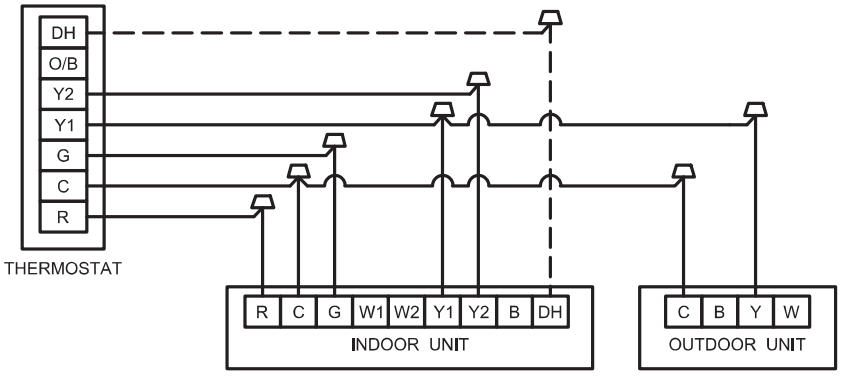
Note:Because Y1 and Y2 are jumped, the indoor fan will only run in high stage.

Note: Any time the electric heat elements are active. the indoor fan will run in high stage.



Wiring for 2H and 2C thermostat (no heat pump system model)

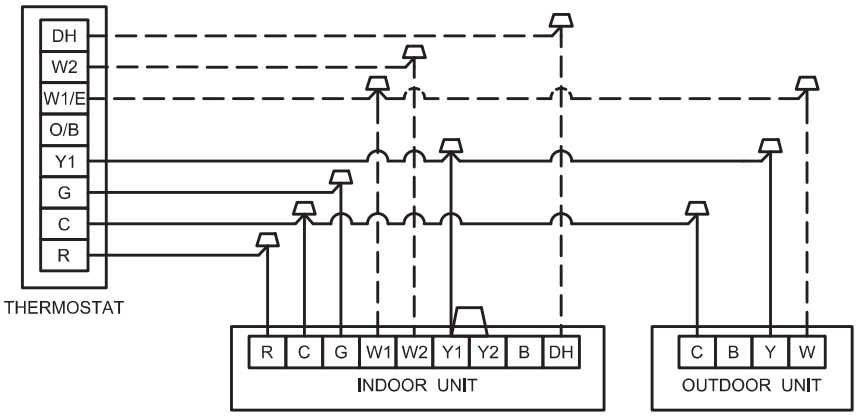
Note:Y1 and Y2
here represents 2 stages of fan
cooling only, the compressor
modulates separately from the fan.



Wiring for 3H and 1C thermostat (no heat pump system model)

Note:Because Y1 and Y2
are jumped, the indoor fan
will only run in high stage.

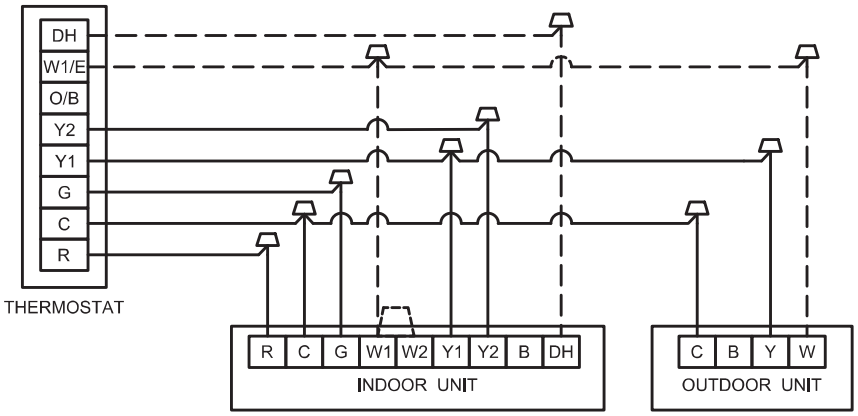
Note: Any time the electric heat
elements are active. the indoor
fan will run in high stage.



Wiring for 3H and 2C thermostat (no heat pump system model)

Note:Y1 and Y2
here represents 2 stages of fan
cooling only, the compressor
modulates separately from the fan.

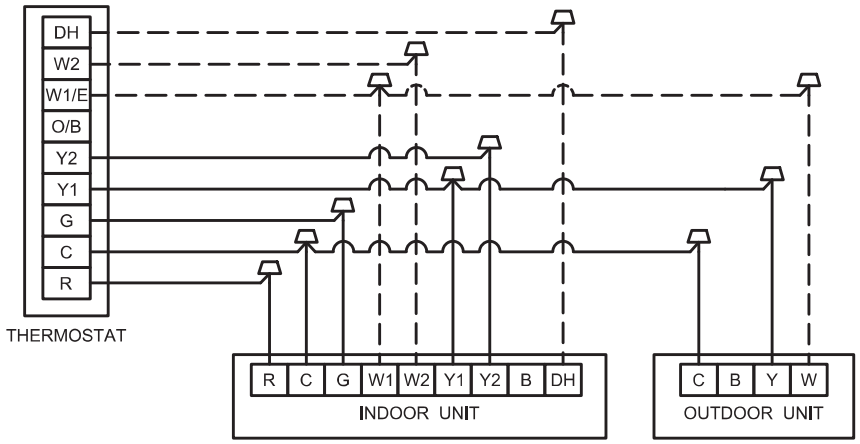
Note: Any time the electric heat
elements are active. the indoor
fan will run in high stage.



Wiring for 4H and 2C thermostat (no heat pump system model)

Note:Y1 and Y2 here represents 2 stages of fan cooling only, the compressor modulates separately from the fan.

Note: Any time the electric heat elements are active. the indoor fan will run in high stage.



Dh wiring is optional and requires a thermostat with a humidistat. Dh functions as Passive Dehumidifi cation and will downstage the indoor fan to first stage. System will operate according to normal sequence of operations if Dh wiring is absent.

Dashed lines in the above thermostat wiring diagrams refer to optional wiring (wiring for Passive Dehumidifi cation Function and/OR Electric Heat). For thermostat wiring please refer to the Owner's Manual of the thermostat.

B wire must be used with heat pump system only, the reversing valve energizes in heating.

Control logic

Indoor unit connector

Connector	Purpose
R	24V Power Connection
C	Common
G	Fan Control
Y1	Low Cooling
Y2	High Cooling
B	Heating Reversing Valve
W1	Stage 1 Electric Heating
W2	Stage 2 Electric Heating
DH	Dehumidification

Outdoor unit connector

Connector	Purpose
C	Common
Y	Cooling
B	Heating Reversing Valve
W	Defrost control

5.4 Low Voltage Maximum Wire Length

Table defines the maximum total length of low voltage wiring from the outdoor unit to the indoor unit and to the thermostat.

24 Volts - Wire size	Max. Wire Length
18 AWG	150 Ft.
16 AWG	225 Ft.
14 AWG	300 Ft.

Table

Self diagnosis function Error code table (indoor unit display)

When unit is running, running light ON, digital tube shows setting temperature in cooling and heating mode, digital tube shows indoor temperature in fan only mode; defrost light turns on when defrosting, timer light turns on when in timer mode.

Error code	Light board displa				Error definition
	Run lamps	Defrost lamps	Timer lamps	Protect lamps	
E1	OFF	Flicker	OFF	OFF	Outdoor unit and indoor unit communication error (from Indoor unit)
E2	OFF	OFF	Flicker	OFF	Indoor unit T1 temperature sensor fault
E3	OFF	OFF	OFF	Flicker	Indoor unit T2 temperature sensor fault
E4	Flicker	Flicker	OFF	OFF	Refrigerant concentration sensor fault
E6	Flicker	OFF	OFF	Flicker	Refrigerant leakage protection
E8	OFF	Flicker	OFF	Flicker	Indoor fan motor current fault
E9	OFF	OFF	Flicker	Flicker	Wired controller communication faul
EE	ON	Flicker	OFF	OFF	The main control board of the indoor unit EEPROM is faulty
PA	Flicker	Flicker	OFF	ON	Anti-freeze protection
d3	Flicker	ON	Flicker	Flicker	Water full failure

6.1 Confirmation Before Test Run

After installation of indoor and outdoor units, piping and wiring, , please confirm there is no refrigerant leak, loose of power supply line and signal line, and no mistaken polarity.

Note: The compressor will not run in case of mistaken connection of power supply line.

6.2 Test Run

1. Connect the main power supply of unit.
2. Press the emergency operation switch (refrigeration or heating) and the air conditioner starts; the operation indication lamp will illuminate; check whether the operation of unit is normal; when pressed the emergency operation switch once again, it will stop the operation.
3. Press the "ON/OFF" key of remote controller and confirm whether the indoor unit emits "Bee" sound; if heard, the remote controller functions and the emergency operation will be canceled; then operate the keys of remote controller to observe whether the operation modes of unit changes correspondingly.
   1) Press "mode" key and select "air supply" mode; check whether there is air blowing out from the air conditioner.
   2) Press "mode" key and select refrigeration mode; check whether there is cool air blowing out of the ai conditioner.
   3) Press "mode" key and select heating mode; check whether there is hot air flowing out of the air conditioner (without this mode for single cold type unit) r
   4) Press "wind speed" mode and select high speed mode; check whether there is strong wind blowing out of the air conditioner.
   5) Press the "swing" mode, and observe if wind grate is normal swing.

6.3 Test The Drainage Device

1. After installation of unit, it is necessary to check the drainage device.
2. During test run, it is necessary to correctly drain out and ensure no leak of connector.

After installation and test run, the installation personnel shall introduce the operation method and safet notices to the user according to the operation instructions.

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Correct Disposal of this product

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

ComfortStar®

The design and specifications are subject to change without prior notice for product improvement.Consult with the sales agency or manufacturer for details.