NŌRDEN®

ENGINEERING AND TECHNICAL MANUAL

R-410 COMMERCIAL CONDENSER

MODELS:

CDV-090-A
CDV-120-A

Refrigerant R-410A

Rev 1.0

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Part. 1 General information

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1. Model Names of Outdoor Units

1.1 Model names of units with cooling only:

Outdoor unit			Cooling capacity
Model	Qty.	Power supply	kW
CDV-090-A	1	208-230V~, 3Ph, 60Hz	28
CDV-120-A	1		35
CDV-090-A	2		52.5
CDV-120-A	2		70
CDV-090-A	1		28

2. External Appearances

2.2 Outdoor unit

CDV-090-A	CDV-120-A
	

Part. 2 Outdoor Unit

1. Dimensions 6

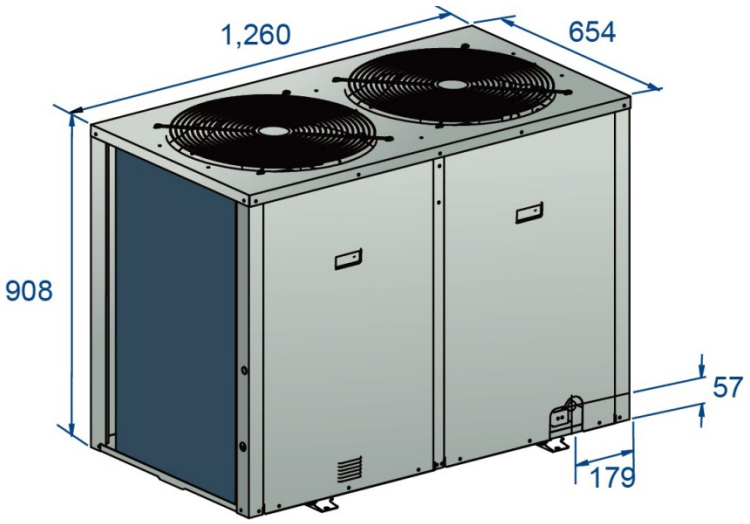
2. Service Space 6

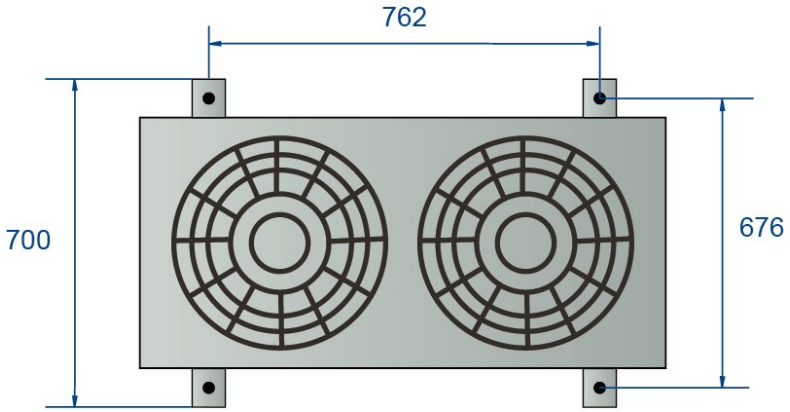
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1. Dimensions (Unit: mm)

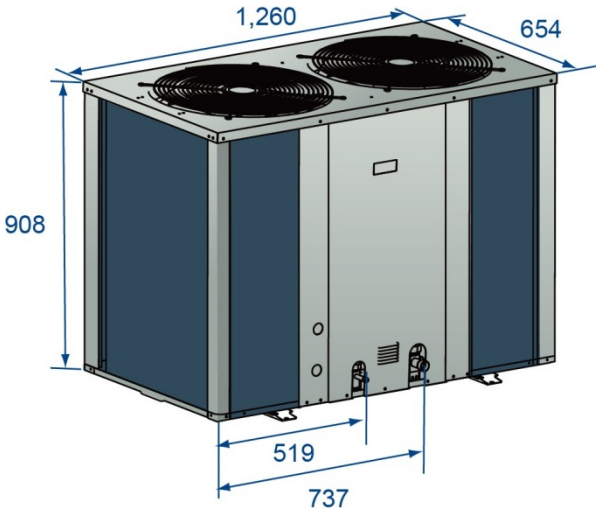
CDV-090-A

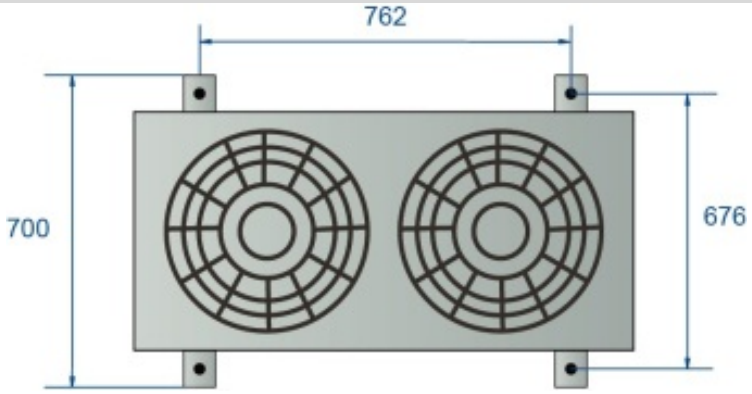




Top view

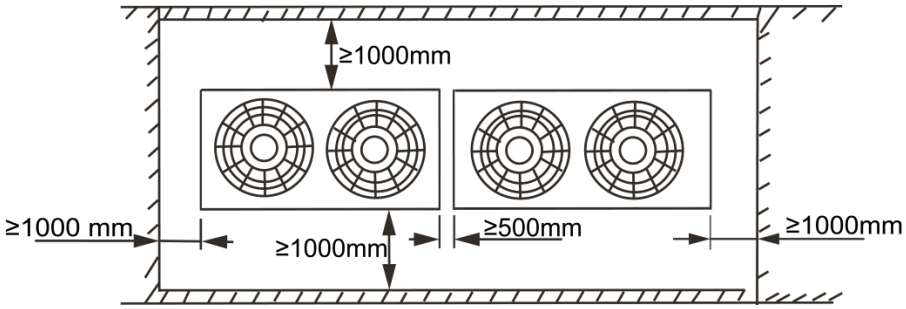
CDV-120-A





Top view

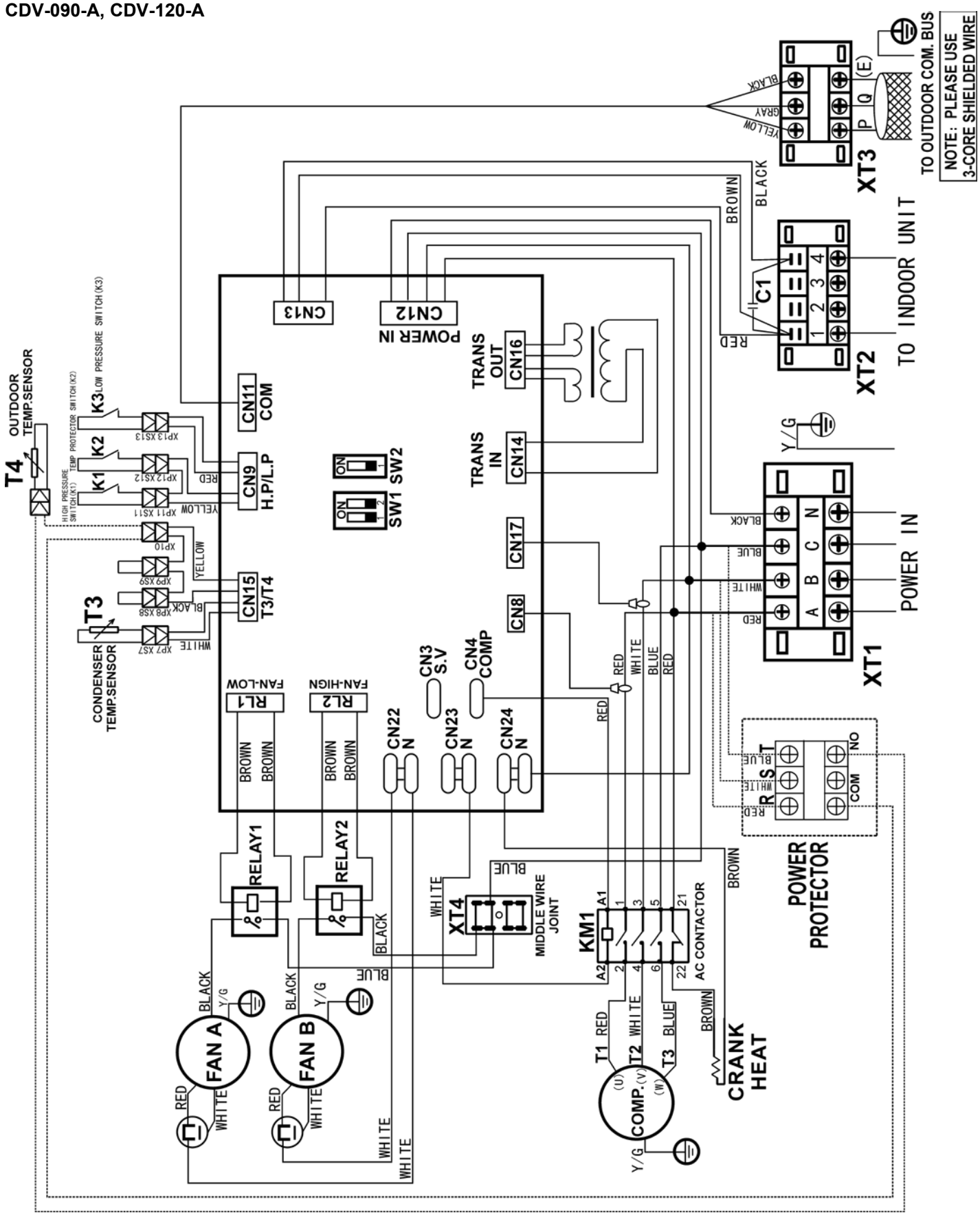
2. Service Space



Notes:

1. **In case any obstacles exist above the outdoor unit, such obstacles must be 2000mm above the outdoor unit.**
2. **If miscellaneous articles are piled around the outdoor unit, such articles must be 400mm below the top of the outdoor unit.**

CDV-090-A, CDV-120-A



LED INDICATION DESCRIPTION

	☆	☆	Stand-by
	◆	◇	Cooling mode
	◆	◆	Heating mode
	◇	◆	Defrost
5	◆	●★	Sequence protection
6	◆	●●★	Communication failure
7	◆	●●●	Fault of outdoor pipe temperature
	◆	●●●●★	Fault of outdoor ambient temperature
	◇	●★	Low pressure protection
	◇	●●★	High pressure protection
	◇	●●●★	Current protection
	◇	●●●●★	Condenser high temperature protection

Note:

●, Light 0.4sec, Extinguish 0.4sec ★, Light 2sec, Extinguish 2sec

___☆, Light 1sec, Extinguish 1sec _◇, Extinguish

◆, Light _, Light 0.2sec, Extinguish 0.2sec

FUNCTION OF SWITCH

SW2	NET OFF 	NET ON 		
SW1	NO.0 Unit (Main) 	NO.1 Unit (AUX) 	NO.2 Unit (AUX) 	NO.3 Unit (AUX) 

Note:

SW2 default setting as NET OFF.

SW1 default setting as main unit (No. 0 unit).

3. Electric Characteristics

Model	Outdoor Unit				Power Supply			Compressor		OFM	
	Hz	Voltage	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	KW	FLA
CDV-090-A	60	208-230V	198V	240V	38.4	44.4	48.8	203	30.7	0.64	5.34
CDV-120-A	60	208-230V	198V	240V	43	58.3	64	267	43.6	0.64	5.34

Notes:

MCA: Min. Current Amps. (A)

TOCA: Total Over-current Amps. (A)

MFA: Max. Fuse Amps. (A)

MSC: Max. Starting Amps. (A)

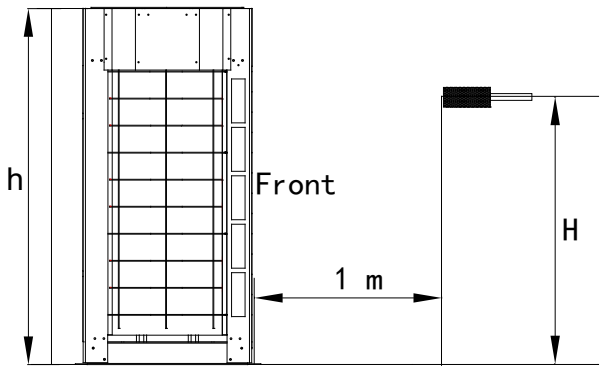
RLA: Rated Locked Amps. (A)

OFM: Outdoor Fan Motor.

FLA: Full Load Amps. (A)

KW: Rated Motor Output (kW)

4. Sound Levels



Note: H = (h+1) / 2

Model	Noise level
CDV-090-A	69 dB(A)
CDV-120-A	70 dB(A)

Part. 5 Installation

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1. Notes

CAUTION:

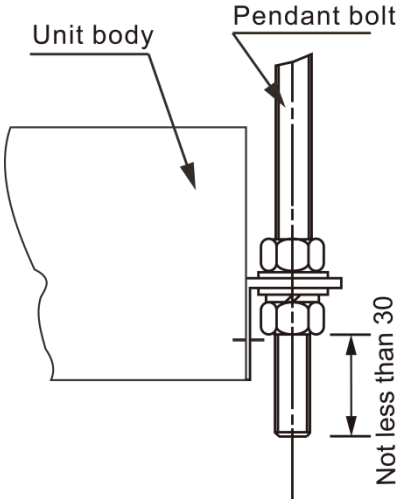
- Transport the air conditioner with the original package.
- If the air conditioner needs to be installed on a metal part of the building, electric insulation must be performed, and the installation must meet the relevant technical standards of electric devices.
- The unit must be installed 2.3m above floor and shall not be installed in the laundry.
- The enclosure of the appliance shall be marked by word, or by symbols, with the direction of fluid flow.
- An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
- Operate the remote controller within the receiving scope of the indoor unit, and direct the transmitting part of the remote controller to the receiver of the indoor unit.
- Install the unit where enough space of installation and maintenance is available.
- Install the unit where the ceiling is horizontal and enough for bearing the weight of the indoor unit.
- Install the unit where the air inlet and outlet are not baffled and the least affected by external air.
- Install the unit where the supply air flow can be sent to all parts in the room.
- Install the unit where it is easy to lead out the connective pipe and the drain pipe.
- Install the unit where no heat is emitted from a heat source directly.
- Installing the equipment in any of the following places may lead to faults of the equipment (if that is inevitable, consult the supplier):
  - ✓ The site contains mineral oils such as cutting lubricant.
  - ✓ Seaside where the air contains much salt.
  - ✓ Hot ring area where corrosive gases exist, e.g., sulfide gas.
  - ✓ Factories where the supply voltage fluctuates seriously.
  - ✓ Inside a car or cabin.
  - ✓ Place like kitchen where oil permeates.
  - ✓ Place where strong electromagnetic waves exist.
  - ✓ Place where flammable gases or materials exist.
  - ✓ Place where acid or alkali gases evaporate, or other special environments.
- Install the unit in a dry and well ventilated place.
- Install the unit where the bearing surface is level and can bear weight of the unit, and is suitable for installing the unit horizontally without increasing noise or vibration.
- Install the unit where the operation noise and the expelling of air do not affect neighbors.
- Install the unit where no flammable gas is leaked.6Install the unit where it is convenient for pipe connection and electric connection.

2. Installation of Duct Type Indoor Units

2.1 Installating indoor units

- As the following picture, when install the indoor unit, select the enough solid and level site with enough space for installation and maintance.
- The inspection orifice should be larger than the units.
- Ensure that the minimum drain gradient is over 1/100.

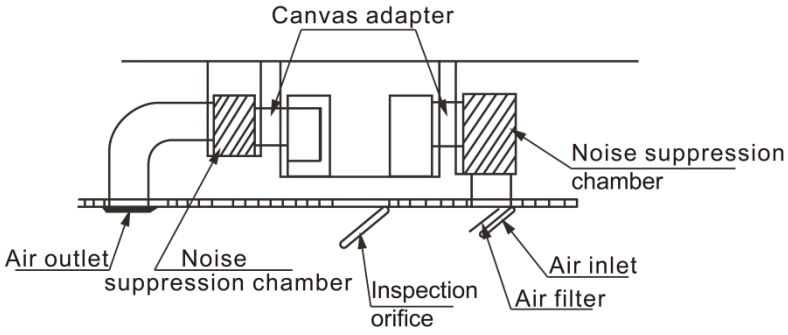
screws to adjust the horizontality. Finally, Tighten the screws.



2.2 Designing and connecting the duct

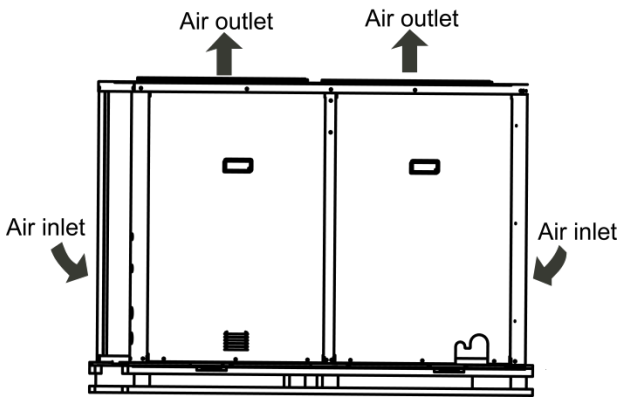
- The duct accessories and materials must be produced by professional manufacturers.
- The duct design must comply with the national heating air conditioner pipeline design specifications.
- Int order to prevent air flow shoting, do not set the air inlet orifice near the air outlet orifice.
- Install a filter at an easy-to-maintain place such as intake pipe. If without the filter, the duct will gether on the air heat exchanger and lead to fault and water leak of the air conditioner.
- In order to suppress noise effectively, install noise suppression and sound insulation devices, especially in the noise-sensitive spaces such as meeting rooms.
- For connection of the flange plane, use non-flammable canvas adapter to prevent transmission of vibration. Use M6×20 screws (configured on site) for connection.

Key points of duct connection

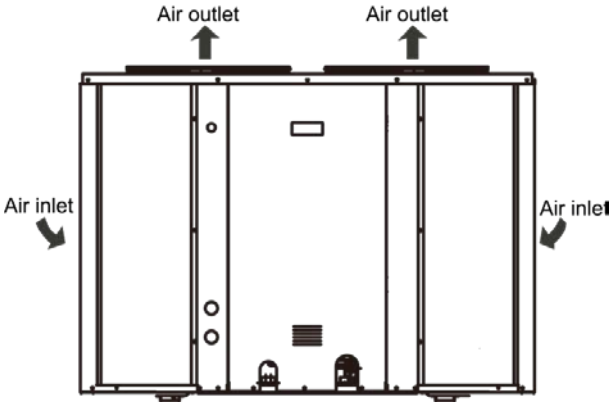


3. Installation of Outdoor Units

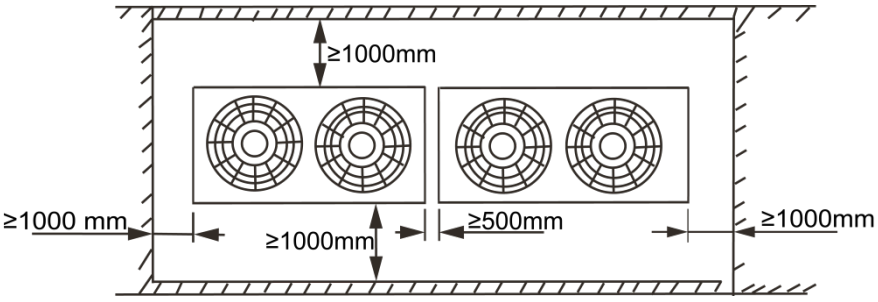
- When installing the unit, leave a space for maintenance shown in the following figure. Install the power supply at the side of the outdoor unit.



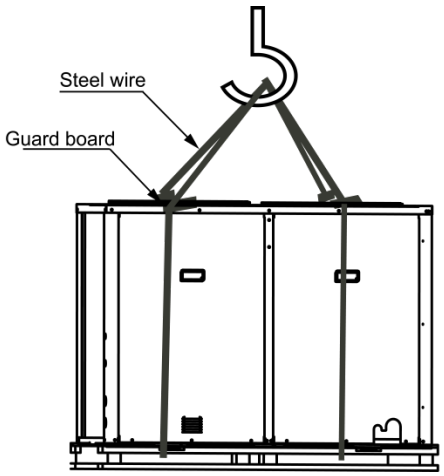
CDV-090-A



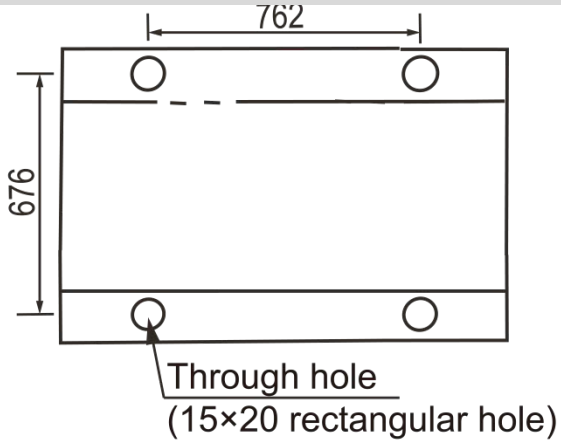
CDV-120-A



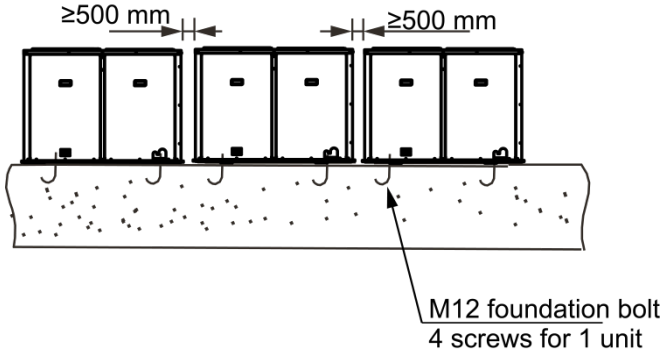
- In case any obstacles exist above the outdoor unit, such obstacles must be 2000mm above the outdoor unit.
- If miscellaneous articles are piled around the outdoor unit, such articles must be 400 mm below the top of the outdoor unit. Use 4 steel ropes of a diameter 6mm or bigger size to hoist the outdoor unit and move it into the site.
- In order to prevent scratch and deformity the outdoor unit, apply a guard board to the surface of contact between the steel wire and the air conditioner. Remove the cushion for use in the transport after finishing the transport.



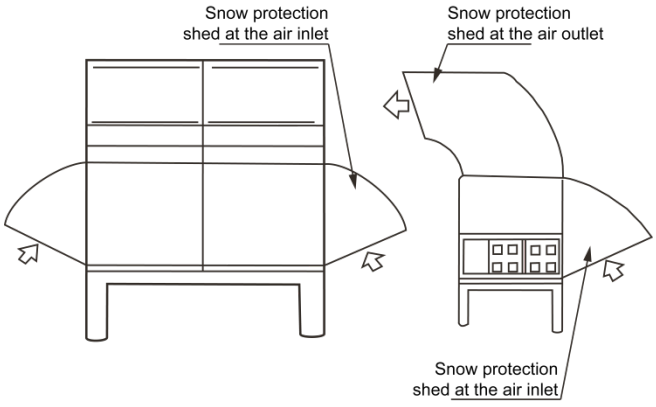
- The distance of the foundation bolt is shown in following picture. (Unit: mm)



- As the following shown picture, leave an interval between the multi-outdoor unit.

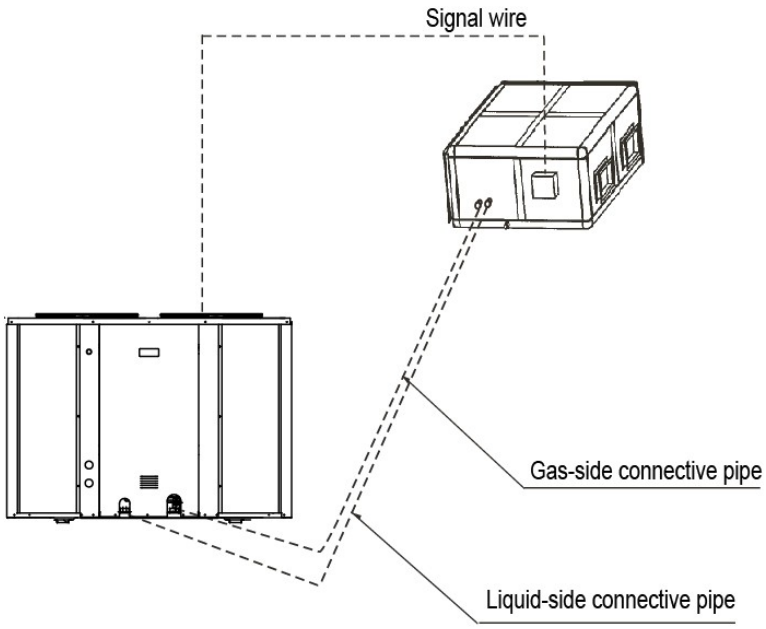


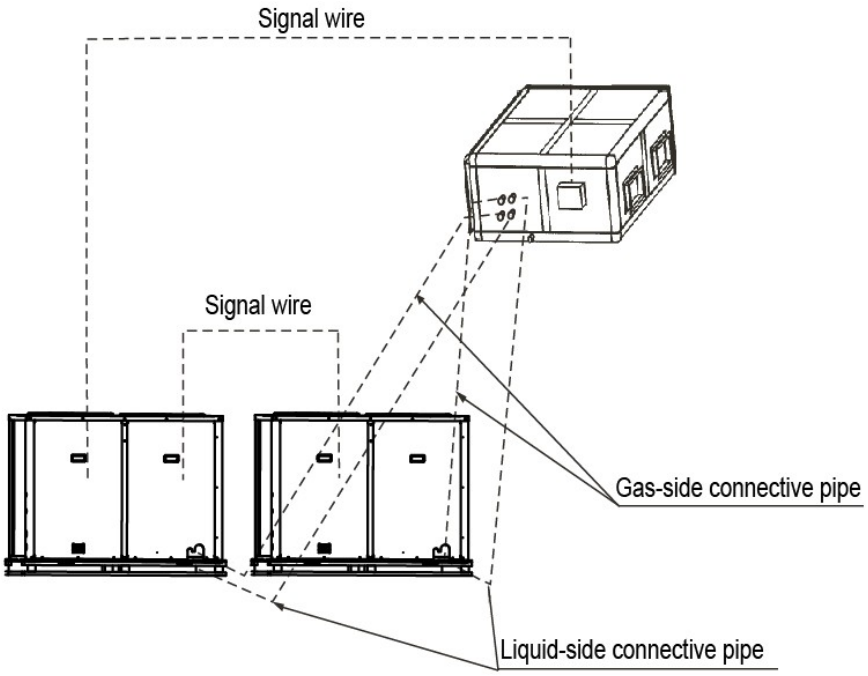
- Snow protection facilities must be installed in the snowfall areas. In order to prevent influence caused by snow, set up raised pavilion, and install snow protection sheds at the air inlet and air outlet. The snow protection facilities are provided in the site.

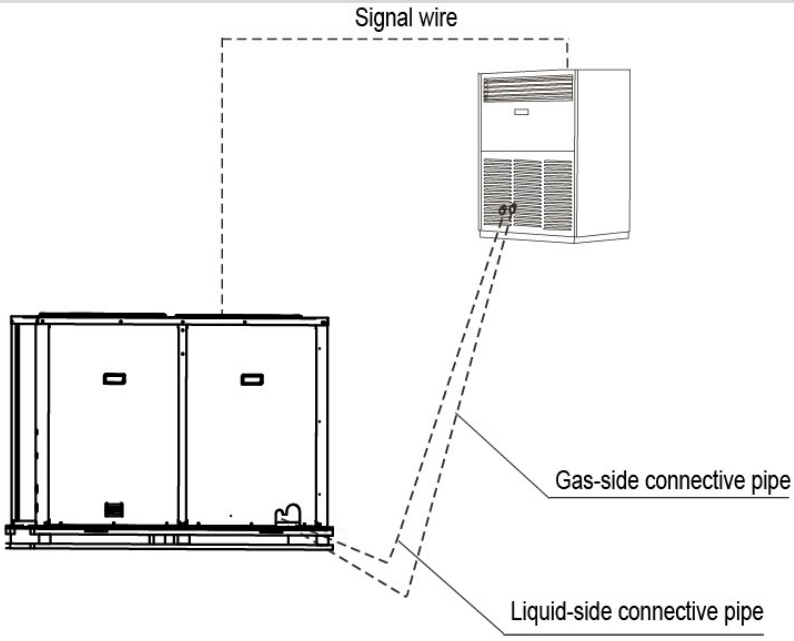


4. Connection of Refrigerant Pipe

- Schematic diagram of connection between indoor unit and outdoor unit:


Signal wire
Gas-side connective pipe
Liquid-side connective pipe

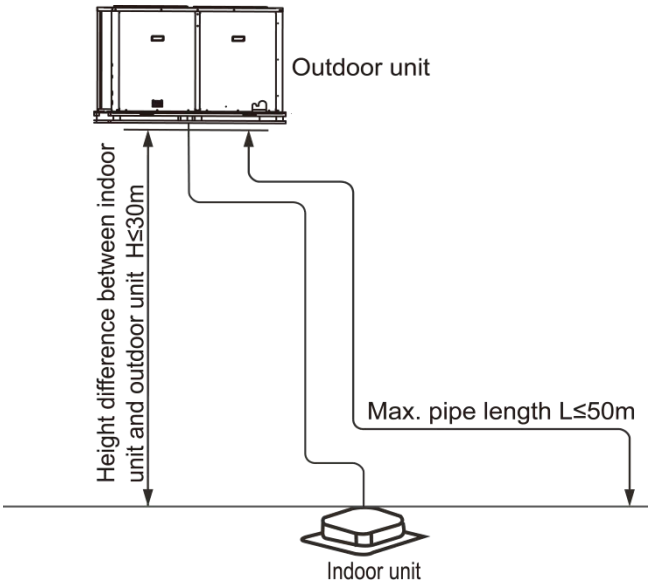

Signal wire
Signal wire
Gas-side connective pipe
Liquid-side connective pipe



- The refrigerant pipe adapter is located inside the outdoor unit. So remove the right front board first, and remove M5 screws.
- When the pipe is connected from the front side, the pipe can be led out through the right front board.
- When welding the refrigerant pipe, in order to prevent internal oxidation of the pipe, nitrogen must be filled in. Otherwise, the oxidized chips may block refrigerating circulatory system.
- Trash and foreign matters may come into the pipe in the process of installing the refrigerant pipe. Be sure to blow them off with nitrogen before connecting the pipe to the outdoor units.
- Use high-pressure nitrogen to clean the pipelines. Do not use the refrigerant of the outdoor unit for cleaning.
- Pipes size of the units.

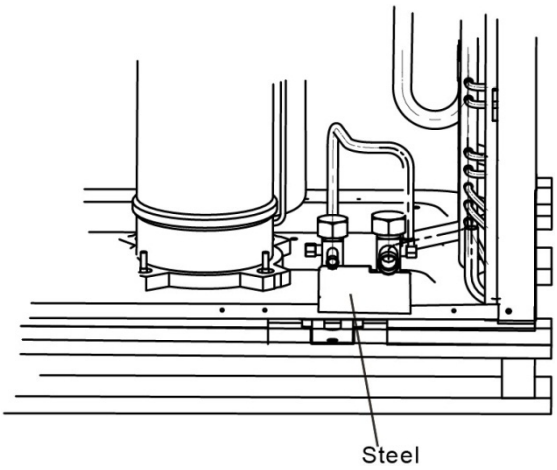
Outdoor units	Liquid pipe	Gas pipe
CDV-090-A	Φ9.52mm	Φ22mm
CDV-120-A	Φ12.7mm	Φ25mm

- All connections between indoor unit and outdoor unit are copper-to copper and should be brazed with a phosphorous-copper alloy material such as Silfos-5 or equivalent. Do not use soft solder. The outdoor units have reusable valves on both the liquid and vapor connections. The total system refrigerant charge is retained within the outdoor unit during shipping and installation. The reusable valves are provided to evacuate and charge per the instruction.
- Dry nitrogen should always be supplied through the tubing while it is being brazed, because the temperature required is high enough to cause oxidation of the copper unless an inert atmosphere is provided. The flow of dry nitrogen should continue until the joint has cooled. Always use a pressure regulator and safety valve to insure that only low pressure dry nitrogen is introduced into the tubing. Only a small flow is necessary to displace air and prevent oxidation.
- Install the connective pipe only after fixing the indoor unit and outdoor unit. Keep dry when installing the connective pipe. Do not let moist intrude into the pipeline system.
- Allowed length of refrigerant pipe and height difference.

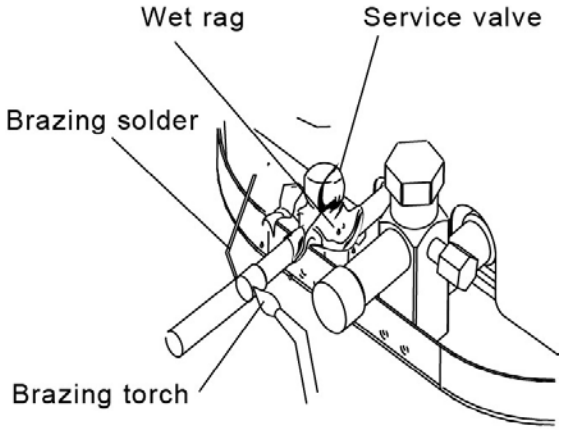


		Allowed value
Max. actual length of pipe (L)		50m
Max. height difference between indoor and outdoor unit	Outdoor unit (upper)	25m
	Outdoor unit lower (lower)	30m
Max. number of bends		15

- Do not increase or decrease piping sizes.
- Incase multiple systems are set (MTA1-150, MTA1-180, MTA1-240), in order to identify the connection system of the indoor unit and outdoor unit, it is necessary to give name to each system. And mark it onto the nameplate in the electric control box cover of the outdoor unit.
- The indoor unit and outdoor unit are categorized into the system A and B. When installing the connecting the indoor unit and outdoor unit correspond to the outdoor unit exactly. Otherwise, it may lead to fault of the air conditioner.
- As shown in following picture, when brazing the indoor and outdoor connective lines, pad a sheet metal under the valve avoids the flame burning the chassis.



- Precaution should be taken to prevent heat damage to the valve by wrapping a wet rag around it. Remove the cap and Schrader core from both the liquid and vapor service valve service ports at the outdoor unit. Connect low pressure nitrogen to the liquid line service port.



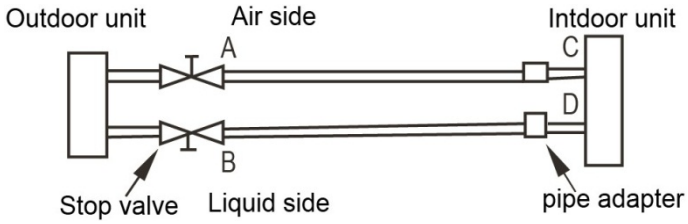
- Braze the liquid line to the high pressure valve (liquid valve) at the outdoor unit. Be sure to wrap the valve body with a wet rag. Allow the nitrogen to continue flowing.
- Carefully remove the rubber plugs from the evaporator liquid and vapor connections at the indoor unit.
- Braze the liquid line to the indoor liquid connection. Nitrogen should be flowing through the evaporator coil.
- Slide the plastic cap away from the vapor connection at the indoor coil. Braze the vapor line to the evaporator vapor connection.
- Protect the vapor valve with a wet rag and braze the vapor line connection to the outdoor unit. The nitrogen flow should be exiting the system from the vapor service port connection. After this connection has cooled, remove the nitrogen source from the liquid fitting service port.
- Replace the Schrader core in the liquid and vapor valves.
- Leak test all refrigerant piping connections including the service port flare caps to be sure they are leak tight.
- Do not over tighten. (between 40 and 60 inch-lbs. maximum)
- Evacuate the vapor line, evaporator and the liquid line, to 500 microns or less.
- Replace cap on service ports. Do not remove the flare caps from the service ports except when necessary for servicing the system.
- Do not connect manifold gauges unless trouble is suspected. Approximately 3/4 ounce of refrigerant will be lost each time a standard manifold gauge is connected.
- Release the refrigerant charge into the system. Open both the liquid and vapor valves by removing the plunger cap and with a hex wrench back out counter-clockwise until valve stem just touches the chamfered retaining wall.
- Replace plunger cap finger tight, then tighten an additional 1/12 turn (1/2 hex flat). Cap must be replaced to prevent leaks.
- Never attempt to repair any brazed connections while the system is under pressure. Personal injury could result.
- After the pipes between the indoor unit and the outdoor unit are connected, replenish compressed nitrogen to perform airtight test.
  - ✓ The airtight test is performed by using the compressed nitrogen, 2.94MPa (30kg/cm^{2}G). Leak test with a bubble type leak detector. Do not use the system refrigerant in the outdoor unit to purge or leak test.
  - ✓ Tighten the spool of the low pressure valve and high pressure valve before compressing the nitrogen.
  - ✓ Compress the nitrogen at the air vent of the gas valve.
  - ✓ The low pressure valve and high pressure valve are closed in the process of compressing the nitrogen.
  - ✓ **Do not** use oxygen, flammable gas or toxic gas in the airtight test.

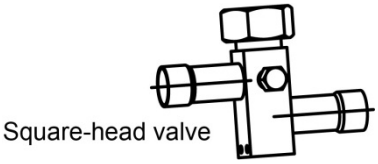
- Vacuum

Length of connective pipe (Single pass)	Procedure of expelling air
Less than 5m	Use refrigerant in the outdoor unit.
5~15m	Use vacuum pump or refrigerant tank.

Note: If the air conditioner is relocated, be sure to use a vacuum pump or refrigerant tank to expel air.

✓ Use the refrigerant in the outdoor unit to expel air.



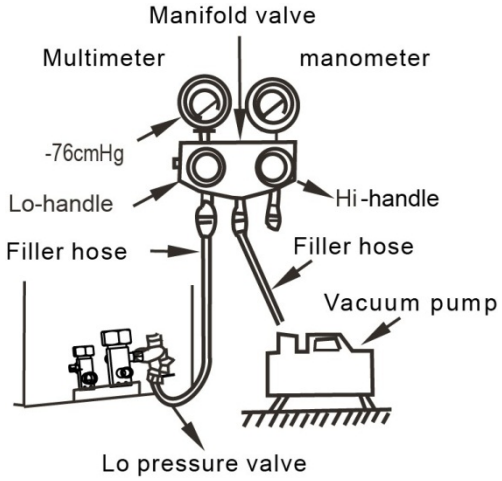


- Screw up the pipe nuts at A, B, C and D completely.
- Loosen and remove the square-head cover of valves A and B, rotate the square-head spool of valve B counter-clockwise for 45 degrees and stay for about 10 seconds, and then close the spool of valve B tightly.
- Detect leak for all adapters at A, B, C and D. After making sure that no leak exists, open the maintenance orifice nut of valve A. After all air is expelled, tighten the maintenance orifice nut of valve A.
- Open the spools of valves A and B completely.
- Tighten the square-head cover of valves A and B completely.

✓ Use refrigerant tank to expel air.

- Screw up the pipe nuts at A, B, C and D completely.
- Loosen and remove the square-head cover and maintenance orifice nut of valves A and B.
- Connect the filler hose of refrigerant tank with the maintenance orifice of valve A.
- Loosen the valve of the refrigerant tank, continue filling refrigerant for 6 seconds to expel the air, and tighten the nut of valve B quickly.
- Loosen the valve of the refrigerant tank again, and fill the refrigerant for 6 seconds. Detect leak for all adapters at A, B, C and D. After making sure that no leak exists, screw off the filler hose. After all the filled refrigerant is expelled, screw up the maintenance orifice nut of valve A quickly.
- Open the square-head pools of valves A and B completely.
- Tighten the square-head cover of valves A and B.

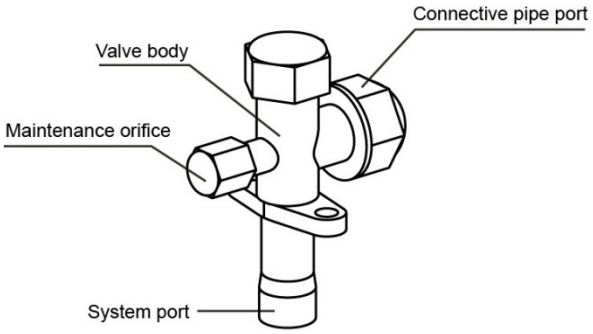
✓ Use a vacuum pump



- Loosen and remove the maintenance orifice nut of valve A, and connect the filler hose of the manifold valve to the maintenance orifice of valve A (Tighten both valve A and valve B).

- Connect the filler hose adapter to the vacuum pump.
- Open the low (Lo) pressure handle of the manifold valve completely.
- Start the vacuum pump to extract air. At the beginning of extracting air, slightly loosen the maintenance orifice nut of valve B, check whether any air enters it (The vacuum pump noise changes, and the multi-meter indicates from negative to 0.). Then tighten this maintenance orifice nut.
- Upon completion of vacuuming, tighten the low pressure handle of the manifold valve completely and stop the vacuum pump. Keep extracting air for over 15 minutes. Check whether the multi-meter points at -1.0×10Pa (-76cmHg).
- Loosen the remove the square-head cover of valves A and B. After opening valves A and B completely, tighten the square-head cover of valves A and B.
- Remove the filler hose of the maintenance orifice of valve A, and then tighten the nut.
- Procedure of using stop valve

✓ Open the spool until it touches the stop block. Do not attempt to open further.
✓ Use a spanner or a similar tool to tighten the bonnet.
✓ Upon completion of installation, open all valves before trial run. Each unit has two valves of different sizes located at the outdoor unit side. Of the two valves, one is gas valve and the other is liquid valve. The procedure of opening / closing the valve is shown in following picture.
✓ Procedure of opening the valve: Open the square-head cover, use a spanner to capture the square head and open it thoroughly. Then tighten the square-head cover.
✓ Procedure of closing the valve: Same as the procedure of opening the valve, but rotate the spanner clockwise thoroughly.



- After vacuum, according to the diameter and length of the connective pipe of liquid side between the indoor unit and outdoor unit, calculate the refrigerant replenishment quantity. The refrigerant for replenishment is R410A.

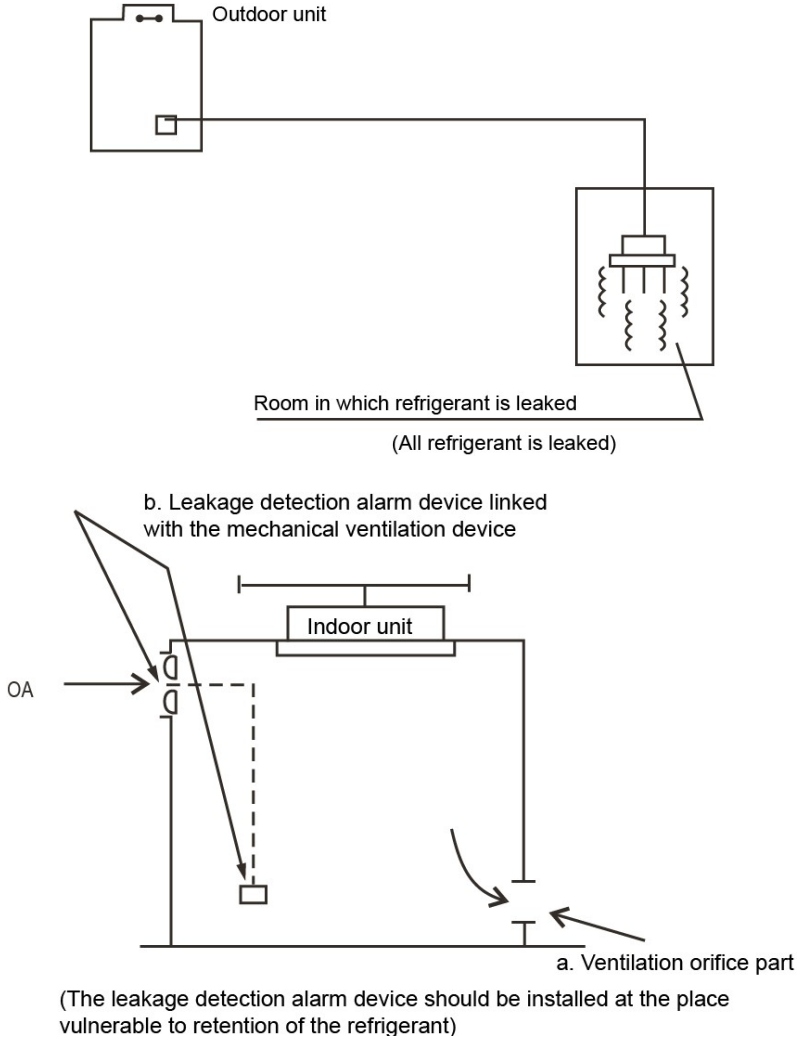
Diameter of liquid-side pipe	Quantity of refrigerant replenished for 1m pipe length
Φ9.52mm	0.06kg
Φ12.7mm	

Note: Please check and record the replenished quantity of the air conditioner.

- Refrigerant leak precautions. This air conditioner uses refrigerant R410A. R410A is safe refrigerant which is harmless and non-flammable. The room for placing the air conditioner should have a proper space. Even if refrigerant leakage occurs, the density threshold will not be crossed. Additional measures may also be taken.

✓ Density threshold: Density of the Freon gas that does not harm the human body. Density threshold of R410A: 0.3kg/m3.
✓ Calculate the total quantity of refrigerant to be replenished [A (kg)].
✓ Total refrigerant quantity = refrigerant replenishment quantity upon shipment + additional refrigerant replenishment corresponding to the pipe length.

- ✓ Calculate out the indoor volume [B (m3)] (according to the minimum volume)
- ✓ Calculate out the refrigerant density:
- ✓ [A (kg)] / [B (m3)] ≤ Density threshold: 0.3kg/m3
- ✓ Measures against crossing of the refrigerant density threshold.
- ✓ In order to keep the refrigerant density below the threshold value, please install a mechanic ventilation device. (Perform ventilation often.)
- ✓ In case frequent ventilation is impossible, please install the leakage detection alarm device linked with the mechanical ventilation device.



(The leakage detection alarm device should be installed at the place vulnerable to retention of the refrigerant)

5. Heat Insulation of Refrigerant Pipe

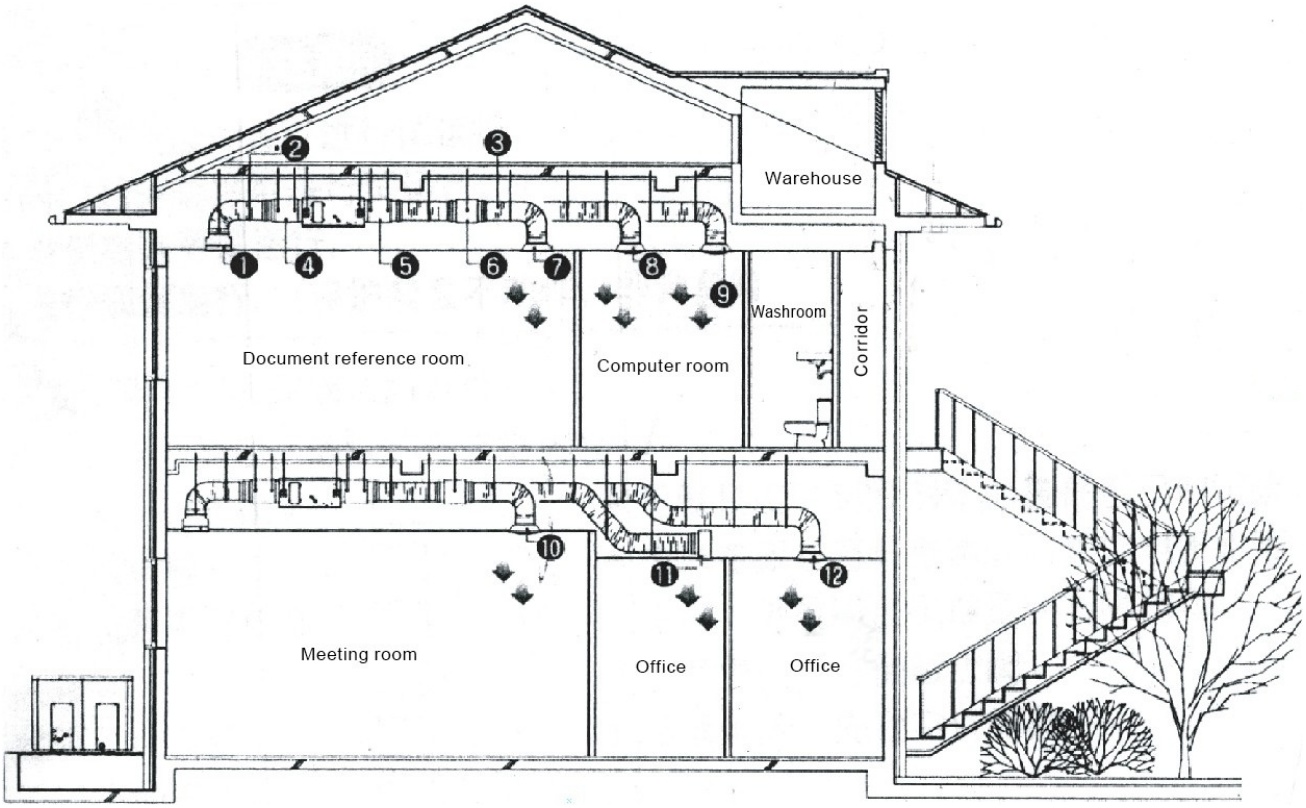
In order to prevent faults caused by condensate of the refrigerant pipe and drain pipe, perform condensate prevention and heat insulation properly. If it is forecast that high humidity and temperature environment (Condensate temperature is over 23°C) may exist in the ceiling, e.g., inside the ceiling with slab, ceiling which is in the same environment as the outdoor air. It is necessary to apply 10mm or thicker adiabatic wool (16~20kg/ m^2) to the refrigerant pipe and the drain pipe in addition to applying the general heat insulation materials. Enough heat insulation materials should also be applied to the refrigerant joint and the pipe joint. **Note:** the heat insulation of drain pipe refer to the installation of indoor unit.

- Please use heat-resistant materials as heat insulation material of the air-side pipe. (e.g., EPT)
- Cover heat insulation materials separately at the liquid side and the air side. Moreover, perform heat insulation thoroughly for the air-side pipes of the indoor unit, and prevent water from dripping outside the unit.
- After applying the auxiliary heat insulation materials, use vinyl resin tape to seal refrigerant pipe and

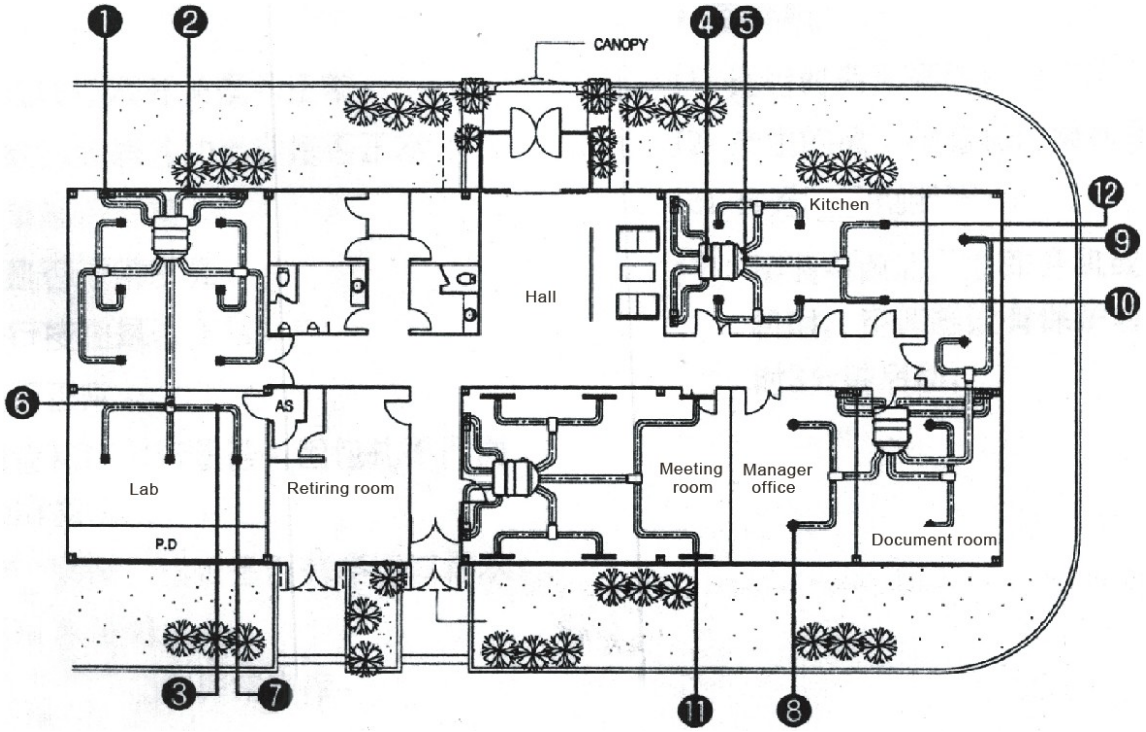
6. Duct Design Scheme

It is only available for duct type indoor unit.

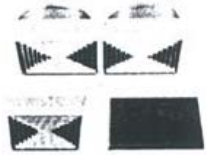
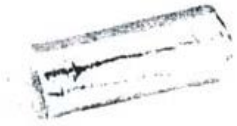
Examples of construction and ventilation pipeline design scheme (Flowering hidden series.)

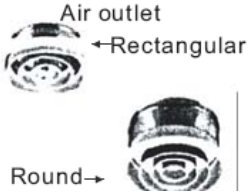


Construction and ventilation pipeline design scheme



Methods of configuring and selecting installation

	Material name	Characteristics, advantages and other contents
1	Air inlet wooden grille  Filter	1. Install the filter at the main body grille in case the store height is low, and at the main body of the indoor unit in case the store height is high. 2. It cleans conveniently at the time of installing/uninstalling the filter. 3. The button structure is easy to install and uninstall.
2	Hose (for absorbing noise) 	1. For purpose of air inlet. 2. Must adopt fire-resistant materials. 3. The heat insulation material must be glass wool.
3	Hose (for general purpose) 	1. For purpose of air outlet. 2. Must adopt fire-resistant materials. (Those materials other materials. (Those materials other shall not be applied) 3. The heat insulation material must be glass wool.
4	Air inlet noise pipe 	1. Install the unit at the air inlet so that the air flows smoothly and the noise is lower. 2. The noise value varies with the length. 3. The hose joint should be bent lest detachment of the pipe.
5	Air outlet noise pipe 	1. Install the unit at the air outlet so that the air flows smoothly and the noise is lower. 2. The noise value varies with the length. 3. The hose joint should be bent lest detachment of the pipe.
6	Distributor 	1. Install the unit at the air outlet so that the air flows smoothly and the noise is lower. 2. Select 1BY2 or 1BY3 according to the quantity of the diffusers. 3. The diffuser pipes should preferably have the same length after branching, and the minimum length of the ventilation pipes is 5m.

7	Rectangular Air outlet 	1. Fixed model that diffuses air at a 360 angle. 2. The outline size should increase when the air volume is over 350CMH. (For above 303), i.e., when about 9 diffusers are required, the outline size should increase. 3. The diffuser pipes should preferably have the same length after branching, and the minimum length of the ventilation pipes is 5m.
8	Air outlet 	1. Fixed model that diffuses air at a 360 angle. 2. The outline size should increase when the air volume is over 350CMH. (For above 303), i.e., when about 9 diffusers are required, the outline size should increase. 3. Proper air speed: For air speed of over 2-3.5m/s, select other diffusers (with great noise). 4. Install the diffuser pipe if it is necessary to install the model of over 3.5m/s. 5. For purpose of cooling-only model.
9	Air outlet 	1 The lengthwise adjustable model which diffuses air at a 360 angle. 2. With the change of the cooling/heating air flow, the horizontal and vertical distance of the fan can be adjusted (applicable to department store and exhibition hall where the decorative effect is essential).
10	Air outlet ←Rectangular  Round→	1. Low noise compared with other air outlets. Applicable to tall buildings that require along distance of air conditioning. 2. Select the ventilation pipe connection caliber according to the distance and the air speed. 3. Applicable to store height of over 5m (for design of tall store such as temple, consult manufacturer).
11	Linear diffuser 	1. The fan is the adjustable type which can change direction of air flow. It is used for deluxe decoration. 2. The outline size should increase when the air flow is over 450CMH (3 or 4 SOLT) when about 6 diffusers are required, the outline size should increase. 3. If the proper air speed is 2.5-5m/s and actual air speed reaches over 5m/s, it is necessary to choose other diffusers (with higher noise values).

12	Air outlet woodengrille 	1. Low noise compared with other air outlets. Applicable to tall buildings that require a long distance of air conditioning. 2. Select the ventilation pipe connection caliber according to the distance and the air speed. 3. Applicable to store height of over 5m (for design of tall stores such as temple, consult manufacturer).
Auxiliary materials	Duct wrapping tape 	1. Flanges and pipelines connected to the ventilation pipes. 2. When the noise pipe is connected with the hose, the ventilation pipe tape must be applied (otherwise, with only adhesive tape, the adhesion will be weakened due to change of temperature).
	Aluminium adhesive tape 	1. It is used to prevent glass wool leak and seal the gas at the time of the flanges and pipelines of the ventilation pipes. 2. Entwine for over 3 circles. 3. Use ventilation pipe-specific tapes (instead of ordinary adhesive tapes). In order to ensure the installation quality and durability, it is necessary to use the auxiliary materials of standard specifications provided by manufacturer electronics and the auxiliary products of the specified manufacturers.

7. Trial Run

- Please conduct in accordance with the nameplate of Trial Run Tenor on the electric control box.
- Perform the trial run only after the outdoor unit has been powered on for over 12 hours.
- Check whether all valves are opened before trial run.
- Check the electric safety before trial run.
- Do not perform compulsory operation in any way, because it is very dangerous if the protection device is not active.
- Perform trial run only after all installations are finished.
- Confirm the following issues before trial operation:
- Install the remote controller holder as required by the user. The holder must be installed in a location suitable for transmitting the signals of the remote controller to the indoor unit.
- Use the remote controller or wired controller to let the air conditioner run in the cooling mode. Inspect the following items according to the operation manual. If any fault occurs, remove the fault first.
- Check the indoor unit:
  - ✓ Whether any vibration or abnormal sound occurs during the operation.
  - ✓ Whether the air, noise and condensate generated by the unit affect the neighbors.
  - ✓ Whether any refrigerant is leaked.
  - ✓ Check whether the connective copper pipes and drain pipes generate condensate due to loose

wrapping.

✓ Open the air inlet grille of indoor unit to check whether any penetration or leak of water occurs, especially at the drain stopper.

8. Trouble shooting

10.1 Phenomena not attributable to faults of air conditioner

- The system does not run.
  - After pressing the **ON/OFF** button, the system does not run immediately.
  - If the Run indicator is on, it indicates the air conditioner runs in the normal status.
  - It does not run immediately because the safety device in the system is active to prevent overload.
  - Three minutes later, the air conditioner compressor will run automatically.
  - If the Run indicator and the Defrost/Preheat indicator are on, it indicates the heating mode is selected. At the beginning after startup, since the compressor does not run, the temperature of the indoor unit is too low.
- The indoor unit gives out white aerosol.
  - This phenomenon may occur when the indoor relative humidity is too high and the unit runs in the cooling mode.
  - The indoor unit is installed in a place where there is much oil mist or dust. If the internal stain of the indoor unit is heavy, the temperature in the room will be distributed unevenly. In the case, the interior of the indoor unit must be cleaned. The cleaning units must be performed by professional maintainers.
  - This phenomenon may also occur when the air conditioner shifts from defrosting operation to heating operation. That is because the moist generated by defrosting is expelled as steam.
- Noise of air conditioner
  - When the air conditioner runs in the cooling, dry or heating mode automatically, grave continuous sizzles may occur. That is the sounds of refrigerant flowing between the indoor unit and the outdoor unit. The sizzles may be heard shortly after the unit stops running or when the unit runs in the defrost mode. That is the sound raised because the refrigerant stops flowing or changes to the volume of flow.
  - Squeak may occur when the air conditioner starts or stops running. That is the sound raised because the plastic assemblies inflate or deflate when the temperature changes.
- Dust is blown out of the indoor unit.
  - When the air conditioner resumes service after a long period out of service, the dust in the indoor unit will be blown out.
- The indoor unit gives out smell.
  - The indoor unit absorbs the smell of the room, furniture or smoking, and gives it out when running.
- Shift from cooling mode to air supply mode.
  - In order to prevent frosting of the indoor heat exchanger, the air conditioner shifts to air supply mode automatically, and resumes to cooling mode in a short time.
  - When the room temperature decreases to the set temperature, the air conditioner will shut down the compressor automatically, and shifts to the air supply status. After the room temperature rises, the compressor will restart. The action of the compressor in the heating mode is the contrary.

10.2 Faults of air conditioner and cause

- If any of the following exceptions occur, operation of the air conditioner will be immediately stopped. Turn off the power switch, and check it.
  - The ***Run*** indicator blinks quickly (2 blinks per second.). After turning off the power switch and then turning it on again, that indicator still blinks quickly. The receiving function of the remote controller fails, or the start and shutdown operation is abnormal.

- The fuse blows out frequently, or the circuit breaker protection occurs frequently.
- Foreign substance or moist enters the air conditioner or other exceptions occur.

● If the air conditioner fails but does not meet the foregoing phenomena obviously, check the system in the following procedure:

Symptom	Possible causes	Way of handing
The system does not run.	Power supply fails.	Operate it after power supply resumes and connect the power supply properly.
	The power switch is not connected.	
	The fuse blows out or the circuit breaker acts.	Replace the fuse or check whether electric leakage occurs.
	The remote controller or wired controller fails.	Check the remote controller or wired controller.

Symptom	Possible causes	Way of handing
The heating effect is poor.	The outdoor environment temperature is lower than -7°C.	Use a heating device. The unit cannot operate normally.
	The door or window is not closed tightly.	Close door and window tightly.
	The refrigerant is leaked or replenishment is deficient.	Detect leak, and fill the refrigerant of a correct quantity.

Symptom	Possible causes	Way of handing
The air conditioner sends air out but cannot provide cool air at all.	The setting temperature is improper.	The setting temperature is lower than the room's during the cooling status or higher during the heating status.
	3-minutes protection of the compressor.	Waiting for 3 minutes.

Symptom	Possible causes	Way of handing
The cooling effect is poor.	The condenser or evaporator is too dirty.	Clean the heat-exchanger.
	The filter is blocked.	Clean the filter.
	The intake orifice or exhaust orifice of the indoor and outdoor unit is blocked.	Remove foreign mattes to keep well ventilated.
	The door or window is opened.	Close all the windows and doors.
	Directly exposed to sunlight.	Obstruct sunlight by curtains or jalousie.
	Too many heat sources.	Reduce heat sources.
	Too high outdoor environment temperature.	It is normal, and the cooling effect of the air conditioner is deteriorated.
	The refrigerant is leaked or the replenishment is deficient.	Detect leak, and fill the refrigerant of a correct quantity.

Symptom	Possible causes	Way of handing
The unit keep starting up and shutting down frequently.	The refrigerant is excessive or deficient.	Detect leak, and fill the refrigerant of a correct quantity.
	Air or non-condensable gas exists in the refrigerant loop.	Make a vacuum again and fill the refrigerant.
	The compressor fails.	Repair or replace the compressor.
	The voltage is too high or too low.	Install a voltage regulator.

10.3 Faults of remote controller and cause

- The shift function cannot be set.

Symptom	Check item	Cause
The wind speed cannot be shifted.	Check whether the mode marked the screen of controller is ***AUTO***.	When the auto mode is selected, the indoor fan speed will be in automatically running and cannot be adjusted.
	Check whether the mode marked on the controller screen is ***DRY***.	When the dry mode is selected, the indoor unit will set fan speed automatically. The speed can selectable only in cooling, heating and fan mode.

- The transmitting symbol ▲ does not blink.

Symptom	Check item	Cause
Pressing **ON/OFF** button, the remote controller signal cannot be transmitted.	Check whether the batteries of remote controller are low.	When the batteries are exhausted, the signals cannot be transmitted.

- The temperature indicator does not light up.

Symptom	Check item	Cause
The temperature indicator does not light up.	Check whether the mode marked on the screen is ***FAN***.	In the fan mode, the temperature cannot be set.

- The display disappears.

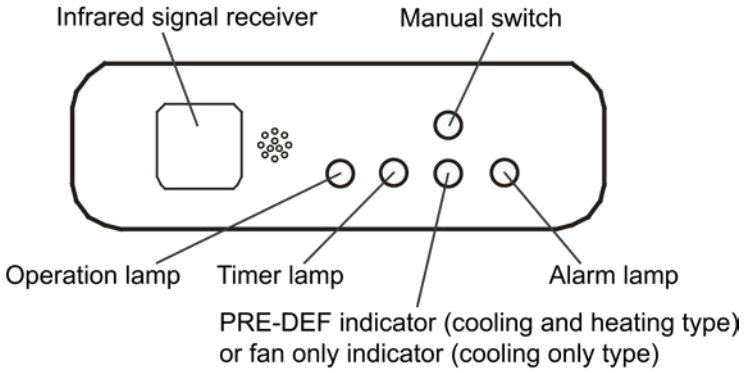
Symptom	Check item	Cause
After a while the ***ON/OFF*** display disappears.	Check whether the time set on the timer has expired.	The air conditioner stops running because the set time has expired.
After a while the ***TIMING ON*** display disappears.	Check whether the time set on the time has expired.	When it comes to the set time of starting operation of the air conditioner, the air conditioner will start running automatically, and the corresponding display will disappear.

- No sound of receiving signal.

Symptom	Check item	Cause
Pressing the **ON/OFF** button, the air conditioner does not raise the receiving tone.	When the **ON/OFF** button is pressed, check whether the signal transmitting part of the remote controller is aligned with the receiving part of the indoor unit.	Align the signal transmitting part of the remote controller with the receiving part of the indoor unit. Then press the **ON/OFF** button repeatedly.
	Check whether the power switch of the air conditioner is connected properly.	The air conditioner cannot receive the signals of the remote controller, because it is shut down.
The buttons of the remote controller do not work.	Check whether the lock icon is in the screen of the remote controller.	Lock the buttons.

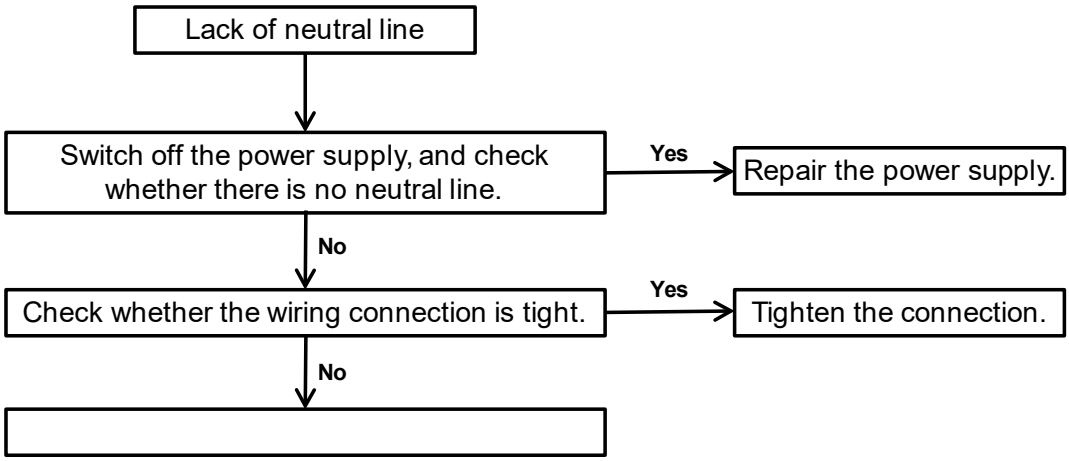
10.4 Duct type indoor unit malfunction and protection codes

- Names of indicators in receiving kit

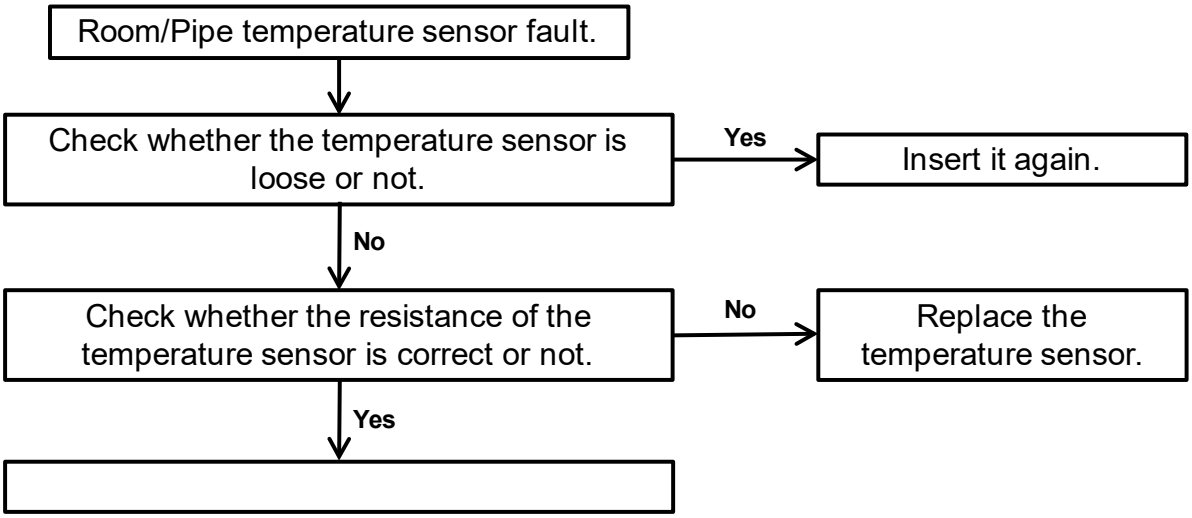


Display content	Fault or protection meaning
All lamps flashing at 5Hz	Lack of neutral line.
Timer lamp flashing at 5Hz	T1, room temperature sensor, fault of open circuit, short circuit.
Operation lamp flashing at 5Hz	T2, pipe temperature sensor, fault of open circuit, short circuit.
Defrosting lamp flashing at 5Hz	Condenser temperature sensor malfunction.
Alarm lamp flashing at 5Hz	Water-level checking malfunction. (Reserved)
Operation lamp and timer lamp flashing at 5Hz	EEprom malfunction

✓ **All lamps flashing at 5Hz**



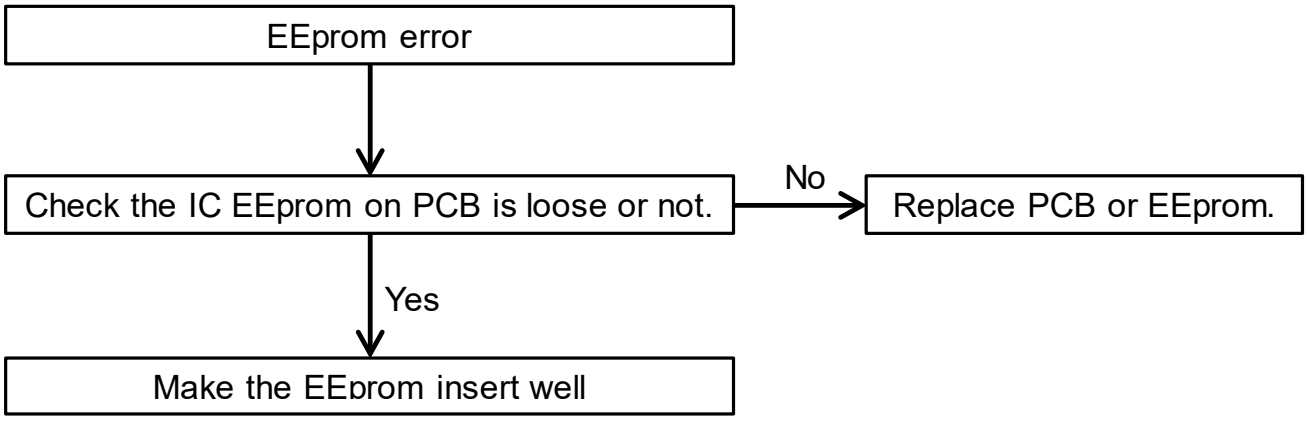
✓ **Timer lamp flashing at 5Hz, Operation lamp flashing at 5Hz**



✓ **Defrosting lamp flashing at 5Hz**

For these series products, if the condenser temperature sensor malfunction is displayed, it is enough to check whether wiring has problem. If the wiring is correct, the PCB should be replaced.

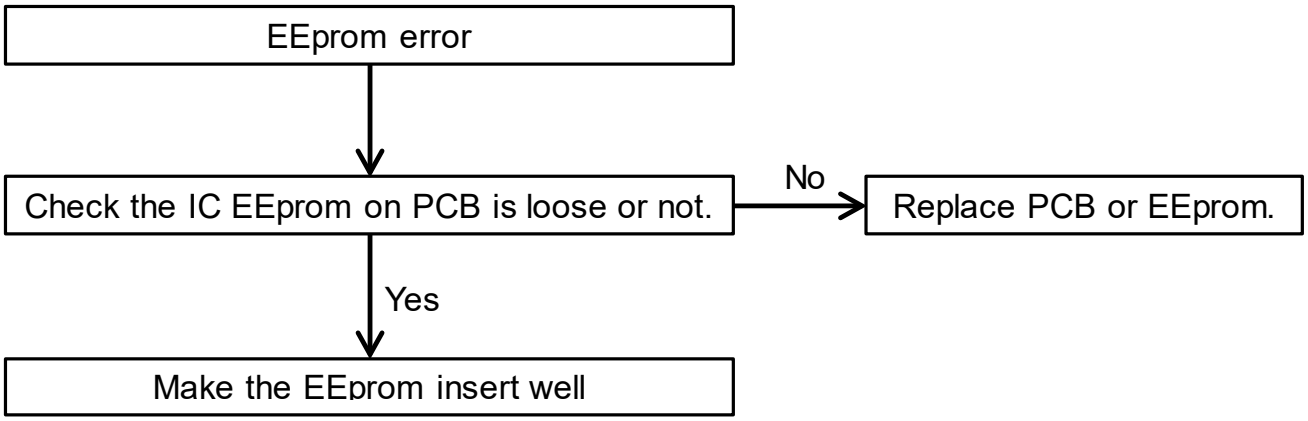
✓ **Operation lamp and timer lamp flashing at 5Hz**



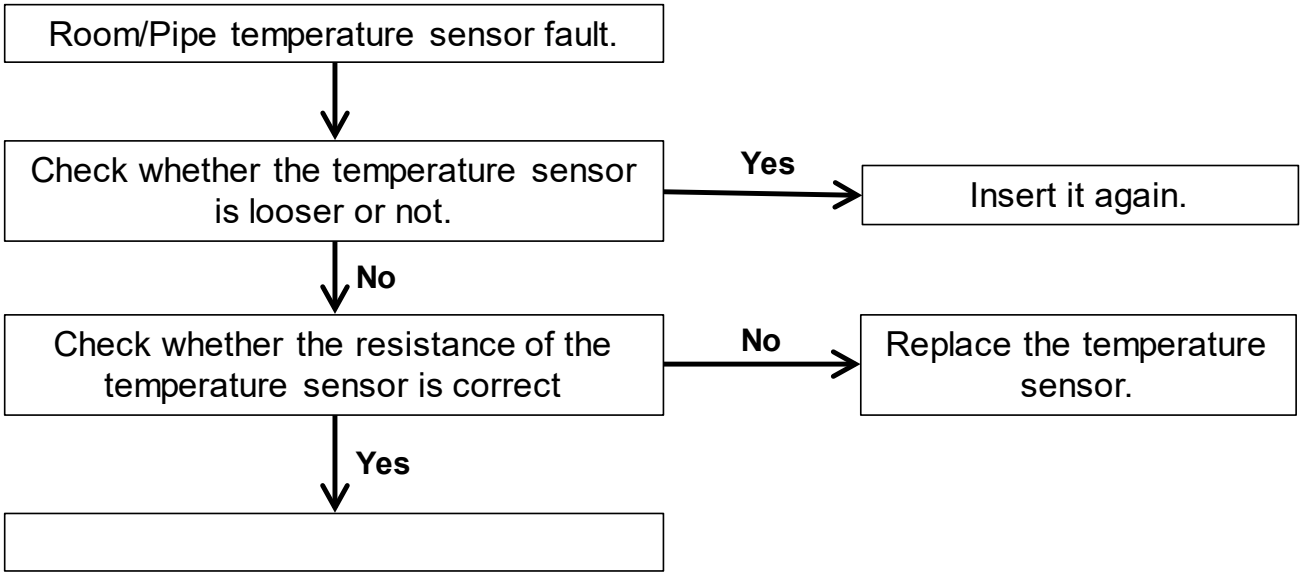
10.5 Floor standing type indoor unit malfunction and protection codes

LED display	Fault or protection meaning
E0	EEprom malfunction
E1	T1, room temperature sensor, fault of open circuit, short circuit.
E2	T2, pipe temperature sensor, fault of open circuit, short circuit.
P1	Low temperature protection under cooling mode.
P2	High temperature protection under heating mode.

✓ **E0**



✓ **E1, E2**



✓ **P1, P2**

They are the normal protection. Under the cooling mode, when the pipe's temperature of evaporator is too low, the protection will be triggered to avoid ice covering the evaporator. Under the heating mode, once the pipe's temperature is too high, the P2 protection will be triggered.

10.6 Outdoor unit malfunction and protection codes

Type	LED1	LED2
Phase sequence or lack of phase.	●	☆★
Communication error.	●	☆☆★
Condenser temperature sensor error.	●	☆☆☆★
Ambient temperature sensor error	●	☆☆☆☆★
System low pressure protection.	O	☆★
Three times low pressure protections within 1 hour.	☆	☆★
System hi-pressure protection, hi-temperature protection of compressor discharger.	O	☆☆★
Current overload protection.	O	☆☆☆★
High temperature protection of condenser.	O	☆☆☆☆★

Note:

●: Light

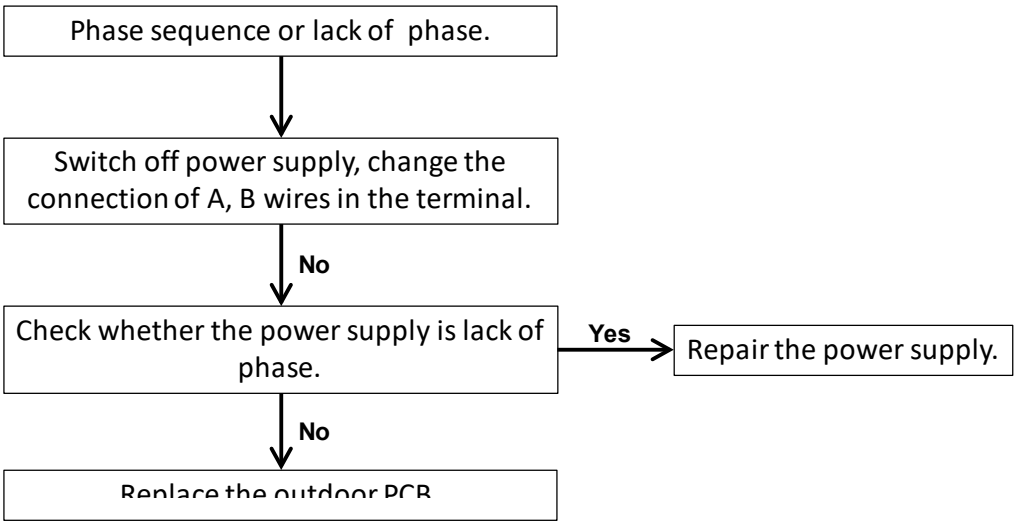
○: Extinguishing

☆: Rapidly flash

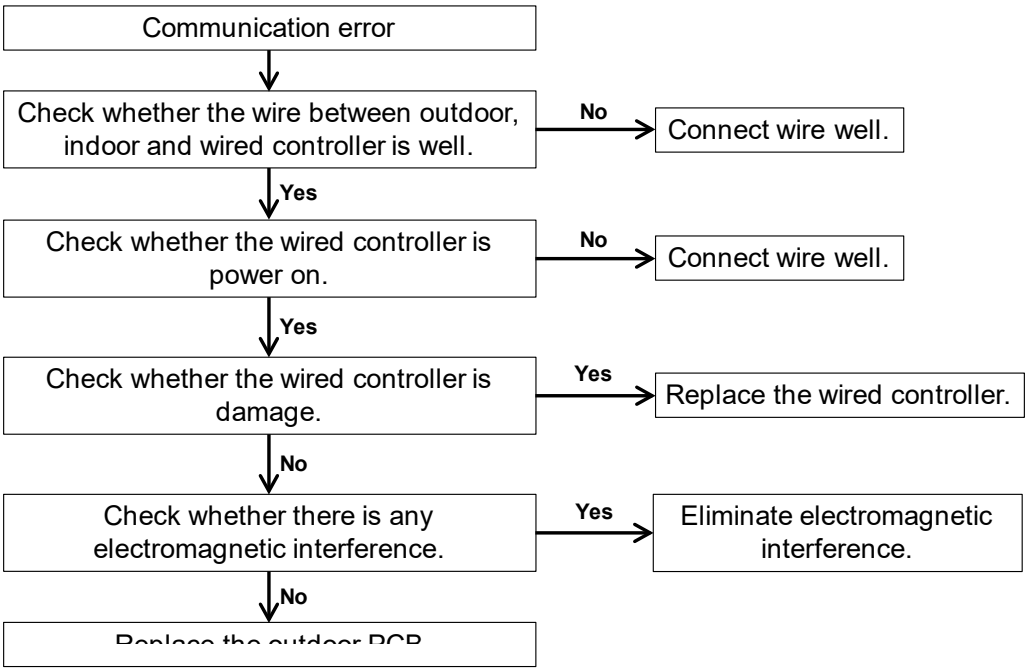
★:Slowly flash

When the outdoor unit protections of temperature or system pressure are triggered three times within 1 hour, the unit will resume after power on again.

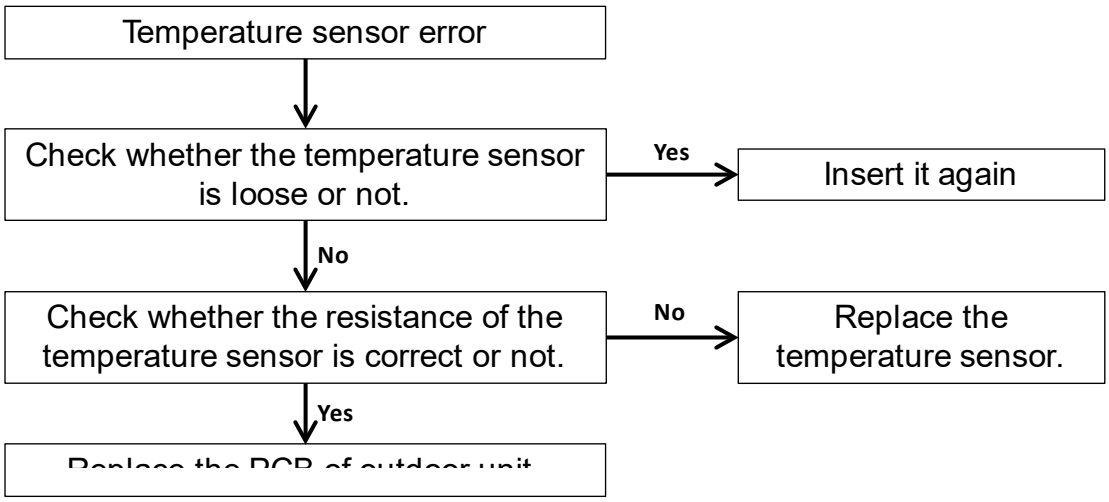
✓ **Phase sequence or lack of phase**



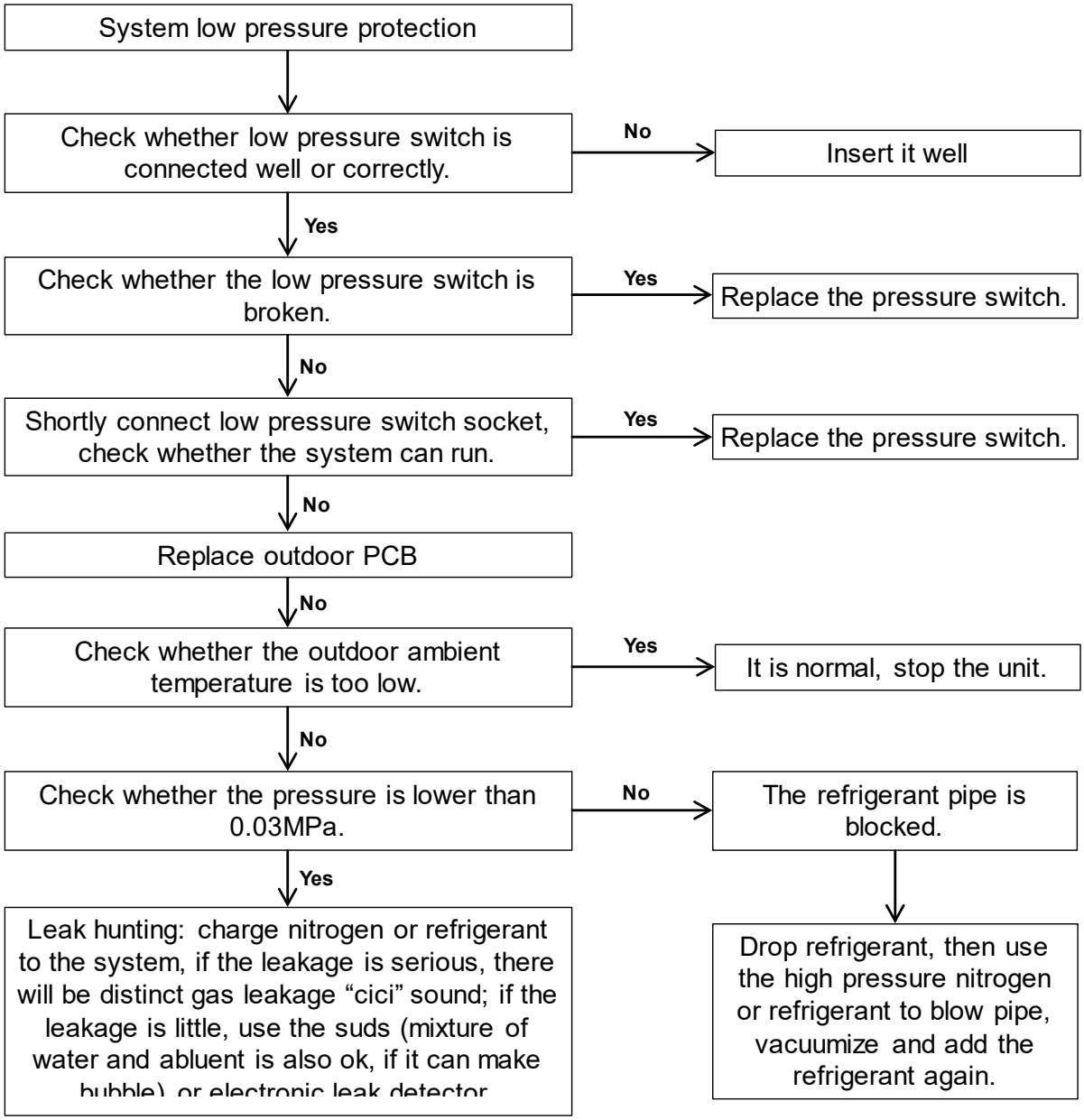
✓ **Communication error**



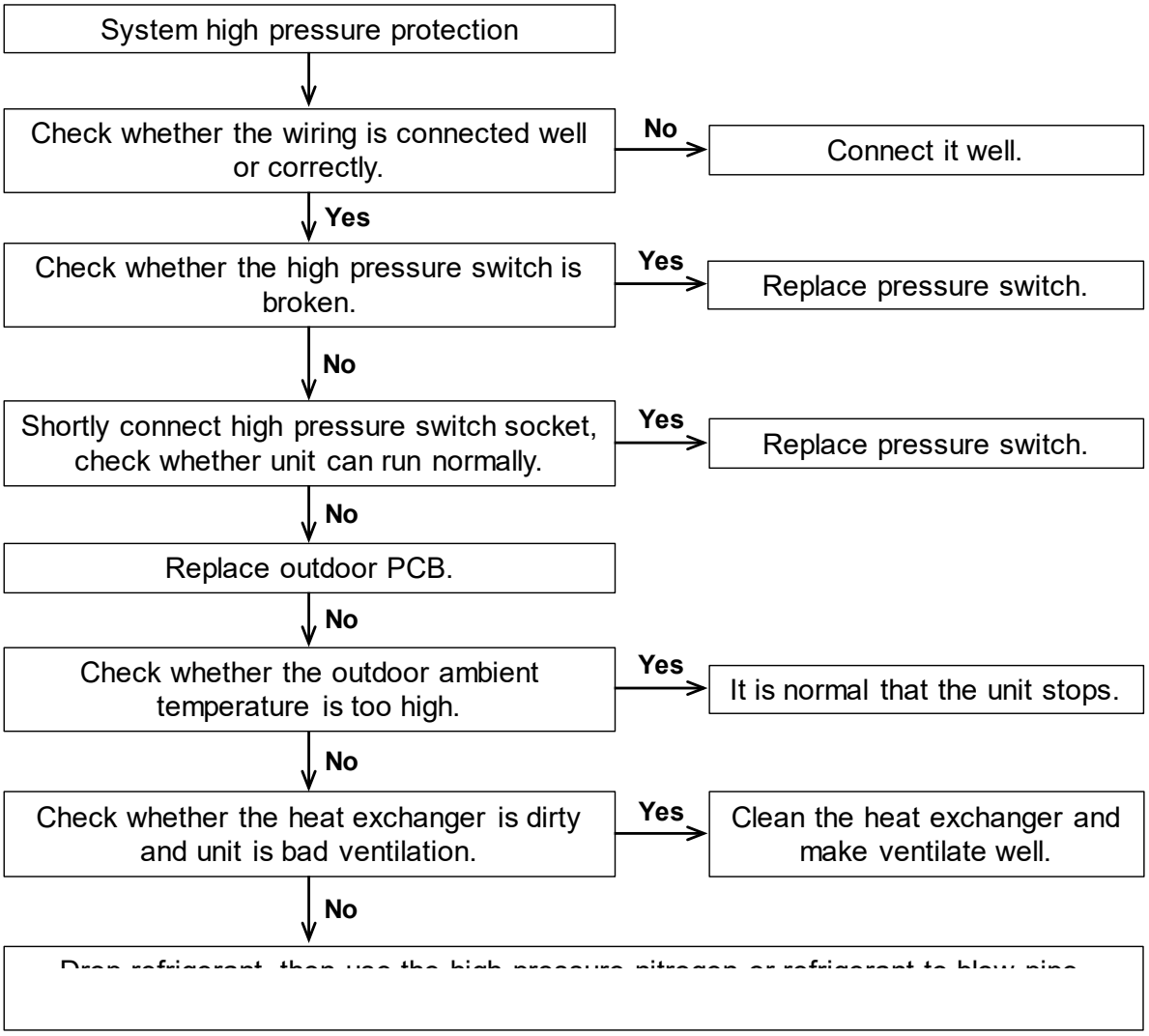
- ✓ **Condenser temperature sensor error**
- ✓ **Ambient temperature sensor error**



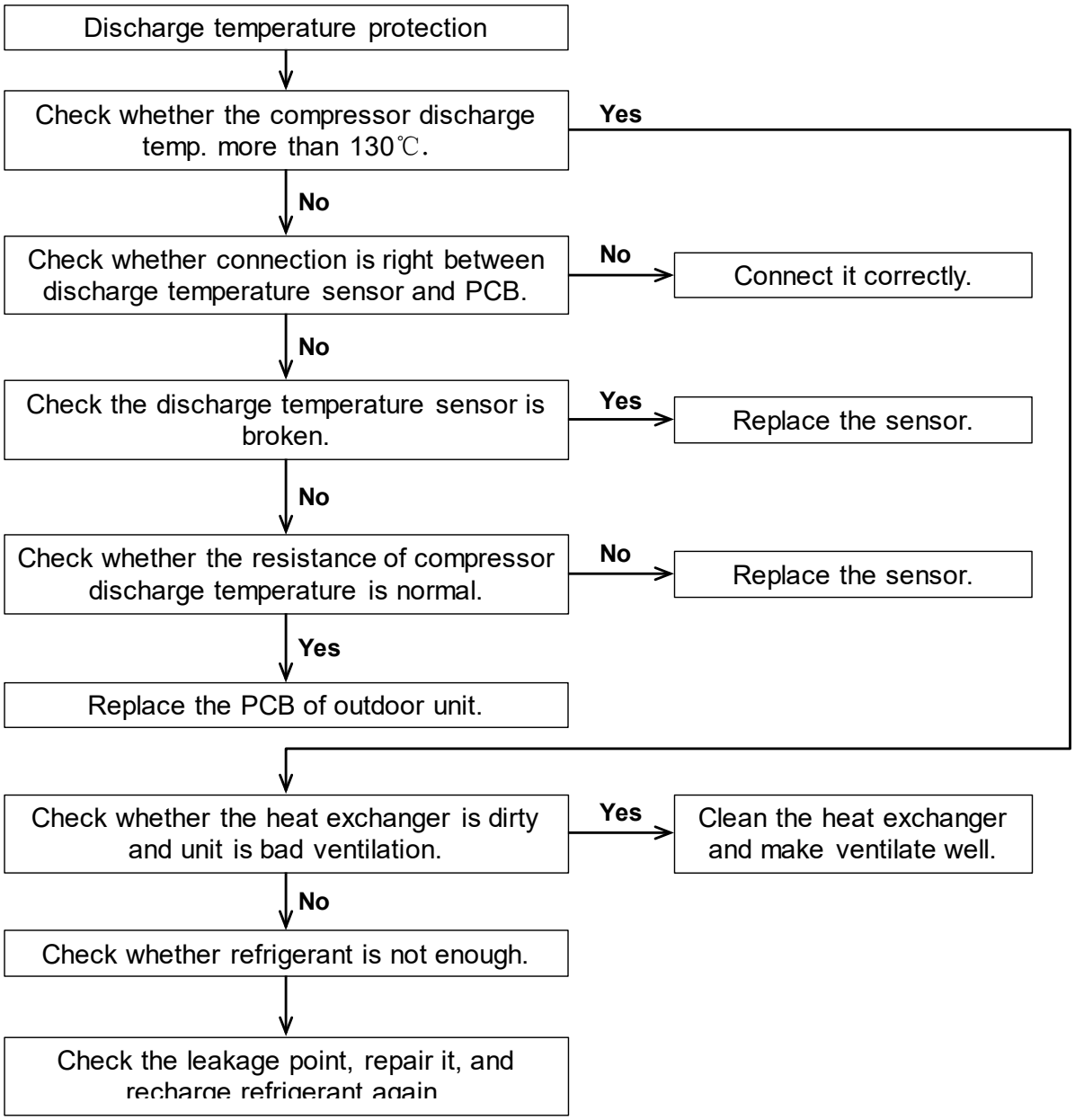
- ✓ **System low pressure protection**
- ✓ **Three times low pressure protections within 1 hour**



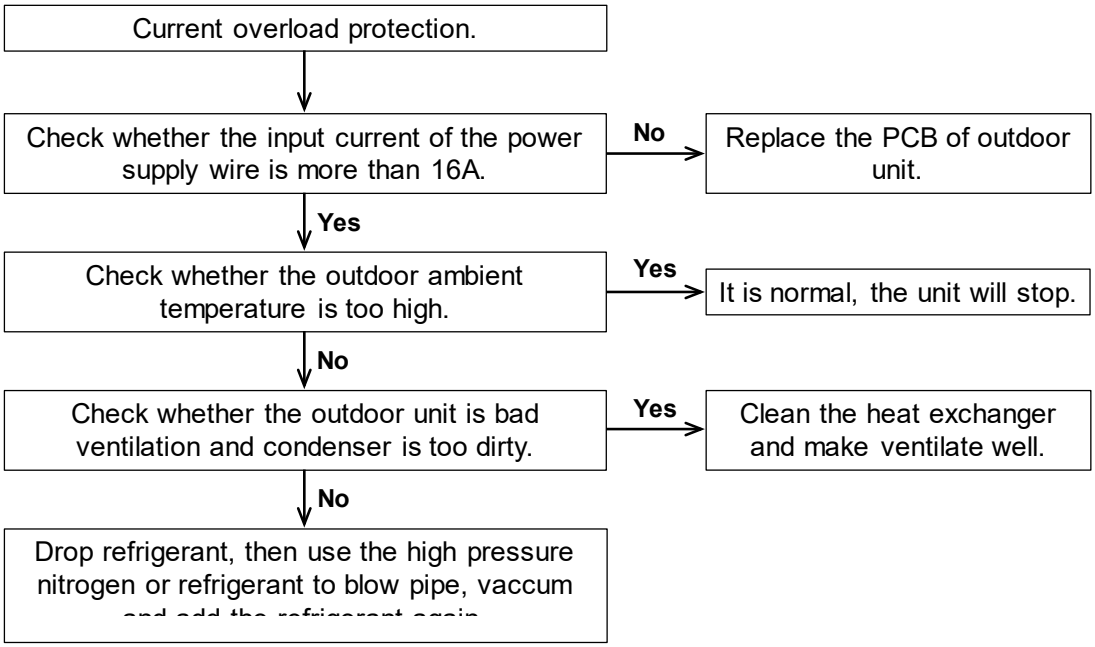
✓ **System high pressure protection**



✓ **Hi-temperature protection of compressor discharger**

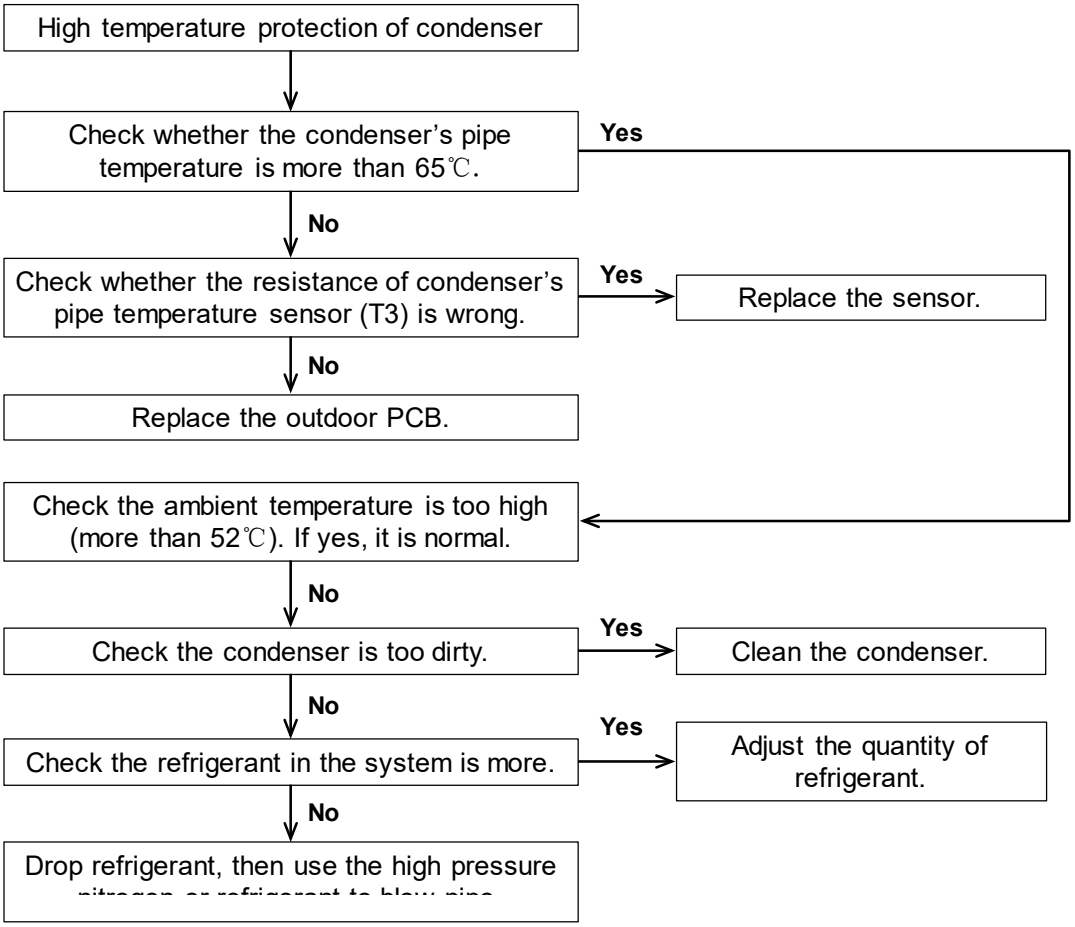


✓ **Current overload protection**



Note: The value of current protection is 34A for 76000Btu/h outdoor unit, 42A for 96000Btu/h outdoor unit, 60A for 12000Btu/h outdoor unit.

✓ **High temperature protection of condenser**



9. Maintenance

- Operation required before leaving the unit idle for a long period.
  - Let the air conditioner run in the fan mode for about half a day, and let its interior be fully dry.
  - Switch off the power by the button in remote controller, and then cut off the power supply.

- When the main power switch is turned on, a certain extent of electric power is consumed even if the air conditioner does not run. Turning off the main power switch can save energy.
- Remove the batteries out of the remote controller.
- After the air conditioner has been in service for several seasons, foreign substance accumulates inside the unit to an extent dependent on the working conditions. Therefore, shut down the air conditioner through the ON/OFF button of the controller, and then cut off the power supply.

- Startup after a long period out of service.
  - Check the following issues:
  - Check whether the air inlet or outlet of the indoor unit and outdoor unit is blocked. Remove foreign substance if any.
  - Check whether the ground wire is connected properly.
  - Check whether the condensate water is discharged normally.
  - Check whether the insulation work of refrigerant circuit and ventilating duct is on sound status. Check whether the installing seat is corroded or rusted.
- Startup
  - Connect the indoor unit 12 hours after connect the outdoor unit to power supply.
  - Switch on the power control of remote controller or wired controller, and then startup the air conditioning.
- Maintenance and upkeep of outdoor unit
  - The edge of some sheet metal assemblies and the fin of the condenser are very sharp. Incorrect operation may cause harm. Be cautious when cleaning them up.
  - Check the air inlet and outlet of the outdoor unit periodically to see whether they are blocked by stain or lampblack.

11.1 Maintenance of indoor unit

- Only the professionals can perform repair. Before maintain the unit, turn off the main power switch. Do not use water or air with a temperature higher than 50°C to clean the panel.
- Check and maintain the ventilating slot once every half years, wash and maintain with corresponding disinfection shall process once.
- Every two years are recommended. The filter can expel dust and other particles in the air. If it is blocked, the effect of the air conditioner will be degraded. Therefore, clean it every another two weeks if the air conditioner already has been used for a long period. If the indoor unit is installed in a place with heavy dust, clean the filter more often.
- If the stain is heavy and difficult to clean, replace the filter.
- Do not replace the power cable without permission. If the power cable is damaged, specialized power cable must be used as substitute.

Part. 6 Controller

1.Wireless Remote Controller (Standard).....42

2.Wired Controller: KJR-29B (Optional).....46

1. Wireless Remote Controller: R51/E (Standard)

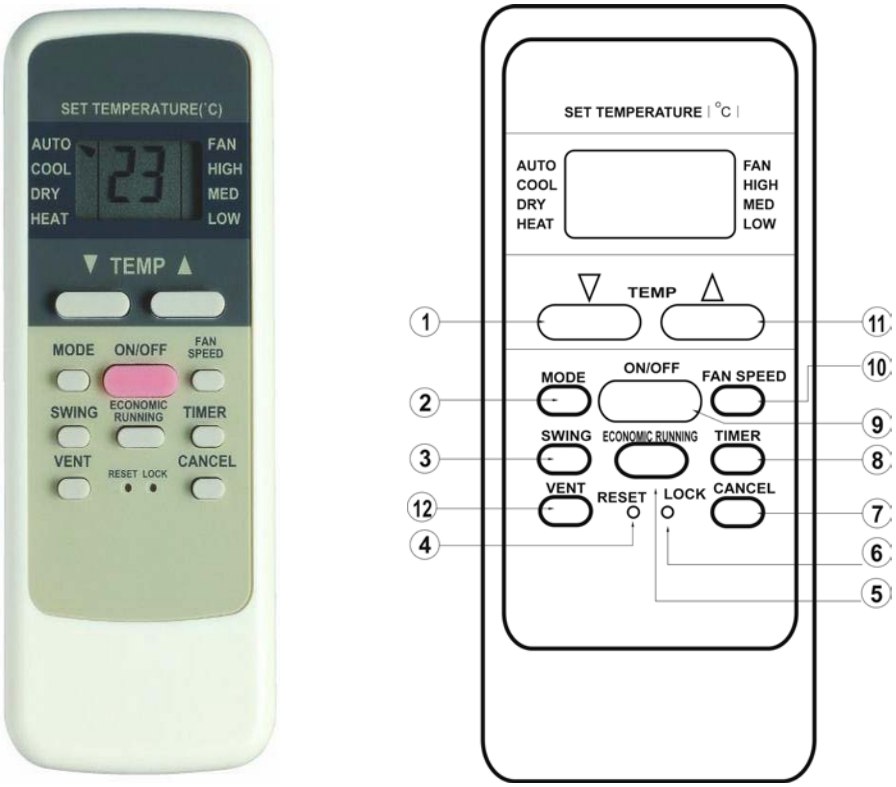
1.1 Remote controller specifications

Model	R51/E
Rated Voltage	3.0V
Lowest Voltage of CPU Emitting Signal	2.0V
Reaching Distance	8m (when using 3.0 voltage, it Gets 11m)
Environment Temperature Range	-5°C～60°C

Performance Features

1. Operating Mode: Cooling, Heating, Dry, Fan and Auto.
2. Timer Setting Function in 24 hours.
3. Indoor Setting Temperature Range: 17°C ~30°C.
4. LCD (Liquid Crystal Display) of all functions.
5. Night Light Function (Optional).

1.2 Introduction of function buttons on the remote controller



Note: This illustration is for explanation purposes only. The actual shape or button names of the remote controller may be slightly different.

1. TEMP Button: Push the **TEMP** button to decrease the indoor temperature setting or to adjust the TIMER in a counter-clockwise direction.

2. MODE Select Button: Each time you push the button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, HEAT and FAN as the following figure indicates:

AUTO(COOL) → COOL → DRY → HEAT → FAN

NOTE: HEAT only for Heat Pump.

3. SWING Button: Push this switch button to change the louver angle.

4. RESET Button: When the **RESET** button is pushed, all of the current settings are cancelled and the control will return to the initial settings.

5. ECONOMIC RUNNING Button: Push this button to go into the Energy-Saving operation mode.

6. LOCK Button: Push this button to lock in all the current settings. To release settings, push again.

7. CANCEL Button: Push this button to cancel the TIMER settings.

8. TIMER Button: This button is used to preset the time ON (start to operate) and the time OFF (turn off the operation).

9. ON/OFF Button: Push this button to start the unit operation. Push the button again to stop the unit operation.

10. FAN SPEED Button: This button is used for setting Fan Speed in the sequence that goes from AUTO, LOW, MED to HIGH, then back to AUTO.

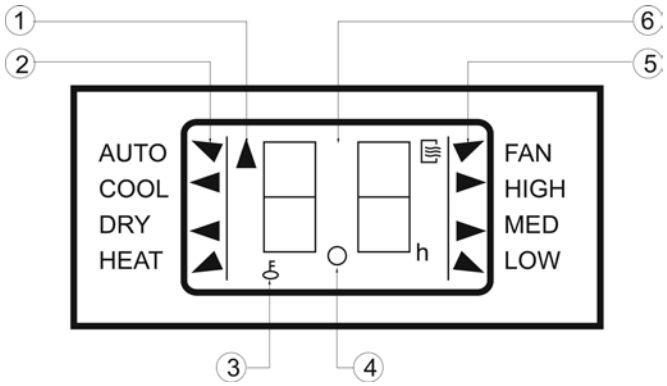
11. TEMP Button: Push the button to increase the indoor temperature setting or to adjust the TIMER in a clockwise direction.

12. VENT Button: Push this button to set the ventilating mode. The ventilating mode will operate in the following sequence:

Continuous → Auto → Off

Note: Ventilation function is available for the fresh air series.

1.3 Names and functions of indicators on remote controller



①**TRANSMISSION Indicator:** This indicator lights when remote controller transmits signals to indoor unit.

② **MODE Display:** Show the current operation modes-- AUTO, COOL, DRY and HEAT. HEAT is only available for heat pump model.

③ **LOCK display:** To displayed by pushing the **LOCK** button. Push the **LOCK** button again to clear display.

④ **TIMER Display:** This display area shows the settings of TIMER.

That is, if only the starting time of operation is set, it will display the ***TIMER ON***. If only the turning off time of operation is set, it will display the ***TIMER OFF***. If both operations are set, it will show ***TIMER ON*** and ***TIMER OFF*** which indicates you have chosen to set both the starting time and off time.

⑤ **FAN Display:** When push the **FAN** button, this indicator lights.

⑥ **Digital Display Area:** This area will show the temperature and, if in the TIMER mode, will show the ON and OFF settings of the TIMER.

Notes: All items are shown in the above picture for the purpose of clear presentation but during the actual operation only the relative functional items are shown on the display panel.

1.4 Operating the remote controller

1) Install / Replace Batteries

The Remote Controller uses two alkaline dry batteries (R03/Ir03X2).

※ To install batteries, slide back the cover of the battery compartment and install the batteries according

to the directions (+and -) shown on the Remote Controller.

※ To replace the old batteries, use the same method as mentioned above.

Notes:

1. When replacing batteries do not use old batteries or a different type battery. This may cause the remote controller to malfunction.

2. If you do not use the remote controller for several weeks remove the batteries. Otherwise battery leakage may damage the remote controller.

3. The average battery life under normal use is about 6 months.

4. Replace the batteries when there is no answering beep from the indoor unit or if the Transmission Indicator light fails to appear.

2) Automatic Operation

When the Air Conditioner is ready for use, switch on the power and the ***OPERATION*** indicator lamp on the display panel of the indoor unit starts flashing.

※ Use the **MODE** select button to select AUTO. In the multi system, to avoid mode conflict; auto-mode is taken as cool mode.

※ Push the **TEMP** button to set the desired room temperature.

※ The most comfortable temperature settings are between 21°C and 28°C

※ Push the **ON/OFF** button to start the air conditioner. The ***OPERATION*** lamp on the display panel of the indoor unit lights. The operating mode of AUTO FAN SPEED is automatically set and there are no indicators shown on the display panel of the remote controller.

※ Push the **ON/OFF** button again to stop the unit operation.

Notes:

1. In the AUTO mode, the air conditioner can logically choose the mode of COOL, FAN, HEAT and DRY by sensing the difference between the actual ambient room temperature and the set temperature on the remote controller.

2. If the AUTO mode is not comfortable for you, the desired mode can be selected manually.

3) COOL, HEAT, and FAN ONLY Operation

※ If the AUTO mode is not comfortable, you may manually change the settings by using COOL, DRY, HEAT (HEAT PUMP units only), or FAN ONLY modes.

※ Push the **TEMP** button to set the desired room temperature.

※ When in COOLING mode, the most comfortable settings are 21°C or above. When in HEATING mode, the most comfortable settings are 28°C or below.

※ Push the **FAN SPEED** to select the FAN mode of AUTO, HIGH, MED or LOW.

※ Push the **ON/OFF** button. The operation lamp lights and the air conditioner start to operate per your settings. Push the **ON/OFF** button again to stop this unit operation.

Note: The FAN ONLY mode cannot be used to control the temperature. While in this mode, only steps1、3 and 4 may be performed.

4) DRY Operation

※ Push the **MODE** button to select DRY.

※ Push the **TEMP** button to set the desired temperature from 21°C to 28°C.

※ Push the **ON/OFF** button. The operation lamp lights and the air conditioner start to operate in the DRY mode. Push the **ON/OFF** button again to stop this unit operation.

Note: Due to the difference of the set temperature of the unit and the actual indoor temperature, the Air Conditioner when in DRY mode will automatically operate many times without running the COOL and FAN mode.

5) TIMER Operation

Push **TIMER** button to set the unit what time turn on or off.

a. To set the STARTING time.

※ Push the **CANCEL** button to cancel any former settings.

※ Push the **TIMER** button. The remote controller will show the ***TIMER*** and the signal "h" is shown on the display panel. The control is now ready to reset the TIMER ON to start the operation.

※ Push the **TEMP** button (▲ or ▼) to set desired unit START time.

※ After setting the TIMER there will be a one-half second delay before the remote controller transmits the signal to the Air Conditioner. Then, after approximately another 2 seconds, the set temperature will re-appear on the digital display.

b. To set the STOPPING time.

※ Press the **CANCEL** button to cancel any former settings.

※ Push the **TIMER** button and the remote controller will show the last set time for the START operation and the signal "***h***" will be shown on the display panel. You are now ready to readjust the TIMER OFF to stop the operation.

※ Push the **TEMP** button to cancel the TIMER ON setting. The digital area will show "***00***".

※ Push the **TIMER** button and the remote controller will show the last set time for the STOP operation and the signal "***h***" will be shown on the display panel. You are now ready to reset the time of the STOP operation.

※ Push the **TEMP** button (▲ or ▼) to set the time you want to stop the operation.

※ After setting the TIMER there will be a one-half second delay before the remote controller transmits the signals to the Air Conditioner. Then after approximately another 2 seconds, the set temperature will re-appear on the digital display.

c. Set the STARTING & STOPPING time

※ Press the **CANCEL** button to cancel any former settings.

※ Push the **TIMER** button and the remote controller will show the last set time for START operation and the signal "***h***" will be shown on the display panel. You are now ready to readjust the TIMER ON to start the operation.

※ Push the **TEMP** button (▲ or ▼) to set the time you want to start the operation.

※ Push the **TIMER** button and the remote controller will show the last set time for STOP operation and the signal "***h***" will be shown on the display panel. You are now ready to reset the time of the STOP operation.

※ Push the **TEMP** button (▲ or ▼) to set the time you want to stop the operation.

※ After setting the TIMER there will be a one-half second delay before the remote controller transmits the signal to the Air Conditioner. Then, after approximately another 2 seconds, the set temperature will re-appear on the digital display.

Notes:

1. Please reset the TIMER after cancelling the former time settings.

2. The setting time is relative time. That is the time set is based on the delay of the current time.

Warning：

1. Be sure there are no barriers between the remote controller and the receiver of indoor unit otherwise the air conditioner will not work.

2. Keep the Remote Controller away formal liquids.

3. Protect the Remote Controller from high temperatures and exposure to radiation.

4. Keep the indoor receiver out of direct sunlight or the Air Conditioner may malfunction.

5. Keep controller away from EMI (Electro-Magnetic Interference) supplied by other household appliances.

2. Wired Controller: KJR-29B (Optional)



KJR-29B

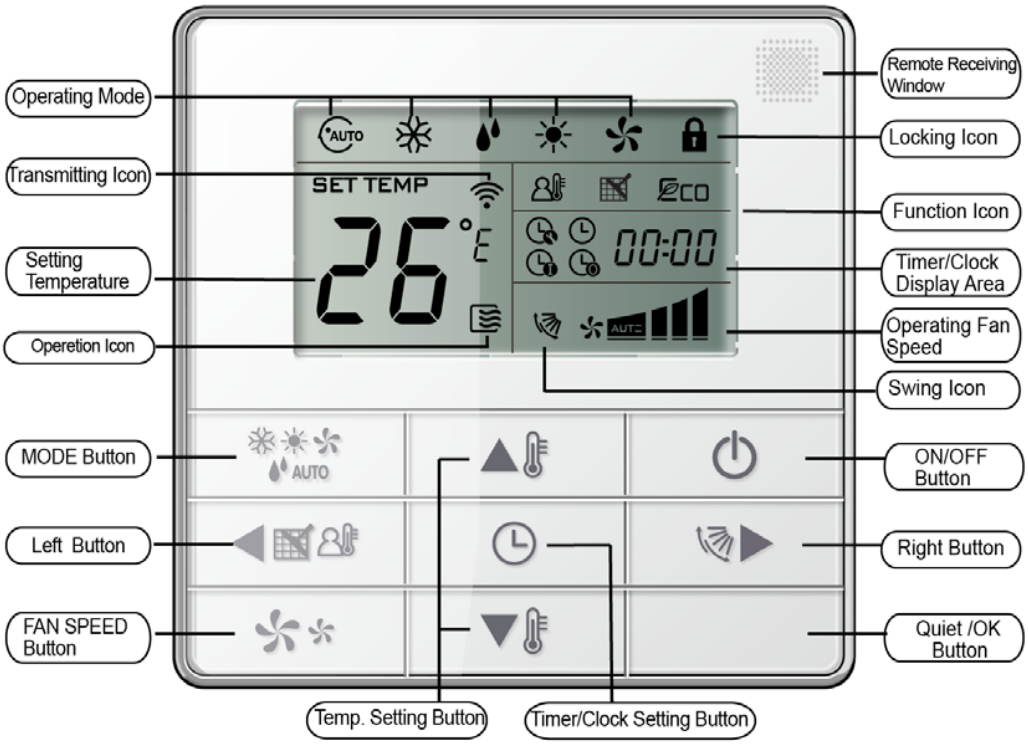
2.1 Remote controller specifications

Model	KJR-29B
Power Supply Voltage	5.0V DC
Ambient Temperature Range	-15°C～43°C
Ambient Humidity Range	RH40%~RH90%

Performance Features

1. Operating mode: Cool, heat, dry, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).
5. Night light and follow me function
6. Remote receiving function.

2.2 Wired controller outlook



2.3 Operation instructions

1) Remote signal receiving function:

the wired controller can be a remote signal receiving device, it is possible to use the wireless remote controller to control the air conditioner through the wired controller when the system have been powered on.

Note: The wired controller will not receive the swing controlling instruction. For the indoor unit with swinging function, you can directly use the wireless remote controller to control swinging through the display panel of the indoor unit, or use the swing button on the wired remote controller to control the indoor unit for swinging.

2) On and off the air conditioner:

Press the On/Off button to control the indoor unit on and off status.

When the unit is turned off, press the On/Off button, the unit will be turned on and the operating icon lights up.

When the unit is turned on, press the On/Off button, the unit will be turned off and the operating icon lights off.

3) Set the operating mode

Press the mode button to set the operating mode, after each button press the operating mode will circle as follow:

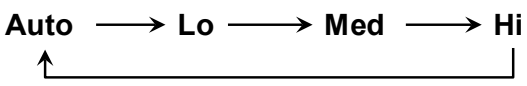


Note: When the controller has been set to cool only, then there is no HEAT mode.

4) Fan speed setting

Under COOL, HEAT and FAN modes, press the fan speed button can adjust the fan speed setting.

After each fan speed button press will circle as follow:



Note: Under AUTO and DRY modes the fan speed is not adjustable and the default fan speed is auto.

5) Temperature setting

Under AUTO, COOL, DRY, HEAT modes, press the temperature setting buttons ▲ and ▼ to set the temperature, the adjusting range is 17ºC~30 ºC (or 62 ºF~88 ºF).

Note: The setting temperature cannot be adjusted under fan mode.

6) Timer on and timer off setting

Press the timer/clock setting button , then enter into the timer on setting status, and screen will display and 0.0h.

Press the buttons ▲ and ▼ to adjust the timer. If the timer setting is less than 10 hours, each press ▼ or ▼ will increase or decrease 0.5 hour. When the timer setting is more than 10 hours, each press ▲ or ▼ will increase or decrease 1 hour, the maximum timer setting is 24 hours.

After finish adjusting the timer on setting, press the button /OK or wait for 5 seconds to confirm and exit the timer on setting.

Under the timer on setting status, press the timer/clock setting button , then enter into the timer off setting status, and the screen will display and 0.0h.

The setting method of timer off is the same as the timer on.

Under timer setting state, set the timer on and the timer off to be 0.0h can cancel timer on and time off.

Note: If the wired controller has been set timer on/off, press the ON/OFF to turn on or turn off the unit then the timer will be canceled simultaneously.

7) Clock setting

Press the timer/clock button setting for 3 seconds, and then enter into the clock setting status.

The hour position of the clock will flash, and can press ▲ and ▼ to adjust the hour value.

After finishing the hour setting, press left button ◀ or right button ▶ to switch to minute position setting, then the minute position will flash, press ▲ and ▼ to adjust the minute value.

After finish the clock setting, press the /OK button or wait for 5 seconds to confirm and exit the setting state.

8) Quiet operation

Under COOL, HEAT, FAN modes, press the /OK button to set into the quiet operation, it is used to reduce the running noise through setting the fan speed to low.

Note: Under AUTO, DRY mode, the fan speed is auto and the /OK button does not work.

9) Lock the wired controller

Press the temperature adjusting buttons and simultaneously, the wired controller enters into locking state, and the locking icon will be lighted up.

Under the locking state, the wired controller will not respond to the buttons pressing and the control instruction from the wireless remote controller.

Simultaneously press the temperature adjusting buttons and again can cancel the locking state.

10) Air filter cleaning reminding function

The wired controller records the total running time of the indoor unit, when the accumulated running time reaches the pre-set value, the air filter cleaning reminding icon will be lighted up, to remind that the air filter of the indoor unit need to be cleaned.

Press for 3 seconds, and reset the reminding icon and the wired controller will re-accumulate the total running time of the indoor unit.

Note: The default setting value of the reminding function is 2,500 hours, and it can change to be 5,000 hours or 10,000 hours. The setting methods refer to the part of wired controller initial parameter setting.

11) Swing function

If the indoor unit supports swing function, press the right button to adjust the air outlet direction of the indoor unit. Press this button for 3 seconds can turn on or turn off the auto swing function, the swing icon will be lighted up when the auto swing function is turned on.

12) Follow-me function

When the system is running and the operating mode is AUTO, COOL or HEAT, press the button will activate the follow-me function; press this button again to deactivate the function. Operating mode changeover will deactivate the function as well.

When the follow-me function is activated, the icon will be light up, the wired controller will display room temperature read from local sensor, and transmit the temperature value to the indoor unit every 3 minutes.

2.4 Installation of wired controller

1) Safety precaution

- ✓ Stated below are important safety issues that must be obeyed. Confirm there is no abnormal phenomena during test operation after complete.
- ✓ Installation by other persons may lead to imperfect installation, electric shock or fire. Improper installation may lead to electric shock or fire. A random disassembly may cause abnormal operation or heating, which may result in fire.
- ✓ Do not install the controller in a place vulnerable to leakage of flammable gases. Once flammable gases are leaked and left around the wired controller, fire may occur.
- ✓ The wiring should adapt to the wired controller current. Otherwise, electric leakage or heating may occur and result in fire. The specified cables shall be applied in the wiring. No external force may be applied to the terminal. Otherwise, wire cut and heating may occur and result in fire.
- ✓ Don’t place the wired controller near the lamps, to avoid the remote signal of the controller to be disturbed. Do not install the unit and controller in a place with much oil, steam, sulfide gas. Otherwise, the product may deform and fail.

2) Accessories

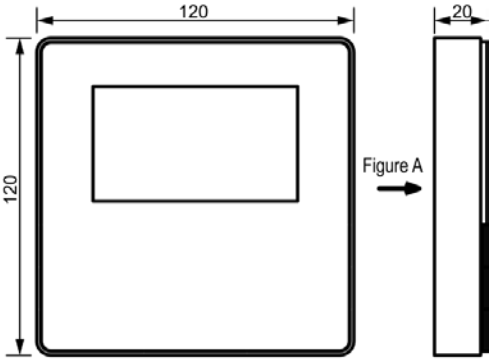
Name	Qty	Remarks
Wired controller	1	\
Cross round head wood mounting screw	3	M4×20 (For mounting on the wall.)
Cross round head mounting screw	2	M4×25 (For mounting on the electrical switch box.)
Installation manual	1	\
Owner's manual	1	\
Plastic expansion pipe	3	For mounting on the wall
Plastic screw bar	2	For fixing on the 86 electrician box.
Switching wires for signal receiving board	1	For connecting the signal receiving board and 4-core shield wire.
Switching wires for wired controller signal	1	(If needed) For connecting the main control panel and4-core shielding wire.

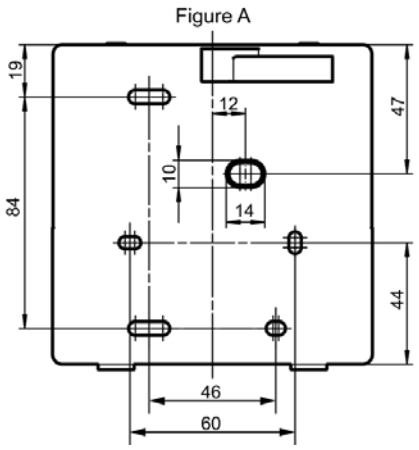
3) Supplied assemblies on the site

Name	Qty (Embedded into wall)	Specification (Only for reference)	Remarks
4-core shielded cable	1	$0.5mm^2 \times 4$	The longest is 15m.
86 Electrician box	1	\	\
Wiring tube (Insulating sleeve and tightening screw.)	1	\	\

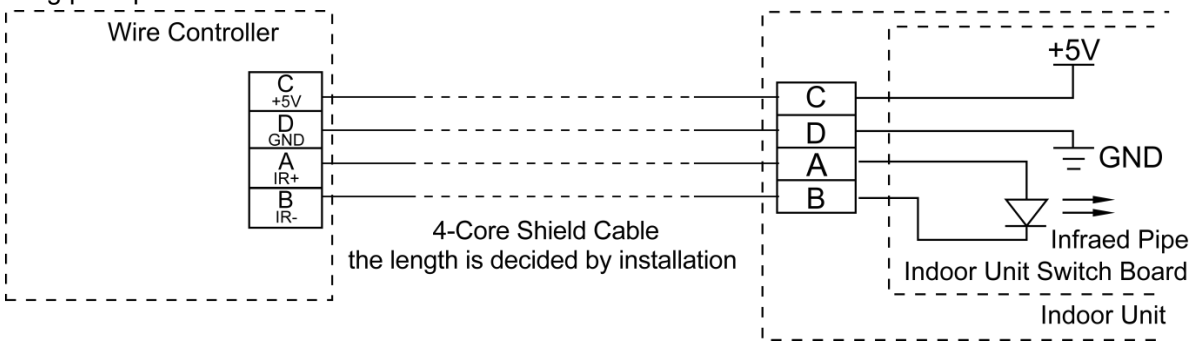
4) Installation procedure

- ✓ The installation manual contains information about the procedure of installing wired controller. Please refer to indoor unit installation manual for connecting between wired controller and indoor unit.
- ✓ Circuit of wired controller is low voltage circuit. Never connect it with a standard 220V or 380V circuit or put it into a same wiring tube with the circuit.
- ✓ The shield cable must be connected stable to the ground, or transmission may fail.
- ✓ Don not attempt to extend the shield cable by cutting, if it is necessary, use terminal connection block to connect.
- ✓ After finishing connection, do not use mugger to have the insulation check to the signal wire.
- ✓ Wired remote controller structure size figure (Unit: mm):



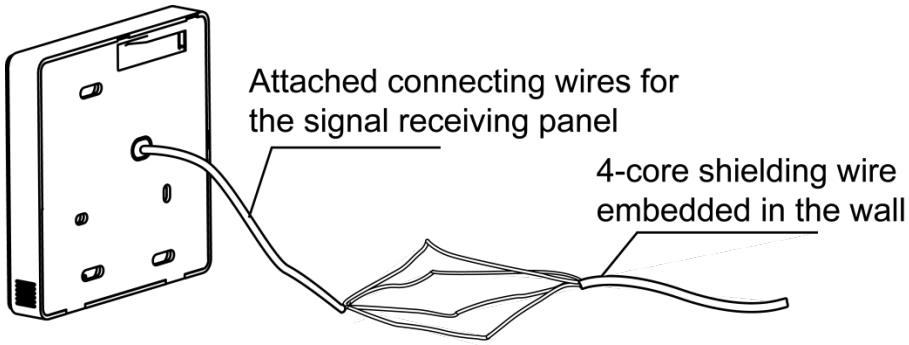


✓ Wiring principle sketch:

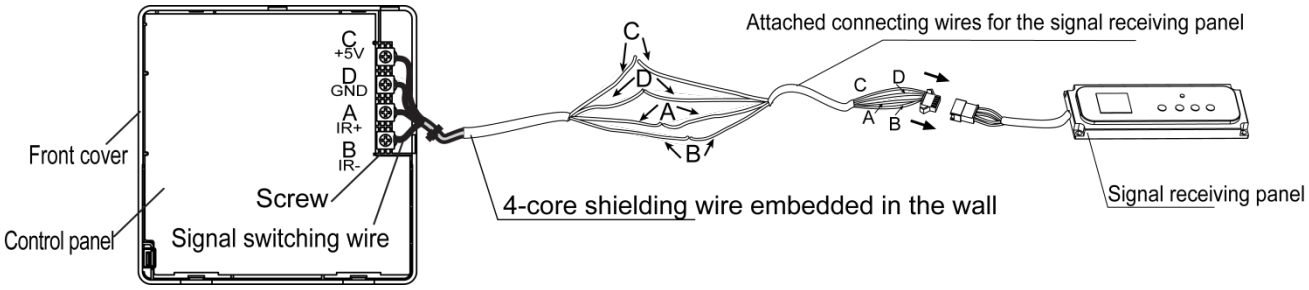


✓ Wiring figure:

Connect two terminals of embedded 4-core shielding wire with the switching wires of wired controller and signal receiving board. Make sure the sequence of 4 terminals (A, B, C and D) should correspond to the wire sequence of signal switching wires (A, B, C and D).



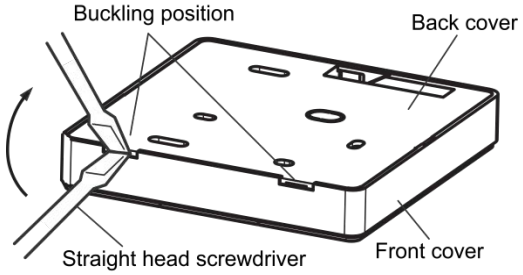
If the embedded 4-core shielding wire cannot go through the wired controller, it can use signal switching for connection, make sure the wires are reliable and firm.



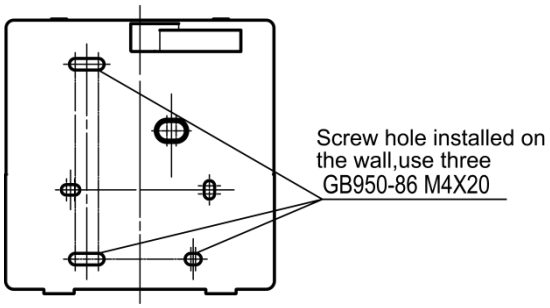
The tightening torque range of screw is: 0.8~1.2N·m (8~12kgf·cm).

✓ Wired controller back cover installation

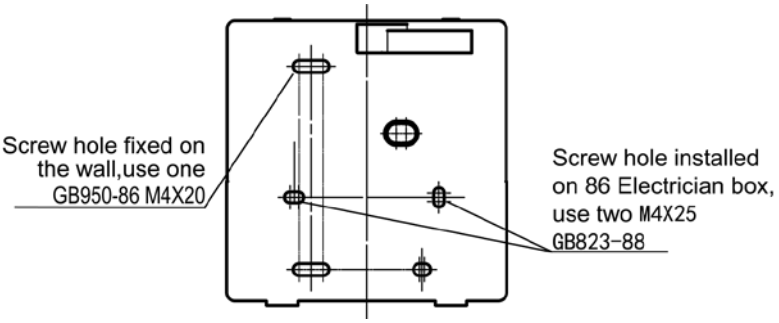
Use straight head screwdriver to insert into the buckling position in the bottom of wired controller, and spin the screwdriver to take down the back cover. Pay attention to spinning direction, otherwise will damage the back cover.



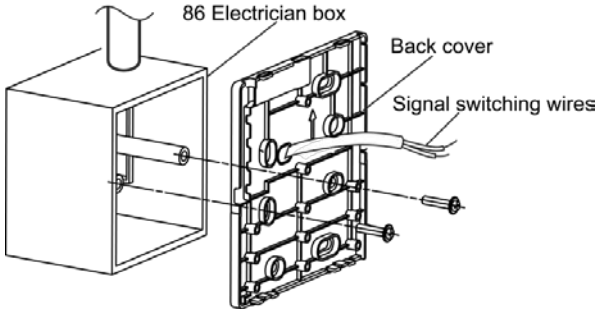
Use three M4×20 screws to directly install the back cover on the wall.



Use two M4×25 screws to install the back cover on the 86 electrician box, and use one M4×20 screws for fixing on the wall.



Adjust the length of two plastic screw bars in the accessory to be standard length from the electrical box screw bar to the wall. Make sure when install the screw bar to the electric box screw bar, make it as flat as the wall.

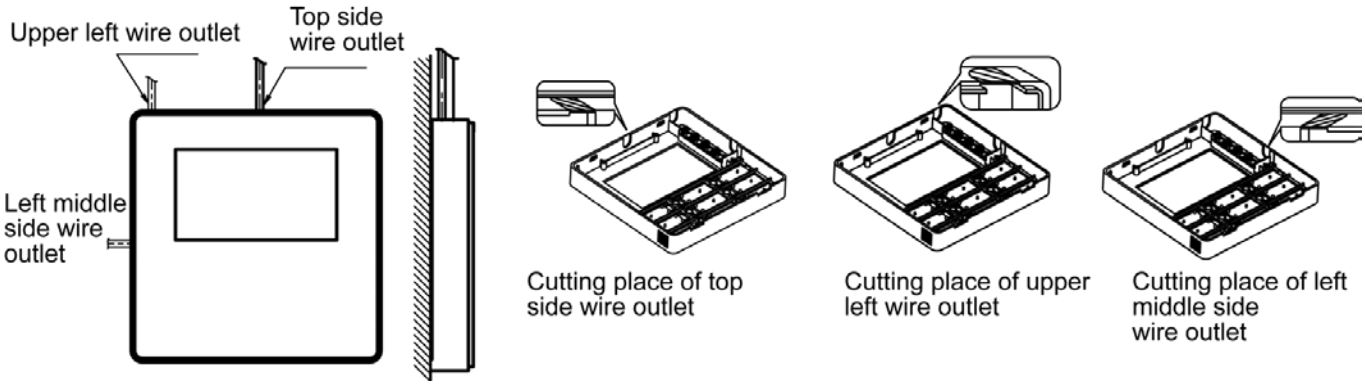


Use cross head screws to fix the wired controller bottom cover in the electrical box through the screw bar. Make sure the wired controller bottom cover is on the same level after installation, and then install the wired controller back to the bottom cover.

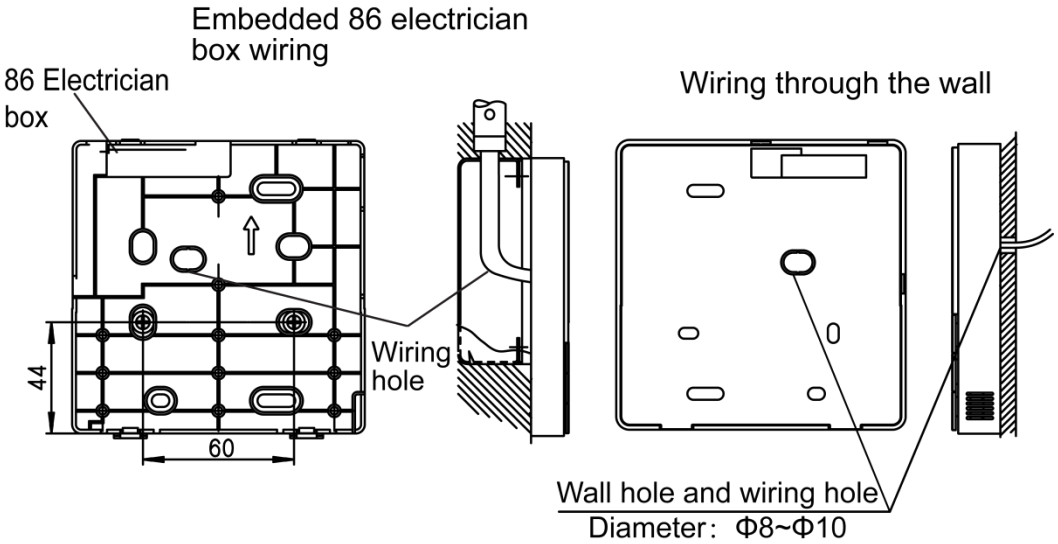
Over fasten the screw will lead to deformation of back cover.

✓ Neaten the wires of the wired controller

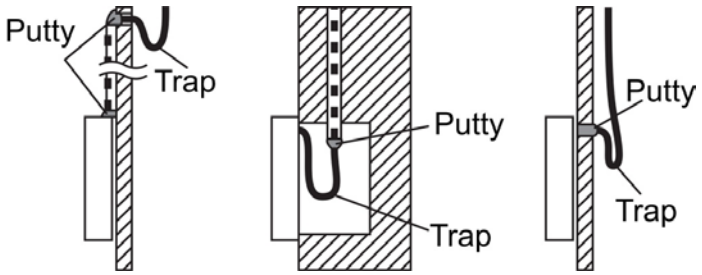
There are three positions of signal wire outlet around the wired controller, when the wired controller directly is installed on the flat wall.



When the wired controller is stalled with electrician box, the back cover of wired controller is already reserved one hole for wire outlet. It is also available for the shielded wire passing by the wall.

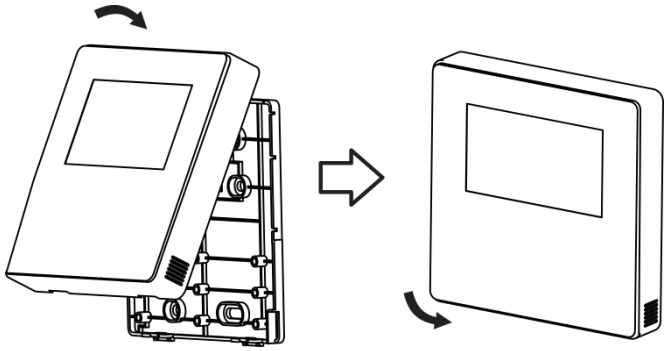


Avoid the water enter into the wired controller, use trap and putty to seal the connectors of wires during wiring installation. When under installation, reserve certain length of the connecting wire for convenient to take down the wired controller while during maintenance.

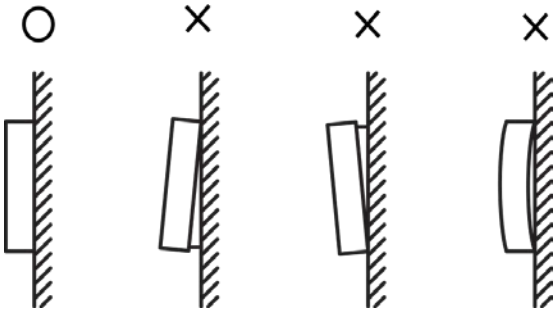


✓ Wired controller's front cover installation:

After adjusting the front cover and then buckle the front cover. Avoid clamping the communication switching wire during installation.



Correct install the back cover and firmly buckle the front cover and back over, otherwise will make the front cover drop off.



✓ Wired controller initial parameter setting

Change the related functions of the controller through adjusting the initial parameters.

The wired controller initial parameter includes two codes 'XY". The first code 'X' means the function class, the second code 'Y' means detailed configuration of this function.

Step1: Simultaneously press the mode button and fan speed button of the wired controller for 5 seconds to enter the parameter setting state.

Step2: The value of the first code 'X' is '0', press the temperature setting buttons and to adjust the second code value.

Step3: After setting the second code value, press Quiet/OK button /OK to switch the first code to the next value.

Step4: When the first code value is '6', press Quiet/OK button /OK again to exit the parameters setting.

The parameter setting table

First code	Function	Second code				
		0	1	2	3	4
0	Cooling-only/Heat pump selection	Heat pump (Default)	Cooling only	\	\	\
1	Indoor unit communication address setting	Yes (Default)	None	\	\	\
2	Power-off memory	Yes (Default)	None	\	\	\
3	Filter cleaning reminding	Cancel the reminding function	1250 hours	2500 hours	5000 hours	10000 hours
5	Remote receiving function	Yes (Default)	None	\	\	\
6	Centigrade/Fahrenheit display	Centigrade (Default)	Fahrenheit	\	\	\

Note: The second code of the filter cleaning reminding is 2500hours, which as default.

NOTE - Due to Nõrden's ongoing commitment to quality, specifications, ratings, and dimensions are subject to change without notice and without incurring liability.