LG

LG

LG
Concealed Duct Air Conditioner
INSTALLATION MANUAL

IMPORTANT

- **Please read this installation manual completely before installing the product.**
- **When the power cord is damaged, replacement work shall be performed by authorized personnel only.**
- **Installation work must be performed in accordance with the national wiring standards by authorized personnel only.**
- **Please retain this installation manual for future reference after reading it thoroughly.**

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Safety Precautions

To prevent injury to the user or other people and property damage, the following instructions must be followed.

■ Be sure to read before installing the air conditioner.

■ Be sure to observe the cautions specified here as they include important items related to safety.

■ Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

⚠WARNING	This symbol indicates the possibility of death or serious injury.
⚠CAUTION	This symbol indicates the possibility of injury or damage to properties only.

■ Meanings of symbols used in this manual are as shown below.

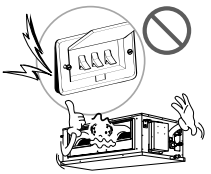
⃠	**Be sure not to do.**
❗	**Be sure to follow the instruction.**

⚠WARNING

■ Installation

Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.

• There is risk of fire or electric shock.



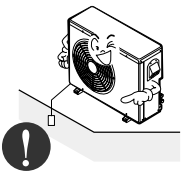
For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized Service Center.

• Do not disassemble or repair the product. There is risk of fire or electric shock.



Always ground the product.

• There is risk of fire or electric shock.



Install the panel and the cover of control box securely.

• There is risk of fire or electric shock.



Always install a dedicated circuit and breaker.

• Improper wiring or installation may cause fire or electric shock



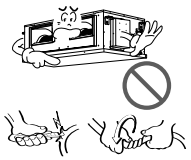
Use the correctly rated breaker or fuse.

• There is risk of fire or electric shock.



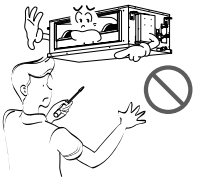
Do not modify or extend the power cable.

- There is risk of fire or electric shock.



Do not install, remove, or re-install the unit by yourself (customer).

- There is risk of fire, electric shock, explosion, or injury.



Be cautious when unpacking and installing the product.

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.



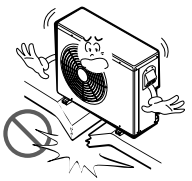
For installation, always contact the dealer or an Authorized Service Center.

- There is risk of fire, electric shock, explosion, or injury.



Do not install the product on a defective installation stand.

- It may cause injury, accident, or damage to the product.



Be sure the installation area does not deteriorate with age.

- If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.



■ Operation

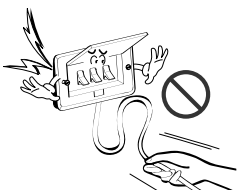
Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.

- Moisture may condense and wet or damage furniture.



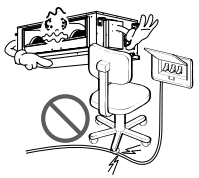
Take care to ensure that power cable could not be pulled out or damaged during operation.

- There is risk of fire or electric shock.



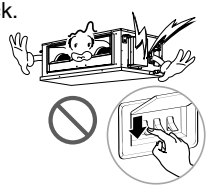
Do not place anything on the power cable.

- There is risk of fire or electric shock.



Do not plug or unplug the power supply plug during operation.

- There is risk of fire or electric shock.



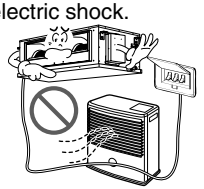
Do not touch(operate) the product with wet hands.

- There is risk of fire or electrical shock.



Do not place a heater or other appliances near the power cable.

- There is risk of fire and electric shock.



Do not allow water to run into electric parts.

- It may cause There is risk of fire, failure of the product, or electric shock.



Do not store or use flammable gas or combustibles near the product.

- There is risk of fire or failure of product.



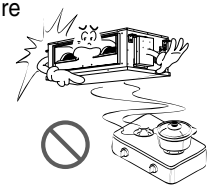
Do not use the product in a tightly closed space for a long time.

- Oxygen deficiency could occur.



When flammable gas leaks, turn off the gas and open a window for ventilation before turn the product on.

- Do not use the telephone or turn switches on or off. There is risk of explosion or fire



If strange sounds, or small or smoke comes from product. Turn the breaker off or disconnect the power supply cable.

- There is risk of electric shock or fire.



Stop operation and close the window in storm or hurricane. If possible, remove the product from the window before the hurricane arrives.

- There is risk of property damage, failure of product, or electric shock.



Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)

- There is risk of physical injury, electric shock, or product failure.



When the product is soaked (flooded or submerged), contact an Authorized Service Center.

- There is risk of fire or electric shock.



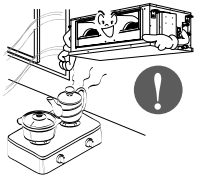
Be cautious that water could not enter the product.

- There is risk of fire, electric shock, or product damage.



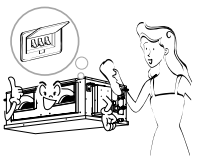
Ventilate the product from time to time when operating it together with a stove, etc.

- There is risk of fire or electric shock.



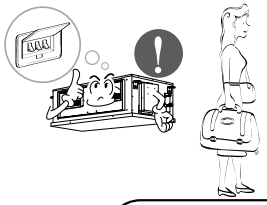
Turn the main power off when cleaning or maintaining the product.

- There is risk of electric shock.



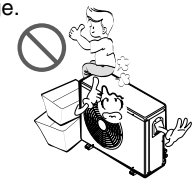
When the product is not be used for a long time, disconnect the power supply plug or turn off the breaker.

- There is risk of product damage or failure, or unintended operation.



Take care to ensure that nobody could step on or fall onto the outdoor unit.

- This could result in personal injury and product damage.

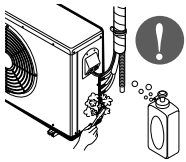


⚠CAUTION

■ Installation

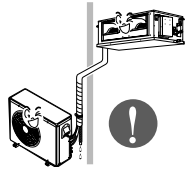
Always check for gas (refrigerant) leakage after installation or repair of product.

- Low refrigerant levels may cause failure of product.



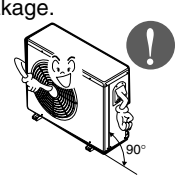
Install the drain hose to ensure that water is drained away properly.

- A bad connection may cause water leakage.



Keep level even when installing the product.

- To avoid vibration or water leakage.



Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.

- It may cause a problem for your neighbors.



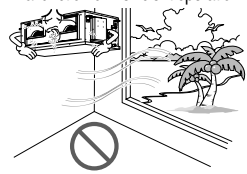
Use two or more people to lift and transport the product.

- Avoid personal injury.



Do not install the product where it will be exposed to sea wind (salt spray) directly.

- It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.



■ Operation

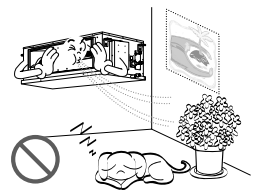
Do not expose the skin directly to cool air for long periods of time. (Don't sit in the draft.)

- This could harm to your health.



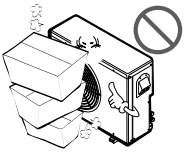
Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.

- There is risk of damage or loss of property.



Do not block the inlet or outlet of air flow.

• It may cause product failure.



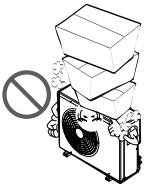
Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.

• There is risk of fire, electric shock, or damage to the plastic parts of the product.



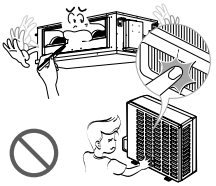
Do not step on or put anyting on the product. (outdoor units)

• There is risk of personal injury and failure of product.



Do not insert hands or other objects through the air inlet or outlet while the product is operated.

• There are sharp and moving parts that could cause personal injury.



Do not drink the water drained from the product.

• It is not sanitary and could cause serious health issues.



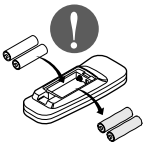
Use a firm stool or ladder when cleaning or maintaining the product.

• Be careful and avoid personal injury.



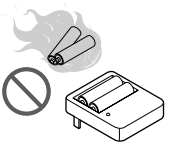
Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.

• There is risk of fire or explosion



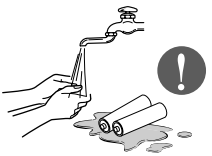
Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.

• They may burn or explode.



If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.

• The chemicals in batteries could cause burns or other health hazards.



If you eat the liquid from the batteries, brush your teeth and see doctor. Do not use the remote if the batteries have leaked.

• The chemicals in batteries could cause burns or other health hazards.

Introduction

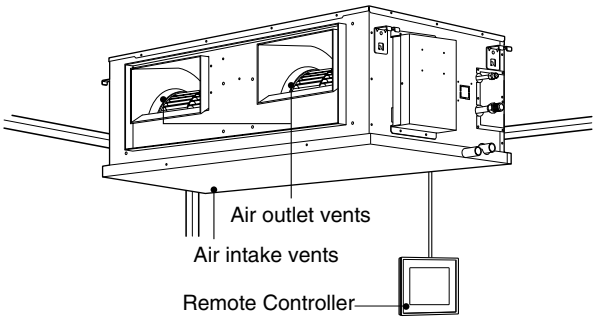
Symbols Used in this Manual

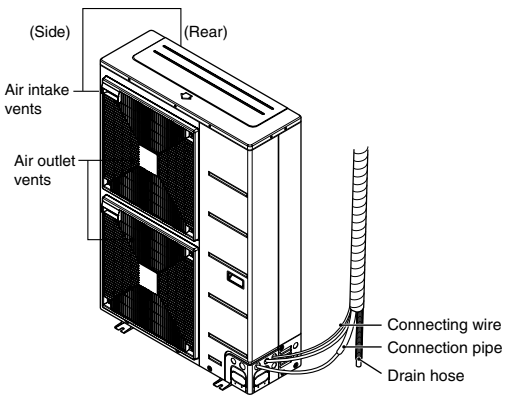
This symbol alerts you to the risk of electric shock.

This symbol alerts you to hazards that could cause harm to the air conditioner.

NOTICE **This symbol indicates special notes.**

Features





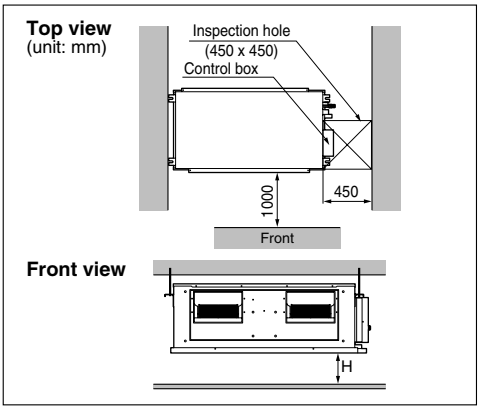
Installation of Indoor, Outdoor Unit

Selection of the best location

Indoor unit

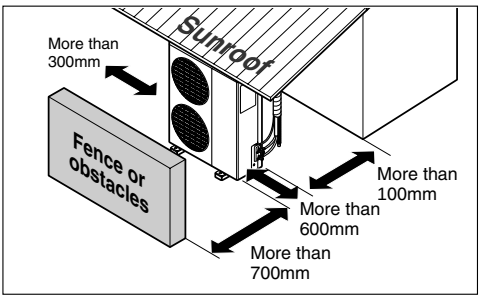
Install the air conditioner in the location that satisfies the following conditions.

- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place shall be able to inspect the unit as the figure.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage.(Suitable dimension "H" is necessary to get a slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where air circulation in the room will be good .
- There should not be any heat source or steam near the unit



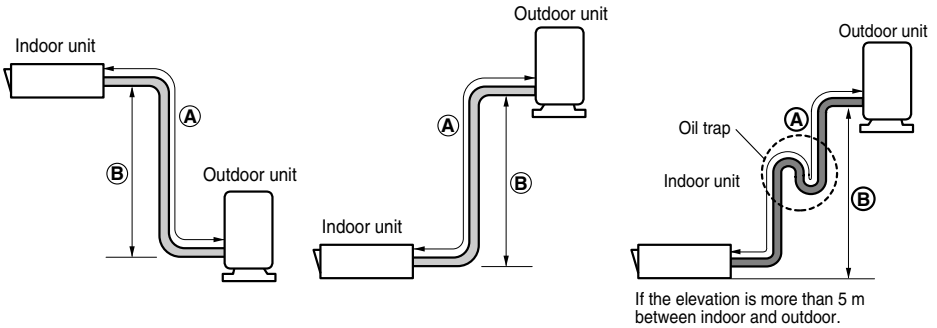
Outdoor unit

- If an awning is built over the unit to prevent direct sunlight or rain exposure, be careful that heat radiation from the condenser is not restricted.
- There should not be any animals or plants which could be affected by hot air discharged.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.



Piping length and the elevation

Capacity	Pipe Size (Diameter:Ø)		Length A(m)		Elevation B(m)		*Additional refrigerant(g/m)
	Gas	Liquid	Standard	Max.	Standard	Max.	
42 kBtu/h	15.88mm(5/8")	9.52mm(3/8")	7.5	50	5	30	40
48 kBtu/h	19.05mm(3/4")	9.52mm(3/8")	7.5	50	5	30	60
55 kBtu/h	19.05mm(3/4")	9.52mm(3/8")	7.5	50	5	30	60



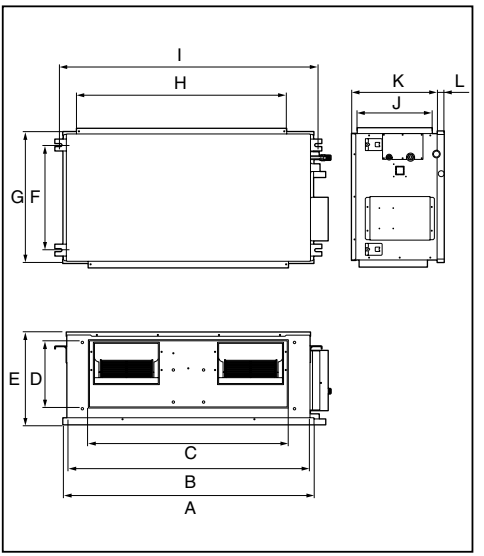
CAUTION:

- **The Standard pipe length is 7.5 m and no need to additional charge of the refrigerant to max 15 m. If the pipe length exceeds 15 m, need to additional charge of the refrigerant which according to the table.**
- If 55 kBtu/h Model is installed at a distance of 50m, 2,100g of refrigerant should be added (50-15) x 60g = 2,100g
- Capacity is based on standard length and maximun allowance length is on the basis of reliability.
- Improper refrigerant charge may result in abnormal cycle.
- Oil trap should be installed every 5~7 meters.

Indoor unit installation

■ **Installation of Unit**

Install the unit above the ceiling correctly.



CASE 1

POSITION OF SUSPENSION BOLT

- Apply a joint-canvas between the unit and duct to absorb unnecessary vibration.
- Apply a filter Accessory at air return hole.

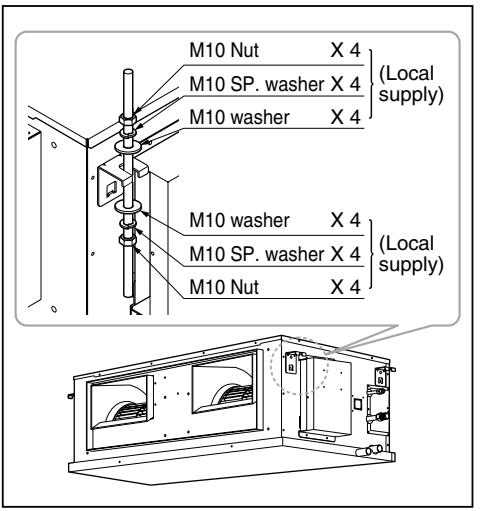
(Unit:mm)

Dimension / Capacity	A	B	C	D	E	F	G	H	I	J	K	L
42 kBtu/h	1062	1020	840	287	400	441	582	882	1073	315	366	40
48 kBtu/h	1362	1320	840	287	400	441	582	1182	1373	315	366	40
55 kBtu/h	1362	1320	840	287	400	441	582	1182	1373	315	366	40

CASE 2

POSITION OF SUSPENSION BOLT

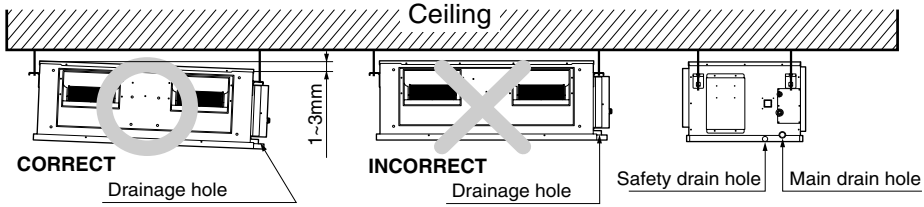
- A place where the unit will be leveled and that can support the weight of the unit.
- A place where the unit can withstand its vibration.
- A place where service can be easily performed.



CAUTION

1. Install declination of the indoor unit is very important for the drain of the duct type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe shall be 10mm.

• The unit must be declined to the drain hose connected when finished installation.

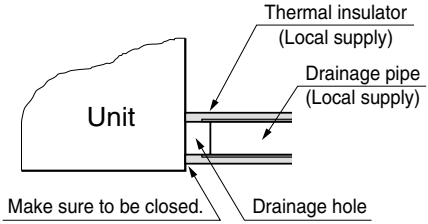


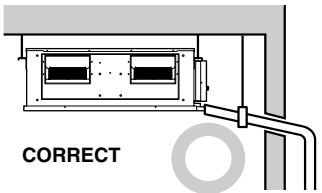
CAUTION FOR GRADIENT OF UNIT AND DRAIN PIPING

Lay the drain hose with a downward inclination so water will drain out.

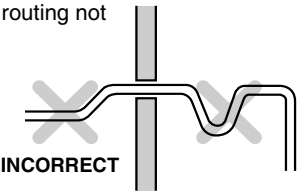
1. Main drain

• Always lay the drain with downward inclination (1/50 to 1/100).
Prevent any upward flow or reverse flow in any part.
• 10mm or thicker formed thermal insulator shall always be provided for the drain pipe.





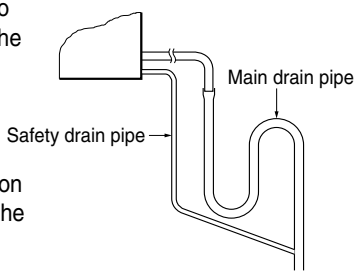
• Upward routing not allowed



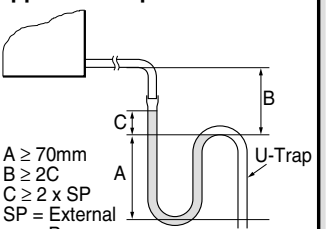
• Install the P-Trap (or U-Trap) to prevent a water leakage caused by the blocking of intake air filter.

2. Safety drain

• There is no need to provide a trap for the safty drain. If the safty drain pipe is connected to the main drain pipe, make the connection below the trap on the main drain pipe.

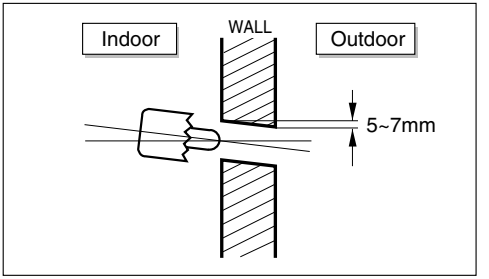


Applied U-Trap Dimension



A ≥ 70mm
B ≥ 2C
C ≥ 2 x SP
SP = External Pressure (mmAq)
Ex) External Pressure = 10mmAq
A ≥ 70mm
B ≥ 40mm
C ≥ 20mm

- Drill the piping hole with 70mm dia, hole core drill.
- Piping hole should be slightly slant to the outdoor side.

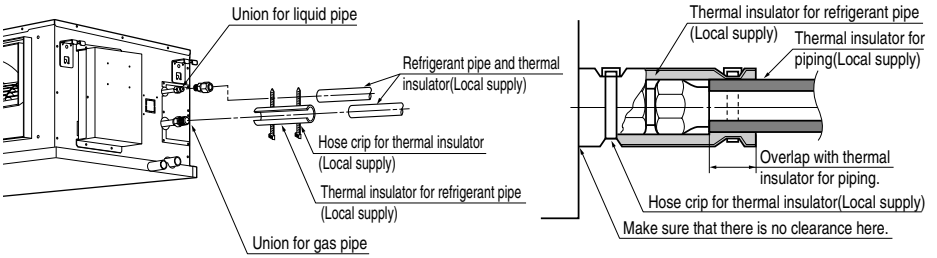


INSULATION, OTHERS

Insulate the joint and tubes completely.

THERMAL INSULATION All thermal insulation must comply with local requirement.

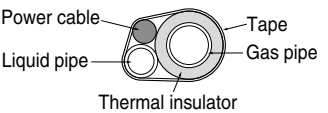
INDOOR UNIT



REFRIGERANT PIPE

- Insulate and tape the gas piping.

CAUTION: Cutting line of insulation must look upper direction. Thickness of insulation is 10mm or over.



NOTICE Recommended Insulation material

Meterial : FOAM PE
Thickness : 10mm
Density : less than 0.032 ±0.005(g/cm²)

Thermal conductivity : less than 0.03(kcal/m.hr.°C)

TEST AND CHECK

■ *After all workings are finished, check the working and operation.*

- Air distribution ——— Is the air circulation good?
- Drain ——— Is the drainage smoothly and no sweating?
- Gas leakage ——— Is the piping connection correctly?
- Wiring ——— Is the wiring connection correctly?
- Lock-bolt ——— Is the lock-bolt of compressor loosened?

INSTALLATION OF REMOTE CONTROL BOX

Install the remote control box and cord correctly.

POINT OF REMOTE CONTROLLER INSTALLATION

• Although the room temperature sensor is in the indoor unit, the remote control box should be installed in such places away from direct sunlight and high humidity.

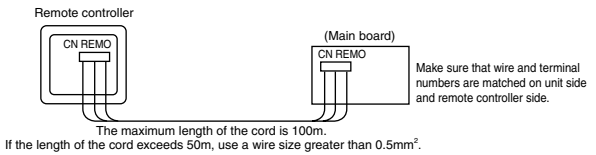
INSTALLATION OF THE REMOTE CONTROL BOX

- Select places that is not splashed by water.
- Select control position after receiving customer approval.
- The room temperature sensor of the thermostat for temperature control is built in the indoor unit.
- This remote controller equipped with liquid crystal display. If this position is higher or lower, display is difficult to see. (The standard height is 1.5m high)

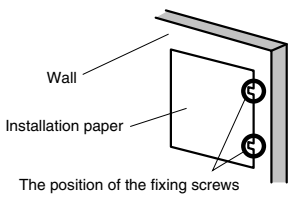
ROUTING OF THE REMOTE CONTROL CORD

- Keep the remote control cord away from the refrigerant piping and the drain piping.
- To protect the remote control cord from electrical noise, place the cord at least 5cm away from other power cables. (Audio equipment, Television set, etc)
- If the remote control cord is secured to a wall, provide a trap at the top of the cord to prevent water droplets from running.

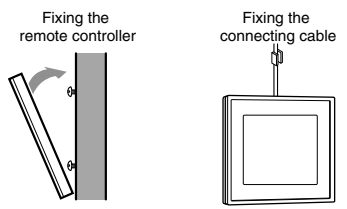
ELECTRICAL WIRING TO THE INDOOR UNIT



Put the installation paper on the place and determine the position and height of the fixing screws of the deluxe wired remote controller.
• Refer to the printed side of the installation paper.



Remove the installation paper before installing the remote controller so that it can fit into the right place.



* When installing the deluxe wired remote controller, do not install it so that it is buried to the wall. (This can cause error in the temperature sensor)
* When installing multiple deluxe wired remote controllers horizontally in one location, leave a minimum distance apart (2cm). (This can cause error in the temperature sensor)
* Do not install the cable with a distance of 50 m or longer. (This can cause communication error.)
* When installing the cable, check whether the connector between the remote controller and the product is installed properly. The connector will not be connected when installed in opposite sides.

WIRED REMOTE CONTROLLER INSTALLATION

• Since the room temperature sensor is in the remote controller, the remote controller box should be installed in a place away from direct sunlight, high humidity and direct supply of cold air to maintain proper space temperature.
Install the remote controller about 5ft(1.5m) above the floor in an area with good air circulation at an average temperature.

Do not install the remote controller where it can be affected by:

- Drafts, or dead spots behind doors and in corners.
- Hot or cold air from ducts.
- Radiant heat from sun or appliances.
- Concealed pipes and chimneys.
- Uncontrolled areas such as an outside wall behind the remote controller.
- This remote controller is equipped with a seven segment LED. display. For proper display of the remote controller LED's, the remote controller should be installed properly as shown in Fig.1. (The standard height is 1.5 m from floor level.)

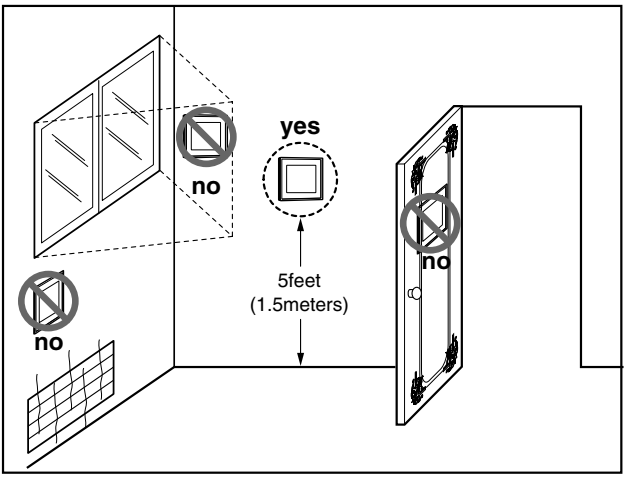
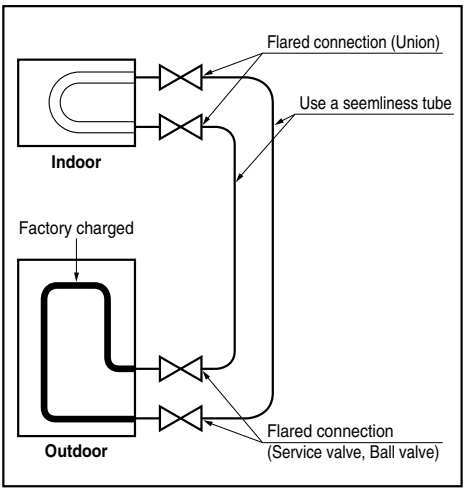


Fig.1 Typical locations for remote controller

REFRIGERANT PIPING

Perform the work according to the Service Manual or Installation Guide.

- Use two spanners when connecting the refrigerant pipe to the unit.
- Make a bend with a radius as large as possible.
- Perform air purge with R410A or vacuum drying.
- When piping work is finished, check all joints.



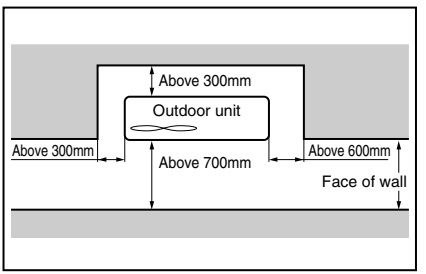
INSTALLATION OF OUT DOOR UNIT

Select a location that satisfies the following conditions. Install the unit firmly in place.

■ **Select the following location**

- A place where the air conditioner can get good ventilation.
- A place where it shall not annoy the neighbors.
- A place where the unit shall be leveled and that can support the weight of unit and withstand its vibrations.

■ **Keep a maintenance space**

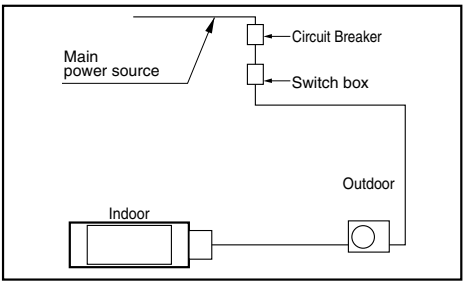


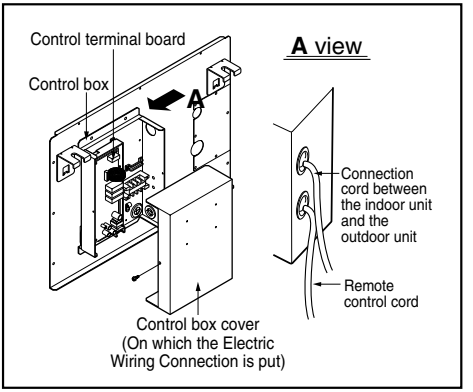
ELECTRICAL WIRING

Perform the electrical wiring work according to the electrical wiring connection.

- All wiring must comply with local requirements.
- Select a power source that is capable of supplying the current required by the air conditioner.
- Use a recognized circuit breaker between the power source and the unit. A disconnection device to adequately disconnect all supply lines must be fitted.
- Capacity of circuit breaker recommended by authorized personnel only

Capacity	Phase(Ø)	Circuit Breaker
42 kBtu/h	1	35A
48 kBtu/h	1	35A
55 kBtu/h	1	35A





WIRING CONNECTION

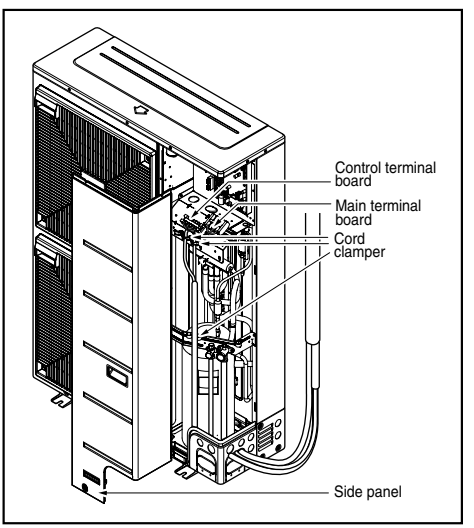
Indoor unit

- Remove the side panel for electrical connection between the indoor and outdoor unit.
- Use the cord clamper to fix the cord.

Outdoor unit

- Remove the side panel for wiring connection.
- Use the cord clamper to fix the cord.
- Earthing work
  - Case 1 :Terminal block of Outdoor Unit have ⏚ mark.
    - Connect the cable of diameter 1.6mm² or more to the earthing terminal provided in the control box and do earthing.
  - Case 2 :Terminal block of Outdoor Unit don't have ⏚ mark.
    - Connect the cable of diameter 1.6mm² or more, to the panel of control box, marked as ⏚ and fasten with earth screw.

※ **Please check !!**



Connecting Pipes to the Indoor Unit

Preparation of Piping

Main cause of gas leakage is defect in flaring work. Carry out correct flaring work in the following procedure.

Cutting Tubes

- Use the accessory piping kit or the pipes purchased locally.
- Measure the distance between the indoor and the outdoor unit.
- Cut the pipes a little longer than measured distance.
- Cut the cable 1.5m longer than the pipe length.

Burrs removal

- Completely remove all burrs from the cut cross section of pipe/tube.
- Put the end of the copper tube/pipe to downward direction as you remove burrs in order to avoid to let burrs drop in the tubing.

Putting nut on

- Remove flare nuts attached to indoor and outdoor units, than put them on pipe/tube having completed burr removal.
  (Not possible to put them on after flaring work)

Flaring work

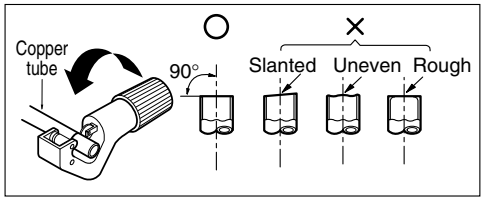
- Carry out flaring work using flaring tool as shown below.

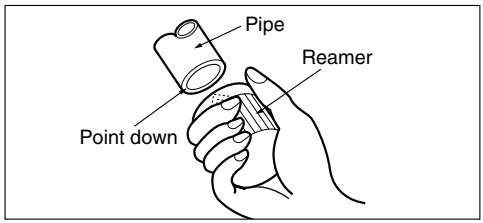
Outside Diameter	"A"
6.35 mm	1.1~1.3 mm
9.52 mm	1.5~1.7 mm
12.7 mm	1.6~1.8 mm
15.88 mm	1.6~1.8 mm
19.05 mm	1.9~2.1 mm

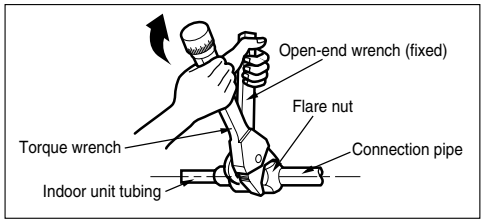
Firmly hold copper tube in a bar(or die) as indicated dimension in the table above.

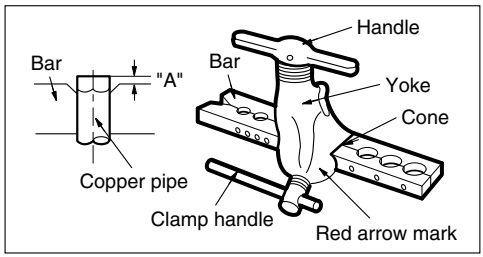
Check

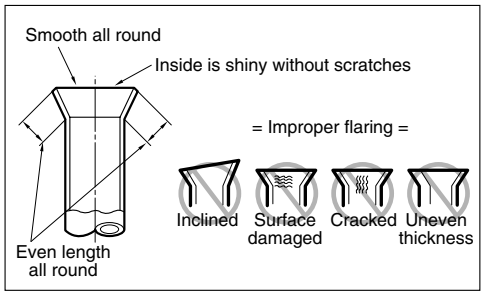
- Compare the flared work with figure.
- If flare is noted to be defective, cut off the flared section and do flaring work again.











Pipe bending

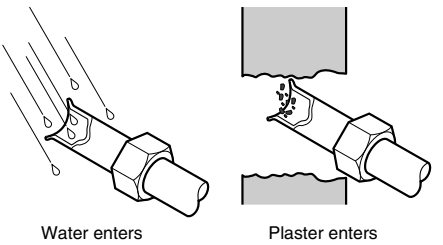
Annealed copper pipe with small diameter (ø6.35 or ø9.52) can be easily bent manually. In this case, secure large R(radius) for the bend section and gradually bend pipe. If annealed copper pipe is large in diameter (ø15.88 or ø19.05), bend pipe with bender. Use bender appropriate for the pipe diameter.

Brazing

In refrigerant piping, bending (in particular, acute bending) must be minimized to reduce piping resistance. Bending is, however, necessary in some places by virtue of the installation position of devices auxiliary to the packaged air conditioner, or of the building structure, piping distance or finishing appearance. If a more acute bend is required than that attainable by pipe bender, perform brazing using ready-made elbow. Aside from this function, brazing also serves to connect straight pipes, generally using ready-made sockets. While brazing, protect piping against heat with wet cloth to avoid damaging valve packing or burning thermal insulator with burner heat. While brazing, blow inert gas (nitrogen gas or carbonic gas) to prevent formation of oxidation film in copper piping; otherwise, the refrigerant circuit will clog.

Refrigerant piping(Flare piping)

When connecting piping, be sure to keep piping dry(keep piping away from water), clean (keep piping away from dust) and airtight (avoid refrigerant leakage).
When connecting piping on rainy days or making a through-hole in wall, take due care to prevent water or plaster from entering piping.



CAUTION:

- **This procedure is designed to prevent formation of oxidation film by filling piping with inert gas. Note that excessive gas pressure will generate pinholes at brazed points.**
  (Nitrogen gas: Supply pressure 0.05~0.1kg/cm²G)
- **When supplying inert gas, be sure to open one end of piping.**

Connecting Pipes to the Outdoor Unit

Connecting the pipes to the Outdoor unit

- Align the center of the pipings and sufficiently tighten the flare nut with fingers.
- Finally, tighten the flare nut with torque wrench until the wrench clicks.
  - When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

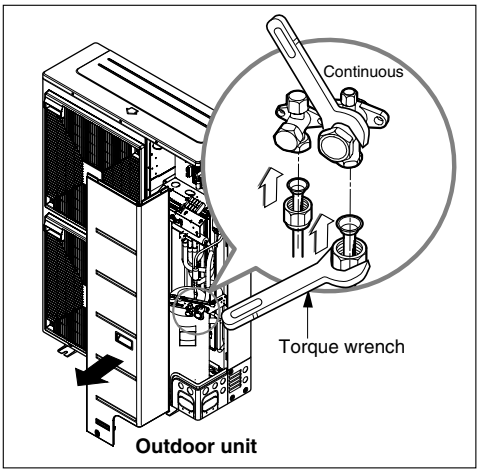
Outside diameter		Torque
mm	inch	kgf·m
Ø6.35	1/4	1.8~2.5
Ø9.52	3/8	3.4~4.2
Ø12.7	1/2	5.5~6.6
Ø15.88	5/8	6.3~8.2
Ø19.05	3/4	9.9~12.1

Align the center of the piping and sufficiently tighten the flare nut by hand.

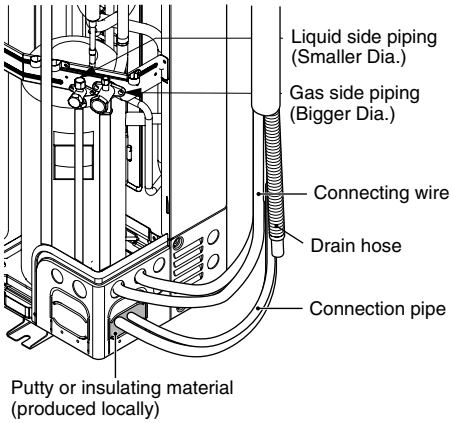
- For the units with capacity more than 42 kBtu/h, the installation piping is connectable in four directions.(refer to figure 1)
- When connecting in a downward direction, knock out the knockout hole of the base pan. (refer to figure 2)

Preventing foreign objects from entering (Figure3)

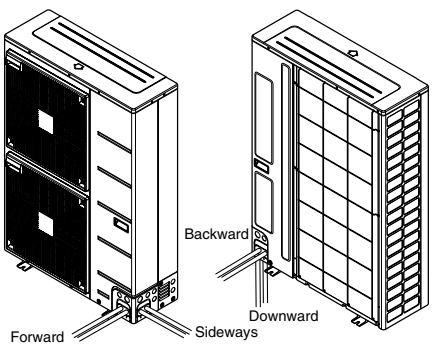
- Plug the pipe through-holes with putty or insulation material(procured locally)to stop up all gaps,as shown in the figure 3.
- Insects or small animals entering the outdoor unit may cause a short circuit in the electrical box.



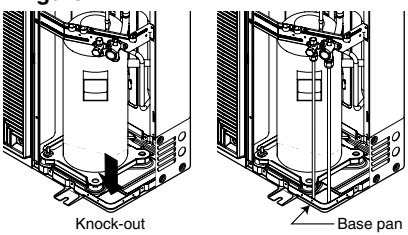
<Figure 3>



<Figure 1>



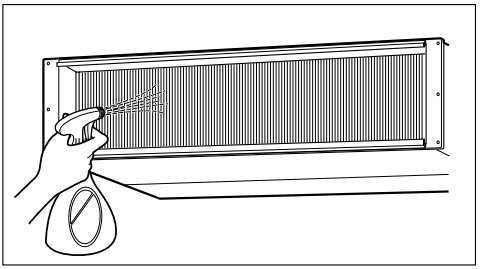
<Figure 2>



Checking the Drainage

Checking the Drainage

- Check the drainage.
  - Spray one or two glasses of water upon the evaporator.
  - Ensure that water flows drain hose of indoor unit without any leakage.

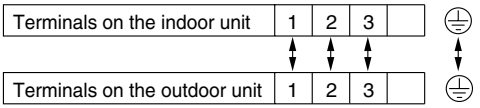


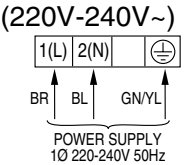
Connecting Cables between Indoor Unit and Outdoor Unit

Connecting cables to the Indoor Unit

■ Connect the wires to the terminals on the control board individually according to the outdoor unit connection.
- Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively

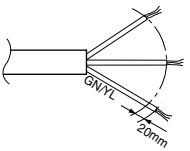
■ Heatpump Model





CAUTION

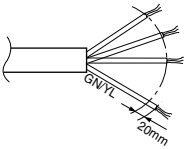
The power cord connected to the outdoor unit should be complied with the following specifications (Rubber insulation, type H05RN-F approved by HAR or SAA).



NORMAL CROSS-SECTIONAL AREA

Capacity	Phase(Ø)	Area(mm^2)
42 kBtu/h	1	5.5
48 kBtu/h	1	5.5
55 kBtu/h	1	5.5

The connecting cable connected to the indoor and outdoor unit should be complied with the following specifications (Rubber insulation, type H05RN-F approved by HAR or SAA).



NORMAL CROSS-SECTIONAL AREA

Capacity	Phase(Ø)	Area(mm^2)
42 kBtu/h	1	1
48 kBtu/h	1	1
55 kBtu/h	1	1

If the supply cord is damaged, it must be replaced by a special cord or assembly availible from the manufacturer of its service agent.

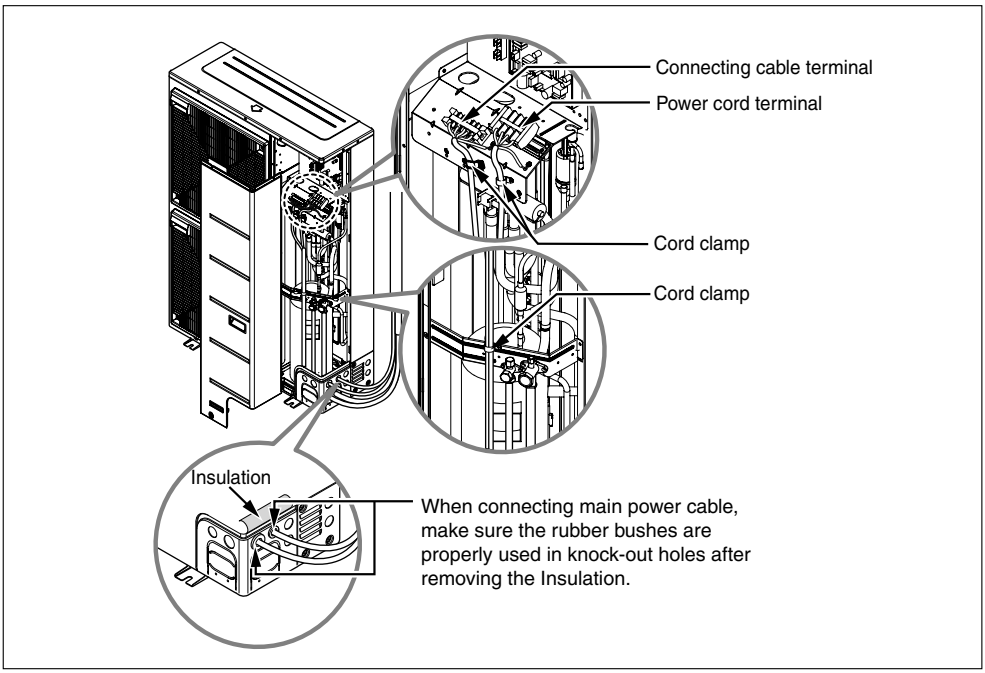
CAUTION: Make sure that the screws of the terminal fixed tightly.

Clamping of cables

- Arrange 2 power cables on the control panel.
- First, fasten the clamp with a screw to the inner boss of control panel.
- For the cooling model, fix the other side of the clamp with a screw strongly.
  For connecting cable to the terminal block, put the 1.0mm^2 cable(thinner cable) on the clamp and tighten it with a plastic clamp to the other boss of the control panel.
- In Australia, the length of power supply cord measured from the entry of the power supply cord to the middle of live pin on the power plug should be over 1.8m.

Connecting the cable to the Outdoor Unit

- Remove the side panel from the unit by loosing screws.
  Connect the wires to the terminals on the control board individually as previous page.
- Secure the cable onto the control board with the holder (clamper).
- Refix the cover control to the original position with the screw.



CAUTION: After the confirmation of the above conditions, prepare the wiring as follows:

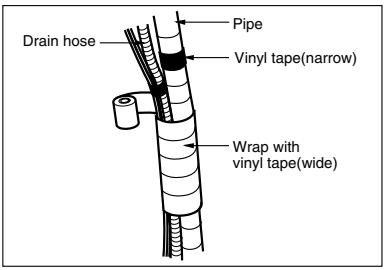
1) Never fail to have an individual power specialized for the air conditioner. As for the method of wiring, be guided by the circuit diagram pasted on the inside of control box cover.
2) Provide a circuit breaker switch between power source and the unit.
3) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could give rise to burn-out of the wires.)
4) Specification of power source
5) Confirm that electrical capacity is sufficient.
6) Be sure that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
7) Confirm that the cable thickness is as specified in the power sources specification. (Particularly note the relation between cable length and thickness.)
8) Never fail to equip a leakage breaker where it is wet or moist.
9) The following troubles would be caused by voltage drop-down.
- Vibration of a magnetic switch, damage on the contact point there of, fuse breaking, disturbance to the normal function of a overload protection device.
- Proper starting power is not given to the compressor.

Forming the piping

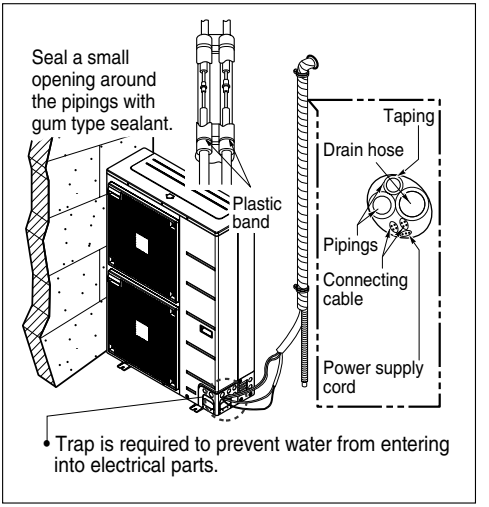
Form the piping by wrapping the connecting portion of the indoor unit with insulation material and secure it with two kinds of vinyl tape.

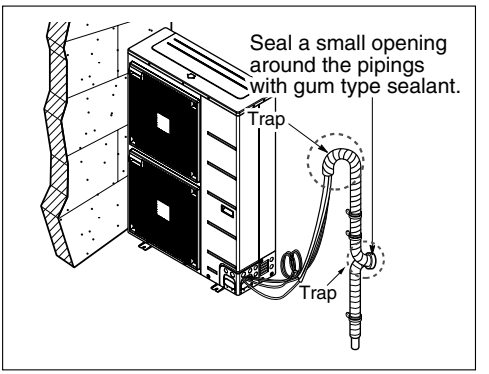
- If you want to connect an additional drain hose, the end of the drain outlet should be routed above the ground. Secure the drain hose appropriately.

Taping pipe



1. Tape the piping and connecting cable from down to up.
2. Secure the taped piping along the exterior wall.
   Form a trap to prevent water entering the room and electrical part.
3. Fix the piping onto the wall by saddle or equivalent.

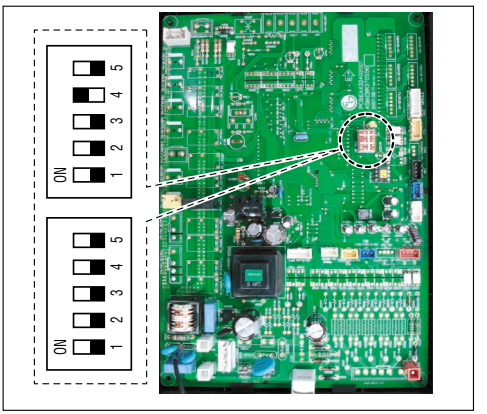




Long Pipe Setting (more than 15m)

1. Open the control cover of outdoor unit
2. Select 4th side of the 5 selectable modes.
3. Move the Slide switch to upside
4. Close the top cover and check whether the product works normally

WARNING: Do not open the control cover or Set the pipe length when operating the product.



Air Purging and Evacuation

Air and moisture remaining in the refrigerant system have undesirable effects as indicated below.
1. Pressure in the system rises.
2. Operating current rises.
3. Cooling(or heating) efficiency drops.
4. Moisture in the refrigerant circuit may freeze and block capillary tubing.
5. Water may lead to corrosion of parts in the refrigeration system.

Therefore, the indoor/outdoor unit and connecting tube must be checked for leak tight, and vacuumed to remove incondensible gas and moisture in the system.

Checking method

Preparation

- Check that each tube(both liquid and gas side tubes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Check that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

Leakage test

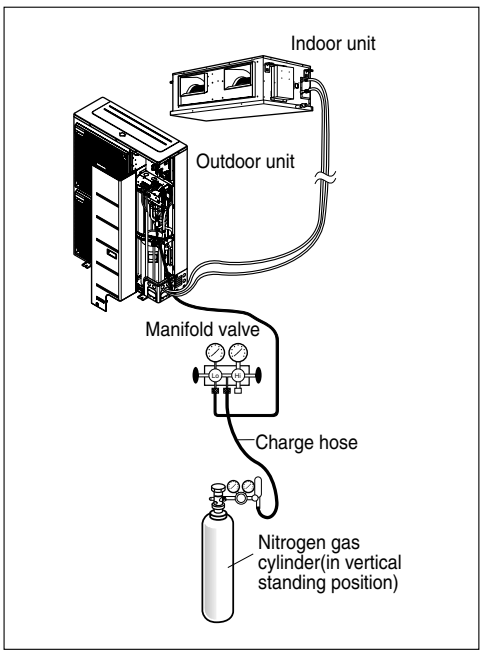
- Connect the manifold valve(with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

⚠ CAUTION: Be sure to use a manifold valve for leakage test. If it is not available, use a stop valve for this purpose. The "Hi" knob of the manifold valve must always be kept close.

- Pressurize the system to no more than 427 P.S.I.G. with dry nitrogen gas and close the cylinder valve when the gauge reading reached 427 P.S.I.G. Next, test for leaks with liquid soap.

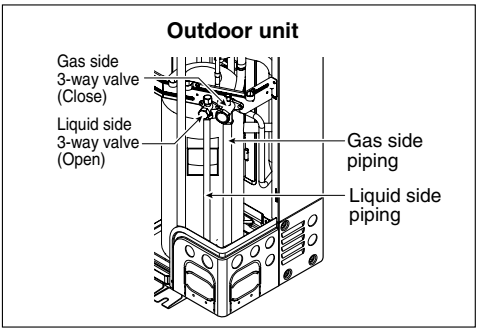
⚠ CAUTION: To avoid nitrogen entering the refrigerant system in a liquid state, the top of the cylinder must be higher than its bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

1. Do a leakage test of all joints of the tubing(both indoor and outdoor) and both gas and liquid side service valves.
   Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.
2. After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.



Soap water method

1. Remove the caps from 3-way valves.
2. Remove the service-port cap from the 3-way valve.
3. To open the liquid side 3-way valve turn the valve stem counterclockwise approximately 90°, wait for about 2~3 sec, and close it.
4. Apply a soap water or a liquid neutral detergent on the indoor unit connection or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping.
5. If bubbles come out, the pipes have leakage

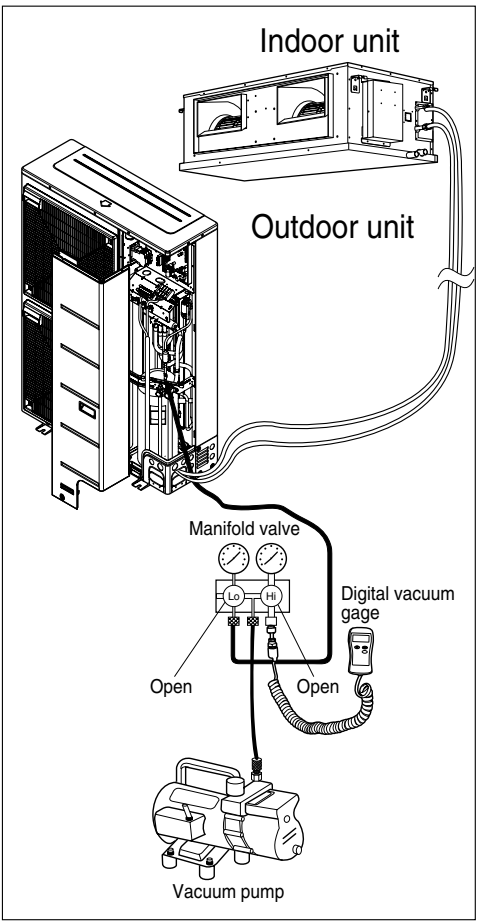


Evacuation

1. Connect the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit.
   Confirm the "Lo and Hi" knob of the manifold valve is open. Then, run the vacuum pump.
   The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.

Required time for evacuation when 30 gal/h vacuum pump is used	
If tubing length is less than 10 m(33 ft)	If tubing length is longer than 10 m(33 ft)
30 min. or more	60 min. or more
0.5 torr or less	

2. When the desired vacuum is reached, close the "Lo and Hi" knob of the manifold valve and stop the vacuum pump.



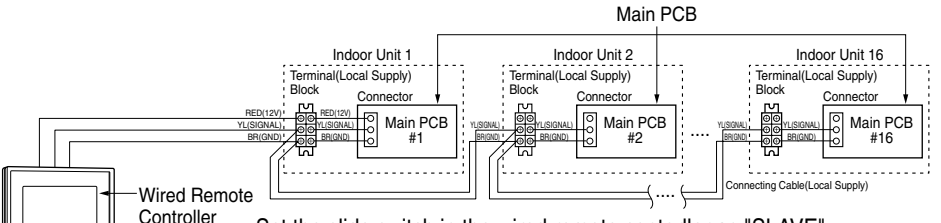
Finishing the job

1. With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
2. Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
3. Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
4. Replace the flare nut and its bonnet on the gas side service port and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
5. Replace the valve caps at both gas and liquid side service valves and fasten them tight.

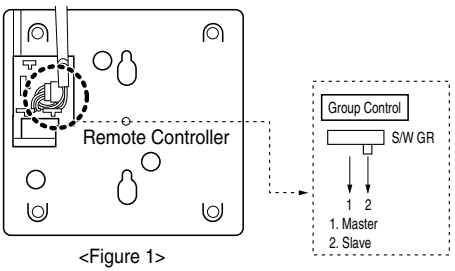
This completes air purging with a vacuum pump.
The air conditioner is now ready to test run.

Group Control

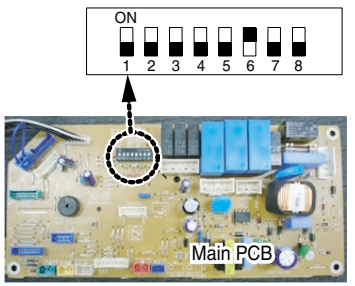
It operates maximum 16 units by only one wired remote controller, and each unit starts sequentially to prevent overcurrent.



- Set the slide switch in the wired remote contorller as "SLAVE" positon.(Figure1)
- If the main PCB is not directly connected to the wired remote controller, set the option switch "6" in the mian PCB as "ON" position.(Figure2)



<Figure 1>



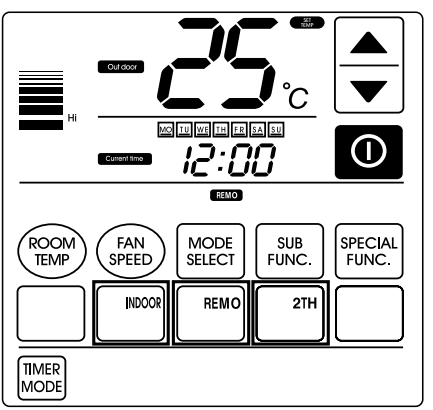
<Figure 2>

Two Thermistor system

Set the thermistor mode by pressing

INDOOR , REMO , 2TH **button in** SUB FUNC.

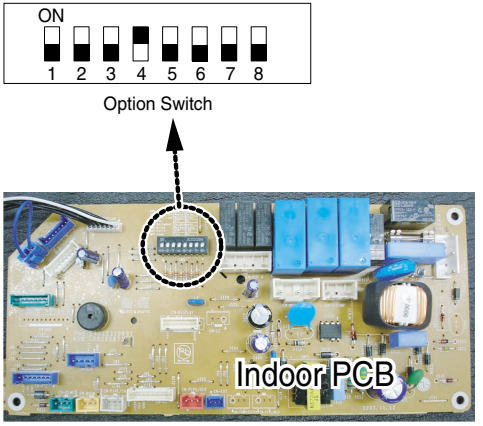
Selected button	Function
INDOOR	Operating the tempertature sensor in the indoor unit(or remote sensor).
REMO	Operating the tempertature sensor in the remote controller.
2TH	• Cooling mode: Operating lower temperature sensor comparing the remote controller and indoor unit(or remote sensor) temperature • Heating mode: Operating higher temperature sensor comparing the remote controller and indoor unit(or remote sensor) temperature



- Set the thermistor mode of the sensor located in main active place. Otherwise, do not work cooling and heating effiectively.

Continuous Fan Operation

When need to set up the continuous fan operation, chage the option switch 4 in the PCB as below guide line.



Option Switch 4	Function
ON	Continuous Fan Operation - **ON**
OFF	Continuous Fan Operation - **OFF**

CAUTION:

- **Continuous fan operation can cause unexpected cold air flow in hot start mode or defrost mode.**
- **It is required to explain to the customer before setting this function.**

Static Pressure & Air Flow Rate

External Static Pressure (Pa)		40	60	80	100	120	130	140	160	180	200
Model	Step	l/s	l/s	l/s	l/s	l/s	l/s	l/s	l/s	l/s	l/s
42 kBtu/h	Hi	-	-	-	-	-	766	754	713	667	620
	Med	-	-	716	690	653	633	612	567	-	-
	Low	627	604	575	548	516	500	-	-	-	-
48 kBtu/h 55 kBtu/h	Hi	-	-	-	-	-	1000	986	941	871	787
	Med	-	-	899	879	853	833	812	751	-	-
	Low	792	768	746	720	688	667	-	-	-	-

* The above table shows the correlation of External Static Pressure & AIR FLOW.

NOTICE Capacities are tested in the following conditions.

Static Pressure (Pa)	Voltage (Phase/Volt)	Air Flow Step	Piping Length	Temperaure(°C DB/°C WB)			
				Cooling		Heating	
				Indoor	Outdoor	Indoor	Outdoor
130	Ø1/230 V	High	7.5 m	27/19	35/24	20/15	7/6

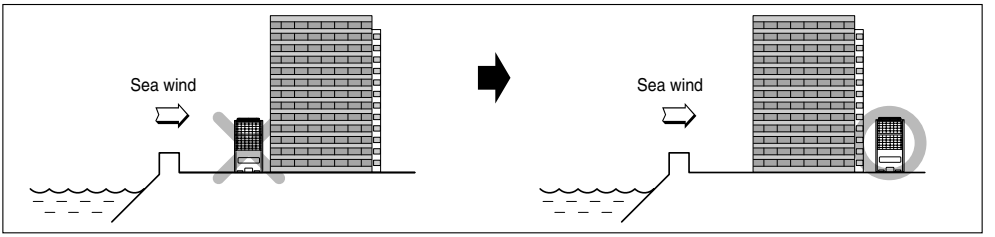
Installation Guide at the Seaside

CAUTION:

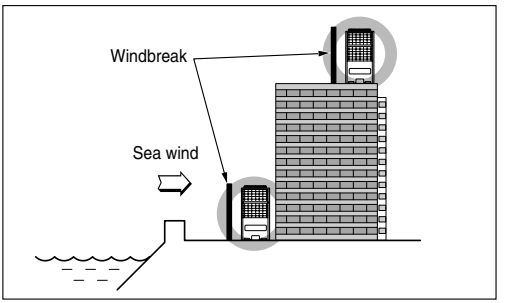
1. **Air conditioners should not be installed in areas where corrosive gases, such as acid or alkaline gas, are produced.**
2. **Do not install the product where it could be exposed to sea wind (salty wind) directly. It can result corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient performance.**
3. **If outdoor unit is installed close to the seaside, it should avoid direct exposure to the sea wind. Otherwise it needs additional anticorrosion treatment on the heat exchanger.**

Selecting the location(Outdoor Unit)

1) If the outdoor unit is to be installed close to the seaside, direct exposure to the sea wind should be avoided. Install the outdoor unit on the opposite side of the sea wind direction.



2) In case, to install the outdoor unit on the seaside, set up a windbreak not to be exposed to the sea wind.



- It should be strong enough like concrete to prevent the sea wind from the sea.
- The height and width should be more than 150% of the outdoor unit.
- It should be keep more than 70 cm of space between outdoor unit and the windbreak for easy air flow.

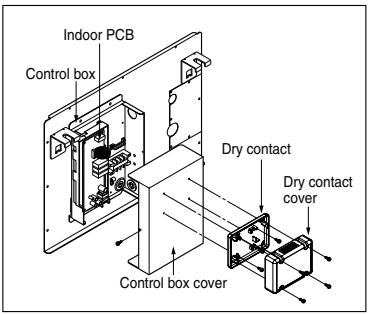
3) Select a well-drained place.

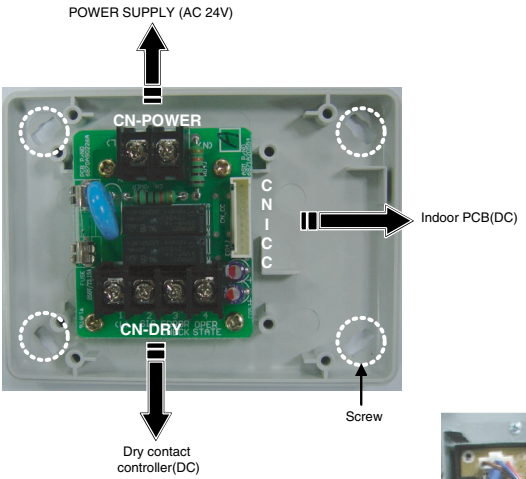
1. If you can't meet above guide line in the seaside installation, please contact LG Electronics for the additional anticorrosion treatment.
2. Periodic (more than once/year) cleaning of the dust or salt particles stuck on the heat exchanger by using water

Accessory Installation Guide

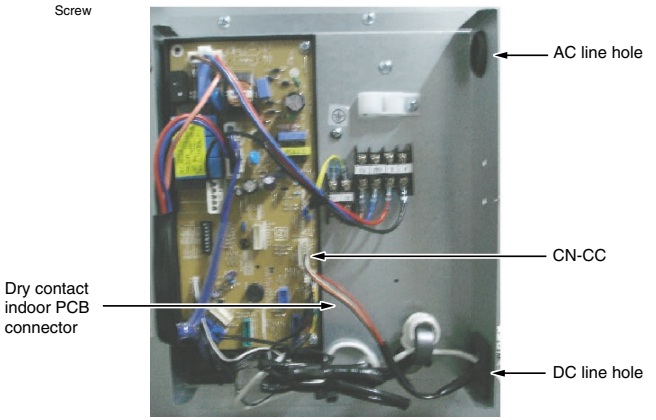
Dry Contact(Only AC 24V)

- Fix dry contact on the indoor control box cover.
- Connect dry contact(CN-CC) to Indoor PCB(CN-CC) with cable provided.
- Use the DC line hole when connecting the cable to indoor PCB.(Figure 2).
- Connect CN-POWER to power supplier.(Only AC 24V).
- Connect CN-DRY to dry contact controller. (Power supplier and dry contact controller are produced locally.)
- Tie the cables with the tie-wraps and clamps. (Figure 2).
- Refer to dry contact installation manual for detailed installation method.





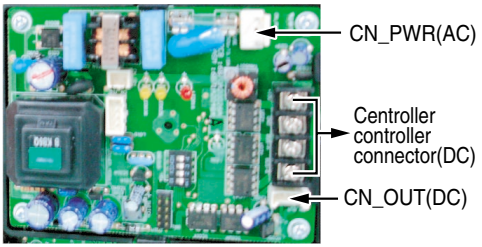
<Figure 1>



Indoor control box
<Figure 2>

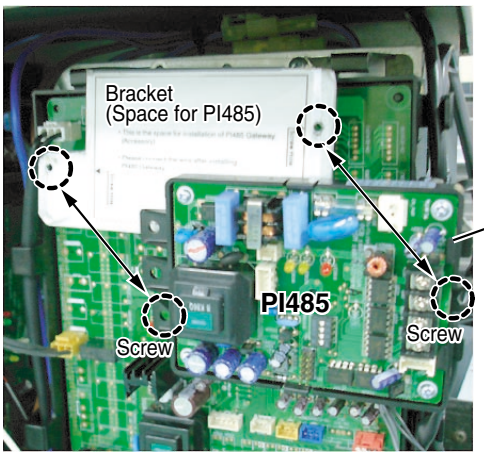
PI485

- Fix PI485 to the bracket in the outdoor control box.(Figure 2)
- Connect PI485 to outdoor PCB and central controller with cable.(Figure 1.3)
  - Connect CN-PWR to WCN_P(N) and WCN_P(L).
  - Connect CN-OUT to CN_CENTRAL.
- Separate AC and DC line when connecting the cable to outdoor PCB.(Figure 3)
  - Use the clip at the PCB case side.
- Tie the cables with the tie-wraps and clamps after intalling PI485.
- Refer to PI485 installation manual for detailed installation method

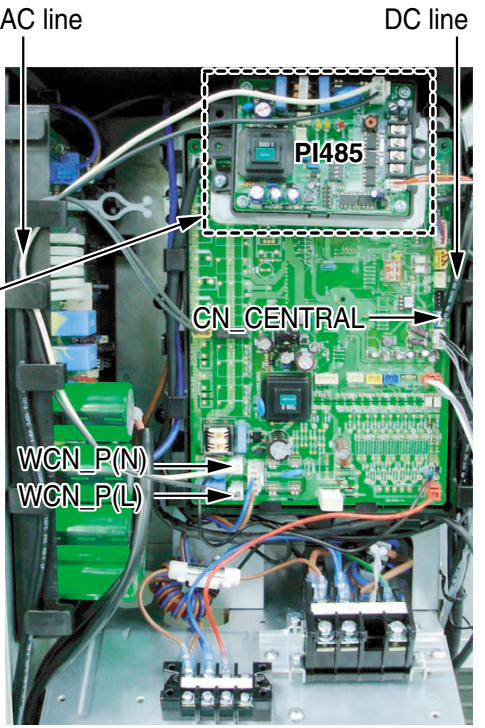


PI485

<Figure 1>



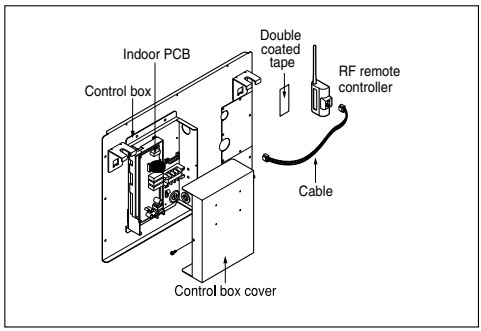
<Figure 2>

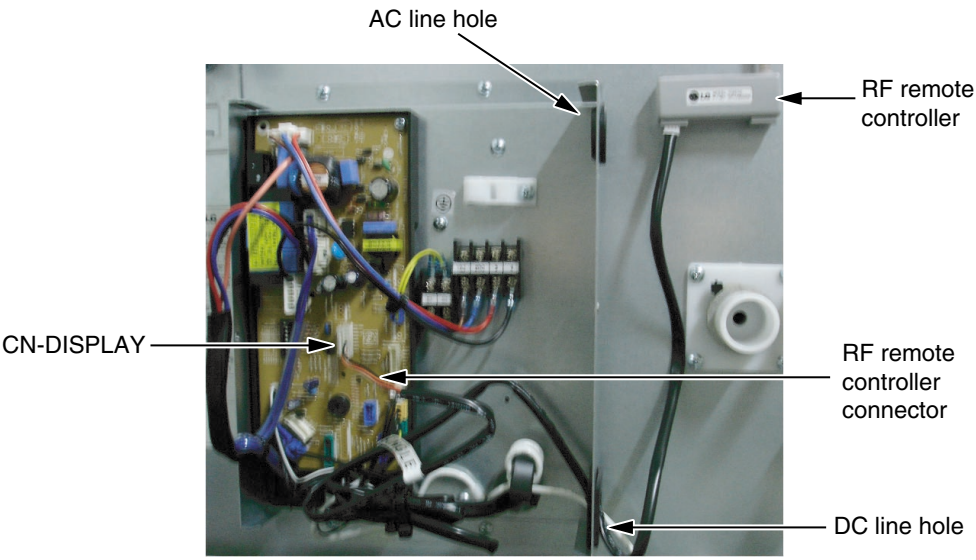


<Figure 3>

RF Remote Controller

- Connect Indoor PCB(CN-DISPLAY) to RF remote controller with the cable provided.
- Use the DC line hole when connecting the cable to Indoor PCB.
- Fix the RF remote controller with adhesive tape at your desired location.
- Tie the cables with tie-wraps and clamps after intalling.
- Refer to RF remote controller Installation manual for detailed installation metheod.





Damper Controller

- Open the cover of indoor unit control box and damper controller(Figure 1)
- Assemble the damper controller to cover which is seperated.
- Connect the lead wires between main PCB and damper controller.(Figure 2)
- Connect the power cord to damper controller and actuator.(Figure 2)
- Assemble the damper controller to indoor unit and then assemble cover of damper controller.
- Set the slide switch in the wired remote contorller as "1" positon.(Figure 3)
- Refer to damper controller Installation manual for detailed installation metheod.

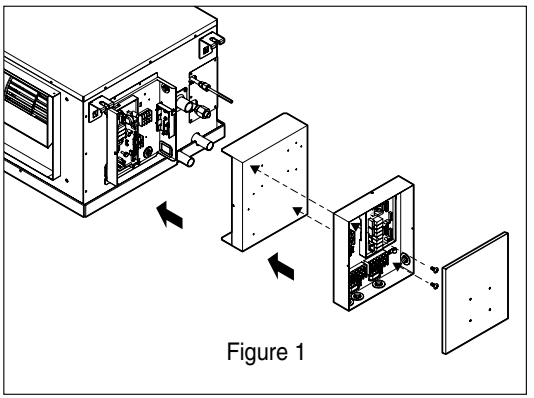


Figure 1

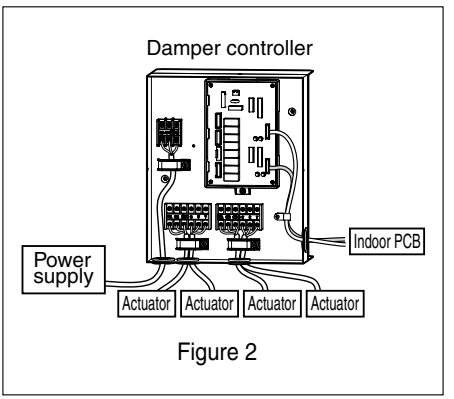


Figure 2

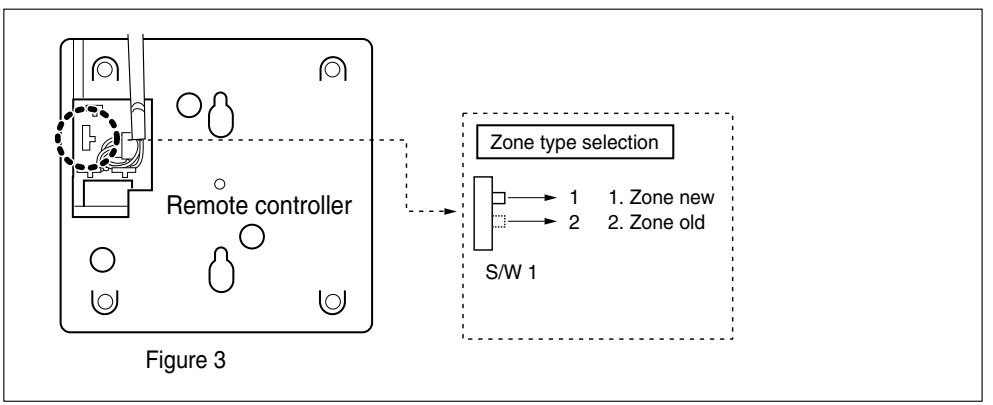
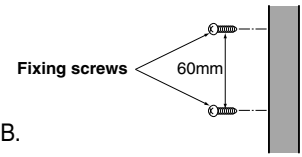


Figure 3

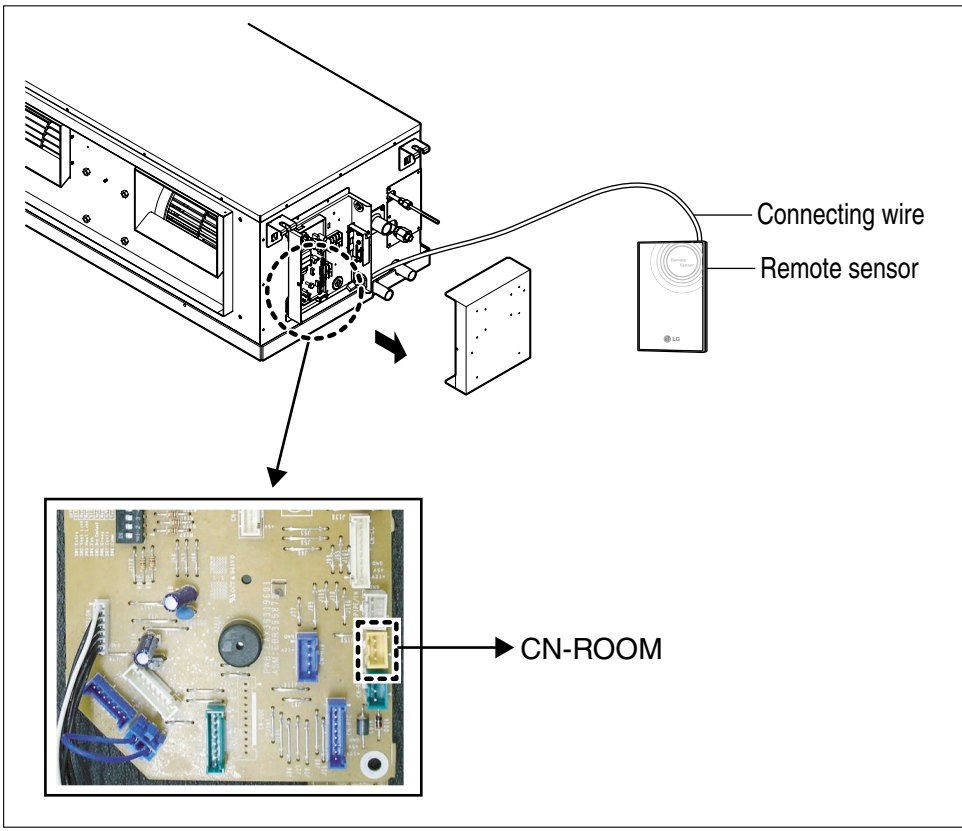
(It is possible to use 2-position control actuator(on/off) or 3-position control actuator(on/off).)

Remote Temperature Sensor

- After deciding where the remote temperature sensor is installed, decide the location and height of the fixing screws. (Interval between the screws : 60mm).

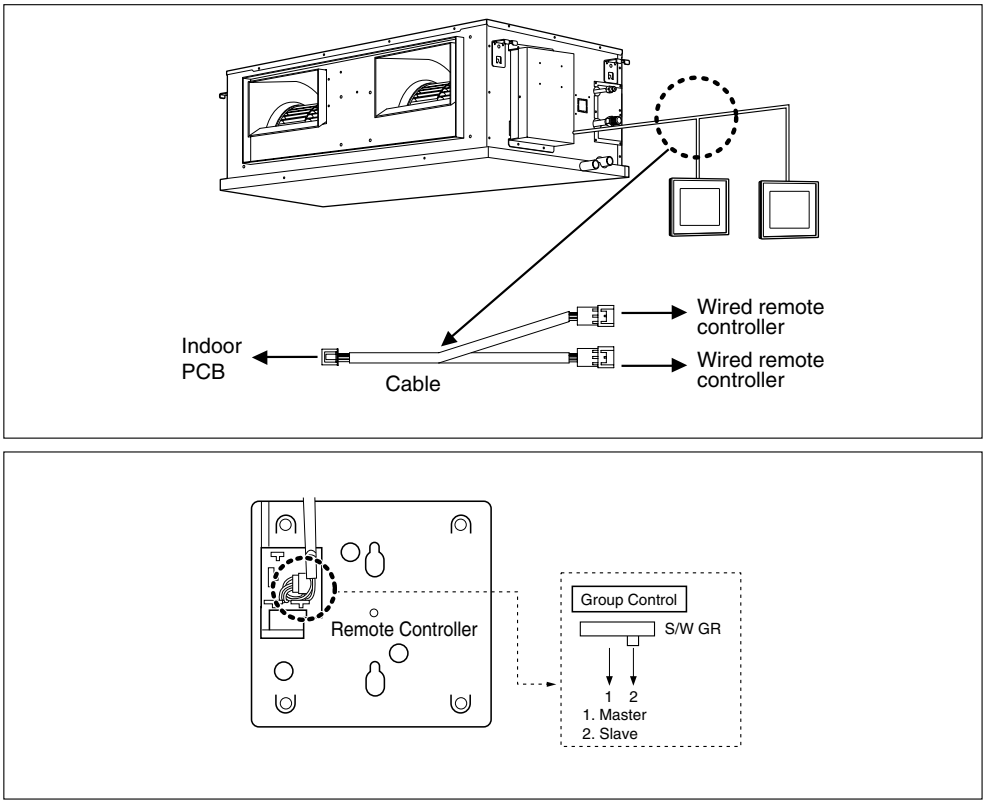


- After removing the control box cover of the indoor unit, remove the room temperature sensor in **CN-ROOM** of the main PCB.
- Insert the connector of remote sensor wire into **CN-ROOM**.
- Using the DC line hole when connecting the wire to Indoor PCB.
- For using the two thermistor fuction, the remote sensor should be installed from the wired remote controller as far as possible.
- Refer to damper remote sensor manual for detailed installation metheod.



Two wired remote controller

- All wired remote controllers are displayed on identical information.
- Last used wired romote controller has priority on product's movement.
- Set one wired remote controller as master,the others as slave.<Figure 1>
- The thermistor mode is operated by the wired remote controller set as "master"

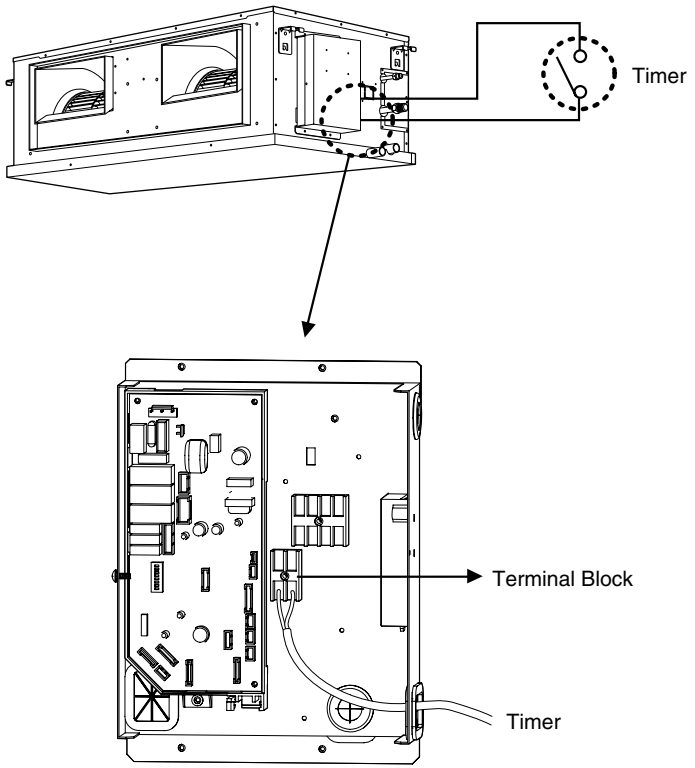


< Figure 1 >

CAUTION:
Two wired remote controllers should be same model name, otherwise it can cause unexpected problems.
For example) Using PDRCUSA0 with PDRCUSA0 is proper.
Using PDRCUDB0 with PDRCUDB0 is proper.
PDRCUSA0 & PDRCUDB0 are improper.

Simple Contact

- It can be used to turn the unit On/Off after getting the signal from external sources like timer, key-in lock etc.
- This function is similar to the dry contact, but need to no additional accessory.
- Open the cover of indoor unit control box, connect the external source to the terminal block.



Indoor contol box



LG Electronics Inc.

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