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ENGLISH
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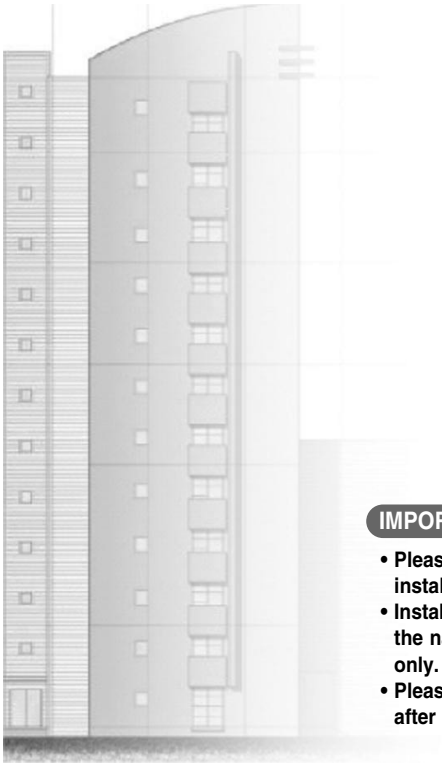
FRANÇAIS
DEUTSCH

MULTI V™ System
Heat Pump Indoor Unit
INSTALLATION MANUAL

MODELS: CE/CF Series
Type: Floor Standing
Concealed Floor Standing



IMPORTANT

- **Please read this installation manual completely before installing the product.**
- **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.**

TABLE OF CONTENTS

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.

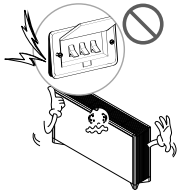
⃠	**Be sure not to do.**
❗	**Be sure to follow the instruction.**

⚠WARNING

■ Installation

Do not use a defective or under-rated circuit breaker. Use this appliance on a dedicated circuit.

- There is risk of fire or electric shock.

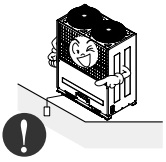


For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized Service Center.

- 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.

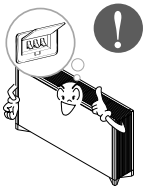


Install the panel and the cover of control box securely.

- There is risk of fire or electric shock.

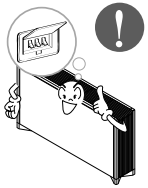
Always install a dedicated circuit and breaker.

- Improper wiring or installation may cause fire or electric shock.



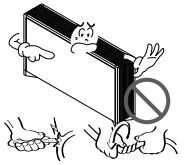
Use the correctly rated breaker or fuse.

- There is risk of fire or electric shock.



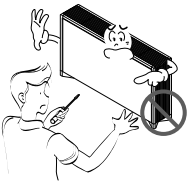
Do not modify or extend the power cable.

• There is risk of fire or electric shock.



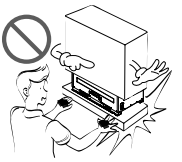
Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.

• Moisture may condense and wet or damage furniture.



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.

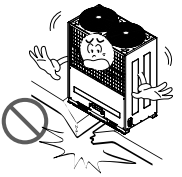


For installation, always contact the dealer or an Authorized Service Center.

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

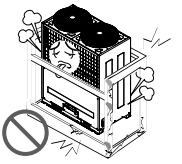
Do not install the product on a defective installation stand.

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



Be sure the installation area does not deteriorate with age.

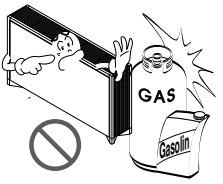
• If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.



■ Operation

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

• There is risk of fire or failure of product.

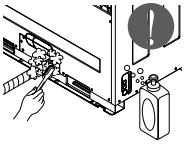


⚠CAUTION

■ Installation

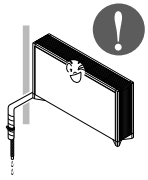
Always check for gas (refrigerant) leakage after installation or repair of product.

• Low refrigerant levels may cause failure of product.



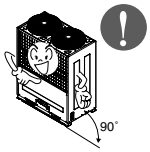
Install the drain hose to ensure that water is drained away properly.

• A bad connection may cause water leakage.



Keep level even when installing the product.

• To avoid vibration or water leakage.

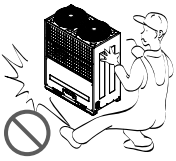


Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.

• It may cause a problem for your neighbors.

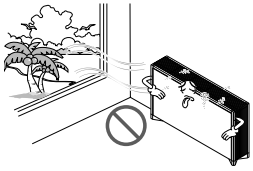
Use two or more people to lift and transport the product.

• 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.



Introduction

Symbols Used in this Manual

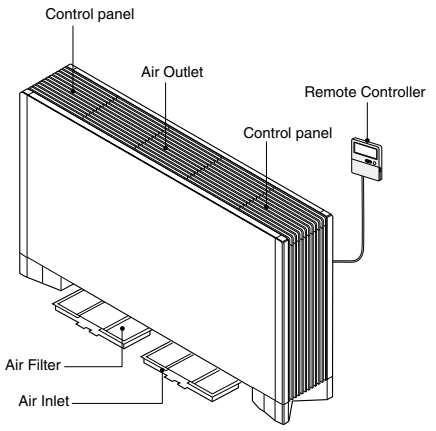
This symbol alerts you to the risk of electric shock.

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

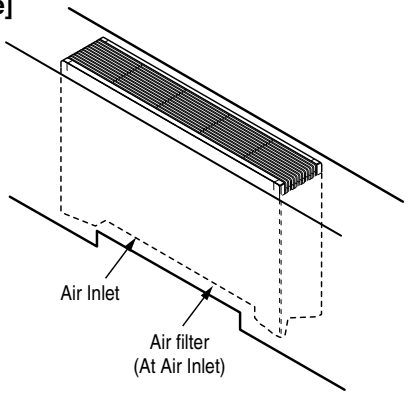
NOTICE **This symbol indicates special notes.**

Features

[CEA/CFA Type]



[CEU/CFU Type]



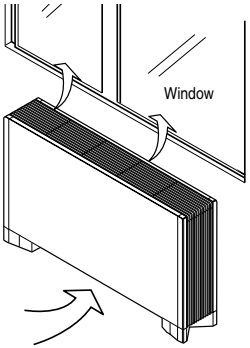
Installation

Selection of the best location

Indoor unit

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

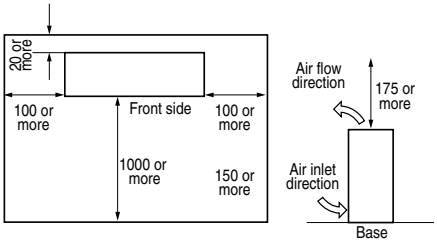
- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place shall be able to inspect the unit as the figure.
- The place where the unit shall be leveled.
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where air circulation in the room will be good .
- There should not be any heat source or steam near the unit

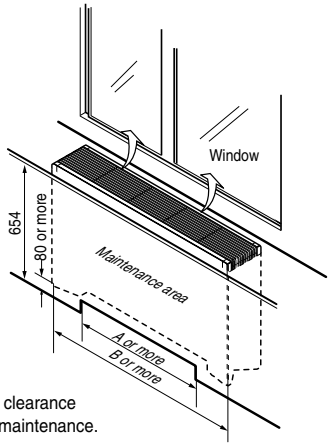


Service space

Select an installation site where the following conditions are satisfied and that meets with your customer's approval.

- Where the floor is strong enough to bear the indoor unit weight.
- Where the floor is not significantly inclined.
- Where nothing blocks the air passage.
- Where condensate can be properly drained.
- Where sufficient clearance for installation and maintenance can be ensured.
- Where there is no possibility of flammable gas leakage.
- Where optimum air distribution can be ensured.
- Where piping between indoor and outdoor units is possible within the allowable limit (Refer to the installation manual of the outdoor unit.)
- Keep the indoor and outdoor unit, power cable and transmission wiring, at least 1m from TVs and radios, to prevent distorted pictures and static.(Depending on the type and source of the electrical waves, static may be heard even when more than 1 m away.)





[IMPORTANT]
Leave sufficient clearance for air inlet and maintenance.

(Length: mm)

Model	A	B
CEU Type	788	1080
CFU Type	1066	1358

Accessories

Check the following accessories are included with your unit.

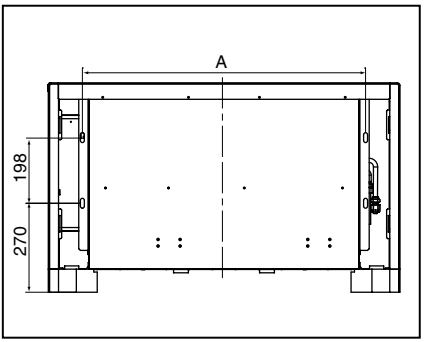
Name	Dran hose	Level adjustment screw	Insulation for fitting	Clamp	[Other]
Quantity	1 EA	4	1 each.	8 pcs.	• Operation manual • Installation manual
Shape			(1) For gas pipe  (2) For liquid pipe 		

Bolt pitch

• Positioning of holes for fastening to the wall

(Unit:mm)

Model	A
CEA, CEU	858
CFA, CFU	1136



1. Use the installationmount for installation. Check whether the wall is strong enough to bear the weight of the unit or not. if there is a risk, reinforce the wall before installing the unit.
2. The unit requires a minimum 100 mm clearance on the underside for air intake. Also, ensure the unit is level when installed so that drainage flows smoothly. If inclined, water can leak.
3. By a state of the wall, operating sound may become bigger.

How to open/close front panel

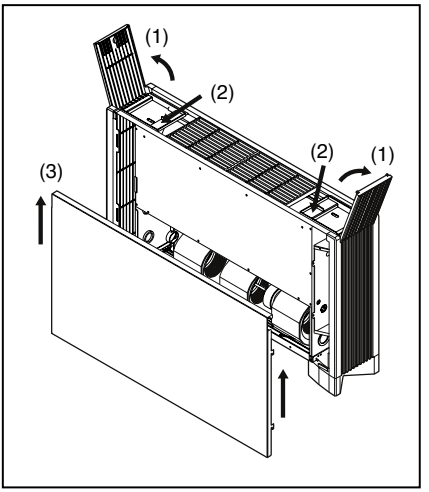
• How to open/close the front panel

(1) Open the lid of control panel(Both left and right)

(2) Remove screws(Both left and right)

(3) Lift the front panel of the unit

- To close, perform the procedure in opposite order.

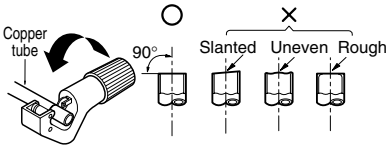


Preparation of Piping

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

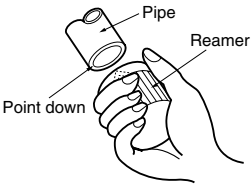
1. Cut the pipes and the cable.

- 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.



2. 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.

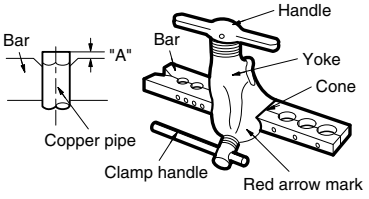


3. Flaring work

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

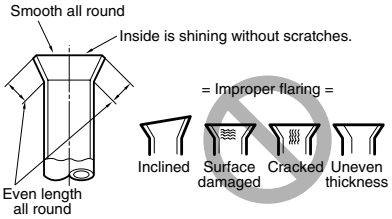
Indoor unit [kW(Btu/h]	Pipe		" A "	
	Gas	Liquid	Gas	Liquid
<5.6(19,100)	1/2"	1/4"	0.5~0.8	0~0.5
<16.0(54,600)	5/8"	3/8"	0.8~1.0	0.5~0.8
<22.4(76,400)	3/4"	3/8"	1.0~1.3	0.5~0.8

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



4. Check

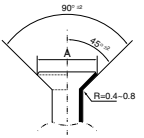
- Compare the flared work with figure below.
- If flare is noted to be defective, cut off the flared section and do flaring work again.



FLARE SHAPE and FLARE NUT TIGHTENING TORQUE

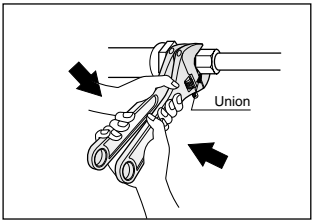
Precautions when connecting pipes

- See the following table for flare part machining dimensions.
- When connecting the flare nuts, apply refrigerant oil to the inside and outside of the flares and turn them three or four times at first. (Use ester oil or ether oil.)
- See the following table for tightening torque.(Applying too much torque may cause the flares to crack.)
- After all the piping has been connected, use nitrogen to perform a gas leak check.

pipe size	tightening torque(Ncm)	A(mm)	flare shape
Ø6.35	1400~1600	8.7~9.1	
Ø9.5	3270-3990	12.8-13.2	
Ø12.7	4950-6030	16.2-16.6	
Ø15.9	6180-7540	19.3-19.7	

CAUTION

- Always use a charge hose for service port connection.
- After tightening the cap, check that no refrigerant leaks are present.
- When loosening a flare nut, always use two wrenches in combination, When connecting the piping, always use a spanner and torque wrench in combination to tighten the flare nut.
- When connecting a flare nut, coat the flare(inner and outer faces) with oil for R410A(PVE) and hand tighten the nut 3 to 4 turns as the initial tightening.



Opening shutoff valve

1. Remove the cap and turn the valve counter clockwise with the hexagon wrench.
2. Turn it until the shaft stops.
   Do not apply excessive force to the shutoff valve. Doing so may break the valve body, as the valve is not a backseat type. Always use the special tool.
3. Make sure to tighten the cap securely.

Closing shutoff valve

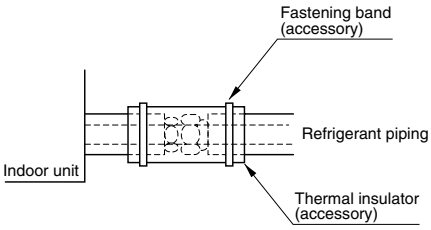
1. Remove the cap and turn the valve clockwise with the hexagon wrench.
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.
   * For the tightening torque, refer to the table on the below.

Tightening torque

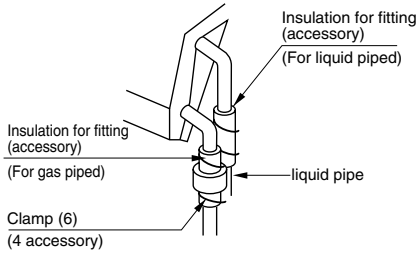
Shutoff valve size	Tightening torque N-m(Turn clockwise to close)					
	Shaft(valve body)		Cap(Valve lid)	Service port	Flare nut	Gas line piping attached to unit
Ø6.4	5.4-6.6	Hexagonal wrench 4mm	13.5-16.5	11.5-13.9	14-17	-
Ø9.5					33-39	
Ø12.7	8.1-9.9		18-22		50-60	
Ø15.9	13.5-16.5	Hexagonal wrench 6mm	23-27		62-75	
Ø22.2	27-33	Hexagonal wrench 10mm	36-44		-	22-28
Ø25.4						

HEAT INSULATION

1. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance (over 120°C).
2. Precautions in high humidity circumstance:
   This air conditioner has been tested according to the "ISO Conditions with Mist" and confirmed that there is not any default. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23°C), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:
   • Heat insulation material to be prepared... EPDM (Ethylene Propylene Diene Methylene)-over 120°C the heat-resistance temperature.
   • Add the insulation over 10mm thickness at high humidity environment.



After inspecting pipe joints for gas leakage, be sure to insulate wit the accessory joint insulation for fitting while referrig to the figure. (Fasten both ends with clamps)



Drain piping work

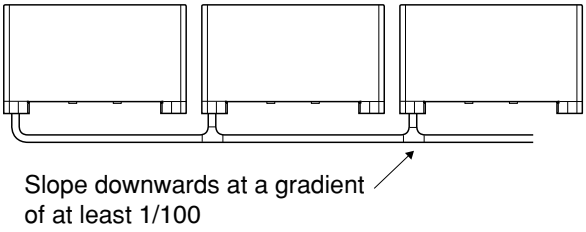
- Drain piping must have downward (1/50 to 1/100): be sure not to provide up-and-down slope to prevent reverse flow.
- During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- The outside diameter of the drain connection on the inddor unit is 21mm.

Piping material: Polyvinyl chloride pipe 25mm and pipe fittings

- Be sure to install heat insulation on the drain piping

Heat insulation material: Polyethylene foam with thickness more than 10 mm.

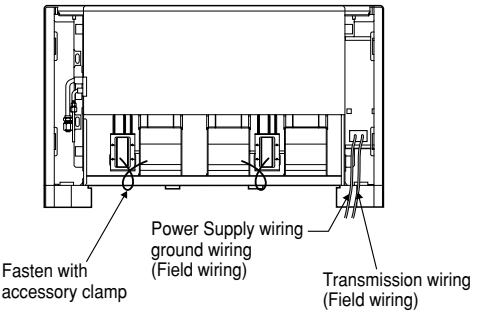
- If converging multiple dranin pipes, install according to the procedure shown below.

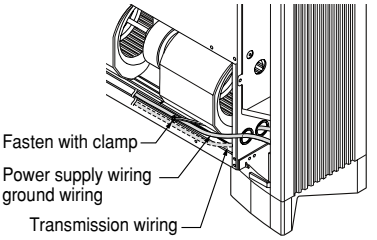


- After piping work is finished check drainage flows smothly.
- Be sure to insulate all indoor units.

How to connect wirings

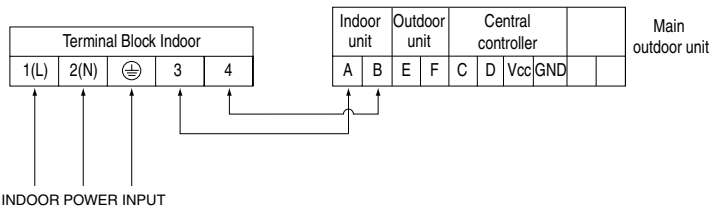
Remove the electric parts Box cover and connect the wiring





Wiring Connection

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.



WARNING : Make sure that the screws of the terminal are free from looseness.

CAUTION:

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

1) Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of control cover.

2) 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 cause burn-out of the wires.)

3) Specification of power source.

4) Confirm that electrical capacity is sufficient.

5) See to that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.

6) Confirm that the cable thickness is as specified in the power source specification. (Particularly note the relation between cable length and thickness.)

7) In a wet or moist area, always install an earth leakage circuit breaker.

8) The following would be caused by voltage drop.

- Vibration of a magnetic switch, which will damage the contact point, fuse breaking, disturbance of the normal function of the overload.

9) The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.

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.

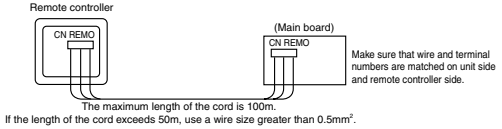
INSTALLATION OF THE REMOTE CONTROL BOX

- 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 1.2~1.5m high)

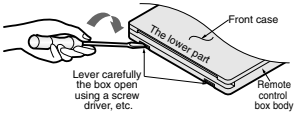
ROUTING OF THE REMOTE CONTROL CORD

- 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



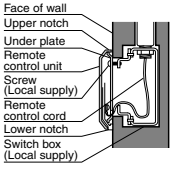
DISASSEMBLING OF THE REMOTE CONTROLLER



WHEN THE REMOTE CONTROL BOX IS INSTALLED WITH THE CORD BURIED.

PROCEDURE OF INSTALLATION

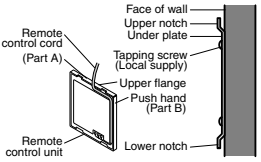
1. Fix the under plate on the switch box by screws(Local supply). In this case, fit the under plate on the wall, and be careful of deformation.
2. Receive the remote control cord in the switch box.
3. Hook the remote control unit on the under plate.



WHEN THE REMOTE CONTROL BOX IS INSTALLED WITH THE CORD EXPOSED.

PROCEDURE OF INSTALLATION

1. Fix the under plate on the wall by self tapping screws
2. Make a slit (Part A) at the top side of the remote control box by nipper.
3. Rout the cord as shown in the following figure. In this case, push the cord into the around of case(Part B).
4. Hook the remote control unit on the under plate.



FIXING OF REMOTE CONTROL CORD

1. Fix the cord clamps on the wall by ø3 tapping screws(Local supply).
2. Fix the remote control cord.

WIERED 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 1.2~1.5 m from floor level.)

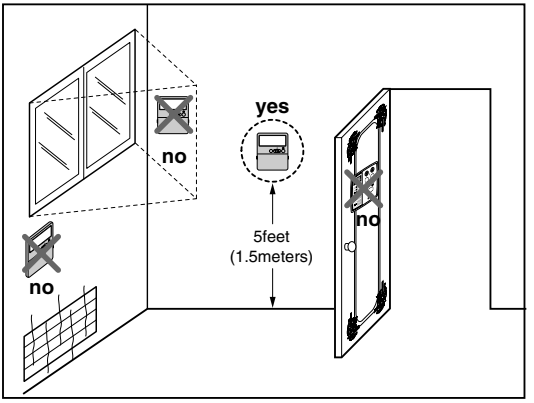
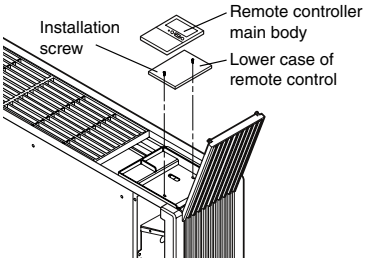


Fig.1 Typical locations for remote controller

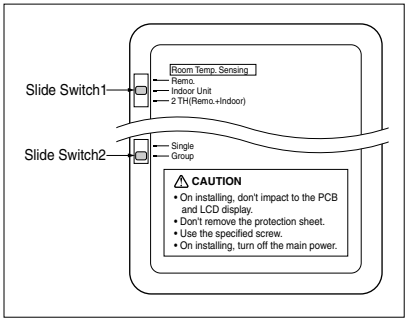
• Use the following procedure to mount the remote controller (optionl) on the unit is so desired.
(CEA, CFA Type)

• Open the right side cover of control panel and mount the lower case on the remote controller.



Two Thermistor system

- Open the rear cover of Remote Controller to set up the mode.
- Selectable options are three as follows.
  - Remo: Sensing the room Temperature.
  - Indoor Unit: Sensing the intake air into indoor Unit.
  - 2 TH: Sensing the lower temperature of the two thermistors.
- To set up the mode, adjust the slide switch to desired mode position on installing.



HAND OVER

Teach the customer the operation and maintenance procedures, using the operation manual.

(air filter cleaning, temperature control, etc.)

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After reading this manual, keep it in a place easily accessible to the user for future reference.