



AIR CONDITIONER

Installation Manual

Chilled Water Fan Coil Unit

Model Name :

Chilled water coil Way round cassette type

40VRS018W

40VRS024W

40VRS036W

40VRS048W

40VRS060W

Installation Manual

VI_ENG_IM_40VRS_REV.0124

Thank you for purchasing "Carrier" air conditioners.

Please read this installation manual carefully before installing the air conditioner.

This manual explains how to install only the fan coil unit.

After installation, please send this installation guide along with the air conditioner operation manual to the user. and instructs users to keep both manuals for future reference.

Generic Denomination : Air Conditioner

Definition of Qualified Installer or Qualified Service Person

The air conditioner must be installed, maintained, repaired and dismantled by a qualified installer or qualified service person. When any of these actions are required, please ask a qualified installer or qualified service person to perform the job.

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Definition of Protective Gear

When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.

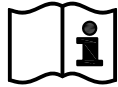
In addition to such normal protective gear, wear the protective gear described below when undertaking the special work detailed in the following table.

Failure to wear the proper protective gear is dangerous because you will be more susceptible to injury, burns, electric shocks and other injuries.

Work undertaken	Protective gear worn
All types of work	Protective gloves 'Safety' working clothing
Electrical-related work	Gloves to provide protection for electricians Insulating shoes Clothing to provide protection from electric shock
Work done at heights (50 cm or more)	Helmets for use in industry
Transportation of heavy objects	Shoes with additional protective toe cap

1. Safety precautions

The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.



Read the precautions carefully before using this manual.



WARNING

General

- Before starting to install the air conditioner, read through the Installation Manual carefully, and follow its instructions to install the air conditioner.
- Only a qualified installer or service person is allowed to do installation work. Inappropriate installation may result in water leakage, electric shock or fire.
- Before opening the air supply hood of the fan coil unit or the electric control panel of the fan coil unit. Must be moved to the OFF position, otherwise a short circuit can occur to internal parts through the contacts. Only qualified installer or qualified service personnel is allowed to open the air inlet of the fan coil unit or the electrical control panel of the unit. and perform the required works.
- Before carrying out the installation, maintenance, repair or removal work, set the circuit breaker to the OFF position. Otherwise, electric shocks may result.
- Place a “Work in progress” sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out. There is a danger of electric shocks if the circuit breaker is set to ON by mistake.
- Only a qualified installer or qualified service person is allowed to undertake work at heights using a stand of 50 cm or more or to remove the intake grille of the fan coil unit to undertake work.
- Wear protective gloves and safety work clothing during installation, servicing and removal.
- Do not touch the aluminum fin of the unit. You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.
- When work is performed at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder’s instructions. Also wear a helmet for use in industry as protective gear to undertake the work.
- Before cleaning the filter or other parts of the outdoor unit, set the circuit breaker to OFF without fail, and place a “Work in progress” sign near the circuit breaker before proceeding with the work.
- Before working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below. While carrying out the work, wear a helmet for protection from falling objects.
- The air conditioner must be transported in stable condition. If any part of the product is broken, contact the dealer.
- When the air conditioner must be transported by hand, carry it by two or more people.
- Do not move or repair any unit by yourself. There is high voltage inside the unit. You may get electric shock when removing the cover and main unit.

Selection of installation location

- Do not install in a location where flammable gas leaks are possible. If the gas leak and accumulate around the unit, it may ignite and cause a fire.
- To transport the air conditioner, wear shoes with additional protective toe caps.
- To transport the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.
- Install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.
- Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion.

Installation

- When the fan coil unit is to be suspended, the designated hanging bolts (M10 or W3/8) and nuts (M10 or W3/8) must be used.
- Install the air conditioner securely in a location where the base can sustain the weight adequately. If the strength is not enough, the unit may fall down resulting in injury.

- Follow the instructions in the Installation Manual to install the air conditioner. Failure to follow these instructions may cause the product to fall down or topple over or give rise to noise, vibration, water leakage or other trouble.
- Carry out the specified installation work to guard against the possibility of high winds and earthquake. If the air conditioner is not installed appropriately, a unit may topple over or fall down, causing an accident.
- Use forklift to carry in the fan coil units and use winch or hoist at installation of them.

Electrical wiring

- Only a qualified installer or qualified service person is allowed to carry out the electrical work of the air conditioner. Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and/or electrical leaks.
- To connect the electrical wires, repair the electrical parts or undertake other electrical jobs, wear gloves to provide protection for electricians and from heat, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.
- Use wiring that meets the specifications in the Installation Manual and the stipulations in the local regulations and laws. Use of wiring which does not meet the specifications may give rise to electric shocks, electrical leakage, smoking and/or a fire.
- Connect earth wire. (Grounding work) Imperfect grounding can cause electric shock.
- Do not connect earth wires to gas pipes, water pipes, and lightning conductor or telephone earth wires.
- After completing the repair or relocation work, check that the earth wires are connected properly.
- Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws.
- Install the circuit breaker where it can be easily accessed by the agent.
- To install the circuit breaker outdoors, install one which is designed to be used outdoors.
- Under no circumstances the power wire must not be extended. Connection trouble in the places where the wire is extended may give rise to smoking and/or a fire.
- Electrical wiring work shall be conducted according to law and regulation in the

community and installation manual. Failure to do so may result in electrocution or short circuit.

Test run

- Before operating the air conditioner after having completed the work, check that the electrical control box cover of the fan coil unit are closed, and set the circuit breaker to the ON position. You may receive an electric shock if the power is turned on without first conducting these checks.
- If there is any kind of trouble (such as an error display has appeared, smell of burning, abnormal sounds, the air conditioner fails to cool or heat or water is leaking) has occurred in the air conditioner, do not touch the air conditioner yourself but set the circuit breaker to the OFF position, and contact a qualified service person. Take steps to ensure that the power will not be turned on (by marking "out of service" near the circuit breaker, for instance) until qualified service person arrives. Continuing to use the air conditioner in the trouble status may cause mechanical problems to escalate or result in electric shocks or other trouble.




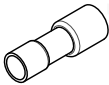





Explanations given to user

- Upon completion of the installation work, tell the user where the circuit breaker is located. If the user does not know where the circuit breaker is, he or she will not be able to turn it off in the event that trouble has occurred in the air conditioner.
- After the installation work, follow the User Manual to explain to the customer how to use and maintain the unit.

Relocation

Only a qualified installer or qualified service person is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and/or vibration may result.

2. Accessories parts

Part name	Qty.	Shape	Usage
Wireless remote controller	1		Only FR model.
Battery	2		For wireless remote controller.
Wire remote controller	1		Only FW model.
Flexible hose	1		For connecting the drain pipe.
Cable tie	2		For fastening the flexible hose.
Mounting bolt (large)	1		For mounting the front panel.
Mounting bolt (small)	3		For mounting the front panel.
Screw M4x40	4		For fixing the mounting bolt.
User manual	1		
Installation manual	1	This manual	

3. Selection of installation place

WARNING

- **Install the air conditioner at enough strong place to withstand the weight of the unit.**
If the strength is not enough, the unit may fall down resulting in injury.
- **Install the air conditioner at a height 2.5m or more from the floor.**
If you insert your hands or others directly into the unit while the air conditioner operates, it is dangerous because you may contact with revolving fan or active electricity.

CAUTION

Do not install the air conditioner in a location subject to a risk of exposure to a combustible gas.

If a combustible gas leaks and stays around the unit, a fire may occur.

Upon approval of the customer, install the air conditioner in a place that satisfies the following conditions.

- Place where the unit can be installed horizontally
- Place where a sufficient servicing space can be ensured for safety maintenance and check.
- Place where drained water will not cause any problem.

Avoid installing in the following places.

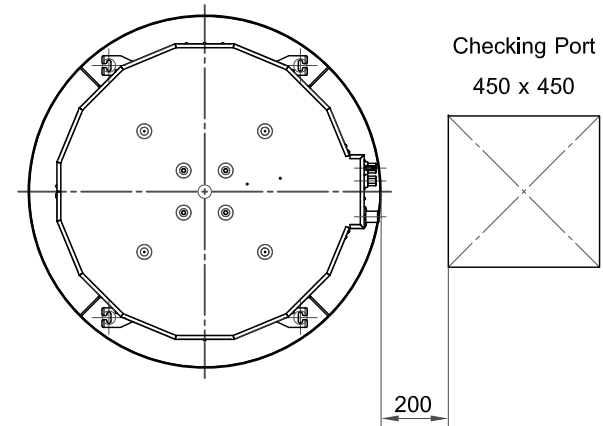
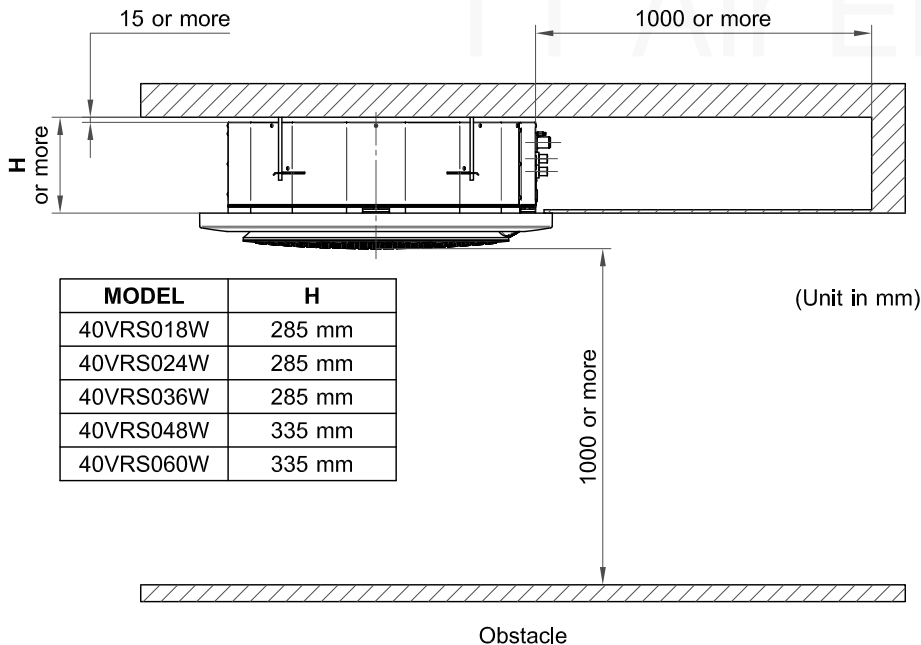
- Place exposed to air with high salt content (seaside area), or place exposed to large quantities of sulfide gas (hot spring).
(Should the unit be used in these places, special protective measures are needed.)
- A restaurant kitchen where a lot of oil is used or place near machines in a factory (Oil adhering to the heat exchanger and resin part (turbo fan) in the indoor unit may reduce the performance, generate mist or dew drop, or deform or damage resin parts.)
- Places where iron or other metal dust is present. If iron or other metal dust adheres to on the interior of the air conditioner, it may spontaneously combust and start a fire.
- Place where organic solvent is used nearby, place where organic solvent is used.
- Place close to a machine generating high frequency.
- Do not use the air conditioner for special purposes such as preserving food, precision

instruments, or art objects, or where breeding animals or growing plants are kept. (This may degrade the quality of preserved materials.)

- Place where any of high-frequency appliances (including inverter devices, private power generators, medical equipment, and communication equipment) and inverter-type fluorescent light is installed. (A malfunction of the air conditioner, abnormal control, or problems due to noise to such appliances / equipment may occur.)
- When the wireless remote controller is used in a room equipped with an inverter-type fluorescent light or at a place exposed to direct sunlight, signals from the remote controller may not be received correctly.
- Place near a door or window exposed to humid outside air (Dew dropping may form.).
- Place where special spray is used frequently.

Installation space

Secure the specified space in the figure for installation and servicing.



Selection of installation place

In case of continued operation of the indoor unit under high-humidity conditions as described below, dew may condense and water may drop.

Especially, high-humidity atmosphere (dew point temperature: 23 °C or more) may generate dew inside the ceiling.

1. Unit is installed inside the ceiling with slated roof.
2. Unit is installed at a location using inside of the ceiling as fresh air take-in path.
3. Kitchen

Advice

- Set a service check opening panel at right side of the unit (size: 450 × 450 mm or more) for piping, maintenance, and servicing.
- If installing a unit at such place, put insulating material (glass wool, etc.) additionally on all the positions of the indoor unit which come to contact with high-humidity atmosphere.

REQUIREMENT

When the humidity inside the ceiling seems to be higher than 80%, attach a heat insulator to the side (top) surface of the indoor unit. (Use a heat insulator that is 10 mm or more thick.)

Ceiling height

Maximum ceiling height suitable for installation is 4.6 m

4. Installation

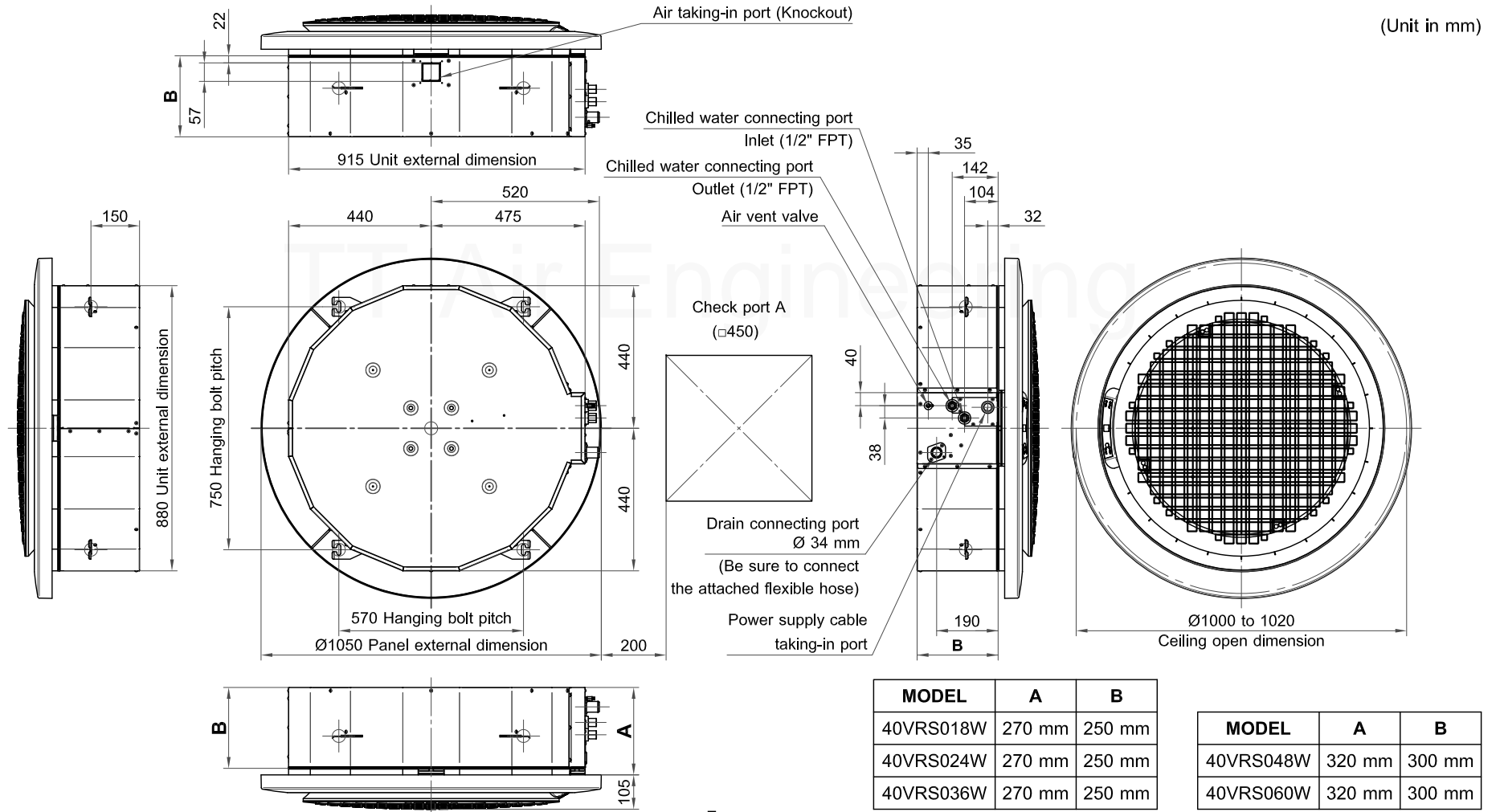
REQUIREMENT

Strictly comply with the following rules to prevent damage of the fan coil units and human injury.

- Do not put a heavy article on the indoor unit. (Even units are packaged)

- Carry in the fan coil unit as it is packaged if possible. If carrying in the fan coil unit unpacked by necessity, be sure to use buffering cloth, etc. to not damage the unit.
- To move the fan coil unit, hold the hooking metals (4 positions) only. Do not apply force to the other parts (refrigerant pipe, drain pan, foamed parts, or resin parts, etc.).
- Carry the package by two or more persons, and do not bundle it with plastic band at positions other than specified.

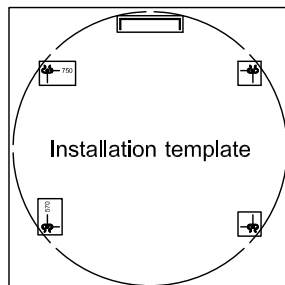
External view



Installation of the fan coil unit

Installation position of the fan coil unit must be considered to the following limitations.

- While defining the position and direction to hang the fan coil unit, consideration should be given to piping / wiring after hanging the unit.
- Dimensions of the ceiling hole and the location of the hanging bolts is in the supplied layout image and installation template attached in the package. Since the templates are made of paper, their dimensions may vary slightly according to temperature or humidity. Therefore, before drilling holes, you should ensure that the holes have in the correct size.



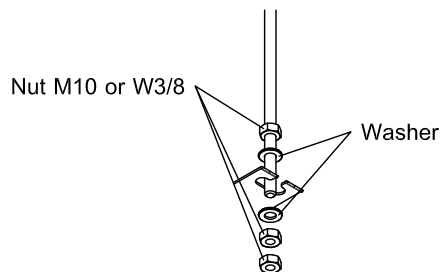
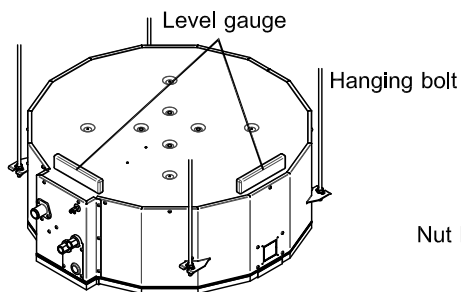
- After determining the location to install the fan coil unit, open the ceiling and install the hanging bolts.
- If using an existing ceiling, leave the drain, cold water and remote-control cables closer to the connection points before hanging the fan coil unit.

Procure hanging bolts and nuts for installing the indoor unit (these are not supplied).

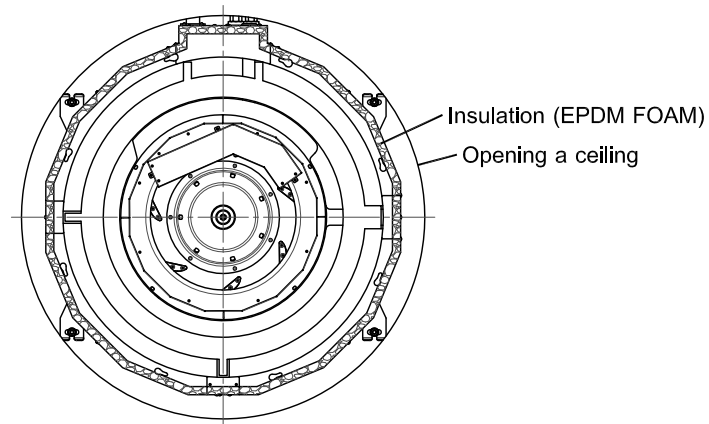
Hanging bolt M10 or W3/8 : 4 pieces

Nut M10 or W3/8 : 12 pieces

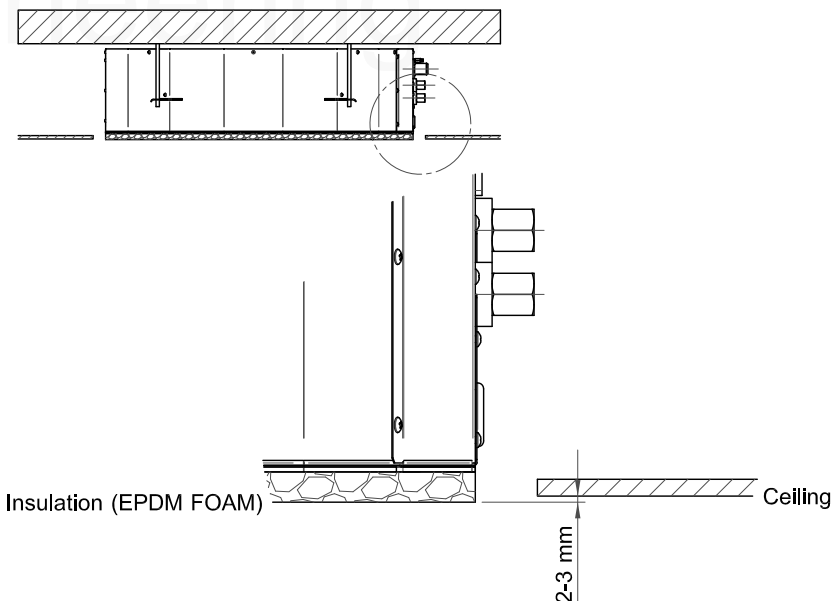
- Hang the fan coil unit with a hanging bolt. Secure all bolts. Check and level the gauge using a level gauge to determine that the fan coil unit is level and not tilted to any side.



- Make sure the unit and the opening in the ceiling are concentric position.



- Adjust the internal level of the machine so that the edge insulation (EPDM FOAM) is at a level lower than the ceiling 2-3 mm. (as shown in the picture).

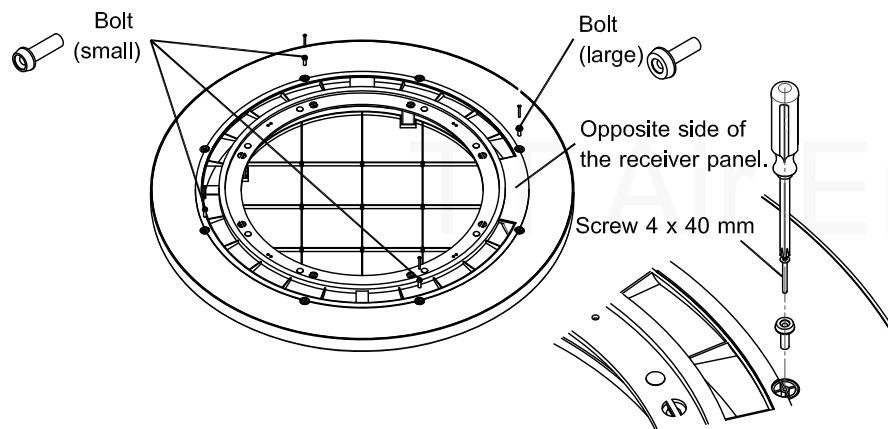


- Insulate the hanging handle of the unit to prevent condensation.

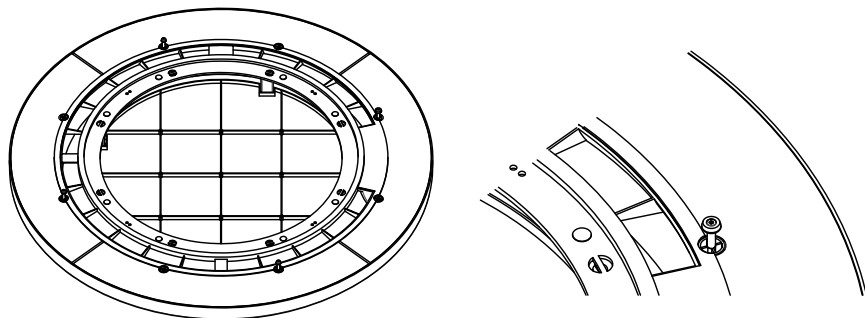
Installation of ceiling panel

Install the ceiling panel according to installation manual after piping / wiring work has completed. Check that installation of fan coil unit and ceiling opening part is correct, and then install it.

- Joint the connecting sections of ceiling panel, ceiling surface, ceiling panel and fan coil unit closely. Any gap between them will cause air leakage and the generate condensation or water leakage.
- Secure the front panel with the bolts and screws provided as shown in the picture.
- Connect the signal cable between the receiver panel on the front panel with the control panel on the unit.

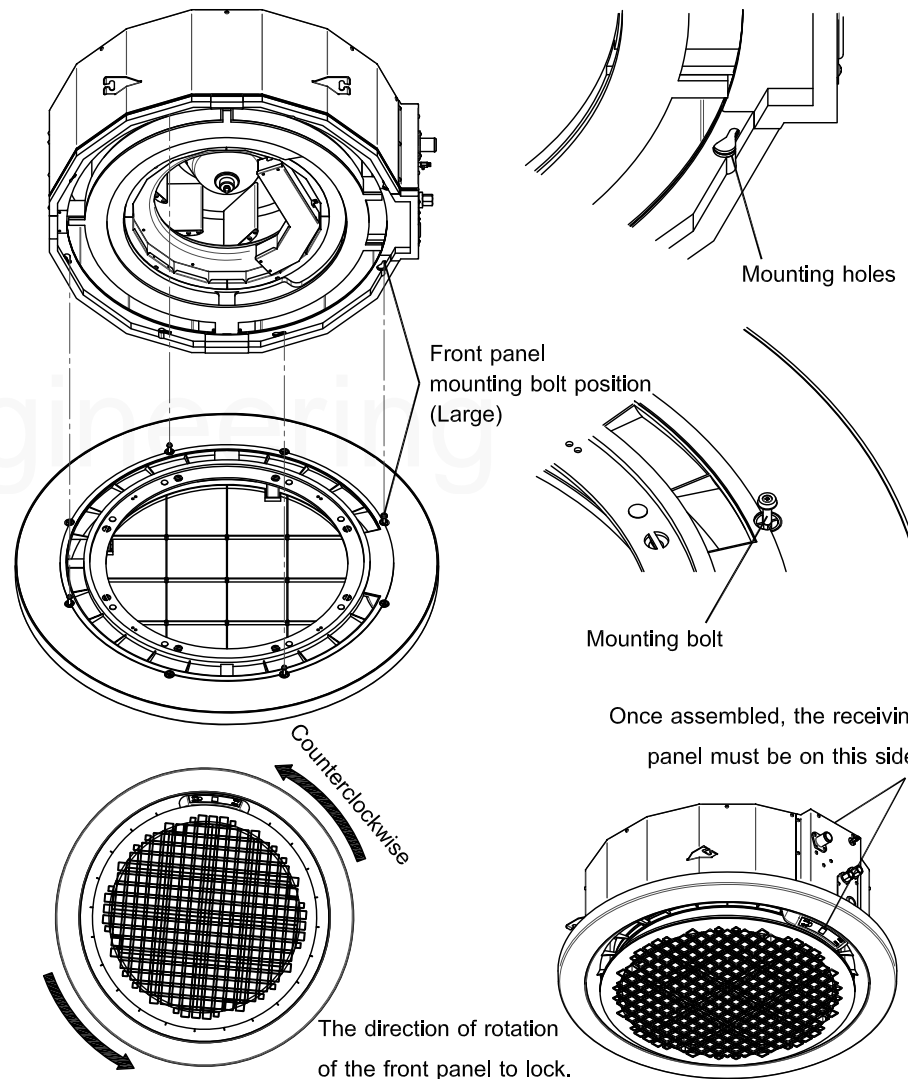


Hold the bolt so that the bolt size is in position shown in the picture.



The picture shown after fixing all 4 bolts.

- Bring the front panel assembly into the unit by inserting the 4 bolts on the front panel into the 4 hanging holes of the unit, then push the front panel up and rotate the front panel counterclockwise until the bolts are locked with the machine. (See the picture)
- When assembling the faceplate assembly into the machine successfully. The location of the signal receiver on the faceplate is in line with the water pipe connection point.

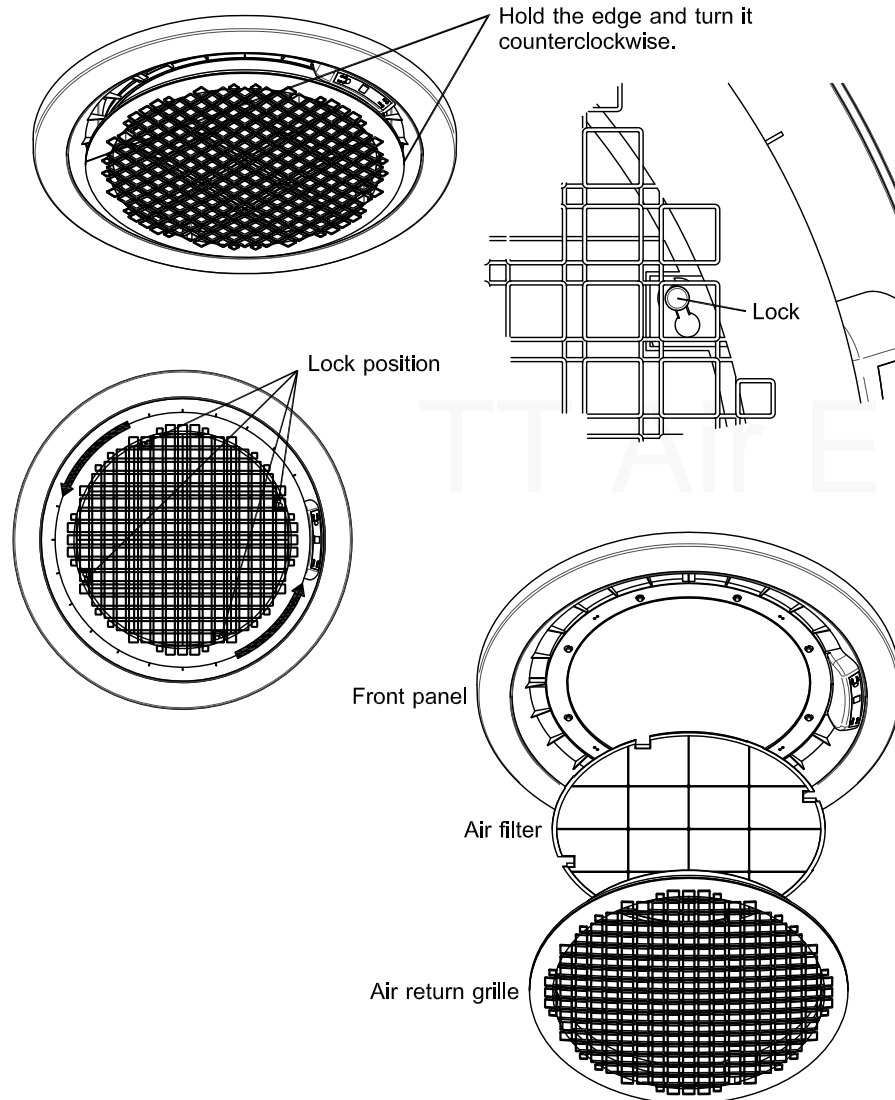


Once assembled, the receiving panel must be on this side.

The direction of rotation of the front panel to lock.

Removing the air return grille and air filter

- Hold the edge of the air return grille.
- Rotate in a counterclockwise direction. The air return grille will come off the front cover.
- Remove the air filter from the air return grille.



5. Drain piping work



CAUTION

Following the Installation Manual, perform the drain piping work so that water is properly drained, and apply a heat insulation so as not to cause a dew dropping. Inappropriate piping work may result in water leakage in the room and wet of furniture.

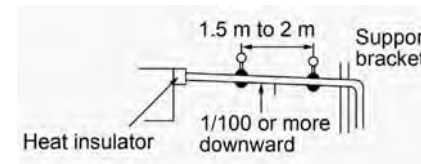
Insulation / Pipe Material

Pipes and insulation must be made of the following materials.

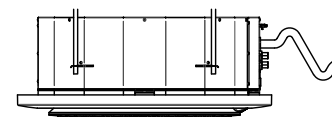
- Pipe : Rigid vinyl chloride pipe VP20
- Insulation : Polyethylene foam : 10 mm thickness or more

Specification

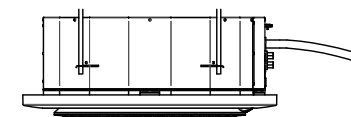
- The drain pipe of the fan coil unit must be insulated.
- Be sure to apply insulation to the connecting parts of the fan coil unit. Incomplete insulation may cause dripping.
- Arrange the drain pipe in a downward oblique direction (1/100 or more), and do not increase the size and trap water in the pipe, it may cause abnormal sound.



- The length of the transverse pipe should be limited to 20 m or less. In case of using long pipes, attach the brackets 1.5 to 2 m apart to prevent swaying and falling.
- Do not connect the drainpipe in a billowy line because it will cause the water to flow inconveniently.

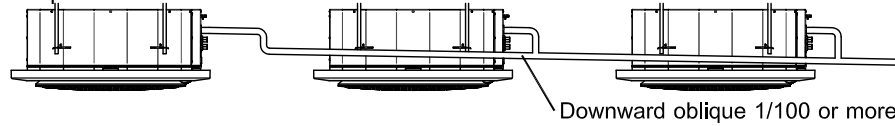


Incorrect connection



Correct connection

- If there are many unit in the same place, the sewer can be made together as shown in the picture.

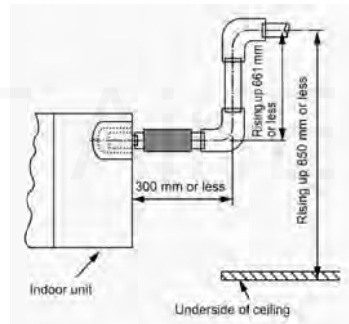


- Rigid vinyl chloride tubing cannot be connected to the drain connection port of the fan coil unit. To connect the drain connection port, be sure to use / secure the hose supplied with the pipe strap. Otherwise, damage may occur, or water is leaking from the drain connection port.

Drain up

When a down-gradient cannot be secured for the drainpipe, drain-up piping is possible.

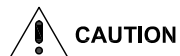
- The height of the drain pipe must be 850 mm or less from the bottom of the ceiling.
- Take the drain pipe out of the drain pipe joint with the indoor unit in 300 mm or less, and bend up the pipe vertically.
- Immediately after the pipe is bent up vertically, lay the pipe making a down-gradient.
- Set downward grading immediately after raising up vertically.



Check the draining

In the test run, check that water drain is properly performed and water does not leak from the connecting part of the pipes. Be sure to check draining also when installed in heating period. Using a pitcher or hose, pour water (1500 to 2000cc) into the discharge port before installation of the ceiling panel.

Pour water gradually so that water does not spread on the motor of the drain pump.

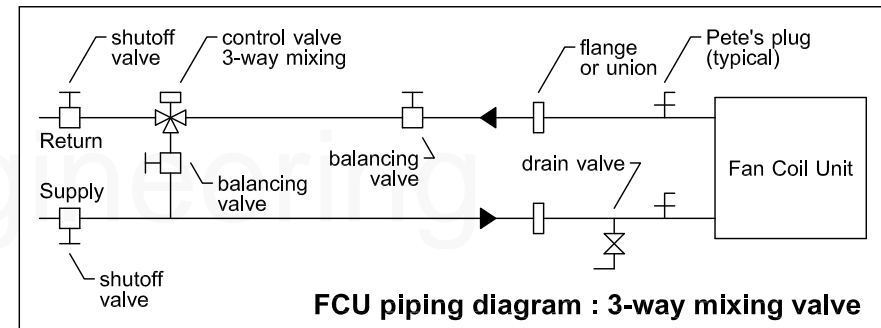
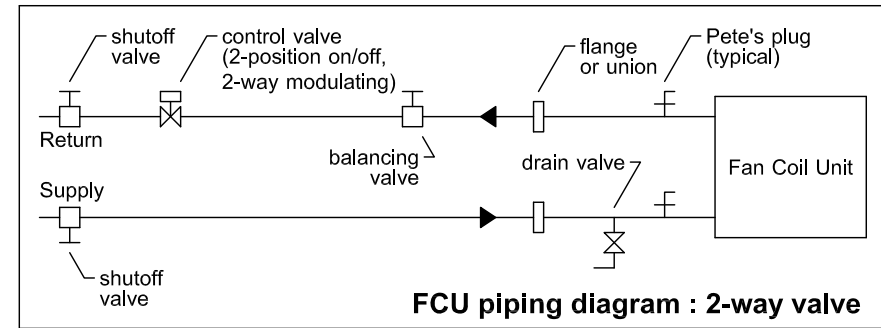


CAUTION

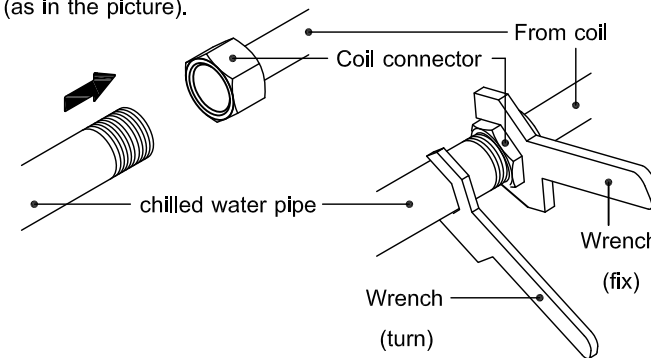
Pour water gently so that it does not spread around inside the indoor unit, which may cause a malfunction.

6. Chilled water piping

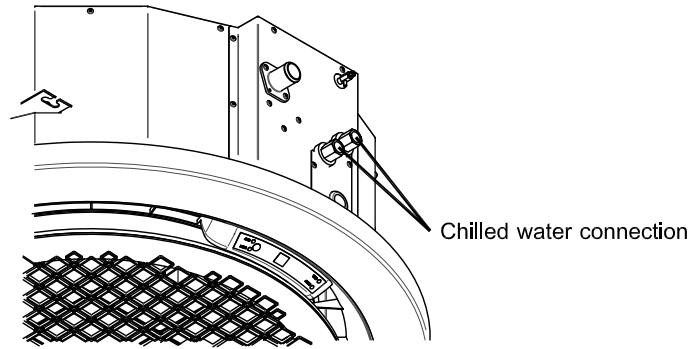
Piping diagram



- To connect the pipe to or from the air conditioner, turn (tighten) it by using 2 wrenches (as in the picture).



- Connecting the pipe to the coil, the pipe must be insulated to prevent condensation.



Insulation material / pipe

Pipes and insulation must be made of the following materials :

- Pipe : VP25 Rigid vinyl chloride pipe
- Insulation : Polyethylene foam, thickness 10 mm or more.

7. Electrical connection

CAUTION

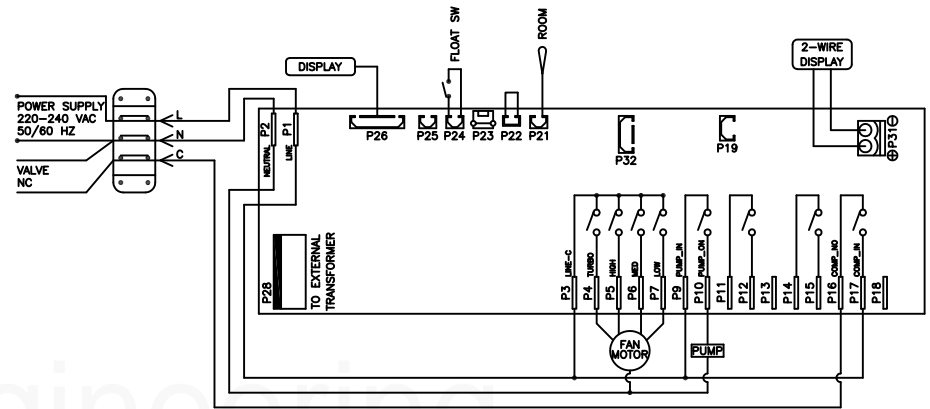
- Use the specified wires for wiring connecting the terminals. Securely fix them to prevent external forces applied to the terminals from the terminals.
- Incomplete connection or fixation may cause a fire or other trouble.
- Connect earth wire. (ground wire connection) Incomplete grounding causes an electric shock.
- Do not connect earth wires to gas pipes, water pipes, lightning conductor or telephone earth wires.
- Be sure to connect the wires matching the terminal numbers. Incorrect connection causes an error.

Wiring procedure

- 1 Loosen the cover fixing screws of the electric control box. Then remove the cover.
- 2 Connect the system connection wires and remote-control wires to the terminal block of electrical control box.

- 3 Tighten the screws of the terminal blocks and secure the wires to the electrical control box with cable holder. (Do not strain the wires in the connection to the terminal block.)
- 4 Cover the electrical control box without overlapping the wires.

Wiring diagram



System interconnection wire*

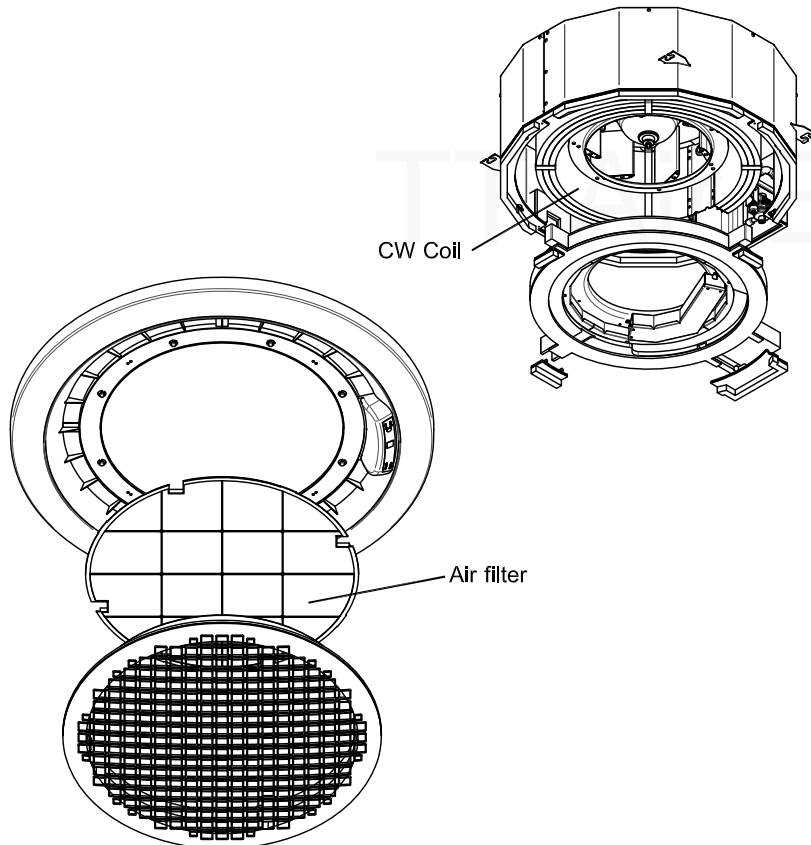
System interconnection wire*	4 x 5 mm ² or more (HO7 RN.F or 60245 IEC 66)	Up to 70 m
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*Number of wire x wire size

8. Maintenance

When using the air conditioner for a while, dust may accumulate in the unit, resulting in the air conditioner being able to cool less or send less cool air. Therefore, there should be maintenance as follows.

1. Turn off the main switch.
2. Remove the air filter and clean it with soapy water or detergent, rinse with clean water and dry in the shade at least once a month.
3. Clean the evaporator coil by using a sponge moistened with liquid soap to wipe over the coil and then use a soft metal wire brush to gently brush until it clean at least once a month (It should be done by a qualified service technician).



9. Troubleshooting

When the fan coil unit is malfunctioning. Before calling for service personnel, please check make sure that:

1. The circuit breaker is in the ON position.
2. The temperature control switch is in the lowest number.
3. The fan control switch is in the HIGH position.
4. The air filter panel is in sufficiently clean condition.
5. The power switch is in the COOL mode.

When checking, if it is found that the air conditioner is still not working or unable to cool normally Turn off the power switch and main switch, and call a trusted service technician for service.

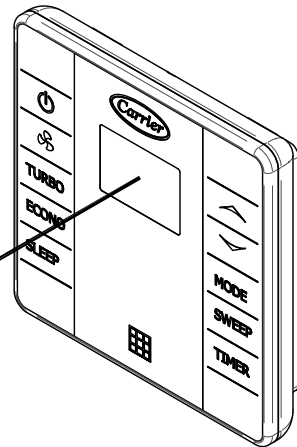
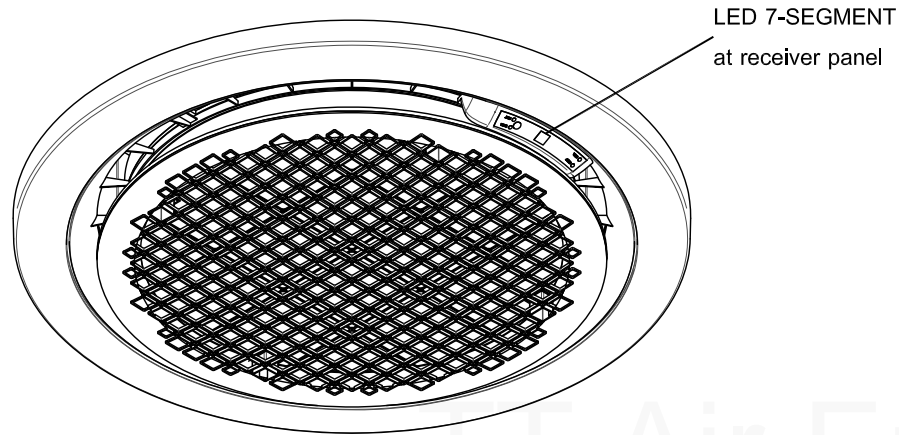
Consideration before calling a technician.

Check the following items before calling a technician because you may be able to fix it. But if after checking, the air conditioner still malfunctions. Please stop using the air conditioner and consult your dealer.

Malfunction	Preliminary Checking
Air conditioner not working	<ul style="list-style-type: none"> >Check wires that missing or not. >Check the electric current crash or not. >Check remote control that set up time correct or not.
Cooling capacity drop	<ul style="list-style-type: none"> >Check temperature set up suitable or not. >Check that the sunlight in the room directly or not. >Check the door and windows it open or not. > Check if anything is blocking the air vents inside of the unit. > Check if there is an excessive heat source in the room. > Check if the ventilators are working or not. > Check if the air filter is dirty or not.
Steam or smoke comes out from the air conditioner while it is operating.	<ul style="list-style-type: none"> > The cause may be caused by the heat in the room reacting with the cold that comes out of the air conditioner.

10. Error code

LED 7-SEGMENT: The display on the front panel and on the wired remote control will show various errors that occur in 7- segment as shown in the table.



CODE	CAUSE	CORRECTION
EA	<ul style="list-style-type: none"> -Drain motor pump malfunction/broken -Drain pipe goes down / slope rate is not enough / Raise the upstream drain pipe higher than standard required / blocked. -The drain pan is dirty / clogged. -Float switch stuck (dirty)/ broken. -The control panel is malfunctioning / broken. -Incorrect wiring. 	<ul style="list-style-type: none"> -Check drain motor pump. -Check drain level/clogging and clean. -Check the drain pan. and clean. -Check float switch / measure Ohm. -Check the control panel. -Check all wiring connections.
EB	<ul style="list-style-type: none"> Room temperature sensor broken or shorted. 	<ul style="list-style-type: none"> Check the condition of the room temperature sensor / Measure the resistance (6.8 kilo-Ohm) If broken, proceed to change.



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