

# **CEILING CONCEALED CHILLED WATER FAN COIL UNIT (F SERIES)**

IM-CCFWD-0117(1)L-ACSON  
Part No.: R08019046054A

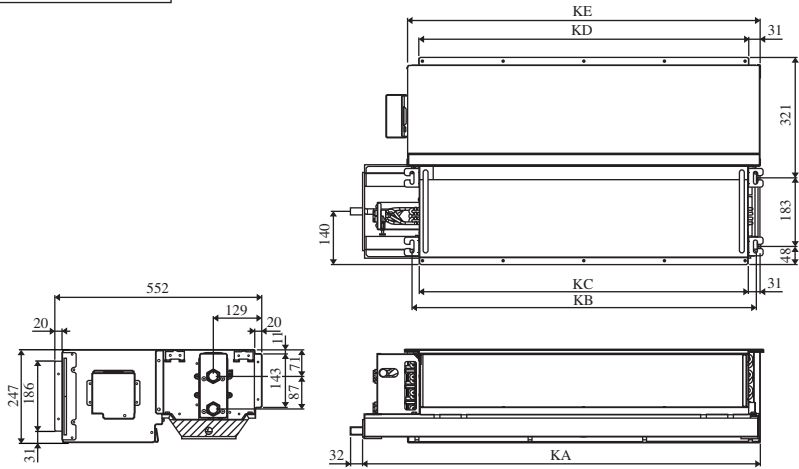


## OUTLINE AND DIMENSIONS

### Indoor Unit: Ceiling Concealed Fan Coil Unit F Series

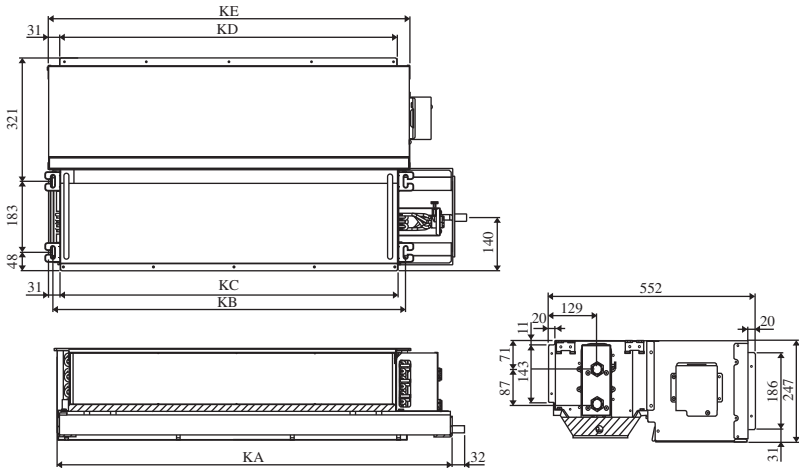
#### LEFT PIPING

All dimensions are in mm



#### RIGHT PIPING

All dimensions are in mm



Dimension	KA	KB	KC	KD	KE
Model					
06/09FWD	619	477	437	440	501
12/15FWD	870	726	687	690	751
18FWD	1060	916	877	880	941
24FWD	1390	1246	1207	1210	1271
30FWD	1600	1456	1417	1420	1481

# INSTALLATION MANUAL

This manual provides the procedures of installation to ensure a safe and good standard of operation for the air conditioner unit. Special adjustment may be necessary to suit local requirement.

Before using your air conditioner, please read this instruction manual carefully and keep it for future reference.

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

This appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

## SAFETY PRECAUTIONS



### WARNING

- Installation and maintenance should be performed by qualified persons who are familiar with local code and regulation, and experienced with this type of appliance.
- All field wiring must be installed in accordance with the national wiring regulation.
- Ensure that the rated voltage of the unit corresponds to that of the name plate before commencing wiring work according to the wiring diagram.
- The unit must be GROUNDED to prevent possible hazard due to insulation failure.
- All electrical wiring must not touch the refrigerant piping, or any moving parts of the fan motors.
- Confirm that the unit has been switched OFF before installing or servicing the unit.
- Disconnect from the main power supply before servicing the air conditioner unit.
- DO NOT pull out the power cord when the power is ON. This may cause serious electrical shocks which may result in fire hazards.
- Keep the indoor and outdoor units, 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 1m away}.



### CAUTION

Please take note of the following important points when installing.

- Ensure that the drainage piping is connected properly.



If the drainage piping is not connected properly, it may cause water leakage which will dampen the furniture.

- Ensure that the unit's panel is closed after service or installation.



Unsecured panels will cause the unit to operate noisily.

- Sharp edges and coil surfaces are potential locations which may cause injury hazards. Avoid from being in contact with these places.
- Before turning off the power supply set the remote controller's ON/OFF switch to the "OFF" position to prevent the nuisance tripping of the unit. If this is not done, the unit's fans will start turning automatically when power resumes, posing a hazard to service personnel or the user.
- Do not install the units at or near doorway.
- Do not install the units at area like hot spring or oil refinery plant where sulphide gas exists.
- Do not operate any heating apparatus too close to the air conditioner unit or use in room where mineral oil, oil vapour or oil steam exist, this may cause plastic part to melt or deform as a result of excessive heat or chemical reaction.
- When the unit is used in kitchen, keep flour away from going into suction of the unit.
- This unit is not suitable for factory used where cutting oil mist or iron powder exist or voltage fluctuates greatly.
- Ensure the color of wires of the outdoor unit and the terminal markings are same to the indoors respectively.
- **IMPORTANT** : DO NOT INSTALL OR USE THE AIR CONDITIONER UNIT IN A LAUNDRY ROOM.
- Don't use joined and twisted wires for incoming power supply.
- The equipment is not intended for use in a potentially explosive atmosphere.

## NOTICE

### Disposal requirement

Your air conditioning product is marked with this symbol. This means that electrical and electronic products shall not be mixed with unsorted household waste.

Do not try to dismantle the system yourself: the dismantling of the air conditioning system, treatment of the refrigerant, of oil and of other parts must be done by a qualified installer in accordance with relevant local and national legislation.

Air conditioners must be treated at a specialized treatment facility for re-use, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. Please contact the installer or local authority for more information.

Batteries must be removed from the remote controller and disposed of separately in accordance with relevant local and national legislation.



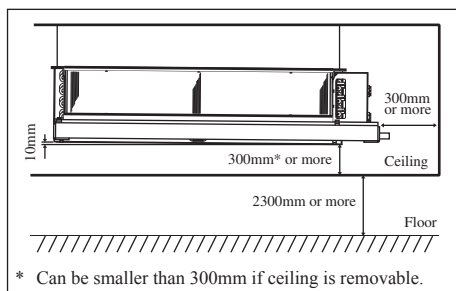
## INSTALLATION OF THE INDOOR UNIT

The indoor unit must be installed such that there is no short circuit of the cool discharge. Respect the installation clearance.

Do not put the indoor unit where there is direct sunlight on unit. The location is suitable for piping and drainage and it must have a large distance between a door and unit.

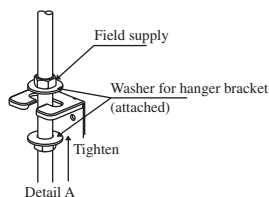
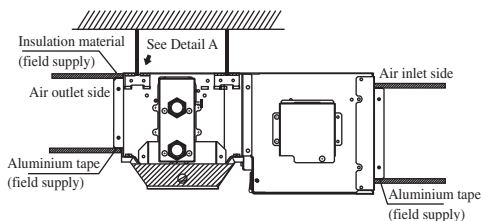
In cases where the temperature above the ceiling might reach 30°C or the humidity RH80%, reinforce the drain pan insulation (10mm or thicker) or adding secondary Drain Pan. Condensation may form on the surface of the insulating material.

Provide clearance for servicing ease and optimal air flow as shown in the diagram.



### Ceiling Concealed Mounting

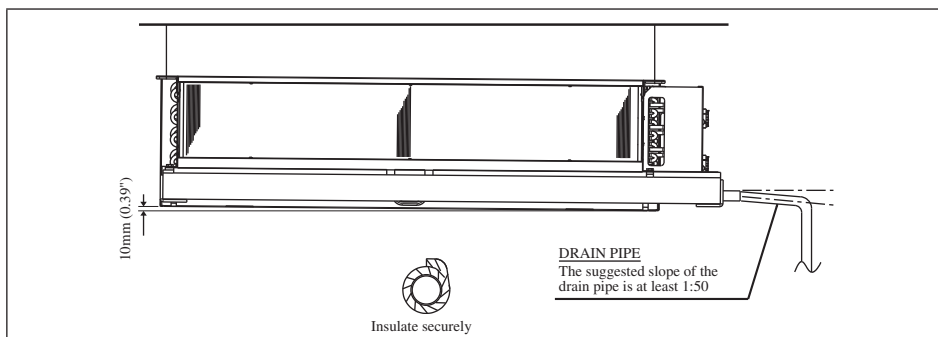
- Use the hanger supplied with the unit.
- Make sure that the ceiling is sufficiently strong to withstand the weight.



## CAUTION

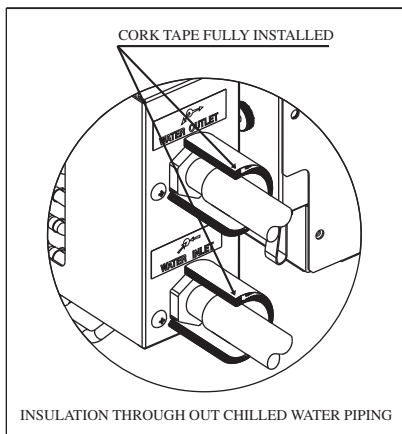
Do not install the unit at altitude over 2000m for both indoor and outdoor.

### Ceiling Concealed Drain Piping Work



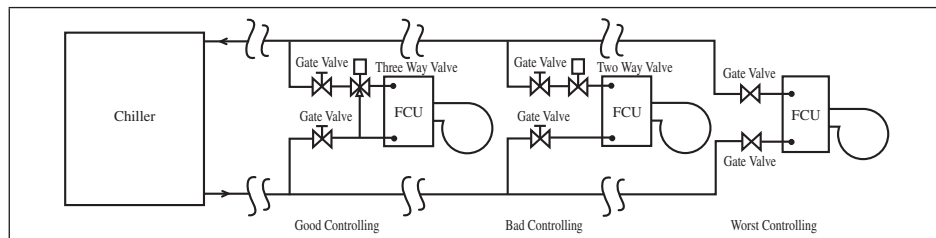
- The drain pipe must be installed as shown in the diagram (see diagram above) to avoid damage caused by leaks and condensation.
- For the best result, keep the piping as short as possible. Slant the piping at an angle to improve the flow.
- Ensure the drain pipe is securely insulated.
- Keep pipes as straight as possible for easy cleaning and to prevent the accumulation of dirt and debris.
- Conduct a water drainage test after the installation is completed. Make sure that the drainage flow is smooth.
- In humid environments, use an extra drain pan to cover the entire area of the indoor unit.

## IMPORTANT NOTICE



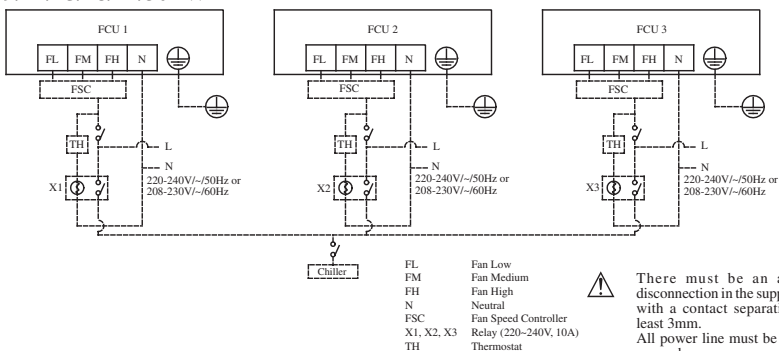
## WATER PIPING CONNECTION

- The indoor unit is equipped with water outlet and inlet connection. There is an air-vent that is fitted along with the connection for air purging.
- 3 way valve is required for cycling off or bypass the chilled water.
- Black steel pipe, closed cell polyurethane pipe and copper tube are recommended in the field installation. All types of piping and connection must be insulated with closed cell polyurethane to avoid condensation.
- Do not use contaminated or damaged pipe and fitting for installation.
- Some main fitting components are needed in the system to enhance the capacity and ease of service, such as gate valve, balancing valve, 2 way or 3 way valve, strainer and etc.



## ELECTRICAL WIRING CONNECTION

06/09/12/15/18/24/30FWD



**IMPORTANT:** \* These values are for information only. They should be checked and selected to comply with local and/or national codes and/or national codes and regulations. They are also subject to the type of installation and size of conductors.

\*\* The appropriate voltage range should be checked with label data on the unit. A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in the fixed wiring in accordance with the relevant local and national legislation.

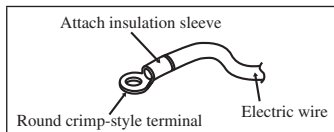
Model	Indoor	06FWD	09FWD	12FWD	15FWD
Voltage Range**	Indoor	220V-240V/~/50Hz + ⊕			
Power Supply Cable Size* mm <sup>2</sup>		1.5	1.5	1.5	1.5
Number of Conductors		5	5	5	5
Recommended Time Delay Fuse* A		1	1	1	1

Model	Indoor (CE)	18FWD	24FWD	30FWD
Voltage Range**	Indoor	220V-240V/~/50Hz + ⊕		
Power Supply Cable Size* mm <sup>2</sup>		1.5	1.5	1.5
Number of Conductors		5	5	5
Recommended Time Delay Fuse* A		2	2	3

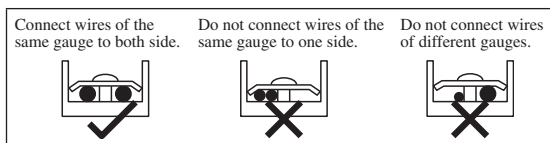
**Note:**

This is a proposed wiring connection. It may change subject to the chiller unit and must comply with the local and national code and regulations.

- All wires must be firmly connected.
- Make sure all the wire do not touch the refrigerant pipings, or any moving parts.
- The power supply cord must be equivalent to H07RN-F which is the minimum requirement.
- Make sure no external pressure is applied to the terminal connectors and wires.
- Make sure all the covers are properly fixed to avoid any gap.
- Use round crimp-style terminal for connecting wires to the power supply terminal block. Connect the wires by matching to the indication on terminal block. (Refer to the wiring diagram attached on the unit).



- Use the correct screwdriver for terminal screws tightening. Unsuitable screwdrivers can damage the screw head.
- Over tightening can damage the terminal screw.
- Do not connect wire of different gauge to same terminal.
- Keep wiring in an orderly manner. Prevent the wiring from obstructing other parts and the terminal box cover.



## OPERATING RANGE

### Operating Limits:

Thermal carrier : Water

Water temperature : 4°C ~ 10°C (Cooling)

Maximum water pressure : 16 bar

Air temperature : (as below)

### Cooling Mode

Temperature	Ts °C/°F	Th °C/°F
Minimum indoor temperature	19.0 / 66.2	14.0 / 57.2
Maximum indoor temperature	32.0 / 89.6	23.0 / 73.4

Ts: Dry bulb temperature. Th: Wet bulb temperature.

## OVERALL CHECKING

- **Ensure that:**
  - 1) The unit has been mounted solidly and rigid in position.
  - 2) The piping and connections are leak-proof after the charging.
  - 3) Proper wiring has been installed.
- **Drainage check**
  - pour some water into the left side of the drain pan (the drainage is at the right side of the unit).
- **Test run:**
  - 1) Conduct a test run on the unit after having perform the water drainage test and the gas leakage test.
  - 2) Check the following items:
    - a) Is the electrical plug inserted firmly into the socket?
    - b) Is there any abnormal sounds from the unit?
    - c) Is there any abnormal vibrations on the unit or the piping?
    - d) Is the drainage of water smooth?
- **Confirm that:**
  - 1) The evaporator blower is running and discharge cool air.

### Note:

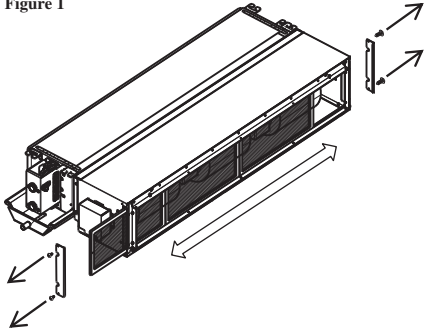
- The installation guide above covers only the fan coil unit. For installation of outdoor (mini chiller etc) please refer to the installation guide for such unit.
- The installation of fan coil unit may vary according to the type of outdoor unit.
- Installation must be done by qualified personnel who is familiar with this type of product.



## Remove air filter to side (Figure 1)

- Remove side air filter cover. (Left or Right side).
- Slide air filter out from filter rail.

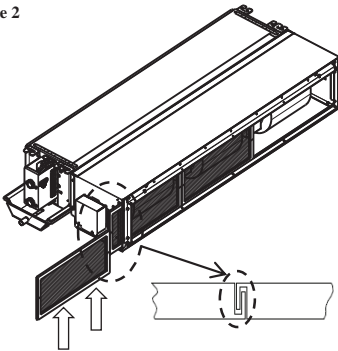
Figure 1



## Install air filter from side (Figure 2)

- Insert the 1st air filter into the air filter rail.
- Align the 2nd air filter with 1st air filter hook.
- Push the air filter to the end of air filter rail.
- Put back the side air filter cover.

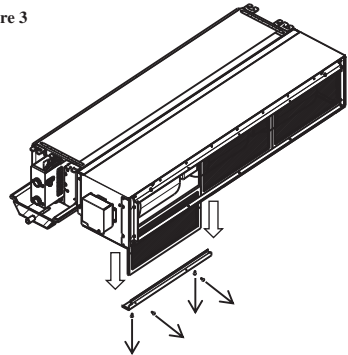
Figure 2



## Remove air filter to bottom (Figure 3)

- Remove bottom air filter cover.
- Slide and pull down air filter from air filter rail.

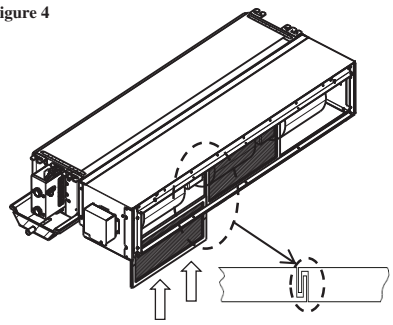
Figure 3



## Install air filter from bottom (Figure 4)

- Insert the 1st air filter into the air filter rail.
- Push the air filter to the side.
- Align the 2nd air filter with 1st air filter hook.
- Push the air filter to the end of air filter rail.
- Put back the bottom air filter cover.

Figure 4



## Note:

- The steps involved are based on Fan Coil Unit with Right Piping connection.

## SERVICE AND MAINTENANCE

Service Parts	Maintenance Procedures	Period
<b>Indoor Air Filter</b>	<ol style="list-style-type: none"> <li>1. Remove any dust adhering to the filter by using a vacuum cleaner or wash in lukewarm water (below 40°C) with a neutral cleaning detergent.</li> <li>2. Rinse the filter well and dry before placing it back onto the unit.</li> <li>3. Do not use gasoline, volatile substances or chemicals to clean the filter.</li> </ol>	<p>At least once every 2 weeks.</p> <p>More frequently if necessary.</p>
<b>Indoor Unit</b>	<ol style="list-style-type: none"> <li>1. Clean any dirt or dust on the grille or panel by wiping it with a soft cloth soaked in lukewarm water (below 40°C) and a neutral detergent solution.</li> <li>2. Do not use gasoline, volatile substances or chemicals to clean the indoor unit.</li> </ol>	<p>At least once every 2 weeks.</p> <p>More frequently if necessary.</p>



### CAUTION

**Avoid direct contact of any coil treatment cleaners on plastic part. This may cause plastic part to deform as a result of chemical reaction.**

## TROUBLESHOOTING

**For any enquiries on spare parts, please contact your authorized dealer. If any malfunction of the air conditioner unit is noted, immediately switch off the power supply to the unit. Check the following fault conditions and causes for some simple troubleshooting tips.**

Fault	Causes / Action
1. The air conditioner unit does not operate.	<ul style="list-style-type: none"> <li>– Power failure, or the fuse need to be replaced.</li> <li>– The power plug is disconnected.</li> <li>– It is possible that your delay timer has been set incorrectly.</li> </ul>
2. The air flow is too low.	<ul style="list-style-type: none"> <li>– The air filter is dirty.</li> <li>– The doors or windows are open.</li> <li>– The air suction and discharge are clogged.</li> <li>– The regulated temperature is not high enough.</li> </ul>
3. Discharge air flow has bad odor.	<ul style="list-style-type: none"> <li>– Odors may be caused by cigarettes, smoke particles, perfume etc. which might have adhered onto the coil.</li> </ul>
4. Condensation on the front air grille of the indoor unit.	<ul style="list-style-type: none"> <li>– This is caused by air humidity after an extended long period of operation.</li> <li>– The set temperature is too low, increase the temperature setting and operate the unit at high fan speed.</li> </ul>
5. Water flowing out from the air conditioner unit.	<ul style="list-style-type: none"> <li>– Switch off unit and call local dealer / serviceman.</li> </ul>

**If the fault persists, please call your local dealer / serviceman.**



- The manufacturer reserves the right to revise any of the specification and design contain herein at any time without prior notification.
- All images are for illustration purposes only.

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