

INSTALLATION MANUAL



MODELS

4-way blow ceiling mounted cassette


CKV007 CKV009


CKV012 CKV015

CKV018

SAFETY PRECAUTIONS

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

 WARNING	This indication shows the possibility of causing death or serious injury.
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 CAUTION	This indication shows the possibility of causing harm or damage the equipment.
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WARNING

- 1) Use qualified installer and follow carefully this instructions. Otherwise it will cause electrical shock, water leakage, or esthetic problem.
- 2) Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
- 3) For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
- 4) Use the specified cable and connect tightly for indoor connection. Connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
- 5) Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
- 6) When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.
- 7) Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock.
- 8) This equipment must be earthed. It may cause electrical shock if the grounding is not perfect.
- 9) Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.

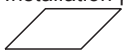


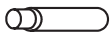







CAUTION

- 1) Selection of the installation location.
Select a installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
- 2) Do not release refrigerant.
Do not release refrigerant during piping work for installation, reinstallation and during repairing a refrigeration parts. Take care of the liquid refrigerant. it may cause frostbite.
- 3) It may need two people to carry out the installation work.
- 4) Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
- 5) Carry out drainage pipes as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

Required tools for installation

1.Screw driver	4.Hexagonal wrench	7. Knife
2.Electric drill, hole core drill (60 mm)	5.Pipe cutter	8.Measuring tape
3.Spanner	6.Reamer	9.Torque wrench

Attached accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation paper board 	1	5	Pipe insulation 	4	9	Clamp 	6
2	Drain hose 	1	6	Washer 	4	10	Sealing material 	2
3	Insulation 	1	7	Bolt 	2	11	Operation manual Installation manual 	2
4	Hoseclamp 	1	8	Bolt 	8			

Optional accessories

Name	Used for
Panel 625mmX625mm	Gird ceiling installation
Panel 725mmX725mm	Hard ceiling installation

Note

Decoration panel is separated from unit when packaging, select proper panel for different installation situation.

1 SELECT THE BEST LOCATION

Do install the cassette in a place meets following conditions:

1. Allow max. Air flow to the desired space;
2. Allow max. Return airflow;
3. Ensure adequate drainage of condensed water;
4. Leave a minimum 250mm free space in front of the filter;
5. Allow a free service access to electrical box;
6. Allow easy access to the base of the indoor unit while providing enough space from the ceiling;
7. It is better to install the unit in the center of the room, and the installation height should over 2.3m.
8. The distance between air-conditioner and obstacles should meets the requirements in fig1.

Do not install the cassette in a place like following:

1. Do not install the cassette in a room where gasses, acids or inflammable products are stored, In order to avoid damage to the aluminum and copper evaporators and the internal plastic parts.
2. Do not install the cassette in a workshop or a kitchen. Oil vapor attracted by the treated air could form deposits on the cassette evaporators and modify their performance or damage the cassette's internal plastic parts.
3. Do not install the cassette in laundry or a room where steam is produced.

This air conditioner has the optional 2-way/3-way air discharging according to installation location. Use sealing material in accessory parts to seal the related air outlets.

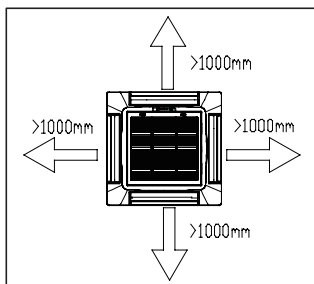
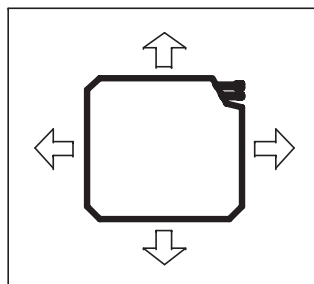
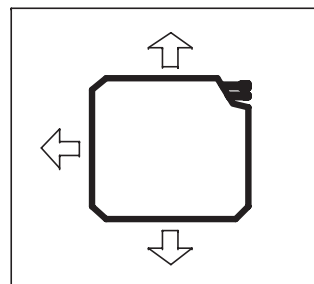


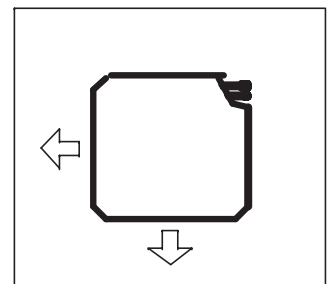
Fig 1 Installation requirement



4-way direction (Default)



3-way direction



2-way direction

Fig 2 Air flow direction (example)

2 UNIT INSTALLATION

STEP 1: Deciding ceiling opening size

- Gird ceiling installation situation (600mmx600mm standard ceiling):
 - Because this unit is a mini-cassette, there is no need to make an opening cut on the ceiling, just remove one piece of ceiling panel.
 - Under this installation condition, decoration paner 625mmx625mm is recommended.
- Hard ceiling installation situation:
 - Create the ceiling opening required for installation, below shows the relationship of the ceiling opening to unit and the panel. (Fig 3)
 - Under this installation situation, decoration panel 725mmX725mm is recommended.
 - The maximum ceiling opening size is 680mm. Pay attention that there must be an overlapping between panel and ceiling. (Fig 3-2)

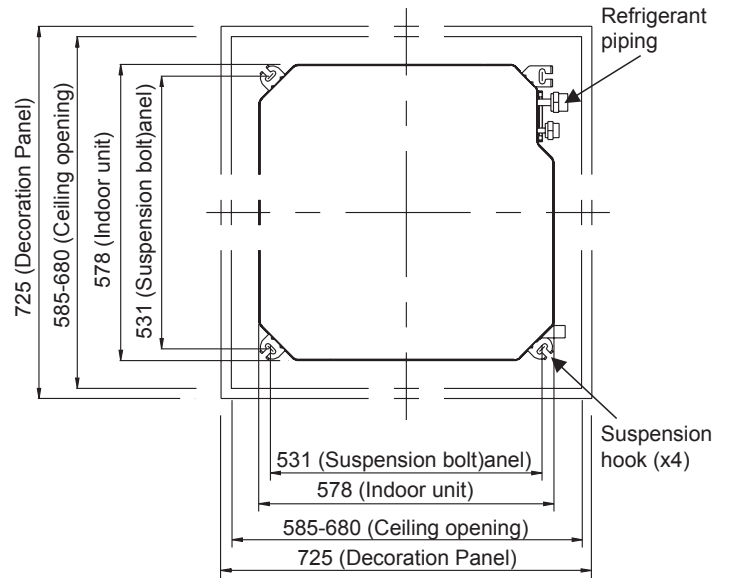


Fig 3-1 Unit:mm

STEP 2: Installing the indoor unit

A Installing the unit body

- Use installation template (supplied with the panel) when deciding the suspension bolt position (Fig 4). Fig 5 and table 1 show the dimensions relationship.

(Unit: mm)

Length Type	A	B	C	D	E
007/009/012	230	160	115	169	91
015/018	281	160	115	169	91

Table 1

	Φ Liquid Pipe	Φ Gas Pipe
CKV007	1/4"	1/2"
CKV009	1/4"	1/2"
CKV012	1/4"	1/2"
CKV015	1/4"	1/2"
CKV018	1/4"	1/2"

Table 2

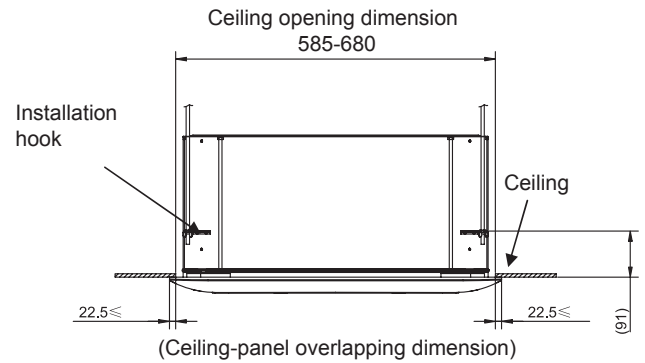


Fig 3-2 Unit:mm

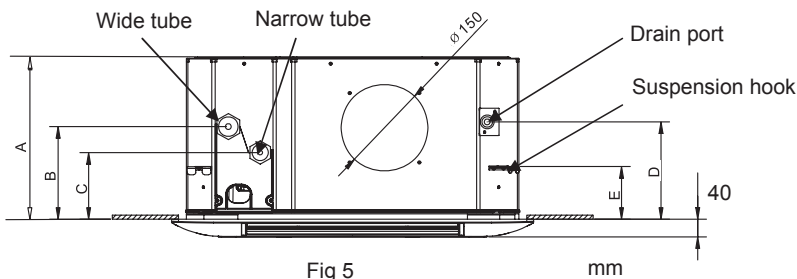


Fig 5

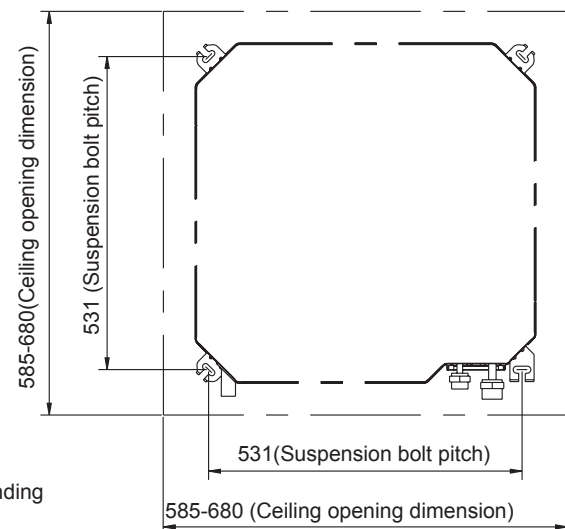


Fig 4 Unit:mm

- Piping and wiring must be prepared before hand inside the ceiling when suspending the unit.
- The length of suspension bolts must be appropriate for a distance between the bottom of the bolt and the bottom of the unit of more than 15mm as shown in Fig 6.
- In order to prevent a possible looseness, it is recommended to use 3 hexagonal nuts (Prepared on site) and 2 washers (accessory) for each suspension bolt. Pay attention that 2 nuts will be used in the lower side.(Fig 7)
- Adjust the distance between the unit and the ceiling bottom to 10~12mm. Tighten all the nuts on the suspending bolts.(Fig 7)

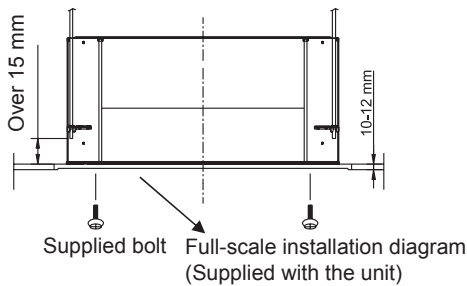


Fig 6

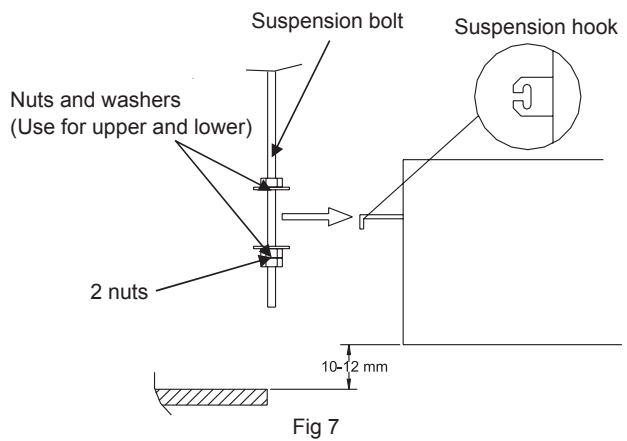


Fig 7

B Panel installing

(1) Removing the grille

- To open the grille, rotate the grille lock counterclockwise from horizontal position to vertical position. (Fig 8)
- With the grille fully opened, remove the grille along the direction shown in Fig 9.

(2) Temporary installation of the panel

- Install two bolts (Accessory) onto the main unit (the corner of refrigerant tubing side and the opposite corner). The detail is shown in Fig 10. Pay attention that leave 15-20mm bolt unscrewed so as to hang the panel easily.
- Attach the panel to the main unit, twist the panel to make sure that the two bolts mentioned above are screwed into the cavity on the panel. Thus the panel can keep balance with the two bolts.
- Pay attention that the TUBE and DRAIN marks on the ceiling panel are in the correct positions on the unit.
- Tighten all bolts (the previously two installed bolts as well as the two remaining bolts.) to secure the panel.
- Pay attention that there should be no gaps between the unit and the ceiling panel, or between the ceiling panel and the ceiling.

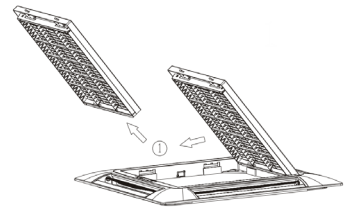


Fig 8

(3) Wiring of panel

- Connect the 12Pin cable connector from the ceiling panel to the relative connector which comes out of the control box. (Fig 11) If this connector is not connected, the display will not work. Make sure the cable is connected securely.
- Connect the 5Pin cable connector from the ceiling panel to the relative connector which comes out of the control box. (Fig 11) If this connector is not connected, the louver will not work. Make sure the cable is connected securely.

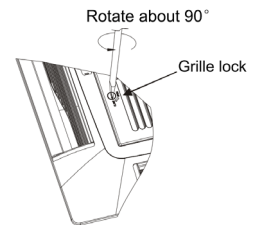


Fig 9

(4) Attaching the grille

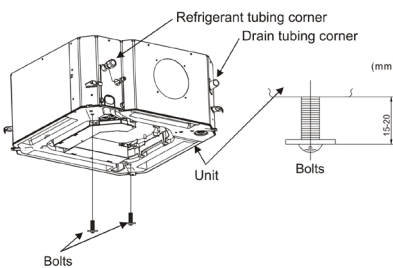


Fig 10

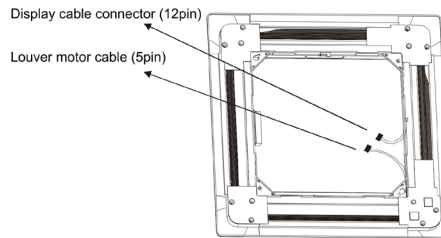


Fig 11-1

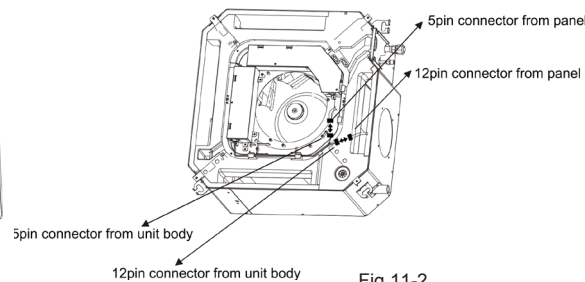


Fig 11-2

STEP 3: Duct installation

- Side openings are provided for installing separate ducts for outside air intake and treated air distribution to an adjacent room. (Fig 12)
- Use a punch to remove the knock-down openings on the casing. Use a knife to make the suitable opening on the polystyrene behind the casing.
- Plug the gaps between the ducts and the opening edge with anti-condensation insulation.
- Use material which can withstand a continuous operating temperature of 60. The ducts can be of the flexible type with a spring core or of corrugated aluminum, covered inside with an insulating material (12 to 25 mm thick glass fiber).
- When the installation is finished, all the surfaces of the non-insulated ducts must be covered with anti-condensation insulation material (6mm thick expanded polystyrene or expanded neoprene). Fireproofing classification: M1.

IF THE ABOVE INSTRUCTIONS ARE NOT FOLLOWED, CONDENSATE FLOWS WILL BUILD UP.

- Distributing air to an adjacent room requires the corresponding panel air outlets to be sealed by using the sealing material (Accessory). (Fig 2)
- A decoration grille must be fitted in the partition between the air conditioned room (where the cassette is installed) and the adjacent room. (Fig 13)

Knock-down opening for outside air Knock-down opening for distributing air to adjacent room

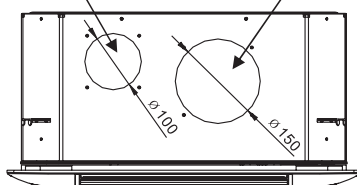


Fig 12

TAKE CARE not to damage the heat exchanger coil located behind the openings.

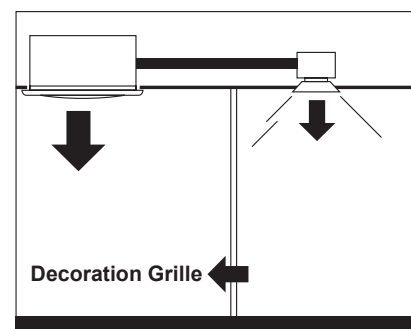
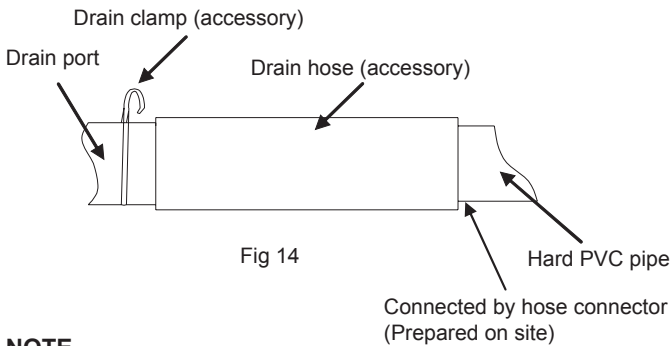


Fig 13

4 DRAIN PIPE CONNECTION

A Connect the drain pipe

- Use standard hard PVC pipe (19mm) for the drain pipe.
- Use the drain hose (Accessory) to change the direction.
- Insert the drain hose until it connects the drain port very well, And then secure it tightly with the hose clamp(Accessory).
- After checking the drainage, wrap the drain hose with the insulation and clamps (Accessory).



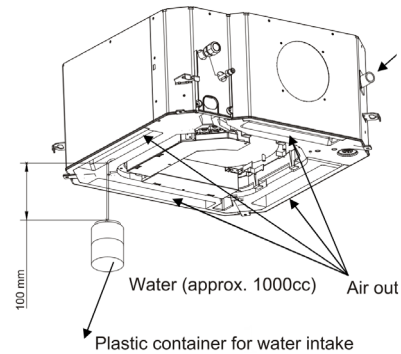
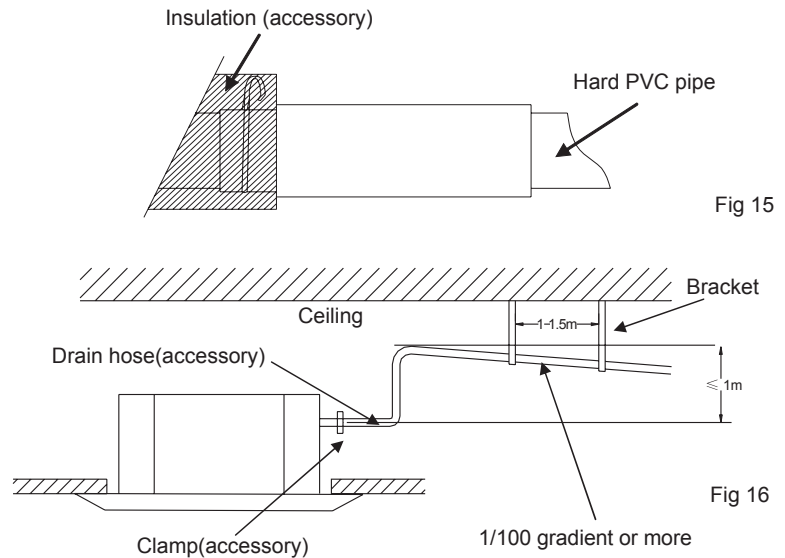
NOTE

- Make sure the drain pipe has a downward gradient (no less than 1/100) And there are no water traps.
- Do not raise the drain pipe higher than 1 m, or else there will be water leak risk.
- To hold the drain pipe, space bracket every 1 to 1.5m.(Fig 16)

B Drainage test

For VRF system please do drainage test after finishing all installations, wiring and piping included, and doing ITEST (Installation test) successfully:

- Prepare works please refer to Fig 17.
- Power on the system, and runs cooling mode.
- Check whether the pump sound is normal.
- Slowly inject about 1,000 cc of water into the drain pan.(Fig 17)
Check the drainage through the transparent drain port to see if any drain leakage happens.
- When the check is finished, do not forget to cut off the power supply.



5 HEIGHT COMPENSATION SETTING

The Compensation setting according to installation height can be done by using the dip switch 11 and 12 on controller PCB.

Installation Height	Height Code	DS11	DS12
2.3-2.7(m)	H0	OFF	OFF
2.7-3.1(m)	H1	OFF	ON
3.1-3.5(m)	H2	ON	OFF
>3.5(m)	H3	ON	ON

Note

- Please disconnect the unit from power supply when change these settings.
- If you feel too noisy, please set DS11 and DS12 to lower height code level.

6 ELECTRICAL WIRING CONNECTION

Power supply wiring

- Unscrew and remove the electrical box cover.
- Connect the power supply wiring to the power supply terminal block.
- When doing this,press the power supply wiring under the wire clip tightly.

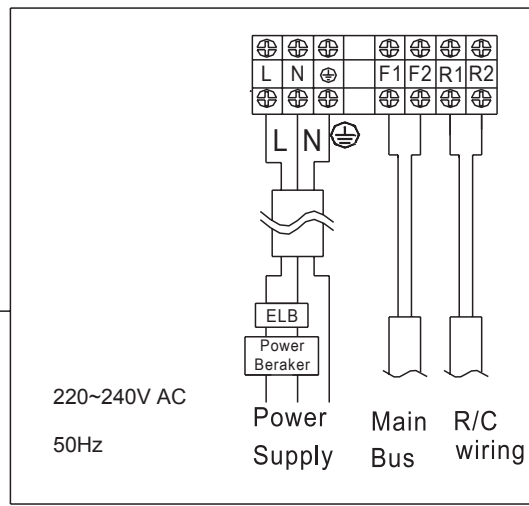
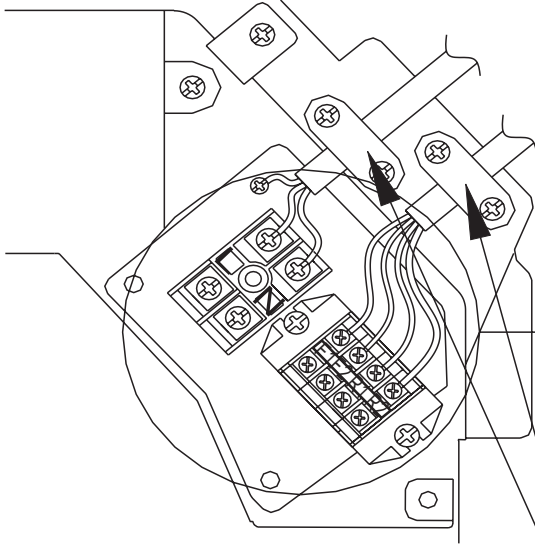
NOTE: For how to connect the power wire and communication wire between outdoor unit and indoor units, please refer to chapter 9 "Field Wiring" in outdoor unit installation manual.

Tightening to torque for the terminal screws

- Use the correct screwdriver for tightening the terminal screws.If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are tightened too hard, screws might be damage.
- Refer to the table below for the tightening torque of the terminal screws.

Main bus communication and R/C wiring

- Unscrew and remove the electrical box cover.
- Connect the R/C wirings to R1,R2 terminal block and the mainbus wirings to F1,F2 terminal block.
- Press the wirings under the wire clip tightly.



ELB: Electricity leakage breaker.

Press the wires under the clips tightly.

	Size	Tightening torque
Remote controller and main bus communication wiring and forced off terminal block(4P)	M3.5	0.8~1.0N.m
Power supply and Ground terminal block(2P)	M4	1.2~1.5N.m

Electrical characteristics

Unit		Power supply		Fan motor		
Model	Hz	Volts	MCA	MFA	KW	FLA
CKV007	50	220~240	0.27	16	0.06	0.18
CKV009			0.27	16	0.06	0.18
CKV012			0.27	16	0.06	0.18
CKV015			0.55	16	0.10	0.32
CKV018			0.55	16	0.10	0.32

MCA : Min. Circuit Amps (A)
MFA : Max. Fuse Amps(A)
KW : Fan Motor Rated output(kW)
FLA : Full Load Amps(A)

Specification for field supplied ELB and wire

Model	Power supply wiring		Remote controller wiring	
	Field ELB	Wire and Size	Main bus wiring	
			Wire	Size
CKV007	16A	Must comply with maximum current and local codes(0.75mm ²)	Twisted-pair wires	1.0mm ²
CKV009				
CKV012				
CKV015				
CKV018				

NOTE:

- All field supplied parts and materials and electrics works must conform to local codes.
- Use copperwire only.
- All wiring must be performed by an authorized electrician.
- Every indoor unit must have a sub circle breaker and the whole system must have a main circle breaker.
- Be sure to ground the air conditioner.
- The appliance shall be installed in accordance with national wiring regulations ,and shall be provided to ensure all-pole disconnection from the supply mains, and distance between the poles shall be more than 3 mm .

NOTE: For the piping and wiring methods,leakage test,vacuum process and installation setting through HMI, please refer to "Outdoor unit Installation Manual".

CHECK ITEMS

BEFORE POWER ON

- Is there any gas leakage at flare nut connections?
- Has the heat insulation been carried out at flare nut connection?
- Is the connecting cable being fixed to terminal board firmly?
- Is the connecting cable being clamped firmly?
- Is the drainage ok? (Refer to "Drainage test" section)
- Is the earth wire connection properly done?
- Is the indoor unit properly hooked to the installation plate?
- Is the power supply voltage complied with rated value?

AFTER POWER ON

- Is there any abnormal sound?
- Is the cooling operation normal?
- Is the thermostat operation normal?
- Is the remote control's LCD operation normal?