



User Manual

Floor Mounted Air Conditioner

INVERTER

KLG-IF40-3D1M

- Thank you for choosing these Air Conditioners, please read this owner's manual carefully before operation and retain it for future reference.
- KOLIN reserves the right to interpret this manual which will be subject to any change due to product improvement without further notice.
- KOLIN Philippines International, Inc. reserves the final right to interpret this manual.

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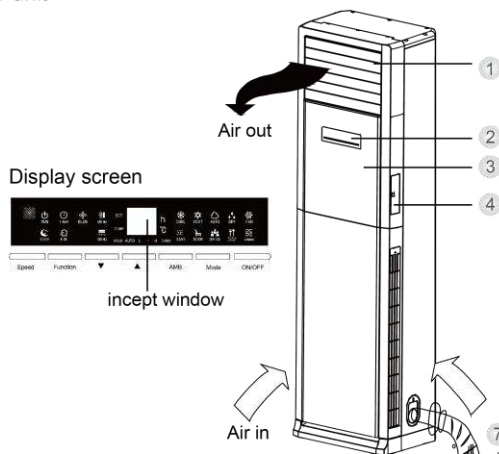
1 Safety Precautions

 WARNING!	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
 CAUTION!	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

 WARNING!	
(1).	For operating the air conditioner pleasantly, install it as outlined in this installation manual.
(2).	Connect the indoor unit and outdoor unit with the room air conditioner piping and cord available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.
(3).	Installation work must be performed in accordance with national wiring standards by authorized personnel only.
(4).	If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces toxic gas.
(5).	Do not power on until all installation work is complete.
(6).	During installation, make sure that the refrigerant pipe is attached firmly before you run the compressor. ● Do not operate the compressor under the condition of refrigerant piping not attached properly with 2-way or 3-way valve open. ● This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.
(7).	During the pump-down operation, make sure that the compressor is turned off before you remove the refrigerant piping. ● Do not remove the connection pipe while the compressor is in operation with 2-way or 3-way valve open. ● This may cause abnormal pressure in the refrigerant cycle that leads to breakage and even injury.
(8).	When installing and relocating the air conditioner do not mix gases other than the specified refrigerant (R410A) to enter the refrigerant cycle. ● If air or other gas enters the refrigerant cycle, the pressure inside the cycle will rise to an abnormally high value and cause breakage, injury, etc.
(9).	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.
(10).	Children should be supervised to ensure that they do not play with the appliance.
(11).	If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

2 Outline of the Unit and Main Parts

- Indoor unit



- Outdoor unit

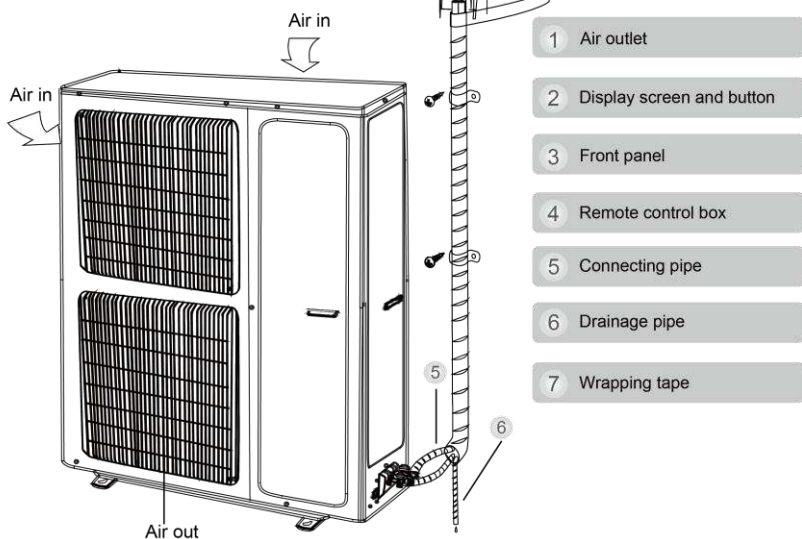


Fig. 2.1

Notes: The connection pipe for this unit should be prepared by the user.

3 Preparative for Installation

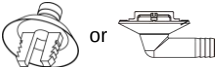
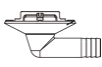
3.1 Standard Accessory Parts

The standard accessory parts listed below are furnished and should be used as required.

Table 3.1

Indoor Unit Accessories				
No.	Name	Appearance	Q'ty	Usage
1	Wireless Controller + Battery		1+2	To control the indoor unit
2	Insulation		1	To insulate the gas pipe
3	Insulation		1	To insulate the liquid pipe
4	Installation Paperboard		2	To insulate the drain pipe
5	Fastener		4	To fasten the sponge
6	Nut		1	To connect gas pipe
7	Nut		1	To connect liquid pipe

Table 3.2

Outdoor Unit Accessories				
No.	Name	Appearance	Q'ty	Usage
1	Drain Plug		3	To plug the unused drain hole.
2	Drainage Connector	 or 	1	To connect with the hard PVC drain pipe

3.2 Selection of the Installation Location

 WARNING!	
The unit must be installed where strong enough to withstand the weight of the unit and fixed securely, otherwise the unit would topple or fall off.	
 CAUTION!	
①.	Do not install where there is a danger of combustible gas leakage.
②.	Do not install the unit near heat source, steam, or flammable gas.
③.	Children under 10 years old must be supervised not to operate the unit.

Decide the installation location with the customer as follows:

3.2.1 Indoor Unit

- (1). Select a place, avoid the inflammable gas produce or leakage.
- (2). Select a place avoid the water vapor or oil sprayed on the unit.
- (3). Ensure that airflow can reach every conner of the room.
- (4). Choose a place so that the connection pipe could be easily pulled out.
- (5). Select the place where the airflow of the unit can not be blocked.
- (6). Select the position where the few outer air influenced.
- (7). Select the firm and flat ground.
- (8). Ensure sufficient clearance and space for service and maintenanc.
- (9). Ensure the installation of indoor unit is in conformity with the requirements of installation dimension drawing;
- (10). Do not use the unit in the immediate surroundings of a laundry a bath a shower or a swimming pool.
- (11). A location from which the condensation water can be drained out conveniently.
- (12). Leave service space around the unit as required in Fig. 3.1.

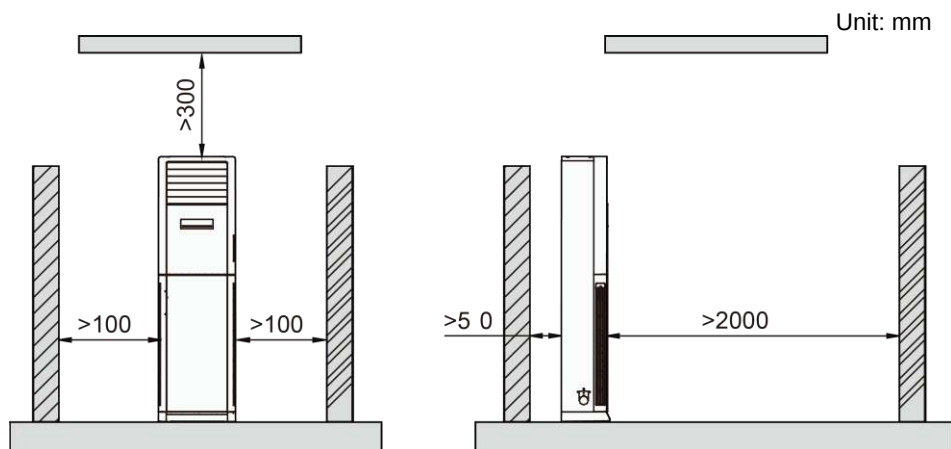


Fig. 3.1

3.2.2 Outdoor Unit



WARNING!

- ①. Install the unit where it will not be tilted by more than 5°.
- ②. During installation, if the outdoor unit has to be exposed to strong wind, it must be fixed securely.

If possible, do not install the unit where it will be exposed to direct sunlight. (If necessary, install a blind that does not interfere with the air flow.)

- (1). Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
- (2). Install the outdoor unit where it is convenient to connect with the indoor unit.
- (3). Install the outdoor unit where the condensate water can be drained out freely during heating operation.
- (4). Do not place animals and plants in the path of the warm air.
- (5). Take the air conditioner weight into account and select a place where noise and vibration are small.
- (6). Install the outdoor unit where is capable of withstanding the weight of the unit and generates as less noise and vibration as possible.
- (7). Provide the space shown in Fig. 3.2, so that the air flow is not blocked. Also for efficient operation, leave three of four directions of peripheral constructions open.

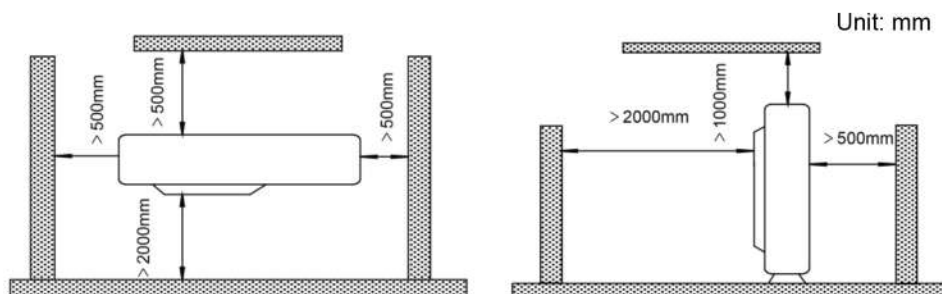


Fig. 3.2

3.3 Connection Pipe Requirement



The maximum length of the connection pipe is listed in the Table below. Do not place the units between which the distance exceeds the maximum length of the connection pipe.

Table 3.3

Item Model	Size of Fitting Pipe(Inch)		Max. Pipe Length (m)	Max. Height Difference between Indoor Unit and Outdoor Unit (m)	Drainage pipe(Outer Diameter × wall thickness) (mm)
	Liquid	Gas			
KLG-IF40-2C1M	3/8	5/8	30	15	φ17×1.75

Note:

- ①. The connecting pipe should be thermally insulated properly.
- ②. The pipe wall thickness shall be 0.5-1.0 mm and the pipe wall shall be able to withstand the pressure of 6.0 MPa. The longer the connecting pipe, the lower the cooling and heating effect performs.
- ③. The pipe wall thickness shall be 0.5-1.0 mm and the pipe wall shall be able to withstand the pressure of 6.0 MPa. The longer the connecting pipe, the lower the cooling and heating effect performs.

3.4 Electrical Requirement

Electric Wire Size and Fuse Capacity.

Table 3.4

Indoor Units	Power Supply	Fuse Capacity	Breaker Capacity	Min. Power Supply Cord
	V/Ph/Hz	A	A	mm ²
KLG-IF40-2C1M	230V ~ 60Hz	6	6	0.75

Table 3.5

Model	Power Supply	Capability of Air Switch(A)	Minimum Sectional Area Of Earth Wire (mm ²)
KLG-IF40-2C1M	230V ~ 60Hz	25	2.5

Notes:

- ①. The fuse is located on the main board.
- ②. Install the disconnect device with a contact gap of at least 3 mm in all poles nearby the units (Both indoor unit and outdoor unit).The appliance must be positioned so that the plug is accessible.
- ③. The specifications of the breaker and power cable listed in the Table above are determined based on the maximum power (maximum amps) of the unit.
- ④. The specifications of the power cable listed in the Table above are applied to the conduit-guarded multi-wire copper cable (like, YJV copper cable, consisting of PE insulated wires and a PVC cable jacket) used at 40°C and resistible to 90°C(see IEC 60364-5-52). If the working condition changes, they should be modified according to the related national standard.
- ⑤. The specifications of the breaker listed in the Table above are applied to the breaker with the working temperature at 40°C. If the working condition changes, they should be modified according to the related national standard.
- ⑥. Take 2 pieces of power cord of 0.75 mm² as the communication lines between indoor and outdoor unit, with their longest lengths of 50m. Please select the appropriate line length as per the actual installation conditions. The communication lines can not be twisted together.
- ⑦. The wire size of the communication line should be no less than 0.75 mm². It's recommended to take 0.75 mm² power cords as the communication line.

4 Installation of the Unit

4.1 Installation of the Indoor Unit



WARNING !

- | | |
|----|--|
| ①. | The unit installation work must be done by qualified personnel according to the local rules and this manual. |
| ②. | When removing the unit to the other place, please firstly contact with the local maintenance center. |

4.1.1 Indoor unit dimension

Unit: mm

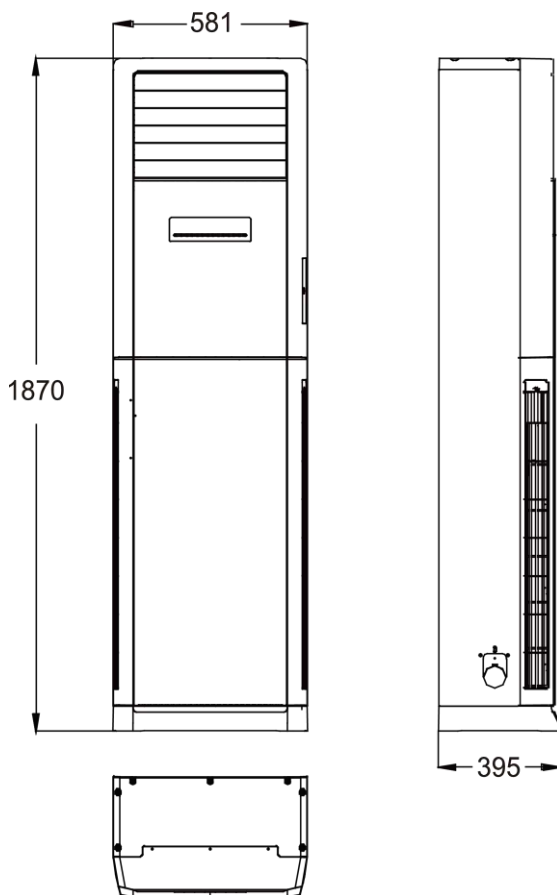


Fig. 4.1

4.1.2 Preparation for Installing the Indoor Unit

It's required to disassemble the air intake panel before conducting piping and wiring work.

- (1). Dismantle the screw-shielding cover from both sides of the panel.
- (2). Remove the screws distributed on the panel by a screwdriver. (See Fig.4.2)
- (3). Pull out the panel as per the arrowed direction. (See Fig.4.2) The internal parts of the unit are shown in Fig.4.3.
- (4). When performing piping and wiring work on the left, right and rear side, please adopt the attached accessories. (See Fig. 4.4 and Fig.4.5)

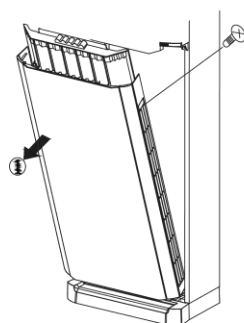


Fig. 4.2

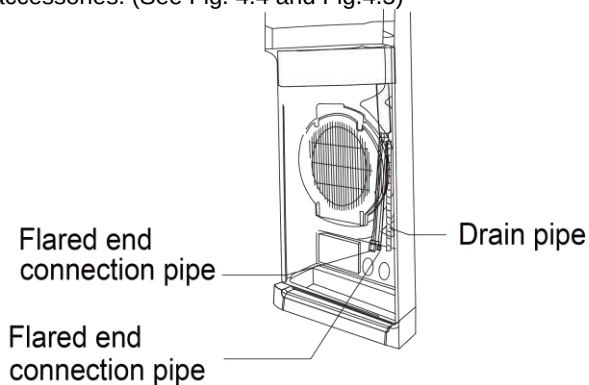


Fig. 4.3

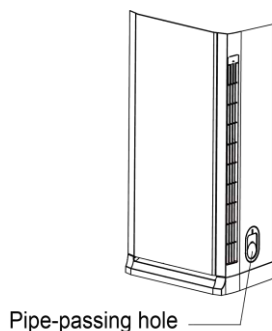


Fig. 4.4

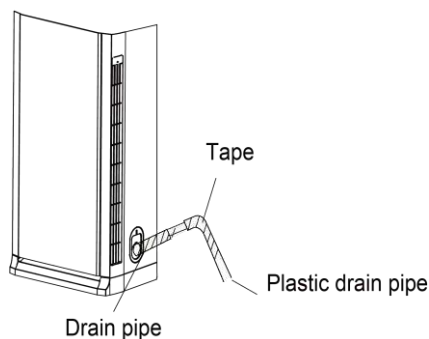


Fig. 4.5

4.2 Installation of the Outdoor Unit



WARNING

- ①. Install the unit where it will not be tilted by more than 5°.
- ②. During installation, if the outdoor unit has to be exposed to strong wind, it must be fixed securely.

4.2.1 Outdoor unit dimension

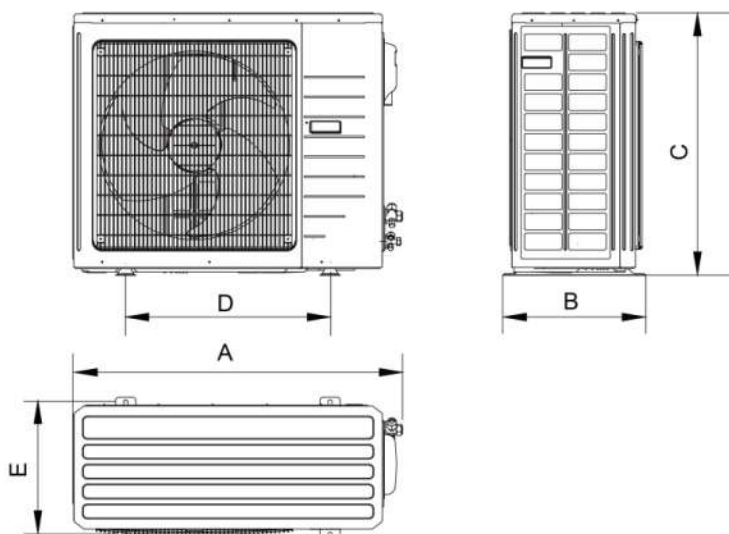


Fig. 4.6
Table 4.2

Unit: mm

Item Model	A	B	C	D	E
KLG-IF40-2C1M	1107	440	1100	631	400

4.2.2 Condensate Drainage of the Outdoor Unit(Only for the heat pump unit) (Fig. 4.7)

- (1). It is required to install a drain pipe for the outdoor unit to drain out the condensate water during heating operation. (only for the heat pump unit)
- (2). When installing the drain pipe, apart from the drain pipe mounting hole, all other holes should be plugged so as to avoid water leakage.(only for the heat

pump unit)

- (3). Installation Method: Insert the pipe joint into the hole $\phi 25$ located at the base plate of the unit and then connect the drain pipe to the pipe joint.

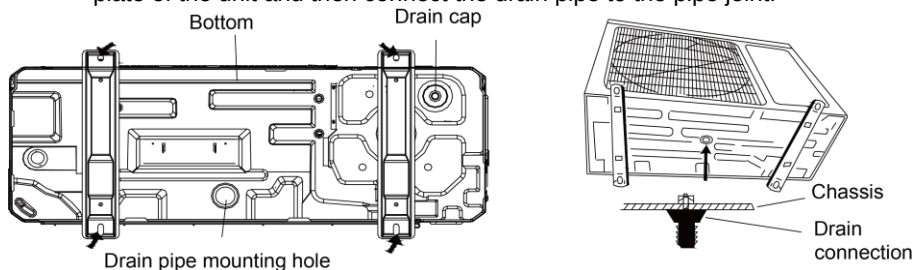


Fig. 4.7

4.3 Installation of the Connection Pipe

4.3.1 Flare Processing

- (1). Cut the connection pipe with the pipe cutter and remove the burrs.
- (2). Hold the pipe downward to prevent cuttings from entering the pipe.
- (3). Remove the flare nuts at the stop valve of the outdoor unit and inside the accessory bag of the indoor unit, then insert them to the connection pipe, after that, flare the connection pipe with a flaring tool.
- (4). Check if the flare part is spread evenly and there are no cracks (see Fig. 4.8).

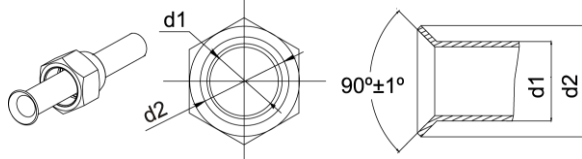


Fig. 4.8

4.3.2 Bending Pipes

- (1). The pipes are shaped by your hands. Be careful not to collapse them.

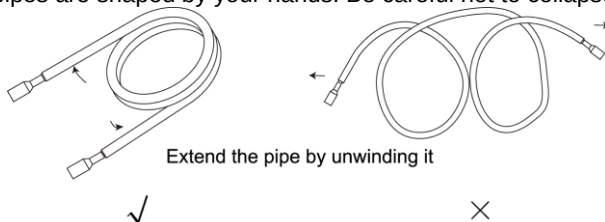


Fig. 4.9

- (2). Do not bend the pipes in an angle more than 90° .

- (3). When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.
- (4). When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 4.10, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

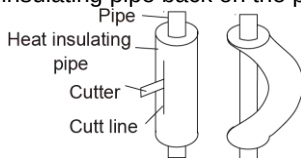


Fig. 4.10

⚠ CAUTION!

- ①. To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm or over.
- ②. If the pipe is bent repeatedly at the same place, it will break.

4.3.3 Connecting the Pipe at the Indoor Unit Side

⚠ CAUTION!

- ①. Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
- ②. Do not remove the flare nut until the connection pipe is to be connected so as to prevent dust and impurities from coming into the pipe system.

- (1). Detach the caps and plugs from the pipes.
- (2). Align the center of the piping flare with the pyramidal face of relevant valve.
- (3). Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench refer to the following. (Table 4.3)

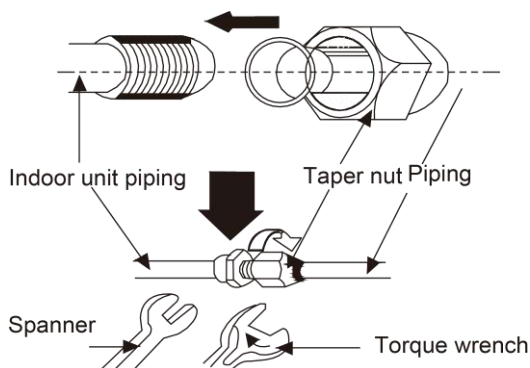


Fig. 4.11

Table 4.3 Flare nut tightening torque

Pipe Diameter	Tightening Torque
1/4" (Inch)	15-30 (N·m)
3/8" (Inch)	35-40 (N·m)
5/8" (Inch)	60-65 (N·m)
1/2" (Inch)	45-50 (N·m)
3/4" (Inch)	70-75 (N·m)
7/8" (Inch)	80-85 (N·m)



CAUTION!

Firstly connect the connection pipe to indoor unit, then to outdoor unit; pay attention to the piping bending, do not damage the connection pipe; the joint nut couldn't tighten too much, otherwise it may cause leakage.

4.3.4 Connecting the Pipe at the Outdoor Side Unit

Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same as that as at the indoor side.

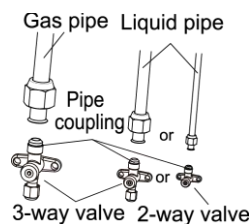


Fig. 4.13

4.3.5 Checking the Pipe Connections for Gas Leaking

For both indoor and outdoor unit side, check the joints for gas leaking by the use of a gas leakage detector without fail when the pipes are connected.

4.3.6 Heat Insulation on the Pipe Joints (Indoor Side Only)

Stick coupler heat insulation (large and small) to the place where connecting pipes.

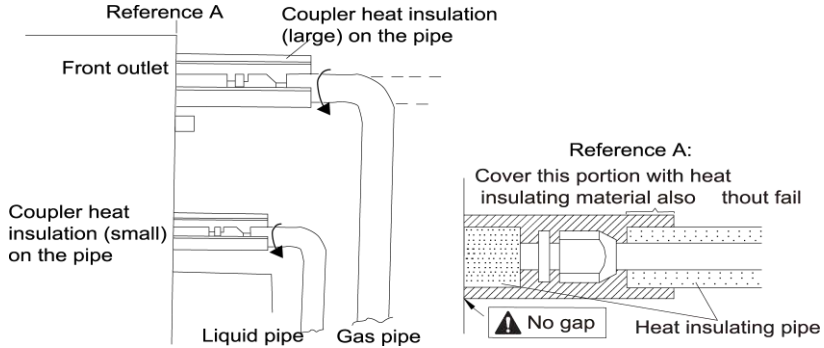


Fig. 4.13

4.3.7 Liquid Pipe and Drain Pipe

- (1). If the outdoor unit is installed lower than the indoor unit (See Fig. 4.14)
- 1). A drain pipe should be above ground and the end of the pipe does not dip into water. All pipes must be restrained to the wall by saddles.
- 2). Taping pipes must be done from bottom to top.
- 3). All pipes are bound together by tape and restrained to wall by saddles.

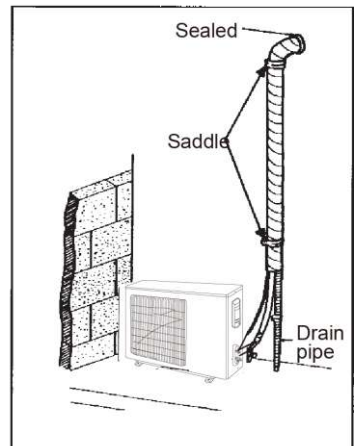


Fig. 4.14

- (2). If the outdoor unit is installed higher than the indoor unit

- 1). Taping should be done from lower to the upper part.
- 2). All pipes are bound and taped together and also should be trapped to prevent water from returning to the room (See Fig. 4.15)
- 3). Restraint all pipes to the wall with saddles.

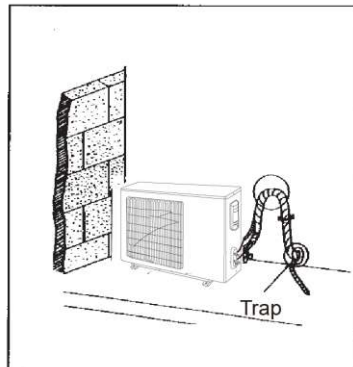


Fig. 4.15

4.4 Vacuum and Gas Leakage Inspection



CAUTION!

Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!

4.4.1 Vacuum

- (1). Remove the caps of the liquid valve, gas valve and also the service port.
- (2). Connect the hose at the low pressure side of the manifold valve assembly to the service port of the unit's gas valve, and meanwhile the gas and liquid valves should be kept closed in case of refrigerant leak.
- (3). Connect the hose used for evacuation to the vacuum pump.
- (4). Open the switch at the lower pressure side of the manifold valve assembly and start the vacuum pump. Meanwhile, the switch at the high pressure side of the manifold valve assembly should be kept closed, otherwise evacuation would fail.
- (5). The evacuation duration depends on the unit's capacity, generally, 30 minutes for the 36K units, 45 minutes for the 60K units. And verify if the pressure gauge at the low pressure side of the manifold valve assembly reads -1.0Mp (-75cmHg), if not, it indicates there is leak somewhere. Then, close the switch fully and then stop the vacuum pump.
- (6). Wait for some time to see if the system pressure can remain unchanged, 10

minutes for the 36/60K units. During this time, the reading of the pressure gauge at the low pressure side can not be larger than 0.005Mp (0.38cmHg).

- (7). Slightly open the liquid valve and let some refrigerant go to the connection pipe to balance the pressure inside and outside of the connection pipe, so that air will not come into the connection pipe when removing the hose. Note that the gas and liquid valve can be opened fully only after the manifold valve assembly is removed.
- (8). Place back the caps of the liquid valve, gas valve and also the service port.

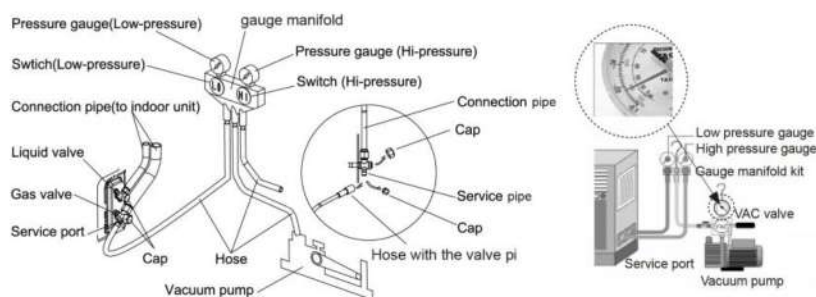


Fig. 4.16

Note: For the large-sized unit, it has the service port for both the gas valve and the liquid valve. During evacuation, it is available to connect two hoses of the manifold valve assembly to two service ports to quicken the evacuating speed.

4.4.2 Additional Charge

36K: Refrigerant suitable for a piping length of 5m is charged in the outdoor unit at the factory. When the piping is longer than 7m, additional charging is necessary.

60K: Refrigerant suitable for a piping length of 7.5m is charged in the outdoor unit at the factory. When the piping is longer than 10 m, additional charging is necessary.

For the additional amount, see Table 4.4.

Table 4.4

Model \ Item	Additional Refrigerant Amount for Extra Pipe
KLG-IF40-2C1M	60g/m

When the height difference between the indoor unit and outdoor unit is larger than 10 meters, an oil bend should be employed for every 6 meters.

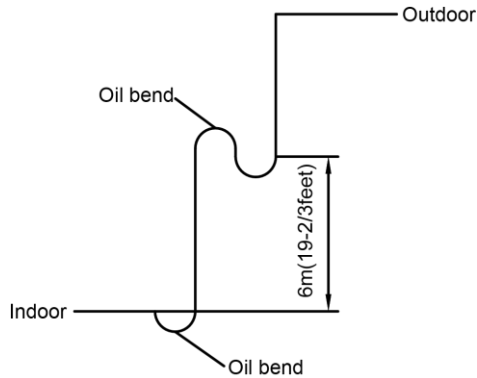


Fig. 4.17

4.5 Installation of the Drain Pipe

4.5.1 Precautions When Doing the Piping Work

- (1). Keep piping as short as possible and slope it downwards at a gradient of at least 1/100 so that air may not remain trapped inside the pipe.
- (2). Keep pipe size equal to or greater than that of the connecting pipe.
- (3). Install the drain piping as shown and take measures against condensation. Improperly rigged piping could lead to leaks and eventually wet furniture and belongings.

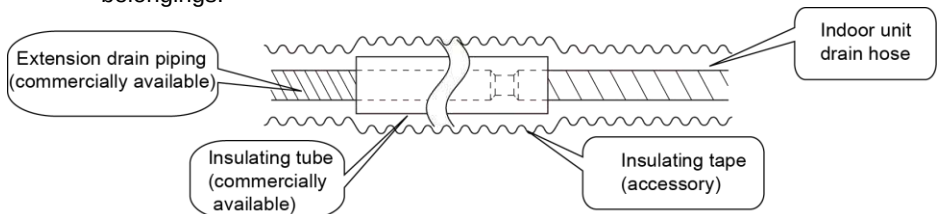


Fig. 4.18

- (4). Connect the drain hose.

4.5.2 Installing the Drain Pipes

- (1). Insert the drain hose into the drain socket up to the base, and tighten the clamp securely with the tape.
- (2). Insert the drain hose into the drain outlet, and tighten the clamp securely with tape.

◆ Tighten the clamp until the screw head is less than 4 mm from the hose.

①-Metal clamp

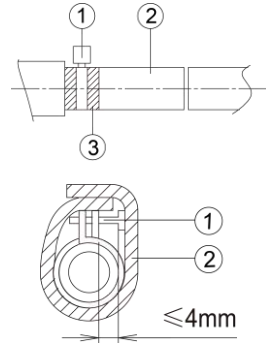
②-Drain hose

③-Grey tape

◆ Insulate the pipe clamp and the drain hose using heat insulation sponge.

①- Metal clamp

②- Insulation sponge



- (3). When drain hose requires extension, obtain an extension hose commercially available.
- (4). After connecting the local drain hose, tape the slits of the heat insulation tube.
- (5). Connect the drain hose to the local drain pipe. Position the inter connecting wire in the same direction as the piping.
- (6). Install the Baffle after installation of connection pipe and drainage pipe according to Fig.4

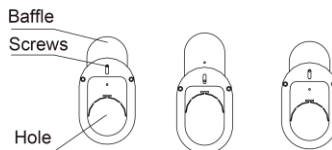


Fig. 4.19

- 1). Loosen the screws and adjust the baffle position up and down to clamp connection pipe/ drainage pipe as much as possible.
- 2). Tighten the screws.

4.5.3 Testing of Drain Piping

- (1). After piping work is finished, check if drainage flows smoothly.
- (2). Pour water into the drain pan from the right side to check that water flows smoothly from the drain hose.

4.6 Electrical Wiring

4.6.1 Wiring Precautions

 WARNING!	
①.	Before obtaining access to terminals, all supply circuits must be disconnected.
②.	The rated voltage of the unit is as shown as Table 3.4 and Table 3.5
③.	Before turning on, verify that the voltage is within the 198~264V range(for single phrase unit).
④.	Always use a special branch circuit and install a special receptacle to supply power to the air conditioner.
⑤.	Use a special branch circuit breaker and receptacle matched to the capacity of the air conditioner.
⑥.	The special branch circuit breaker is installed in the permanent wiring. Always use a circuit that can trip all the poles of the wiring and has an isolation distance of at least 3 mm between the contacts of each pole.
⑦.	Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.
⑧.	Install a leakage special branch circuit breaker in accordance with the related laws and regulations and electric company standards.

 CAUTION!	
①.	The power source capacity must be the sum of the air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
②.	When the voltage is low and the air conditioner is difficult to start, contact the power company to raise the voltage.

4.6.2 Electrical Wiring

- (1). For solid core wiring (Fig. 4.20)
 - 1). Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation about 25mm (15/16") .
 - 2). Using a screwdriver, remove the terminal screw(s) on the terminal board.
 - 3). Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
 - 4). Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.
- (2). For strand wiring (Fig. 4.20)
 - 1). Cut the wire end with a wire cutter or wire-cutting pliers, then strip the

insulation about 10 mm (3/8") .

- 2). Using a screwdriver, remove the terminal screw (s) on the terminal board.
- 3). Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- 4). Position the round terminal wire, and replace and tighten the terminal screw with a screwdriver.(Fig. 4.21)

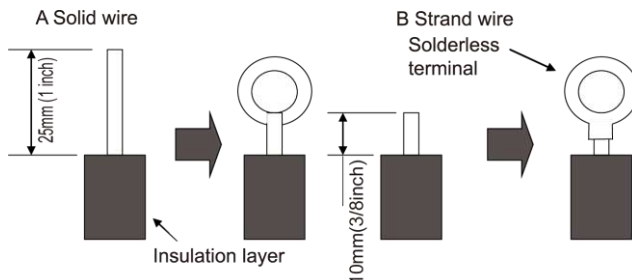


Fig. 4.20

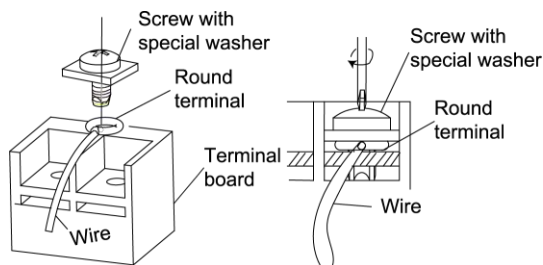


Fig. 4.21

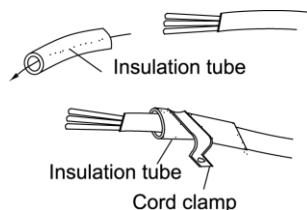


Fig. 4.22

- (3). How to fix connection cord and power cord by cord clamp

After passing the connection cord and power cord through the insulation tube, fasten it with the cord clamp.(Fig. 4.22)

⚠ WARNING!	
①.	Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
②.	Match the terminal block numbers and connection cord colors with those of the indoor unit side.
③.	Erroneous wiring may cause burning of the electric parts.
④.	Connect the connection cords firmly to the terminal block. Imperfect installation may cause a fire.
⑤.	Always fasten the outside covering of the connection cord with cord clamps. (If the insulator is not clamped, electric leakage may occur.)
⑥.	Always connect the ground wire.

(4). Electric wiring between the indoor and outdoor units

Single-phase unit (KLG-IF40-2C1M)

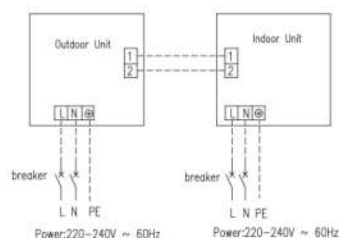


Fig. 4.23

KLG-IF40-2C1M-Outdoor-Indoor
1.Power cord $3 \times 6.0\text{mm}^2$ (H07RN-F)
2.Power cord $3\text{G}0.75\text{mm}^2$ (H05VV-F)
3.Communication cords $2 \times 0.75\text{mm}^2$ (H05RN-F)

(5). Electric wiring of indoor unit side

Open the glass panel and the electric box cover then insert the end of the communication cord and the power cable into the terminal board.

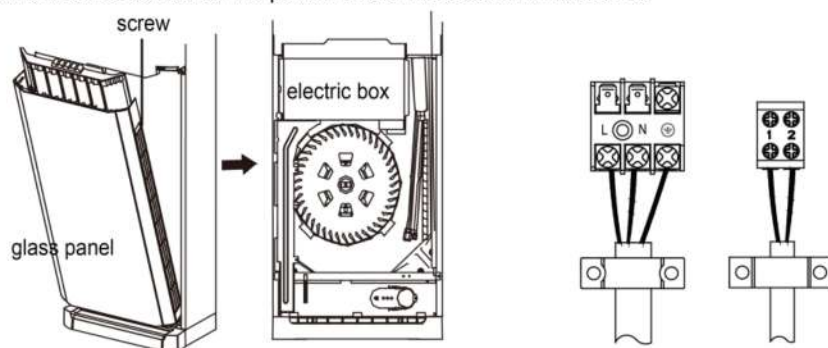
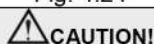


Fig. 4.24



- ①. The power cord and the wire of the fresh air valve are high-voltage, while the communication cord and connection wire of the wired controller are low-voltage. They should run separately against electromagnetic interference.
- ②. The high-voltage and low-voltage lines should pass through the rubber rings at different electric box covers.
- ③. Do not bundle the connection wire of the wired controller and the communication cord together, or arrange them in parallel, otherwise improper operation would occur.
- ④. The high-voltage and low-voltage lines should be fixed separately and securely, with internal big clamps for the former and small clamps for the latter.

⑤.	Tighten the indoor/outdoor connection cord and power cord respectively on the terminal boards with screws. Faulty connection may cause a fire.
⑥.	If the indoor unit connection cord (to the outdoor unit) and power supply are wired incorrectly, the air conditioner may be damaged.
⑦.	Connect the indoor unit connection cord properly based on the corresponding marks as shown in Fig. 4.23.
⑧.	Ground both the indoor and outdoor units by attaching a ground wire.
⑨.	Unit shall be grounded in compliance with the applicable local and national codes.

(6). Electric wiring of outdoor unit side

Note: When connecting the power supply cord, make sure that the phase of the power supply matches with the exact terminal board. If not, the compressor will rotate reversely and run improperly.

Remove the big handle (36K) /front board(60K) of the outdoor unit and insert the end of the communication cord and the power cable into the terminal board.

Single phase:

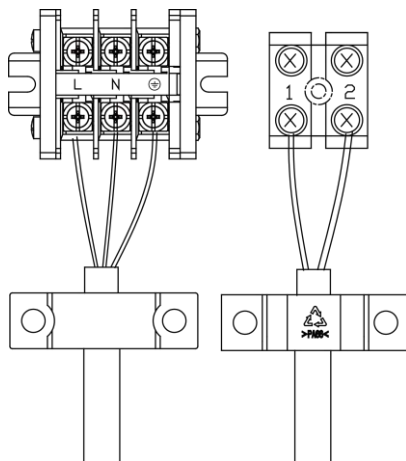


Fig. 4.25

5 Installation of Controllers

Refer to the Installation Manual of the controller for more details.

6 Test Running

6.1 Trial Operation and Testing

(1). The meaning of error codes as shown below:

Table 6.1

Number	Error code	Error	Remarks
1	E1	Compressor high pressure protection	
2	E2	Indoor anti-freeze protection	
3	E3	Compressor low pressure protection, refrigerant lack protection and refrigerant collecting mode	
4	E4	Compressor high discharge temperature protection	
5	E6	Communication error	
6	E8	Indoor fan motor error	
7	E9	Full water protection	
8	F0	Indoor ambient temperature sensor error	
9	F1	Evaporator temperature sensor error	
10	F2	Condenser temperature sensor error	
11	F3	Outdoor ambient temperature sensor error	
12	F4	Discharge temperature sensor error	
13	EE	Outdoor memory chip error	
14	PF	Electric box sensor error	
15	H3	Compressor overload protection	
16	H4	Overloading	
17	H5	IPM protection	
18	H6	DC fan motor error	
19	H7	Drive desynchronizing protection	
20	HC	Pfc protection	
21	Lc	Activation failure	
22	Ld	Compressor phase sequence protection	
23	LE	Compressor stalling protection	
24	LF	Power protection	
25	Lp	Indoor and outdoor mismatch	
26	U7	4-way valve direction changing protection	
27	P0	Drive reset protection	
28	P5	Over-current protection	

29	P6	Communication error between main control and drive	
30	P7	Drive module sensor error	
31	P8	Drive module over temperature protection	
32	P9	Zero passage protection	
33	PA	AC current protection	
34	Pc	Drive current error	
35	Pd	Sensor connecting protection	
36	PE	Temperature drift protection	
37	PL	Bus low voltage protection	
38	PH	Bus high voltage protection	
39	PU	Charge loop error	
40	PP	Input voltage abnormality	
41	ee	Drive memory chip error	
42	C4	Outdoor unit capacity code error	

(2). Function buttons

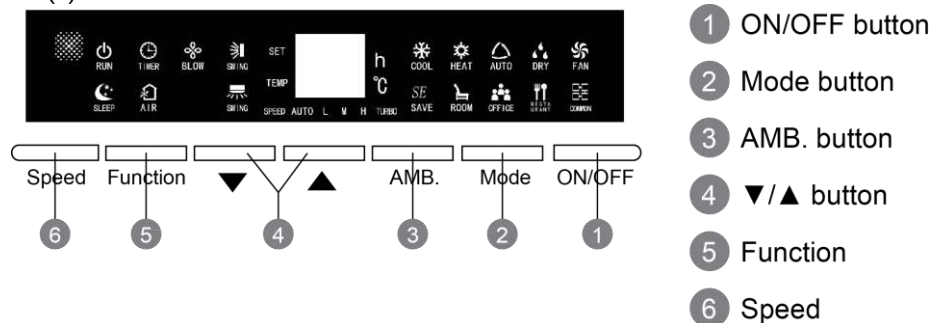


Fig.6.1

 CAUTION!	
①.	After putting through the power, the air conditioner will give out a sound. Operation indicator “  ” is ON (red indicator). After that, you can operate the air conditioner by the control panel.
②.	Under ON status, after each pressing of button on control panel, icons on display screen will ON. (Except functional button setting, please refer to related description of functional buttons for details) Air conditioner will also give out sound.
③.	Under OFF status, only operation indicator “  ” is ON (red indicator).
④.	About the functions of “AIR”, it is currently unavailable for this unit but reserved.

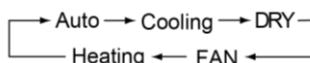
Buttons on the control panel : ON/OFF, Mode, AMB, ▲and▼,Function, Speed

1). ON/OFF

- ①. Press this button to turn on or turn off the air conditioner.
- ②. After the unit is started up. “” is in green (Display color may be different for different unit, please refer to the actual product). Under standby status, “” is in red.

2). Mode

Press this button and the mode will change circularly as below:



AUTO: Under this mode, air conditioner will operate automatically according to ambient temperature. Set temperature can't be adjusted. “” icon is bright.

COOL: Under this mode, air conditioner will operate under cool mode. “” icon is bright.

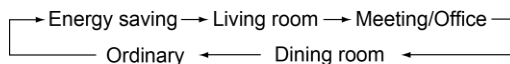
DRY: Under this mode, air conditioner operates at low speed under dry mode. Fan speed can't be adjusted. “” icon is bright.

FAN: Under this mode, air conditioner can't cool or heat, only blow fan. “” icon is bright.

HEAT: Under this mode, air conditioner will operate under heat mode. “” icon is bright.

3). AMB

- ①. Press this button, and ambient mode will be changed circularly as below:



- ②. Setting method of ambient mode: For the first time unit is started, ambient mode defaults to ordinary mode. Turn off the unit and start it up again, ambient mode will remain the set status before unit is turned off. Air conditioner can only be switched into energy saving mode or ordinary mode under ambient mode after receiving signals from remote controller. Under the mode of energy saving, living room, meeting/office or dining room, sleep function will be canceled automatically and can't be set. Sleep function is only effective in cooling, drying or heating under ordinary mode.

- ③. Under mode of living room, dining room, meeting/office, set temperature, set speed, up & down swing and left & right swing will be adjusted automatically. If

user changes the set temperature, set speed or up & down swing, air conditioner will run according to user's setting. Next time when unit is turned on, up & down swing and left & right swing will maintain the previous status while temperature and fan speed adopt default settings.

- ④. Under energy saving mode, when unit is in cooling operation, set temperature, set speed, up & down swing and left & right swing will be adjusted automatically. If user changes the fan speed, up & down swing or left & right swing, air conditioner will run according to user's setting. Temperature can't be set under energy saving mode.
- ⑤. The mode of living room, dining room, meeting/office can only be set via the front panel of air conditioner. If air conditioner receives signal from remote controller under the mode of living room, dining room, meeting/office, it will exit the above-said modes and run according to the signal from remote controller.

4). ▲ and ▼

- ①. Temperature adjustment: After each pressing of ▲ and ▼ button, set temperature will increase or decrease 1°C. Temperature adjustment range is 16°C-30°C. Under auto mode, temperature setting button is invalid.
- ②. Function selection: You can press ▲ and ▼ button to select your required function to select your required function.
- ③. Lock screen: press ▲ and ▼ buttons at the same time for 3s, all buttons on display panel will be locked. Meanwhile, display board displays "LC" to warning user that buttons are locked. Press ▲ and ▼ buttons at the same time for 3s again to unlock buttons, and display will resume normal.
- ④. Test: After energization for the first time, when there's no button-pressing:
- ⑤. Press ▲ button for twice successively within 20s, the unit operates under compulsory heating. Up&down swing blade opens to the minimum position, and all loads are turned on. Indoor fan and outdoor fan operate at high speed. All characters will be displayed when there's no malfunction of temperature sensor. When there's malfunction of temperature sensor, dual-8nixie tube displays error code in turn and the buzzer gives sound. The unit will stop operation after 5min or if the unit received the OFF signal within 5s, the unit will turn to standby status. Or press ▼ button for twice successively within 20s and the unit will operates at compulsory cooling at once. Up&down swing blade opens to the minimum position, and all loads are turned on except the 4-way valve. Indoor fan and outdoor fan operate at high speed. All characters will be displayed when there's no malfunction of temperature sensor. When there's malf unction of temperature sensor, dual-8nixie tube displays error

code in turn and the buzzer gives sound. The unit will stop operation after 5min or if the unit received the OFF signal within 5s, the unit will turn to standby status.(Energization for the first time: it indicates the first energization after installing the unit)

5). Function

- ①. Under ON status, press this button select up&down swing, left&right swing, blow (X-fan), timer, air renewal, sleep, display set temperature and display indoor ambient temperature function.
 - a. When function character on display flashes, it indicates you can use ▲and▼ button to set function.
 - b. If there's no change after function is set for 5s, the setting is finished.
 - c. After setting function, if the unit hasn't be turned off and hasn't received remote control signal within 2min, press this button to circulate the function from current setting function. After 2min, if turn off the unit by pressing ON/OFF button or the unit received the remote control signal, press this button again and the function will circulate from the first function icon.
- ②. When pressing this button to select left&right swing function, the corresponding icon flashes. Meanwhile, press ▲and▼ button can start up or turn off left&right swing.
- ③. When pressing this button to select up&down swing function, the corresponding icon flashes. Meanwhile, press ▲and▼ button can start up or turn off up&down swing.
- ④. When blow (X-fan) function is started up, after the air condition is turned off, indoor fan will continue to operate at low speed for a period of time. After turning off the unit, when indoor fan operates, press this button can turn off the air conditioner directly. (After turning off the unit, when indoor fan is operates, press this button can't set TIMER ON.)
- ⑤. Timer function:
 - a. Under ON status: press this button to select timer function and corresponding icon will flash. Meanwhile, TIMER OFF can be set. Dual-8 nixie tube displays timer value and“h” will be displayed. Each pressing of ▲and▼ button can increase/decrease 0.5h or 1h. (When the time is within 10h, each pressing of ▲and▼ button will increase or decrease 0.5h; when the time is among 10-24h, each pressing of ▲and▼ button will increase or decrease 1h). After time is set, wait for 5s or press this button to select next

function can startup TIMER OFF. Cancel Timer OFF: Under timer function, press this button to select timer function and the corresponding icon flashes. Meanwhile, press ▲ and ▼ button to adjust timer setting to no display, wait for 5s or press this button to select next function can cancel TIMER OFF.

- b. Under OFF status: Press this can set TIMER ON directly. Dual-8 nixie tube displays timer value and "h" will be displayed. Each pressing of ▲ and ▼ button can increase/decrease 0.5h or 1h. (When the time is within 10h, each pressing of ▲ and ▼ button will increase or decrease 0.5h; when the time is among 10-24h, each pressing of ▲ and ▼ button will increase or decrease 1h). After time is set, wait for 5s or press this button can startup TIMER ON. Cancel Timer ON: Press this button and the corresponding icon flashes. Meanwhile, press ▲ and ▼ button to adjust timer setting to no display, wait for 5s or press this button can cancel TIMER ON.

- c. Time setting range: 0.5-24h.

- ①. Press this button to select sleep function and the corresponding icon blinks. Meanwhile, press ▲ and ▼ button can turn on or turn off sleep function. (Sleep function can only be started up under cooling, drying or heating mode.)
- ②. Press this button to select set temperature display function, and "SET" figure flashes. Meanwhile, press ▲ and ▼ button and set temperature will be defaulted to display.
- ③. Press this button to select indoor ambient temperature display function, "TEMP" figures flashes. Meanwhile, press ▲ and ▼ button and indoor ambient temperature will be defaulted to display.
- ④. Air renewal function is not available for this unit.

6). Speed

Press this button, the speed can shift in the circulation among of "Auto → Low → Medium → High → Turbo → Auto".

Note: Low speed under drying mode and this button is invalid for drying mode. "Turbo" is available for cool mode and heat mode; is not available for auto mode and fan mode; "Turbo" cannot be set under Dry mode

(3). Instruction to Display

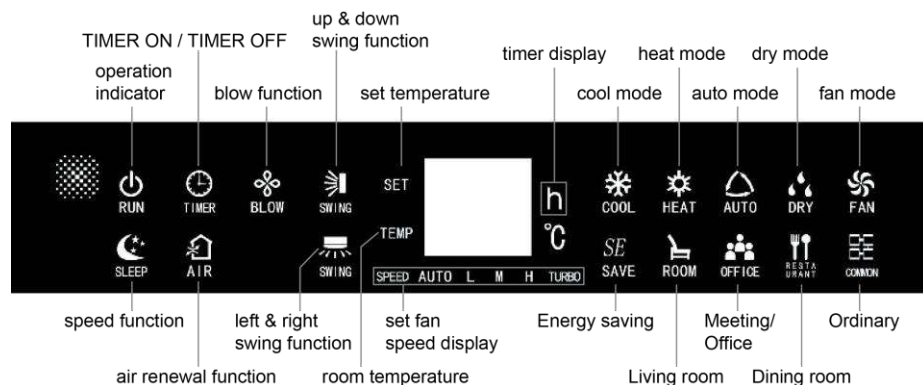


Fig.6.2

Table 6.2

No.	Icons	Introduction
1	SET	Display setting temperature.
2	TEMP	Indicate temperature of indoor circumstances.
3	TURBO	Indicates setting the super strong function.
4	SE SAVE	Indicate mode of energy saving.
5	ROOM	Indicate mode of living room.
6	OFFICE	Indicate mode of office/meeting.
7	RESTAURANT	Indicate mode of restaurant.
8	COMMON	Indicate common mode.
9	Swing	Up and down swing
10	Swing	Left and right swing
11	BLOW	Indicate BLOW function
12	SLEEP	When the typeface light is on, it indicates setting the sleep function.
13	TIMER	Indicate setting the timer function.

6. 2 Working Temperature Range

Table 6.3

Test Condition	Indoor Side		Outdoor Side	
	DB(°C)	WB(°C)	DB(°C)	WB(°C)
Nominal Cooling	27	19	35	24
Nominal Heating	20	—	7	6
Rated Cooling	32	23	48	—
Low Temp. Cooling	21	15	18	—
Rated Heating	27	—	24	18
Low Temp. Heating	20	—	-10	-11

Note:

- ①. The design of this unit conforms to the requirements of ISO5151 standard.
- ②. The air volume is measured at the relevant standard external static pressure.
- ③. Cooling (heating) capacity stated above is measured under nominal working conditions corresponding to standard external static pressure. The parameters are subject to change with the improvement of products, in which case the values on nameplate shall prevail.

7 Troubleshooting and Maintenance

7.1 Troubleshooting

If your air-conditioning unit suffers from abnormal operation or failure, please first check the following points before repair:

Table 7.1

Failure	Possible Reasons
The unit cannot be started.	①. The power supply is not connected. ②. Electrical leakage of air-conditioning unit causes tripping of the leakage switch. ③. The operating keys are locked. ④. The control loop has failure.
The unit operates for a while and then stops.	①. There is obstacle in front of the condenser. ②. The control loop is abnormal. ③. Cooling operation is selected when the outdoor ambient temperature is above 48°C.

Poor cooling effect.	①. The air filter is dirty or blocked. ②. There is heat source or too many people inside the room. ③. The door or window is open. ④. There is obstacle at the air intake or outlet. ⑤. The set temperature is too high. ⑥. There is refrigerant leakage. ⑦. The performance of room temperature sensor becomes worse
Poor heating effect	①. The air filter is dirty or blocked. ②. The door or window is not firmly closed. ③. The set room temperature is too low. ④. There is refrigerant leakage. ⑤. The outdoor ambient temperature is lower than -5°C. ⑥. Control loop is abnormal.
Wireless remote control is not available	①. The unit interfered by abnormal or frequent functions switchover occasionally the controller cannot operate. At this time, you need to pull out of the plug, and reinsert it. ②. It is not in its receiving range. ③. To check the voltage in wireless remote control inside is charged,otherwise to replace the batteries. ④. The wireless remote control is damaged.
Water leakage in the room.	①. The air humidity is on the high side. ②. Condensing water over flowed. ③. The connection position of indoor unit drainage pipe is loosed.
Moisture formed on air outlet grill	If air conditioner is running in a high humidity for a long time, the moisture may condense on the air outlet grill and drip off.

Note: After carrying out the check of the above items and taking relevant measures to solve the problems found but the air-conditioning unit still does not function well, please stop the operation of the unit immediately and contact the local service agency designated by Kolin. Only ask professional serviceman to check and repair the unit.

7.2 Routine Maintenance



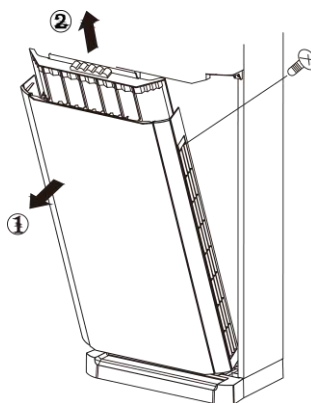
WARNING!

- ①. Do not turn off the unit and cut off the main power supply when cleaning the air conditioner, otherwise electric shock may happen.
- ②. Do not make the air conditioner wet or electric shock may be lead; Ensure that the air conditioner will not be cleaned by water rinsing under any circumstance.
- ③. Volatile liquid like thinner or gasoline would damage the appearance of air conditioner. (So, only soft dry cloth and wet cloth moistened by neutral cleaning fluid could be used to clean the surface panel of air conditioner.)

(1). Clean the air filter(once every 2 weeks)

1. Disassembly of air filter

Open screw caps at both sides according to direction in fig. 1. Remove the screws at both sides of air-in panel with screwdriver. After opening the air-in panel unscrew the screws fixing the air filter. At last pull out the air filter from the arrow direction.



2. Cleaning the filter

Slightly flat the filter or clean the filter with electric cleaner. If too much dust on the filter, clean it with a little neutral detergent or warm water. After that, dry the filter and reinstall it, as shown in Fig. 8.

NOTE: Do not dry the filter by exposing it under direct sunshine or near a heating oven, or it may get deformed.



(2). At the Start of the Seasonal Use

- 1). Check if there is blockage at the inlet or outlet vent of air conditioner.
- 2). Check if the earth wire has been attached reliably by the skilled serviceman.
- 3). Check if the exhausted batteries of the wireless controller have been replaced.
- 4). Check if the air filter had been installed well by professional.

Keep the power switch “On” 8 hours before the startup of the unit which has not been used for a long period.

Note: all above should be operated by the skilled serviceman.

(3). At the End of the Seasonal Use

- 1). Cut off the power supply main switch
- 2). Clean the air filters and other parts by the skilled serviceman.
- 3). Leave the fan running for 2-3 hours to dry the inside of the unit.
- 4). Note: all above should be operated by the skilled serviceman.

SERVICE CENTERS

Branch	Address	Tel. No.
Cavite	Block 3 Lot 5 Main Drive FCIE Compound, Langkaan 1, Dasmariñas, Cavite	(046) 402-0793
Bacolod	Door A-2 and A-3 UTC Building, Alunan St., Barangay Singcang, Bacolod City	(034) 433-0031
Cagayan de Oro	Door #3 De Oro Land Building, Julio Pacana St., Puntod, Cagayan de Oro	(088) 856-4672
Cebu	Unit #6 A, Geson Building, D. Jakosalem corner F. Ramos Sts., Cebu City	(032) 253-9997
Dagupan	107 Caranglaan District, Dagupan City	(075) 523-2832
Davao	Door #5 Belle Fran Arcade, E. Palma Gil St., Bo. Obrero, Davao City	(082) 227-7063
Iloilo	Door #4, TDK Realty Devt. Corp. Bldg., South Fundedor St., Brgy. Fundedor, Molo, Iloilo City	(033) 336-1970
Pampanga	Mexico Gold Commercial and Residential Building, Jose Abad Ave., Lagundi, Mexico, Pampanga	(045) 455-2934
Zamboanga	Door #5, Varmall Building, Veterans Avenue, Zamboanga City	(062) 992-2493

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