ECOAIRE

CGIF - GDIF
INVERTER DUCTED UNIT




INSTALLATION & OPERATION MANUAL

Contents

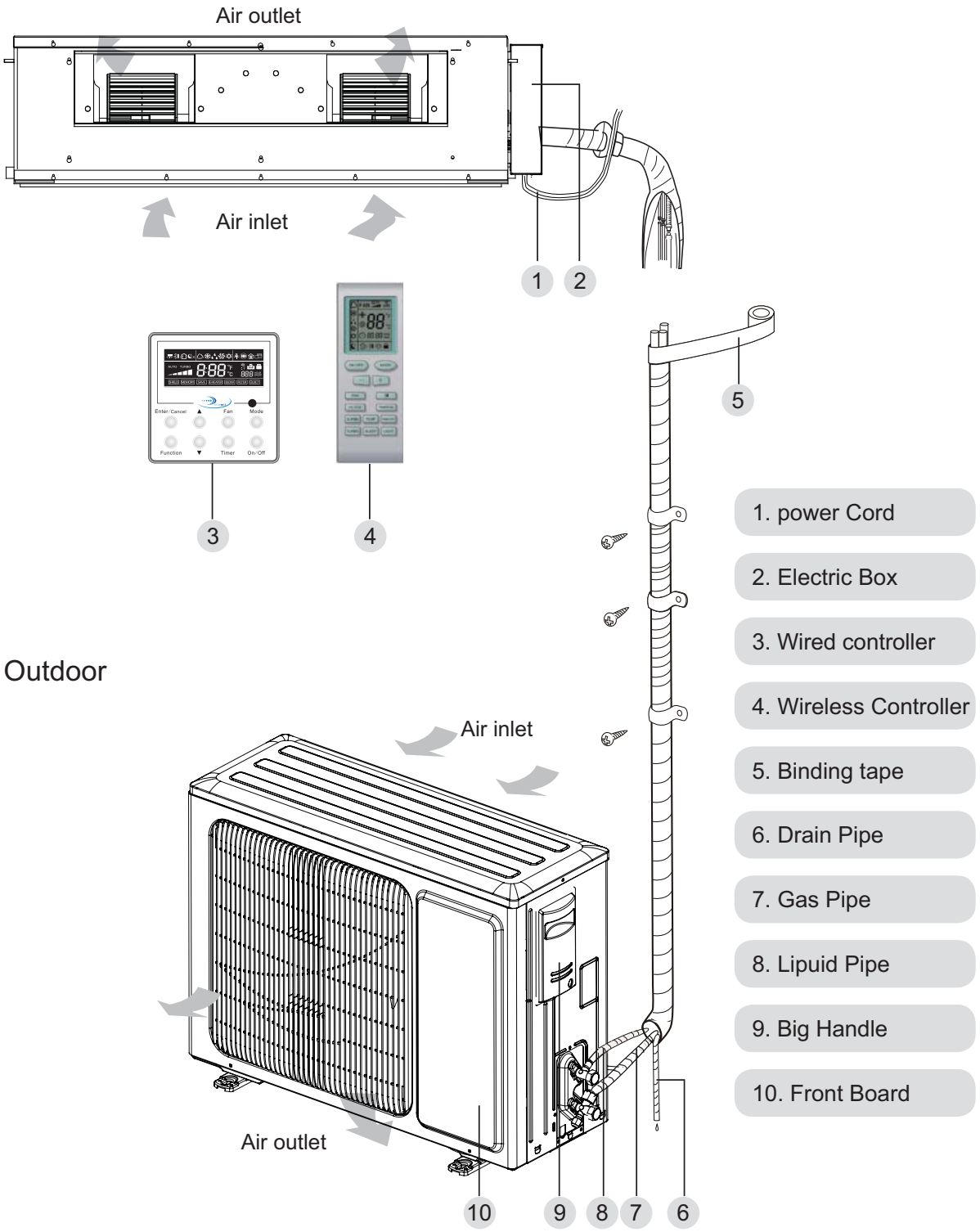
1 Safety Precautions

⚠ **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



1. power Cord
2. Electric Box
3. Wired controller
4. Wireless Controller
5. Binding tape
6. Drain Pipe
7. Gas Pipe
8. Lipuid Pipe
9. Big Handle
10. Front Board

Fig.1

NOTE!
①. The connection pipe and duct for this unit should be prepared by the user.
②. The unit is standard equipped with rectangular duct.

3 Preparative for Installation

3.1 Standard Accessory Parts

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

Table 1

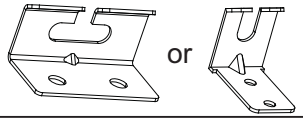
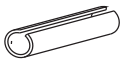
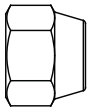
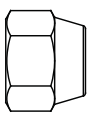
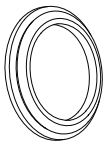
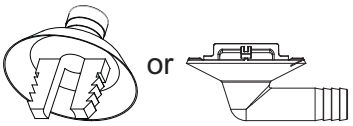
Indoor Unit Accessories				
No.	Name	Appearance	Q'ty	Usage
1	Wired Controller		1	To control the indoor unit
2	Hanger		4	To fix the indoor unit
3	Nut with Washer		8	To fix the hook on the cabinet of the unit.
4	Nut with Washer		4	To fix the hook on the cabinet of the unit.
5	Nut		4	To be used together with the hanger bolt for installing the unit.
6	Washer		4	To be used together with the hanger bolt for installing the unit.
7	Insulation		1	To insulate the gas pipe
8	Insulation		1	To insulate the liquid pipe
9	Fastener		8	To fasten the sponge
10	Nut		1	To connect liquid pipe
11	Nut		1	To connect gas pipe

Table 2

Outdoor Unit Accessories				
No.	Name	Appearance	Q'ty	Usage
1	Drain Plug		3	To plug the unused drain hole.
2	Drainage Connecter		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). Install the unit at a place where is strong enough to withstand the weight of the unit.

(2). The air inlet and outlet of the unit should never be clogged so that the airflow can reach every corner of the room.

(3). Leave service space around the unit as required in Fig.2.

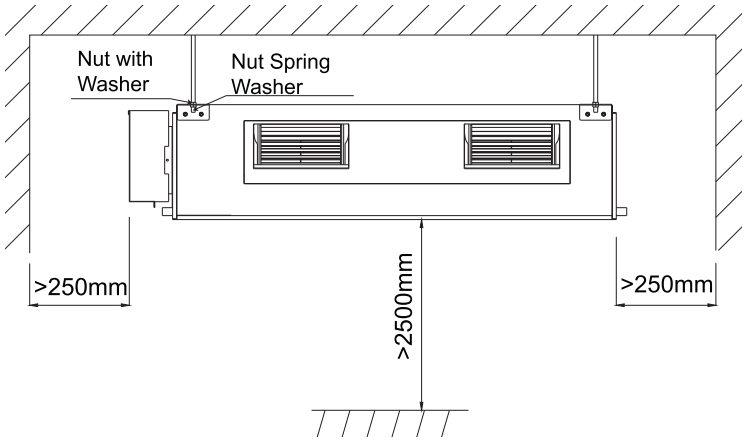


Fig.2

(4). Install the unit where the drain pipe can be easily installed.

(5). The space from the unit to the ceiling should be kept as much as possible so as for more convenient service.

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.

(1). 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.)

(2). Install the outdoor unit in a place where it will be free from getting dirty or getting wet by rain as much as possible.

(3). Install the outdoor unit where it is convenient to connect the indoor unit.

(4). Install the outdoor unit where the condensate water can be drained out freely during heating operation. 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, so that the air flow is not blocked. Also for efficient operation, leave three of four directions of peripheral constructions open.

Units: mm

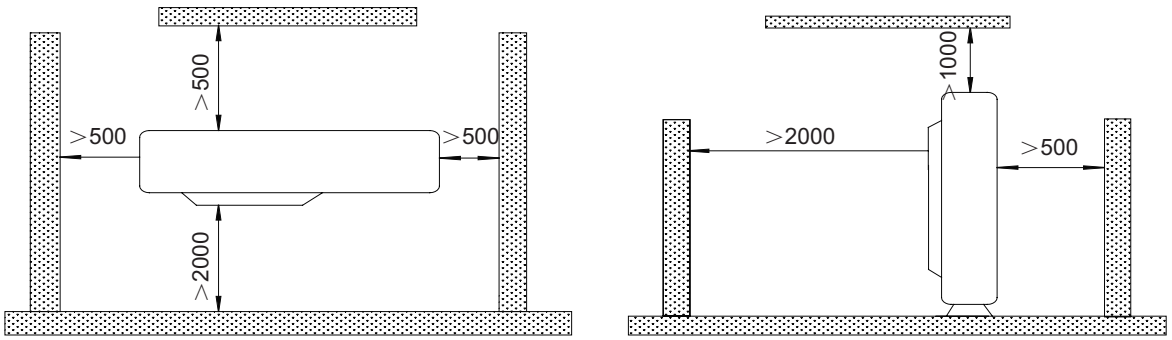


Fig.3

3.3 Connection Pipe Requirement

⚠ CAUTION!
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

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			
GDIF18 CGIF18	1/4	1/2	20	15	Φ30X1.5
GDIF24 CGIF24	3/8	5/8	30	15	Φ20X1.2
GDIF36 CGIF36	3/8	5/8	30	15	Φ20X1.2
GDIF48 CGIF48	3/8	5/8	50	30	Φ20X1.2
GDIF60 CGIF60	3/8	3/4	50	30	Φ20X1.2

① . The connection pipe should be insulated with proper water-proof insulating material.

② . The pipe wall thickness shall be 0.5-1.0mm 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 4

Indoor Units	Power Supply	Fuse Capacity	Breaker Capacity	Min. Power Supply Cord
	V/Ph/Hz	A	A	mm^2
18K~60K	220-240V~ 50Hz	5	6	1.0

Table 5

Model	Power Supply	Capability of Air Switch(A)	Minimum Sectional Area of Power Cable and Earth line (mm^2)
CGIF18	220-240V ～ 50Hz	16	1.5
CGIF24		20	2.5
CGIF36		25	2.5
CGIF48	380-415V 3N ～ 50Hz	16	1.5
CGIF60		16	1.5

Note:

①. The fuse is located on the main board.

②. Install the disconnect device with a contact gap of at least 3mm 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 0.75mm^2 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. For the unit (≤30K), it's recommended to use 8m long communication line.

⑦. Take 2 pieces of power cord of 0.75mm^2 as the communication lines between the wired controller and the indoor unit, with their longest lengths of 30m. Please select the appropriate line length as per the actual installation conditions. The communication lines can not be twisted together. It's recommended to use 8m long communication line.

⑧. The wire size of the communication line should be no less than 0.75mm^2. It's recommended to take 0.75mm^2 power cords as the communication line.

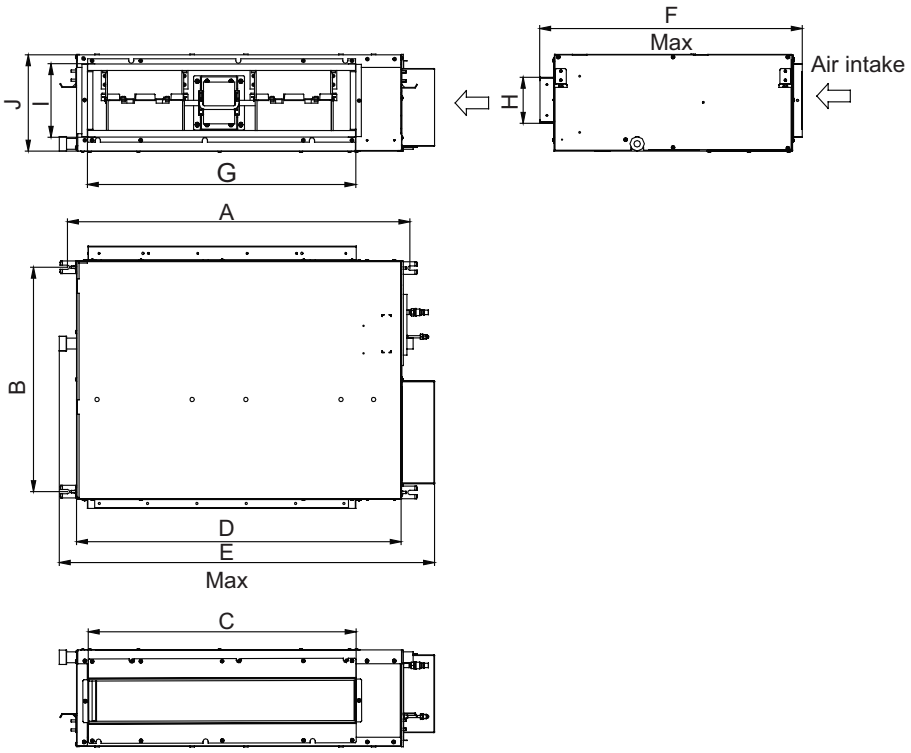
4 Installation of the Unit

4.1 Installation of the Indoor Unit

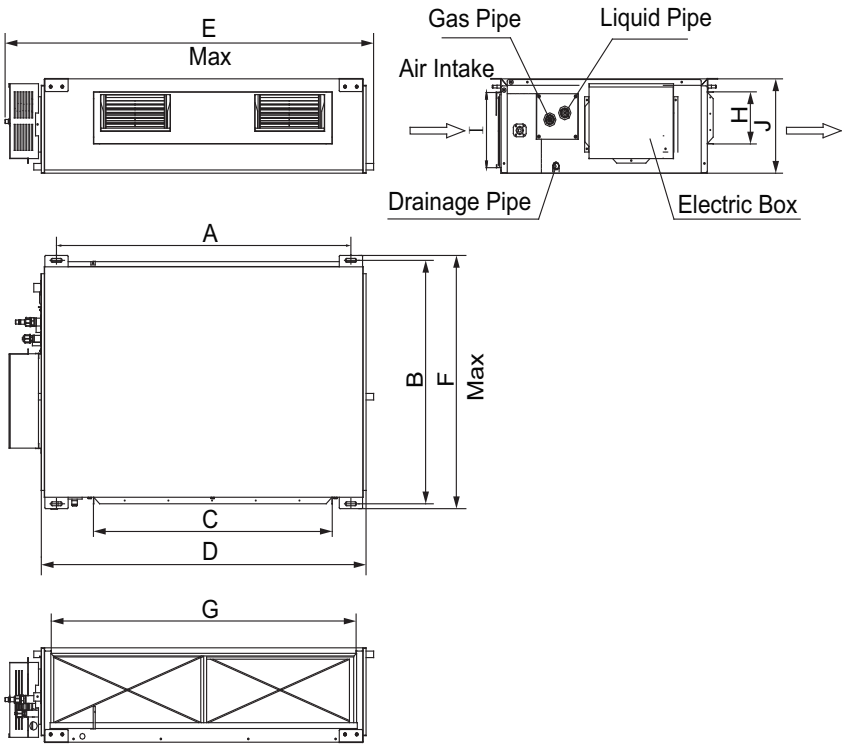
4.1.1 Indoor unit dimension

⚠ WARNING!
①. Install the indoor unit in a location which can withstand a load of at least five times the weight of the main unit and which will not amplify sound or vibration. ②. If the installation location is not strong enough, the indoor unit may fall and cause injuries. ③. If the job is done with the panel frame only, there is a risk that the unit will come loose. Please take care.

For the unit: 18K



For the units: 24~36K



For the units: 48k,60k

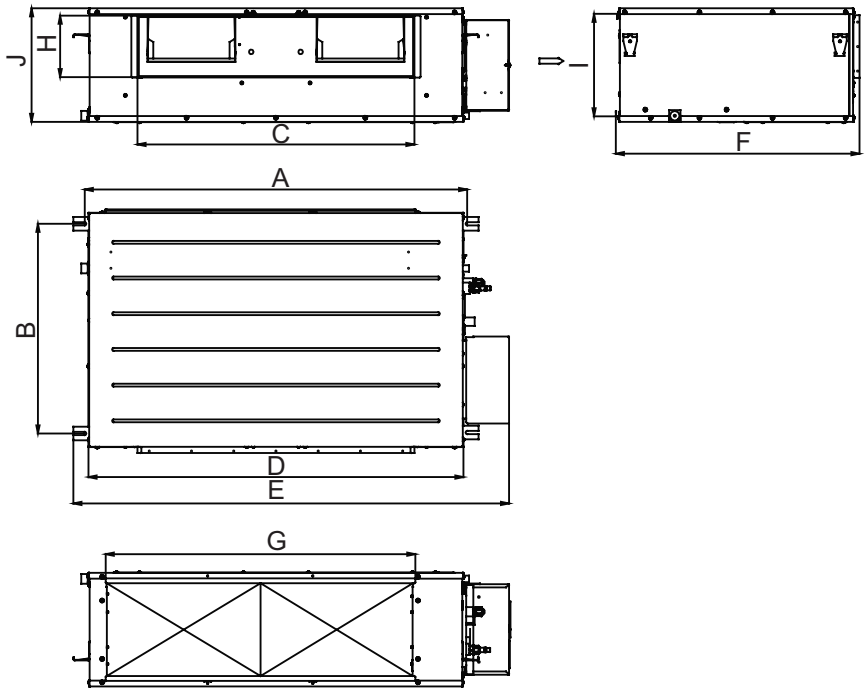


Fig.4

Table 6

Item / Model	A	B	C	D	E	F	G	H	I	J
GDIF18	945	618	738	892	1037	721	738	125	203	266
GDIF24	1101	517	820	1159	1279	558	1002	160	235	268
GDIF36	1011	748	820	1115	1226	775	979	160	231	290
GDIF48	1177	646	852	1150	1340	750	953	190	316	350
GDIF60										

4.1.2 Drilling Holes for Bolts and Installing the Bolts

Using the installation template, drill holes for bolts (four holes). (Fig. 5)

4.1.3 Installing the Suspension Bolts

(1). Install the bolts to the ceiling at a place strong enough to hang the unit. Mark the bolt positions from the installation template. With a concrete drill, drill for 12.7mm (1/2") diameter holes. (Fig. 6)

(2). Insert the anchor bolts into the drilled holes, and drive the pins completely into the anchor bolts with a hammer. (Fig. 7)

(3). Install the hanger to the unit. (Fig.8)

(4). Pass the unit hangers over the bolts installed to the ceiling and install the unit with the special nut.(Fig.9)

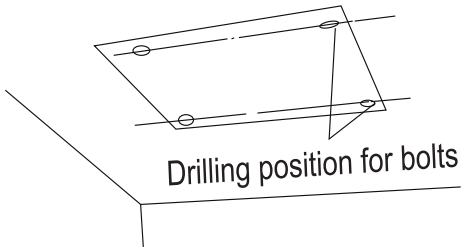


Fig. 5

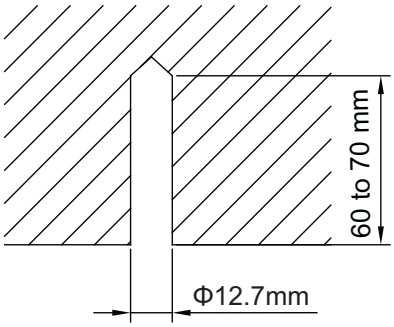


Fig.6

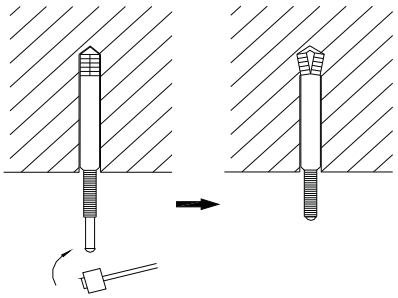


Fig.7

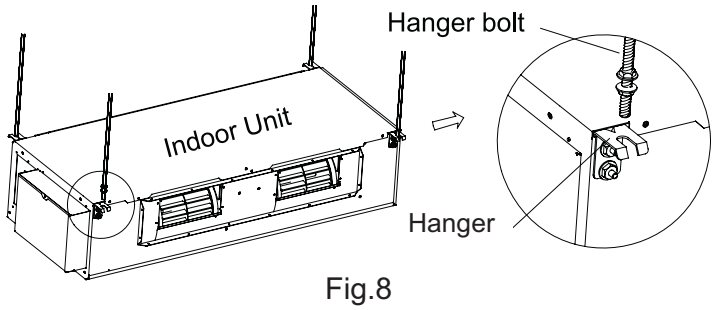


Fig.8

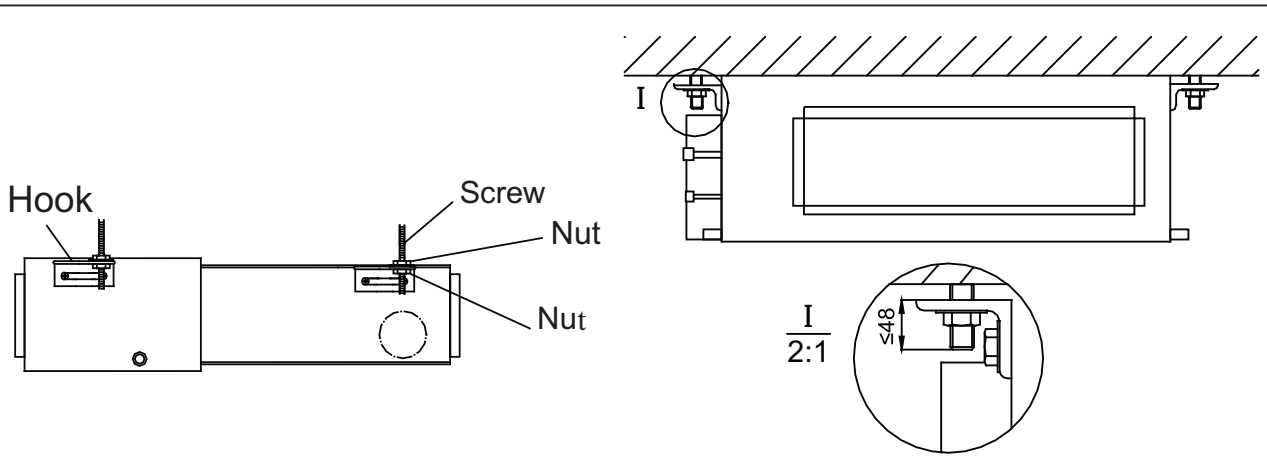


Fig.9

4.1.4 Leveling

The water level test must be done after installing the indoor unit to make the unit horizontal, as shown below.

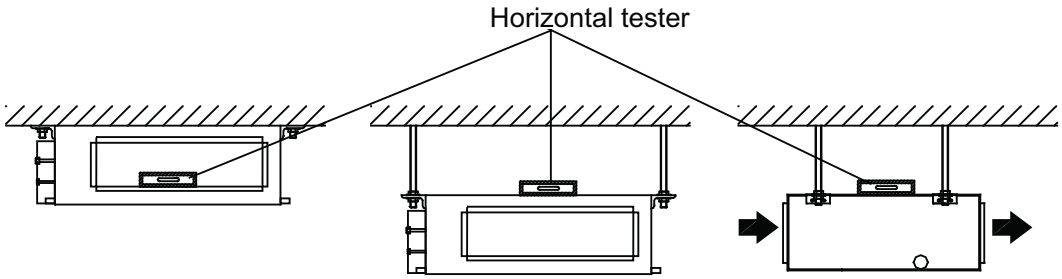


Fig.10

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

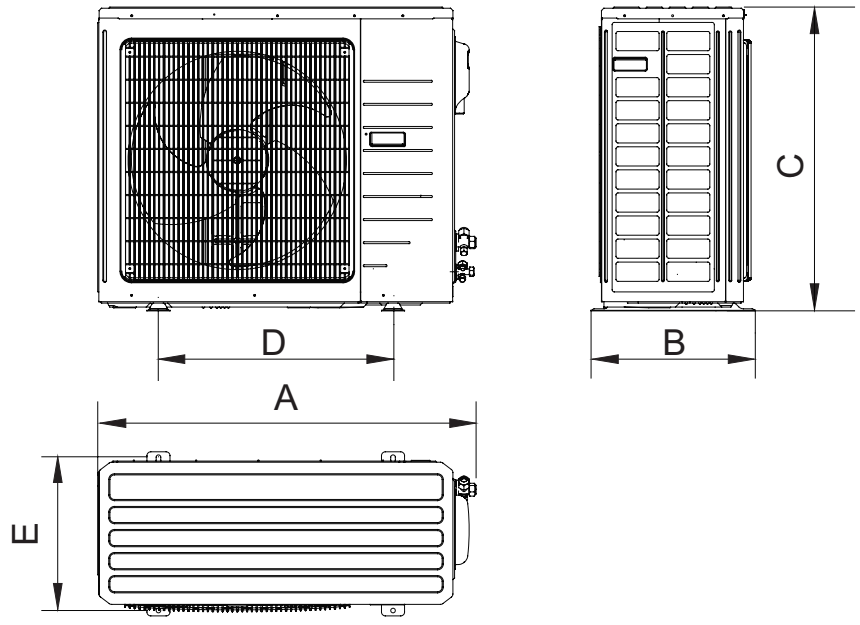


Fig.11

Table 6 Unit: mm

Item / Model	A	B	C	D	E
CGIF18	955	396	700	560	360

CGIF24	980	427	790	610	395
CGIF36	1107	440	1100	631	400
CGIF48	958	412	1349	572	376
CGIF60	1085	427	1365	620	395

4.2.2 Condensate Drainage of the Outdoor Unit(Only for the heat pump unit) (Fig.12)

(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 φ25 located at the base plate of the unit and then connect the drain pipe to the pipe joint.

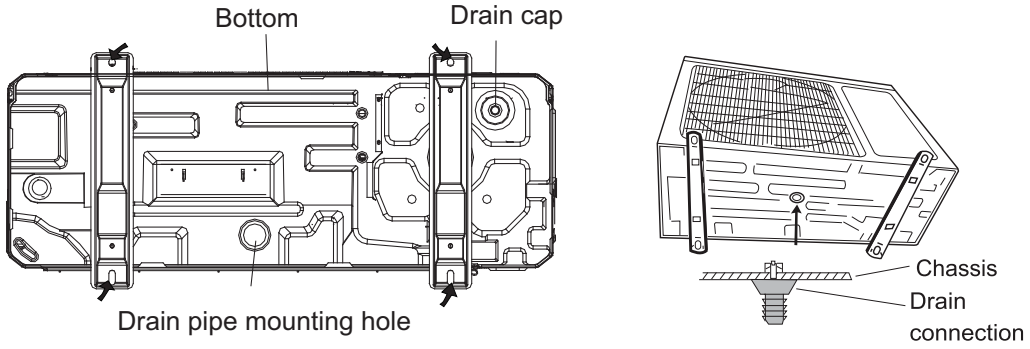


Fig.12

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.13).

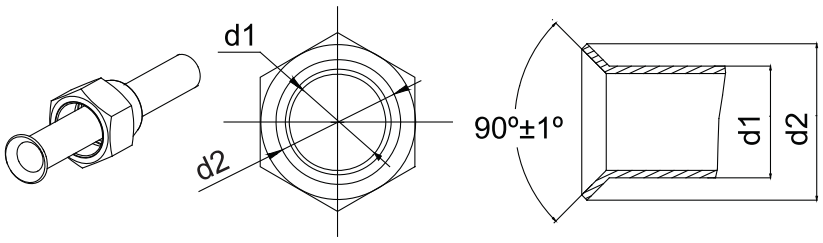


Fig.13

4.3.2 Bending Pipes

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

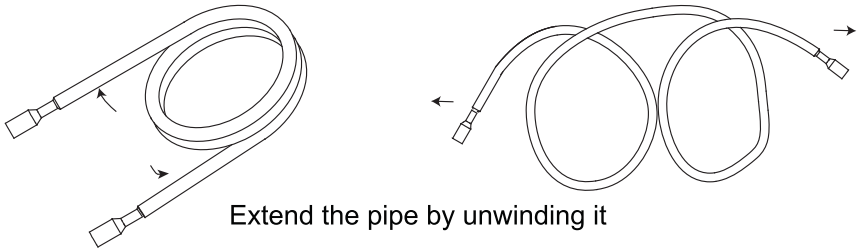


Fig.14

(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.15, 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.

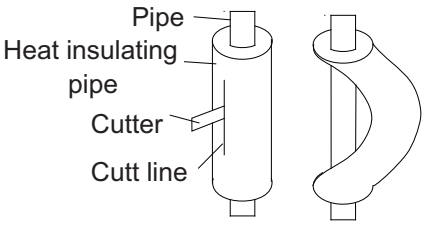


Fig.15

⚠ 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

Detach the caps and plugs from the pipes.

⚠ 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.

Centering the pipe against port on the indoor unit, turn the flare nut with your hand.

⚠ CAUTION!
Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 15, in order to tighten the flare nut correctly.

When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.

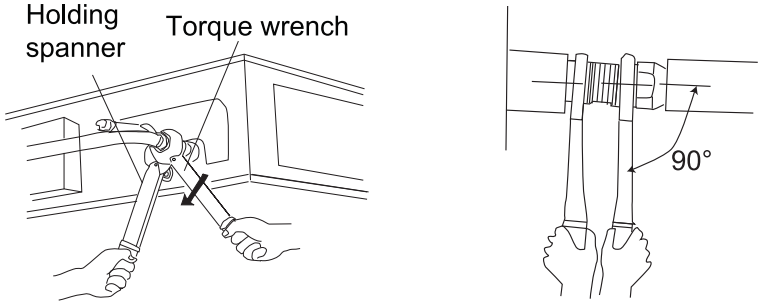


Fig.16

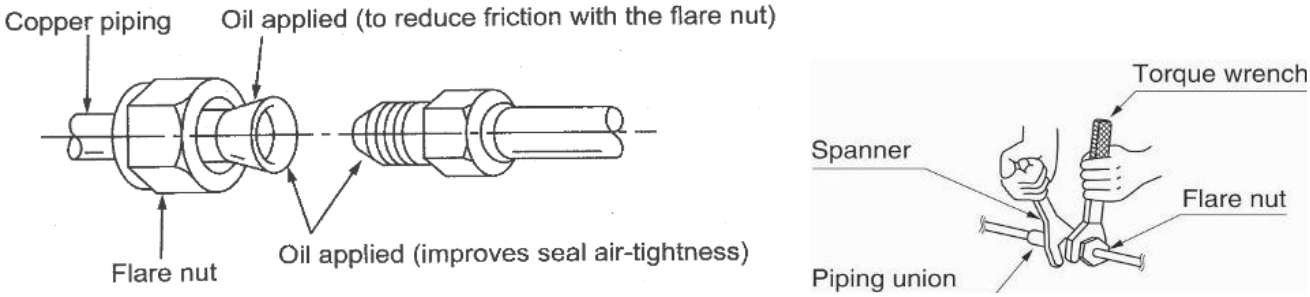


Fig.17

Table 7 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!

Be sure to connect the gas pipe after connecting the liquid pipe completely.

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.

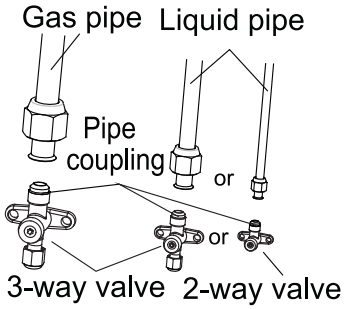


Fig.18

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.

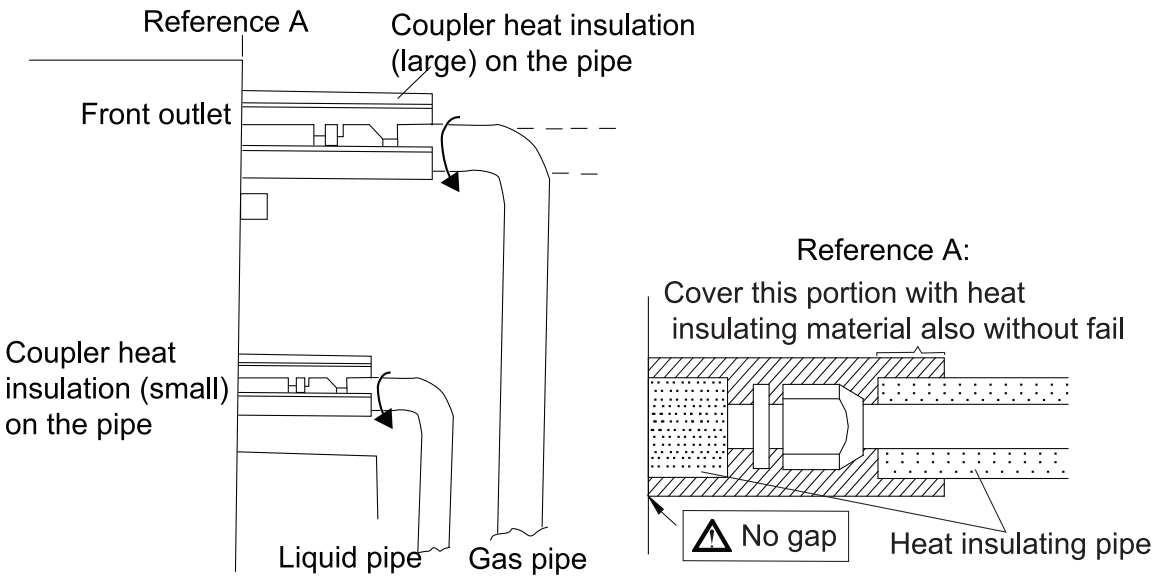


Fig.19

4.3.7 Liquid Pipe and Drain Pipe

If the outdoor unit is installed lower than the indoor unit (See Fig.20)

(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.

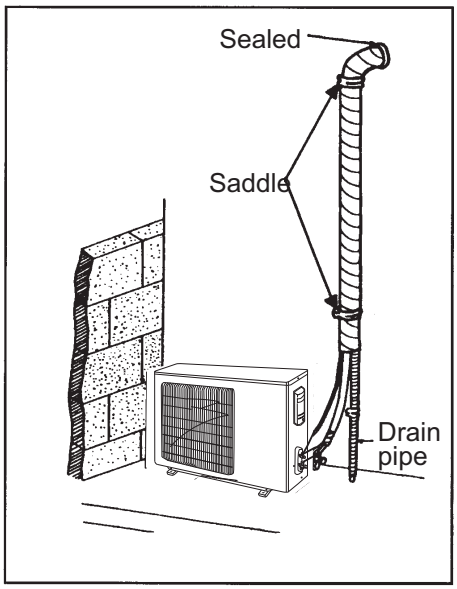


Fig.20

If the outdoor unit is installed higher than the indoor unit (See Fig.21)

(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.49)

(3). Restraint all pipes to the wall with saddles.

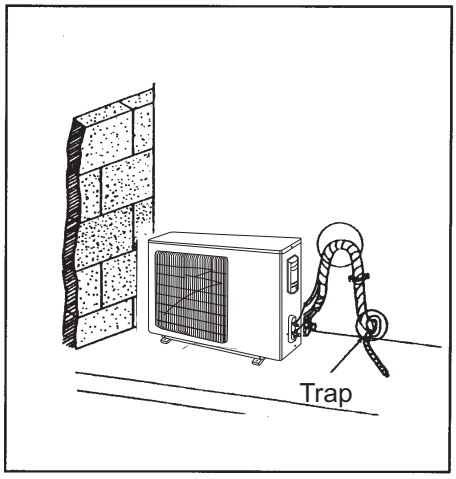


Fig.21

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, 20 minutes for the 18K unit, 30 minutes for the 24/36K units, 45 minutes for the 48/60K 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, 3 minutes for the units less than 18K, 5 minutes for the 18K~24K units, 10 minutes for the units more than 36K. 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.

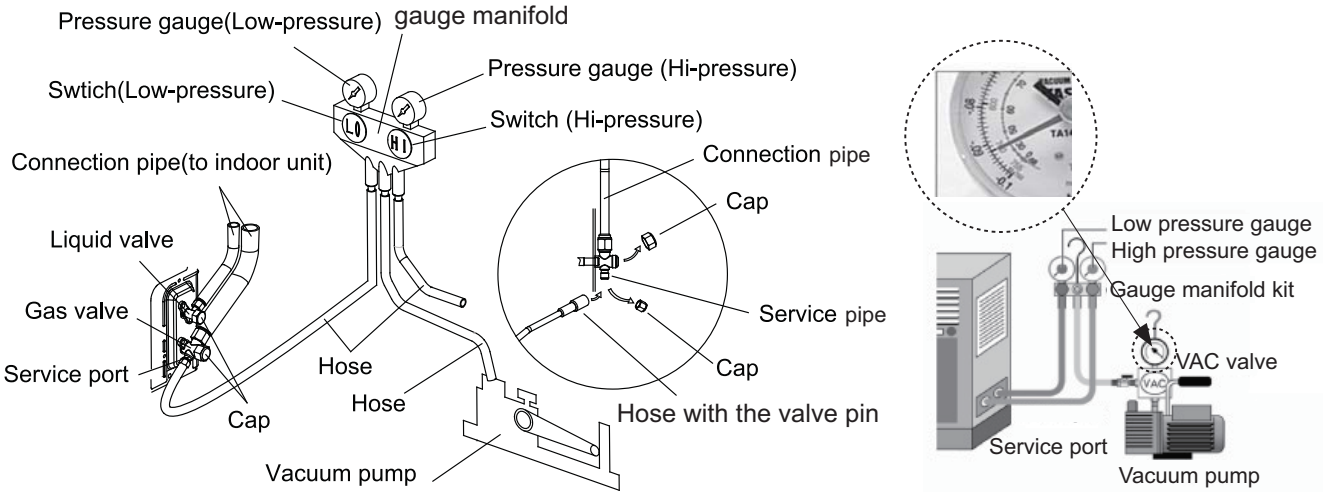


Fig.22

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

Refrigerant suitable for a piping length of 5m is charged in the 18~36K outdoor unit at the factory, and for 48~60K outdoor unit refrigerant is charged for a piping length of 7.5m.

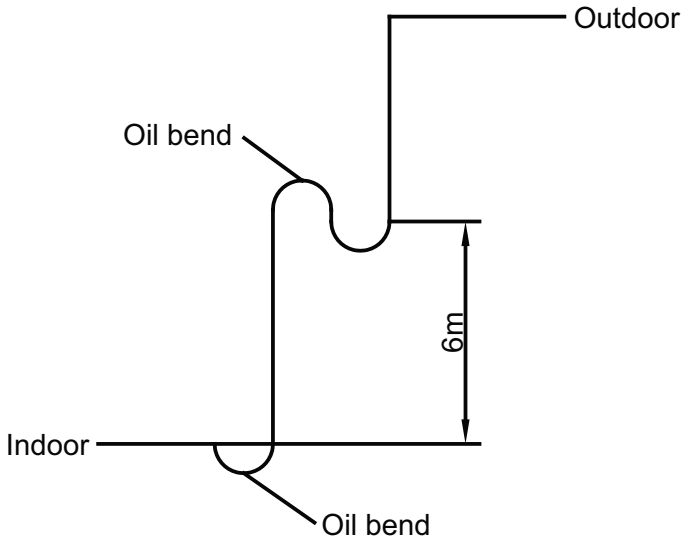
When the piping of 18~36K unit is longer than 7.5m or the piping of 48~60k unit is longer than 9.5m, additional charging is necessary.

For the additional amount, see Table 8.

Table 8

Item \ Model	Standard Pipe Length	Unnecessary Charge Pipe Length	Additional Refrigerant Amount for Extra Pipe
18K	5m	≤ 7.5m	30 g/m
24~36K	5m	≤ 7.5m	60 g/m
48~60K	7.5m	≤ 9.5m	60 g/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.



4.5 Installation of the Drain Hose

4.5.1 Installation of Drain Piping

⚠ CAUTION!
Install the drain hose in accordance with the instructions in this installation manual and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

(1). Install the drain hose with downward gradient (1/50 to 1/100) and no risers or traps are used for the hose.(Fig.23)

(2). Be sure there is no crack or leak on the drain hose to avoid the formation of air pocket. (Fig.23)

(3). When the hose is long, install supporters.(Fig.24)

(4). Always use the drain hose which has been insulated properly.

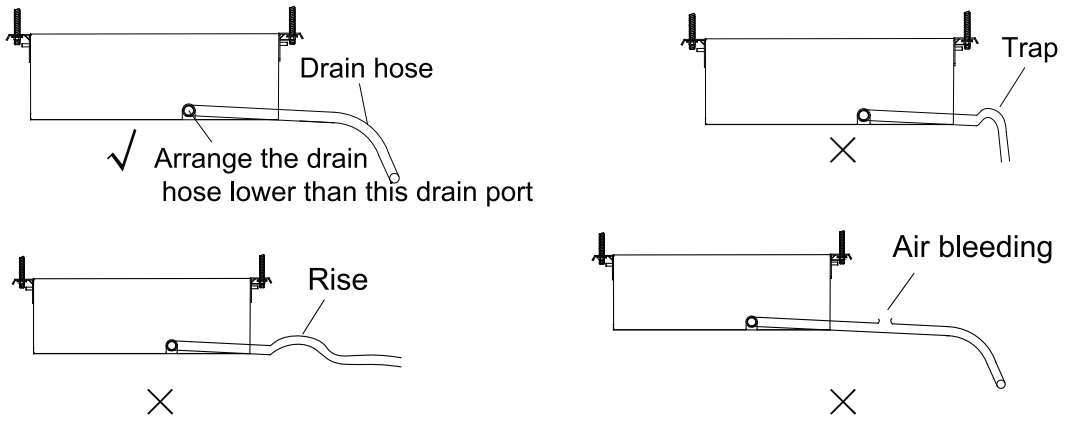


Fig.23

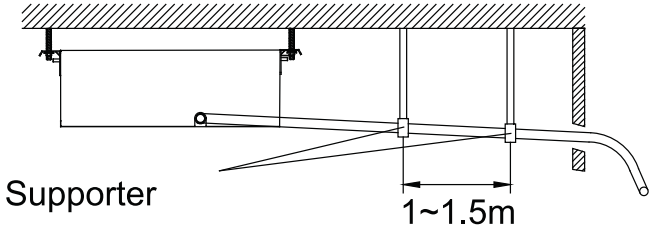


Fig.24

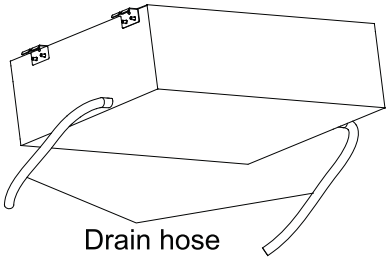
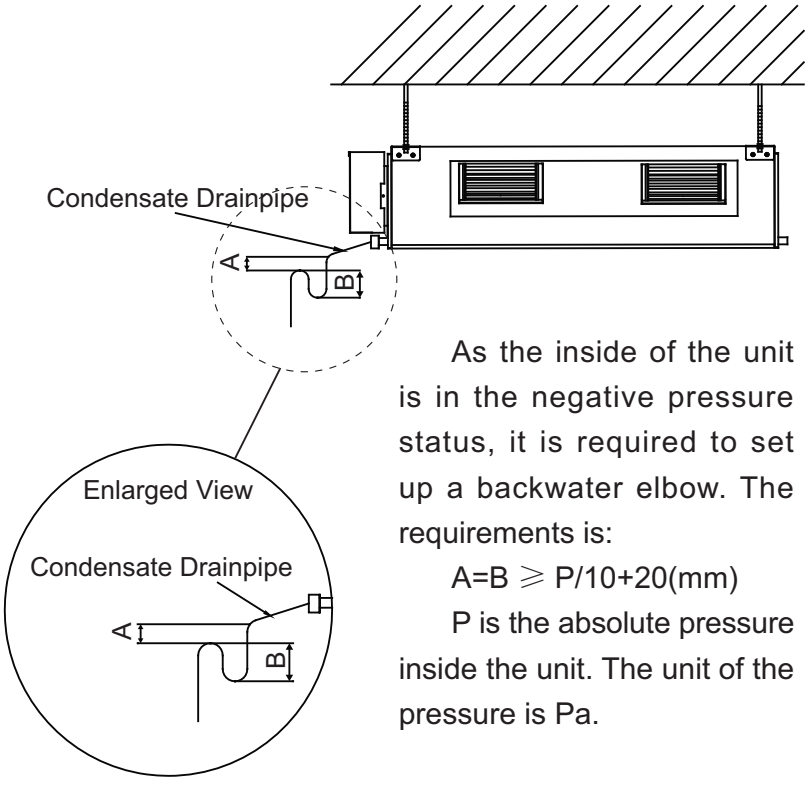


Fig.25



As the inside of the unit is in the negative pressure status, it is required to set up a backwater elbow. The requirements is:

$A=B \geqslant P/10+20(mm)$

P is the absolute pressure inside the unit. The unit of the pressure is Pa.

Fig.26

(5). Use a suitable drain hose, and see Table 3 for its size.

(6). There is a drain port on both the left and right sides. Select the drain port to match the local conditions.(Fig.25)

(7). When the unit is shipped from the factory, the drain port is defaulted to be the one on the left side (electric box side), the port on right side has been plugged.

(8). When using the drain port on the right side of the unit, reinstall the drain cap to the left side drain port.(Fig.27)

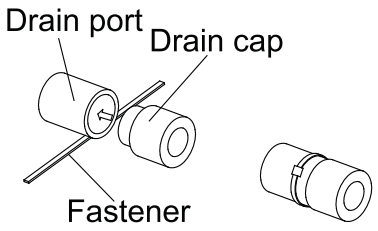


Fig.27

⚠ CAUTION!

Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener. If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

(9). Be sure to insulate where the drain port and the drain hose is connected.(Fig.28)

(10). The unused drain port also should be insulated properly.(Fig.29)

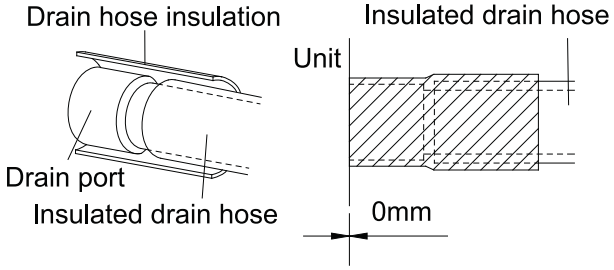


Fig.28

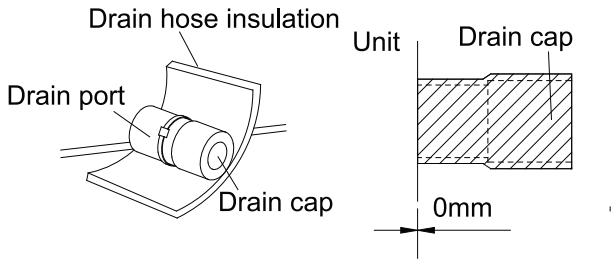


Fig.29

(11). There is adhesive on one side of the insulation so that after removing the protective paper over it the insulation can be directly attached to the drain hose.

(12). Considerations for the unit with the condensate pump:

1). For the unit with the condensate pump, only one drain port at the side close to the electric box is prepared and only through it the drain hose can be connected.

2). See table 3 for the size of the drain port of the unit with the condensate pump, which is different from that of the unit without the condensate pump.

3). For the unit with the condensate pump, two drain ports at the bottom are defaulted to be factory plugged with drain caps. After the installation of the drain hose, these two drain ports also need to be insulated properly with the same way aforementioned.

4). The drain hose for the unit with the condensate pump should be arranged as shown in the figure below.

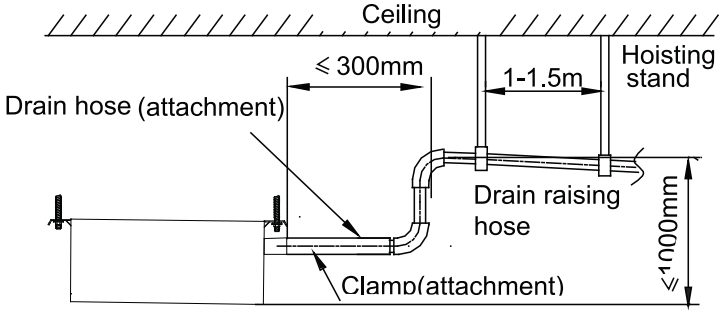


Fig.30

a. The vertical height of the drain hose should be 75mm or less so that it is unnecessary for

the drain port to withstand additional force.

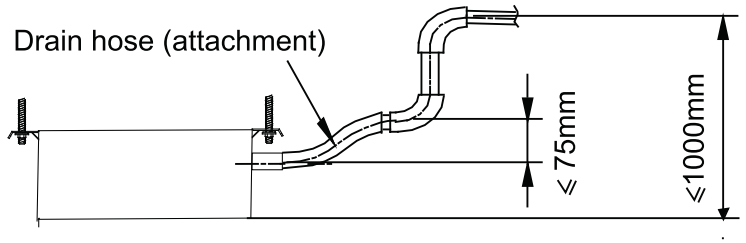


Fig.31

b. When multiple drain hoses are used, their installation should be performed as shown in the figure below.

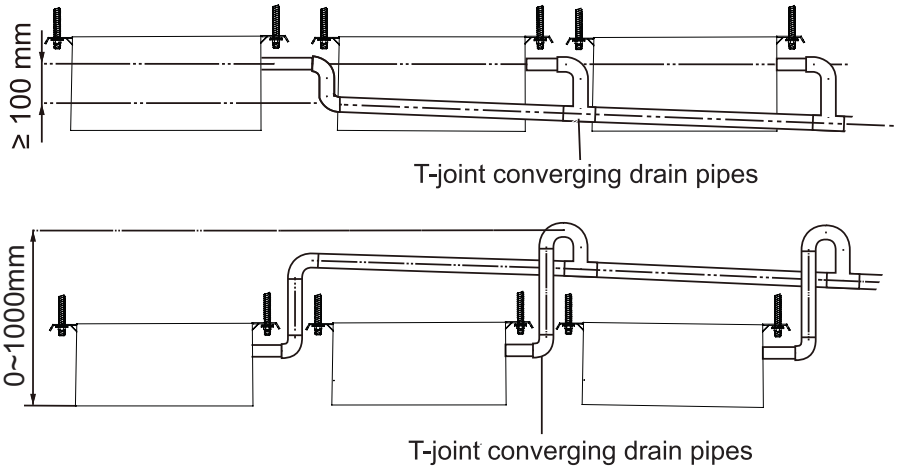


Fig.32

4.5.2 Testing of Drain Piping

After piping work is finished, check if drainage flows smoothly.

As shown in the figure, add approximately 1liter of water slowly into the drain pan and check drainage flow during COOL running.

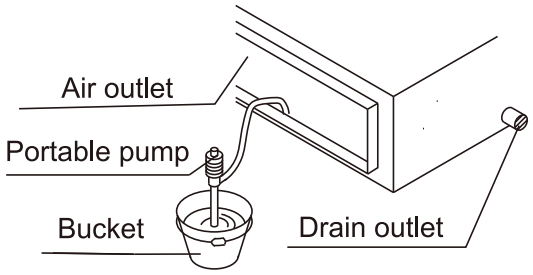


Fig.33

4.6 Installation of the Duct

4.6.1 Dimensions of the Supply Air Outlet/Return Air Inlet

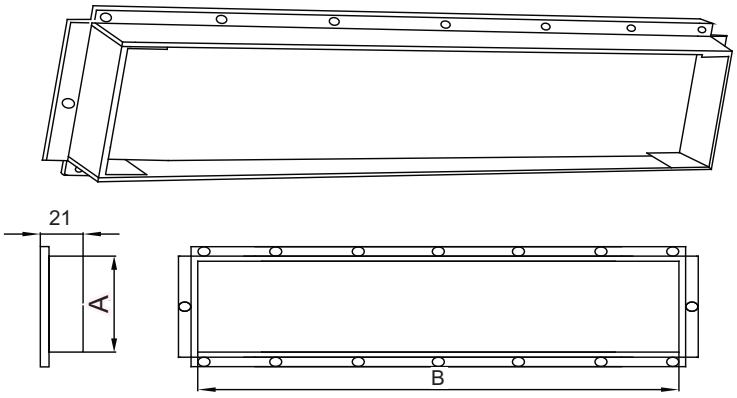


Fig.34 Supply Air Outlet

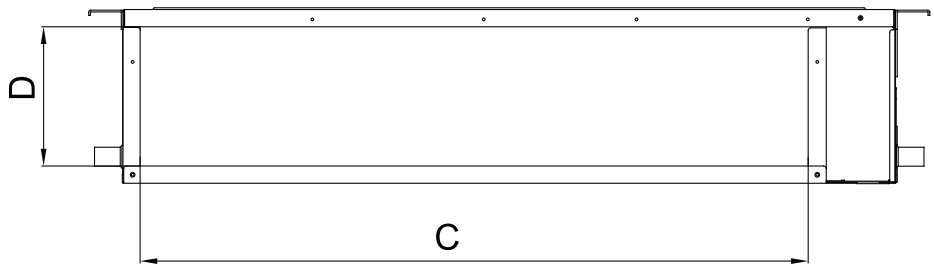


Fig.35 Return Air Inlet

Table 9

Item / Model	Supply Air Outlet		Return Air Inlet	
	A	B	C	D
GDIF18	123	736	710	166
GDIF24	158	818	994	195
GDIF36	158	818	1000	206
GDIF48	190	850	940	286
GDIF60	190	850	940	286

4.6.2 Installation of the Supply Air Duct

(1). Installation of the Rectangular Duct.

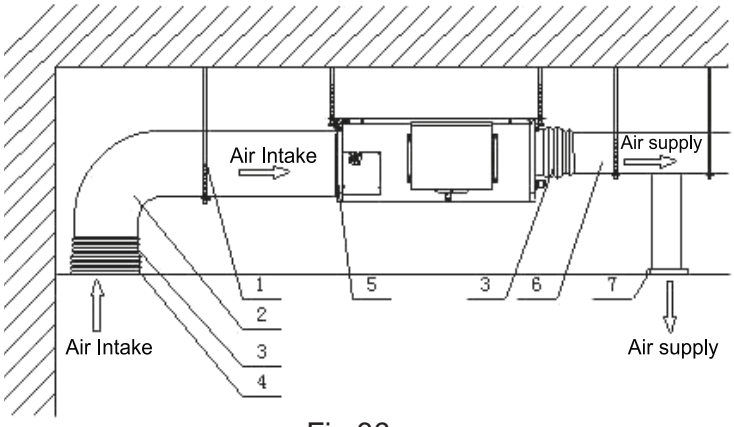


Fig.36

No.	Name	No.	Name
1	Hanger	5	Filter
2	Air Intake Pipe	6	Main Air Supply Pipe
3	Canvas Air Pipe	7	Air Supply Outlet
4	Air Intake		

⚠ CAUTION!

① . The maximum length of the duct means the maximum length of the supply air duct plus the maximum length of the return air duct.

② . The duct is rectangular and connected with the air inlet/outlet of the indoor unit. Among all supply air outlets, at least one should be kept open.

Bottom Return Air Installation only for Unit 18K

(2). The default installation location of the rectangular flange is at the back, as shown in Fig.37.

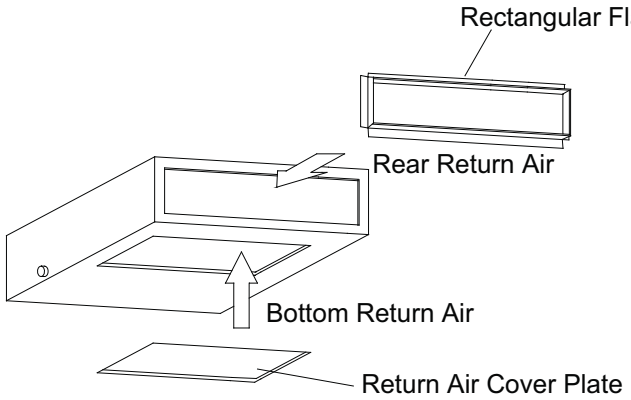


Fig.37

(3). If the bottom return air is desired, just change the place of the rectangular flange and the return air cover plate.

(4). Connect one end of the return air duct to the return air outlet of the unit by rivets and the other to the return air louver. For the sake of the convenience to freely adjust the height, a cutting of canvas duct will be helpful, which can be reinforced and folded by 8# iron wire.

(5). More noise is likely to be produced in the bottom return air mode than the backward return air mode, so it is suggested to install a silencer and a static pressure box to minimize the noise.

(6). The installation method can be chosen with considering the conditions of the building and maintenance etc., as shown in Fig.38.

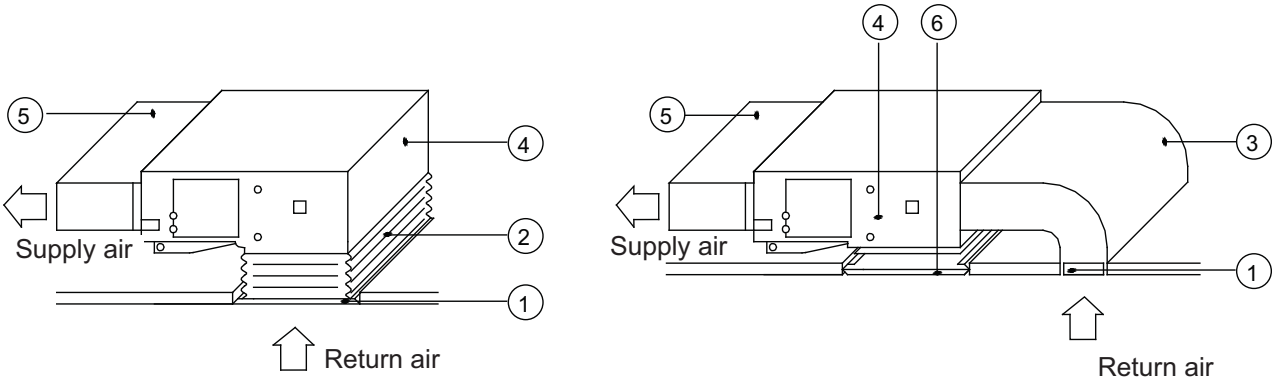


Fig.38 Install the return air duct

Table 10 Installation of the return air duct

No.	Name	No.	Name
1	Return Air Inlet (with filter)	4	Indoor unit
2	Canvas Duct	5	Supply Air Duct
3	Return Air Duct	6	Grill

4.7 Electrical Wiring

4.7.1 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 4 and Table 5
③. Before turning on, verify that the voltage is within the 198~264V range(for single phrase unit) or 342~457V range (for three-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 3mm 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.

4.7.2 Electrical Wiring

(1). For solid core wiring (Fig.39)

1). Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation about 25 mm (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.39)

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.40)

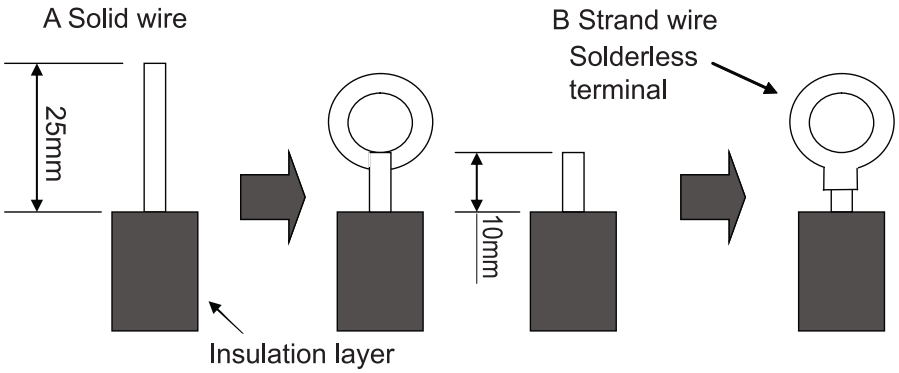


Fig.39

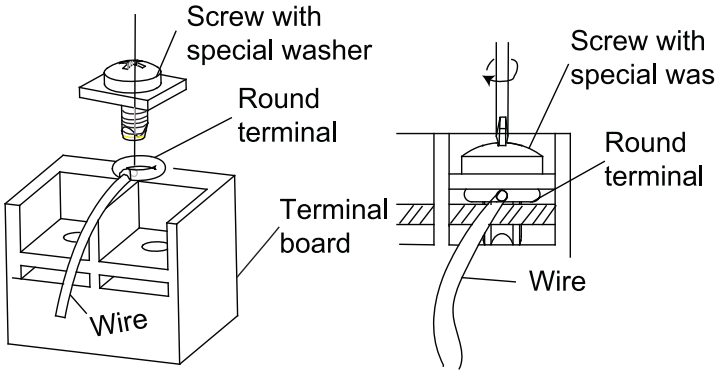


Fig.40

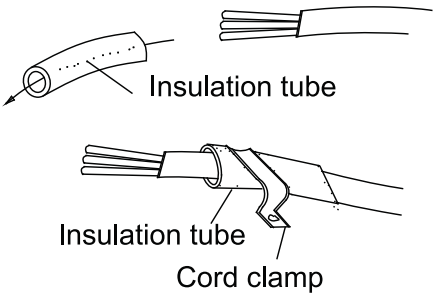


Fig.41

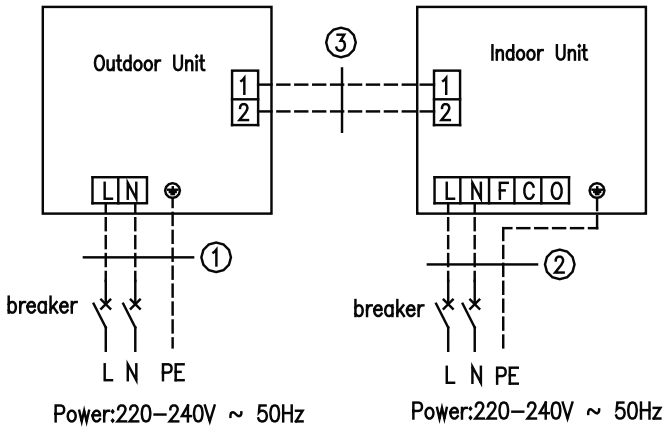
(3). How to fix connection cord and power cord by cord clamp

After passing the connection cord and power cord through the insulation tube, fasten it with the cord clamp.(Fig.41)

⚠ 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

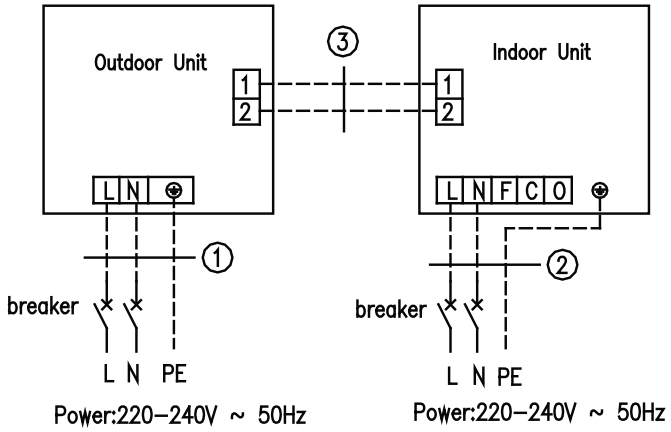
Single-phase units (18K~36K)



CGIF18 + GDIF18
①. Power cord 3×1.5mm^2(H07RN-F)
②. Power cord 3×1.0mm^2(H05RN-F)
③. Communication Cords 2×0.75mm^2(H05RN-F)

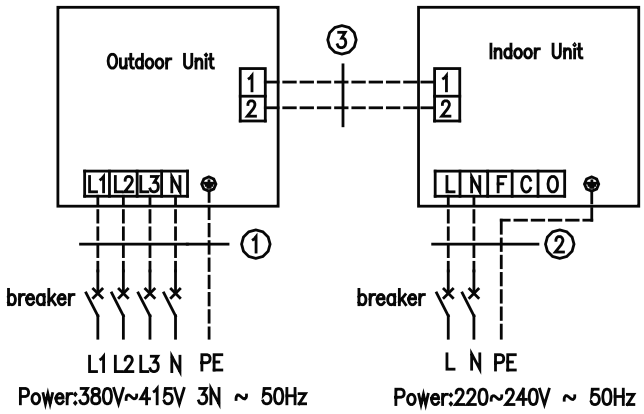
CGIF24 + GDIF24
①. Power cord 3×2.5mm^2(H07RN-F)
②. Power cord 3×1.0mm^2(H05RN-F)
③. Communication Cords 2×0.75mm^2(H05RN-F)

Single-phase units (36K~48K)



CGIF36 + GDIF36
①. Power cord 3×2.5mm^2(H07RN-F)
②. Power cord 3×1.0mm^2(H05RN-F)
③. Communication Cords 2×0.75mm^2(H05RN-F)

Three-phase units (48K~60K)



CGIF48 + GDIF48
CGIF60 + GDIF60
①. Power cord 5×1.5mm^2(H07RN-F)
②. Power cord 3×1.0mm^2(H05RN-F)
③. Communication Cords 2×0.75mm^2(H05RN-F)

Fig.42

(5). Electric wiring of indoor unit side

Remove the electric box cover from the electric box sub-assy and then connect the wire.

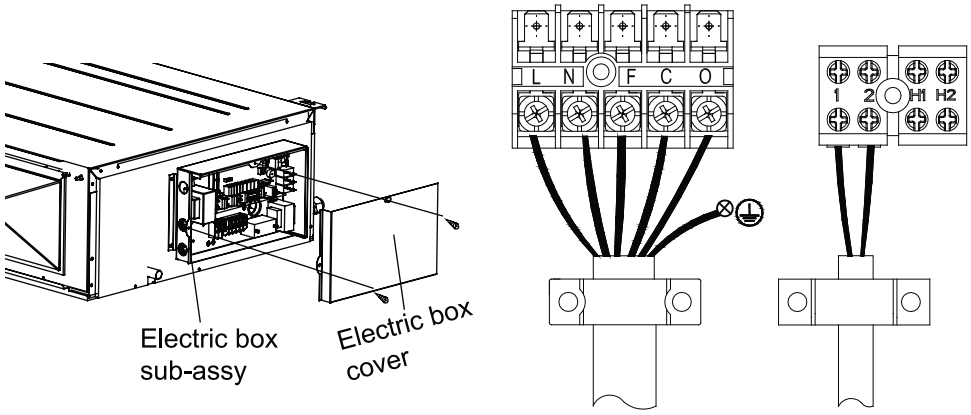


Fig.43

The F, C, O connect to the COMMOM, CLOSE and OPEN terminal of the fresh air valve respectively.

⚠ CAUTION!
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.42.
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 (18~36K) /front board(48/60K) of the outdoor unit and insert the end of the communication cord and the power cable into the terminal board.

Single phase:

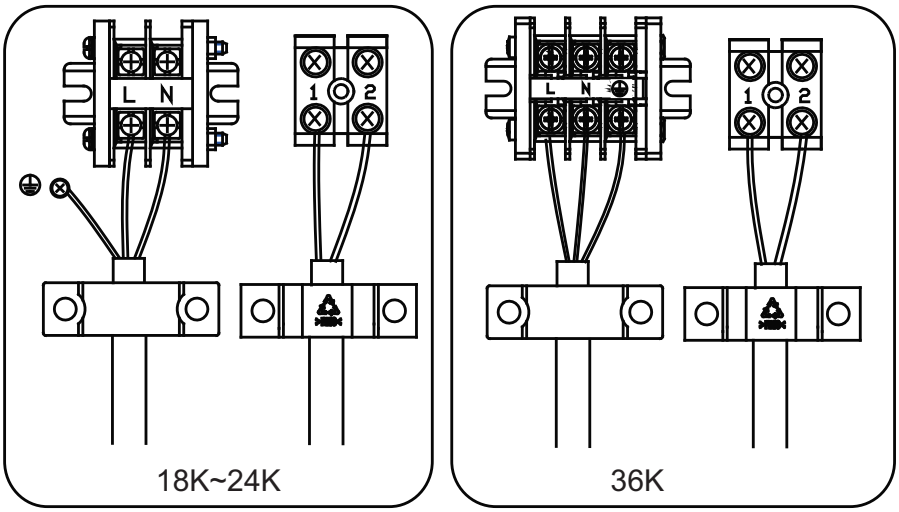


Fig.44

Three-phase:

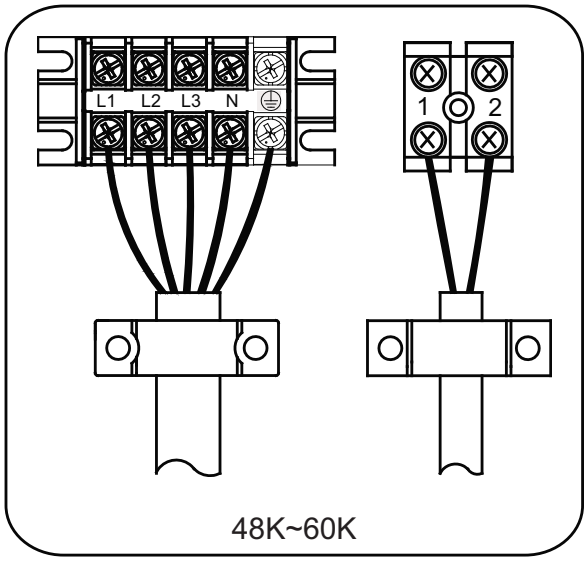


Fig.45

Power lines should go along the right side plate and be fixed to the fixation hook with binding wires to keep no contact with pipelines. Communication lines between indoor and outdoor units also should go along the right side plate and keep away from power lines.

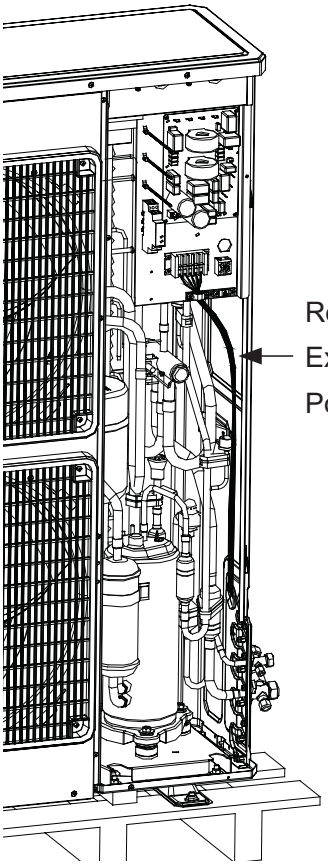


Fig.46

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 11

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 colleting 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	F5	Temperature sensor error of wired controller	
15	C5	Capacity code error	
16	EE	Outdoor memory chip error	
17	PF	Electric box sensor error	
18	H3	Compressor overload protection	
19	H4	Overloading	
20	H5	IPM protection	
21	H6	DC fan motor error	
22	H7	Drive desynchronizing protection	
23	Hc	Pfc protection	
25	Lc	Activation failure	
26	Ld	Compressor phase sequence protection	
27	LE	Compressor stalling protection	
28	LF	Power protection	
29	Lp	Indoor and outdoor mismatch	
30	U7	4-way valve direction changing protection	
31	P0	Drive reset protection	
32	P5	Over-current protection	
33	P6	Communication error between main control and drive	
34	P7	Drive module sensor error	
35	P8	Drive module over temperature protection	
36	P9	Zero passage protection	
37	PA	AC current protection	

38	Pc	Drive current error	
39	Pd	Sensor connecting protection	
40	PE	Temperature drift protection	
41	PL	Bus low voltage protection	
42	PH	Bus high voltage protection	
43	PU	Charge loop error	
44	PP	Input voltage abnormality	
45	ee	Drive memory chip error	

Note: When the unit is connected with the wired controller, the error code will be simultaneously shown on it.

(2). Instructions to the Error Indicating Lamps on the Panel of the Duct Type Unit.

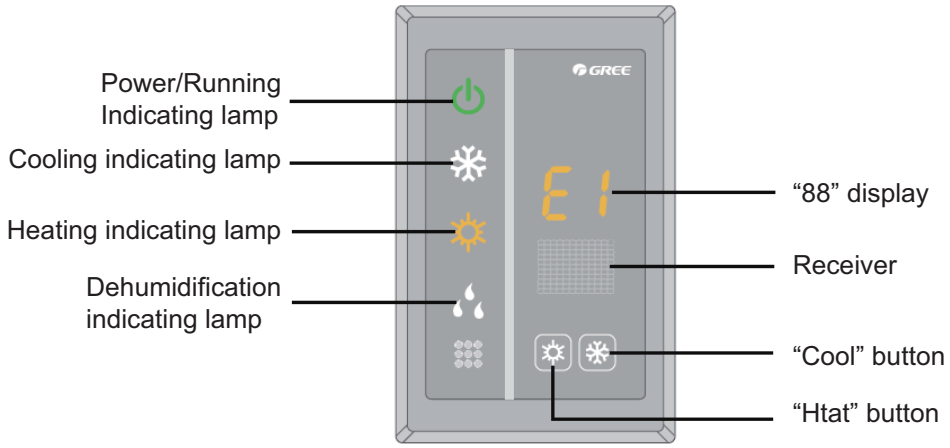


Fig.47

6.2.Working Temperature Range

Table 12

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	-15	–
Rated Heating	27	–	24	18
Low Temp. Heating	20	–	-10	-11

Note:

① . The design of this unit conforms to the requirements of EN14511 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.

④ . In this table, there are two outside DB values under the low temp cooling conditions, and the one in the brackets is for the unit which can operate at extreme low temperature.

7 Unit Function

7.1 Setting of Double Indoor Room Sensors

This series of ducted air-conditioning unit has two indoor room sensors. One is located at the air intake of the indoor unit and the other one is located inside the wire controller.

User can select one from the two indoor room sensors on the basis of the engineering requirement.

(Refer to the section of wire controller instructions for detailed operation.)

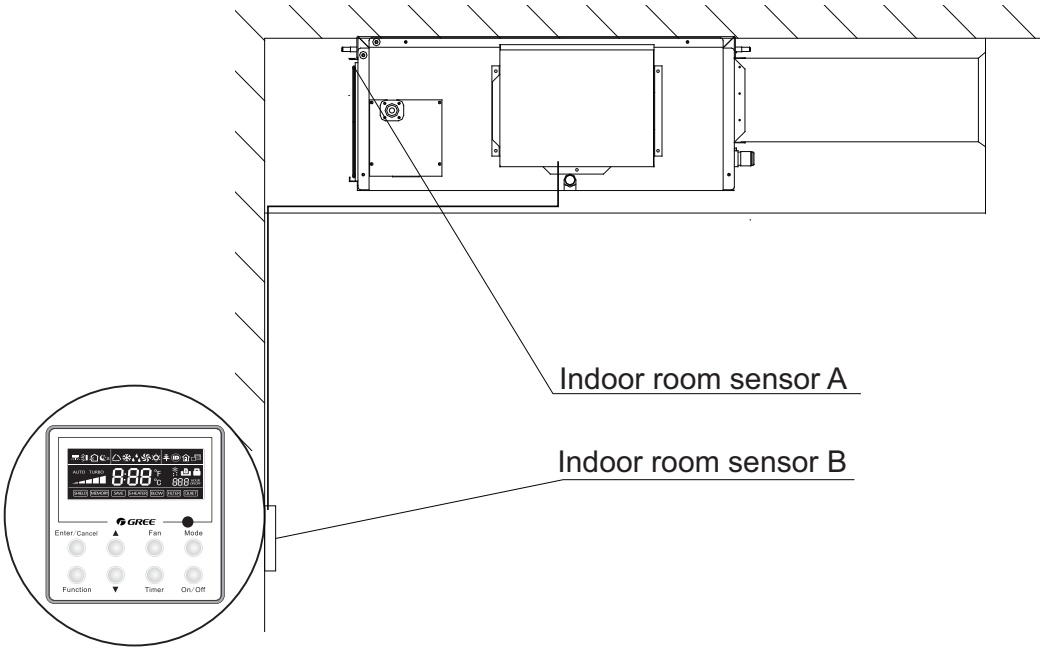


Fig.48

7.2 Checking of Outdoor Ambient Temperature

The outdoor ambient temperature can be checked on the wire controller for the convenience of users before going out. (Refer to the section of wire controller instructions for detailed operation.)

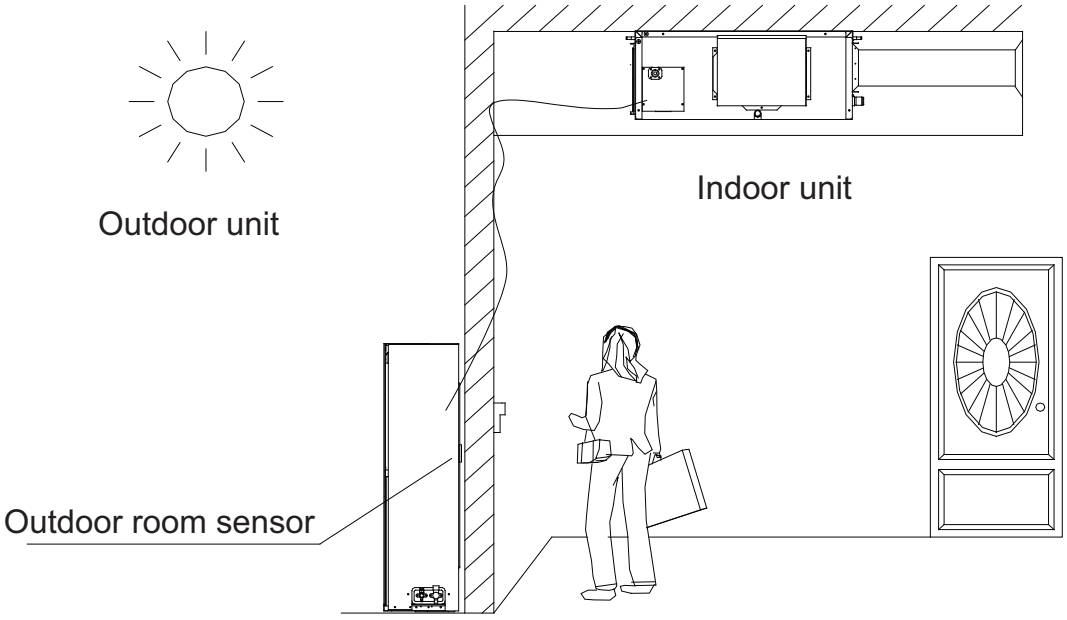


Fig.49

7.3 Fresh Air Control

11-levels control can be realized for the amount of fresh air taken in. The function not only facilitates the health of users, but also controls the electricity consumption loss because of taking in fresh air. This kind of control can be carried out through the wire controller. The function can set at any time, goes into effect at any time, and features very simple operation. (Refer to the section of wire controller instructions for detailed operation.)

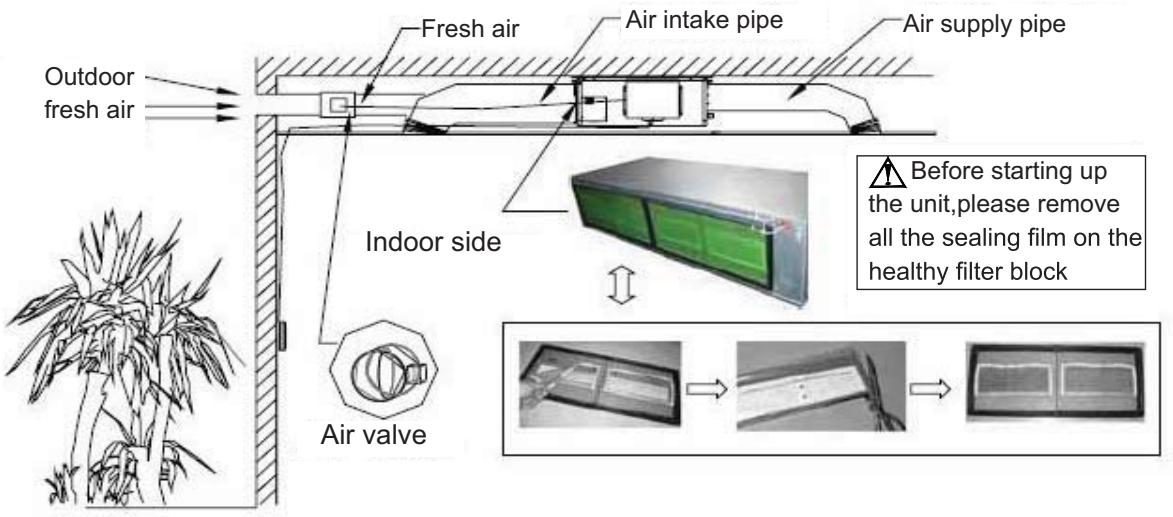


Fig.50

8 Troubleshooting and Maintenance

8.1 Troubleshooting

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

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.

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 Ecoaire. Only ask professional serviceman to check and repair the unit.

8.2 Routine Maintenance

Only a qualified service person is allowed to perform maintenance.

Before accessing to terminal devices, all power supply circuits must be disconnected.

Do not use water or air of 50°C or higher for cleaning air filters and outside panels.

Note:

①. Do not operate the air conditioner with the filter uninstalled, otherwise dust would come into the unit.

②. Do not remove the air filter except for cleaning. Unnecessary handling may damage the filter.

③. Do not clean the unit with gasolene, benzene, thinner, polishing powder or liquid insecticide,

otherwise it would cause discoloration and deformation of the unit.

④ . Do not wet the indoor unit in case of electric shock or fire hazard.

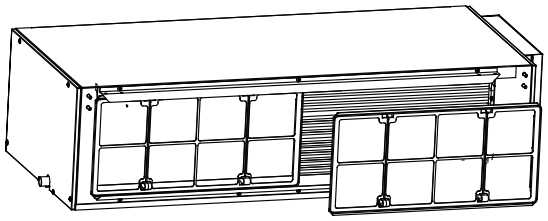
Increase the frequency of cleaning if the unit is installed in a room where the air is extremely contaminated.(As a yardstick for yourself, consider cleaning the filter once a half year.)

If dirt becomes impossible to clean, change the air filter. (Air filter for exchange is optional.)

(1). Removing the air filter from the duct.

(2). Cleaning the air filter

Remove dust from the air filter using a vacuum cleaner and gently rinse them in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning dry them in the shade.



Press the return air inlet filter downward against the guide groove sponge and take it off along the arrow direction.There are two return air inlet filters.

(3). Replacing the air filter

Reinstall the filter as before.

ECOAIRE

Wired Controller XK60




USER'S MANUAL

User Notice

⚠Please carefully read this manual before installation and use of this product

- Thanks for choosing ECO AIRE duct type air conditioners. Please read this manual carefully before operating this product and keep it properly for future reference. In addition, please take notice of the symbols below.

⚠**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.

⚠**CAUTION!**
(1). Do not install the wired controller in the damp place or under direct sunlight.
(2). Do not beat, toss, or frequently assemble/disassemble the wired controller.
(3). Do not operate the wired controller with wed hands and never let any liquid flow into it.
(4). Do not install or remove the wired controller by yourself. If necessary, please contact the after-sales serviceman.
(5). This wired controller is applicable to various kinds of air conditioners, while some specific functions unavailable to the duct type air conditioners will not be covered in this manual.
(6). Before operating the air conditioner, please read this manual carefully and keep it properly for future reference.

Contents

1 Introduction to the Wired Controller

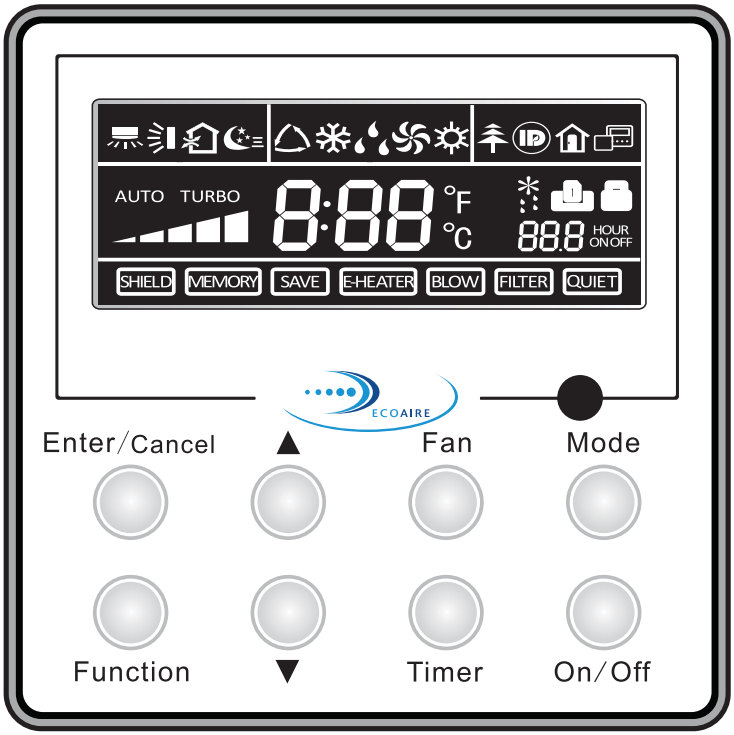


Fig.1 Appearance of the Wired Controller

1.1 Appearance and LCD Icons

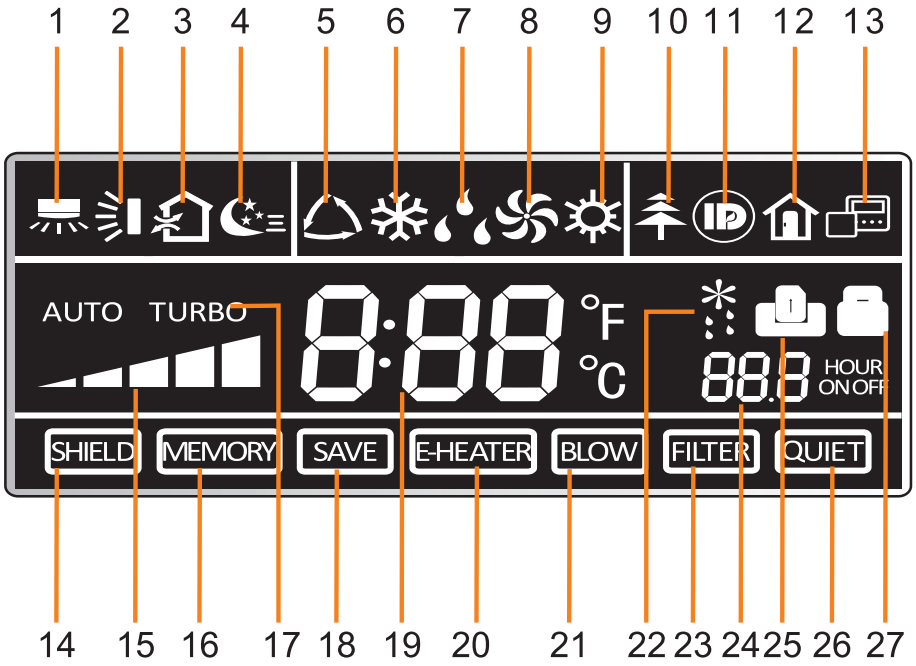


Fig.2 Appearance of the LCD

1.2 Introduction to the LCD Icons

Table 1

No.	Icons	Introduction
1		Left and right swing function
2		Up and down swing function
3		Air exchange function
4		Sleep function
5		Auto mode
6		COOL mode
7		DRY mode
8		FAN mode
9		HEAT mode
10		Health function
11		I-Demand function
12		Vacation function
13		Status display of master and slave wired controller
14		Shield function The button operation, temperature setting, "On/Off" operation, "Mode" setting, and "Save" setting are disabled.
15		Fan speed
16		Memory function The unit will resume the original setting state after power recovery.
17		Turbo function
18		Energy-saving function
19		Ambient/setting temperature

20		Electric heater
21		Blow function
22		Defrosting function
23		Filter cleaning
24		Timer Setting
25		Keycard control / Detected status sensed by human body
26		Quiet function
27		Lock function

2 Press Buttons

2.1 Buttons

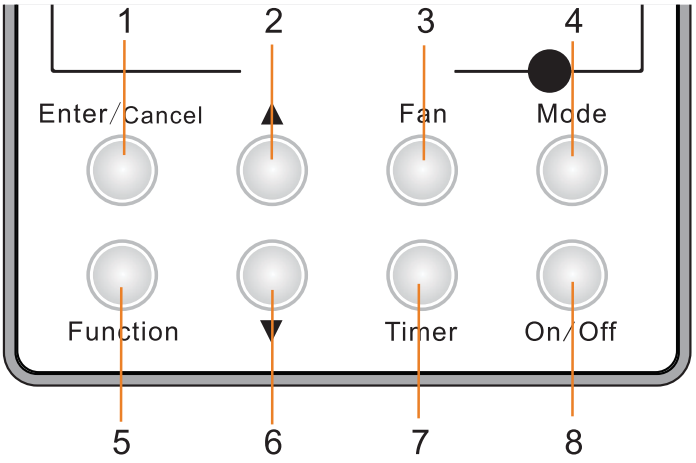


Fig.3 Press Buttons

2.2 Instruction to the Function of Press Buttons

Table 2

No.	Press Buttons	Function Introduction
1	Enter/Cancel	①. Function selection and canceling; ②. Press it for 5s to enquiry the outdoor and indoor ambient temperature.
2	▲	①. Running temperature setting of indoor unit, range :16~30°C ②. Timer setting, range:0.5-24hr ③. Air function setting ④. Save setting ⑤. Clean setting
6	▼	
3	Fan	Select fan speed from high, mid-high, middle, mid-low, low and auto levels.
4	Mode	Selection of the COOL, HEAT, FAN or DRY mode.
5	Function	Switchover among these functions of SWING/AIR/SLEEP/HEALTH/ I-DEMAND/VACATION/TURBO/SAVE/E-HEATER/BLOW/QUIET
7	Timer	Timer setting
8	On/Off	Turn on/off indoor unit
4 mode and 2 ▲	Memory	Press Mode and ▲ at the same time for 5s under the OFF state of the unit to activate/deactivate memory function (If memory is set, indoor unit will resume original setting state after power recovery. If not, indoor unit is defaulted to be OFF after power recovery. Memory function is defaulted to be ON)
2 ▲ and 6 ▼	Lock	Under the ON state of the unit without any malfunction or under the OFF state of the unit, press ▲and ▼ buttons at the same time for 5s to go to the lock state. In this case, any other buttons won't respond the press. Repress ▲ and ▼ again for 5s to quit the lock state.
4 mode and 6 ▼	°F/°C	Under the OFF state of the unit, press the Mode and ▼ at the same time for 5s to switch the temperature scale between Celsius and Fahrenheit.

3 OPERATION INSTRUCTION

3.1 On/off

Press the On/Off button to turn on or off the unit.

Notes:

① . The state shown in Fig.4 indicates the OFF state of the unit after energization.

② . The state shown in Fig.5 indicates the ON state of the unit after energization.

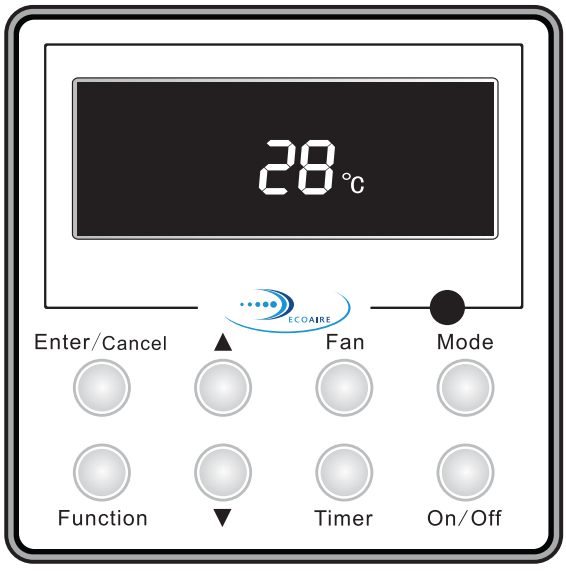


Fig.4 OFF State of the Unit

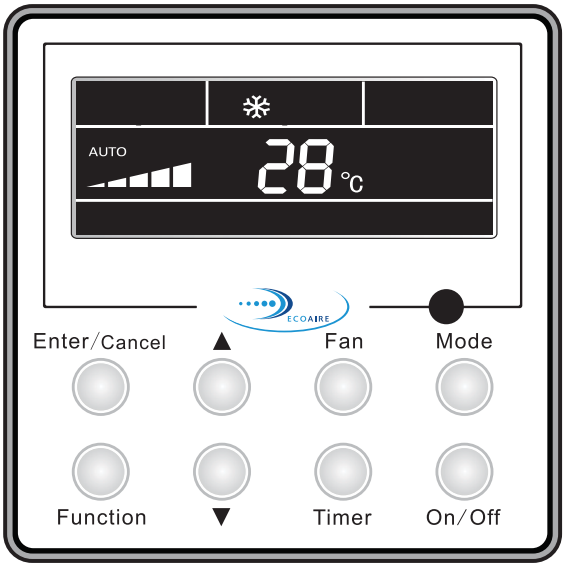


Fig.5 ON State of the Unit

3.2 Mode Setting

Under the ON state of the unit, press the Mode button to switch the operation modes as the sequence shown in Fig.6:

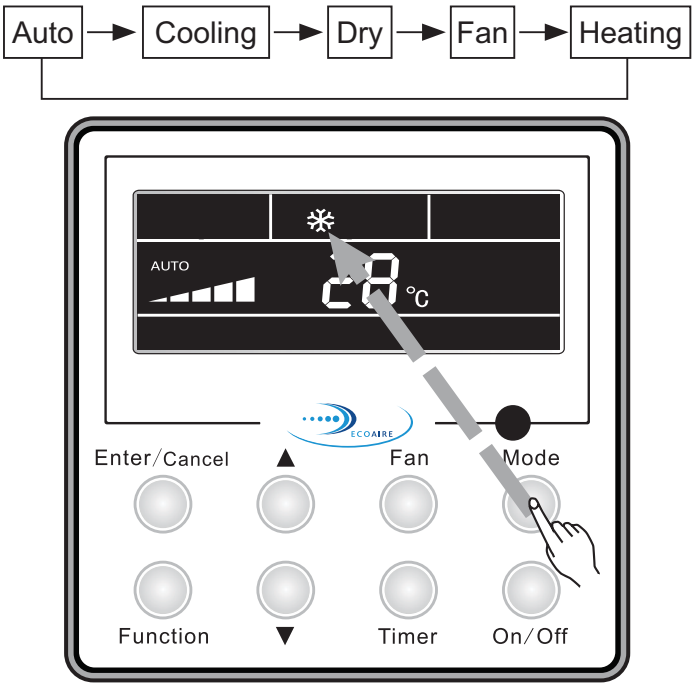


Fig.6

3.3 Temperature Setting

Press ▲ or ▼button to increase or decrease setting temperature under on-state of the unit. If press either of them continuously, temperature will be increased or decreased by 1°C every 0.5s.

In Cooling, Dry, Fan and Heating mode, temperature setting range is 16°C~30°C.

In Auto mode, the setting temperature is un-adjustable.

As shown in Fig.7:

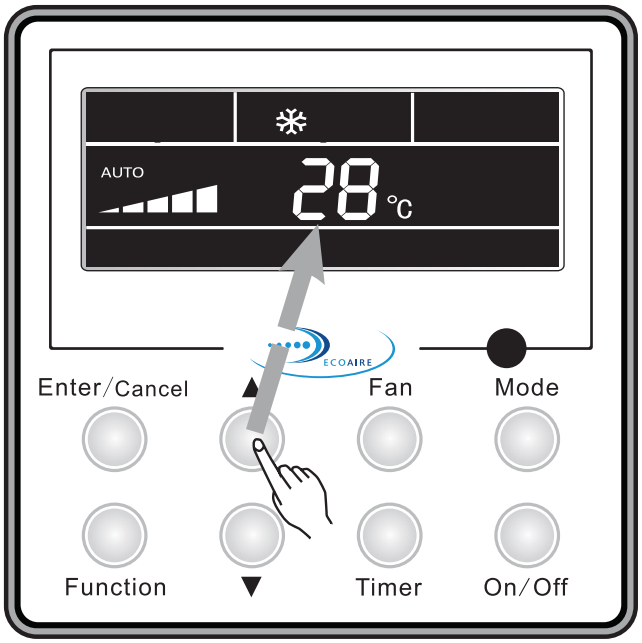
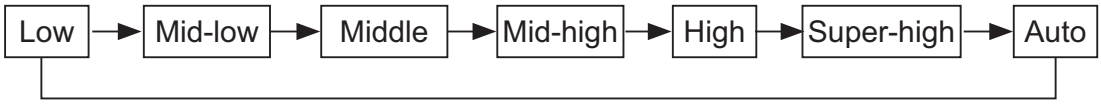


Fig.7 Temperature Setting

3.4 Fan Speed Setting

Press Fan button, fan speed of indoor unit will change as the sequence shown in Fig.8:



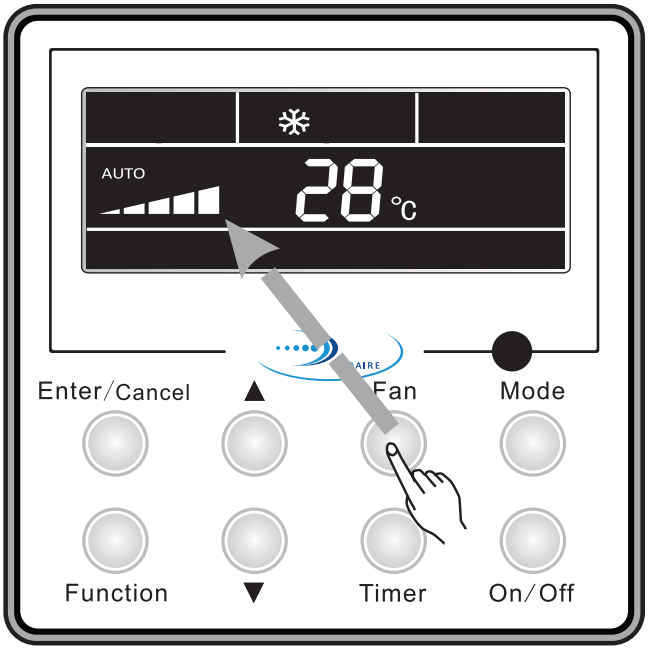


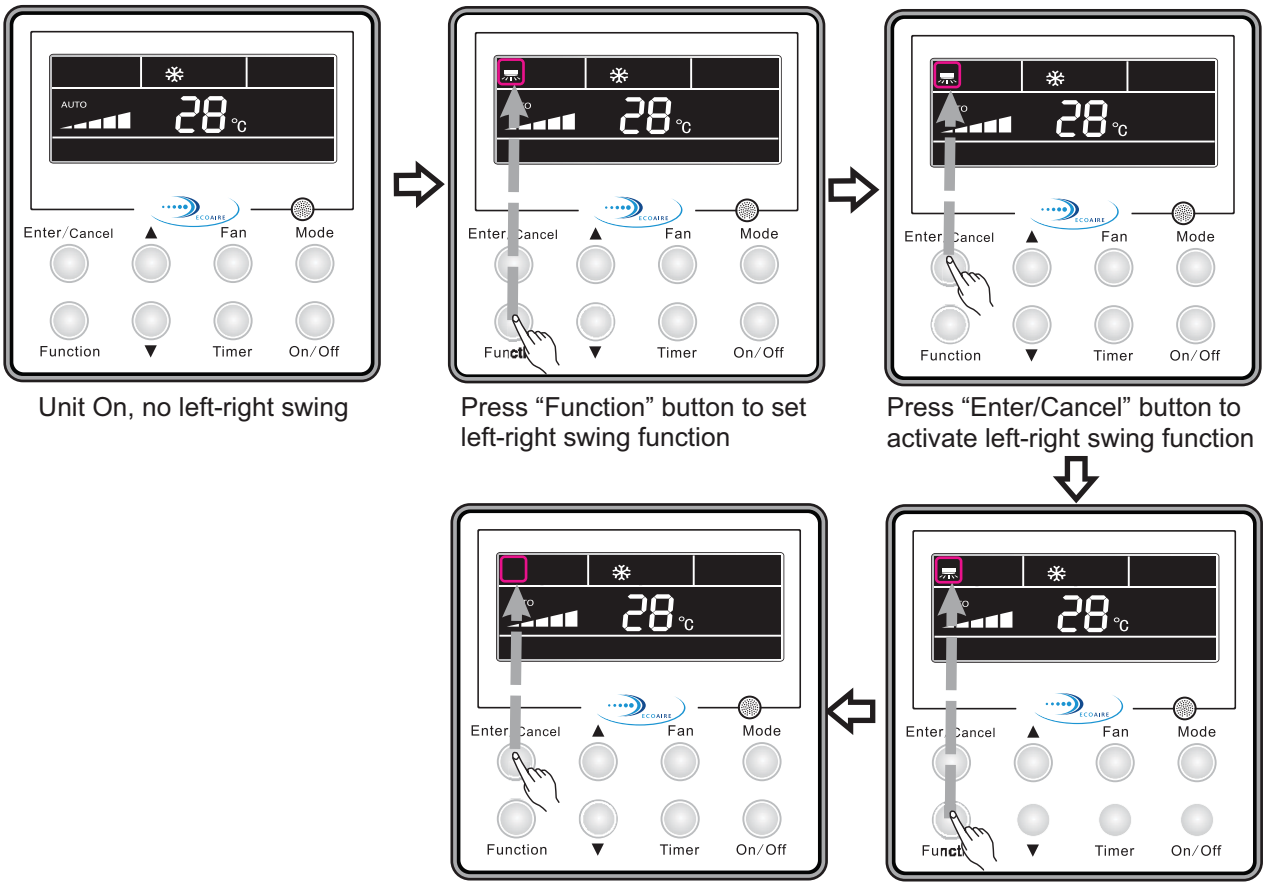
Fig.8 Fan Speed Setting

3.5 Right and Left Swing

Under the ON state of unit, press the Function button to select the “Right and Left Swing” function option and then press the Enter/Cancel button to activate it.

When the Swing function is activated, press the Function button to select the "Right and Left Swing" function option and then press the Enter/Cancel button to deactivate it.

Right and Left Swing function setting is as shown in Fig.9.



Unit On, no left-right swing

Press “Function” button to set left-right swing function

Press “Enter/Cancel” button to activate left-right swing function

Press “Enter/Cancel” button to cancel left-right swing function

Press “Function” button to set left-right swing function

Fig.9 Right and Left Swing Setting

3.6 Up and Down Swing

Under the ON state of unit, press the Function button to select the "Up and Down Swing" function option and then press the Enter/Cancel to activate it.

When the Swing function is activated, press the Function button to select the "Up and Down Swing" function option and then press the Enter/Cancel button to deactivate it.

Up and Down Swing function setting is as shown in Fig.10.

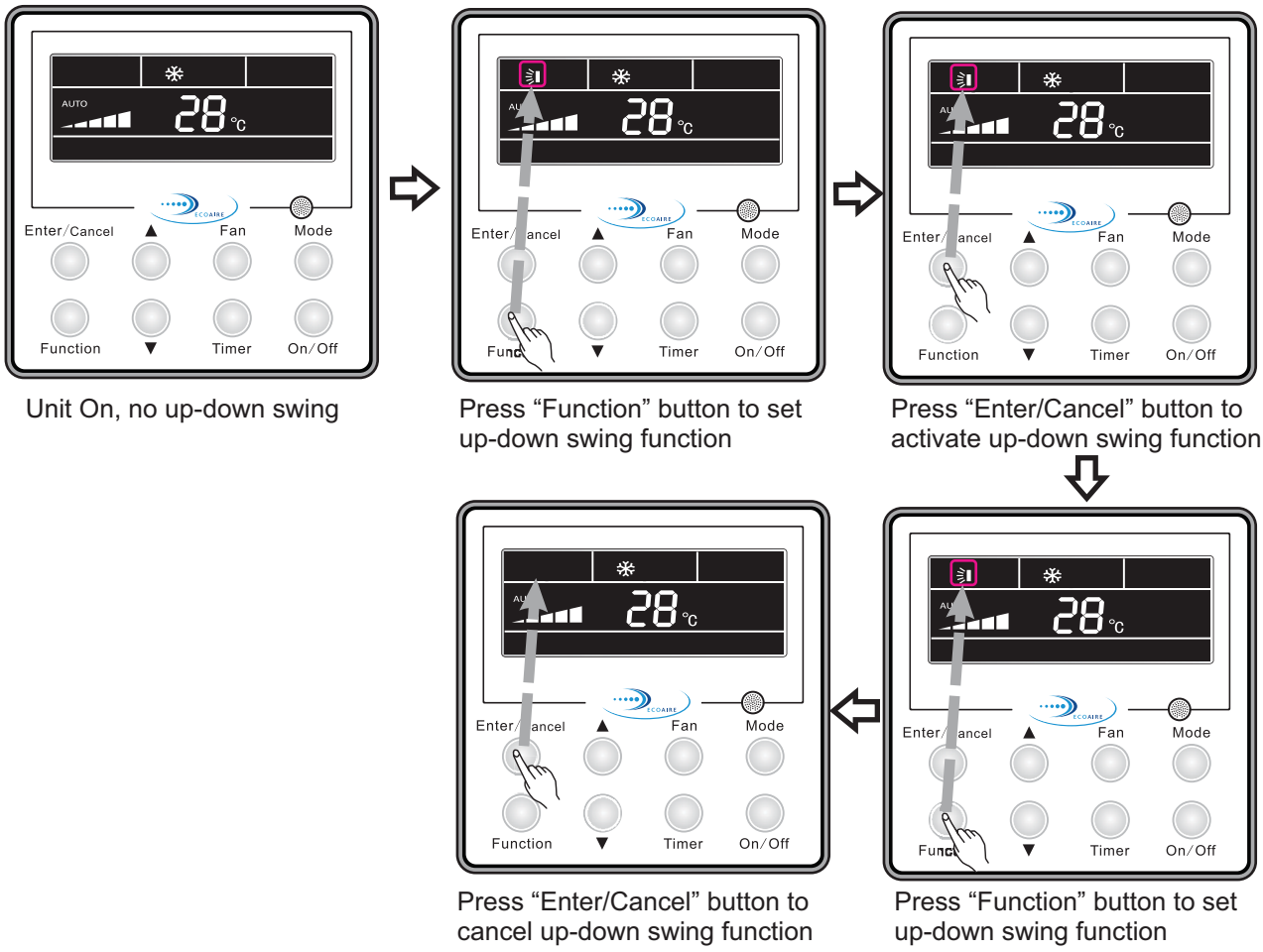


Fig.10 Up and Down Swing Setting

3.7 Timer Setting

Timer “On” Setting:

It is intended to set when to start the unit. When the unit is OFF, press the Timer button, with xx. Hour displayed and ON blinking, then press ▲/▼to adjust the timer, after that, press the Timer button again to make a confirmation. If the Mode button is pressed prior to the confirmation, it will switch to the Timer Off setting. After the timer Off setting, the LCD displays xx. Hour ON OFF,xx. Hour indicating the time to start the unit, while the time to stop the unit won’t be displayed.

Timer “Off” Setting:

It is intended to set when to stop the unit. When the unit is On, press the Timer button, with xx. Hour displayed and OFF blinking, then press ▲/▼to adjust the timer, after that, press the Timer button again to make a confirmation. If the Mode button is pressed prior to the confirmation, it will switch to the Timer On setting. After the timer On setting, the LCD displays xx. Hour ON OFF,xx. Hour indicating the time to stop the unit, while the time to start the unit won’t be displayed.

Cancellation of Timer Setting: The timer setting can be canceled by press “Timer”. Then , xx. Hour won’t be displayed.

Timer Setting under the ON state of the Unit is as shown in Fig.11:

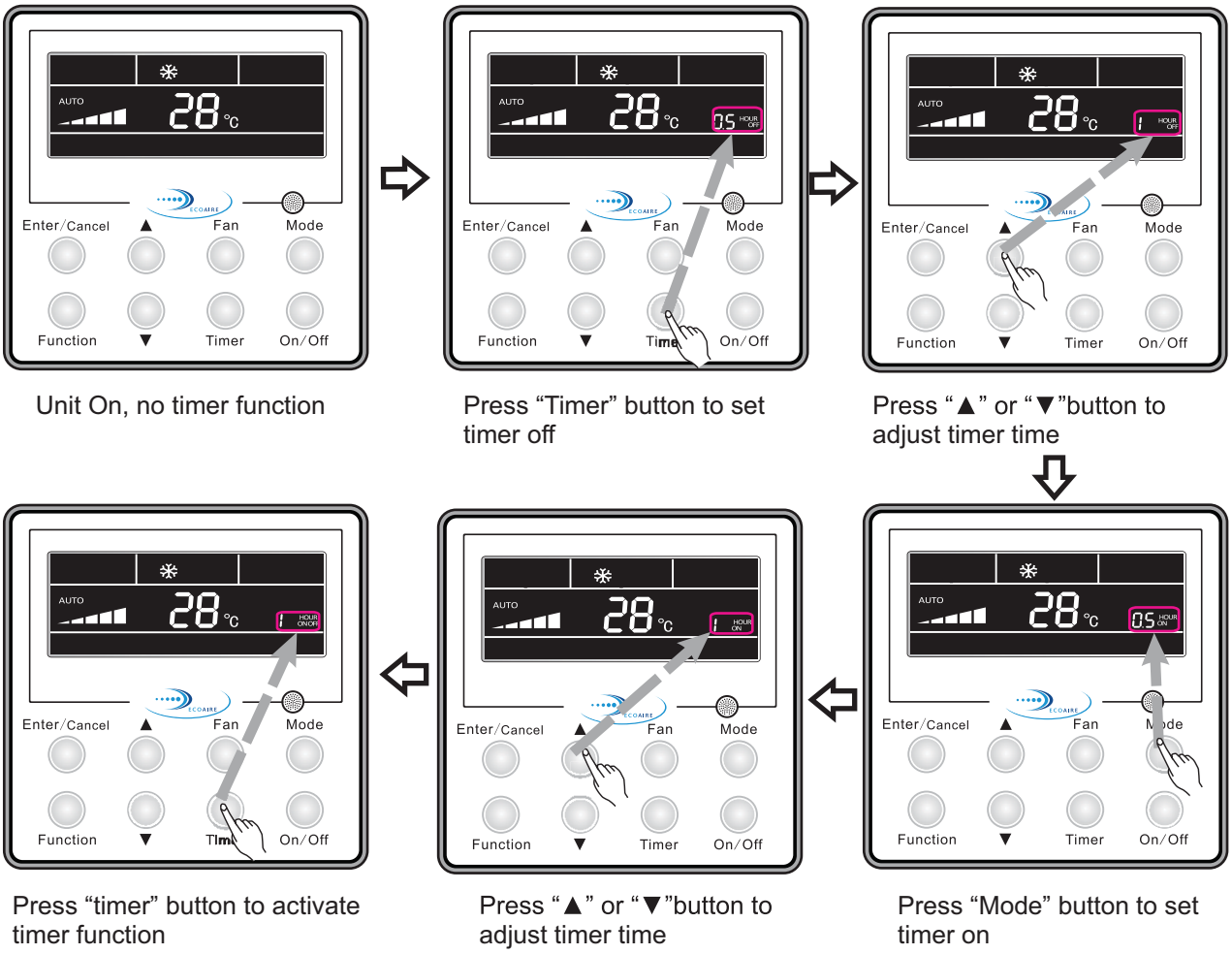


Fig.11 Timer Setting under the ON state of the Unit

Timer range: 0.5-24hr. Every press of the ▲ or ▼ button will make the setting time increased or decreased by 0.5hr.If press either of them continuously, the setting time will automatically increase/ decrease by 0.5hr every 0.5s.

Notes:

① . When Timer On and Timer Off both are set, the displayed time is the Timer On setting for the unit under the OFF state , or is the timer Off setting for the unit under the ON state .

② . Timer On setting starts when the unit under the ON state is turned off; Timer Off setting starts when the unit under the OFF state is turned on.

3.8 Air Exchange Setting

How to activate the air exchange function:

Under the ON state of the unit, press the Function button to select the “AIR” function, with the function symbol flashing, and then press ▲ or ▼ to adjust the “AIR” type, after that, press the Enter/Cancel button to activate this function. When this function is activated, the symbol will be displayed. Type 1 is the defaulted “AIR” type.

There are 10 “AIR” function types , but only 1-2 types are for the wireless remote controller.

1——The unit continuously runs for 60min, and fresh air valve runs for 6 min.
2——The unit continuously runs for 60min, and fresh air valve runs for 12 min.
3——The unit continuously runs for 60min, and fresh air valve runs for 18 min.
4——The unit continuously runs for 60min, and fresh air valve runs for 2 4 min.
5——The unit continuously runs for 60min, and fresh air valve runs for 30 min.
6——The unit continuously runs for 60min, and fresh air valve runs for 36 min.
7——The unit continuously runs for 60min, and fresh air valve runs for 42 min.
8——The unit continuously runs for 60min, and fresh air valve runs for 48 min.
9——The unit continuously runs for 60min, and fresh air valve runs for 54 min.
10——The unit continuously runs for 60min, and fresh air valve always runs.

How to deactivate the air exchange function:

When the “Air” function is activated, it can be deactivated in the way by firstly pressing the Function button to select the “Air” function option with the “Air” symbol flashing, and then pressing the Enter/Cancel button with the “Air” symbol disappeared.

Air Exchange setting is shown as in Fig.12:

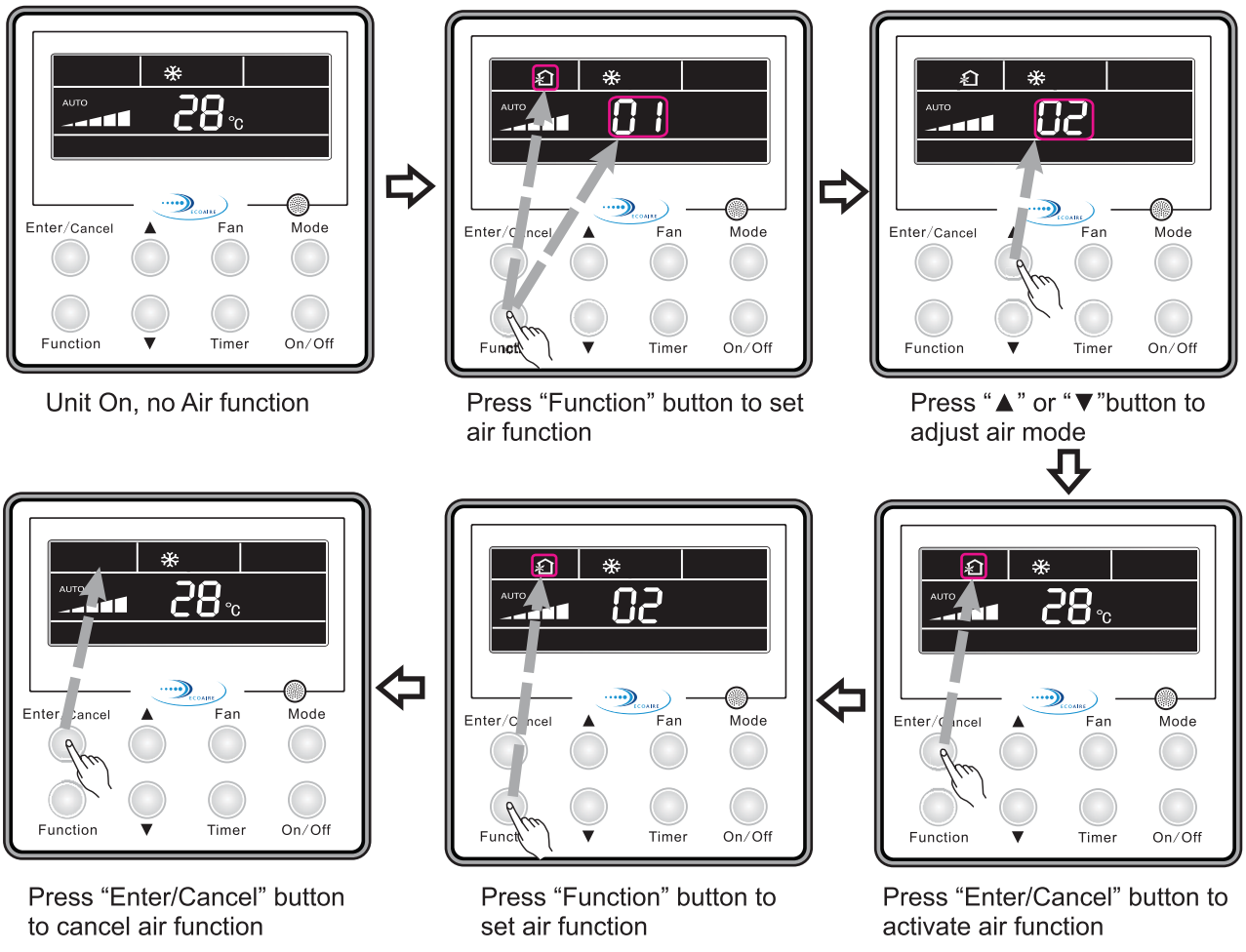


Fig.12 Air Exchange Setting

3.9 Sleep Setting

Sleep on: Press the Function button under the ON state of the unit to select the “Sleep” function option and then press the Enter/Cancel button to activate it.

Sleep off: When the Sleep function is activated, press the Function button to select the Sleep function option and then press the Enter/Cancel button to deactivate this function.

Sleep setting is as shown in Fig.13 :

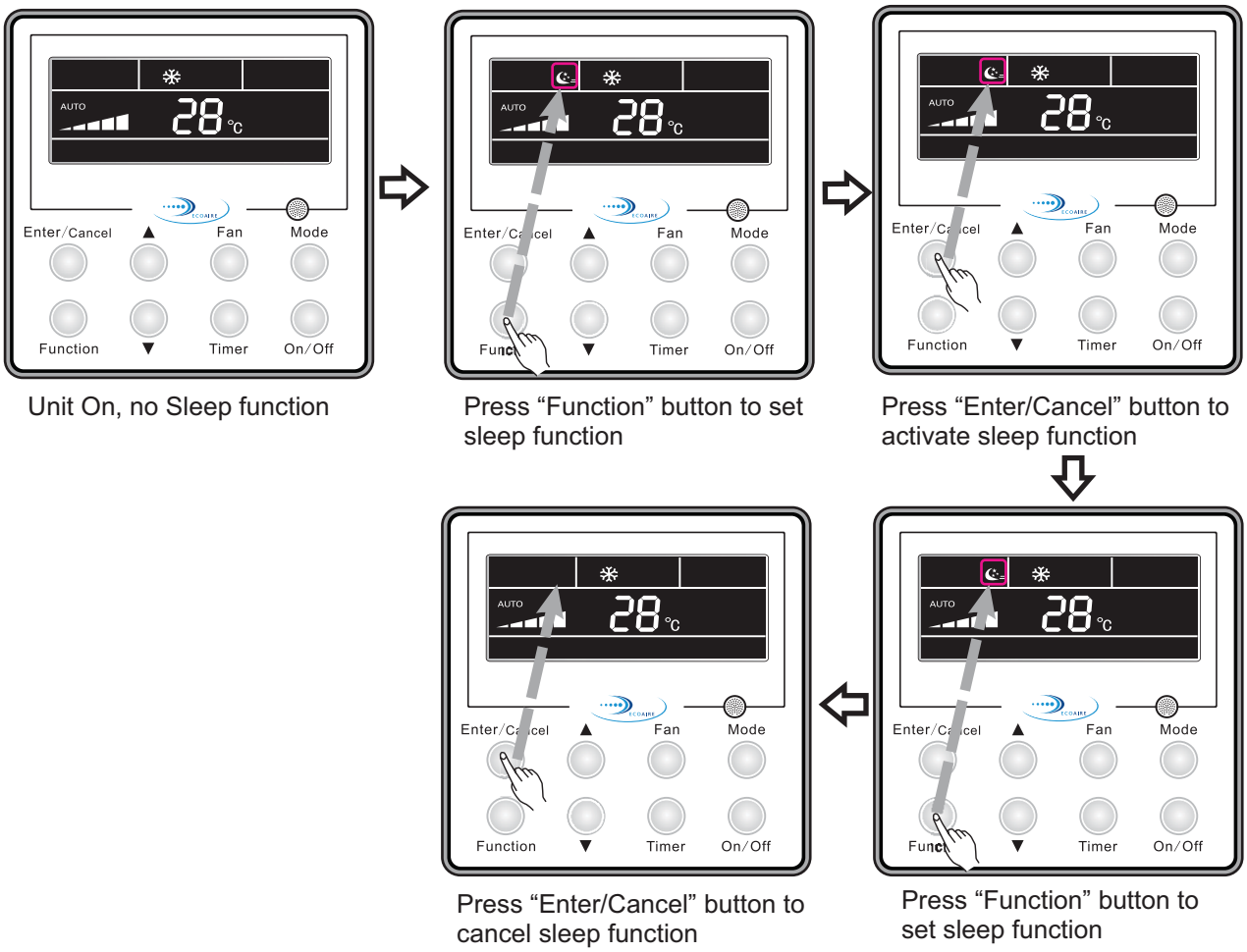


Fig.13 Sleep Setting

Notes:

① . The Sleep function is defaulted to be OFF after power recovery.

② . The Sleep function is unavailable under the Fan mode.

③ . When the Quiet function is activated, the Quiet function will always keep ON no matter if the Sleep function is activated or deactivated.

④ . Under the Cool mode, the Sleep function is ON, the setting temperature range can be 16~23°C, 24~27°C, 28~29°C or 30°C. Each of them has a different curve as shown in Fig.14.

e.g. If the setting temperature is 25°C, the temperature will rise by 1°C in each hour until it reaches 27°C. 7 hours later, the temperature will drop to 26°C. After that, the unit will run at this temperature.

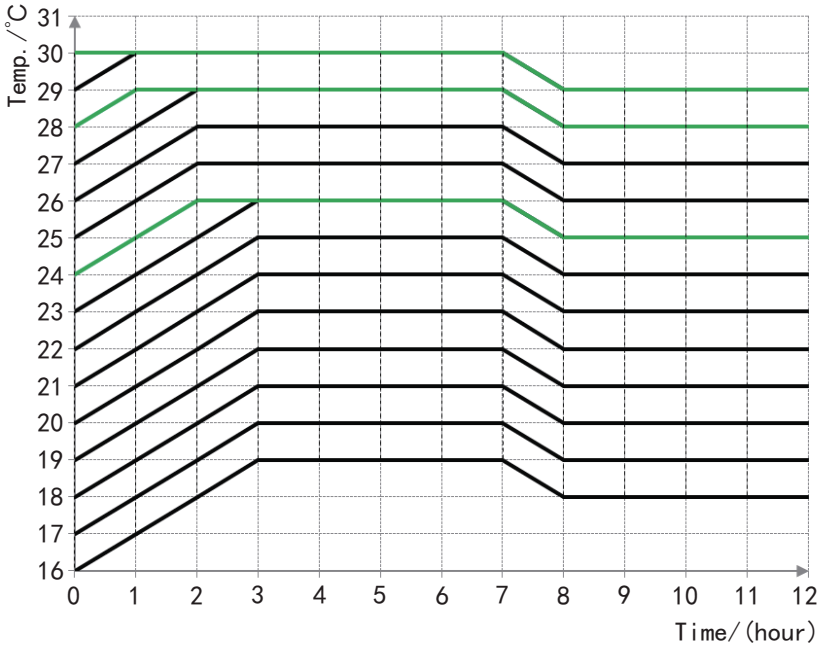


Fig.14 Sleep Curve under the COOL Mode

Under the Heat mode, the Sleep function is ON, the setting temperature range can be 16°C, 17~20°C, 21~27°C or 28~30°C. Each of them has a different curve as shown in Fig.15.

e.g. If the setting temperature is 22°C, the temperature will drop by 1°C in each hour until it reaches 20°C. Then, the unit will run at this temperature

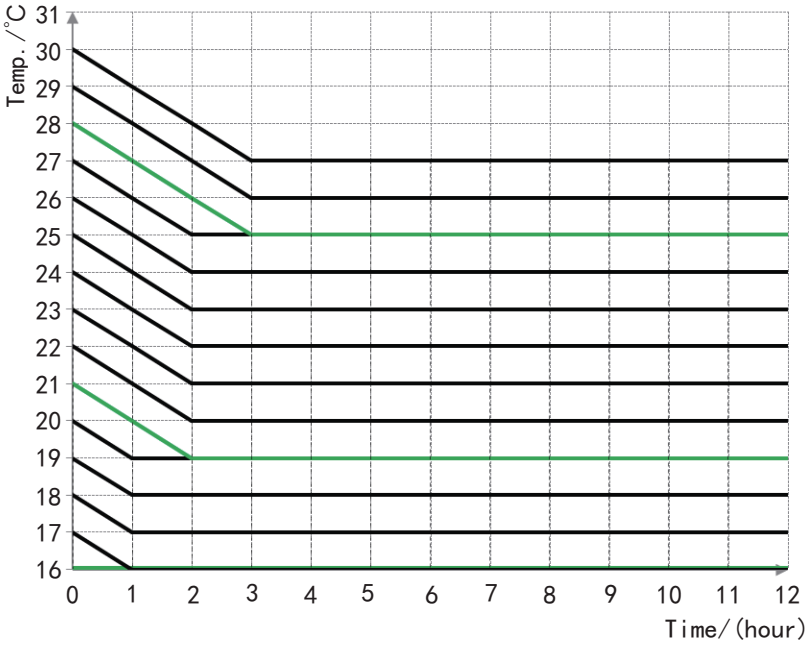


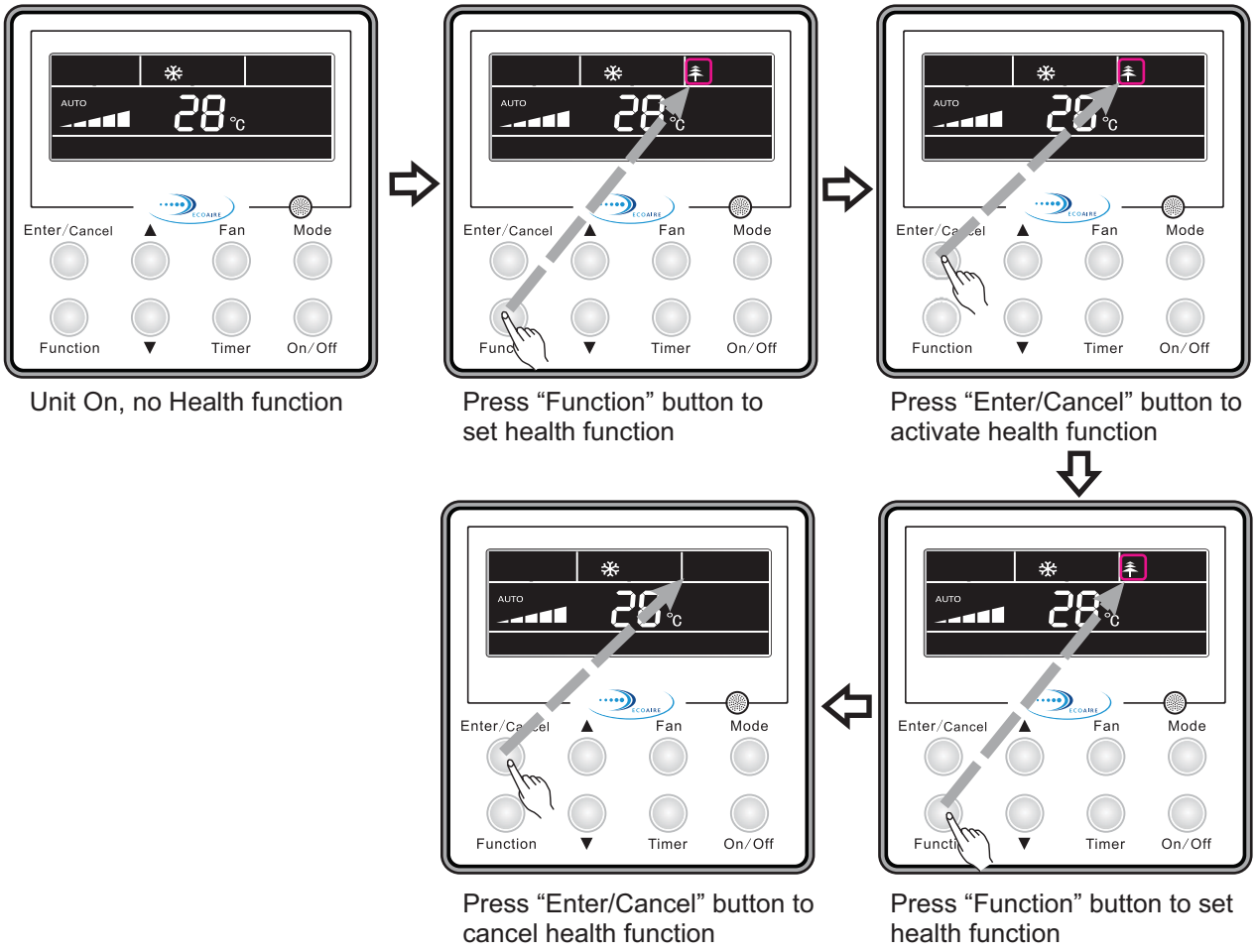
Fig.15 Sleep Curve under the HEAT Mode

3.10 Health Setting

Under unit on status, press “Function” button to select health function with “Health” icon flashing. Press “Enter/Cancel” button to activate health function.

When health is on, press “Function” button to set function, with “health” icon flashing. Then press the “Enter/Cancel” button to cancel health function.

How to set health function is shown in the Fig.16:



Unit On, no Health function

Press “Function” button to set health function

Press “Enter/Cancel” button to activate health function

Press “Enter/Cancel” button to cancel health function

Press “Function” button to set health function

Fig.16 Health Setting

Note:

① . The health function can be cancelled by turning off the unit.

② . The health function can not be cancelled by mode switching.

③ . After the unit is resumed, health function will be maintained.

3.11 I-Demand Setting

Under cooling mode, press “Function” button to select I-Demand function with “I-Demand” icon flashing. Press “Enter/Cancel” button to activate I-Demand function.

When I-Demand is on, press “Function” button to set function, with “I-Demand” icon flashing. Then press the “Enter/Cancel” button to cancel I-Demand function.

How to set I-Demand function is shown in the Fig.17:

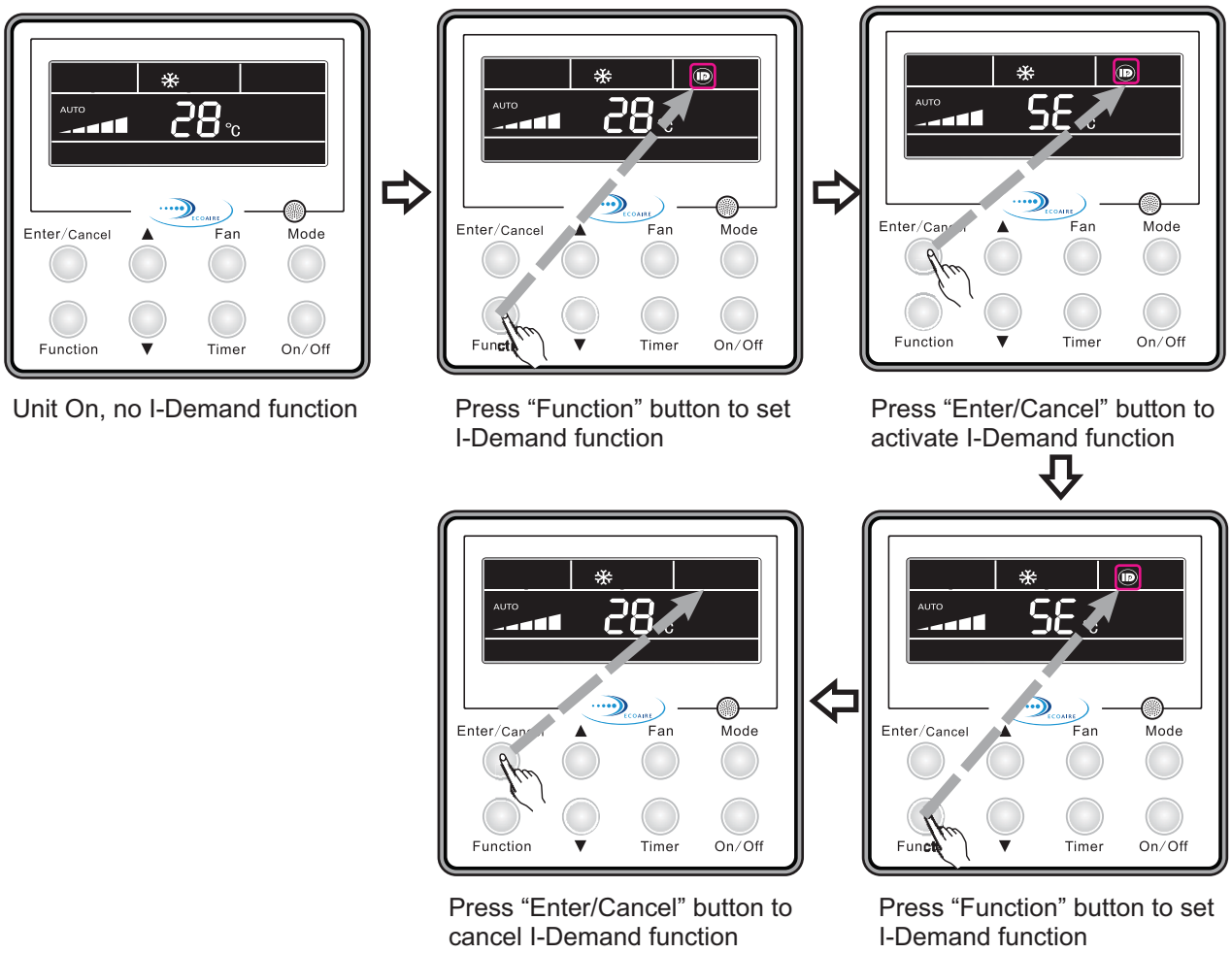


Fig.17 I-Demand Setting

Note:

① . The I-Demand function can be cancelled by mode switch and unit ON/OFF.

② . After the unit is resumed, I-Demand function will be maintained.

③ . The I-Demand function can not be simultaneously set and can be cancelled by Sleep/Quiet function.

④ . When the I-Demand function is set, the unit will run as per Auto fan speed. The Turbo fan speed is not available.

⑤ . When the I-Demand function is set, the setting temperature 27°C can not be changed.

⑥ . When the setting temperature is shielded by the distant control, I-Demand function can not be entered.

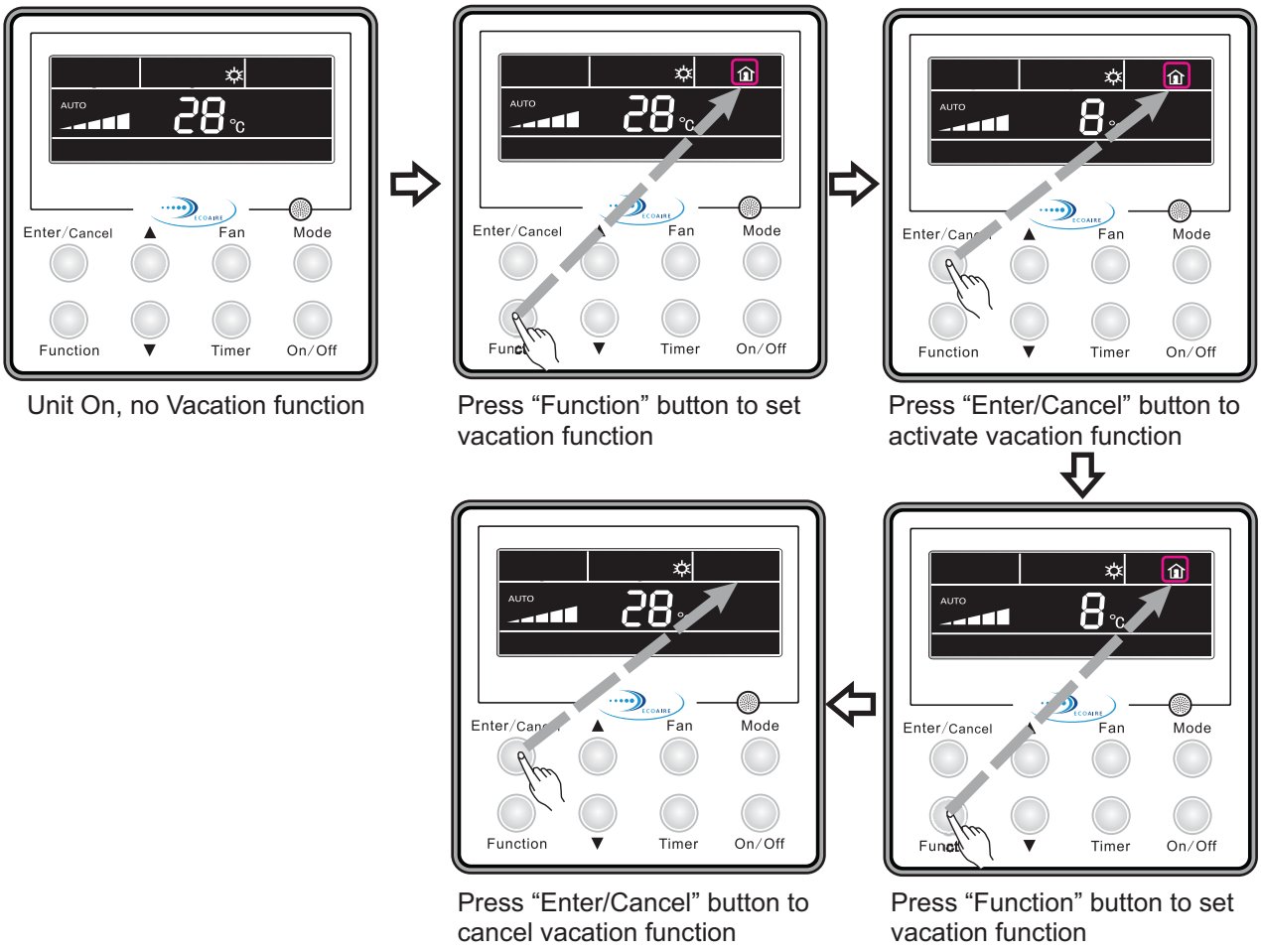
3.12 Vacation Setting

Vacation function: It’s used to keep the indoor ambient temperature and activate fast heating.

Under heating mode, press “Function” button to select Vacation function with “Vacation” icon flashing. Press “Enter/Cancel” button to activate Vacation function.

When Vacation is on, press “Function” button to set function. Then press the “Enter/Cancel” button to cancel Vacation function with no icon flashing.

How to set vacation function is shown in the Fig.18:



Unit On, no Vacation function

Press “Function” button to set vacation function

Press “Enter/Cancel” button to activate vacation function

Press “Enter/Cancel” button to cancel vacation function

Press “Function” button to set vacation function

Fig.18 Vacation Setting

Note:

① . The vacation function can be only set under heating mode.

② . The turbo function will be cancelled when the vacation function is set.

③ . The Sleep and Quiet function will be cancelled when the vacation function is set.

④ . After the unit is resumed, the vacation function will be maintained.

⑤ . When the vacation function is set, the setting temperature can not be shielded by the distant control. In reverse, the vacation function can not be set when the distant shielding is taking into effect.

⑥ . When the vacation function is set, the setting temperature shown on the wired controller is 8°C. The indoor fan will automatically run as per Auto fan speed.

⑦ . The vacation function can be cancelled when there is mode switching. The temperature will go back to the original setting temperature prior to vacation function.

⑧ . Unit ON/OFF will not cancel the vacation function.

3.13 Turbo Function Setting

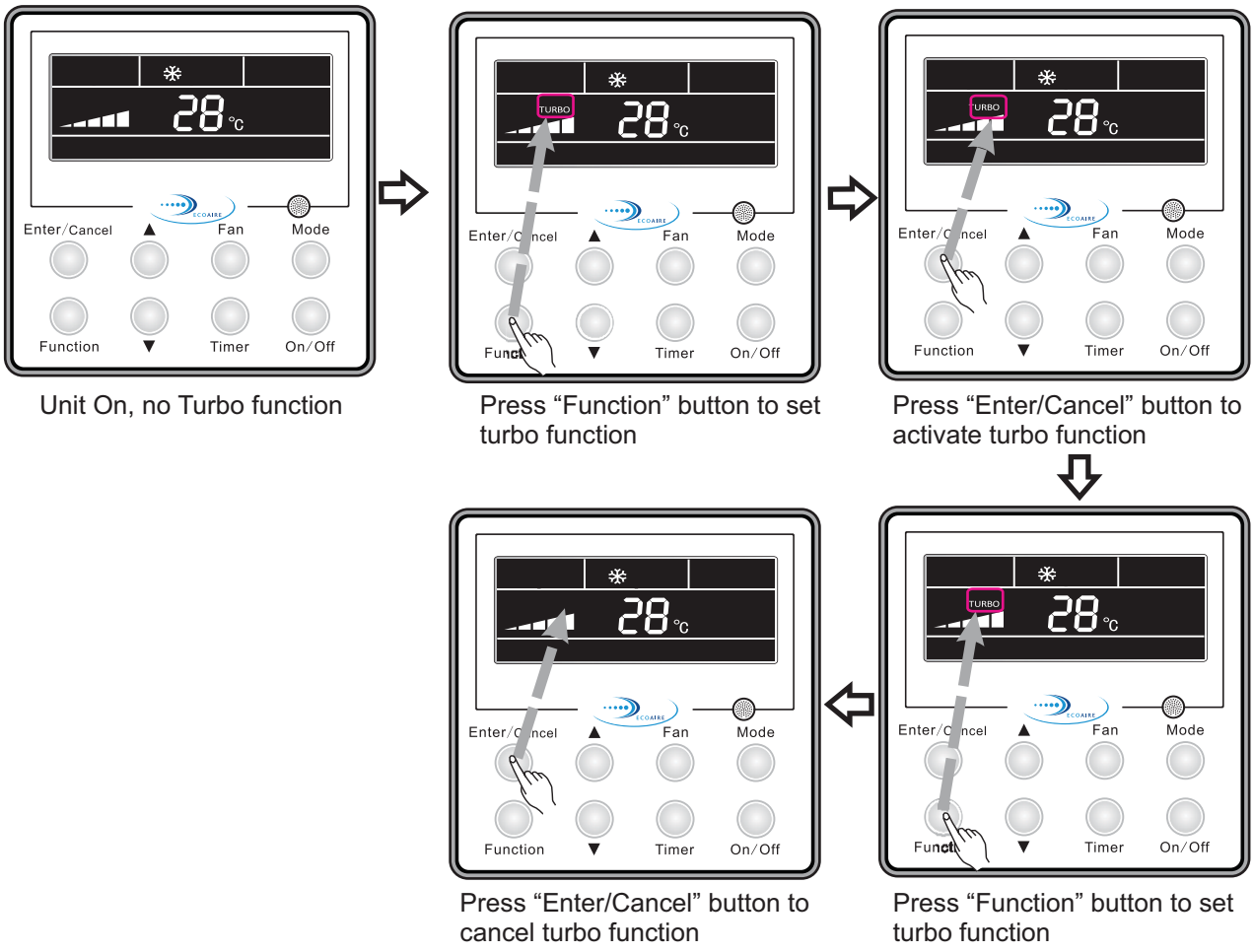
TURBO function: The unit at the highest fan speed can realize quick cooling or heating so that room temperature can quickly approach the setting temperature.

In the COOL or HEAT mode, press the Function button to select the "Turbo" function option and then press the Enter/Cancel button to activate it.

When the "Turbo" function is activated, it can be deactivated by firstly pressing the Function

button to select the "Turbo" option and then pressing the Enter/Cancel button.

Turbo function setting is as shown in Fig.19:



Unit On, no Turbo function

Press “Function” button to set turbo function

Press “Enter/Cancel” button to activate turbo function

Press “Enter/Cancel” button to cancel turbo function

Press “Function” button to set turbo function

Fig.19 Turbo Function Setting

Notes:

① . The Turbo function will not be deactivated due to power failure. In DRY, FAN and AUTO modes, the Turbo function is unavailable and the function symbol won’t be displayed.

② . The Turbo function will be automatically deactivated as the Quiet function is activated.

③ . The FAN button can also be used to adjust Turbo function.

3.14 SAVE Function Setting

Energy Saving Function: Energy saving can make the air conditioner runs in a smaller temperature range by setting lower limited value of setting temperature in the COOL or DRY mode and upper limited value in the HEAT mode.

(1). Energy Saving Setting for Cooling

When the unit runs under the COOL or DRY mode, press the Function button to select the “SAVE” function option, with “SAVE” flashing, and then press ▲ or ▼ to adjust the lower limit, after that, press the Enter/Cancel button to activate this function.

(2). Energy Saving Setting for Heating

When the unit runs under the HEAT mode, press the Function button to select the “SAVE” function option, with “SAVING” flashing, then press the Mode button to switch to the “SAVE” setting for the HEAT mode and then press ▲ or ▼ to adjust the upper limit, after that, press the Enter/

Cancel button to activate this function.

The activated SAVE function can be deactivated by firstly pressing the “Function” button to select the “SAVE” option and then pressing the “Enter/Cancel” button.

The energy saving setting is as shown in the Fig.20:

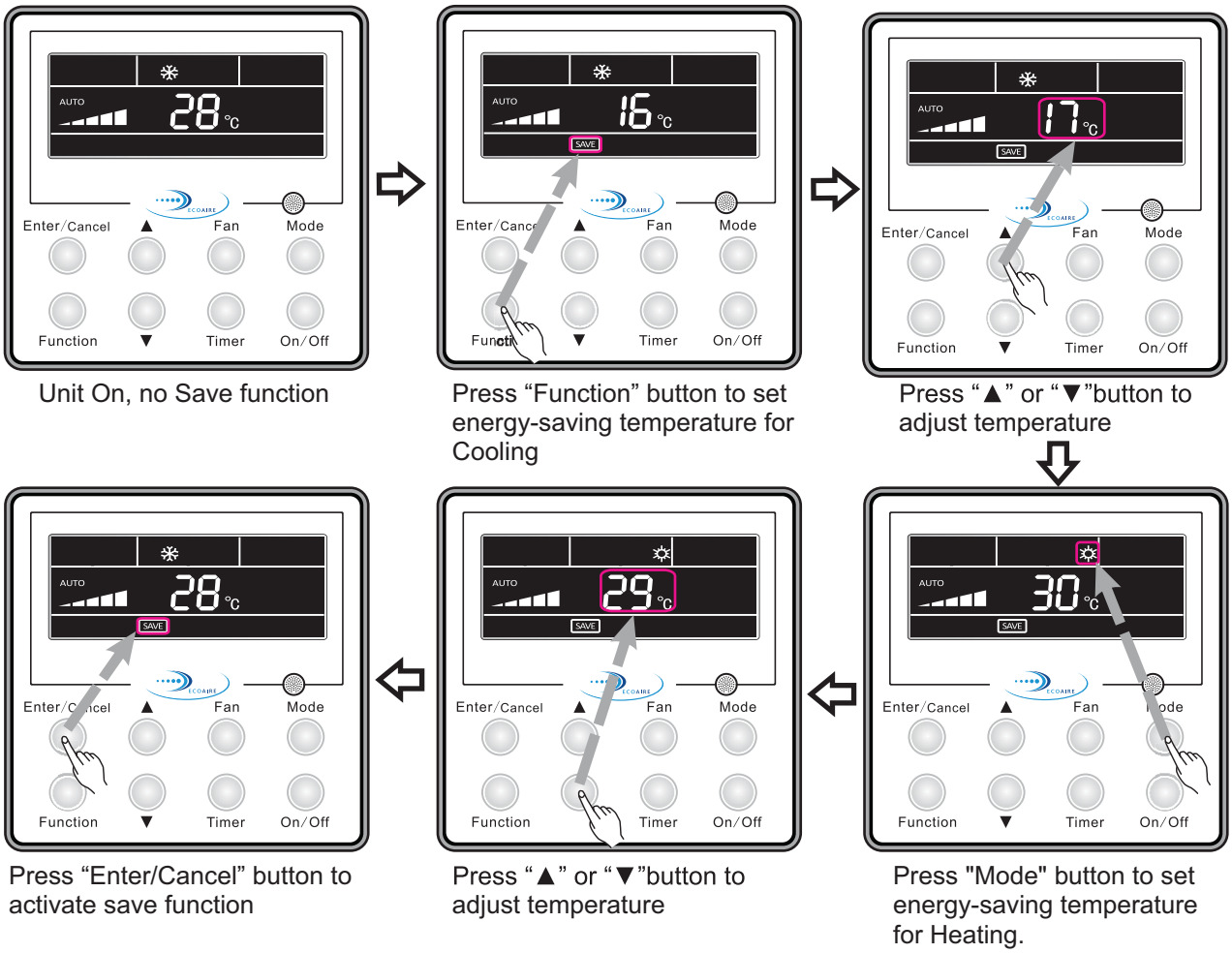


Fig.20 SAVE Function Setting

Notes:

① . Under the Auto mode, when the “SAVE” function is activated, the unit will forcibly quit the Auto mode and change to the current operation mode. Further, the “Sleep” function will be deactivated when the “SAVE” function is activated.

② . During the “SAVE” setting, if the Function button is pressed down or there is not any operation within 5s after the last button operation, the system will quit the “SAVE” setting with the current setting data not saved.

③ . The “SAVE” function setting will be memorized in case of power failure.

④ . The lower limit for cooling is 16 °C and the upper limit for heating is 30°C.

⑤ . During the “SAVE” setting, if the expected setting temperature is out of the limit, then the limit temperature always prevail.

3.15 E-HEATER Setting

E-HEATER: in the HEAT mode, “E-HEATER” function is allowed to be activated to improve the heating efficiency. Generally, it will be activated automatically as the unit goes into the HEAT mode through any button operations .

Activation of the “E-HEATER” Function: firstly press the Function button to select the “E-HEATER” option, with the symbol “E-HEATER” flashing, and then press the Enter/Cancel button to activate it. After the activation, the symbol “E-HEATER” will always be displayed.

Deactivation of the “E-HEATER” Function: firstly press the Function button to select the “E-HEATER” option, with the symbol “E-HEATER” flashing, and then press the Enter/Cancel button to deactivate it.

“E-HEATER” Function setting is as shown in Fig.21:

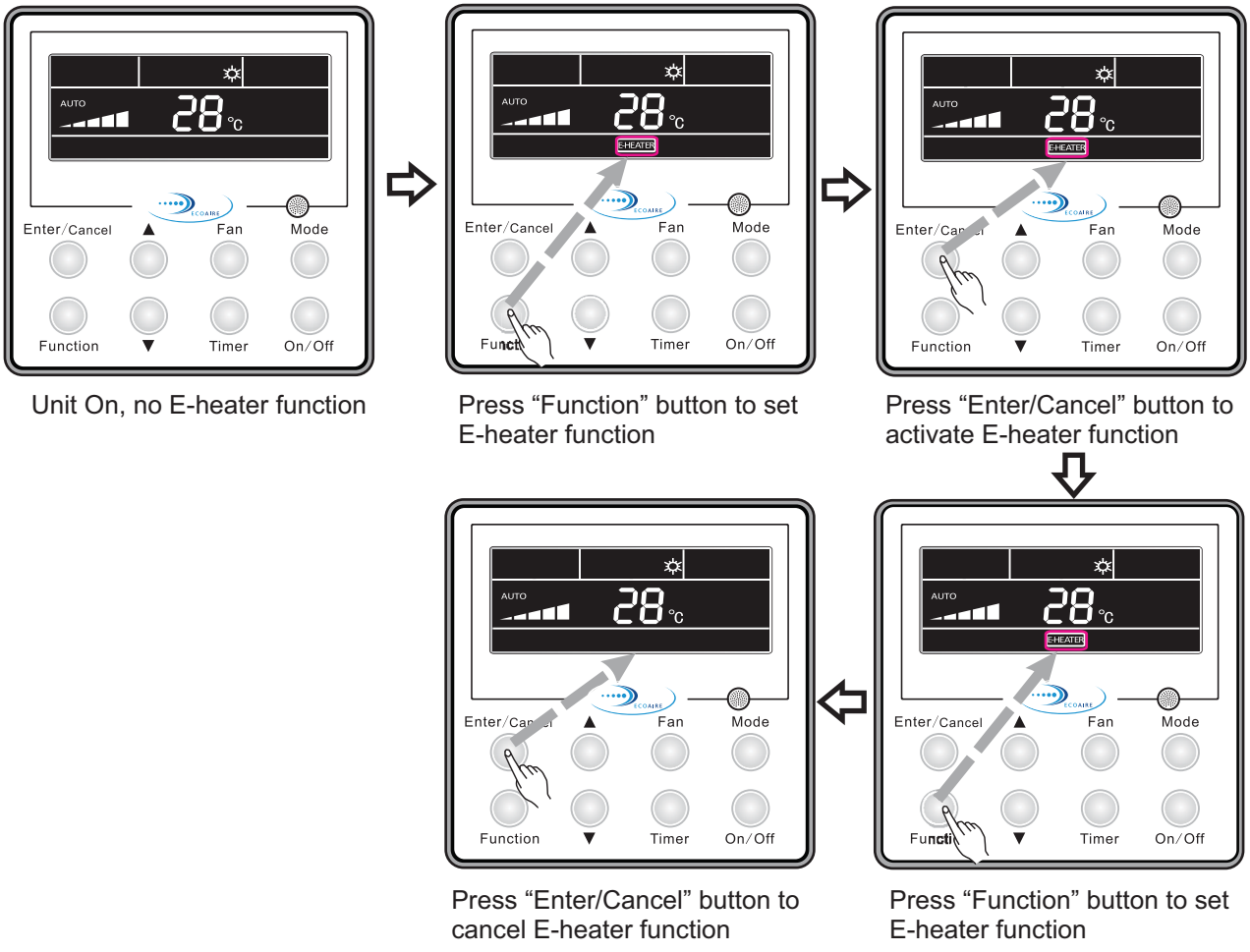


Fig.21 “E-HEATER” Function Setting

Note: The “E-HEATER” function is not available in the COOL, DRY, and FAN modes, with the symbol “E-HEATER” not displayed.

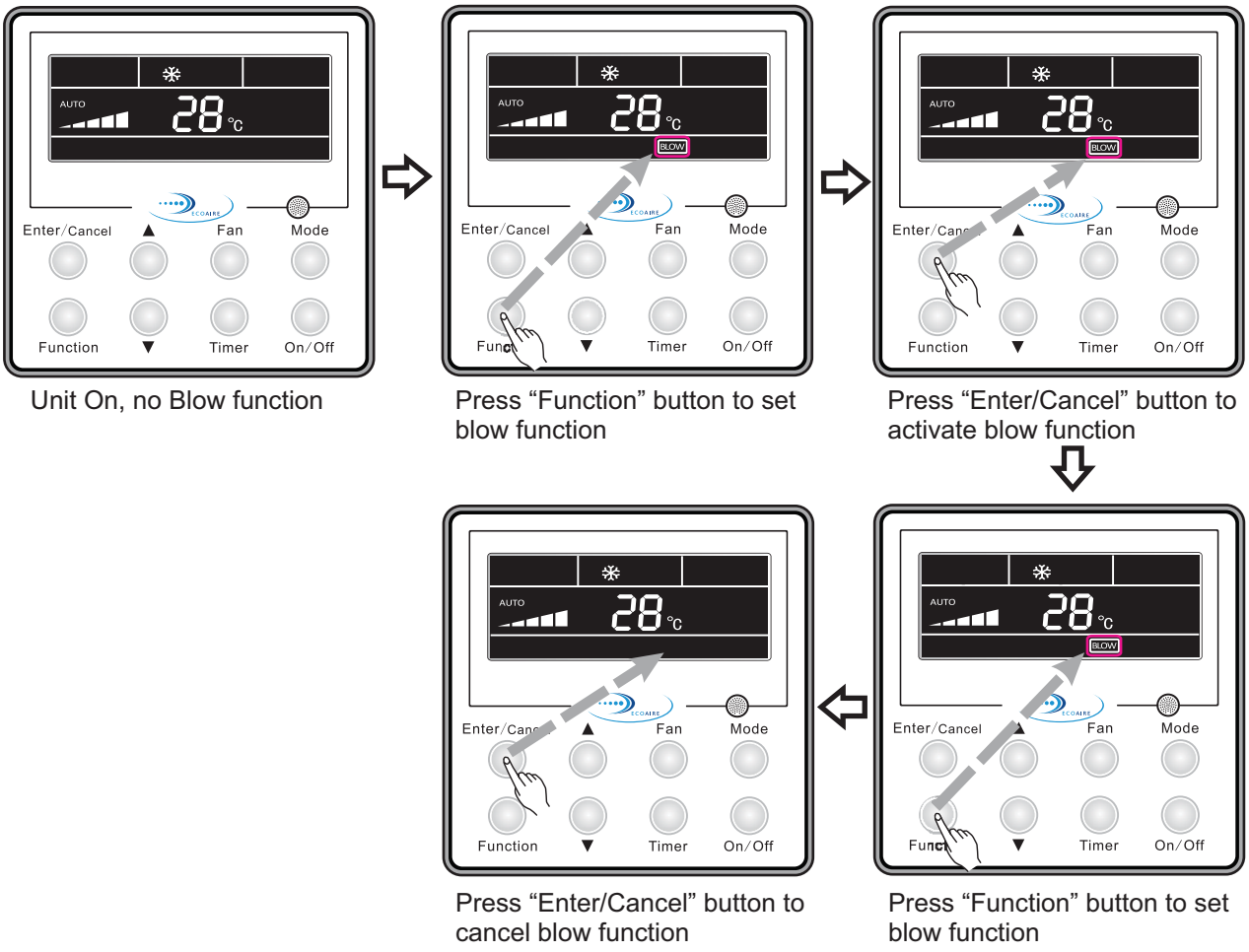
3.16 Blow Function Setting

BLOW function: After the unit is turned off, water in evaporator of indoor unit will be automatically evaporated to avoid mildew.

Activation of the “Blow” Function: in the COOL or DRY mode, press the Function button to select the “Blow” option, with the symbol “BLOW” flashing, and then press the Enter/Cancel button to activate it.

Deactivation of the “Blow” Function: The activated “Blow” function can be deactivated by firstly pressing the Function button to select the “Blow” option and then pressing the Enter/Cancel button.

BLOW function setting is as shown in Fig.22:



Unit On, no Blow function

Press “Function” button to set blow function

Press “Enter/Cancel” button to activate blow function

Press “Enter/Cancel” button to cancel blow function

Press “Function” button to set blow function

Fig.22 Blow Function Setting

Notes:

① . When the “Blow” function is activated, if the unit is turned off through the On/Off button, the indoor fan will still run at low fan speed for another 10 minutes. When the “Blow” function is deactivated, the indoor fan will stop directly as the unit is turned off.

② . The “Blow” function is not available in the FAN and HEAT modes.

3.17 Filter Setting

Under On status, press “Function” button to set “Filter” function with “Filter” icon flashing. The setting pollution level will be shown at the Timer area. Press “▲” and “▼” to adjust pollution level and press “Enter/Cancel” button to activate Filter function.

When the Filter function is set, press “Function” button to set with “Filter” icon flashing. Press “▲” and “▼” to adjust till “00” is shown on the timer area. Then press “Enter/Cancel” button to cancel the Filter function.

How to set Filter function is shown in the Fig.23:

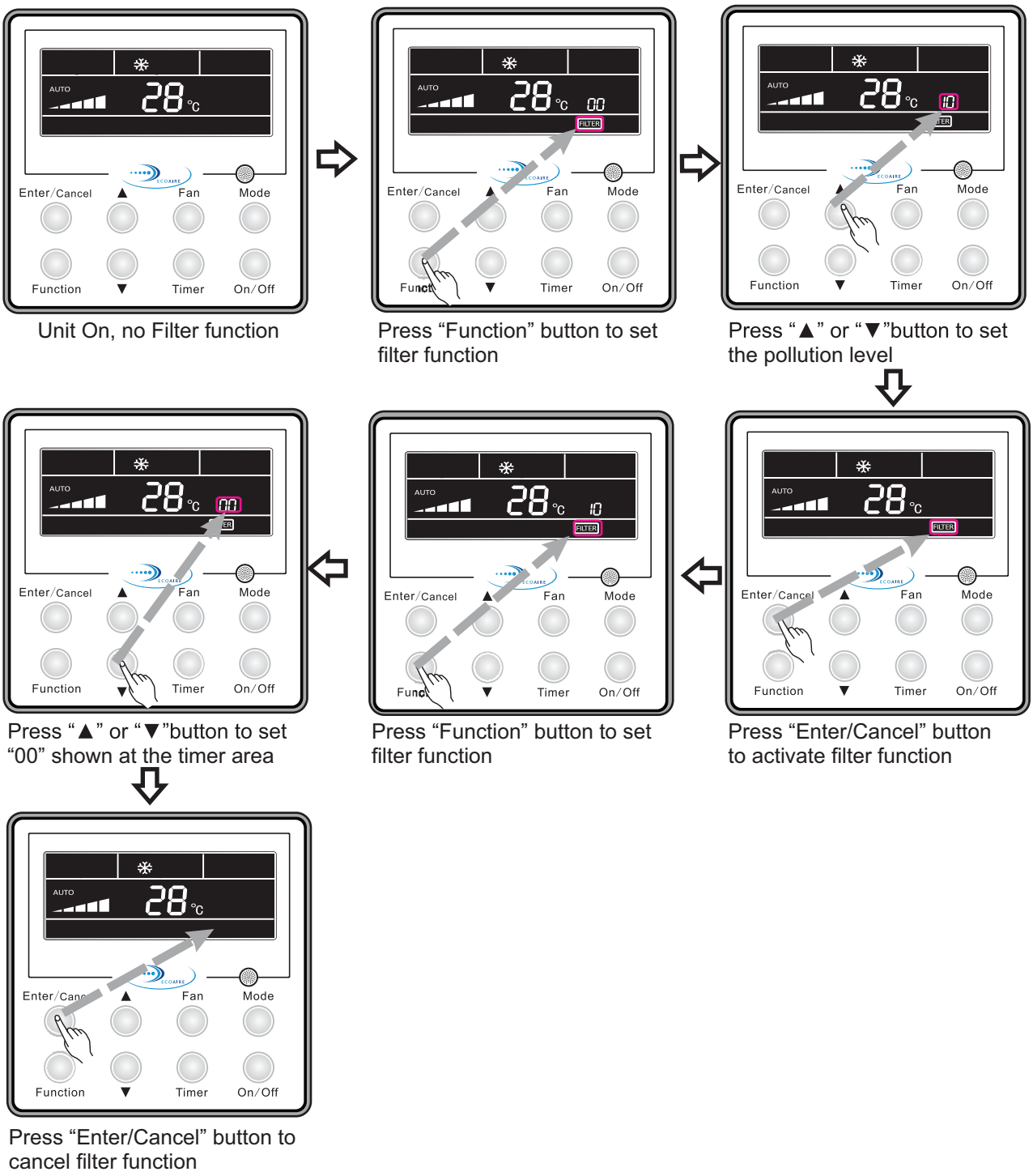


Fig.23 Filter Setting

While setting Filter, two numbers will be shown on the timer area. The first number represents the pollution level. The second number shows the accumulated operating time of the indoor fan. There are four statuses in total:

① . No Filter function setting (“00” shown at the timer area)

② . When the filter reaches light-level pollution, “1” will be shown at the first place, When “0” shows up at the second place, the accumulated operating hour reaches 5500h. Every increase of the number means another 500h is accumulated. When “9” shows up, it means the operating hour reaches 10000h.

③ . When the filter reaches middle-level pollution, “2” will be shown at the first place, When

"0" shows up at the second place, the accumulated operating hour reaches 1400h. Every increase of the number means another 400h is accumulated. When "9" shows up, it means the operating hour reaches 5000h.

④. When the filter reaches serious-level pollution, "3" will be shown at the first place, When "0" shows up at the second place, the accumulated operating hour reaches 100h. Every increase of the number means another 100h is accumulated. When "9" shows up, it means the operating hour reaches 1000h.

Pollution level with corresponding operating hour:

Table 3

Pollution level	Accumulated operating time (h)	Pollution level	Accumulated operating time (h)	Pollution level	Accumulated operating time (h)
10	5500	20	1400	30	100
11	6000	21	1800	31	200
12	6500	22	2200	32	300
13	7000	23	2600	33	400
14	7500	24	3000	34	500
15	8000	25	3400	35	600
16	8500	26	3800	36	700
17	9000	27	4200	37	800
18	9500	28	4600	38	900
19	10000	29	5000	39	1000

Note:

①. If the Filter function is effectively set, the FILTER icon will light up.

②. If it is not necessary to clean the filter, no matter whether the setting is changed or not, the unit will not restart to timing while pressing "Enter/Cancel" button.

③. If the filter should be cleaned, under On/OFF status, the FILTER icon will blink once every 0.5s so as to remind user to clean the filter. Press "Function" button to set with icon FILTER flashing. Press "▲" and "▼" to adjust pollution level, and then press "Enter/Cancel" button to activate it. If the setting pollution level is lighter than before, the icon FILTER will keep flashing. If the setting pollution level is more serious, the icon FILTER will go out, and the Filter function will keep on working.

④. The only method to cancel Filter function is, when the function is set with icon FILTER flashing, let "00"shown at the timer area, at this time, the accumulated time will be zero clearing.

3.18 Quiet Function Setting

Press "Function" button to set Quiet function with its icon flashing. Press "Enter/Cancel" button to activate Quiet function.

When the quiet function is On, press "Function" button to set with Quiet icon flashing, press "Enter/Cancel" button to cancel Quiet function.

How to set Quiet function is set in the Fig. 24:

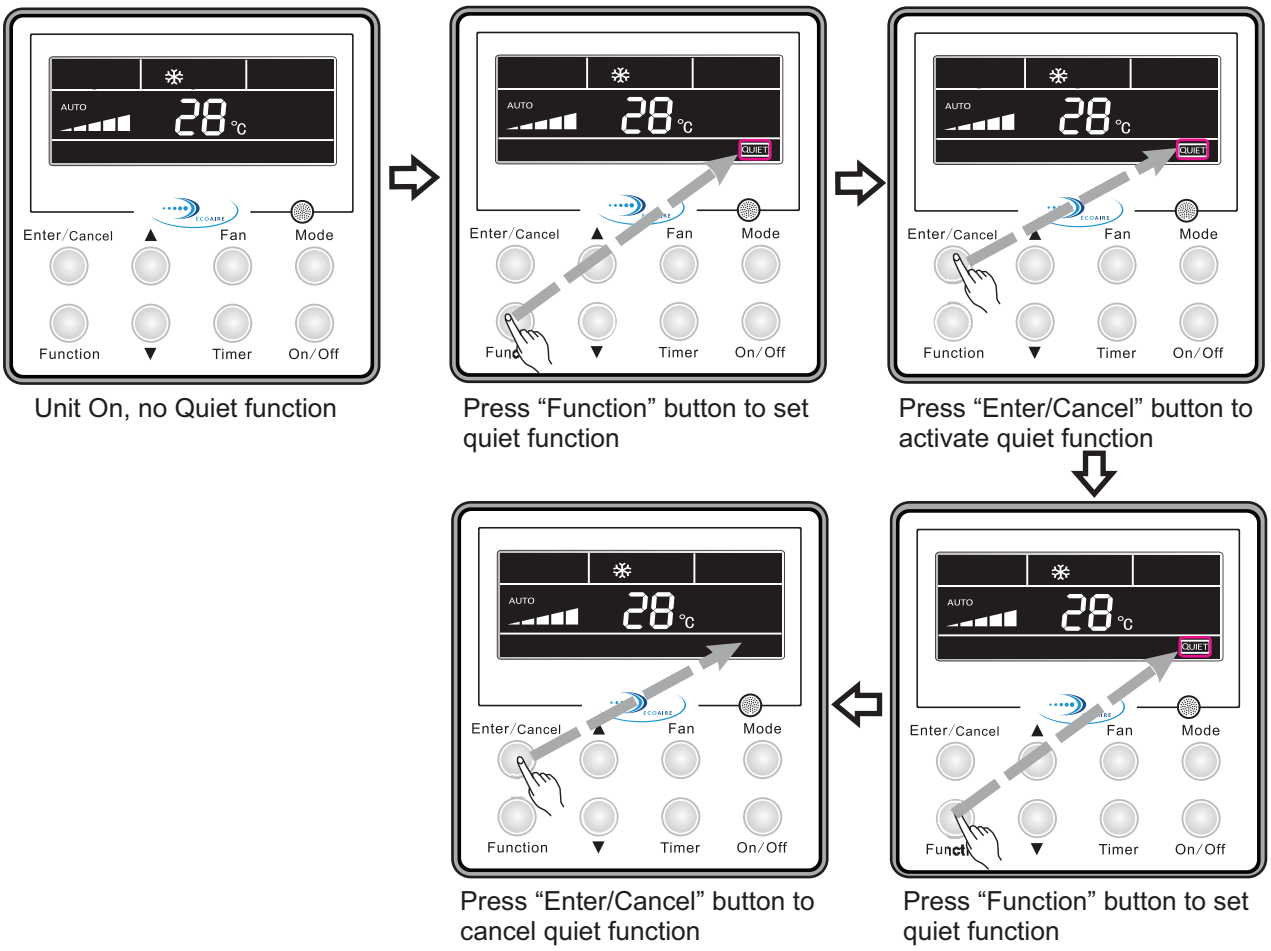


Fig.24 Quiet function setting

Notes:

① . "QUIET" function is unavailable in Fan or Dry mode. Owing to power failure, the "Quiet" function is defaulted to be deactivated.

② . If quite function is set, turbo function will be canceled.

3.19 Ultra-Dry Setting

Under Dry mode, when the setting temperature is 16°C, press “▼” button twice and the setting temperature will be changed to 12°C, at this time, the unit enters the Ultra-Dry function.

When the Ultra-Dry function is activated, it can be cancelled by pressing “▲” button or pressing “Mode” button to switch mode.

3.20 Other Functions

3.20.1 Lock Function

Under the ON state of the unit without any malfunction or under the OFF state of the unit, press ▲ and ▼buttons at the same time for 5s till the wired controller enters the lock state. In this case, LCD displays . After that, repress these two buttons at the same time for 5s to quit the lock state.

Under the lock state, no response will be given to the other button operation.

3.20.2 Memory Function

Memory switchover: Under the OFF state of the unit, press the Mode and ▲ buttons at the same time for 5s to switch memory modes. When setting the memory mode, “MEMORY” will be displayed. If this function is deactivated, the unit will go to the OFF state after power recovery.

Memory recovery: If the memory function is On, the wired controller after power failure will resume its original running state upon power recovery.

Note: It will take about 5 seconds to save data. Therefore, please do not cut down the power at this time, or data will fail to be saved.

3.20.3 Selection of Centigrade and Fahrenheit

Under the OFF state of the unit, press the Mode and ▼ buttons at the same time for 5s, Centigrade and Fahrenheit scales will be switched alternately.

3.20.4 Ambient Temperature Enquiry

Under On/Off status, press “Confirm” button for 5s, it will enter Enquiry interface. At this time, what shows on the timer area is the ambient temperature type: 01 or 02 and the temperature will be shown. “01” means the outdoor ambient temperature and “02” represents the indoor ambient temperature. Press “Mode” button to switch between those two types. Press any other button except Mode button or receive the signal from the remote controller will quit from the Enquiry function. If there is no operation in 20s, the unit will quit from this function automatically.

Note:

① . If the unit is not connected with the ambient temperature sensor, after 12h electrification, the display of the ambient temperature sensor will be shielded.

② . If the outdoor temperature sensor has error, after 12h electrification, the display of the ambient temperature sensor will be shielded.

3.20.5 Indoor fan shutdown mode setting

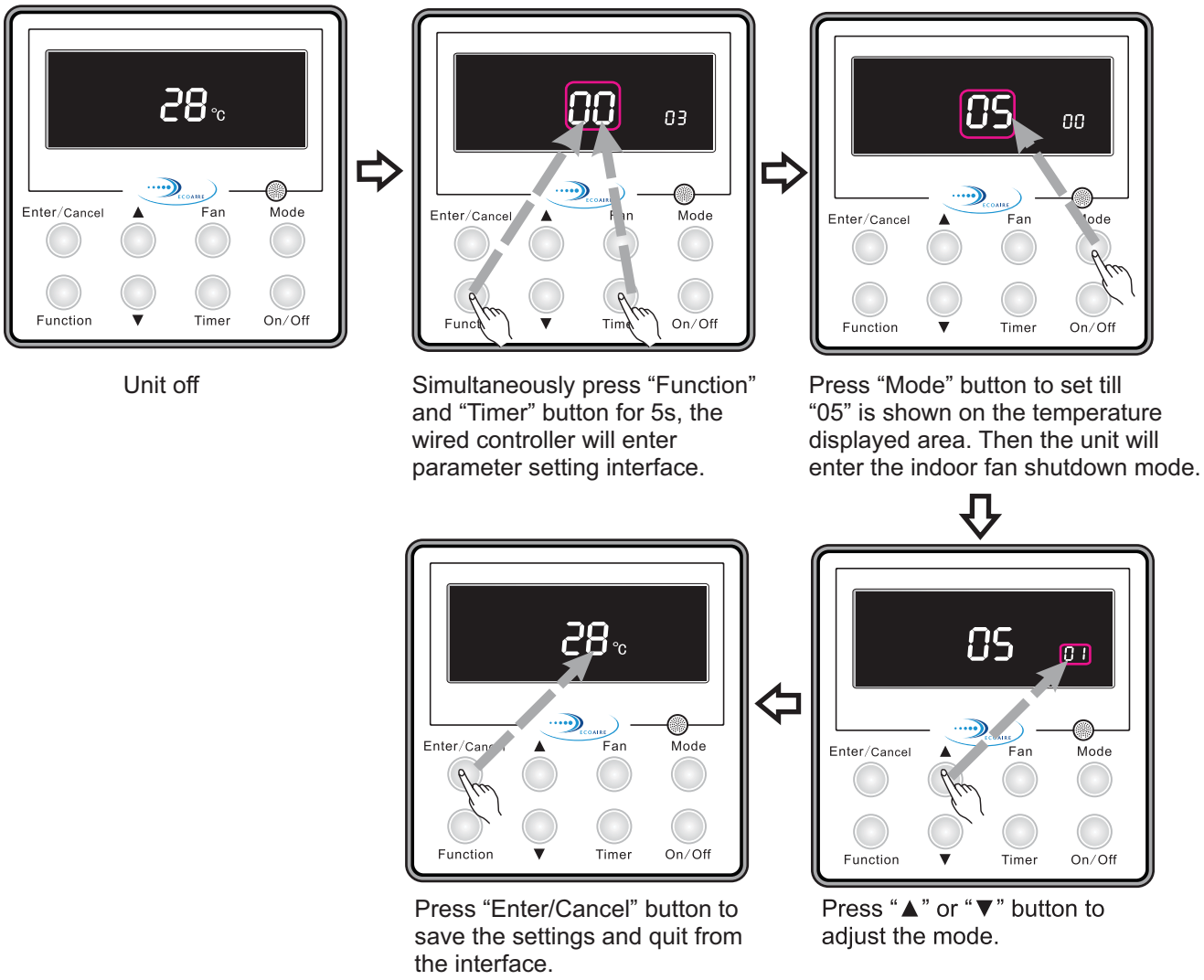
Under unit OFF status, simultaneously press “Function” and “Timer” button for 5s, the wired controller will enter parameter setting interface. Press “Mode” button to set till “05” is shown on the temperature displayed area. Then the unit will enter the indoor fan shutdown mode.

Two options are available for the indoor fan shutdown mode:

Mode 1: When the temperature reaches certain value, the indoor fan will not be shut down at any mode except heating mode. After the unit is shut down, for the duct type unit and the floor ceiling type unit, the indoor fan will blow the extra heat for 60s and then stop running. For the cassette type unit, its indoor fan will operate at low fan speed and blow the extra heat for 60s only when error happens to it.

Mode 2: No matter the unit is under which mode, the indoor fan will keep running for 10s after the temperature reaches certain value, then it will stop.

Press “▲” or “▼” button to adjust the mode. Under Mode 1/2, “00”/ “01” will show up in the timer area. Then press “Enter/Cancel” button to save the settings. The setting procedures are shown as Fig.25:



Unit off

Simultaneously press “Function” and “Timer” button for 5s, the wired controller will enter parameter setting interface.

Press “Mode” button to set till “05” is shown on the temperature displayed area. Then the unit will enter the indoor fan shutdown mode.

Press “Enter/Cancel” button to save the settings and quit from the interface.

Press “▲” or “▼” button to adjust the mode.

Fig.25 Indoor fan shutdown mode setting

Note: In the parameter setting interface, only when “05” shown on it, the indoor fan shutdown mode can be set. Other parameters are not allowed to be modified and our company is not responsible for the unit damage or property loss due to parameter changed by customers.

4 Installation of the Wired Controller

4.1 Standard Parts

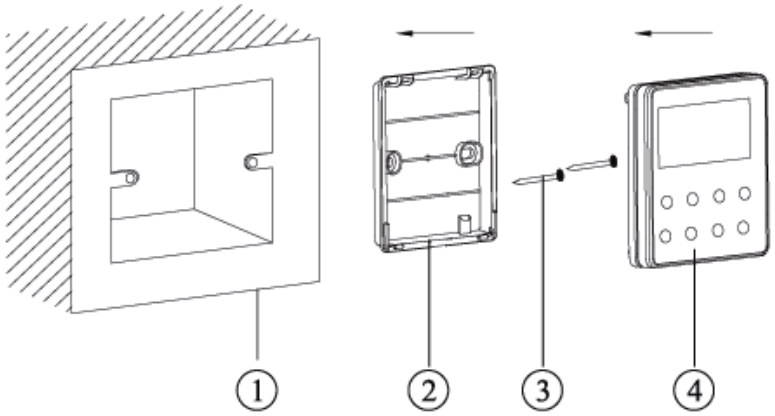


Fig.26 Standard Parts of the Wired Controller

Table 4 Standard Parts

No.	Description	Quantity
1	Base Box	1
2	Soleplate	1
3	Screw M4×25	2
4	Front Panel	1

4.2 Installation Location and Installation Requirements

(1). Do not install the wired controller in the damp place or under direct sunlight.

(2). Do not install the wired controller close to the hi-temperature object or place where the wired controller is likely to suffer water spray.

(3). Do not install the wired controller directly opposite to the window so as to avoid improper operation caused by the interference of the neighbor's same model wired controller.

(4). Please cut off the power supply of wires embedded in the wall. No operation is allowed with electricity.

(5). To avoid abnormal operation caused by electromagnetic interference or other causes, please take notice of the following statements during wiring.

① . Be sure the communication line is wired into the correct port, otherwise it would result in communication fault.

② . The communication line (wired controller) and power line must be separated with the minimal distance of 20cm, otherwise it would result in communication fault.

③ . Suppose that the air conditioner is installed where likely to suffer electromagnetic interference, the communication line of the wired controller must be shielded twisted pair.

4.3 How to Install the Wired Controller

First of all, the selection and connecting method of the communication line is shown as follows:

(1). Select appropriate communication line of the wired controller: 2-core signal line (wire size≥0.75mm^2, length<30m, recommended length: 8m).

(2). After the indoor unit is de-energized, fix the communication line on the indoor terminal board by screws.

Then, the specific installation steps is shown in the Fig.27:

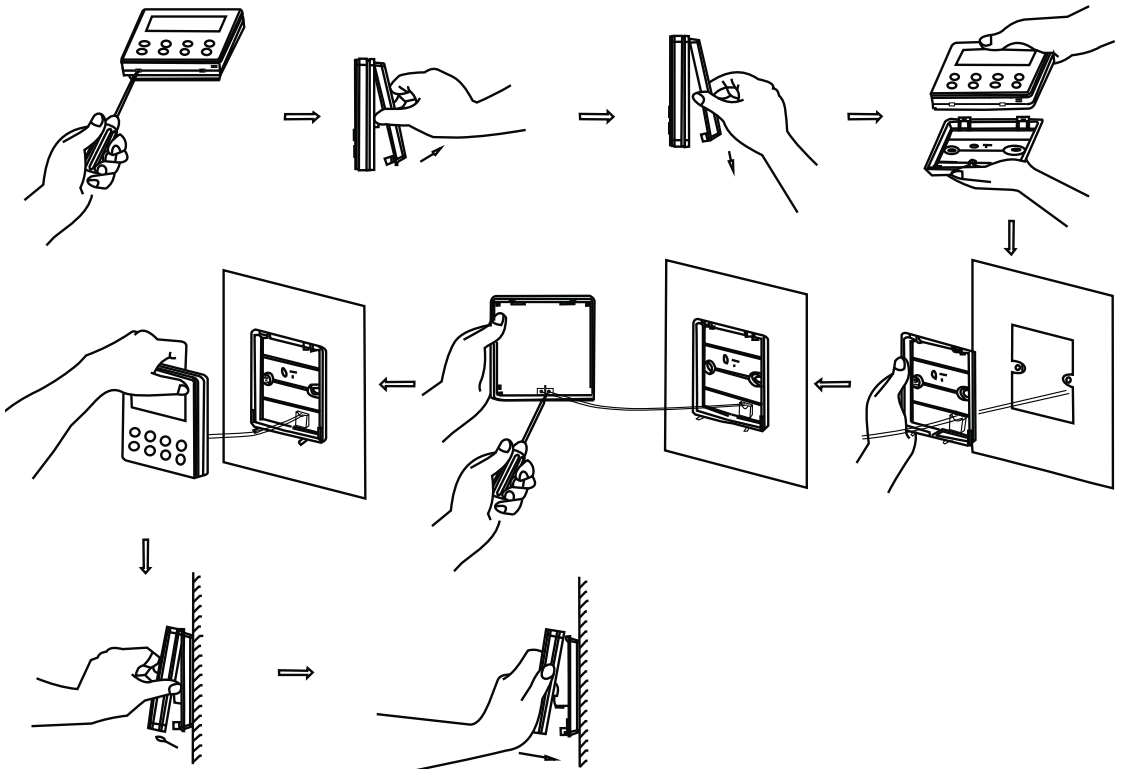


Fig.27 Installation of the Wired Controller

Brief instructions:

① . Pull out the 2-core signal line from the mounting hole and pass this line through the round hole located at the bottom of the wired controller.

② . Use M4×25 screws to fix the soleplate of the wired controller on the wall.

③ . Fix the signal line on the copper tabs X1 and X2. Make sure the line is tightly fixed and with no short-circuit potential.

④ . Set the panel and the bottom together by clasps.

4.4 How to Remove the Wired Controller

The wired controller can be easily removed as shown in Fig.28

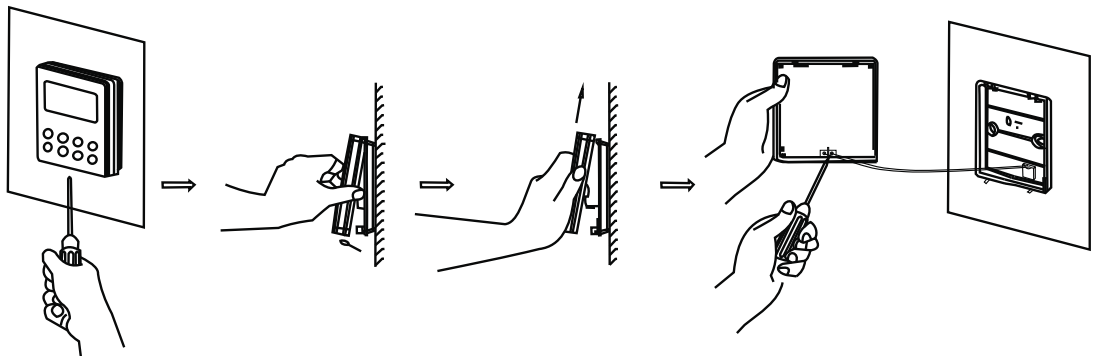


Fig.28 Removal of the Wired Controller

5 Error Display

When error happens to the unit, the error code will be shown on the wired controller. When multiple errors simultaneously happen, the error codes will circularly show up.

When error occurs, please immediately shut down the unit and contact professional personnel. As shown in the Fig.29 means the high pressure protection.

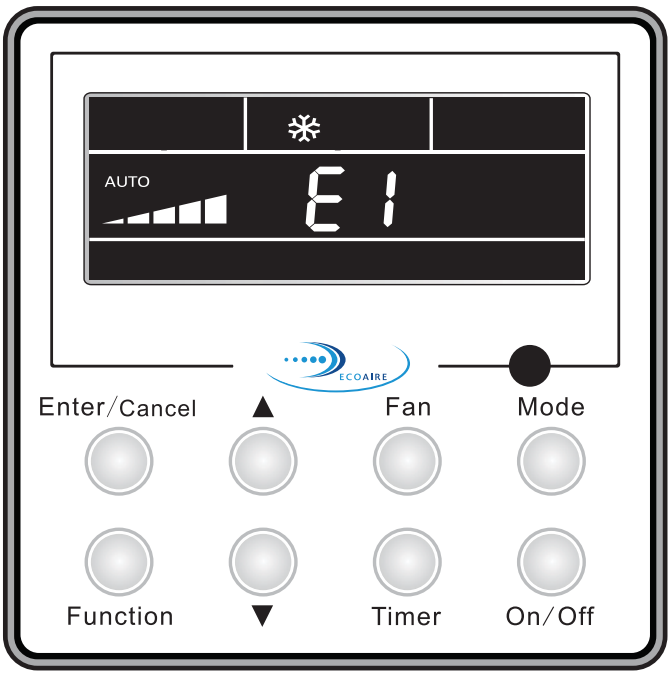


Fig.29

Error codes and their meanings:

Table 5

Number	Error code	Error
1	E1	Compressor high pressure protection
2	E2	Indoor anti-freeze protection
3	E3	Compressor low pressure protection, refrigerant lack protection and refrigerant colleting 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	F5	Temperature sensor error of wired controller
14	C5	Capacity code error
15	EE	Outdoor memory chip error
16	PF	Electric box sensor error
17	H3	Compressor overload protection
18	H4	Overloading
19	H5	IPM protection
20	H6	DC fan motor error
21	H7	Drive desynchronizing protection
22	Hc	Pfc protection
23	L1	Humidity sensor error
24	Lc	Activation failure
25	Ld	Compressor phase sequence protection
26	LF	Power protection
27	Lp	Indoor and outdoor mismatch
28	U7	4-way valve direction changing protection
29	P0	Drive reset protection
30	P5	Over-current protection
31	P6	Communication error between main control and drive
32	P7	Drive module sensor error

33	P8	Drive module over temperature protection
34	P9	Zero passage protection
35	PA	AC current protection
36	Pc	Drive current error
37	Pd	Sensor connecting protection
38	PE	Temperature drift protection
39	PL	Bus low voltage protection
40	PH	Bus high voltage protection
41	PU	Charge loop error
42	PP	Input voltage abnormality
43	ee	Drive memory chip error

1.2 Description of Drive Malfunction

1.2.1 Main board dual 8 numeral tube Display Codes for Outdoor Unit of 09~60k

Malfunction Item	Indoor Unit Display	Outdoor unit display of dual 8 numeral tube
DC busbar over-voltage protection	PH	PH
IPM or PFC over-temperature protection	P8	P8
Current sense circuit error	Pc	Pc
IPM or PFC temperature sensor error	P7	P7
Compressor current protection	P5	P5
DC busbar under-voltage protection	PL	PL
Compressor startup failure	Lc	Lc
Drive module reset	P0	P0
Compressor motor desynchronizing	H7	H7
Phase loss	Ld	Ld
Drive-to-main-control communication error	P6	P6
IPM protection	H5	H5
Compressor overload protection	H3	H3
AC current protection (input side)	PA	PA
Charging circuit error	PU	PU
PFC protection	Hc(48K only)	Hc(48K only)
DC fan error	H6	H6
Input AC voltage abnormality	PP	PP
Driving board memory chip error	ee(09-42K)	ee(09-42K)

MAINTENANCE
1 TROUBLE TABLE
1.1 Main Control Malfunction

Table 4-1-1 Fault Display on Indoor Wired Controller

No.	Error code	Malfunction name	Origin of malfunction signal	Control description
1	E1	High pressure protection	High pressure switch	When outdoor unit detects the high pressure switch is cut off for 3s successively, high pressure protection will occur. All the loads (except the 4-way valve in heating mode) will be switched off. In this case, all the buttons and remote control signals except ON/OFF button will be disabled and cannot be recovered automatically. Switch off the unit or re-energize the unit after cutting off power to eliminate this protection.
2	E2	Freeze protection	Indoor evaporator temperature sensor	If detecting that the evaporator temperature is lower than protective temp. value after the unit has been running for a period of time under cooling or dry mode, the unit will report this fault, in which case the compressor and outdoor fan motor will be stopped. The unit will not run until evaporator temperature is higher than the protective temp. value and the compressor is stopped for 3min.
3	E3	Low pressure protection	Low pressure switch	If it is detected within 30s successively that the low-pressure switch is cut off under ON or standby state, the unit will report low pressure protection. If the fault occurs successively 3 times within 30min, the unit cannot be recovered automatically.
		Refrigerant lacking protection		If the unit reports system refrigerant lacking within 10min after turning on the unit, the unit will stop operation. If the fault occurs successively 3 times, the unit cannot be recovered automatically.
		Refrigerant recycling mode		If enter refrigerant recycling mode through special operation, E3 will be displayed. After exiting refrigerant recycling mode, the code will disappear.
4	E4	Compressor high discharge temperature protection	Compressor discharge temperature is high	If outdoor unit detects that the discharge temperature is higher than protective temp. value, the unit will report high discharge temperature protection. If the protection occurs over 6 times, the unit cannot be recovered automatically. Switch off the unit or re-energize the unit after cutting off power to eliminate this protection.
5	E6	Communication malfunction	Communication between indoor and outdoor mainboard	If the outdoor unit does not receive data from indoor unit, communication malfunction will be reported. If there is communication abnormity between display board and indoor unit, communication malfunction will be reported too.
6	E8	Malfunction of indoor fan motor	Indoor fan motor	If the indoor unit does not receive signal from indoor fan motor for 30s successively when the fan motor is operating, indoor fan motor malfunction will be reported. In this case, the unit can automatically resume operation after stopping. If the malfunction occurs 6 times within one hour, the unit cannot be recovered automatically. Switch off the unit or re-energize the unit after cutting off power to eliminate this malfunction.
7	E9	Full water protection	Water level switch	If cut-off of water level switch is detected for 8s successively once energized, the system will enter full water protection. In this case, switch off the unit and then switch it on to eliminate this malfunction.
8	F0	Malfunction of indoor ambient temperature sensor at air return port	Indoor ambient temperature sensor	If the indoor ambient temperature sensor is detected of open circuit or short circuit for 5s successively, indoor ambient temperature sensor malfunction will be reported. The unit can automatically resume operation after the malfunction disappears. If indoor ambient temperature sensor malfunction occurs in fan mode, only the error code is displayed and the indoor unit can work normally.
9	F1	Malfunction of evaporator temperature sensor	Evaporator temperature sensor	If the indoor evaporator temperature sensor is detected of open circuit or short circuit for 5s successively, evaporator temperature sensor malfunction will be reported. The unit can automatically resume operation after the malfunction disappears. If evaporator temperature sensor malfunction occurs in fan mode, only the error code is displayed and the indoor unit can work normally.

10	F2	Malfunction of condenser temperature sensor	Condenser temperature sensor	If the outdoor condenser temperature sensor is detected of open circuit or short circuit for 5s successively, condenser temperature sensor malfunction will be reported. The unit can automatically resume operation after the malfunction disappears. If condenser temperature sensor malfunction occurs in fan mode, only the error code is displayed and the indoor unit can work normally.
11	F3	Malfunction of outdoor ambient temperature sensor	Outdoor ambient temperature sensor	If the outdoor ambient temperature sensor is detected of open circuit or short circuit for 5s successively, outdoor ambient temperature sensor malfunction will be reported. The unit can automatically resume operation after the malfunction disappears. If outdoor ambient temperature sensor malfunction occurs in fan mode, only the error code is displayed and the indoor unit can work normally.
12	F4	Malfunction of discharge temperature sensor	Discharge temperature sensor	If the outdoor discharge temperature sensor is detected of open circuit or short circuit for 5s successively after the compressor has been operating for 3min, outdoor discharge temperature sensor malfunction will be reported. The unit can automatically resume operation after the malfunction disappears.
13	F5	Malfunction wired controller temperature sensor	Wired controller	If the wired controller detects open circuit or short circuit of its temperature sensor for 5s successively, wired controller temperature sensor malfunction will be reported.
14	ee	Malfunction of outdoor drive memory chip	Outdoor drive board	If the memory chip of outdoor drive board is broken, the unit cannot be started. The unit cannot be recovered automatically. If the malfunction cannot be eliminated after switching off the unit and then energizing the unit for several times, please replace the outdoor drive board.
15	H3	Compressor overload protection	Compressor overload switch	If it is detected within 3s successively that the overload switch is cut off under ON or standby state, the unit will report overload protection. If the fault occurs successively 3 times, the unit cannot be recovered automatically. Switch off the unit or re-energize the unit after cutting off power to eliminate this protection.
16	H4	Overload protection	Evaporator temperature, condenser temperature	If outdoor unit detects that the tube temperature is higher than protective temp. value, the unit will report overload protection. The unit will not restart operation until tube temperature is lower than the protective temp. value and the compressor is stopped for 3min. If the protection occurs over 6 times, the unit cannot be recovered automatically. Switch off the unit or re-energize the unit after cutting off power to eliminate this protection.
17	H6	Malfunction of outdoor fan motor	Outdoor fan motor	If the outdoor unit does not receive signal from outdoor fan motor for 30s successively when the fan motor is operating, outdoor fan motor malfunction will be reported. In this case, the unit can automatically resume operation after stopping. If the malfunction occurs 6 times within one hour, the unit cannot be recovered automatically. Switch off the unit or re-energize the unit after cutting off power to eliminate this malfunction.
18	U7	Direction changing malfunction of 4-way valve	4-way valve	After the compressor starts operation in heating mode, if the outdoor unit detects the difference between evaporator temperature and indoor ambient temperature is lower than the protective value for 10min successively, direction changing malfunction of 4-way valve will be reported and the outdoor unit will stop operation. The unit can automatically resume operation in the first two malfunctions. If the malfunction occurs 3 times, the unit cannot be recovered automatically. Switch off the unit or re-energize the unit after cutting off power to eliminate this malfunction.
19	P6	Communication malfunction between main control and drive	Communication between main control board and drive board	If the outdoor main control board does not receive data from drive board, communication malfunction between main control and drive will be reported. This malfunction can be eliminated automatically.
20	EE	Malfunction of outdoor main control memory chip	Outdoor main control board	If the memory chip of outdoor main control board is broken, the unit cannot be started. The unit cannot be recovered automatically. If the malfunction cannot be eliminated after switching off the unit and then energizing the unit for several times, please replace the outdoor main control board.

1.2.2 Three-phase PFC malfunction type and indication instruction:

Note: All single-phase drive malfunction code is compatible with three-phase drive malfunction code. No need for adding new malfunction codes.

Malfunction type	Malfunction code	LED1	LED2	LED3	Main control display	Remark
		Red	Yellow	Green		
Input voltage abnormal	PP	Blink	Blink	On	AC input voltage abnormal Program status: 137	After energizing for 50mins, PFC detects that the voltage of input ST line exceeds 294-484V
Bus high voltage protection	PH	Blink	Blink	Off	DC bus voltage is too high Program status: 130	After the PFC starts, the voltage of DC bus is too high (800V)
Bus low voltage protection	PL	On	Blink	Off	DC bus voltage is too low or DC bus voltage dropping malfunction Program status: 131	After the PFC operates, the actual bus voltage is lower than the given voltage value minus 50V
Line voltage unbalance protection	PP	On	Off	On	AC input voltage abnormal Program status: 132	Line voltage unbalance exceeds 76V
PFC module protection	Hc	Blink	Off	Blink	PFC abnormal	IPM abnormal, FO outputs low level
Overcurrent protection of input current	PA	Blink	Blink	Blink	AC current protection (input side)	It is detected consecutively for 3 times that each input phase current is bigger than the instantaneous current value 32A
PFC over-temperature protection	P8	On	Blink	On	The temperature of radiator or IPM module or PFC module is too high Program status: 133	Module temperature is higher than 100-120 °C after energizing
PFC temperature sensor malfunction	P7	Off	Blink	On	Radiator or IPM module or PFC module temperature sensor is abnormal Program status: 134	Module temperature is higher than 120°C after energizing or it is lower than -19°C after the PFC operates for 5s
PFC-PMSM communication malfunction	P6	Off	Blink	Blink	Communication malfunction Program status: 135	No data is received for 15s continuously or the data received does not meet the requirement of communication protocol
Normal		Blink	Off	Off		

Differentiation and judgment of drive malfunction

The following content is only for three-phase drive controller. Drive malfunction display can be judged from three aspects:

(1). Malfunction displayed on the main control nixie tube;

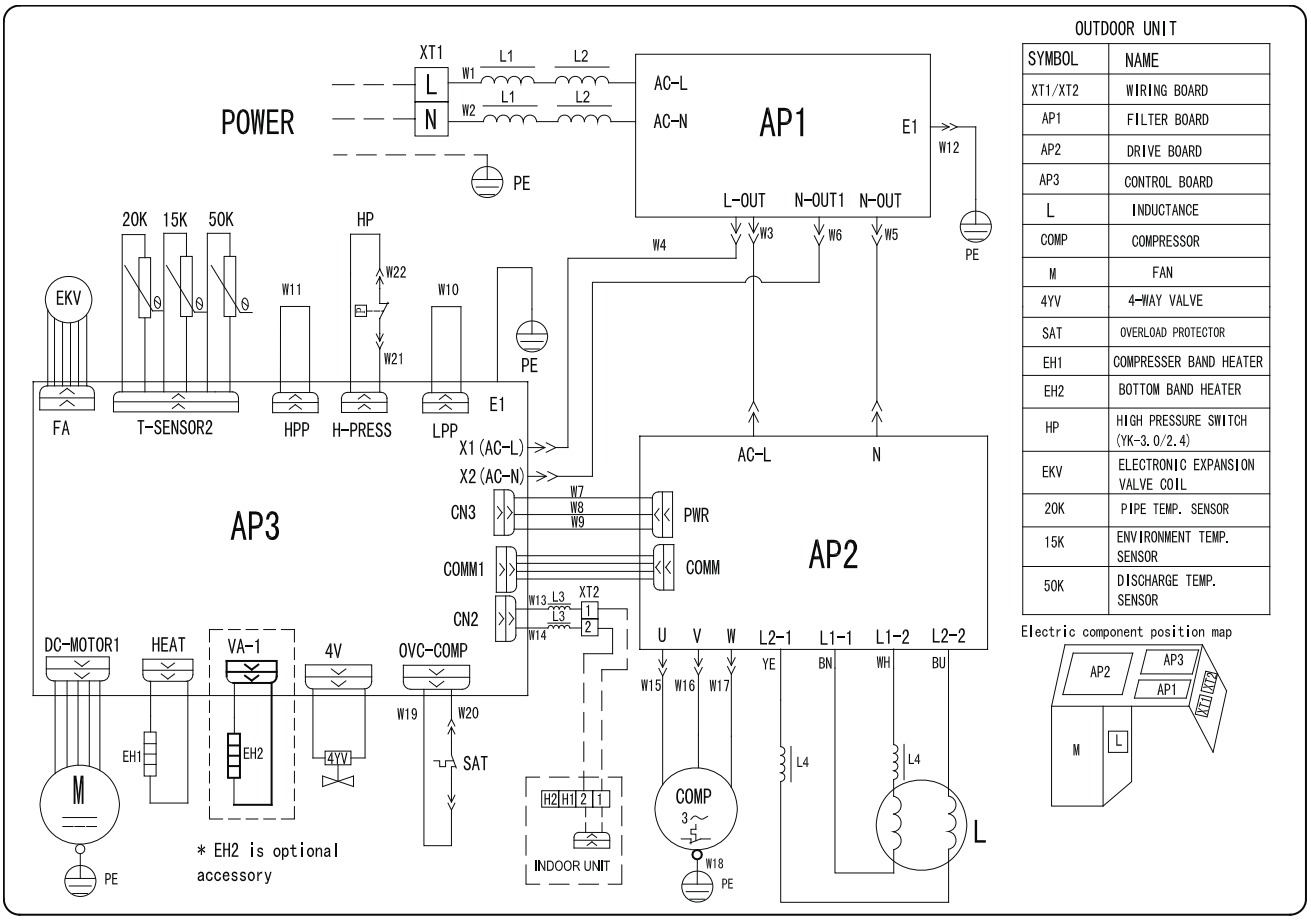
(2). Malfunction light display of the drive;

(3). Program status on the monitoring software. As some IPM malfunctions codes are the same as PFC malfunction codes (that is the malfunction code displayed on the main control board is identical but the actual drive malfunction is different), please obey the following 4 rules in order to differentiate the drive malfunction:

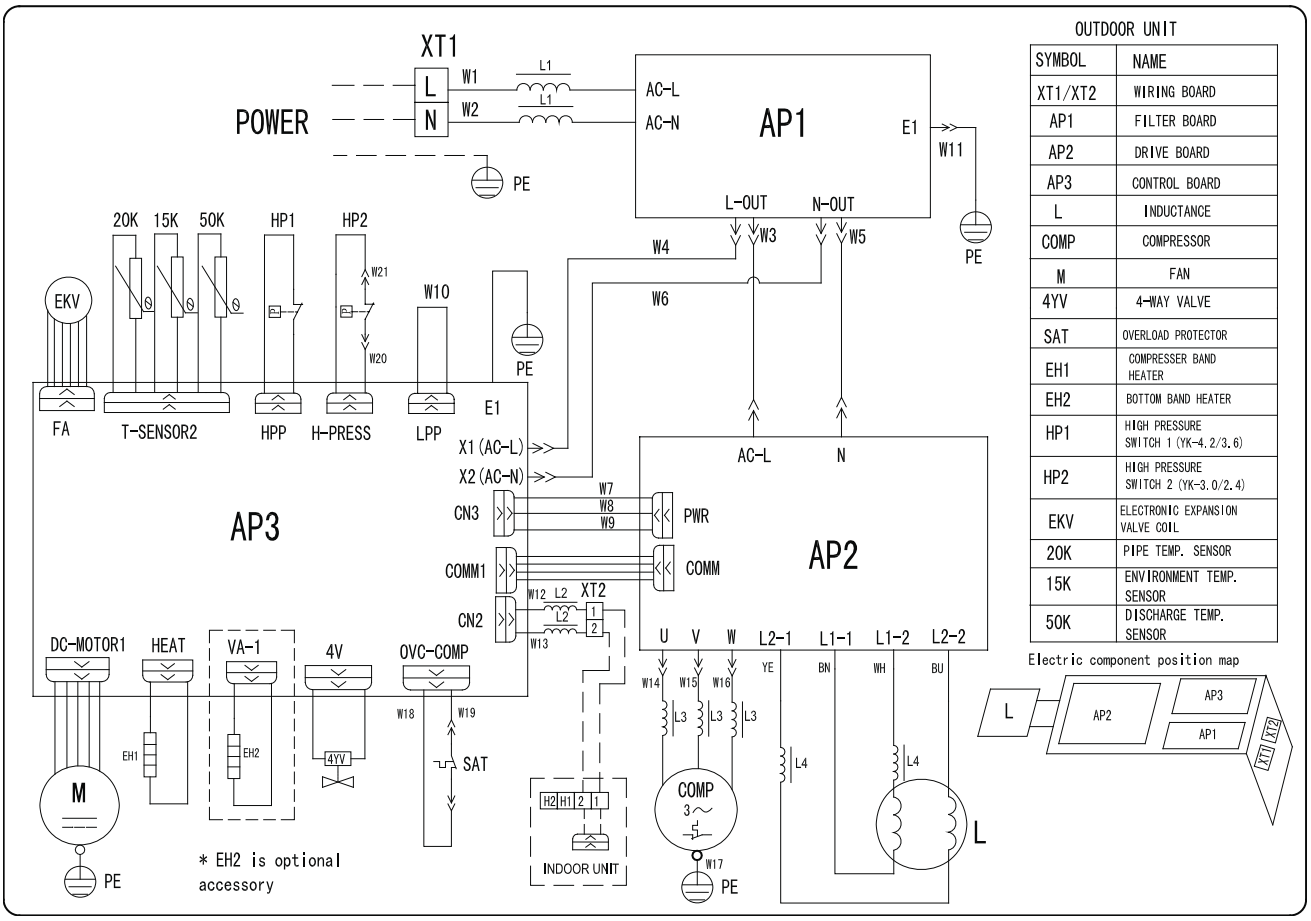
1). If the malfunction codes displayed on main control contain IPM malfunction and PFC malfunction, you can make the judgment according to the Sheet of PFC Malfunction Light Display. If the display way of malfunction light on the PFC drive is identical with one of the display in the sheet, it is PFC malfunction. When the PFC malfunction is eliminated, the malfunction of complete unit is eliminated at the same time.

2). If the malfunction codes displayed on main control contain IPM malfunction and PFC malfunction, you can make the judgment according to the Sheet of PFC Malfunction Light Display. If the display way of

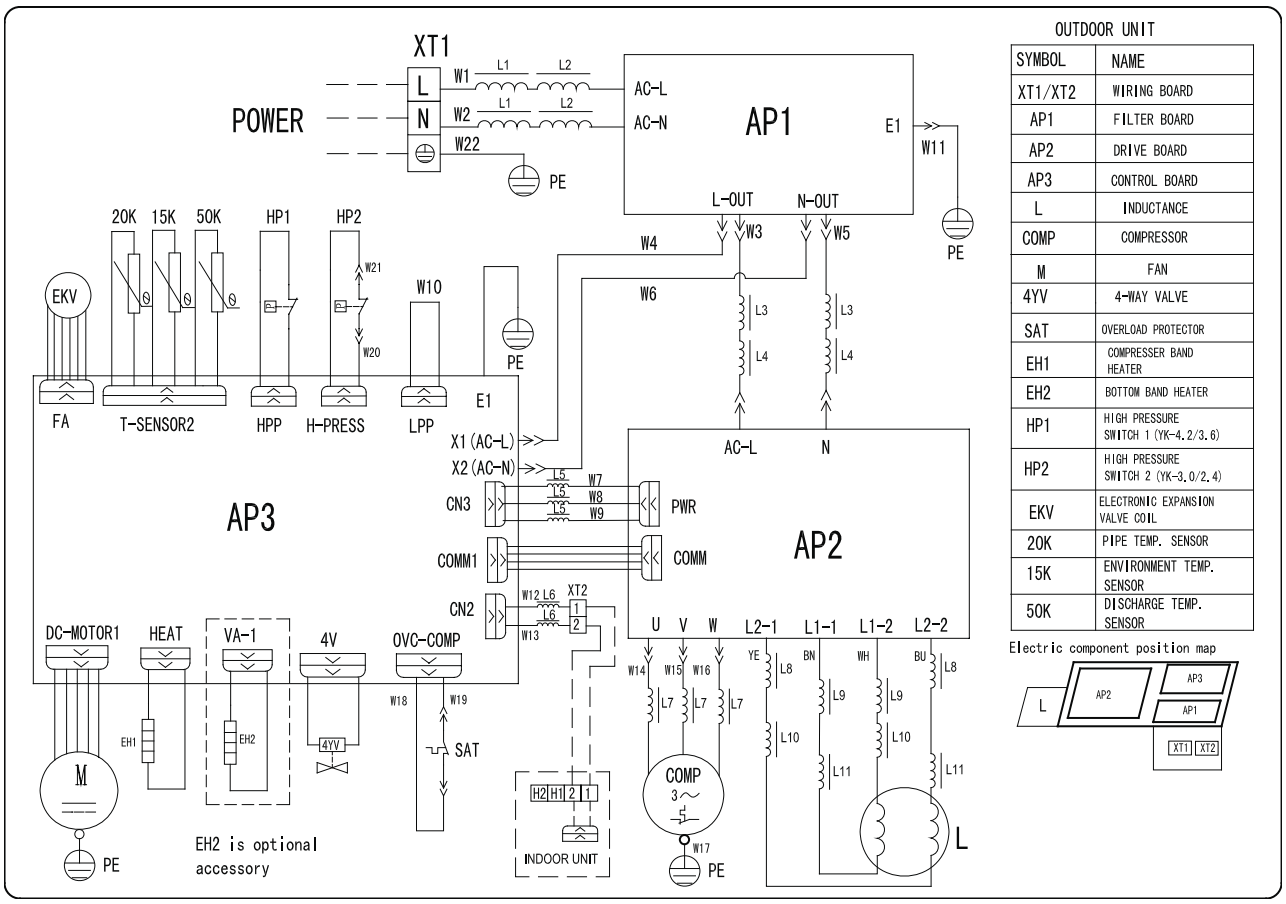
◆ Model: CGIF18



◆ Model: CGIF24



◆ Model: CGIF36

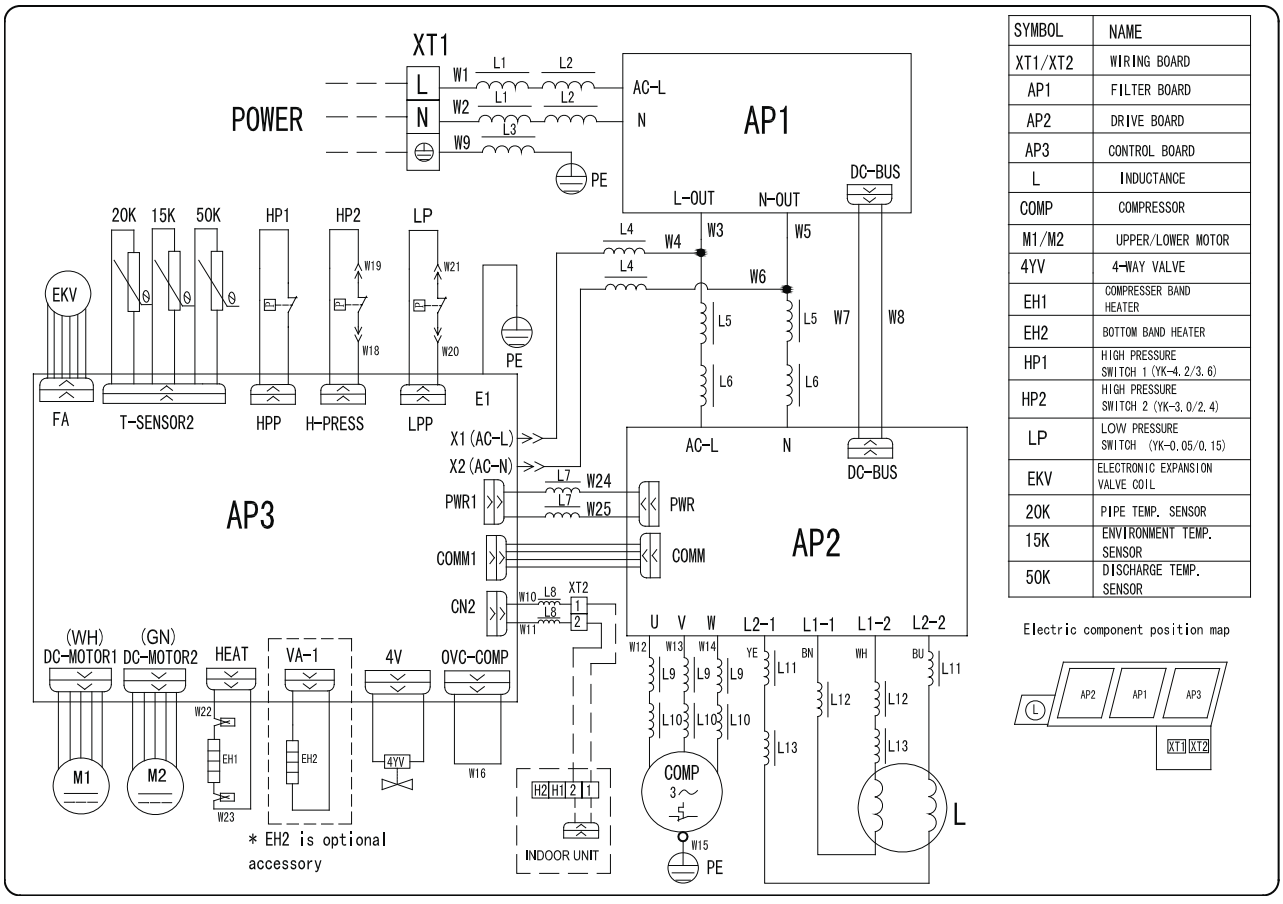


OUTDOOR UNIT

SYMBOL	NAME
XT1/XT2	WIRING BOARD
AP1	FILTER BOARD
AP2	DRIVE BOARD
AP3	CONTROL BOARD
L	INDUCTANCE
COMP	COMPRESSOR
M	FAN
4YV	4-WAY VALVE
SAT	OVERLOAD PROTECTOR
EH1	COMPRESSER BAND HEATER
EH2	BOTTOM BAND HEATER
HP1	HIGH PRESSURE SWITCH 1 (YK-4.2/3.6)
HP2	HIGH PRESSURE SWITCH 2 (YK-3.0/2.4)
EKV	ELECTRONIC EXPANSION VALVE COIL
20K	PIPE TEMP. SENSOR
15K	ENVIRONMENT TEMP. SENSOR
50K	DISCHARGE TEMP. SENSOR

Electric component position map

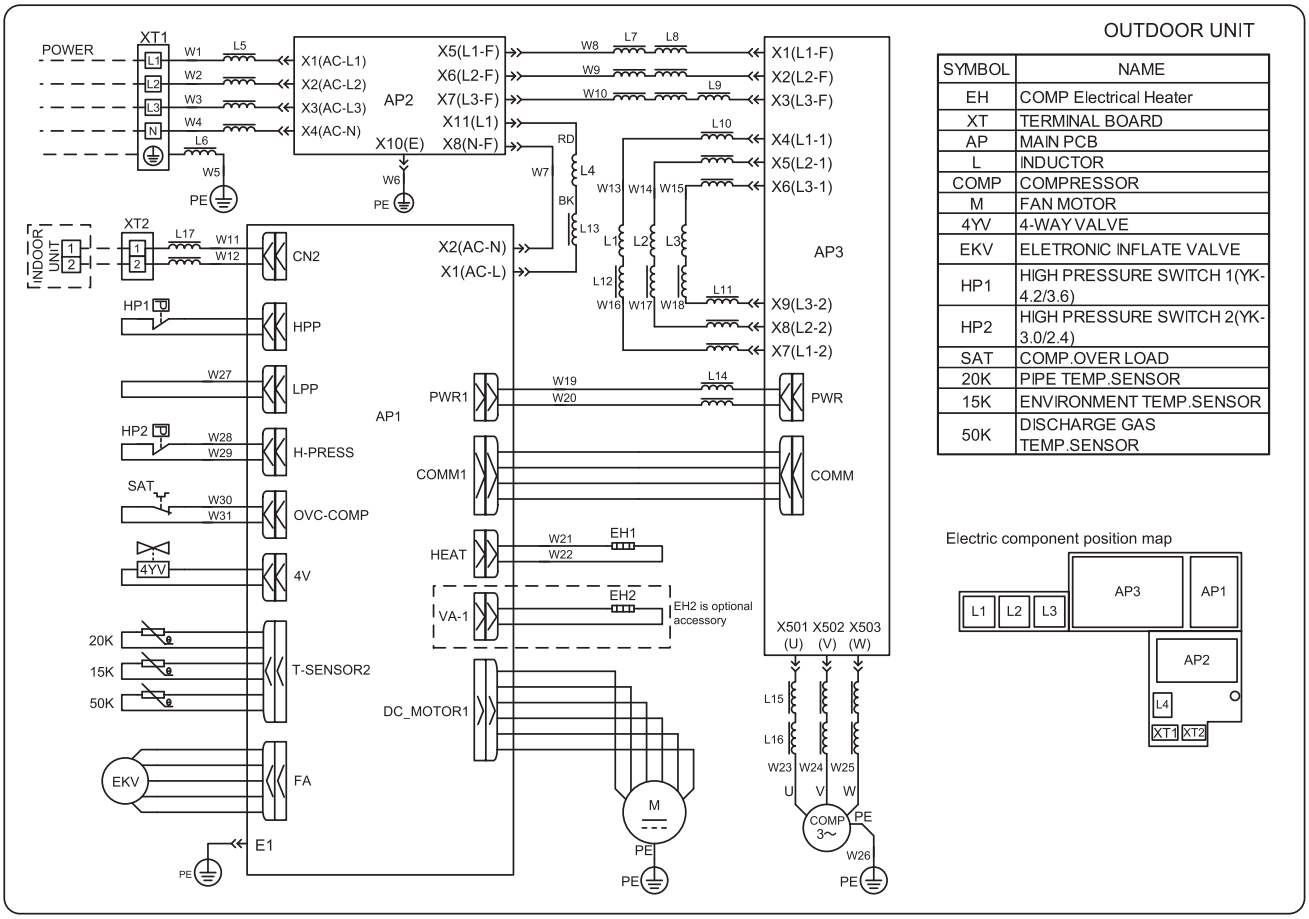
◆ Model: CGIF48



SYMBOL	NAME
XT1/XT2	WIRING BOARD
AP1	FILTER BOARD
AP2	DRIVE BOARD
AP3	CONTROL BOARD
L	INDUCTANCE
COMP	COMPRESSOR
M1/M2	UPPER/LOWER MOTOR
4YV	4-WAY VALVE
EH1	COMPRESSER BAND HEATER
EH2	BOTTOM BAND HEATER
HP1	HIGH PRESSURE SWITCH 1 (YK-4.2/3.6)
HP2	HIGH PRESSURE SWITCH 2 (YK-3.0/2.4)
LP	LOW PRESSURE SWITCH (YK-0.05/0.15)
EKV	ELECTRONIC EXPANSION VALVE COIL
20K	PIPE TEMP. SENSOR
15K	ENVIRONMENT TEMP. SENSOR
50K	DISCHARGE TEMP. SENSOR

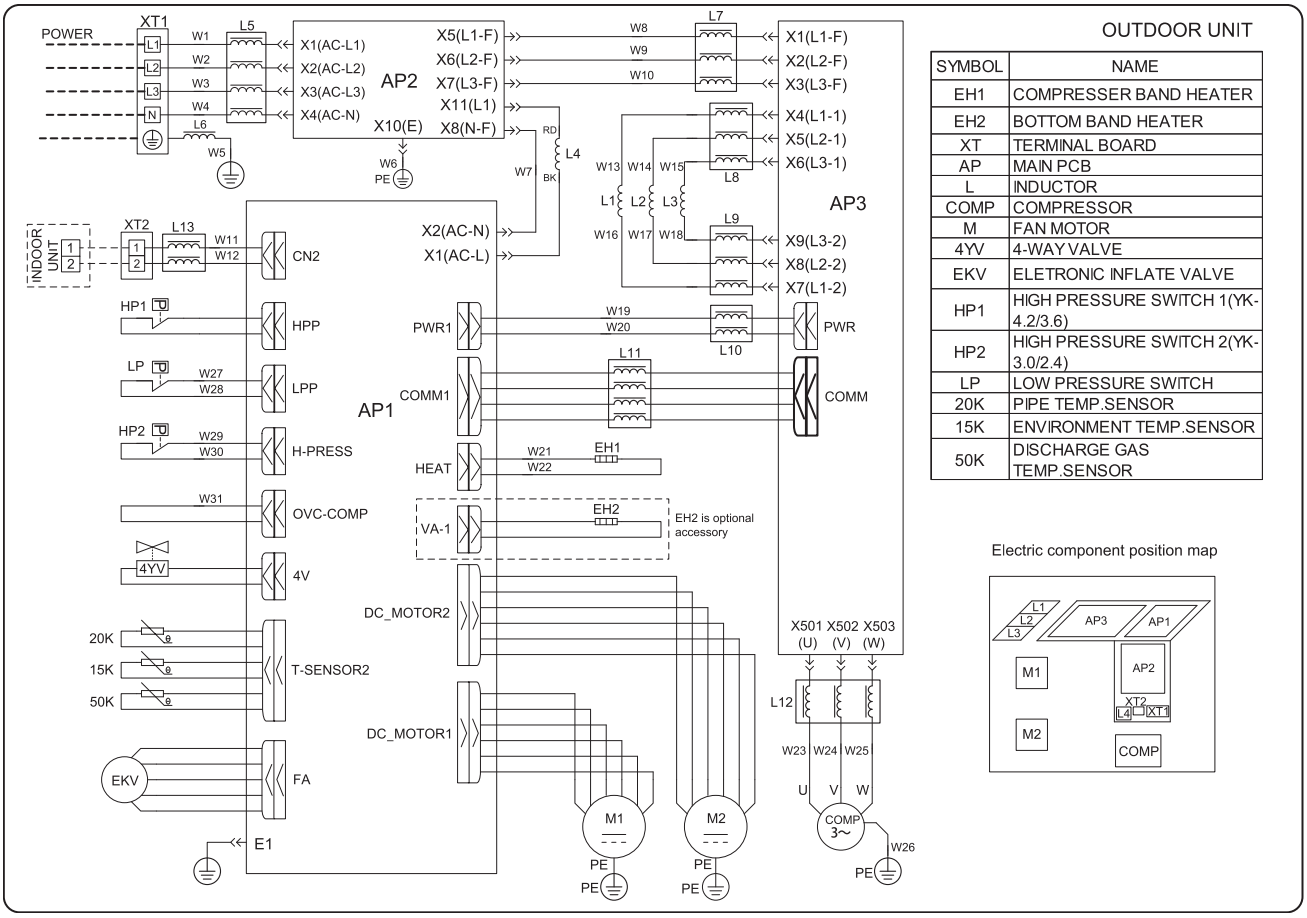
Electric component position map

◆ Model: CGIF36



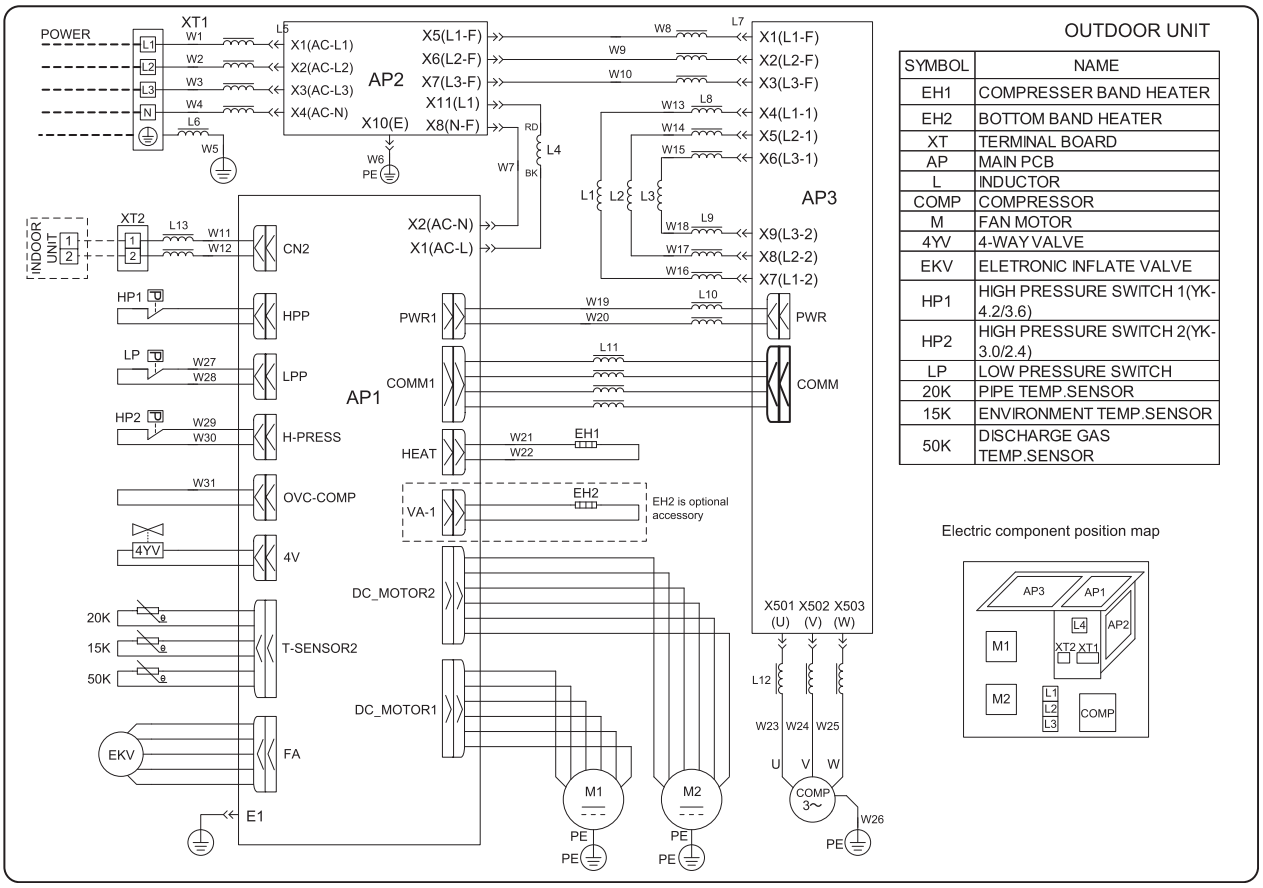
SYMBOL	NAME
EH	COMP Electrical Heater
XT	TERMINAL BOARD
AP	MAIN PCB
L	INDUCTOR
COMP	COMPRESSOR
M	FAN MOTOR
4YV	4-WAY VALVE
EKV	ELETRONIC INFLATE VALVE
HP1	HIGH PRESSURE SWITCH 1(YK-4.2/3.6)
HP2	HIGH PRESSURE SWITCH 2(YK-3.0/2.4)
SAT	COMP.OVER LOAD
20K	PIPE TEMP.SENSOR
15K	ENVIRONMENT TEMP.SENSOR
50K	DISCHARGE GAS TEMP.SENSOR

◆ Model: CGIF48



SYMBOL	NAME
EH1	COMPRESSER BAND HEATER
EH2	BOTTOM BAND HEATER
XT	TERMINAL BOARD
AP	MAIN PCB
L	INDUCTOR
COMP	COMPRESSOR
M	FAN MOTOR
4YV	4-WAY VALVE
EKV	ELETRONIC INFLATE VALVE
HP1	HIGH PRESSURE SWITCH 1(YK-4.2/3.6)
HP2	HIGH PRESSURE SWITCH 2(YK-3.0/2.4)
LP	LOW PRESSURE SWITCH
20K	PIPE TEMP.SENSOR
15K	ENVIRONMENT TEMP.SENSOR
50K	DISCHARGE GAS TEMP.SENSOR

◆ Model: CGIF60

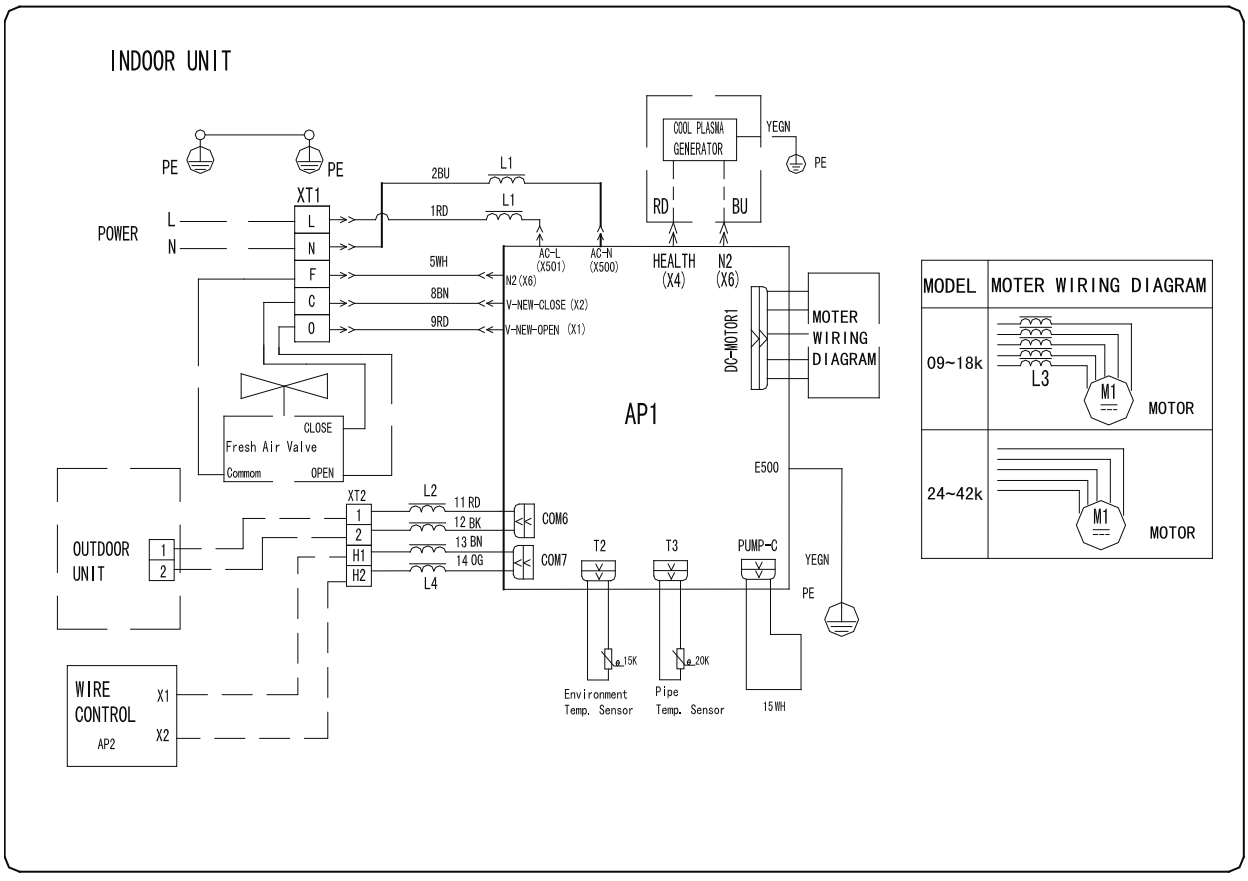


3.2 Indoor unit

The actual wiring should always refer to the wiring diagram of the unit.

3.2.1 Duct Type

◆ Model: GDIF18, GDIF24, GDIF36



◆ Model: GDIF48, GDIF60