



DELTA

**Vogue Ultra Cassette
21CK Series**

INSTRUCTION MANUAL

WARNING!

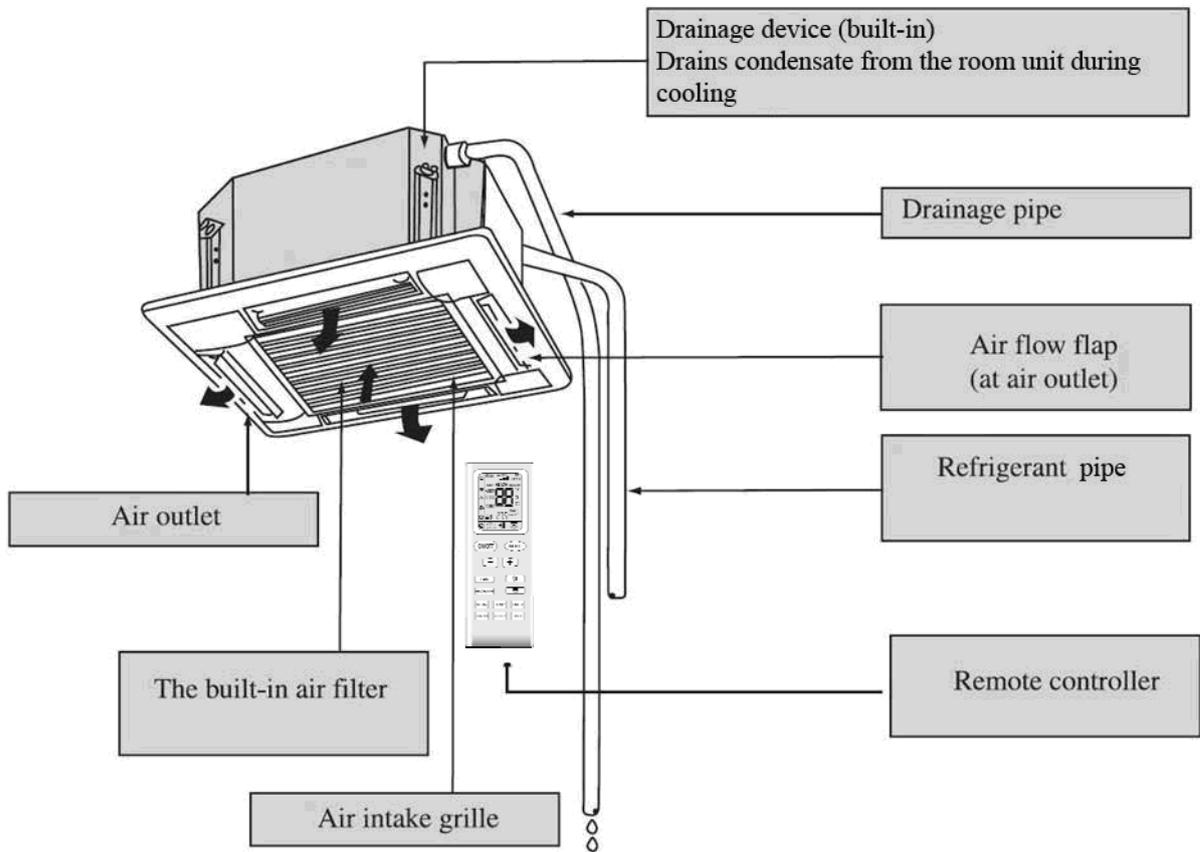
Read and follow all safety precautions in Instruction Manual - improper use can cause serious injury.

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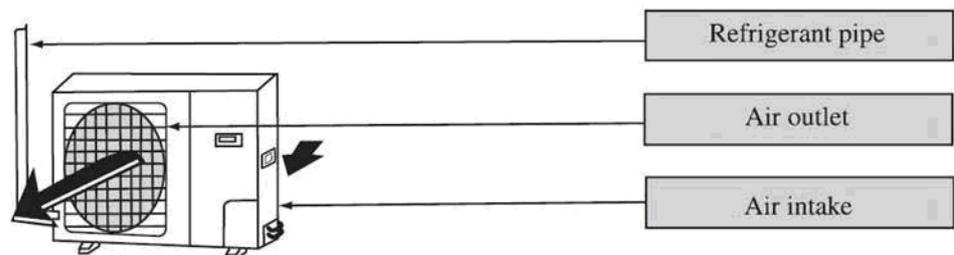
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1 Names and functions of parts

● Indoor unit

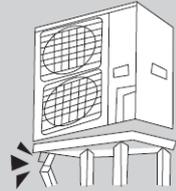
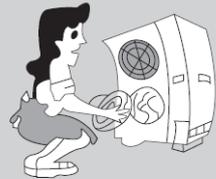
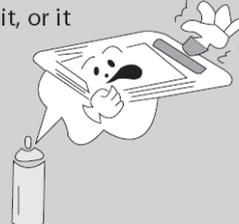
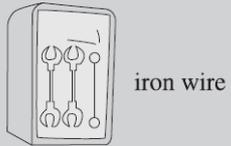


● Outdoor unit



2 Safety cautions

- Read the following carefully to assure safe use.

Warning	
<p>Avoid direct air flow to your body and avoid excessive heating or cooling, which may make you feel uncomfortable and do harm to your health.</p> 	<p>Check whether the installed stand is still firm enough after the unit has operated for a long time. If a worn-out stand is left unfixed, the unit may topple and do harm.</p> 
<p>Do not remove protection grill nets from the outdoor unit. Do not reach hands or insert anything into the unit air outlet.</p> 	<p>Do not stand on the outdoor unit or put anything on it, or you may fall down or people may get hurt by the falling things.</p> 
<p>If there is something abnormal (eg. burning smell), cut off the power immediately and contact service center.</p> 	<p>Do not spray any paint or pesticide on the unit, or it may cause fire.</p> 
<p>If room air is stuffy, air the room by opening door and window for a while, but please close the curtains when operating the unit to prevent conditioned air from leaking.</p> 	<p>Never use wrong ampere rating wire. Use of iron wire or copper wire may cause the unit to break down or cause fire.</p> 

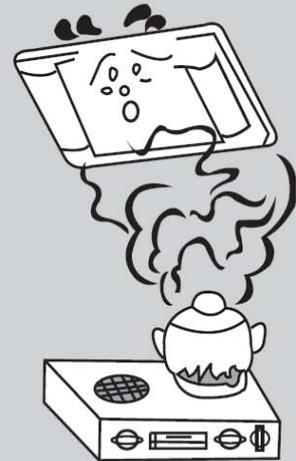
NOTE: Children should be supervised to ensure that they do not play with the appliance.

Warning

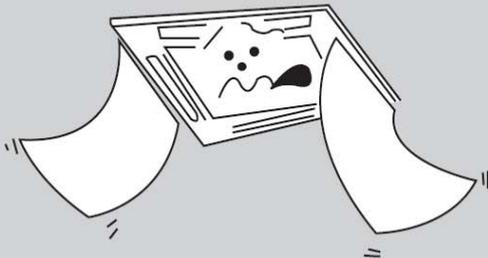
Do not check or repair during the unit is operating. It is very dangerous.



Do not use other heating equipment near the air conditioner. It will affect the cooling performance.



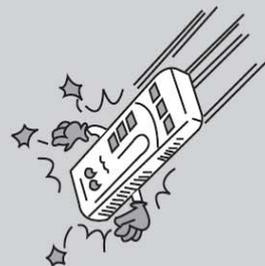
Never place objects near the air intake and the air outlet of the unit. It may affect performance or stop operation of the unit.



Do not splash water directly to indoor unit. It may cause trouble or electric shock.



Do not bang the remote controller, and do not press the button of the remote controller with pointed object, or the remote controller may be damaged.



NOTE: 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.

3 Wired remote controller

3.1 Displaying Part



Fig.3.1.1 Outline of wired controller

3.1.1 LCD Display of Wired Controller

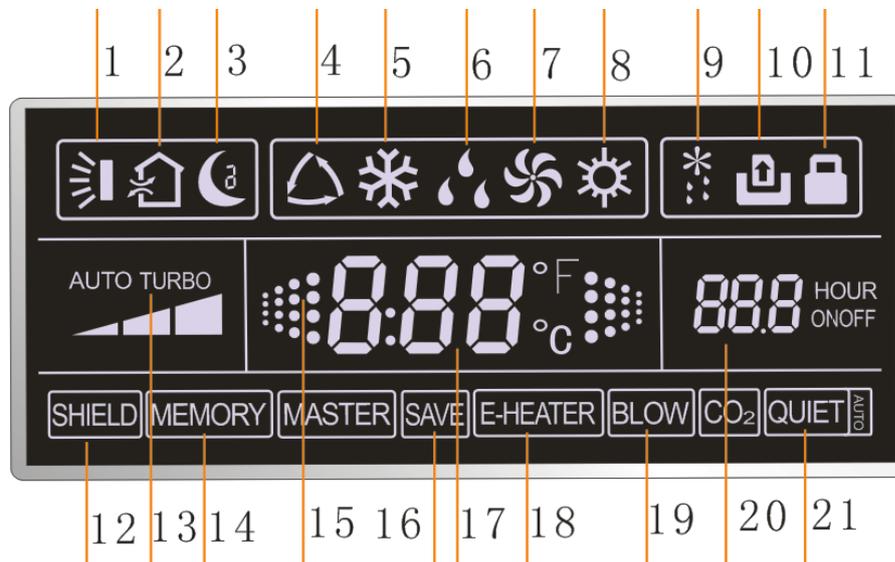


Fig.3.1.2 LCD display

3.1.2 Instruction to LCD Display

No.	Description	Instruction to Displaying Contents
1	Swing	Swing function
2	Air *	Air exchange function
3	Sleep	Sleeping states
4	Running mode	Each kind of running mode of indoor unit (auto mode)
5	Cooling	Cooling mode
6	Dry	Dry mode
7	Fan	Fan mode
8	Heating	Heating mode
9	Defrost *	Defrosting state
10	Gate-control card *	Gate control
11	Lock	Lock state
12	Shield	Shielding state (buttons, temperature, on/off, mode or save is shielded by long-distance monitoring)
13	Turbo	Turbo function state
14	Memory	Memory state (Indoor unit resumes original setting state after power failure and then power recovery)
15	Twinkle	Flicking when unit is on without operation of buttons
16	Save	Energy-saving state
17	Temperature	Ambient/setting temperature value
18	E-Heater *	E-HEATER display means electric-heater is available
19	Blow	Blow mark
20	Timer	Timer-displayed location
21	Quiet	Quiet state(two types: quiet and auto quiet)

Notes: The functions with * are reserved for other models and are not applicable for the models listed in this manual.

Table 3.1

3.2 Buttons

3.2.1 Silk Screen of Buttons



Fig. 3.2.1 Silk screen of buttons

3.2.2 Instruction to Function of Buttons

No.	Description	Function of Button
1	Enter/cancel	(1) Function selection and canceling; (2) Press it for 5s to enquiry the outdoor ambient temperature. *
2	▲	(1) Running temperature setting of indoor unit, range :16~30°C (2) Timer setting, range:0.5-24hr
6	▼	(3) Switchover between quiet/auto quiet
3	Fan	Setting of high/middle/low/auto fan speed
4	Mode	Setting of cooling/heating/fan/dry mode of indoor unit
5	Function	Switchover among these functions of air/sleep/turbo/save/e-heater/blow/quite
7	Timer	Timer setting
8	On/off	Turn on/off indoor unit
4 Mode and 2 ▲	Memory function	Press Mode and ▲ for 5s under off state of the unit to enter/cancel key memory function (If memory is set, indoor unit will resumer original setting state after power failure and then power recovery. If not, indoor unit is defaulted to be off after power recovery. Memory function is defaulted to be set before outgoing.)
2 ▲ and 6 ▼	Lock	Upon startup of the unit without malfunction or under off state of the unit, press ▲ ▼ key at the same time for 5s in to lock state. In this case, any other buttons won't respond the press. Repress ▲ ▼ key for 5s to quit lock state.

Table 3.2 Installation of Wired Controller

3.3 Installation of Wired Controller

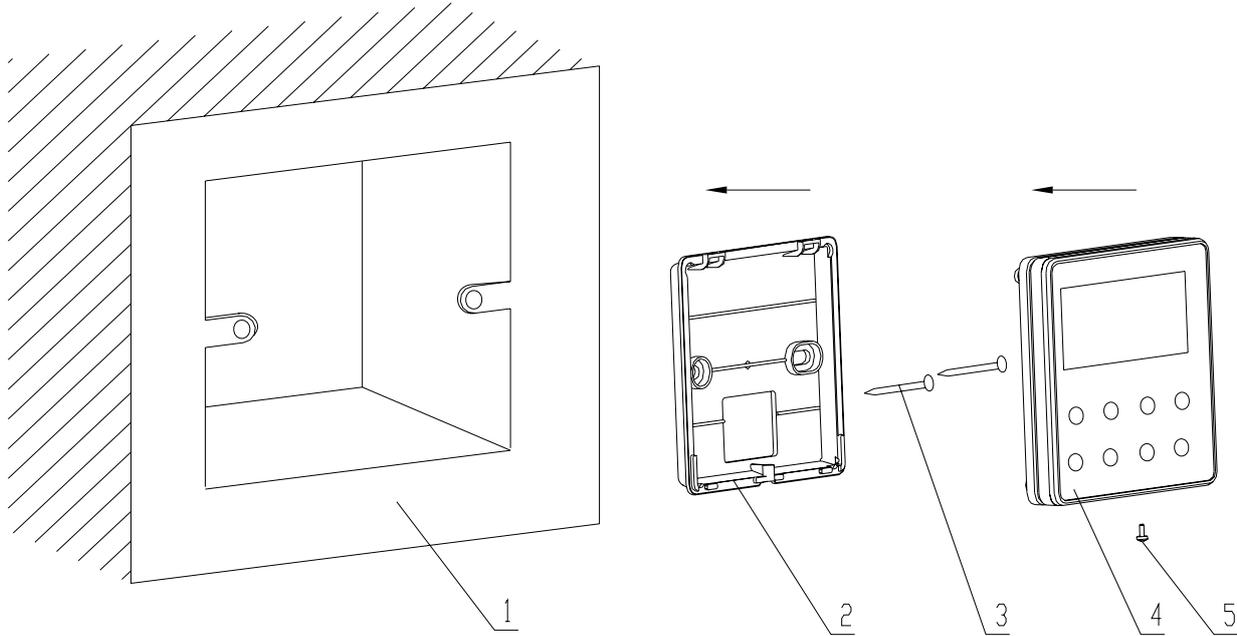


Fig.3.3.1: Sketch for Installation of Wired Controller

No.	1	2	3	4	5
Description	Socket's base box installed in the wall	Soleplate of controller	Screw M4X25	Front panel of controller	Screw ST2.2X6.5

Fig.3.3.1: Sketch for Installation of Wired Controller. Pay attention to the following items during installation of wired controller:

1. Cut off power supply of heavy-current wire embedded in mounting hole in the wall before installation. It is prohibited to perform the whole procedure with electricity.
2. Pull out 4-core twisted pair line in mounting hole and then make it through the rectangle hole at the back of controller's soleplate.
3. Joint the controller's soleplate on wall face and then fix it in mounting hole with screws M4X25.
4. Insert the 4-core twisted pair line through rectangle hole into controller's slot and buckle the front panel and soleplate of controller together.
5. At last, fix the controller's front panel and soleplate with screws ST2.2X6.5.



Caution:

During connection of wirings, pay special attention to the following items to avoid interference of electromagnetism to unit and even failure of it.

1. To ensure normal communication of the unit, signal line and wiring (communication) of wired controller should be separate from power cord and indoor/outdoor connection lines. The distance between them should be kept 20cm in min.
2. If the unit is installed at the place where there is interference of electromagnetism, signal line and wiring (communication) of wired controller must be shielded by twisted pair lines.

3.4 Instruction to Operation

3.4.1 On/Off

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

Note: The state shown in Fig.3.4.1 indicates off-state of the unit after energization.
The state shown in Fig.3.4.2 indicates on-state of the unit after energization.



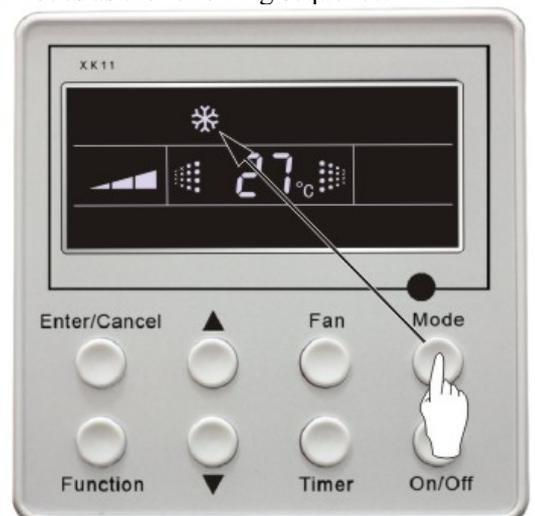
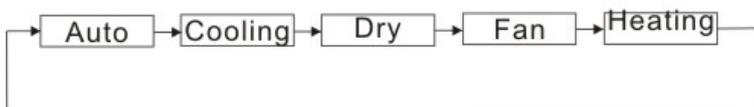
Fig.3.4.1 Off state of the unit



Fig.3.4.2 On state of the unit

3.4.2 Mode Setting

Under on-state of the unit, press **Mode** button to switch the operation modes as the following sequence:



3.4.3 Temperature Setting

Press ▲ or ▼ button to increase or decrease of 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.3.4.3.

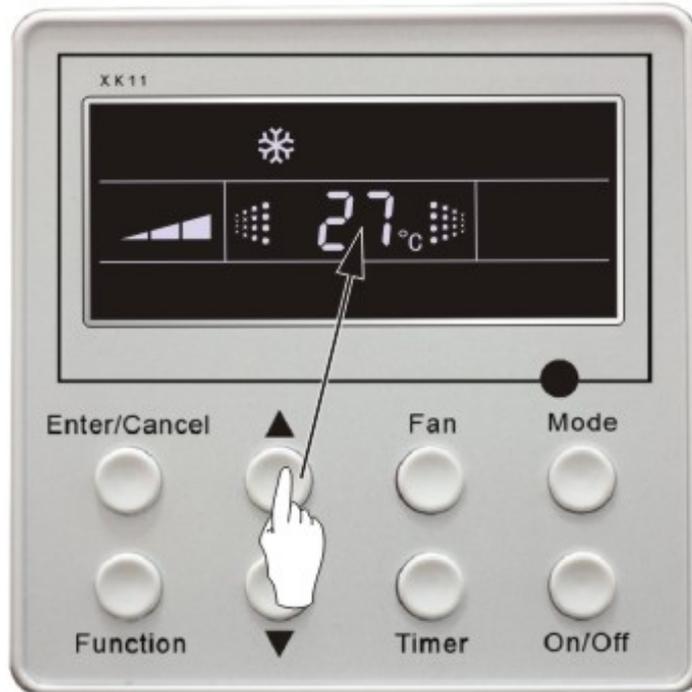


Fig 3.4.3

3.4.4 Fan Speed Setting

Press **Fan** button, fan speed of indoor unit will change as below:

As shown in Fig.3.4.4.

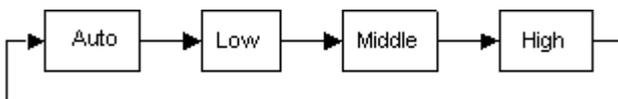


Fig.3.4.4

3.4.5 Swing Control Function

Under on-state of unit, press **Function** button till the unit enters swing control function and then press “Enter/cancel” button to turn on “swing” control function.

During swing function, press **Function** button till the unit enters swing control function and then press **Enter/cancel** button to cancel swing control function.

Swing control function setting is shown in Fig 3.4.5

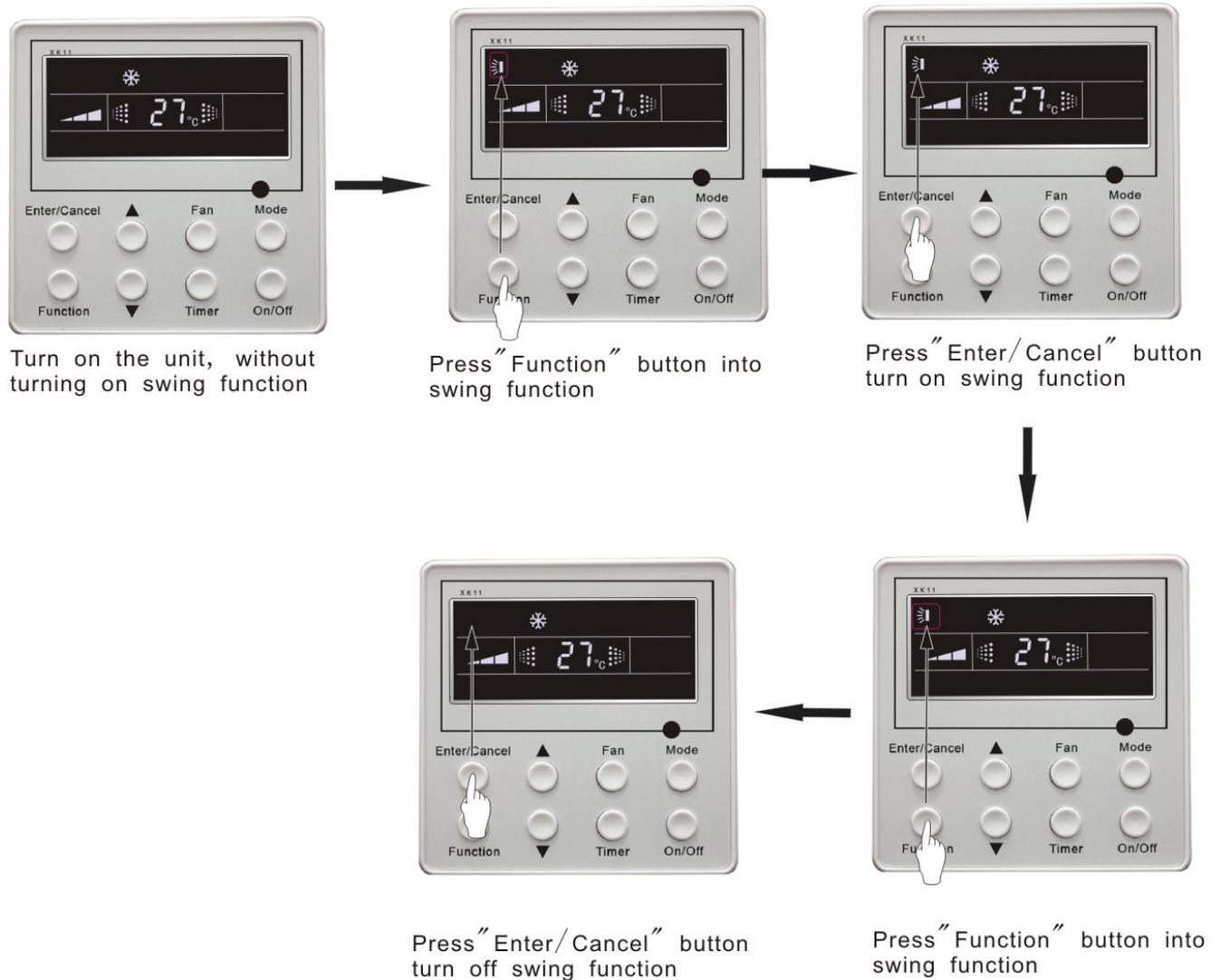


Fig. 3.4.5

3.4.6 Timer Setting

Press **Timer** button to set timer off of the unit. Under off-state of the unit, press **Timer** button to set timer on of the unit in the same way.

Timer on setting: Under off-state of the unit without timer setting, if **Timer** button is pressed, LCD will display **xx. Hour**, with **ON** blinking. In this case, press **▲** or **▼** button to adjust timer on and then press **Timer** to confirm. If **Mode** button is pressed before pressing **Timer** button to confirm, timer mode will be switched to timer off setting mode. In this case, LCD displays **xx. Hour**, with **OFF** blinking. In this case, press **▲** or **▼** button to adjust timer off and then press **Timer** to confirm. When LCD displays **xx. Hour On Off**, **xx. Hour** means time of timer on, but time of timer off won't be displayed.

Timer off setting: Under **on-state** of the unit without timer setting, if **Timer** button is pressed, LCD will display **xx. Hour**, with **OFF** blinking. In this case, press **▲** or **▼** button to adjust timer on and then press **Timer** to confirm. If **Mode** button is pressed before pressing **Timer** button to confirm, timer mode

will be switched to timer on setting mode. In this case, LCD displays **xx. Hour**, with **ON** blinking. In this case, press **▲** or **▼** button to adjust timer on and then press **Timer** button to confirm. When LCD displays **xx. Hour On Off**, **xx. Hour** means time of timer off, but time of timer on won't be displayed.

Cancel timer: After setting of timer, if **Timer** button is pressed, LCD won't display **xx. Hour** so that timer setting is canceled.

Timer off setting under **on-state** of the unit is shown as Fig.3.4.6

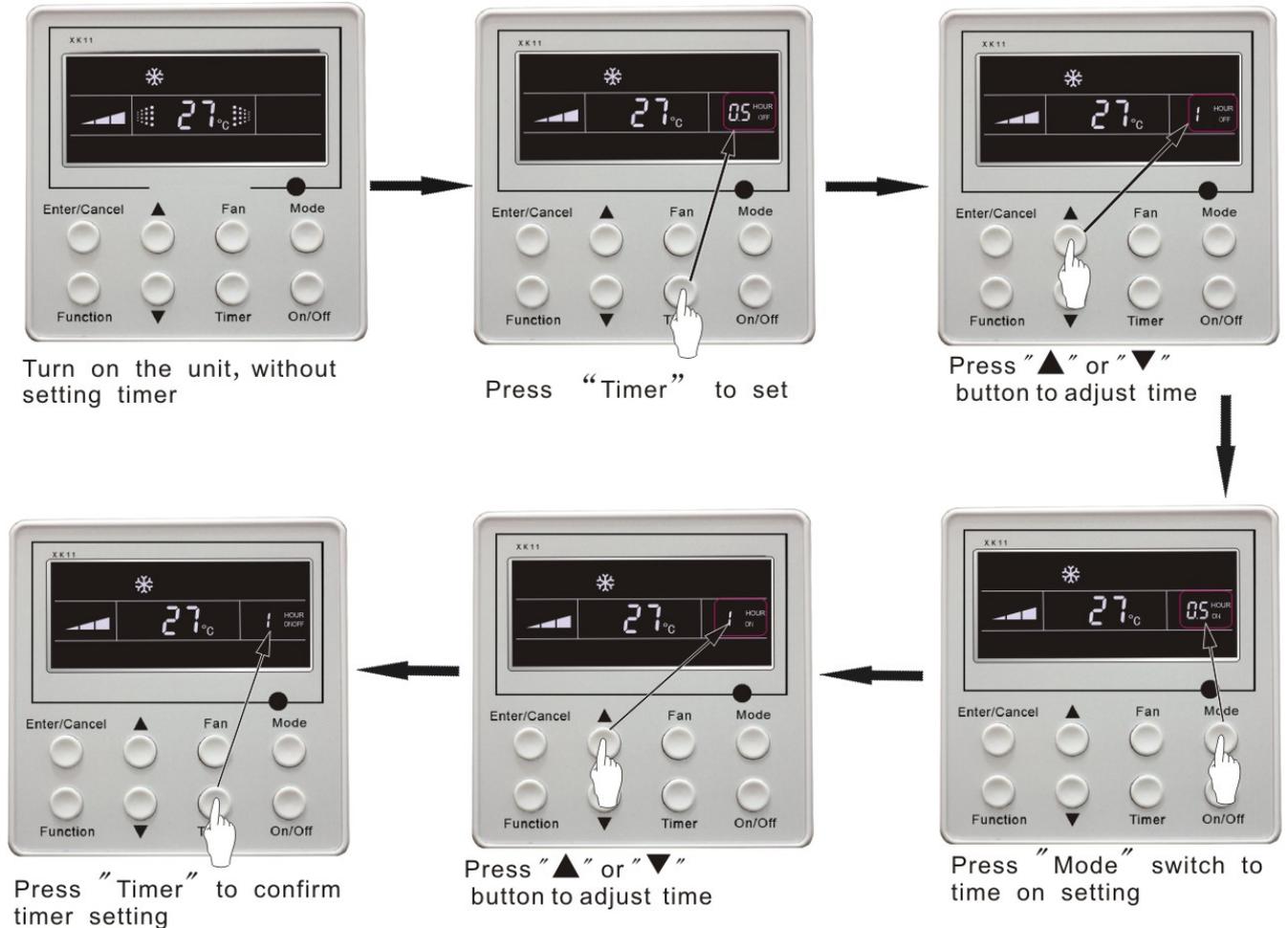


Fig. 3.4.6 Timer setting under on state of the unit

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

Note:

1. If both timer on and timer off are set in unit on interface, the wired controller only display time of time off. If both of them are set in unit off-state, only time of timer on is displayed.
2. Timer on in unit on-state is timed from the time of unit off and timer off in unit off-state is timed from the time of unit on.

3.4.7 Air Exchange Setting *

Turn on air Exchange function:

Under on-state of the unit, press **Function** button to go to the this function setting (**Air** mark blinks).AIR 1 displayed at the ambient temperature-displayed location (888) is defaulted (the last type of **AIR** will be displayed after adjustment).Press **▲** or **▼** button to adjust air type. Press **Enter/Cancel** button to turn on/off air function. After turning on this function, the air mark shows.

There are 10 types of AIR, but only 1-2 types are for remote control. Refer to the following details:

- 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 24 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.

Turn off air Exchange function: During Air function, press **Function** button to go to the Air function. In this case, **air** mark is blinking, and then press **Enter/cancel** button to turn off this function. Air mark will subsequently disappear.

Air Exchange setting is shown as in fig.3.4.7:

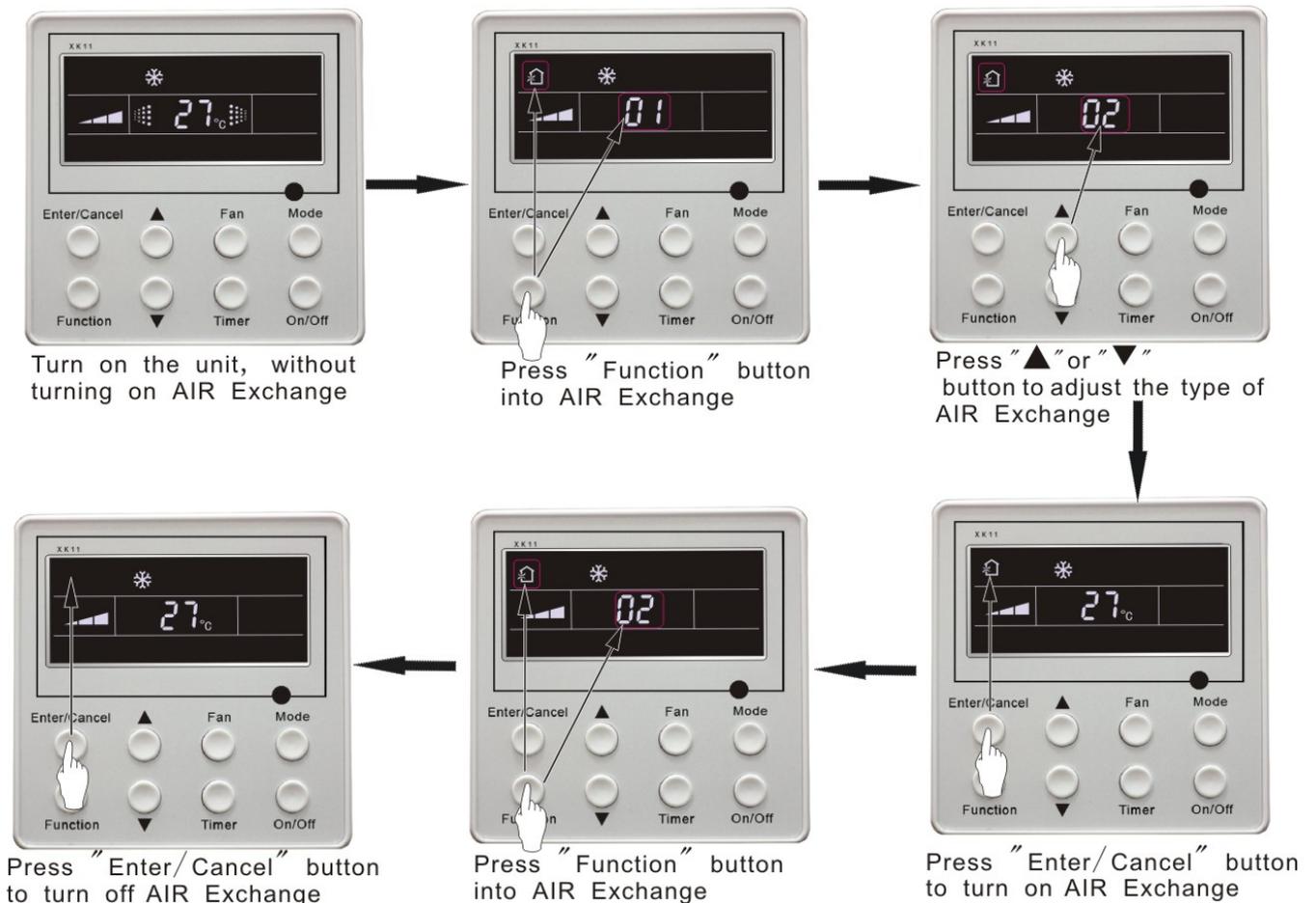


Fig.3.4.7 Air exchange device

Note: In air exchange mode, press **Function** button or there is not any operation within 5s after the last button operation, the system will be quit from **air exchange** setting and current energy-saving data won't be memorized.

3.4.8 Sleep Setting

Sleep on: Press **Function** button under on-state of the unit into sleep function and then press **Enter/cancel** button to turn on sleeping function.

Sleep off: During sleep on-state, press **Function** button to go to the sleep function and then press **Enter/cancel** button to turn off this function.

Sleep setting is shown as Fig.3.4.8:

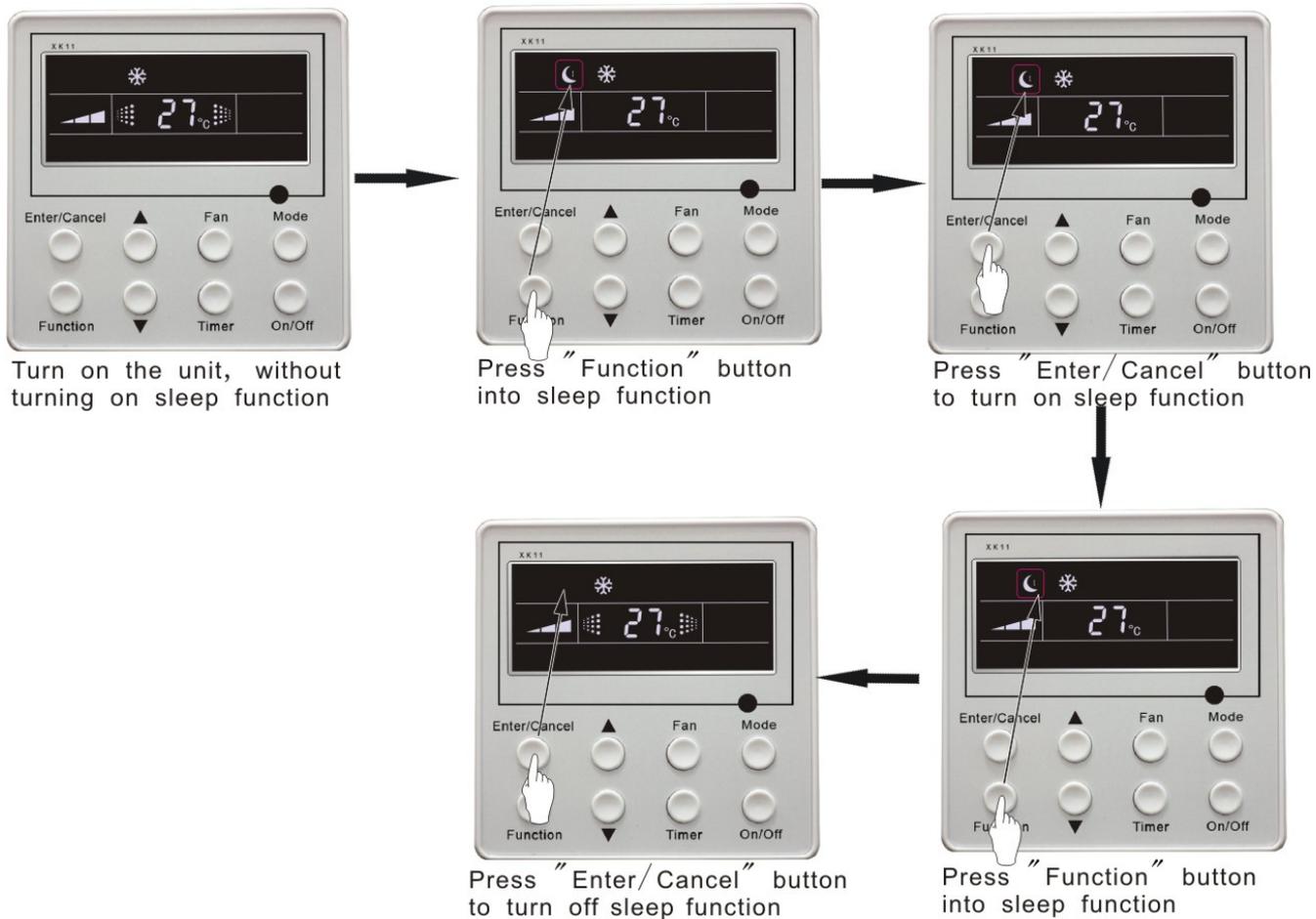


Fig.3.4.8 Sleep setting

Sleep setting is clear after power failure and then power recovery. There is not sleep function in fan and auto mode.

Note: In cooling and dry mode, if the unit with sleep function has run for 1 hour, the preset temperature will be increased by 1°C and 1°C in another 1 hour. After that, the unit will run at this temperature. In heating mode, if the unit with sleep function has run for 1 hour, the preset temperature will be decreased by 1°C and 1°C in another 1 hour. After that, the unit will run at this temperature.

3.4.9 Turbo Function Setting

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

In cooling or heating mode, press **Function** button till the unit enters **TURBO** function and then press **Enter/cancel** button to turn on **TURBO** function.

During **TURBO** function, press **Function** button till the unit enters **TURBO** function and then press **Enter/cancel** button to cancel **TURBO** function.

TURBO function setting is shown in Fig.3.4.9 :

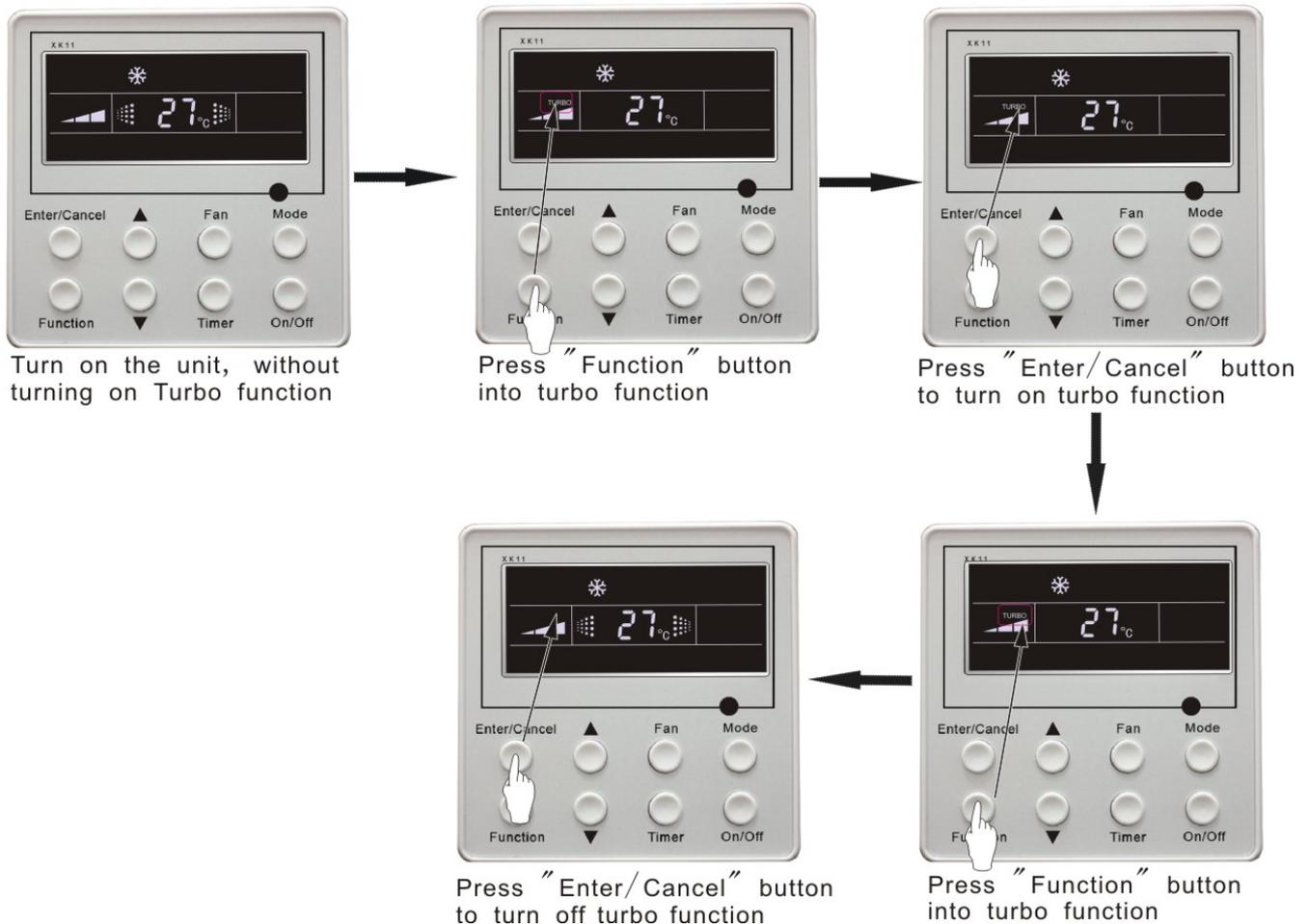


Fig.3.4.9 Turbo Function Setting

Note:

1. **TURBO** function will be turned off after power failure and then recovery. In dry, fan and auto mode, **TURBO** function can not be set and **TURBO** mark won't be displayed.
2. **TURBO** function will be automatically canceled after setting of quiet function.

3.4.10 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 cooling or dry mode and upper limited value in heating mode.

Energy Saving Setting for Cooling

Under on-state and in cooling or dry mode of the unit, press **Function** button into energy saving function , with **SAVE** blinking .Press **▲** or **▼** button to adjust lower limited value of setting temperature in cooling mode. After that press **Enter/Cancel** button to turn on energy saving function for cooling.

Energy Saving Setting for Heating

Under on state and in heating mode of the unit, press **Function** button into energy saving function, with **SAVE** blinking. Press **Mode** button into energy saving function for heating and then press **▲** or **▼** button to adjust upper limited value of setting temperature in heating mode. After that, press **Enter/Cancel** button to turn on energy saving function for heating.

After energy saving function is turned on, press **Function** button into energy saving function and press **Enter/cancel** to cancel this function.

The energy saving setting is shown in the fig.3.4.10.

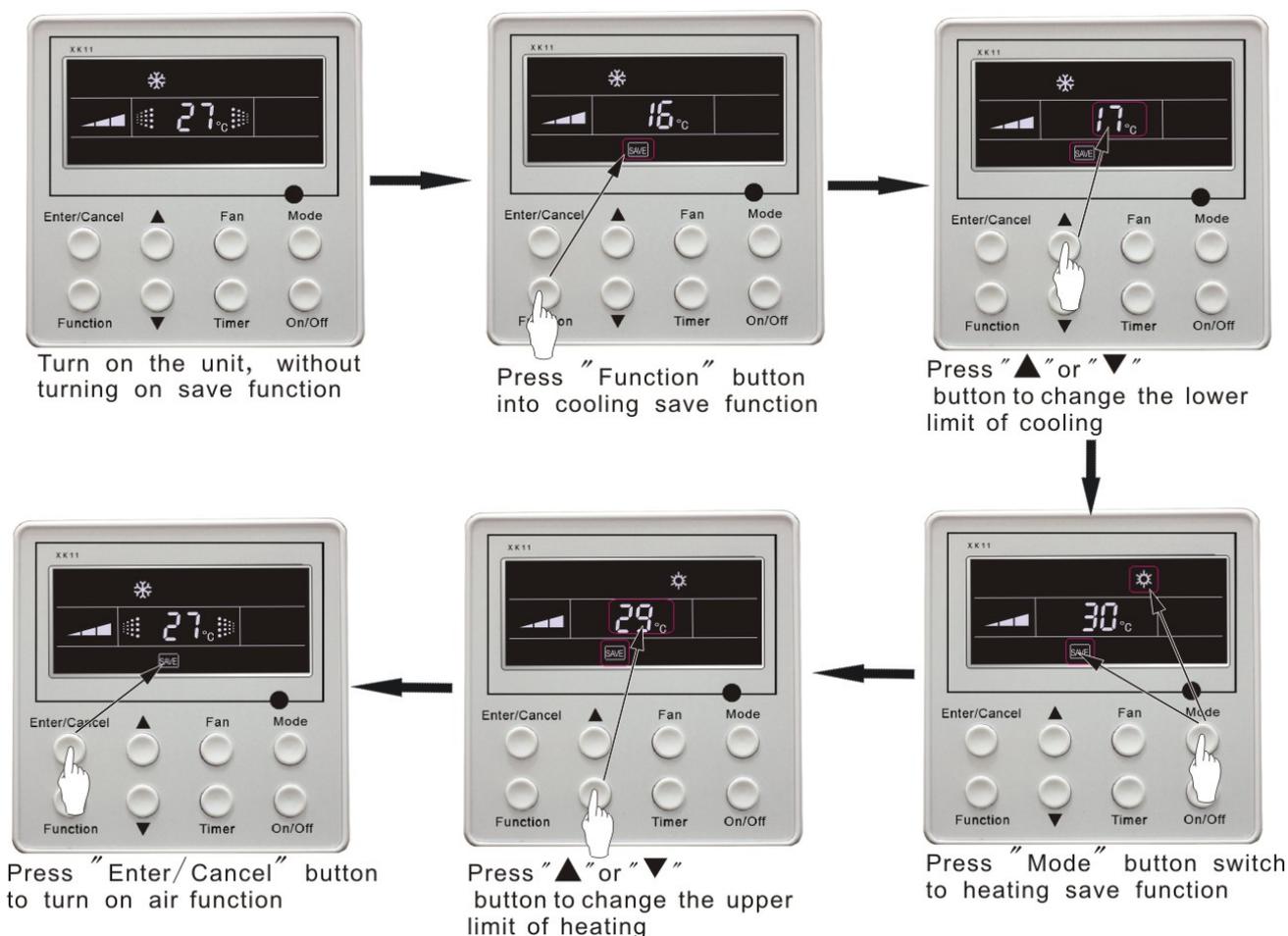


Fig.3.4.10 Energy Saving Setting

Note:

1. In Auto running mode with save function on, the unit will be forcibly quit Auto running Mode and change to current operation mode, After setting of save, sleep function will be canceled.
2. In save mode, if **Function** button is pressed or there is not any operation within 5s after the last button operation, the system will be quit from save function setting and current data won't be memorized.
3. After power failure and then recovery, save function setting will be memorized.
4. The lower limited value in cooling mode is 16°C and the upper limited value in heating mode is 30°C.
5. After save setting, if the setting temperature is out of the range in the mode, the limited value will prevail.

3.4.11 E-HEATER Setting *

E-HEATER: In the heating mode, E-heater is allowed to be turned on for improvement of efficiency.

If heating mode is turned on by button operation, auxiliary electric heating function will be automatically turned on.

Press **Function** button in heating mode to go to the auxiliary electric heating function, the **E-HEATER** blinking, and press **Enter/cancel** button to turn on this function. In this case, the **E-HEATER** will be displayed, which means E-heater is allowed to be turned on.

If auxiliary electric heating function is on, press **Function** button to confirm or press **Enter/cancel** button to cancel. In this case, **E-HEATER** won't be displayed, which means E-heater is prohibited to be turned on.

The setting of this function is shown as Fig.3.4.11 below:

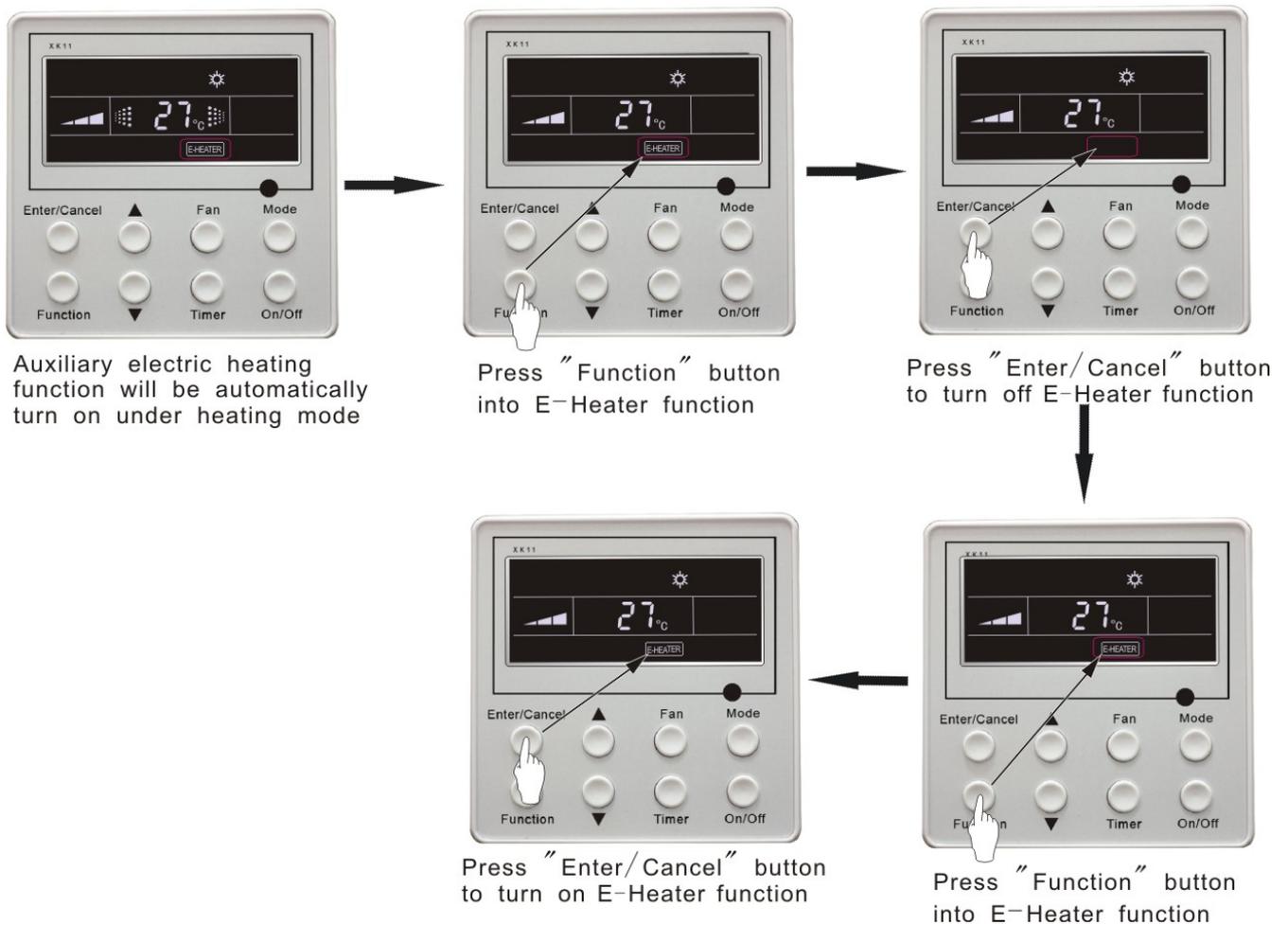


Fig. 3.4.11 Auxiliary Electric Heating Function Setting

Note:

E-HEATER can not be set in cooling, dry and fan mode, **E-HEATER** mark won't be displayed. The setting is shown in Fig.3.4.11.

3.4.12 Blow Function Setting

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

In cooling and dry mode, press **Function** button till the unit enters **BLOW** function, with **BLOW** blinking, and then press **Enter/cancel** button to turn on this function.

In **BLOW** mode, press **Function** button till the unit enters **BLOW** function and then press **Enter/cancel** button to cancel this function.

BLOW function setting is shown in Fig.3.4.12

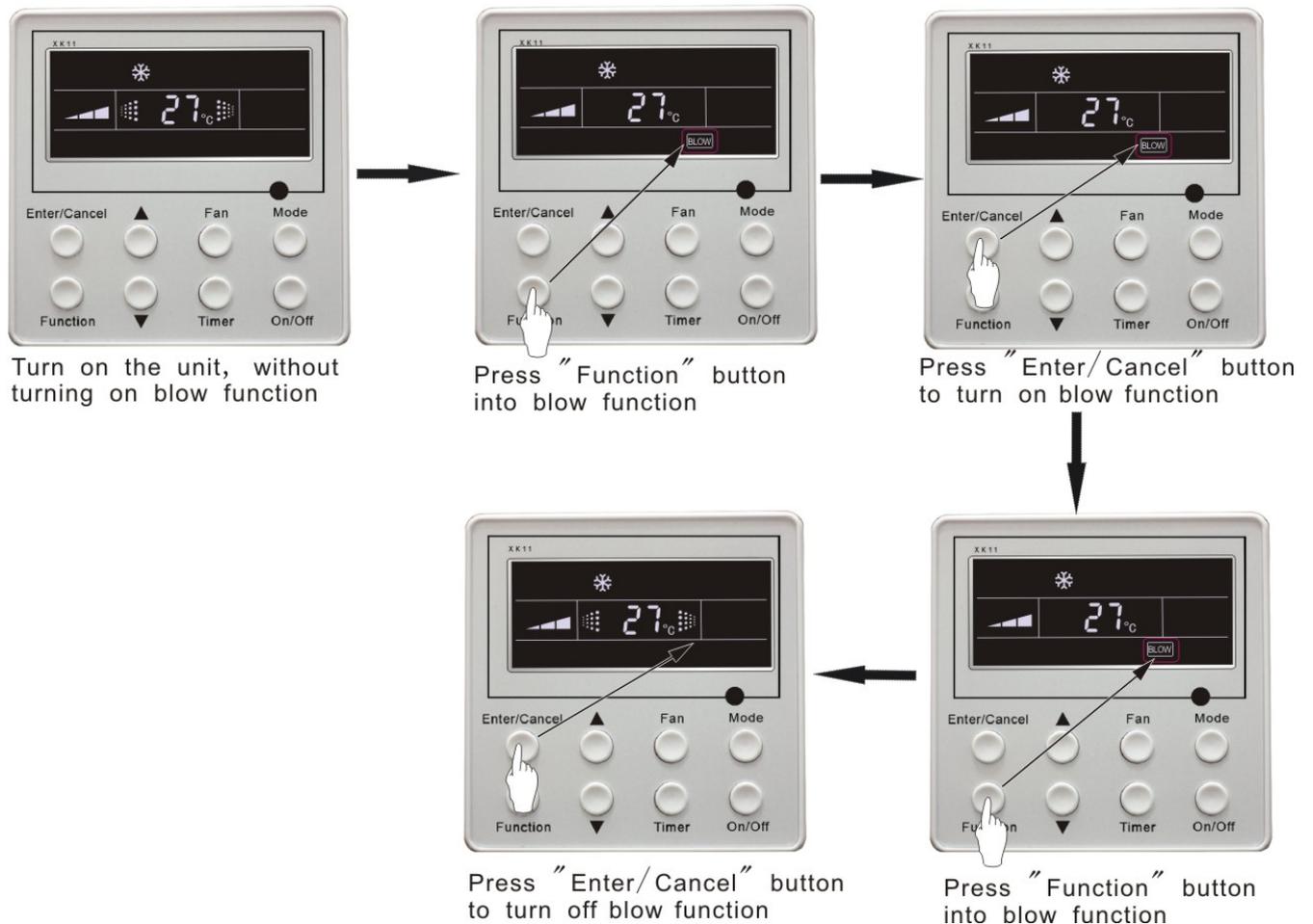


Fig. 3.4.12 Blow function setting

Note:

1. After setting BLOW function, turn off the unit by pressing **On/Off** button on remote controller, indoor fan will run at low fan speed for 10 min. (**BLOW** shows). Meanwhile, if **BLOW** function is canceled indoor fan will be turned off directly.
2. There is not BLOW function in fan or heating mode.

3.4.13 Quiet Function Setting

Quiet function consists of two kinds: QUIET and AUTO QUIET.

Press **Function** button till the unit enters quiet function setting state, **Quiet or Auto Quiet** mark blinks. In this case, press **▲** or **▼** button to switch between Quiet and Auto Quiet and then press **Enter/cancel** button to turn on this function.

In quiet mode, press **Function** button till the unit enters quiet function. In this case, **Quiet or Auto Quiet** icon blinks and then press **Enter/cancel** button to cancel this function.

Quiet function setting is shown in Fig.3.4.13

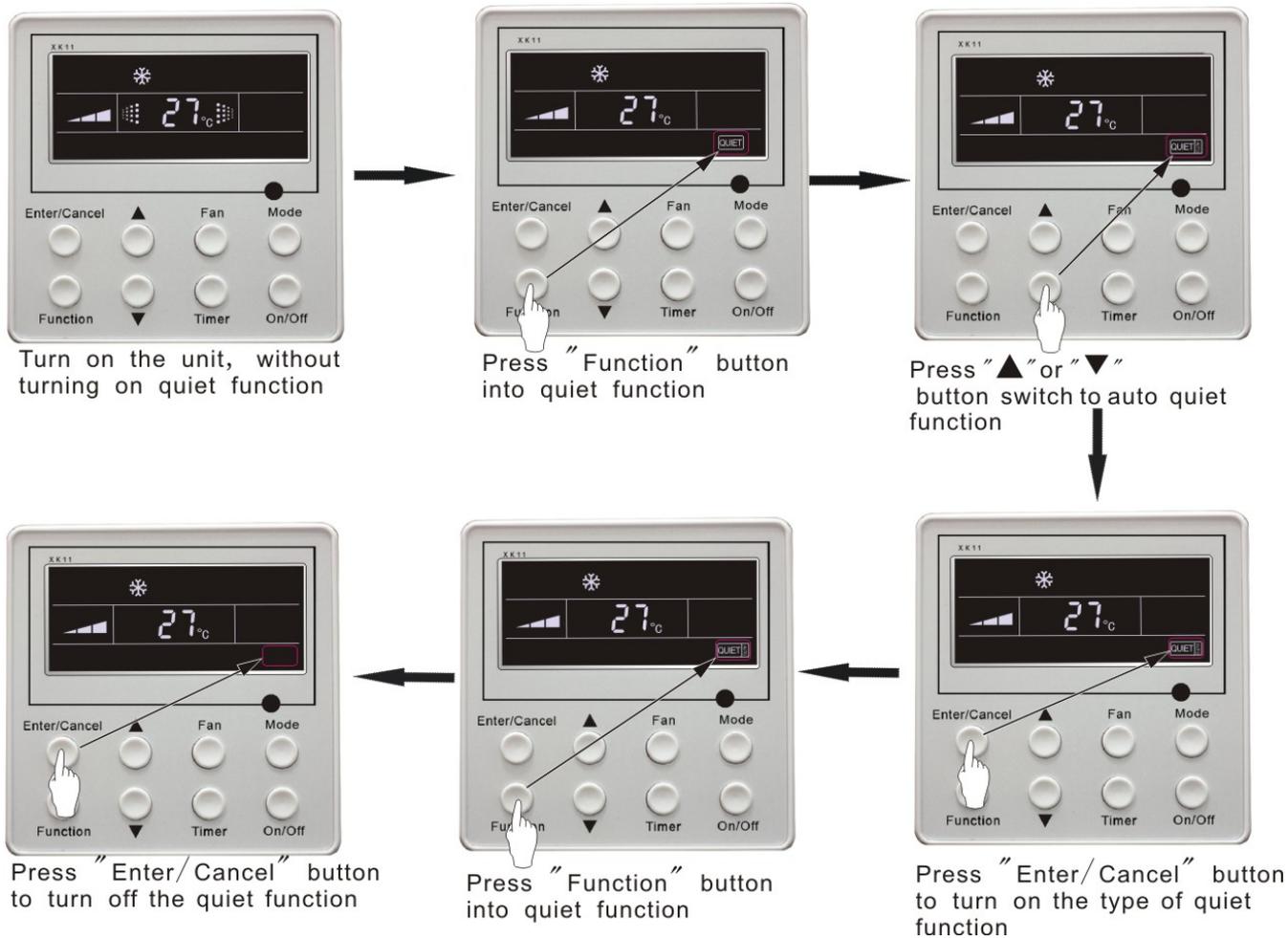


Fig. 3.4.13 Quiet function setting

Note:

1. During quiet function, fan speed is un-adjustable.
2. When turning on auto quiet function, the unit will enter quiet running state according to temperature difference between room temperature and setting temperature. In this case, fan speed is adjustable. If temperature difference between room temperature and setting temperature $\geq 4^{\circ}\text{C}$, fan will keep its current speed; if $2^{\circ}\text{C} \leq$ temperature difference $\leq 3^{\circ}\text{C}$; fan speed will be reduced by one grade, but if it is at minimum grade, it is un-adjustable.; if temperature difference $\leq 1^{\circ}\text{C}$, fan speed will be at minimum grade
3. In auto quiet mode, fan speed can not be raised but reduced. If high fan speed is manually adjusted, auto quiet mode will quit.
4. There is not auto quiet function in fan or dry mode. Quiet off is default after power failure and then power recovery.
5. If quiet function is set, turbo function will be canceled.

3.4.14 Field Functions

Under off-state of the unit, press **Function** and **Timer** buttons continuously for 5s to go to the debugging menu. Press **Mode** button to adjust the setting items and **▲** or **▼** button to set the actual value.

3.4.14.1 Ambient Temperature Sensor Setting

In field setting mode, press **Mode** button to adjust the temperature displayed location displaying 00, and press **▲** or **▼** button to adjust setting state at timer displayed location. There are 3 types for selection:

- (1) Indoor ambient temperature is that at return air inlet (01 is displayed at timer displayed location)
- (2) Indoor ambient temperature is that at the place of screen (02 is displayed at timer displayed location)
- (3) Return air inlet temperature sensor shall be selected for cooling, dry and fan modes and wired controller temperature sensor (03 is displayed at timer displayed location) shall be selected for heating and auto modes.

3.4.14.2 Three Grades of Speed for Indoor Fan

In field setting mode, press **Mode** button to adjust the temperature displayed location displaying 01 and press **▲** or **▼** button to adjust setting state at timer displayed location. There are 2 types for selection:

- (1) 3 low grades (LCD displays 01)
- (2) 3 high grades (LCD displays 02)

Three low grades indicate high, medium and low grades and 3 high grades indicate super-high, high and medium grades.

Press **Enter/Cancel** button to save the setting and quit after setting. If there is not any operation within 20s after the system responds to the last button operation in this interface, the system will quit this menu and display normal off-state; meanwhile, current setting won't be saved.

3.4.15 Other Functions

3.4.15.1 Lock Function

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

Under lock state, any other buttons won't give any response to the press.

3.4.15.2 Memory Function

Memory switchover: Under off-state of the unit, press **Mode** and **▲** buttons at the same time for 5s to switch memory modes. During setting memory mode, **Memory** will be displayed. If this function is not set, the unit will be under off state after power failure and then power recovery.

Memory recovery: If memory mode has been set for wired controller, the wired controller after power failure will resume its original running state upon power recovery.

Note:

It will take about 5 seconds to save all the information, therefore, please do not cut down the power at this time, or it may fails.

3.4.15.3 Selection of Centigrade and Fahrenheit

Under off-state of the unit, press **Mode** and **▼** at the same time for 5s, the displayer panel will switch between Centigrade and Fahrenheit.

3.5 Error Display

If there is malfunction during running of the system, LCD will display error code at temperature–displayed location. Once there is more than one malfunction, error codes will be displayed circularly. If there are multiple circuit systems, the system number of failed system will be displayed before the colon (not for single system).

If malfunction occurs, turn off the unit and contact nearest dealer for help.

As shown in Fig.3.5.1, it means high pressure protection of system 2 under unit on.



Fig.3.5.1

Error code meaning:

Error code	Malfunction
E2	Indoor anti-freezing protection
E6	Communication malfunction
E9	Water overflow protection
F0	Indoor unit ambient sensor malfunction at air return opening
F1	Evaporator sensor malfunction
F5	Ambient sensor malfunction on Displayer(or LED board)

3.6 Setting of Indoor Room Sensor Installing Wired Remote Controller

3.6.1 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 wired 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.)

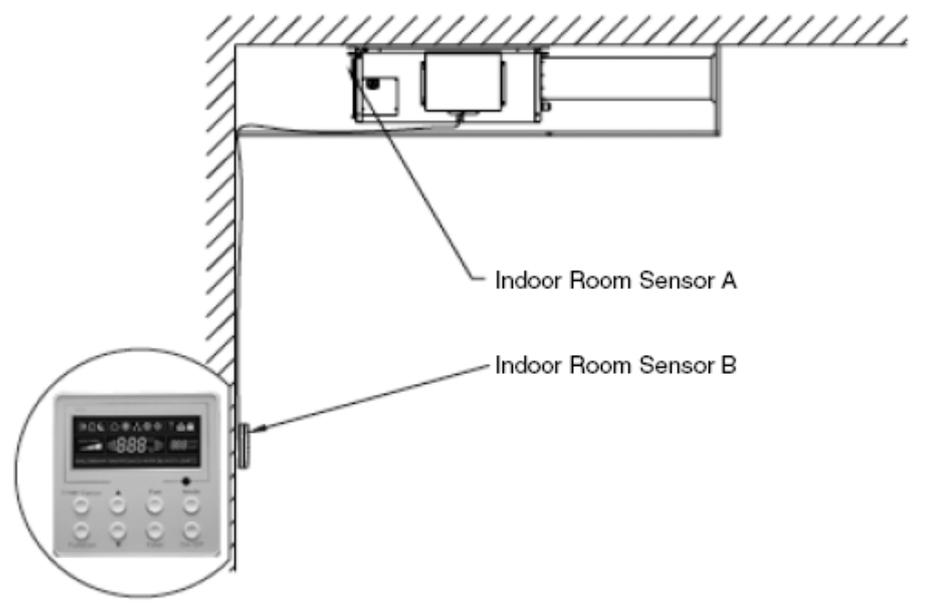


Fig3.6.1

3.6.2 Position and Method of Installing Wired Remote Controller

1. One end of the control wire of the wired remote controller is connected to main board in the electric box of indoor unit, it should be tightened by wire clamps, while the other end should be connected to the wired controller. The special control wire be used between the indoor unit and wired remote controller, of which the length is 8 meters.
2. The material to be adopted for the control wire should be metallic substance. The wired controller could not be disassembled and the control wire to be used for the wired controller should not be changed by users optionally. The installation and maintenance should be carried out by the installer.
3. Firstly select an installation position. According to the size of the control wire for the wired remote controller, leave a recess or a embedded wire hole to bury the communication line.
4. If the control wire between the wired remote controller and the indoor unit is surface-mounted, use 1# metallic pipe and make matching recess in the wall (refer to Figure 3.6.2); If concealed installation is adopted, 1# metallic pipe can be used (Refer to Figure 3.6.3).
5. No matter if surface mounting or concealed mounting is selected, it is required to drill 2 holes (in the same level) between which the distance shall be the same as the distance (60mm) of installation holes in the bottom plate of the wired controller. Then insert a wood plug into each hole, fix the bottom plate of the wire controller to the way through these two holes, plug the control wire onto the control panel, and lastly install the panel of the wire controller.(Refer to Figure 3.3.1)

EXPOSED BODY, EXPOSED CORD

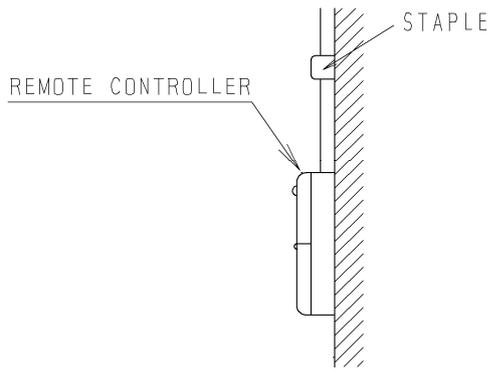


Fig.3.6.2

EXPOSED BODY, EMBEDDED CODE

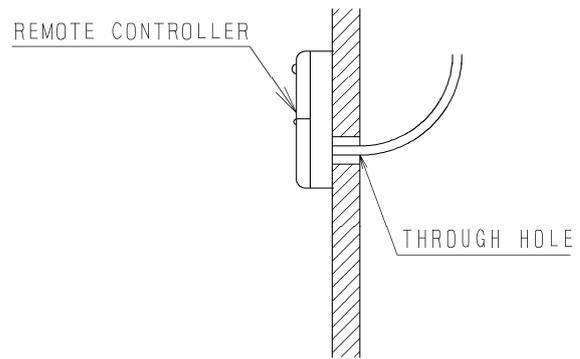


Fig.3.6.3

⚠ Caution:

During the installation of the bottom plate of the wired controller, pay attention to the direction of the bottom plate. The plate's side with two notches must be at the lower position, otherwise the panel of the wired controller cannot be correctly installed.

⚠ Caution:

1. The communication distance between the main board and the wired controller can be as far as 20m (The standard distance is 8m).
2. The wired controller shall not be installed in a place where there is water drop or large amount of water vapor.

4 Defrosting control (Heat pump)

The defrosting mode:

After the compressor consecutively runs for “t” minutes, it will start defrost if the sensor detects the temperature $\leq T1$ °C for consecutive 1 minute. It will stop defrost when defrosting has run for 10 minutes or the sensor detects the temperature over “T2” °C

defrosting control:

There are 8 defrosting modes corresponding to different DIP ways.

Firstly the abbreviations are defined as below:

t -----the defrosting temp sensor starts to detect after the compressor has been operating for t minutes accumulatively

T1-----the defrosting circuit on the main board starts to work when the defrosting temp sensor has been in T1 °C or under T1 °C for 1 minute continuously

T2-----The defrosting will stop after it goes on for 10 minutes continuously or the temp sensor detects the ambient temperature over T2 °C

T-----outdoor ambient temperature

DIP and corresponding temperature

Outdoor ambient temp sensor	Outdoor ambient temp sensor does not work					Outdoor ambient temp sensor works					
DIP	000	001	010	011	100	101		110		111	
T	-	-	-	-	-	≥-3	<-3	≥-3	<-3	≥-3	<-3
t	44	44	60	90	30	30	60	44	90	90	120
T1	-2	-5	0	0	0	-2	-10	-2	-10	-2	-15
T2	15	20	20	20	20	20	15	20	15	20	15

In summary:

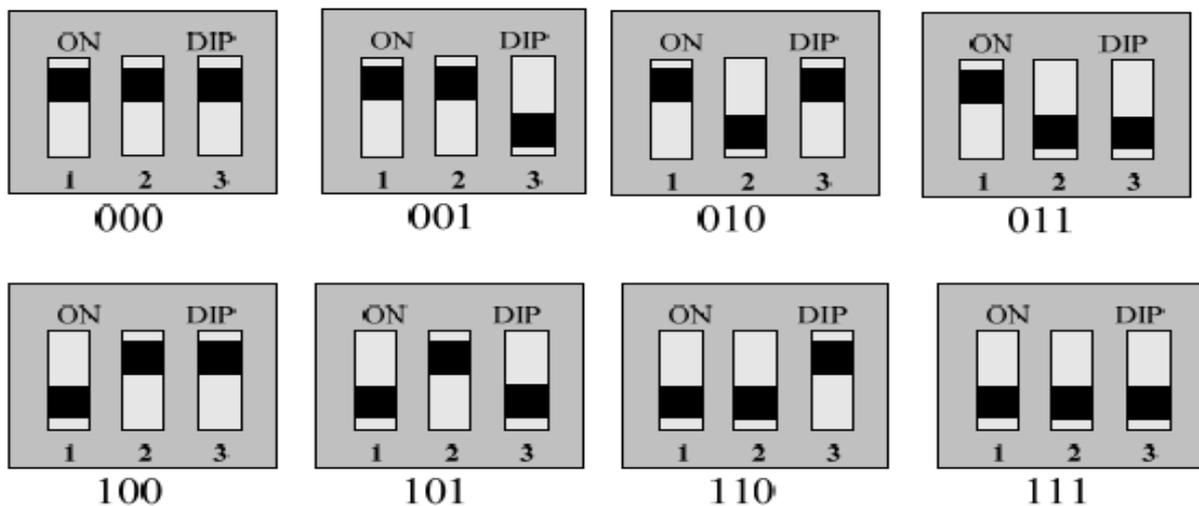
If the compressor operates for t mins continuously under “heating” mode, the defrosting will start when the defrosting thermistor is under or below T1 temperature for 1 min continuously. At the same time, the 4-way valve is energized, the fan motor of outdoor unit stops running and the auxiliary electric heating device is energized. The defrosting will stop after it goes on for 10 minutes continuously or the temp sensor detects the ambient temperature over T2°C. At the same time, the 4-way valve is de-energized, the fan motor of outdoor unit is energized and the auxiliary electric heating device runs as per the setting of wired controller.

The defrosting stops immediately if the A/C is diverted to “COOLING” mode while the outdoor unit is defrosting.

Forced defrosting:

When the forced defrosting button is pushed, the A/C will start to defrost promptly. At the same time, the 4-way valve is energized, the fan motor of outdoor unit stops running and the auxiliary electric heating device is energized. The defrosting will stop after it goes on for 10 minutes or the temp sensor detects the ambient temperature over T2 . At the same time, the 4-way valve is de-energized, the fan motor of outdoor unit is electrified and the auxiliary electric heating device runs as per the setting of wired controller.

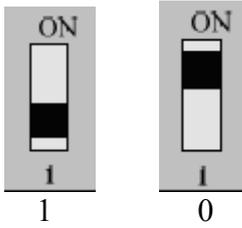
DIP switch(SA1):



Warning: the default setting of DIP switch included in the WZ14301-1 main board of outdoor unit:

DIP switch (SA1): Position 1,2,3to “ON”

Note:



Mainboard LED display instruction		
	LED1	LED2
Normal Operation	Flashing every 0.5s	Flashing every 0.5s
Defrosting	ON	ON
High pressure protection	Flashing every 0.5s	OFF
Low pressure protection	OFF	Flashing every 0.5s
Outdoor ambient Temp. sensor Malfunction	OFF	ON
Defrosting Temp. sensor Malfunction	ON	OFF

5 Main board Code Setting

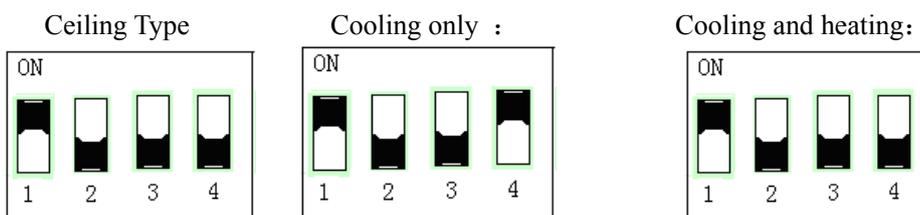
Please find the corresponding main board according to the unit type and then check whether the mainboard code is right according to the main board.

The relation between main board type and unit type:

Main board: Z4G25C Z4G25B

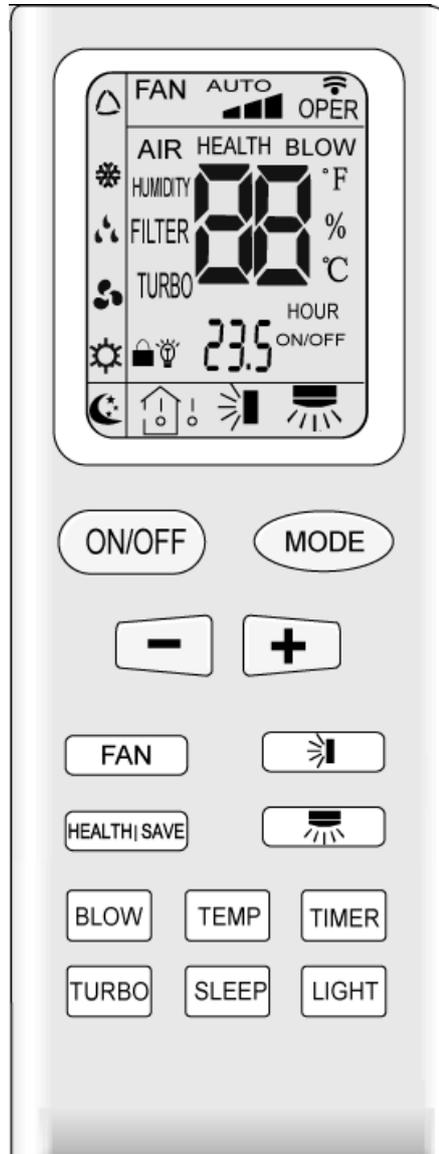
Code location and meaning:

Please find the corresponding main board according to the complete unit type and then check whether the main board code conforms to the figures below according to the main board. Cooling only unit as well as cooling and heating unit is differentiated by location “4” of DIP switch. When it is dialed to “4”, it means cooling and heating when it is dialed to ON, it means cooling only. The third code remains in “3”. Please refer to the following figure for detailed coding.



6 Names and functions of remote control buttons

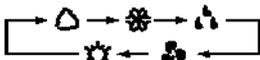
Notes: This remote control is universal .It could be used for many units. Some buttons which are not available in this unit such as “TURBO” 、 “BLOW ”、 “LIGHT”、 “TEMP” 、 “HEALTH|SAVE”  will not be described below.



1、 “ON/OFF” button

After powering the unit, when the unit is off state, press the “ON/OFF” button to start the unit. AND when the unit is on state, press the button ,it will be off.

2、 “Mode” button



Press this button , the unit will be run in the mode which you want. Press this button once, the mode will be changed in a regular as AUTO –COOL –DRY –FAN – HEAT.

 AUTO;  COOL;  DRY;  FAN;  HEAT

3、 “+” 、 “-” button

Press the “+” or “-” button to set your desired temperature. The temperature rang is from 16°C to 30°C.It is not necessary at AUTO mode. AND when you are setting the timing hours, press the “+” or “-” button

once , the timing hours will increase or decrease 0.5 hour.

4、“FAN” button

Press the “FAN” button to set fan speed. The AUTO FAN 、LOW、MID、HIGH could be selected.

5、 button

Press this button to turn on or turn off the swing function.

6、“SLEEP” button

Press this button to set the sleep mode. Once the sleep mode is set , the temperature will increase 1°C after 1 hour, and still increase another 1°C after 2 hours in the COOL mode. While in HEAT mode , the temperature will decrease 1°C after 1 hour, and still decrease another 1°C after 2 hours .

7、“TIMER” button

Press the button to set the timing function. When the timing function is on, press this button to cancel the function. When the timing function is off, press this button once, words Hour on(off) will appear and flicker. In this case, press +/- button to adjust time (press +/- button continuously to change timing value quickly),the setting time range is from 0.5 to 24 hr; press this key once again to fix the time, then remote controller will send out the signal immediately and hour on/off will stop flickering. If the time of that no press timer button under flicking status is above 5s, the timer setting will quit. If the timer has been set, press this button once again to quit it.

About AUTO RUN :

When AUTO RUN mode is selected, the setting temperature will not be displayed on the LCD .The unit will be accordance with the room temp, automatically to select the suitable running mode and to make ambient comfortable.

About LOCK:

Press “+” and “-” simultaneously to lock or unlock the keyboard. If the remote control is locked, the icon  will be displayed on the LCD, in which case, press any button , the mark will flicker for three times. If the keyboard is unlock, the mark will disappear.

About switch between Fahrenheit and Centigrade:

Under status of unit off, press MODE and – buttons simultaneously to switch °C and °F.

Changing batteries and notices

1、 Slightly to press the place with  along the arrowhead direction to push the back cover of remote controller.(As show in Fig 1.)

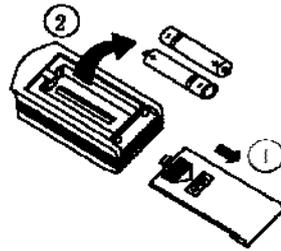


Fig.1

- 2、 Take out the old batteries ,insert two AAA alkaline cells(As show in Fig 2.)
- 3、 Attach the back cover of remote control.

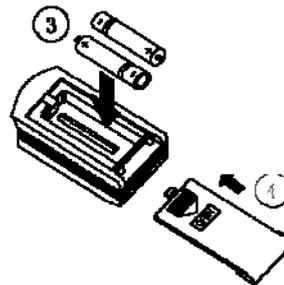


Fig.2

NOTE:

- When changing the batteries, do not use the old or different batteries, otherwise, it can cause the malfunction of the wireless remote control.
- If the wireless remote control will not be used for a long time, please take them out and do not let the leakage liquid damage the wireless remote control.
- The operation should be in its receiving rang.
- It should be placed where is 1m away from the TV set or stereo sound sets.
- If the remote control cannot operate normally, please take the batteries out, and then reinsert it 30s later; if it is also abnormal, please replace the batteries.
- If the main unit needs to be remote controlled, please aim remote controller at the receiver of main unit in order to improve the receiving sensitivity of the main unit.
- When the remote controller sends out single, a mark  will flicker for about 1s.The bell will ring if the main unit receives effect signal.

7 Errors display and buttons of LED board

. There are one yellow LED used as Timer LED, one green LED used as Compressor LED, one red LED used as Run LED on the LED board. AND also two buttons, one is Auto button, the other is Test button .We will introduce the error displaying of the LED and the functions of the buttons

7.1 Errors display

● Yellow LED:

(1)on/off

It is on when setting timer function.

It is off if there is not setting.

(2)Blink

It continuously blinks once upon indoor temperature sensor malfunction.

It continuously blinks twice upon evaporator temperature sensor malfunction.

● Green LED:

(1)on/off

It is on during running of compressor.

It is off upon stop of compressor

● Red LED:

(1)on/off

It is on upon unit ON..

It is off upon unit OFF.

(2)Blink

It continuously blinks once upon communication malfunction.

It continuously blinks twice upon water overflow protection.

It continuously blinks 3 times upon antifreezing protection.

It continuously blinks 4 times upon indoor high temperature resistance protection.

It continuously blinks 5 times in forcible running mode.

7.2 Functions of the buttons

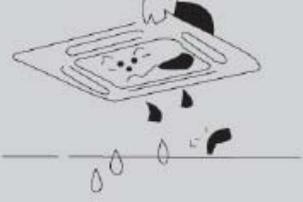
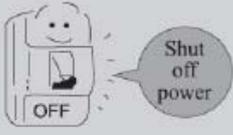
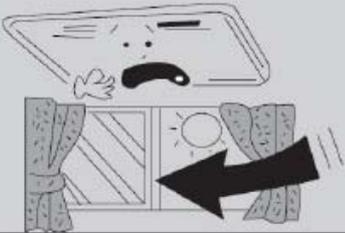
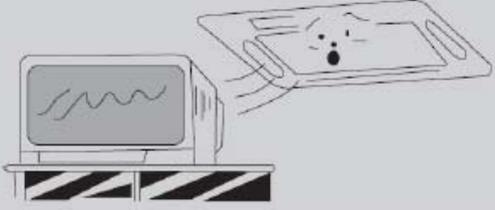
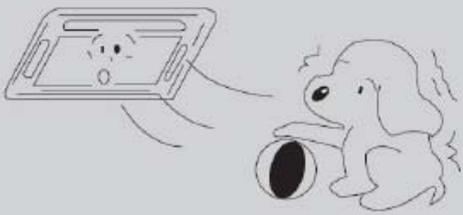
● Auto button:

The unit will run in auto mode upon pressing this button at unit OFF and will stop upon pressing it at unit OFF.

● Test button:

This button is only for debug.

8 Optimum operation

Adjust the room temperature properly	
Adjust the room temperature properly for a comfortable environment.	
Never place anything under the indoor unit that is to be kept dry.	
Water may drop from the indoor unit when the humidity is over 80% or when the drainage outlet is clogged.	
Turn off the main power supply switch when it is not to be used for long periods of time	
When the main power switch is turned on, some watts of electricity is being used even if the system is not operating. Turn off the main power supply switch to save energy.	
Do not open the doors and windows for a long time when air conditioner is operating	
Cooling and heating performance will be affected if the doors and windows are open for a long time.	
Place TV, radio, stereo, etc. at least 1m away from the indoor unit and the remote controller	
It may cause interference in the picture or sound.	
Avoid direct air flow to pets and plants.	
It may do harm to them.	

9 Trouble shooting

★ Warning

- In case of something abnormal (such as bad smell), shut of the power switch immediately and contact service center.
- Do not repair the air conditioner by yourself because wrong repair may cause fire, please contact service center to do it for you.

★Check item shown below before contacting service center.

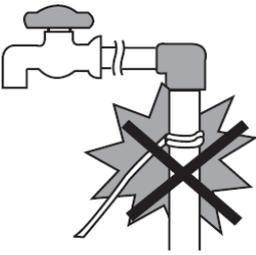
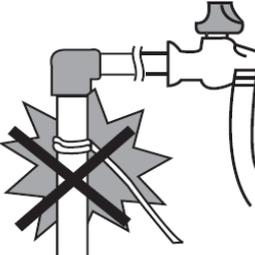
symptom	cause	Corrective measures
The system does not operate at all	Phase opposition or fuse broken	Change phase or replace fuse
	Power off	It will restart when power is on
	Loose plug	Put the plug into place
	Batteries of remote controlling fail	Replace batteries
	Out of the remote controlling range	Keep the distance in 10mm
The system stops right after it is started	Object at the air intake and air outlet of the air conditioner	Remove them
Cooling and heating is malfunctioning	Object at the air intake and air outlet of the air conditioner	Remove them
	Wrong temperature setting	Refer to temperature setting
	Low fan speed	Refer to fan speed setting
	Air direction is not correct	Refer to swing setting
	Doors or windows are open	Close them
	Direct sunshine	Close the curtain or blinds
	Too many people in the room	
	Too many heating sources	
Dirty air filter	Clean it	

★**Note:** If trouble still exists after checking the above items, please contact service center.

★ The following are not troubles

	“ Trouble”	Cause
The unit does not operate when	Restart right after stopping	Once the unit is stopped, it will not operate for about 3 minutes to protect it
	Press SET TEMP.and then release immediately.	
	Power is switched on	Wait for 1 minute
Mist is emitted	When cooling	Room air is chilled rapidly and becomes foggy.
Outdoor unit is hot	after the unit is stopped	Compressor is emitting heat to get ready for restarting.
Noise	Buzz is heard at starting	It's the starting sound of thermostat and will turn low after 1 minute.
	Sound of running water can be heard during operation	This is caused by the refrigerant flowing inside the unit
	A “shuh” sound which is heard at the start or immediately after the stop of operation or which is heard at the start or immediately after the stop of defrosting operation.	This is the noise of refrigerant caused by flow stop and flow change. The noise is heard when the drainage pump is in operation.
	A continuous low “shah” sound is heard when the system is in cooling operation or at a stop.	
	Cracking noise can be heard during or after operation.	This is caused by the panel expanding or contracting due to the change in temperature.
Dust from the units	Starting operation after not using for a long time.	Dust absorbed by the unit blows out
Wind from the outlet smells	During operation	This is caused by the odors in the room which have gotten onto the air conditioner

10 Installation notes

Location	Noise
<ul style="list-style-type: none"> • The air conditioner must be firmly installed and 3~4 liability checks must be done every year. • Avoid place within easy reach of young children. • Avoid other heat sources or direct sun light. • Install indoor unit away from TV set or radio. • Avoid where inflammable gas is likely to leak. • At salty coastal areas or special areas such as the vicinity of a sulphurous hot spring, please contact dealer before installation to make sure it is safe to use the unit. • Not to be installed in laundries. 	<ul style="list-style-type: none"> • Select a place with good ventilation or it may affect performance or increase noise. • Install the air conditioner on a foundation that can withstand its weight. insufficient strength may result in the fall of equipment and cause injury. • Select a place so as not to annoy neighbor with the hot air or noise. • Never place objects near the air outlet or the unit, it may affect performance or increase noise. • If there is abnormal noise during the operating, contact dealer immediately.
Installation and transportation	Wiring arrangement
<ul style="list-style-type: none"> • Installation and transportation of the unit must be done by skilled personnel. • Be sure to use only the specified accessories and parts for installation, failure to use may lead to electric shock, leakage or fire. • Carry out installation with consideration of strong winds, typhoons, or earthquakes. Improper installation work may result in accidents due to fall of equipment. • If the unit is to be moved to other place, please consult dealer first. 	<ul style="list-style-type: none"> • Make sure wiring is carried out by qualified personnel according to laws and regulations and this manual, using a separate circuit and suitable fuse. • Be sure to install an earth leakage breaker. • Diameter of power supply cord must be big enough. (Refer to P24 about the sizes of diameter) • If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard. • The appliance shall be installed in accordance with relative wiring regulations.
<p>Earth</p> <p>Be sure to connect the earth wire to earth device of the building. Install an earth leakage breaker.</p> <p>Do not connect the earth wire to gas or water pipes, lightning conductor or telephone earth wire.</p>	
<p>Water pipe</p> <p>Some parts of the water pipe are made of plastic materials and not suitable for earthing.</p> 	<p>Gas pipe</p> <p>If there is electrical leakage accidentally from air conditioner, it is easy to cause fire or explosion.</p> 

11 Care and maintenance

Please pull out the power plug after you used the air conditioner.

Warning

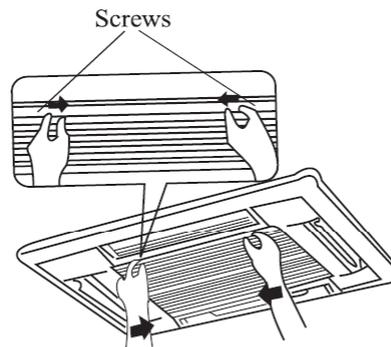
■ Pull out the power plug before cleaning

■ Do not splash water directly to the unit

How to clean the air filter

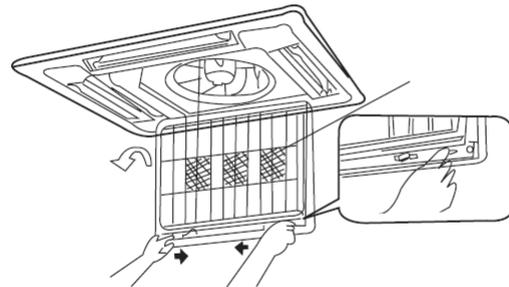
1. Open the suction grille

Use screwdriver screws the two screws.
Slide both knobs simultaneously as shown and then pull them downward slowly.



2. Remove the air filters.

Slide knobs on the back of the suction grille outward and remove the air filter.
Then remove three air cleaners on it.



3. Clean the air filter

Use vacuum or wash the air filter with water when the air filter is very dirty, use neutral detergent and water. Let the filter dry naturally at shady place.

Note:

Do not clean with hot water.

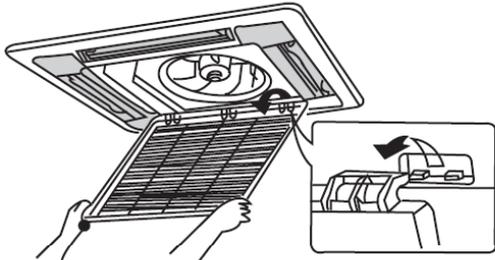
Do not dry over fire.

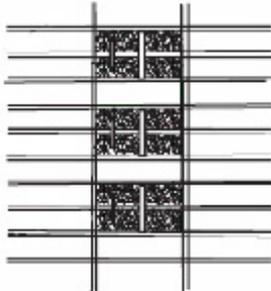
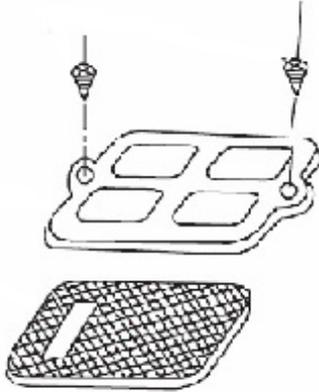
Do not run the air conditioner without the air filter.

The suction grille must be opened by skilled personnel.



<p>4. Fix the air filters</p> <ul style="list-style-type: none"> • Fix three air cleaner on the air filter and then fix the air filter to the suction grille by hanging it to the projected portion above suction grille. • Set air filter by sliding the knob on the back of the suction grille inward. 	
<p>Shut the suction grille.</p>	<p>Refer to step 1.</p>

How to clean the suction grille	
<p>1. Open the suction grille.</p>	<p>See step 1 of “How to clean the air filter”</p>
<p>2. Remove the air filters.</p>	<p>See step 2 of “How to clean the air filter”</p>
<p>3. Remove the suction grille Open the suction grille at 45° and then lift.</p>	
<p>4. Wash with water. When the suction grille is very dirty, use soft brush and neutral detergent. Shake off water and dry in a shady place. Notes: Do not wash with hot water.</p>	
<p>5. Fix the suction grille</p>	<p>Refer to step 3.</p>
<p>6. Fix the air filter.</p>	<p>See step 4 of “How to clean the air filter”</p>
<p>7. Close the suction grille</p>	<p>Refer to step 1.</p>

changing air cleaner	
1.Open the suction grille	See step 1 of "How to clean the air filter"
2.Remove the air cleaner Remove the air filter and remove the air cleaner after unscrewing	
3.Take off packing bag and put in new static electricity fiber filter, then fix them on the air filter	
4.Fix the air filter	See step 4 of " How to clean the air filter"
Air cleanerer functions and service cycle time	
<p>Absorbs bad smell in air such as carbon monoxide carbon dioxide,benzol,gasoline and so on.</p> <p>Absorbs harmful objects bigger than 1.0um in air such as dust, germ,virus and so on.</p> <p>It can be used for about half a year to one year.</p>	

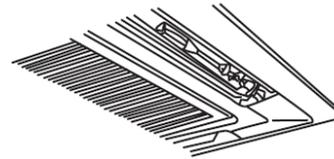
How to clean the air outlet and case.

- Clean with soft cloth or use water and neutral detergent.
- Do not use gasoline, benzene, thinner, polishing powder, liquid insecticide, which may cause discoloring or warping. If the air flow flap is very dirty, you may remove it to clean as shown below.

Detach and fix the flap

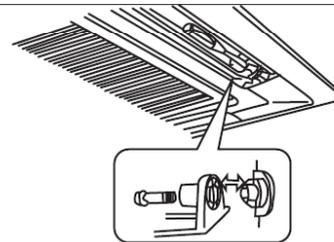
1. Detach the flap

Loosen the screws on the sides of the flap.
Clean with soft cloth.



2. Fix the flap

Set the ribs on the sides of the air outlet to the slit of the flap and then screw together to fix the flap.



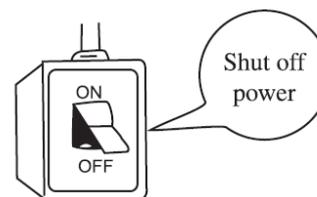
Before starting the air conditioner for the first time in the season

1. Check to make sure no objects obstructing the intake and outlets parts on both the indoor and outdoor units.
2. Check to make sure ground wire is connected and that it is not damaged.
3. Check to make sure air filter has been cleaned.
4. Turn on the power 6 hours before starting the air conditioner.



End of season cleaning

1. Clean the filter and the body of the unit.
2. Turn off power.
3. Clear outdoor unit of dust.
4. If there is any rust in the outdoor unit, this should be painted over to prevent the rust from spreading.



12 Instructions of unit installation

12.1 Install of the cassette type indoor unit

A、 Schematic diagram of installation spaces

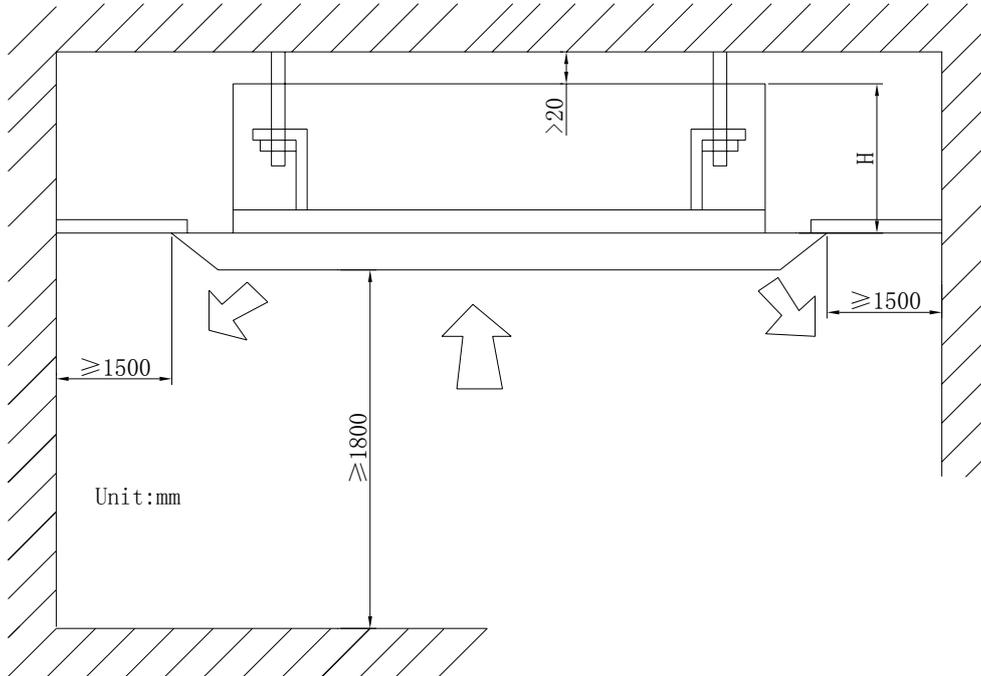


Fig.1

Models	H(mm)
21CK018C24	230
21CK024C24	260
21CK036C24 21CK048C24 21CK060C24	340

B、 Select install location of the indoor unit

1. Obstruct should put away from the intake or outlet vent of the indoor unit so that the airflow can be blown though all the room.
2. Make sure that the installation had accord with the requirement of the schematic diagram of installation spaces.
3. Select the place where can stand 4 times of the weight of the indoor unit and would not increase the operating noise and oscillate.
4. The horizontally of the installation place should be guaranteed.

5. Select the place where is easy to drain out the condensate water, and connect with outdoor unit.
6. Make sure that there are enough space for care and maintenance. Make sure that the height between the indoor unit and ground is above 1800mm.
7. When installing the suspender bolt, check if the install place can stand the weight 4 times of the unit's. If not, reinforce before installation. (Refer to the install cardboard and find where should be reinforced)



Note!

There will be lots of lampblack and dust stick on the acentric fan, heat exchanger and water pump in dining room and kitchen, which would reduce the capacity of heat exchanger, lead water leakage and abnormal operation of the water pump.

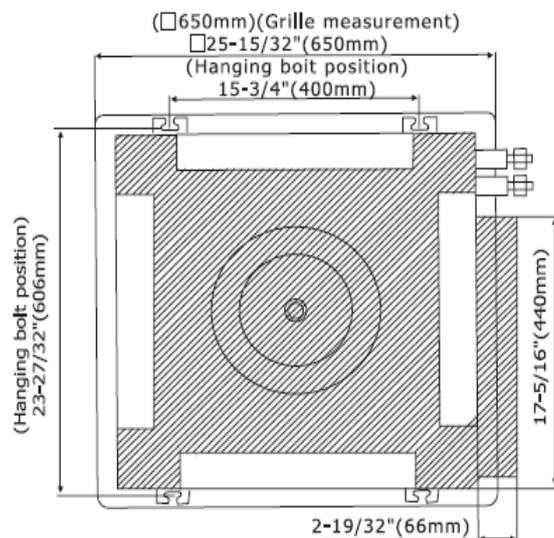
The following treatment should be taken under this circumstance:

1. Ensure that the smoke trap above cooker has enough capacity to obviate lampblack to prevent the indraft of the lampblack by the air conditioner.
2. Keep the air conditioner far from the kitchen so that the lampblack would not be indraft by the air conditioner.

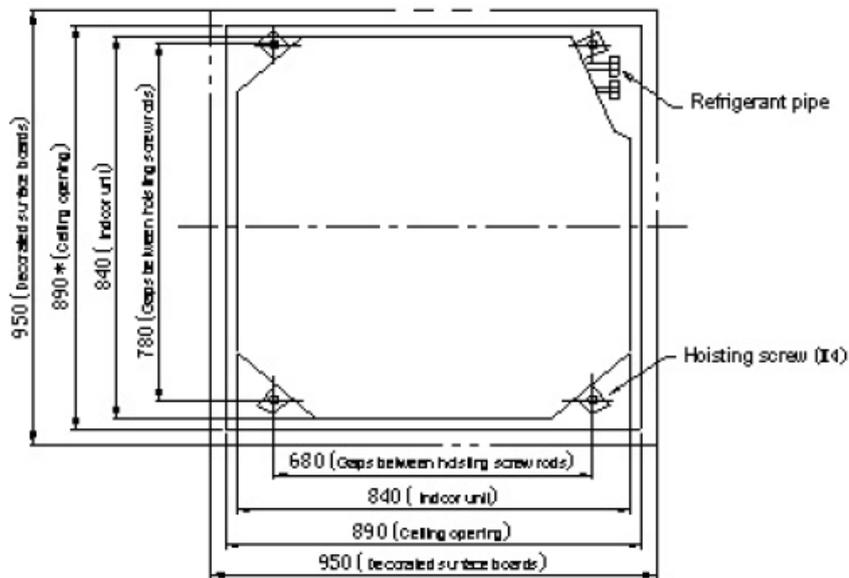
C、 Important notice

- ☆ To guarantee the good performance, the unit must be installed by professional personnel according with this instruction.
- ☆ Please contact the local DELTA special nominated repair department before installation. Any malfunction caused by the unit that is installed by the department that is not special nominated by DELTA would not deal with on time by the inconvenience of the business contact.

D、 Dimension of ceiling opening and location of the hoisting screw (M10)



21CK018C24



21CK024C24、21CK036C24

21CK048C24、21CK060C24

☆ The drilling of holes in the ceiling must be done by the professional personnel.

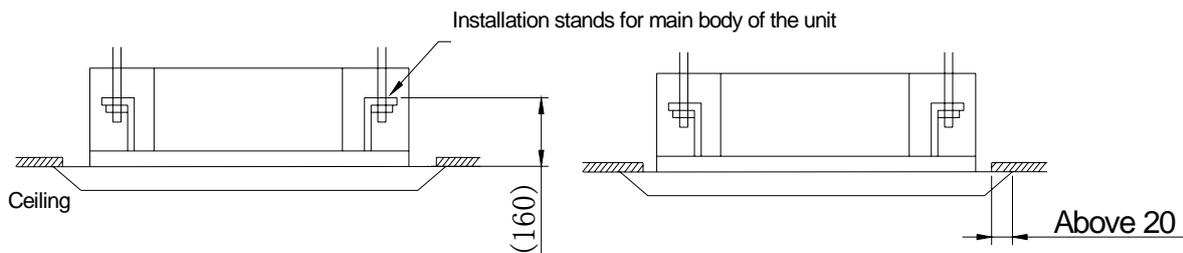


Fig 1

Notes: The dimension for the ceiling openings with * marks can be as large as 910mm. But the overlapping sections of the ceiling and the decorated surface boards should be maintained at no less than 20mm.

E、 Main body of hoisting air conditioner

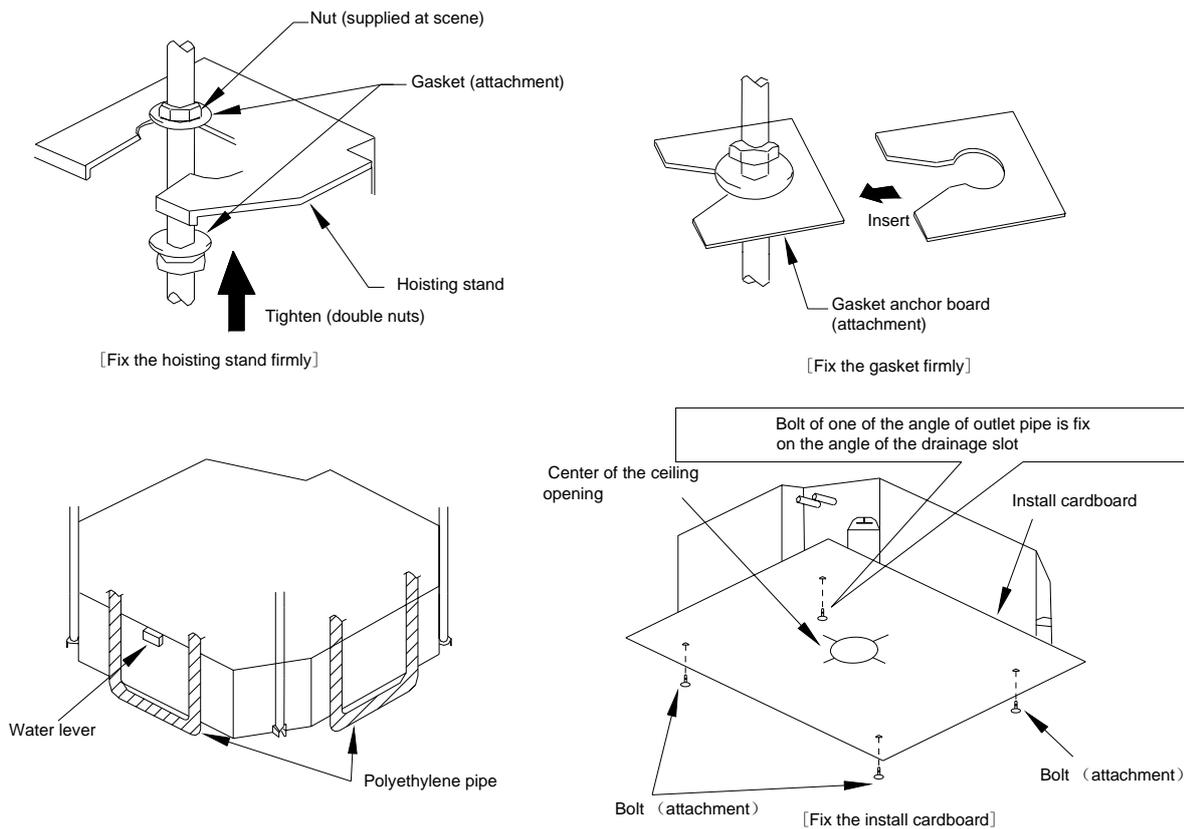


Fig.2

1、 The primary step for install the indoor unit.

☆ When attach the hoisting stand on hoisting screw, do use nut and gasket individually at the upper and lower of the hoisting stand to fix it. The use of gasket anchor board can prevent gasket break off.

2、 Use install cardboard

☆ Please refer to the install cardboard about the dimension of ceiling opening.

☆ The central mark of the ceiling opening is marked on the install cardboard.

☆ Install the install cardboard on the unit by bolt (3 piece), and fix the angle of the drainage pipe at the outlet vent by bolt.

3、 Adjust the unit to the suitable install place.

4、 Check if the unit is horizontal.

☆ Inner drainage pump and bobber switch are included in the indoor unit, check if 4 angle of every unit are horizontal by water lever. (If the unit is slant toward the opposite of the coagulate water flow, there may be malfunction of the bobber switch and lead water drop.)

5、 Backout the gasket anchor board used to prevent gasket break off and tighten the nut on it.

6、 Backout the install cardboard.

Note!

-  Please do not tighten the nuts and bolts to prevent air conditioner break off.

F、 Connect the refrigerant pipe☆ **Selection of Connecting Pipe**

Model	Size of Fitting Pipe (inch)		Max. Pipe Length (m)	Max. Height Difference between Indoor Unit and Outdoor Unit (m)	Amount of Additional Refrigerant to be Filled (For Extra Length of Pipe)
	Gas Pipe	Liquid Pipe			
21CK018C24 31VP018	5/8	3/8	20	15	60g/m
21CK024C24 31VP024	5/8	3/8	30	15	60g/m
21CK036C24 31VP036	1/2	3/4	50	30	120g/m
21CK042C24 31VP048					
21CK048C24 31VP060					

Note: 1、 The standard pipe length is 5m, When the length(L) of the connecting pipe is less than or equals 5m, there is no need to add refrigerant. If the connecting pipe is longer than 5m, it is required to add refrigerant, in the above table, the amounts of refrigerant to be added for the models are listed for each additional meter of pipe length.

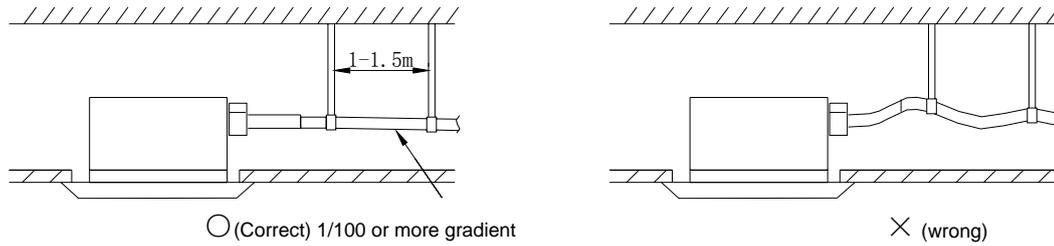
- 2、 The pipe wall thickness shall be 0.5-1.0mm and the pipe wall shall be able to withstand the pressure of 6.0MPa.
- 3、 The longer the connecting pipe, the lower the cooling effect and the heating effect.

G、 Drainage hose

1. Install the drain hose

- ☆ The diameter of the drain hose should be equal or bigger than the connection pipe's. (The diameter of polythene pipe: Outer diameter 25mm Surface thickness ≥ 1.5 mm)
- ☆ Drain hose should be short and drooping gradient should be at least 1/100 to prevent the formation of air bubble.

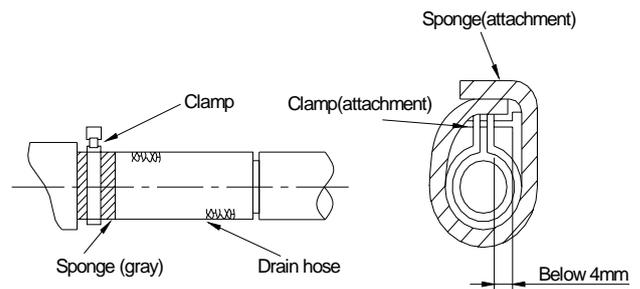
- ☆ If drain hose cannot have enough drooping gradient, drain raising pipe should be added.
- ☆ To prevent bent of the drain hose, the distance between hoisting stand should be 1 to 1.5m.



☆ Use the drain hose and clamp attached. Insert the drain hose to the drain vent, and then tighten the clamp.

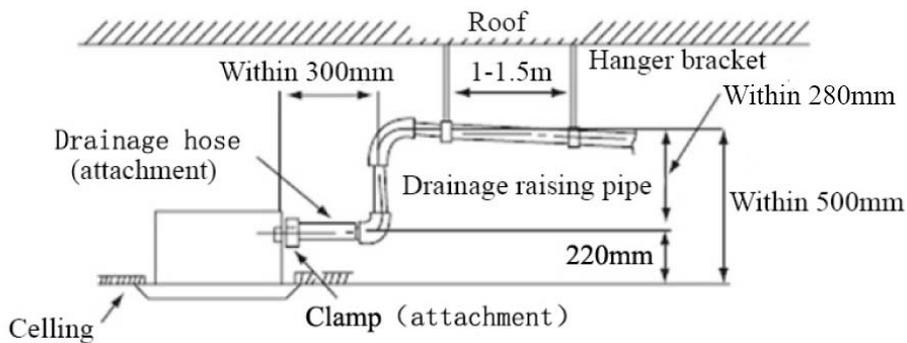
☆ Entwine the big sponge on the clamp of drain hose to insulate heat.

☆ Heat insulation should be done to indoor drain hose.



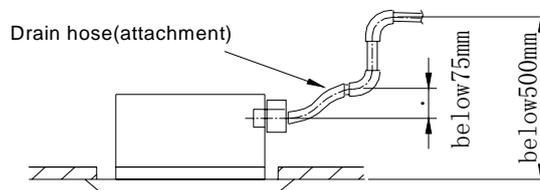
● Note of drainage raising pipe

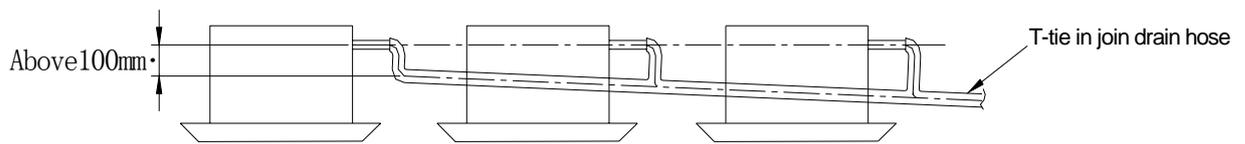
- ☆ The install height of the drain raising pipe should be less than 280mm.
- ☆ The drain raising pipe should form a upright angle with the unit, and distance to unit should not be beyond 300mm.



Instruction

- ☆ The slant gradient of the attached drain hose should be within 75mm so that the drain hole doesn't have to endure the unnecessary outside force.
- ☆ Please install the drain hose according to the following process if several drain hoses join together.

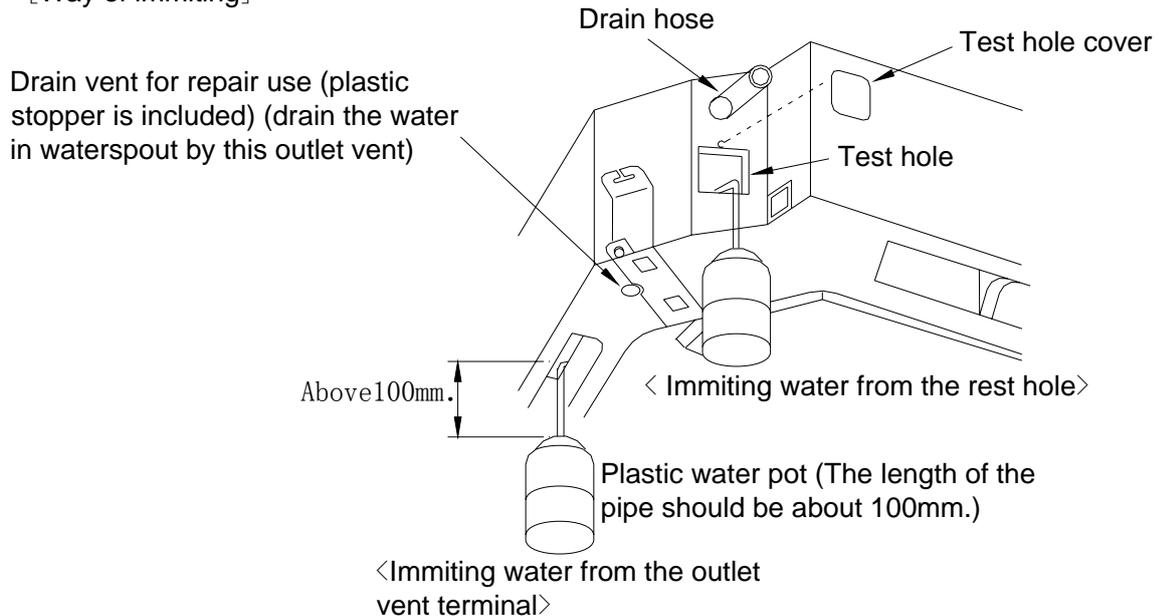




The specs of the selected join drain hose should fits the running capacity of the unit.

- ☆ Check the smoothness of drain after installation.
- ☆ Check the drain state by immitting 600cc water slowly from the outlet vent or test hole.
- ☆ Check the drain in the state of refrigerating after installation of the electric circuit.

[Way of immiting]



● **Warning:** Before obtaining access to terminals, all supply circuits must be disconnected.

12.2 Electric wiring

- 1、 All field supplied parts and materials must conform to local laws and regulations.
- 2、 For electric wiring, refer to WIRING DIAGRAM attached to the unit body.
- 3、 All wiring must be performed by a skilled technician.
- 4、 A circuit breaker capable of shutting down power supply to the entire system and which have at least 3 mm contact separation in each jole must be install in the fixed wiring.
- 5、 Earth properly.
- 6、 Wiring must conform to national laws and regulations.
- 7、 The fixed wiring must be installed with a protector with no more that 30 mA leakage current.
- 8、 If the supply cord is damaged, it must be replaced by the manufactory or its service agents or a similarty qualified person in order to avoid a hazard.

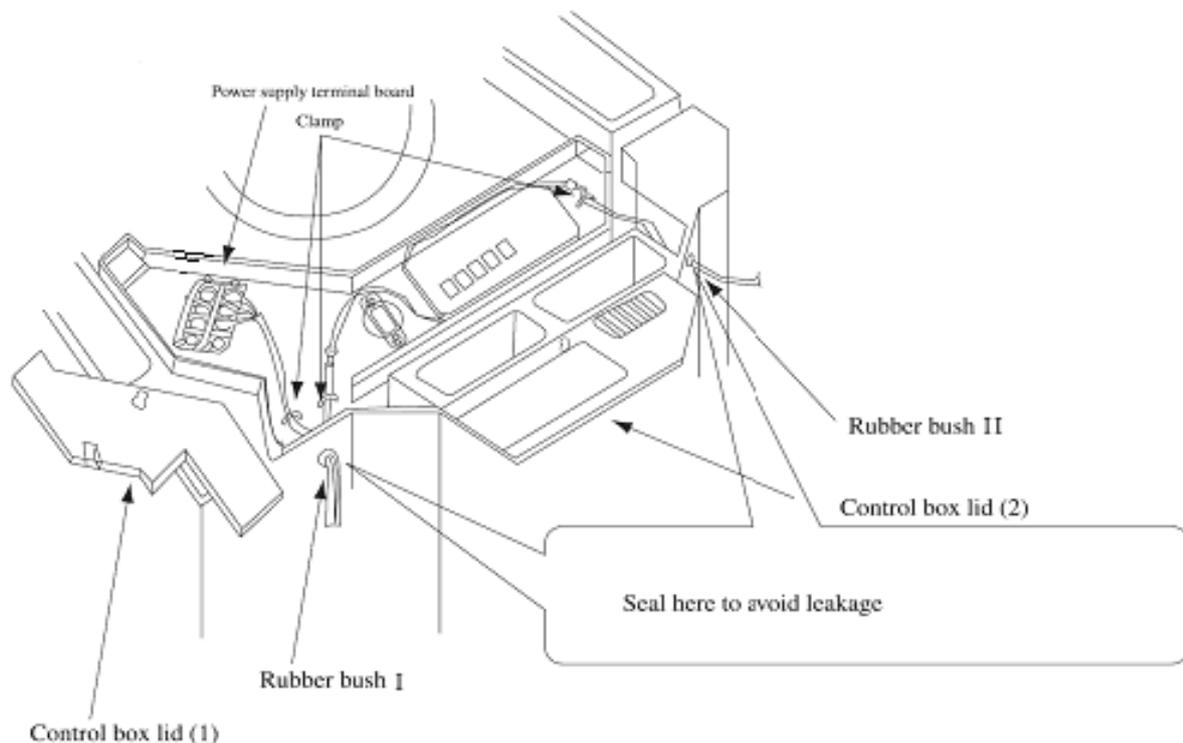
● Wiring of unit and the controller

1. Wiring of the indoor unit.

Remove the control box lid, pull the wires inside through rubber bush and wiring according to the WIRING DIAGRAM , then tighten it with clamp.

2. Wiring of the controller

- 1) Remove the control box lid, pull wires inside through rubber bush and connect to the controller.
- 2) Wrap the wire with sealing pad.
- 3) After wiring, tighten it with clamp and fix the control box lid.
- 4) Connect the rubber wire to the power supply terminal board in properly.



● Precautions: Be sure to connect the indoor unit and outdoor unit at right poles.

12.3 Installation of panel

● Set the panel to the indoor unit body by matching the position of the swing flap motor of the decoration panel to the piping position of the indoor unit as shown in fig.4.

● .Install the decoration panel

- 1、 Hang the latch, which is located on the opposite side of the swing flap motor on the panel, temporarily to the hook of the indoor unit. (2 Positions)
- 2、 Temporarily hang the remaining 2 latches to the hooks on the sides of the indoor unit.(be careful not to let the swing motor lead wire get caught in the sealing material.)

- 3、Screw all 4 hexagon head screws located right beneath the latches in approximately 15mm.(panel will rise)
- 4、Adjust the panel by turning it to the arrowed direction in Fig.4 so that the ceiling opening is completely covered.
- 5、Tighten the screws until the thickness of the sealing material between the panel and the indoor unit body is reduced to 5~8 mm.

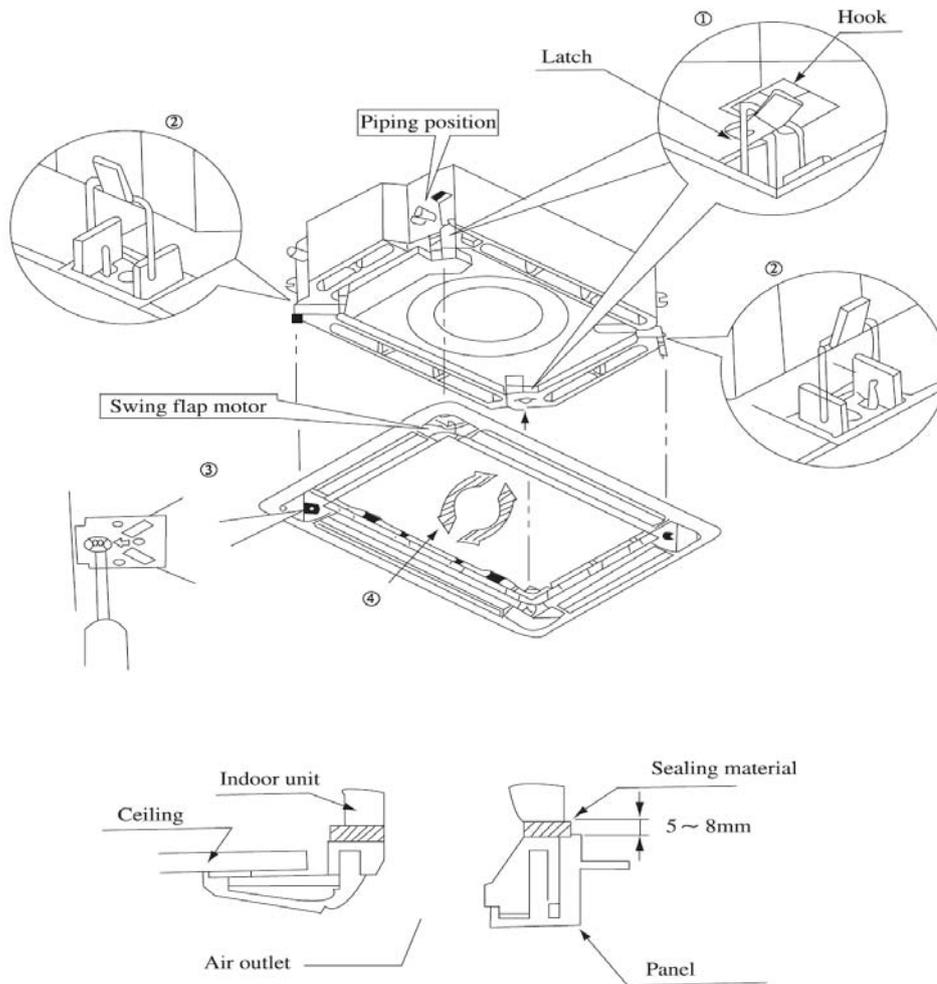


Fig 4

1. Improper screwing of the screws may cause the troubles shown in Fig.5

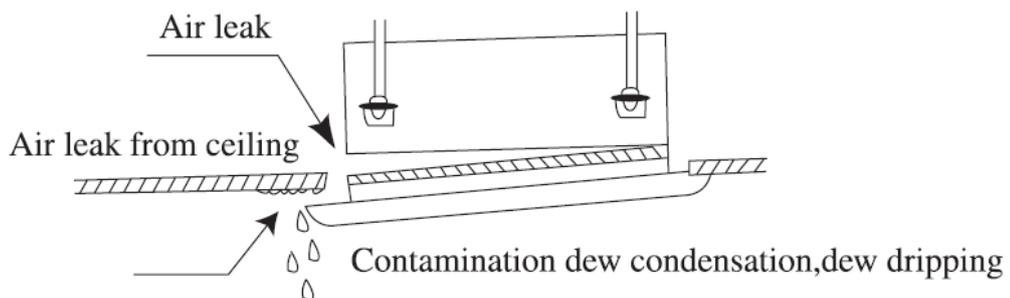


Fig.5

2. If gap is still left between the ceiling and the panel after screwing the screws, readjust the height of the indoor unit body (Refer to Fig.6)

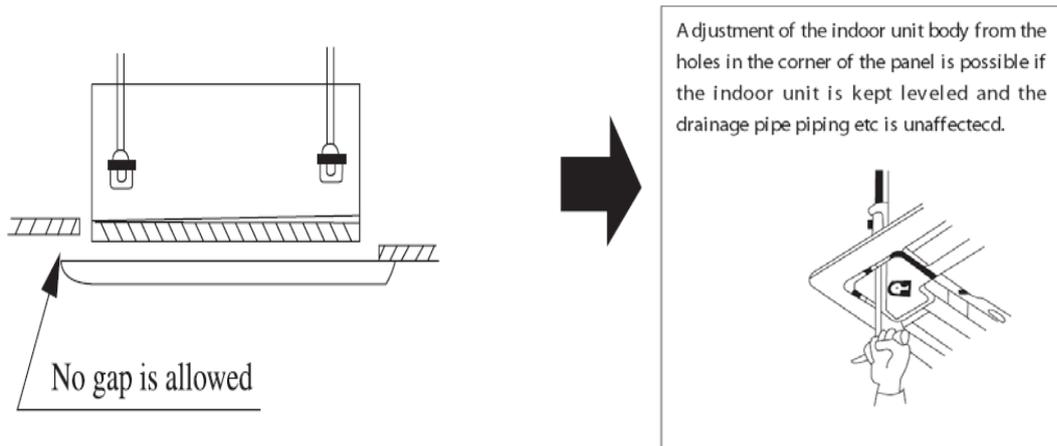


Fig.6

● After fixing be sure no gap left between the ceiling and the panel

3. Wiring of the decoration panel.

Two butted terminals of the air deflector fan must be placed inside the electric box. (Refer to Fig.7, Fig.8, Fig.9)

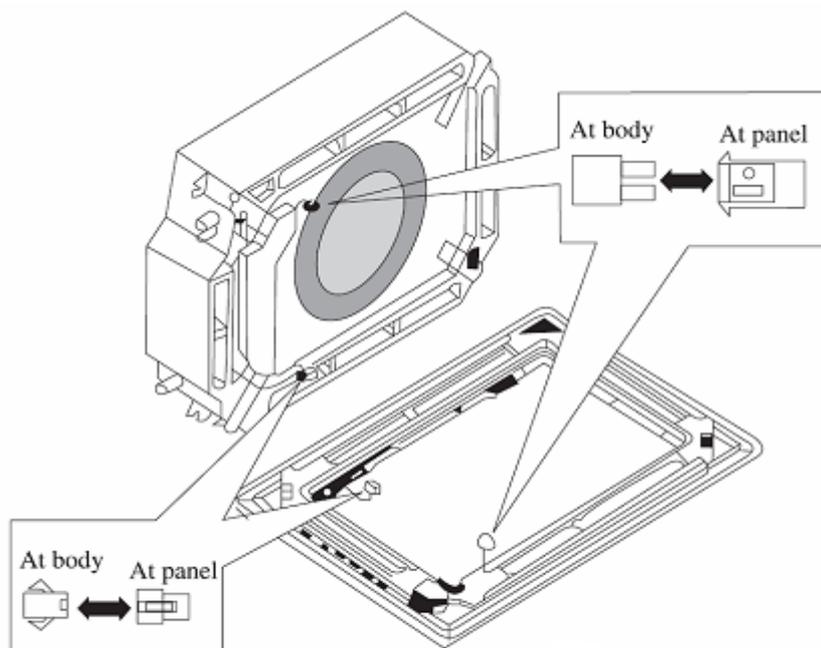


Fig.7

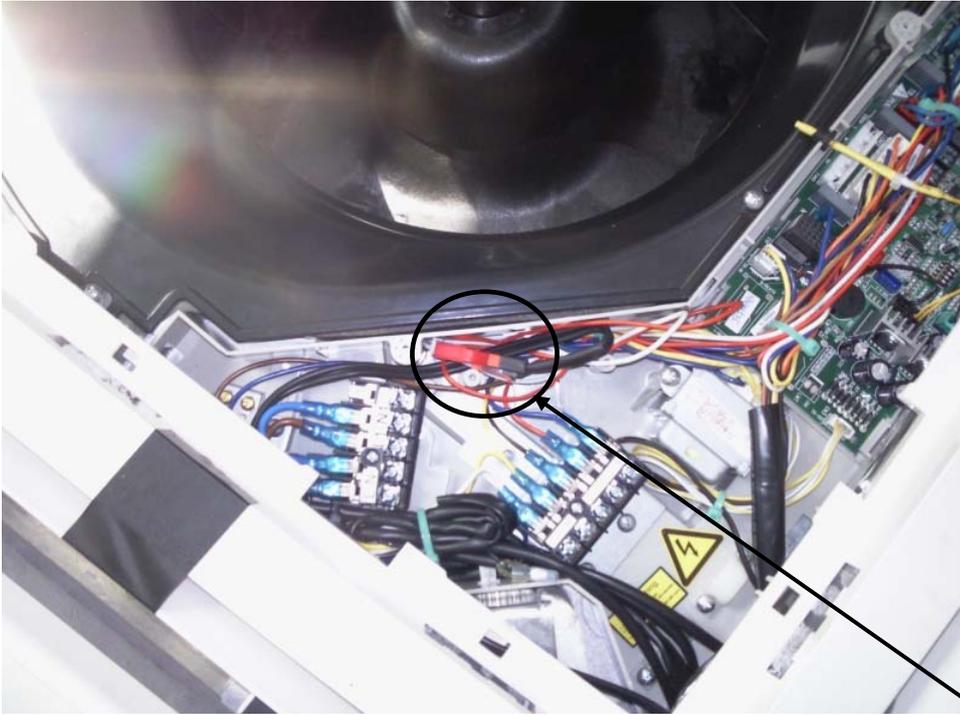


Fig.8

butted terminals

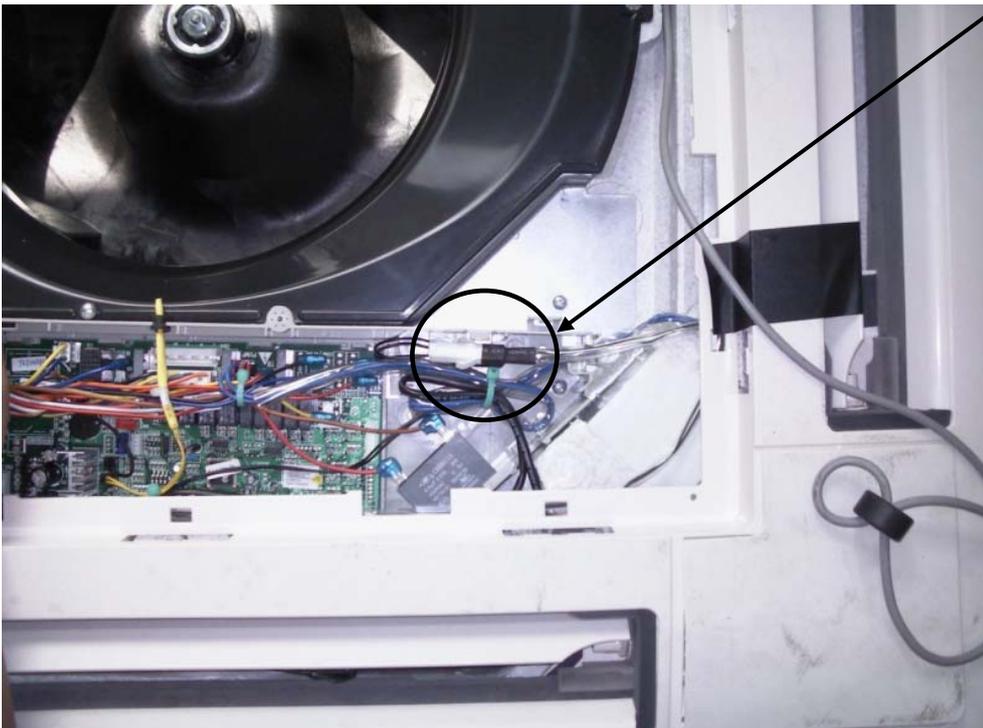
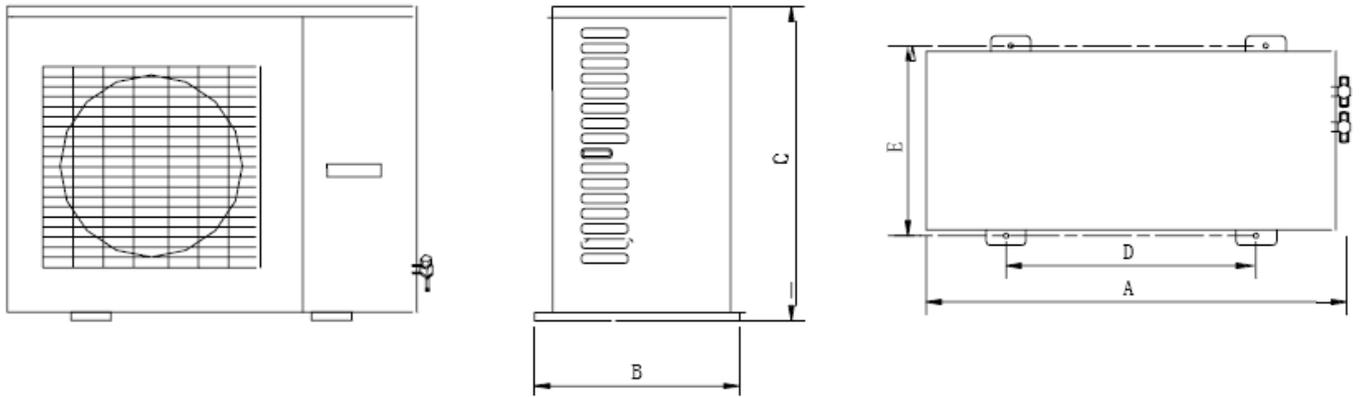


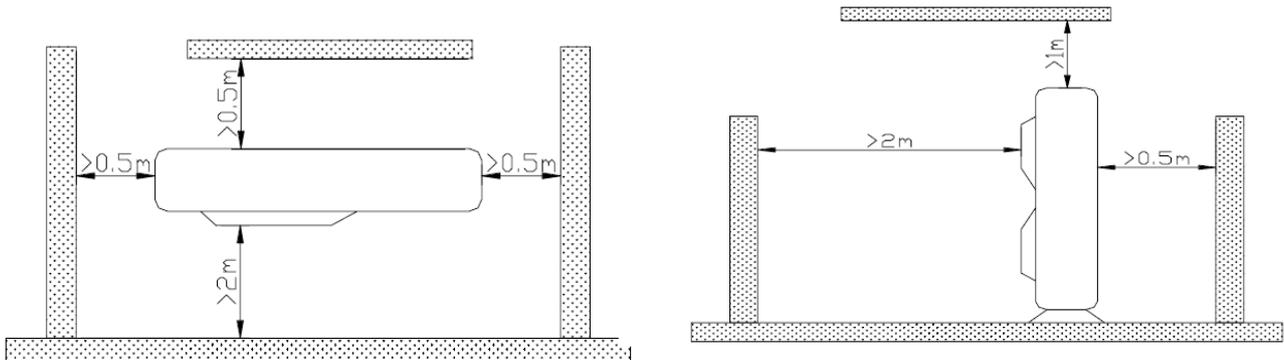
Fig.9

12.4 Install of outdoor unit

A、 Profile Dimensions of Outdoor Unit



B、 Schematic diagram of installation spaces



C、 Precautions on Installation of Outdoor Unit

To ensure the unit in proper function, selection of installation location must be in accordance with following principles:

- (1) Outdoor unit shall be installed so that the air discharged by outdoor unit will not return and that sufficient space for repair shall be provided around the machine.
- (2) The installation site must have good ventilation, so that the outdoor unit can take in and exhaust

enough air. Ensure that there is no obstacle for the air intake and exhaust of the outdoor unit. If there is any obstacle blocking the air intake or exhaust, remove it.

(3) Place of installation shall be strong enough to support the weight of outdoor unit, and it shall be able to insulate noise and prevent vibration. Ensure that the wind and noise from the unit will not affect your neighbors.

(4) Avoid direct sunshine over the unit. It is better to set up a sun shield as the protection.

(5) Place of installation must be able to drain the rainwater and defrosting water.

(6) Place of installation must ensure the machine will not be buried under snow or subject to the influence of rubbish or oil fog.

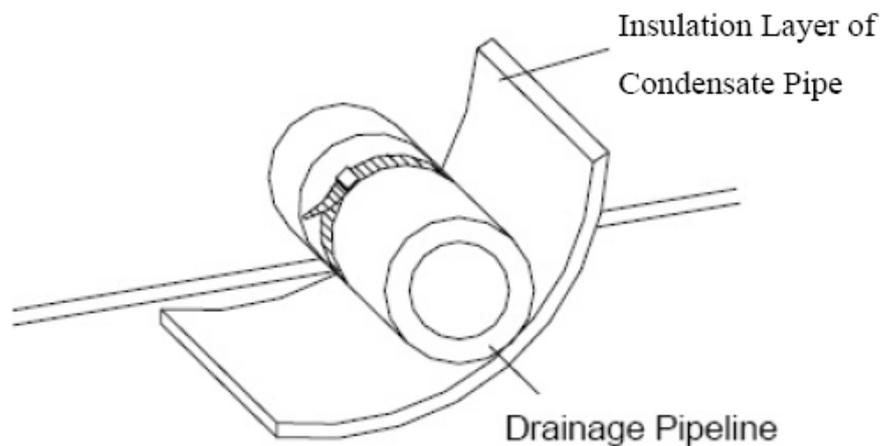
(7) The installation site must be at a place where the air exhaust outlet does not face strong wind.

D、 Installation of Condensate Pipe

(1) The condensate pipe shall be installed with an inclining angel of $5\sim 10^{\circ}$, so as to facilitate the drainage of condensate. The joints of the condensate pipe must be covered by thermal insulation materials to avoid generation of exterior condensate.

(2) A condensate outlet is located at both the left and right sides of the indoor unit. After selecting one condensate outlet, the other outlet shall be blocked by rubber plug. Bundle the blocked outlet with string to avoid leakage, and also use thermal insulation materials to wrap the blocked outlet.

(3) When shipped out from factory, both the condensate outlets are blocked by rubber plugs.



Thermal Insulation of Condensate Pipe

E、 Connection of Pipeline

1. Installation Sketch of Throttle Valve

(1) Structure of throttle valve

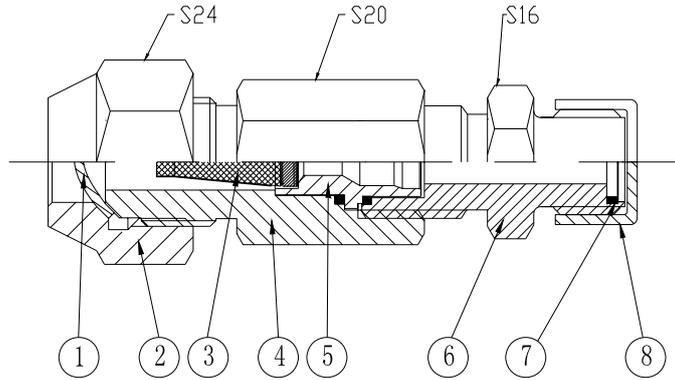


Fig 10

No	Names	No.	Names
1	1/2 Copper seal cap	5	Valve base A
2	Coupling nut	6	Joint
3	Filter (60 mesh)	7	Seal ring
4	Joint	8	Seal cap

(2) During connection, remove the plastic seal cap at one end of the throttle valve (Part 8 in the above fig 10)

(3) Remove the end cap of liquid pipe joint (Note: Flange is equipped with the liquid pipe joint of ducted type unit)

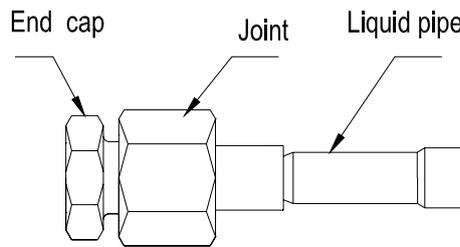


Fig 11

(4) Confirm the specification of cooling/heating throttle orifice according to model of the unit (marked on the unit).

Model of Unit	Cooling throttle orifice	Heating throttle orifice
21CK018C24	047#	040#
21CK024C24	056#	045#
21CK036C24	065#	057#
21CK048C24	081#	080#
21CK060C24	081#	080#

(5) Installation of cooling throttle orifice

Put the cooling throttle orifice confirmed according to above table onto the valve base of liquid pipe joint.

Notice! Pay attention to specification and installation direction of throttle orifice.



Fig 12

(6) Installation of heating throttle orifice

Put the heating throttle orifice confirmed according to above table onto the valve base A of throttle orifice.

Notice! Pay attention to specification and installation direction of throttle orifice.

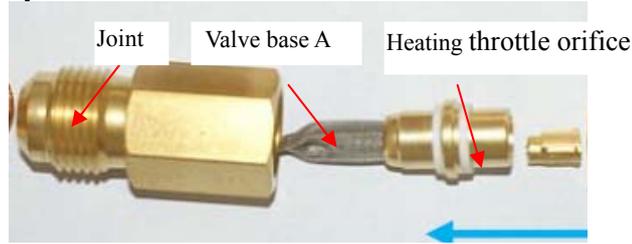


Fig 13

(7) Installation of throttle valve

Its installation is shown in Fig 14:

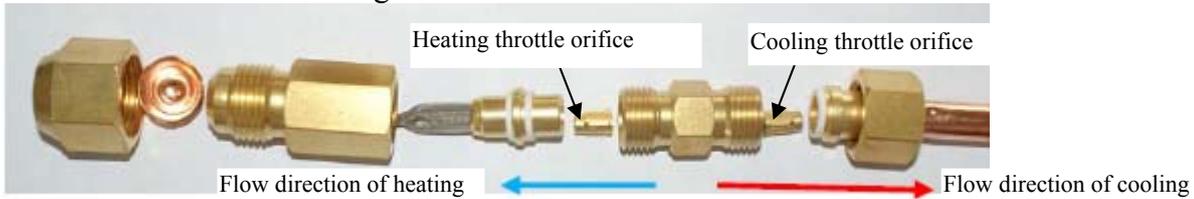


Fig 14

Notice! In order to ensure normal operation of the unit, never inversely install the cooling throttle orifice and heating throttle orifice.

Install the throttle valve and throttle orifice according to the above sequence. Meanwhile, the seal rings shall be installed properly at joints to prevent leakage.

Model	Torque moment
21CK018C24	20 ± 5 (N · m)
21CK024C24	20 ± 5 (N · m)
21CK036C24	20 ± 5 (N · m)
21CK048C24	20 ± 5 (N · m)
21CK060C2	20 ± 5 (N · m)

(8) Connection pipe and joint of throttle valve

After connection of throttle orifice, throttle valve and liquid pipe joint, connect connection pipe directly with joint of throttle valve.

2. Connection of Pipeline

(1) Align the flared end of the copper pipe with the center of the thread joint. Manually tighten the flared end nut.

(2) Use torque spanner to tighten the flared end nut until the spanner clatters (See Fig.15).

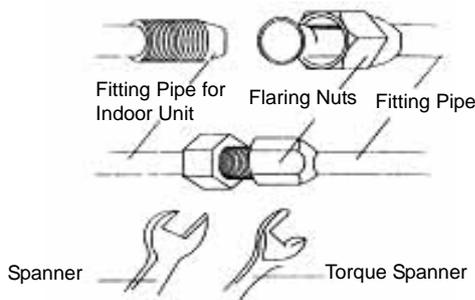


Fig. 15

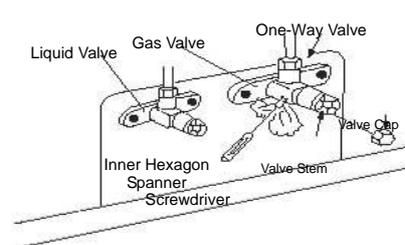


Fig. 16

The following table describes the torques for tightening nuts of different pipe diameters.

Pipe Diameter	Tightening Torque
φ6.34mm	15-30 (N·m)
φ9.52mm	35-40 (N·m)
φ15.88mm	60-65 (N·m)
φ12.7mm	45-50 (N·m)
φ19.05mm	70-75 (N·m)
φ22.05mm	80-85 (N·m)

(3) The bending angle of the fitting pipe shall not be too small, and otherwise the pipe may break. Please use a bender when bending the fitting pipes.

3. Air Purging and Leakage Test

- (1). Take out the nut cap of the inlet for refrigerant.
- (2). Connect the tube of the vacuum meter with the vacuum pump; link the low-pressure end to the inlet for refrigerant.

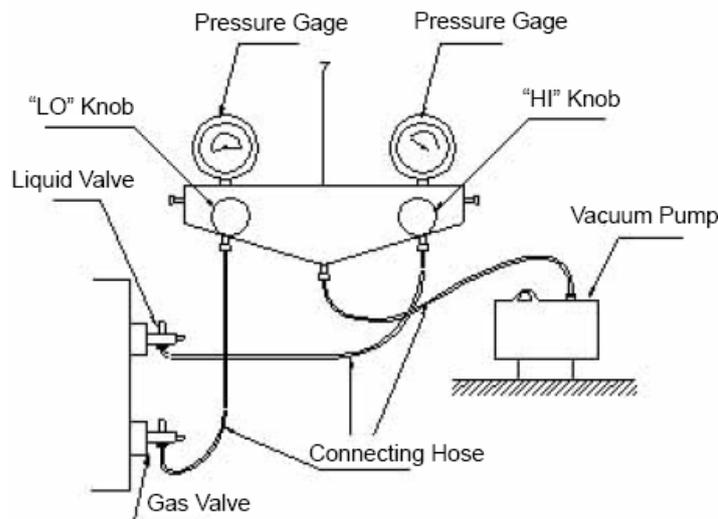


Fig 17

- (3). Start the vacuum pump. When the indicator turns to -1 bar, close the low pressure handle and stop vacuumizing. Keep for 15 minutes, and ensure that the pressure of the vacuum watch remain.
- (4). Take out the cap of the gas valve together with the liquid valve.
- (5). Loosen the cord of liquid valve until the pressure rise to 0 bar.
- (6). Dismantle the tube from the cover of the inlet of refrigerant then, tighten the cover.
- (7). Loosen the valve cord of the gas valve as well as the liquid valve entirely.
- (8). Tighten the caps of the gas valve and liquid valve so as to check whether leakage occurs.

F、 Installation of Protective Layer of Connecting Pipe

1. To avoid generation of condensate on the connecting pipe and avoid leakage, the big pipe and the small pipe of the connecting pipe must be covered by thermal insulation materials, be bundled by adhesive tape, and be isolated from air.
2. The joint connecting to the indoor unit must be wrapped by thermal insulation material. There shall be no gap between the connecting pipe joint and the wall of the indoor unit. Refer to Fig 18.

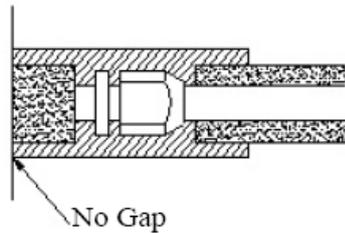


Fig.18

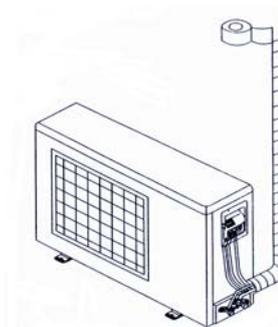


Fig.19

Caution:

After the pipes are wrapped by protective materials, never bend the pipes to form very small angle, and otherwise the pipes may crack or break.

3. Use adhesive tape to wrap the pipes:

- (1) Use adhesive tape to bundle the connecting pipe and the cables together. To prevent condensate from overflowing out from the drainage pipe, separate the drainage pipe from the connecting pipe and the cables.
- (2) Use thermal insulation tape to wrap the pipes from the bottom of the outdoor unit until the upper end of the pipe where the pipe enters the wall. When wrapping thermal insulation tape, the later circle of tape must cover half of the front circle of tape (Refer to Fig 19).
- (3) Wrapped pipe must be fixed to wall using pipe clamps.

Caution:

- (1) Do not wrap the protective tape too tight, otherwise the efficiency of thermal insulation may be decreased. Ensure that the condensate drainage flexible tube is separate from the bundled pipes.
- (2) After the protective work is completed and the pipes are wrapped, use seal material to block the hole in the wall, so as to prevent rain and wind from entering the room.

G、 Position and Method of Installing Wire Controller

- 1、 First select an installation position. According to the size of the communication line of the wire controller, leave a recess or a embedded wire hole to bury the communication line.
- 2、 If the communication line between the wire controller (85 × 85 × 16) and the indoor unit is surface-mounted, use 1# PVC pipe and make matching recess in the wall (refer to Figure 19);

If concealed installation is adopted, 1# PVC pipe can be used (Refer to Figure 20).

- 3、No matter if surface mounting or concealed mounting is selected, it is required to drill 2 holes (in the same level) which distance shall be the same as the distance (60mm) of installation holes in the bottom plate of the wire controller. Then insert a wood plug into each hole. Fix the bottom plate of the wire controller to the wall by using the two holes. Plug the communication line onto the control panel. Lastly install the panel of the wire controller.

⚠ Caution:

1. During the installation of the bottom plate of the wire controller, pay attention to the direction of the bottom plate. The plate's side with two notches must be at the lower position, and otherwise the panel of the wire controller cannot be correctly installed.

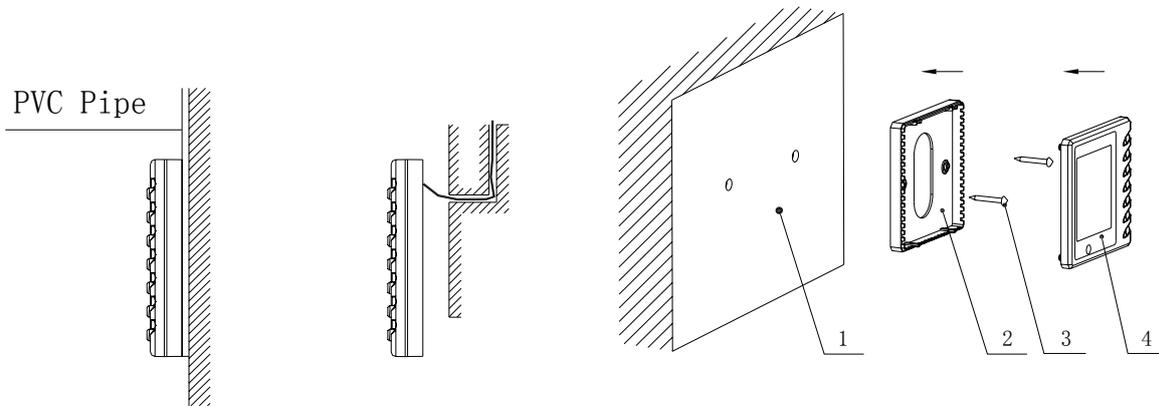


Fig 20 Surface Mounting of Cable

Fig 21 Concealed mounting of Cable

Fig 22 Schematic Diagram of Installation

No.	Name
1	Wall Surface
2	Bottom Plate of Wire Controller
3	Screw M4X10
4	Panel of Wire Controller

2. The standard communication distance between the main board and the wire controller is 8m.
3. The wire controller shall not be installed in a place where there is water drop or large amount of water vapor.

H. Connection of Signal Line of Wire Controller

1. Open the cover of the electric box of the indoor unit.
2. Pull the signal cable of the wire controller through the rubber ring.
3. Plug the signal line of the wire controller onto the 4-bit pin socket at the circuit board of the indoor unit.
4. Use cable fastener to bundle and fix the signal cable of the wire controller.

I. Power Cable Connection

⚠ Caution: Before installing the electrical equipment, please pay attention to the following matters which have been specially pointed out by our designers:

- (1) Check that if the power supply used conforms to the rated power supply specified on the nameplate.
- (2) The capacity of the power supply must be large enough. The section area of fitting line in the room shall be larger than 2.5 mm^2 .
- (3) The lines must be installed by professional personnel.

An electricity leakage protection switch and an air switch with gap between electrode heads larger than 3 mm shall be installed in the fixed line.

1. Connection of single wire

- (1) Use wire stripper to strip the insulation layer (25mm long) from the end of the single wire.
- (2) Remove the screw at the terminal board of the air-conditioning unit.
- (3) Use pliers to bend the end of the single wire so that a loop matching the screw size is formed.
- (4) Put the screw through the loop of the single wire and fix the loop at the terminal board.

2. Connection of multiple twisted wires

- (1) Use wire stripper to strip the insulation layer (10mm long) from the end of the multiple twisted wires.
- (2) Remove the screw at the terminal board of the air-conditioning unit.
- (3) Use crimping pliers to connect a terminal (matching the size of the screw) at the end of the multiple twisted wires.
- (4) Put the screw through the terminal of the multiple twisted wires and fix the terminal at the terminal board.

⚠ Warning:

If the power supply flexible line or the signal line of the equipment is damaged, only use special flexible line to replace it.

- 1、 Before connecting lines, read the voltages of the relevant parts on the nameplate. Then carry out line connection according to the schematic diagram.
- 2、 The air-conditioning unit shall have special power supply line which shall be equipped with electricity leakage switch and air switch, so as to deal with overload conditions.
- 3、 The air-conditioning unit must have grounding to avoid hazard owing to insulation failure.
- 4、 All fitting lines must use crimp terminals or single wire. If multiple twisted wires are connected to terminal board, arc may arise.

- 5、 All line connections must conform to the schematic diagram of lines. Wrong connection may cause abnormal operation or damage of the air-conditioning unit.
- 6、 Do not let any cable contact the refrigerant pipe, the compressor and moving parts such as fan.
- 7、 Do not change the internal line connections inside the air-conditioning unit. The manufacturer shall not be liable for any loss or abnormal operation arising from wrong line connections.

Connection Of the Power Cable

1. Air-conditioning unit with single-phase power supply

(1) Remove the front-side panel of the outdoor unit.

(2) Pass the cable through rubber ring.

(3) Connect the power supply cable to the “L, N” terminals and the grounding screw.

(4) Use cable fastener to bundle and fix the cable.

2. Air-conditioning unit with 3-phase power supply

(1) Remove the front-side panel of the outdoor unit.

(2) Attach rubber ring to the cable-cross hole of the outdoor unit.

(3) Pass the cable through rubber ring.

(4) Connect the power cable to the terminal and earthing screws marked “L1, L2, L3 & N”.

(5) Use cable fastener to bundle and fix the cable.



Caution:

For air-conditioner with auxiliary heater, it is required to connect the power cable to the “L1, L2 L3” terminals and the grounding screw.



Caution:

Take great care when carrying out the following connections, so as to avoid malfunction of the air-conditioning unit because of electromagnetic interference.

(1) The signal line of the wire controller must be separated from the power line and the connecting line between the indoor unit and the outdoor unit.

(2) In case the unit is installed in a place vulnerable by electromagnetic interference, it is better to use shielded cable or double-twisted cable as the signal line of the wire controller.

12.5 Products Electric Installation

Caution!

The unit should be reliably earthed, if it is improperly earthed that may cause electric shock or fire.

Wiring layout

- ☆ Installation should be conducted by National Wiring Regulation.
- ☆ The rated voltage and exclusive power supply must be adopted for the air conditioners.
- ☆ The power cable should be reliable and fixed, in order to avoid the wiring terminal be suffered from force. And do not drag the power cable forcibly.
- ☆ The wire diameter of power cable should be large enough, if power cable and connection wire

be damaged, it should be replaced by the exclusive cable.

- ☆ All electric installation must be done by professional personnel according to local law, regulation and this manual.
- ☆ It should be reliably earthed, and it should be connected to the special earth device, the installation work should be operated by the professional.
- ☆ The creepage protect switch and air switch must be installed.

Air switch should have the thermal dropout and magnetic dropout function, in order to avoid the short circuit and overload.

- ☆ The on spot connection should refer to the circuit diagram, which is stuck on the unit body.

The model selection recommend table for air switch and power cable

Model	Power supply	Capacity of air switch(A)	Outdoor power supply cord (mm ²)	Indoor power supply cord (mm ²)
21CK018C24	220V~	20	3×2.5 H07RN-F	3×4.0 H07RN-F
21CK024C24	220V~	25	3×2.5 H07RN-F	3×4.0 H07RN-F
21CK036C24	220V~	32	3×6.0 H07RN-F	3×1.0 H07RN-F
21CK048C24	220V~	40	3×10.0 H07RN-F	3×1.0 H07RN-F
21CK060C24	220V~	50	3×16.0 H07RN-F	3×1.0 H07RN-F

- 1、 The power cable used in the unit is copper cable, the working temperature should not exceed the specified value.
- 2、 If the power cable is longer than 15 meters, please enlarge the cross section of power cable adequately, in order to avoid the accident due to overload.

● **Requirement for ground**

- ☆ Air conditioner is the I class electric appliance, thus please do conduct reliable grounding measure.
- ☆ The yellow-green two-color wiring of air conditioner is grounding wire and can not be used for other purposes. It cannot be cut off and be fixed by screw, otherwise it would cause electric shock.
- ☆ The user must offer the reliable grounding terminal. Please don't connect the grounding wire to the following places:
 - ① Water pipe;
 - ② Gas pipe;
 - ③ Blowing pipe;
 - ④ Other places that professional personnel consider them unreliable.

13 Test operation

1. Prepare for test

- (1) Do not turn on the power switch before all installation is finished.
- (2) Connect wires correctly and firmly.
- (3) Open the check valve.
- (4) Remove all dust.

2. Testing

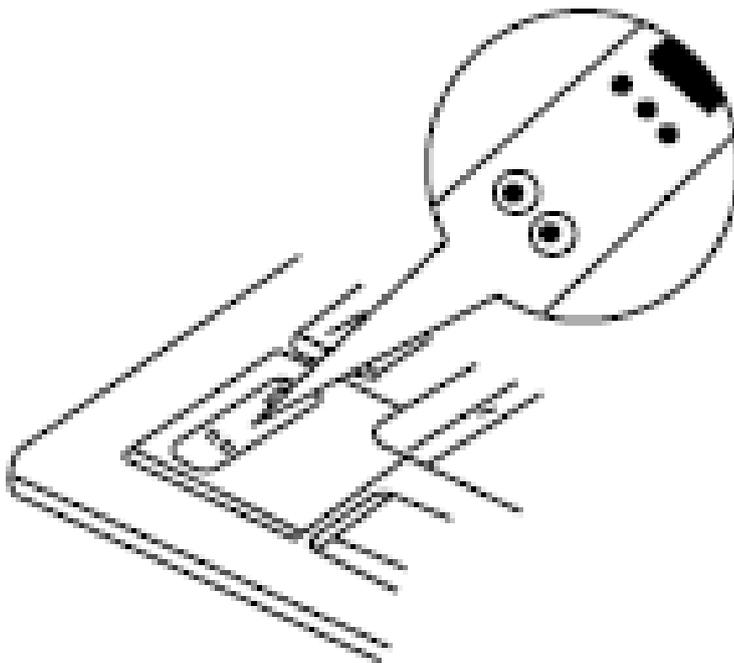
- (1) Turn on the power switch and press ON/OFF button.
- (2) Press MODE button select COOL, HEAT, FAN, etc to test whether it operates normally.

3. Emergency operation.

When the batteries fail or when the remote controller is missing, operate as shown below.

* On stopping you can press the AUTO button on cover NO. II , until it is in AUTO mode.

The cover NO. II is the part of the panel. As the below picture.



The air conditioner select from COOL, HEAT, DRY, FAN modes automatically.

* On operating, press the AUTO button, the air conditioner will stop.

Note: The “TEST” button on the cover No. II is specially for testing the air conditioner. When pressing it ,the air conditioner will be forced to operate or stop. Do not press it when air conditioner is in normal operation.

For the following items, take special care during construction and check after installation is finished.

Items to check	If not properly done, what is likely to happen
Is the indoor unit fixed firmly?	The unit may drop, vibrate or make noise.
Is the gas leakage test finished?	It may result in insufficient cooling.
Is the unit fully insulated?	Condensate water may drip.
Does drainage flow smoothly?	Condensate water may drip.
Does the power supply voltage correspond to that shown on the nameplate?	The unit may malfunction or the components burn out.
Are wiring and piping correct?	The unit may malfunction or the components burn out.
Is the unit safely grounded?	Risk of electric leakage.
Is wiring size according to specifications?	The unit may malfunction or the components burn out.
Is something blocking the air outlet or intake of either the indoor or outdoor unit?	It may result in insufficient cooling.
Have records of refrigerant piping length and additional refrigerant change been made?	Volume of refrigerant change in the system is not clear.

Note to the installer:

Be sure to instruct the customer how to operate the system and show him/her the attached operation manual.

Be sure the electric supply that user applies is beyond the bounds of tolerances (+/-10%, +/-1Hz).

The ambient temperature should be at 5-52°C, and the humidity at 30-95%.

Appendix:

Air conditioner nominal working condition and working range:

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	52	31
Low temp. cooling	21	15	18	--
Rated heating	27	--	24	18
Low temp. heating	20	--	-7	-8

Note:

The design of this unit conforms to the requirements of ISO 5151 standard.

WARNING!

- This appliance is not intended for use by persons (including children) with reduced physical sensory or capabilities, or lack of experience and knowledge, unless they have been given supervision on instruction concerning use of appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

Thank you for Choosing



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