







# Part 6 Control System

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## 1. Wireless remote controller

| Controller                 | Appearance  | Model           | Description  |
|----------------------------|---|-----------------|--|
| Wireless remote controller |    | RM02A/BGE-A     | General functions with backlight, follow me, setting address ,keyboard locking function, 26°C button and auto-mode (Normal).                         |
|                            |   | RM02A/BGE (T)-A | General functions with backlight, follow me, setting adresse, keyboard locking function, 26°C button and auto-mode (Only for HR system indoor unit). |
|                            |    | RM05/BG(T)E-A   | General functions, big screen and LCD display, with back light display, clock function. address setting function,                                    |
|                            |    | R05/BGE         | General functions, big screen and LCD display, with back light display, clock function.  |
|                            |  | R51D/E          | General functions.   |
|                            |   | R51/E           | General functions and with economic mode.  |
|                            |   | R51I4/BGE       | General functions with backlight and FOLLOW ME.  |
|                            |  | R71A/E          | General functions., button quantities reduce, but functions increase.  |
|                            |  | R06/BGE         | The function is the same as R05/BGE, and only the appearance is different.   |
|                            |   | R06/BGCE        | For cooling only mode. The function is the same as R05/BGE, and only the appearance is different.  |

**Notes:** General functions include the ON/OFF, setting mode (AUTO, COOL, HEAT, DRY and FAN), Fan speed, Temperature setting, Timer function.

### 1.1 RM02A/BGE-A

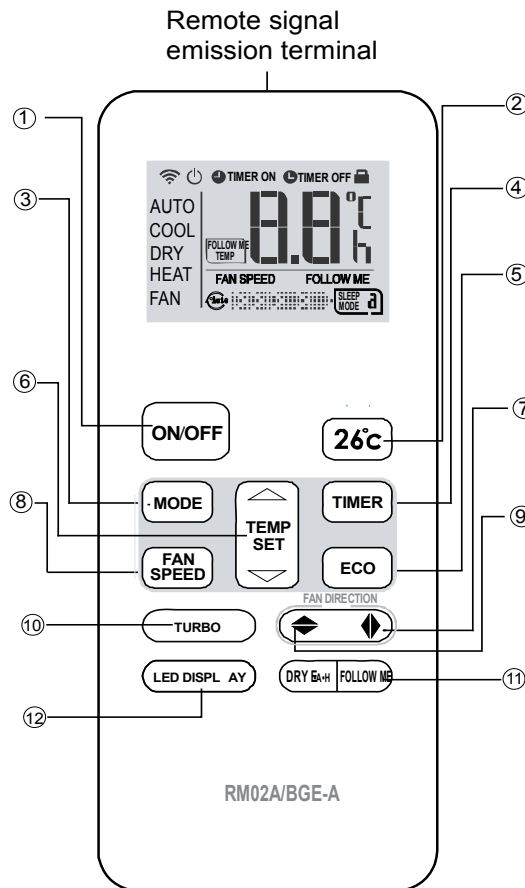
Remote controller specifications

|                                       |  |
|---------------------------------------|--|
| Model                                 | RM02A/BGE-A; RM02A/BGE (T)-A             |
| Rated Voltage                         | 3.0V                                     |
| Lowest Voltage of CPU Emitting Signal | 2.0V                                     |
| Reaching Distance                     | 8m (when using 3.0 voltage, it gets 11m) |
| Environment Temperature Range         | -5°C~60°C                                |

Performance Features

1. Operating Mode: COOL, HEAT, DRY, FAN and AUTO.
2. Timer Setting Function in 24 hours.
3. Indoor Setting Temperature Range: 17°C ~30°C.
4. LCD (Liquid Crystal Display) of all functions.
5. Night Light Function

#### 1.1.1 Parts name



- Newly design with smart appearance
- V4, V4+ series units applied
- Economic running mode
- Turbo running mode
- FOLLOW ME function inside
- One-key 26°C
- Address setting function
- Keyboard locking function

**(1) ON/OFF**

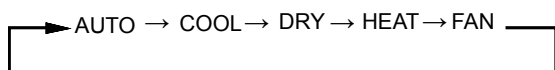
For turning on or turning off the air conditioner.

**(2) 26°C Button**

Press this button can operate the cool mode with the setting temperature 26°C. Considering about the comfort and energy saving, 26°C is the best setting temperature.

**(3) Mode Select**

Once pressing, running mode will be selected in the following sequence:

**(4)Timer button**

Under the OFF state only can set TIME ON function. Once press this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing TIMER button will increase the time by 1 hour. Adjust the TIMER ON to be "0:00" then can cancel the TIMER ON.

Under the ON state only can set TIME OFF function. Once press this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing TIMER button will increase the time by 1 hour. Adjust the TIMER OFF to be "0:00" then can cancel the TIMER OFF.

**(5)ECO Button**

When operating COOL, HEAT and AUTO mode, press the "ECO" button, and operate power save function; press again will cancel the function. Under the DRY/FAN mode, this function is invalid. Under power save state, press "MODE", "ON/OFF" or "FAN" button will cancel this function.

**(6)Adjust button ▽**

Decrease the set temp. Keeping pressing will decrease the temp with 1°C per 0.5s.

**Adjust button ▲**

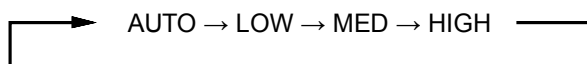
Increase the set temp. Keeping pressing will increase the temp with 1°C per 0.5s.

**(7)Horiz Swing**

Press this button can activate or turn off wind horizontal swing function. (Only available when remote controller is used with corresponding unit.)

**(8)FanSpeed**

Fan speed will be selected in following sequence once pressing this button: (Under the DRY and AUTO mode (except for the auto heat recycling mode), the fan speed will be fixed and cannot be adjusted. Under the auto heat recycling mode, the fan speed will be automatically and can be adjusted.)

**(9)Vert Swing**

Press this button can activate or turn off vertical swing function. Under the power off state, this button will not work (Only available when remote controller is used with corresponding unit.)

**(10)TURBO button**

Press this button will set the air conditioner to operate as turbo mode, and the frequency will be raised, press TURBO button again will cancel this mode. (Only available when remote controller is used with corresponding unit.)



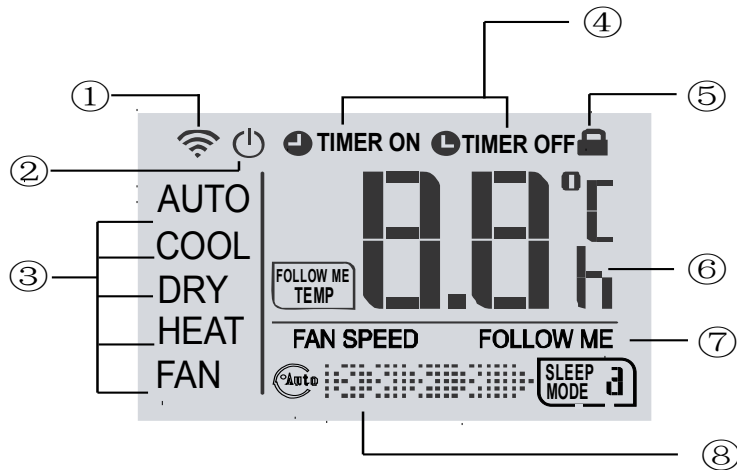
**(11) DRY·AUXILIARY HEAT/FOLLOW ME**

When it is operating the dry cleaning function ,press the left of the button, will turn off the dry cleaning function; when it is operating follow me function ,press the right of the button, will turn off the follow me function.(Only available when remote controller is used with corresponding unit.)

**(12) LED Display**

When the air conditioner is on the ON state, press this button, can close (open) the modules display, press again will open (close) the display. (Only available when remote controller is used with corresponding unit.)

**1.1.2 LCD display**



**1.1.3 Other operations**

➤ **FOLLOW ME function**

- This air conditioner has FOLLOW ME function, when the function is operated, the remote controller will detect the temperature near the remote controller and compare with the temperature you set automatically, and control the operation of the air conditioner according to the contrastive result, and make the temperature near the remote controller reaches the setting temperature. This function is valid only under COOL, HEAT, AUTO mode and the unit has follow me function. This helps making the room environment comfortable and the temperature accurate.

**Notes:** To carry on the FOLLOWME function, please keep the RM02A pointing directly to the indoor unit.


- Remote controller cannot be placed near the heat source or low temperature source, otherwise will affect its temperature gathering precision and then affect the follow me function.

### ➤ **Setting addresses**

For the V4 plus system, the RM02A can set the indoor units' addresses. This function help the user assign the address to the indoor units freely. V4 series do not have this function.

- ◆ Press the Fan Speed button and ECO button simultaneously for more than 5 seconds, then the controller gets into address setting mode.
- ◆ Press the ON/OFF button to start transmitting signal in the address setting mode. If the transmitting signal icon has been turned on, then step can be omitted. When working in address setting mode, press ON/OFF will not turn the controller off.
- ◆ In the address setting mode, there are 2 main functions:  
 Querying address: Please point the remote controller to the indoor unit, then press MODE button, the corresponding indoor unit will display its address.  
 Setting address: Use the UP and DOWN buttons to choose an address you want. Then point the remote controller to the indoor unit and then press the FAN button to set the indoor unit's address. The corresponding indoor unit will display the new address and record it. After about 4 seconds, this displaying will fade out and the indoor units turn to normal display mode.  
**Note:** the address cannot be repeated in the same system.
- ◆ After setting all the addresses, users can press the Fan button and ECO button simultaneously again for 5 seconds to exit the address setting mode.

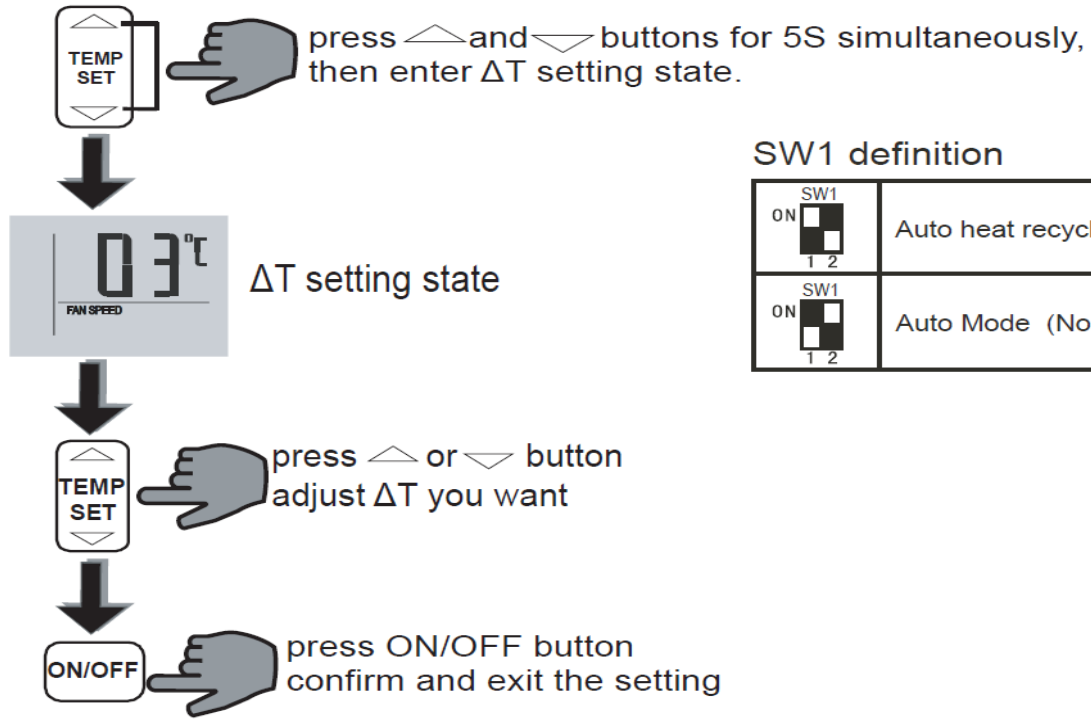
### ➤ **Keyboard lock**

The RM02A wireless RC allows users to lock, the keyboard to prevent mistaken operation or keep the kids from changing the parameters randomly. Press the "MODE" and "TIMER "button simultaneously and last over 5s, then can operate keyboard locking .In the locking mode, all the buttons are ineffective. Pressing the MODE and TIMER button for a period and the  on the LCD will indicate this function.

### ➤ **Auto heat recycling mode function**

$\Delta T$ : Temperature difference, means the different temperature between the indoor temperature ( $T_f$ ) detected by the remote controller and the remote controller setting temperature ( $T_s$ ). (The default difference is  $3^{\circ}\text{C}$ , the difference range is  $1\sim 4^{\circ}\text{C}$ )

$\Delta T$  instruction:



SW1 definition

|    |            |                          |
|----|------------|--------------------------|
| ON | SW1<br>1 2 | Auto heat recycling Mode |
| ON | SW1<br>1 2 | Auto Mode (Normal)       |

Example:

$\Delta T$  is  $1^{\circ}\text{C}$ ,  $T_s$  is  $25^{\circ}\text{C}$ :

when  $T_f - T_s \geq +\Delta T$ , it will operate COOL mode, the fan speed will be operated according to the setting fan speed. When  $T_f - T_s \leq -\Delta T$ , it will operate HEAT mode, the fan speed will be operated according to the setting fan speed.

**Notes:**

This function operation can be only available for the heat recycling three-pipe system. When the remote controller selects the auto heat recycling mode, the remote controller position must be placed at the signal receiving range of the air conditioner. When the remote controller detects changes of the mode (cool to heat, or heat to cool), it will send the changes to air conditioner. One beep of air conditioner changed mode signals is giving out.

➤ **Auto Operation (Normal)**

- Press MODE to select AUTO.
- Adjust temp via  $\triangle$  and  $\nabla$ . Generally the Temp. range is  $17^{\circ}\text{C} \sim 30^{\circ}\text{C}$ . Press ON/OFF and running indicator light on indoor unit is lightened. Air conditioner will work on AUTO mode and fan speed is AUTO, the display screen on remote controller will display "AUTO", then the fan speed is adjustable. And press ON/OFF again, the air conditioner will be stopped.

## 1.2 R05/BGE; RM05/BG (T) E-A

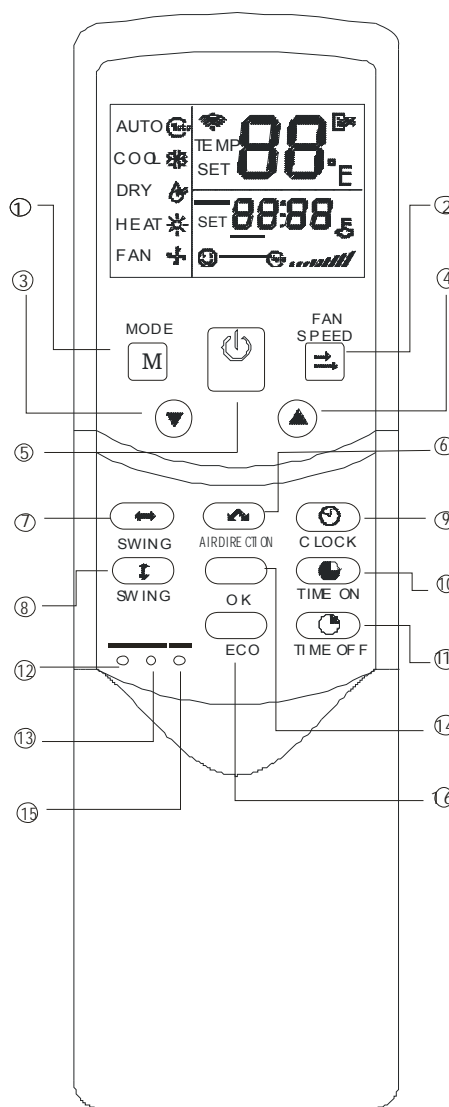
Remote controller specifications

|                     |                                     |
|---------------------|-------------------------------------|
| Model               | R05/BGE; RM05/BG (T) E-A            |
| Rated Voltage       | 3.0V(2 pieces of LR03 7# batteries) |
| Lowest Voltage      | 2.4V                                |
| Effective Distance  | 8M~11M                              |
| Operation Condition | -5°C~60°C                           |

Performance Features

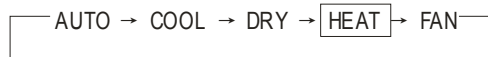
1. Operating Mode: COOL HEAT DRY FAN and AUTO.
2. Timer Setting Function in 24 hours.
3. Indoor Setting Temperature Range: 17°C ~30°C.
4. LCD (Liquid Crystal Display) of all functions.
5. Night Light Function

### 1.2.1 Parts name



**(1) Mode Button**

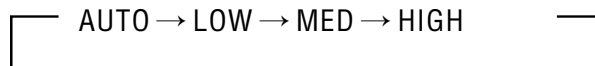
Once pressing, running mode will be selected in the following sequence:



**Notes:** No heating mode for cool only type unit.

**(2) FanSpeed**

Fan speed will be selected in following sequence once pressing this button:

**(3) Adjust button ▼**

Decrease the set temp. Keeping pressing will decrease the temp with 1°C per 0.5s.

**(4) Adjust button ▲**

Increase the set temp. Keeping pressing will increase the temp with 1°C per 0.5s.

**(5) ON/OFF button**

For turning on or turning off the air conditioner.

**(6) Air Direction**

Activate swing function of air deflector. Once pressing, air deflector will turn 6°. For normal operation and better cooling and heating effect, deflector will not turn to the degree which is the state of deflector when the unit is turned off (Only available when remote controller is used with corresponding unit.)

**(7) Horiz Swing**

Activate or turn off horizontal swing function. (Only available when remote controller is used with corresponding unit.)

**(8) Vert Swing**

Activate or turn off vertical swing function. (Only available when remote controller is used with corresponding unit.)

**(9) Clock**

Display the current time. (12:00 is displayed when resetting or electrifying for the first time.) Press CLOCK for 5s, icon indicating hour will flash with 0.5s. Press it again, ▼ and ▲ are used to adjust the figure. Setting or modification is effective only by pressing OK button to make confirmation.

**(10)Time ON**

For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

**(11)Time OFF**

For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjust the figure to 0.00 will cancel time ON setting.

**(12)Reset Button**(inner located)

Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

**(13)Lock Button**(inner located)

Press this button with a needle of 1mm to lock or unlock the current setting.

**(14)OK button**

Used to confirm the time setting and modification.

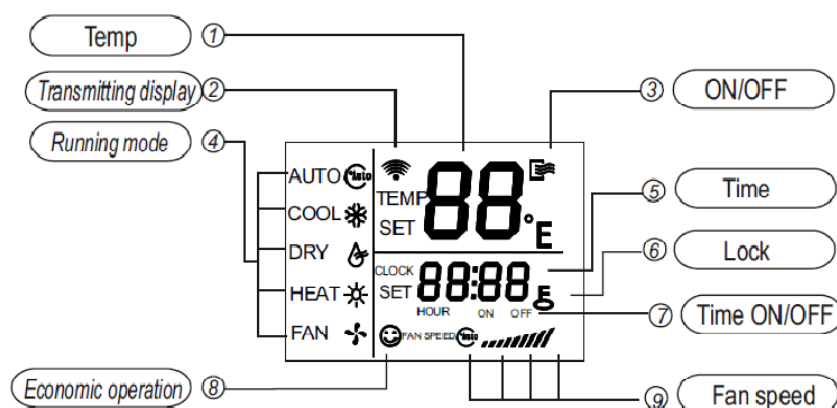
**(15)COOL/HEAT (inner located)**

Press this button with a needle of 1mm to shift mode between COOL only and COOL&HEAT.

During setting, backlight will be lightened. Factory default mode is COOL &HEAT.

**(16)ECO Button**

Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)

**1.2.2 LCD display**

**Notes:** RM05/BG(T)E-A is able to set the indoor units' addresses individually.

**1.2.3 How to set address through Wireless Remote Controller RM05**

- Press the LOCK button for more than 5 seconds, then the controller gets into address setting mode.
  - Press the ON/OFF button to start transmitting signal in the address setting mode. If the transmitting signal icon has been turned on, then step can be omitted. When working in address setting mode, press ON/OFF will not turn the controller off.
  - In the address setting mode, there are 2 main functions:
    - Querying address: Please point the remote controller to the indoor unit, then press MODE button, the corresponding indoor unit will display its address.
    - Setting address: Use the UP and DOWN buttons to choose an address you want. Then point the remote controller to the indoor unit and then press the FAN button to set the indoor unit's address. The corresponding indoor unit will display the new address and record it. After about 4 seconds, this displaying will fade out and the indoor units turn to normal display mode.
- Note:** the address cannot be repeated in the same system
- After setting all the addresses, users can press the LOCK button for 5 seconds to exit the address setting mode.

### 1.3 R51/E (standard)

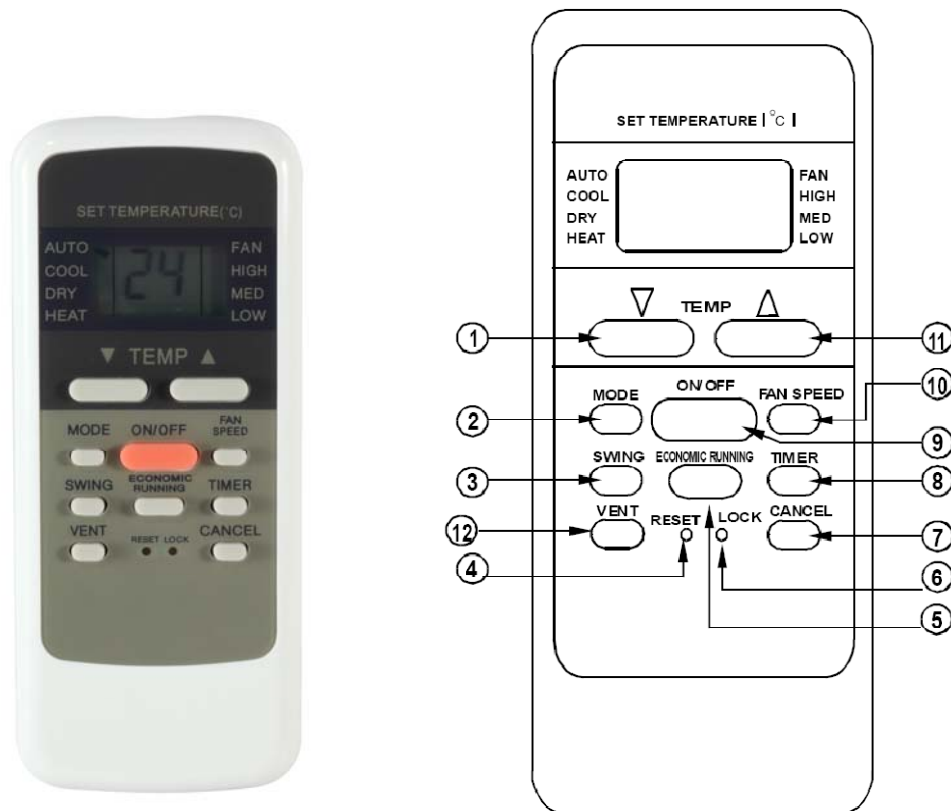
Remote controller specifications

|                                       |  |
|---------------------------------------|--|
| Model                                 | R51/E, R51C/BGE,R51D/E,R51I4/BGE         |
| Rated Voltage                         | 3.0V                                     |
| Lowest Voltage of CPU Emitting Signal | 2.0V                                     |
| Reaching Distance                     | 8m (when using 3.0 voltage, it gets 11m) |
| Environment Temperature Range         | -5°C~60°C                                |

Performance Features

1. Operating Mode: COOL, HEAT, DRY, FAN and AUTO.
2. Timer Setting Function in 24 hours.
3. Indoor Setting Temperature Range: 17°C ~30°C.
4. LCD (Liquid Crystal Display) of all functions.
5. Night Light Function (Optional)

#### 1.3.1 Parts name



**Notes:**

This illustration is for explanation purposes only. The actual shape or button names of the remote controller may be slightly different.

**(1) TEMP DOWN Button**

Press the TEMP DOWN button to decrease the indoor temperature setting or to adjust the timer in a counter-clockwise direction.

**(2) Mode Select Button**

Each time you press this button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, HEAT and FAN as the following figure indicates:



**Notes:** Heat only for heat pump.

**(3) Swing Button**

Press swing button to change the louver angle.

**(4) Reset Button**

When press RESET button, all of the current settings are cancelled and the control will return to the initial settings.

**(5) Economic Running Button**

Press this button to go into the Energy-Saving operation mode.

**(6) Lock Button**

Press this button to lock in all the current settings. To release settings, press it again.

**(7) Cancel Button**

Press this button to cancel the TIMER settings.

**(8) Timer Button**

This button is used to preset the time ON (start to operate) and the time OFF (turn off the operation).

**(9) ON/OFF Button**

Press this button to start the unit operation. Press the button again to stop the unit operation.

**(10) Fan Speed Button**

This button is used for setting fan speed in the sequence that goes from AUTO, LOW, MED to HIGH, and then back to Auto.

**(11) Temp UP Button**

Press this button to increase the indoor temperature setting or to adjust the timer in a counter-clockwise direction.

**(12) Vent Button**

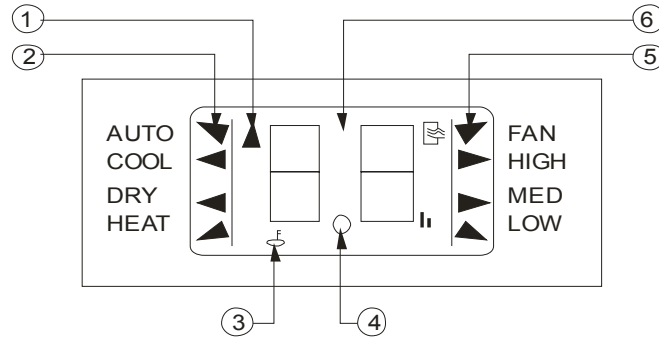
Press this button to set the ventilating mode. The ventilating mode will operate in the following sequence:



*Ventilation Function is available for the Fresh Star Series.*



### 1.3.2 LCD display



①**Transmitting display:** This indicator lights when remote controller transmits signals to indoor unit.

②**Mode display:** Show the current operation modes-- AUTO, COOL, DRY and HEAT. HEAT is only available for heat pump model.

③**Lock display:** To displayed by pressing the LOCK button. Press the LOCK button again to clear display.

④**Timer display:** This display area shows the settings of TIMER.

That is, if only the starting time of operation is set, it will display the TIMER ON. If only the turning off time of operation is set, it will display the TIMER OFF. If both operations are set, it will show TIMER ON and TIMER OFF which indicates you have chosen to set both the starting time and off time.

⑤**Fan speed display:** When Press the FAN button, this indicator lights.

⑥**Digital display area:** This area will show the temperature and, if in the TIMER mode, will show the ON and OFF settings of the TIMER.

**Notes:**

All items are shown in the Fig-2 for the purpose of clear presentation but during the actual operation only the relative functional items are shown on the display panel.

### 1.3.3 Operating the remote controller

#### 1) Install / Replace Batteries

The Remote Controller uses two alkaline dry batteries (R03/Ir03X2).

※ To install batteries, slide back the cover of the battery compartment and install the batteries according to the directions (+and -) shown on the Remote Controller.

※ To replace the old batteries, use the same method as mentioned above.

**Notes:**

1. When replacing batteries do not use old batteries or a different type battery. This may cause the remote controller to malfunction.
2. If you do not use the remote controller for several weeks remove the batteries. Otherwise battery leakage may damage the remote controller.
3. The average battery life under normal use is about 6 months.
4. Replace the batteries when there is no answering beep from the indoor unit or if the Transmission Indicator light fails to appear.

## 2) Automatic Operation

When the Air Conditioner is ready for use, switch on the power and the OPERATION indicator lamp on the display panel of the indoor unit starts flashing.

- ※ Use the MODE select button to select AUTO. In the multi system, to avoid mode conflict; auto-mode is taken as cool mode.
- ※ Press the TEMP button to set the desired room temperature.
- ※ The most comfortable temperature settings are between 21°C and 28°C
- ※ Press the ON/OFF button to start the air conditioner. The OPERATION lamp on the display panel of the indoor unit will light. The operating mode of AUTO FAN SPEED is automatically set and there are no indicators shown on the display panel of the remote controller.
- ※ Press the ON/OFF button again to stop the unit operation.

### Notes:

1. In the AUTO mode, the air conditioner can logically choose the mode of COOL, FAN, HEAT and DRY by sensing the difference between the actual ambient room temperature and the set temperature on the remote controller..
2. If the AUTO mode is not comfortable for you, the desired mode can be selected manually.

## 3) COOL, HEAT, and FAN ONLY Operation

- ※ If the AUTO mode is not comfortable, you may manually change the settings by using COOL, DRY, HEAT (HEAT PUMP units only), or FAN ONLY modes.
- ※ Press the TEMP button to set the desired room temperature.
- ※ When in COOLING mode, the most comfortable settings are 21°C or above. When in HEATING mode, the most comfortable settings are 28°C or below.
- ※ Press the FAN SPEED to select the FAN mode of AUTO, HIGH, MED or LOW.
- ※ Press the ON/OFF button. The operation lamp lights and the air conditioner start to operate per your settings. Press the ON/OFF button again to stop this unit operation.

### Notes:

The FAN ONLY mode cannot be used to control the temperature. While in this mode, only steps 1, 3 and 4 may be performed.

## 4) DRY Operation

- ※ Press the MODE button to select DRY.
- ※ Press the TEMP button to set the desired temperature from 21°C to 28°C.
- ※ Press the ON/OFF button. The operation lamp lights and the air conditioner start to operate in the DRY mode. Press the ON/OFF button again to stop this unit operation.

### Notes:

Due to the difference of the set temperature of the unit and the actual indoor temperature, the Air Conditioner when in DRY mode will automatically operate many times without running the COOL and FAN mode.

## 5) TIMER Operation

Press TIMER button to set the unit what time turn on or off.

### a. To set the STARTING time.

- ※ Press the CANCEL button to cancel any former settings.
- ※ Press the TIMER button. The remote controller will show the TIMER and the signal "h" is shown on the display panel. The control is now ready to reset the TIMER ON to start the operation.
- ※ Press the TEMP button (▲ or ▼) to set desired unit START time.

- ※ After setting the TIMER there will be a one-half second delay before the remote controller transmits the signal to the Air Conditioner. Then, after approximately another 2 seconds, the set temperature will re-appear on the digital display.

**b. To set the STOPPING time.**

- ※ Press the CANCEL button to cancel any former settings.
- ※ Press the TIMER button and the remote controller will show the last set time for the START operation and the signal "h" will be shown on the display panel. You are now ready to readjust the TIMER OFF to stop the operation.
- ※ Press the TEMP button to cancel the TIMER ON setting. The digital area will show "00".
- ※ Press the TIMER button and the remote controller will show the last set time for the STOP operation and the signal "h" will be shown on the display panel. You are now ready to reset the time of the STOP operation.
- ※ Press the TEMP button (▲ or ▼) to set the time you want to stop the operation.
- ※ After setting the TIMER there will be a one-half second delay before the remote controller transmits the signals to the Air Conditioner. Then after approximately another 2 seconds, the set temperature will re-appear on the digital display.

**c. Set the STARTING & STOPPING time**

- ※ Press the CANCEL button to cancel any former settings.
- ※ Press the TIMER button and the remote controller will show the last set time for START operation and the signal "h" will be shown on the display panel. You are now ready to readjust the TIMER ON to start the operation.
- ※ Press the TEMP button (▲ or ▼) to set the time you want to start the operation.
- ※ Press the TIMER button and the remote controller will show the last set time for STOP operation and the signal "h" will be shown on the display panel. You are now ready to reset the time of the STOP operation.
- ※ Press the TEMP button (▲ or ▼) to set the time you want to stop the operation.
- ※ After setting the TIMER there will be a one-half second delay before the remote controller transmits the signal to the Air Conditioner. Then, after approximately another 2 seconds, the set temperature will re-appear on the digital display.

**Notes:**

1. Please reset the TIMER after cancelling the former time settings.
2. The setting time is relative time. That is the time set is based on the delay of the current time.

**Warning**

1. Be sure there are no barriers between the remote controller and the receiver of indoor unit otherwise the air conditioner will not work.
2. Keep the Remote Controller away from formal liquids.
3. Protect the Remote Controller from high temperatures and exposure to radiation.
4. Keep the indoor receiver out of direct sunlight or the Air Conditioner may malfunction.
5. Keep controller away from EMI (Electro-Magnetic Interference) supplied by other household appliances.

## 1.4 R06/BGE, R06/BGCE

Remote controller specifications

| Model                                 | R06/BGE, R06/BGCE                        |
|---------------------------------------|--|
| Rated Voltage                         | 3.0V                                     |
| Lowest Voltage of CPU Emitting Signal | 2.0V                                     |
| Reaching Distance                     | 8m (when using 3.0 voltage, it gets 11m) |
| Environment Temperature Range         | -5°C~60°C                                |

Performance Features

1. Operating Mode: AUTO, COOL, HEAT, DRY, and FAN.
2. Timer Setting Function in 24 hours.
3. Indoor Setting Temperature Range: 17°C~30°C.
4. LCD (Liquid Crystal Display) of all functions.
5. Night Light Function

### 1.4.1 Buttons and functions description



**Notes:** The "\*" symbol indicates an optional button.

#### (1) ON/OFF Button

Press this button to start operation, Press the button again to stop operation.

#### (2) Mode Button

Each time you Press the button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, HEAT and FAN. NOTES: COOL only model has no HEAT feature.

**(3) Swing Button**

Press the button, the louver would swing up and down automatically. Press it again to stop.

**(4) Direction Button**

Press this button to change the swing angle of the louver. The swing angle of the louver is 6° for each press. When the louver swing at a certain angle which would affect the cooling and heating effect of the air conditioner, it would automatically change the swing direction. No symbol will appear in the display area when press this button.

**(5) Temp Adjust Button**

Press ▲ button to increase the indoor temperature setting or to adjust the TIMER in a clockwise direction. Press ▼ button to decrease the indoor temperature setting or to adjust the TIMER in a counter-clockwise direction.

**(6) Turbo Button**

Press this button on COOL mode, the air conditioner goes into powerful cooling operation. Press again to cancel the TURBO function.

**(7) Sleep Button**

Press this button to go into the Energy-Saving operation mode. Press it again to cancel. This function is only can be used on COOL, HEAT and AUTO mode and maintain the most comfortable temperature for you.

**Notes:** When the unit is running under the SLEEP operation mode, it will be canceled if you press the other button.

**(8) Reset Button**

When you press the recessed RESET button, all current settings are cancelled and the control will return to the initial settings.

**(9) Fan Button**

Use to select the Fan Speed in four steps AUTO, LOW, MED or HIGH. Each time the button is pressed, the fan speed mode is shifted.

**(10) Timer Button**

This button is used to preset the time ON (start to operate) and the time OFF (turn off the operation).

**(11) Cancel Button**

Press this button to cancel the TIMER ON/OFF settings.

**(12) Clock Button**

Use to set the time.

**(13) LED Button**

Press this button to clear the digit display in the air conditioner, press it again to activate digit display in the air conditioner.

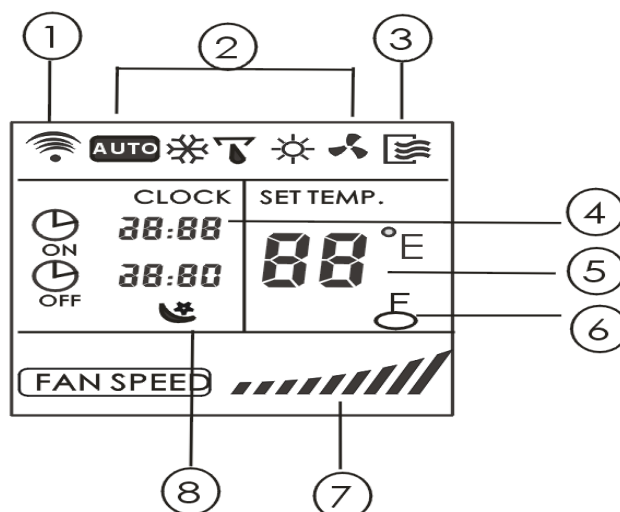
**(14) Lock Button**

When you press the LOCK button, all current settings are locked in and the remote controller does not accept any operation except that of the LOCK. Press again to cancel the LOCK mode.

**(15) O<sub>2</sub> Button (optional)**

Press this button to activate the oxygen generating mechanism, and the oxygen density of indoor varies. Press again to stop the function.

## 1.4.2 LCD display indications



### (1) Transmission Indicator

This transmission indicator light when remote controller transmits signals to the indoor unit.

### (2) Mode display

Can display the current operational mode, including AUTO, COOL, DRY, HEAT (not applicable to cooling only models), FAN ONLY and back to AUTO.

### (3) ON/OFF display

Can display ON/OFF state and press the ON/OFF button again the icon will disappear.

### (4) Time display

Indicate Timer on/off time (0 ~23:50 hours) or clock time.

The clock time is indicated only when no AUTO-ON/OFF timer is set. When AUTO-TIMER feature is operating, it displays the AUTO-ON/OFF time. To check the current time, press the CLOCK button, and the time will display.

### (5) Temperature display

Displays the temperature setting (17°C~30°C), when you set the operating mode to FAN ONLY, no temperature setting is displayed.

### (6) Fan speed display

Can display the selected fan speed, AUTO (no display) and three fan speed levels "///" (LOW),

"/////" (MED), "///////" (HIGH) can be indicated. The fan speed is AUTO when the operating mode is either AUTO or DRY.

### (7) Lock Display

Can display LOCK icon, and press the LOCK button again the icon will disappear.

### (8) Sleep Display

Can display SLEEP icon and press the SLEEP button again the icon will disappear.

**Notes:** All displays on the remote controller are shown for illustration purposes only

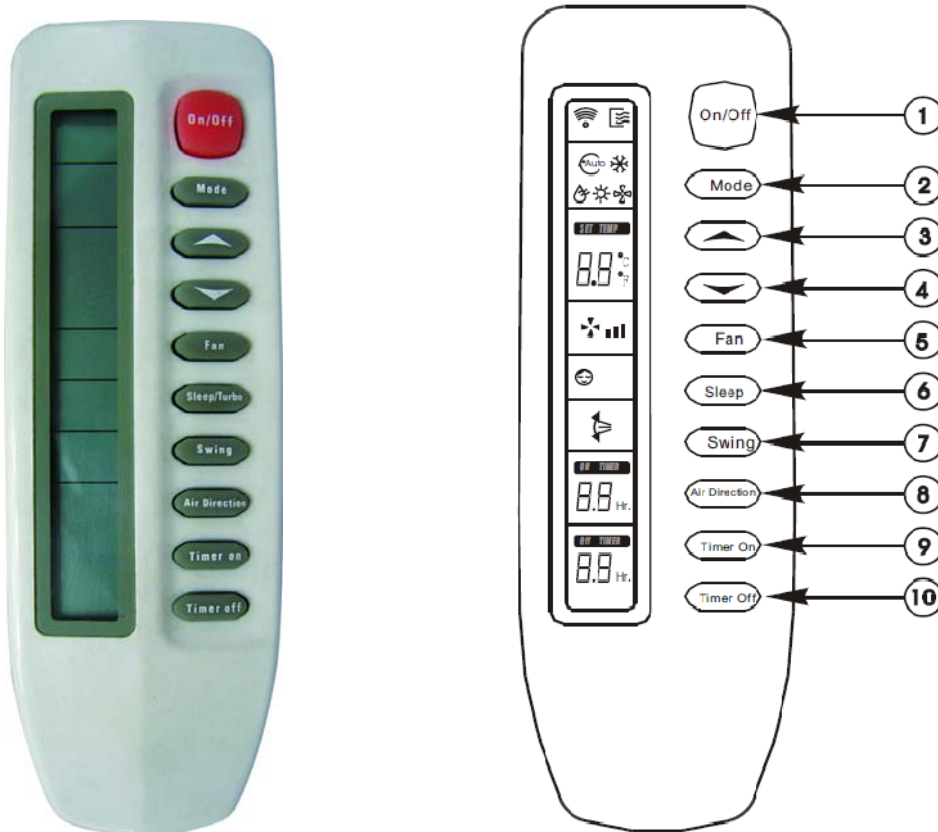
### 1.5 R71A/E

Remote controller specifications:

General functions, button quantities reduce, but functions increase.

1. Operating Mode: COOL HEAT DRY FAN only and AUTO.
2. Timer Setting Function in 24 hours.
3. Indoor Setting Temperature Range: 17°C~30°C.
4. LCD (Liquid Crystal Display) of functions.

#### 1.5.1 Parts name



#### (1) On/off Button

Press this button to start the unit, Press again to stop the unit.

#### (2) Mode Button

The mode is selected in a sequence as the following figure indicates



#### (3) ▲ Button

Press the button to increase the indoor temperature to 30°C.

#### (4) ▼ Button

Press the button to decrease the indoor temperature to 17°C.

#### (5) Fan Button:

The fan speed is selected in a sequence that goes from AUTO, LOW, MED to HIGH, then back to Auto. When you select the AUTO or DRY mode, the fan speed will be automatic and you cannot set the fan speed.

### (6) Sleep/Turbo Button

When you press the button, the operation mode is selected in a sequence as the following figure indicates. But this function cannot be used in DRY and FAN-only mode.



### (7) Swing Button

Press the SWING button to activate the swing function, press it again to stop.

### (8) Air direction Button

Press this button to change the swing angle of the louver. The swing angle of the louver is 6° for each press. When the louver swings at a certain angle, it would automatically change the swing direction. No symbol will appear in the display area when press this button.

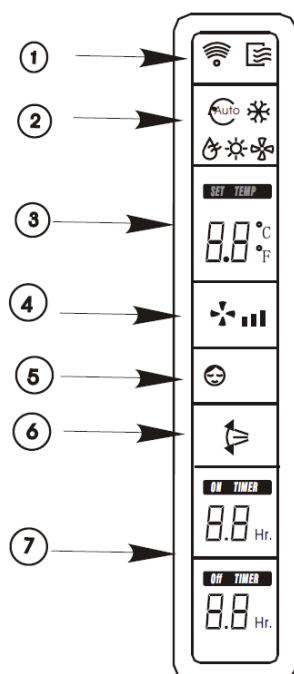
### (9) Timer on Button

Press this button to initiate the auto-on time. Each press will increase the auto-on time in 30minutes increments. When the setting time displays 10Hr, each press will increase the auto-on time in 60 minutes increments. To cancel the auto-on time program, continue pressing the button until nothing displays.

### (10) Timer off Button

Press this button to initiate the auto-off time. Each press will increase the auto-off time in 30minutes increments. When the setting time displays 10Hr, each press will increase the auto-off time in 60 minutes increments. To cancel the auto-off time program, continue pressing the button until nothing displays.

## 1.5.2 LCD display



### (1) Transmission Indicator

This indicator lights when remote controller transmits signals to indoor unit.

### (2) Mode indicator

Display the current operation modes. Including AUTO (☁), COOL (\*), DRY (♂), HEAT (♀) or FAN (\*). HEAT is only available for the heat pump model.

### (3) Temperature Indicator

Displays the temperature settings(17°C to 30°C).

### (4) Fan Speed Indicator

Displays the selected fan speed, AUTO (☼) and three fan speed levels LOW (☼), MED (☼), HIGH (☼). It will display ☼ (flashing) when the operating mode is either AUTO or DRY.

### (5) Sleep/Turbo Indicator

Each time the Sleep/Turbo button is pressed, the signal displays in the following sequence, nothing will appear when the operating mode is

DRY or FAN-only.

**(6) Swing Indicator:** This indicator lights up when the SWING button is pressed.

**(7) Timer Indicator:** The time set for timer operation is indicated (0.5 ~ 24 hours)

**Note:** All items are shown in the figure for the purpose of clear presentation, but during the actual operation only the relative functional items are shown on the display panel.



## 2. Wired controller

### 2.1 KJR-10B/DP (T)-E



**KJR-10B/DP (T)-E**

| Model                   | Description   |
|-------------------------|---|
| KJR-10B/DP(T)-E         | General control function and without backlight. With the Air filter cleaning remind function, setting address, initialization settings and connected to the indoor unit display panel's corresponding port. |
| KJR-10B/DPC(T)-E        | The function is generally the same as the KJR-10B/DP (T)-E, but excluding the heat mode.  |
| KJR-10B/DP(T)-E(Korean) | A Korean Edition bases on the KJR-10B/DP (T)-E.   |

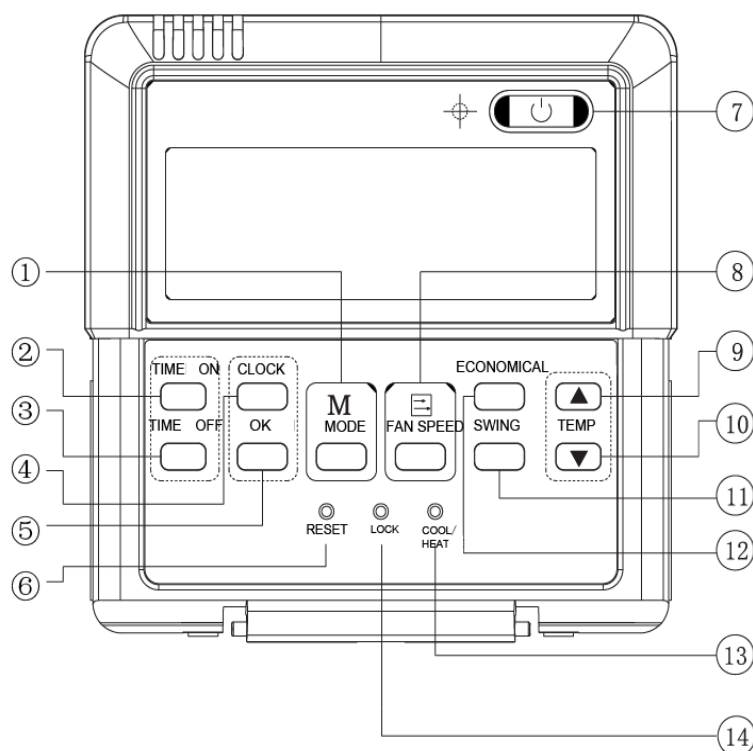
#### Wired controller specifications

|                           |                         |
|---------------------------|-------------------------|
| Model                     | KJR-10B/DB(T)-E         |
| Power Supply Voltage      | 5.0V DC                 |
| Ambient Temperature Range | -15°C~43°C(-5°F ~109°F) |
| Ambient Humidity Range    | RH40%~RH90%             |

#### Performance Features

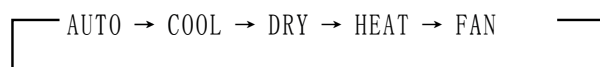
1. Operating mode: Cool, heat, dry, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).

## 2.1.1 Parts name



### (1) Mode Selection Button

The mode is selected in a sequence as the following figure indicates:



**Notes:** no heating mode if wired controller is set as cooling-only.

### (2) Timer on Button

Press this button to initiate the auto-on time. Each press will increase the auto-on time in 30minutes increments. When the setting time displays 10Hr, each press will increase the auto-on time in 60 minutes increments. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0.

### (3) Timer off Button

Press this button to initiate the auto-off time. Each press will increase the auto-off time in 30minutes increments. When the setting time displays 10Hr, each press will increase the auto-off time in 60 minutes increments. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0.

### (4) Clock Button

Normally display the clock set currently (display 12:00 for the first electrifying or resetting).When press the button for 5 seconds, the hour part on the clock display flashes every 0.5 seconds, then press ▲ and ▼ to adjust hour; press the button CLOCK again, the minute part flashes every 0.5 seconds, then press ▲ and ▼ button to adjust minute. When set clock or alter clock setting, must Press the confirm button to complete the setting.

### (5) OK Button

The button is used at the state of CLOCK adjustment. After setting the time, Press the button to confirm then exit, the current clock will display

**(6) Reset Button (hidden)**

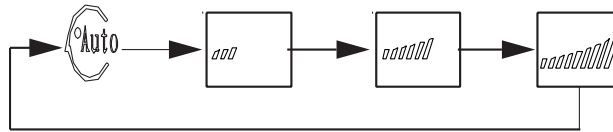
Use a small stick with a diameter of 1mm to Press the RESET button to cancel the current settings and get into the condition of resetting.

**(7) ON/OFF Button**

Press the button at the condition of OFF, the OPERATION lamp lights, and the wired controller enters into ON operation, simultaneously sends the setting operation information (e.g. temperature, fan speed, timer etc.) to the units. Press the button at the condition of ON, the OPERATION lamp extinguishes, simultaneously enters into OFF. If having set TIMER ON or TIMER OFF, the wired controller will cancel these settings before entering into OFF, close the relevant indicator, and then send the OFF information.

**(8) Fan Speed Selection Button**

Select the fan speed from "AUTO", "LOW", "MED", to "HIGH". Each time Press the button, the fan speed will change in turn as fellow.

**(9) Adjust Button ▲**

Set indoor temperature up. If press and hold on, it will increase at 1 degree per 0.5 second.

**(10) Adjust Button ▼**

Set indoor temperature down. If press and hold on, it will decrease at 1 degree per 0.5 second.

**(11) Swing Button**

Press this button for the first time in running time, start the swing function. Press the button for the second time, cancel the swing function. (Match to some model with swing function)

**(12) Economical Button**

Press the button to set the economical operation mode, Press again to cancel the mode. The operation mode is suitable for sleeping time.

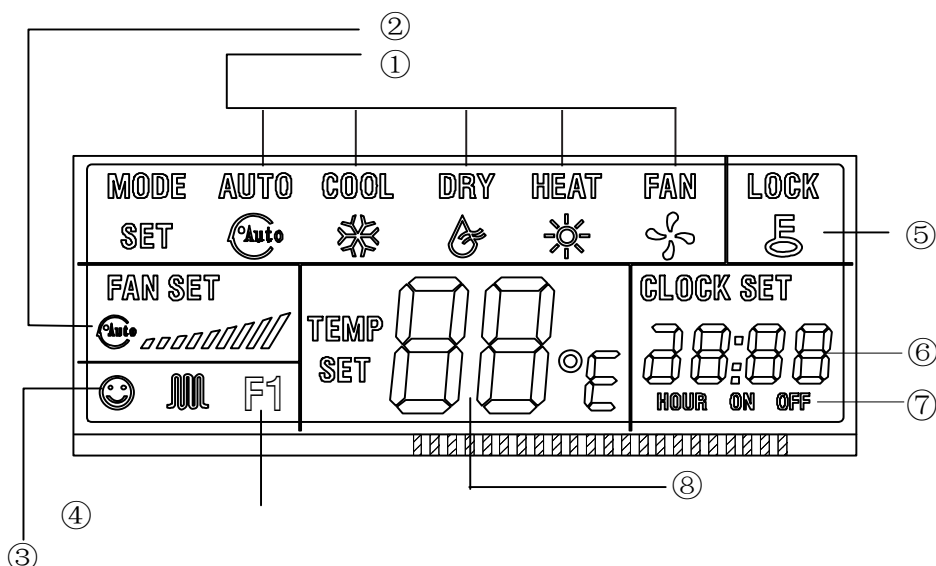
**(13) Cooling-only/cooling and heating selection button (hidden)**

Use a small stick with a diameter of 1mm to Press the button to switch modes. For Cooling-only type, it will be no heating mode when pressing MODE button. The factory-setting mode is COOLING and HEATING.

**(14) Lock Button (hidden)**

Use a small stick with the diameter of 1mm to press the LOCK button to lock the current setting, press the button again then cancel the setting.

## 2.1.2 LCD display



### (1) Mode Display

Press MODE button can select "AUTO""COOL", "DRY", "HEAT", or "FAN "mode.(HEAT is invalid for COOL ONLY wired controller.)

### (2) Fan Speed Display

Press FAN SPEED to select fan speed from "AUTO", "LOW", "MED" to "HIGH".

**Notes:** some air conditioners have no MED fan speed, and then the MED is regarded as HIGH.

### (3) Economical Operation Display

When indoor unit has this function, under cool, heat or auto mode, press ECONOMICAL button can operate the economic mode. If press ECONOMICAL button again, then the display icon will disappear.

### (4) Air Filter Cleaning Remind Display

When the calculated operating time reaches the setting filter cleaning time, the filter cleaning icon will be lighted up, to remind the user to clean the filter screen. After cleaning filter, the user can long press the "ECONOMICAL" button for 3 seconds to cancel the icon.

### (5) Lock Display

Press LOCK button, the LOCK icon will display. Press the button again, and then the icon of LOCK disappears. In the LOCK mode, all the buttons are invalid except for the LOCK button and RESET button.

### (6) Clock Display

Usually display the actual time. Press the button CLOCK for 5 seconds, the HOUR part will flash, press "▲" and "▲" to adjust HOUR. Press the CLOCK again, the minute part flash, press "▲" or "▼" to adjust MINUTE. After clock set or clock operation, it must press the OK button to complete the set.

### (7) Timer ON/OFF Display

When adjust setting on timer or only on timer is set, the "ON" is lighted. When adjust setting off timer or only off timer is set, the "OFF" is lighted. If on and off timer are both set, the "ON" and "OFF" are both lighted.

### (8) Temperature Display Area

Usually displays the set temperature. It can be adjusted by press temperature button ▲ and ▼, under the FAN mode, there is no figure display in the area.

### 2.1.3 Operating the wired controller

#### 1) AUTO Operation

- ※ Insert the power supply of indoor unit, and operation lamp of indoor unit will flash.
- ※ Press MODE to select AUTO.
- ※ Set the desired temperature by Pressing the TEMP▲and TEMP ▼, usually the temperature range is set from 17°C to 30°C.
- ※ Press ON/OFF, the operation lamp of indoor unit lights, the air conditioner starts operating at the automatic mode, and the fan speed is controlled automatically, wired controller display screen display AUTO, so the fan speed is un-adjustable.
- ※ Press the button ON/OFF again, and the air conditioner stops operating.

**Notes:** The ECONOMICAL button is available at the auto operation mode.

#### 2) COOL/HEAT/FAN ONLY Operation

- ※ Press the MODE button to select any one of COOL, DRY, HEAT or FAN ONLY mode.
- ※ Select the desired temperature by Pressing the TEMP▲and TEMP ▼, usually the temperature range is set from 17°C to 30°C.
- ※ Press the button FAN SPEED to select any one of AUTO, LOW, MED or HIGH fan speed modes.
- ※ Press the ON/OFF, the operation lamp on indoor unit lights, the air conditioner operates according the mode selected.
- ※ Press the button ON/OFF again, stop the air conditioner.

**Notes:**

1. Under fan only mode, the temperature cannot be set.
2. The economical button is valid in cool, heat mode.
3. Cooling only unit has not heat mode.

#### 3) DRY Operation

- ※ Press MODE to select DRY mode.
- ※ Select the desired temperature by pressing the TEMP ▲ and TEMP ▼, usually the temperature range is set from 17°C to 30°C.
- ※ Press the ON/OFF, the operation lamp of indoor unit lights, and the air conditioner will start to dehumidify.
- ※ Press the ON/OFF again, stop the air conditioner.

**Notes:** The FAN SPEED and ECONOMICAL buttons are invalid in the dry mode.

#### 4) Only Set the Time of Timer On

- ※ Press button TIME ON, the wired controller display SETTING, the icons of HOUR and ON display on the timer setting area. The wired controller enters into the setting of timer off.
- ※ Press button TIME ON again, and then adjust the time of timer off as desired.
- ※ Continuously Press the button, the time of timer will increase 0.5 hours per time. After the time of timer reaches to 10 hours, the time will increase 1 hour each time.
- ※ 0.5 seconds later, after finishing the adjustment, the wired controller sends the information of time off, the timer off setting is completed.

### 5) Only Set the Time of Timer Off

- ※ Press button TIME OFF, the wired controller display SETTING, the icons of HOUR and OFF display on the timer setting area. The wired controller enters into the setting of timer off.
- ※ Press button TIME OFF again, and then adjust the time of timer off as desired.
- ※ Continuously Press the button, the time of timer will increase 0.5 hours per time. After the time of timer reaches to 10 hours, the time will increase 1 hour each time.
- ※ 0.5 seconds later, after finishing the adjustment, the wired controller sends the information of time off, the timer off setting is completed.

### 6) Set the Time of Timer ON and Timer OFF Simultaneously

- ※ Press button TIME ON, the wired controller display SETTING, the icons of HOUR and ON display on the timer setting area. The wired controller enters into the setting of timer off.
- ※ Press button TIME ON again, and then adjust the time of timer off as desired.
- ※ Press button TIME OFF, the wired controller display SETTING, the icons of HOUR and OFF display on the timer setting area. The wired controller enters into the setting of timer off.
- ※ Press button TIME OFF again, and then adjust the time of timer off as desired.
- ※ When set the timer on and timer off simultaneously, if the setting times of timer on and timer off are less than 10 hours, then timer off time will always 0.5 hours later than the timer on. If the setting times of timer on and timer off is always later 1 hour than timer on.
- ※ 0.5 seconds later, after finishing the adjustment, the wired controller sends the information of timer, the timer off and timer on setting are completed.

### 7) Cancel the Timer Setting

- ※ Press the TIME ON and TIME OFF, OK once more.
- ※ Adjust the time of timer on and timer off as 0.0 to cancel the timer on and timer off.

**Notes:** The time of timer on is the relative time; it is relative to the standard time of operating wired controller. If having setting the timer on or timer off, then the clock cannot be adjusted.

### 8) Cancel the Filter Cleaning Icon

When the calculated operating time reach the setting filter cleaning time, the filter cleaning icon will be lighted up, to remind the user to clean the filter screen. After cleaning it can long press the ECONOMICIAL button for 3 seconds to cancel the icon.

### 9) Initialization Parameters Setting

For some functions of the wired controller, if the default setting in following list cannot meet the user's request, the user can select the function for setting follow the below method.

| First code(Y) | First code function                                | Second code (X)               |              |                      |            |             |
|---------------|--|-------------------------------|--------------|----------------------|------------|-------------|
|               |  | 0                             | 1            | 2                    | 3          | 4           |
| 0             | Cooling only/Cooling and heating selection setting | Cooling and heating (Default) | Cooling only | /                    | /          | /           |
| 2             | Power-off memory setting                           | Yes (Default)                 | No           | /                    | /          | /           |
| 3             | Time setting for reminding to clean the filter     | Cancel the function           | 1250 hours   | 2500 hours (Default) | 5000 hours | 10000 hours |

|   |   |                      |            |   |   |   |
|---|---|----------------------|------------|---|---|---|
| 6 | Centigrade/Fahrenheit selection setting | Centigrade (Default) | Fahrenheit | / | / | / |
|---|---|----------------------|------------|---|---|---|

- ※ Long press the FAN SPEED and MODE buttons for 5 seconds together, and enter into the initialization function setting interface.
- ※ After enter into the setting interface, the temperature display area will display YX. Y means the first function code, and X means the second function code, details refer to the up table. Y will on all the time, X will flash with 1Hz frequency.
- ※ Press TEMP▲ and TEMP ▼, to select the detail function under Y code, then press the OK button and the setting will work, and the system will automatically shift to next Y code setting, until all the function codes have been set, then the system will quit the setting interface automatically.

#### 10) Query for Initialization Function Parameters

After setting the initialization function, use the following method for query:

- ※ Long press FAN SPEED button for 2 seconds to enter into the query interface.
- ※ After enter to the interface, the LCD temperature display area, minute display area will display a series of numbers, which is the current initialization parameter value. If the current initialization function is cooling and heating (00), no power-off memory (21), the filter screen cleaning time is 5000 hours (33), centigrade display (60), their combination is 0130, and it will display 0130.
- ※ After enter to the interface for 3 seconds, it will automatically exit.
- ※ Under this interface, it will not respond any key operation.

#### 11) Indoor unit address setting and query

- ※ Long press the LOCK key for 5 seconds, enter into the indoor unit address setting interface.
- ※ After enter into the interface, the temperature display area will display 00, means the address which is going to be set, then press TEMP ▲ and TEMP ▼ to select the address, and then press the FAN SPEED key to finish indoor unit address setting.
- ※ After enter into the interface, press MODE key to query the address.
- ※ Under the address setting interface, long press LOCK for 5 seconds again, then it will quit the indoor unit setting interface.

### 2.1.4 Wired controller Installation

#### (1) Make sure the following parts has been prepared.

| NO. | Name                | QTY. | Remarks  |
|-----|---------------------|------|--|
| 1   | wired controller    | 1    | With Cover                                       |
| 2   | Wood Mounting Screw | 3    | M4×20(For mounting on the wall)                  |
| 3   | Mounting Screw      | 3    | M4×25(For Mounting on the electrical switch box) |
| 4   | Installation Manual | 1    | /  |
| 5   | Owner's Manual      | 1    | /  |

**(2) Preparation before Installation:**

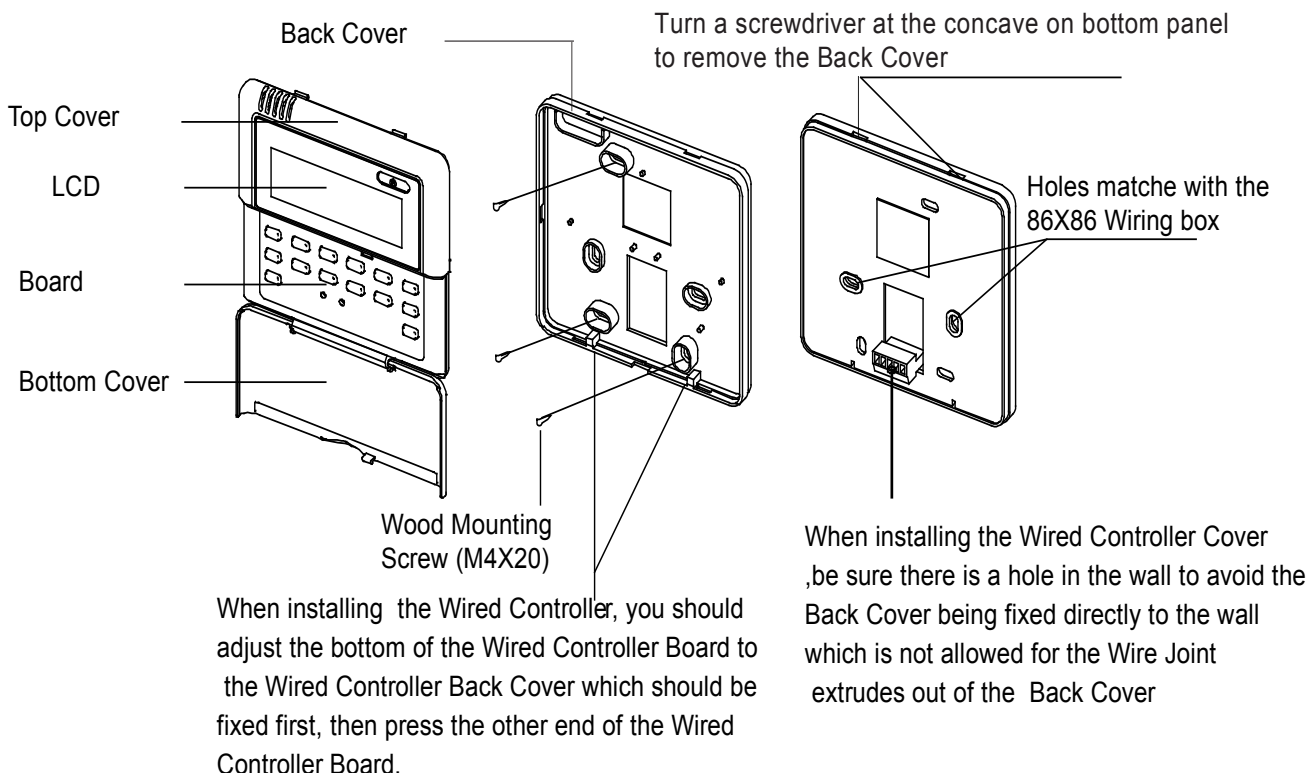
Prepare for the following at installation site.

| NO. | Name  | QTY.                  |                     | Remarks                                       |
|-----|---|-----------------------|---------------------|---|
|     |   | Install into the wall | Install on the wall |   |
| 1   | 5-core Shield Cable                                 | 1                     | 1                   | 0.05mm <sup>2</sup> ×5 Cable no more than 15M |
| 2   | Switch Box  | 1                     | /                   | /   |
| 3   | Wiring Tube(Insulating Sleeve and Tightening Screw) | 1                     | /                   | /   |

**Notes:** Do not turn screws too tightly, or else the cover would be sunk or the Liquid Crystal may be broken.

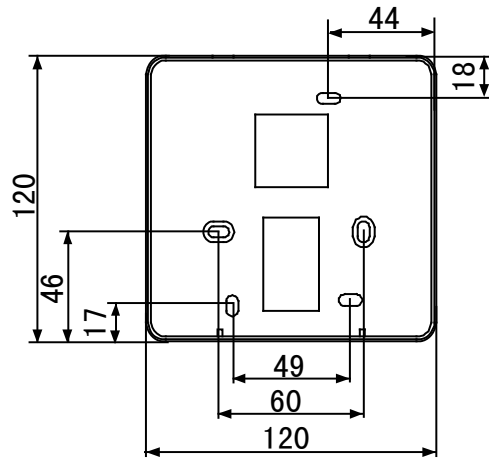
**(3) Installation procedure**

- ※ Circuit of wired controller is low voltage circuit. Never connect it with a standard 220V/380V circuit or put it into a same wiring tube with the circuit.
- ※ The shield cable must be connected stable to the ground, or transmission may fail.
- ※ Do not attempt to extend the shield cable by cutting, if it is necessary, use terminal connection block to connect.
- ※ Wired controller installation size refers to the following picture (Unit: mm):

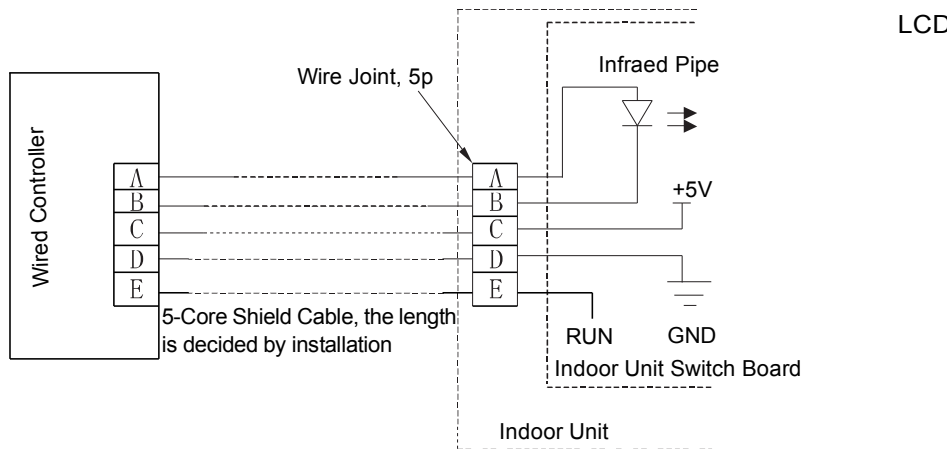




**(4) Dimensions: 120\*120\*15mm**



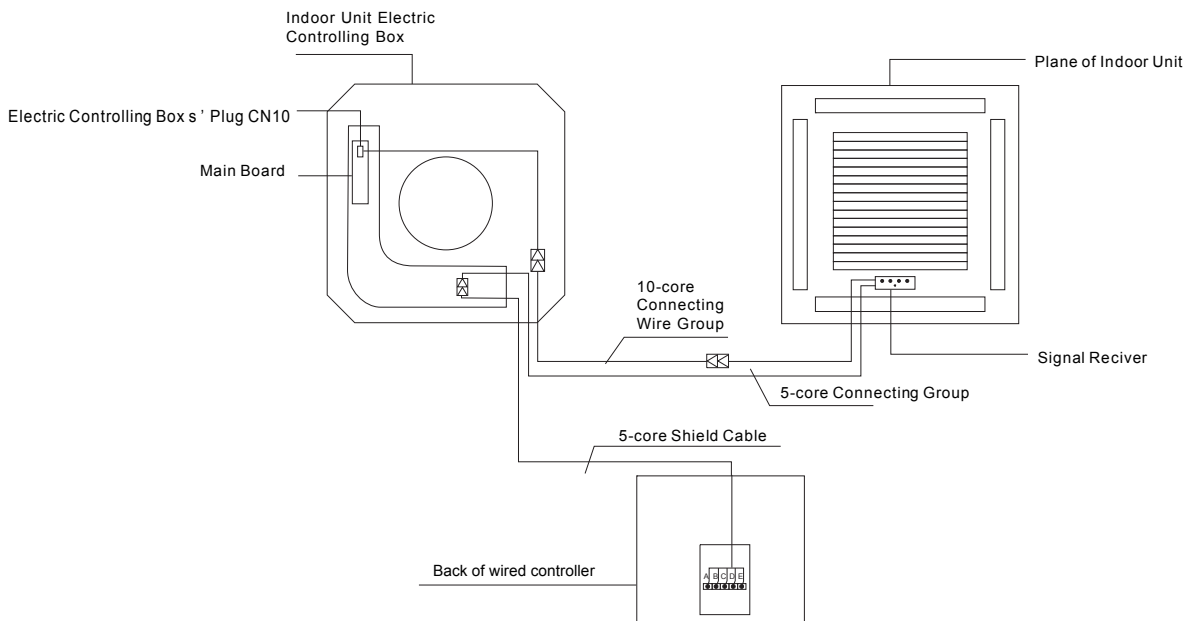
**(5) Wiring method**



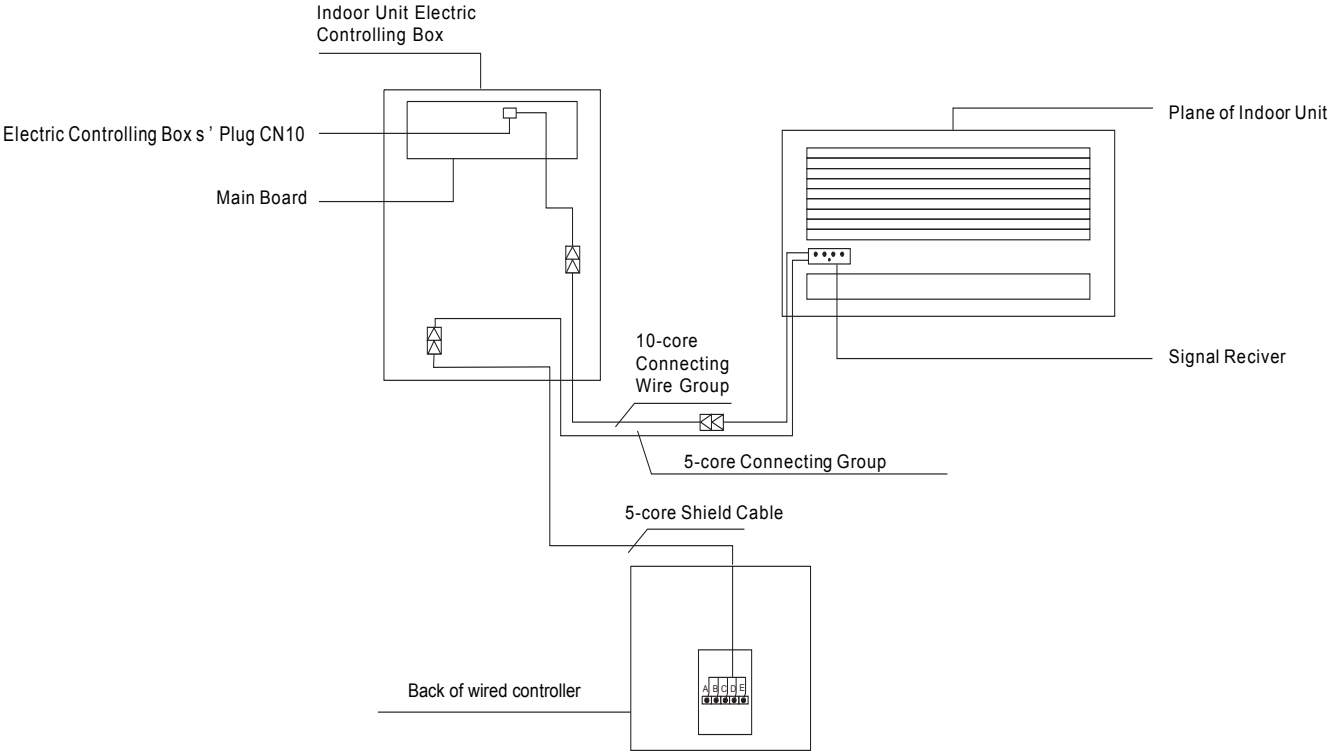
**Notes:** When install the wired controller, an additional 5-terminal is needed to install in indoor unit, fasten an infrared emission (fasten with glue), connect the anode and the cathode respectively to A and B, then connect the +5V GND and RUN respectively to C, D and E on the terminal.

**(6) Wiring diagram of wired controller**

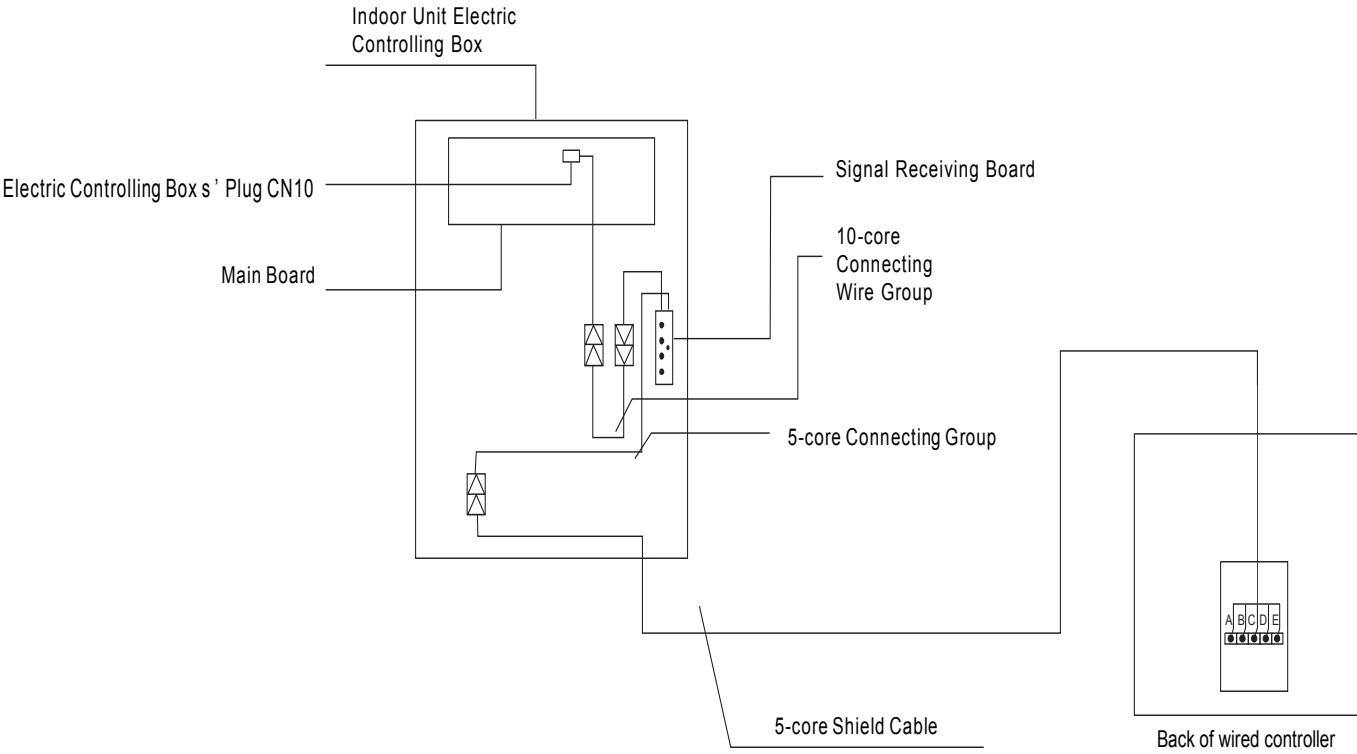
1) Wiring diagram between wired controller and four-way cassette of indoor unit:



2) Wiring diagram between wired controller and duct type of indoor unit:



3) Wiring diagram between wired controller and high static duct type of indoor unit:



## 2.2 KJR-12B/DP (T)-E



**KJR-12B/DP (T)-E**

| Model               | Description  |
|---------------------|--|
| KJR-12B/DP(T)-E     | General functions and integrates FOLLOW ME function.   |
| KJR-12B/DPBG(T)-E   | Bases on the KJR-12B/DP (T)-E and with backlight, vertical and level swing function.         |
| Dun-KJR-12B/DP(T)-E | FOLLOW ME and configured with a 20M wire. There's no brand and backlight on it.              |
| KJR-12B/DPC(T)-E    | The function is generally the same as the KJR-12B/DP (T)-E (D), but excluding the heat mode. |

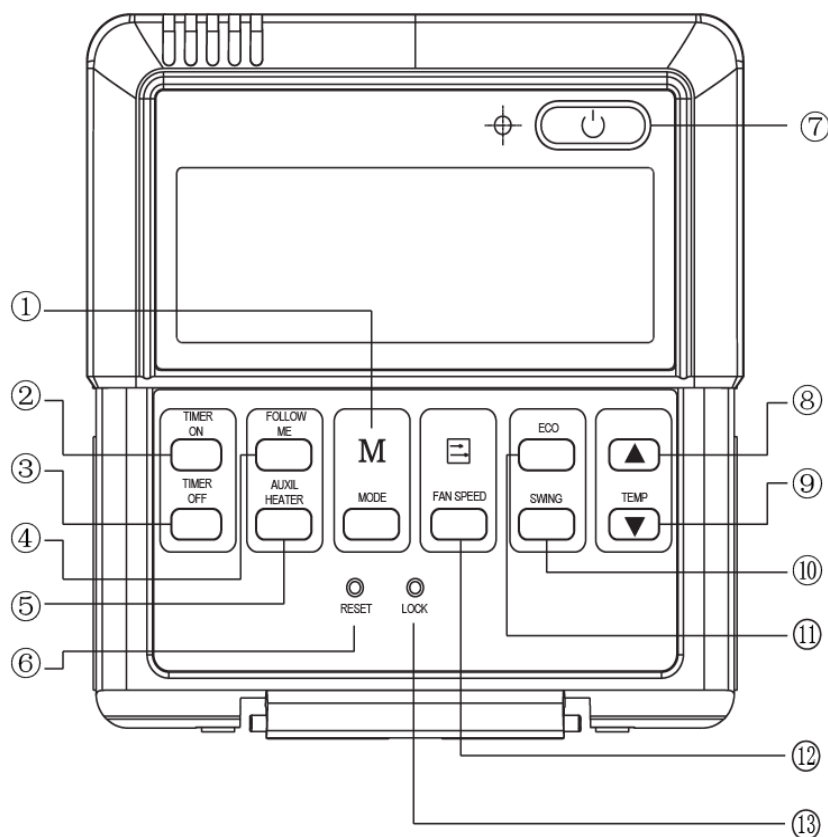
### 2.2.1 Wired controller specifications

| Model                     | KJR-12B/DP(T)-E          |
|---------------------------|--------------------------|
| Power Supply Voltage      | 5.0V DC                  |
| Ambient Temperature Range | -15°C~43°C(-5°F ~ 109°F) |
| Ambient Humidity Range    | RH40%~RH90%              |

#### Performance Features

1. Operating mode: Cool, heat, dry, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).
5. Follow me function.

## 2.2.2 Appearance



### (1) Mode Button

The mode is selected in a sequence as the following figure indicates



(HEAT is invalid for COOL ONLY wired controller.)

### (2) Timer on Button

Press this button to initiate the auto-on time. Each press will increase the auto-on time in 30minutes increments. When the setting time displays 10Hr, each press will increase the auto-on time in 60 minutes increments. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0.

### (3) Timer off Button

Press this button to initiate the auto-off time. Each press will increase the auto-off time in 30minutes increments. When the setting time displays 10Hr, each press will increase the auto-off time in 60 minutes increments. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0.

### (4) Follow me Button

When under cooling, heating and auto mode, press this button, follow me function will be active. Press again, this function will be ineffective.

### (5) Electrical Heater Button

If press this button in heating mode, electrical heater function become effective.

### (6) Reset Button (hidden)

Use a small stick with diameter of 1mm to Press the RESET button to cancel the current settings and get into the condition of resetting.

**(7) ON/OFF Button**

Press the button at the condition of OFF, the OPERATION lamp lights, and the wired controller enters into ON operation, simultaneously sends the setting operation information (e.g. temperature, fan speed, timer etc.) to the units. Press the button at the condition of ON, the OPERATION lamp extinguishes, simultaneously enters into OFF. If having set TIMER ON or TIMER OFF, the wired controller will cancel these settings before entering into OFF, close the relevant indicator, and then send the OFF information.

**(8) Adjust Button ▲**

Set indoor temperature up. If press and hold on, it will increase at 1 degree per 0.5 second.

**(9) Adjust Button ▼**

Set indoor temperature down. If press and hold on, it will decrease at 1 degree per 0.5 second.

**(10) Swing Button**

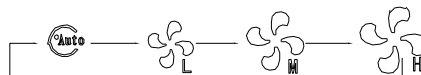
Press this button for the first time in running time, start the swing function. Press the button for the second time, cancel the swing function. (Match to some model with swing function)

**(11) Economical Button**

Press the button to set the economical operation mode, Press again to cancel the mode. The operation mode is suitable for sleeping time.

**(12) Fan Speed Selection Button**

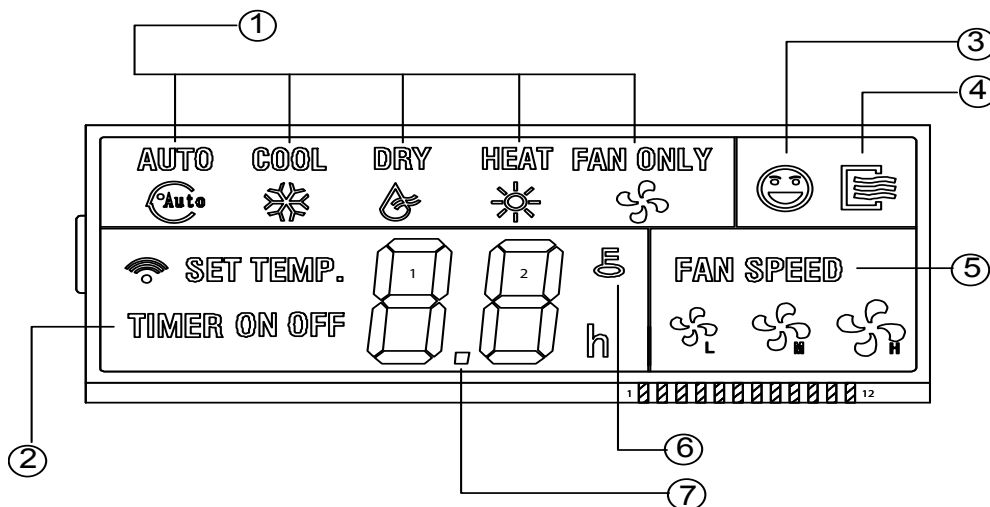
Select the fan speed from "AUTO", "LOW", "MED", to "HIGH". Each time Press the button, the fan speed will change in turn as follow.



**(13) Lock Button (hidden)**

Use a small stick with the diameter of 1mm to press the LOCK button, all current settings are locked in and the wired controller does not accept any operation except that of the LOCK button. Use the lock mode when you want to prevent setting from being changed accidentally or play fully. Press the button again then cancel the LOCK setting.

**2.2.3 LCD display**



**(1) Mode display**

When press "MODE" button, the following mode can be selected in circle.



**Notes:** For cooling only model, heat mode is invalid.

## (2) TIMER ON/OFF Display

When adjust setting on timer or only on timer is set, the "ON" is lighted. When adjust setting off timer or only off timer is set, the "OFF" is lighted. If on and off timer are both set, the "ON" and "OFF" are both lighted.

## (3) Follow Me Function

There is a temperature sensor inside the wired controller, after setting temperature, it will compare the two temperatures, and the temperatures at wired controller space will be the same as setting temperature. It is available under cooling, heating, and auto mode.

## (4) ON/OFF Display

When it is on, the icon display, otherwise it is extinguished.

## (5) Fan Speed Display

Press FAN SPEED to select fan speed from "AUTO", "LOW", "MED" to "HIGH".

NOTES: some air conditioners without MED fan speed, and then the MED is regarded as HIGH.

## (6) Lock Display

It will display in LOCK mode, and disappear not in lock mode. In LOCK mode, all the buttons are invalid except for LOCK button.

## (7) Temperature Display Area

Display the setting temperature; it can be adjusted by press temperature button ▲ and ▼. Under FAN mode, there is no display here.

## 2.2.4 Wired controller installation

Preparation before Installation:

Make sure the following parts has been prepared.

| NO. | Name                        | QTY. | Remarks  |
|-----|-----------------------------|------|--|
| 1   | Wired Controller            | 1    | /  |
| 2   | Wood Mounting Screw         | 3    | M4×20(For mounting on the wall)                  |
| 3   | Mounting Screw              | 3    | M4×25(For Mounting on the electrical switch box) |
| 4   | Installation Manual         | 1    | /  |
| 5   | Owner's Manual              | 1    | /  |
| 6   | 5-terminal Group            | 1    | RS9005E  |
| 7   | Terminal installation Screw | 2    | ST3.9×12-F-H GB845-85                            |

Prepare for the following at installation site.

| NO. | Name  | QTY. | Type                           | Remarks                                      |
|-----|---|------|--------------------------------|--|
| 1   | 5-core Shield Cable                                 | 1    | RVVP-0.5<br>mm <sup>2</sup> ×5 | 0.05mm <sup>2</sup> ×5Cable no more than 15M |
| 2   | Switch Box  | 1    | /                              | /  |
| 3   | Wiring Tube(Insulating Sleeve and Tightening Screw) | 1    | /                              | /  |

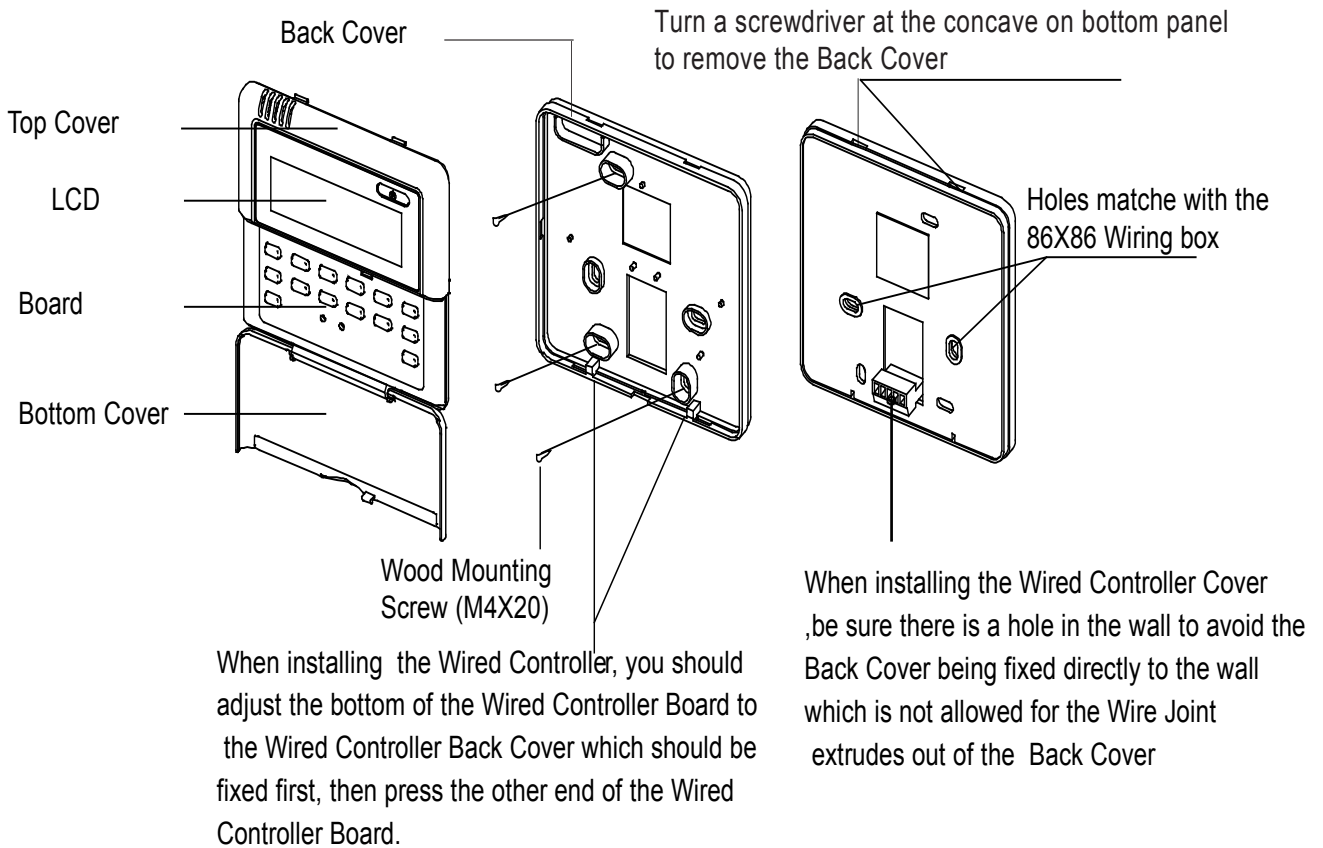
**Notes:**

Never turn screws too tightly, or else the cover would be sunk or the Liquid Crystal breaks.

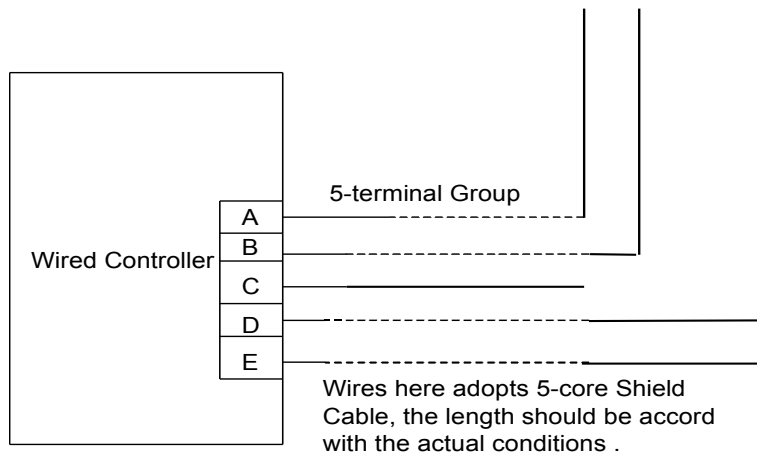
Installation of wired controller KJR-12B/DP (T)-E is the same to KJR-10B/DP (T)-E.

**(1) Installation procedure**

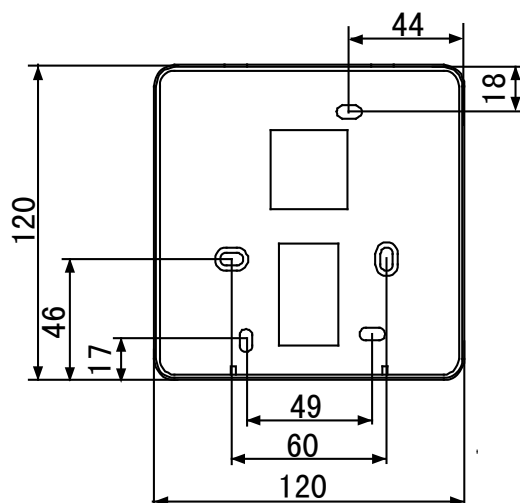
- ※ Circuit of wired controller is low voltage circuit. Never connect it with a standard 220V/380V circuit or put it into a same wiring tube with the circuit.
- ※ The shield cable must be connected stable to the ground, or transmission may fail.
- ※ Do not attempt to extend the shield cable by cutting, if it is necessary, use terminal connection block to connect.



- ※ When install the wired controller, an additional 5-terminal is needed to install in indoor unit, fasten an infrared emitter whose anode and cathode connecting with A and B near the receiver in the indoor unit switch board, then connecting the terminal +5V, GND and Run in the switch board to C, D, E respectively.

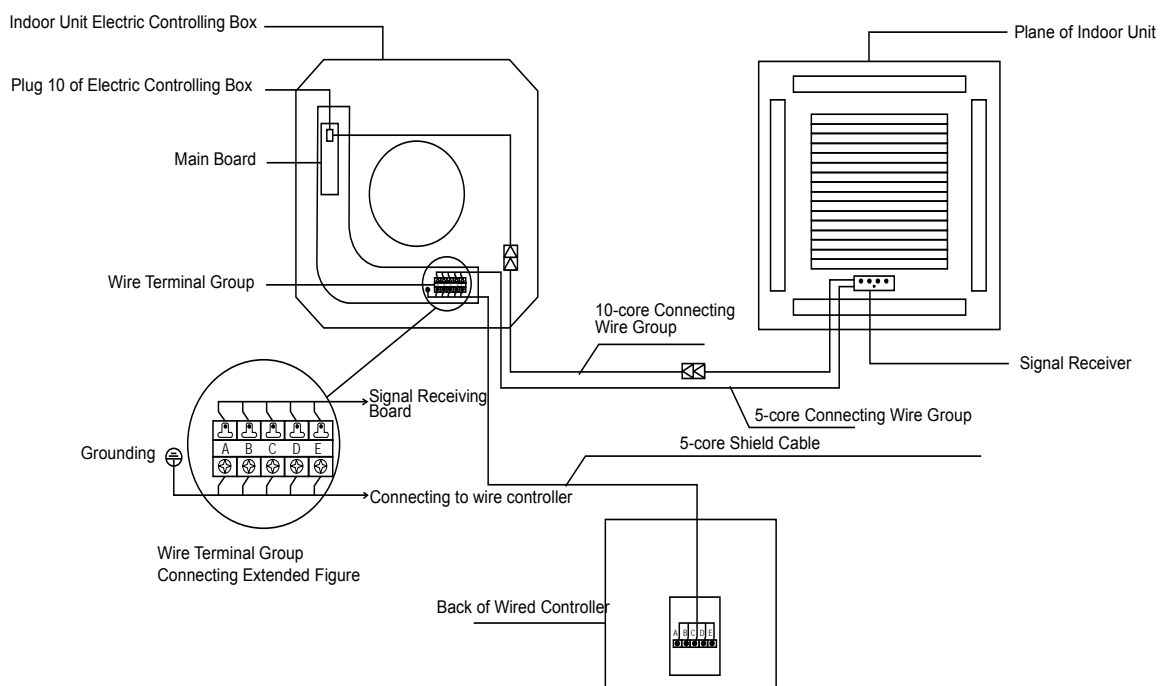


**(2) Dimension: 120\*120\*15mm**



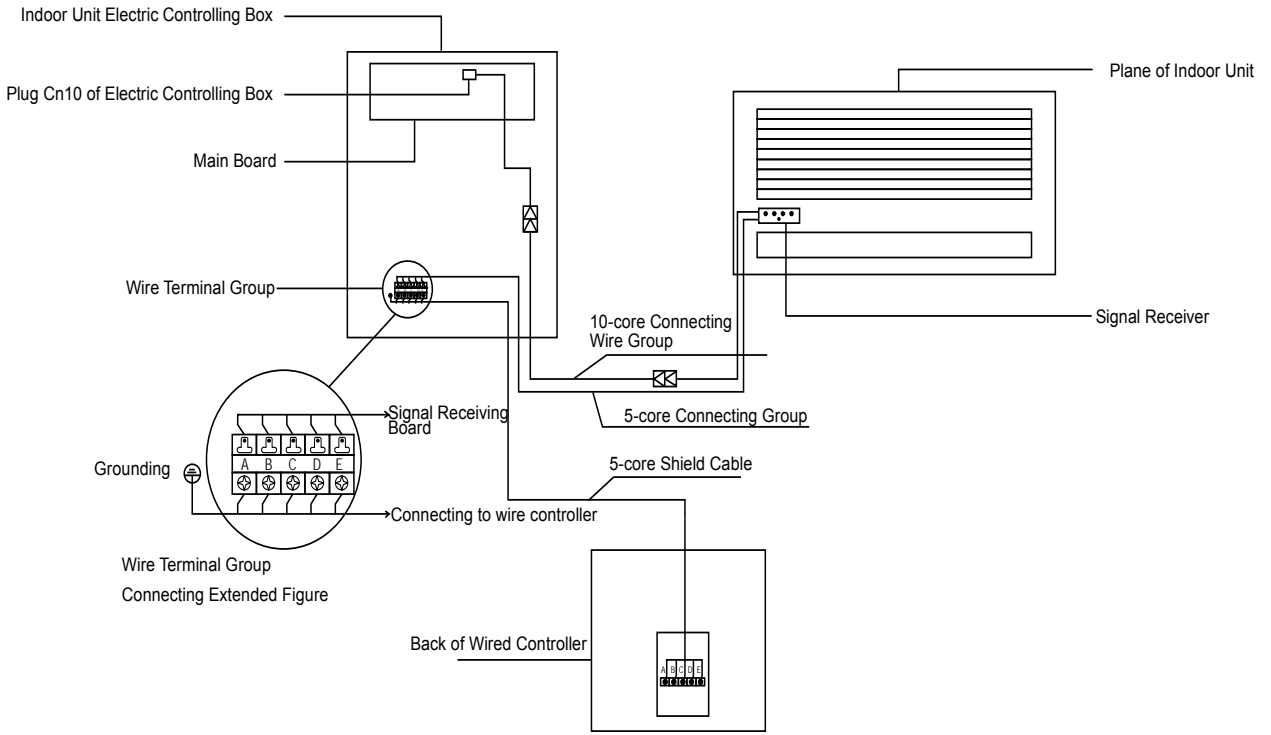
**(3) Wiring diagram**

1) Wiring diagram between wired controller and four-way cassette of indoor unit:

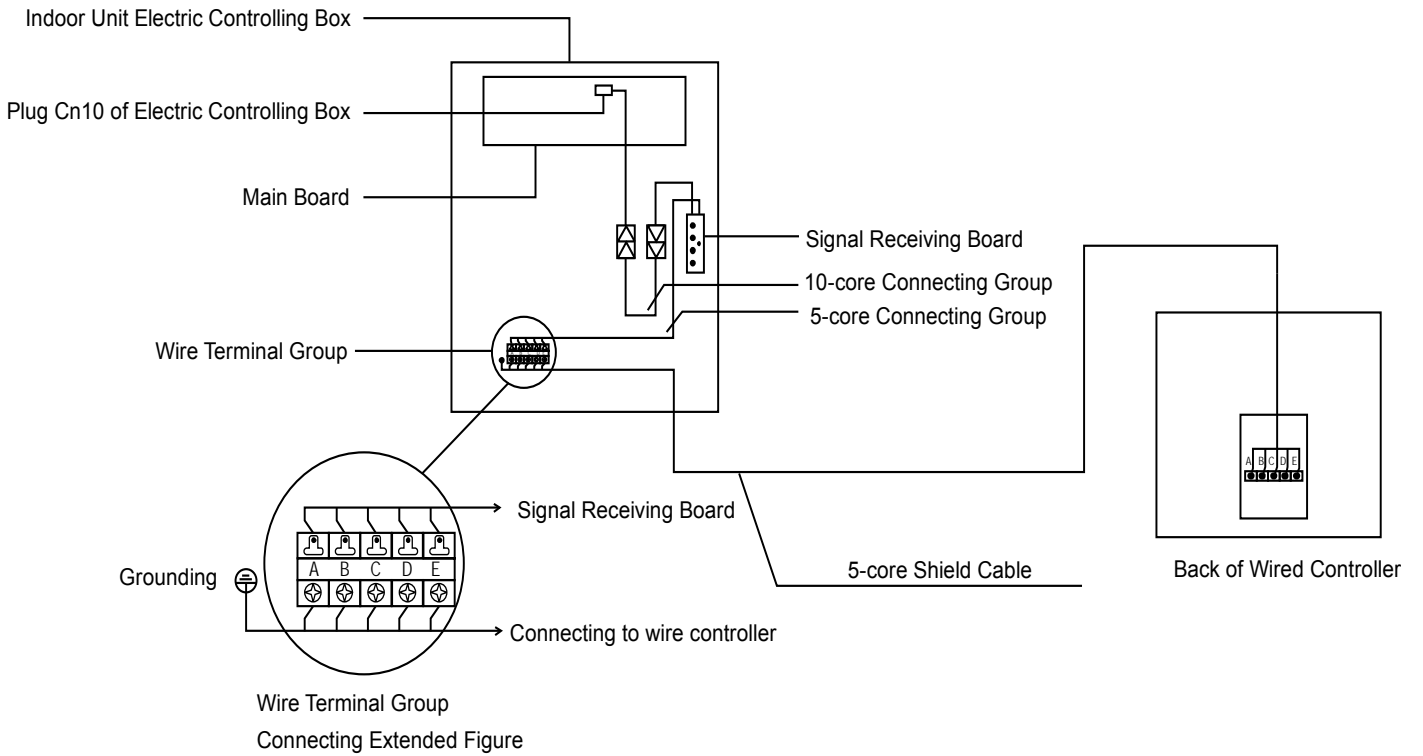




2) Wiring diagram between wired controller and duct type of indoor unit:



3) Wiring diagram between wired controller and high static duct type of indoor unit:



## 2.3 Touch- style key wired controller: KJR-29B/BK-E



**KJR-29B/BK-E**

### Wired controller specifications

|                           |                 |
|---------------------------|-----------------|
| Model                     | KJR-10B/DB(T)-E |
| Power Supply Voltage      | 5.0V DC         |
| Ambient Temperature Range | -5°C~43°C       |
| Ambient Humidity Range    | RH40%~RH90%     |

### Performance Features

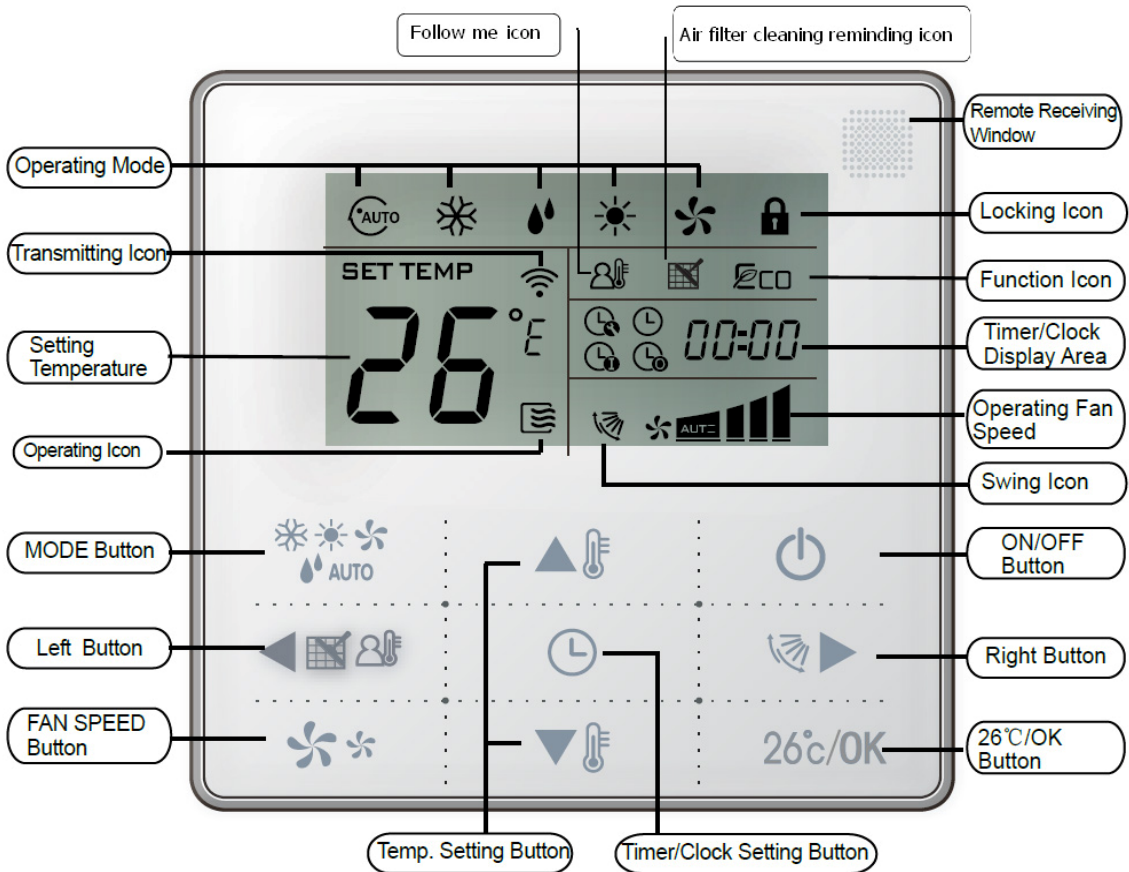
1. Operating mode: Cool, heat, dry, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).
5. Touch-style key

### 2.3.1 Function summarize

KJR-29B is the touch-style key wired controller.

| New function  | Basic function                          |
|---|---|
| Air filter cleaning reminding function                  | ON and OFF the air-conditioner          |
| Indoor unit address setting function                    | Auto-restart function                   |
| Remote control receiver function                        | Time ON and Time OFF setting            |
| Lock the wired controller                               | Clock setting                           |
| 26°C operation shortcut setting and 26°C operation lock | Setting the Operating mode, Temperature |
| Follow me   | Fan speed and Swing functions           |

### 2.3.2 Wired controller appearance



#### (1) Remote signal receiving function

There is the signal receiver for wireless remote controller on the KJR-29B. You can use the wireless remote controller to control the air-conditioner through the wired remote controller when the system has been powered on.

**Notes:** The wired controller will not receive the swing controlling instruction. For the indoor unit with swinging function, you can directly use the remote controller to control swinging through the display panel of the indoor unit, or use the swing button on the wired remote controller to control the indoor unit for swinging.

#### (2) ON/OFF Button

Press the ON/OFF button to control the indoor unit on and off status. When the unit is turned off, press the ON/OFF button, the unit will be turned on and the operating icon lights up. When the unit is turned on, press the ON/OFF button, the unit will be turned off and the operating icon lights off.

#### (3) Mode Button

Press the mode button to set the operating mode, after each button press the operation mode will circle as follow:



When the controller has been set to cool-only, then there is no HEAT mode.

#### (4) Fan speed setting

Under COOL, HEAT and FAN modes, press the fan speed button can adjust the fan speed setting. After each fan speed button press will circle as follow:



Under AUTO and DRY modes, the fan speed is not adjustable and the default fan speed is auto.

**(5)Temperature setting**

Under AUTO, COOL, DRY, HEAT modes, press the Temp adjust Up/Down buttons to set the temperature, the adjusting range is 17°C~30°C (or 62°F~88°F). The setting temperature cannot be adjusted under FAN mode.

**(6)Timer on and Timer off setting**

Press the timer/clock setting button, then enter into the timer on setting status, and the screen will display timer

icon  and .

You can press Temperature setting buttons to adjust the time. When the time setting is less than 10 hours, each press the Temp setting buttons will increase or decrease 0.5 hour. When the timer setting is more than 10 hours, each press Temp setting buttons will increase or decrease 1 hour, the maximum timer setting is 24 hours. After finish adjusting the time on setting, press the 26°C/OK button or wait for 5 seconds to confirm and exit the time on setting.

**Notes:** If the wired remote controller has been set timer on/ off, press the ON/OFF button to turn on/ turn off the unit then the timer will be canceled simultaneously.

**(7) Clock setting**

Long press the timer/clock setting button for 3 seconds, and then enter into the clock setting status. The hour position of the clock will flash, and can press Temp setting buttons to adjust the hour value.

After finish the hour setting, press left button or right button to switch to minute position setting, then the minute position will flash, press Temp setting buttons to adjust the minute value. After finish the clock setting, press the button or wait for 5seconds to confirm and exit the setting state.

**(8)26°C/OK button**

Under AUTO, COOL, DRY, HEAT modes, press the 26°C/OK button can set the operating temperature to 26°C. Long press this button for 3 seconds, the wired controller will lock the setting temperature to 26°C, and the locking icon will be lighted up. Under the 26°C operation locking state, the wired controller cannot adjust the setting temperature through the temperature setting buttons, and also will not respond to the temperature adjusting instruction from the wireless remote controller.

Long press 26°C/OK button for 3seconds, can unlock the 26°Coperation locking state.

**(9) Wired controller locking**

Press the temperature adjusting UP and DOWN buttons simultaneously, the wired controller enters into locking state, and the locking icon will be lighted up. Under the locking state, the wired controller will not respond to buttons by pressing and the control instruction from the wireless remote controller. Simultaneously press temperature adjusting buttons again can cancel the locking state.

**(10) Air filter cleaning reminding function**

The wired controller records the total running time of the indoor unit, when the accumulated running time reaches the pre-set value, air filter cleaning reminding icon will be lighted up, to remind that the air filter of the indoor unit needs to be cleaned. Long press left button for 3 seconds, and clear the reminding icon and the wired controller will re-accumulate the total running time of the indoor unit.

**Notes:** The default setting value of reminding function is 2500 hours, and it can change to be 1250 hours, 5000 hours or 10000 hours. The setting methods please refer to the installation manual.

**(11)Swing Function**

If the indoor unit supports swing function, press the right button to adjust the air outlet direction of the indoor unit. Long press this button for 3 seconds can turn on or turn off the auto-swing function. When the auto-swing

function is turned on, the swing icon will be lighted up.

### (12) Follow me function

When the system is running and the operating mode is AUTO. COOL or HEAT, press the left button will activate the Follow Me function. Press left button again will cancel follow me function. When the operating mode is changed, and then will cancel this function as well. When the Follow Me function is activated, the icon will be light up, and the wired controller will display room temperature read from the local sensor, and transmit the temperature value to the indoor unit every 3 minutes.

### (13) Setting addresses

- ✚ Press the Temp. UP and DOWN button simultaneously for more than 8 seconds, then the controller gets into address setting mode.
- ✚ In the address setting mode, there are 2 main functions:  
 Querying address: Press MODE button, the corresponding indoor unit will display its address.  
 Setting address: Use the UP and DOWN buttons to choose an address you want. Then press the FAN button to set the indoor unit's address. The corresponding indoor unit will display the new address and record it. After about 4 seconds, this displaying will fade out and indoor units turn to normal display mode.
- ✚ After setting addresses, users can press the 26°C/OK button can exit the address setting mode.
- ✚ After each setting address and enter the query / set mode again, it will display the last set of address, but if re-power, this address will be cleared.
- ✚ In the address setting mode, wired controller does not respond to any command from remote controller.

### 2.3.3 Installations

#### ※ Preparation before Installation:

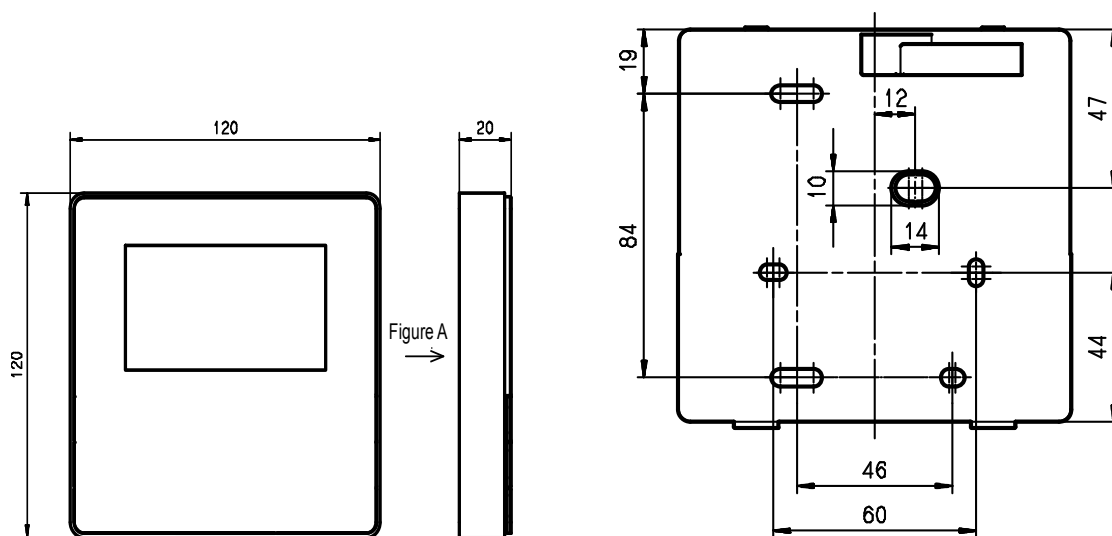
Make sure the following parts has been prepared.

| NO. | Name  | QTY. | Remarks   |
|-----|---|------|---|
| 1   | Wired Controller                            | 1    | /   |
| 2   | Cross round heat wood Mounting Screw        | 3    | M4×20(For mounting on the wall)   |
| 3   | Cross round heat mounting Screw             | 2    | M4×25(For Mounting on the electrical switch box)                            |
| 4   | Installation Manual                         | 1    | /   |
| 5   | Owner's Manual                              | 1    | /   |
| 6   | Plastic expansion pipe                      | 3    | For Mounting on the Wall  |
| 7   | Plastic screw bar                           | 1    | For fixing on the 86 electrician box  |
| 8   | Switching wires for signal receiving board  | 1    | For connecting the signal receiving board and 4-core shielding wire         |
| 9   | Switching wires for wired controller signal | 1    | (If needed) For connecting the main control panel and 4-core shielding wire |

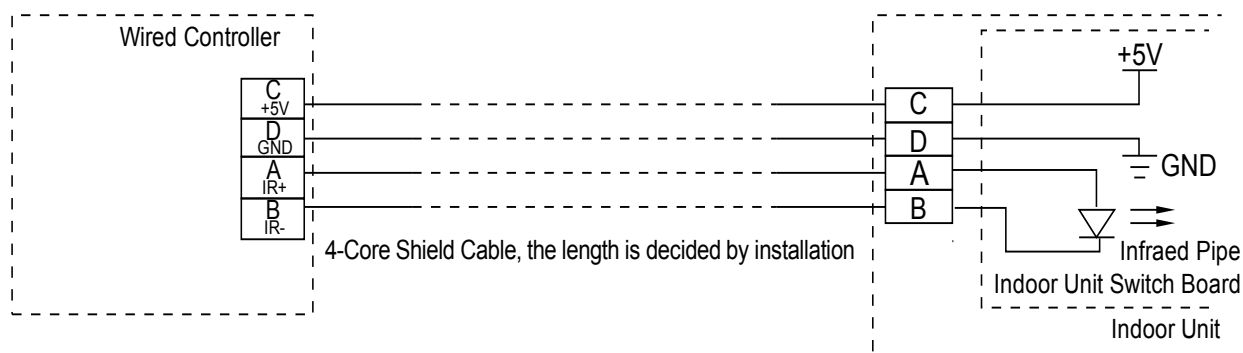
※ Prepare for the following at installation site.

| NO. | Name   | Qty.(embedded into wall) | Specification remarks (only for reference) | Remarks  |
|-----|--|--------------------------|--|--|
| 1   | 4-core Shield Cable                                  | 1                        | RVVP-0.5 mm <sup>2</sup> ×4                | 0.05 mm <sup>2</sup> ×5 cable no more than 12M |
| 2   | 86 electrician box                                   | 1                        | /  | /  |
| 3   | Wiring Tube (Insulating Sleeve and Tightening Screw) | 1                        | /  | /  |

※ Dimensions: 120\*120\*20mm

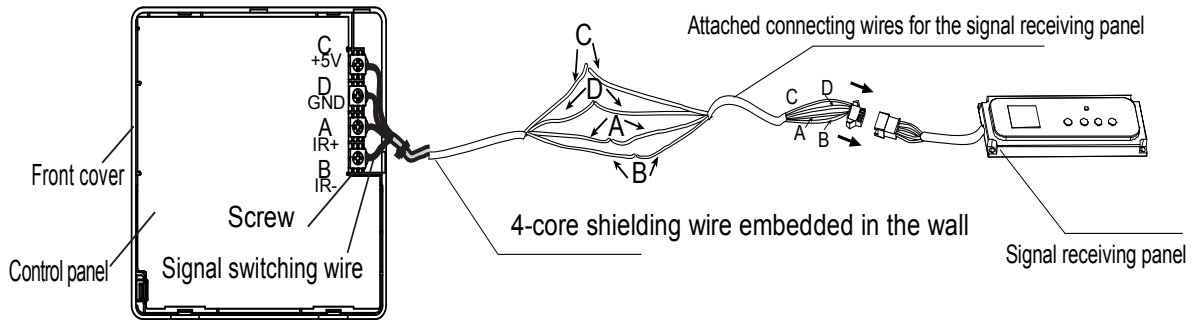


※ Wiring principle sketch:

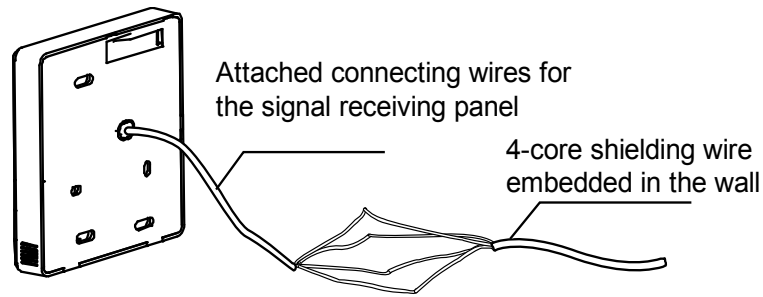


※ **Wiring figure:**

1) Connect two terminals of embedded 4-core shielding wire with the switching wires of wired remote controller and signal receiving board. Make sure the sequence of 4 terminals (A/B/C/D) should correspond to the wire sequence of signal switching wires (A/B/C/D).

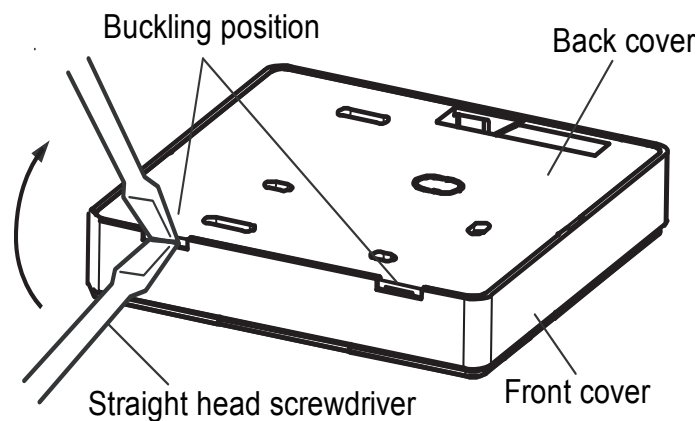


2) If embedded 4-core shielding wire cannot go through the wired controller, it can use signal switching for connection and make sure the wires are reliable and firm. The tightening torque range of the screw is 0.8~1.2N .m (8~12 kgf . cm).

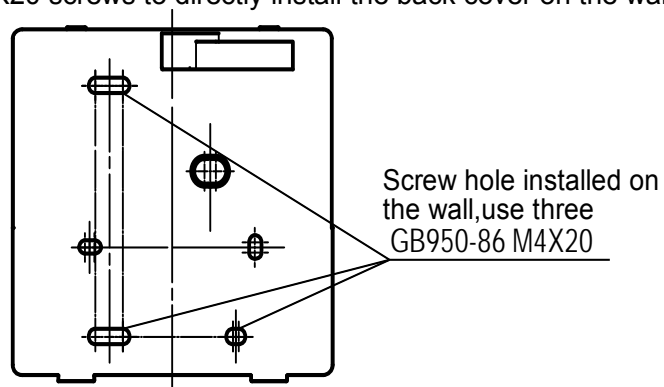


※ **Back cover installation**

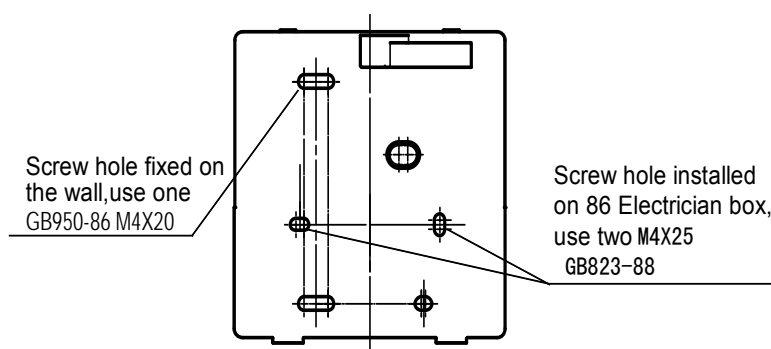
1) Use straight head screwdriver to insert into the buckling position in the bottom of a wired controller, and spin the screwdriver to take down the back cover. (Pay attention to spinning direction, if not you maybe damage the back cover.)



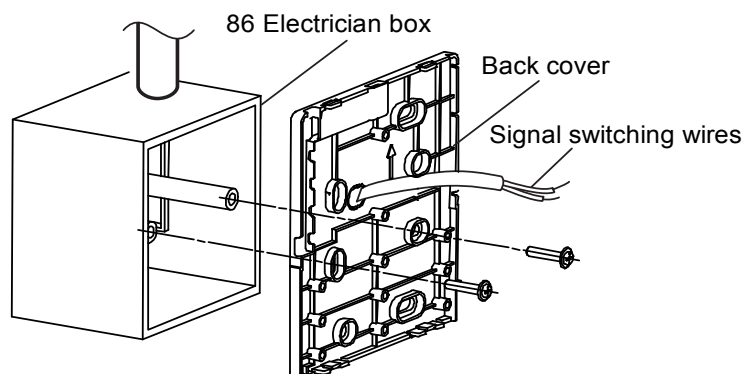
2) Use three GB950-86 M4X20 screws to directly install the back cover on the wall.



3) Use two M4X25 GB823-88 screws to install the back cover on the 86 electrician box, and use one GB950-86 M4X20 screw for fixing the wall.



4) Adjust the length of two plastic screw bars in the accessory to be the standard length from the electrical box screw bar to the wall. Make sure when install the screw bar to the electrical box screw bar, make it as flat as the wall.



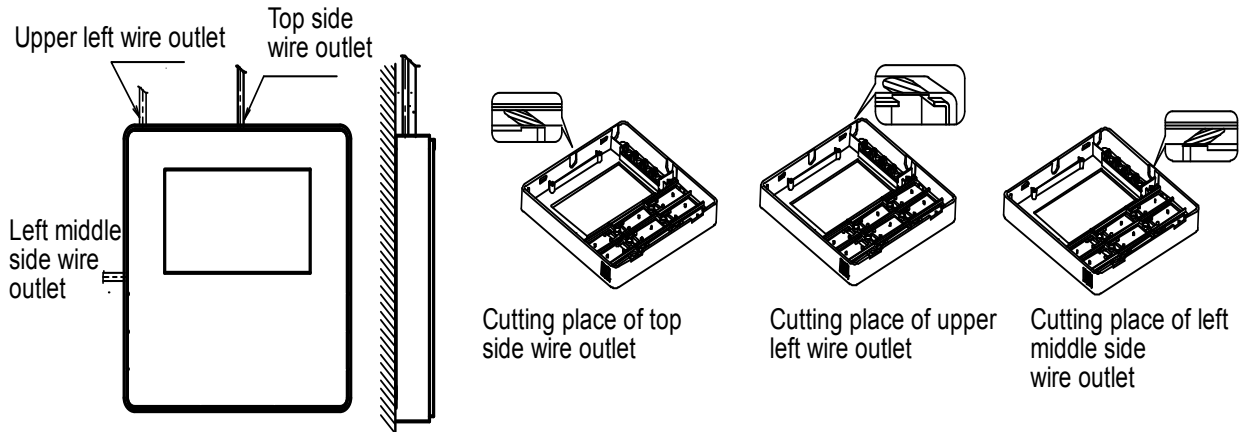
**Notes:** 1. Use cross head screws to fix the wired controller bottom cover in the electric control box through the screw bar. Make sure the wired controller bottom cover is on the same level after installation, and then install the wired controller back to the bottom cover.

2. Over fasten the screw will lead to deformation of the back cover.

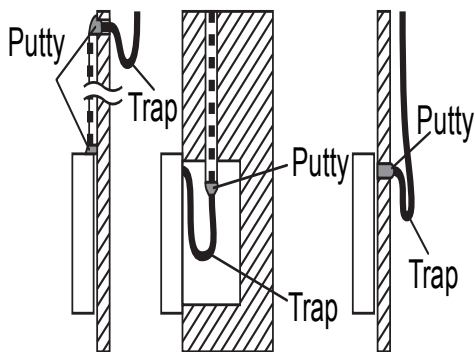
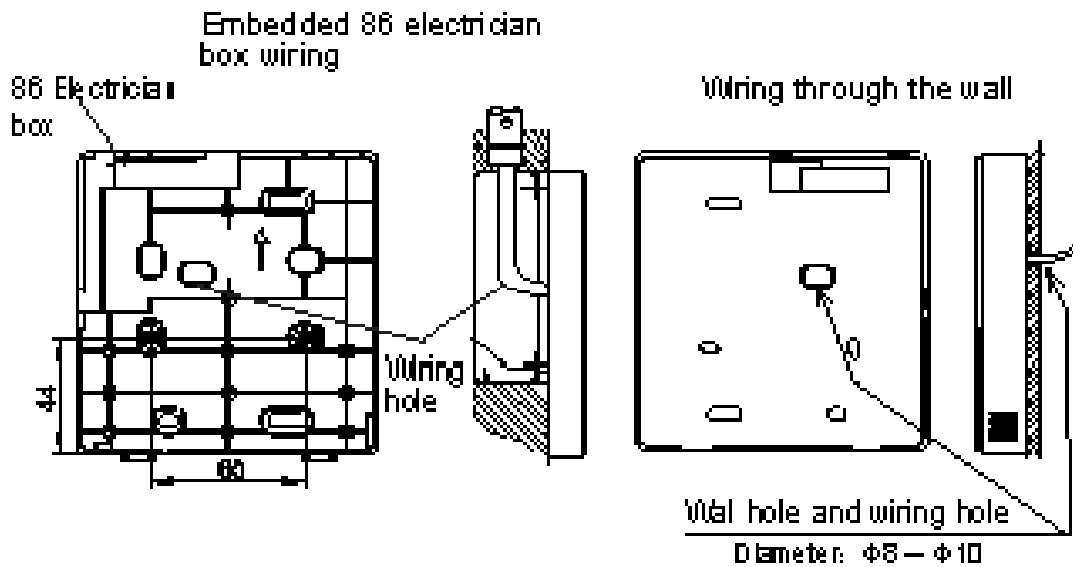


※ **Wiring**

1) Wiring, three outlet positions



2) Shielded wiring



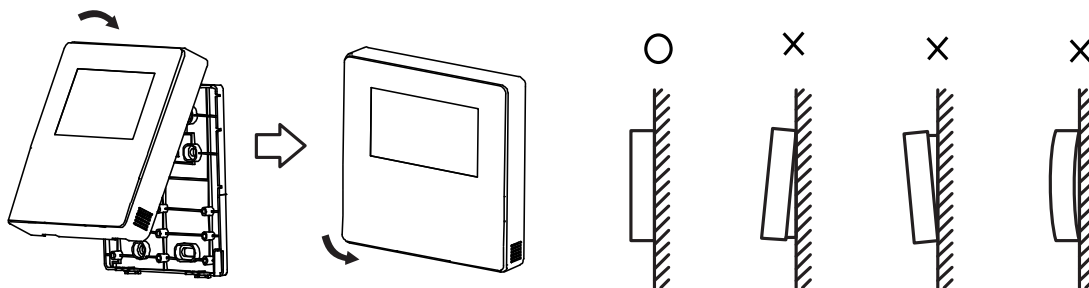
3) Avoid water enters into the wired controller, use trap and putty to seal the connectors of wires during wiring installation.

When under installation, reserve a certain length of the connecting wire for convenient to take down the wired controller while during maintenance.

※ **Front cover installation**

1) After adjusting the front cover and then buckle the front cover; avoid clamping the communication switching wire during installation.

2) Correct install the back cover and firmly buckle the front cover and back cover, if not you maybe make the front cover drop off.



※ **Wired controller initial parameters setting:**

1. Change the related functions of the controller through adjusting the initial parameters, details refer to table 1
2. The wired controller initial parameter includes two codes "XY", the first code "X" means function class, and the second code "Y" means the detailed configuration of this function.
3. Setting method:
  - 1) Simultaneously press "Mode" and "Fan" button of the wired controller for 5 seconds to enter the parameter setting state;
  - 2) The value of this first code "X" is "0"; press the temperature setting button UP and DOWN to adjust the second code value;
  - 3) After setting the second code value, press 26/OK button to switch the first code to the next value;
  - 4) When the first code value is "6", press 26/OK button again to exit the parameters setting.
4. The parameters setting function only under the situation which needs to adjust the default functions' setting states; otherwise there is no need to do the setting.

Table 1

| First code | Functions                                 | Second code                   |            |                      |           |             |
|------------|---|-------------------------------|------------|----------------------|-----------|-------------|
|            |   | 0                             | 1          | 2                    | 3         | 4           |
| 0          | Cool-only/ Cool-Heat selection            | Cool-Heat (Default)           | Cool-only  | /                    |           | /           |
| 1          | Indoor unit communication address setting | Yes (Default)                 | None       | /                    | /         | /           |
| 2          | Auto-restart                              | Yes (Default)                 | None       | /                    | /         | /           |
| 3          | Air filter cleaning reminding function    | Cancel the reminding function | 1250 hours | 2500 hours (Default) | 5000hours | 10000 hours |
| 5          | Remote receiving function                 | Yes (Default)                 | None       |                      |           |             |
| 6          | Centigrade/ Fahrenheit display            | Centigrade                    | Fahrenheit | /                    | /         | /           |

## 2.4 V4 plus R wired controller: KJR-120A/BK-E



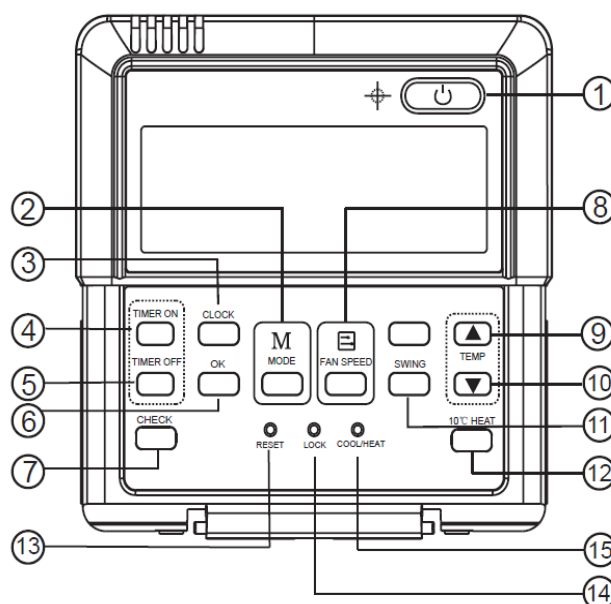
**KJR-120A/BK-E**

### 2.4.1 Functions summary:

The controller has functions as follows:

- 1) Can compatible with the V4 plus heat recycling 3-pipe system and V4 plus 2-pipe system.
- 2) Setting the mode through buttons;
- 3) Timer function;
- 4) Auto-restart function;
- 5) Query function;
- 6) Indoor unit error display function

### 2.4.2 Appearance



|   |           |  |    |                       |   |
|---|-----------|--|----|-----------------------|---|
| 1 | ON/OFF    | ON/OFF the air conditioner                                   | 9  | TEMP ▲                | Increase the setting temperature                |
| 2 | MODE      | Select operation mode<br>(AUTO/COOL/DRY/HEAT/FAN)            | 10 | TEMP ▼                | Decrease the setting temperature                |
| 3 | CLOCK     | Enable/disable the real time clock<br>setting mode           | 11 | SWING                 | Activate/deactivate swing control               |
| 4 | TIMER ON  | Enter timer on setting mode                                  | 12 | 10°CHEAT              | Activate/deactivate 10°C operation<br>mode      |
| 5 | TIMER OFF | Enter timer off setting mode                                 | 13 | RESET<br>(hidden)     | Reset the wired controller                      |
| 6 | OK        | Confirm and back to main display                             | 14 | LOCK<br>(hidden)      | Lock the button function of wired<br>controller |
| 7 | CHECK     | Check the temperature and<br>operation status of indoor unit | 15 | COOL/HEAT<br>(hidden) | Operation mode locking                          |
| 8 | FAN SPEED | Select fan speed   |    |                       |   |

### (1) ON/OFF button

When the unit is turned off, press the ON/OFF button, the unit will be turned on and the operation LED lights on. When the unit is turned on, press the ON/OFF button, the unit will be turned off and the operation LED lights off.

### (2) Mode button

✧ Press the button to select the operation mode, each press will change as following order:

AUTO→COOL→DRY→ HEAT→FAN→AUTO

✧ Cool-only mode will change as following order:

COOL→DRY→FAN→COOL

**Notes:** Heat-only mode can only set to HEAT mode.

◆ When mode setting is in progress, the screen light the mode “set” string and display the setting mode of the wired remote controller. After the mode setting is completed, “set” strings extinguish and the screen display the actual operation mode of the indoor unit.

◆ The indoor unit has 3 different actual operation modes: COOL/HEAT/FAN. The actual operation mode of the indoor unit may be different from the setting mode of the controller. For example: If the setting mode is AUTO, the actual operation mode of the indoor unit may be COOL or HEAT. If the setting mode is DRY, the actual operation mode of the indoor unit is COOLING.

### (3)Clock setting

First power on or reset the wired controller, the clock will display 12:30, pressing the CLOCK button can enter to the clock setting state. At this time, the minute position will be flashed, press ▲ or ▼ button can adjust the minute; press the CLOCK button again then the hour position will be flashed, and press ▲ or ▼ button can adjust the hour. The third time press the CLOCK button or press OK button can exit and finish the clock setting, or wait for 5s to exit the clock setting automatically.

### (4)Timer setting

◆ Press “TIMER ON” or “TIMER OFF” to enter the timer setting, then press ▲ or ▼ button can adjust the timer, when the timer on or off setting is less than 10 hours, each press ▲ or ▼ button will increase or

decrease 0.5 hour. When the timer on or off setting is more than 10 hours, each press ▲ or ▼ button will increase or decrease 1 hour, the maximum timer on or off setting is 24 hours. Press OK button or wait for 5s will exit the timer setting and back to normal display.

◆ When the timer on/off has been set, set the timer to 0.0 hour can cancel the timer.

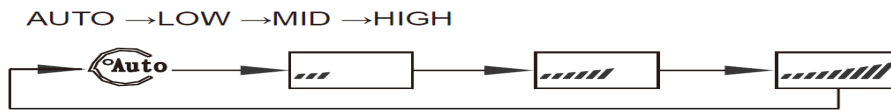
**Notes:** If the controller has been set timer on/ off, press the ON/OFF to turn on/ off the unit and the timer will be canceled simultaneously.

**(5) Check button**

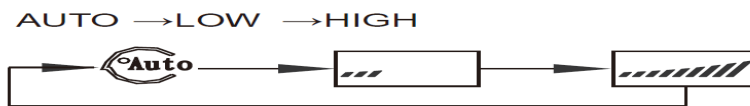
Press the CHECK button to display room temperature (TF) and evaporator temperature (t2 and t2b) of the unit. First press CHECK button, the screen display the room temperature (TF). Second press CHECK button, the room temperature display will switch to middle-evaporator temperature (T2), then at third press CHECK button the temperature display will switch to evaporator-outlet temperature(T2B). Press OK button or wait 5s will exit the query display and back to normal display.

**(6) Fan speed**

1) Press the FAN SPEED button to set the fan speed of indoor unit. The fan speed switch order as follow:



2) For no medium fan type, the wired remote controller fan speed switch order is:



3) Setting the fan speed to AUTO then the indoor unit will actually run at LOW speed.

**(7) Temperature setting**

Press the temperature adjusting buttons ▲ or ▼ to increase or decrease the setting temperature. Under AUTO/COOL/DRY/HEAT operating mode can set the temperature, the setting range: 17°C-30°C(62°F-88°F).

**(8) Swing function**

Press the swing button to activate the swing function when the fan of indoor unit is turned on. Press this button again can deactivate the swing function (This function is effective when it is used with the relative indoor unit).

**(9) 10°C Heat mode**

- ✧ For preventing a significant decline of the room temperature when nobody in the room and the air conditioner is turn off in cold weather, you can set the unit to operate as 10°C Heat mode for keeping the room warm.
- ✧ Press the 10°C Heat button can enter the 10°C Heat operation mode. The screen of the wired controller will display “10°C”. Press this button again or press ON/OFF button will exit 10°C Heat mode and turn off the unit.
- ✧ Under 10°C Heat operating mode, when the room temperature is lower than 10°C then the unit will start to heat, and the wired controller operation LED will be lighted up, at the same time the “run” LED of the display panel light up and display “17” if the digital LED is available on the panel. When the room temperature is higher than 15°C then it will stop heating and the operation LED lights off.
- ✧ Press the 10°C Heat button again or ON/OFF button can exit 10°C Heat mode.

**(10) Locking (Hidden)**

Use a small stick with a diameter of 1mm to press the LOCK button to lock the current setting, press the button again to unlock

**(11) Cool-only/ Heat-only/ Cool-heat switching (Hidden)**

The factory default of the controller is cool-heat mode. Use a small stick with a diameter of 1mm to press the cool/heat button, each press will change the mode locking as the following order:

Cool-heat mode → Cool-only mode → Heat only mode → Cool-heat mode


**Notes:** 1) Under cool-only mode, the wired remote controller can only be switched in 3 different operation modes: COOL → DRY → FAN.

2) Under heat-only mode, the controller can only be set to HEAT mode.

**(12) Reset (hidden)**

Use a small stick with a diameter of 1mm to press the reset button to reset the chip of the controller, and all the setting status of the controller will be saved.

**(13) Auto operation mode (3-pipe system)**

- ✧ If the controller operates under 3-pipe system auto operation mode, the screen will display “” icon.
- ✧ 3-pipe system auto operation mode can automatically switch to COOL mode or HEAT mode depending on the temperature difference between setting temperature( $T_s$ ) and indoor temperature( $T_f$ ), and the fan speed is adjustable.
- ✧ The wired remote controller will set the unit to operate on heating mode when  $T_s - T_f$  is greater than  $\Delta T$ , and changeover to cooling mode when  $T_s - T_f$  is less than  $\Delta T$ . The minimum operating mode switching interval is 15 minutes.
- ✧ The default  $\Delta T$  is 3°C, the value can be changed from 1~4°C. Press ▲ and ▼ buttons simultaneously for 5 seconds to enter the  $\Delta T$  setting, then press ▲ or ▼ button to adjust the value of  $\Delta T$ .
- ※ The auto operation mode of the controller cannot be changed by other control terminals, such as wireless remote controller, central remote controller, etc.

**Notes:** 1) The wired remote controller can be used in a 2-pipe system; in that case the controller should be set to 2-pipe system mode. Please refer to the INSTALLATION MANUAL for details.

2) For a 2-pipe system, auto operation mode will set the unit to operate on COOL mode and the fan speed is set to auto and is not adjustable.

**(14) Air filter cleaning remind function**

The controller records the total running time of the indoor unit, when the accumulated running time reaches the pre-set value, flashed “F1” flag will appear to remind the user the air filter of indoor unit is needed to be cleaned, the “F1” flag will auto disappear after 8s, and it will appear and flash for 8s again every time turn on the unit.

Press CHECK and OK buttons simultaneously can cancel the “F1” reminding flag, and the wired remote controller will re-accumulate the total running time of the indoor unit. The air filter cleaning pre-set time can be set to 5 different time periods (defaults 2500 hours). Pressing the CHECK and CLOCK button simultaneously for 5 seconds will enter setup. Five time periods corresponding to the five codes (0,1,2,3,4), press the ▲ and ▼ keys to adjust between the different codes.

| 0                          | 1          | 2          | 3          | 4           |
|----------------------------|------------|------------|------------|-------------|
| Disable the alarm function | 1250 Hours | 2500 Hours | 5000 Hours | 10000 Hours |

### 2.4.3 Codes description

The wired controller KJR-120A can display the fault codes when the units malfunction or protection, the code as follow:

| Codes | Description  |
|-------|--|
| E0    | Modes confliction  |
| E1    | Communication malfunction between indoor/outdoor units             |
| E2    | T1 sensor malfunction  |
| E3    | T2 sensor malfunction  |
| E4    | T2B sensor malfunction   |
| Ed    | Outdoor unit malfunction   |
| EF    | Water level switch checking malfunction                            |
| F1    | Air filter cleaning remind function                                |
| F2    | Wired controller EEPROM malfunction                                |
| F3    | Communication malfunction between wired controller and indoor unit |
| F4    | Wired controller temperature sensor malfunction                    |

### 2.4.4 Installation

※ Preparation before Installation:

Make sure the following parts has been prepared.

| NO. | Name                        | QTY. | Remarks  |
|-----|-----------------------------|------|--|
| 1   | Wired Controller            | 1    | With Cover                                       |
| 2   | Wood Mounting Screw         | 3    | M4×20(For mounting on the wall)                  |
| 3   | Mounting Screw              | 3    | M4×25(For Mounting on the electrical switch box) |
| 4   | Installation Manual         | 1    | /  |
| 5   | Owner's Manual              | 1    | /  |
| 6   | 5-way terminal              | 1    | RS9005E  |
| 7   | Terminal Installation Screw | 2    | ST3.9×12-F-H                                     |

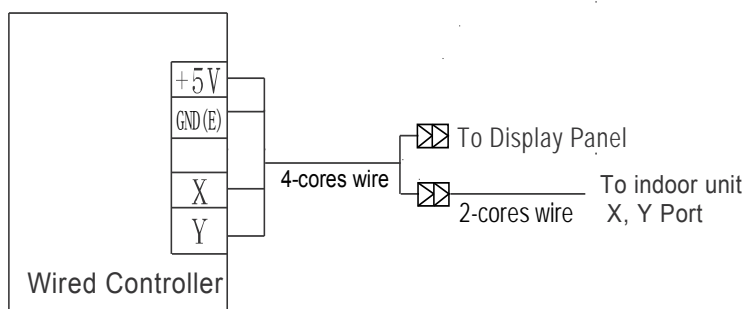
※ Prepare for the following at installation site.

| NO. | Name                | QTY. | Remarks   |
|-----|---------------------|------|---|
| 1   | 4-core Shield Cable | 1    | The factory default length is 6m; The longest length should be less than 15m. |
| 2   | 2-cores wire        | 1    | 1.5m length   |

|   |   |   |   |
|---|---|---|---|
| 3 | Switch Box  | 1 | / |
| 4 | Wiring Tube(Insulating Sleeve and Tightening Screw) | 1 | / |

**Notes:**

1. This manual contains information about the procedure of installing the controller.
2. The circuit of the wired controller is a low voltage circuit, never connect it with a 220V/380V circuit or put it into a same wiring Tube with the circuit, and the interval must be more than 300~500mm.
3. The shield cable must be connected stable to the ground, or transmission may fail.
4. Do not attempt to extend the shield cable by cutting, if it is necessary, use Terminal Connection Block to connect.
5. After finished connection, do not use Megger to do installation check to the signal wire.

**1) Wiring method**

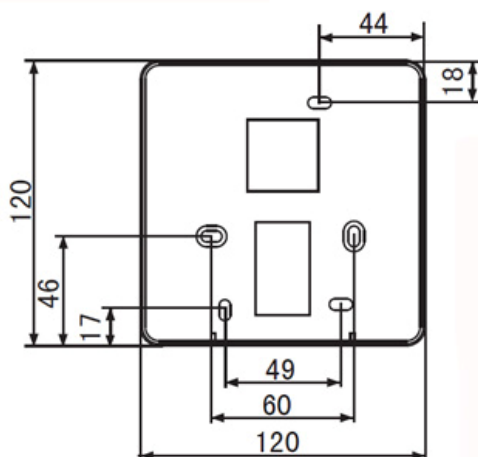
**Notes:** Use the 4-cores wire and 2-cores wire accessories to connect the same wired control and indoor unit.

**2) Wired controller mode setting:**

SW1 definition:

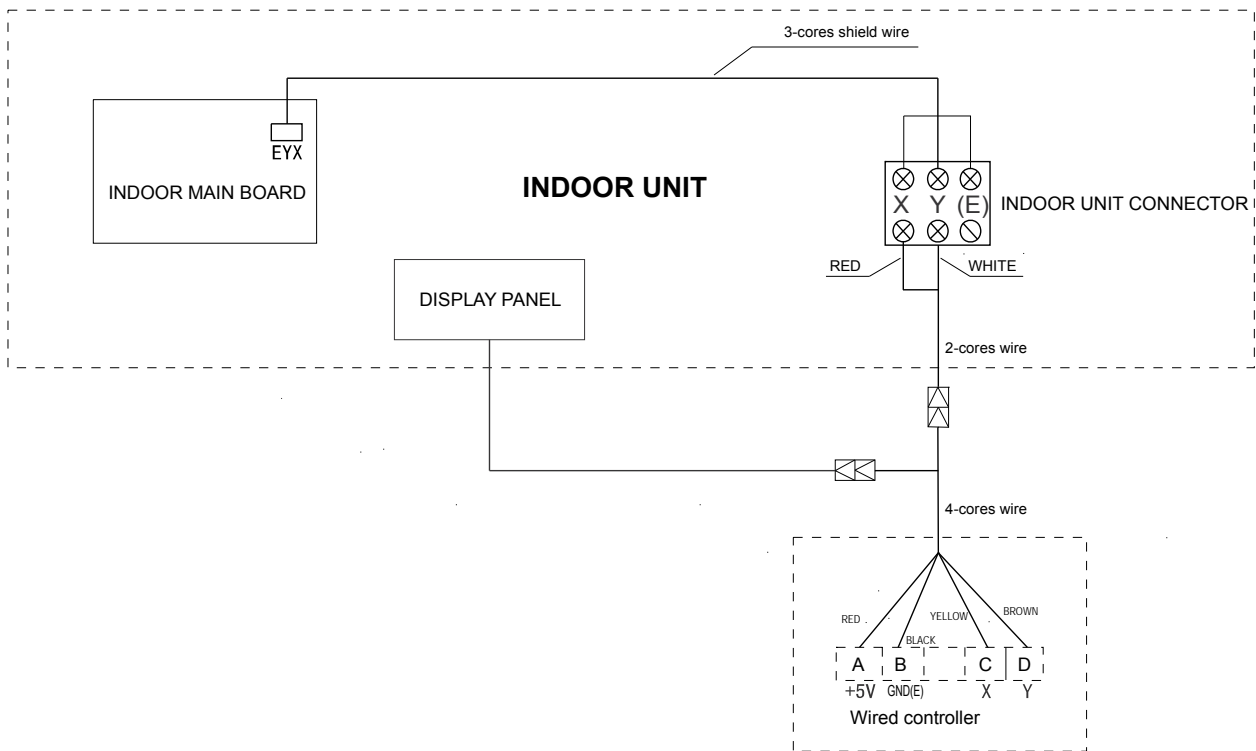
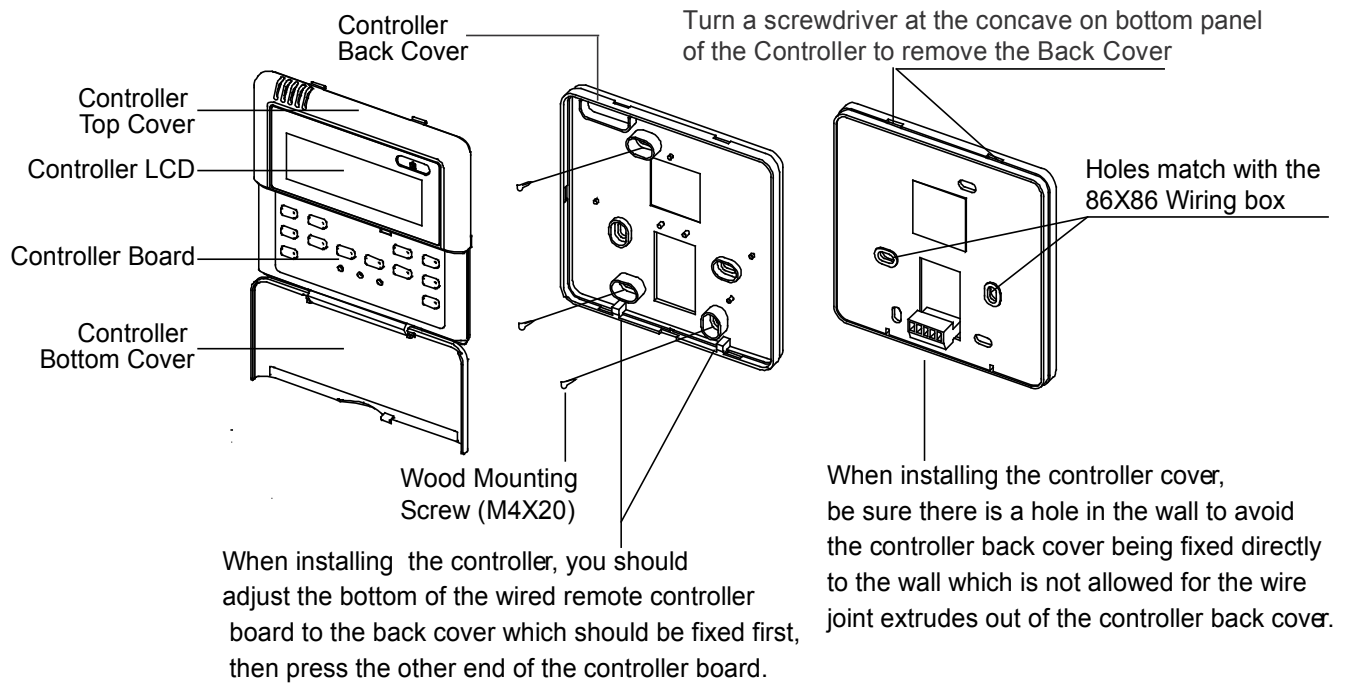
|  |                               |
|--|-------------------------------|
|  | <b>2-pipe system</b>          |
|  | <b>3-pipe system(default)</b> |

The controller can work on 2-pipe system mode or heat recycling 3-pipe system mode. AUTO mode in a 2-pipe system is cooling operation; a 3-pipe system is real auto operation. Set the switch SW1 on the main board to select 2-pipe system mode or 3-pipe system mode. The factory default setting is 3-pipe system mode.

**3) Dimension: 120\*120\*15mm**



### 4) Wiring principle



**Notes:**

- 1) This wired controller is compatible with the indoor unit of V4 plus heat recycling 3-pipe system and V4+ 2-pipe system.
- 2) Please do not connect the wired controller and a CCM. to the same X, Y ,E port, otherwise it will lead to conflict.

## 2.5 KJR-90A-E

| Model      | Description  |
|------------|--|
| KJR-90A-E  | General control function.  |
| KJR-90A1-E | To avoid mode confliction running mode is fixed to cool mode, other functions are the same as KJR-90A-E. |

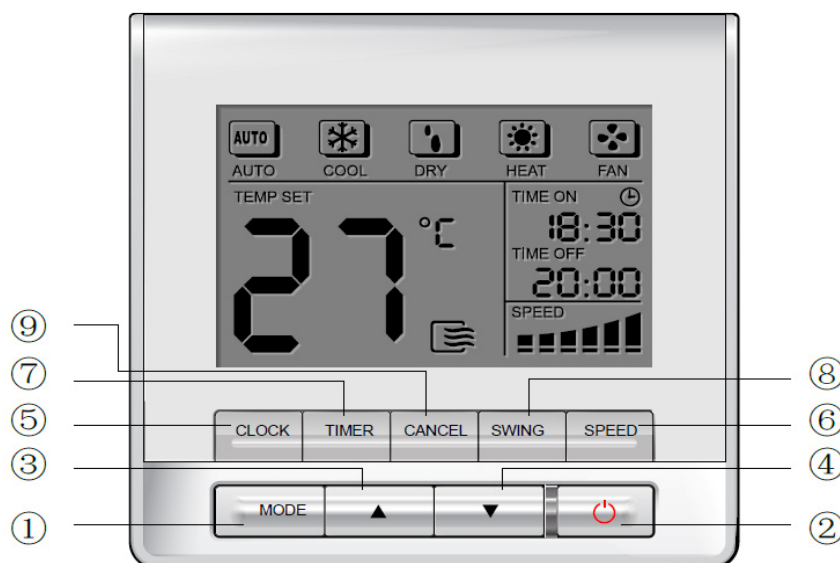
### Wired controller specifications

| Model                     | KJR-90A-E/ KJR-90A1-E |
|---------------------------|-----------------------|
| Power Supply Voltage      | 5.0V DC               |
| Ambient Temperature Range | -5°C~43°C             |
| Ambient Humidity Range    | RH40%~RH90%           |

### Performance Features

1. Operating mode: Cool, heat, dry, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).

### 2.5.1 Appearance



#### (1) Mode Selection Button

The mode is selected in a sequence as the following figure indicates



(HEAT is invalid for COOL ONLY wired controller.)

#### (2) ON/OFF Button

Press the button at the condition of OFF, the OPERATION lamp lights, and the wired controller enters into ON operation, and sends the setting operation information (e.g. mode, temperature, fan speed, timer etc.) to the units. Press the button at the condition of ON, the OPERATION lamp extinguishes, simultaneously enters into

OFF. If having set TIMER ON or TIMER OFF, the wired controller will cancel these settings before entering into OFF, close the relevant indicator, and then send the OFF information.

### (3) Adjust Button ▲

Set indoor temperature up. If press and hold on, it will increase at 1 degree per 0.5 second.

### (4) Adjust Button ▼:

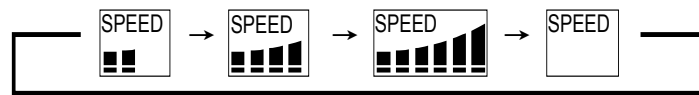
Set indoor temperature down. If press and hold on, it will decrease at 1 degree per 0.5 second.

### (5) CLOCK Button:

Press this key lasting for 4 seconds, the clock will flashing at the frequency of 0.5 Sec. by using and to adjust the time, 1 minute to be increased/decreased for every once press the ▲/▼. Long pressing the ▲/▼, it will increase/decrease 4 times/sec and 10 minutes/time. Release the key when finish the clock setting, the time will stop flashing automatically.

### (6) Fan Speed Selection Button

Select the fan speed from "AUTO", "LOW", "MED", to "HIGH". Each time Press the button, the fan speed will change in turn as follow. (This button is unavailable in AUTO or DRY mode)



### (7) Timer Button

Press this button, the Timing will turn on. Set Timing ON time by ▲ and ▼. The clock will increase and decrease once every 10 minutes; long pressing the keys it will increase/decrease once 10 minutes/0.2 seconds.

### (8) Swing Button

Press this button for the first time in running time, start the swing function. Press the button for the second time, cancel the swing function. (Match to some model with swing function)

### (9) Cancel Button

Press this button to cancel the TIMER settings.

## 2.5.2 General Function

✧ Low cost and low price, exquisite appearance and LCD display.

✧ To realize the control common indoor units

The wired controller is designed to suit for indoor units that need wired controller in standard, such as low pressure duct series. And it also suits for other kind of indoor units.

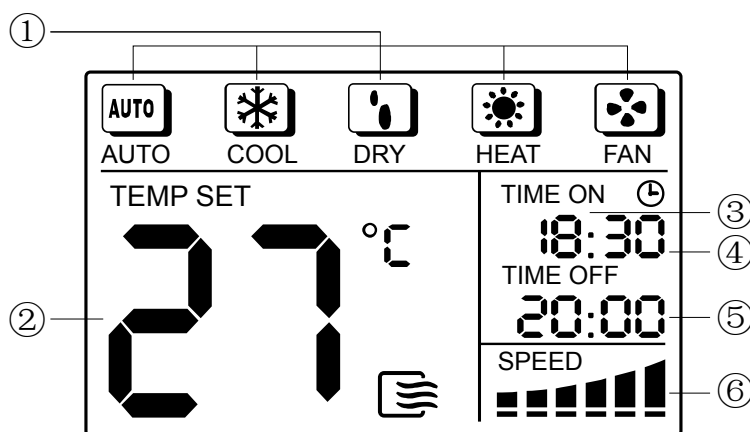
✧ Easy Installation

The KJR-90A-E is designed at the base of KJR-10B and it suit for electric cabinet, so it can be installed in the electric cabinet.

✧ More functions to choose

The KJR-90A-E has the same functions with KJR-10B. And the KJR-90AI-E can not select running mode. There are nine function buttons.

### 2.5.3 LCD display



(1) Mode display; (2) Temperature display; (3) Time on display; (4) Time display; (5) Time off display; (6) Fan speed display

### 2.5.4 Wired controller installation

#### ※ Preparation before Installation:

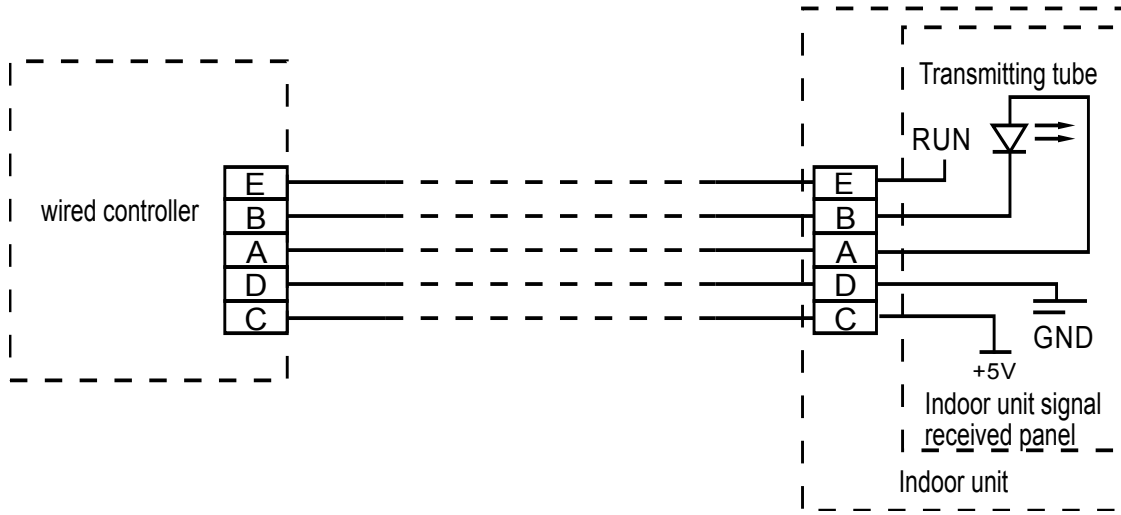
Make sure the following parts have been prepared.

| NO. | Name   | QTY. | Remarks  |
|-----|--|------|--|
| 1   | Wired Controller                                       | 1    | /  |
| 2   | Cruciform slot screw M4×25                             | 2    | This accessory is used when install the wired controller inside the electric cabinet |
| 3   | Plastic bolt   | 2    |  |
| 4   | Installation and owner's manual                        | 1    | /  |
| 5   | The connective wires of display panel (on some models) | 1    | For connect between the display panel wire and shield 5-core cable                   |

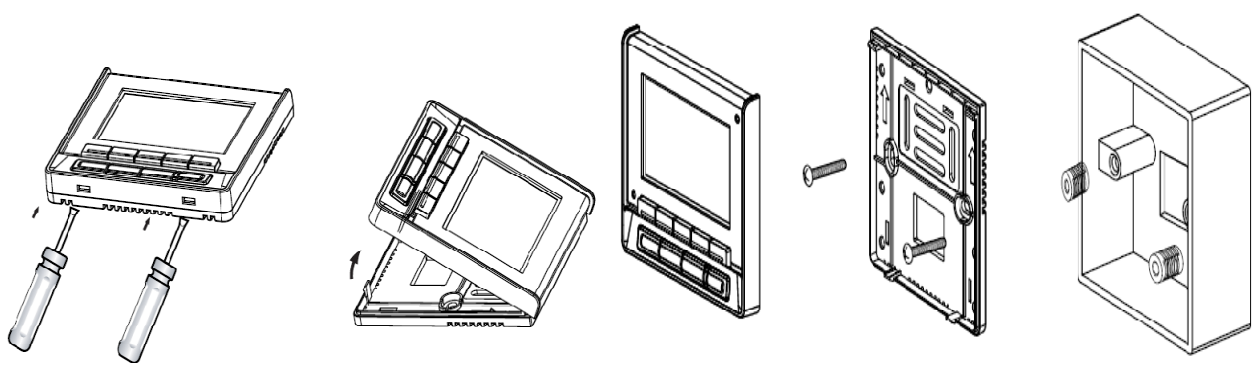
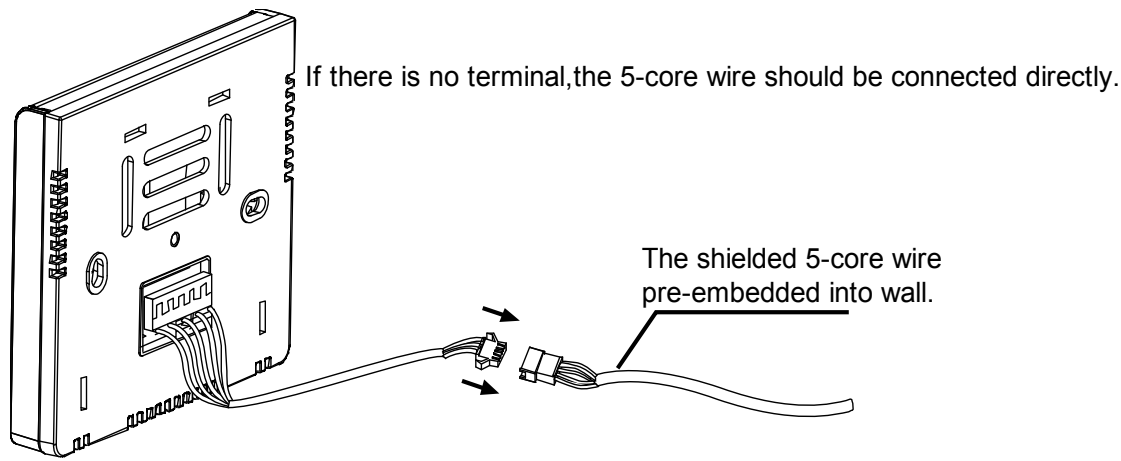
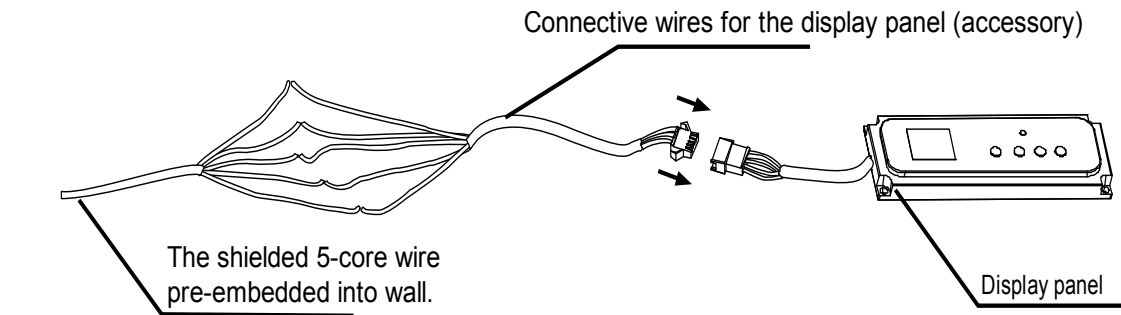
#### ※ Prepare for the following at installation site.

| NO. | Name                                   | QTY. | Remarks   |
|-----|--|------|---|
| 1   | Electric cabinet                       | 1    | Universal electric cabinet's specification<br>Pre-embed it into the wall. |
| 2   | Shielded 5-cores cable                 | 1    | Pre-embed RVVP-0.5 mm <sup>2</sup> ×5 into the wall                       |
| 3   | Wire configured tube(insulated sheath) | 1    | Pre-embed into the wall, the longest length should not more than 15M.     |
| 4   | Phillips screwdriver                   | 1    | For install cruciform slot screw  |
| 5   | Slotted head screwdriver               | 1    | For unscrew the bottom cover of the wired controller                      |

※ Simplified schematic of wired controller

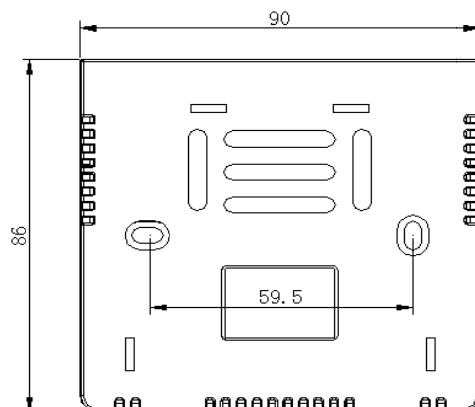
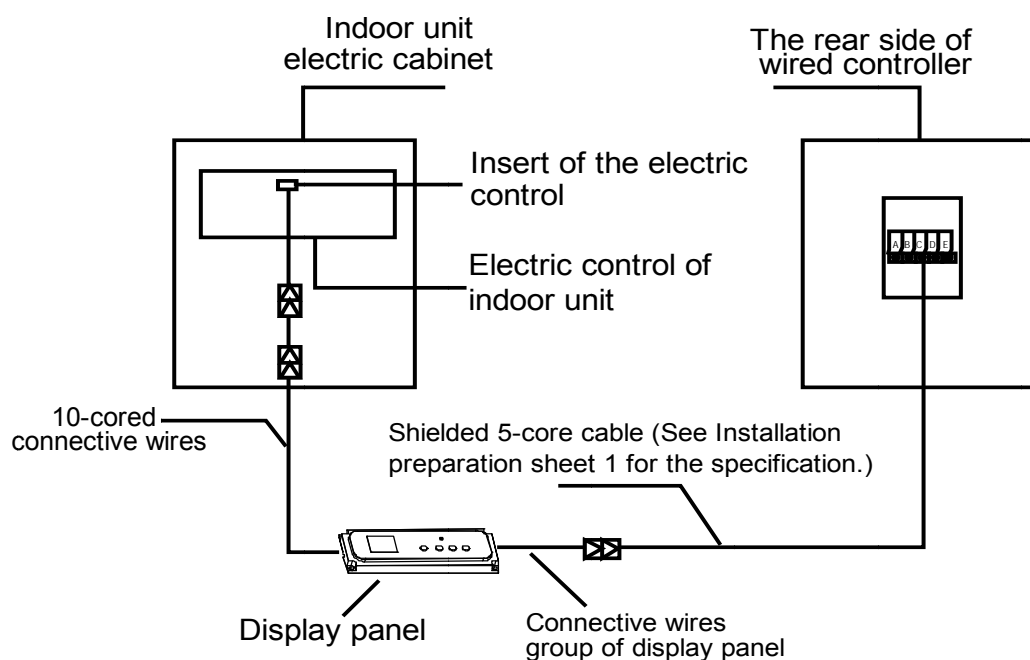


※ Installation diagram



**Notes:**

- 1) Over tighten the screw would cause the rear covers deformed and LCD damage.
- 2) When installation, please maintain the screws and wired controller at the same height level without deformed.
- 3) When installation, please reserve a certain length of wired controller connectivity cable for future maintenance to take off the wired controller.

※ **Dimension: 90\*86\*13mm**※ **Wiring diagram for wiring wired controller with air conditioner**

## 2.6 Mode-button hidden wired controller: KJR-86C-E



**KJR-86C-E**

Wired controller specifications

|                           |             |
|---------------------------|-------------|
| Model                     | KJR-86C-E   |
| Power Supply Voltage      | 5.0V DC     |
| Ambient Temperature Range | -5°C~43°C   |
| Ambient Humidity Range    | RH40%~RH90% |

### 2.6.1 Appearance

KJR-86C is a Mode-button Hidden Wired Controller. Designed with succinct appearance can be apply for hotel, hospital and school etc.



#### (1) ON/OFF button

Press the ON/OFF button can turn on or turn off air conditioner.

#### (2) Selecting mode

When the unit is turned on, press the temperature adjusting buttons "▲" and "▼" at the same time for 3 seconds to select the operation mode, each press will switch the operation mode as the following order: COOL→ HEAT→COOL

### (3) Fan speed button

1) When the unit is turned on, press the FAN SPEED key to set the fan speed of the indoor unit. The fan speed switching order is:

AUTO→LOW →MID →HIGH→ AUTO

2) Setting the fan speed to AUTO when the indoor unit will actually run at LOW speed.

### (4) Setting temperature

When the unit is turned on, press the temperature adjusting buttons "▲"/"▼" to increase or decrease the setting temperature, the setting range is 17°C-30°C.

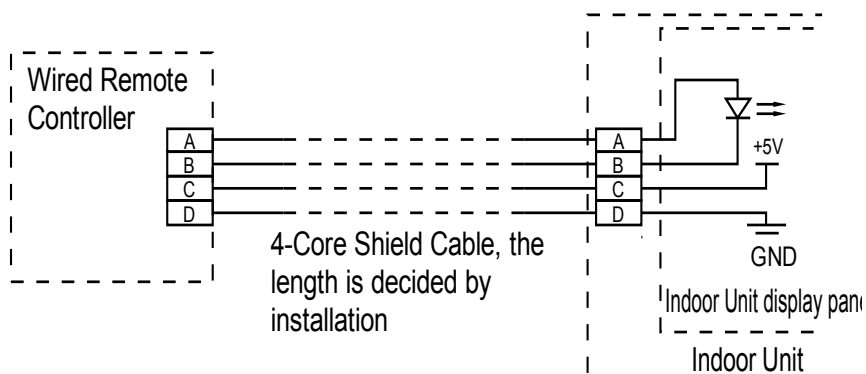
### (5) 26°C setting button

When the unit is turned on, you can press the 26°C shortcut key to quickly set the operation temperature to 26°C.

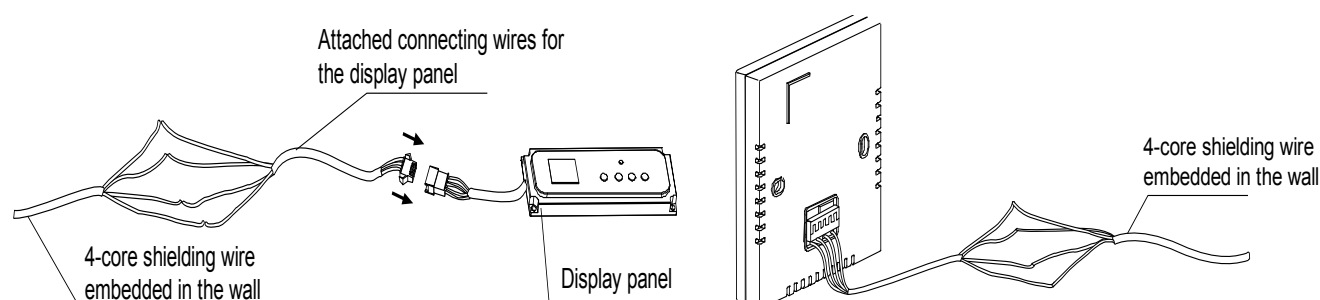
## 2.6.2 Installation##

### 2.6.2.1 Installation methods

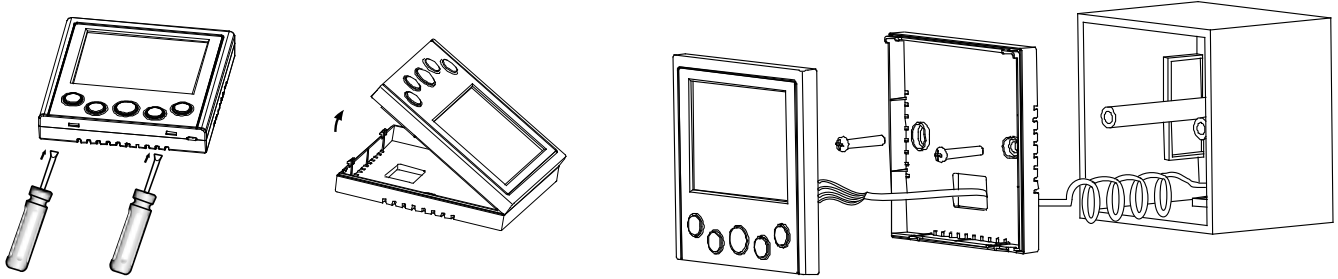
※ Principle diagram of wired controller



※ Installation instruction figure





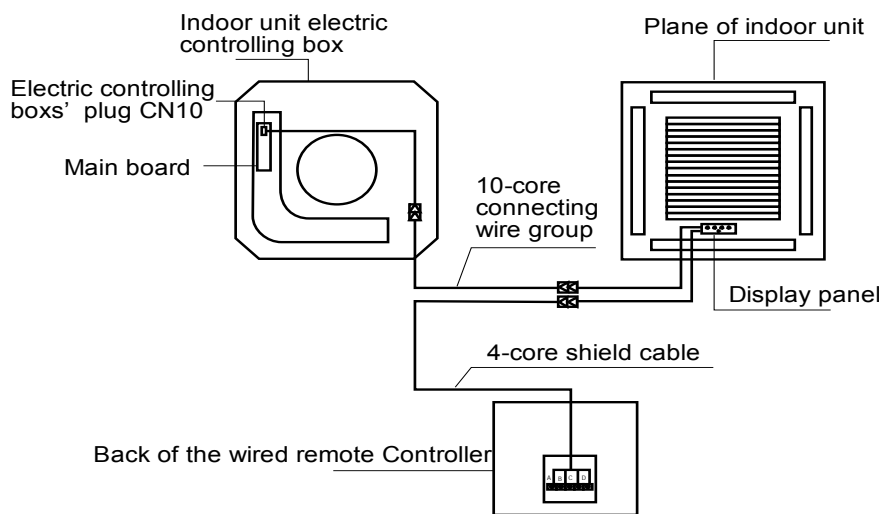


**Notes:**

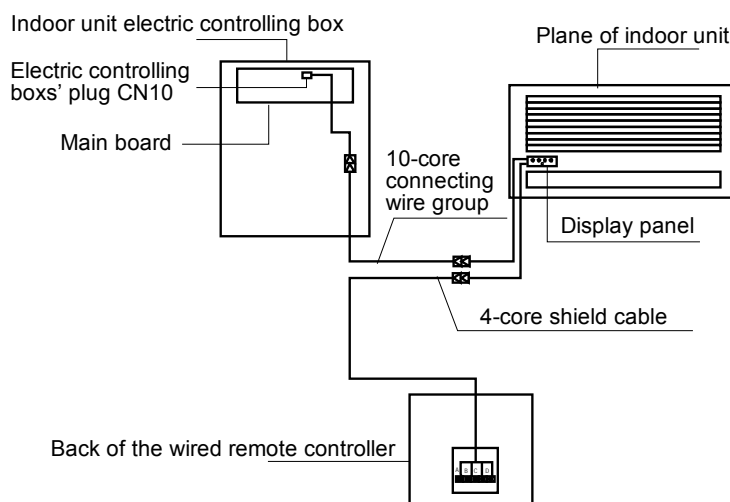
- 1) Over tighten the screw would cause the rear covers deformed and LCD damage.
- 2) When installation, please maintain the screws and wired controller at the same height level without deformed.
- 3) When installation, please reserve a certain length of wired controller connectivity cable for future maintenance to take off the wired controller.

**2.6.2.2 Wiring figure**

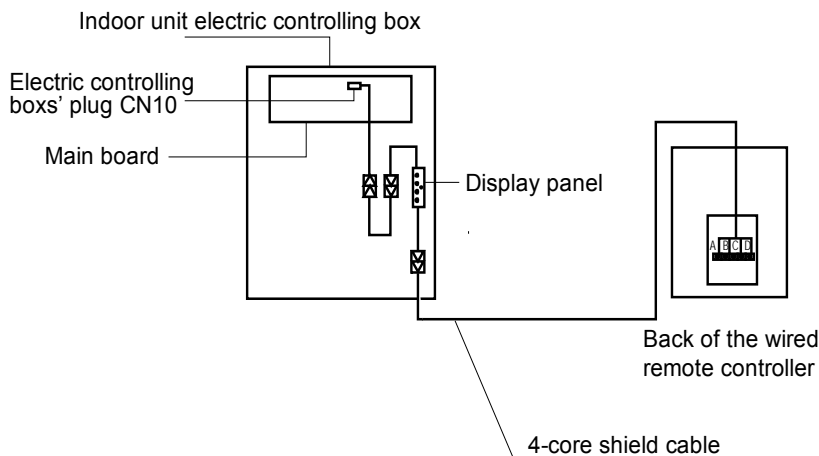
1) Wiring figure of the wired controller connect with the four-way cassette type indoor unit.



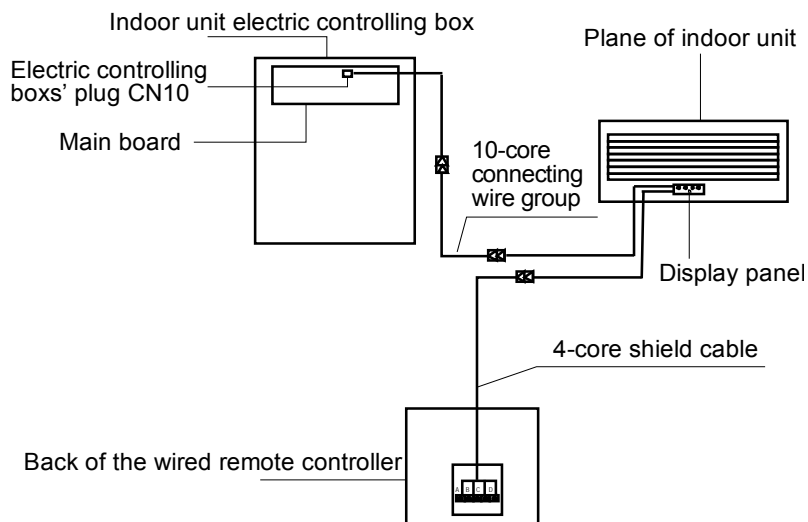
2) Wiring figure of the wired controller connect with the courtyard-style duct type indoor unit.



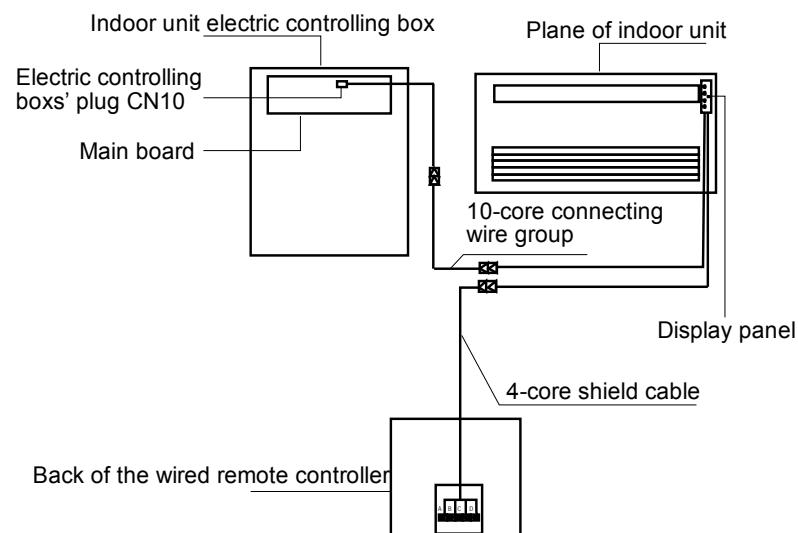
3) Wiring figure of the wired controller connect with the high-static pressure duct type indoor unit.



4) Wiring figure of the wired controller connect with the wall hanging type indoor unit.



5) Wiring figure of the wired controller connect with the stand-hanging type indoor unit.



## Preparation before Installation:

Make sure the following parts have been prepared.

| NO. | Name  | QTY. | REMARK  |
|-----|---|------|---|
| 1   | Wired controller                              | 1    | —   |
| 2   | Installation & owner's manual                 | 2    | —   |
| 3   | M4 × 25 Cross head screwdriver                | 2    | For installing the wired controller on the electrical box.                |
| 4   | Installation and owner's manual               | 1    | For installing the wired controller on the electrical box.                |
| 5   | Connective wires to the signal receive panel. | 1    | For connecting the signal receiving panel with the 4-core shielding wire. |

## Prepare for the following at installation site.

| NO. | NAME                           | QTY. | REMARK  |
|-----|--------------------------------|------|---|
| 1   | Electric cabinet               | 1    | General electrical box size, embedded in the wall in advance.       |
| 2   | 4-core shielding wire          | 1    | PVVR-0.5mm <sup>2</sup> ×4, embedded in the wall in advance.        |
| 3   | Wiring tube(insulation casing) | 1    | Pre-embedded in to the wall and the length should be less than 15m. |
| 4   | Cross head screwdriver         | 1    | For installing the cross head screw.                                |
| 5   | Small cross head screwdriver   | 1    | For taking down the bottom cover of wired controller.               |

### 3. Centralized controller



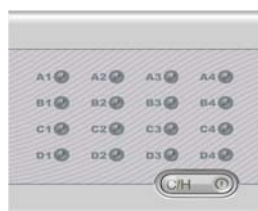
**MD-CCM03 (A)**



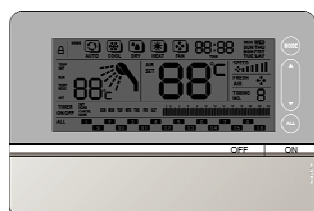
**MD-CCM09 (A)**



**CCM30/BKE-A**



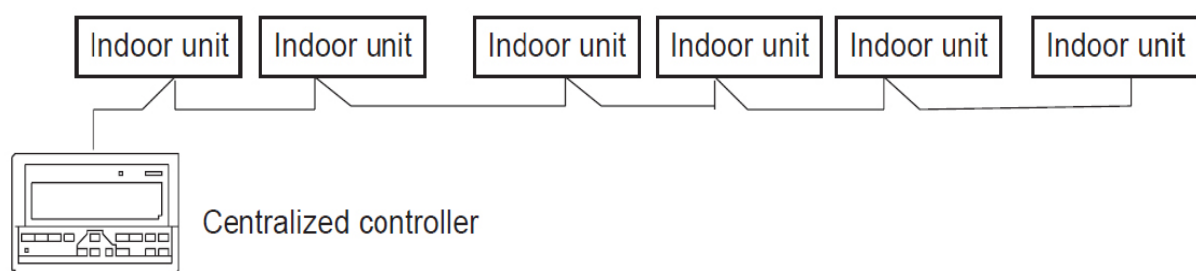
**KJR-90B/M-E**



**KJRF-180A/MBT-E (A)**

#### 3.1 MD-CCM03 (A)

MD-CCM03 is a multifunctional device which is able to control up to 64 indoor units. And the connection length can be up to 1200m. Both of the following wiring modes centralized monitor and indoor units are applicable.



#### 3.1.1 General function description

##### 1) Power on or reset

When the centralized controller is powered on or reset, all display segments of the LCD are luminous for 2 seconds and then goes off. 1 second later, the system enters the normal display status. The centralized controller is in the main page display status and displays the first page, and searches the in-service air conditioners in the network. Once the search is finished, the centralized controller enters the mode setting page, and sets the first in-service air conditioner by default.

##### 2) Network area address of centralized controller

The local computer or gateway can be up to connect with 16 centralized controllers for communication. Each centralized controller serves as an area of the air conditioner network. The centralized controllers are differentiated by bit selection address. The configurable range is 0~15.

##### 3) State indications

If any local keypad operation is setting the operation status of the air conditioner, the indicator is on when the signals are sent. Upon completion of the setting process, the indicator goes off. If an in-service air conditioner in the network is faulty, or the centralized controller network itself is faulty, the indicator will blink at 2Hz.

If one or more in-service air conditioners in the network are running, including under setting of timing start/shutdown, the indicator will be luminous. Otherwise, the indicator is off.

#### **4) Locking of centralized controller**

After receiving the centralized controller locking command sent from the computer, the centralized controller disables the startup/shutdown and setting of the air conditioner, and sends commands to lock remote controllers of all air conditioners in the network of the centralized controller. After receiving the unlocking command, the centralized controller enables the startup/shutdown operation, and sends commands to unlock the remote controller of all air conditioners.

The locking status of the remote controller can be locked or unlocked by the computer or centralized controller separately. The locking status of the centralized controller is memorized after power failure of the centralized controller, and will not vanish after the power supply is restored, unless the command of unlocking is received.

#### **5) Mode locking function**

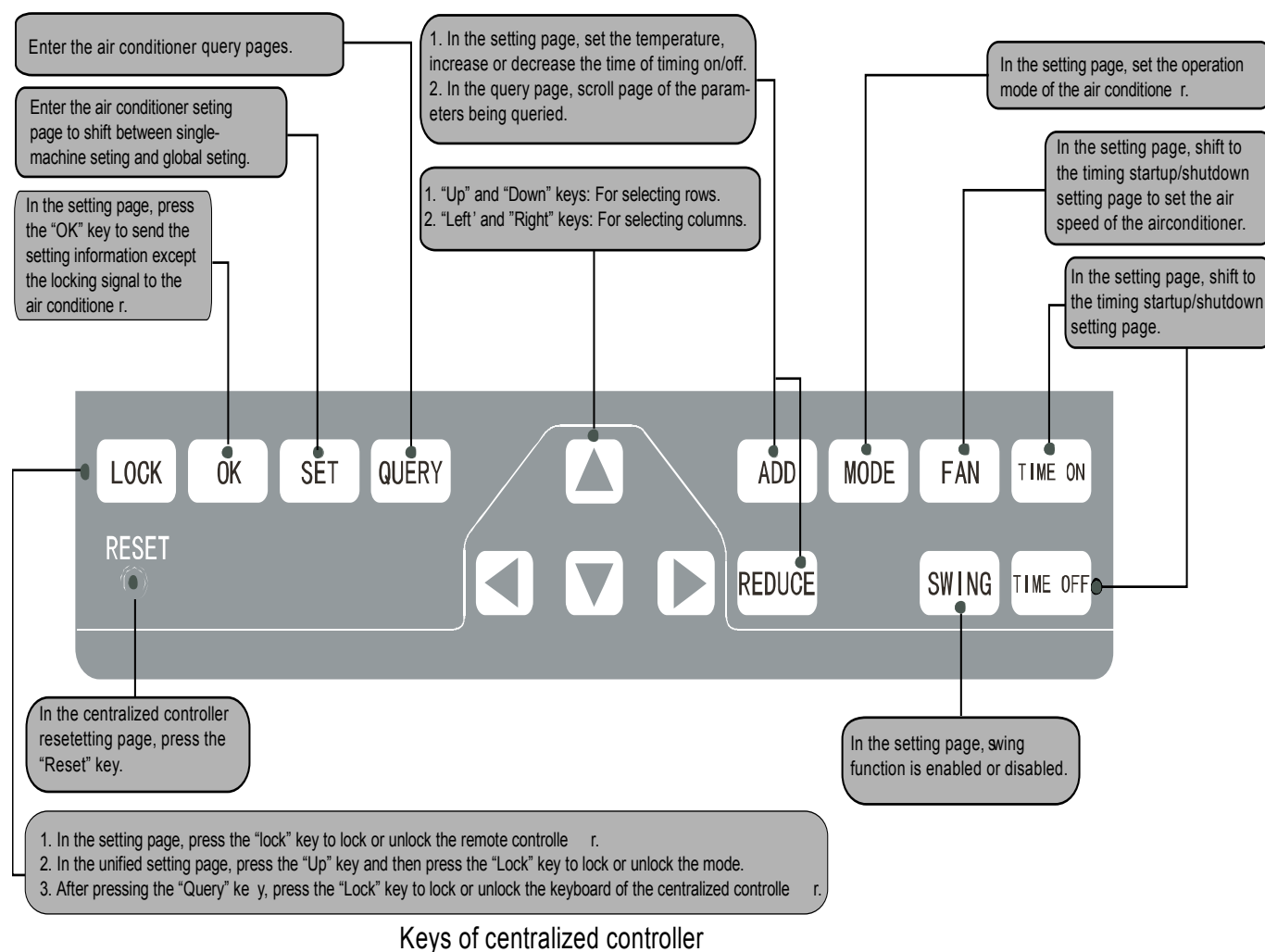
After the mode locking command is received, the command is forwarded to the air conditioner, and the centralized controller displays the mode locking flag. After the command of unlocking is received, the non-conflict mode can be selected freely. The centralized controller can also lock modes of all indoor units.

#### **6) Emergent shutdown and compulsory startup**

When the emergent shutdown switch of the centralized controller is shorted, all air conditioners in the network of the centralized controller will shut down compulsorily. The centralized controller and computer and all functional modules are disabled from startup and shutdown until the foregoing switch is open. When the compulsory startup switch of the centralized controller is shorted, all air conditioners in the network of the centralized controller will start up compulsorily. In default conditions, they will run in the cooling mode. The startup and shut down operations of the centralized controller and the computer and all functional modules will be disabled (only the command of startup is sent to the air conditioner, without affecting operation of the remote controller after startup) until the foregoing switch is opened.

If the foregoing two switches are shorted in the same time, the emergent shutdown switch shall have preference.

### 3.1.2 Buttons and Functions



#### 1) Query button

Any time when you press the button, the selected operation mode is to query the operation status of the air conditioner. By default, the first in-service air conditioner will be queried. Through the Increase and Decrease keys, you can change the parameter page to be queried; through the Up, Down, Left and Right keys, you can change to query status of other in-service air conditioners.

#### 2) Set button

In other display mode, press the button to enter the setting mode. By default, it is single setting, and the first in-service air conditioner is displayed. In setting operation mode, press the key again, and the operation will be performed for all air conditioners in the network. Press the key repeatedly to shift between single setting and global setting.

→ Single → Global →

#### 3) Mode setting

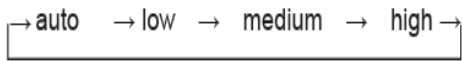
In setting operation mode, press this button to set the operation

→cooling → heating → supply air only → off →

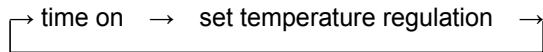
In other display mode, press the key to enter the setting mode. By default, it is single-machine setting, and the first in-service air conditioner is displayed.

**4) Fan speed**

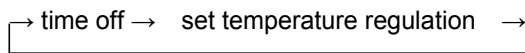
In setting operation mode, press this button to set the fan of the indoor unit of the air conditioner to run in the automatic, high, medium or low level of air:

**5) Time on**

In setting operation mode, press this button to set the timing startup of air conditioner; press the key again to exit the timing setting, and restore the normal temperature regulation operation mode.

**6) Time off**

In setting operation mode, press this button to set the timing shutdown of air conditioner; press the key again to exit the timing setting, and restore the normal temperature regulation operation mode.

**7) Swing**

In setting operation mode, press this key to enable or disable the swing function. If all currently selected air conditioners have no swing function, no effect will result after pressing the key.

**8) Leftward button**

In the query mode, every time when you press the button, the operation status data of the previous air conditioner will be displayed. If it is currently on the first machine, press the key again, and the data of the last machine will be displayed. If you hold down this key, the address will decrease one by one.

In the setting mode, every time when you press the key, if it is in single operation mode, the air conditioner of the previous in-service address number will be selected. If it is in the global operation mode, no effect will result after the key is pressed.

In the main page, press the button to enter the query mode. By default, it is the first air conditioner in-service.

**9) Rightward button**

In the query mode, every time when you press the button, the operation status data of the last air conditioner will be displayed. If it is currently on the last machine, press the key, and the data of the first machine will be displayed. If you hold down this key, the address will increase one by one.

In the setting mode, every time when you press the key, if it is in the single operation mode, the air conditioner of the next in-service address number will be selected. If it is in the global operation mode, no effect will result after the key is pressed.

In the main page, press the key to enter the query mode. By default, it is the first in-service air conditioner.

**10) Downward button**

In the query mode, every time when you press the key, the operation status data of the air conditioner corresponding to the next row of the matrix will be displayed. If it is currently in the last row, press the key, and the data of the air conditioner corresponding to the first row will be displayed. If you hold down this key, the row will increase one by one.

In the setting mode, every time when you press the key, if it is in the single operation mode, the air conditioner corresponding to the last row will be selected. If it is in the global operation mode, no effect will result after the key is pressed.

In the main page, press the button to enter the query mode. By default, it is the first in-service air conditioner.

**11) Upward button**

In the query mode, every time when you press the button, the operation status data of the air conditioner corresponding to the previous row of the matrix will be displayed. If it is currently in the first row, press the key, and the data of the air conditioner corresponding to the last row will be displayed. If you hold down this key, the row will decrease one by one. In the setting mode, every time when you press the key, if it is in the single operation mode, the air conditioner corresponding to the previous row will be selected. If it is in the global operation mode, no effect will result after the key is pressed.

In the main page, press the key to enter the query mode. By default, it is the first in-service air conditioner.

**12) Add button**

In the main page or the query mode, every time when you press the button, the data of the last page will be displayed. If it is now in the last page, press the key again, and the first page will be displayed.

In the setting mode, every time when you press the key, if it is in the temperature regulation mode, the set temperature will decrease by 1 °C until the highest allowed set temperature; if it is in the timing startup/shutdown time setting mode, select the upper-level set time, if no time is set, 0.0 will be displayed, if you hold down the key, the upper-level data will be selected consecutively.

The specific change mode is as follows:

0.0→0.5→1.0→1.5→2.0→2.5→3.0→3.5→4.0→4.5→5.0→5.5→6.0→6.5→7.0→7.5→  
8.0→8.5→9.0→9.5→10→11→12→13→14→15→16→17→18→19→20→21→22→23→24

**13) Reduce button**

In the main page or the query mode, every time when you press this key, the data of the current page will be displayed. If it is now in the first page, press the key again, and the last page will be displayed.

In the setting mode, every time when you press the key, if it is in the temperature regulation mode, the set temperature will decrease by 1 degree until the lowest allowed set temperature; if it is in the timing startup/shutdown time setting mode, select the upper-level set time, if no time is set, 0.0 will be displayed, if you hold down the key, the upper-level data will be selected consecutively.

The specific change mode is as follows:

0.0←.5←1.0←1.5←2.0←2.5←3.0←3.5←4.0←4.5←5.0←5.5←6.0←6.5←7.0←7.5←8.0←8.5  
←9.0←9.5←10←11←12←13←14←15←16←17←18←19←20←21←22←23←24

**14) ON/OFF key**

Any time when you press the key, the centralized startup/shutdown operation is performed for all current in-service air conditioners in the centralized controller network. If all in-service air conditioners in the network are in the power-off status, press the key to perform the startup operation.

If it is in the mode setting page currently, and the parameters such as startup mode, temperature and air speed are selected, the air conditioner will be started according to the selected parameters.

If no mode is selected currently, and the air conditioner is powered off or it is in other display page currently, and the default startup mode is: Cooling, strong air, set temperature 24°C, swing function enabled. The default startup mode is locked according to the system mode or judged according to other constraint conditions. If any conflict exists, the next conflict-free mode will apply automatically. If conflict exists for all modes, startup will be impossible. If one or more in-service air conditioners in the network (including in the timing process of timing startup/shutdown), pressing this key will shut down all air conditioners. When performing the shutdown



operation, the shutdown command is issued to the air conditioners in the startup status only, and is not issued to those in the shutdown status.

### **15) Lock button**

In the mode setting mode, press the Lock button, and the remote controller of the currently selected air conditioner will be locked/unlocked. The operation mode is: If you select single-machine setting, the operation is performed for the air conditioner of the current address only. If the remote controller of the air conditioner is locked currently, issue the lock command; otherwise, send the lock command. If you does not select the single-machine mode, and the remote controller of one or more currently selected air conditioners is locked, issue the unlock command; if the remote controllers of all currently selected air conditioners are in the non-locked status, issue the remote controller lock command. When the remote controller of the air conditioner is locked, the air conditioner does not receive remote control signals from the remote controller or wired controller until the remote controller is unlocked. Press the Query key and then press the Lock key, and the keys of the centralized controller will be locked or unlocked. If the keys are currently locked, press the foregoing keys concurrently again, and the keys will be unlocked; if the keys are currently unlocked, press the foregoing keys concurrently, and the keys will be locked. If the keys are locked, pressing of any key other than the Unlock key will be ineffective.

In the unified setting page, press the Up button and the Lock button concurrently to lock all air conditioner modes in the network. The mode locking is cancelled when the key is pressed again.

### **16) Confirmation button**

In the setting mode, press the button to send the currently selected mode status and the auxiliary function status to the selected air conditioner, and display the mode setting operation results.

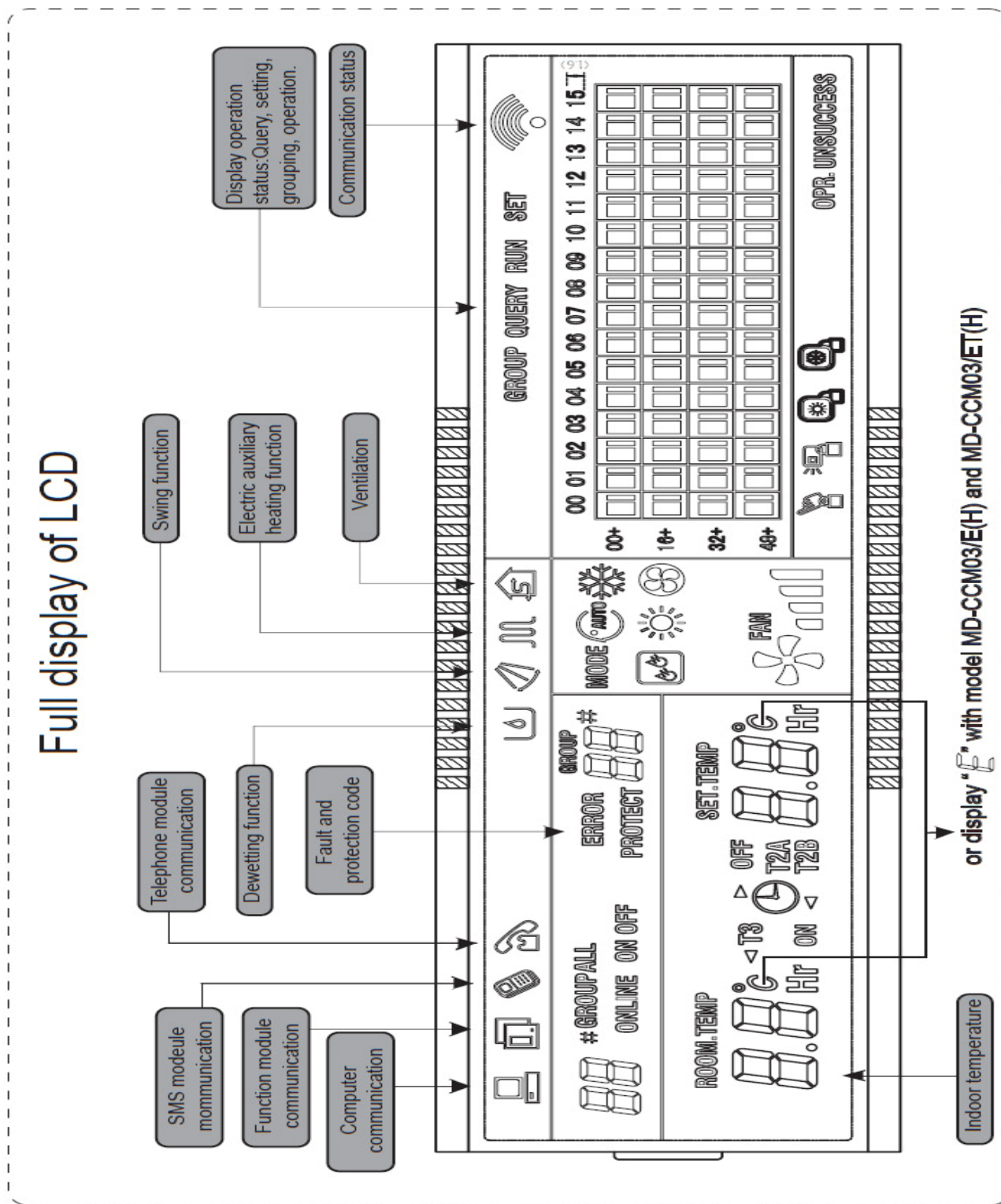
After you select the operation mode and auxiliary function status information of the air conditioner, if you do not press the confirmation key, the selected information will not be sent to the air conditioner, and will not affect the current operation of the air conditioner.

The operations of remote controller locking and unlocking do not need pressing the confirmation key. The command information is sent directly after the locking key is pressed.

### **17) Reset button**

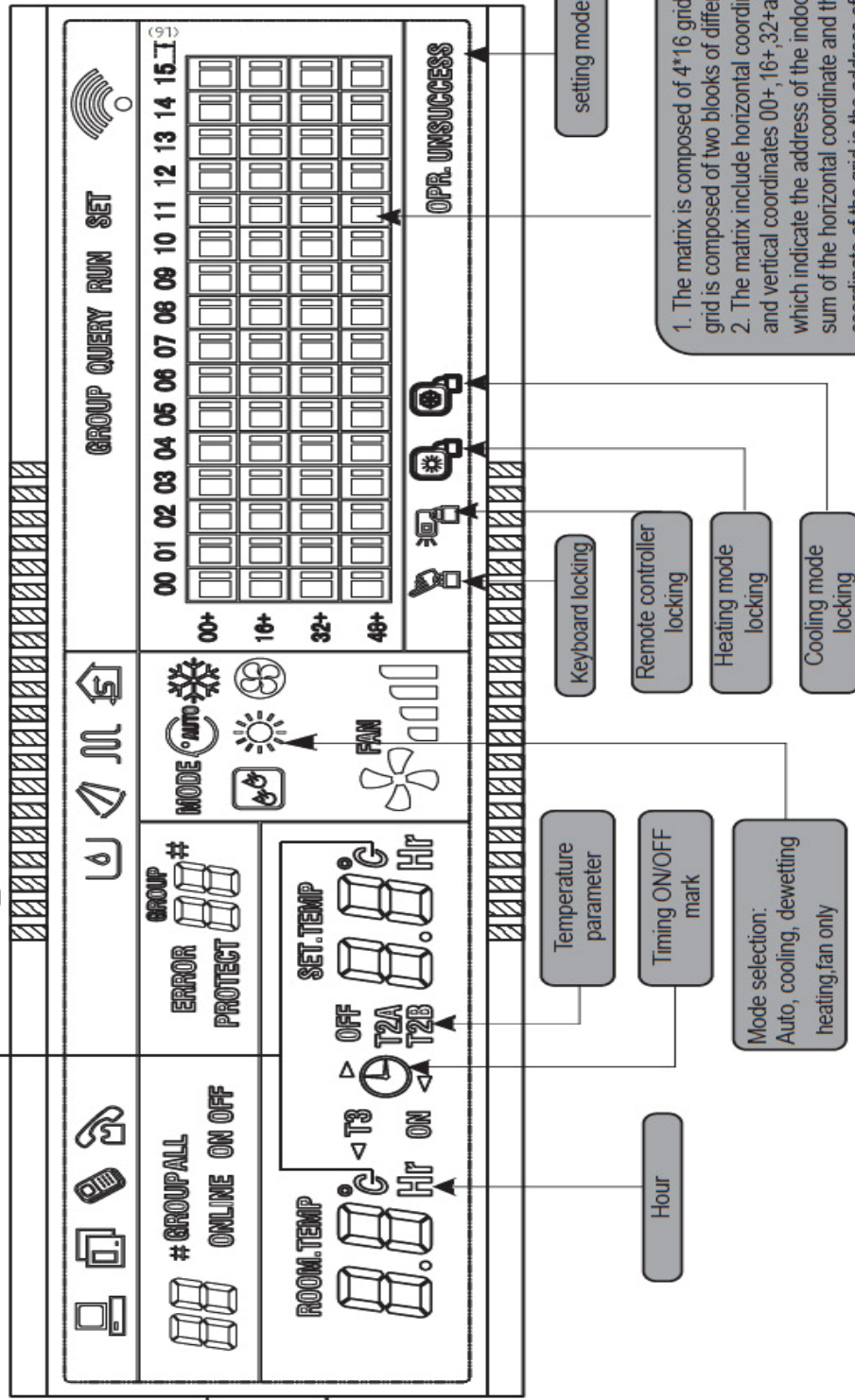
Anytime when the reset button is pressed, the centralized controller will reset. The result is the same as the result of restoring power-on after power failure.

### 3.1.3 LCD display



# Full display of LCD

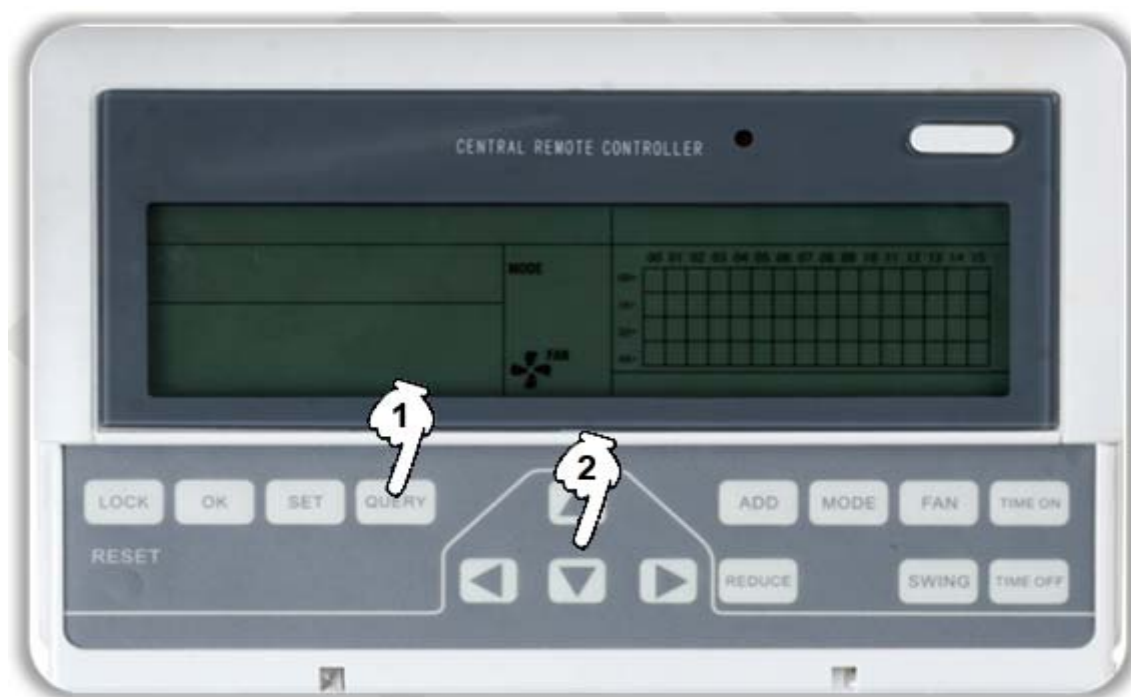
or display "E" with model MD-CCM03/E(H) and MD-CCM03/ET(H)



1. The matrix is composed of 4\*16 grids and each grid is composed of two blocks of different sizes.  
 2. The matrix include horizontal coordinates 00-15 and vertical coordinates 00+, 16+, 32+ and 48+, which indicate the address of the indoor unit. The sum of the horizontal coordinate and the vertical coordinate of the grid is the address of the grid. Each grid corresponds to an indoor unit of this address.

### 3.1.4 Query and Error code#

The CCM03 centralized controller offers the function of query of indoor units' running state and displays the error code when some of the indoor units fail down.



1. Press the query button to activate the query function. Firstly the display panel will display the 1st units' state.
2. Use the UP, DOWN, LEFT, RIGHT buttons to select the unit we want to query.

The indication of error codes are as the 2 tables below:

Table 1: Fault code

| Fault code | Content  |
|------------|--|
| EF         | Other faults   |
| EE         | Water level detection malfunction                              |
| ED         | Outdoor unit malfunction                                       |
| EC         | Cleaning malfunction   |
| EB         | Inverter module protection                                     |
| EA         | Current of compressor is too large (4 Times)                   |
| E9         | Communication malfunction between main board and display board |
| E8         | Wind blowing speed is out of control                           |
| E7         | EEPROM error   |
| E6         | Detection of current direction alternating is abnormal         |
| E5         | T3 or T4 sensor of discharge of compressor fails down          |
| E4         | T2B sensor malfunction   |
| E3         | T2A sensor malfunction   |

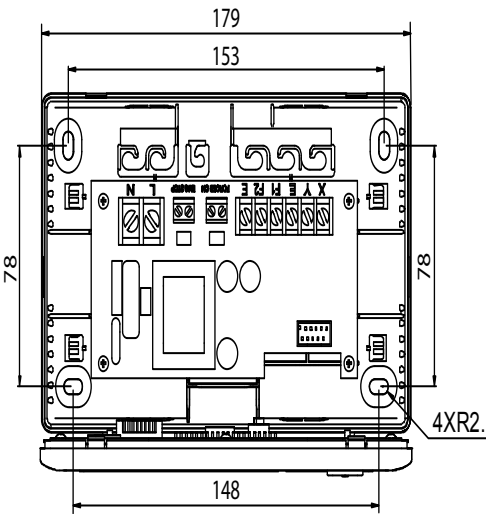
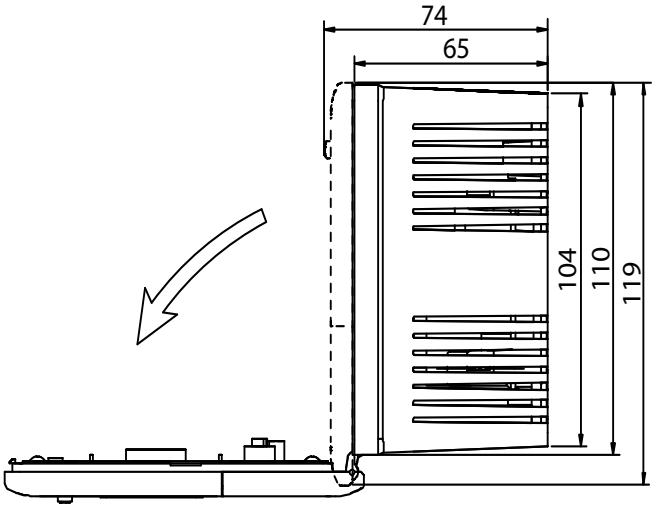
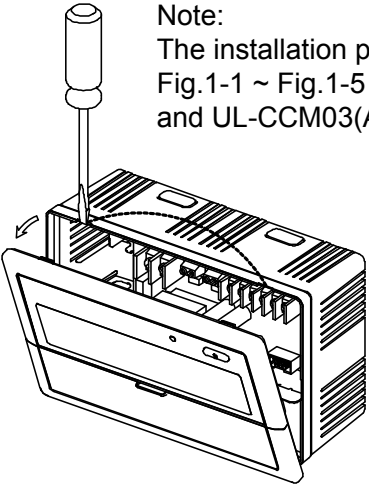
|     |   |
|-----|---|
| E2  | T1 sensor malfunction   |
| E1  | Communication malfunction   |
| E0  | Phase sequence disorder or loss of power phase  |
| 07# |   |
| 06# |   |
| 05# |   |
| 04# |   |
| 03# | Communication malfunction between centralized controller and PC(gateway)              |
| 02# | Communication malfunction between centralized controller and functional module        |
| 01# | Communication malfunction between centralized controller and network interface module |
| 00# | Communication malfunction between network interface module and main control board     |

Table 2: Protection code

| Protection code | Content  |
|-----------------|--|
| PF              | Other protection                               |
| PE              | Reserved                                       |
| PD              | Reserved                                       |
| PC              | Reserved                                       |
| PB              | Reserved                                       |
| PA              | Reserved                                       |
| P9              | Reserved                                       |
| P8              | Compressor's current is too large              |
| P7              | Voltage of power supply is too high or too low |
| P6              | Pressure of discharge is too low               |
| P5              | Pressure of discharge is too high              |
| P4              | Temp. of discharge pipe is abnormal            |
| P3              | Temp. of compressor is abnormal                |
| P2              | Condenser high-temperature protection          |
| P1              | Anti-cool air or defrost protection            |
| P0              | Evaporator temperature protection              |

3.1.5 Installation

Note:  
The installation procedure show in Fig.1-1 ~ Fig.1-5 is for MD-CCM03(A) and UL-CCM03(A)/E



RS232 Pin hole: for connection to computer COM port

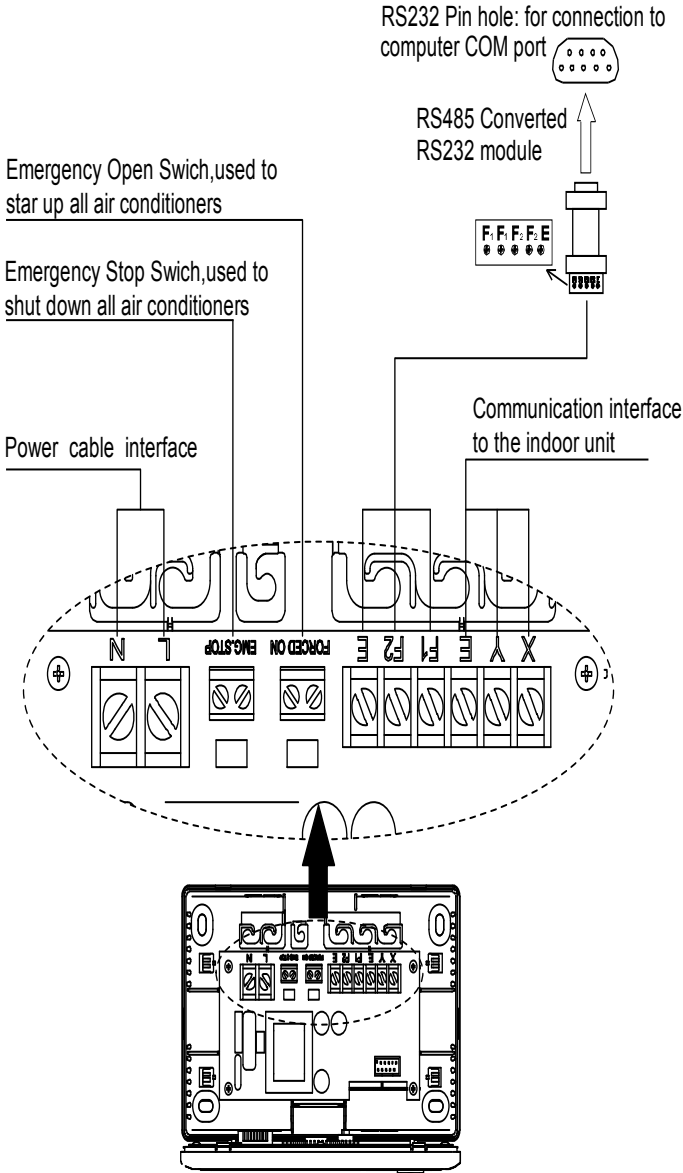
RS485 Converted RS232 module

Emergency Open Switch, used to star up all air conditioners

Emergency Stop Switch, used to shut down all air conditioners

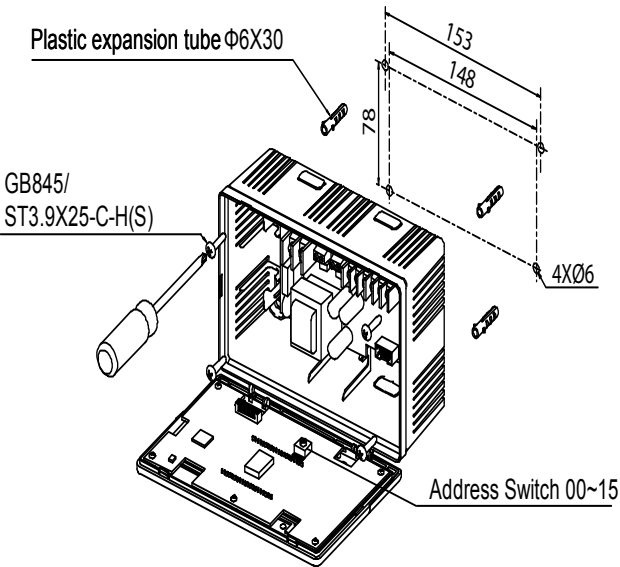
Power cable interface

Communication interface to the indoor unit



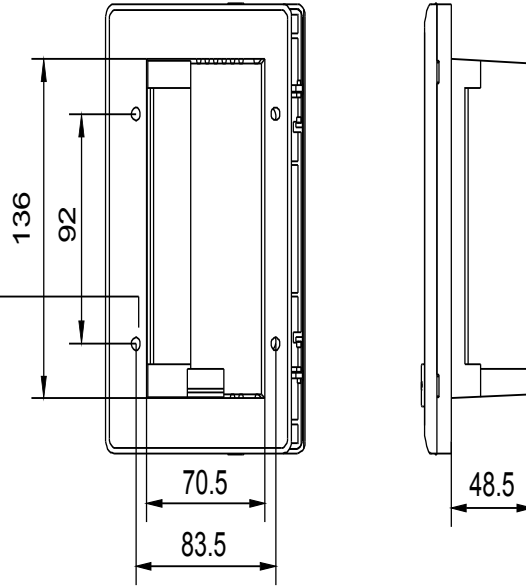
Plastic expansion tube  $\phi 6 \times 30$

GB845/ ST3.9X25-C-H(S)

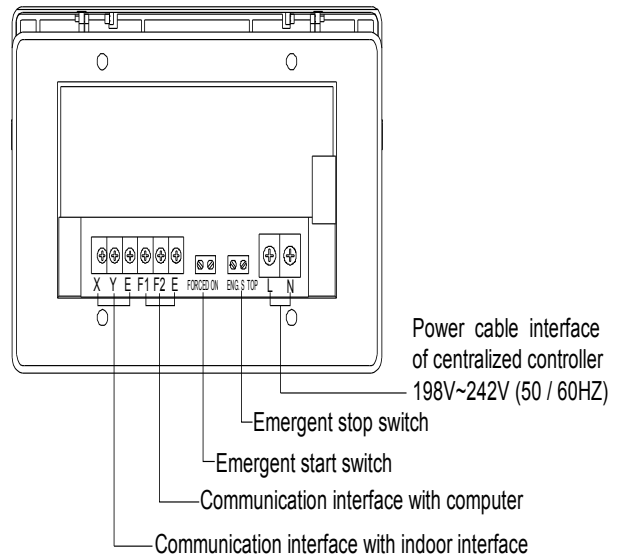
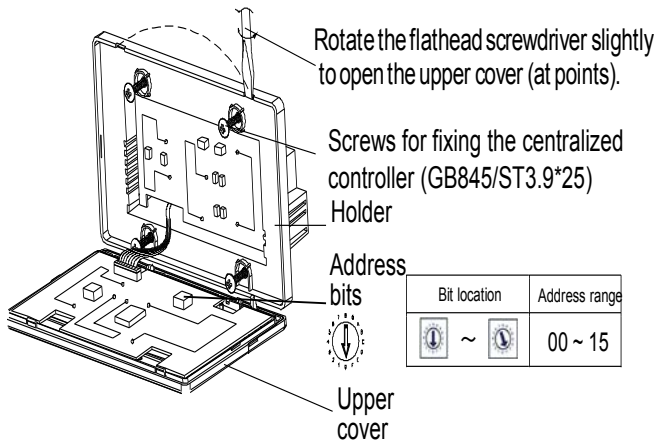


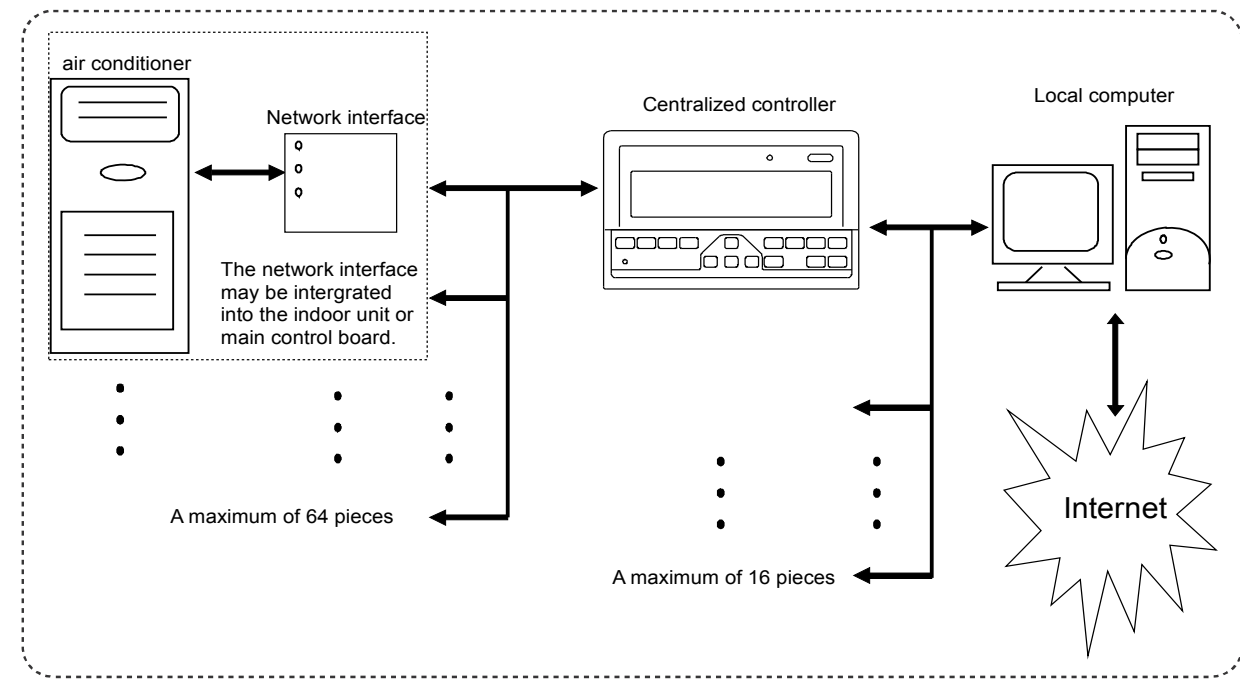
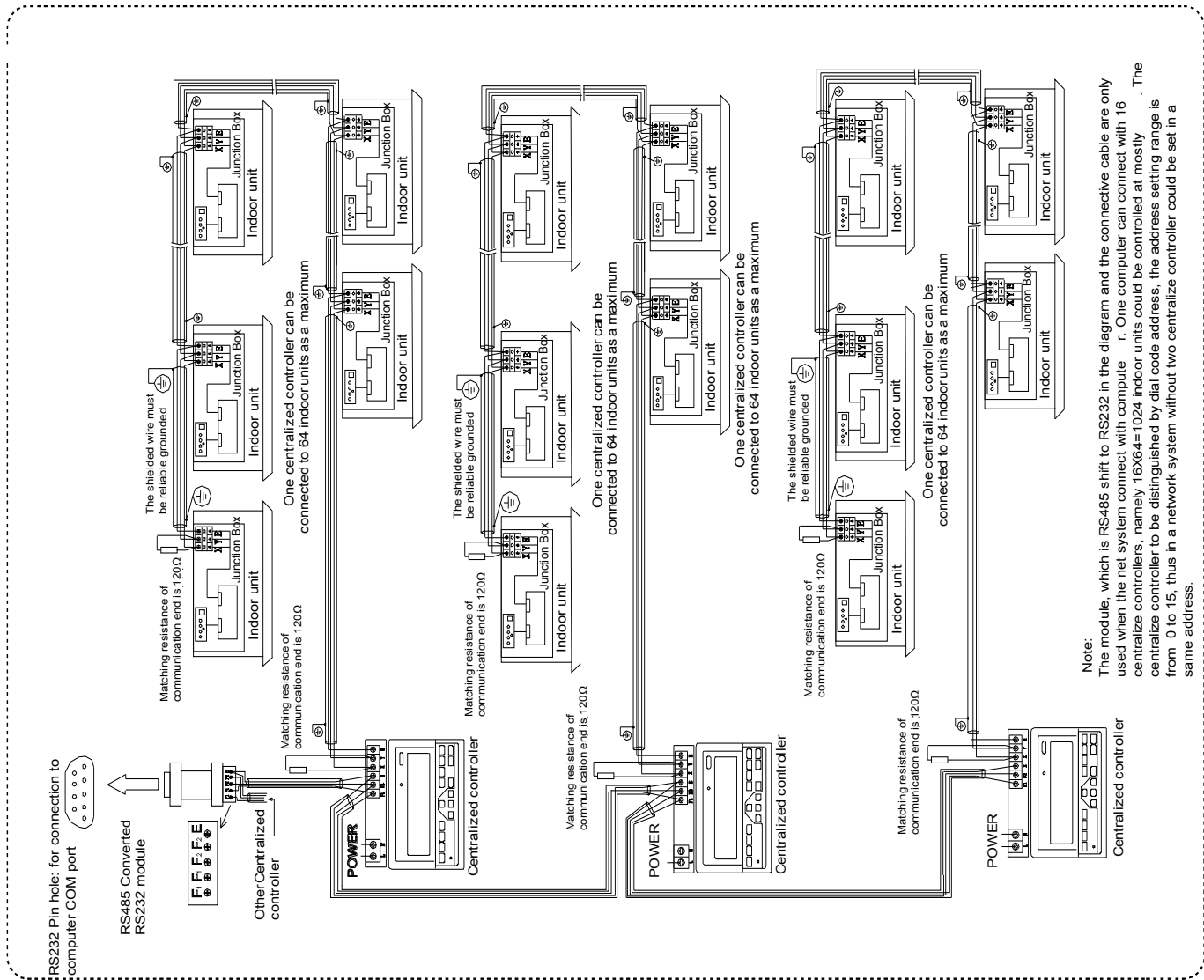
Installation dimensions:  
As shown in the figure  
on the right side.

Installation screw  
holes (4 holes)



Note:  
The installation procedure show in  
Fig.1-6 ~ Fig.1-8 is for MD-CCM03/E,  
MD-CCM03/E(M), MD-CCM03/E(T),  
MD-CCM03/E(H) and MD-CCM03/ET(H).





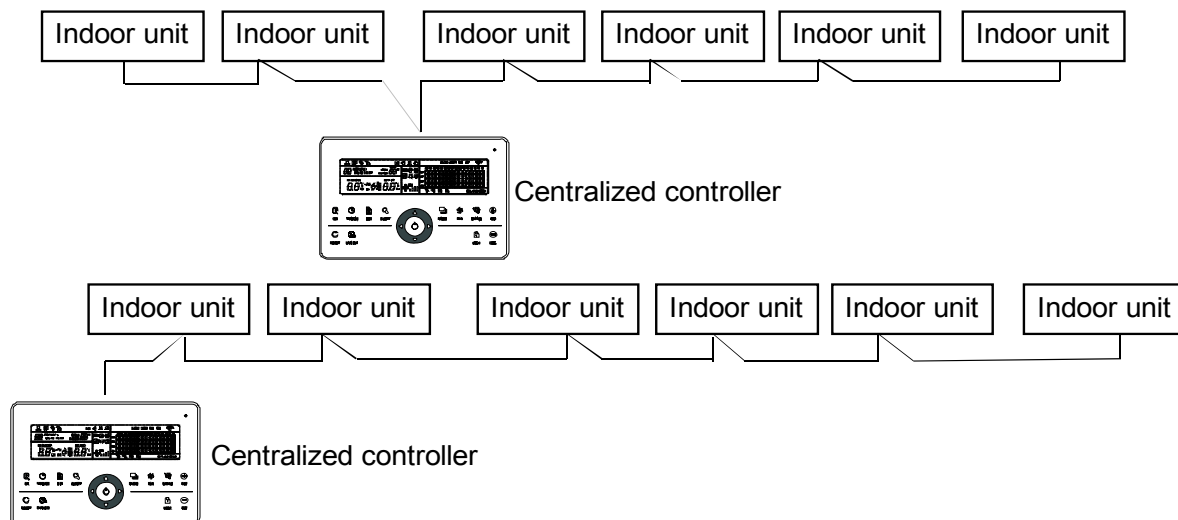
Notes: Before starting the network, please confirm that every CCM03's address is different with each other.



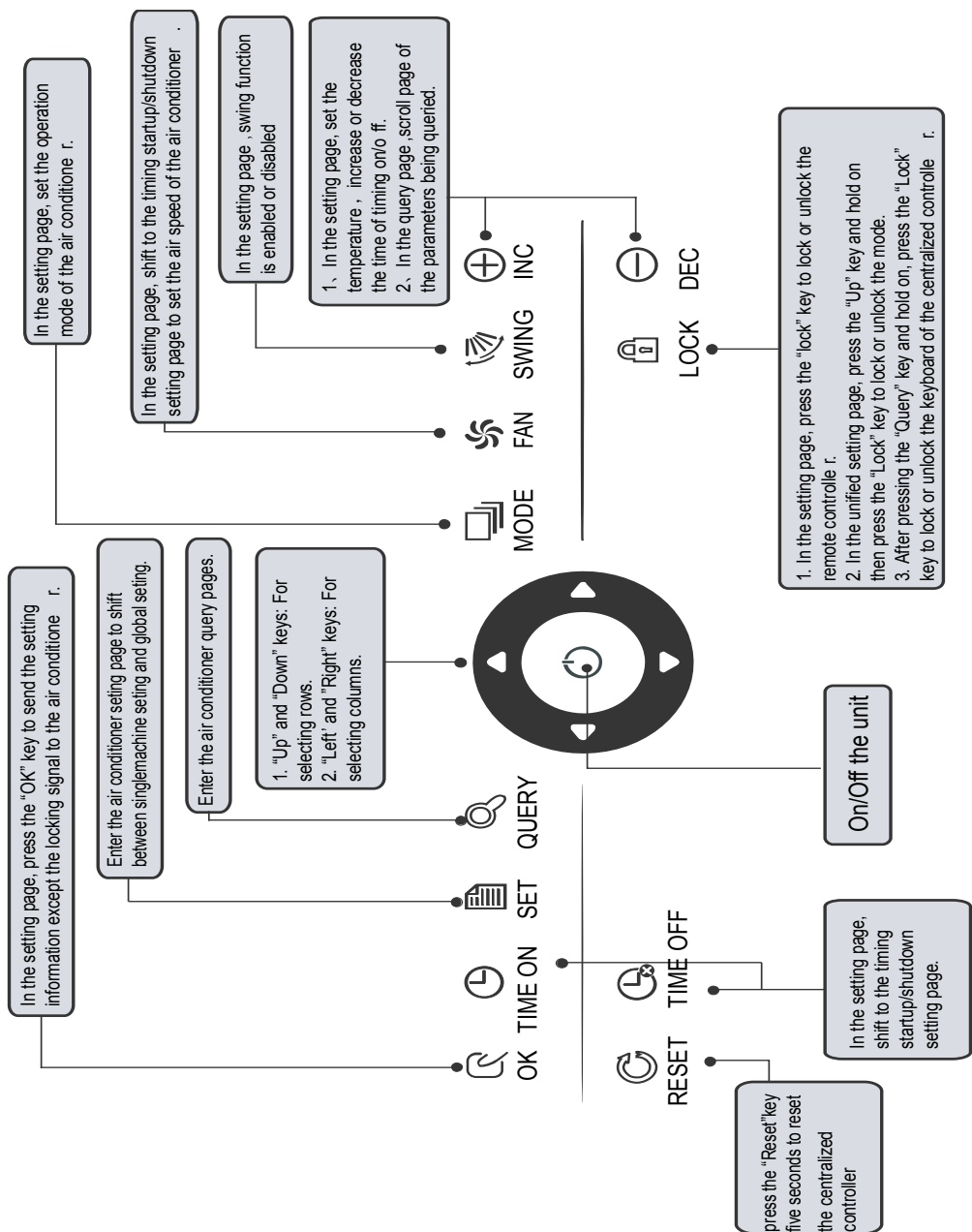
### 3.2 Touch-style key centralized controller: CCM30/BK-E, CCM30/BKE-B



The CCM30/BK-E is new designed and it is a touch-style key centralized controller. It can be connected up to 64 indoor units, and the connection length can be up to 1200m. The CCM30 centralized controller has the air filter cleaning reminding function and it is convenient to remind users to clean the air filter. Both of the following wiring modes centralized monitor and indoor units are applicable.



### 3.2.1 General functions and description



#### (1) Query key

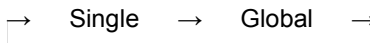
Any time when you press the key, the selected operation mode is to query the operational status of the air conditioner.

By default, the first in-service air conditioner will be queried.

#### (2) Setting key

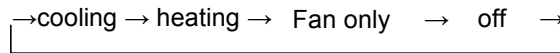
In other display modes, press this key can enter the setting mode.

By default, it is a single setting, and the first in-service air conditioner is displayed. In setting the operation mode, press this key again, and the operation will be performed for all air conditioners in the network. Press the key repeatedly to shift between a single setting and global setting.

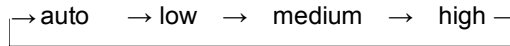



**(3) Mode key** 

Under the setting operation mode, press this key to set the operation.

**(4) Fan key** 

Under the setting operation mode, press this key to set the fan of the indoor unit to run in the automatic, high, medium or low level of air.

**(5) Time on key** 

Under the setting operation mode, press this key can set the timing to turn on the air conditioner; press this key again can exit the timing setting, and restore the normal temperature regulation operation mode

**(6) Time off key** 

Under the setting operation mode, press this key can set the timing shutdown of air conditioner, press this key " " again to exit the timing setting, and restore the normal temperature regulation operation mode.

**(7) Swing key** 

Under the setting operation mode, press this key can enable or disable the swing function. If all currently selected air conditioners have no swing function, no effect will result after pressing the key.

**(8) Leftward key** 

In the query mode, if this key is pressed, the operation status data of the previous air conditioner will be displayed. If it is currently on the first machine, the data of the last machine will be displayed, when the key is pressed. If you hold down this key, the address will decrease one by one. In the setting mode, if it is in single operation mode, the air conditioner of the previous in-service address number will be selected, when this key is pressed, if it is in the global operation mode, no effect will result when this key is pressed. In the main page, press the key to enter the query mode. By default, it is the first in-service air conditioner.

**(9) Rightward key** 

In the query mode, when the key is pressed, the next in-service air conditioner is selected, and its operational status data will be displayed. If it is currently on the last air conditioner, the first one is selected and its data displays, when the key is pressed. If this key is long pressed, the address will increase one by one.

In the setting mode, if it is in the single operation mode, when the key is pressed, the next in-service air conditioner will be selected. If it is in the global operation mode, no effect will result when the key is pressed.

In the main page, press the key to enter the query mode. By default, it is the first in-service air conditioner.

**(10) Downward key** 

In the main page, press this key can enter the query mode. By default, it is the first in-service air conditioner. In any other time, press this key " " will select the next row corresponding position air conditioner.

In the setting mode, if the global operation mode is selected, this key is invalid. If it is on the last row, press this key again to shift to the first row air conditioner. If this key is long pressed, the row will increase one by one.

**(11) Upward key** 

In the main page, press this key can enter the query mode. By default, it is the first in-service air conditioner. In

any other time, press this key will select the previous corresponding position air conditioner.

In the setting mode, if selected all the air conditioners to operate, this key is invalid.

If it is on the first row, press this key again, and shift to the last row corresponding air conditioner.

If you hold down this key, the row will decrease one by one.


## (12) Add key INC

1) Query mode:

Press this key, display the data of the last page. If it is now in the last page, press this key again and the first page will be displayed.


2) Setting operation mode

① Temperature adjusting method

Press this key; the setting temperature will increase one degree. If you hold down the key " INC", the setting temperature will increase one by one.


When reached the highest allowed to set temperature, it cannot increase.

② Timing on or timing off setting method

Press this key " INC", it will select the next setting time. If you hold down this key, the next data will be selected one by one. When reached the max. allowed setting time, it cannot increase.


## (13) Reduce key DEC

1) Query mode



Press this key " DEC", display the data of the previous page. If it is now in the first page, press is key again and the last page will be displayed.

2) Setting operation mode

① Temperature adjusting method

Press this key " DEC", the setting temperature will decrease one degree. If you hold down this key , the setting temperature will decrease one by one. When reached the lowest allowed set temperature, it cannot decrease.

② Timing on or timing off setting method

Press this key " DEC", it will select the next setting time. If you hold down the key " DEC", the next data will be selected one by one. When reached the min allowed setting time, it cannot decrease.

## (14) ON/OFF key

Any time when you press the key, the centralized startup/shutdown operation is performed for all current in-service air conditioners in the centralized controller network.

## (15) Confirmation key OK

In the setting mode, press this key can send the currently selected mode status and the auxiliary function status to the selected air conditioner.

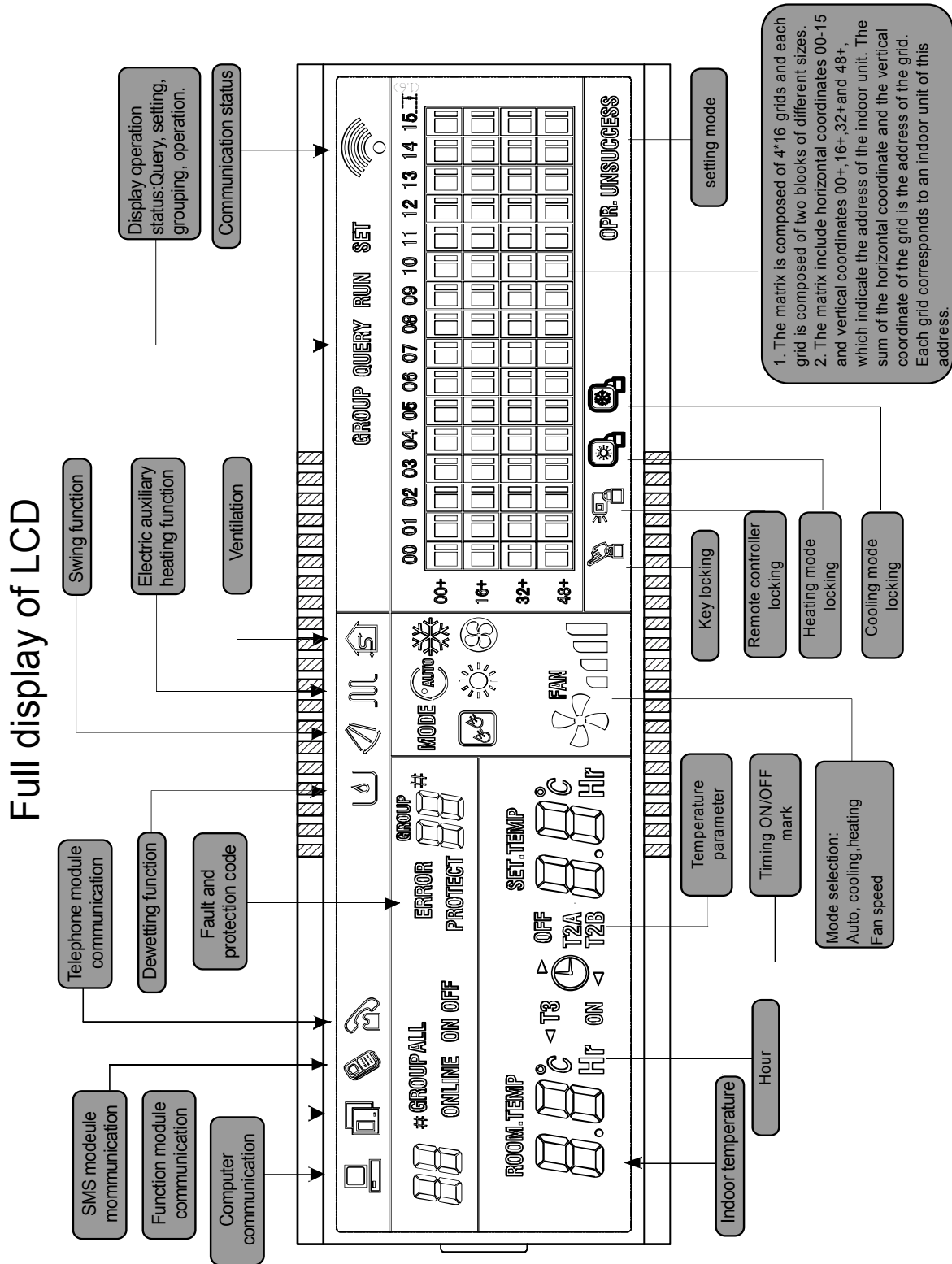
(16) **Reset key** 

Any time when the reset key is pressed, the centralized controller will reset. The result is the same as the result of restoring power-on after power failure.

(17) **Lock key** 

Any time when this key is pressed, the selected air conditioner can be locked or unlocked.

3.2.2 LCD display



### 3.2.3 Other operations

#### ※ Various locking functions

##### 1. Centralized controller locking

The centralized controller locking state will be recorded when powered off. It won't dismiss when re-power on until receiving the unlocking order.

##### 1) Effect

① When the centralized controller is under locking state, it cannot change the air conditioner's operating state through the centralized controller (such as ON/OFF the unit, setting mode, change the setting temperature, change the fan speed, unlock the exiting locking state etc), but it can do the query operation, until unlocking and then recover to normal.

② When the centralized controller is under the locking state, all the air conditioners in the centralized controller network will be remote controller locked.

##### 2) Operation

##### ① Locking

The centralized controller can be locked by the computer only.

##### ② Unlocking

a) When the centralized controller and computer communicate normally

The centralized controller can be unlocked by the computer only. When the centralized controller is unlocked, the controller will send the order to unlock the remote controller locking of all the air conditioners.

b) When the centralized controller and computer communication abnormally

When the centralized controller is locking, the centralized controller can be unlocked by the way that the press QUERY key and holds on, then press MODE key (it should operate within one minute after centralized controller is re-powered on or the RESET key is pressed).

The remote controller locking of the air conditioner is remained.

##### 2. Remote controller locking

##### 1) Effect

① When the air conditioner is under remote controller locking state, it will not receive the remote signals from remote controller or wired controller, until unlocking.

② The air conditioner can be operated by the centralized controller.

##### 2) Operation

① Can lock or unlock through the computer.

② Can operate by a centralized controller.

In the centralized controller setting interface, press LOCK key to lock or unlock.

If the current state is remote controller locking, press the key to unlock.

If there's no remote controller locking, press the key to lock.

##### 3. Mode locking

##### 1) Effect

Under the mode locking state, only can choose the mode which hasn't conflict with locking mode through centralized controller to operate the air conditioner,

## 2) Operation

Can set the heat and cool mode lock or not

Under mode locking state, if set the new mode locking, it must be unlocking first, then can operate the new mode locking.

① Can lock or unlock through the computer.

② Can operate by a centralized controller.

In the centralized controller setting interface, choose all the air conditioners of the centralized controller network as the object, press Upward key and hold on, then press LOCK key to do the mode locking or unlocking.

If the current state is mode locking, press the key to unlock.

If there isn't a mode of locking, press the key to lock.

### ※ **Power on or reset**

When the centralized controller is powered on or resets by the RESET key:

The buzzer long buzz for 2 seconds: all display segments of the LCD are luminous for 2 seconds and then goes off;

1 second later, the system enters normal display status. The centralized controller is in the main page display status and displays the first page, and searches the in-service air conditioners in the network.

Once the search is finished, the centralized controller enters the mode setting page, and sets the first in-service air conditioner by default



### ※ **Emergency stop and forced on**

When the emergent stop switch of the centralized controller is connected, all the air conditioners in the centralized controller network will be shut down compulsorily, and the LED flashes as 0.5Hz. The centralized controller and computer and all functional modules are disabled from startup and shutdown until the emergent stop switch is broken. When the forced on the switch of the centralized controller is connected, all air conditioners in the network of the centralized controller will start up compulsorily. By default, they will run before the power failure mode.

The startup and shutdown operations of the centralized controller and computer and all functional modules will be disabled (only the command of a startup is sent to the air conditioner, without affecting operation of the remote controller after startup) until the forced on the switch is broken.

If the foregoing two switches are connected concurrently, the emergent stop switch shall have preference.

### ※ **ON and OFF operation**





Use the " " key or " " key can turn on and turn off the air conditioners in the centralized controller network.

The ON mode will accord to the system mode locking or other limit conditions for judging, if there is conflict, it will auto adjust to the next mode without conflict; if all the modes have a conflict, then it cannot operate the unit.





## 1. Use " " key to TURN ON and TURN OFF the unit:

Press this key can operate a single air conditioner or all the air conditioners in the centralized controller network.

1) Choose the object. Press SET key to choose a single air conditioner or all the air conditioners in the centralized controller network. If choose a single air conditioner, then use "  ", "  ", "  ", and "  " to choose the air conditioner.


2) Use "MODE", "FAN", "ADD", and "Reduce" key to set the operating mode and operating parameters, such as fan speed, setting temperature etc.


3) Use "  " key, centralized controller sends the relative order to the operating object.

After setting the operating parameter for the air conditioner, if not press the key "  ", the setting parameter will not be sent to the air conditioner, and the current operation of the air conditioner is not affected (except locking operation).


## 2. Use " " key to TURN ON and TURN OFF the unit

Only can operate all air conditioners, not for single in the centralized controller network:

"  "key is long pressed: press this key for over 2 seconds then loose.

"  "key is short pressed: press this key and then loose within 2 seconds.


According to different states and operation ways of air conditions in the current centralized, there are following situations:

1) One or more air conditioners under ON state (include timing process of timing ON and OFF) "  " key only has a short press function.


Only send the OFF order to the air conditioners with ON state, not for OFF state units.

The memory function is activated; the current state of all air conditioners is memorized.

2) All the air conditioners in the centralized controller network are OFF states

① "  " key short press

The centralized controller reads the memory contents, and sends relative order to all air conditioners.

② "  " key long press

a) If current page is setting parameters, and the setting mode is not OFF, the centralized controller will send orders to all air conditioners according to parameters, such as setting mode, fan speed, setting temperature, etc.

b) If the current is under setting interface but the setting mode is OFF state or under other interfaces, the centralized controller will send the default ON order to all air conditioners. The default ON order is: cooling mode, high fan speed, setting temperature is 24°C or 76°F, operates the swinging function.



※ **Air filter cleaning remind function**

1) The centralized controller records the total running time of the indoor unit.

When the accumulated running time reaches the pre-set value, the air filter cleaning reminding icon “FL” will be lighted up to remind users that the air filter of the indoor unit need to be cleaned.

When the centralized controller displays FL, it needs to manual operation to clear the icon. Press SWING key and hold on then press QUERY key, can clear FL reminding.

At the same time, the accumulated time of centralized controller powered on will be cleared

2) Function setting

① Dial the dial code 3 to "ON"( to table 2.1 ), and then power on the centralized controller, within 1 minute to press QUERY key and hold on then press FAN key can enter the optional function setting. The icon **88** will be flashed with 1Hz frequency (default display 00), and you can choose the function from table 2.2.



Press " **INC** " and " **DEC** " keys can select function, and then press " **OK** " key to enter parameter selection.

②After entering parameter selection, dual eight represented function selection will be lighted on, The icon will



be flashed with 1Hz frequency, display optional parameter code. Through pressing " **INC** " and " **DEC** " keys can select the detailed parameter.



③Press " **OK** " to confirm parameter selection(details parameter codes' corresponding time refer to table 2.3).

④After setting successfully, dual eight represented function selection and dual eight represented function selection will be lighted on, the screen will display "Setting successfully" . After 3 seconds will auto exit optional function setting, and the screen will be back to normal display. After entering optional function setting, no

operations in 5 seconds will auto exit function selection, the setting parameter will not change. Only press " **OK** " key to confirm the parameter then the setting parameter will save.

Table 2.2: The code of selecting the clear filter function

| Function code | Function setting                 |
|---------------|----------------------------------|
| 00            | Only display, no function        |
| 01            | Cleaning filter screen reminding |

Table 2.3: The code of different times of reminding clear filter

| Parameter code | Time (hour) |
|----------------|-------------|
| 00             | 0           |
| 01             | 1250        |
| 02             | 2500        |
| 03             | 5000        |
| 04             | 10000       |

### 3.2.4 Fault and protection codes

| Fault code      | Content   |
|-----------------|---|
| EF              | Other faults  |
| EE              | Water level detection malfunction   |
| ED              | Reserved  |
| EC              | Cleaning malfunction  |
| EB              | Inverter module protection  |
| EA              | Current of compressor is too large (4 Times)  |
| E9              | Communication malfunction between main board and display board                        |
| E8              | Wind blowing speed is out of control  |
| E7              | EEPROM error  |
| E6              | Detection of current direction alternating is abnormal                                |
| E5              | T3 or T4 sensor of discharge of compressor fails down                                 |
| E4              | T2B sensor malfunction  |
| E3              | T2A sensor malfunction  |
| E2              | T1 sensor malfunction   |
| E1              | Communication malfunction   |
| E0              | Phase sequence disorder or loss of power phase  |
| 07#             |   |
| 06#             |   |
| 05#             |   |
| 04#             |   |
| 03#             | Communication malfunction between centralized controller and PC(gateway)              |
| 02#             | Communication malfunction between centralized controller and functional module        |
| 01#             | Communication malfunction between centralized controller and network interface module |
| 00#             | Communication malfunction between network interface module and main control board     |
| Protection code | Content   |
| PF              | Other protection  |
| PE              | Reserved  |
| PD              | Reserved  |
| PC              | Reserved  |
| PB              | Reserved  |
| PA              | Reserved  |
| P9              | Reserved  |
| P8              | Compressor's current is too large   |
| P7              | Voltage of power supply is too high or too low  |
| P6              | Pressure of discharge is too low  |

|    |                                       |
|----|---------------------------------------|
| P5 | Pressure of discharge is too high     |
| P4 | Temp. of discharge pipe is abnormal   |
| P3 | Temp. of compressor is abnormal       |
| P2 | Condenser high-temperature protection |
| P1 | Anti-cool air or defrost protection   |
| P0 | Evaporator temperature protection     |

### 3.2.5 Centralized controller installation

#### ※ Dimensions (Unit: mm)

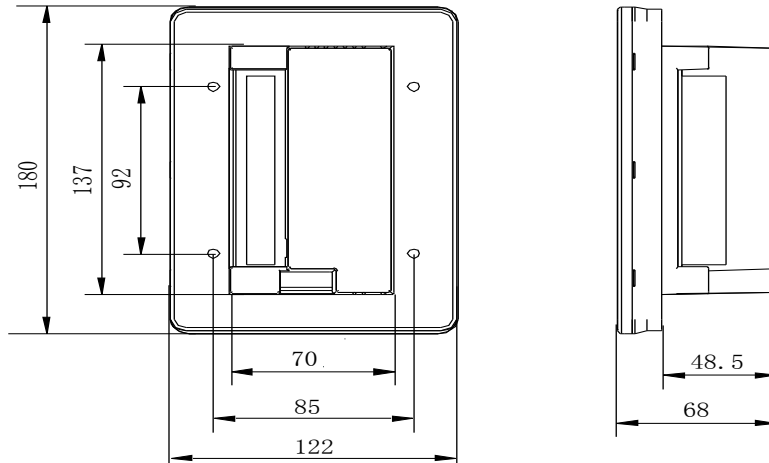
There are two kinds of appearance for your choice, and you can choose you like.



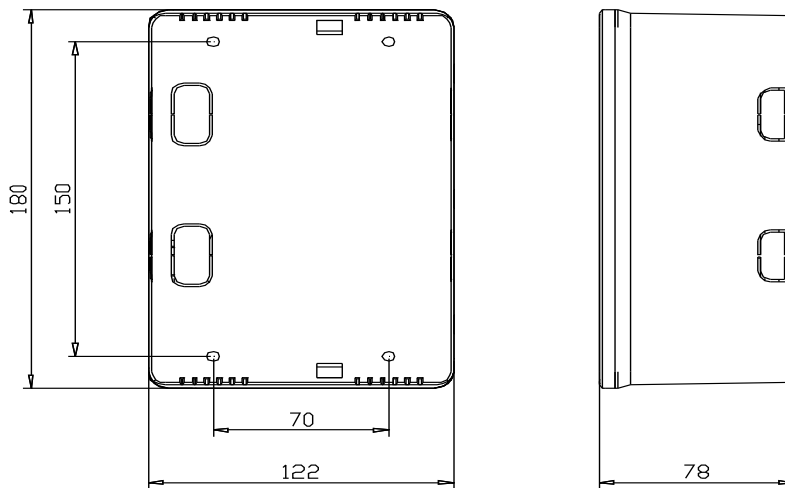
CCM30/BKE-A



CCM30/BKE-B

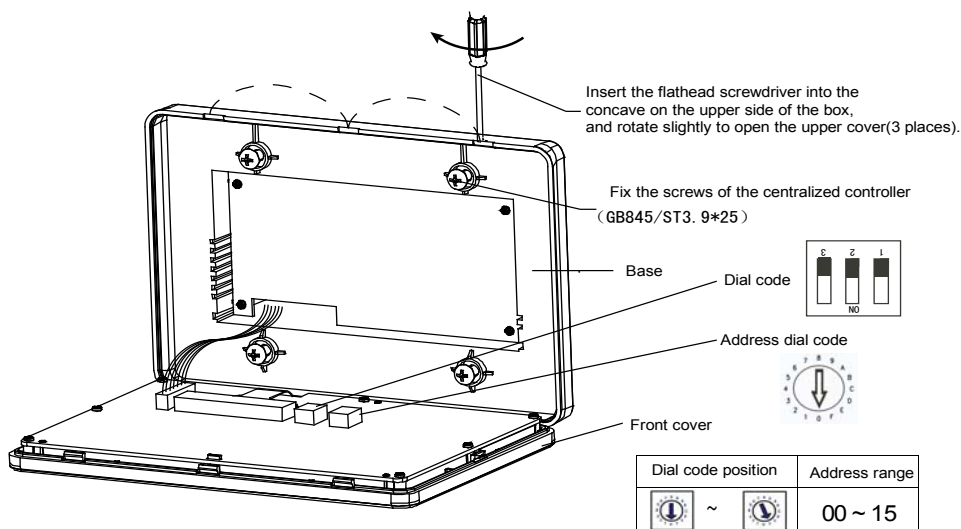


CCM30/BKE-A

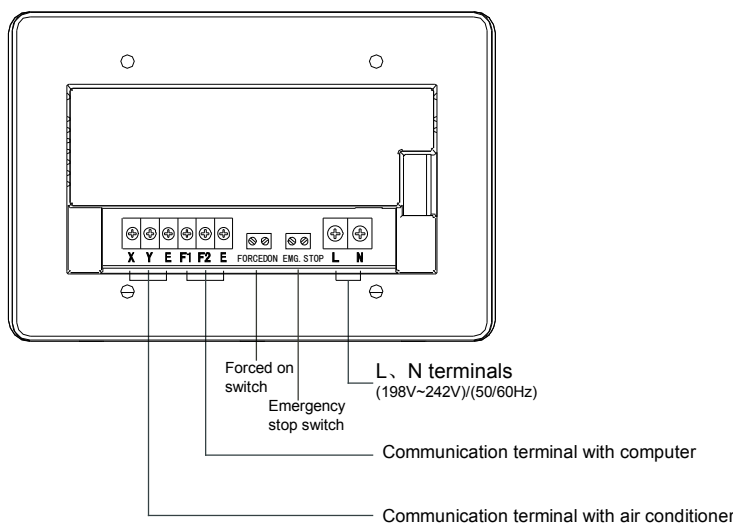


CCM30/BKE-B

※ Installation diagram

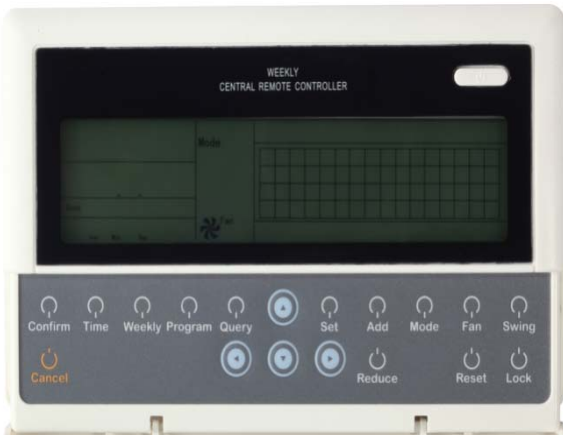


※ Terminal instruction



### 3.3 Weekly schedule timer centralized controller: MD-CCM09 (A)

MD-CCM09/E is designed base on the CCM03, max. 64 indoor units control, weekly schedule timer function. With the function above, CCM09/E can't be connected to the network control system. And actually it does not have the port F1, F2, E, which are needed if connects to the computer.



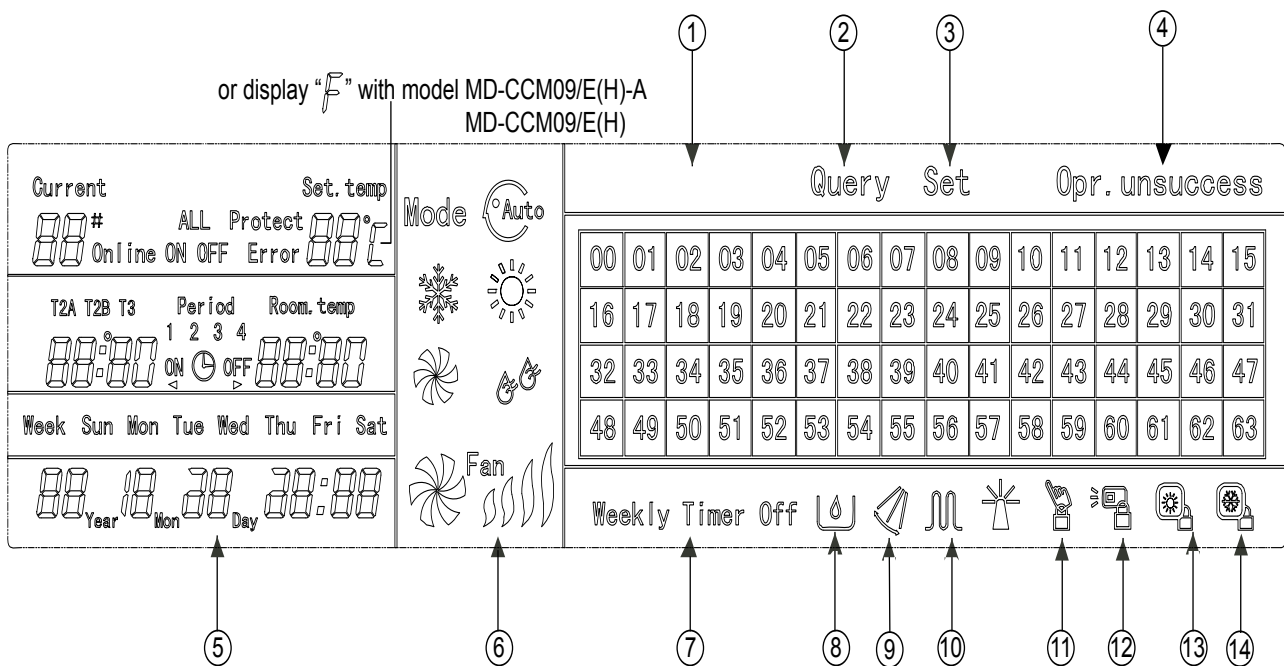
- 7 -days Weekly schedule setting (Maximum 128 weekly & daily schedules)
- Max. 64 indoor units group control or individual setting
- Clear and bright screen with LCD backlight
- Temperature setting
- Wireless remote control restriction
- Sleep and Silent mode
- Mode lock
- Permanent schedule setting storage

#### 3.3.1 System configure

MD-CCM09/E is only an indoor unit centralized controller, but with this device we could set the indoor unit's functions compactly and conveniently.

1. All the indoor units and outdoor units are V4 plus series, the topology of the network can be as follows. Moreover the 2<sup>nd</sup> way of connecting is also adaptable in this condition.

#### 3.3.2 LCD display



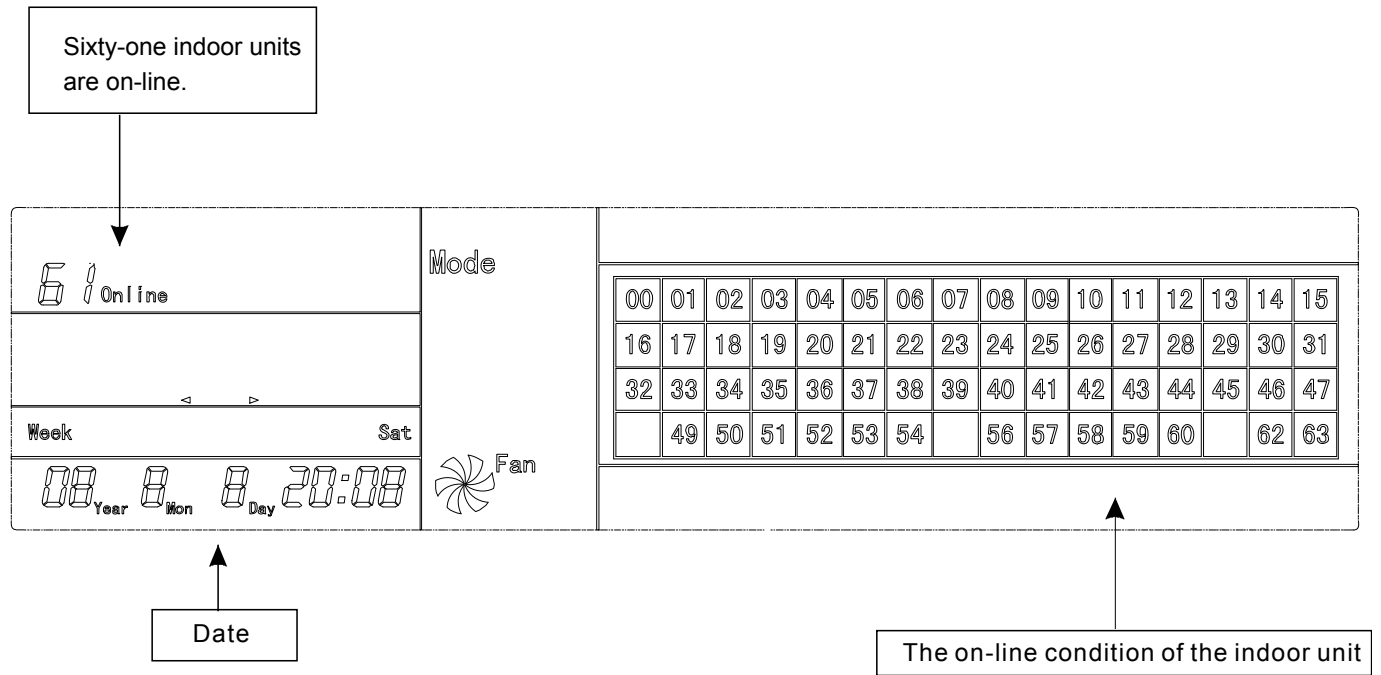
|   |   |    |  |
|---|---|----|--|
| 1 | On-line condition matrix table of AC 0-63 | 8  | Economy run  |
| 2 | Query                                     | 9  | Swing  |
| 3 | Set                                       | 10 | Electric auxiliary heater  |
| 4 | Operate result                            | 11 | Locking keyboard   |
| 5 | Date time                                 | 12 | Remote controller locking: Does not respond signal from remote controller. |
| 6 | Run mode                                  | 13 | Heating mode locking: only heating mode is effective                       |
| 7 | Weekly-timer off                          | 14 | Cooling mode locking: only cooling mode is effective                       |

### 3.3.3 LCD icon description

| Icon  | Meaning                           | Icon  | Meaning                              |
|---|-----------------------------------|---|--------------------------------------|
|    | Auto mode                         |    | Fan only mode                        |
|    | Cooling mode                      |    | Dry mode                             |
|    | Heating mode                      |   | Fan speed                            |
|   | Electric auxiliary heating        |   | Lock heat mode                       |
|  | Lock cool mode                    |  | Wireless controller lock             |
|  | Lock keyboard                     | Set   | Set mode                             |
| Query   | Query mode                        | Opr. unsuccess  | Operating result                     |
| Weekly Timer Off  | Weekly timer off                  | ALL   | All units are selected               |
| Online  | Online status                     | Protect   | Protection code follows              |
| Error   | Error code follows                | Set. temp   | Set temperature                      |
| T2A T2B T3  | Corresponding period              | Room. temp  | Room temperature                     |
| T2A   | Temp. of the middle of evaporator | T2B   | Temp. of the outlet of the condenser |
| T3  | Temp. Of outdoor pipe             | Mon   | Monday                               |
| Tue   | Tuesday                           | Wed   | Wednesday                            |
| Thu   | Thursday                          | Fri   | Friday                               |
| Sat   | Saturday                          | Sun   | Sunday                               |

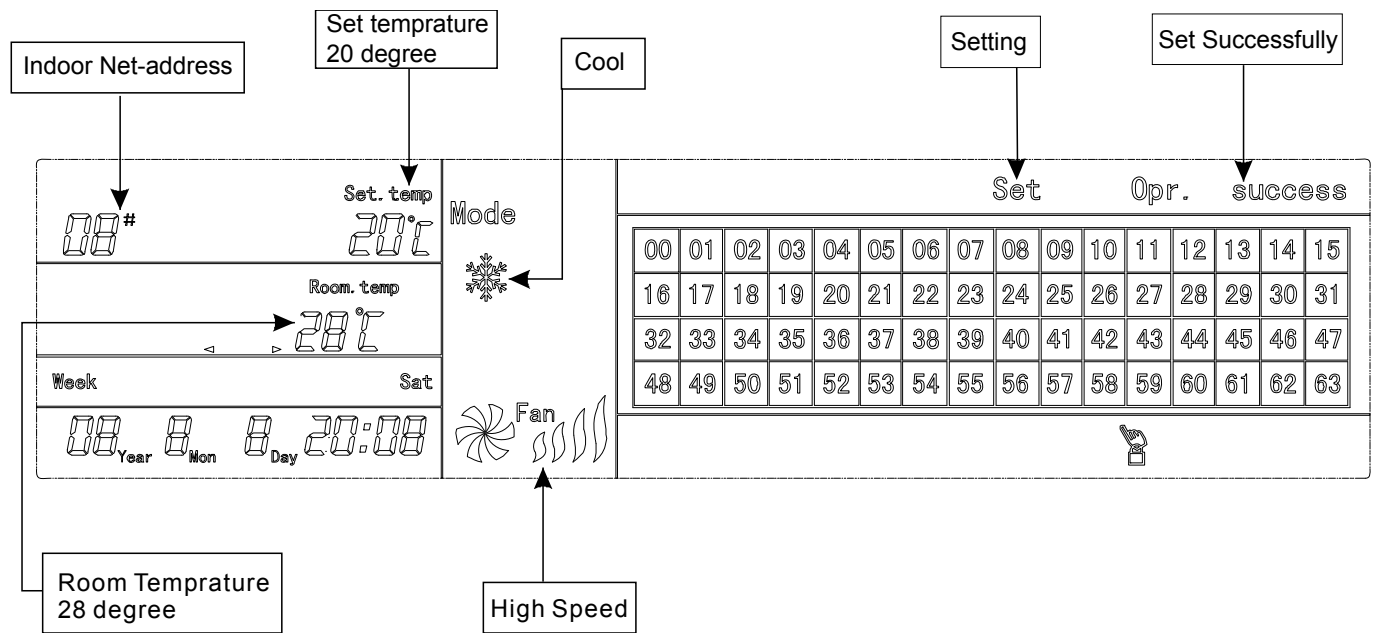
- The main interface of the weekly-timer central controller (user interface)

- Under the other pages, press **Cancel** to return to the main interface.
- Under the other pages, automatically return to the main interface when no operation for a period of time.
- The main interface displays the on-line condition of the indoor unit.



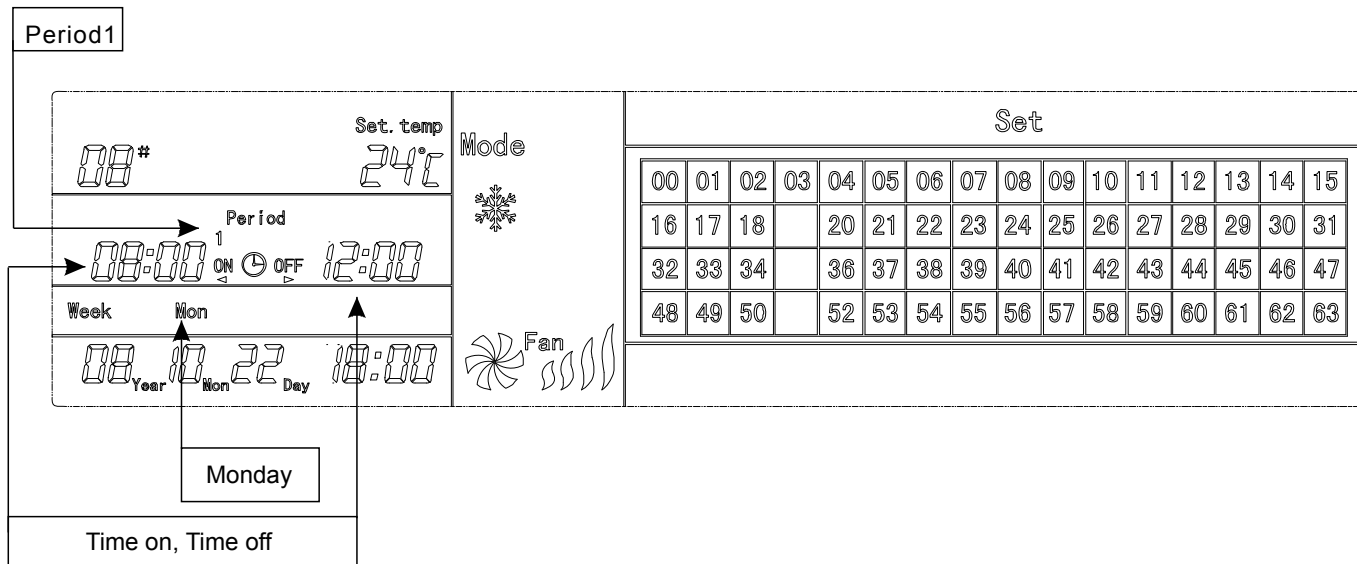
- Setting interface of single weekly-timer central controller

- Under the main interface, press **Set** to the single setting interface.
- Automatically return to the main interface when no operation for a period of time.
- Set the running status of single air conditioner under this page.



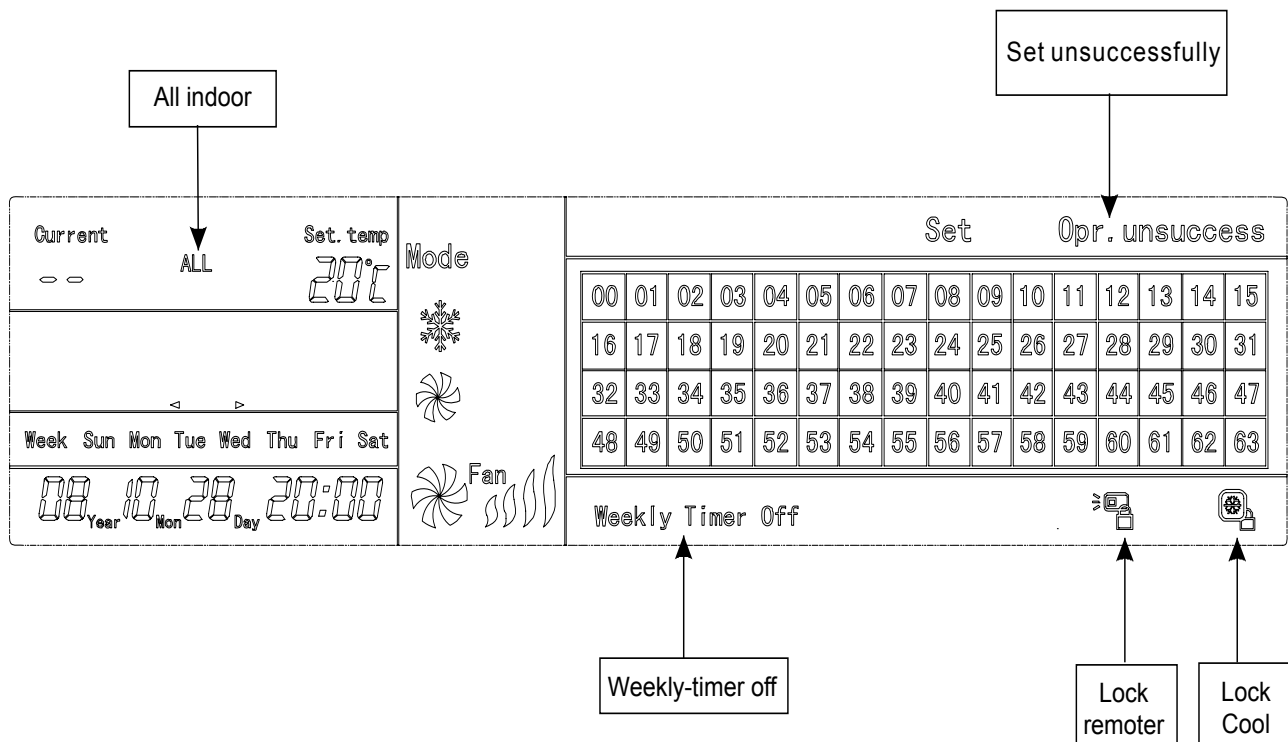
● Setting interface of weekly timer parameters of single weekly-timer central controller

- 1) Under the main interface, press **Program** to display the parameter setting interface of single weekly timer.
- 2) Automatically return to the main interface if no operation is performed for a period of time.
- 3) Under this page, set the weekly timer parameters of single air conditioner, including startup time, shutdown time, the running mode of this period, temperature and wind speed.
- 4) One air conditioner can be at most set with four periods in one day from Monday to Sunday.



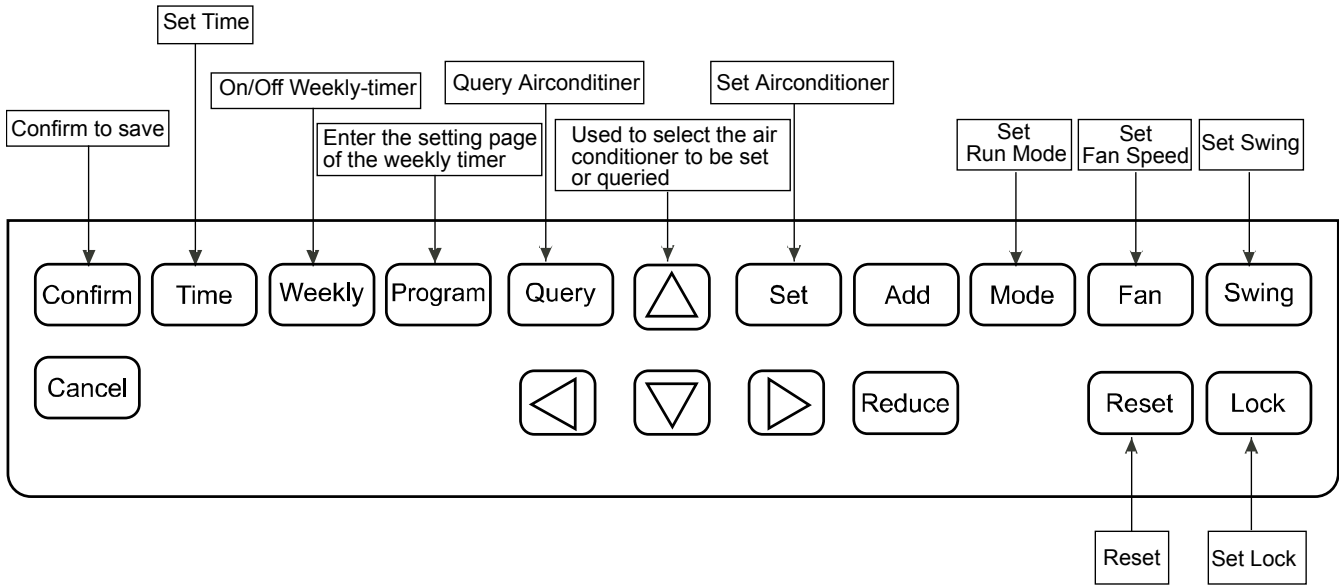
● Unified setting interface of the weekly-timer central controller

- 1) Under the main interface, press **Set** to display the unified setting interface.
- 2) Automatically return to the main interface if no operation is performed for a period of time.
- 3) Set the running mode of all air conditioners under this page, including mode, temperature and Fan speed.





### 3.3.4 Button names#



#### 1) On/Off key

Press the ON/OFF button. All air conditioners will be shut down if they are running; on the contrary, they will be started up. If you press the button for less than 5 seconds, the startup mode is the last running mode of the air conditioner. If you press the button for more than 5 seconds, the startup mode is cooling, fan runs at high Speed, and the set temp. is 24 degrees.

#### 2) SET key

Press the SET button, and then select set single or set all. Set single indicates to set the parameter (such as mode/ temperature/Fan speed/ weekly timer) of a single selected air conditioner. Set all indicates to set the parameter of all air conditioners controlled by the central controller.

#### 3) Query key

Press the Query button to query the running condition of the air conditioner, such as on or off, temperature setting, indoor temperature, fan speed and running mode. Press direction keys to select the air conditioner that you want to query.

#### 4) Up, Down, Left, Right keys (Direction keys)

When querying or setting the indoor units, press these four keys to select the indoor units that we need to set or queried. When setting the weekly timer, it is used for selecting the day of the week and the time of startup and shutdown.

#### 5) Add key

When querying the indoor unit, press the Add button to query more parameter of the indoor unit. When setting the indoor unit, it is for adjust the setting temperature. When setting the weekly timer, it is for adjust the time of startup and shutdown.

#### 6) Reduce key

When querying the indoor unit, press the “Reduce” button to query more parameter of the indoor unit. When setting the indoor unit, it is for modifying the setting temperature. When setting the weekly timer, it is for modifying the time of startup and shutdown.

**7) Mode key**

When setting the indoor unit, it is used for setting the running mode of the indoor unit which includes Automation, Cooling, Heating, Fan mode, Dry and shutting down.

**8) Fan key**

When setting the indoor unit, it is for setting the wind speed of the indoor unit which includes high speed, middle speed, low speed and automatic speed.

**9) Swing key**

In setting the indoor unit, it is for setting the swing function of the indoor unit. The running modes are swing on or swing off.

**10) Lock key**

When setting, press the Lock button to lock the remote controller of all or single indoor unit. Press the Query button and hold under the main page, then repress the Lock button again to lock the keyboard of the central controller; press the Mode button and then press the Lock button again to lock the running mode.

**11) Reset key**

The central controller re-scans the indoor unit in the network as recharging after power off.

**12) Program key**

Under the main page, press the Program button to set the weekly timer of single indoor unit or all indoor units. Press the Query button and hold, and then press the Program button to query the weekly timer parameters of the indoor unit.

**13) Weekly key**

Under the main page, press the Weekly button to start up or shut down the weekly timer function.

**14) Time key**

Under the main page, press the Time button for 5 seconds to enter the time-modifying status, and then press Add or Reduce button to change the setting time. Press Left or Right to select minute/ hour/ day/ month/ year. Finally, press the Confirm button to save the modification.

**15) Confirm key**

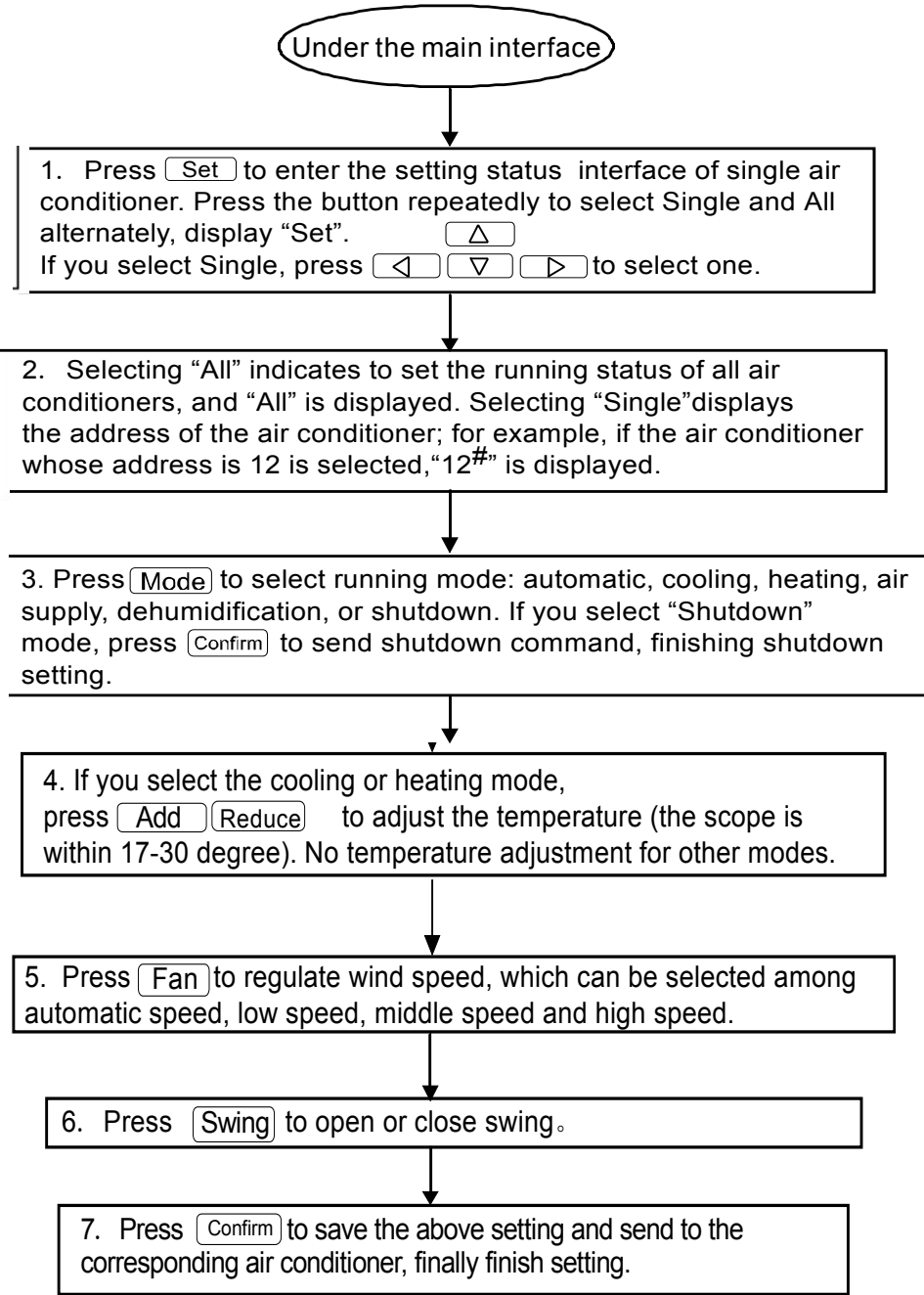
Save data and send the command required to the indoor unit, such as setting the mode of the air conditioner.

**16) Cancel key**

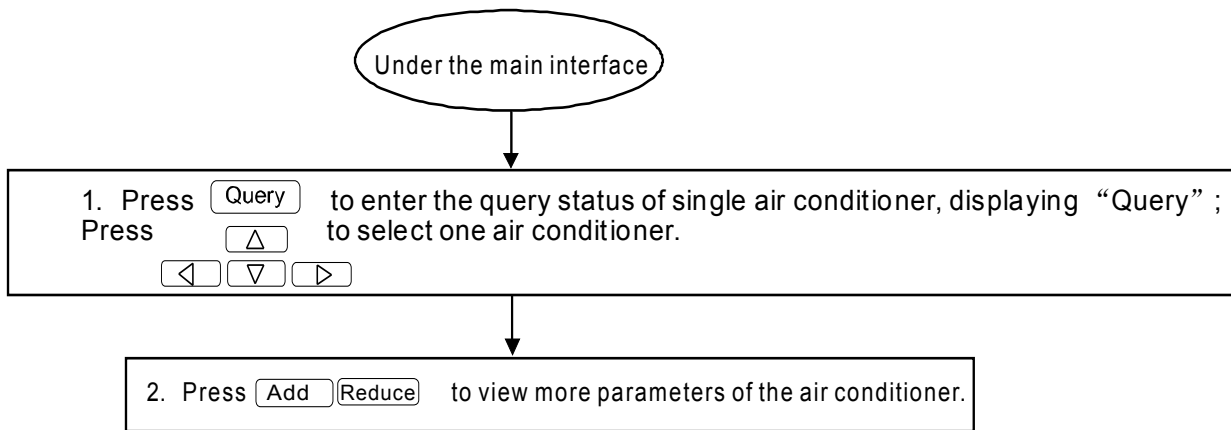
Cancel the last operation and return to the last interface.

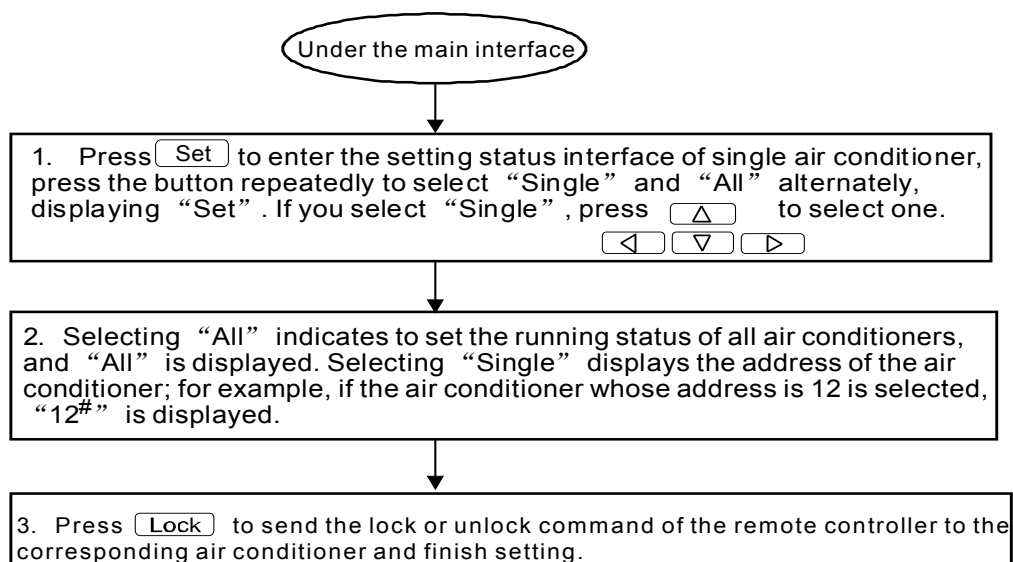
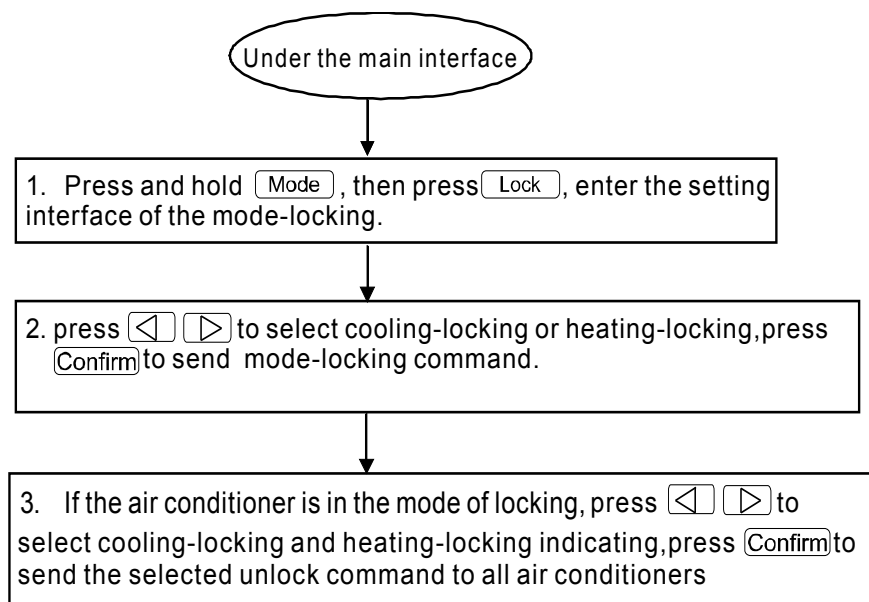
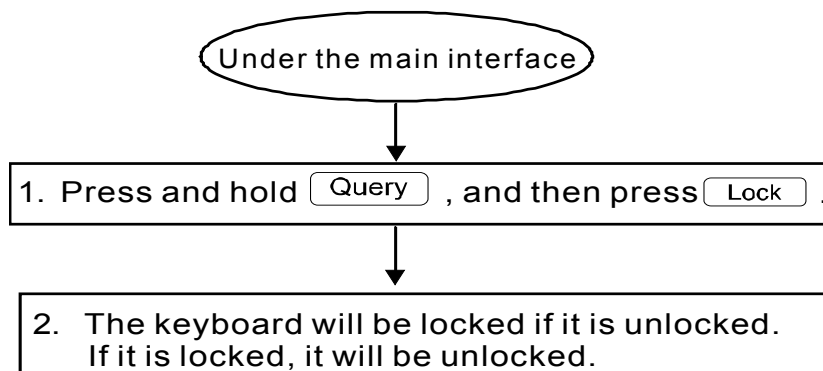
### 3.3.5 Operating the centralized controller

#### (1) How to set the running status of the air conditioner?

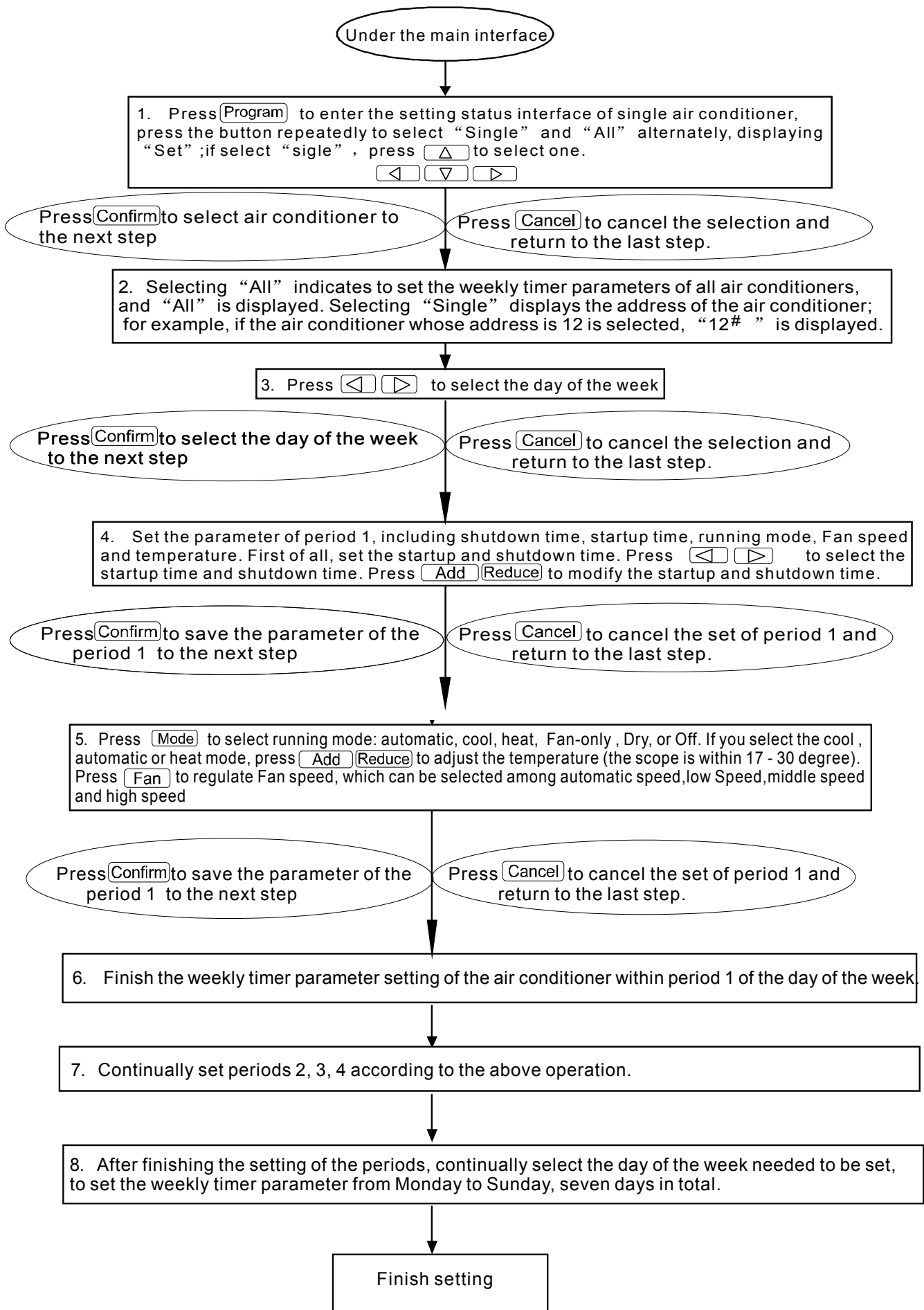


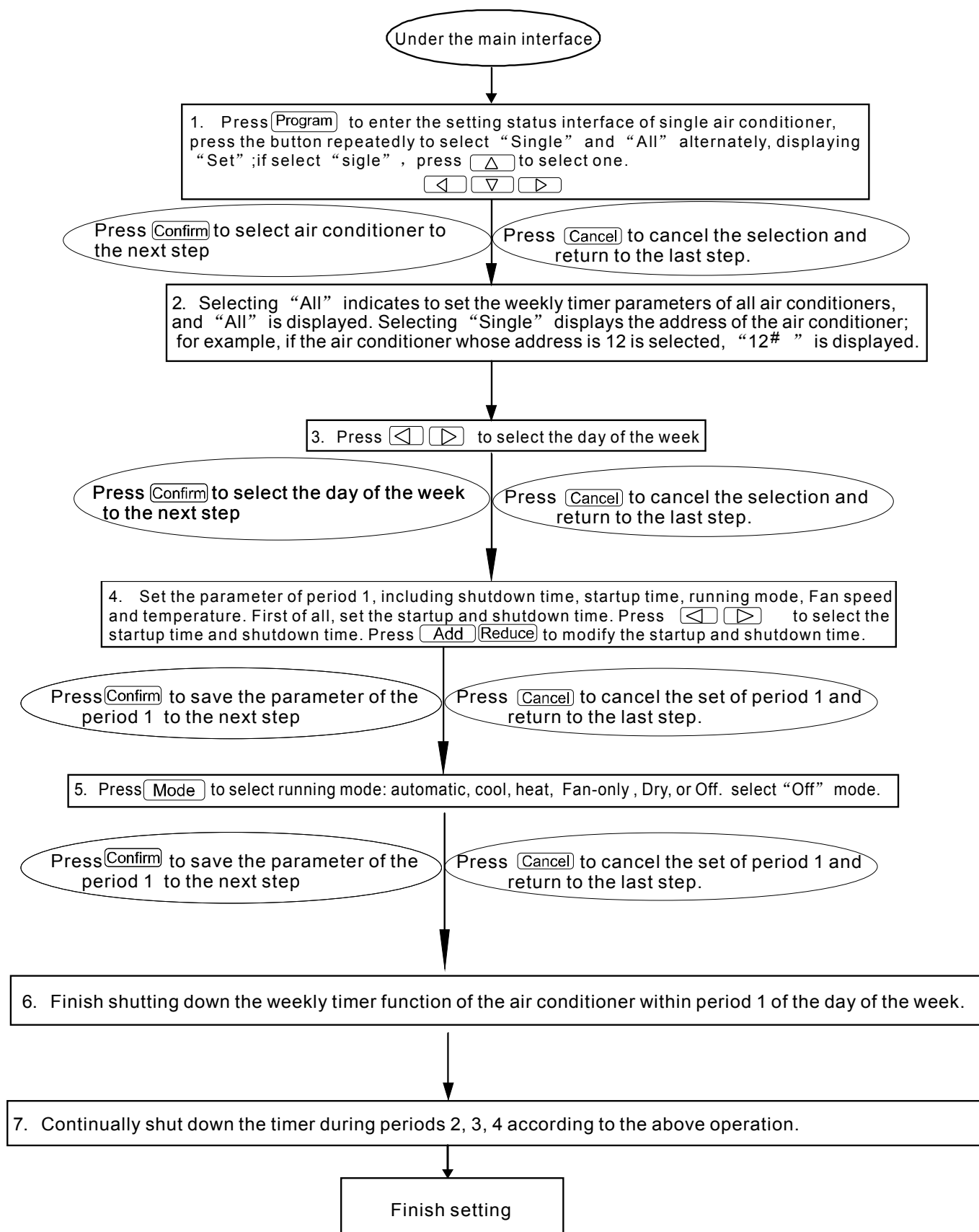
#### (2) How to query the running status of the air conditioner?



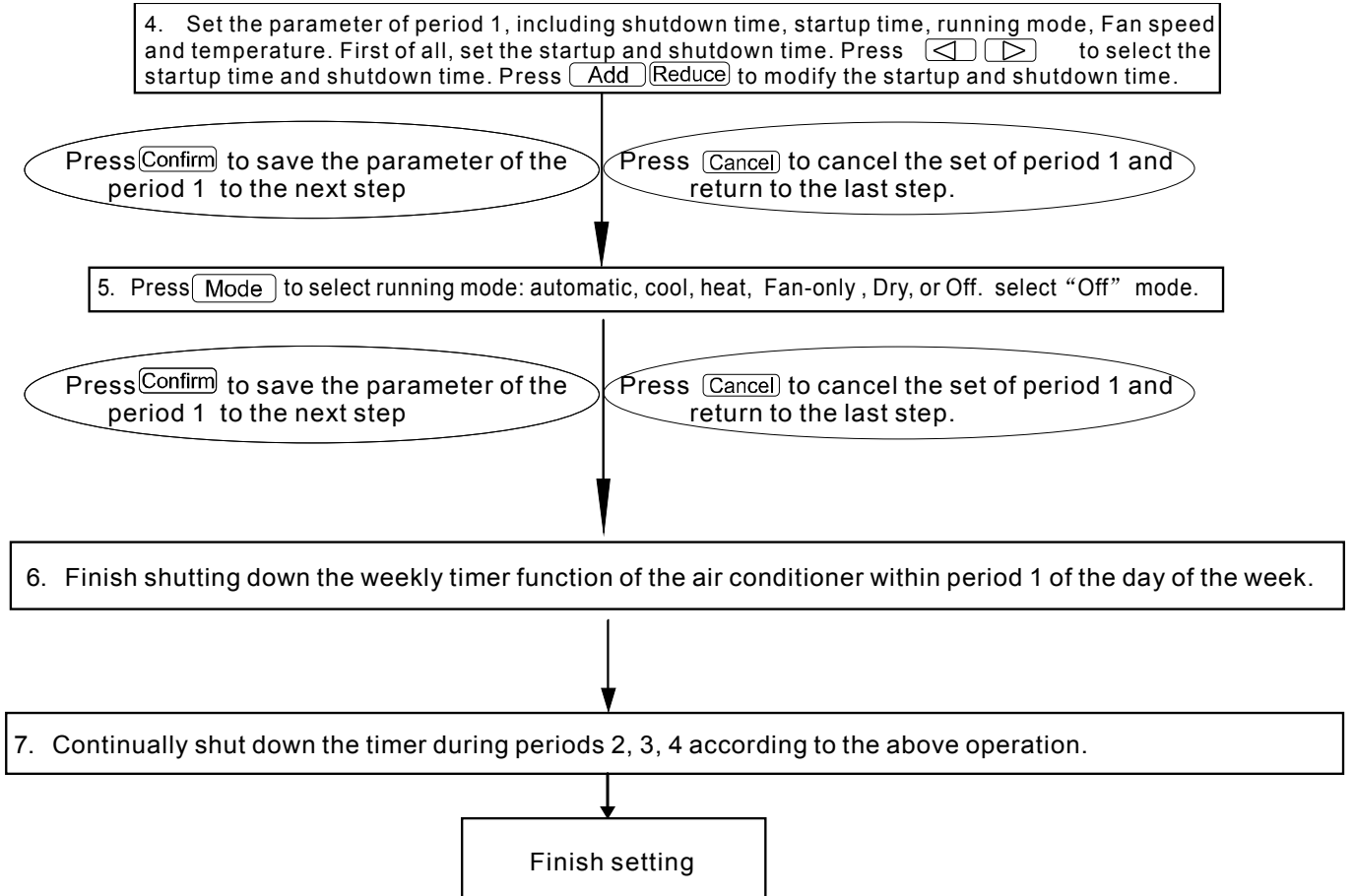
**(3) How to lock and unlock the remote controller of the air conditioner?****(4) How to lock and unlock the mode of the air conditioner?****(5) How to lock and unlock the key board of the weekly-timer central controller?**

**(6) How to set the function and relevant parameters of the weekly timer of the air conditioner?**

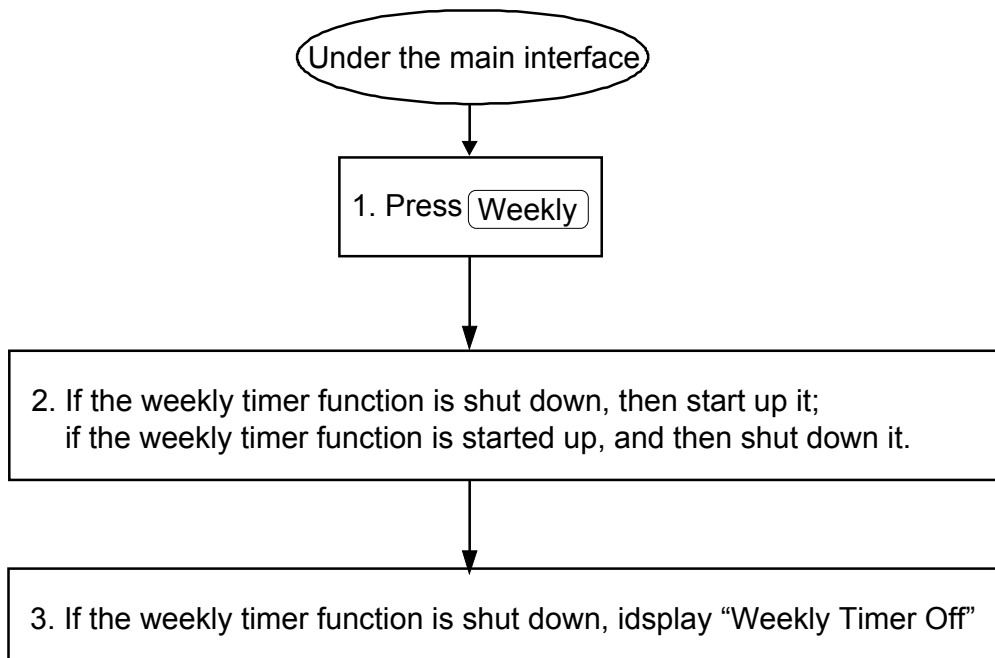


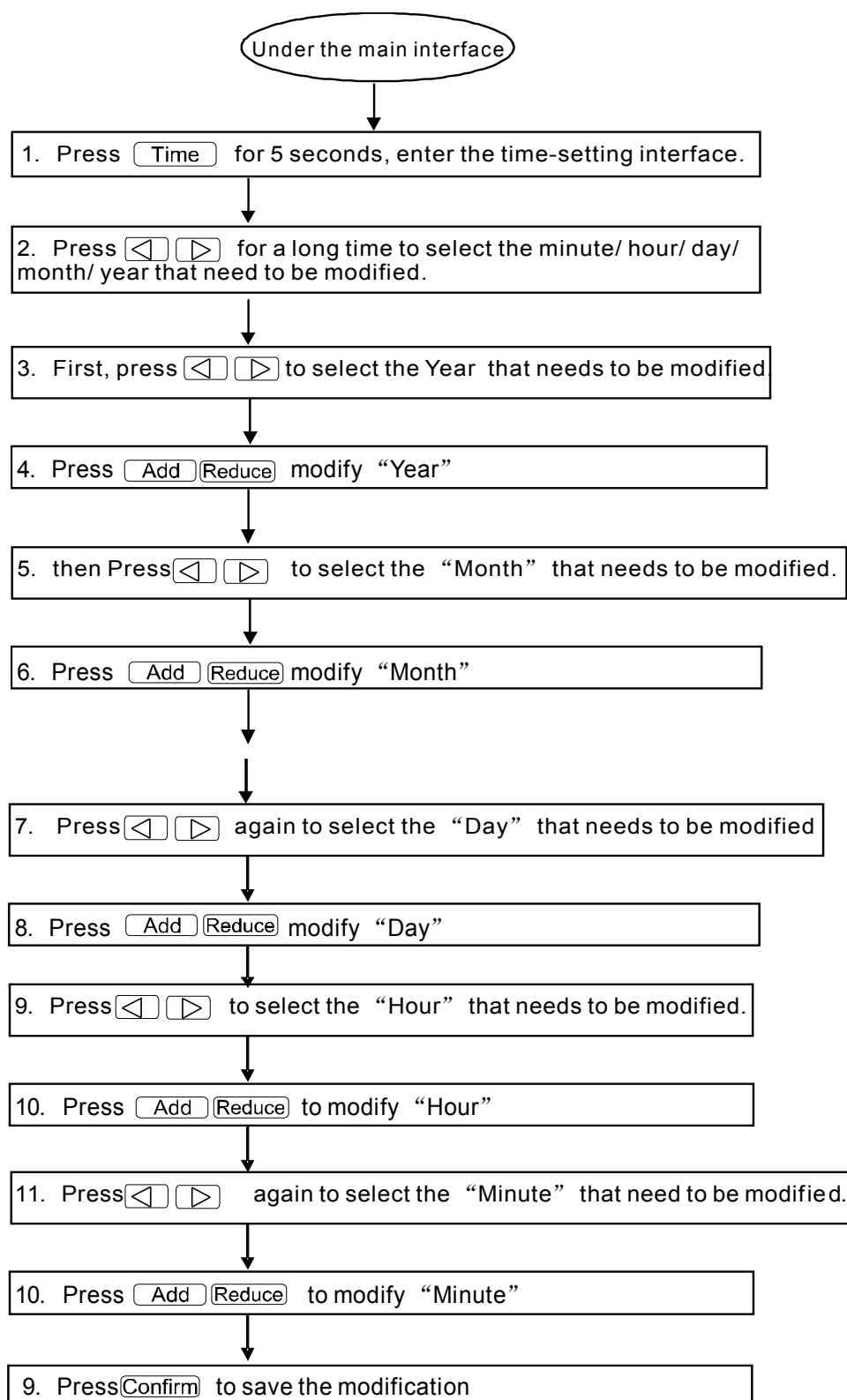
**(7) How to turn off the weekly timer setting of a period of an air conditioner?**

**(8) How to query the weekly timer setting parameter of the air conditioner?**



**(9) How to start up or shut down the weekly timer function of all air conditioners?**



**(10) How to modify the system time?**



### 3.3.6 Installation

The thickness of the central controller cable shall be adjusted according to the length of the cable. A proper cable tube shall be used to install the cable of the central controller.

Insert the flat tip screwdriver into the recess on the top panel of the case and slightly turn to open the top cover of the central controller.

Note:  
The installation procedure show in fig.1~Fig.5 is for MD-CCM09 (A), UL-CCM09 (A)/E and MD-CCM09/E (H)-A

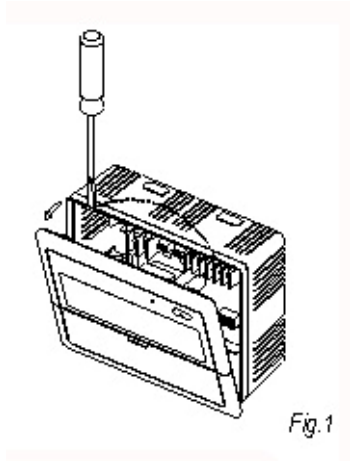


Fig.1

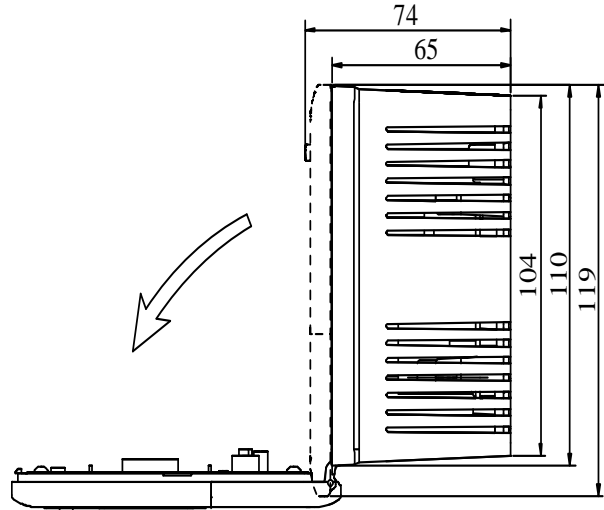


Fig.2

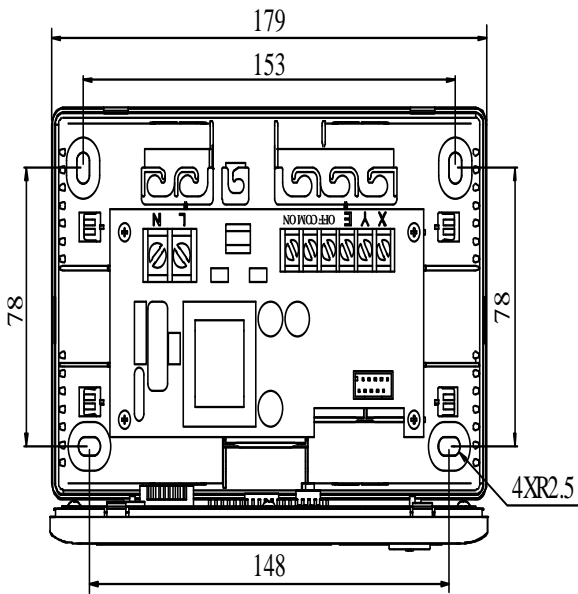


Fig.3

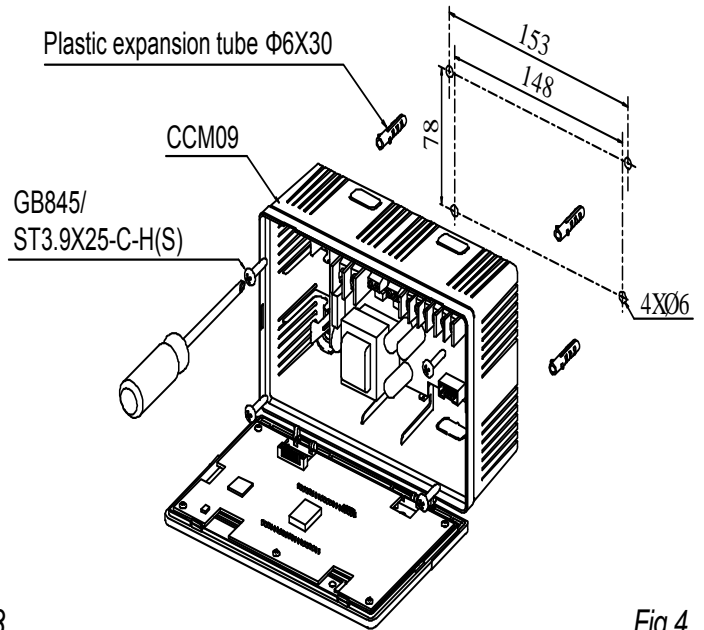


Fig.4

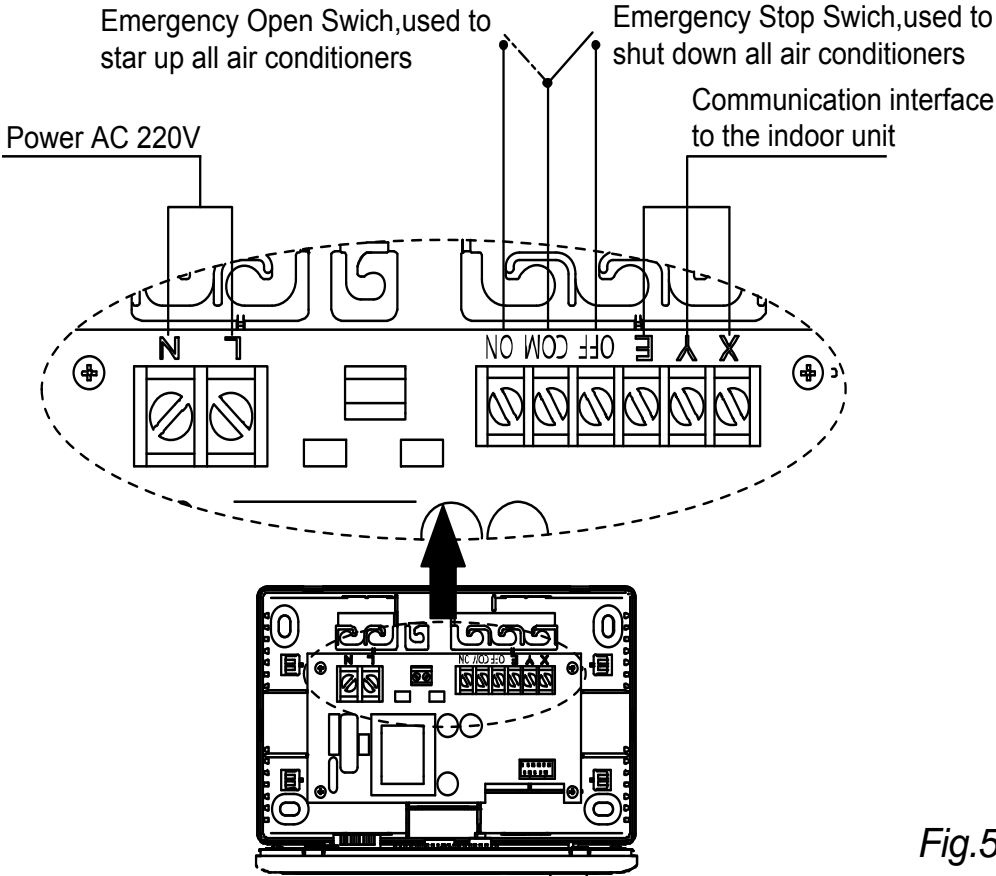


Fig.5

Note: The installation procedure show in Fig.6 ~ Fig.8 is for MD-CCM09/E and MD-CCM09/E(H)

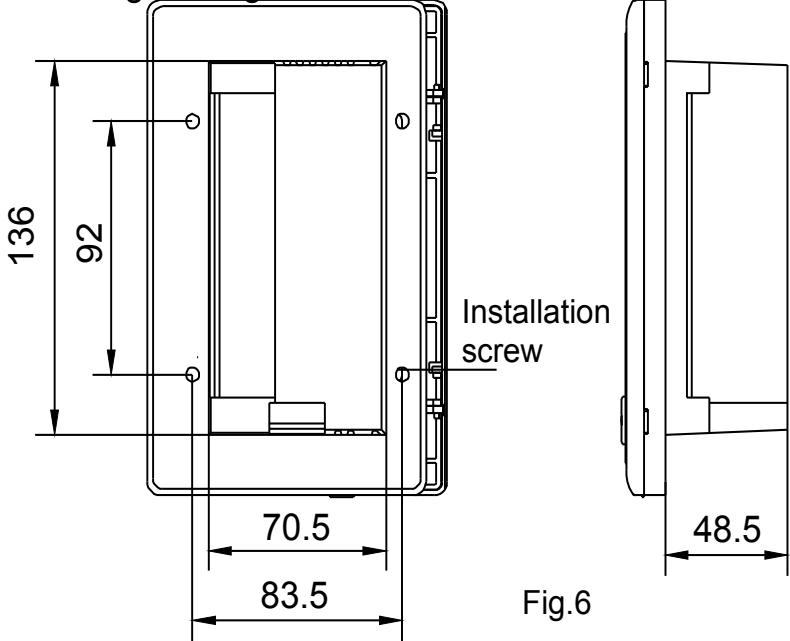


Fig.6

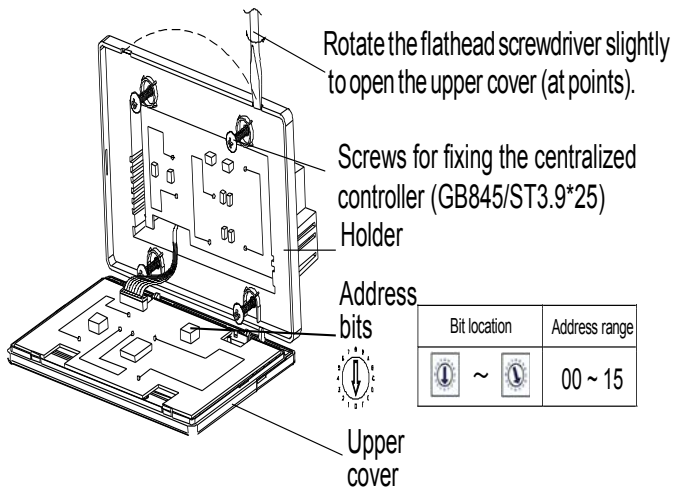
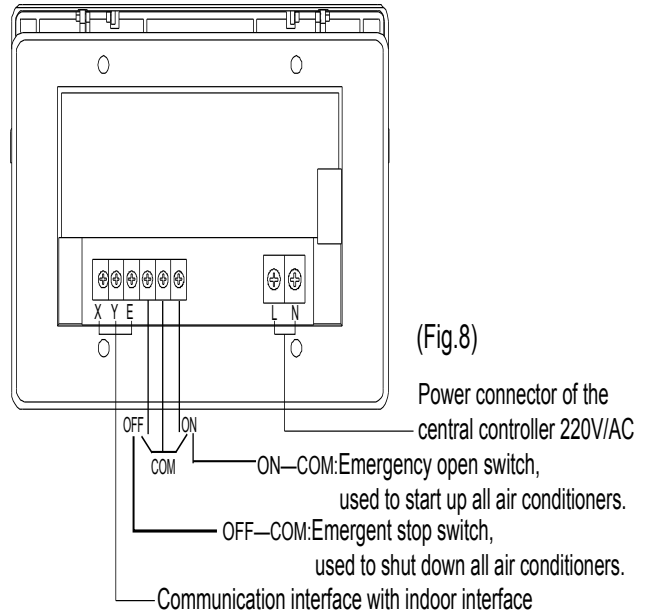


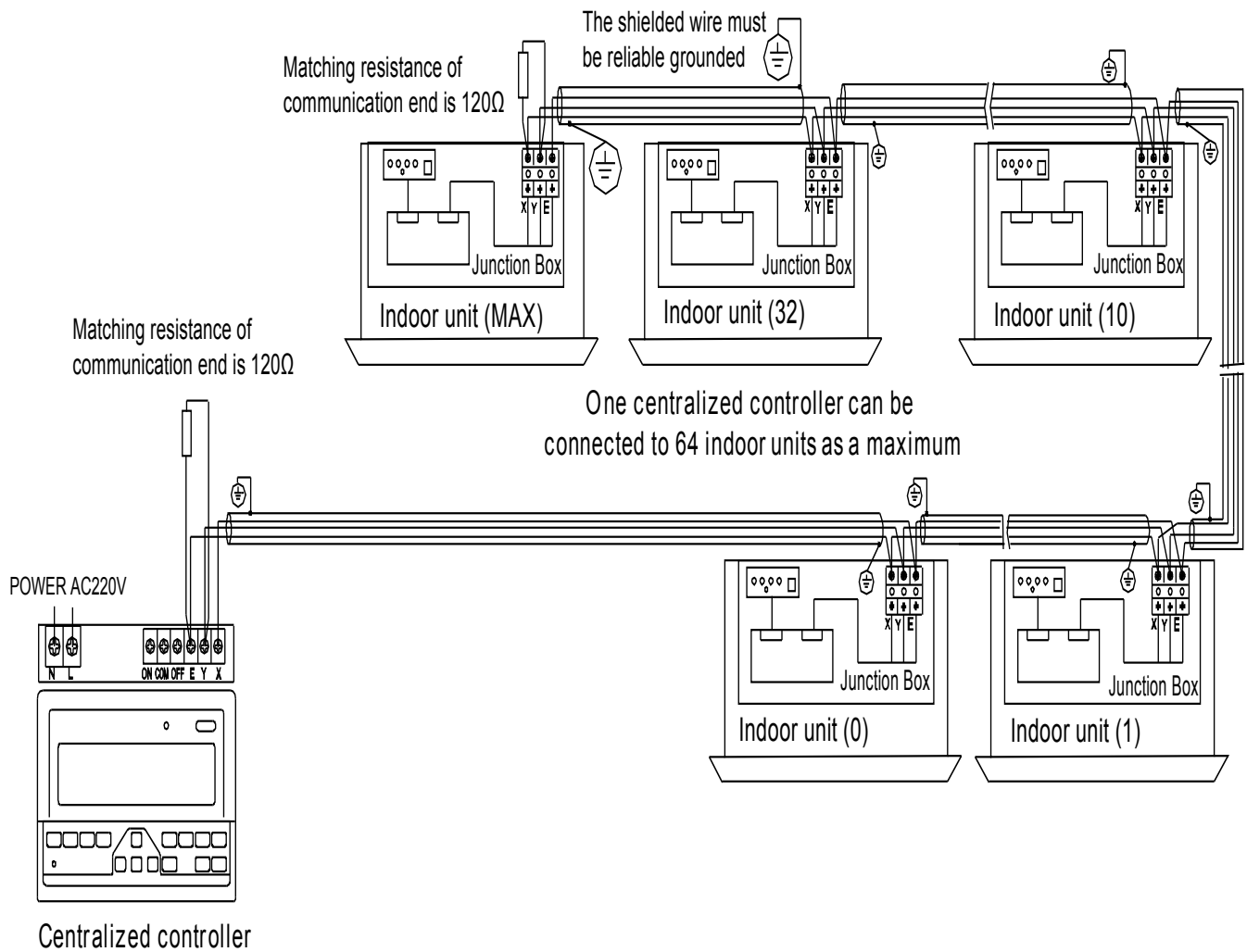
Fig.7



(Fig.8)

Connecting diagram of network-based air conditioning system

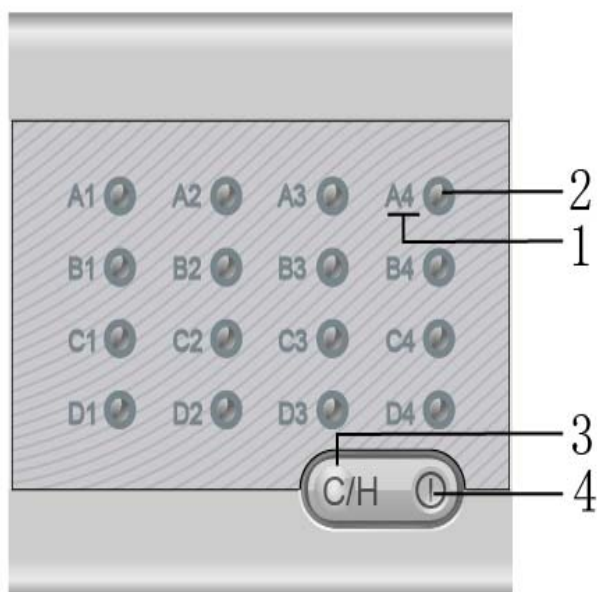
(There are two types of indoor units, namely indoor unit with external network interface module on the main control board or built-in network interface module in the main control board.)



### 3.4 KJR-90B/M-E

KJR-90B/M is a unified centralized controller, which allows us to control up to 16 indoor units simply and compactly. It commands the indoor unit to work at only 2 modes, cooling and heating. Besides this commanding, users could also modify the indoor units working mode by the remote wireless controller. This controller offers the controller functions only and is disable to bridge the units to the PC.

#### 3.4.1 Button name



- ◆ Centralized Control
  - Short press:
    - Only turn ON/OFF the last time
- ◆ Operated indoor units.
  - Long press (3 seconds):
    - Can Turn ON/OFF all indoor units.
    - Operation Mode Selection Switch (Cooling, Heating)
- ◆ Overall/mono-control the indoor units
- ◆ Sleep and memory function
  - If no operation to be conducted at the controller after 25 seconds, system would enter to sleep mode, all indicators are faded. Press any key to recovery the displaying.
- ◆ Compatible with central control.

#### (1) Corresponding indoor unit tag

Up to 16 indoor units are controlled by one centralized controller. If more than 16 indoor units, the operation would failure. Please set the indoor unit network address codes properly before use this controller. The following table shows the relation between the tag and the corresponding network:

|                     |    |    |    |    |    |    |    |    |
|---------------------|----|----|----|----|----|----|----|----|
| Air condition label | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 |
| Network address     | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| Ari condition label | C1 | C2 | C3 | C4 | D1 | D2 | D3 | D4 |
| Network address     | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 |

The corresponding indication of the air conditioner reflects the working mode of its indoor unit, blue means cooling or air supply mode, red means heating mode.

#### (2) Single indoor unit On/Off key

Users could press this key to turn on or turn off the corresponding indoor unit. If the indoor units original mode is on, press this would turn it off. The interval for modes shift-over is 6 seconds, if interval less than 6 seconds, the operation would invalid.

**Notes:** 1. if the red light flashes quickly, it means the corresponding indoor unit malfunctions.

2. If no one presses the keys of the controller, the controller would turn itself into power saving mode, in which all the lights fade out. Press any key to stop this mode.

**(3) Unified mode setting key**

Press this key to set all the units' mode. Only two modes can be set by this key. They are the cooling mode and the heating mode. The details of the two modes are as follows:

| Mode    | Temperature | Fan Speed | Key light |
|---------|-------------|-----------|-----------|
| Cooling | 20°C        | Hi speed  | Blue      |
| Heating | 28°C        | Hi speed  | Red       |

**Notes:** The interval for modes shift-over is 6 seconds, if interval less than 6 seconds, the operation would be invalid. When the indoor unit's working mode is changed by other device, such as remote controller, this centralized controller could detect, and change the corresponding units tag to show the actual running mode.

**(4) Unified On/Off key**

This key has 2 ways to send commands:

Press for 3 seconds or more: To turn on or turn off all the indoor units those are connected to this controller.

Press for less than 3 seconds: to turn on or turn off the single unit that we ever controlled most latterly.

**Notes:** If this key's light flash quickly, it means that the EEPROM malfunctions.

**(5) Mode select**

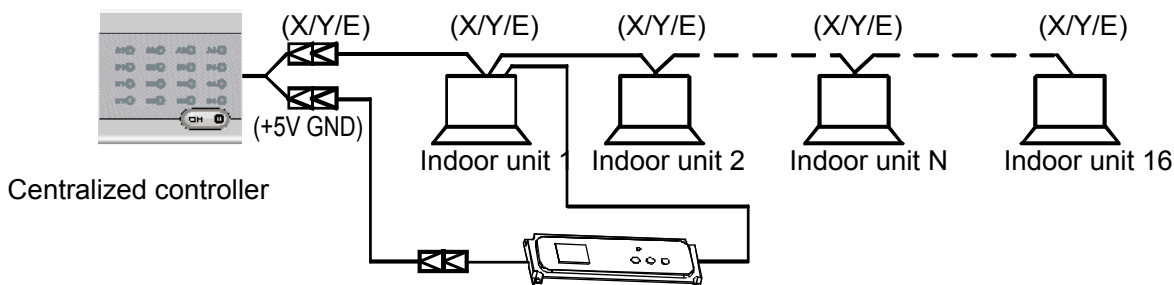
The system consists with heating and cooling modes; shift the modes by Mode button. The fluorescent light indicating the current mode: Red is heating mode, which mode corresponding parameter have already set unallowable to modify, if necessary, the parameter could be modified by remote controller.

**Notes:** 1. The interval for modes shift-over is 6 seconds, if interval less than 6 seconds, the operation would be invalid.

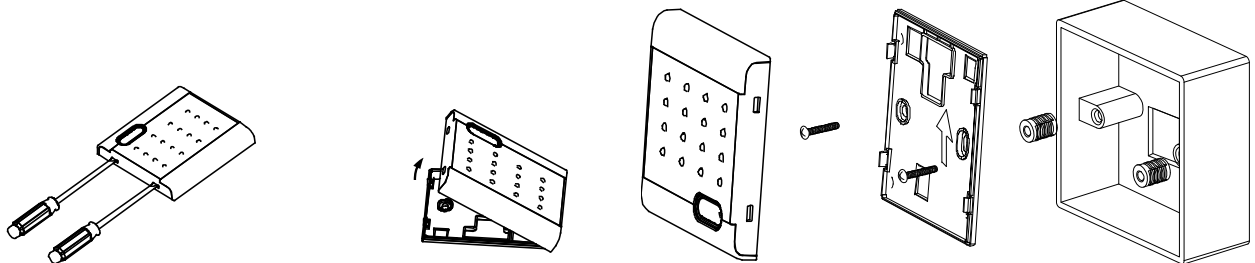
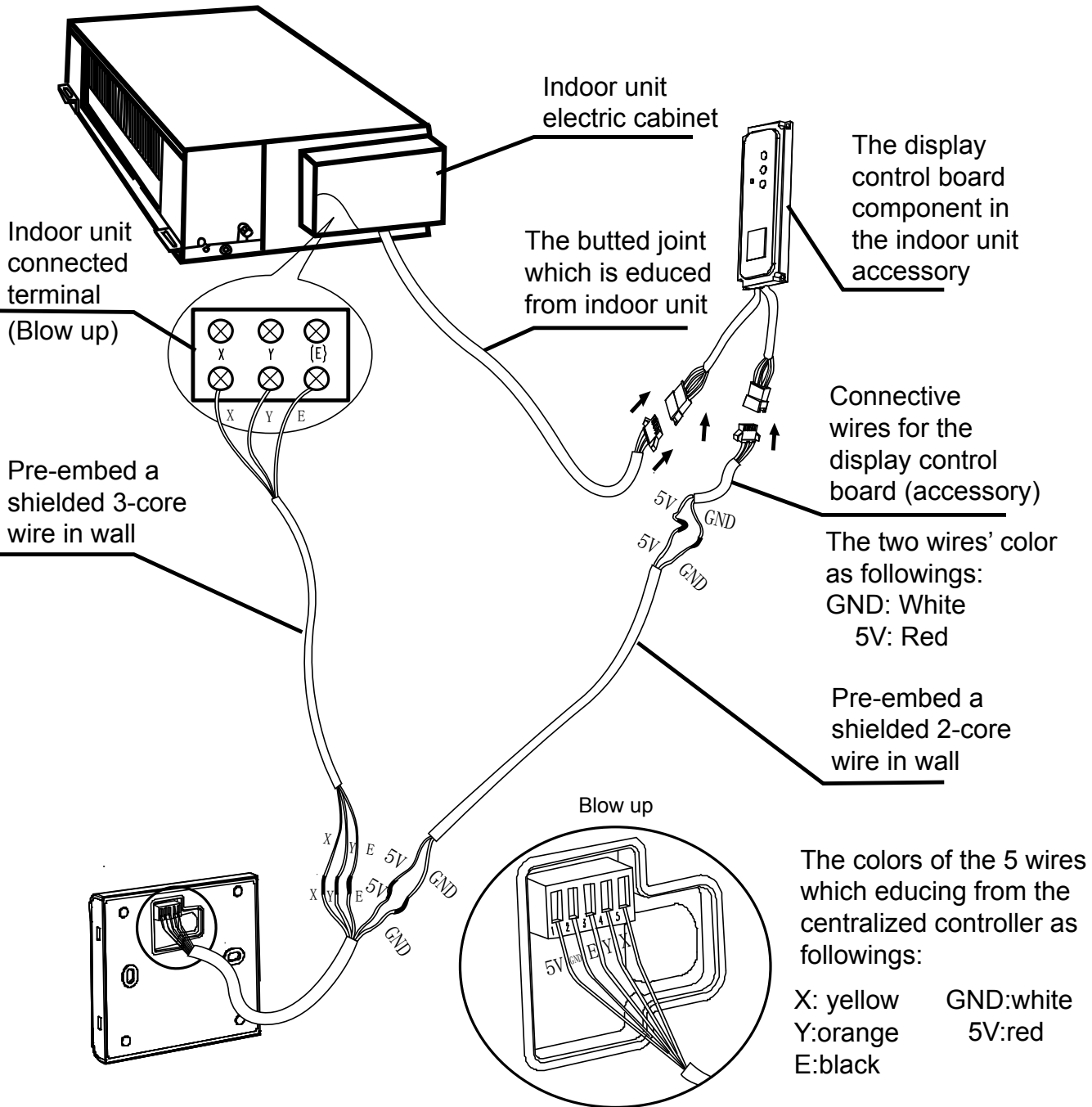
2. Default starting temperature: Cooling 20 °C, High wind, the corresponding

LED in the indoor unit will light(Blue); Heating 28°C, high, wind, the corresponding LED in the indoor unit will light(red). Red light flash rapidly means indoor unit malfunction.

**3.4.2 Installation**



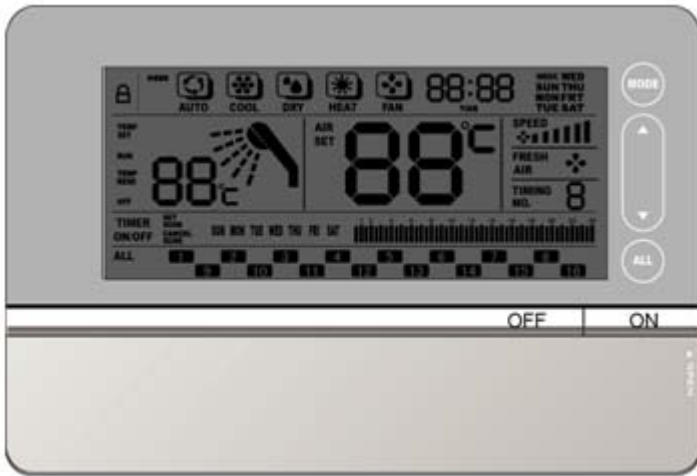
**Notes:** Centralized controller could controller and gets power from the displaying control cabinet in one of the sixteen indoor units. If necessary to get power from four-way cassette, the transformer has to be changed, please see the label in the back of the centralized controller.



Notes: Please base on the arrow direction in above to install the bottom cover.

### 3.5 Centralized controller KJRF-180A/MBT-E and KJRF-180A1/MBT-E

The only difference between KJRF-180A/MBT-E and KJRF-180A1/MBT-E is their cabinet's shape. Their controlling functions are totally the same.



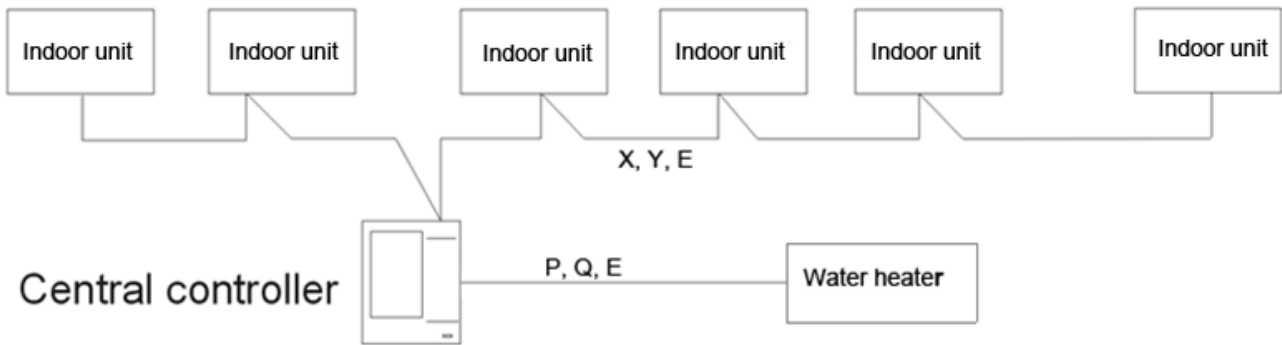
- Newly designed centralized controller with graceful appearance.
- Able to centralized control up to 16 indoor units, which group can contain 1 fresh air indoor unit.
- Able to control the heat pump water heater.

#### 3.5.1 System configure

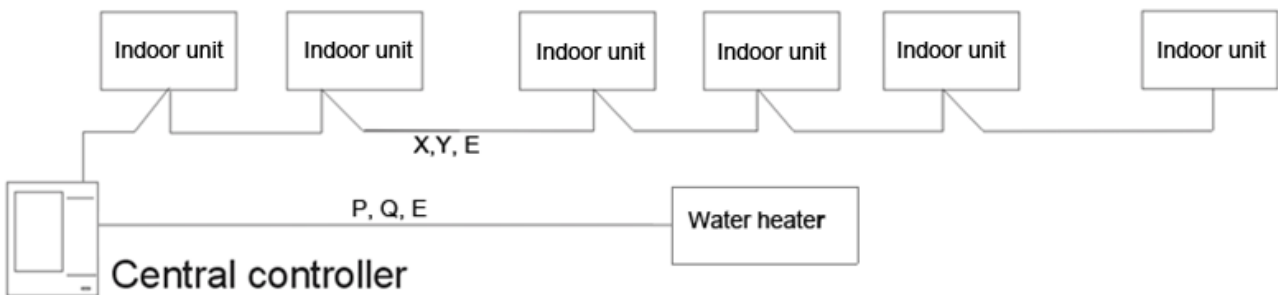
With KJRF-180A/MBT-E, we are able to centrally control up to 16 indoor air conditioner units and 1 heat pump water heater. When the centralized control function works, it acts like the MD-CCM09. KJRF-180A/MBT-E and KJRF-180A1/MBT-E are unable to connect the indoor units to the PC or BMS.

These 2 ways for the centralized controller to connect the indoors units are both available

1<sup>st</sup> way:



2<sup>nd</sup> way:

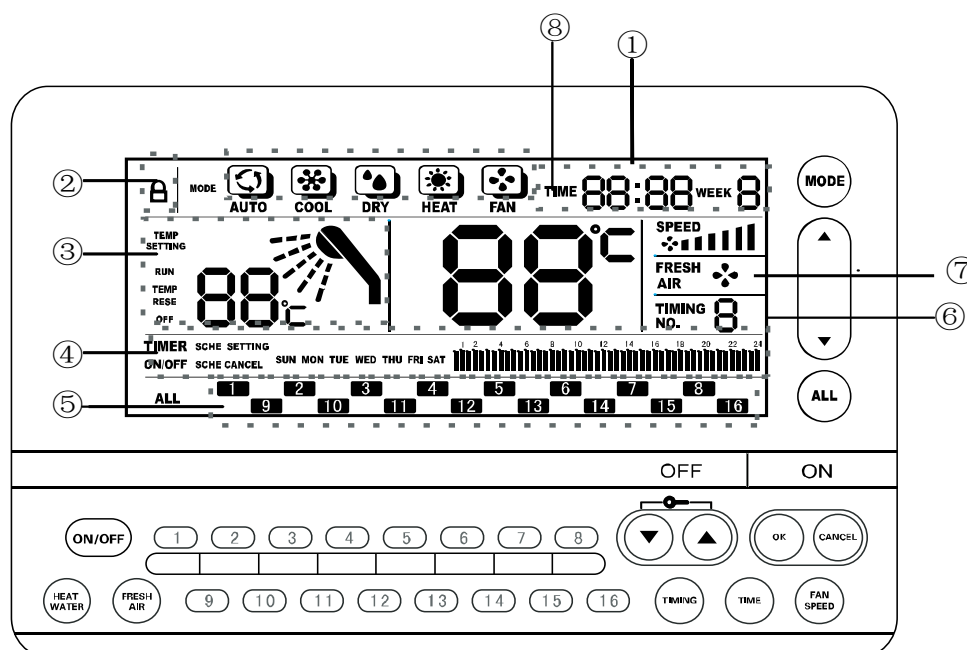


To establish a steady network the following should be noted

- The signal wire should be 3-core shielded wire and the wire should be provided by licensed electricians.
- To make signal transmission steady and to protect the facilities, the signal transmission wires should not be near to the power line. An interval of 300mm-500mm should exist between these two kinds of wires.
- The signal wire of each network should be less than 1,200m.
- The unit and the centralized controller should be connected hand-in-hand, which means that all the units' same port should be connected to a 3-core wire and the signal wire should be linear in topology. Or else, the facilities could not work normally.

### 3.5.2 Description Name and Functions

Liquid Crystal Display:



①The current time and date display

Display the date and the time.

②Operation lock display

Display whether the item is locked or not.

③Displays water heater area

Display the working status of the water heater.

④Displays event content settings

Display the content of the schedule.

⑤Displays operating status of the air-conditioner

Display whether the air-conditioner is running: LCD will be illuminated when the corresponding unit is running, or flash slowly if it is not.

⑥Timing sequence

Display the timing sequence when setting the events.

⑦Display the state of the fresh air

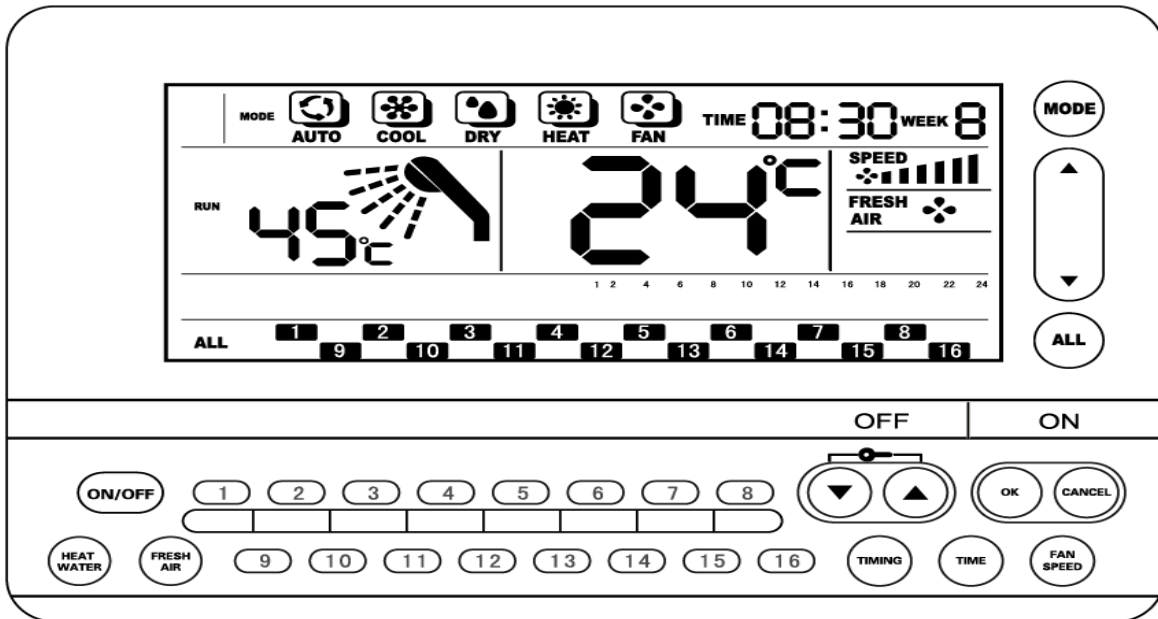
Display the current work state of the fresh air handling unit.



⑧ Display the set temperature of the air-conditioner

Display the current setting temperature of the corresponding air-conditioner.

3.5.3 Buttons and functions



**(1) Mode button:**

Press this button to change the indoor unit’s running mode. The changing sequence of the mode is as follows, Auto/ Cool/Dry/Heat/Fan.

**(2) Temperature setting button:**

Press this button to adjust the setting temperature

**(3) ALL button:**

Press this button can into main screen to select all the indoor units and if there is no activity in 40 seconds, the backlight will turn off.

**(4) ON/OFF button:**

This button is used for turning on or turning off the water heater of the fresh air unit. The operation takes effect after pressing the OK button.

**(5) OFF button:**

Turn off all or one single air-conditioner.

**(6) ON button:**

Turn on all or one single air-conditioner.

**(7) FRESH AIR button:**

Press this key to select the fresh air unit. And then we can change the setting of the fresh air unit.

**(8) TIME setting button:**

Press this key to activate the time setting function.

**(9) OK button:**

Press this button to confirm all the settings and deliver the signal the commands to the indoor units.

**(10) Water heater button:**

Press this key to select the water heater. And then we can change the setting of the fresh air unit.

**(11)TIMING button:**

Press this button to start setting the turning on and turning off schedule of the indoor unit.

**(12)UP and DOWN button:**

Used for adjusting the setting temperature the air conditioner and the water heater. Users can lock or unlock the keyboard by pressing the 2 keys synchronously.

**(13)CANCEL button:**

Cancel the setting operation.

**(14)A single air-conditioner selection button:**

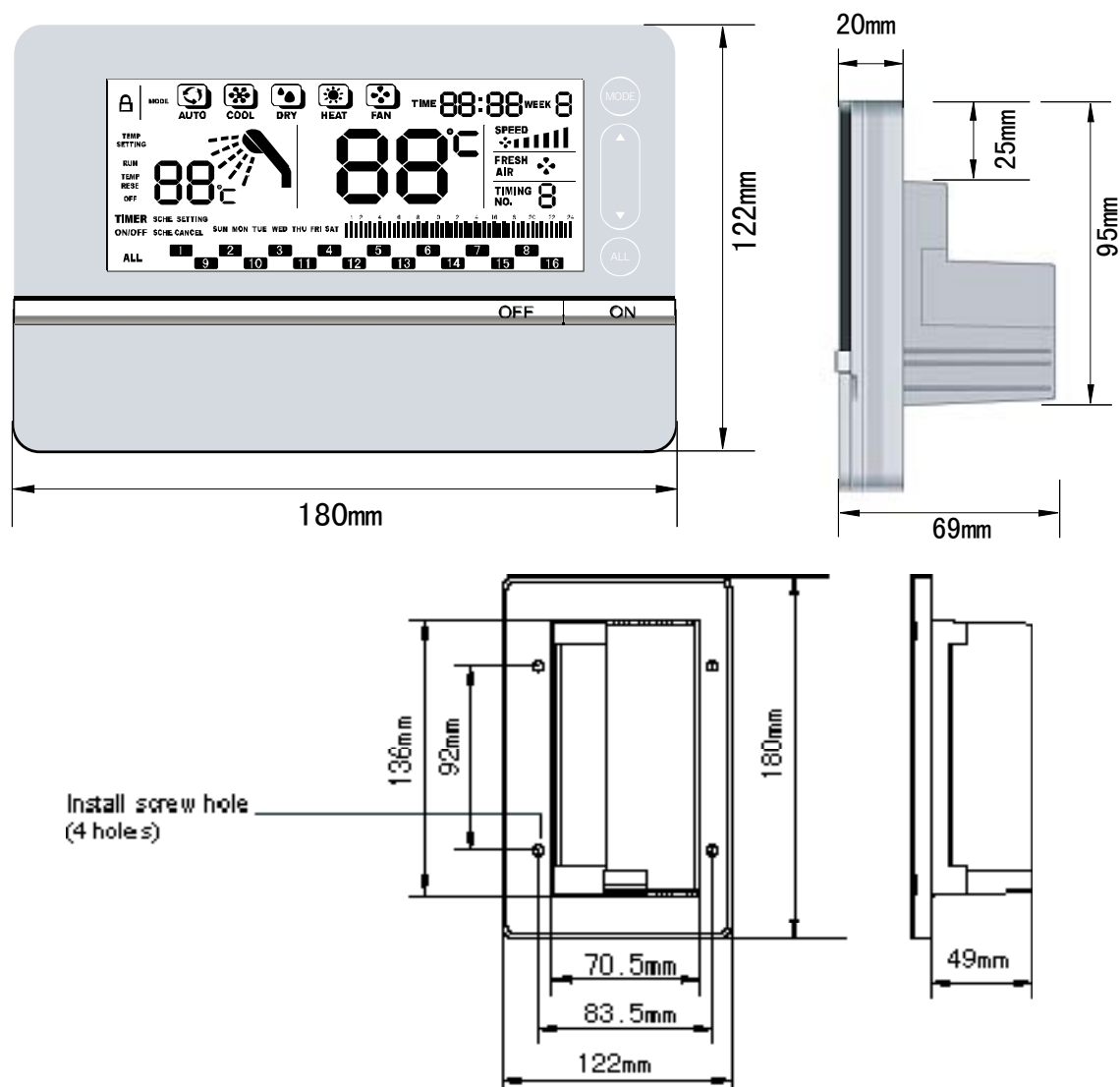
Use this button to select the corresponding air conditioner.

**(15)FAN SPEED button:**

Press this button to change the fan's running speed.

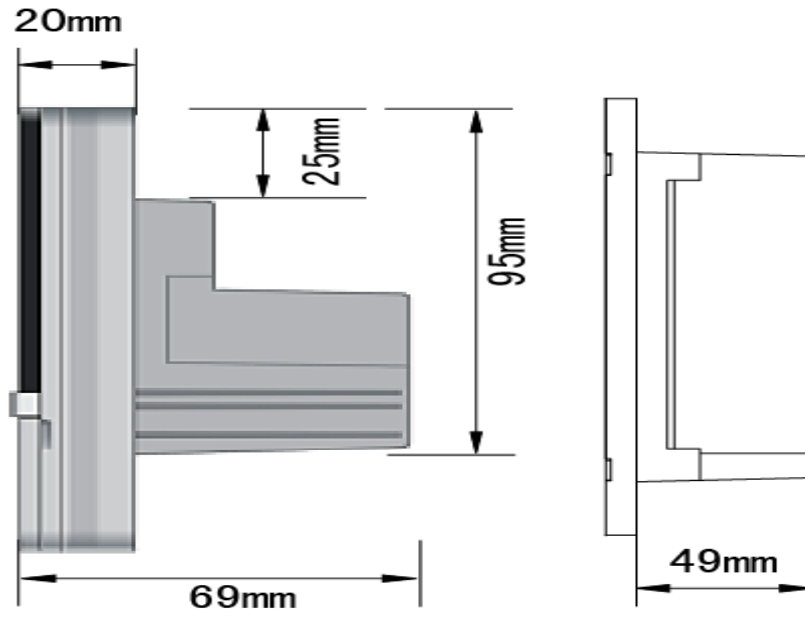
**3.5.4 Installation**

※ Dimension: 180\*122\*69mm

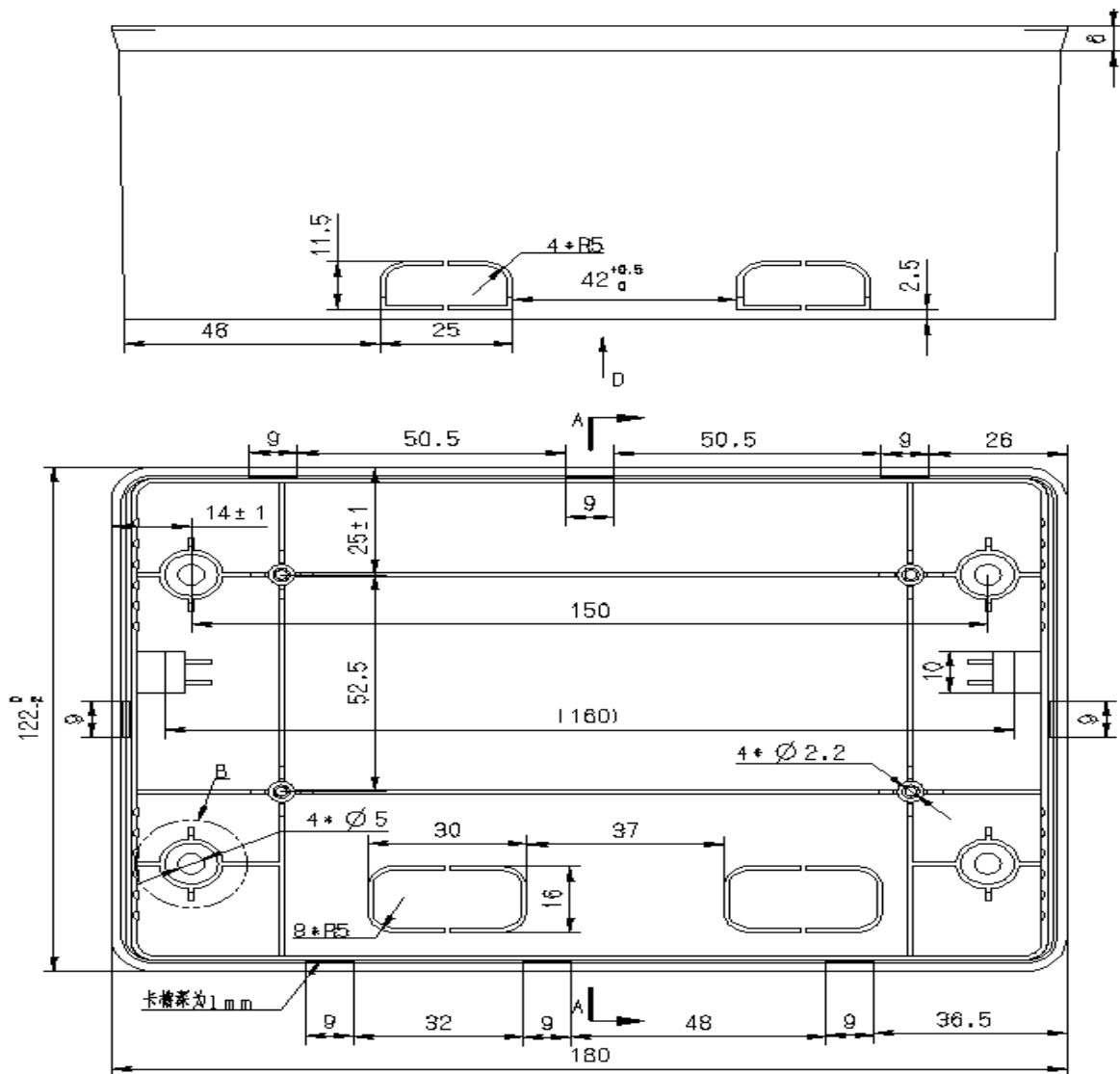


※ **Base cabinet:**

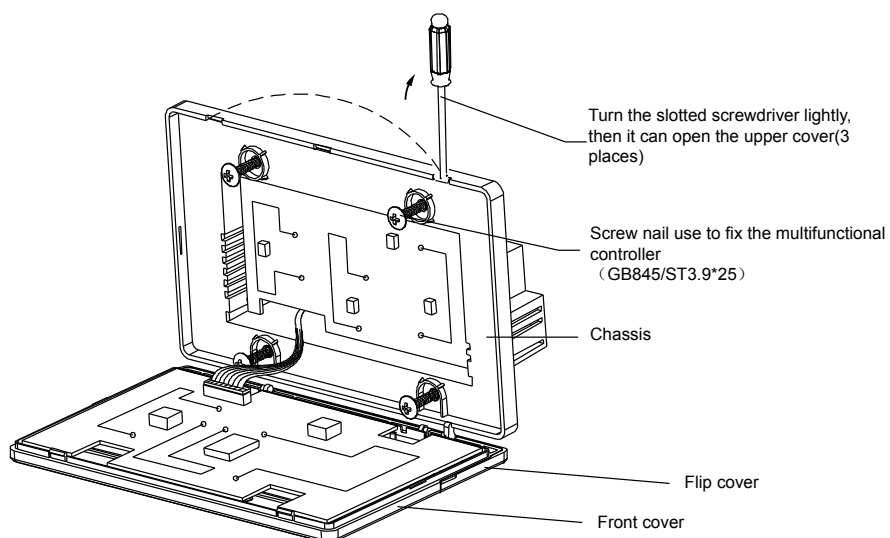
1) KJRF-180A/MBT



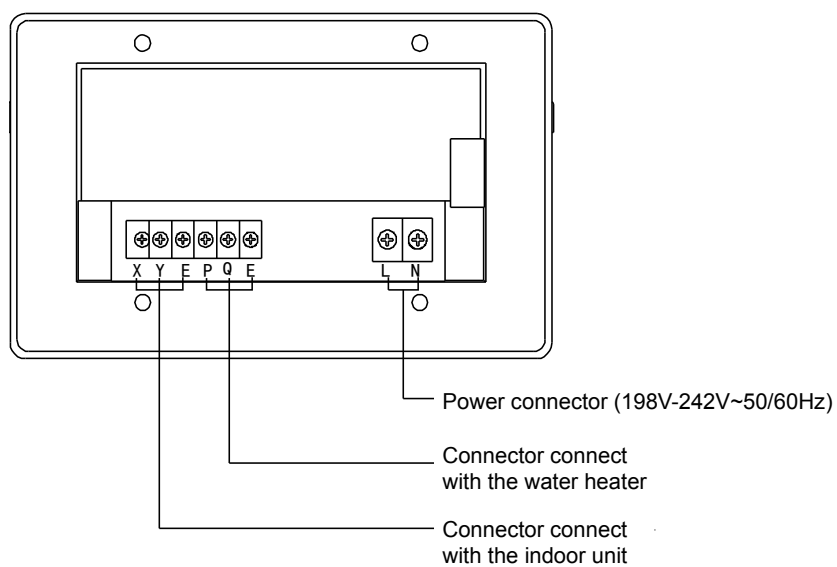
KJRF-180A1/MBT



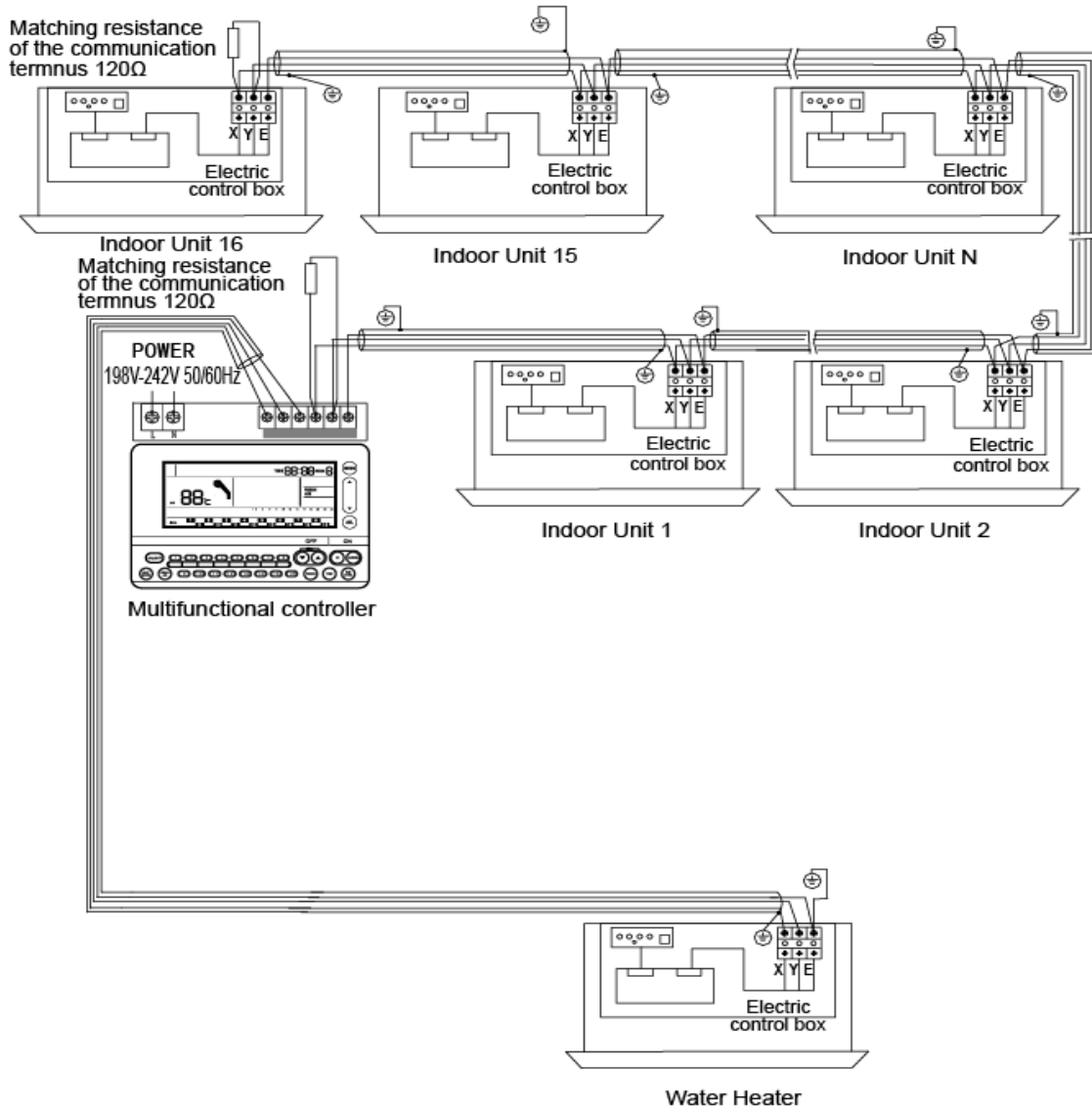
## ※ Detaching the shell



## ※ Wiring at the back





※ Available wiring diagram



3.5.5 Error and Diagnosis

1. If the centralized controller cannot detect the indoor units, and does not display the

icons . Check the wiring from the malfunction indoor unit to the controller. Please make sure that the joint are tied steadily and the wiring obeys the hand-in-hand rule.

2. if the centralized controller cannot detect the water heater and does not display the shower icon , then check whether the P, Q, E of the controller is connected to the communicative line X, Y, E of the water heater correctly. If it weren't connected to the water heater directly, it would not display the shower icon.

Notes: KJRF-180A/MBT-E or KJRF-180A1/MBT-E does not display the error code of the indoor unit.

## 4. Gateway



MD-LonGW64/E



MD-CCM08/E



GateWay01/E



IMM441V4PA512

### 4.1 Lonworks BMS gateway: MD-LonGW64/E

The new LonWorks gateway MD-LonGW64/E has been compliance with Lonworks standard and can be connected up to 64 indoor units to the LonWorks network directly. It can connect multiple refrigeration systems and do not need to connect CCM03. For full V4 plus system can be connected CCM03, and it must be connected from outdoor unit's XYE, the new and the old indoor units or V4 indoor units cannot be applied to this function.

MD-LonGW64 helps other LonWorks devices gathering the information from the Midea central A/C, and help setting the indoor units' working mode.



- ◇ Connect Central A/C system to LonWorks network.
- ◇ The core control module applies flash memory. Easily download the program on line.
- ◇ LonGW64 gateway applies non-polar twisted pair lines, which makes connecting to LonWorks network easily.
- ◇ Be able to bridge the indoor units to the BMS.

#### 4.1.1 General Function

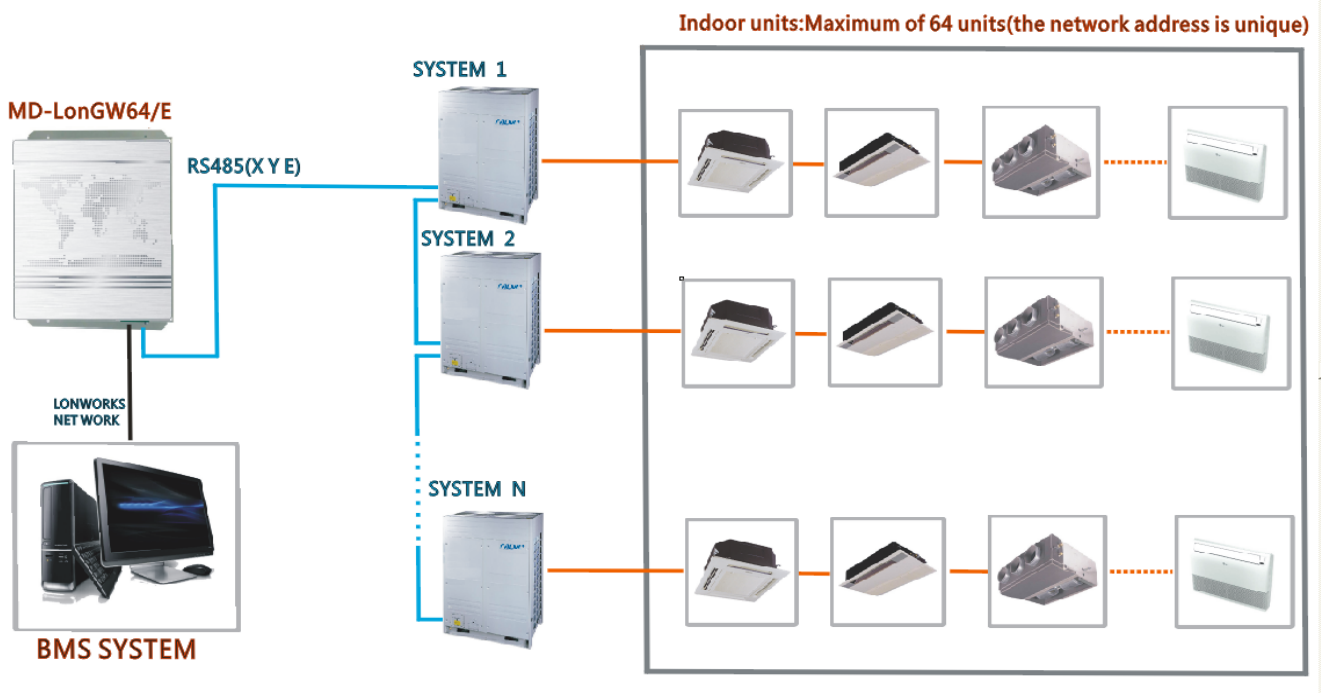
| Monitoring                          | Controlling                       |
|-------------------------------------|-----------------------------------|
| ON/OFF status report                | Mode setting for single unit      |
| Running mode status report          | Mode setting for all units        |
| Fan speed status report             | Stop setting for single           |
| Set temp. value report              | Emergency stop for single unit    |
| Indoor temp. value report           | Fan speed setting for single unit |
| Error status report                 | Fan speed setting for all units   |
| Online/offline status report        | Temp. setting for single unit     |
| Quality of connection status report | Temp. setting for all units       |

### 4.1.2 System configure

Indoor units can be connected to the MD-LonGW64 gateway, and we can gather all the units' information and control the indoor units through MD-LonGW64. As a result, the indoor units need firstly connecting to the computer to make a central monitoring system. The composition of the whole network is as follows:

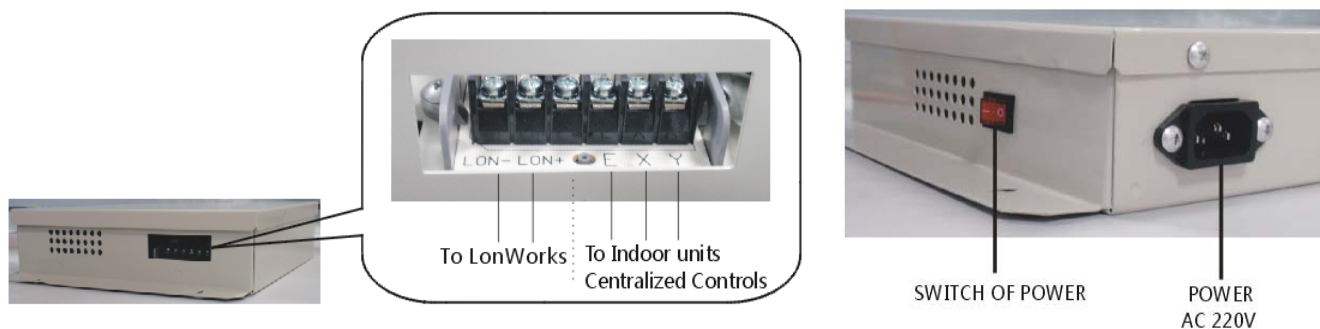


This connection method is suitable for all of the air conditioners system.



**Notes:** If there are a few MD-LonGW64 devices to compose a LonWorks network, the LonWorks terminals of the MD-LonGW64 are able to be connected in the hand-in-hand way. And can be connected up to 64 indoor units to the LonWorks network.

### 4.1.3 Connecting ports



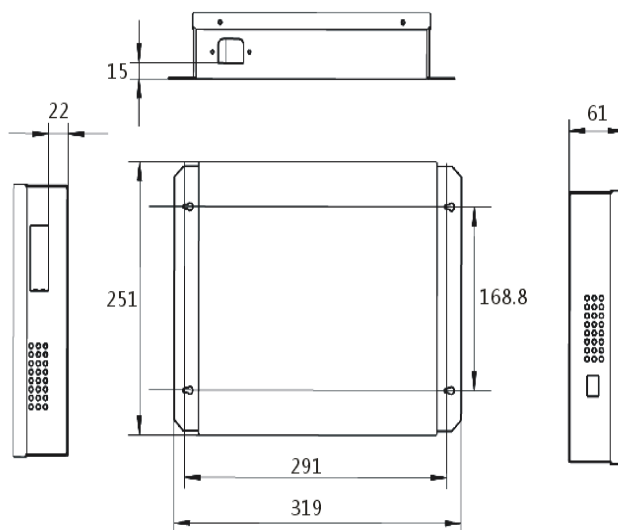
LON- and LON+ port: The ports should be connected to the computer's COM port, using the RS-232 communicative standard.

X Y E port: These ports use a removable connecting way to help user connect the LonWorks network conveniently.

POWER: This port should be connected to the AC 220V power adaptor.

### 4.1.4 External View

Dimensions: 31.9\*25.1\*6.1



**Notes:** There are three installation methods as the following figure. Don't install the unit in any other orientation.





## 4.2 BACNET BMS gateway: MD-CCM08

MD-CCM08/E is a gateway to connect the indoor units and outdoor units to the BACnet. BACnet stands for the Building Automation and Control Network. MD-CCM08/E gathers the information of the IDU and ODU. Besides, MD-CCM08/E is able to send the command to the units.

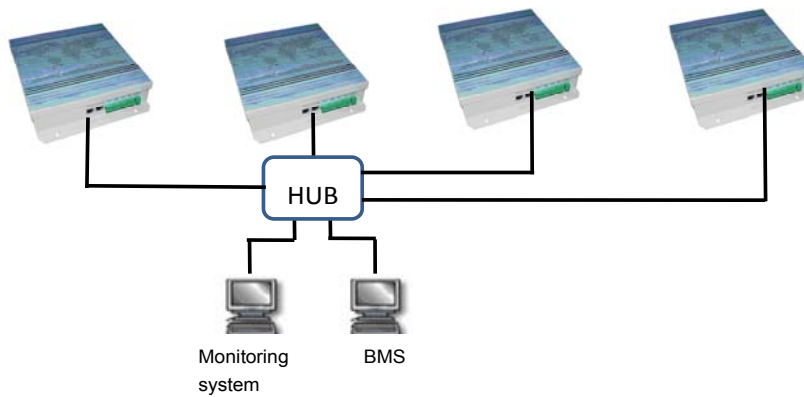


- ◇ Be able to bridge the indoor and outdoor units to the BACnet protocol BMS.
- ◇ Also be able to connect the indoor and outdoor units only, without the BMS.
- ◇ Contains 4 Groups of RS485 communication ports and able to connect up to 256 indoor units or 128 outdoor units instead.
- ◇ User can check the units' status and change their settings via local network.
- ◇ Compatible with Firebird.

### 4.2.1 System configure

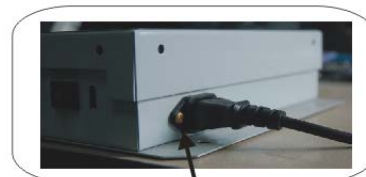
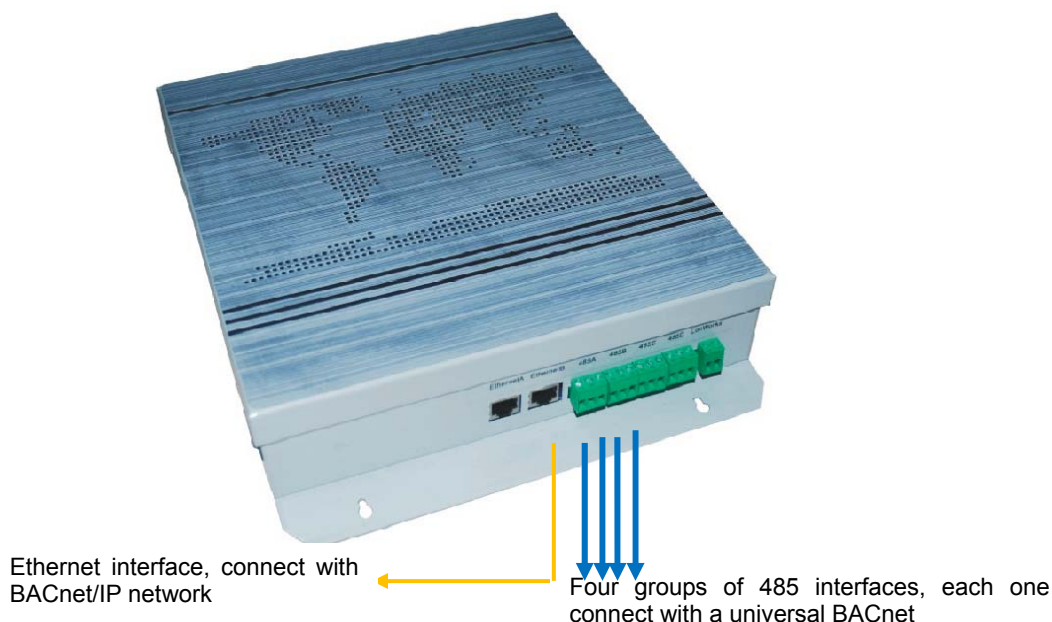
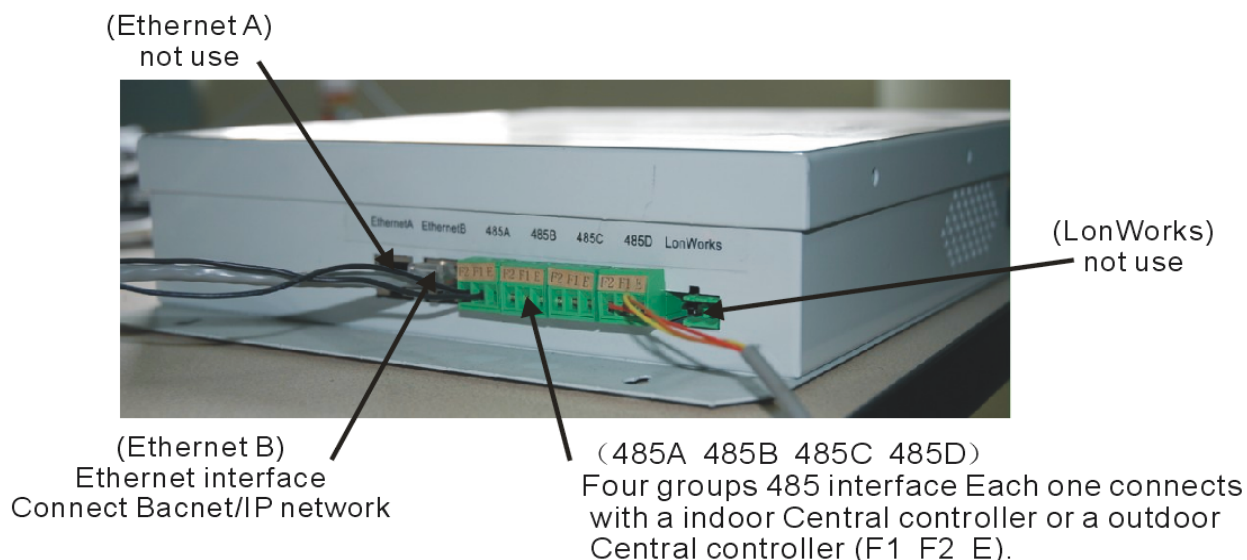
MD-CCM08 is able to connect up to 4 groups of RS-485 communicative network. Each of the RS-485 networks contains up to 64 indoor units or up to 32 outdoor units. The input of MD-CCM08/E should be directly connected to the CCM02 or CCM03.

If there are a few MD-CCM08 applied in the system, the MD-CCM08 can be connected to the HUB and then connected to the monitoring system and BMS.



**Notes:** MD-CCM08 and the BMS computer must be at the same subnet address field. Or else, the device cannot work normally. The default address of CCM08 is set to be under the segment "192.168.\*.\*".

### 4.2.2 Connecting ports and functions



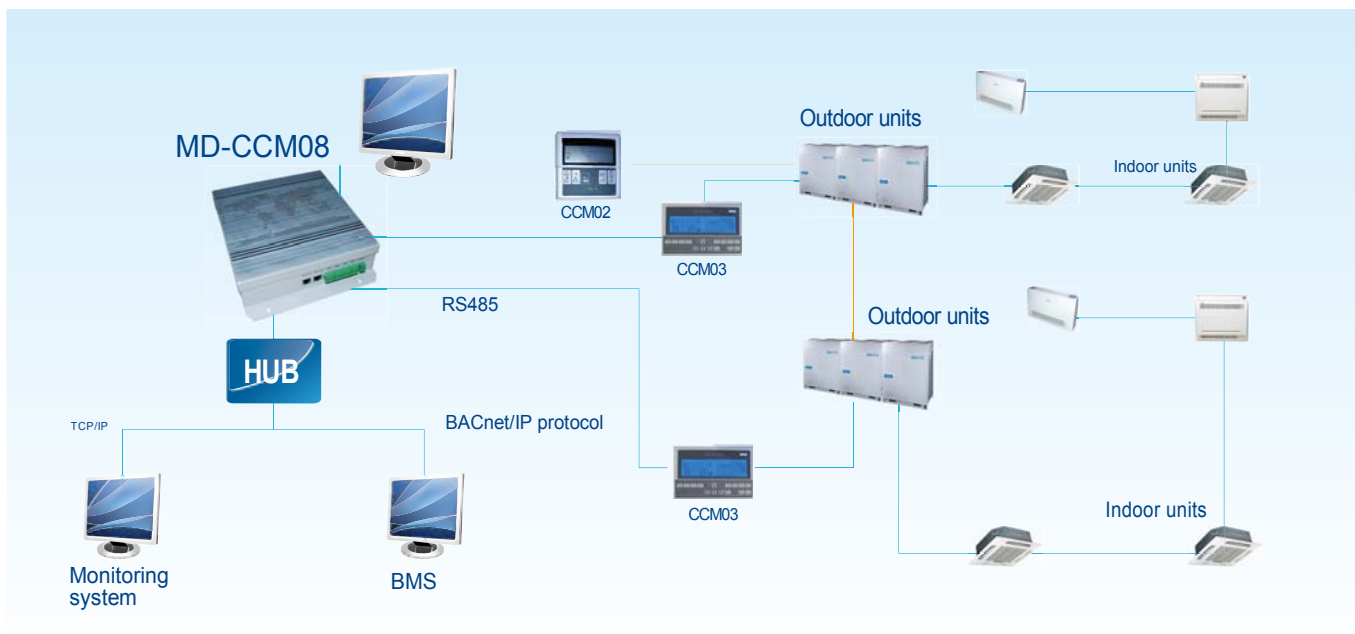
Power Supply(AC220V/50Hz)  
Powe line (Prefabrication)

MD-CCM08 has some kinds of connecting ports. Ethernet and LonWorks ports are used for further function designed and do not function by now.






**Ethernet B port** is an Ethernet interface base on the BACnet network protocol. Connect this port with the BACnet HUB, then the device connect to the HUB can communicate with the MD-CCM08.

**4 groups of RS-485 communicative port:** Each port can be connected to a MD-CCM02 or MD-CCM03 via the “F1, F2, E” terminals.

### 4.2.3 Network example



### 4.2.4 Available BMS

|   | Company   | BMS software  | Brand   |
|---|-----------|---------------|---|
| 1 | SIMENS    | APOGEE        |  |
| 2 | TRANE     | Tracer Summit |  |
| 3 | Honeywell | Alerton       |  |
| 4 | Schneider | Andover       |  |
| 5 | Johnson   | METASYS       |  |

### 4.3 Modbus BMS gateway: GateWay01/E

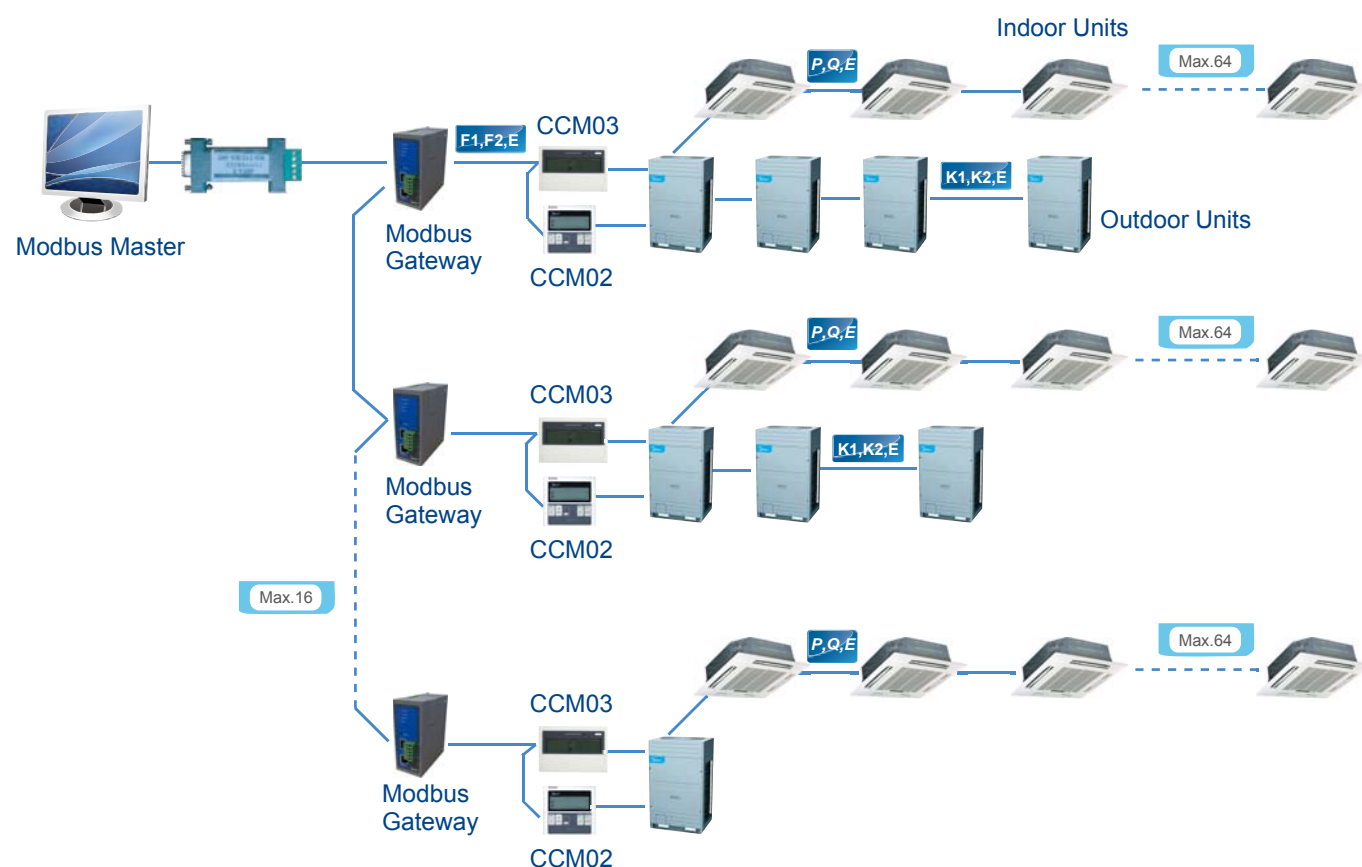
GateWay01/E support the Modbus protocol network, bridge the Midea central AC system to the BMS, compose a Modbus network of up to 1024 indoor units and 64 outdoor units.



- ✧ support the Modbus protocol network
- ✧ Each GateWay01/E can connect 1 CCM02 and 1 CCM03, 64 indoor units and 4 outdoor units
- ✧ Maximum 16 GateWay01/E can be connected to one Modbus network
- ✧ One Modbus network can connect up to 1024 indoor units and 64 outdoor units.
- ✧ Transfer the information via the RTU mode
- ✧ Wide voltage 12-48V DC adaptable

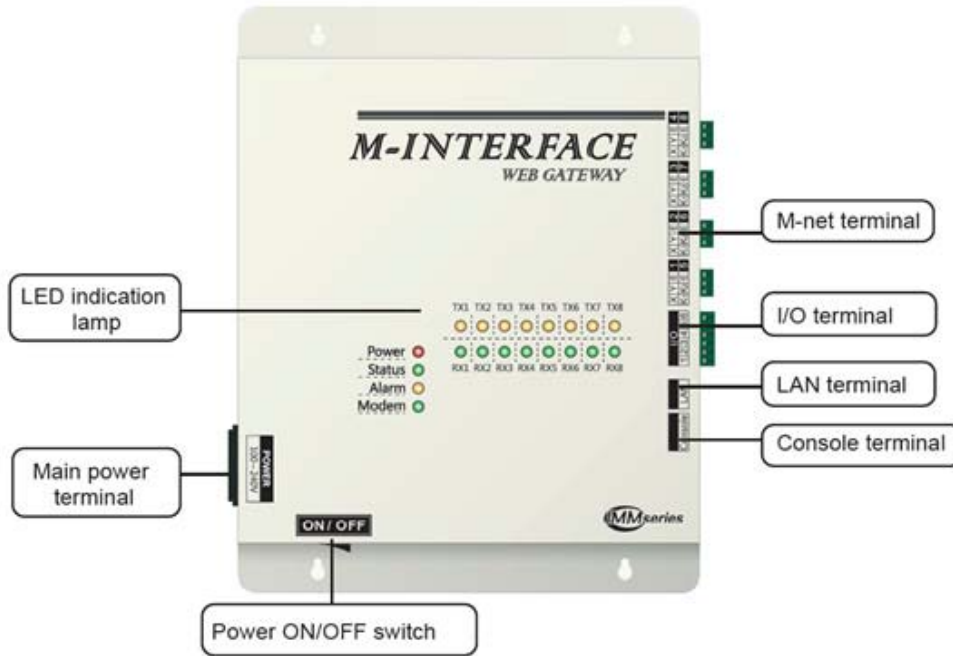
#### 4.3.1 Network example

One Modbus gateway can bridge one refrigerant system with a PC or the Modbus master



### 4.4 M-interface gateway: IMM441V4PA512

M-INTERFACE gateway is used for querying and controls the air conditioning indoor unit, and transmits the status information of the indoor unit to the computer and transmits the controlling and querying orders sent by the computer to the indoor unit.

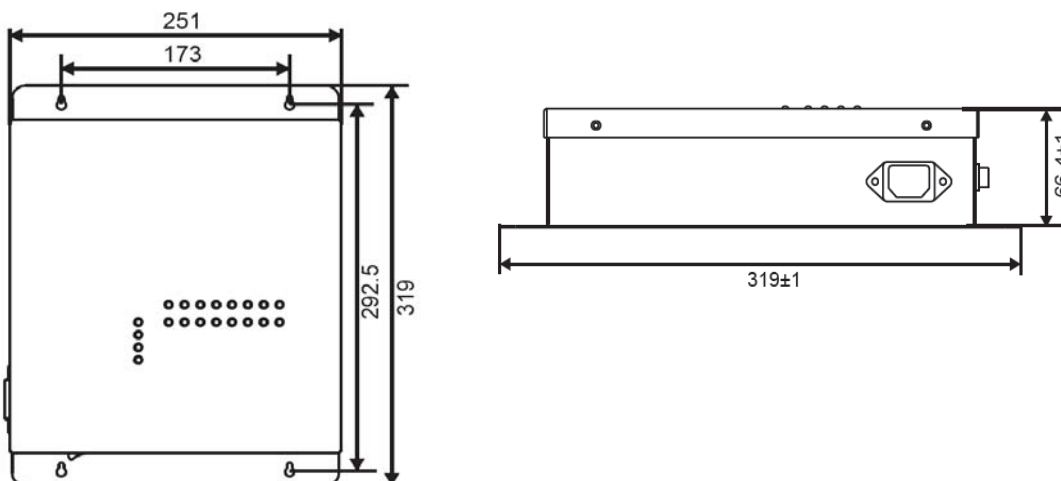


M-INTERFACE Gateway has 8 M-net terminals, 1 LAN terminal, 8 M-net terminal indication lamps, 4 status display lamps (Power, Status, Alarm, and Modem) and a power switch. Connection to the central air-conditioning system through the M-net terminal, and connects the local area network or Internet network through a LAN terminal. Computer or other similar devices can visit M-INTERFACE WEB through Brower, and then local or remote control devices.

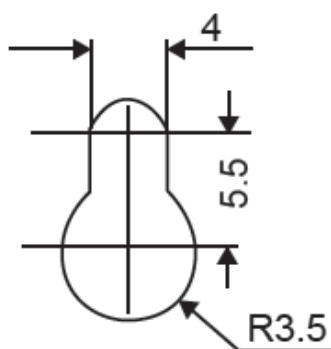
**Notes:** M-Interface gateway needs to be installed at the end of the XYE or K1K2E communication wire, cannot be installed in the middle of the XYE or K1K2E communication wire. Connection needs to use 0.7mm<sup>2</sup> ~ 1.0mm<sup>2</sup> three cores shielded wire.

#### 4.4.1 Gateway structure

※ Dimensions: 319\*251\*66.4mm



※ Detailed drawing of installation holes (Unit: mm)



Installation precautions:

- ◆ Install at a place where should not affect by electromagnetic wave or dust;
- ◆ Avoid to install at a place where affect by sunshine or heat source device etc;
- ◆ Avoid to install at a place where has high humidity or can contact the water;
- ◆ Avoid to install at a place where will produce corrosive or flammable gas.

#### 4.4.2 WEB home page of M-interface gateway

M-INTERFACE is based on WEB technology, unrelated to computer or similar devices operational systems. M-INTERFACE insert into the network then can browse the WEB page through the browser of the system platform, we suggest using IE (9.0 or above), Firefox (11.0 or above), Chrome (18.0 or above) or Safari ((5.1 or above).

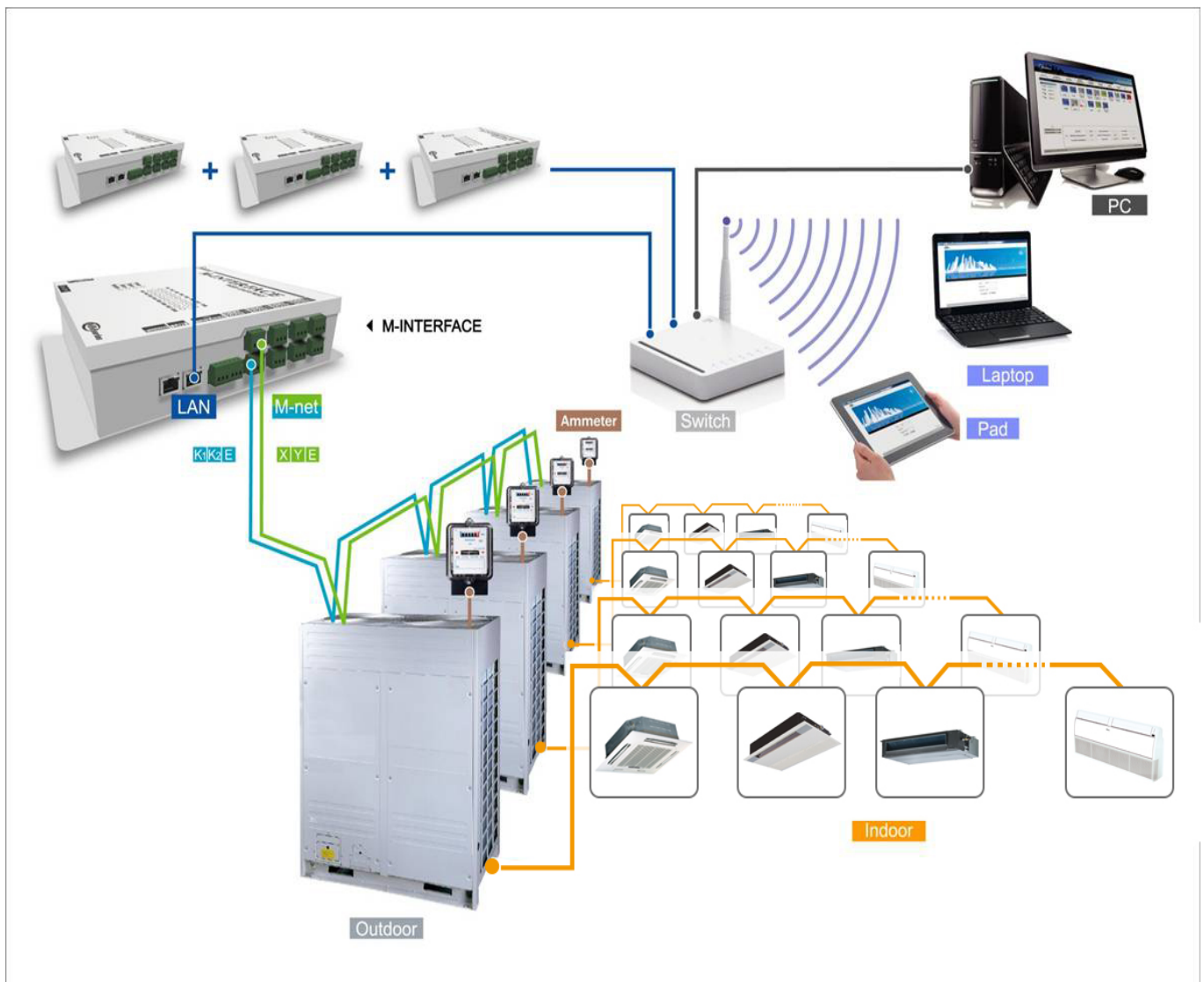
The screenshot shows the Midea M-Interface WEB home page. The interface includes a navigation menu (Menu, File, Project information, Help) and a status bar (user, Log). The main content area displays a grid of indoor units (ID 40411 to 41200) with their current temperatures. The temperatures range from 21°C to 33°C. A control panel at the bottom allows for device control (On/Off, Mode, Fan, Temp., Swing) and a 'Sending' button. The status bar at the bottom shows 'Successfully connect to the server', 'Prompt(0)', 'Warning(7)', and the date/time '2012-10-16 11:01:23'.

| ID    | Temp | ID    | Temp | ID    | Temp | ID    | Temp | ID    | Temp | ID    | Temp | ID    | Temp |
|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
| 40411 | 25°C | 40412 | 25°C | 40413 | 25°C | 40414 | 25°C | 40415 | 25°C | 40416 | 25°C | 40417 | 25°C |
| 40418 | 25°C | 40419 | 25°C | 40420 | 25°C | 40421 | 25°C | 40422 | 25°C | 40423 | 25°C | 40424 | 25°C |
| 40425 | 25°C | 40426 | 25°C | 40427 | 25°C | 40428 | 25°C | 40429 | 24°C | 40430 | 25°C | 40431 | 25°C |
| 40432 | 25°C | 40433 | 25°C | 40434 | 25°C | 40435 | 25°C | 40436 | 25°C | 40437 | 25°C | 40438 | 25°C |
| 40439 | 25°C | 40440 | 25°C | 40441 | 25°C | 40442 | 25°C | 40443 | 25°C | 40444 | 25°C | 40445 | 25°C |
| 40446 | 25°C | 40447 | 25°C | 40448 | 25°C | 40449 | 25°C | 40450 | 25°C | 40451 | 25°C | 40452 | 25°C |
| 40453 | 25°C | 40454 | 25°C | 40455 | 25°C | 40456 | 25°C | 40457 | 25°C | 40458 | 25°C | 40459 | 25°C |
| 40460 | 21°C | 40461 | 25°C | 40462 | 25°C | 41100 | 28°C | 41101 | 28°C | 41102 | 27°C | 41103 | 28°C |
| 41104 | 28°C | 41105 | 28°C | 41106 | 26°C | 41200 | 31°C | 41201 | 25°C | 41202 | 26°C | 41203 | 21°C |
| 41204 | 25°C | 41205 | 25°C | 41206 | 26°C | 41207 | 32°C | 41208 | 26°C | 41209 | 32°C | 41210 | 33°C |
| 41211 | 28°C | 41212 | 25°C | 41213 | 27°C |       |      |       |      |       |      |       |      |



#### 4.4.3 M-INTERFACE Network

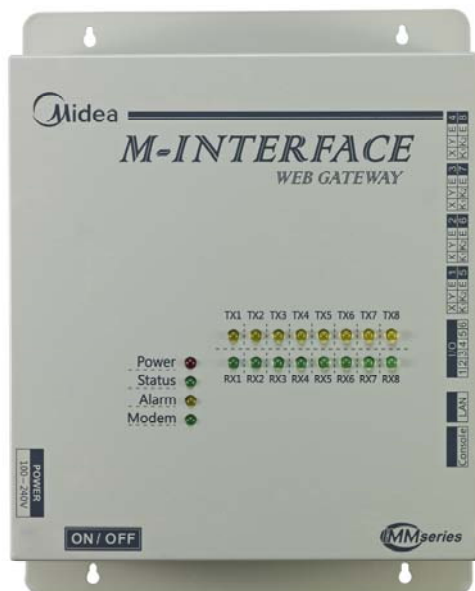
- 1) M-INTERFACE gateway can connect to the local area network or Internet network through a LAN terminal.
- 2) M-net terminals are listed to be two rows, 1 to 4 is X,Y,E terminals, and 5 to 8 is K1, K2 and E terminals. Computer or other similar devices can visit M-INTERFACE WEB through browser, and then local or remote control devices.



## 5. Network monitoring system

### 5.1 The 4th generation network monitoring system IMM – Intelligent Manager of Midea

Intelligent Manager of Midea, designed specifically to control VRF systems, is based on a centralized format and dedicated to the complete control and monitoring of all the system's functions. It can be used as a flexible multi-purpose system and applied to a variety of needs, according to the scale, purpose and control method of each building.

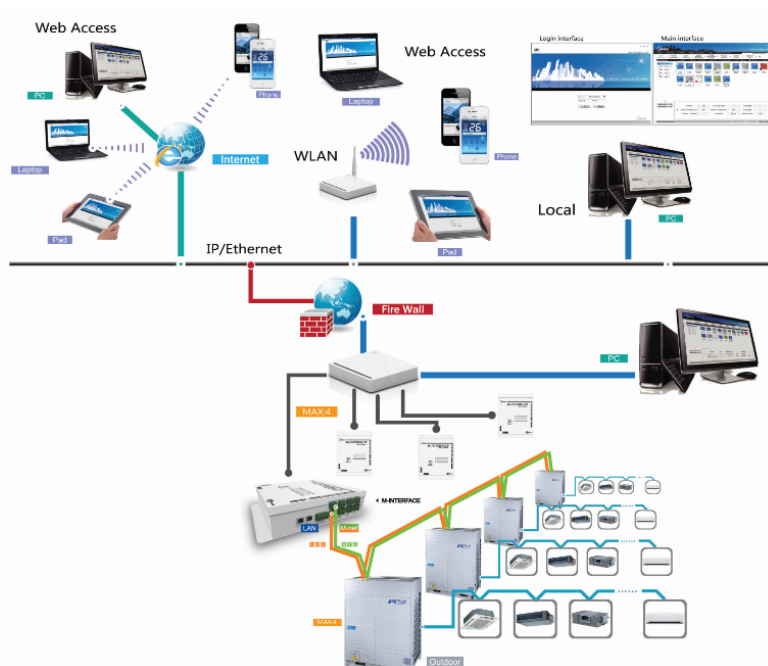


- ✧ Connect computer and Ethernet by cables
- ✧ 16 Ethernet central controllers can be connected at most for one computer
- ✧ One Ethernet central controller can connect 4 refrigerating system
- ✧ Long-distance monitoring
- ✧ Plurilingual, multi-operating system
- ✧ User friendly Operation interfaces
- ✧ Simple electric charge output report, personalization selection mode of electrical quantity (Force apportion or on apportion)
- ✧ Find the indoor unit quickly refer to building layout
- ✧ Optional long-distance control mode
- ✧ Breakdown message service

#### System Configuration


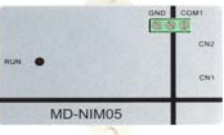







- AT compatible machine that runs Microsoft® windows®
- OS: XP Professional (English version)
- Windows 7 Home /Premium/Professional (Corresponds to 8 different languages.\*)
- 32-bit version is supported.
- CPU: Inter® Pentium® 2.5GHz or above
- HDD:80 GB or more of free space
- Memory: 2 GB or more
- Display: 1024 x 768 dots or more
- Max.4 refrigerant systems for 1 interface.  
And maximum of 4 M-interfaces, 64 refrigerant systems, 1,024 indoor units, and 256 outdoor units can be controlled by one PC.

The details please refer to “M-INTERFACEUSER’S MANUAL” and “IMM OWNER’S MANUAL”





## 6. Accessories

| Appearance  | Model         | Description   |
|---|---------------|---|
|    | DTS634/DTS636 | Send the electric energy data to outdoor unit for realizing network fee charge function.  |
|    | MD-NIM05      | Match hotel card system to control the air conditioner.   |
|    | MD-NIM09      | Automatically turn off and turn on the indoor unit, saving energy.  |
|    | MD-CCM02      | The outdoor unit controller can monitor maximum 8 refrigerant systems and up to 32 outdoor units.                                 |
|  | KJR-31B/E     | Be able to lock up to 64 indoor units' running mode to avoid modes conflict.  |
|  | KJR-32B/E     | When outdoor unit is working abnormally, it can output the outdoor unit's fault and protection status.                            |
|  | KJR-150A/M-E  | Could control a group of indoor units at the same time.   |
|  | AHUKZ-01      | Can be used to connect VRF outdoor units with DX AHU or other brand indoor units, but cannot connect to the heat recovery system. |
|   | AHUKZ-02      |   |
|   | AHUKZ-03      |   |
|  | KJR-27B/E     | Individually designed for the HRV-Heat Recovery Ventilator.   |

## 6.1 Digital ammeter DTS634/DT636

The digital ammeter DTS634/DT636 is a device to calculate the power consumption of the outdoor unit and transmit the information when it is required.

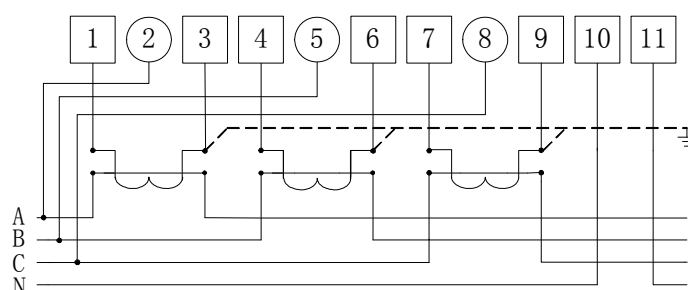


- ✧ Steadily functioning and needs no adjusting.
- ✧ Be with great precision.
- ✧ Works in wide working temperature, from  $-35\text{ }^{\circ}\text{C}$  to  $+55\text{ }^{\circ}\text{C}$ .
- ✧ Be able to be built inside the outdoor units in our factory.

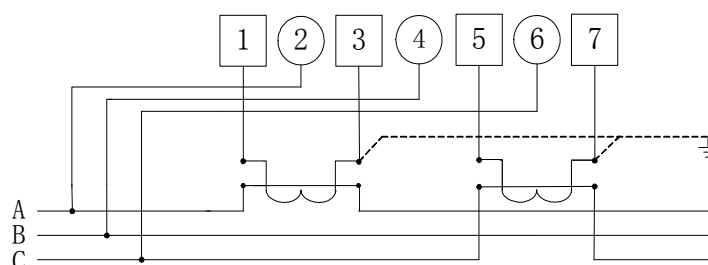
### 6.1.1 Digital ammeter wiring

The ammeter has two kinds of ports. One is the power port used to calculate the current flow through it. The other is the signal port O, A, E used to send the signals to the other device. Both of these two kinds of port should be connected and fastened before use.

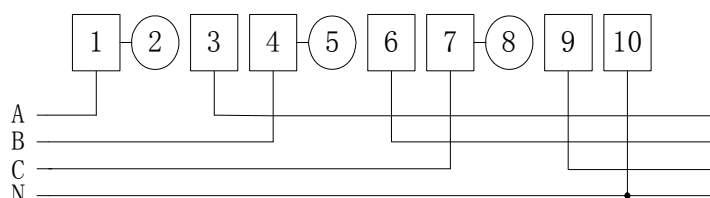
#### 1) Three-phase four-wire system with current transformer



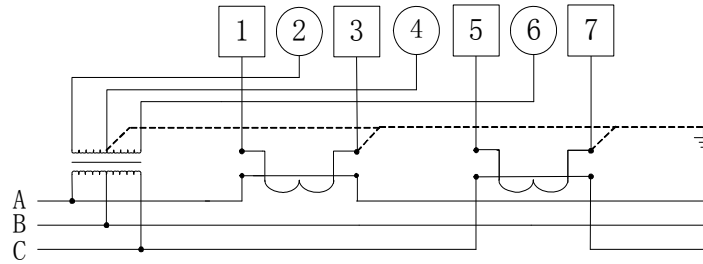
#### 2) Three-phase three-wire system with current transformer



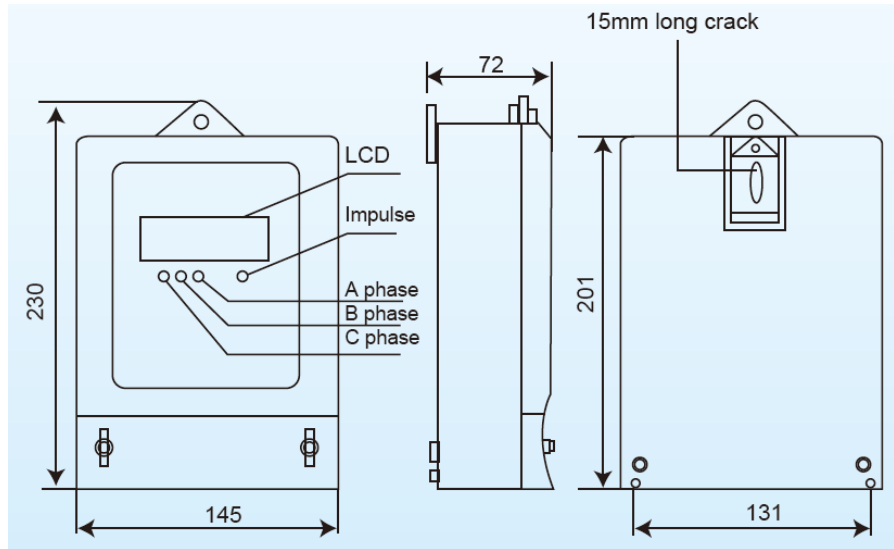
#### 3) Three-phase four-wire system



## 4) Three-phase three-wire system with current transformer and voltage transformer



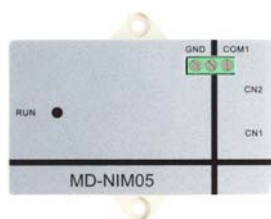
## 6.1.2 Installation



**Notes:** The ammeter device is an optional device. Without this device, the central AC system is also able to work normally. If users want to realize the network fee calculating function, this device is necessary. And each outdoor unit should equip one ammeter. Do remember to fix the power line terminals and the signal line terminals before use.

## 6.2 Hotel card key interface module: MD-NIM05/E and MD-NIM05/E-1

MD-NIM05/E and MD-NIM05/E-1 are mainly designed for the hotel card-insert system. It offers a smart way to save energy and manage the air conditioners.



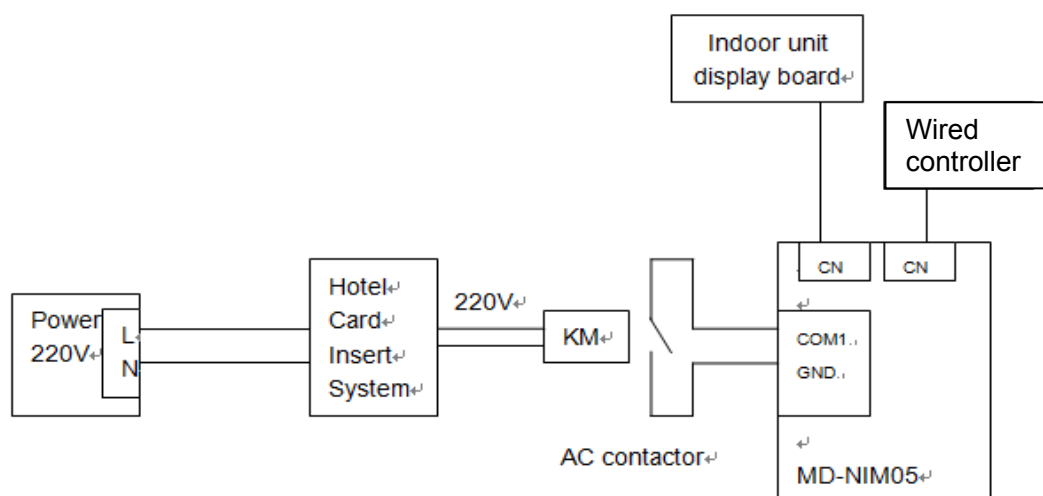
- ✧ A smart way to save energy and money.
- ✧ Cooperates with the hotel card-insert system.
- ✧ Extra power supply is unnecessary.
- ✧ Connected but insulate to the card-insert system
- ✧ Cooperate with the wired controller to automate control.
- ✧ Easy to install.

The main difference between MD-NIM05/E and MD-NIM05/E-1 is that MD-NIM05/E-1 is able to record the running status after power off and recover the unit to the previous running status. While MD-NIM05/E runs the unit to the default starting status after power off.

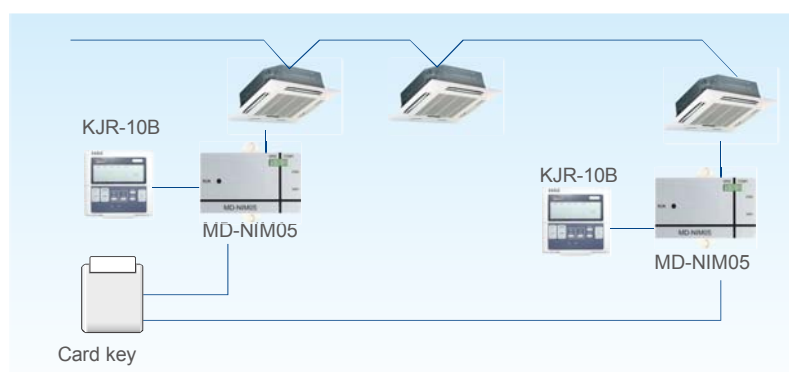
### 6.2.1 Wiring

When the card is inserted, to turn on the air conditioner, the terminal COM1 and GND should be connected or short. So the card-insert system should send the signal to the terminal COM1 and GND. The wiring diagram should be as follows.

Wiring diagram:



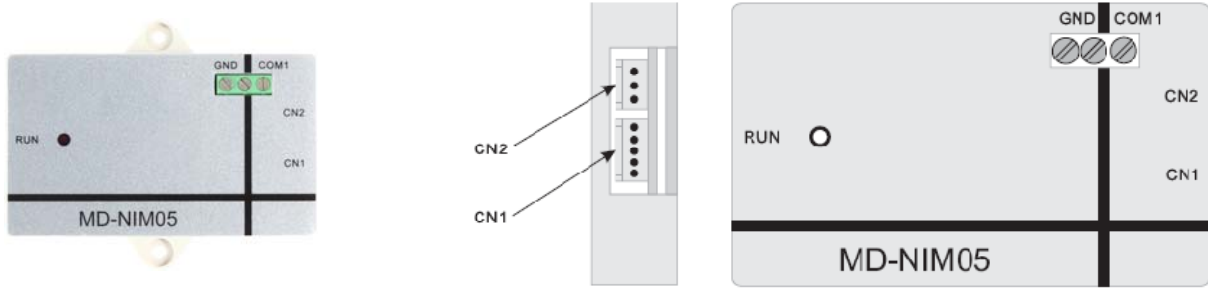
### Installation example



Wired controller is necessary in this card-key system.

**Notes:**

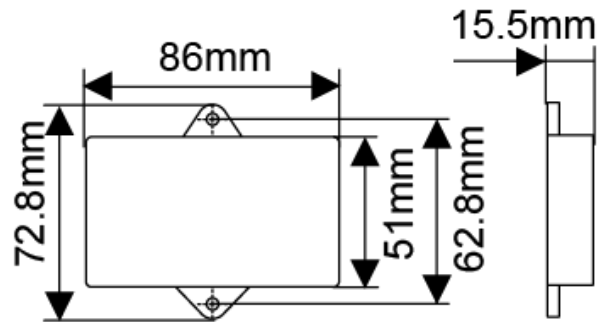
- 1) An AC contactor or a delay is necessary to transform the signal.
- 2) Wiring assy. 1 connects the CN1 of hotel card-insert assy. to wired controller of air conditioner.
- 3) Wiring assy. 2 connects the CN2 of hotel card-insert assy. to display board and main control board of air conditioner indoor unit.



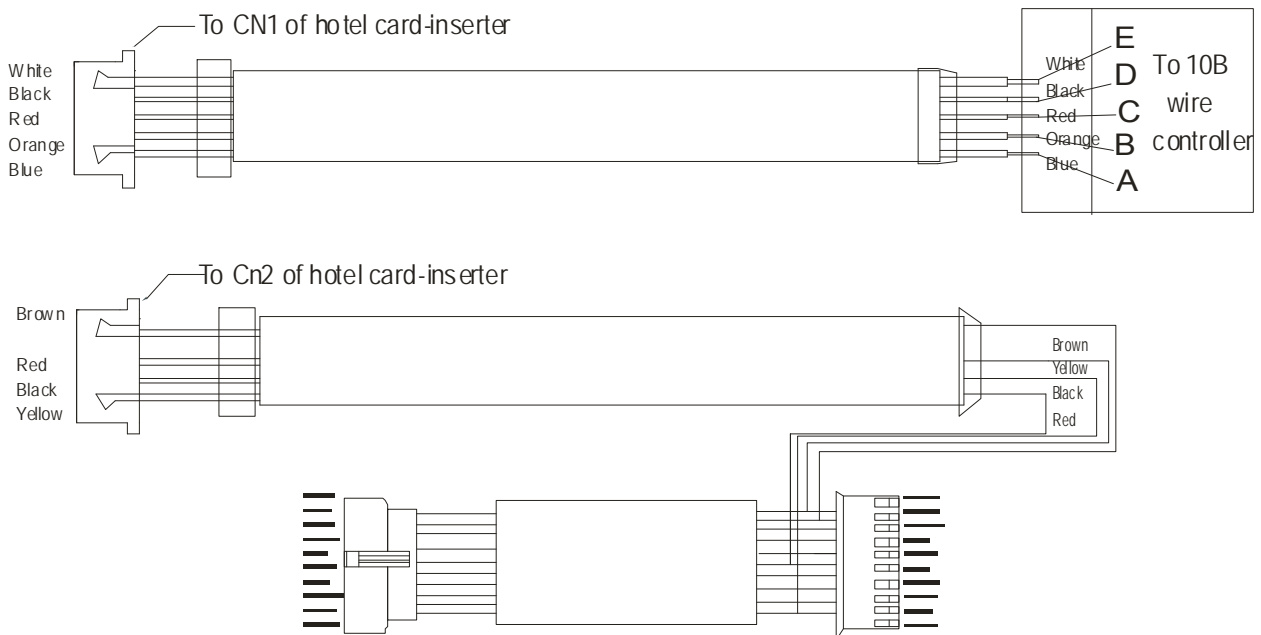
**Notes:** COM1 and GND terminals should be short to work and not be connected to the power. The electricity voltage over 5V will probably damage the device or get the device burnt and cause fire.

**6.2.2 Installation**

※ **Dimensions**



※ **Wires methods**



Select the corresponding wire group refer to the wire selecting instruction

### 6.2.3 Operation description

- 1) Connect 5-place terminal at fixed rated wired controller via 5 terminals: A, B, C, D, and E.
- 2) Connect LCD at main control panel of indoor unit via terminals REV, C, D, and E.
- 3) Upon wiring according to the wiring diagram in, Please power to the wired controller and switch on it. When card has been inserted between in COM1 and GND, air conditioner is turn on and its operation mode could be set, the director lamp at wired controller is light-up.
- 4) When no card has been inserted between in COM1 and GND (i.e. It not be short connected), the ON/OFF button of wired controller cannot start air conditioner, but two beeps of air conditioner closed down signals be giving out and no lamp is light-up at wired controller.
- 5) User must apply wired controller to turn on air conditioner and set operation modes every time power is input. After then, operation modes of this performance would be memorized, although took off card and then insert it on again, as long as power does not be cut off from main unit. i.e. air conditioner will turn off when card is took off, while insert it on again unit will perform as per the last setting.  
Notice: the first start-up of main unit and mode setting must apply wired controller.
- 6) System can receives signal delivering from fixed rated wired controller (KJR-10B), and transits the signal to indoor unit; it can also memorizes the latest ON/OFF information sending by wired controller (Timing information be transited but memorized.)
- 7) Upon powered to card-inserter, transited signal defaults as unit shutdown. Once take off the card, system will send signal of unit shut down twice; till to the next time card is inserted, system will not start unit until 3 seconds later, because of memory information delivery.

### 6.3 Infrared sensor controller: MD-NIM09/E



Infrared control box



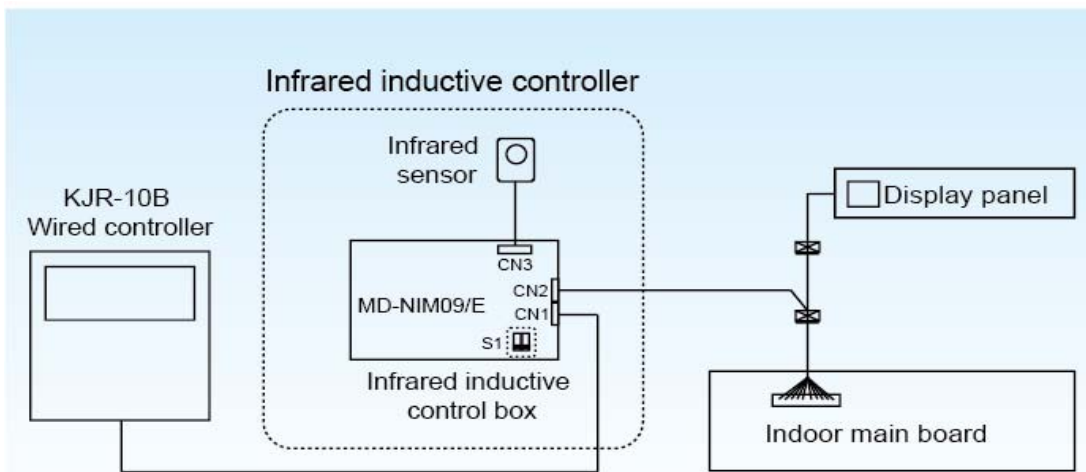
Infrared sensor module

MD-NIM09/E is an infrared sensor, which is able to detect whether there is people nearby and auto change the air conditioner back to running mode. This humanistic device helps making a comfortable environment for the users and the turning down the conditioner automatically.

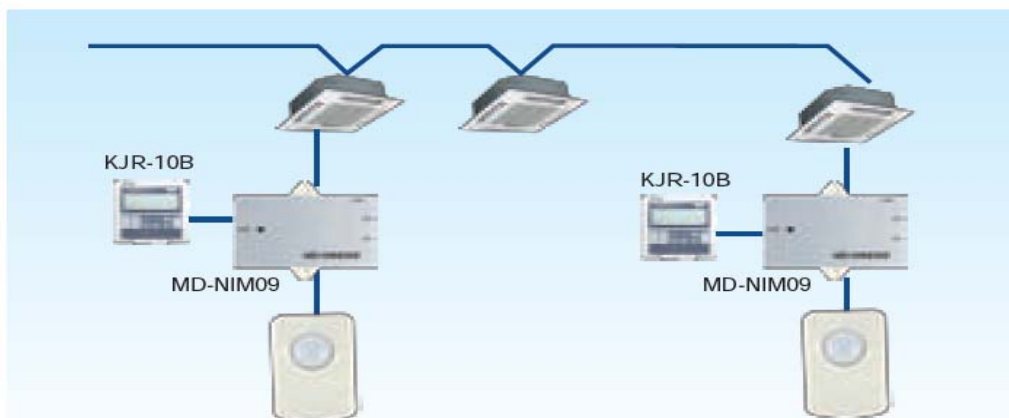
- ✧ Easy to install on the wall or ceiling.
- ✧ With a wide detective range up to 100°C.
- ✧ Detective distance is at least 4M, great sensibility.
- ✧ Optional auto-restart function.
- ✧ Automatically adjust the room environment.
- ✧ Automatically extend the shutting down time, avoiding frequent ON/OFF.
- ✧ Graceful appearance accommodates itself to different buildings.
- ✧ Be powered from the indoor unit display panel. Extra power supply is unnecessary.

#### 6.3.1 Wiring





The infrared sensor controller MD-NIM09/E contains a sensor and a control box. The control box helps connecting the device to the wired controller and the indoor unit.



## Installation example



- ✧ MD-NIM09 must be work together with the wired controller.
- ✧ As show above, the MD-NIM09/E has 3 connecting port.
- ✧ CN1 is used for connecting the wired controller.
- ✧ CN2 is used for connecting the indoor unit's display panel.
- ✧ CN3 is used for connecting the infrared sensor.
- ✧ The switch S1 stands for:

|  |  |
|--|--|
| ON   | Turn off the indoor units in 0.5 hour after users leave (default). |
| ON  | Turn off the indoor units in 1 hour after users leave.             |
| ON  | With optional auto-restart function.                               |
| ON  | Without optional auto-restart function.                            |

### 6.3.2 How to use

The general function of MD-NIM09/E is turning down the indoor unit automatically. So users should run the indoor unit firstly and adjust the temperature, fan speed, etc, via the wired controller. Once set, users do not need to turn down the indoor unit. The MD-NIM09 will turn it down automatically after the users leave. Once the users come to the infrared sensor's detective area, the MD-NIM09 turns the indoor unit on and runs it at the status which is set previously.

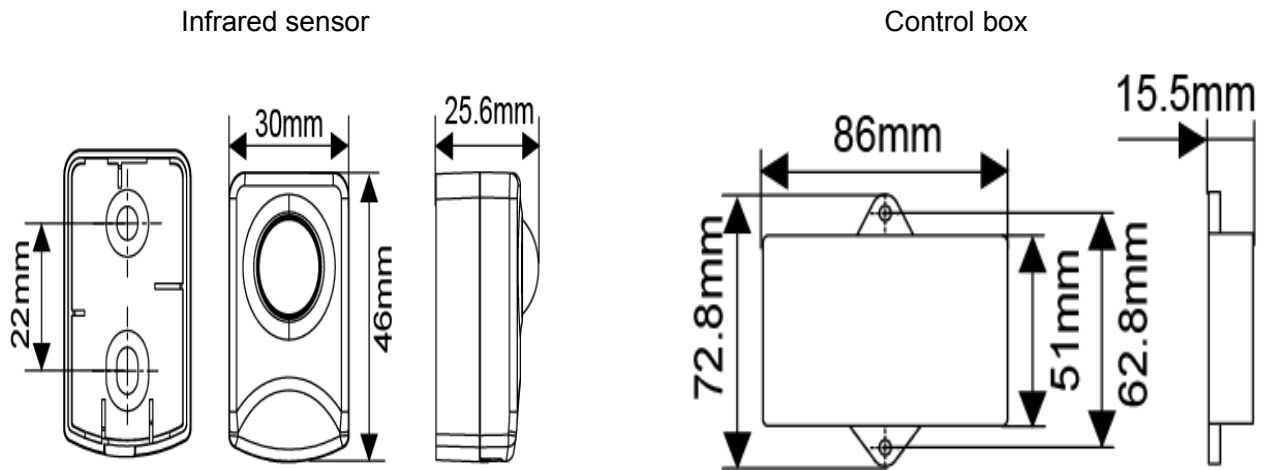
Main parameters:

|                     |             |
|---------------------|-------------|
| Input voltage       | DC +5V      |
| Ambient temperature | -5°C~43°C   |
| Ambient humidity    | RH40%~RH90% |

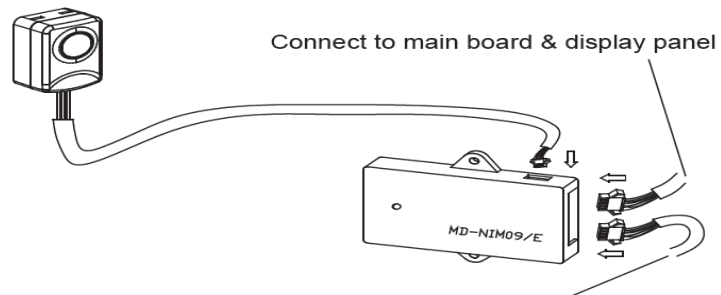
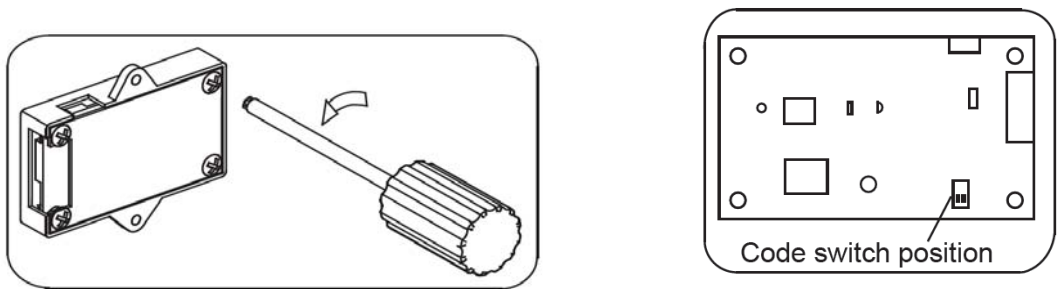
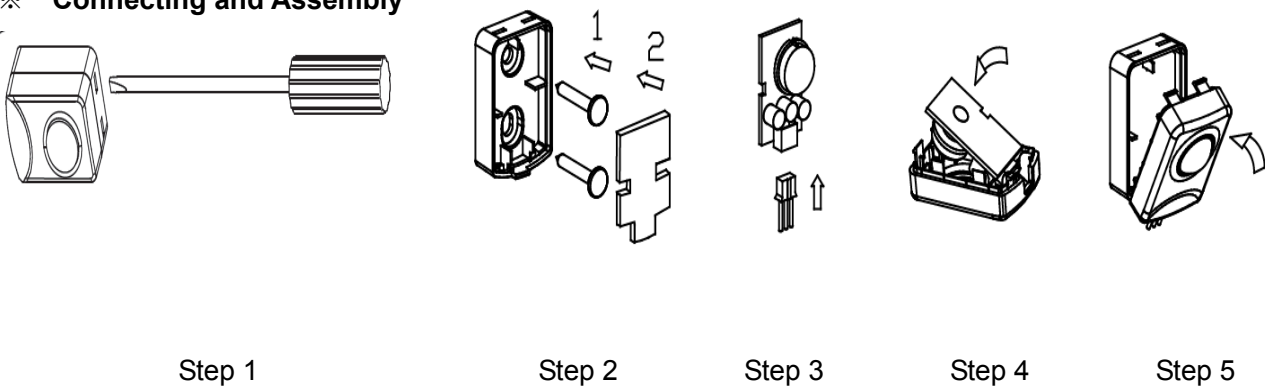


### 6.3.3 Installation

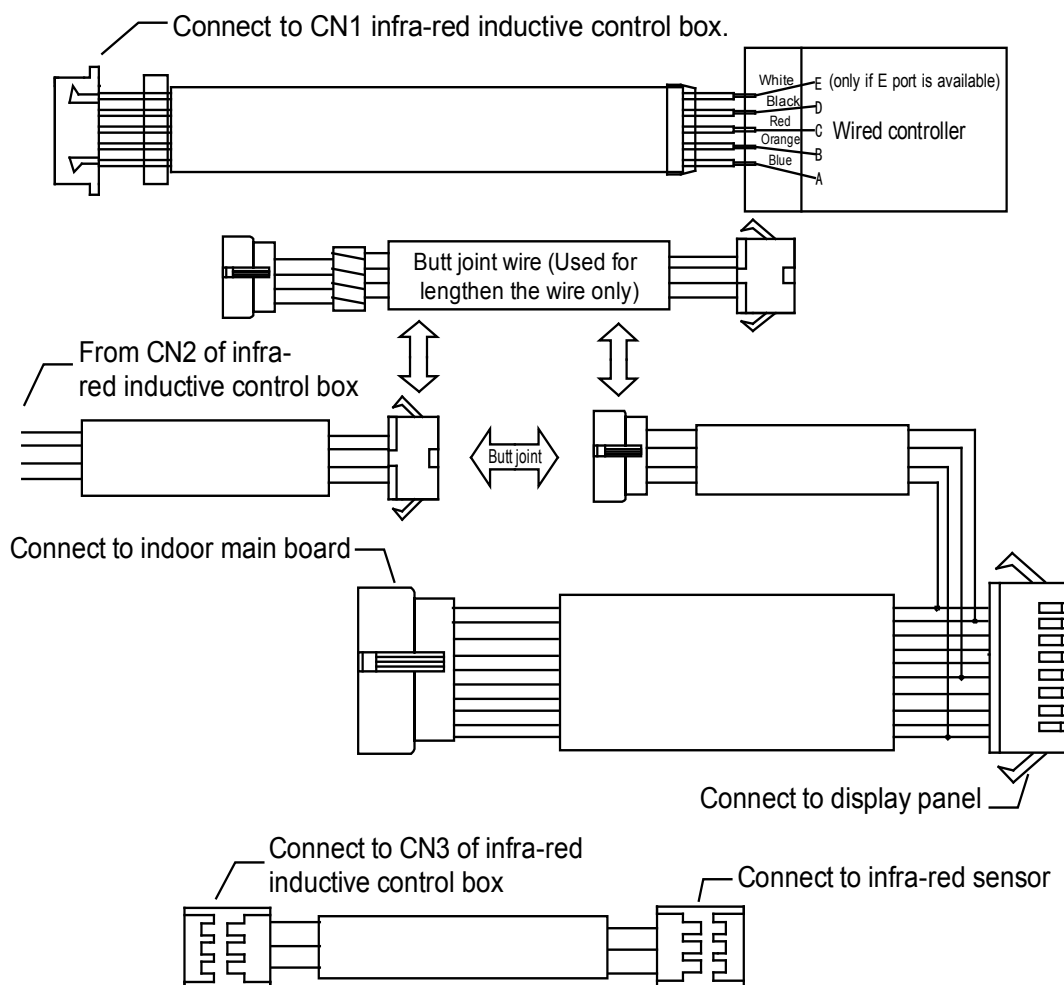
#### ※ Dimensions



#### ※ Connecting and Assembly



## ※ Wires methods



### Notes:

The infrared inductive controller is a low voltage device, so it's forbidden to contact with above 220V or 380V high-voltage cable directly, and it can't be placed at the same wiring pipe with the above described loop and the interval space of the wiring pipes should be at least more than 300~500mm.

## 6.4 Outdoor unit controller: MD-CCM02/E



- RS485 communication protocol
- Up to 8 systems, max.32 outdoor units can be connected to the Network monitoring and BMS.
- It can display the operating parameter of outdoor units
- Can display the error or protection code of outdoor units.

### 6.4.1 Summarize of outdoor CCM

The functional only can be realized when the system is in normal operation.

- 1) CCM02 can realize the central control and data query to outdoor units. One outdoor CCM can connect up to 8 systems and up to 32 outdoor units by communication ports in outdoor PCB. And it adopts wire-connecting method communication to realize central control to the outdoor units in the same network.
- 2) CCM can communicate with PC through RS485/RS232 converter. One PC can connect up to 16 outdoor CCM and 16 indoor CCM. And one PC can be centralized control, management and status query in the same monitoring network of all outdoor CCM, indoor CCM and indoor /outdoor units.
- 3) The CCM and outdoor units, PC and CCM adopt main-auxiliary communication. In the network of CCM and outdoor units, CCM is the main unit and outdoor units are the auxiliary units.

### 6.4.2 Operation#

#### 1) Description of Names and Functions

##### ◆ Power on or reset

After the CCM is powered on or reset, all the segments of the LCD will be displayed and last for 3 seconds. And then disappear for 2 seconds. After this, the controller's system runs the normal display mode, in which CCM would display the main page.

##### ◆ Network Area Address Setting

Up to 16 CCM02 can be connected to the gateway or the PC. Each CCM02 can be viewed as a secondary or sub-net of the network and distinguish themselves by their unique address. The address can be set in the key panel and it ranges from 16-31.

Address setting method:

To differentiate the CCM02 and CCM03, the addresses of CCM02 range from 16-31. Every time we press the address button of a CCM02, the corresponding CCM02's address increase by 1. When the address come to the end 31, press the key again could make the address back to the starting address 16.

◆ Indicator Display

Indicator lamp will be on when the CCM is power on.

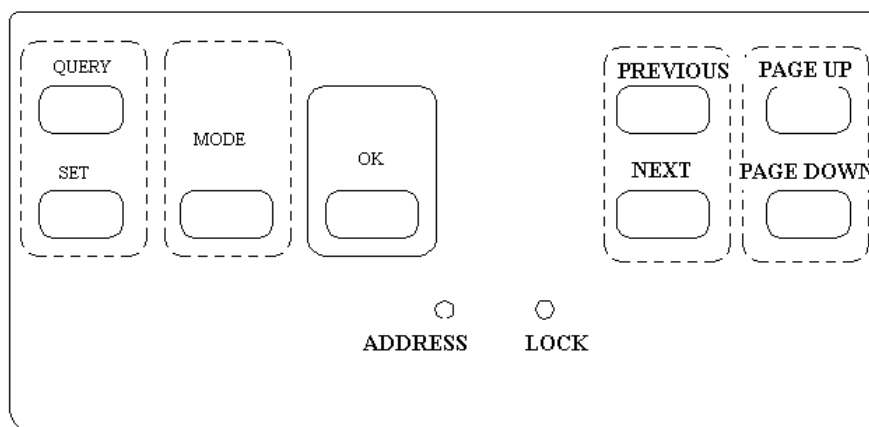
◆ CCM02 Locked

All the other buttons will not be on controlled anytime when pressing the CCM is locked. And unlock happens when receiving the lock.

◆ Electric energy consumption query

CCM02 allows user check each outdoor units' electricity consumption. To realize this function, each outdoor unit should be installed with an ammeter. The ammeter DTS634/DTS636 can be purchased from Midea Company.

## 2) Buttons and Functions



### (1) Query Button

Press it to enter into the query state.

### (2) Previous Button

On the query state, Press it to query in default the running states of other online air-conditioners.

### (3) Next Button

On the query state, Press it to query in default the running states of other online air-conditioners.

### (4) Page up Button

Pressing the Page Up button when choosing an online air-conditioner on the query state can display the parameters in the previous page and this can be cycled.

### (5) Page down Button

Pressing the Page Down button when choosing an online air-conditioner on the query state can display the parameters in the next page and this can be cycled.

### (6) Set Button

Press Set button enters into Set Page.

**(7) Mode Button**

Pressing the OK button to enter into the Mode Set, and select circularly between Forced Cooling and OFF state.

**(8) OK Button**

Pressing the OK button to confirm all setting and send the corresponding air-conditioners.

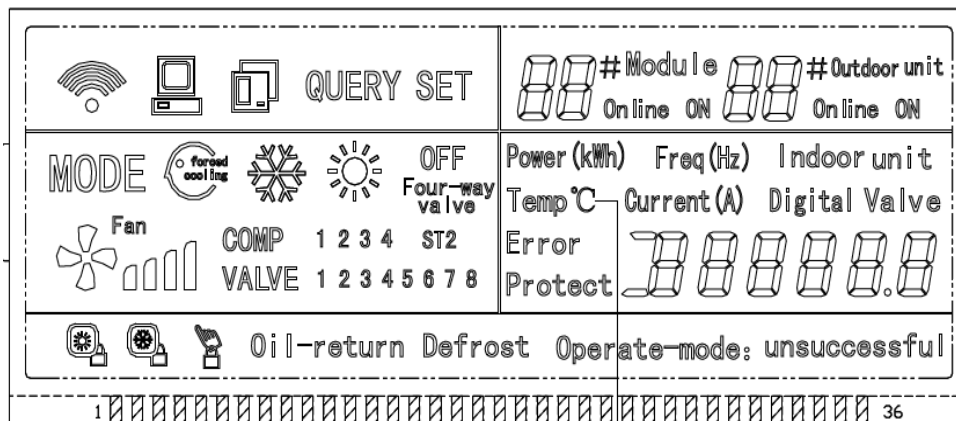
**(9) Lock Button**

All the other button will not be controlled anytime when Pressing the button, and unlock happens when Press it again.

**(10) Address Set Button**




In Set page, pressing the Set button repeatedly, the address will be increased one by one. When the address is equal 31 and you press once more, the address will restart from 16.

**6.4.3 Description of LCD Screen**







Graph 2 LCD Screen OR display 'Temp°F' with the model:MD-CCM02/E(H)

➤ **Common Display Data:**

- Display  means CCM is sending query order.
- Display  means CCM is in communication with a PC, and it will be off in 20 seconds with no communication.
- Display  means CCM is in communication connection with the outdoor unit, and it will be off in 20 seconds with no communication.
- Press the OK button in setting page and waiting for 4 seconds, “success” or “fail” will be shown in the operation state area.



➤ **Stand-by Page Display:**



- Display  #Module Online ON means the total number of online modules

-  Display  #Outdoor unit Online ON means the total number of online units
-  Stand-by Page can display the address of CCM with the address format of "Addr XX", here "XX" equals the real address of CCM plus 16, and the range of "XX" is 16-31.

➤ **Query Page Display:**




1) Query Page Display the query icon.

2) Displaying the address of selected outdoor unit with  #Module and  #Outdoor unit

3) Mode display:  means cooling mode,  means heating mode, OFF means shut off, means

 locking cool mode,  means locking heat mode.

**Notes:** Locking cool mode and locking heating mode are reserved.

4) Fan Speed Display:  means low speed,  means middle speed,  and means high speed.

5) Compressor State Display: "COMP. 1 2 3 4 5 6"

6) Electromagnetism Valve Display: "EMV. 1 2 3 4 5 6"

7) Four-Way Valve Display

8) Defrost Display: "Defrost"

9) When Oil Return will display: "OIL RETURN"

10) Page 0 will display the consumption of electric energy icon "ELECTRIC ENERGY Kwh" and the number.

11) Page 1 will display the input power frequency with "Frequency Hz" and the number.

12) Page 2 will display the total number of indoor units.

13) Page 3 will display the icon "TEMP. °C", "T3" and the number.

14) Page 4 will display the icon "TEMP. °C", "T4" and the number.

15) Page 5 will display the icon "TEMP. °C", "T6" and the number.

16) Page 6 will display the discharge temperature of compressor 1 icon "TEMP. °C", "C1" and the number.

17) Page 7 will display the discharge temperature of compressor 2 icon "TEMP. °C", "C2" and the number.

18) Page 8 will display the discharge temperature of compressor symbol C3 with "TEMP. °C", "C3" and the number.

19) Page 9 will display the compressor current value 1 icon "CURRENT A", "1" and the number.

20) Page 10 will display the compressor current value 2 icon "CURRENT A", "2" and the number.

21) Page 11 will display the compressor current value 3 icon "CURRENT A", "3" and the number.

22) Page 12 will display the digital capacity icon "DIGITAL CAPACITY" and the number.

23) Page 13 will display the openness of electromagnetism valve 1 icon with "VALVE OPENNESS", "1" and the number.

24) Page 14 will display the openness of electromagnetism valve 2 icon "VALVE OPENNESS", "2" and the number.

**25)** Page 15 displays the most advanced malfunction icon "MALFUNCTION" and the code.


**26)** Page 16 will display the most advanced protection icon "PROTECTION" and the code.

**Notes:** The page will increase or decrease by 1 every time you press "PAGE UP" or "PAGE DOWN".

Select the online outdoor unit by Press the "previous" or "next" freely.

➤ **SET PAGE DISPLAY:**

1) Set Page Displays" Set"

2) Mode display: Pressing MODE button to enter into MODE set, and select circularly between Forced Cooling  and OFF state.

3) Set page displays the address of selected outdoor units and module.

4) Press the OK button to confirm all setting and send the corresponding air-conditioners.

5) "Successful" or "Unsuccessful" shown in the operation state area indicates whether the transmission is confirmed or not.

➤ **Malfunction and Protection Code Table**

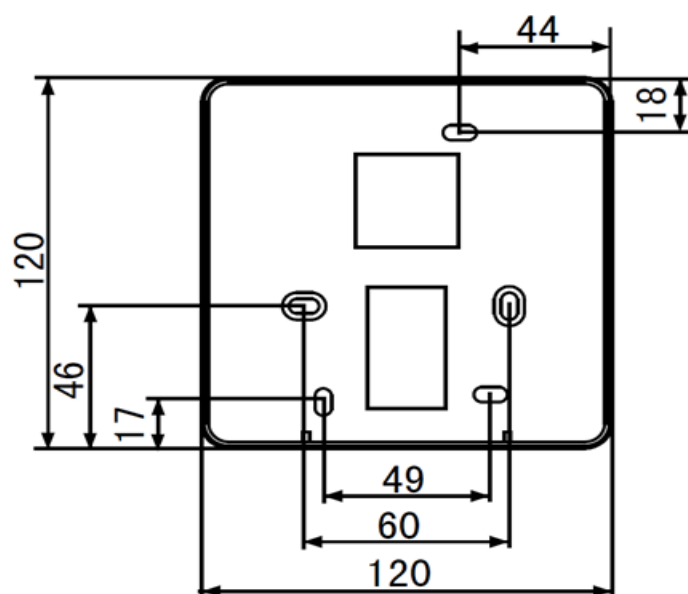
| Error Code | Error Contents  | Description | Error Code | Error Contents                           | Description |
|------------|---|-------------|------------|--|-------------|
| H3         | Outdoor Adding Malfunction<br>(Valid For Host Unit)             |             | Pd         | Oil Return                               |             |
| H2         | Outdoor Decreasing<br>Malfunction (Valid For Host<br>Unit)      |             | PA         | Defrost Protection                       |             |
| H1         | Net Communication<br>Malfunction                                |             | P8         | Compressor Current 3rd<br>Protection     |             |
| EF         | Other Malfunction   |             | P7         | Compressor Current 2rd<br>Protection     |             |
| E4         | T4 Temp Sensor Malfunction                                      |             | P5         | Condenser High Temp<br>Protection        |             |
| E3         | T3 Temp Sensor Malfunction                                      |             | P4         | Discharge Pipe Temp<br>Protection        |             |
| E2         | Communication Malfunction<br>between indoor and outdoor<br>unit |             | P3         | Compressor Current 1st<br>Protection     |             |
| E1         | Phase Sequence Malfunction                                      |             | P2         | Discharge Low-Pressure<br>Protection     |             |
| E0         | Outdoor unit communication<br>Malfunction                       |             | P1         | Discharge<br>High-Pressure<br>Protection |             |
| PF         | Other Protection  |             | P0         | Compressor High Temp<br>Protection       |             |
| PE         | Oil Balance   |             |            |  |             |

## 6.4.4 Installation

### 1. Basic Requirements

- 1) Applicable Power Voltage Range: Input Voltage 220~240V/AC.
- 2) AC Input Power Frequency: 50Hz/60Hz.
- 3) Working Ambient Temp.: -15°C -+43°C
- 4) Working Ambient Humidity: RH40%~RH90%.

### 2. Dimensions: 120\*120\*15mm

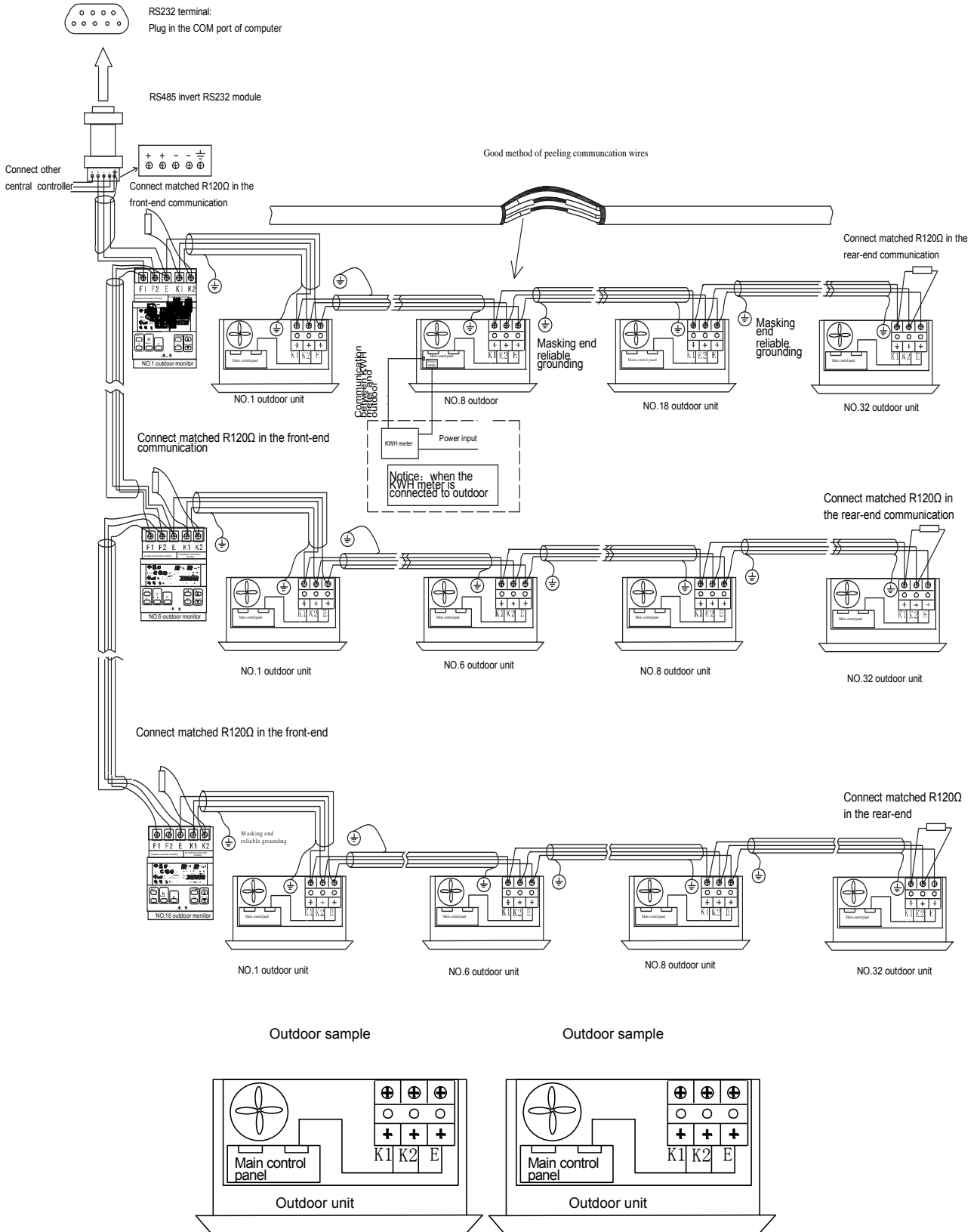


### 3. System configure

With MD-CCM02/E, we could both centrally display the outdoor units' running status and bridge up to 32 outdoor units to the PC monitoring software or BMS--Building Management System. In fact, for the purpose of connecting the indoor units to the PC or the gateway, which makes the outdoor units visible on the display panel, MD-CCM02/E is necessary.

The location of CCM02 in the network is as follows.





**Notes:**

1. One computer can connect 16 outdoor central monitors.
2. One outdoor central monitor can connect up to 8 refrigerant systems and 32 outdoor units.
3. You need connect R120 in the front and rear of monitor system.
4. Communication wire masking end assure reliable grounding.

## Remarks

(1) In the wiring, the part from Rs485 to Rs232 is only needed when connecting with PC. And one PC can connect maximum 16 outdoor MD-CCM02 and 16 indoor MD-CCM03. The addresses of MD-CCM03 ranges from 0 to 15, while the MD-CCM02 ones from 16 to 31. And the address of any two outdoor CCM can't be the same, or the system can't work normally.

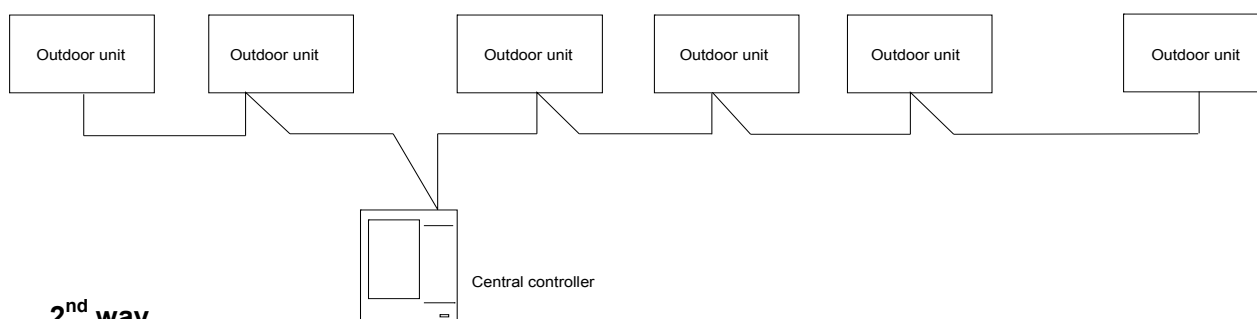
(2) One outdoor centralized monitoring MD-CCM02 can connect maximum 32 outdoor units, while one indoor MD-CCM03/E can connect maximum 64 indoor units.

(3) The address of outdoor CCM and the address of outdoor units are set by manual. Please refer to their owner's manual for setting.

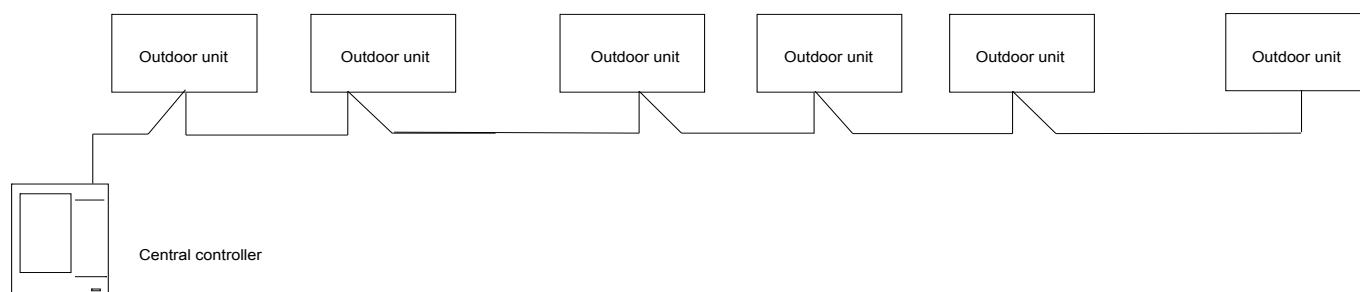
## 4. Wiring sketch map of MD-CCM02 and outdoor units

These 2 ways are both available and the total number of outdoor unit must be  $\leq 32$  in one controller.

### 1<sup>st</sup> way:

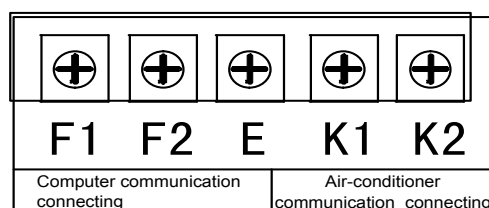


### 2<sup>nd</sup> way

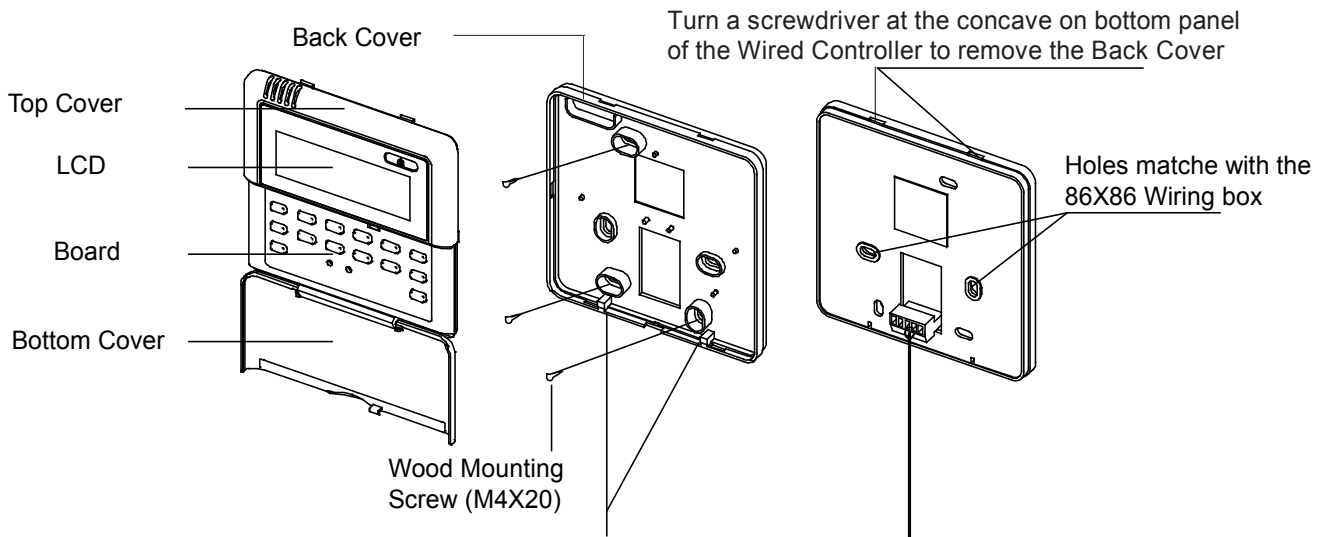


The MD-CCM02 wiring ports are as follows. F1, F2, E joints are used for PC connection. K1, K2, E joints are used for outdoor unit connections. E joint is the common terminal.

Outdoor central controller  
joint sample



### 5. Structure and composition

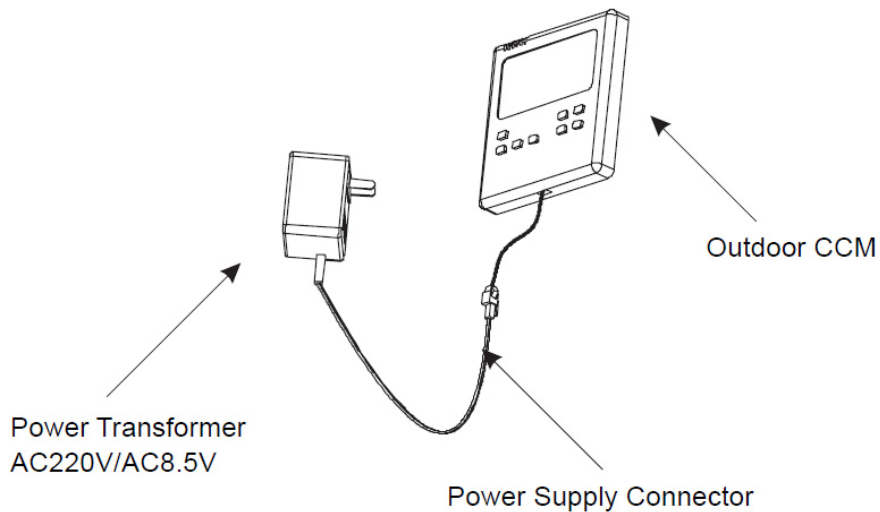


When installing the Wired Controller, you should adjust the bottom of the Wired Controller Board to the Wired Controller Back Cover which should be fixed first, then press the other end of the Wired Controller Board.

When installing the Wired Controller Cover, be sure there is a hole in the wall to avoid the Wire Controller Back Cover being fixed directly to the wall which is not allowed for the Wire Joint extrudes out of the Wired Controller Back Cover.

### 6. Power supply

MD-CCM02 uses a power adaptor to obtain power supply from the normal AC 220V. Remember to connect the adaptor's connector



### 7. Query and error codes

Press QUERY button to start the query function. Then press the PREVOIS and NEXT button to select the outdoor units that want to check. Press PAGE UP button 15 times to display the corresponding outdoor's error code or 16 times to display the protection codes.

## 6.5 Mode lock controller KJR-31B/E

KJR-31B/E is a wired centralized mode lock controller. With this device, we could lock the mode of all the units connected to this controller to avoid mode conflict. When the mode conflict happens, e.g. some indoor units request cooling and some heating, the outdoor unit could only work in either mode. As a result, some of the indoor units could not work. By adopting this device, we could consider the environment and artificially determine whether the indoor units should work at cooling or heating mode.

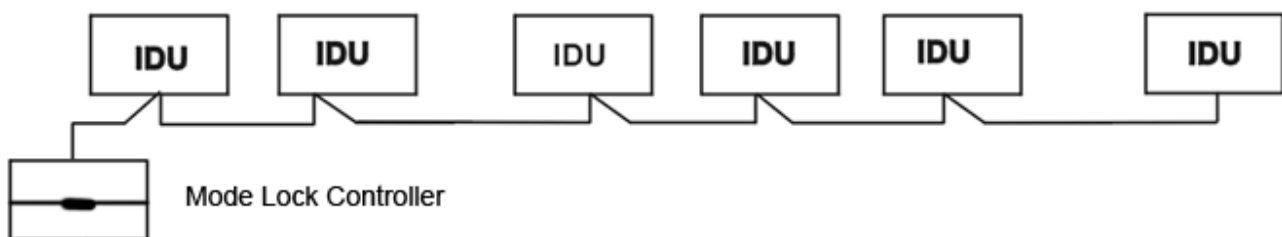


- **New designed and graceful appearance**
- **Compactly functions and friendly user interface**
- **Easy networking**
- **Connected up to 64 indoor units**

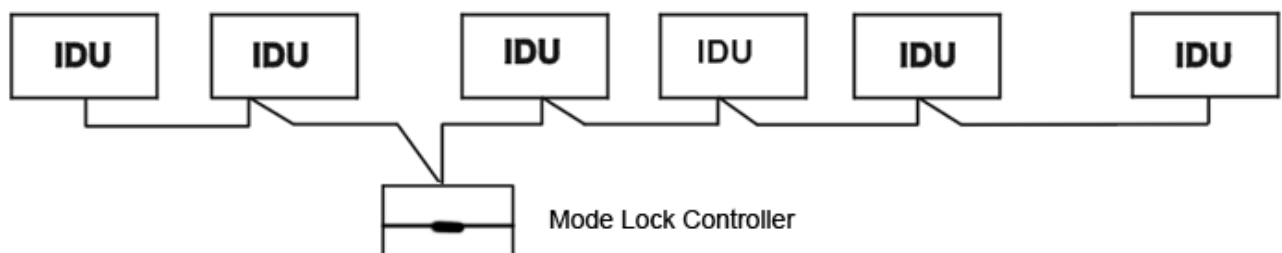
### 6.5.1 System configure

Mode lock controller KJR-31B/E is only a compact indoor unit centralized controller, which cannot bridge the indoor units to the PC or BMS. Its network configuration is much the same as MD-CCM09. The following 2 ways is both available.

1<sup>st</sup>:



2<sup>nd</sup>:

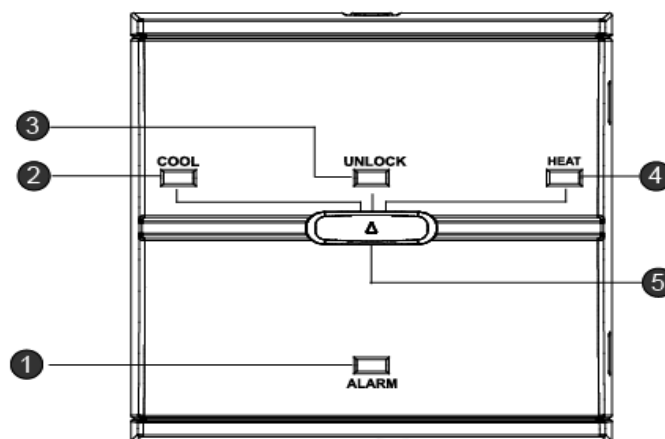


To establish a steady network the following should be noted

- The signal cable and power cable of the central controller cannot be contained in the same cable tube. The distance between the signal cable tube and power cable tube shall be between 300mm -500mm at least.
- The total signal cable length of the central controller shall not exceed 1,200m.
- Make sure there is no joint in the middle of the shielded cable. If such a joint exists, use a socket to connect it.

## 6.5.2 Description Names and Functions

### ※ Buttons and indication lights



#### 1. Alarm light

When the alarm lights are on, malfunctions occur on the indoor units. Please check the indoor unit and find the error code on the indoor unit's display panel. After solving the problem, the ALARM light will fade out.

#### 2. COOL light

Press the mode switch leftwards to turn all the indoor units to cooling only mode and the COOL light will be on. This light indicates that all the indoor units are running at cooling mode. Users can only set the cooling parameter such as temperature and fan speed by other controller. If the user changes the units to the heating only mode, the indoor unit displays mode conflict error code. And then the corresponding unit turns off to prevent user's environment from being more unsatisfying.

#### 3. UNLOCK light

Press the mode switch to the middle of the controller and the UNLOCK light will be on. In this mode, all the indoor units are freely to work at heating mode or cooling mode.

#### 4. HEAT light

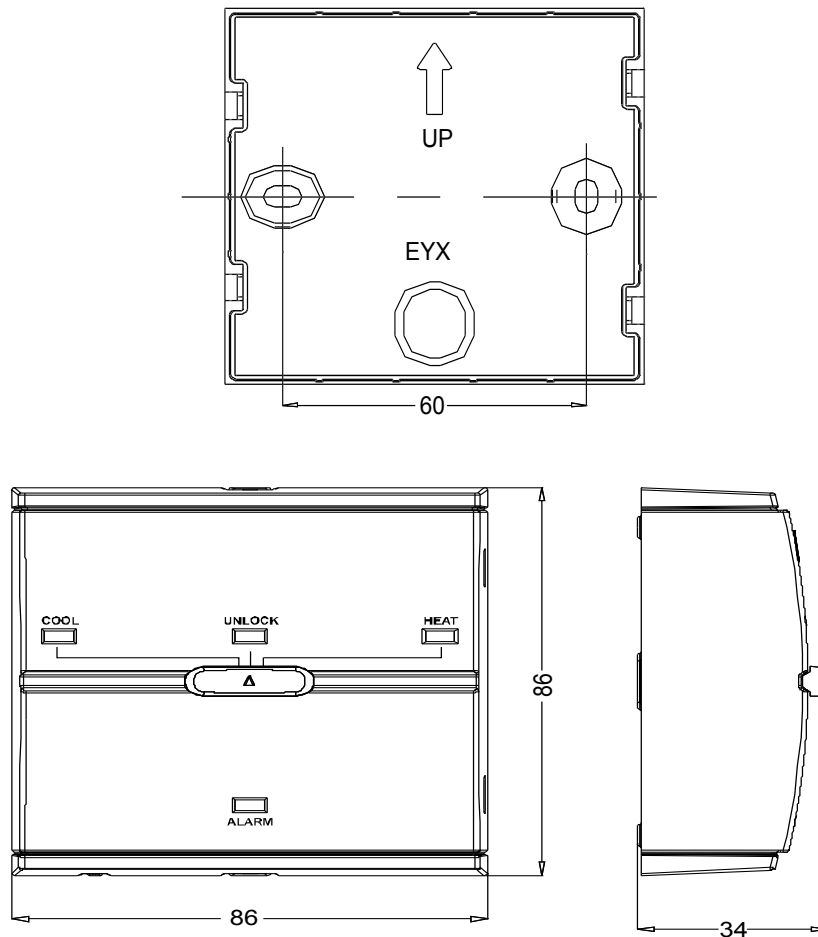
Press the mode switch leftwards to turn all the indoor units to heating only mode and the HEAT light will be on. This light indicates that all the indoor units are running at cooling mode. Users can only set the heating parameter such as temperature and fan speed by other controller. If the user changes the units to the cooling only mode, the indoor unit displays mode conflict error code. And then the corresponding unit turns off to prevent user's environment from being more unsatisfying.

#### 5. Mode switch

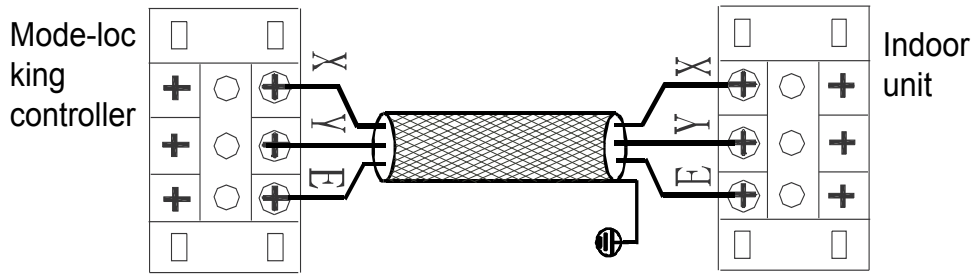
Mode switch is the only key on the controller. Slide this key and command all the indoor units to the corresponding mode to avoid mode conflict.

#### 6.5.3 Installation

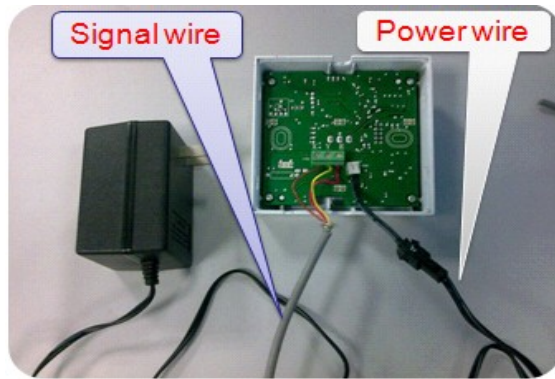
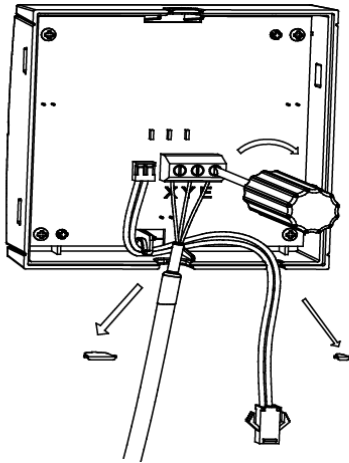
##### ※ Dimension



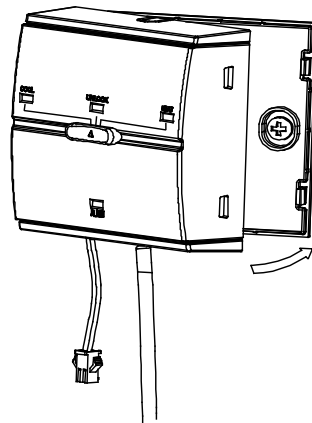
※ **Controlling wiring connection**



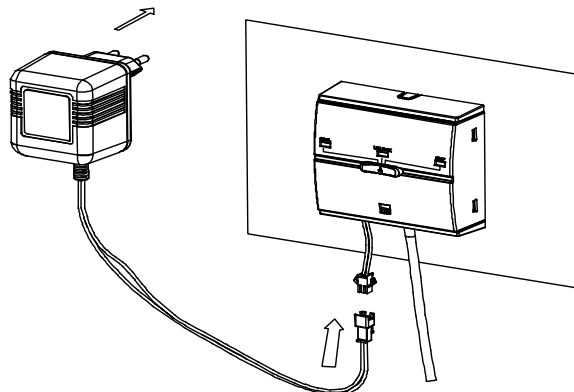
※ **Tie the screw**



※ **Assemble the front shell to the base**



※ **Connect the power adaptor to the controller**



The power supply of the KJR-31B/E should be 220-240V 56/60Hz.

## 6.6 Fault alarm controller: KJR-32B/E

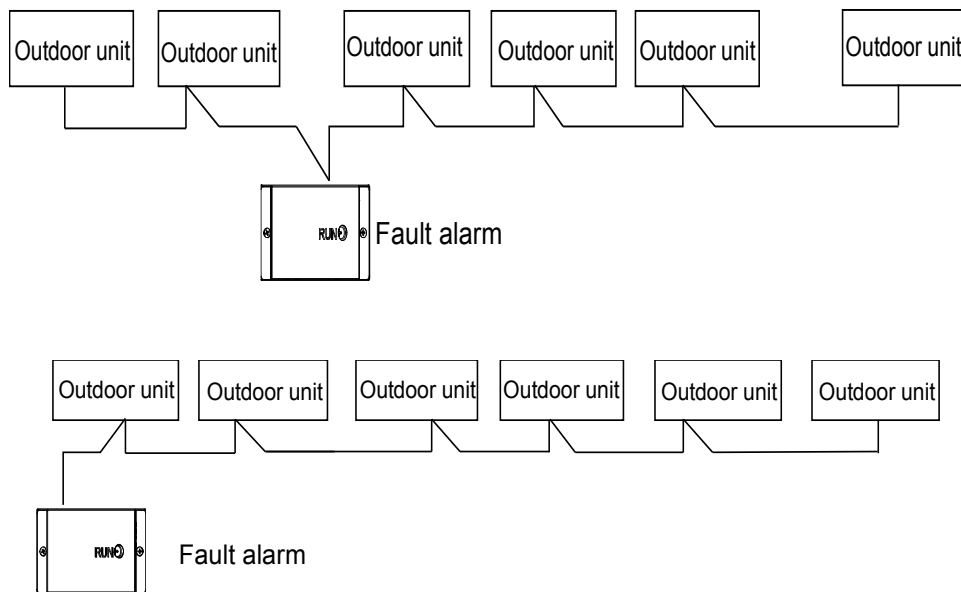
KJR-32B is specially designed for engineering applications. It does not display the outdoor unit's working parameters, but it can connect to the alarm device when outdoor unit is working abnormally, the RUN light will flash.



- ✧ Connect the outdoor unit through K1 K2 E terminals.
- ✧ Connect the RS485 shift RS232 module of Midea 3rd generation network solution by F1 F2 E, and then finally connect to the computer.
- ✧ Output and input the same power through the fault alarm output side.
- ✧ With LED indication function.

### 6.6.1 Wiring methods

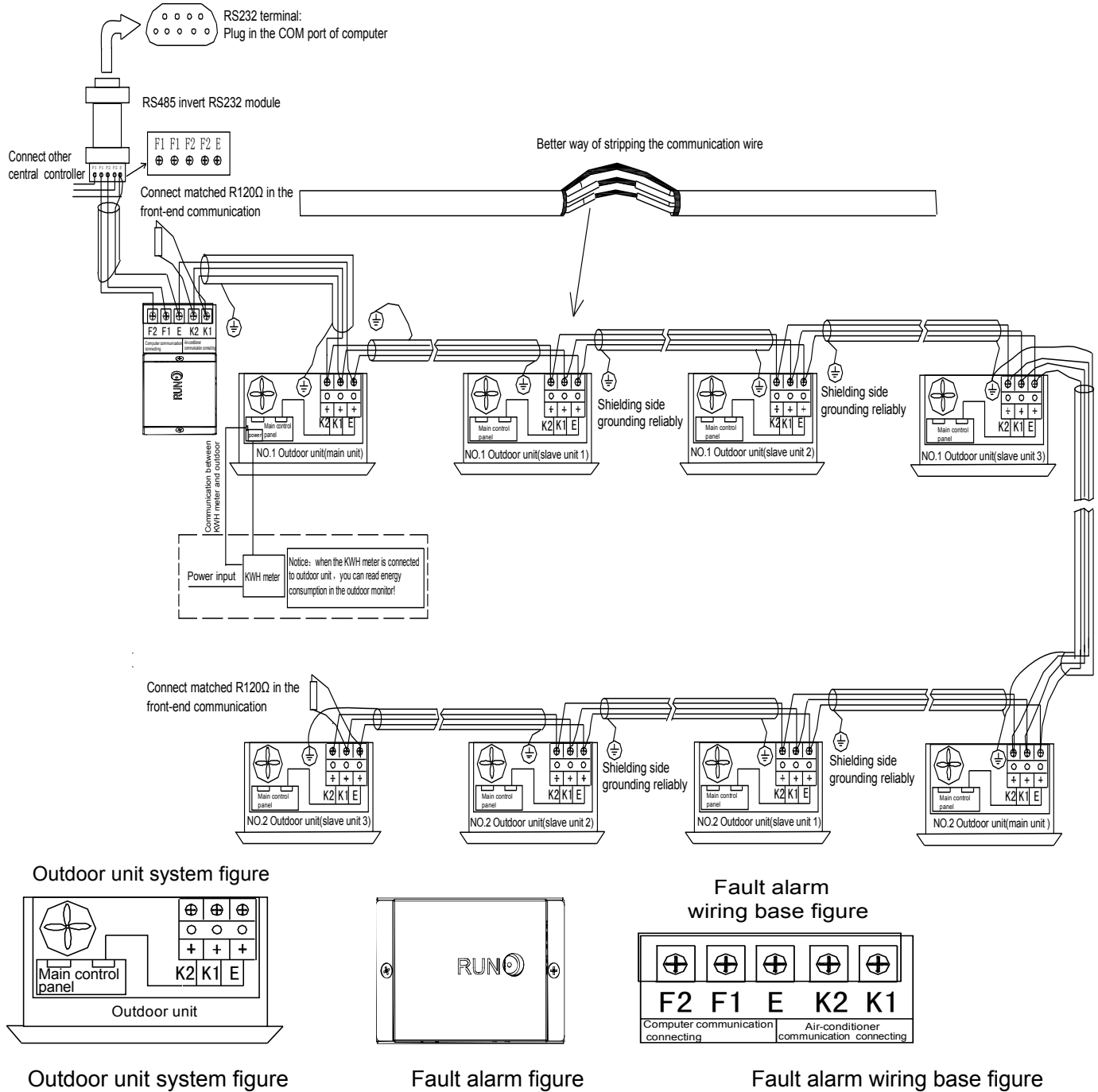
There are two wiring methods can be connected for fault alarm controller. Each fault alarm controller can be connected up to 32 outdoor units and 8 refrigerant systems.



### 6.6.2 System wiring diagram

- 1) One computer can be connected only one fault alarm controller.
- 2) Must connect according to the follow system wiring method, if not it will not work normally.
- 3) You need to connect R120 to the front or rear of the monitoring system, and at the end of communication wire masking should be reliable ground.



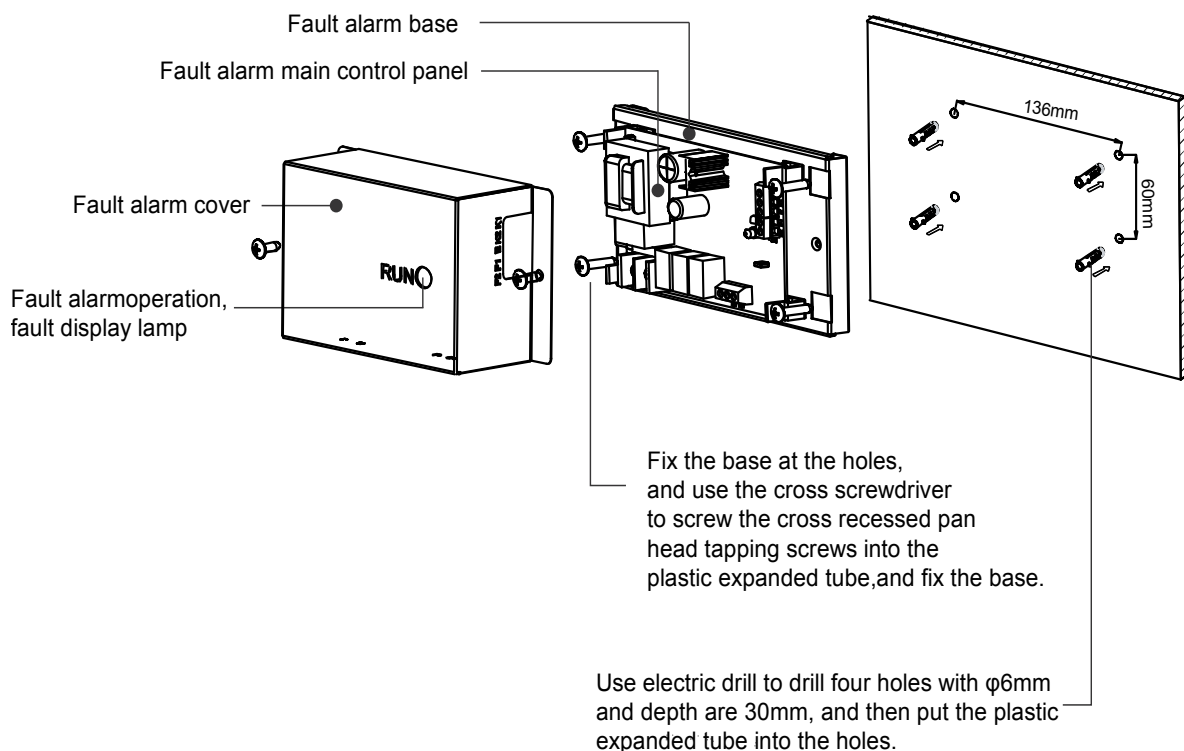
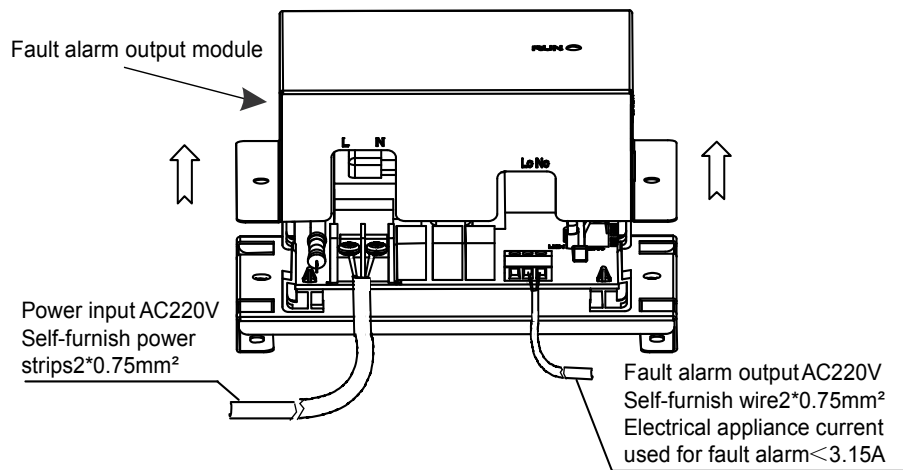


**Notes:**

1. First install the fault alarm controller, after setting the fault protection through the outdoor main panel 2 minutes, observe the indication lamp whether be flashed or not, then judge whether the fault alarm communication with the outdoor unit.
2. When using the fault alarm controller, its output connected appliance requirements: all the AC220V appliances lower than 3.15A current can be the fault alarm controller appliance, such as miniwatt lamp.

### 6.6.3 Installation

1. The RS485 shift RS232 module, connecting wire in the wiring figure can be used only when network monitoring need to connect the computer;
2. One computer cannot connect with one fault alarm and outdoor central controller at the same time, you must choose one for connection;
3. When connected to the computer with 3rd network control system, the default address of the alarm module is 16 and it cannot be changed. Outdoor unit addresses need to be set manually, please refer to the detailed set information in the outdoor installation and owner's manual. The outdoor unit addresses cannot be repetitive, or the system cannot operate normally;
4. Power part and fault output part as follows display:



### 6.7 Indoor unit group controller: KJR-150A/M-E

KJR-150A is specially designed for V4 plus indoor units and its appearance is the same as KJR-32B. A group controller can connect up to 16 V4 plus indoor units through X1 Y1 E, but it cannot directly connect to the central controller. If you need to use a central controller or a PC, you can connect to the XYE from an outdoor unit. A group controller can control a group of indoor units simultaneously, and query the running status of each unit in the group via the display panel.

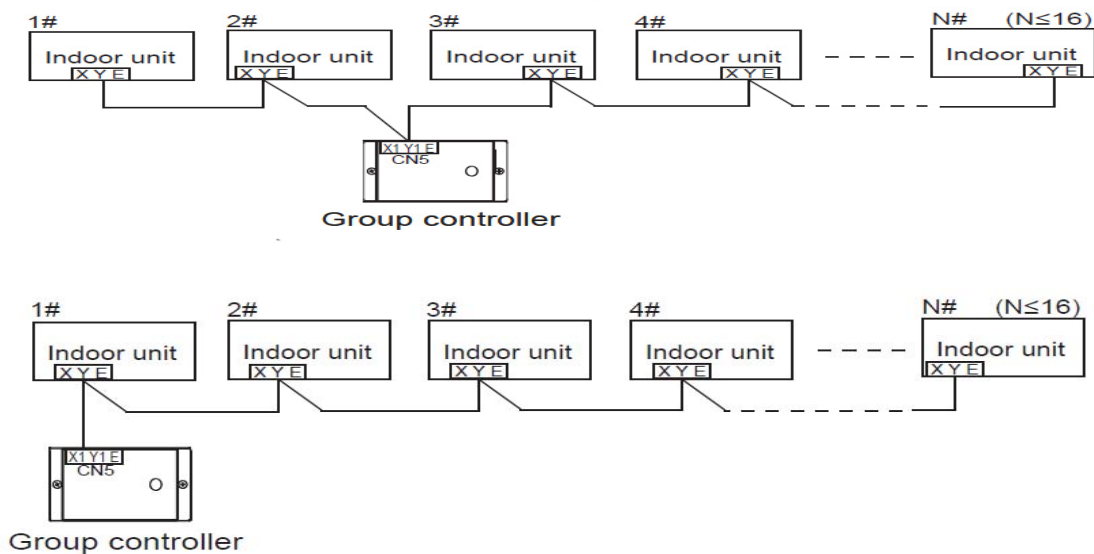


- ✧ Connect the indoor unit through X1 Y1 E terminals.
- ✧ Group controller could control a group of indoor units at the same time.
- ✧ With the check button of the display board, Group controller could query the running state of every unit in the group.
- ✧ With LED indication functions.

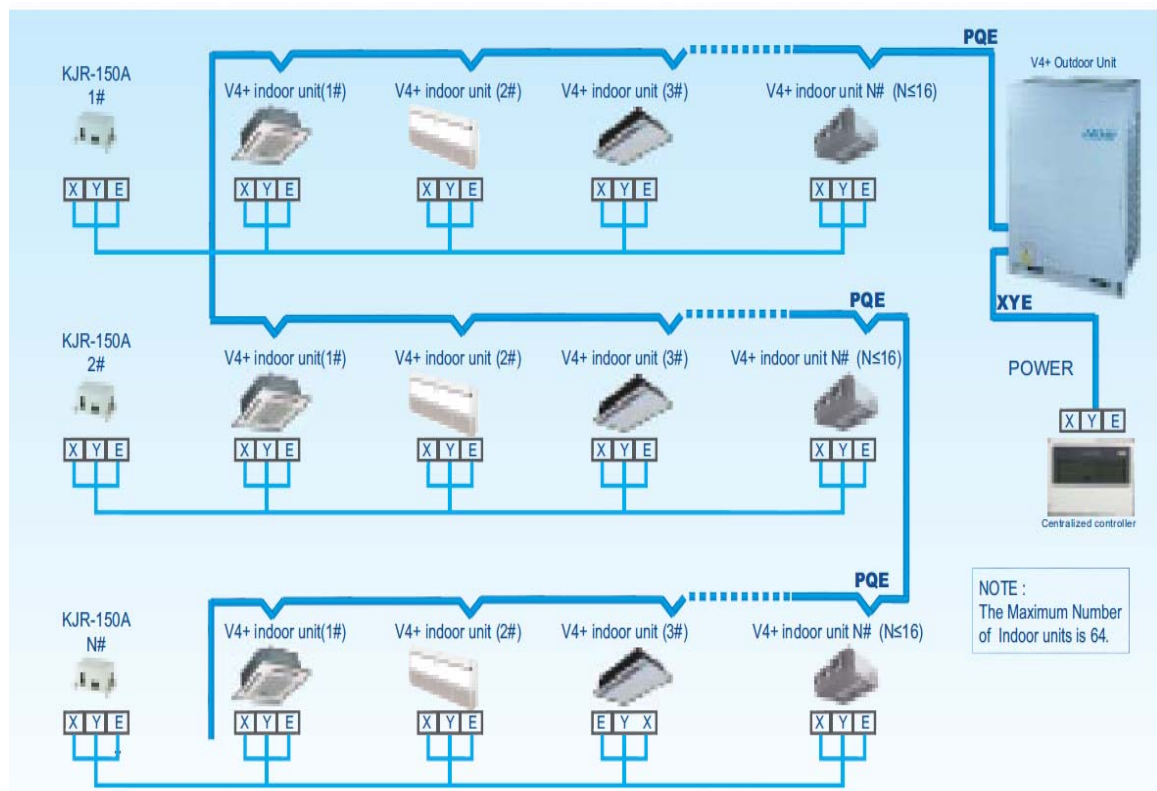
#### 6.7.1 Wiring methods

The following two methods are accepted for the indoor unit group controller KJR-150A. One indoor unit group controller is only allowed to connect up to 16 indoor units.

When connected indoor unit to the group controller as a group, indoor units could be controlled simultaneously and enter to unique running state with the group controller. And then indoor units could be controlled separately by their standard controller, such as the remote controller, wired controller and so on.

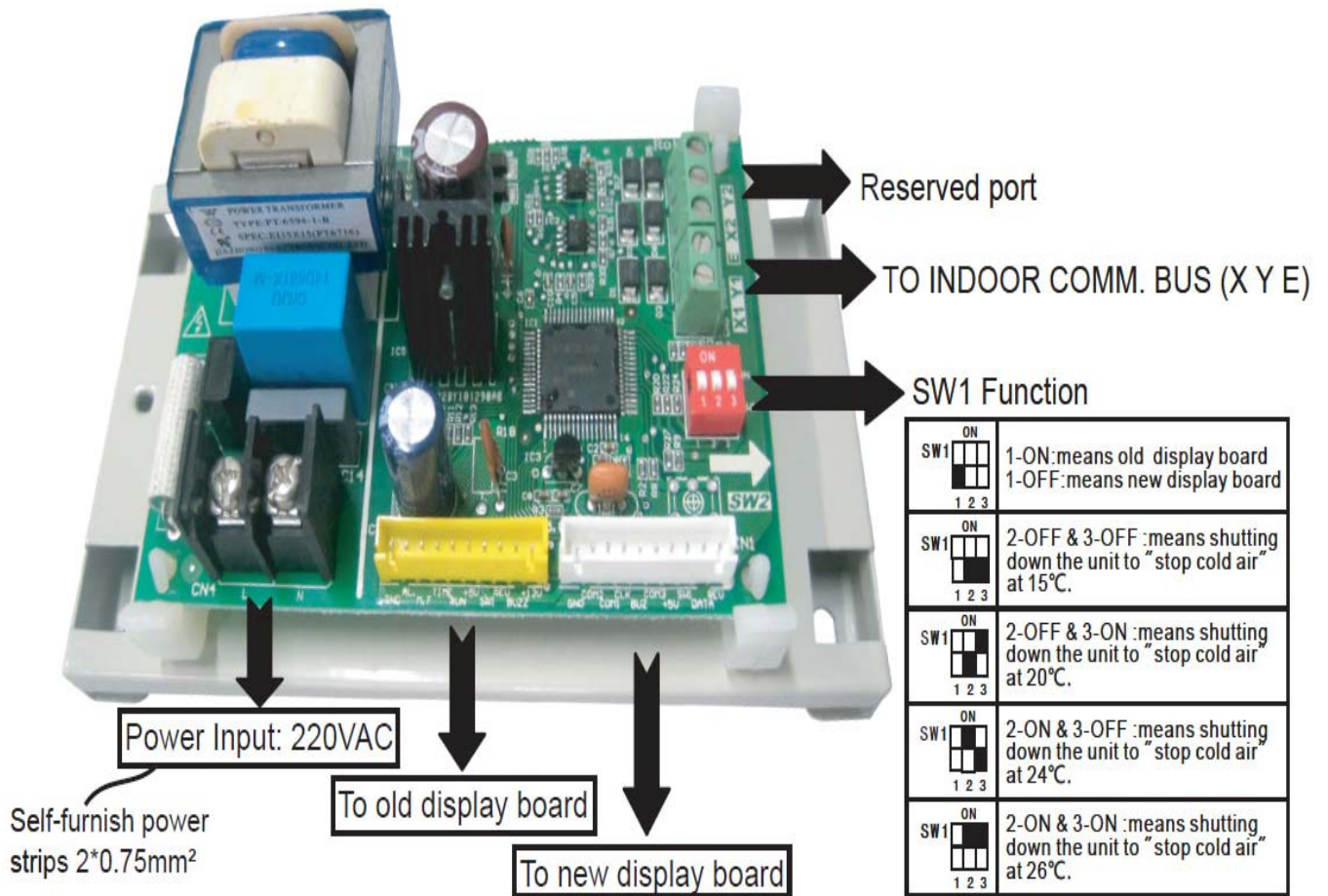


## 6.7.2 System wiring diagram

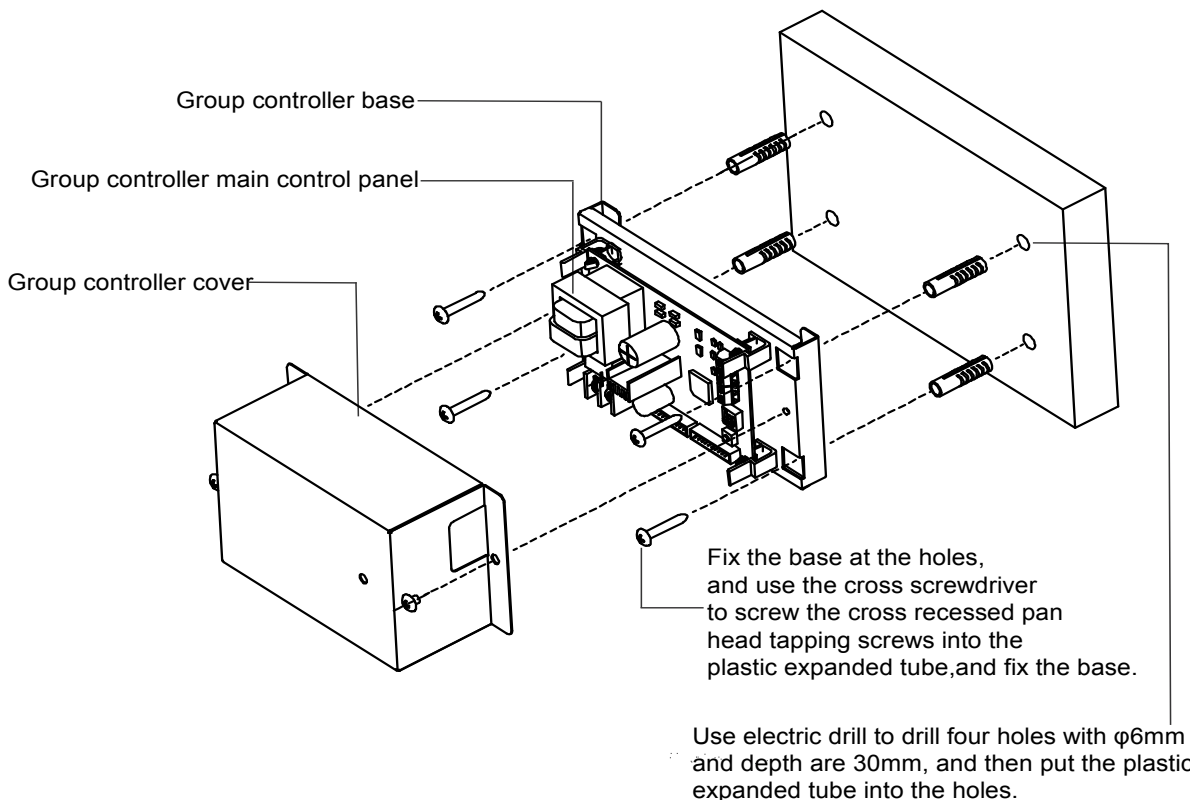


## 6.7.3 Installation

1. When selecting the old display board, please dial the first bit of SW1 to ON. When selecting the new display board, please dial the first bit of SW1 to OFF.
2. In the group, anti-cold air switches of all the indoor units have to be the same with the group controller's, or some displays about this will be wrong.
3. One Group controller is only allowed to connect most of the 16 indoor units.
4. When the centralized controller is needed, you have to connect to the centralized controller from the X, Y, and E port of the outdoor unit.
5. Only with the corresponding units Group controller could work.
6. Power part and communication ports as follows display:



**Notes:** Communication signal in CN5(X1 Y1) and CN6 (E) is a low voltage signal. Do not apply high voltage, or breakdown will occur and even cause fire.





## 6.8 AHU control box 14&28&56kW: AHUKZ-01, AHUKZ-02, AHUKZ-03



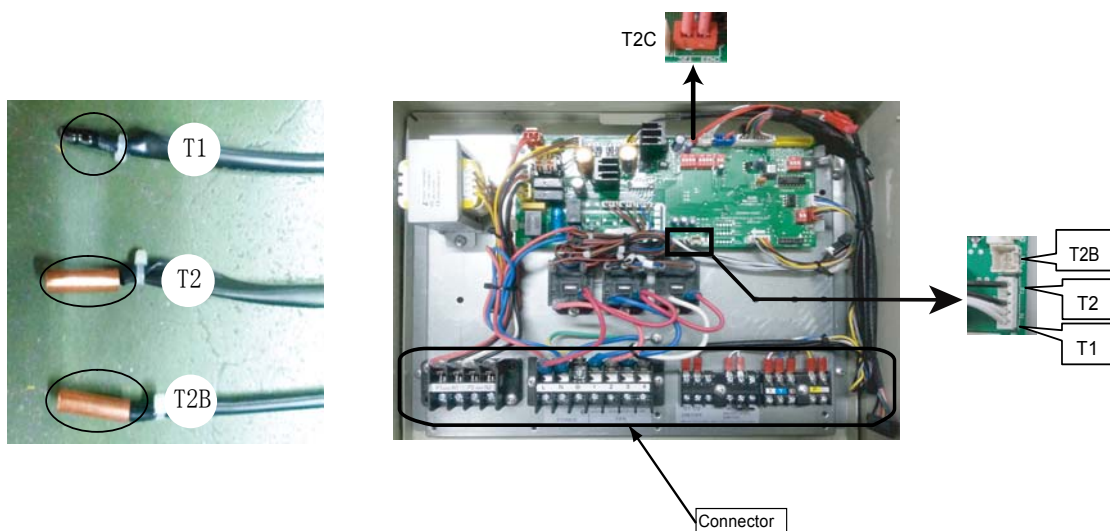
- ◆ Electrical mounting plate can be flipped, easy to install and maintain
- ◆ Can be used to connect VRF outdoor units with DX AHU or other brand indoor units, but cannot connect to the heat recovery system
- ◆ The Sheet Metal integration design
- ◆ Built-in electronic expansion valve
- ◆ One main control board
- ◆ Add the T2C indoor evaporator inlet sensor
- ◆ With failure feedback function
- ◆ Can only connect to R410A refrigerant system

The new AHU control boxes of 14 kW, 28 kW and 56 kW can be used to connect VRF outdoor units with DX AHU or other brand indoor units, but cannot connect to the heat recovery system. The EXV is controlled by superheat degree; one gas pipe and one liquid pipe, easy to install and maintain. The diameters of these three models are different, you can choose you need models

### 6.8.1 Electric control box wiring figure

AHUKZ-01, AHUKZ-02 and AHUKZ-03 are applied one main control board, the temperature sensor T1, T2 and T2B must be connected to the main control board before first powered on.

- T1 is indoor temperature sensor, install at the air inlet of the indoor unit.
- T2 is indoor evaporator intermediate temperature sensor, install at the intermediate of temperature evaporators.
- T2B is indoor evaporator outlet sensor, install at the outlet of the evaporator.
- T2C is indoor evaporator inlet sensor, and it has been installed before the product leaves the factory



**6.8.2 Error and protection codes**

When the AHU control box is working abnormally, it can display the malfunction and protection codes through the new or old display panel. At the same time, you can check the temperature parameters by the LED display panel

**New display panel**

| Codes | Descriptions   |
|-------|--|
| FE    | Without address when first time power on                       |
| H0    | M-home not matched between MS module and control box           |
| E0    | Mode conflict  |
| E1    | Communication malfunction between indoor unit and outdoor unit |
| E2    | T1 sensor malfunction  |
| E3    | T2 sensor malfunction  |
| E4    | T2B/T2C sensor malfunction                                     |
| E7    | EEPROM malfunction   |
| Ed    | Outdoor unit malfunction                                       |
| EE    | Water level switch malfunction                                 |

**Old display panel**

| Definition   | LED status                          |
|--|-------------------------------------|
| Without address when first time power on                         | Time LED and run LED flash together |
| M-home not matched between MS module and control box             | 4 LED flash together                |
| Mode conflict  | Defrost LED flashes                 |
| Communication malfunction between indoor unit and outdoor unit 5 | Timer LED flashes                   |
| Indoor sensors malfunction                                       | Run LED flashes                     |
| EEPROM malfunction   | Defrost LED flash slowly            |
| Outdoor unit malfunction   | Alarm LED flashes slowly            |
| Water level switch malfunction                                   | Alarm LED flash                     |

### 6.8.3 Query instructions

| Sequence | Display contents               | Remarks  |
|----------|--------------------------------|--|
| 0        | Normal display                 |  |
| 1        | Address of AHU control box     |  |
| 2        | Capacity of AHU control box    | Actual address is 1~59, but check value displays 1~58. |
| 3        | Net address of AHU control box | 0~63   |
| 4        | Actual setting Temp.           |  |
| 5        | T1 actual Temp.                | Minimum displays - 9 °C                                |
| 6        | T1 actual Temp.                | Minimum displays - 9 °C                                |
| 7        | T2 actual pipe Temp.           | Minimum displays - 9 °C                                |
| 8        | T2B actual pipe Temp.          | Minimum displays - 9 °C                                |
| 9        | T2C actual pipe Temp.          | Minimum displays - 9 °C                                |
| 10       | Error code                     |  |
| 11       | --                             | End of check   |

### 6.8.4 Basic specification

| Model                |    | AHUKZ-01                       | AHUKZ-02    | AHUKZ-03 |
|----------------------|----|--------------------------------|-------------|----------|
| Power supply         |    | 220-240V~ 50Hz; 208-230V~ 60Hz |             |          |
| Indoor unit capacity | kW | 9~20                           | 20.1~33     | 40~56    |
| IP-class             |    | IPX0                           | IPX0        | IPX0     |
| Piping size (in/out) | mm | Φ8/Φ8                          | Φ12.7/Φ12.7 | Φ16/Φ16  |
| Dimension            | mm | 375×350×150                    |             |          |
| Packing dimension    | mm | 490×240×420                    |             |          |



### 6.8.5 Dial code definition

#### 1) SW1 definition

|                                    |  |
|------------------------------------|--|
| <p>SW1<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 1 means the factory test mode</li> <li>• 0 automatic search address mode (factory default)</li> </ul> |
| <p>SW1<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 1 means select DC fan(reserved)</li> <li>• 0 means select AC fan</li> </ul>                           |
| <p>SW1<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 00 means DC fan static pressure selection 0 set (reserved)</li> </ul>                                 |

|                                    |  |
|------------------------------------|--|
| <p>SW1<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 00 means DC fan static pressure selection 0 set (reserved)</li> </ul> |
| <p>SW1<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 01 means DC fan static pressure selection 1 set (reserved)</li> </ul> |
| <p>SW1<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 10 means DC fan static pressure selection 2 set (reserved)</li> </ul> |
| <p>SW1<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 11 means DC fan static pressure selection 3 set (reserved)</li> </ul> |

#### 2) SW2 definition

|                                    |  |
|------------------------------------|--|
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 00 means temperature of shut down against cool air is 15°C</li> </ul> |
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 01 means temperature of shut down against cool air is 20°C</li> </ul> |
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 10 means temperature of shut down against cool air is 24°C</li> </ul> |
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 11 means temperature of shut down against cool air is 26°C</li> </ul> |

|                                    |  |
|------------------------------------|--|
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 00 means the time of TERMAL stop the fan is 4 minutes</li> </ul>  |
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 01 means the time of TERMAL stop the fan is 8 minutes</li> </ul>  |
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 10 means the time of TERMAL stop the fan is 12 minutes</li> </ul> |
| <p>SW2<br/>ON 1 2 3 4<br/>1234</p> | <ul style="list-style-type: none"> <li>• 11 means the time of TERMAL stop the fan is 16 minutes</li> </ul> |

#### 3) SW5 definition

|                               |   |
|-------------------------------|---|
| <p>SW5<br/>ON 1 2<br/>1 2</p> | <ul style="list-style-type: none"> <li>• 00 means the temperature compensation under heating mode is 6°C</li> </ul> |
| <p>SW5<br/>ON 1 2<br/>1 2</p> | <ul style="list-style-type: none"> <li>• 01 means the temperature compensation under heating mode is 2°C</li> </ul> |

|                               |   |
|-------------------------------|---|
| <p>SW5<br/>ON 1 2<br/>1 2</p> | <ul style="list-style-type: none"> <li>• 10 means the temperature compensation under heating mode is 4°C</li> </ul> |
| <p>SW5<br/>ON 1 2<br/>1 2</p> | <ul style="list-style-type: none"> <li>• 11 means the temperature compensation under heating mode is 8°C</li> </ul> |




#### 4) SW6 definition

|                                   |  |
|-----------------------------------|--|
| <p>SW6<br/>ON 1 2 3<br/>1 2 3</p> | <ul style="list-style-type: none"> <li>• 1 means the old display panel</li> <li>• 0 means the new display panel</li> </ul>                   |
| <p>SW6<br/>ON 1 2 3<br/>1 2 3</p> | <ul style="list-style-type: none"> <li>• 1 means automatic mode automatic fan</li> <li>• 0 means non-automatic mode automatic fan</li> </ul> |
| <p>SW6<br/>ON 1 2 3<br/>1 2 3</p> | Reserved   |



#### 5) SW7 definition

|                               |                             |
|-------------------------------|-----------------------------|
| <p>SW7<br/>ON 1 2<br/>1 2</p> | Standard configuration      |
| <p>SW7<br/>ON 1 2<br/>1 2</p> | The last set of the network |

6) J1, J2 definition

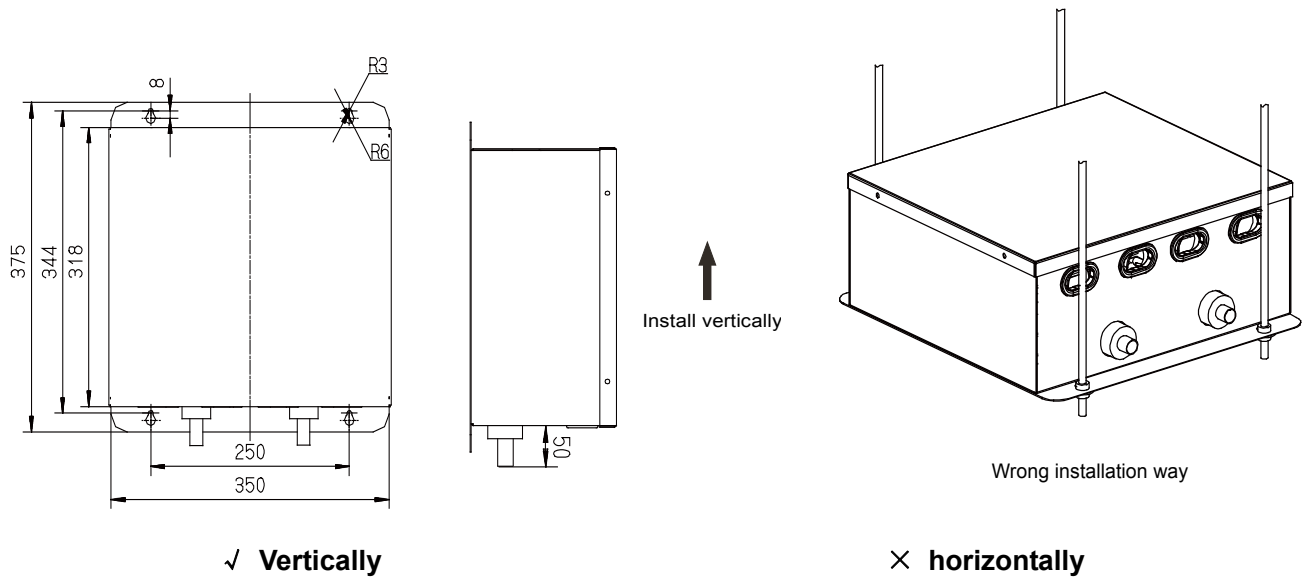
|   |  |
|---|--|
|  | J1 Jumperless for has power down memory function |
|  | J1 Jumper for has no power down memory function  |
|  | Reserved   |

7) 0/1 definition

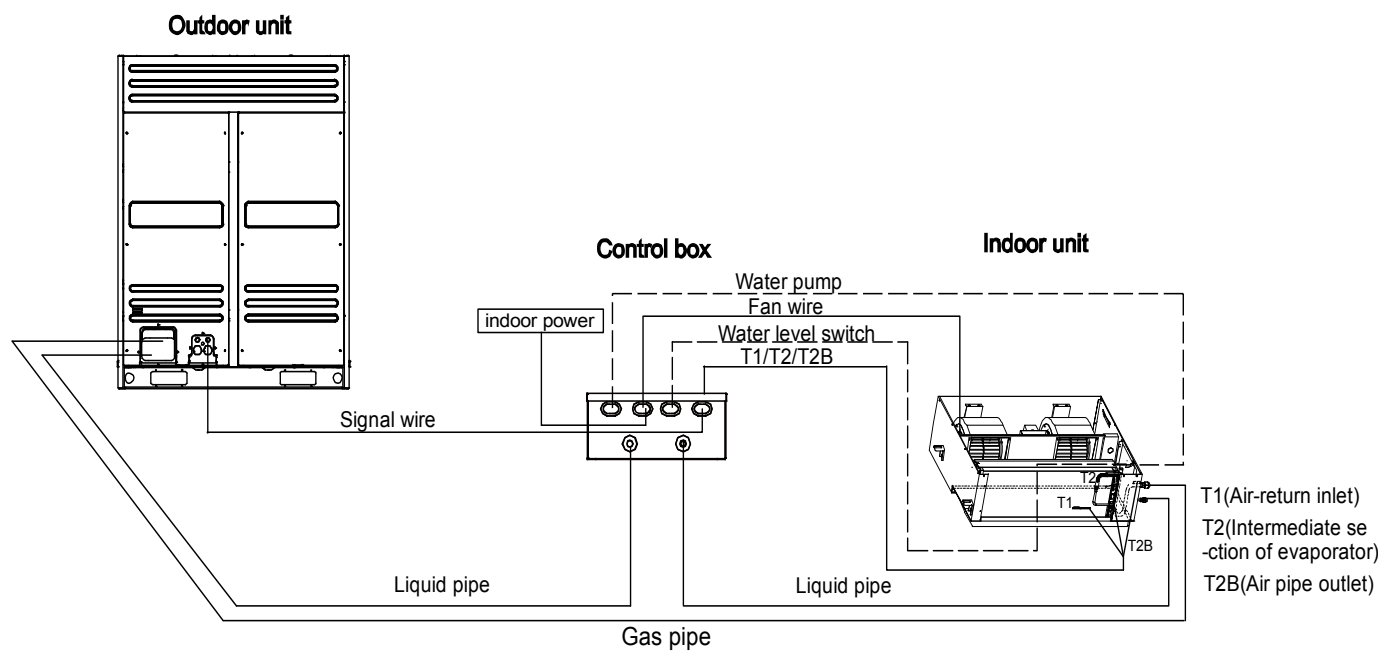
|   |         |
|---|---------|
|  | Means 0 |
|  | Means 1 |

6.8.6 Installation methods

1) Installation methods for vertically, and horizontal installation is invalid



2) Wiring diagram between indoor and outdoor units



**Notes:** 1) If it is needed, user can select the backup function in the dotted line frame.

2) T2C has been installed before the product leaves the factory

### 6.9 HRV wired controller: KJR-27B/E

KJR-27B is individually designed for HRV—Heat Recovery Ventilator. The HRV can work in the following modes: exhaust, air supply, bypass, heat exchange, and auto.

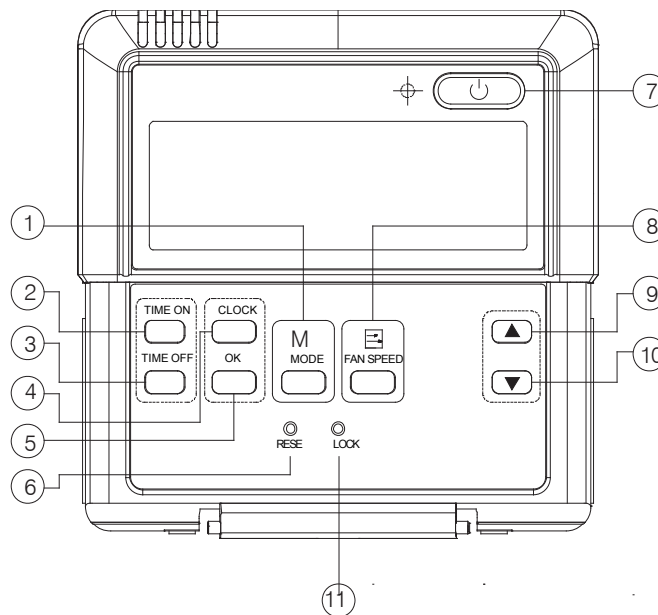
Wired controller specifications

|                           |                 |
|---------------------------|-----------------|
| Model                     | KJR-10B/DB(T)-E |
| Power Supply Voltage      | 5.0V DC         |
| Ambient Temperature Range | -15°C~43°C      |
| Ambient Humidity Range    | RH40%~RH90%     |

Performance Features

1. Operating mode: Cool, heat, dry, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).

#### 6.9.1 Parts name



#### (1) Mode selection button

It is used to select mode, press this button one time, then the operation modes will change in turn as follows:

AUTO→HEAT RECOVERY→EXHAUST→BYPASS→SUPPLY

**(2) Timer on button**

Press this button can set TIMER ON, each time press this button, the time moves forward by 0.5 hours. When the set time is over 10 hours, each time press the button to the time moves forward by 1 hour. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0.

**(3) Timer off button**

Press this button can set TIMER OFF, each time press the button, the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0.

**(4) CLOCK button**

Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When press the button for 4 seconds, the hour part on the clock display flashes every 0.5 seconds, then press button ▲ and ▼ to adjust hour; Press the button CLOCK again, the minute part flashes every 0.5 seconds, then press ▲ and ▼ button to adjust minute. When set clock or alter clock setting, must push the confirm button to complete the setting.

**(5) Confirm button**

The button is used at the state of CLOCK adjustment. After select the time, push the button to confirm then exit, the current clock will display

**(6) RESET button (hidden):**

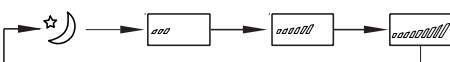
Use a small stick with a diameter of 1mm to press the RESET button can cancel the current settings and get into the condition of resetting.

**(7) ON/OFF button**

Press this button at the condition of OFF, the OPERATION lamp lights, and the wired controller enters into ON operation, simultaneously sends the information of operation mode set currently, temperature, fan speed, timer etc. Press the button at the condition of ON, the OPERATION lamp extinguishes simultaneously sends the OFF. If having set TIMER ON or TIMER OFF, the wired controller will cancel these settings before entering into OFF, close the concern indicator, and then send the OFF information.

**(8) Fan speed selection button**

Can select anyone fan speed from “☆” (star icon), "LOW", "MED", and "HIGH". Each time press the button, the fan speed will change in turn as follow.



**(9) Adjustment button**

The button only for time adjustment, and press the ▲ button, time increases.

**(10) Adjustment button**

The button only for time adjustment, press the ▼ button, time decreases.

**(11) LOCK button (hidden)**

Use a small stick with the diameter of 1mm to press the LOCK button can lock the current setting, press the button again then cancel the setting.

**6.9.2 Using the wired controller****(1) Automatic operation**

Insert the power supply, operation lamp of HRV flashes.

1. Press MODE to select AUTO
2. Press ON/OFF button, the operation lamp of HRV unit lights, the HRV start operating at the auto mode, the fan speed is controlled automatically, wired controller display screen display "AUTO" the fan speed is un-adjustable. Press the button ON/OFF again, and then the HRV stops operating.

**(2) The operation of heat recovery/bypass/supply**

1. Press the MODE button to select any one of "HEAT RECOVERY", "BYPASS", or "SUPPLY" mode.
2. Press the button FAN SPEED to select any one of "☺", "LOW", "MIDDLE", or "HIGH" fan speed modes.
3. Press the button ON/OFF, the operation lamp on HRV lights, the HRV operates according to the mode selected. Press the button ON/OFF again, stop the HRV.

**(3) Exhaust operation**

1. Press MODE to select EXHAUST mode.
2. Press the ON/OFF button, the operation lamp of indoor unit lights, and the air conditioner will start to EXHAUST mode. Press the button ON/OFF again, stop the 3. The button FAN SPEED is invalid in the mode EXHAUST.

**(4) Timer setting**

1. Button TIMER ON can set the starting time.
2. Button TIMER OFF can set the stopping time.

**(5) Only setting timer on**

1. Press TIMER ON button, the wired controller displays SETTING, the icons of HOUR and ON display on the timer setting area. The wired controller enters into the setting of the timer on.
2. Press the TIMER ON button again, and then adjust the time of the timer on as you desired.

3. Continuously press adjust up button. The time of the timer will increase 0.5 hours per time. After the time of timer reaches to 10 hours, the time will increase 1hour each time.

4. 0.5 seconds later, after finishing the adjustment, the wired conditioner sends the information of time on, the timer on the setting is completed.

#### **(6) Only setting timer off**

1. Press the TIMER OFF button, the wired controller display SETTING, the icons of HOUR and OFF display on the timer setting area. The wired controller enters into the setting of the timer off.

2. Press the TIMER OFF button again, and then adjust the time of time off as you desired.

3. Continuously presses adjust up button. The time of the timer will increase 0.5 hours per time. After the time of timer reaches to 10 hours, the time will increase 1hour each time.

4. 0.5 seconds later, after finishing the adjustment, the wired conditioner sends the information of time off. The timer off setting is completed.

#### **(7) Setting time on and time off simultaneously**

1. Refer to step 1 and step 2 of TIMER ON to set the TIMER ON.

2. Refer to step 1 and step 2 of TIMER OFF to set the TIMER OFF.

3. When set the TIMER ON and TIMER OFF simultaneously, if the set times of TIMER ON and TIMER OFF are all over 10 hours, then TIMER OFF is always later 1 hour than TIMER ON.

4. 0.5 seconds later, after finishing the adjustment, the wired conditioner sends the information of time on/off, the timer off and timer on setting are completed.

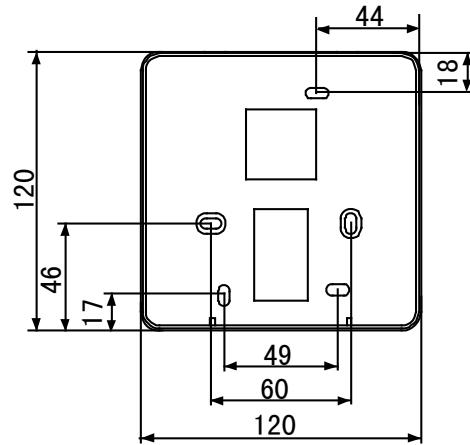
Alter the timer, to alter the time of TIMER ON of 1. Refer to step 1 and step 2 of TIMER ON to set the TIMER ON.

#### **Remark:**

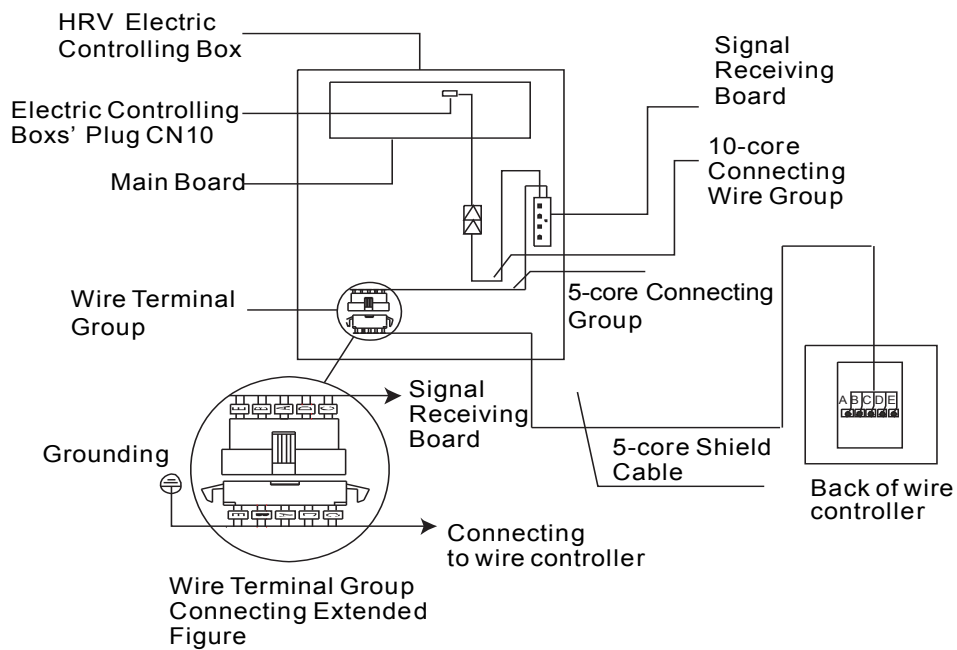
Time of TIMER ON is the relative time; it is relative to standard time of operating wired controller. If having setting the TIMER ON or TIMER OFF, then the clock cannot be adjusted.

### **6.9.3 Installation**

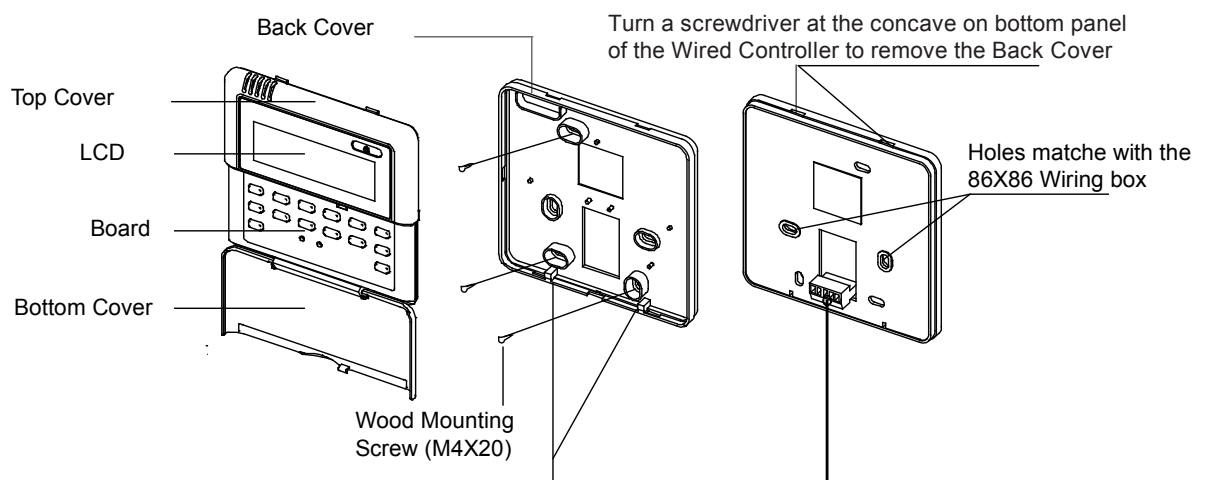
#### **(1) Dimensions: 120\*120\*15mm**



**(2) Wiring principle sketch**



**(3) Wiring principle**



When installing the Wired Controller, you should adjust the bottom of the Wired Controller Board to the Wired Controller Back Cover which should be fixed first, then press the other end of the Wired Controller Board.

When installing the Wired Controller Cover, be sure there is a hole in the wall to avoid the Wired Controller Back Cover being fixed directly to the wall which is not allowed for the Wire Joint extrudes out of the Wired Controller Back Cover