

1. Wired Controller (Standard)

1.1 Wired controller specifications

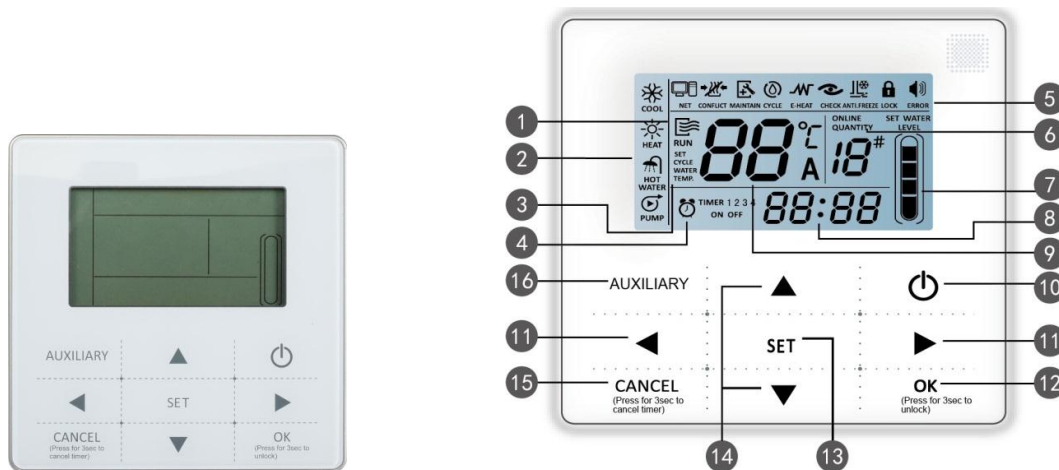
Model	KJR-51/BMKE-A
Input Voltage	10.0V
Operating environment temperature	-10°C~+43°C
Operating RH	RH 40%~RH 90%


Performance Features

1. Touch key operation.
2. LCD displays operation parameters.
3. Multiple timers.
4. Real-time clock (battery life: 5~8 years).

1.2 Introduction of function buttons on the wired controller

The wired controller, KJR-51/BMKE-A, is universal controller, and some functions as reserved are not available for this unit.



1. Operation icon (): Indicate unit ON and OFF status; the icon displays when the unit is on and does not display when the unit is off.










2. Mode area: Indicate the main unit operating mode;

	SET	SET
WATER	WATER	SET
TEMP.	TEMP.	CYCLE
		WATER
		TEMP.

3. Setting temperature: 3 statuses can be displayed -

4. Timing ON/OFF indication ( **TIMER 1 2 3**): Indicate the timing information.

5. Function icon:

- ◇  **NET** : Display when water heater system connects to Modbus network;
- ◇  **CONFLICT** : Displays when other heat source is provided to the system.
- ◇  **MAINTAIN** : Displays when water heater maintenance is needed. Press and hold 'AUXILIARY' key for 3 seconds to cancel the icon and timing will restart until next maintenance.
- ◇  **CYCLE** : Displays when cycle heating function is on.
- ◇  **E-HEAT** : Displays when electric auxiliary heating function is on.
- ◇  **CHECK** : Displays when check function is on.
- ◇  **ANTI.FREEZE**: Displays when ambient temperature is below 2° C which means the main unit need anti-freezing action.
- ◇  **LOCK** : Displays when no key operation for 2 minutes and all keys are locked. Press and hold 'OK' key for 3 seconds to unlock.
- ◇  **ERROR** : Displays when error or protection occurs and means the unit need maintenance by professionals.

6. Online quantity indication: Under normal status display the quantity of units connected to the wired controller; under check status display the device serial number.

7. Water level indication: Under normal status displays water level; under water level setting status displays setting value.

8. Clock: Under normal status displays clock; under timing setting displays the setting timing.

9. Water temperature: Under normal status display water temperature; under water

temperature setting status displays the setting value; under cycle heating water temperature setting status displays the setting value; under check status displays check parameter.

10. ON/OFF key (⏻): Turn on and turn off functions.

11. Right and left key (◀ and ▶): Press these keys to check setting water temperature, setting cycle heating water temperature and setting water level under main page; press right key to shift to the next step setting under timing setting status. Press these keys to turn over the unit parameter information under check status.

12. OK key: Press this key to confirm settings. Press and hold this key for 3 seconds to unlock under locking status.

13. Setting key: Setting water temperature, timing and mode, etc. Press and hold this key for 3 seconds to enter check status.

14. Add and Reduce key (▲ and ▼): Move up or move down values of temperature, timing, water level, etc. Turn over #0~#15 units under check status.

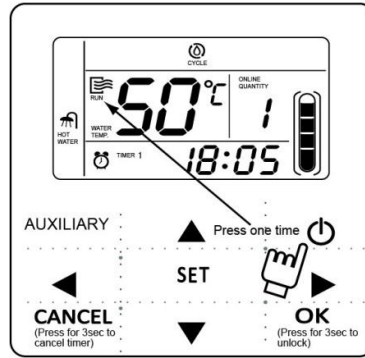
15. Cancel key: Press this key to cancel parameter setting under setting status; press and hold this key for 3 seconds to cancel timing when timing is valid.

16. Auxiliary key: Power on the cycle heating function, electric auxiliary heating function or water pump function.

1.3 Operation instruction

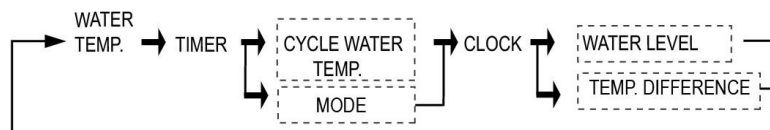
1.3.1 Turn on and turn off the main unit

- Press the ON/OFF key (⏻) to control on and off status of the main unit.
- Under off status, press the ON/OFF key (⏻) to run the main unit, at that time the LCD of wired controller will display the operation icon (⏻_{RUN}). The main unit will running as the current setting of the wired controller.
- Under on status, press the ON/OFF key (⏻) to turn off the main unit and the operation icon (⏻_{RUN}) on the LCD will disappear.



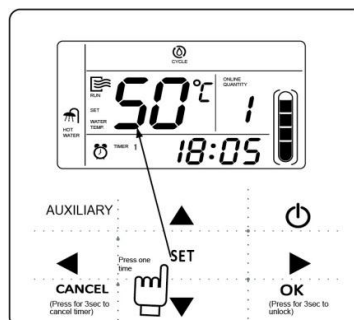
1.3.2 Setting operating modes and parameters

- Press **SET** key to enter the operation mode and parameters setting. The setting contents will change as the following order each time the key is pressed.



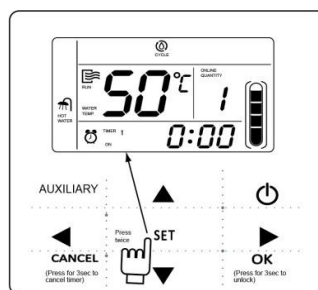
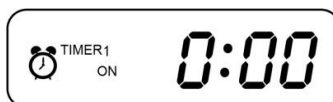
The setting options in the dotted line frame are not general setting. The wired controller automatically judges the needed setting according to the model of main unit.

- Setting water temperature
 - ✓ Press the ▲ or ▼ button to adjust the water temperature after the controller is powered on. Or press **SET** key once when **‘SET WATER TEMP’** is displayed on the LCD and then press the ▲ or ▼ button to adjust water temperature.
 - ✓ To check water temperature setting, press ◀ or ▶ key under the main page (the page displayed after the controller is powered on).



➤ Timing setting

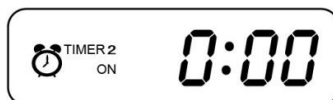
- ✓ 3 timing periods can be set on the wired controller; Timer 1, Timer 2, Timer 3.
These 3 timers can control the main unit to be turned on and off 3 times at most during a day.
- ✓ Press **SET** key under man page twice to enter timing setting. Then the LCD will display as the following:



- ✓ At this time the hour of the clock will flash, which means the current setting is the hour of Timer 1 on, press the ▲ or ▼ to adjust, press ► key when finished, and then the minute of the clock will flash, which means the current setting is the minute of Timer 1 on, press the ▲ or ▼ to adjust, press ► key when finished, the LCD will display as the following:



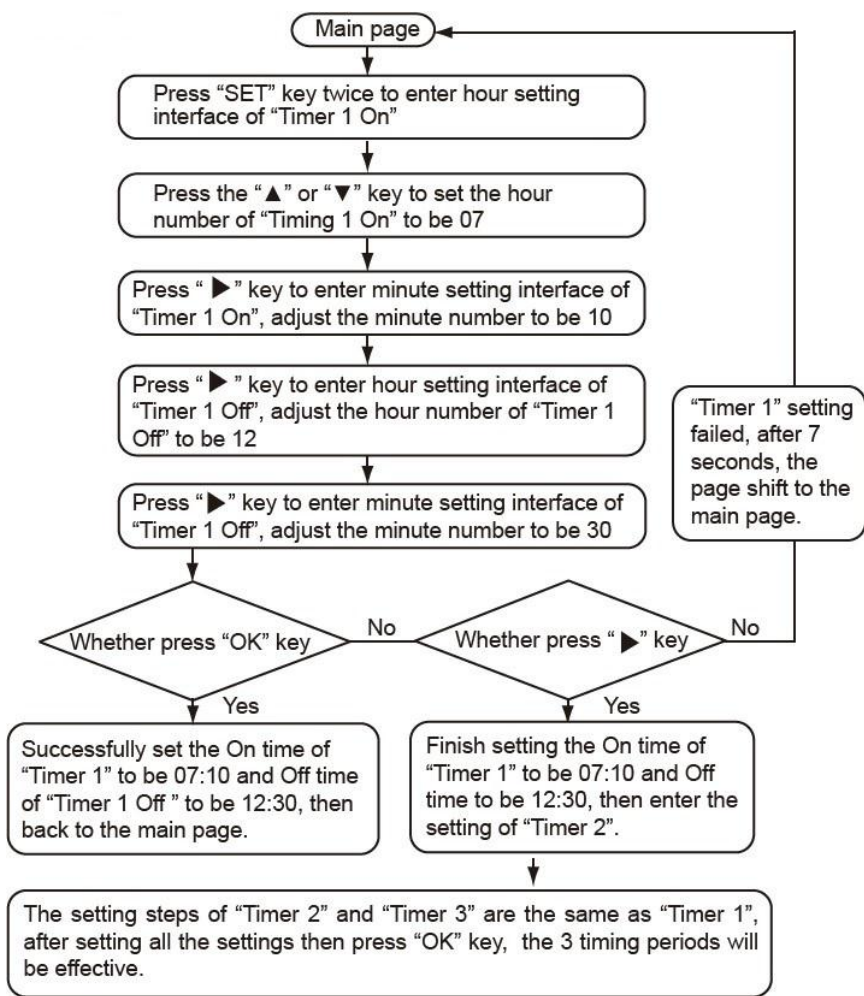
- ✓ At this time the hour of the clock will flash, which means the current setting is the hour of Timer 1 off, press the ▲ or ▼ to adjust, press ► key when finished, and then the minute of the clock will flash, which means the current setting is the minute of Time 1 off, press the ▲ or ▼ to adjust, press ► key when finished, the LCD will display as the following:



- ✓ At this time the hour of the clock will flash, it means the current setting is the hour of the Timer 2 on. And the follow setting method will be the same as the Timer 1. Similarly, the setting of Timing 3 is the same as this method. After setting is finished, press **OK** key or wait for 7 seconds to confirm the setting, and the LCD will display the effective timing information, as the following display:



- ✓ Example of timing setting:

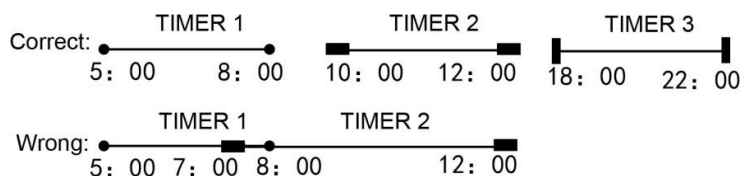


During any period of timing setting to press **OK** key, the timing periods which have been set will be effective (only if the on and off of one timing period have been set, the setting is effective).

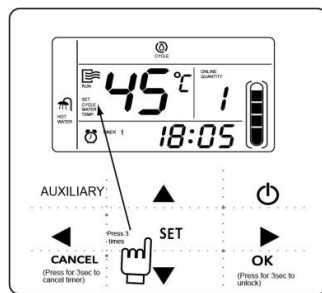
Check timing information: to check the timing which has been set, press ◀ or ▶ key under main page, the on and off time of Timer 1, Timer 2 and Timer 3 will be displayed in turns.

Cancel timing: press and hold **CANCEL** key for 3 seconds, then all the effective timing periods will be cancelled.

- ✓ To avoid timing error, each period of timing should not be crossed, e.g.:



- Set the cycle heating water temperature (Reserved)
 - ✓ Continuous press **SET** key 3 times to enter cycle heating water temperature setting. The LCD will display '**SET CYCLE WATER TEMP.**' and temperature value will flash.
 - ✓ Press the ▲ or ▼ key to adjust the temperature value, press **OK** key or wait for 7 seconds to confirm. During setting process pressing **CANCEL** key to exit without saving.
 - ✓ Check cycle water temperature value setting: press ◀ or ▶ key under main page to check the value.



- Set clock

Press the **SET** key 4 times to enter clock setting. The hour of the clock will flash, which means the current setting is the hour of the clock, press the ▲ or ▼ key to adjust, press

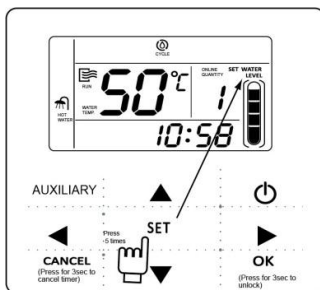
▶ key when finished, and then the minute of the clock will flash, it means the current setting is the minute of the clock, press the ▲ or ▼ key to adjust, press **OK** key when finished or wait for 7 seconds to confirm. During the setting process press the **CANCEL** key to exit without saving.

Setting the clock should be correct, otherwise cannot get the correct timing on and timing off.



➤ Set water level (Reserved)


Press the SET key 5 times to enter the water level setting. Press the ▲ or ▼ key to adjust the water level. Press OK key when finished or wait for 7 seconds to confirm. During the setting process, press the CANCEL key to exit without saving. The setting value is 50%, 75% or 100%. Press the ◀ or ▶ key to check the water level which has been set under main page.

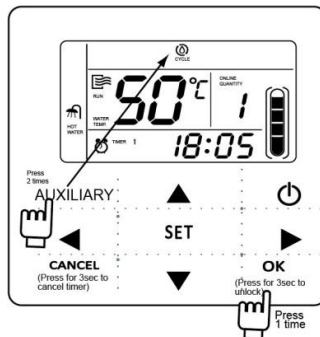


1.3.3 Auxiliary operation

➤ Cycle heating (Reserved)


Cycle heating function makes the direct heating water heater to run the cycle heating function.

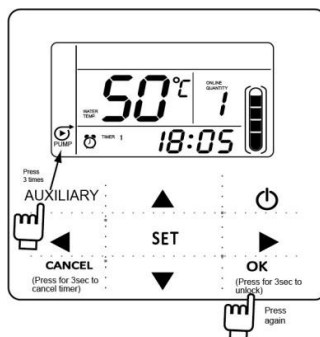
Operation method: press **AUXILIARY** key twice to enter this function. The  **CYCLE** icon will flash, press **OK** key to confirm. The '**CYCLE**' icon will be on if the cycle heating running requirement is fulfilled and will be off if not fulfilled.



- Water pump (reserved for future use.)

This function is used to run the main water pump in the device installing and debugging.

Operation method: Press **AUXILIARY** key 3 times to enter this function. The  **PUMP** icon will flash and then press **OK** key to confirm. The '**PUMP**' icon will be on if the pump running requirement is fulfilled and will be off not fulfilled.



- Cancel auxiliary

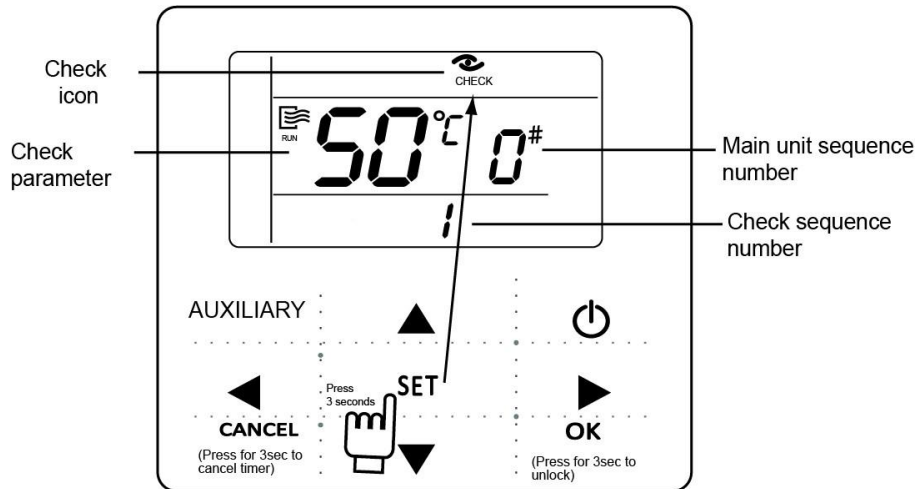
To stop the auxiliary function, press the **AUXILIARY** key again, and then press **CANCEL** key when the corresponding icon is flashing. Then the auxiliary function will be cancelled.

1.3.4 Check

- Check function allows the user to check all the operating parameters, error and

protection information of the main unit.

- Enter method: press and hold **SET** key for 3 seconds to enter check interface, as the figure display:



- Press the ▲ or ▼ key to adjust the main unit serial number and check 16 unit's status information from #0~#15. Press ◀ or ▶ to adjust the check sequence number of one unit and check all the status information of this unit.
- Check content:

Water outlet temperature T1→2, Outdoor pipe temperature T3→3, Outdoor ambient temperature T4→4, Air exhausting temperature→
Compressor A current→6, Compressor B current→7, EXV opening→8, EXV opening
Last one error or protection→10, last second error or protection→
Last third error or protection→12, Outdoor unit model→13, Wired controller setting value→1, Water outlet temperature T1.....

1.3.5 Error handling

- When the unit has error or protection, the icon will flash. Press and hold **SET** key for 3 seconds to enter check status and then press the ▲ or ▼ key to check the unit of #0~#15. If the '**ERROR**' icon is on, it means the corresponding unit has error or protection at that time. The last 3 error or protection codes of the unit can be checked. The error icon will disappear if the error or protection is cleared.
- For the error code, refers to trouble shooting part.

1.4 Installation of wired controller

1.4.1 Caution

- Stated below are important safety issues that must be obeyed.
- Confirm there is no abnormal phenomena during test operation after complete, then hand the manual to the user.
- Reinstallation must be performed by professional.
- Do not install the unit in a place vulnerable to leakage of flammable gases. Once flammable gases are leaked and left around the wired controller, fire any occur.
- The wiring should adapt to the wired controller current. Otherwise, electric leakage or heating may occur and result in fire.
- The specified cables shall be applied in the wiring. No external force may be applied to the terminal. Otherwise, wire cut and heating may occur and result in fire.
- Circuit of wired controller is low voltage circuit. Never connect it with a standard 220V or 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.
- Do not place the wired controller near the lamps, to avoid the signal of the controller to be disturbed.

- Do not install the unit in a place with much oil, steam, sulfide gas. Otherwise, the product may deform and fail.

1.4.2 Preparation before installation:

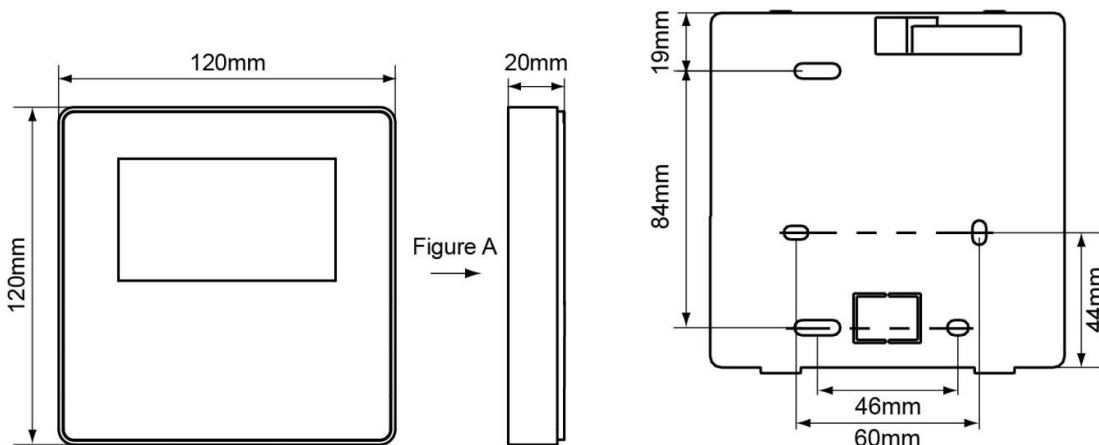
Check whether the following assemblies are complete:

Name	Qty.	Remarks
Wired controller	1	
Cross round head wood mounting screw	3	M4×20, for mounting on the wall.
Cross round head mounting screw	2	M4×25, for mounting on the electric switch box.
Installation manual	1	
Owner’s manual	1	
Plastic expansion pipe	3	For mounting on the wall.
Plastic screw bar	2	For fixing on the 86 electrician box.

Prepare the following assemblies on the site:

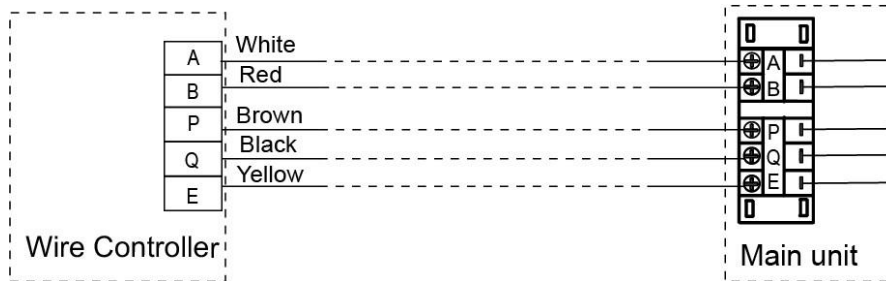
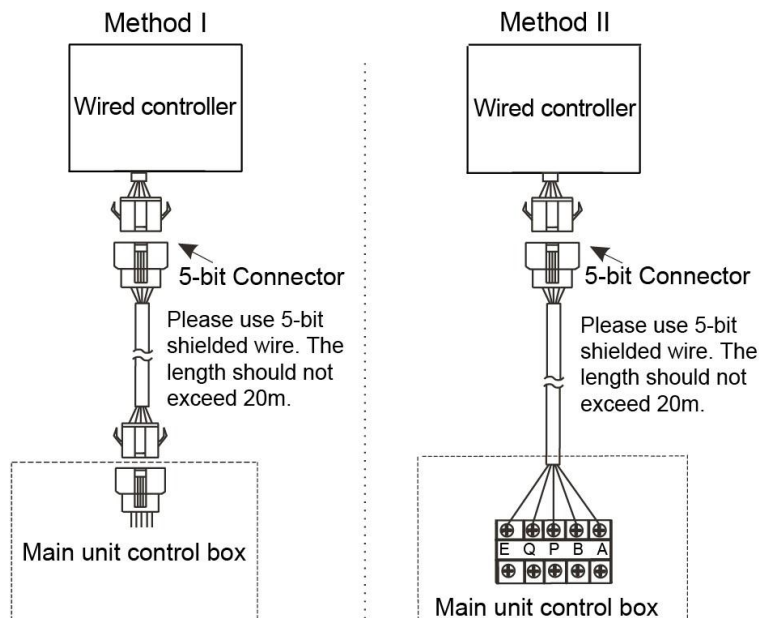
Name	Qty.	Remarks
Wiring tube (insulating sleeve and tightening screw)	1	Embedded into wall.
Electrician box	1	Embedded into wall.

1.4.3 Dimensions



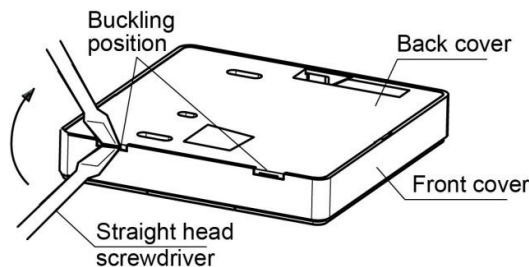
1.4.4 Wire connection

There are two methods to connection between wired controller and main unit.



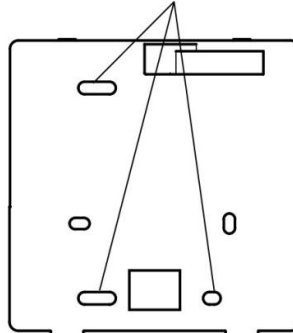
1.4.5 Back cover installation

- Use straight head screwdriver to insert into the buckling position in the bottom of wired controller, and spin the screwdriver to take down the back cover. Pay attention to spinning direction, otherwise will damage the back cover.



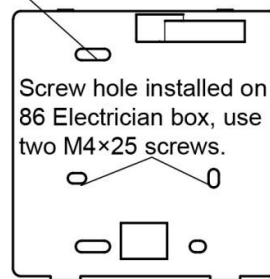
- Use three M4×20 screws to directly install the back cover on the wall.

Screw hole installed on the wall, use three M4×20 screws.

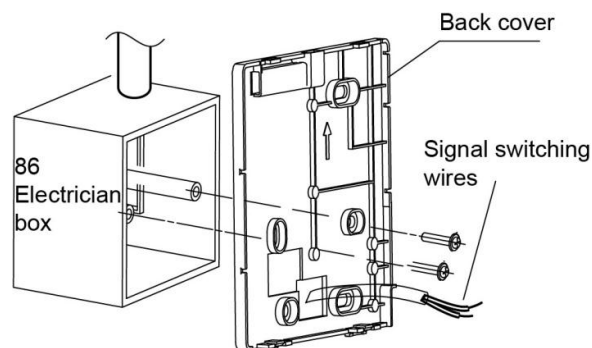


- Use two M4×25 screws to install the back cover on the 86 electrician box, and use one M4×20 screw for fixing on the wall.

Screw hole fixed on the wall, use one M4×20 screw.



- Adjust the length of two plastic screw bars in the accessory to be 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.



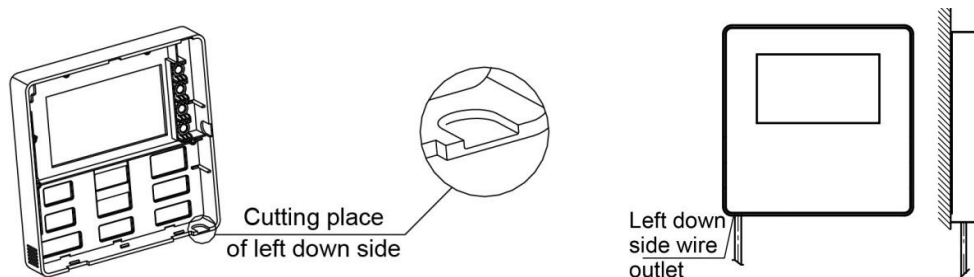
- Use cross head screws to fix the wired controller bottom cover in the electric control box through the screw bar. Make sure the wired controller bottom cover is on the same level after installation, and then install the wired controller back to the bottom cover.

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

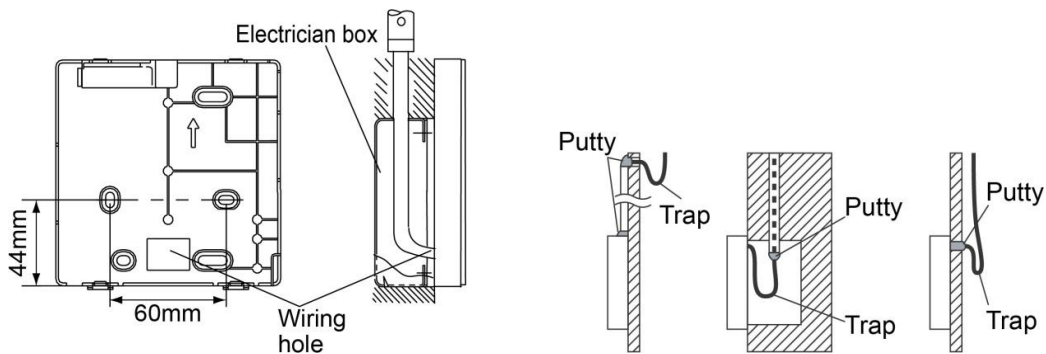
1.4.6 Wire outlet

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

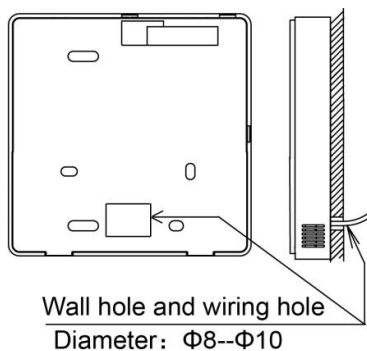
Method 1:



Method 2:

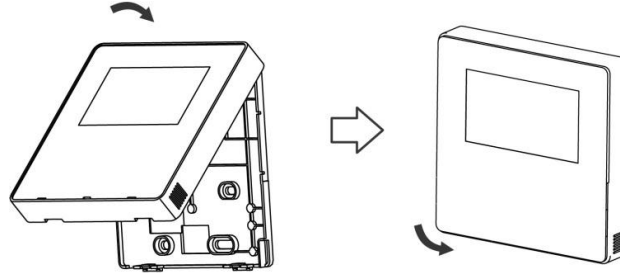


Method 3:



1.4.7 Front cover installation

- After adjusting the front cover and then buckle the front cover. It should avoid to clamping the communication switching wire during installation.



- Correct install the back cover and firmly buckle the front cover and back cover, otherwise will make the front cover drop off.

