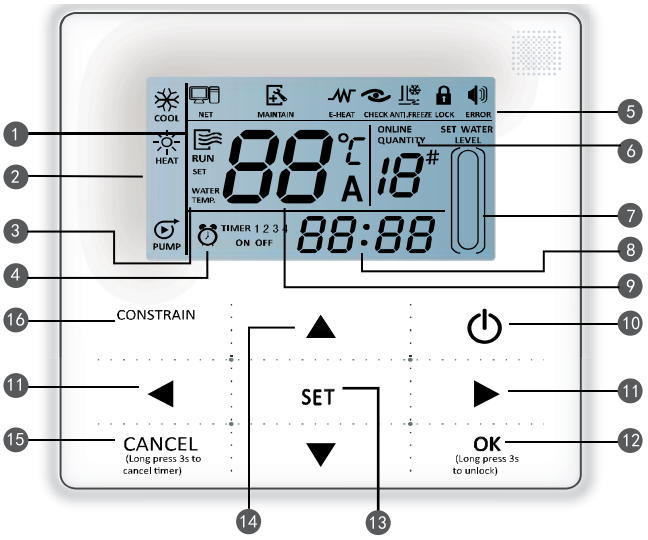
16.2 Wired Controller KJRM-120D/BMK-E(Standard)

KJRM-120D/BMK-E



1. Operation icon
2. Mode area
3. Setting temperature
4. Timing On/Off
5. Function icon
6. On-line unit qt y.
7. Reserved
8. Clock
9. Water temp.
10. ON/OFF key
11. Right, Left key
12. OK key
13. Setting key
14. Add, reduce key
15. Cancel key
16. Reserved key

16.2.1. Operating instructions of buttons

①**.Operation icon** : Indicate the ON and OFF status; when it is ON, it will display; when it is OFF, it will disappear;

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

③**Setting temperature:** 2 status can be displayed: WATER TEMP. SET WATER TEMP.;

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

⑤**Function icon;**

1) Computer: Display when connects to computer;

2) Maintenance: When the icon is lighted on it means should arrange professionals to do the cleaning maintenance; long press“CONSTRAINT” for 3 seconds then this icon will be off, until the next maintenance;

3) E-heating: Display when the electric auxiliary heating water function is operated;

4) Check: Display when check function is operated;

5) Anti-freezing: Display when the main unit ambient temperature is below 2℃, to remind the main unit should be do the anti-freezing measurement;

6) Lock: When the icon is lighted on, it means the button has been locked (no keys operation for 2 minutes), long press “OK” key for 3 seconds to unlock;

7) Error: When the main unit has error or protection, this icon will be displayed. The unit need to be maintained by professionals.

⑥**On-line unit qty.** indication: Under normal status display the quantity of the units connected to the wire controller; under check status display the device serial number;

⑦**Reserved;**

⑧**Clock:** Under normal status display clock; during timing setting it displays the setting timing time;

⑨**Water temperature:** Under normal status display water temperature; during water temperature setting it displays the setting numerical value; under spot check status display spot check parameter;

⑩**ON/OFF key:** On and Off functions;

⑪**Right, Left key:** Under main page to press this key can query the setting water temperature, setting timing etc; during timing setting press the right key then shift to the next step setting; during spot check they are used to turn over the unit parameter information;

⑫**OK key:** After setting the parameter then press this key to confirm. After keys locking then long press this key for 3 seconds to unlock;

⑬**Setting key:** Setting the water temperature, timing, mode etc, long press this key for 3 seconds enter to spot check;

⑭**Add, Reduce key:** Setting water temperature, timing, water level etc; during spot check they are used to read over #0～#15 units;

⑮**Cancel key:** During setting parameters press this key to cancel setting. After timing setting and then long press this key 3 seconds to cancel timing;

⑯**Reserved key.**

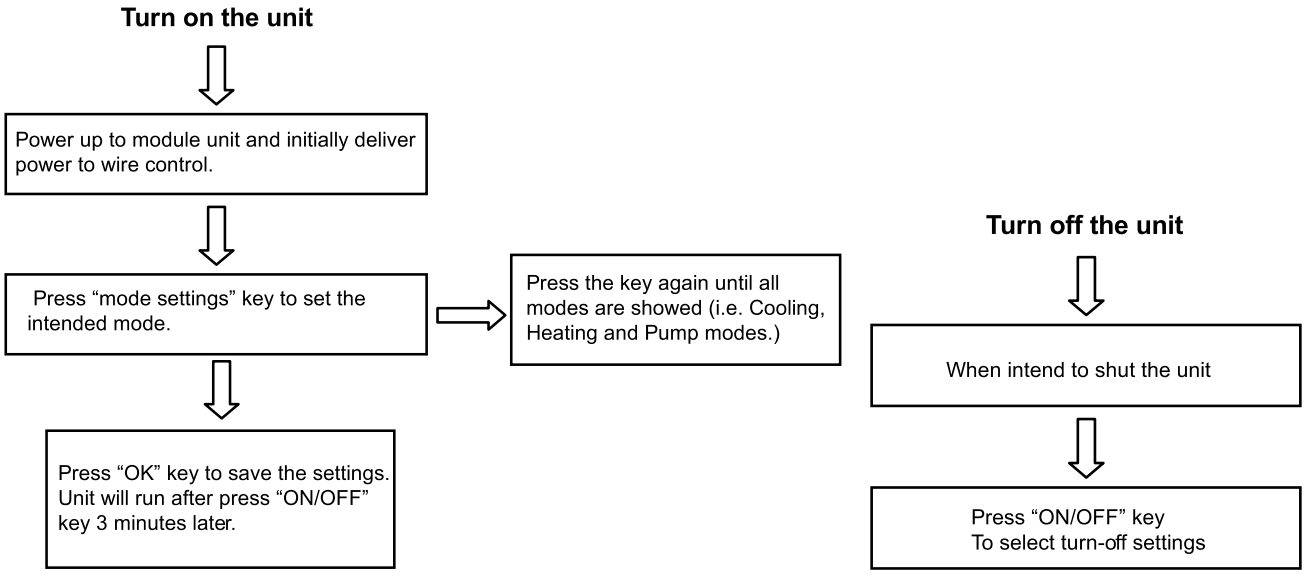
16.2.2. Operation instruction

On and Off the main unit

1) Press the On/Off key to control On and Off status of the main unit.

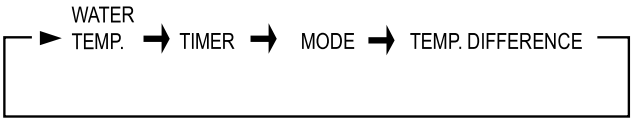
2) Under Off status, press the On/Off key "⏻" to operate the main unit, at that time the LCD of wired controller will display the operation icon "RUN". The main unit will be operated as the current setting of the wired controller.

3) Under On status, press the On/Off key "⏻" to off the main unit, at that time the operation icon "RUN" on the LCD of wire controller will disappear.

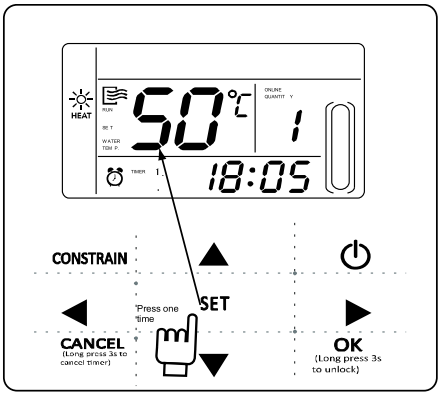


Setting operating modes and parameters

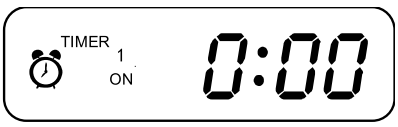
Press “Setting” key to enter the operation mode and parameters setting. The setting contents will change as the following order each time the key is pressed:

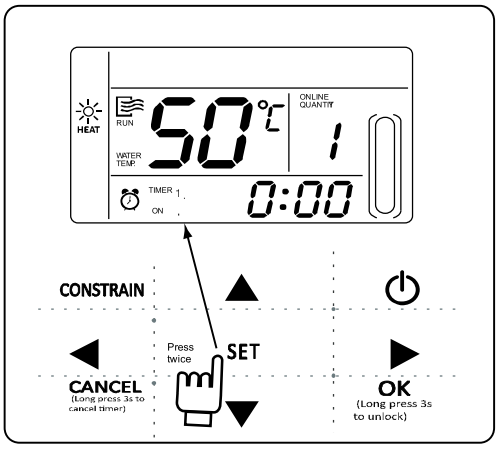


1) Setting water temperature: under main page directly press the “▲” or “▼” to adjust the water temperature, or press “Setting” key to enter and then press “▲” or “▼” to adjust. At that time the LCD will display “Setting temperature” and “Water temperature parameter”, as the following display. Query water temperature setting: press the “◀ ” or “▶” key under the main page to query the set water temperature numerical value.

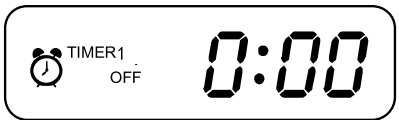


2) Timing setting: can set 3 timing periods on the wire controller: Timer 1, Timer 2, Timer 3, and then control the main unit to ON and OFF in different periods. Setting method: press “Setting” key under main page twice to enter timing setting. At that time the LCD will display as the following:

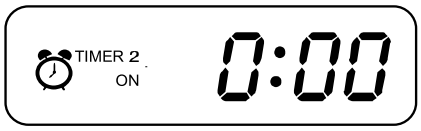




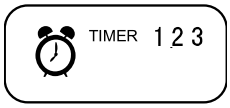
This time the hour of the clock will flash, it means the current setting is the hour of Timer 1 “On”, press the “▲” or “▼” to adjust, press “►” key when finished, and then the minute of the clock will flash, it means the current setting is the minute of Timer 1 “On”, press the “▲” or “▼” to adjust, press “►” key when finished, the LCD will display as the following:



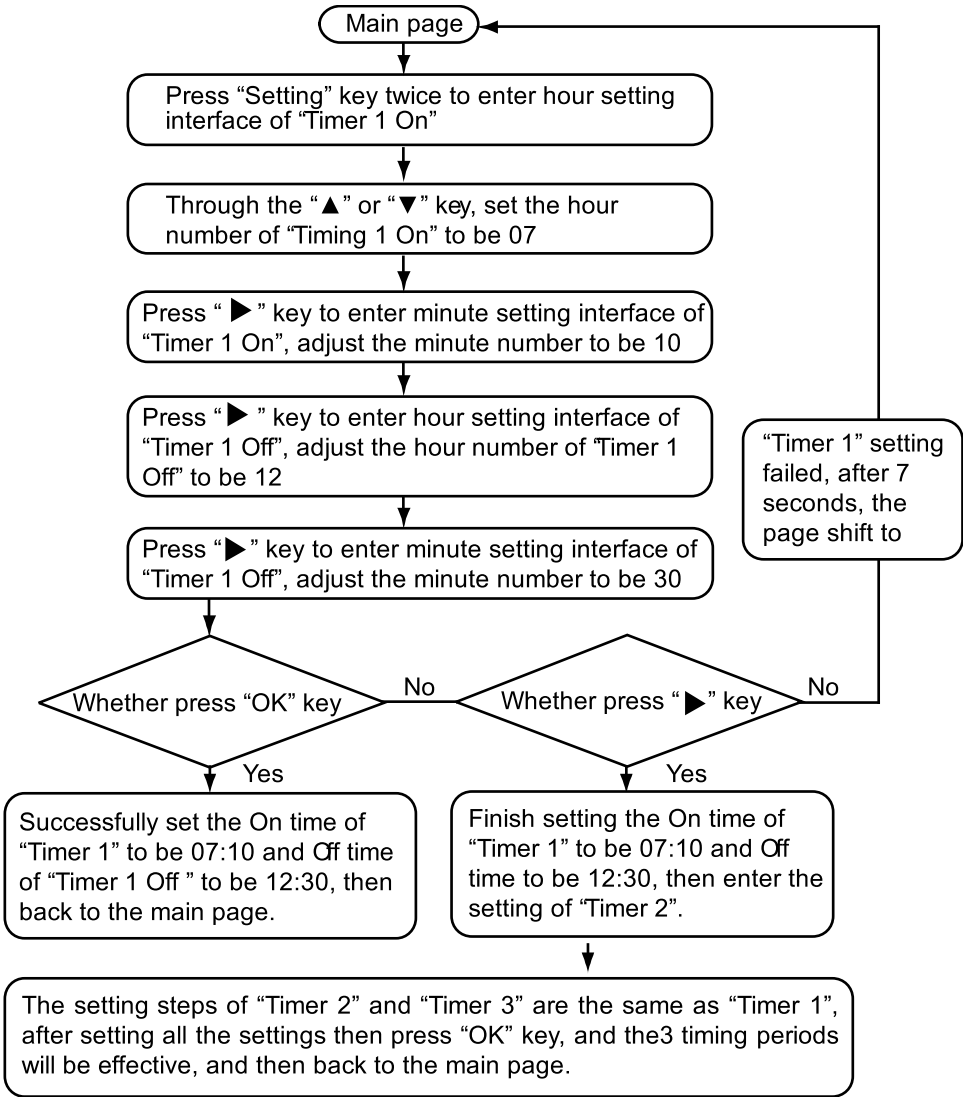
This time the hour of the clock will flash, it means the current setting is the hour of Timer 1 “Off”, press the “▲” or “▼” to adjust, press “►” key when finished, and then the minute of the clock will flash, it means the current setting is the minute of Timing 1 “Off”, press the “▲” or “▼” to adjust, 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 of the Timer 1. Similarly, the setting of Timing 3 is the same with this method. After setting, press “OK” key or wait for 7 seconds then the setting to be effective, and the LCD will display the effective timing information, as the following display:



Example of Timing setting

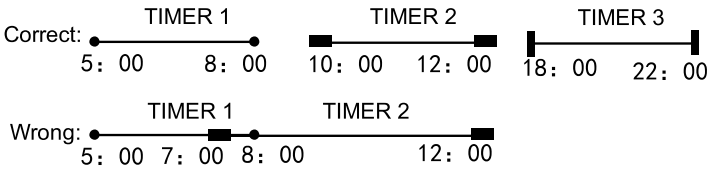


During any period of timing setting to press “OK” key , then the timing period has been set will be effective (only when the “On” and “Off” of one timing period have been set then this period setting can be finished). Press “Cancel” then cancel the setting. Query timing information: if query the timing hour which has been set, press “◀” or “▶” key under main page, the On and Off time of Timer1, Timer 2 and Timer3 will be displayed in turns.

Cancel timing: long press “Cancel” key for 3 seconds, then all the effective timing periods will be cancelled.

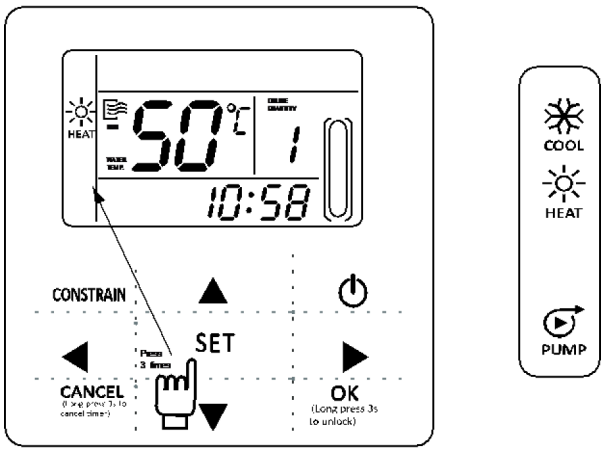
Note:

To avoid the timing error, each period of timing should not be crossed. E.g.:



3) Set working mode (valid when wired controller set to 2,3,4)

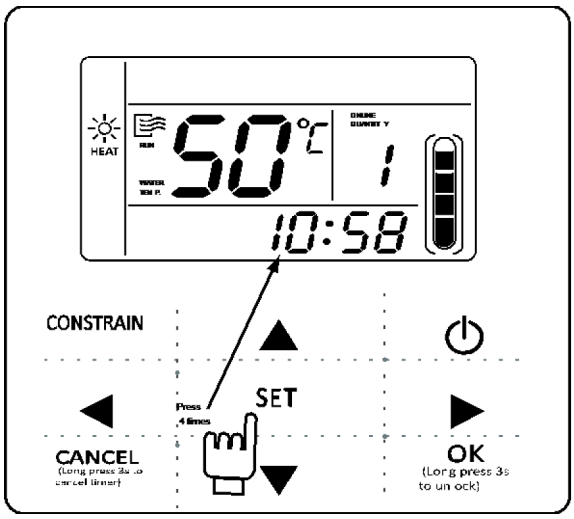
Press “SET” key 3 times to enter the working mode setting when the main unit is off power. press the “▲” or “▼” key to adjust , press “OK” key or wait for 7 seconds to be effective, and back to the main page; During setting process to press “Cancel” key then will exit without saving. The controller will show different working mode when it is applied to different main unit and set to 2,3,4 respectively.



Note:

Working mode setting is valid only when the unit is power off.

4) Set clock



▲This time the hour of the clock will flash, it means the current setting is the hour of the clock, press the "▲" or "▼" 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 "▼" to adjust, press " OK " key when finished or wait for 7 seconds to be effective; during the setting process press the "Cancel" key, then it will exit without saving.

Note:

For getting the correct timing on and timing off hour, please correctly set the clock!

16.2.3. Combination of key functions

1) HYSTERESIS setting function

a. Through the hysteresis setting, the system can adjust the load effectively.

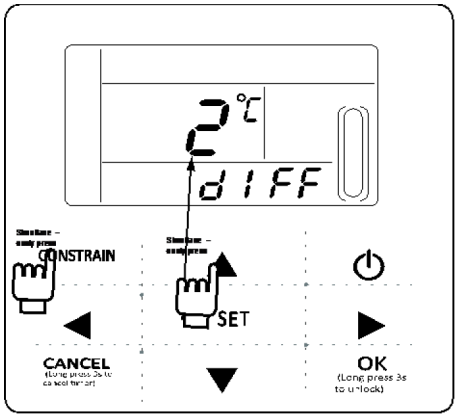
b. The adjusting logic of cooling mode: (the parameter of δ1,δ2,Tj1 and Tj2 are decided by the outdoor unit)

Unit start temperautre	$T_{AL} \geqslant Ts+ \delta_1$
Loading region	$T_{AL} > Ts+ \delta$
Stable region	$Ts < T_{AL} \leqslant Ts+ \delta$
Unloading region	$Tj1 < T_{AL} \leqslant Ts$
Abrupt stop region	$T_{AL} \leqslant Tj1$

c. The adjusting logic of heating mode: (the parameter of δ1,δ2,Tj1 and Tj2 are decided by the outdoor unit)

Unit start temperautre	$T_{AL} \leq Ts-\delta$
Loading region	$T_{AL} < Ts+1-\delta$
Stable region	$Ts-1+\delta > T_{AL} \geq Ts+1-\delta$
Unloading region	$Ts-1+\delta \leq T_{AL} < Tj2$
Abrupt stop region	$T_{AL} \geq Tj2$

(TAL: total outlet water temperature)

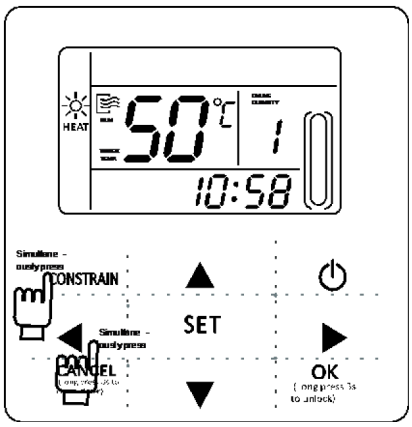


Operation method: Turned off, press the "Constrain" "▲" 2 button for 3 seconds to enter the hysteresis setting selection. Can be adjusted Hysteresis parameter δ = (2,3,4,5 ° C). Press "◀" or "▶" key to select the desired value, 7S key operation Or press the Enter key, then exit and save the settings and return to the main page. During setup, press the "Cancel" key, does not save the parameters and exit.

The factory default δ = 2°C .

2) ADDRESS setting function

The address of wire controller can be set by pressing this button. The address range 0~15, therefore, 16 wire controller could be parallel at most. Operation method: Press "Constraint" "▶" two button for 3 seconds to enter the wired remote address selection. Press "◀" or "▶" key to select the desired value. 7S key operation or press "OK" key to exit and save the settings and return Page. Not saved during set up, press the Cancel key parameters and exit.



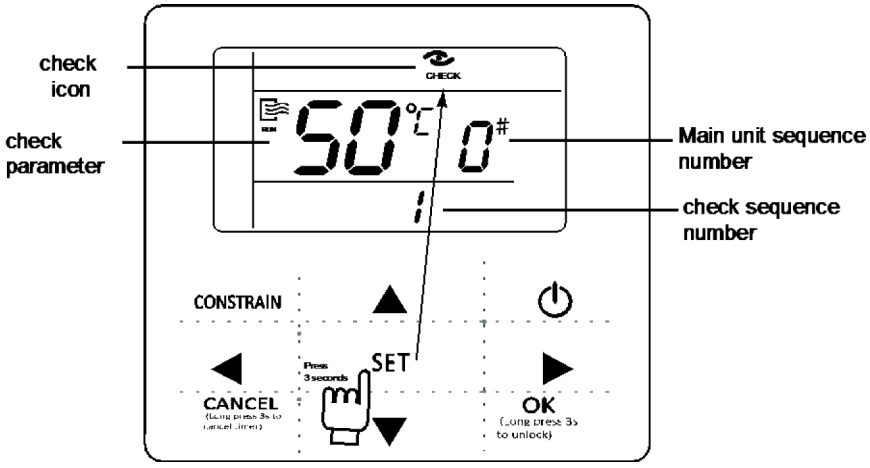
3) The fault is cleared

This feature can clear the fault and protection has been ruled out. Methods of operation: press the "Constraint" "◀" two button for 3 seconds to clear the fault. Page of the main page and Inspection press this key combination, you can clear the entire system fault, the fault code cleared at the same time.

16.2.4. Check

1) Check function allows the user to query all the operating parameters and error and protection information of the main unit.

2) Enter method: long press "Set" key for 3 seconds to enter check interface, as the figure display:



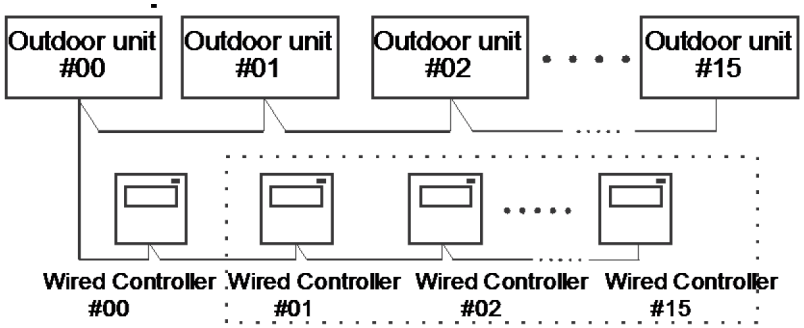
3) Press the “▲” or “▼” key to adjust the main unit serial number can query 16 sets main units status information from #0～#15. Press “◀” or “▶” to adjust the spot check sequence number of one main unit then can query all the status information of this unit. Spot check content according to the main unit model wired controller:

1	outlet water temperature Tou->2、inlet water temperature Tin->
3	outdoor ambient temperatures T4->4、outdoor pipe temperature T3A->
5	outdoor pipe temperature T3B->6、current of the compressor IA->
7	current of the compressor Ib->8、anti-frozen temperature T6->
9	electronic expansion valv opening FA->10、electronic expansion valv opening Fb->
11	Last one error or protection->12、Last second error or protection->
13	Last third error or protection->1、outlet water temperature Tou……

16.2.5. Error alarm handling

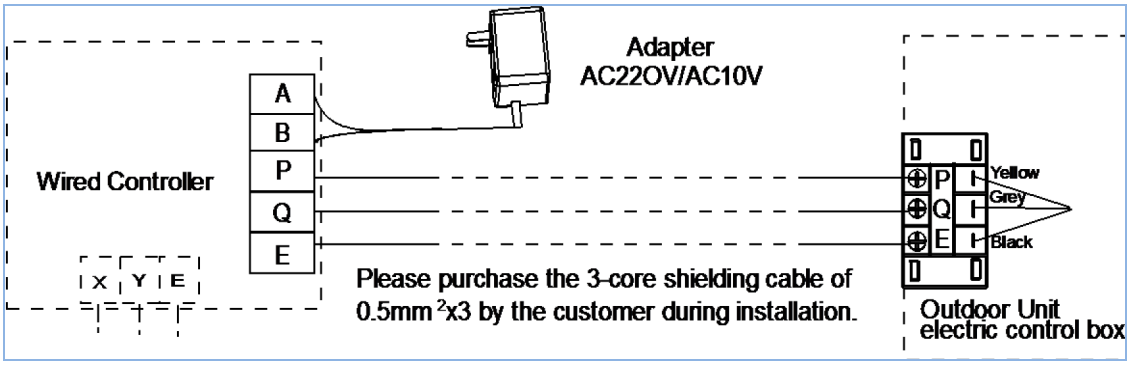
When the unit has error or protection, “ERROR” icon will be flashed. Long press “Setting” for 3 seconds to enter spot check, and then press the “▲” or “▼” key to query the unit of 0-15#, if the error icon was on during query, that means the corresponding outdoor unit has error or protection at that time, and then can spot check the last 1, 2, 3 times error or protection of this outdoor unit. After clear the error or protection, the error icon will disappear.

16.2.6. Installation procedure



Use PQE connect with each other when several wired-controllers are parallel.

The wiring procedure and principles are shown in the figure:



16.2.7. Basic conditions of operating the wired controller：

1) Applicable range of supply voltage: Input voltage is 10V AC.
2) Operating environment temperature of wired controller: -10℃~+43℃.
3) Operating RH of wired controller: RH 40%~RH90%.

16.2.8. Main functions of the wire controller as follows:

1) Touch key operation;
2) LCD displays operation parameters;
3) Multiple timer;
4) Buzzer prompt tone and alarm functions;
5) Real-time clock function.

16.2.9. Control and protection function of unit

The unit has the following protection functions:

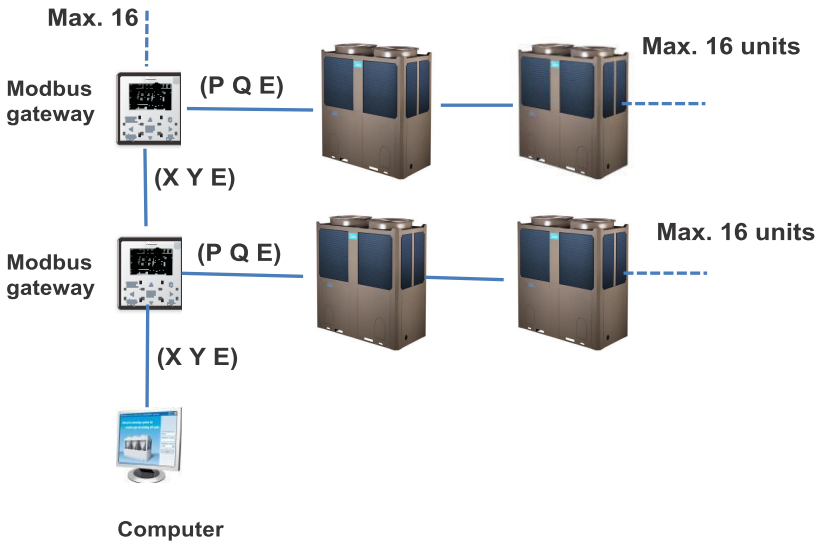
1) Current cut-off protection
2) Power supply phase sequence protection
3) Protection for over-low suction pressure
4) Protection for compressor overcurrent
5) Protection for compressor overload
6) Anti-freezing protection
7) Protection for over-high discharge pressure
8) Protection for outlet and inlet water temperature

The unit also has other control functions:

1) Plug and play system
2) RS-485/TS232 Standard serial communication port

MODBUS gateway

The Modbus gateway can be customized, the MODBUS protocol built in wired controller KJRM-120D/BMK-E, it realizes intelligent network control by X Y E ports. It can connect max. 16 wired controllers, each wired controller can control max.16 units.



Note：

The gateway will be used with wired controller together（The LONWORKS gateway can be use independently without wired controller）, as below:

Wired controller	LONWORKS gateway	Network control software	MODBUS gateway
KJR-120A/MBTE	√	√	×
KJRM-120D/BMK-E	√	×	√