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MODULAR CHILLER WIRE CONTROLLER

KJRM-120D/BMK-E KJRM-120D/BMK-E(MCK)

OPERATION MANUAL



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- This manual gives detailed description of the precautions that should be brought to your attention during operation.
- In order to ensure correct service of the wired controller please read this manual carefully before using the unit.
- For convenience of future reference, keep this manual after reading it.



1. Safety precautions

The following contents are stated on the product and the operation manual, including usage, precautions against personal harm and property loss, and the methods of using the product correctly and safely. After fully understanding the following contents (identifiers and icons), read the text body and observe the following rules.



■ Identifier description

Identifier	Meaning
 Warning	Means improper handling may lead to personal death or severe injury.
 Caution	Means improper handling may lead to personal injury or property loss.
<p>[Note]: 1. "Harm" means injury, burn and electric shock which need long-term treatment but need no hospitalization. 2. "Property loss" means loss of properties and materials.</p>	

■ Icon description

Icon	Meaning
	It indicates forbidding. The forbidden subject-matter is indicated in the icon or by images or characters aside.
	It indicates compulsory implementation. The compulsory subject-matter is indicated in the icon or by images or characters aside.

Warning

 Warning	Delegate installation	Please entrust the distributor or professionals to install the unit. The installers must have the relevant know-how. Improper installation performed by the user without permission may cause fire, electric shock, personal injury or water leakage.
 Usage Warning	Forbid	Do not spray flammable aerosol to the wire controller directly. Otherwise, fire may occur.
	Forbid	Do not operate with wet hands or let water enter the wire controller. Otherwise, electric shock may occur.



WARNING

- Please entrust the distributor or professionals to install the unit.
- Improper installation may lead to electric shock or fire.



CAUTION

- For protecting the device, do not repeatedly or quickly shift modes. Each wire controller operation to off the unit, it must be waited for 3 minutes or waited for all the units stopped then can re-operate the wire controller to start the outdoor unit.
- The wire controller is supplied 10V AC current by the adapter.
- Do not install the unit in a place vulnerable to leakage of flammable gases. Once flammable gases are leaked and left around the wire controller, fire may occur.

2. Overview of wired controller

2.1 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: $-10^{\circ}\text{C}\sim+43^{\circ}\text{C}$.
- 3) Operating RH of wired controller: RH 40%~RH90%.

2.2 Main functions of this 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.

3. Whole instruction of wire controller

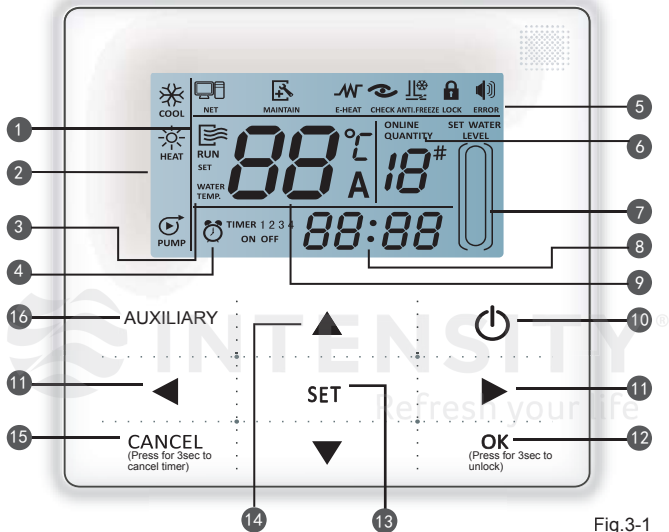



Fig.3-1


- | | |
|---------------------------------|--------------------------|
| 1. Operation icon | 10.ON/OFF Key |
| 2. Mode area | 11.Right, Left Right Key |
| 3. Setting temperature | 12.OK key |
| 4. Timing On/Off | 13. Setting key |
| 5. Function Icon | 14. Add, Reduce key |
| 6. On-line Unit Qty. Indication | 15. Cancel key |
| 7. Reserved | 16. Reserved. key |
| 8. Clock | |
| 9. Water temp. | |

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; details refer to Page 15;

③ **Setting temperature:** 2 status can be displayed:



④ **Timing ON/OFF indication** : Indicate the timing information; details refer to Page 10;

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 "AUXILIARY" 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;

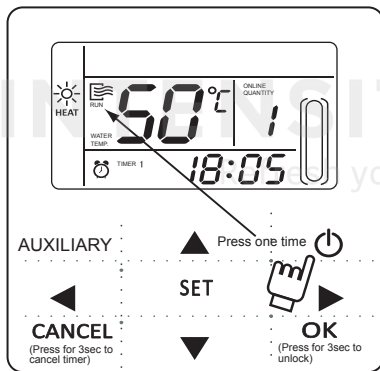

6) Lock: When the icon is lighted on, it means the button has been locked (no keys operation for 2 minutes), long press "OK" key for 3 seconds to unlock;

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, details refer to Page 10;
- 9 **Water temperature:** Under normal status display water temperature; during water temperature setting it displays the setting numerical value; under the check status display 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 the 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.**

4. Operation instruction

4.1 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 “

The diagram shows the LCD display and control panel of the wire controller. The LCD displays the following information:

 - HEAT icon (sun and water waves)
 - WATER TEMP: 50°C
 - ONLINE QUANTITY: 1
 - TIMER 1: 18:05
 - RUN icon (water waves)

The control panel includes the following buttons:

 - AUXILIARY
 - SET
 - CANCEL (Press for 3sec to cancel timer)
 - OK (Press for 3sec to unlock)
 - Power On/Off key (power icon)

An arrow points from the power icon to the RUN icon on the LCD, indicating that pressing the power key will toggle the unit's status and the RUN icon's visibility.

Fig.4-1

4.2 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.



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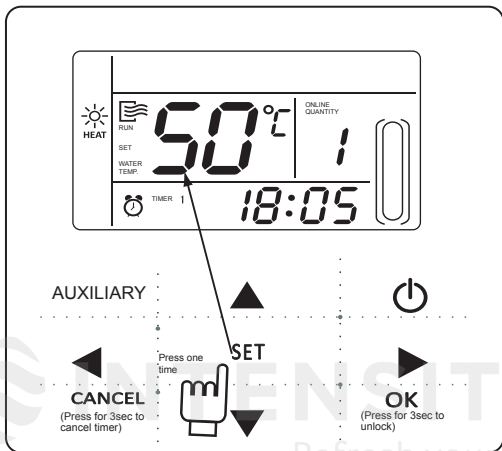


Fig.4-2

- 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:



Fig.4-3

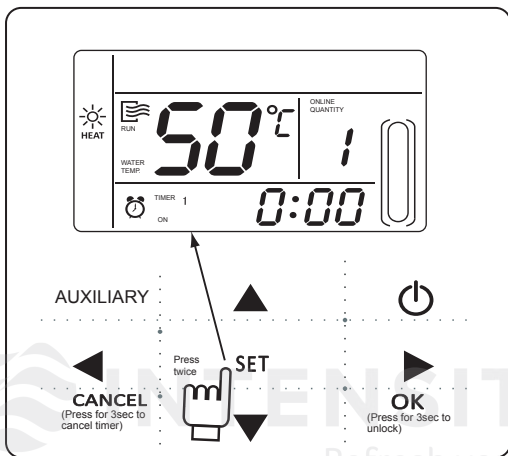


Fig.4-4

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:



Fig.4-5

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:



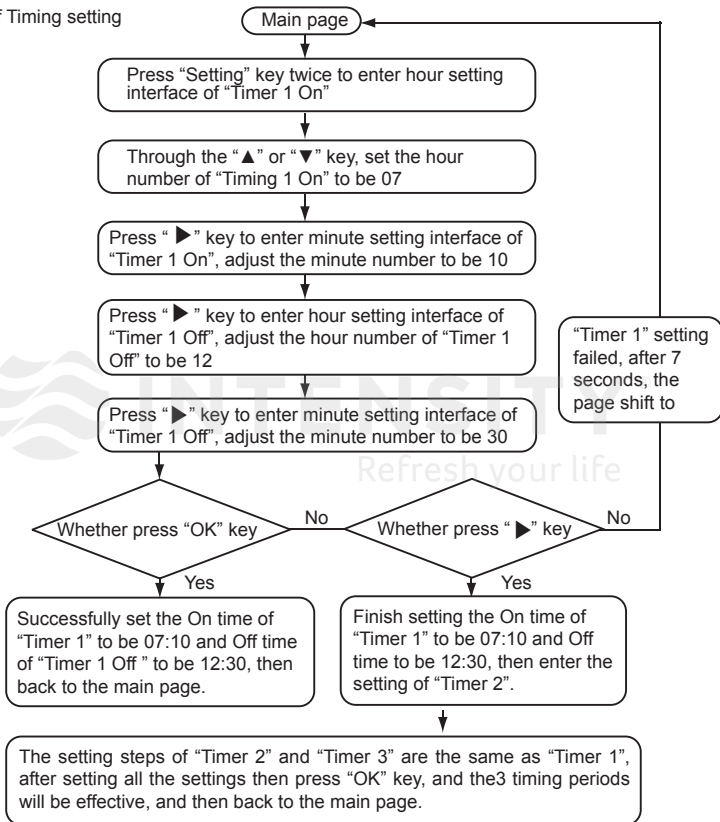
Fig.4-6

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:



Fig.4-7

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).

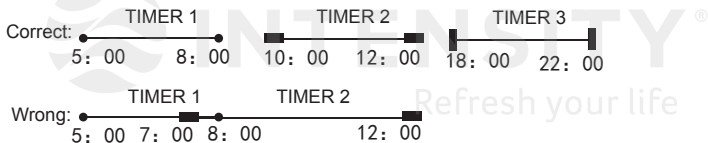
Press “Cancel” then cancel the setting. Query timing information: if query the timing hour which has been set, press “ ◀ ” or “ ▶ ” key under main page, the On and Off time of Timer1, Timer 2 and Timer3 will be displayed in turns.

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

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. See fig.4-8

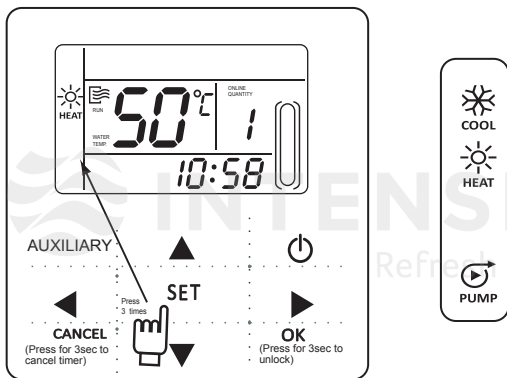


Fig.4-8



NOTE

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

4) Set clock

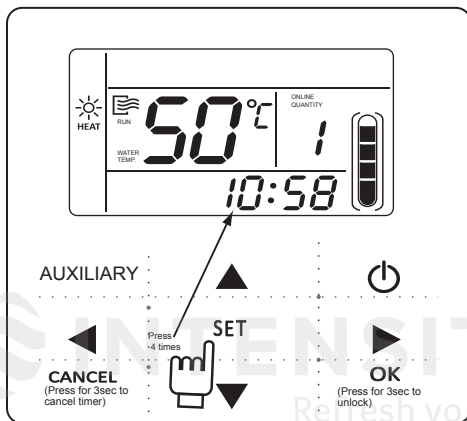


Fig.4-9

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!

4.3 Combination of key functions

1) HYSTERESIS setting function

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

Operation method: Turned off, press the "AUXILIARY" "▲"2 button for 3 seconds to enter the hysteresis setting selection. Can be adjusted Hysteresis parameter $\delta = (2,3,4,5 ^\circ\text{C})$.

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 $\delta = 2^\circ\text{C}$

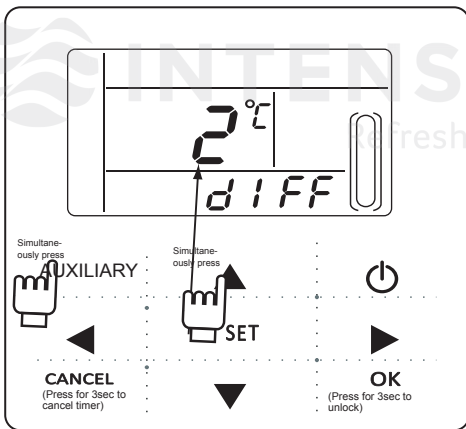


Fig.4-10

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 “AUXILIARY” “▶” two button for 3 seconds to enter the wired remote address selection. Press “◀” or “▶” key to select the desired Page 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.



NOTE

When there is only one wire controller, it is necessary to execute this setting, the address of wire controller should be set to '0'(main wire controller) .

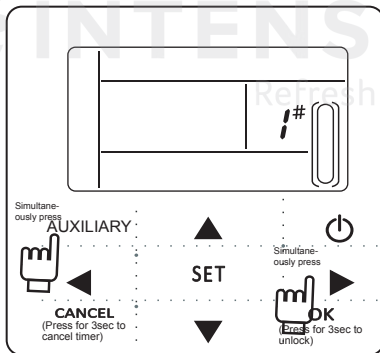


Fig.4-11

3) The fault is cleared

This feature can clear the fault and protection has been ruled out. Methods of operation: press the "AUXILIARY" "◀" 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.

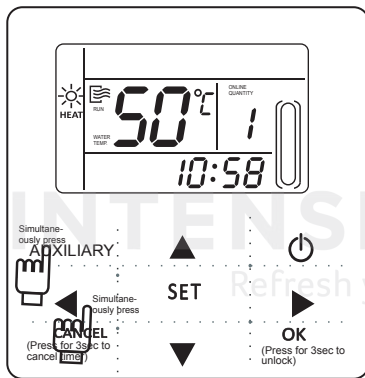
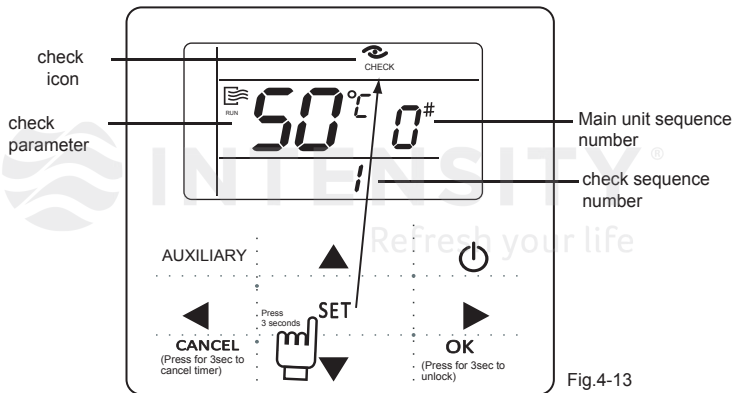


Fig.4-12

4.4 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 check sequence number of one main unit then can query all the status information of this unit. The check content according to the main unit model wire controller :

Table 4-1

1	outlet water temperature T_{ou} ->2、inlet water temperature T_{in} ->
3	outdoor ambient temperatures T_4 ->4、outdoor pipe temperature T_{3A} ->
5	outdoor pipe temperature T_{3B} ->6、current of the compressor I_A ->
7	current of the compressor I_b ->8、anti-frozen temperature T_6 ->
9	electronic expansion valv opening F_A ->10、electronic expansion valv opening F_b ->
11	Last one error or protection ->12、Last second error or protection->
13	Last third error or protection ->1、outlet water temperature T_{ou}

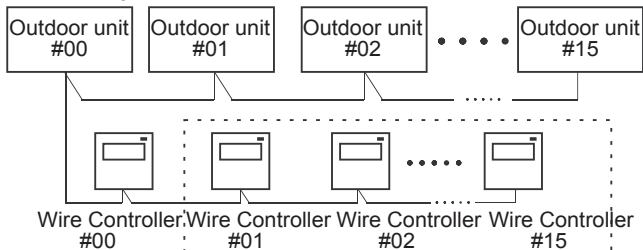
5. Error alarm handling

When the unit has error or protection, “” 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.

E0	Error of outdoor EEPROM
E1	Power supply wire phase error
E2	Communication error
E3	Error of total outlet water temp. Sensor(Be valid for main unit)
E4	Unit outlet water temperature sensor failure
E5	System A condenser temp. Sensor failure
E6	System B condenser temp. Sensor failure
E7	Error of outdoor ambient temp. Sensor
E8	Power supply phase sequence module protection
E9	Error of waterflow detection (manual recovery)
EA	Reserved
Eb	Evaporator anti freeze protection sensor failure
EC	Wire control detect that the units on-line have decreased.
Ed	Reserved
EE	EEPROM error of the wire controller
EF	Unit inlet water temperature sensor failure
P0	System A high pressure/discharge protection (manual recovery)
P1	System A low pressure protection (manual recovery)
P2	System B high pressure/discharge protection (manual recovery)
P3	System B low pressure protection (manual recovery)
P4	System A current protection (manual recovery)
P5	System B current protection (manual recovery)
P6	System A condensor high ambient protection
P7	System B condensor high ambient protection
P9	Temperature protection of the differences between water inlet and water outlet
PA	Start refrigeration low environment temperature protection
Pb	System anti-frozen protection
PC	Anti-freezing pressure protection of the system A (manual recovery)
Pd	Anti-freezing pressure protection of the system B (manual recovery)
PE	Refrigeration evaporator low ambient protection (manual recovery)

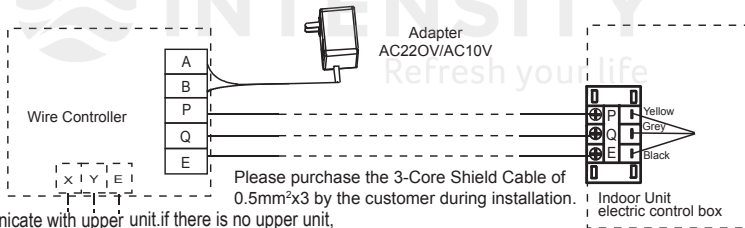
ATTACHED PICTURE (I) INSTALLATION PROCEDURE

Installation procedure:



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

The wiring procedure and principles are shown in the figure:



Communicate with upper unit, if there is no upper unit, it is no need to be wired



NOTE

Please connect the attached shorted-wires to the corresponding communication port COM(I) or COM(O) in the main control board of the last parallel unit (dial code). Directly connect to the last parallel unit if only one unit is connected.