



FULL DC INVERTER SYSTEMS

OWNER'S MANUAL

KJR-120A

COMMERCIAL AIR CONDITIONERS SDV4



Original instructions

- 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.



CONTENTS

1. Safety precautions.....	1
2. Overview of wire controller.....	2
3. Outline of functions.....	2
4. Name and function description of LCD screen of wire controller.....	3
5. Installation procedure.....	4
6. Names of keys on wire controller and the keypad operation description.....	6
7. Operation procedure of wire controller	10
Operation procedure of mode setting.....	10
Operation procedure of water temperature setting	10
Operation procedure of system on/off.....	10
Operation procedure of system information querying.....	10
Operation of remote on/ off.....	10
Operation procedure of HYSTERESIS TEMP.SET(δ)	10
Fault alarm processing.....	11
8. Using method.....	12
Appendix 1.....	15
Appendix 2.....	16

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.


[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.

■ 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.
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 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.

2. OVERVIEW OF WIRE CONTROLLER

Basic conditions of operating the wire controller

1. Applicable range of supply voltage:
Input voltage is AC 220V \pm 10%, powered to wire controller by attached power adapter.
2. Operating environment temperature of wire controller: -15°C~+43°C.

3. Operating RH of wire controller: RH40%~RH90%.

3. OUTLINE OF FUNCTIONS

This wire controller provides the following functions:

1. Connect with the outdoor unit through the terminals P, Q and E. Connect with the upper unit through the terminals X, Y

and E(reserved).Connect with other wire controllers through the terminals P, Q and E.

2. Set the action mode through the keypad operation.

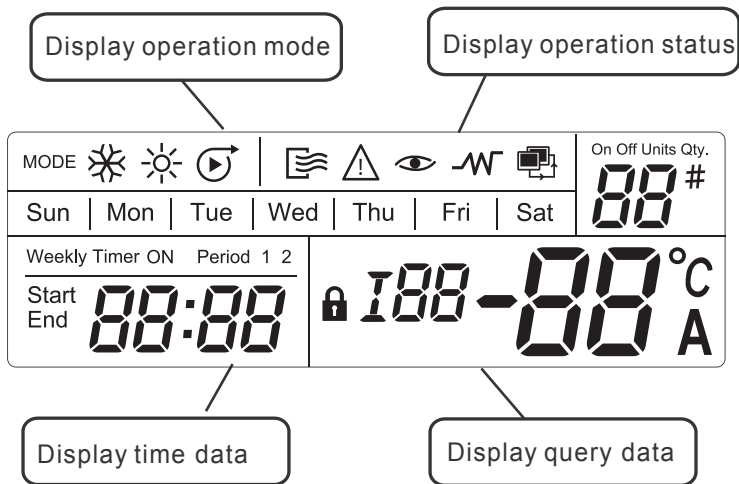
3. Provide the LCD display function.

4. Provide the timing startup function.

5. Real-time clock function (the wire controller inner place 3V battery)

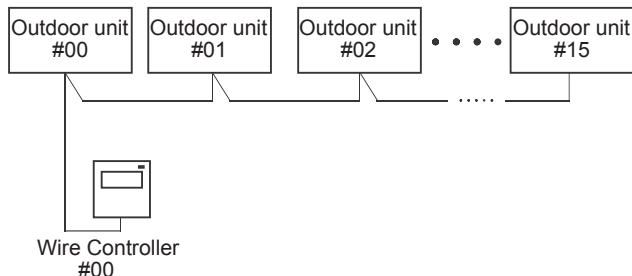
When the wire controller is powered on, the LCD will display the current time; if it is powered off, the clock will not be displayed, then it will be autoupdated when the wire controller is re-power on.

4. NAME AND FUNCTION DESCRIPTION OF LCD SCREEN OF WIRE CONTROLLER



5. INSTALLATION PROCEDURE

Installation procedure:



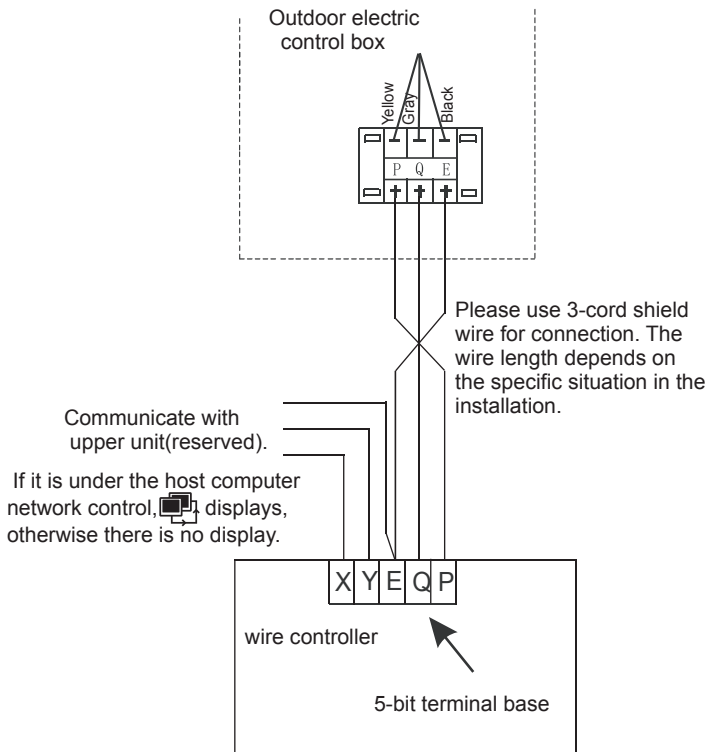
Use PQE connect with the outdoor units.



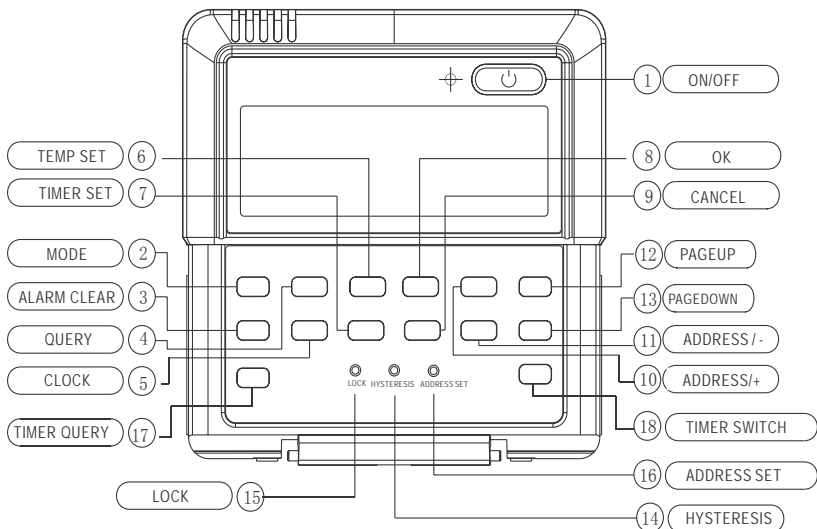
NOTE

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.

The wiring procedure and principles are shown in the figure:



6. NAMES OF KEYS ON THE WIRE CONTROLLER AND THE KEYPAD OPERATION DESCRIPTION



① ON/OFF button:

In the power off status, press this key and the startup indicator led comes on, and the wire controller enters the startup status and keeps the current set

information such as temperature value, timing. In the startup status, press this button once, and the startup indicator led goes off and transmits the shutdown information.

② Operation mode button:

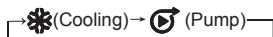
In the power off status, press this button to select the operation mode. This function is invalid at power on status.

Modes shifted sequence as follows:

1) Mode of KJR-120A air cooled modular wire controller:



2) Cooling only air cooled modular wire controller:



③ ALARM CLEAR button

Press the button, then can clear some errors which need to operate manually for recovery. These errors represent there are problems while the unit is operating, but will not affect the system safety. If this type of error came out frequently then it needs to check and maintain the unit.

④ QUERY button

Press the button, inquire state information of No. 0 to No. 15 outdoor units (the default is state information of No.0 unit) and enter inquiry state. After entering inquiry state, inquire the information of the former unit or the

following unit through “ADDRESS/+” and “ADDRESS/-”. After a certain outdoor unit is selected, state information of the outdoor unit can be inquired through “page up” and “page down”. There are two possible inquiry sequences.

1).Error→protection →outlet water temperature Tou→inlet water temperature Tin→outdoor ambient temperatures T4→outdoor pipe temperature T3A→outdoor pipe temperature T3b→current of the compressor IA → current of the compressor Ib→anti-frozen temperature T6→electronic expansion valv opening FA→electronic expansion valv opening Fb→Error.....The wired controller only displays the last fault information and the protection information, when query is conducted on fault and protection information.

2). outdoor pipe temperature T3A→protection→Error→outlet water temperature Tou→current of the compressor Ib→current of the compressor IA →Setting temperature Ts→outdoor ambient temperatures T4→outdoor pipe temperature T3b→outdoor pipe temperature T3A.....The wired controller only displays the last fault information and the protection information, when query is conducted on fault

and protection information.

⑤ CLOCK button

Press the "CLOCK" button once 【Press for the first time】 , and enter to the week adjustment, 【Press for the second time】 , and enter to the hour adjustment, 【Press for the third time】 , and enter the minute adjustment. The numerical value of week, hour and minute can be adjusted by "ADDRESS/+" and "ADDRESS/-", after the adjustment then press the OK button for the setting confirmation.

⑥ TEMP SET button

Setup the total water outlet temperature in cooling and heating mode. The numerical value of temp. setting can be adjusted by "ADDRESS/+" and "ADDRESS/-"

⑦ TIMER SET button

Press the button can enter the timer set adjustment. The numerical value of the week, the start period, the end period, the operation mode and the setting temperature can be adjusted by "ADDRESS/+" and "ADDRESS/-".

⑧ OK button

Once finished upon, press OK key, wire controller will delivery order to main unit.

⑨ CANCEL button

Press the button can return to the interface previous and not save the setting information when the timer switch is ON.

If press the button for 3 seconds, all the setting information of the timer will be cleared.

⑩ ADDRESS/+ button

Press this button at Check mode; when select the next modular, the operation status of the next modular will display; if the current modular is 15#, and the next one is 0#.

Press this button for add address at wire address setting mode. If the wire controller address is 15, press this key will display the next address is 0. Press this button for add temperature at wire temperature setting mode. Press this button for add clock or time at wire clock or time setting mode.

⑪ ADDRESS/- button

Press this button at query mode; when select the previous modular, the operation status of the previous modular will display; if the current modular is 0#, and the previous one is 15#.

Press this button for minus address at wire address setting mode. If the wire controller address is 0, press this key will

display the next address is 15.
Press this button for minus temperature at wire temperature setting mode.

Press this button for minus clock or time at wire clock or time setting mode.

⑫ ⑬ PAGEUP/DOWN button to spot check the operation parameters of unit in the main menu.

⑭ HYSTERESIS button (Hidden)

Use a small round bar with 1mm diameter to press this button, then can adjust the return parameter $\delta = (2, 3, 4, 5^{\circ}\text{C})$. The numerical valve of hysteresis can be adjusted by "ADDRESS/+" and "ADDRESS/-", after the adjustment then press the OK button for the setting confirmation.

The factory defaults $\delta = 2^{\circ}\text{C}$.

⑮ LOCK button (Hidden)

Use a 1mm-diameter round bar to lock the current setting. Press this button again to unlock.

⑯ ADDRESS SET button (Hidden)

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.

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) .

⑰ TIMER QUERY button

Press the button can inquire the timer setting information, such as the week, the setting operation mode, the start period, the end period and the setting temperature and so on.

⑱ TIMER SWITCH button

Press the button can open the weekly timer function or close the weekly timer function.

7. OPERATION PROCEDURE OF WIRE CONTROLLER

● Operation procedure of mode setting

1. Press MODE at shutdown status, you could select appropriate mode as you want. The function is invalid at startup status.
2. The modes which you can select depend on outdoor unit .

● Operation procedure of water temperature setting

1. Press [TEMP SET] button of wire controller when background light is on.
2. Press [ADDRESS/+] or [ADDRESS/-] button, you can select the water temperature. Temperature range is not same in different operation mode .
3. Temperature range depend on outdoor unit .

● Operation procedure of system ON/OFF

Press [ON/OFF] button, running indicator

of wire controller is light, unit is start to run, and display running status at wire controller. Press this button once again, unit will stop running.

● Operation procedure of system information querying

1. Press [QUERY] ,enter Check status.
2. Press [ADDRESS/+] or [ADDRESS/-] button, select the unit you want to query.
3. Press [PAGEUP] or [PAGEDOWN] button to query the unit information, which includes E-, P-, Tou, Tin, T4, T3A, T3b ,IA, Ib, T6, FA, Fb or T3A, P-, E-, Tout, Ib, IA, Ts, T4, T3B.

● Operation of remote on/off

If the main unit's is under the remote on/off control, ~~Not~~-ON flashes, and communicate with upper unit is invalid.

● Operation procedure of HYSTERESIS TEMP.SET(δ)

- 1: Through the hysteresis setting, the system can adjust the load effectively.
- 2: The adjusting logic of cooling mode :

(the parameter of δ_1 , δ_2 , T_{j1} and T_{j2} are decided by the outdoor unit)

Unit start temperature	$T_{AL} \geq T_s + \delta_1$
Loading region	$T_{AL} > T_s + \delta$
Stable region	$T_s < T_{AL} \leq T_s + \delta$
Unloading region	$T_{j1} < T_{AL} \leq T_s$
Abrupt stop region	$T_{AL} \leq T_{j1}$

3: The adjusting logic of heating mode:
(the parameter of δ_1 , δ_2 , T_{j1} and T_{j2} are decided by the outdoor unit)

Unit start temperature	$T_{AL} \leq T_s - \delta_2$
Loading region	$T_{AL} < T_s + 1 - \delta$
Stable region	$T_s - 1 + \delta > T_{AL} \geq T_s + 1 - \delta$
Unloading region	$T_s - 1 + \delta \leq T_{AL} < T_{j2}$
Abrupt stop region	$T_{AL} \geq T_{j2}$

(T_{AL} : total outlet water temperature)

● Fault alarm handing

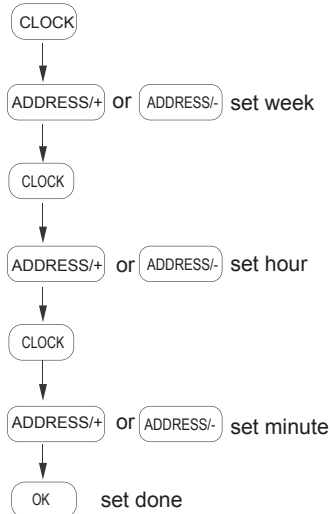
1: When unit fails or the wire controller detects failure of communication with the outdoor units, the indicator blinks. After all fault of the system and the wire controller are eliminated, the indicator stops blinking. The fault indicator and

the operation indicator share the same LCD.

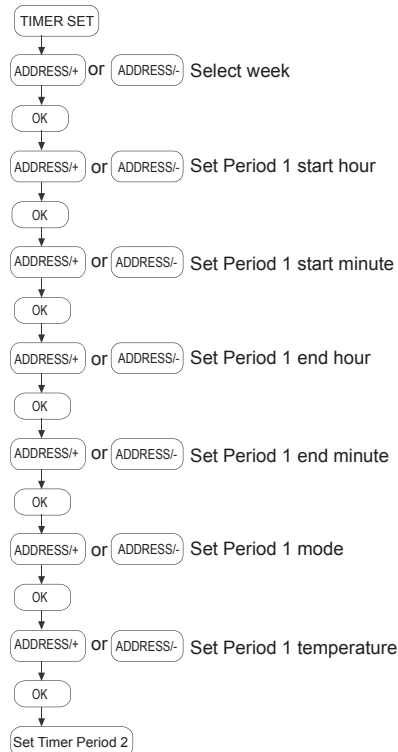
2: Some errors will be auto cleared after the errors are cleared, and some error must press the "ALARM CLEAR" button and then be cleared after the errors are cleared. The details can refer to the error code table. If this type error come out frequently, then need to check and maintain the unit.

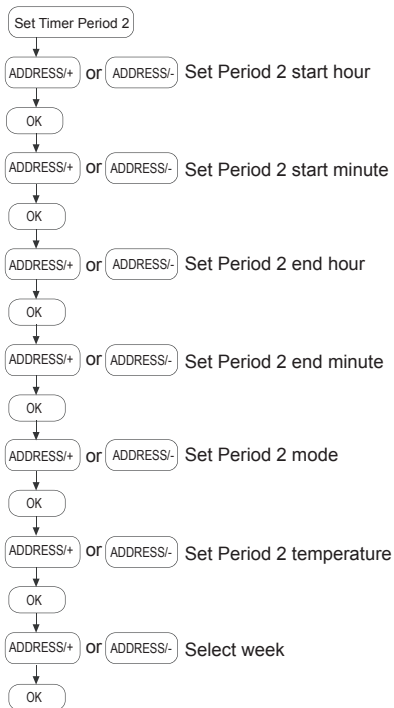
8. USING METHOD

CLOCK SET



WEEKLY TIMER SET

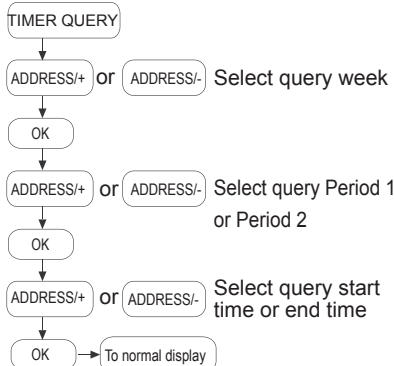




NOTE

In operating, Press the key "CANCEL", to turn back to the previous step or the normal display interface.

WEEKLY TIMER QUERY



NOTE

In operating, Press the key "CANCEL", to turn back to the previous step or the normal display interface.



NOTE

1. Before power failure of the heating water system or wire controller, the wire controller memorizes the status of the unit automatically, and sets the water temperature value except timing on/off function. After being powered on, the wire controller will send the relevant signals to the heating water system according to memorized status before power failure, in order to ensure that the unit can run in the originally set status after restoration of the power supply.

2. In the normal status, the background light is off. Press any key can only turn on the background light.

3. In order to protect the equipments, it is not allowed to change the running mode quickly or frequently. It should operate the wire controller to start up the unit after 3 minutes later or all units are shutdown.

4. The wire controller and the outdoor unit must connect with the same power supply, powered up and powered off

simultaneously. It is not allowed to cut off the power supply separately.

5. When several wire-controllers are parallel connected, the timing message can not communicating in these wire-controllers, and the timing will work separately. In order not to confuse, we suggest set the timing message on one wire-controller for the reason of indoor unit performance is compliance with the sequence of setting time.

6. During changing or installing the battery, pay attention to the “+”, “-” poles of the battery and install it correctly, or will damage the control panel or battery, even worse will put lives at risk.

Appendix 1:

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)
Eb	Evaporator anti freeze protection sensor failure
EC	Wire control detect that the units on-line have decreased.
EE	EEPROM error of the wire controller
EF	Unit inlet water temprature 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)
PF	Communication between the main control panel with electronic lock failure
EP	Wire controller clock failure

Appendix 2:

E0	Error of waterflow detection (The third time)
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 temprature sensor failure
E5	System A condenser temp. Sensor failure
E6	System B condenser temp. Sensor failure
E7	Error of outdoor ambient temp. Sensor
E8	Error of system A digital compressor air exhaust temperature protection
E9	Error of waterflow detection (The first and second time)
EA	From main unit detection to auxilliary unit quantity decrease
Eb	Error of CEB A anti-frozen temperature sensor
EC	Wire control detect that the units on-line have decreased.
Ed	Refrigeration evaporator low ambient protection(The third time in one hour)
EE	EEPROM error of the wire controller
EF	Error of CEB B anti-frozen temperature sensor
P0	System A high pressure/discharge protection
P1	System A low pressure protection
P2	System B high pressure/discharge protection
P3	System B low pressure protection
P4	System A current protection
P5	System B current protection
P6	System A condensor high ambient protection
P7	System B condensor high ambient protection
P8	System A digital compressor air exhaust temperature protection
PA	Start refrigeration low environment temperature protection
Pb	System anti-frozen protection
PE	Refrigeration evaporator low ambient protection
PF	Communication between the main control panel with electronic lock failure
EP	Wire controller clock failure