Household Air to Water Heat Pump User Manual

(Heating mode)

Controller version: PC board: CG248021 LCD: CG248024
Heat pump model: CGKS3.5, CGKS5.5, CGKS7, CGKS9

Attention

Thank you for choosing our product, we shall be more than glad to service you. For you to better operate this product and to prevent accidents due to misoperation, please read carefully this user manual before carrying out any installation or operation, also please pay special attention to the warning, prohibition and attention instructions. We are continuously supplementing and upgrading this user manual to better service for you!

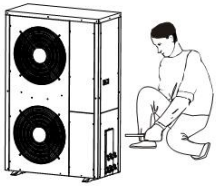
Part 1. Before Use

1. Attentions

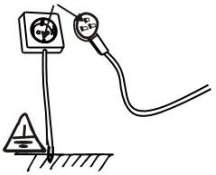
Warning Caution Prohibition

This appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be super vised to ensure that they do not play with the appliance.

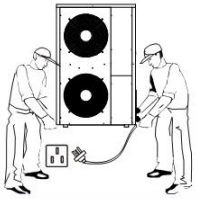
Be sure to read this manual before use.



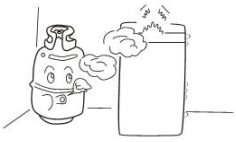
Be sure to read this manual before use. The installation, dismantle mentand maintenance of the unit must be performed by qualified personnel. It is forbidden to do any changes to the structure of the unit. Otherwise injury of personor unit damage might happen.



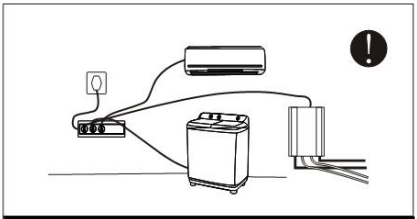
The power supply to the unit must be grounded.



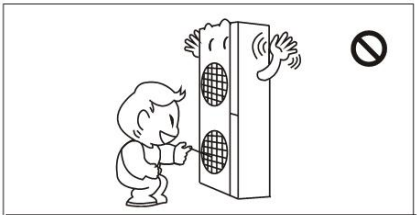
Make sure the power supply to the heat pump unit is off Before any operations are done on the unit.
When the power cord gets looser or is damaged, always get a qualified person to fix it.



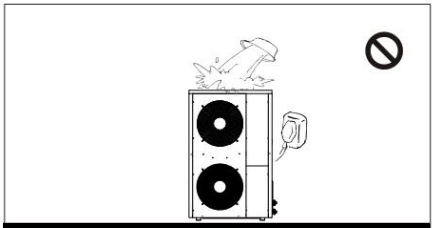
Keep the unit away from the combustible or corrosive environment.



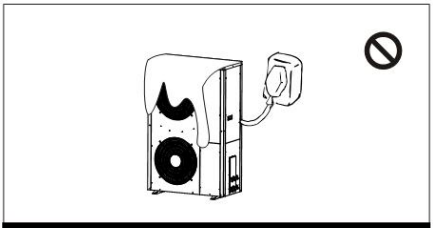
Use a dedicated socket for this unit, otherwise malfunction may occur.



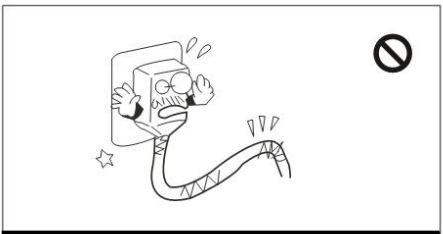
Do not touch the air outlet grill when fan motor is running.



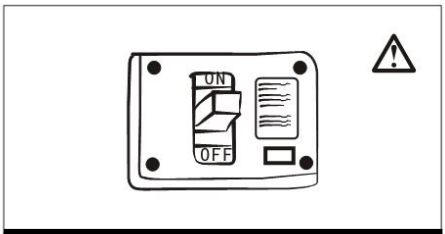
Water or any kind of liquid is strictly forbidden to be poured into the product, or may case creepage or breakdown of the product.



When running the unit, never cover clothes, plastic cloth or any other material that block ventilation on the product which will lead to low efficiency or even non-operation of this unit.



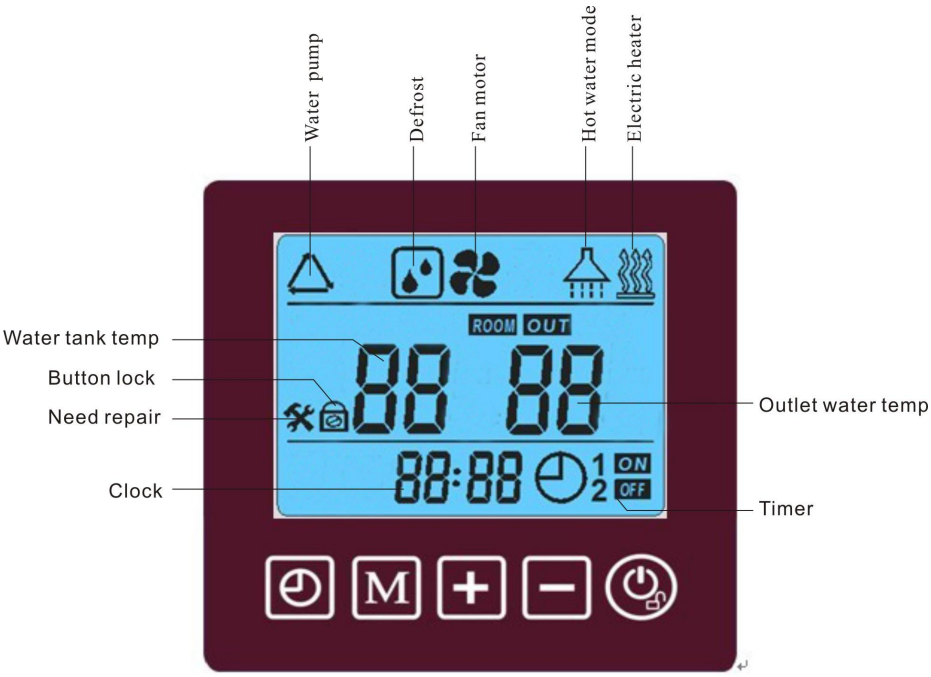
When the power cord gets loose or is damaged, always get a qualified person to fix it.



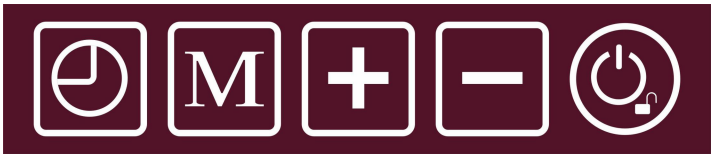
It is mandatory to use a suitable circuit breaker for the heat pump and mak e sure the power supply to the heater corresponds to the specifications. Otherwise the unit might be damaged.

Part 2. Controller introduction

1. Operating panel display



2. Buttons



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Clock M + - power

2.1 “Power” button

2.1.1 Under the unlocking state, press this button for 1s, can change heat pump ON/OFF.

2.1.2 Under other setting state, press this button, will return main interface.

2.1.3 Under locking state, press this button for 5s, will unlock keys.

2.2 “M ”button

Under the main interface, press M button, can enter heat pump status query.

2.3 “+” and “-” button

2.3.1 Page forward and backward query, amend parameters value.

2.3.2 Combines “M” button, can have a query on parameters and setting parameters.

2.3.3 Under power on state, press “+”and“-” button，can operate current working mode water tank temperature setting

2.4 “Clock” button

2.4.1 Press this button for 10s, enter clock setting status.

2.4.2 Press this button, enter fixed ON/OFF time setting status, combines “+” and “-”button，can set the 1st and 2nd groups fixed time.

3. Wired panel operating

3.1 Parameters query and setting

3.1.1 Working status parameters query

How to enter? Under main interface, press “M” button, can enter working status parameters query interface.

Table 1: Working status parameters

Query code	Meaning	Query code	Meaning
A0	Water tank temperature	A4	Environment temp
A1	Air HE coil temp	A5	Water HE outlet water temp
A2	Inlet gas temp	A9	EEV open degree
A3	Outlet gas temp	E1-E6	History error code display

Table 2: Error code table

Code	Description	Code	Description
03E	Water flow switch	16E	Air HE coil temp sensor damage
05E	High pressure	18E	Outlet gas temp sensor
06E	Low pressure	21E	Air temp sensor
09E	Communication	27E	Water HE outlet temp sensor damage
11E	Time limited	29E	Inlet gas temp sensor damage
12E	High outlet gas temp	44E	Air temp is too low protection
15E	Tank temp sensor damage		

3.1.2 User parameters query and setting （Can set at both ON and OFF state）

a. Under main interface, press “M” button for 3s, enter user parameters query interface. Press “+” and “-” button, can query each parameter.

b. At users parameters query interface, press “M” button, can enter current parameter setting interface, now press “+” and “-” button, can modify current parameter value, press “M” button again, return parameters query status.

c. At user parameter query or user parameter setting interface, if there is not button operating constantly for 30s, then quit user parameter query or user parameter setting interface automatically, and return main interface. Press “Power” button can return main interface too.

User setting parameter

Code	Parameter name	Setting range	Initial value
L2	water tank temp drop for compressor restart	2℃～18℃	5℃
L3	Water tank temp setting at heating mode	30℃～ 60℃	55℃
L4	Reserved		
L5	Air temp that electric heater starting is allowed	0℃～35℃	5℃
L6	Electric heater setting temperature	20℃～80℃	55℃
L7	Electric heater start temperature difference	2℃～40℃	5℃

3.2 Other operation

3.2.1 Clock setting

◆ At main interface, press “clock” button for 10 seconds, enter clock setting interface

◆ At clock interface, press “clock” button, then “hour” flash, press “+”or “-”button，can set hour.

◆ After finish setting hour, press “clock” button, then “minute” flash, now press “+”or“-”button，can set minute.

◆ After finish setting minute, press “clock” button, to confirm clock setting, and back to main interface.

◆ At clock setting interface, if there is not operation within 30seconds, system will confirm clock setting and back to main interface automatically.

◆ At clock setting interface, press “power” button, can confirm current clock setting and back to main interface.

3.2.2 Timer setting and cancelling (ON/OFF timer)

◆ At main interface, press “clock” button, enter timer group 1 setting.

◆ After enter group 1 fixed time setting interface, press “clock” button again, group1 timer “hour” flash, then press “+”or“-”button，then can set “hour” for group 1 ON timer.

◆ After finish setting “hour”, press “clock” button, then “minute” flash, then press “+”or“-”button，can set “minute” for group 1 timer ON.

◆ After finish setting group 1 ON timer “minute”, press “clock” button, enter group 1 OFF timer setting, same way like ON timer setting..

◆ After finish setting group 1 ON/OFF timer, press “clock” button, confirm group 1 setting, and enter group 2 ON/OFF timer setting, same way like group 1 setting.

◆ At timer interface, if there is not operation within 30seconds, then confirm current timer setting, and back to main interface (this setting can be remembered if electricity is cut off)

◆ At timer interface, press “power” button, confirm current timer setting, and back to main interface.

◆ How to cancel timer? At timer setting interface, press “M” button for 5s，then cancel current group timer setting.

◆ At timer setting interface, if there is not button operating constantly for 30s, then confirm current timer group setting, and return main interface (after set timer, if there is power failure, controller will memory the setting)

3.2.3 Lock keys and un-lock keys

◆ Under locking keys status, after press “Power” button for 3s, when controller gives a “beep”, key locking will be removed.

◆ If there is not button operating constantly for 60s, key will be locked automatically.

3.2.4 Forced defrost

◆ Under power on status, press “-”button for 3s, enter forced defrost.

◆ Press “power” button， after power off, quit from forced defrost completely after 3min, or when defrosting time reach preset, quit forced defrost too.

3.2.5 Forced electric heater function

Press “power”button and “clock” button at the same time for 3s, start/stop forced electric heater.

3.2.6 Remove history error code

At the interface of query history error code, press “power” and “M” button for 5s， remove history error code.

Part 3. Working mode

1. Heating mode running

1.1 When water tank temp ≤ L3- L2, start to heat.

1.2 When water tank temp ≥ L3, stop heating.

2. Defrost

2.1 Ambient air temperature is below 12℃, heat pump can defrost

2.2 When defrost, fan motor stop working, compressor and circulating water pump work.

2.3 When defrost, operating panel display defrosting symbol.

Part 4. Each electrical load controlling

1. Compressor

Compressor start / stop safe time (when defrosting, refer defrosting program)

1.1 After compressor stop, should need 3min at least, then it is allowed restart again.

1.2 First time starting needn't 3min protection.

1.3 If has circulating water pump, must let water pump work 90s first, then check water tank temperature, to judge if need start compressor.

2. Circulating water pump (mono-block type heat pump)

2.1 When system request power on, circulating water pump start at once;

2.2 When system request power off, circulating water pump delay 30s to stop after compressor stop;

2.3 Under defrosting state, water pump doesn't stop.

3. Four - way valve

3.1 Under normal heating state, 4-way valve has not electricity;

3.2 When automatic defrosting and forced defrosting, 4-way valve electrified, refer to defrosting process.

4. Fan motor

4.1 Before compressor start, fan motor should start first 5s in advance.

4.2 After compressor stop, fan motor should continue to work for 30s then stop

4.3 When defrosting, fan motor doesn't work, refer to defrosting process.

5. Auxiliary electric heater of water tank

When L5 set to 0, automatic auxiliary electric heater is invalid.

5.1 Automatic auxiliary electric heater

a. Start condition:

When power on, if air temperature≤L5，and water tank temperature ＜L3-L2，electric heater start.

b. Stop condition:

When water tank temperature≥L3-1℃，or air temperature≥L5+2℃, electric heater stop.

5.2 Forced auxiliary electric heater

a. Any time, user can press the forced electric heater button to start electric heater.

b. If hot water tank real temp hasn't reached preset temp, electric heater will heat the water to preset temp, then electric heater stop automatically.

c. Before water temp reach preset temp, if use want to turn off the electric heater, he can use the same as start the forced electric heater.

d. Forced electric heater can't heat water higher tan preset water tank temp.

e. At automatic defrosting, manual defrosting and second grade anti-freeze condition, electric heater is forced to start.

6. Electric expansion valve

The working of EEV is very complicated, we will not introduce here.

Part 5. Error and protections

1. Water flow switch error (Er 03)

1.1 One minute after circulating water pump start, if the water flow switch disconnect constantly for 10sec, then operating panel will display Er 03 and alarm, heat pump will stop working to protect.

1.2 This error can recover automatically.

Solve: check if water flow switch cable connects well, if not, repair. If yes, check if there is block in water circulating system. After repair, this error will disappear.

2. Outlet gas pressure too high protection (Er05)

2.1 When outlet gas pressure switch disconnects when working, operating panel will display Er05error and alarm, and heat pump stop working to protect.

2.2 If this error happen 3times within 30minutes, system will not recover normal working unless cut off electricity (the first two times can recover automatically)

Solve: the error is caused by small water flow, check what lead to small water flow and repair, will solve.

3. Inlet gas pressure too low protection (Er06)

3.1 When inlet gas pressure switch disconnects when working, operating panel will display Er06 error and alarm, and heat pump stop working to protect.

3.2 If this error happen 3times within 30minutes, system will not recover normal working unless cut off electricity (the first two times can recover automatically)

Solve: this error always caused by gas leakage, check if there is gas leak, and repair, will solve.

4. Communication error and protection (Er09)

4.1 Within 20seconds at the first time power on heat pump, if PC board can't get signal from operating panel all the time, operating panel can't exit from full display. PCB will not instruct, system will work according to "the last time working status parameters that operating panel input" only.

4.2 In the process of power on, if operating panel can't get signal from PC board constantly for 10seconds, system will judge this communication error, and display Er:09, heat pump work according to former preset temperature, when communication recover, Er:09 will disappear.

Solve: check the connecting of PC board and display panel, if any of them damage, can change a new one, if not, can solve very easily.

5. Outlet gas temperature too high protection (Er12)

5.1 If outlet gas temperature ≥110℃ constantly for 10sec, operating panel will display Er12 and alarm, system will stop working to protect.

5.2 When detect outlet gas temperature ≤ 80℃, then system quit the protection.

5.3 If this error happen 3times within 30minutes, system will not recover normal working unless cut off electricity (the first two times can recover automatically)

Solve: This error always is caused by too small water flow. Check what lead to small water flow and repair, will solve.

6. Water tank temperature sensor error (Er15)

6.1 If detect hot water tank temperature sensor is short circuit or open circuit, system will display Er15 and alarm, heat pump will stop working.

6.2 Change a new temp sensor, will solve.

7. Air heat exchanger lowest tube temperature sensor error (Er16)

7.1 If detect air heat exchanger lowest tube temperature sensor is short circuit or open circuit, system will display Er16 error and alarm, but heat pump will continue to work.

7.2 Change a new temp sensor, will solve.

8. Outlet gas temperature sensor error (Er18)

8.1 If detect outlet gas temperature sensor is short circuit or open circuit, system will display Er18 error and alarm, heat pump will stop working.

8.2 Change a new temp sensor, will solve.

9. Ambient air temperature sensor error (Er21)

9.1 If detect ambient air temperature sensor is short circuit or open circuit, system will display Er21 error and alarm, but heat pump will continue to work.

9.2 Change a new temp sensor, will solve.

10. Outlet water temperature sensor error (Er27)

10.1 If detect outlet water temperature sensor is short circuit or open circuit, system will display Er27 error and alarm, heat pump will stop working to protect.

10.2 Change a new temp sensor, will solve.

11. Inlet gas temperature sensor error (Er29)

11.1 If detect inlet gas temperature sensor is short circuit or open circuit, system will display Er29 error and alarm, but heat pump will continue to work.

11.2 Change a new temp sensor, will solve.

12. Ambient air temperature is too low protection (Er44)

12.1 When ambient air temperature is lower -10℃, operating panel will display Er44 code and alarm, heat pump stop working, electric heater start automatically.

12.2 When ambient air temperature is higher than -8℃, heat pump start work, electric heater working according to normal controlling.

13. Outlet water temperature too high protection (Er45)

13.1 At heating or hot water mode, after compressor has running for 5min, if outlet water temperature ≥62℃, controller will display Er45 code and alarm, , compressor and fan motor stop working, water pump continue to work.

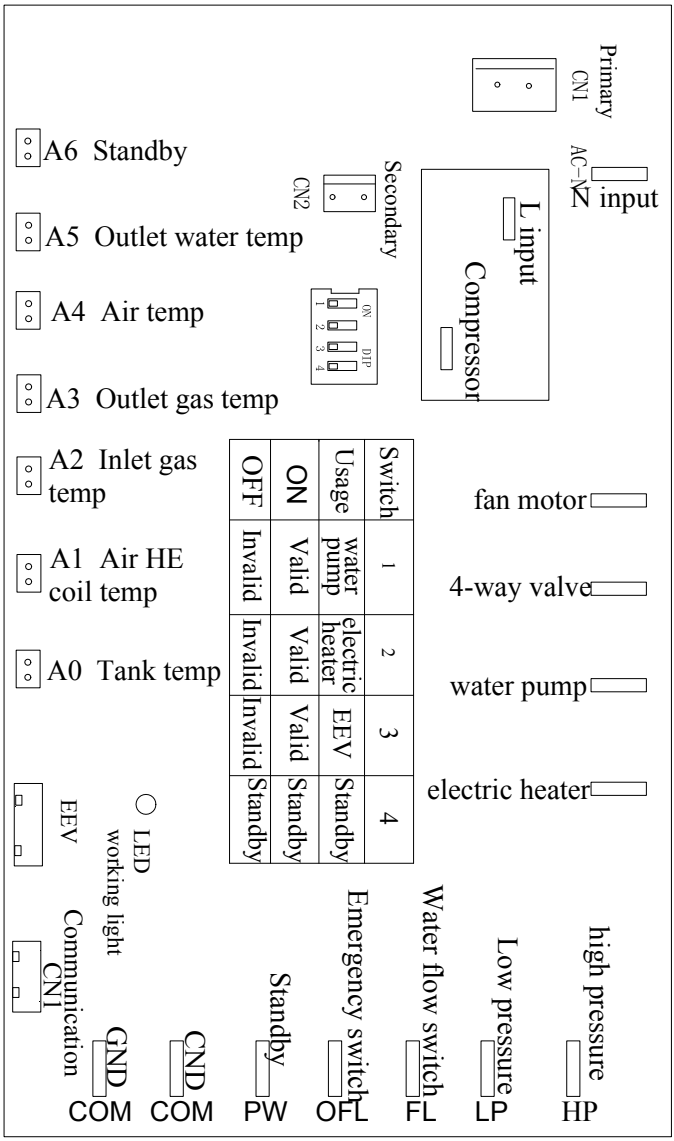
13.2 When outlet water temperature 57℃, then system quit the protection.

14. Anti-freeze protection

14.1 Under standby or power off state, when ambient temperature ≤2℃, heat pump will enter anti-freeze protection state. When anti-freeze, operating panel doesn't display error code. Sometimes only water pump work, sometimes the whole heat pump work. This error needn't repair.

14.2 When ambient temperature >2℃, heat pump will quit anti-freeze automatically.

8: PC board


Primary
CN1
AC-L
N input
L input
Compressor
Secondary
CN2
DIP
ON
1 2 3 4
A6 Standby
A5 Outlet water temp
A4 Air temp
A3 Outlet gas temp
A2 Inlet gas temp
A1 Air HE coil temp
A0 Tank temp
Switch 1 2 3 4
Usage water pump electric heater EEV Standby
ON Valid Valid Valid Standby
OFF Invalid Invalid Invalid Standby
fan motor
4-way valve
water pump
electric heater
high pressure HP
Low pressure LP
Water flow switch FL
Emergency switch OFL
Standby PW
CND COM
GND COM
LED working light
Communication CN1
EEV

CERTIFICATE

Product Model: _____

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Bar code: _____

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