



JOYONWAY

BY BALBOA

Heat pump controller

P16B162

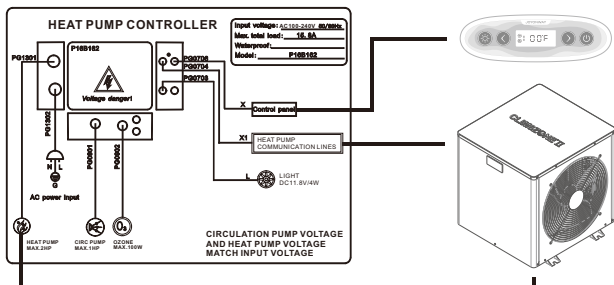
PB557-02

Simplified operation instruction

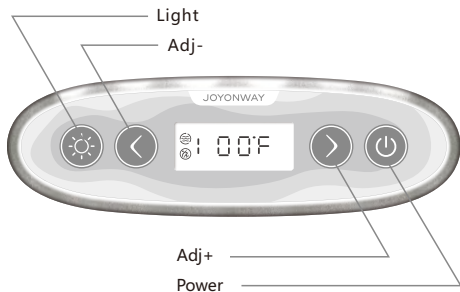


I. Pre-use operations

1、Please connect power strictly according to the power data plate.



2. After connecting the load and checking it in detail, turn on the power and use it normally.




P16B162 parameter:



Input voltage: AC100-240V 50/60Hz
Max. total load: 15.8A

II Functions



1. Power

When the control system is powered on, press "  " for one second to turn on or off the system.

2. Temp unit



When the control system is turned on, press "  " and "  " at the same time to change the temp unit. (°C or °F). The system will store the setting.


3. Temp adjustment

When the control system is turned on, press "  " to increase the setting temp and press "  " to decrease the setting Temp.

Setting temp range: 5-40°C (40-104°F)

4. Light

4.1、 When the control system is turned on, press "  " to control the light. In RGB mode, Press and hold "  " for 2 seconds to turn off the light directly.

4.2、 Within 5 minutes after the system is powered and control system is turned off, press and hold "  " for 8 seconds to change the working mode of the light. (on/off mode and RGB mode)(this function is only used for configuring in factory.)

4.3、 In on/off mode, only on and off of the light can be controlled.

4.4、 In RGB mode, the working pattern is as follows:

State1: automatic color change (cycle through state 2-8)

State 2: red

State 3: green

State 4: yellow(green+red)


State 5: blue

State 6: purple(blue+red)

State 7: cyan (blue+green)

State 8: white

5. Children lock

When the control system is turned on, long press the "  " button for 5 seconds to turn on or off the child lock function. When the child lock function is turned on, it briefly displays "LON", and when the child lock function is turned off, it briefly displays "LOF". After turning on the child lock function, if there is no button operation within 3 minutes, the button will be locked and displayed as "LOCK". After locking, long press any key (except for the unlock key) for 3 seconds to unlock this lock.

6. Circ pump

When the control system is turned on, the circ pump will run automatically. When the heat pump is running, the circ pump also runs. After the heat pump is turned off, the circ pump will shut down after a delay of 2 minutes. If the circ pump has not been running within 1 hour, it will automatically run for 1 minute.

7. Ozone

- 6.1、The ozone will turn on and off automatically according to the control system state.
- 6.2、When the circ pump is running, zone will turn on. Then the circ pump is turned off, the ozone will turn off automatically.

8. Heating

- 8.1、When the control system is turned on, heating will be on automatically.
- 8.2、When heating is turned on, circ pump will be started in advance. Then heat pump will run. When heating is turned off, heat pump turns off in advance and then circ pump.
- 8.3、When heating is turned on, the control system will automatically control the water temp by starting and stopping the heat pump according to water temp and setting temp.
- 8.4、Temp control regulation (when the system is turned on):

When water temp \geq set temp + 1°C, then cooling function of the heat pump will be started.

When water temp \geq set temp - 1°C, then heating function of the heat pump will be started.

When water temp \geq set temp, then heat pump stops working.

III System malfunction table

malfunction code	malfunction description	solution
F10	The control panel cannot communicate with the control mainframe	Check the connecting wire between the control panel and the control main unit. Replace if necessary.
F11	The control mainframe cannot communicate with the cycle pump	Please check the connecting wire between the control main unit and the heat pump and replace it if necessary. Or please check if the heat pump is powered.

Heat Pump ER03: Water flow failure

Water flow failure

Cause:

1. The water flow switch fault
2. Low water flow
3. The inlet and outlet water are reversed
4. There is air in the pipe
5. The pipe blocked

Action:

1. Check the water flow switch and replace it if it is faulty
2. Check the water valve and the temperature difference between inlet and outlet water
3. Whether the inlet and outlet water pipes are correctly connected
4. Emptying water system
5. Pipe cleaning

Heat Pump ER04: Winter anti-freezing

Winter anti-freezing

Cause:

The ambient temperature is lower than the antifreeze setting value

Action:

Normal protection procedure

Heat Pump ER09: Communication with the upper computer failed

Communication with the upper computer failed (Communication with Balboa system failed)

Cause:

Action:

1. Replace the main board
2. Check the communication cables between the main board and Balboa system
3. Check whether the Balboa system software matches

**Heat Pump ER05:
High pressure protection**

High pressure protection

Cause:

1. Low water flow
2. Pressure switch fault
3. The fan motor unwork or the speed too low
4. Overcharged the refrigerant

Action:

1. Check whether the temperature difference between inlet and outlet water is too large, and whether the outlet water temperature is too high
2. Use a multimeter to check whether the high voltage protection switch works
3. Check the water flow of the water pump and the speed of the fan
4. Refill the refrigerant

Heat Pump ER06:

Low Pressure Failure

Cause:

Action:

**Heat Pump ER10:
Communication fault
of frequency conversion
module**

Communication fault of frequency conversion module (alarm when communication is disconnected between external board and drive board)

Cause:

1. The mainboard or driver board damaged
2. The connector of the communication cable between the mainboard and the driver board is in poor contact or falls off
3. The communication cable is damaged

Action:

1. Replace the main board or driver board
2. Check the communication cables between the main board and driver board
3. Replace the communication cable

**Heat Pump ER12:
Exhaust too high
protection**

Exhaust too high protection

Cause:

1. Less refrigerant or leakage
2. The system blocked
3. Compressor refrigerant oil is insufficient
4. The resistance value of the exhaust probe is offset, and the inlet temperature probe is dropped

Action:

1. Refill the refrigerant
2. Replace the filter
3. Add refrigerant oil to the compressor
4. Replace the exhaust probe and reconnect the water inlet temperature probe

**Heat Pump ER15:
Inlet water temp. Error**

Inlet water temp. Error

Cause:

The sensor plug is in poor contact or off, or the sensor is damaged

Action:

Check and replace the water inlet temperature sensor (T2 sensor)

**Heat Pump ER16:
Outer coil pipe temp.
Error**

Outer coil pipe temp. Error

Cause:

The sensor plug is in poor contact or off, or the sensor is damaged

Action:

Check and replace the coil pipe temperature sensor(T3)

**Heat Pump ER18:
Exhaust gas temp. Error**

Exhaust gas temp. Error

Cause:

The sensor plug is in poor contact or off, or the sensor is damaged

Action:

Check and replace the exhaust gas temperature sensor(T1)

Heat Pump ER19:

DC Fan Motor Failure

Cause:

Action:

**Heat Pump ER20:
Abnormal protection of
frequency conversion
module**

Abnormal protection of frequency conversion module

Cause:

IPM module internal fault, check related problems according to the attached table

Action:

**Heat Pump ER21:
Ambient temp. Error**

Ambient temp. Error

Cause:

The sensor plug is in poor contact or off, or the sensor is damaged

Action:

Check and replace the ambient temperature sensor(T4)

Heat Pump ER23:

Cooling outlet water temperature low protection

Cause:

Action:

**Heat Pump ER27:
Outlet temperature fault**

Outlet temperature fault

Cause:

The sensor plug is in poor contact or off, or the sensor is damaged

Action:

Check and replace the water outlet temperature sensor(T6)

**Heat Pump ER29:
Return gas temp. Error**

Return gas temp. Error

Cause:

The sensor plug is in poor contact or off, or the sensor is damaged

Action:

Check and replace the suction gas sensor(T5)

**Heat Pump ER32:
Heating outlet water
high temperature
protection**

Heating outlet water high temperature protection

Cause:

Action:

**Heat Pump ER33:
Outer Door Coil High
Temperature Protection**

Outer Door Coil High Temperature Protection

Cause:

Action:

**Heat Pump ER35:
Compressor Current
Protection**

Compressor Current Protection

Cause:

Action:

**Heat Pump ER42:
Internal Coil
Temperature Failure**

Internal Coil Temperature Failure

Cause:

Action:

**Heat Pump ER44:
Ambient Temperature
Too Low Protection**

Ambient Temperature Too Low Protection

Cause:

Action:

**Heat Pump ER46:
DC Fan Error**

DC Fan Error

Cause:

1.Dc fan failure

2.Plug is in poor contact or off

Action:

1. Replace the DC fan

2. Reconnect cables to the DC fan