emerald energy

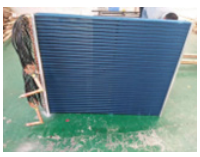
ALL-IN-ONE HEAT PUMP WATER HEATER
TROUBLESHOOTING GUIDE

MODEL NUMBERS:

EE-HWS-A1-220E
EE-HWS-A1-220
EE-HWS-A1-220E-1
EE-HWS-A1-220-1
EE-HWS-A1-270E
EE-HWS-A1-270
EE-HWS-A1-270E-1
EE-HWS-A1-270-1

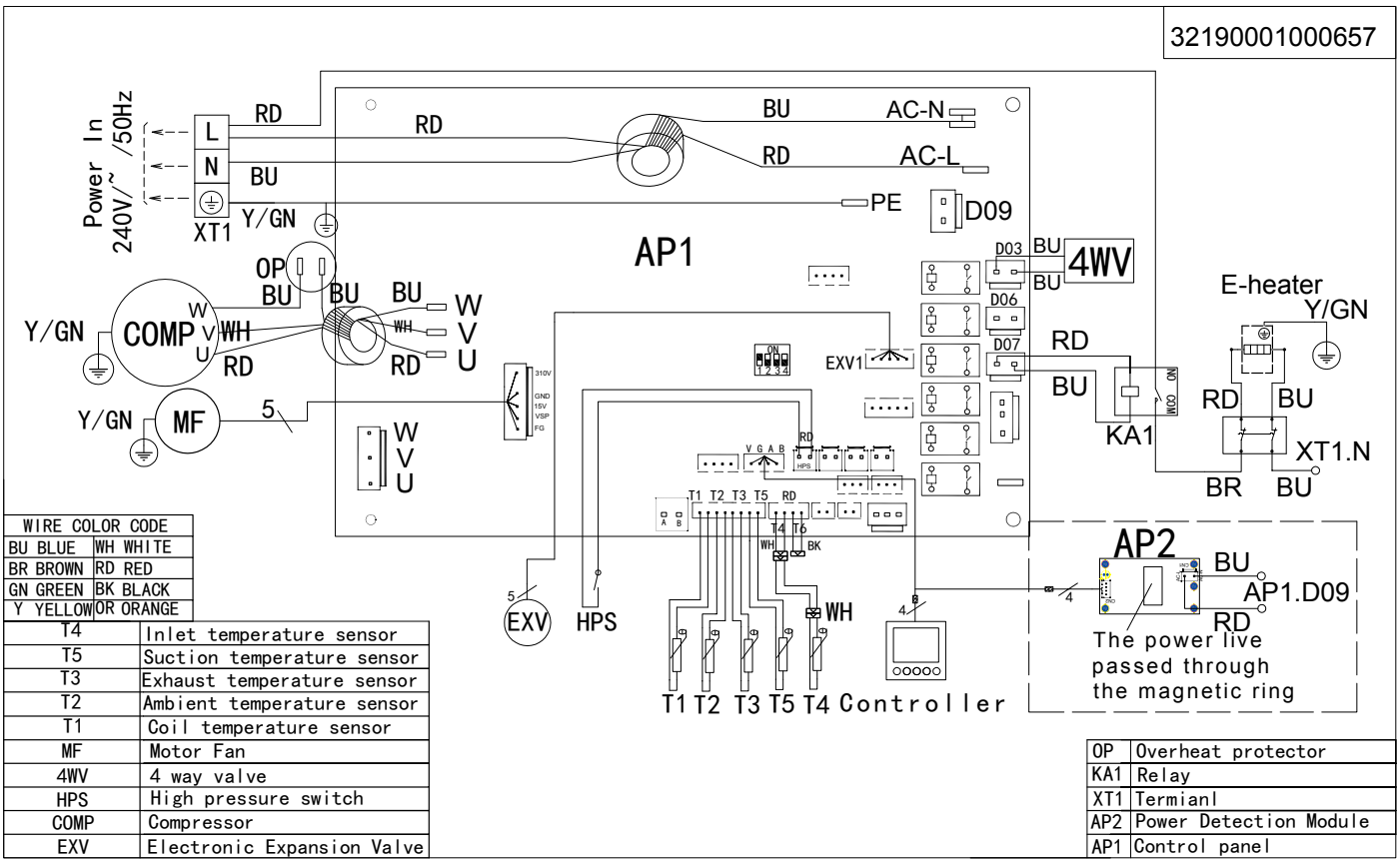
CONTENTS

COMPONENTS

IMAGE	NAME	FUNCTION DESCRIPTION
	DC inverter compressor	The compressor plays a central role in the heat pump system. It functions like a "steam pump" by taking low-temperature, low-pressure vapor and then compressing it into high-temperature, high-pressure vapor. This pressurised vapor then circulates through the heat pump system, carrying the refrigerant along with it.
	Microchannel heat exchanger	The microchannel heat exchanger functions as a condenser during heating, converting high-pressure, high-temperature gaseous refrigerant into a medium-temperature, high-pressure liquid, and transferring heat to a heat exchange medium (water). During refrigeration, it acts as an evaporator, converting a low-pressure, low-temperature liquid refrigerant into a gaseous state and absorbing heat from the heat transfer medium (water) during evaporation.
	Air side heat exchanger	Finned heat exchangers serve as both evaporators and condensers. During heating, they function as evaporators, converting low-temperature, low-pressure liquid refrigerant into a gaseous state to absorb heat from the air. Conversely, during refrigeration, they act as condensers, converting high-temperature, high-pressure gaseous refrigerant into a medium-temperature, high-pressure liquid, and releasing heat into the air.
	Electronic expansion valve	The electronic expansion valve is a throttling pressure relief device that reduces the pressure of the liquid refrigerant from medium temperature and high pressure to low temperature and low pressure.
	4-way directional valve	A four-way directional valve is used to alter the flow direction of refrigerant, enabling the system to switch between cooling, heating, and defrosting functions.
	Pressure switch	The high-pressure switch in a heat pump system functions to safeguard the unit by disconnecting power when the exhaust pressure exceeds the preset protection threshold, thereby preventing damage to the system.
	Temperature and pressure safety valve	A temperature and pressure safety valve serves a crucial role in safeguarding personal safety and equipment operation. It automatically opens when the water system's pressure exceeds the designated threshold, releasing excess pressure and preventing it from surpassing the specified design value.
	Fan (DC motor + blade)	The outdoor fan, consisting of a DC motor and blades, enhances heat transfer during the exchange process in the finned heat exchanger by generating powerful air convection.
	Gas filling valve (service)	The service gas filling valve in the heat pump system is used for draining, charging refrigerant, and evacuating during maintenance procedures.
	Overheat protector for E-heater	The overheat protector for the E-heater serves as a safety feature. If the E-heater malfunctions, continuously heating without control, the protector detects high water temperature and disconnects the power supply to prevent overheating.

ELECTRICAL CONNECTIONS

WIRING DIAGRAM



WIRE COLOR CODE	
BU BLUE	WH WHITE
BR BROWN	RD RED
GN GREEN	BK BLACK
Y YELLOW	OR ORANGE

T4	Inlet temperature sensor
T5	Suction temperature sensor
T3	Exhaust temperature sensor
T2	Ambient temperature sensor
T1	Coil temperature sensor
MF	Motor Fan
4WV	4 way valve
HPS	High pressure switch
COMP	Compressor
EXV	Electronic Expansion Valve

OP	Overheat protector
KA1	Relay
XT1	Termianl
AP2	Power Detection Module
AP1	Control panel

ERROR CODES AND FAULT PROTECTION

TROUBLESHOOTING COMMON FAULT CODES

FAILURE CODE

When the unit has a fault, the fault will be displayed in the timing area, and the fault code will be displayed cyclically, and "  " will flicker at the same time. When the fault is eliminated, the normal display will resume.

ERROR CODES

Below is a list of possible error codes that will be displayed on the controller screen in the event of an issue, check that the corresponding hardware component on the Heat Pump relating to the error code is not damaged.

If all the Heat Pump hardware is in good condition, then contact Emerald Energy.

Please see the following detailed error code table

ERROR CODE	DESCRIPTION
E05	High pressure switch failure
E09	Communication failure between controller and main board
E12	Gas exhaust temperature too high
E15	Water tank temperature sensor failure
E16	Evaporator coil temperature sensor failure
E18	Gas exhaust temperature sensor failure
E21	Ambient temperature sensor failure
E29	Gas suction temperature sensor failure
E35	Compressor current over high protection
E38	Fan motor failure
E44	Low ambient temperature protection
E80	Wrong power supply
E88	Compressor driver board failure
E96	Communication failure between compressor driver board and main board (detected by main board)
E98	Communication failure between fan driver board and main board (detected by main board)

PROTECTIONS

CONTROLLER COMMUNICATION FAULT PROTECTION

If the main board detects that there is no data transmission with the controller for 30 seconds, it judges that the controller has a communication failure, and the fault code is "E09", and shutdown protection is required.

COMPRESSOR DRIVER COMMUNICATION FAILURE PROTECTION

If the main board detects that there is no data transmission with the compressor driver for 10 seconds, it judges that the compressor driver communication failure, the fault code is "E96", and the unit must be shut down for protection.

TEMPERATURE SENSOR FAILURE PROTECTION

SENSOR	DIAGNOSIS	ERROR CODE	TROUBLESHOOTING
Ambient temp sensor	Detect open circuit or short circuit for 5s consecutively	E21	Stop the compressor and fan, allow to start E-heater
Evaporator coil temp sensor	Detect open circuit or short circuit for 5s consecutively	E16	Stop the compressor and fan, allow to start E-heater
Gas suction temp sensor	Detect open circuit or short circuit for 5s consecutively	E29	Stop the compressor and fan, allow to start E-heater
Gas discharge temp sensor	After compressor starts to run for 3mins, detect open circuit or short circuit for 5s consecutively	E18	Stop the compressor and fan, allow to start E-heater
Water temp sensor	Detect open circuit or short circuit for 5s consecutively	E14	Stop the compressor and fan, allow to start E-heater

ERROR CODES AND FAULT PROTECTION

DRIVER BOARD FAULT AND PROTECTION

When the DC driver board gives an alarm, the system stops running immediately, and the controller displays the fault code. After the fault is eliminated, the unit returns to normal control. Blinking cycles through E88 and the following codes:

P1	Bit0: IPM over current/IPM module protection
P2	Bit1: Compressor fails to be driven/Software control abnormal/ Compressor out of step
P3	Bit2: Compressor over current
P4	Bit3: Input power supply lack of phase (not for single phase)
P5	Bit4: IPM current detection failure
P6	Bit5: Power component overheat to lead system shutdown
P7	Bit6: Pre-charge failure
P8	Bit7: DC bus overvoltage
P9	Bit8: DC bus undervoltage
P10	Bit9: AC input undervoltage
P11	Bit10: AC input overcurrent
P12	Bit11: AC input detection failure
P13	Bit12: Communication failure between DSP and PFC
P14	Bit13: Radiator temperature sensor failure for
P15	Bit14: Communication failure between DSP and communication board
P16	Bit15: Communication failure between main board and driver board
P17	Bit0: Compressor overcurrent alarm
P18	Bit1: Compressor weak magnetic alarm
P19	Bit2: PIM overheat alarm
P20	Bit3: PFC overheat alarm
P21	Bit4: AC input overcurrent alarm
P22	Bit5: EEPROM alarm
P24	Bit7: EEPROM refresh complete (disappear after restart)
P25	Bit8: Temperature sensor failure to lead frequency limit
P26	Bit9: AC undervoltage alarm to lead frequency limit
P33	Bit5: Pre-charge voltage failure
P34	Bit6: EEPROM failure
P35	Bit7c: AC input over voltage failure
P36	Bit8: Micro electronic parts failure
P37	Bit9: Compressor model code failure
P38	Bit10: Bit11~Bit15: NA Overcurrent detection (hardware detection)
P39	Bit6: EEPROM failure
P40	Bit7: AC input overvoltage failure
P41	Bit8: Micro-electronic failure
P42	Bit9: Compressor type code error
P43	Bit10: Bit11~Bit15: NA Detected current overhigh (hardware overcurrent)

HIGH PRESSURE SWITCH PROTECTION

1. If the high-pressure switch is disconnected for 5 consecutive seconds, it will enter high-pressure protection, the compressor will stop running immediately, and the fault code "E05" will be displayed on the screen of the remote controller.

2. After the unit is shut down for protection, if the high-pressure switch is closed for 60 seconds, exit the high-pressure protection.

3. If the fault code occurs at 3 times within 60 minutes, it will not recover automatically unless the power is off.

4. When P00 is selected as 1, the high-pressure switch is disabled, and the high-pressure switch protection is not detected.

5. When P04 is selected as 1, the fault will not be locked, and it can be automatically restored if the fault recovery condition is met, without time limit.

ANTI-FREEZE PROTECTION

When the unit is in shutdown or startup failure shutdown state:

1. When the ambient temperature is ≤5°C (P43) and the water tank temperature is ≤3°C (P44) for 10s, it enters antifreeze protection, and the unit is forced to start heating operation. When the unit has a protective shutdown fault, it is forced to turn on the electric heating element.

2. When the ambient temperature is ≥P43+2°C or the water tank temperature is ≥15°C, the antifreeze protection will be disabled.

GAS DISCHARGE TEMPERATURE OVERHIGH

1. After the compressor starts running, if the discharge temperature of the compressor is ≥115°C (parameter P125) for 5 consecutive seconds, the compressor will stop running immediately; and the fault code "E12" will be displayed on the controller.

2. After the unit is shut down for protection for 1 minute, when the compressor discharge temperature is ≤90°C, the discharge temperature protection will be exited.

3. If this protection occurs 3 times in a row within 60 minutes, the protection cannot be restored, and the power must be cut off to eliminate it

4. When P06 is selected as 1, the fault will not be locked, and it can be automatically restored if the fault recovery condition is met, without time limit

LOW AMBIENT TEMPERATURE PROTECTION

1. When the ambient temperature is ≤ -9°C (P20-2°C), the compressor is prohibited from running.

2. When the ambient temperature is ≥ -7°C (P20), normal operation will resume; this protection has no fault display, and the fault icon flashes.

SYSTEM RUNNING READINGS QUERY

In the normal interface, long press "⌃" 3S or "⌄" 3S to enter the running readings query, enter the running readings query state, the temperature display area displays the running reading code, and the timing area displays the reading value.

After entering the running readings query, press the "⌃" or "⌄" button to scroll and display each "running readings"; press the "On/Off" button or there is no button operation for 60 seconds to automatically exit the status of viewing readings.

DISASSEMBLY AND PARTS DESCRIPTION

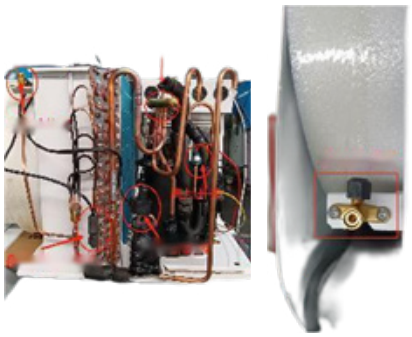
Logo position, same on opposite side

Top lid: the top lid screws need to be removed to inspect the electrical parts and gas pipeline.

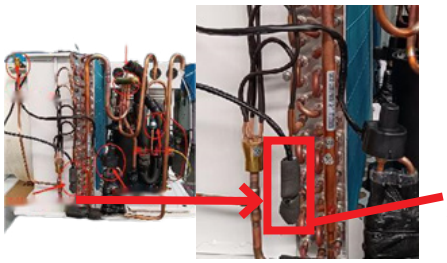
Electrical components located at top of the system once lid is removed.

13080002000764: Integrated board/R-JY003-BP-V1.0

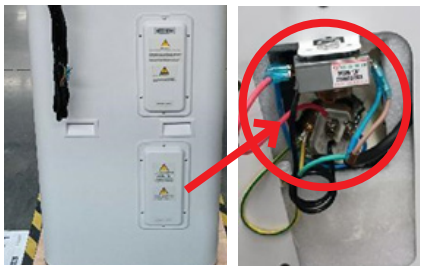
DISASSEMBLY AND PARTS DESCRIPTION



Gas pipeline:
1. 4 way valve
2. Compressor
3. Stop valve
4. EEV (Electronic Expansion Valve)
5. High pressure switch
6. Coil temp sensor

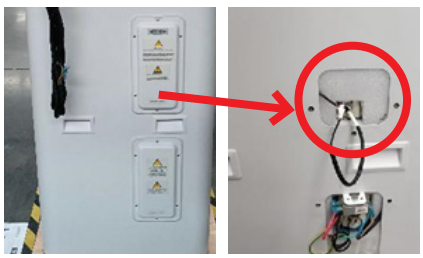


Evaporator coil temp sensor 5K

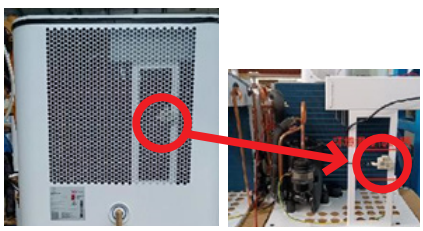


E-heater:
1.Thermostat
2. 1.5kW E-heater

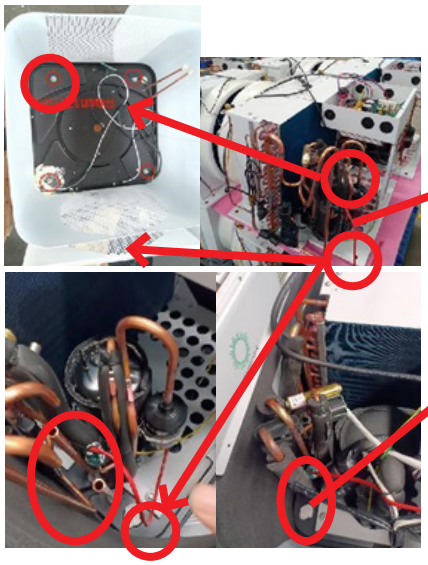
R290 compressor: When replacing, the air must be able to circulate, and there must be no fire source. Only when the refrigeration system is exhausted can the hands-on operation be performed. The unit should be installed in a ventilated place, away from fire sources.



Water temp sensor 5K



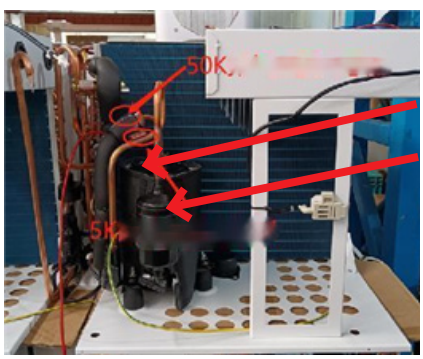
Ambient temp sensor 5K



The top unit is pre-installed, hoisted above the water tank, and fixed by bolts.

Weld the top unit with tank part

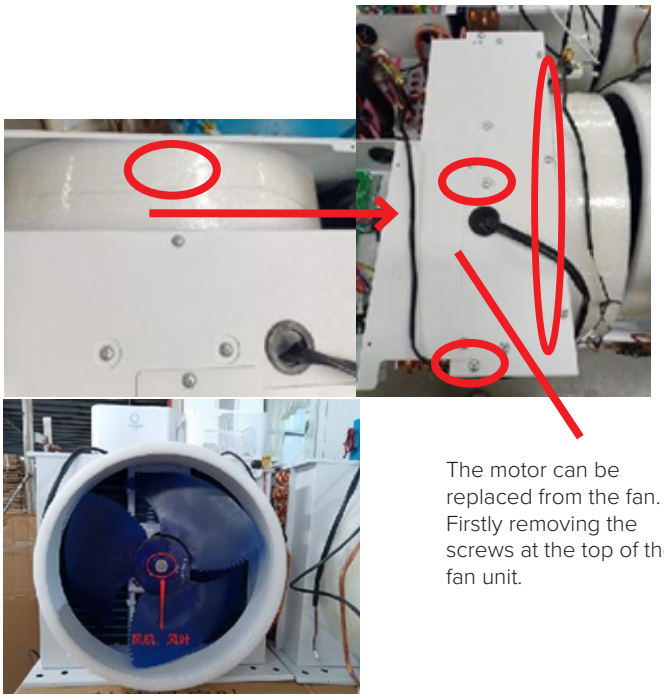
Weld the top unit with tank part



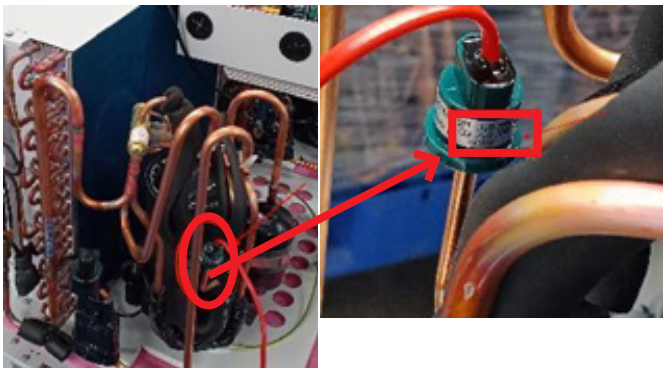
Gas discharge temp sensor 50K

Gas return temp sensor 5K

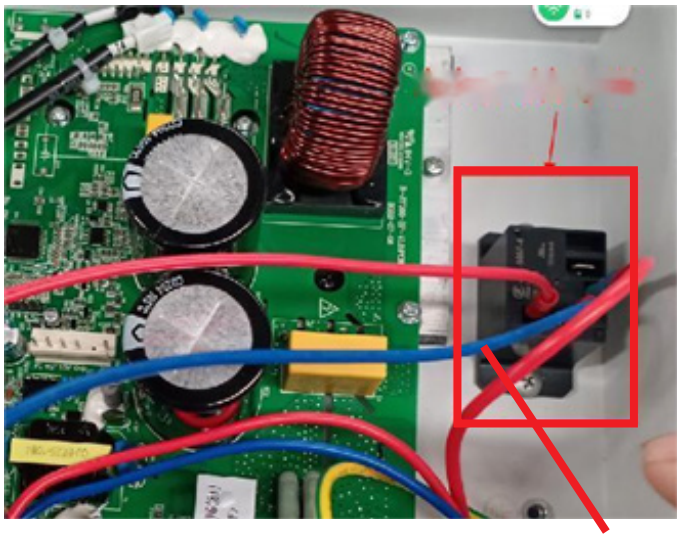
DISASSEMBLY AND PARTS DESCRIPTION



The motor can be replaced from the fan. Firstly removing the screws at the top of the fan unit.



High voltage switch: Action value: 3MPa; (the resistance between the two wires is zero) Recovery value: 2.4MPa; (the resistance between the two wires is infinite)



The electric heating is 1.5KW, and the electric heating power cannot be directly provided by the electric control board, but must be controlled by a relay or an AC contractor.

ERROR: E12
GAS DISCHARGE TEMPERATURE OVERHIGH

CAUSE ANALYSIS	DIAGNOSIS AND SOLUTION
Gas discharge sensor failure	Replace gas discharge sensor
The system leaks gas or lacks gas	Detect the actual gas discharge temperature of the compressor and the high side pressure of the system. If the gas discharge temperature is really high and the high pressure is really high, use soap water to check for leaks and add gas
The system is blocked, mostly filter or EEV where the channel is narrow	Use nitrogen to purge the system, replace the throttling element, and add a removable filter before the throttling element

When an E12 fault occurs, if the shutdown has exceeded ten minute

STEPS	DIAGNOSIS ERROR CODE	TROUBLE-SHOOTING
Step 1: Determine whether the sensor or the main board is damaged.	Power off, power on again. ↓ The compressor is not started, press and hold the up button or down button for 3 seconds on the main interface to enter the query state, and check whether the reading of code 15 is the same as the ambient temperature. Investigate parameters and ambient temperature. Not same → Remove the air outlet cover, find the exhaust temperature sensor, cut off the power, and replace it with a new sensor. Ambient temperature ↓ Same Start the unit to run, after running for 5 minutes, observe the difference between the running 15 parameters and the temperature of the water tank: between 30-45 degrees? Consistent with the inquiring parameters and ambient temperature. Yes → Finished	Phillips screwdriver or electric screwdriver

ERROR: E05
HIGH PRESSURE SWITCH FAILURE
(Protection activated when the switch is open)

CAUSE ANALYSIS	DIAGNOSIS AND SOLUTION
Wiring connection issue of high pressure switch	Check if the wiring is loose on PCB, re-plug

ERROR: E09
COMMUNICATION ERROR
(Controller cannot receive main board data)

CAUSE ANALYSIS	DIAGNOSIS AND SOLUTION
Main board	Replace main board
Communication cable failure	Check if the cable is loosened or broken
Controller	Replace controller

Diagnosis

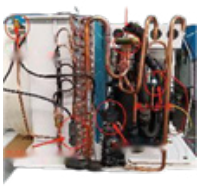
DESCRIPTION	PICTURE	TOOL
1. Power off and restart, does it still report E09 fault, restart several times and still report the same fault, power off		
2. Remove the top lid		Phillips screwdriver or electric screwdriver
3. Check whether the connection line of the wire controller is loosened or not in good contact, reconnect it, and check whether the communication is normal after power-on. If it is still abnormal, replace the communication line with a new one. If the communication is restored, the communication line is broken. Otherwise continue testing.		Multimeter
4. Replace the normal controller, if the communication is restored, the controller is broken. If communication is not restored, otherwise continue testing.		
5. Replace the main board, power on again, and check whether the communication is normal. After the above-mentioned inspections, if communication has not been restored, check again. After returning to normal, power off and restore the machine installation. Power on, start up.		Phillips screwdriver or electric screwdriver

OTHER TEMPERATURE SENSOR FAILURE: Same diagnosis solution as previously stated

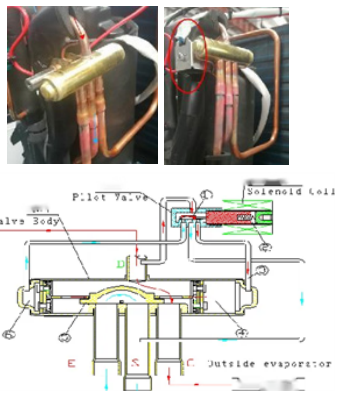
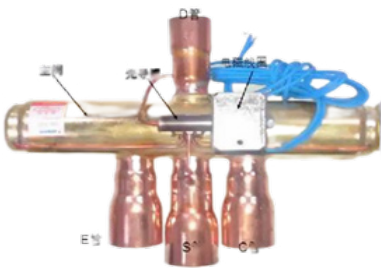
E16	Evaporator coil temp sensor failure
E21	Ambient temp sensor failure
E18	Gas discharge temp sensor failure
E14	Water temp sensor failure
E29	Gas return temp sensor failure

CAUSE ANALYSIS	DIAGNOSIS AND SOLUTION
Sensor failure	Replace sensor
Main board failure	Replace main board
Controller failure	Replace controller

Diagnosis

DESCRIPTION	PICTURE	TOOL
1. Power off and restart, whether the fault is still reported, and the same fault is reported after restarting several times, then power off.		
2. Remove the top lid	 	Phillips screwdriver or electric screwdriver
3. Find the corresponding sensor and measure the resistance value with a multi-meter. If it is 0 or infinite, it is judged that the sensor is broken. If resistance is detected, find the corre-sponding sensor on the electronic control board, replace the sensor with any other sensor, if the fault code does not change, it means that there is a problem with the main board or the controller, if the fault code changes, it means that the sensor has a problem, and replace it Can. If there is a problem with the motherboard or the controller, replace the controller first, if it returns to normal, the controller is broken. Otherwise replace the motherboard. After returning to normal, power off and restore the machine installation. Power on, start up.	 	Multimeter
Detection method: measure the resistance value of the sensor with a multimeter, when the resistance is 0 or infinite, report the sensor failure		

OTHER COMPONENTS:

DESCRIPTION	PICTURE	TOOL
1. The four-way reversing valve is composed of two parts, one is an electromagnetic pilot valve, and the other is a four-way reversing valve. The four-way reversing valve is controlled by an electromagnetic pilot valve, and two parts are connected by three guiding capillaries.		4 way valve
2. 4 way valve power-off state: tube D is connected to tube C; tube E is connected to tube S; 2.3. Coil energized state: tube D is connected to tube E; tube C is connected to tube S		4 way valve

Other possible causes:

COMPONENT	ISSUE DESCRIPTION	ANALYSIS
Compressor	1. Compressor doesn't work	1. Can't hear compressor running noise: Check whether the main board supplies power to the compressor, and use a multi-meter to measure whether there is normal voltage at the terminals of the compressor? If there is no voltage, check whether the power cord of the compressor is disconnected, etc., and the output of the main board. If it is a problem with the main board, replace the main board; After checking that the voltage is normal, check whether the pipeline and compressor shell are hot, if not? It may be that the compressor is broken, and the power is cut off. Use a multimeter to measure the resistance of the wiring diagram of the terminal. If the resistance is infinite, it means that the compressor is broken;

continued over

TROUBLESHOOTING

COMPONENT	ISSUE DESCRIPTION	ANALYSIS
Compressor	2. Compressor starts, power trips	1. If the compressor starts, the RCBO trips, and the power is cut off, use a multimeter to check whether the coil resistance of the compressor terminal is 0. The compressor coil resistance is very small. You must also confirm whether the compressor is leaking electricity, and measure the insulation resistance between the terminal and the compressor shell. If it is connected, it means that the compressor is leaking, the compressor is broken, and needs to be replaced; 2. If the compressor is stuck, and the current is too high to cause a trip, you can find another larger power supply to confirm whether the compressor is stuck. If the compressor is stuck, the compressor has a large current, the sound is loud, and the refrigerant pressure does not change. It is possible to measure the power supply with a clamp meter and the pressure change with a pressure gauge, and listen to whether the sound is abnormally loud.
Compressor	3. The unit operates normally, but the water temperature does not rise;	1. Use a current clamp meter to measure the power supply current, if the current is far lower than the rated power supply of the machine, that means the gas may leak 2. Disassemble the machine, connect the pressure gauge, and check the low pressure. If the pressure of the pressure gauge is 0 during operation, then measure the static pressure. If the pressure is too high, it may be determined that there is a lack of refrigerant. First, check the machine for leaks. 3. If no leakage is found, refill the refrigerant first, restore the unit to normal, record the repair time, and pay attention to the operating status of the unit later. If the refrigerant reappears in a short period of time, check for leaks again, but no leaks are found, it may be a leak in the water tank heat exchanger, then use high-pressure nitrogen to pressurize the leak test, and the pressure drops significantly after 48 hours, indicating that there is a leak in the water tank heat exchanger, then the system must be replaced;
4-way valve	Cross-gas phenomenon in 4-way valve	The sliding plate in the valve body of the four-way valve does not move in place, causing the exhaust gas to directly flow through the valve body to the compressed gas suction side, resulting in high temperature of the gas suction pipe, the water temperature does not heat up, the gas suction temperature is high, the loud sound of the compressor running, and the high exhaust. In this case, the internal sliding plate of the four-way valve is generally damaged and needs to be replaced. The internal sliding plate of the four-way valve is made of plastic and cannot suffer too high temperature. When replacing the four-way valve, be sure to wrap it with a wet sheet to cool it down, otherwise it may cause gas leakage again after replacement.

SENSOR ERRORS' LOGIC

TEMP. SENSOR	JUDGMENT LOGIC	ERROR CODE	CONTROL LOGIC
Ambient temp. sensor	detect open or short circuit for 5 seconds	E21	Compressor and fan motor stop, e-heater can start
Coil temp. sensor	detect open or short circuit for 5 seconds	E16	Compressor and fan motor stop, e-heater can start
Suction temp. sensor	detect open or short circuit for 5 seconds	E29	Compressor and fan motor stop, e-heater can start
Discharge temp. sensor	Compressor start and detect open or short circuit for 5 seconds	E18	Compressor and fan motor stop, e-heater can start
Water temp. sensor	detect open or short circuit for 5 seconds	E14	Compressor and fan motor stop, e-heater can start

HIGH PRESSURE PROTECTION LOGIC

Detect the high pressure switch open circuit for 5 seconds, the switch will work , and the compressor will stop , the wired controller will show E05.

When the system stop , it detects the high pressure switch is closed for 60s, the protection will be recovery automatically;

The protection occurs 3 times within 60min, it should be restarted automatically;

HIGH DISCHARGE TEMPERATURE PROTECTION

When the discharge temp. is higher than 115°C for 5 seconds (parameter P125) the compressor will stop; the wired controller will show “E12”;

After E12 occurred for 1min, when the discharge temperature ≤90°C, E12 will be recovered automatically.

The protection occurs 3 times within 60min, it should be restart automatically;

LOW AMBIENT TEMPERATURE PROTECTION LOGIC

Ambient temp. ≤-9°C (P20-2°C), the compressor can not start;

Ambient temp. ≥-7°C (P20), the heat pump will work normally;

No protection code, the error icon will flash;

TROUBLESHOOTING

NO HOT WATER

POSSIBLE CAUSES	SOLUTION
System has no power	Check if the controller screen is blank, check the isolator switch is on, check the electrical switchboard circuit breaker is turned on. Contact your electrician to ensure system is getting power.
Controller is off	Check the controller screen is displaying a “sun” symbol.
Issue with temperature sensor	Check that the temperature sensor is plugged into PCB (Communications Board) correctly and is not damaged.

INTERMITTENT HOT WATER

POSSIBLE CAUSES	SOLUTION
Incorrect wiring	Check that the system is wired into the continuous pow-er in the electrical switchboard and not off peak. If you switch board only has one hot water system option, then it will be continuous, and all is good.
Off-peak timer is set	If the controller displays a clock symbol, then the tim-er is on. Hold down the clock button for 3 seconds to turn this off.

SYSTEM IS LEAKING/TPR VALVE LEAKING

POSSIBLE CAUSES	SOLUTION
High Pressure mains	The system needs to be pressure tested and pressure limiting valve installed if the kPa is above 500kPa. This is carried out by the plumber.
General system operation	It is normal for the system to drip slightly from the TPR valve.

STEPS

Turn On Heat Pump
- Press the “ON/OFF” button for one second
- When the system is ON, the “Sun” symbol will appear
- When the system is OFF, the “Sun” symbol will disappear

How to switch running mode
- Press the “M” button to switch running mode;
- Under Standard mode, the “Sun” symbol appears;
- Under Silent mode, the “Sun” and “Moon” symbol appear;
- Under Booster mode, the “Sun” and “Booster” and “Electric Heater” symbol appear;
- Under Element mode, the “Sun” and “Electric Heater” symbol appear;

Set the real time
- Press the “Timer” button to enter the real time setting
- Press the “Timer” button again to move the “Hour” setting;
- Press the “UP” or “DOWN” button to ad-just the “Hour” value
- Press the “Timer” button to lock the “Hour” setting, this will also move to the “Minute” setting

Set the target water temp
- Under any mode, the target water temperature is adjusted by pressing the “UP” or “DOWN” button;
- To lock the input value, press the “OFF” button or wait 5 seconds;

How to set the daily timer
- Press the “Timer” button for 3 seconds to enter or exit the timer settings
- Press the “UP” or “DOWN” button to ad-just the “Hour” value or “Minute” value
- There are three time periods marked with small numbers “1, 2, 3”. Each time period has a start and finish time
- Press the “Timer” button to switch to the hour and minute values for each of the time periods
- Press the “Timer” button or wait 15 seconds to lock the settings

How to access the running readings
- Press the “UP” button for 3 seconds to check the running readings
- Press the “UP” or “DOWN” button to check different readings
- Press the “ON/OFF” button to exit running readings check

How to access the back-end parameters
- Press the “M” button for 5 seconds to enter the back-end parameters Series L
- Press the “M” button again for 5 seconds to enter the back-end parameters Series P
- Press the “M” button shortly to move the setting of back-end parameters value
- Press the “UP” or “DOWN” button to modify the value of each parameter
- Press the “M” button to confirm the value and to move to the next parameter
- Press the “ON/OFF” button to exit back end parameters

How to do the factory reset
- Within 5 minutes of power on, press the “M”, “UP”, “DOWN” and “ON/OFF” button simultaneously for 5 seconds

WARRANTY INFORMATION

Emerald Energy Pty Ltd warrants this heat pump to the original purchaser.

Emerald Energy Pty Ltd warrants each new heat pump is free from defects in material and workmanship under normal use and service from the date of purchase. 5 years tank and heat pump, 2 years labour. *Subject to terms and conditions.

This warranty does not cover damage resulting from accident, misuse or abuse or lack of reasonable care of the product.

In no case shall Emerald Energy Pty Ltd be liable for any incidental or consequential damages for breach of this or any other warranty express or implied whatsoever.

For full warranty details visit our website emeraldenergy.com.au

Emerald Energy Pty Ltd
ABN 86 632 172 368
L2, 12a Rodborough Road Frenchs Forest NSW 2086

2023.09