OMEGA VRF TECHNOLOGY

Engineered to elevate **efficiency and comfort .....**
..... to the next level!

OMEGA TECHNOLOGY

OTECO AIR CONDITIONING

Mini VRF
Trouble Shooting

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VRF Error Table

Failure and Protection			
Code	Failure or protection definition	Code	Failure or protection definition
E1	Phase sequence failure	P1	High pressure protection
E2	Comm. failure between indoor and outdoor units	P2	Low pressure protection
E4	Environment temperature sensor failure(T4)	P3	Over current protection
E6	Condensate temperature sensor failure(T3)	P4	Excessive exhaust temperature protection
E8	TP temperature sensor failure(TP)	P5	T3 or T3B condenser over temperature protection
E9	AC overvoltage/undervoltage protection	P6	IPM modules protection
E10	EEPROM failure	P9	DC fan protection
EA	Condensate temperature sensor failure(T3B)	P10	Protected against typhoons
Eb	Reserved	P11	Heating T2 high temperature protection
Ec	Refrigerant cooling inlet pipe temperature sensor failure(T7/TS)	P13	The current detect abnormal protection
		Pb	Module over temperature protection
H0	Comm. failure between master chip and DSP		
H4	The protection of three times P6 in 30 minutes		
H5	The protection of three times P2 in 30 minutes		
H6	The protection of three times P4 in 100 minutes		
H7	The decrease in the number of indoor		
H9	The protection of two times P9 in 10 minutes		
H10	The protection of three times P3 in 60 minutes		
H11	The protection of two times P13 in 10 minutes		
H12	The protection of three times Pb in 60 minutes		

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VRF Operating Parameters Table

Check Table			
NUM	Display content	NUM	Display content
0	Frequency / the number of Indoor units	16	DC current
1	Outdoor power	17	AC voltage
2	Run mode(0: shut down/air supply; 2: refrige -ration; 3: heating; 4: forced refrigeration)	18	DC voltage
		19	The number of indoor units
3	Indoor demand	20	The number of running indoor units
4	Outdoor after correction demand	21	Priority mode: 0:automatic selection; 1:Heating mode preferred; 2:Refrigeration mode preferred; 3:Only heating mode; 4:Only refrigeration mode; 5:VIP+Automatic mode priority; 6:According to the first mode
5	Actual operation ability		
6	Fan speed state (0-8)	22	Reserved
7	T2/T2B average temp.	23	Reserved
8	T3 condenser outlet temp.	24	Reserved
9	T3B condenser middle temp.	25	Reserved
10	T4 outdoor ambient temp.	26	Frequency limit display: 0:unlimited frequency; 1:T3B frequency limits; 2:T4 frequency limits; 4:TP frequency limits; 8:Voltage limiting frequency; 16:current limiting frequency; 32:T6 restrictions; 64:mute frequency limit
11	TP exhaust temp.		
12	T6/T9 module temp.	27	Last failure or protection code
13	T7/TS refrigerant cooling inlet pipe temp.	28	Soft version
14	Electronic expansion valve opening (Actual value = Show value * 4)	29	Memorizer version
		30	- - -
15	AC current		

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E1： Phase sequence malfunction

Reason： Three-phase power supply phase sequence error or lack of phase

Solution ：

1. Verify if the phase sequence of the outdoor unit power aligns with the power supply. If it is correct, move on to the next step.
2. Confirm if the sequence of the power cords from the wiring terminals to the main board corresponds. If the alignment is correct, proceed to the next step.
3. Use a multimeter to measure the phase voltage to ensure that it falls between 220-240V and there is no shortage of phase.
4. Check the power terminal and ensure that it is securely connected.
5. If all the above steps are successful, then replace the main board.

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E2： Communication failure between indoor unit and outdoor unit ；

Reason： Communication between the outdoor unit and all indoor units is lost

Solution ：

1. Verify the communication wire between the communication board and the main control board. Ensure that the wiring is firm and the wiring harness is undamaged. Proceed to the next step if everything looks normal.
2. Check the communication wire PQE and confirm that it uses a 2-core shielded wire. Make sure to connect it correctly using P to P, Q to Q, and E to E connections. Avoid star connections.
3. Test for an open or short circuit in the communication wire. Use a multimeter to measure the resistance between PQ to identify any short circuit. If there is no short circuit, short circuit PQ and check if there is an open circuit from the PQ terminal of the outdoor unit.
4. Once you have confirmed that there are no issues with the communication wire, check if all the indoor units are powered on and have addresses. If there are no addresses, refer to the internal machine FE troubleshooting. Ensure that all the indoor units are powered on and have addresses.
5. If all the above steps are successful, the issue could be communication interference. Connect a 100Ω resistance between the PQ of the last indoor unit of the system. If the issue persists, check the interference source and eliminate it. If the problem still persists, replace the communication board/main board.

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E4/E6/E8/EA/EC： T4 ambient temperature/T3 condenser outlet/T5 exhaust/T3B condenser middle/T7 refrigerant heat pipe sensor failure

Reason： Sensor reading error or sensor is damaged

Solution ：

1. Verify if the sensor is securely connected to the main board. If it is loose, reconnect it firmly. If it is faulty, proceed to the next step.
2. Disconnect the sensor and measure its resistance. Check if it is open or short. If the resistance is open or short, replace the sensor group. If it is not open or short, replace the main board.

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E9： AC voltage protection

Reason： AC supply voltage problem

Solution：

1. Use a multimeter to measure the voltage of the power supply phase to confirm the supply voltage. Check if the voltage is below 165V or higher than 265V.
2. If the power supply voltage is normal, replace the main board.

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E10： EEPROM error

Reason： Outdoor unit main board failure

Solution：

1. Replace the main board of the outdoor unit.

H0： Communication failure between main control chip and DSP module board

Reason： Communication failure between main control board chip and module

Solution：

1. Replace the outdoor unit main board；

H4： There are 3 times P6 protection in 30 minutes

Solution： Refer to P6

H5： There are 3 times P2 protection in 30 minutes

Solution： Refer to P2

H6： There are 3 times P4 protection in 100 minutes

Solution： Refer to P4

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H7： Indoor unit quantities decreasing malfunction over 3 minutes

Reason： Part of the indoor unit communication is lost

Solution ：

1. Refer to the indoor unit error code FE&E1;

H9： There are 3 times P9 protection in 30 minutes

Solution ： Refer to P9

H10： There are 3 times P3 protection in 60 minutes

Solution ： Refer to P3

H11： There are 2 times P13 protection in 10 minutes

Solution ： Refer to P13

H12： There are 3 times Pb protection in 60 minutes

Solution ： Refer to Pb

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P1： High pressure protection

Reason： The open circuit state is detected at the high pressure switch detection port

Solution：

1. Verify that the wiring of the high-pressure switch is securely connected, and ensure that the wiring is normal.
2. Check the condenser for poor heat dissipation, and ensure that there are no issues with heat dissipation.
3. Connect the pressure gauge, and run the unit. Check the high and low pressure. If the pressure is normal, remove the pressure switch to measure its resistance. If the resistance is infinite, replace the pressure switch. If the pressure switch resistance is 0, replace the main board.
4. Conduct a pressure gauge test. If the pressure is too high, the issue may be with the system. Troubleshoot problems such as system blockage, vacuum, and excessive refrigerant.

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P2： Low pressure protection

Reason： The open circuit state is detected at the low pressure switch detection port

Solution：

1. Verify that the wiring of the low-pressure switch is securely connected, and ensure that the wiring is normal.
2. Check the evaporator for poor heat dissipation, and ensure that there are no issues with heat dissipation.
3. Connect the pressure gauge, and run the unit. Check the high and low pressure. If the pressure is normal, remove the pressure switch to measure its resistance. If the resistance is infinite, replace the pressure switch. If the pressure switch resistance is 0, replace the main board.
4. Conduct a pressure gauge test. If the pressure is too low, the issue may be with the system. Troubleshoot problems such as system blockage, leakage, and insufficient refrigerant.

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P3： Inverter compressor over current protection

Reason： The main board detects that the operating current is too large

Solution：

1. Verify that the wiring of the motor and compressor is tightly connected, and ensure that the wiring is normal.
2. Use a clamp meter to check the primary side AC current and the secondary side compressor DC current. Check 15/16 items, and compare the difference between the check value and the clamp meter. If the difference is significant, the main board is likely faulty. Replace the main board.
3. If the difference between the clamp meter and the check value is not significant, the issue may be with the compressor or the system.

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P4： Discharge temperature sensor protection

Reason： Exhaust temperature sensor reads that the temperature is too high

Solution：

1. Connect a pressure gauge to measure the low pressure (usually 0.7-0.9MPa). If the pressure is too low, add refrigerant. Also, check whether the SV2 on the main control board outputs 220V before the failure. If there is no output, replace the main board. If the valve does not act, replace the SV2 coil.
2. Measure the resistance of the temperature sensor. If it is inaccurate, replace the sensor.
3. If the temperature sensor reading is accurate, check the exhaust temperature of item 11 and compare it. If the temperature of the main control board is unreasonable, replace the main control board.
4. If all the above steps are normal, check the refrigerant system for issues such as blockage of the air return pipe, poor evaporation, wear of the compressor, etc.

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P5： Heat exchanger high temperature protection

Reason： The condenser temperature sensor reads that the temperature is too high

Solution ：

1. Check the heat dissipation of the condenser for normal operation. Ensure that there is no dirty block, poor return air, or any other obstruction.
2. Measure the resistance of the temperature sensor. If it is inaccurate, replace the sensor.
3. If the temperature sensor reading is accurate, check the middle and outlet temperature of the condenser for items 8 & 9 and compare them. If the temperature of the main control board is unreasonable, replace the main control board.
4. If all the above steps are normal, check the system for any issues, such as an overloaded indoor unit, vacuum problems, or any other irregularities.

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P6： IPM module protection

Reason： Compressor drive module abnormal

Solution：

1. Check the power supply for normal operation. Ensure that the power supply phase voltage is within 220-240V.
2. Check the heat dissipation of the condenser for normal operation. Ensure that there is no dirty blockage, poor return air, or any other obstruction.
3. Measure the resistance between compressor UWV (normally within 20Ω) and UVW resistance to ground (normally infinite, MΩ level). If the compressor resistance is abnormal, replace the compressor. Otherwise, proceed to the next step.
4. Check whether the module heat dissipation silicone grease is applied evenly and normally. If it is abnormal, apply silicone grease again. Otherwise, proceed to the next step.
5. Run the unit and observe whether the compressor is abnormal, such as abnormal noise, excessive current, or any other issue. If there is an issue, replace the compressor.
6. Observe whether the system has poor heat dissipation or module overheating and overcurrent caused by mixing with difficult-to-compress gas. If there is an issue, replace the main control board.

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P9： DC fan module protection

Reason： Fan drive module abnormal

Solution：

1. Check whether the power supply is normal, the power supply phase voltage is 220-240V, and confirm that the power supply is normal；
2. Use a multimeter to measure the voltages of Vm-GND and Vcc-GND, whether they meet the following table, if not, replace the main control board, otherwise proceed to the next step；
3. Use a multimeter to measure the Vsp-GND voltage, 0V when the fan is stopped, and there is no voltage fluctuation when there is a demand when the fan is turned on, then replace the main control board；
4. Use a multimeter to measure FG-GND, the DC voltage fluctuates with the fan speed change, otherwise replace the motor

1	RED	Vm	DC380V
2	----	----	---
3	BLACK	GND	地
4	WHITE	Vcc	DC15V
5	YELLOW	Vsp	DC 0~6.5V
6	BLUE	FG	12个/转

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P10： Typhoon protection

Reason： After stopping the fan, check the fan speed ≥ 400 Rpm

Solution：

1. The fan rotates by external force. No need for special treatment

P11： T2 high temperature protection

Reason： Average T2 evaporator temperature ≥63℃ for 50s (check item 7)

Solution：

1. Check the indoor unit heat exchange for normal operation. Ensure that there is no poor return air or blockage, and that the evaporator is not dirty. If there is a return air problem, address it before proceeding to the next step.
2. Check the dial code of the indoor unit's capacity. Ensure that the unit with small capacity has not been dialed to a larger capacity. Correct the dial code, and proceed to the next step.
3. If all the above steps are normal, replace the main control board of the outdoor unit.

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P13： Abnormal current detection

Reason： 3-5 minutes after the compressor starts, the transformer detects abnormal current <1A

Solution：

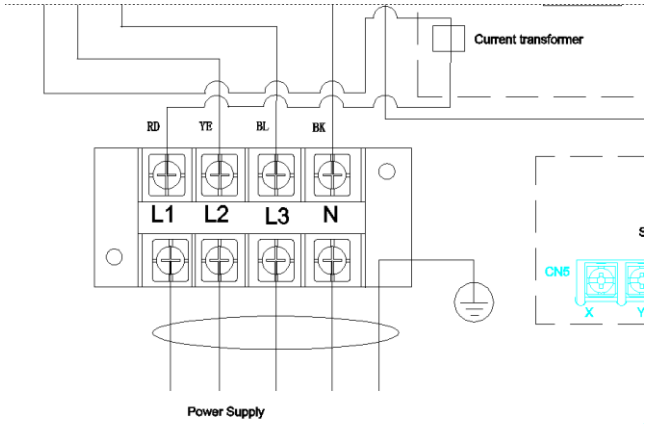
1. Check whether the power wire passes through the current transformer. Confirm that it is properly set up, and then proceed to the next step.
2. Use a clamp meter to measure the current. If the clamp meter current is normal, the transformer may be damaged. In this case, replace the main control board.

Pc： IPM Module high temperature protection

Reason： IPM module high temperature

Solution：

1. Refer to P6



Note: the power line where the current transformer is located passes through the current transformer.

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