

## Troubleshooting

If **THERMAV** operates not properly or it does not start operation, please check following list.

### CAUTION

Turn off the power before proceeding troubleshooting

### Troubleshooting for Problem while Operation

No	Problem	Reason	Solution
1	Heating or Cooling is not satisfactory.	<ul style="list-style-type: none"> <li>Setting target temperature is not proper.</li> </ul>	<ul style="list-style-type: none"> <li>Set target temperature correctly.</li> <li>Check if temperature is water-based or air-based. See 'Remote sensor active' and 'Temp. sensor selection' in Chapter6.</li> </ul>
		<ul style="list-style-type: none"> <li>Charged water is not enough.</li> </ul>	<ul style="list-style-type: none"> <li>Check pressure gage and charge more water until pressure gage is indication 2~2.5 Bar</li> </ul>
		<ul style="list-style-type: none"> <li>Water flow rate is low.</li> </ul>	<ul style="list-style-type: none"> <li>Check if strainer gathers too much partices. If so, strainer should be cleaned.</li> <li>Check if pressure gage indicates above 4 Bar</li> <li>Check if water pipe is getting closed due to stacked partices or lime.</li> </ul>
2	Although electric power supply is OK (remote controller displays information), the unit does not start working.	<ul style="list-style-type: none"> <li>Water inlet temperature is too high.</li> </ul>	<ul style="list-style-type: none"> <li>If water inlet temperature is above 57 °C, the unit does not operated for the sake of system protection</li> </ul>
		<ul style="list-style-type: none"> <li>Water inlet temperature is too low.</li> </ul>	<ul style="list-style-type: none"> <li>If water inlet temperature is below 5 °C in cooling operation, the unit does not operated for the sake of system protection. Wait while unit warms up the water inlet temperature.</li> <li>If water inlet temperature is below 15 °C in heating operation, the unit does not operated for the sake of system protection. Wait while unit warms up to 18 °C the water inlet temperature.</li> <li>If you are not using the back up heater accessory (HA**1M E1), increase the water temperature with the external heat source (heater, boiler). If the problem persists, contact your dealer.</li> <li>If you want to use the screed drying function, be sure to purchase and install back up hater accessories (HA**1M E1).</li> </ul>
3	Water pump noise.	<ul style="list-style-type: none"> <li>Air purging is not completely finished.</li> </ul>	<ul style="list-style-type: none"> <li>Open the cap of air purge and charge more water until pressure gage is indicating 2~2.5 Bar</li> <li>If water does not splash out when the tip(at the top of the hole) is pressed, then air purging is not completed yet. If well purged, the water will splash out like fountain.</li> </ul>
		<ul style="list-style-type: none"> <li>Water pressure is low.</li> </ul>	<ul style="list-style-type: none"> <li>Check if pressure gage indicates above 0.3 Bar.</li> <li>Check if the expansion tank and pressure gage operates well.</li> </ul>
4	Water is flood out through drain hose.	<ul style="list-style-type: none"> <li>Too much water is charged.</li> </ul>	<ul style="list-style-type: none"> <li>Flood out water by opening the switch of the safety valve until pressure gage is indicating 2~2.5 Bar.</li> </ul>
		<ul style="list-style-type: none"> <li>Expansion tank is damaged.</li> </ul>	<ul style="list-style-type: none"> <li>Replace the expansion tank</li> </ul>
5	DHW is not hot.	<ul style="list-style-type: none"> <li>Thermal protector of water tank heater is activated.</li> </ul>	<ul style="list-style-type: none"> <li>Open the side panel of the DHW tank and push the reset button of the thermal protector. (for more detail information, please refer to intallation manual of DHW tank.</li> </ul>
		<ul style="list-style-type: none"> <li>DHW Heating is disabled.</li> </ul>	<ul style="list-style-type: none"> <li>Select DHW Heating Operation and identify if icon is displayed on the remote conrtoller.</li> </ul>

## Troubleshooting for Error Code

Code No.	Description	Cause	Normal Condition
1	Problem in remote room air sensor	<ul style="list-style-type: none"> <li>• Incorrect connection between sensor and PCB(Heater).</li> <li>• PCB(Heater) fault</li> <li>• Sensor fault</li> </ul>	<ul style="list-style-type: none"> <li>• Resistance: 10 kΩ at 25 centigrade (unplugged) → for Remote room air sensor</li> <li>• Resistance: 5 kΩ at 25 centigrade (unplugged) → for all sensors EXCEPT remote room air sensor</li> <li>• Voltage: 2.5 V DC at 25 centigrade (plugged) (for all sensors)</li> <li>• Refer resistance-temperature table to check in different temperature</li> </ul>
2	Problem in refrigerant (inlet side) sensor		
6	Problem in refrigerant (outlet side) sensor		
8	Problem in water tank sensor		
13	Problem in solar pipe sensor		
16	Problems in sensors		
17	Problem in water-inlet sensor		
18	Problem in water-outlet sensor		
19	Problem in electric heater outlet sensor		
10	BLDC Water pump Lock	Restriction of BLDC Water pump	<ul style="list-style-type: none"> <li>• BLDC Water pump defect / assembly condition abnormal</li> <li>• Fan lock by foreign material</li> </ul>
3	Bad communication between remote controller and unit.	<ul style="list-style-type: none"> <li>• Incorrect connection between sensor and PCB(Heater)</li> <li>• PCB(Heater) fault</li> <li>• Sensor fault</li> </ul>	<ul style="list-style-type: none"> <li>• Wire connection between remote controller and Main PCB assembly(Heater) should be tight</li> <li>• Output voltage of PCB should be 12 V DC</li> </ul>
5	Bad communication between Main PCB assembly(Heater) and Main PCB assembly(Inverter) of the unit.	<ul style="list-style-type: none"> <li>• The connector for transmission is disconnected</li> <li>• The connecting wires are misconnected</li> <li>• The communication line is broken</li> <li>• Main PCB assembly(Inverter) is abnormal</li> <li>• Main PCB assembly(Heater) is abnormal</li> </ul>	<ul style="list-style-type: none"> <li>• Wire connection between remote control panel and Main PCB assembly(Heater) should be tight.</li> </ul>
53			
9	PCB program (EEPROM) fault	<ul style="list-style-type: none"> <li>• Electrical or mechanical damage a the EEPROM</li> </ul>	<ul style="list-style-type: none"> <li>• This error can not be permitted</li> </ul>
14	Problem in flow switch	<ul style="list-style-type: none"> <li>• Flow switch is open while internal water pump is working</li> <li>• Flow switch is closed while internal water pump is not working</li> <li>• Flow switch is open while DIP switch No. 5 of Main PCB assembly(Heater) is set as on</li> </ul>	<ul style="list-style-type: none"> <li>• Flow switch should be closed while internal water pump is working or DIP switch No. 5 of Main PCB assembly(Heater) is set as on</li> <li>• Flow switch should be open while internal water pump is not working</li> </ul>
15	Water pipe overheated	<ul style="list-style-type: none"> <li>• Abnormal operation of electric heater</li> <li>• Leaving water temperature is above 72 °C.</li> </ul>	<ul style="list-style-type: none"> <li>• If there is no problem in electric heater control, possible maximum leaving water temperature is 72 °C</li> </ul>
20	Thermal fuse is damaged	<ul style="list-style-type: none"> <li>• Thermal fuse is cut off by abnormal overheating of internal electric heater</li> <li>• Mechanical fault at thermal fuse</li> <li>• Wire is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• This error will not be happened if temperature of electric heater tank is below 80 °C</li> </ul>

Display code	Title	Cause of error	Check point & Normal condition
21	DC PEAK (IPM Fault)	<ul style="list-style-type: none"> <li>• Instant over current</li> <li>• Over Rated current</li> <li>• Poor insulation of IPM</li> </ul>	<ul style="list-style-type: none"> <li>• An instant over current in the U,V,W phase <ul style="list-style-type: none"> <li>- Comp lock</li> <li>- The abnormal connection of U,V,W</li> </ul> </li> <li>• Over load condition <ul style="list-style-type: none"> <li>- Overcharging of refrigerant Pipe length. Outdoor Fan is stop</li> </ul> </li> <li>• Poor insulation of compressor</li> </ul>
22	Max. C/T	Input Over Current	<ol style="list-style-type: none"> <li>1. Malfunction of Compressor</li> <li>2. Blocking of Pipe</li> <li>3. Low Voltage Input</li> <li>4. Refrigerant, Pipe length, Blocked...</li> </ol>
23	DC Link High / Low Volt	<ul style="list-style-type: none"> <li>• DC Link Voltage is above 420 V DC</li> <li>• DC Link Voltage is below 140 V DC</li> </ul>	<ul style="list-style-type: none"> <li>• Check CN_(L), CN_(N) Connection</li> <li>• Check Input Voltage</li> <li>• Check PCB DC Link voltage sensor parts</li> </ul>
24	Low/High Pressure Switch Perception Error	<ul style="list-style-type: none"> <li>• Low pressure is below 0.2 kgf/cm<sup>2</sup>.</li> <li>• High pressure is above 42~44 kgf/cm<sup>2</sup>.</li> <li>• Pressure switch is self-defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the low/high pressure</li> <li>• Check the connection of harness</li> </ul>
26	DC Compressor Position	<ul style="list-style-type: none"> <li>• Compressor Starting fail error</li> </ul>	<ul style="list-style-type: none"> <li>• Check the connection of comp wire "U,V,W"</li> <li>• Malfunction of compressor</li> <li>• Check the component of "IPM", detection parts.</li> </ul>
27	AC Input Instant over Current Error	PCB(Inverter) input current is over 100 A(peak) for 2 us	<ol style="list-style-type: none"> <li>1. Overload operation (Pipe clogging/Covering/EEV defect/Ref. overcharge)</li> <li>2. Compressor damage (Insulation damage/Motor damage)</li> <li>3. Input voltage abnormal (L,N)</li> <li>4. Power line assemble condition abnormal</li> <li>5. PCB assembly 1 Damage (input current sensing part)</li> </ol>
29	Inverter compressor over current	(HM**1M U*3) Inverter Compressor input current is 35 Apk. (HM**3M U*3) Inverter Compressor input current is 35 Apk.	<ol style="list-style-type: none"> <li>1. Overload operation (Pipe clogging/Covering/EEV defect/Ref. overcharge)</li> <li>2. Compressor damage(Insulation damage/Motor damage)</li> <li>3. Input voltage low</li> <li>4. ODU PCB assembly 1 damage</li> </ol>
32	High temperature in Discharge pipe of the inverter compressor	<ul style="list-style-type: none"> <li>• Overload operation (Outdoor fan constraint, screened, blocked)</li> <li>• Refrigerant leakage (insufficient)</li> <li>• Poor INV Comp Discharge sensor</li> <li>• LEV connector displaced / poor LEV assembly</li> </ul>	<ul style="list-style-type: none"> <li>• Check outdoor fan constraint/ screened/ flow structure</li> <li>• Check refrigerant leakage</li> <li>• Check if the sensor is normal</li> <li>• Check the status of EEV assembly</li> </ul>
35	Low pressure Error	Excessive decrease of low pressure	<ul style="list-style-type: none"> <li>• Defective low pressure sensor</li> <li>• Defective unit fan</li> <li>• Refrigerant shortage/leakage</li> <li>• Deformation because of damage of refrigerant pipe</li> <li>• Defective unit EEV</li> <li>• Covering / clogging (unit covering during the cooling mode / unit filter clogging during heating mode)</li> <li>• SVC valve clogging</li> <li>• Defective unit PCB(Inverter)</li> <li>• Defective unit pipe sensor</li> </ul>

Display code	Title	Cause of error	Check point & Normal condition
41	Problem in D-pipe temperature sensor	<ul style="list-style-type: none"> <li>• Open / Short</li> <li>• Soldered poorly</li> <li>• Internal circuit error</li> </ul>	<ol style="list-style-type: none"> <li>1. Bad connection of thermistor connector</li> <li>2. Defect of thermistor connector (Open/Short)</li> <li>3. Defect of outdoor PCB(Inverter)</li> </ol>
43	Problem in high pressure sensor	Abnormal value of sensor (Open/Short)	<ul style="list-style-type: none"> <li>• Bad connection of connector PCB(Inverter)</li> <li>• Bad connection high pressure connector</li> <li>• Defect of high pressure connector (Open/Short)</li> <li>• Defect of connector PCB(Inverter) (Open/Short)</li> <li>• Defect of PCB(Inverter)</li> </ul>
44	Problem in outdoor air temperature sensor	<ul style="list-style-type: none"> <li>• Open / Short</li> <li>• Soldered poorly</li> <li>• Internal circuit error</li> </ul>	<ol style="list-style-type: none"> <li>1. Bad connection of thermistor connector</li> <li>2. Defect of thermistor connector (Open/Short)</li> <li>3. Defect of outdoor PCB(Inverter)</li> </ol>
45	Problem in Cond. middle pipe temperature sensor	<ul style="list-style-type: none"> <li>• Open / Short</li> <li>• Soldered poorly</li> <li>• Internal circuit error</li> </ul>	<ol style="list-style-type: none"> <li>1. Bad connection of thermistor connector</li> <li>2. Defect of thermistor connector (Open/Short)</li> <li>3. Defect of outdoor PCB(Inverter)</li> </ol>
46	Problem in suction pipe temperature sensor	<ul style="list-style-type: none"> <li>• Open / Short</li> <li>• Soldered poorly</li> <li>• Internal circuit error</li> </ul>	<ol style="list-style-type: none"> <li>1. Bad connection of thermistor connector</li> <li>2. Defect of thermistor connector (Open/Short)</li> <li>3. Defect of outdoor PCB(Inverter)</li> </ol>
52	PCB Communication Error	Checking the communication state between Main PCB and Inverter PCB	<ul style="list-style-type: none"> <li>• Generation of noise source interfering with communication</li> </ul>
54	Open and Reverse Phase Error	Prevention of phase unbalance and prevention of reverse rotation of constant-rate compressor	Main power wiring fault
60	PCB(Inverter) & Main EEPROM check sum error	EEPROM Access error and Check SUM error	<ol style="list-style-type: none"> <li>1. EEPROM contact defect/wrong insertion</li> <li>2. Different EEPROM Version</li> <li>3. ODU Inverter &amp; Main PCB assembly 1 damage</li> </ol>
61	High temperature in Cond. Pipe	<ul style="list-style-type: none"> <li>• Overload operation (Outdoor fan constraint, screened, blocked)</li> <li>• Unit heat exchanger contaminated</li> <li>• EEV connector displaced / poor EEV assembly</li> <li>• Poor Cond. Pipe sensor assembly / burned</li> </ul>	<ul style="list-style-type: none"> <li>• Check outdoor fan constraint / screened / flow structure</li> <li>• Check if refrigerant overcharged</li> <li>• Check the status of EEV assembly</li> <li>• Check the status of sensor assembly / burn</li> </ul>
62	Heat sink Temp, High error	Heatsink temperature is greater than 110 °C.	<ol style="list-style-type: none"> <li>1. Part no. : EBR37798101~09 <ul style="list-style-type: none"> <li>- Check the heatsink sensor: 10 kΩ / at 25 °C(Unplugged)</li> <li>- Check the outdoor fan is driving rightly</li> </ul> </li> <li>2. Part no. : EBR37798112~21 <ul style="list-style-type: none"> <li>- Check the soldered condition in the 22,23 pin of IPM, PFCM</li> <li>- Check the screw torque of IPM, PFCM</li> <li>- Check the spreadable condition of thermal grease on IPM, PFCM</li> <li>- Check the outdoor fan is driving rightly</li> </ul> </li> </ol>
65	Problem in Heatsink Temperature sensor	Abnormal value of sensor (Open/Short)	<ul style="list-style-type: none"> <li>• Check if there is defect of thermistor connector (Open/Short)</li> <li>• Check defect of outdoor PCB(Inverter)</li> </ul>

Display code	Title	Cause of error	Check point & Normal condition
67	Fan lock error	Fan RPM is less than 10 for 5 seconds from start-up operation. Fan RPM is less than 40 in operation except for start-up operation	<ol style="list-style-type: none"> <li>1. Fan motor damage</li> <li>2. Assembly condition abnormal</li> <li>3. Jammed fan by surroundings</li> </ol>
114	Problem in Vapor injection inlet temperature sensor	<ul style="list-style-type: none"> <li>• Open (Below -48.7 °C)/ Short(Over 96.2 °C)</li> <li>• Soldered poorly</li> <li>• Internal circuit error</li> </ul>	<ol style="list-style-type: none"> <li>1. Bad connection of thermistor connector</li> <li>2. Defect of thermistor connector (Open/Short)</li> <li>3. Defect of outdoor PCB(Outdoor)</li> </ol>
115	Problem in Vapor injection outlet temperature sensor	<ul style="list-style-type: none"> <li>• Open (Below -48.7 °C)/ Short(Over 96.2 °C)</li> <li>• Soldered poorly</li> <li>• Internal circuit error</li> </ul>	<ol style="list-style-type: none"> <li>1. Bad connection of thermistor connector</li> <li>2. Defect of thermistor connector (Open/Short)</li> <li>3. Defect of outdoor PCB(Outdoor)</li> </ol>





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