Honeywell

Mini-Split Air Conditioner
Single Zone
Error Code Diagnostic Guide

HWAC-1217S

HWAC-1817S

HWAC-2417S

Professional Installation Required!
Please read and retain these troubleshooting instructions.

ERROR CODES – TABLE OF CONTENTS

This error code diagnostic guide should be used by a licensed professional to diagnose and fix any error codes that may appear on the unit during its lifetime.

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TERMS GUIDE/TABLE OUTLINE

Cause of Error	**Cause:** Explains the most common error cause. **Inspection path:** The order of troubleshooting.
Tools Required	Tools that should be utilized to fix/maintenance the error.
Possible Broken Part	Any possibly broken part related to the error that may need to be replaced.
Troubleshooting Procedures	All the troubleshooting procedures are prepared from simple to complex, from surface to internal, and from test to replacement. These procedures cover the most common causes for an error code to occur.
Key Details	Often overlooked key details for licensed professional to consider.

E1 – INTERNAL TEMPERATURE SENSOR ERROR

Cause of Error	**Cause:** The unit detects a short circuit or open circuit of the indoor temperature sensor during the inspection of main control panel in the indoor unit, indicated by "internal temperature sensor error". **Inspection path:** Sensor → Sensor wire → Connectors → Main indoor unit control panel
Tools Required	Multimeter, 15KΩ standard sensor (25℃)
Possible Broken Part	Internal temperature sensor, main internal control panel
Troubleshooting Procedures	1. Check if there's resistance problem, short circuit or open circuit in the sensor; the resistance value should be within a reasonable range (15KΩ under the temperature of 25℃) 2. Check if the sensor wire is broken. 3. Check if the terminal connectors are well fixed; check if the weld between the terminal and the main control panel is loose and pull the terminal slightly for inspection if necessary. 4. Check if the sensor is damp/wet. 5. If no standard sensor is available, replace the internal temperature sensor, and then check if the error persists; if yes, check the main internal control panel and replace it.
Key Details	You can switch the unit to "Fan" mode and judge the accuracy of the sensor though the temperature displayed on the screen. **DO NOT USE A SENSOR WITH A VALUE LOWER OR HIGHER THAN 15KΩ**

E2 – EXTERNAL COIL SENSOR ERROR

Cause of Error	**Cause:** The unit detects a short circuit or open circuit of the outdoor unit coil sensor during the inspection of the outdoor unit control panel, indicated by "external coil sensor error". **Inspection path:** Sensor → Sensor wire → Connectors → Main outdoor unit control panel
Tools Required	Multimeter, 20KΩ standard sensor (25℃)
Possible Broken Part	External coil sensor, outdoor unit control panel
Troubleshooting Procedures	1. Check if there's resistance problem, short circuit or open circuit in the sensor; the resistance value should be within a reasonable range (15KΩ under the temperature of 25℃) 2. Check if the sensor wire is broken. 3. Check if the terminal connectors are well fixed; check if the weld between the terminal and the main control panel is loose and pull the terminal slightly for inspection if necessary. 4. Check if the sensor is damp/wet. 5. If no standard sensor is available, replace the internal temperature sensor, and then check if the error persists; if yes, check the main internal control panel and replace it.
Key Details	**DO NOT USE A SENSOR WITH A VALUE LOWER OR HIGHER THAN 20KΩ**

E3 – INTERNAL COIL SENSOR ERROR

Cause of Error	**Cause:** The detection of short circuit or open circuit of internal coil sensor during the inspection of main internal control panel, indicated by "internal coil sensor error". **Inspection path:** Sensor → Sensor wire → Connectors → Main internal control panel
Tools Required	Multimeter, 20KΩ standard sensor (25℃)
Possible Broken Part	External coil sensor, outdoor unit control panel
Troubleshooting Procedures	1. Check if there's resistance problem, short circuit or open circuit in the sensor; the resistance value should be within a reasonable range (15KΩ under the temperature of 25℃) 2. Check if the sensor wire is broken. 3. Check if the terminal connectors are well fixed; check if the weld between the terminal and the main control panel is loose and pull the terminal slightly for inspection if necessary. 4. Check if the sensor is damp/wet. 5. If no standard sensor is available, replace the internal temperature sensor, and then check if the error persists; if yes, check the main internal control panel and replace it.
Key Details	**DO NOT USE A SENSOR WITH A VALUE LOWER OR HIGHER THAN 20KΩ**

E4 – INTERNAL FAN ERROR (INDOOR PG MOTOR)

Cause of Error	**Cause:** The PG motor is equipped with a speed feedback signal line. When the feedback signal is not received by the control panel, it has no way to recognize the fan moving. This will be indicated as "Internal fan error".
Tools Required	Multimeter, A PG motor
Possible Broken Part	Mechanical error, PG motor, control panel
Troubleshooting Procedures	1. Check if the fan can work for 1 minute by itself before the error occurs. If yes, there is no mechanical error. 2. Disconnect the power supply and move the fan blade by hand to see if there's any resistance. 3. Reconnect the drive wire and speed feedback wire to exclude any fan error due to connector loosening. 4. Check if the plug-in terminal of speed feedback on the control panel is loose and pull the terminal slightly for inspection if necessary. 5. Replace the motor in the faulted air conditioner with other PG motor (do not fix it with the fan for the time being), if the main control panel still indicates "internal fan error", then replace the main internal control panel; if the error disappears, replace the internal fan.

E5 – INTERNAL & EXTERNAL COMMUNICATION ERROR

Cause of Error	**Cause:** The frequency converter needs internal and external communication. When the communication cannot be reached, the internal and external units will indicate “internal and external communication error”. Only “main internal control panel, connecting cable and outdoor unit control panel” are related to communication; but sometimes the communication error will be indicated when the external unit has no power and the internal unit cannot connect with the external unit due to other errors, then such situation should be distinguished from “pure communication error” and treated in a different way. **Inspection paths:** 1. Unit powers on and works: Are the internal unit and external unit matched? → Is the phase sequence of connecting wires of internal and external units correct? 2. Unit does not power on: Can AC 220V be delivered to the terminal block of the external unit? → Can the bridge rectifier and module panel generate DC 310V? → Can the outdoor unit control panel generate a low voltage power supply of DC 5V? → Does the main external control panel show the status of periodical reset?
Tools Required	Multimeter, main internal control panel in normal condition
Possible Broken Part	Connecting wire phase sequence and contact, main internal control panel, outdoor unit control panel, module panel
Troubleshooting Procedures	1. Check if the IDU and the ODU are connected properly. 2. Check the outdoor unit control panel, turn on the unit, three lights should be lit up, they will then turn off and the relay will pull in. If this does not occur, there is a power supply problem. 3. Connect the black signal line S to terminal N of ODU. Turn on the A/C, if "E5" is still reported, the outdoor unit control panel needs to be replaced.

F0 – EXTERNAL DC FAN ERROR

Cause of Error	**Cause:** The main control panel will indicate "external DC fan error" when it detects an imbalanced current on the three lead wires of the drive motor. **Inspection path:** Is the DC fan stuck due to foreign material? → Motor terminal connectors → Outdoor unit control panel → Motor
Tools Required	Outdoor unit control panel in normal condition
Possible Broken Part	Mechanical jam of external fan, outdoor unit control panel, external DC motor
Troubleshooting Procedures	1. Exclude the possibility of a mechanical jam in the fan motors. 2. Observe if the terminal of the fan is not connected firmly or the order of the lead wires is correct. If the external fan of the newly installed unit rotates reversely, first observe if the color order of the three lead wires is correct or change the order of any two of the three lead wires of the motor to see if the fan can rotate in the correct direction.
Key Details	The fan blades may shake for 3-5 seconds and then rotate slowly when powered on, this is normal.

F1 – MODULE PROTECTION ERROR

Cause of Error	**Cause:** The power module is the part to directly drive the compressor to work. It can protect the machine in time when overcurrent, overvoltage or overheat occurs and stops the compressor from working. It will, at the same time, send a "shutdown request" to the module panel. The error triggered by the "shutdown request" is called "module protection error". **Inspection path:** Supply voltage → Compressor wire, reactor wire → System blocked → Module panel damaged → Outdoor unit control panel destroyed → Compressor destroyed
Tools Required	Multimeter, pressure gauge, megameter, module panel in normal condition
Possible Broken Part	Supply voltage, compressor wire, reactor, system pressure, module panel, outdoor unit control panel, compressor
Troubleshooting Procedures	1. Check if the supply voltage unstable or volatile. High system pressure will cause rotation problems to the compressor. 2. Is the module panel fixed to the radiator firmly? Is the internal and external heat exchanger dirty? If "module protection error" is indicated immediately after starting up, observe if there is any component destroyed by a strike arc near the module panel; use the multimeter to test if the resistances between any two compressor wires are the same. Use the megameter to measure if the resistance insulation of the three compressor wires against the ground wire is good (normally at MΩ level). 3. Test if the 15V and 5V (3.3V) power supply on the module panel is stable and exclude the module panel error caused by power supply of the outdoor unit control panel. 4. Replace with the module panel. If the test is normal after changing the module panel, then the original module panel is destroyed. 5. If there is only electromagnetic sound and the compressor does not work; or an irregular sound appears after the compressor works for a while and then it shuts down; the compressor may be blocked or destroyed. Consider replacing the compressor.

F2 – PFC PROTECTION ERROR

Cause of Error	**Cause:** PFC board is a component of the inverter air conditioner for power factor correction and voltage boosting. When the PFC board cannot perform power calibration as normal because of overcurrent and overvoltage, it will indicate "PFC protection error" and its function may also be integrated with the module panel or main control panel. **Inspection path:** Supply voltage → AC and DC power path → PFC board data wire → PFC board → Main control panel
Tools Required	Multimeter, PFC board in normal condition
Possible Broken Part	Supply voltage, reactor, PFC board, module panel, outdoor unit control panel
Troubleshooting Procedures	1. Check if the supply voltage is unstable or if the voltage is too low (below AC 135V). 2. Check if the reactor itself is destroyed and the reactor connecting wire is in poor condition. 3. If "PFC protection error" happens immediately after startup, observe if there is any component destroyed by a strike arc near the module panel. 4. Test if the 15V and 5V (3.3V) power supply on the PFC board is stable. 5. Replace with the PFC board. If the unit is normal after changing the PFC board, then the original PFC board is destroyed. 6. If PFC protection error appears and there is no problem with the supply voltage, reactor connection or the reactor, replace the controller of the external unit.

F3 – COMPRESSOR OUT-OF-STEP ERROR

Cause of Error	**Cause:** The module panel will constantly test the current of lead wires of the compressor and calculate the position of the rotator of the compressor. When the compressor deviates far from the normal operating status , it will indicate "compressor out-of-step error" because the current of the compressor wires is too high or it cannot detect the position of the rotator. This error always follows "module protection error". **Inspection path:** supply voltage → Compressor wire, reactor wire → System blocked → Module panel damaged → Outdoor unit control panel destroyed → Compressor destroyed
Tools Required	Multimeter, pressure gauge, module panel in normal condition
Possible Broken Part	Supply voltage, compressor wire, reactor, system pressure, module panel, outdoor unit control panel, compressor
Troubleshooting Procedures	1. Check if the supply voltage unstable or volatile. High system pressure will cause rotation problems to the compressor. 2. Is the module panel fixed to the radiator firmly? Will it cause pool cooling? Is the internal and external heat exchanger dirty? If "compressor out-of-step error" is indicated immediately after starting up, observe if there is any component destroyed by a strike arc near the module panel; use the multimeter to test if the resistances between any two compressor wires are the same. Use the megameter to measure if the resistance insulation of the three compressor wires against the ground wire is good (normally at MΩ level). 3. Test if the power supply on the module panel is stable and exclude the module panel error caused by power supply of the outdoor unit control panel. 4. Change the module panel, if it is normal, then the original module panel is destroyed. 5. If there is only electromagnetic sound and the compressor does not work; or an irregular sound appears after the compressor works for a while and then it shuts down; the compressor may be blocked or destroyed. Consider replacing the compressor.

F4 – EXHAUST SENSOR ERROR

Cause of Error	**Cause:** The outdoor unit control panel will indicate "exhaust sensor error" and send it to the main internal control panel when it detects short circuit or open circuit of the exhaust sensor. **Inspection path:** Exhaust sensor → Sensor wire → Connectors → Main external control panel
Tools Required	Multimeter, 50KΩ standard exhaust sensor
Possible Broken Part	Exhaust sensor, outdoor unit control panel
Troubleshooting Procedures	1. Check if there is any evident resistance problem in the sensor. if in short circuit or open circuit, the resistance should maintain in a reasonable range (about 50KΩ when the compressor is not working and between 3 KΩ and 30 KΩ after the compressor works for a while, the corresponding exhaust temperature should be 100℃-38℃). 2. Check if the sensor wire or the sensor connecting wire is damaged. 3. Check if the connecting terminal is connected firmly, the weld between the terminal and the main control panel is loose; pull the terminal slightly for inspection if necessary. 4. Check if the sensor is damp/wet. The coil sensor is quite easy to be damp/wet in case the lead wire of coil sensor is above the copper pipe. 5. If there is no standard sensor at hand, exchange the exhaust sensor with the one beside it to see if the error changes. If yes, there is something wrong with the sensor and it should be replaced; if it still indicates "external coil sensor error", replace the outdoor unit control panel.
Key Details	**DO NOT USE A SENSOR WITH A VALUE LOWER OR HIGHER THAN 50KΩ**

F5 – COMPRESSOR TOP HEAD SENSOR ERROR

Cause of Error	**Cause:** The compressor top head sensor is a compressor top head temperature protection switch most of the time. It keeps closed (short circuit) when the compressor temperature is normal and switches off (open circuit) when the temperature is too high. The outdoor unit control panel will indicate "compressor top head sensor error" when it senses disconnection of the compressor top head protection switch. **Inspection path:** Compressor top head sensor (temperature protection switch) → Sensor wire → Connectors → Outdoor unit control panel
Tools Required	Pressure gauge, multimeter
Possible Broken Part	System pressure, liquid deficiency, compressor top head sensor (temperature protection switch), outdoor unit control panel
Troubleshooting Procedures	1. First check if the compressor top head temperature is too high (above 110℃) and causes the error. Reasons why the compressor top head temperature is too high may be: the system is low in coolant and the compressor idles; the system is blocked, and the pressure of the compressor is too high. 2. The temperature protection switch is closed normally. Test if the terminals of the sensor are in the short-circuit condition with the multimeter. In the case of open circuit, then there is something wrong with the sensor or lead wires. 3. Check if the sensor wire or the sensor connecting wire is damaged. 4. Check if the connecting terminal is connected firmly. The weld between the terminal and the main control panel is loose, pull the terminal slightly for inspection if necessary. 5. If the compressor top head sensor error disappears after start up, then replace the sensor; if the error still occurs, it's probably the main control panel problem, replace the outdoor unit control panel.

F6 – EXTERNAL TEMPERATURE SENSOR ERROR

Cause of Error	**Cause:** The detection of short circuit or open circuit of external termperature sensor during the inspection of outdoor unit control panel, indicated by "external termperature sensor error". **Inspection path:** Sensor → Sensor wire → Connectors → Outdoor unit control panel
Tools Required	Multimeter, 15KΩ standard sensor
Possible Broken Part	External temperature sensor, outdoor unit control panel.
Troubleshooting Procedures	1. Check if there's resistance problem, short circuit or open circuit in the sensor; the resistance value should be within a reasonable range (15KΩ under the temperature of 25℃). 2. Check if the sensor wire is broken. 3. Check if the terminal connectors are well fixed; check if the weld between the terminal and the main control panel is loose and pull the terminal slightly for inspection if necessary. 4. Check if the sensor is damp/wet. 5. Replace the external temperature sensor and check if the error still exists; if the error disappears, replace the sensor; if the error still exists, it's possible that the main control panel is faulted, change the outdoor unit control panel.
Key Details	**DO NOT USE A SENSOR WITH A VALUE LOWER OR HIGHER THAN 15KΩ**

F7 – OVP OR UVP ERROR

Cause of Error	**Cause:** When the supply voltage is lower than 135V or higher than 275V, the inspection, circuit would detect over or under voltage protection signal and send it to the outdoor unit control panel and the outdoor unit control panel would initiate an "OVP or UVP error" and indicate it through the internal motor. **Inspection path**: Supply voltage → Internal direct current voltage → Reactor wiring → Module panel → Outdoor unit control panel
Tools Required	Multimeter
Possible Broken Part	Supply voltage, reactor, module panel and outdoor unit control panel.
Troubleshooting Procedures	1. First, check the supply environment of the user, especially should check when the compressor of the air conditioner has been running for a while. The normal supply voltage should be between 198V and 242V and the minimum work assurance range of the air conditioner should be within 165V and 265V. 2. For the external machines with PFC panels (without separate rectifier bridges), the operator should ensure if the PFC function is on with the direct current voltage grade of the multimeter. When the compressor is running, voltage between P and N ends detected on the test module panel or outdoor unit control panel should be over 200V and if the voltage is below that range, it is possible that the reactor is faulted, or the PFC is broken. 3. The operator should check and confirm the voltage inspection circuit is on which control panel first and then replace it. The regular replacement: for the external machine of single panel single chip, replace the external controller directly; and for the machine of two panels, replace the module panel.

F8 – OUTDOOR UNIT CONTROL PANEL AND MODULE PANEL COMMUNICATION ERROR

Cause of Error	**Cause:** Only the models with the module panels separated with the outdoor unit control panels may have this error. When the machine is running normally, the module panel and the outdoor unit control panel would coordinate with each other on the communication to work and when the communication is off, the outdoor unit control panel would raise the alarm of "main control panel and module panel communication error". Only "module panel, data line and main external control panel" are related to such communication. **Inspection path:** data line connection → module panel power → module panel → outdoor unit control panel
Tools Required	Multimeter and regular module panel
Possible Broken Part	Module panel and main control data line, module panel and main external control panel.
Troubleshooting Procedures	1. First check if the communication connection line (mostly 4 chips) between the module panel and main control panel gets loose and if the connection is faulted. 2. Measure and check with a multimeter if the power from the main external control panel is normal and especially note that if the 5V (3.3V) power is led to the module panel. Eliminate the possibility that it's not running normally because there is no 5V (3.3V) power at the module panel. 3. The maintenance personnel should replace the module panel of the faulted air conditioner with a regular module panel taken with him and if the communication error disappears when the external machine is switched on, it means the original module panel is faulted and if the error is still there, maybe the outdoor unit control panel should be replaced.

F9 – OUTDOOR EE ERROR

Cause of Error	**Cause:** Parameters are stored in an “EE” chip for the unit to run properly. The motor on the outdoor unit control panel can only work after reading the data stored in EE and if not read, the alarm "outdoor EE error" would be reported and raised in the internal machine. Reasons for data not being read are as follows: 1. Wrong EE chip data format; 2. EE chip is broken; 3. Bad contact of EE or fault of EE reading circuit; 4. Backwards installation of EE chip. **Inspection path:** outdoor unit control panel.
Tools Required	None
Possible Broken Part	Bad contact of EE, outdoor unit control panel.
Troubleshooting Procedures	1. Replace the outdoor unit control panel directly.

FA – RECIRCULATED SENSOR ERROR

Cause of Error	**Cause:** When the main control panel detects an open circuit or short circuit of the recirculated sensor, it would raise an alarm of "recirculated sensor error" and send it to the main internal control panel to indicate it. **Inspection path:** four-way valve → recirculated sensor → sensor wire → connectors → outdoor unit control panel
Tools Required	Multimeter, pressure meter, normal 20KΩ recirculated sensor
Possible Broken Part	Four-way valve, recirculated sensor, outdoor unit control panel.
Troubleshooting Procedures	1. If the error appears in heating mode but not in cooling mode, first check if the four-way valve failed to change the position or there is a back flow, which can be estimated by measuring the high and low pressures with the pressure meter. During heating, check if the four-way valve terminal can switch a circuit of 220V, if yes, then the four-way valve is faulted; and if there is no circuit over 220V in heating, it means the outdoor unit control valve is faulted. 2. If it is not the four-way valve that is faulted, check on the resistance value and short circuit problems and the resistance value should be within a proper range (around 20KΩ at temperature of 25℃). 3. Check if the terminal connectors are well fixed; check if the weld between the terminal and the main control panel is loose and pull the terminal slightly for inspection if necessary. 4. Check if the sensor is damp/wet. 5. Replace the possibly faulted recirculated sensor with a normal one. If the error is still there, consider replacing the main external control panel.

FB – PROTECTION OF FREQUENCY CONVERSION

Cause of Error	**Cause:** In routine operation of the unit, there will be times where the unit will need to protect the compressor during defrost, overheating, or undercooling. Three indicator lights are used on the outdoor unit control panel to signify this protection is occurring. The unit will protect the compressor during defrosting, over current protection, cooling overload protection, indoor heating high temperature protection, and indoor cooling freezing protection.
Tools Required	Multimeter
Possible Broken Part	Regular protection, system blockage, power supply, resistance value of sensor drifts or is used wrong.
Troubleshooting Procedures	1. Defrosting: If the unit defrosts frequently, please note these possible causes: heat exchange of the external unit is faulted, if the fan revolving speed is low and if the resistance value of the coil sensor is wrong or the temperature is inaccurately measured, or it is damaged. 2. Over current protection: It is normal if such protection appears under a very high temperature cooling status but not under low temperature low load status. 3. Cooling overload protection: When the outdoor coil sensor senses the temperature is too high, as to provent the compressor from overload, it would possitively lower the frequency and it is normal for the protection under the high temperature cooling status. 4. Indoor high temperature heating protection: When the indoor coil sensor senses the temperature is too high, as to prevent the compressor from overload, it would positively lower the frequency and it is normal for the protection in a warm room. 5. Indoor cooling freezing protection: When the indoor coil sensor senses the temperature is too low, it would possitively lower the frequency and it is normal for the protection in a low temperature room.

ROYAL SOVEREIGN INTERNATIONAL, INC.
2 Volvo Dr., Rockleigh, NJ 07647 USA
TEL: +1 855-687-2223
Email: supportusa@honeywelldispensers.com

Honeywell