B0160 or B0162 the resistance increases and the voltage signal increases

Circuit Description

The ambient air temperature sensor provides the HVAC control module software with the temperature of the air outside the vehicle. That temperature can be displayed in the driver information center (DIC). A reference voltage is supplied to the sensor thermistor and the HVAC control module determines thevoltage drop across that device which is proportional to temperature. As the air temperature increases, the resistance decreases and the voltage signal decreases. As the air temperature decreases, the resistance increases and the voltage signal increases.

Conditions for Running the DTC

The ignition is turned ON.

Conditions for Setting the DTC

DTC B0160: The HVAC control module detects the ambient air temperature sensor signal circuit is less than 2 counts for more than 30 seconds.

DTC B0162: The HVAC control module detects the ambient air temperature sensor signal circuit is more than 253 counts for more than 30 seconds.

Action Taken When the DTC Sets

The driver information center will display 15°C (59°F) for outside air temperature.

DTC B0160: The system operates using a default value of 15°C.
DTC B0162: The system operates using a default value of 15°C.

Conditions for Clearing the DTC

- The DTC will become history if the HVAC control module no longer detects the condition that set the DTC.
- The history DTC will clear after 50 fault free ignition cycles.
- The DTC can be cleared with a scan tool.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

3. Tests for the proper operation of the circuit in the high voltage range.
4. Tests for the proper operation of the circuit in the low voltage range. If the fuse in the jumper opens when you perform this test, the signal circuit is shorted to voltage.

DTC B0160 or B0162

Step	Action	Value(s)	Yes	No
Schematic Reference: HVAC Schematics Connector End View Reference: HVAC Connector End Views				
1	Did you perform the HVAC Diagnostic System Check?	—	Go to Step 2	Go to Diagnostic System Check - HVAC Systems - Automatic
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the Outside Air Temp parameter in the Climate Control Panel Open/Short data list. Does the scan tool indicate that the Outside Air Temp parameter is within the specified range?	2–253 counts	Go to Testing for Intermittent and Poor Connections in Wiring Systems	Go to Step 3

Step	Action	Value(s)	Yes	No
3	1. Turn OFF the ignition. 2. Disconnect the ambient air temperature sensor. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Outside Air Temp parameter. Does the scan tool indicate that the Outside Air Temp parameter is greater than the specified value?	253 counts	Go to Step 4	Go to Step 5
4	1. Turn OFF the ignition. 2. Connect a 3 amp fused jumper wire between the signal circuit of the ambient air temperature sensor and the low reference circuit of the ambient air temperature sensor. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Outside Air Temp parameter. Does the scan tool indicate that the Outside Air Temp parameter is less than the specified value?	2 counts	Go to Step 9	Go to Step 6
5	Test the signal circuit of the ambient air temperature sensor for a short to ground. Refer to Circuit Testing on page 8-1184 and Wiring Repairs on page 8-1189 in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 10

Step	Action	Value(s)	Yes	No
6	Test the signal circuit of the ambient air temperature sensor for a short to voltage, a high resistance, or an open. Refer to Circuit Testing on page 8-1184 and Wiring Repairs on page 8-1189 in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 7
7	Test the low reference circuit of the ambient air temperature sensor for a high resistance or an open. Refer to Circuit Testing on page 8-1184 and Wiring Repairs on page 8-1189 in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 8
8	Test the signal circuits of the following components for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems: • Left sunload sensor • Right sunload sensor • Ambient light sensor • Inside air temperature sensor • Evaporator temperature sensor Did you find and correct the condition?	—	Go to Step 13	Go to Step 10
9	Inspect for poor connections at the harness connector of the ambient air temperature sensor. Refer to Testing for Intermittent and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 11

Step	Action	Value(s)	Yes	No
10	Inspect for poor connections at the harness connector of the HVAC control module. Refer to Testing for Intermittent and Poor Connections and Connector Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 12
11	Replace the ambient air temperature sensor. Refer to Ambient Air Temperature Sensor Replacement. Did you complete the replacement?	—	Go to Step 13	—
12	Replace the HVAC control module. Refer to HVAC Control Module Replacement Did you complete the replacement?	—	Go to Step 13	—
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	—	Go to Step 2	System OK