

# B0164 the resistance decreases and the voltage signal decreases

## Circuit Description

The inside air temperature sensor provides the HVAC control module with the temperature of the air drawn through an aspirator from the passenger compartment across a sensor. A reference voltage is supplied to the sensor thermistor and the HVAC control module determines the voltage 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

The HVAC control module detects the inside air temperature sensor signal circuit is less than 2 counts or greater than 253 counts for 30 seconds.

## Action Taken When the DTC Sets

- If the DTC sets due to the low condition, the HVAC control module will use ambient temperature value as default in-car value. If ambient sensor is also failed, system uses 25°C default.
- If the DTC sets due to the high condition, the HVAC control module will use ambient temperature value as default in-car value. If ambient sensor is also failed, system uses 25°C default.

## Conditions for Clearing the DTC

- The DTC will become history if the HVAC control module no longer detects a failure.
- The history DTC will clear after 50 fault free ignition cycles.

- The DTC can be cleared with a scan tool.

## Diagnostic Aids

If the condition is not present, refer to Testing for Intermittent and Poor Connections on page 8-1187 in Wiring Systems.

## 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 B0164

Step	Action	Values	Yes	No
<b>Schematic Reference: HVAC Schematics Connector End View</b> <b>Reference: HVAC Connector End Views</b>				
1	Did you perform the HVAC Diagnostic System Check?	—	Go to Step 2	Go to Diagnostic System Check -HVAC Systems -Automatic
2	<ol style="list-style-type: none"> <li>1. Install a scan tool.</li> <li>2. Turn ON the ignition, with the engine OFF.</li> <li>3. With a scan tool, observe the Inside Air Temp parameter in the Climate Control Panel, Open/Short Data list.</li> </ol> Does the scan tool indicate that the Inside Air Temp parameter is within the specified range?	2–253 counts	Go to Diagnostic Aids	Go to Step 3

Step	Action	Values	Yes	No
3	<ol style="list-style-type: none"> <li>1. Turn OFF the ignition.</li> <li>2. Disconnect the inside air temperature sensor.</li> <li>3. Turn ON the ignition, with the engine OFF.</li> <li>4. With a scan tool, observe the Inside Air Temp parameter.</li> </ol> Does the scan tool indicate that the Inside Air Temp parameter is greater than the specified value?	253 counts	Go to Step 4	Go to Step 5
4	<ol style="list-style-type: none"> <li>1. Turn OFF the ignition.</li> <li>2. Connect a 3-amp fused jumper wire between the signal circuit of the inside air temperature sensor and the low reference circuit of the inside air temperature sensor.</li> <li>3. Turn ON the ignition, with the engine OFF.</li> <li>4. With a scan tool, observe the Inside Air Temp parameter.</li> </ol> Does the scan tool indicate that the Inside 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 inside air temperature sensor for a short to ground. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 10
6	Test the signal circuit of the inside air temperature sensor for a short to voltage, a high resistance, or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 7

Step	Action	Values	Yes	No
7	Test the low reference circuit of the inside air temperature sensor for a high resistance or an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?	—	Go to Step 13	Go to Step 8
8	Test the following signal circuits for a short to voltage: <ul style="list-style-type: none"> <li>• Evaporator temperature sensor</li> <li>• Ambient air temperature sensor</li> <li>• Left sunload sensor</li> <li>• Right sunload sensor</li> <li>• Ambient light sensor</li> </ul> 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
9	Inspect for poor connections at the harness connector of the inside 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
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

Step	Action	Values	Yes	No
11	Replace the inside air temperature sensor. Refer to Inside 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