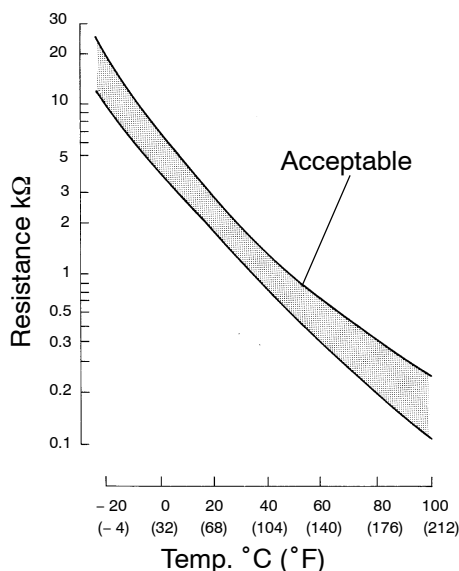


**DTC****P0110****Intake Air Temp. Circuit Malfunction****CIRCUIT DESCRIPTION**

(fig. 1)



FI4741

The intake air temp. sensor is built into the air flow meter and senses the intake air temperature.

A thermistor built in the sensor changes the resistance value according to the intake air temperature.

The lower the intake air temperature, the greater the thermistor resistance value, and the higher the intake air temperature, the lower the thermistor resistance value (See fig. 1).

The intake air temp. sensor is connected to the engine ECU (See below). The 5 V power source voltage in the engine ECU is applied to the intake air temp. sensor from the terminal THA via resistor R.

That is, the resistor R and the intake air temp. sensor are connected in series. When the resistance value of the intake air temp. sensor changes in accordance with changes in the intake air temperature, the potential at terminal THA also changes. Based on this signal, the engine ECU increases the fuel injection volume to improve driveability during cold engine operation.

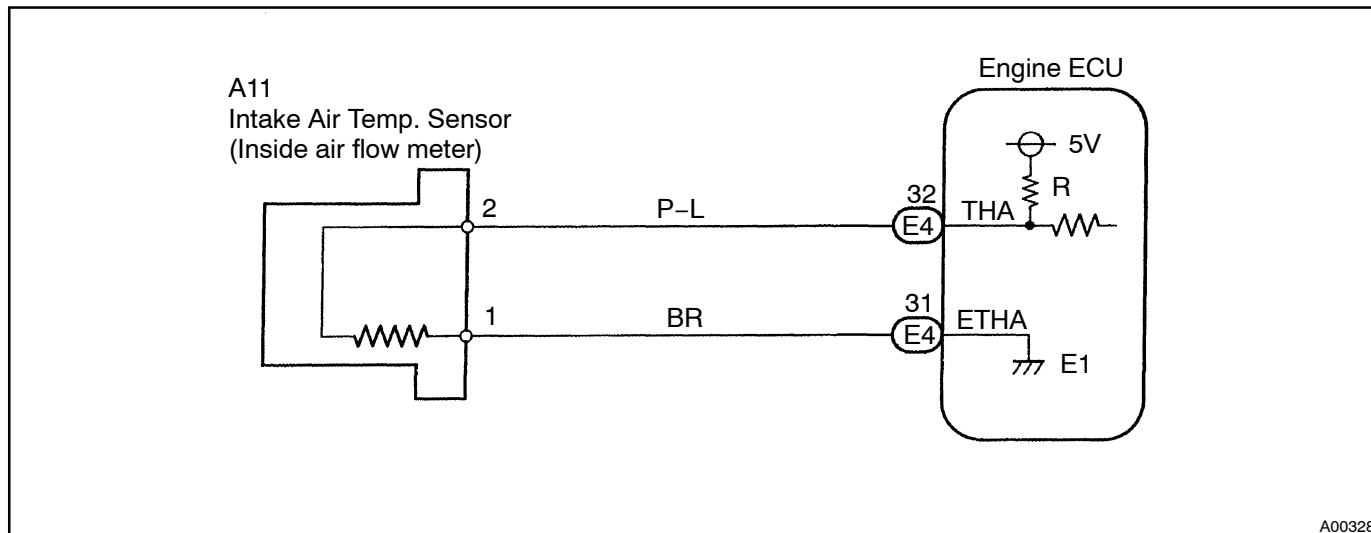
DTC No.	DTC Detecting Condition	Trouble Area
P0110	Open or short in intake air temp. sensor circuit	<ul style="list-style-type: none"> <li>• Open or short in intake air temp. sensor circuit</li> <li>• Intake air temp. sensor (inside air flow meter)</li> <li>• Engine ECU</li> </ul>

**HINT:**

After confirming DTC P0110, use the OBD scan tool or hand-held tester to confirm the intake air temperature from CURRENT DATA.

Temperature Displayed	Malfunction
-40°C (-40°F)	Open circuit
140°C (284°F) or more	Short circuit

## WIRING DIAGRAM



## INSPECTION PROCEDURE

### HINT:

Read freeze frame data using a OBD scan tool or hand-held tester. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

- |   |   |
|---|---|
| 1 | <b>Connect OBD scan tool or hand-held tester, and read value of intake air temperature.</b> |
|---|---|

### PREPARATION:

- Connect the OBD scan tool or hand-held tester to the DLC3.
- Turn the ignition switch ON and push the OBD scan tool or hand-held tester main switch ON.

### CHECK:

Read temperature value on the OBD scan tool or hand-held tester.

### OK:

**Same as actual intake air temperature**

### HINT:

- If there is open circuit, OBD scan tool or hand-held tester indicates  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ).
- If there is short circuit, OBD scan tool or hand-held tester indicates  $140^{\circ}\text{C}$  ( $284^{\circ}\text{F}$ ) or more.

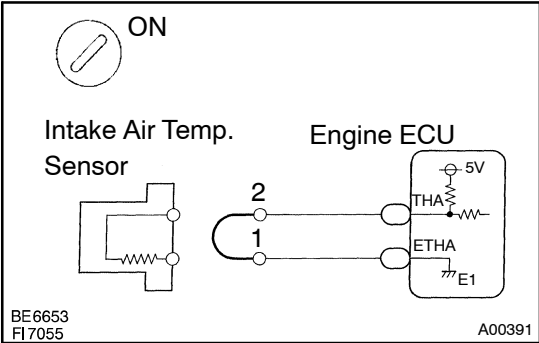
NG

$-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ )...Go to step 2  
 $140^{\circ}\text{C}$  ( $284^{\circ}\text{F}$ ) or more...Go to step 4.

OK

Check for Intermittent problems (See page DI-73).

2 Check for open in harness or engine ECU.



**PREPARATION:**

- (a) Disconnect the air flow meter connector.
- (b) Connect the sensor wire harness terminals together.
- (c) Turn the ignition switch ON.

**CHECK:**

Read temperature value on the OBD scan tool or hand-held tester.

**OK:**

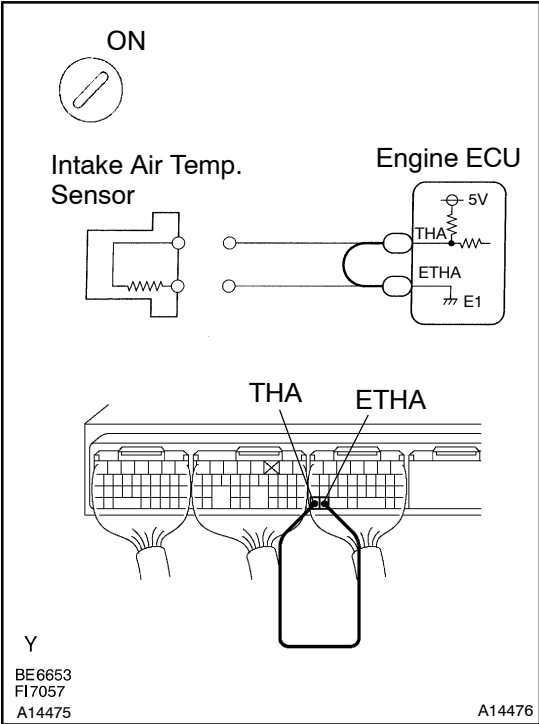
Temperature value: 140°C (284°F) or more

OK

Confirm good connection at sensor. If OK, replace air flow meter.

NG

3 Check for open in harness or engine ECU.



**PREPARATION:**

- (a) Remove the engine ECU hood and cover (See [page FI-74](#)).
- (b) Connect between terminals THA and ETHA of the engine ECU connector.

**HINT:**

Air flow meter connector is disconnected.

Before checking, do a visual and contact pressure check for the engine ECU connector (See [page N-30](#)).

**CHECK:**

Read temperature value on the OBD scan tool or hand-held tester.

**OK:**

Temperature value: 140°C (284°F) or more

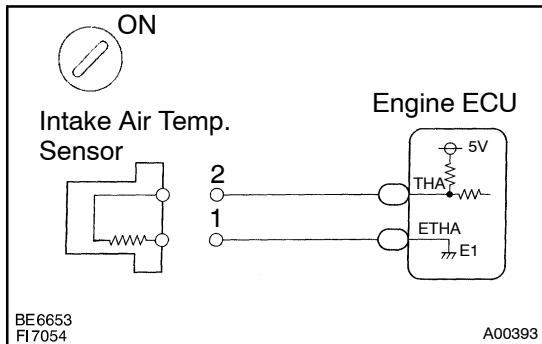
OK

Open in harness between terminals ETHA or THA, repair or replace harness.

NG

Confirm good connection at engine ECU.  
If OK, check and replace engine ECU.  
(See [page N-30](#))

#### 4 Check for short in harness and engine ECU.



##### PREPARATION:

- Disconnect the air flow meter connector.
- Turn the ignition switch ON.

##### CHECK:

Read temperature value on the hand-held tester.

##### OK:

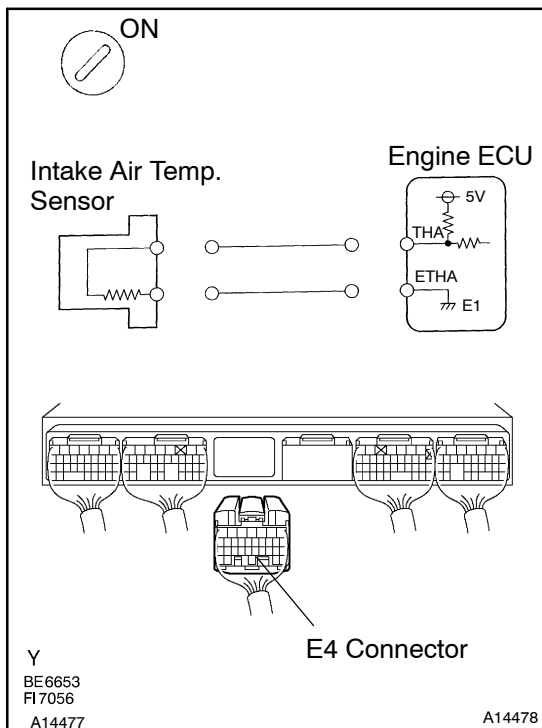
Temperature value:  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ )

OK

Replace air flow meter.

NG

#### 5 Check for short in harness or engine ECU.



##### PREPARATION:

- Remove the engine ECU hood and cover (See [page FI-74](#)).
- Disconnect the E4 connector of the engine ECU.

##### HINT:

Air flow meter connector is disconnected.

- Turn the ignition switch ON.

##### CHECK:

Read temperature value on the OBD scan tool or hand-held tester.

##### OK:

Temperature value:  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ )

OK

Repair or replace harness or connector.

NG

Check and replace engine ECU (See [page IN-30](#)).