# P0099: INTAKE AIR TEMPERATURE SENSOR 2 CIRCUIT INTERMITTENT

OVERVIEW

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|---|---|---|
| **Severity** | : | Medium |
| **DIY Difficulty Level** | : | Intermediate |
| **Repair Cost** | : | **$90-$1000** |
| **Can I Still Drive?** | : | **Yes** (Short-term only) |

## What Does The P0099 Code Mean?

A stored code P0099 means that the powertrain control module (PCM) has detected an intermittent input signal from the #2 intake air temperature (IAT) sensor circuit.

The PCM uses the IAT input signal and the mass airflow (MAF) sensor input signal to calculate fuel delivery and ignition timing strategy. Since maintaining a correct air/fuel ratio (typically 14:1) is critical to engine performance and fuel efficiency, the input of the IAT sensor is very important.

The IAT sensor can be threaded directly into the intake manifold but is more commonly inserted into the air inlet pipe or air cleaner box. Some manufacturers also integrate the IAT sensor into the MAF sensor housing.

At any rate, it must be positioned so that (with the engine running) ambient air, drawn into the intake manifold through the throttle body, can continuously and consistently flow across it.

The IAT sensor is usually a two-wire thermistor sensor. Sensor resistance varies according to the temperature of the air that flows across the cold wire element. Most OBD II equipped vehicles utilize a reference voltage (five-volts is normal) and a ground signal to complete the IAT sensor circuit.

The varying resistance levels in the IAT sensor element cause voltage fluctuations in the input

circuit. These fluctuations are interpreted by the PCM as changes in intake air temperature.

If the PCM detects a certain number of intermittent signals from the #2 IAT sensor, over a set period of time, a code P0099 will be stored and a malfunction indicator lamp may be illuminated.

## What Are The Symptoms Of The P0099 Code?

Symptoms of a P0099 code may include:

- Slightly diminished fuel efficiency
- Decreased engine performance (especially upon cold start)
- Hesitation or surge at idle or upon light acceleration
- Other drivability codes may be stored

## What Are The Potential Causes Of The P0099 Code?

Possible causes for this engine code include:

- Open or shorted #2 IAT sensor wiring and/or connectors
- Defective #2 IAT sensor
- Faulty MAF sensor
- Clogged air filter
- Broken intake air inlet pipe

## How Can You Fix The P0099 Code?

A good starting point is always to check for technical service bulletins (TSB) for your particular vehicle. Your issue may be a known issue with a known fix put out by the manufacturer and can save you time and money during diagnosis.

When faced with diagnosing a code P0099, I like to have a suitable diagnostic scanner, a digital volt/ohmmeter (DVOM), an infrared thermometer, and a reliable vehicle information source (such as All Data DIY) at my disposal.

### Step 1

Connect the scanner to the vehicle diagnostic connector and retrieve the stored trouble codes and applicable freeze frame data. I normally write this information down in case I need it later. Clear the codes and test drive the vehicle. If the code is immediately reset, proceed with the diagnostic process.

Most professional technicians begin with a visual inspection of IAT sensor-related wiring and connectors (don't forget the air filter and the air inlet pipe). Pay careful attention to the sensor connector as it is susceptible to corrosion because of its close proximity to the battery and coolant

reservoir.

## Step 2

If the system wiring, connectors, and components appear to be in working order, proceed by connecting the scanner to the diagnostic connector and opening the data stream. By narrowing the data stream to include only pertinent data, you will get a faster response. Use the infrared thermometer to make sure that the IAT reading (on the scanner) correctly reflects actual intake air temperature.

If it is incorrect, consult your vehicle information source for IAT sensor testing recommendations. Use the DVOM to test the sensor and compare your findings with vehicle specifications. Replace the sensor if it fails to comply.

## Step 3

If the sensor passes the resistance test, check for a sensor reference voltage and a ground. If either one of these are not present repair the open or shorted circuit and retest the system. If system reference and ground signals are present, obtain an IAT sensor voltage to temperature chart from your vehicle information source and use the DVOM to test sensor output voltage.

Compare the voltage with the voltage to temperature chart and replace the sensor if actual findings vary from maximum recommended tolerances.

If actual IAT input voltage is within specifications, disconnect the electrical connector/s from all related controllers and use the DVOM to test resistance and continuity on all system circuits. Repair or replace circuits that prove to be open or shorted and retest the system.

If the IAT sensor and all system circuits are within recommended specifications, suspect a defective PCM or a PCM programming error.

**Additional diagnostic note:** By far, the most common cause of a P0099 being stored is a disconnected #2 IAT sensor connector. When the air filter is checked or replaced, the IAT sensor is often left disconnected. If your vehicle has recently been serviced, and a code P0099 is suddenly stored, suspect that the IAT sensor has simply been left unplugged.

Related IAT sensor and circuit trouble codes: P0095, P0096, P0097, P0098, P0110, P0111, P0112, P0113, P0114, P0127

## Severity Description

The IAT sensor signal is used by the PCM to calculate fuel delivery strategy. Therefore a code P0099 should be treated as severe.

## Reference Sources

P0099: IAT Circuit Sensor 2 Intermittent, OBD-Codes.