

FORD · POWERTRAIN

P1109

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1109 · Ford

IAT B Sensor Intermittent

P1109 on Ford vehicles means the powertrain control module (PCM) has detected an intermittent fault in the intake air temperature (IAT) sensor B circuit, which is typically the sensor mounted in the intake air duct or manifold. The PCM monitors the sensor signal for sudden dropouts, erratic voltage swings, or out-of-range readings that occur intermittently rather than failing completely.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Ford specific	Low	Intermediate	Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Occasional rough idle or hesitation when the engine is cold
- Momentary stumble or surge during acceleration that comes and goes
- Poor fuel economy or slightly elevated emissions in some cases
- Hard starting or extended crank time in cold weather
- In rare cases, the engine may briefly run rich or lean as the PCM substitutes a default temperature value

Common causes, most likely first

- 1 Loose, corroded, or damaged electrical connector at the IAT sensor B
- 2 Chafed, cracked, or broken wires in the IAT sensor B circuit (signal or ground)
- 3 Failing IAT sensor B that intermittently opens or shorts internally
- 4 Poor terminal tension at the PCM connector for the IAT circuit
- 5 Moisture or oil contamination inside the sensor connector causing intermittent contact
- 6 Aftermarket air intake or filter installation that stresses the sensor wiring
- 7 Rarely, a faulty PCM driver for the IAT input circuit



How to diagnose and fix it

- 1 Inspect the IAT sensor B connector and wiring for looseness, corrosion, or damage; clean and reseat as needed
- 2 Perform a wiggle test on the sensor harness while watching live IAT data on a scan tool to reproduce the intermittent fault
- 3 Check the sensor's resistance or voltage output with a multimeter and compare to Ford specifications for the ambient temperature
- 4 Backprobe the signal and ground circuits at the PCM to verify continuity and check for intermittent opens or shorts
- 5 Replace the IAT sensor B if resistance testing or live data confirms an erratic signal
- 6 Repair or replace damaged sections of the sensor harness and secure it away from heat and moving parts
- 7 Clear the diagnostic trouble code (DTC) and verify the repair by road-testing while monitoring IAT data for stability

Intermittent IAT faults often hide in the harness

- A common oversight is replacing the IAT sensor when the real problem is a chafed wire near the air box or a loose pin in the connector that only acts up over bumps.
- The code can set from a momentary glitch that lasts less than a second, so the sensor may test perfectly good when the engine is idling in the bay.
- Ford's IAT sensor B is often integrated into the mass airflow (MAF) sensor housing on some models, so technicians mistakenly replace the entire MAF assembly when only the thermistor is faulty.
- Aftermarket air intake systems frequently route the IAT harness too close to hot components or sharp edges, creating intermittent shorts that mimic a failed sensor.
- A weak battery or poor ground can cause voltage spikes that the PCM interprets as an intermittent IAT signal, so always check charging system health before condemning the sensor.

Can I keep driving with P1109?

The vehicle is generally safe to drive with P1109 because the PCM substitutes a default intake air temperature value, but avoid towing heavy loads or aggressive acceleration until the fault is repaired. Prolonged driving with an intermittent sensor can lead to poor fuel economy and increased emissions, so schedule diagnosis soon.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire piercing probes or backprobe pins
- Electrical contact cleaner
- Basic hand tools for connector and sensor access



Reading P1109

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (Ford): its meaning depends on the make.
- 1** Fuel and air metering.
- 09** The exact fault within that area.

Often seen with

P0109 MAP/Barometric Pressure Circuit Intermittent · **P0110** Intake Air Temperature Circuit Malfunction · **P0111** Intake Air Temperature Circuit Range/Performance · **P0112** Intake Air Temperature Circuit Low Input · **P0113** Intake Air Temperature Circuit High Input

See it working

Watch the animated explainer [Engine Cooling System Trainer: How Engines Stay Cool](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/ford-p1109/>

