

GENERIC · POWERTRAIN

P2509

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2509

ECM/PCM Power Input Signal Intermittent

P2509 means the engine control module (ECM) or powertrain control module (PCM) has detected an intermittent problem with its main power input signal, so the computer is not receiving a steady, reliable voltage feed. The module logs the fault when the power feed momentarily drops out or fluctuates beyond an acceptable range while the engine is running or the ignition is on.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- The check engine light or service engine soon light illuminates, often with no other noticeable symptoms.
- The engine may stall unexpectedly or crank but fail to start intermittently.
- Momentary loss of power or hesitation while driving, sometimes accompanied by other warning lights flashing.
- The transmission may shift erratically or enter limp mode if the PCM loses power briefly.
- Accessories or dashboard lights may flicker or reset when the fault occurs.
- In some cases, the engine may cut out and restart immediately, feeling like a brief electrical glitch.

Common causes, most likely first

- 1 Corroded, loose, or damaged battery terminals and cable ends that cause intermittent voltage drops.
- 2 A failing or weak battery that cannot maintain stable voltage under load.
- 3 A faulty ignition switch or ignition relay that intermittently interrupts power to the ECM/PCM.
- 4 Damaged or chafed wiring in the ECM/PCM power feed circuit, often near the battery or fuse box.
- 5 A blown or poorly seated fuse in the ECM/PCM power circuit, or a corroded fuse box terminal.
- 6 A failing ECM/PCM power relay that drops out intermittently due to heat or age.
- 7 Internal fault in the ECM/PCM itself, though this is less common than external power supply issues.



How to diagnose and fix it

- 1 Perform a visual inspection of the battery terminals, cables, and ground connections for corrosion or looseness, and clean or tighten as needed.
- 2 Load-test the battery and check the charging system output to rule out a weak battery or alternator.
- 3 Check all fuses and relays related to the ECM/PCM power feed, reseating or replacing any that are suspect.
- 4 Use a digital multimeter to back-probe the ECM/PCM power input circuit while wiggling wiring and connectors to catch intermittent voltage drops.
- 5 Inspect the ignition switch and its connector for wear or loose terminals, testing for voltage stability in the run and start positions.
- 6 If the fault persists, perform a voltage drop test on the entire power feed circuit from the battery to the ECM/PCM, repairing any high-resistance connections or damaged wires.
- 7 As a last resort, substitute a known-good ECM/PCM only after all external power and ground circuits are verified good, then reprogram if necessary.

Intermittent Power Loss Traps to Avoid

- A intermittent power input fault often leaves no stored freeze-frame data, so the code may reset and not return until the exact conditions repeat, making it easy to misdiagnose as a ghost code.
- Many technicians replace the ECM/PCM prematurely when the real culprit is a corroded ground strap or a failing ignition relay that only acts up under heat or vibration.
- The code can be set by a momentary voltage spike or drop during engine cranking, so a weak battery that still starts the car can be the root cause without obvious starting problems.
- Aftermarket accessories wired into the ECM/PCM power circuit, such as alarms or remote starters, are a frequent source of intermittent power interruptions that set this code.
- P2509 can appear alongside communication codes like U0100 if the module briefly loses power and drops off the CAN bus, so always check for related network codes before condemning the module.

Can I keep driving with P2509?

You can usually drive the vehicle short distances to a repair shop, but avoid long trips or high-speed driving because an intermittent power loss can cause sudden stalling or loss of power steering and braking assist. If the engine stalls repeatedly or multiple warning lights appear, stop driving and have the vehicle towed.

Tools that help

- Digital multimeter with min/max recording capability
- Battery load tester
- Fuse puller and test light
- Wiring diagram for the ECM/PCM power circuit
- Scan tool capable of reading live data and clearing codes



Reading P2509

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 5** Vehicle speed, idle control and auxiliary inputs.
- 09** The exact fault within that area.

Often seen with

P0562 System Voltage Low · **P0563** System Voltage High · **P0600** Serial Communication Link Malfunction · **P2508** ECM/PCM Power Input Signal High · **U0100** Lost Communication With ECM/PCM A

See it working

Watch the animated explainer [How a Six-Speed Manual Gearbox Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2509/>

