

GENERIC · POWERTRAIN

P2BB4

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2BB4

Engine Coolant Temperature Sensor 4 Circuit Intermittent/Erratic

P2BB4 means the engine control module (ECM) has detected an intermittent or erratic signal from the circuit of engine coolant temperature (ECT) sensor 4, which is a fourth temperature sensor used on some engines for a specific monitoring function. The ECM logs this code when the voltage from that sensor circuit jumps, drops out, or behaves inconsistently over time rather than failing completely.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Hybrid propulsion

Symptoms you may notice

- Often no symptoms besides the warning light, because the fault is intermittent and the ECM may substitute a default temperature value.
- A coolant temperature gauge that flickers or reads erratically if sensor 4 feeds the gauge circuit.
- Intermittent rough running, poor fuel economy, or unusual fan operation when the ECM loses a stable temperature signal.
- A cooling fan that runs constantly or not at all, depending on how the ECM reacts to the erratic signal.
- Occasional hard starting or a brief rich-running condition when the signal drops out during warm-up.
- A stored code that clears itself and returns after driving over bumps or in wet weather.

Common causes, most likely first

- 1 A loose, corroded, or partially broken connector terminal at ECT sensor 4 or at the ECM harness.
- 2 Chafed or internally broken wiring in the sensor circuit that makes contact only intermittently.
- 3 A failing ECT sensor 4 that produces an unstable resistance as it heats and cools.
- 4 Coolant contamination or low coolant level causing the sensor tip to be exposed intermittently.
- 5 A poor ground connection shared by the sensor circuit, causing voltage reference drift.
- 6 A faulty ECM driver or internal circuit, which is rare but possible after all wiring and sensor checks pass.
- 7 Aftermarket accessories or repairs that disturbed the harness near the sensor or ECM.



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P2BB4, then clear the code and test-drive to confirm it returns.
- 2 Inspect the ECT sensor 4 connector and harness for corrosion, loose pins, chafing, and signs of coolant wicking.
- 3 Back-probe the sensor signal and ground wires and wiggle the harness while watching live data for voltage or resistance jumps.
- 4 Measure sensor resistance cold and hot and compare with the manufacturer's temperature-resistance chart for that sensor.
- 5 Check coolant level and condition, and verify the sensor is fully immersed and not contaminated.
- 6 Repair or replace the faulty pigtail, terminal, or section of harness, then re-test the circuit under load and vibration.
- 7 Replace ECT sensor 4 only after electrical and coolant checks confirm the sensor itself is unstable, then clear and verify the code.

Intermittent ECT codes hide in the harness

- Most P2BB4 cases are not the sensor itself but a terminal that loses contact only when the engine moves or the harness flexes, so a static resistance test often passes.
- A coolant temperature sensor can test perfectly on a bench and still set this code because the fault appears only at a specific temperature or vibration frequency.
- Low coolant or an air pocket can expose the sensor tip intermittently and mimic an electrical fault, so always verify coolant level and bleed the system before condemning parts.
- The ECM may use sensor 4 for a secondary function such as fan control or model-based monitoring, so the driver may notice no drivability change at all.
- Clearing the code without capturing freeze-frame data can send you chasing the wrong circuit, because the fault may not reappear for many drive cycles.

Can I keep driving with P2BB4?

You can usually drive with P2BB4 because the ECM substitutes a default temperature, but avoid long trips or heavy load until the intermittent circuit is repaired. Stop driving if the temperature gauge climbs or the engine overheats, since an erratic coolant signal can mask a real cooling problem.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probe pins
- Wiring diagram for the ECT sensor 4 circuit
- Temperature-resistance chart for the sensor
- Coolant refractometer or hydrometer
- Terminal pick and electrical contact cleaner

Reading P2BB4

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
B	Hybrid propulsion.
B4	The exact fault within that area.

Often seen with

P0115 Engine Coolant Temperature Circuit Malfunction · **P0117** Engine Coolant Temperature Circuit Low Input · **P0118** Engine Coolant Temperature Circuit High Input · **P2BB3** Fuel Pump Secondary Circuit Performance · **P2BB5** Engine Coolant Temperature Sensor 5 Circuit Intermittent/Err

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/p2bb4/>

