

GENERIC · POWERTRAIN

P2B2C

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2B2C

Engine Coolant Temperature Sensor 5 Range/Performance

P2B2C indicates that the powertrain control module has detected an out-of-range or performance fault in the circuit for engine coolant temperature sensor number five, which is a temperature-sensing element used by the engine management system. The computer compares the sensor's signal against expected values during specific operating conditions and flags the code when the reading is implausible or inconsistent.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Incorrect or erratic temperature gauge readings on the dashboard
- Poor fuel economy or rough running during warm-up
- Cooling fan that runs constantly or fails to activate when needed
- Hard starting or stalling when the engine is cold
- Reduced engine performance or limp mode in some vehicles

Common causes, most likely first

- 1 Faulty engine coolant temperature sensor number five
- 2 Damaged or corroded wiring or connector at the sensor
- 3 Open or short circuit in the sensor signal or ground circuit
- 4 Coolant level low or air pockets causing inaccurate temperature readings
- 5 Failed thermostat keeping the engine from reaching normal operating temperature
- 6 Corrosion or debris on the sensor tip
- 7 Powertrain control module software or internal fault (rare)



How to diagnose and fix it

- 1 Verify coolant level and condition, and pressure-test the cooling system for leaks
- 2 Inspect the sensor connector and wiring for damage, corrosion, or loose pins
- 3 Measure the sensor's resistance with a multimeter and compare to the manufacturer's temperature-resistance chart
- 4 Check the sensor's reference voltage and ground circuit integrity with a multimeter or oscilloscope
- 5 Compare the sensor reading to actual coolant temperature using a scan tool and an infrared thermometer
- 6 Replace the sensor if resistance or signal output is out of specification
- 7 Clear the code and perform a road test to confirm the repair

Why sensor five is rarely the real culprit

- Many technicians replace the sensor first, but a corroded connector or chafed wire in the harness is a more frequent cause of this code than the sensor itself.
- A low coolant level or trapped air pocket can create a temperature reading that looks like a sensor fault, so always verify the cooling system is full and properly bled before condemning the sensor.
- On some vehicles, a failing thermostat that keeps the engine below normal operating temperature will set this code because the sensor signal never reaches the expected range.
- The code can be set by a momentary glitch in the signal circuit that does not repeat, so check for stored freeze-frame data and intermittent wiring faults before replacing parts.
- A weak battery or charging system issue can cause voltage spikes that corrupt sensor signals and set this code, so check battery and alternator health as part of the diagnosis.

Can I keep driving with P2B2C?

The vehicle is generally safe to drive short distances, but avoid heavy loads or long trips until the fault is repaired because inaccurate coolant temperature data can affect fuel mixture and cooling fan operation. If the engine overheats or the temperature gauge behaves erratically, stop driving and have the vehicle inspected.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Infrared thermometer
- Socket and ratchet set
- Coolant refractometer or hydrometer
- Wiring diagram for the specific vehicle



Reading P2B2C

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

Often seen with

P0115 Engine Coolant Temperature Circuit Malfunction · **P0116** Engine Coolant Temperature Circuit Range/Performance · **P0117** Engine Coolant Temperature Circuit Low Input · **P0118** Engine Coolant Temperature Circuit High Input · **P0128** Coolant Thermostat (Coolant Temperature Below Thermostat Reg

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/p2b2c/>

