



P2C3D

Cylinder Head Temperature Sensor A/B Correlation

P2C3D indicates that the engine control module has detected an implausible relationship between two cylinder head temperature sensor signals, typically designated as Sensor A and Sensor B. The module compares the two readings and sets this code when their values diverge beyond a calibrated threshold for a given operating condition, meaning the sensors disagree about the actual head temperature.

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
- Erratic or inaccurate temperature gauge readings on the dashboard
- Poor fuel economy or rough running when the engine is cold or hot
- Intermittent cooling fan operation because the module cannot trust the temperature input
- Hard starting or stalling in extreme cases if the module substitutes a default temperature value
- A stored freeze-frame showing a large split between the two sensor readings

Common causes, most likely first

- 1 A faulty cylinder head temperature sensor, either Sensor A or Sensor B, with a skewed or dead element
- 2 Damaged or corroded wiring between the sensors and the engine control module, including chafed harnesses
- 3 Loose or contaminated sensor connector terminals causing high resistance
- 4 An engine control module software calibration issue or internal fault in the sensor input circuit
- 5 Coolant or oil intrusion into the sensor connector or sensor body
- 6 Installation error after recent engine work, such as a sensor not fully seated or the wrong sensor fitted



How to diagnose and fix it

- 1 Connect a scan tool and record the freeze-frame data plus live readings from both cylinder head temperature sensors to confirm the correlation fault
- 2 Visually inspect both sensors, their connectors, and the harness for damage, corrosion, or fluid intrusion
- 3 Measure resistance across each sensor at room temperature and compare the values to the manufacturer's specification
- 4 Back-probe the sensor signal circuits at the engine control module and check for voltage drops or shorts while wiggling the harness
- 5 If one sensor reads outside specification, replace that sensor and clear the code, then verify the readings track together
- 6 Check for any applicable engine control module software updates or recalibration bulletins before condemning the module
- 7 After repairs, run the engine through a full warm-up cycle and confirm the code does not return and both sensors agree

Why two sensors disagree on head temperature

- A correlation code does not automatically mean a sensor has failed; a poor ground or reference voltage shared by both sensors can pull one reading off without any sensor being defective.
- Technicians often replace the sensor that looks wrong on the scan tool, but the fault can be in the wiring on the other sensor's circuit, so always check both circuits before parts swapping.
- Aftermarket sensors with incorrect resistance curves are a common cause of repeat correlation codes, especially on vehicles that have had recent engine work.
- The engine control module may use the cylinder head temperature signal for cooling fan control and fuel enrichment, so a correlation fault can cause driveability symptoms that seem unrelated to temperature.
- A weak battery or charging system issue can cause the module to log implausible sensor values during cranking, so check system voltage before chasing the sensors.

Can I keep driving with P2C3D?

The vehicle is usually safe to drive to a workshop because the engine control module substitutes a default temperature value, but avoid heavy loads and long trips until the fault is repaired. If the engine overheats or the cooling fan stops working, stop driving and have the vehicle towed.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with resistance and voltage measurement
- Back-probe kit or breakout leads for testing circuits at the module
- Manufacturer service information for sensor resistance specifications and wiring diagrams
- Basic hand tools for sensor and connector access



Reading P2C3D

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- C** Hybrid propulsion.
- 3D** 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 · **P2C3C** Cylinder Head Temperature Sensor B Circuit Intermittent/Erra · **P2C3E** Fan 4 Control Circuit

See it working

Watch the animated explainer [How a Supercharger Works: Roots Blower in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2c3d/>

