

GM · POWERTRAIN

P1116

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1116 · GM

Engine Coolant Temperature Sensor Erratic

P1116 on a GM vehicle means the engine control module (ECM) has detected an erratic signal from the engine coolant temperature (ECT) sensor circuit. The ECM expects the sensor voltage to change smoothly as the engine warms up, but instead it sees sudden jumps, dropouts, or implausible readings that do not match other temperature inputs.

SYSTEM

Powertrain

CODE TYPE

GM specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Check engine light illuminated, often with no other noticeable symptoms
- Erratic or inaccurate temperature gauge reading on the dashboard
- Poor fuel economy or rich-running condition because the ECM misjudges coolant temperature
- Hard starting or rough idle when the engine is cold or hot
- Cooling fan running constantly or not engaging when needed
- Intermittent stalling or hesitation during warm-up

Common causes, most likely first

- 1 Faulty engine coolant temperature sensor (internal failure or degraded thermistor)
- 2 Corroded, loose, or damaged electrical connector at the ECT sensor
- 3 Chafed or broken wires in the ECT sensor circuit (signal or ground)
- 4 Coolant level low or air pockets causing the sensor to read erratically
- 5 Contaminated or degraded coolant affecting sensor response
- 6 ECM internal fault or poor ground connection at the ECM
- 7 Aftermarket sensor with incorrect resistance curve installed

How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P1116 to see when the erratic signal occurs
- 2 Inspect the ECT sensor connector and wiring for corrosion, looseness, or damage; repair as needed
- 3 Check coolant level and condition; top off or flush if contaminated or low
- 4 Measure ECT sensor resistance with a multimeter and compare to GM specifications for the current temperature
- 5 Backprobe the sensor signal wire at the ECM and watch for voltage jumps while wiggling the harness
- 6 Replace the ECT sensor with a genuine GM or OEM-equivalent part if resistance testing is out of spec
- 7 Clear codes and perform a road test to verify the erratic signal is gone and no pending codes return

Why an erratic ECT signal fools the ECM

- A sensor that tests fine at room temperature can still be erratic when hot, so always test resistance both cold and after warming the engine.
- Corroded terminals inside the ECT connector often cause this code without any visible damage on the outside, so unplug and inspect the pins closely.
- Low coolant or trapped air can make the sensor read erratically because the tip is not continuously immersed in coolant.
- The ECM compares ECT with intake air temperature and engine run time; a slow-to-rise sensor can set P1116 even if it never goes open circuit.
- Aftermarket sensors with the wrong resistance curve are a common cause of repeat P1116 codes after a repair.

Can I keep driving with P1116?

You can usually drive with P1116, but avoid long trips or heavy load until it is diagnosed because erratic coolant temperature data can affect fuel mixture and cooling fan operation. If the temperature gauge swings wildly or the engine overheats, stop driving and have it checked immediately.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire piercing probes or backprobe pins
- Socket set and wrench for sensor removal
- Coolant refractometer or test strips

Reading P1116

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (GM): its meaning depends on the make.
1	Fuel and air metering.
16	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/gm-p1116/>

