

GM · POWERTRAIN

P1628

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1628 · GM

ECT Pull-Up Resistor

P1628 on GM vehicles indicates that the engine control module (ECM) has detected a fault in the pull-up resistor circuit for the engine coolant temperature (ECT) sensor. The ECM monitors the voltage on the ECT signal circuit and expects it to be pulled up to a reference voltage when the sensor is disconnected or has high resistance; when the voltage stays outside the expected range, the ECM sets this code.

SYSTEM

Powertrain

CODE TYPE

GM specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Computer and output circuits

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Inaccurate or erratic temperature gauge readings
- Poor fuel economy or rich-running condition due to incorrect temperature data
- Hard starting or rough idle when the engine is cold
- Cooling fan may run constantly or not at all
- Possible reduced engine performance or stalling in extreme cases

Common causes, most likely first

- 1 Faulty engine coolant temperature (ECT) sensor
- 2 Open or shorted wiring in the ECT sensor circuit
- 3 Corroded or loose connector at the ECT sensor
- 4 Failed pull-up resistor inside the engine control module (ECM)
- 5 Poor ground connection for the ECT sensor circuit
- 6 Aftermarket or incorrect ECT sensor installed

How to diagnose and fix it

- 1 Use a scan tool to verify the ECT sensor reading and check for related codes
- 2 Inspect the ECT sensor connector and wiring for damage or corrosion
- 3 Measure the resistance of the ECT sensor and compare to specifications
- 4 Check the voltage on the ECT signal circuit with the sensor disconnected to verify the pull-up voltage
- 5 Test the ground circuit for the ECT sensor for excessive resistance
- 6 If the circuit and sensor are good, suspect the ECM and perform further diagnostics before replacement
- 7 Clear the code and verify the repair with a test drive



Don't overlook the simple causes first

- A corroded connector at the ECT sensor is a common cause that can mimic a failed sensor or ECM.
- The pull-up resistor is internal to the ECM, so a code for it does not automatically mean the ECM is bad; wiring faults often set this code.
- Aftermarket ECT sensors with incorrect resistance curves can trigger this code even when new.
- A poor ground connection can cause the ECM to see an out-of-range voltage on the ECT circuit, leading to this code.
- This code may be stored alongside P0118 or P0117, so always check for related ECT codes before diagnosing.

Can I keep driving with P1628?

The vehicle is generally safe to drive with this code, but avoid extended driving because incorrect temperature data can affect fuel economy and emissions. If the engine overheats or runs poorly, stop driving and seek repair.

Tools that help

- OBD-II scan tool
- Digital multimeter
- Wiring diagram for the vehicle
- Socket set and ratchet
- Terminal pick and electrical contact cleaner

Reading P1628

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (GM): its meaning depends on the make.
6	Computer and output circuits.
28	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 · **P0119** Engine Coolant Temperature Circuit Intermittent



See it working

Watch the animated explainer [How Regenerative Braking Works in Electric Cars](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1628/>

