

GENERIC · POWERTRAIN

P0A01

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0A01

Motor Electronics Coolant Temperature Sensor Circuit Range/Performance

P0A01 indicates that the motor electronics coolant temperature sensor circuit is reporting a value outside its expected range or is not performing as designed, which the control module detects by comparing the sensor signal against plausible limits and other temperature inputs. This sensor monitors the coolant temperature of the power electronics in hybrid and electric vehicles, and a fault here can affect how the system manages heat and protects the electronics.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon warning
- Often no symptoms besides the warning light, especially if the fault is intermittent
- Reduced power or limp mode if the control module derates the system to protect the electronics
- Overheating warnings or cooling fan running excessively
- Inconsistent or erratic temperature gauge readings if the vehicle displays motor electronics temperature
- Possible charging or drive system warnings on hybrid vehicles

Common causes, most likely first

- 1 Faulty motor electronics coolant temperature sensor
- 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 or cooling system component affecting sensor performance
- 6 Internal fault in the control module interpreting the sensor signal
- 7 Sensor installed incorrectly or wrong sensor type



How to diagnose and fix it

- 1 Scan all modules for stored codes and freeze-frame data to confirm P0A01 and check for related codes
- 2 Visually inspect the sensor, connector, and wiring for damage, corrosion, or loose pins
- 3 Check coolant level and condition, and bleed the cooling system if air pockets are suspected
- 4 Measure sensor resistance and compare to specifications across known temperatures
- 5 Backprobe the sensor signal and ground circuits to check for opens, shorts, or excessive voltage drop
- 6 If the sensor tests out of range, replace it and clear codes, then verify the reading with a scan tool
- 7 If wiring and sensor are good, diagnose the control module and its connections before replacement

What the coolant sensor reading really tells you

- A common oversight is assuming the sensor is bad when the real problem is a chafed wire harness near hot components, which causes intermittent range errors that never appear during a quick test.
- Low coolant or trapped air can make the sensor report a temperature that is plausible but wrong, so always verify the cooling system is properly filled and bled before condemning the sensor.
- This code can set from a sensor that is skewed rather than failed, meaning it reads a few degrees off across the range and only trips the range/performance monitor under specific conditions.
- On some vehicles, the motor electronics coolant temperature sensor shares a reference voltage or ground with other sensors, so a fault in a neighbouring circuit can trigger P0A01 as a secondary code.
- Clearing the code without checking freeze-frame data often leads to a comeback, because the conditions that set the code (such as a cold start or high load) are key to reproducing the fault.

Can I keep driving with P0A01?

You can usually drive with this code if the vehicle runs normally and no overheating warnings appear, but avoid heavy loads or long trips until it is diagnosed. If the vehicle enters limp mode or shows a high temperature warning, stop driving and have it checked promptly to prevent damage to the power electronics.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Backprobe pins or breakout leads
- Coolant refractometer or hydrometer
- Basic hand tools for sensor removal



Reading P0A01

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

Often seen with

P0A00 Motor Electronics Coolant Temperature Sensor Circuit · **P0A02** Motor Electronics Coolant Temperature Sensor Circuit Low · **P0A03** Motor Electronics Coolant Temperature Sensor Circuit High · **P0A04** Motor Electronics Coolant Temperature Sensor Circuit Intermi · **P0A05** Motor Electronics Coolant Pump Control Circuit/Open

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/p0a01/>

