

GENERIC · POWERTRAIN

P0539

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0539

A/C Evaporator Temperature Sensor Circuit Intermittent

P0539 means the climate control computer has seen the air conditioning evaporator temperature sensor signal drop out or jump erratically, rather than reading a steady temperature. The computer sets this code when the sensor circuit is intermittent, so the fault comes and goes instead of failing completely.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Low	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- The air conditioning may blow warm air intermittently or cycle on and off unpredictably.
- The A/C compressor clutch may engage and disengage more often than normal.
- The blower fan may keep running or change speed without driver input on automatic climate systems.
- The climate control panel may show a flashing or erratic temperature display.
- Often no symptoms besides the warning light, especially if the intermittent fault has not yet affected A/C performance.
- The A/C may work perfectly on some drives and fail on others, making the problem hard to reproduce.

Common causes, most likely first

- A loose, corroded, or partially backed-out electrical connector at the evaporator temperature sensor.
- A chafed or broken wire in the sensor circuit that makes contact only some of the time, often where the harness bends or passes through the firewall.
- A failing evaporator temperature sensor that reads correctly when cold but opens or shorts when warm or vibrating.
- Water intrusion or condensation at the sensor connector causing intermittent resistance changes.
- Poor terminal tension inside the sensor connector or at the climate control module pins.
- A faulty climate control module that intermittently loses the sensor input, though this is less common than wiring faults.



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P0539, then clear the code and test-drive with the A/C on to see whether it returns.
- 2 Inspect the evaporator temperature sensor connector and the climate control module connector for corrosion, loose pins, or water intrusion, and clean or repair as needed.
- 3 Wiggle-test the sensor harness while watching live evaporator temperature data to catch an intermittent signal drop.
- 4 Measure sensor resistance with a multimeter at the sensor and compare it to the expected value for the ambient temperature, then check the same circuit at the module end to isolate a wiring fault.
- 5 Check for continuity and voltage drop on both sensor signal and ground wires while flexing the harness, repairing any chafed or broken wire.
- 6 Replace the evaporator temperature sensor if the wiring and connectors pass every test but the signal still drops out.
- 7 After repair, clear the code and run the A/C through several complete cycles to confirm the evaporator temperature reading stays steady and P0539 does not reset.

Intermittent faults hide in the harness

- A sensor that tests perfectly on a cold engine can still set P0539 once the evaporator box heats up, so always test the circuit warm and while the A/C is running.
- The evaporator temperature sensor is often buried behind the glovebox or inside the HVAC case, and technicians frequently replace it before checking the connector that is actually causing the intermittent signal.
- Water from a clogged evaporator drain can drip onto the sensor connector and create a fault that only appears on humid days or after rain.
- P0539 does not always mean the sensor has failed; a poor ground shared with other climate control sensors can make the evaporator reading intermittent while other functions seem normal.
- Some vehicles use the evaporator temperature signal to control compressor clutch cycling, so an intermittent sensor can cause compressor short-cycling that looks like a failing compressor.

Can I keep driving with P0539?

The vehicle remains safe to drive because this fault affects only the air conditioning, but avoid long trips in hot weather until it is repaired. Do not keep driving with the A/C on if the compressor is short-cycling rapidly, since that can stress the clutch and pulley.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with resistance and voltage-drop functions
- Back-probe pins or breakout leads for testing connectors without damage
- Trim removal tools for accessing the evaporator sensor and climate control module
- Wiring diagram for the specific vehicle's climate control circuit

Reading P0539

- P** Powertrain: engine, transmission and emissions.
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- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
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- 5** Vehicle speed, idle control and auxiliary inputs.
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- 39** The exact fault within that area.

Often seen with

P0535 A/C Evaporator Temperature Sensor Circuit · **P0536** A/C Evaporator Temperature Sensor Circuit Range/Performance · **P0537** A/C Evaporator Temperature Sensor Circuit Low · **P0538** A/C Evaporator Temperature Sensor Circuit High · **P0645** A/C Clutch Relay Control Circuit

See it working

Watch the animated explainer [How an Automatic Transmission Works, Gear by Gear](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0539/>

