

GENERIC · POWERTRAIN

P2210

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2210

NOx Sensor Heater Sense Circuit Low Input

P2210 means the engine computer has detected a low-voltage condition on the heater sense circuit for a nitrogen oxide (NOx) sensor, which is used on diesel and some lean-burn gasoline engines to monitor emissions. The computer expects a specific voltage range from the heater sense wire, and a reading below that threshold tells it the heater circuit is not drawing the current it should.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Reduced engine power or limp mode on some vehicles
- Poor fuel economy or increased diesel exhaust fluid (DEF) consumption
- Failed emissions test due to incomplete readiness monitors
- In rare cases, a rough idle or hesitation if the sensor heater affects closed-loop fueling

Common causes, most likely first

- 1 Open or high-resistance heater element inside the NOx sensor
- 2 Damaged or corroded wiring or connector at the sensor or control module
- 3 Blown fuse or faulty relay supplying power to the NOx sensor heater
- 4 Failed NOx sensor control module or engine control module (ECM) driver
- 5 Water intrusion or contamination in the sensor connector
- 6 Exhaust system leaks or excessive soot buildup affecting sensor operation

How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data to confirm the fault conditions
- 2 Inspect the NOx sensor connector and wiring for corrosion, chafing, or loose pins, and repair as needed
- 3 Check the heater circuit fuse and relay, and verify power and ground at the sensor connector with a multimeter
- 4 Measure the resistance of the NOx sensor heater element and compare to the manufacturer's specification
- 5 Perform a voltage drop test on the heater sense circuit to locate excessive resistance
- 6 If the circuit tests good, substitute a known-good NOx sensor and clear codes to see if the fault returns
- 7 After repair, clear codes and complete a drive cycle to verify the monitor runs and the code does not reset



What the heater sense circuit really monitors

- The heater sense circuit does not directly measure temperature; it infers heater performance from current flow, so a low input can be caused by a poor connection rather than a failed sensor.
- A common misdiagnosis is replacing the NOx sensor when the real problem is a corroded ground point or a damaged wire harness near the exhaust, which is exposed to heat and moisture.
- Some vehicles set P2210 when the battery voltage is low or the charging system is weak, because the heater circuit cannot draw enough current during engine start or low-idle conditions.
- The code can be stored intermittently if the sensor heater is failing only when cold, so a resistance check at room temperature may not reveal the fault; a hot resistance test or oscilloscope waveform is more reliable.
- On vehicles with a dedicated NOx sensor control module, a faulty module can set P2210 even when the sensor itself is good, so module power and ground must be verified before condemning the sensor.

Can I keep driving with P2210?

You can usually continue driving with P2210, but the vehicle may fail emissions testing and could enter limp mode if the fault worsens. Avoid long trips at high load until the circuit is diagnosed, and do not ignore the code if you notice reduced power or increased fuel consumption.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the NOx sensor circuit
- Socket set and trim removal tools
- Oscilloscope (optional for waveform analysis)

Reading P2210

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
2	Fuel and air metering (injector circuits).
10	The exact fault within that area.

Often seen with

P2209 NOx Sensor Heater Sense Circuit Range/Performance (Bank 1 Se · **P2211** NOx Sensor Heater Sense Circuit High Input · **P2212** NOx Sensor Heater Sense Circuit Intermittent (Bank 1 Sensor · **P2213** NOx Sensor Circuit (Bank 2 Sensor 1) · **P229E** NOx Sensor Circuit (Bank 1 Sensor 2)



See it working

Watch the animated explainer [How a Manual Transmission Works: Four-Speed Cutaway](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2210/>

