

GENERIC · NETWORK

U05A9

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

U05A9

NOx Sensor C Received Invalid Data From ECM/PCM

This code means the engine control module (ECM) or powertrain control module (PCM) has sent a message to the nitrogen oxide (NOx) sensor module that the sensor module considers invalid, so the sensor's readings cannot be trusted. The ECM/PCM sets U05A9 when it detects that the NOx sensor for bank 1, sensor 3 (or the specific sensor designated as 'C') is reporting a data integrity fault or is receiving corrupted serial data from the ECM.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Network	Generic (all makes)	Medium	Professional	Network communication

Symptoms you may notice

- Illumination of the malfunction indicator lamp (MIL) with no other noticeable symptoms.
- Reduced engine power or limp mode in some vehicles as a protective strategy.
- Poor fuel economy or increased diesel exhaust fluid (DEF) consumption.
- Intermittent rough running or hesitation under load.
- Possible failure to pass an emissions inspection due to the stored code.

Common causes, most likely first

- 1 Faulty NOx sensor module or sensor element.
- 2 Damaged or corroded wiring harness or connector at the NOx sensor.
- 3 CAN bus communication fault between the ECM/PCM and the NOx sensor module.
- 4 Software or calibration issue in the ECM/PCM requiring a reflash or update.
- 5 Poor ground connection for the NOx sensor or ECM/PCM.
- 6 Aftermarket or incorrect NOx sensor installed.
- 7 Internal ECM/PCM fault (rare).



How to diagnose and fix it

- 1 Inspect the NOx sensor connector and wiring for damage, corrosion, or loose pins; repair as needed.
- 2 Check for technical service bulletins (TSBs) or software updates for the ECM/PCM related to NOx sensor communication.
- 3 Perform a voltage drop test on the sensor's power and ground circuits to ensure they are within specification.
- 4 Use a scan tool to monitor NOx sensor data and compare with expected values; replace the sensor if data is erratic or missing.
- 5 Verify CAN bus communication integrity with an oscilloscope or scan tool; repair any bus faults.
- 6 If all else fails, substitute a known-good NOx sensor to see if the code clears; replace if necessary.
- 7 After repairs, clear codes and perform a drive cycle to verify the fix.

When the NOx sensor is not the culprit

- A loose or corroded ground connection at the chassis or engine block can cause the NOx sensor module to send invalid data that the ECM interprets as a sensor fault.
Some vehicles require a software update to the ECM/PCM to correct a miscommunication with the NOx sensor, and replacing the sensor without the update will not fix the code.
- The code can be set by a low battery or charging system issue that causes voltage spikes or drops, corrupting data on the CAN bus.
- Aftermarket NOx sensors often have incompatible communication protocols and can trigger this code even when new.

The ECM/PCM may set this code if the NOx sensor's heating circuit is failing, as the sensor cannot provide valid data until it reaches operating temperature.

Can I keep driving with U05A9?

You can usually drive with this code, but the vehicle may enter limp mode or have reduced power, and fuel consumption may increase. Avoid heavy loads and long trips until diagnosed, and address it promptly to prevent further emissions system damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Oscilloscope for CAN bus analysis
- Wiring diagram for the specific vehicle
- Socket set and trim removal tools



Reading U05A9

- U** Network: communication between the vehicle's control modules.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 5** Network communication.
- A9** The exact fault within that area.

Often seen with

P2200 NOx Sensor Circuit (Bank 1 Sensor 1) · **P2201** NOx Sensor Circuit Range/Performance (Bank 1 Sensor 1) · **P229E** NOx Sensor Circuit (Bank 1 Sensor 2) · **U05A8** Invalid Data Received From NOx Sensor C · **U05AA** Invalid Data Received From Charge Air Cooler Coolant Pump

See it working

Watch the animated explainer **V6 Engine Explained: 60° Bank and Firing Order** on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/u05a9/>

