



P1451 · BMW

Diagnostic Module Tank Leakage DM-TL Switching Solenoid Control Circuit Signal Low

P1451 on a BMW indicates that the diagnostic module for tank leakage (DM-TL) has detected a low signal on the control circuit for its switching solenoid. The engine computer expects a certain voltage or current on the wire that commands the leak-detection solenoid, and it is seeing less than it should, which points to a wiring fault, a failed solenoid, or a problem inside the diagnostic module itself.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	BMW specific	Medium	Intermediate	Auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- A slight fuel odor around the rear of the vehicle if the solenoid sticks and affects tank venting.
- Intermittent check engine light that comes and goes with temperature or vibration.
- Rough idle or slight hesitation in rare cases where the solenoid affects purge flow.
- Failed emissions inspection due to the stored fault code.
- No driveability complaints in most cases, as the fault is confined to the leak-detection circuit.

Common causes, most likely first

- 1 Damaged, chafed, or corroded wiring in the solenoid control circuit, especially near the connector or where the harness passes through the body.
- 2 Failed switching solenoid inside the DM-TL module, causing an open or high-resistance circuit.
- 3 Loose or corroded electrical connector at the DM-TL unit or at the engine control module (DME).
- 4 Water intrusion into the DM-TL module or its connector, leading to low signal voltage.
- 5 Internal fault in the diagnostic module itself, such as a failed driver circuit.
- 6 Poor ground connection for the DM-TL circuit, causing a voltage drop that mimics a low signal.



How to diagnose and fix it

- 1 Clear the fault code and perform a road test to see if P1451 returns, confirming it is not a historical or intermittent glitch.
- 2 Visually inspect the DM-TL solenoid connector and wiring for corrosion, chafing, or loose pins, and repair as needed.
- 3 Measure resistance of the switching solenoid with a multimeter and compare to the manufacturer's specification to rule out an open or shorted coil.
- 4 Back-probe the control circuit at the DM-TL connector and check for the expected voltage or duty cycle while commanding the solenoid on with a scan tool.
- 5 Check the ground circuit for excessive resistance using a voltage drop test, and clean or tighten the ground point if necessary.
- 6 If the wiring and solenoid test good, substitute a known-good DM-TL module or perform a guided diagnostic with BMW diagnostic software to check the driver circuit inside the module.
- 7 After repairs, clear codes and run the tank leakage diagnostic monitor to completion to verify the fix.

What the DM-TL low signal really means

- A low signal on the control circuit often results from a poor ground rather than a failed solenoid, so technicians who replace the module without checking grounds frequently see the code return.
- The DM-TL module on many BMW models is located near the fuel tank or under the rear seat, where it is exposed to road splash and can suffer water intrusion that corrodes the connector pins.
- P1451 can be set by a weak battery or low charging voltage during cranking, so always verify battery condition and charging system output before condemning the solenoid.
- The code does not always mean the solenoid is defective; a short to ground in the harness can pull the signal low and mimic a failed component.
- Some BMW models require the tank leakage diagnostic to be run with a specific fuel level and temperature range, so a repair may seem ineffective until the monitor completes under the right conditions.

Can I keep driving with P1451?

The vehicle is generally safe to drive with P1451 because the fault affects only the evaporative emissions leak-detection circuit and not engine performance. However, avoid topping off the fuel tank excessively and have the fault diagnosed soon to prevent a small evap leak from going undetected and to ensure the vehicle passes emissions testing.



Tools that help

- OBD-II scan tool with BMW-specific software or capable of reading manufacturer codes
- Digital multimeter with back-probing pins
- Wiring diagram for the specific BMW model
- Socket set and trim removal tools for accessing the DM-TL module
- Smoke machine for evaporative system testing if a leak is suspected

Reading P1451

- P** Powertrain: engine, transmission and emissions.
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- 1** Manufacturer-specific code (BMW): its meaning depends on the make.
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- 4** Auxiliary emission controls.
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- 51** The exact fault within that area.

Often seen with

P1450 Secondary Air Injection System Circuit Short To B+ · **P1450** Barometric Pressure Sensor Too Low Or Too High · **P1450** Unable To Bleed Up Fuel Tank Vacuum · **P1450** Excessive Vacuum Leak · **P1450** Barometric Pressure Sensor Circuit · **P1450** Inability of Evaporative Emission Control System to Bleed Fu · **P1450** Barometric Pressure Sensor Circuit · **P1450** Diagnostic Module Tank Leakage DM-TL Switching Solenoid Open · **P0440** Evaporative Emission Control System Malfunction · **P0442** EVAP System Leak Detected (Small) · **P0455** EVAP System Leak Detected (Large) · **P0456** Evaporative Emission System Leak Detected (very small leak)

See it working

Watch the animated explainer [How a Turbocharger Works, Step by Step](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/bmw-p1451/>

