

GENERIC · POWERTRAIN

P2D4F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2D4F

Hybrid/EV Battery Pack K Over Temperature

P2D4F indicates that the hybrid or electric vehicle battery pack has exceeded a safe operating temperature threshold, specifically for the pack designated as 'K' in vehicles with multiple battery packs. The battery energy control module (BECM) monitors temperature sensors within the pack and sets this code when the reading surpasses the calibrated limit, typically to protect the cells from damage.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

High

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- A warning light or message on the dashboard indicating a hybrid system fault or battery over-temperature
- Reduced electric-only range or the vehicle switching to gasoline engine power more frequently
- Limited power output or a 'turtle' mode reducing vehicle speed
- The battery cooling fan or liquid cooling pump running excessively or continuously
- In rare cases, a burning smell or visible smoke from the battery pack area
- Often no symptoms besides the warning light, especially if the over-temperature event was brief

Common causes, most likely first

- 1 A faulty battery temperature sensor providing inaccurate high readings
- 2 Blocked or restricted airflow to the battery pack cooling system, such as a clogged filter or debris
- 3 Malfunctioning battery cooling fan or coolant pump not circulating enough air or liquid
- 4 Low coolant level or air pockets in a liquid-cooled battery system
- 5 Degraded battery cells producing excessive heat during charging or discharging
- 6 A software glitch in the battery energy control module causing false over-temperature detection
- 7 Extreme ambient temperatures combined with heavy load, such as prolonged uphill driving or fast charging



How to diagnose and fix it

- 1 Use a scan tool to read the freeze-frame data and verify the actual battery temperature sensor readings against a known good value or infrared thermometer.
- 2 Inspect the battery cooling system for obstructions: check the cooling fan operation, clean or replace the air filter, and verify coolant level and flow in liquid-cooled systems.
- 3 Test the battery temperature sensor and its wiring for resistance and continuity according to the manufacturer's specifications.
- 4 Check for technical service bulletins (TSBs) or software updates for the battery energy control module that address false over-temperature codes.
- 5 Perform a battery pack load test and cell balance check to identify degraded cells that may overheat under normal use.
- 6 If all else fails, follow the manufacturer's diagnostic flow chart for P2D4F, which may involve replacing the battery pack or the BECM.

Overheating code often misdiagnosed

- A loose or corroded battery temperature sensor connector can cause intermittent high readings that set this code without any actual overheating.
- The code can be set by a brief spike in temperature during aggressive driving or fast charging, and may not indicate a chronic problem if the cooling system checks out.
- In some vehicles, a failing 12-volt auxiliary battery can cause erratic behavior in the battery control module, leading to false temperature codes.
- After replacing a battery pack or module, the new component may require programming or calibration to prevent false over-temperature codes.
- The 'K' pack designation is used in vehicles with multiple battery packs, so always verify which pack is affected before ordering parts.

Can I keep driving with P2D4F?

Do not continue driving if the over-temperature warning is active, as prolonged overheating can permanently damage the battery pack and pose a fire risk. Stop safely, allow the system to cool, and have the vehicle inspected by a qualified technician before resuming normal use.

Tools that help

- OBD-II scan tool with hybrid/EV battery data capability
- Infrared thermometer
- Digital multimeter
- Manufacturer-specific diagnostic software
- Cooling system pressure tester



Reading P2D4F

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- D** Hybrid propulsion.
- 4F** The exact fault within that area.

Often seen with

P0A9C Hybrid/EV Battery Temperature Sensor A Circuit Range/Perform · **P0AC4** Hybrid/EV Powertrain Control Module Requested MIL Illuminati · **P0AFA** Hybrid/EV Battery System Voltage Low · **P2D4E** Hybrid/EV Battery Pack J Over Temperature · **P2D50** Hybrid/EV Battery Pack L Over Temperature

See it working

Watch the animated explainer [How Regenerative Braking Works in Electric Cars](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2d4f/>

