

GENERIC · POWERTRAIN

P2D49

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2D49

Hybrid/EV Battery Pack E Over Temperature

P2D49 means the battery energy control module has detected that the high-voltage battery pack designated as 'E' has exceeded its safe operating temperature threshold. The module monitors temperature sensors inside the pack and sets this code when the reading stays above the calibrated limit for a defined period, indicating a genuine over-temperature condition rather than a momentary spike.

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 instrument cluster indicating a hybrid or electric system fault
- Reduced power output or a limp-home mode that limits acceleration and top speed
- The vehicle may refuse to start or may shut down while driving if the pack temperature remains high
- Active cooling fans or pumps may run continuously after the vehicle is switched off
- Often no symptoms besides the warning light, especially if the over-temperature event was brief
- Possible smell of hot coolant or a burning odor from the battery compartment in severe cases

Common causes, most likely first

- 1 Low or contaminated battery coolant, or air trapped in the cooling circuit, reducing heat transfer
- 2 A failed coolant pump, radiator fan, or thermostat that prevents proper circulation through the pack
- 3 A faulty battery temperature sensor reporting a higher value than actual, causing a false over-temperature code
- 4 Restricted airflow or a blocked cooling duct around the battery pack, often from debris or collision damage
- 5 A failing battery energy control module or a software calibration issue that misinterprets sensor data
- 6 Internal battery degradation or a cell imbalance that generates excess heat during charging or heavy use
- 7 High ambient temperatures combined with repeated fast charging or aggressive driving that overwhelms the cooling system



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, then record freeze-frame data to see the temperature and conditions when P2D49 set
- 2 Inspect the battery coolant level, condition, and specific gravity where applicable, and pressure-test the cooling circuit for leaks
- 3 Command the coolant pump and radiator fan on with a scan tool and verify they operate at the correct speed and duty cycle
- 4 Compare the battery temperature sensor readings against each other and against ambient temperature to identify a skewed sensor
- 5 Check for software updates or calibration bulletins from the manufacturer that address over-temperature thresholds
- 6 Perform a battery pack load test and cell balance check with manufacturer-specific diagnostic equipment
- 7 If the cooling system and sensors are healthy, follow the manufacturer's procedure to replace the battery pack or the affected module

What a P2D49 code really tells you

- A P2D49 code can be set by a temperature sensor that reads high even when the pack is actually cool, so always verify sensor accuracy before condemning the battery
- Many vehicles will set this code after a single over-temperature event during fast charging in hot weather, and the code may clear itself after the pack cools without any repair
- The cooling system for the high-voltage battery is often separate from the engine cooling system, and a low coolant level in that dedicated loop is a commonly missed cause
- After any repair, the battery energy control module may need a relearn or adaptation procedure, otherwise the code can return immediately even though the fault is fixed
- A weak 12-volt auxiliary battery can cause erratic module behavior and false temperature codes, so check it before diving into the high-voltage system

Can I keep driving with P2D49?

Do not continue driving with an active P2D49 code because an overheated high-voltage battery can suffer permanent damage and, in rare cases, create a fire risk. Stop safely, allow the pack to cool, and have the vehicle towed to a qualified hybrid or electric vehicle technician if the warning persists.



Tools that help

- Hybrid/EV-capable scan tool with manufacturer-specific software
- Infrared thermometer for non-contact temperature checks
- Digital multimeter with high-voltage safety rating
- Coolant refractometer or hydrometer
- Battery pack load tester and cell balance analyzer
- Insulated safety gloves and high-voltage disconnect tools

Reading P2D49

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
D	Hybrid propulsion.
49	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 · **P2D48** Hybrid/EV Battery Pack D Over Temperature · **P2D4A** Hybrid/EV Battery Pack F 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/p2d49/>

