

GENERIC · POWERTRAIN

P2E50

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2E50

Battery Charger Coupler Temperature Sensor D Circuit Range/Performance

P2E50 indicates that the powertrain control module (PCM) has detected an out-of-range or performance fault in the temperature sensor circuit for the battery charger coupler, which is the connector assembly that links the charging system to the high-voltage battery pack. The PCM monitors the sensor's signal for expected voltage changes as the coupler warms and cools, and it sets this code when the signal stays fixed, jumps erratically, or falls outside the plausible range for the current operating conditions.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon message, often with no other noticeable symptoms.
- Reduced or disabled battery charging, especially in plug-in hybrid or electric vehicles, because the PCM limits charging to protect the coupler.
- A warning message on the dash indicating a charging system fault or that the vehicle cannot be charged.
- Intermittent charging interruptions or a charge session that stops before the battery is full.
- Overheating of the charge coupler or charge port area during charging, which may be accompanied by a burning smell.
- In rare cases, the vehicle may refuse to start or enter a reduced power mode if the fault affects high-voltage system readiness.

Common causes, most likely first

- 1 A faulty battery charger coupler temperature sensor that has drifted in resistance or failed internally.
- 2 Damaged, corroded, or loose wiring and connectors between the sensor and the PCM, often due to moisture intrusion or vibration.
- 3 A short or open circuit in the sensor signal or ground circuit, sometimes caused by chafed harness insulation.
- 4 Poor electrical contact at the coupler connector pins, leading to intermittent signal loss.
- 5 A PCM software issue or internal fault in the temperature sensing circuit, though this is less common.
- 6 Extreme ambient temperatures or repeated high-power charging that push the sensor beyond its normal operating range and trigger a performance code.



How to diagnose and fix it

- 1 Use a scan tool to retrieve all stored codes and freeze-frame data, then clear the code and test-drive or initiate a charging session to see if it returns.
- 2 Visually inspect the battery charger coupler, its connector, and the wiring harness for signs of damage, corrosion, moisture, or loose pins.
- 3 Measure the resistance of the temperature sensor at the coupler connector and compare it to the manufacturer's specification for the current ambient temperature.
- 4 Backprobe the sensor signal and ground wires at the PCM connector to check for opens, shorts, or excessive resistance while wiggling the harness.
- 5 If the sensor is integrated into the coupler assembly and not serviceable separately, replace the coupler or sensor according to the manufacturer's procedure.
- 6 Check for technical service bulletins (TSBs) or software updates for the PCM that address false or erratic temperature sensor codes.
- 7 After repairs, clear the codes and verify proper charging operation and sensor signal response with a scan tool during a complete charge cycle.

What the coupler sensor code hides

- A common misdiagnosis is replacing the entire battery charger coupler when the real problem is a corroded connector pin or chafed wire a few inches away, so always perform a resistance and voltage drop test before condemning the sensor.
- This code can be set by a perfectly functional sensor if the PCM's learned temperature offset is corrupted, so a software reflash or adaptive learning reset may resolve it without any hardware replacement.
- In some vehicles, the coupler temperature sensor shares a ground circuit with other sensors, and a fault in that shared ground can set P2E50 along with unrelated codes, so check for multiple codes before assuming the sensor itself failed.
- The PCM may set P2E50 only after a complete charging cycle, so a short test drive may not reproduce the fault; a full charge session is often needed to confirm the repair.
- Extreme cold or heat can cause the sensor's resistance to fall outside the expected range temporarily, and the code may be a false alarm if the vehicle was recently charged in extreme ambient conditions.

Can I keep driving with P2E50?

You can usually drive the vehicle with this code, but avoid high-power charging and long trips until it is diagnosed, because a faulty coupler temperature sensor can prevent the charging system from safely managing heat. If the vehicle shows a charging system warning or refuses to charge, do not force a charge session and seek service promptly.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with resistance and voltage measurement functions
- Backprobe pins or breakout leads for connector testing
- Manufacturer service information for sensor resistance specifications and wiring diagrams
- Infrared thermometer for checking coupler temperature during charging

Reading P2E50

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

Often seen with

P0A0D High Voltage System Interlock Circuit A High · **P0AA6** Hybrid/EV Battery Voltage System Isolation Fault
 · **P2E4F** Battery Charger Coupler Temperature Sensor D Circuit · **P2E51** Battery Charger Coupler Temperature Sensor D Circuit Low

See it working

Watch the animated explainer [How a Gyroscope Works: Gimbals and Precession](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2e50/>

