

GENERIC · POWERTRAIN

P2E1F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2E1F

Drive Motor A Phase Y Current Sensor Circuit

P2E1F indicates that the powertrain control module has detected an implausible signal from the current sensor that monitors the Y phase of the drive motor A circuit, which is part of the high-voltage traction system. The computer compares the sensor's reported current against expected values and flags the code when the signal falls outside the acceptable range or fails a rationality check.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

High

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon message, often with no other noticeable symptoms
- Reduced power output or limp mode engagement due to the vehicle limiting torque to protect the inverter and motor
- Intermittent stalling or failure to start if the hybrid or electric system disables the motor drive
- Audible whine or clicking from the motor area in rare cases where the sensor fault is accompanied by a physical phase issue
- Dashboard warning indicating a high-voltage system fault, sometimes accompanied by a message to pull over safely

Common causes, most likely first

- 1 Faulty current sensor integrated into the motor phase busbar or inverter assembly
- 2 Damaged or corroded wiring harness between the current sensor and the control module
- 3 Loose or contaminated connector pins at the sensor or controller
- 4 Internal failure of the inverter or motor control module affecting sensor reference voltage
- 5 Electrical interference or ground offset in the low-voltage sensor circuit
- 6 Mechanical damage to the phase cable or busbar causing abnormal current readings



How to diagnose and fix it

- 1 Perform a visual inspection of the motor phase cables, connectors, and sensor mounting for signs of damage, corrosion, or loose connections
- 2 Use a scan tool to retrieve freeze-frame data and check for related codes in the hybrid or electric powertrain system
- 3 Measure the sensor reference voltage and ground at the sensor connector with a multimeter, comparing to manufacturer specifications
- 4 Check the wiring harness for continuity and resistance between the sensor and the control module, looking for opens or shorts
- 5 Swap the current sensor with a known-good unit if accessible, or perform a signal simulation to verify the sensor output
- 6 If the sensor and wiring test good, follow the manufacturer's diagnostic flow for the inverter or motor control module, which may require replacement
- 7 Clear codes and perform a road test to confirm the repair, ensuring the code does not return under load

When the sensor is not the culprit

- A common misdiagnosis is replacing the current sensor when the real fault is a chafed wire in the harness that only shorts intermittently under vibration.
- The code can be set by a weak 12-volt battery or poor ground connection that causes the sensor's reference voltage to drop, so always check the low-voltage supply first.
- On some vehicles, the current sensor is part of the inverter assembly and cannot be replaced separately, leading to unnecessary inverter replacement if the wiring is overlooked.
- A failing motor phase cable or busbar can cause abnormal current spikes that the sensor correctly reports, so the sensor may be flagging a genuine motor issue rather than a sensor fault.
- After repairs, some manufacturers require a calibration or learn procedure for the current sensor, and skipping it can cause the code to reset immediately.

Can I keep driving with P2E1F?

Do not continue driving if the vehicle enters limp mode or displays a high-voltage system warning, as this indicates a potential safety risk. If the only symptom is the warning light and the car drives normally, you may drive cautiously to a repair shop, but avoid heavy acceleration or high loads.



Tools that help

- OBD-II scan tool with hybrid/EV capability
- Digital multimeter with min/max recording
- Oscilloscope for signal analysis
- Manufacturer service information for wiring diagrams and pinpoint tests
- Insulation tester for high-voltage cable checks
- Terminal pick and contact cleaner for connector service

Reading P2E1F

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
E	Hybrid propulsion.
1F	The exact fault within that area.

Often seen with

P0A3F Drive Motor A Position Sensor Circuit · **P0A40** Drive Motor A Position Sensor Circuit Range/Performance · **P2E1E** Drive Motor A Phase X Current Sensor Circuit High · **P2E20** Drive Motor A Phase Y Current Sensor Circuit Range/Performance

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/p2e1f/>

