

GENERIC · POWERTRAIN

P2E2A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2E2A

Drive Motor A Excitation Current Sensor Circuit High Voltage

P2E2A indicates that the powertrain control module has detected an abnormally high voltage on the signal circuit of the excitation current sensor for drive motor A, which is the sensor that monitors the field or excitation current feeding the motor's rotor or stator windings. The computer expects the sensor's output to stay within a calibrated voltage window, and a sustained reading above the upper threshold triggers this code because the signal is outside the range the control module can trust.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Professional	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 or a limp-home mode as the controller limits motor output to protect the drive system
- Intermittent hesitation or shudder during acceleration because the excitation current feedback is unreliable
- A warning message on the instrument cluster indicating a hybrid or electric drive system fault
- Possible inability to restart the vehicle after a key cycle if the controller sets a hard fault

Common causes, most likely first

- 1 A faulty excitation current sensor that internally shorts or drifts high, sending an out-of-range signal to the controller
- 2 Damaged or chafed wiring in the sensor signal circuit, such as a short to voltage or a poor splice that raises the signal voltage
- 3 Corroded or loose connector pins at the sensor or at the control module, adding resistance that skews the voltage reading
- 4 A failed control module driver or reference voltage circuit that overpowers the sensor signal line
- 5 Moisture intrusion into the sensor connector or harness, causing intermittent high-voltage readings
- 6 Aftermarket accessories or improper repairs that tap into the sensor wiring and introduce voltage on the signal circuit



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, then record freeze-frame data for P2E2A to see the sensor voltage at the moment of failure
- 2 Visually inspect the excitation current sensor, its connector, and the harness routing for chafing, corrosion, or moisture intrusion
- 3 Back-probe the sensor signal circuit at the connector and compare the live voltage reading with the scan tool parameter to confirm the fault is real
- 4 Check the sensor reference and ground circuits for correct voltage and resistance, looking for a short to voltage on the signal line
- 5 Disconnect the sensor and measure the signal circuit voltage with the key on to see if the controller or wiring is pulling the line high
- 6 Replace the excitation current sensor if the wiring and connectors pass inspection but the signal remains out of range
- 7 Clear the codes and perform a road test with live data monitoring to verify the repair and confirm the voltage stays within specification

What the excitation current sensor really does

- Many technicians replace the sensor first, but a chafed signal wire shorting to a nearby 12-volt circuit will set this code repeatedly even with a new sensor installed.
- A weak or failing 12-volt auxiliary battery can cause the controller to set false high-voltage sensor codes because the reference voltage becomes unstable during cranking.
- The excitation current sensor is often integrated into the motor assembly on some designs, so a high-voltage code can actually point to an internal motor fault rather than a standalone sensor.
- This code can be set by a poor ground at the control module, which raises the sensor's return voltage and makes the signal appear high to the controller.
- After any repair, the controller may need a relearn or adaptation reset before the code will stay cleared, even when the electrical fault is fixed.

Can I keep driving with P2E2A?

You can usually drive the vehicle to a repair shop, but avoid hard acceleration and long trips because the controller may enter a reduced-power mode without warning. If the vehicle enters limp mode or will not restart, stop driving and arrange a tow to prevent further damage to the drive system.



Tools that help

- OBD-II scan tool with live data and hybrid/EV module access
- Digital multimeter with back-probe pins
- Wiring diagram for the excitation current sensor circuit
- Insulation piercing probes or breakout box
- Hand tools for connector and sensor removal

Reading P2E2A

- P** Powertrain: engine, transmission and emissions.
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- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
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- E** Hybrid propulsion.
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- 2A** 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
 · **P2E29** Drive Motor A Excitation Current Sensor Circuit Low Voltage · **P2E2B** Drive Motor A Excitation Current Too High

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/p2e2a/>

