

GENERIC · POWERTRAIN

P2E1A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2E1A

Drive Motor A Inverter Voltage Sensor A/B Correlation

P2E1A indicates that the inverter controller for drive motor A has detected a mismatch between two independent voltage sensor readings that should closely agree. The computer compares sensor A and sensor B signals and sets this code when the correlation between them falls outside the expected range, pointing to a sensor, wiring, or inverter internal fault.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	High	Professional	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon message, often with no other symptoms
- Reduced power or limp mode as the inverter limits motor output to protect the system
- Intermittent hesitation or shudder during acceleration or regenerative braking
- Possible stalling or failure to start if the inverter shuts down completely
- A warning message on the dash such as 'Hybrid System Fault' or 'Electric Drive Fault'

Common causes, most likely first

- 1 Faulty voltage sensor A or sensor B inside the inverter, causing one signal to drift or fail
- 2 Damaged or corroded wiring or connector pins between the sensors and the inverter control module
- 3 High-voltage interlock loop issue or poor ground connection affecting sensor reference voltage
- 4 Internal inverter circuit board fault, such as a failed analog-to-digital converter or reference voltage regulator
- 5 Software calibration error in the inverter control module requiring a reflash or update
- 6 Moisture intrusion or contamination inside the inverter housing causing signal interference



How to diagnose and fix it

- 1 Connect a scan tool and record all freeze-frame data and related codes to confirm P2E1A is active and not history
- 2 Visually inspect the inverter harness, connectors, and ground points for corrosion, chafing, or loose pins
- 3 Measure reference voltage and signal voltage at both sensor A and sensor B connectors with a digital multimeter and compare to specifications
- 4 Perform a wiggle test on the harness while monitoring sensor voltages to reveal intermittent wiring faults
- 5 Check for technical service bulletins or software updates for the inverter control module and apply any available calibration
- 6 If wiring and sensors check out, follow the manufacturer's diagnostic flow for internal inverter fault isolation, which may require replacement of the inverter assembly
- 7 After repairs, clear codes and perform a road test with live data monitoring to verify sensor correlation returns to normal

What Most Techs Miss on P2E1A

- A correlation code does not automatically mean a sensor has failed; a poor ground or reference voltage drop can skew both sensors and trigger the same code.
- Intermittent connector fretting corrosion at the inverter is a common hidden cause that only shows up during temperature swings or vibration.
- Some vehicles require a specific drive cycle or inverter self-test to complete before the code will clear, so a simple code erase may not be enough.
- Aftermarket high-voltage components or improper jump-starting can introduce voltage spikes that damage inverter sensor circuits and set this code.
- The code can be stored without any drivability complaint if the correlation error is small and only occurs under specific load or temperature conditions.

Can I keep driving with P2E1A?

Do not continue driving with this code active, as the inverter may shut down unexpectedly and cause a loss of motive power. Have the vehicle towed to a qualified service facility for diagnosis and repair.

Tools that help

- OBD-II scan tool with live data and graphing capability
- Digital multimeter with high-voltage safety rating
- Manufacturer-specific diagnostic software or subscription
- Insulated hand tools and personal protective equipment for high-voltage work
- Wiring diagram and connector pinout reference for the inverter circuit



Reading P2E1A

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

Often seen with

P0A78 Drive Motor A Inverter Performance · **P0A94** DC/DC Converter A Performance · **P2E1B** Drive Motor A Phase X Current Sensor Circuit · **P2E1C** Drive Motor A Phase X Current Sensor Circuit Range/Performan

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/p2e1a/>

