

GENERIC · POWERTRAIN

P2E40

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2E40

Battery Charger B Module Forced Shutdown Voltage High

P2E40 indicates that the battery charger control module B has commanded a forced shutdown because it detected a voltage that exceeded its safe high threshold. The module monitors its output and internal supply rails, and when the voltage rises above the calibrated limit, it logs this code and disables charging to protect the battery and the charger hardware.

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

Symptoms you may notice

- Illumination of the battery charger warning light or a generic powertrain malfunction indicator lamp (MIL).
- The high-voltage battery may not accept a charge, leaving the vehicle with reduced electric range or a no-start condition.
- A message on the driver information display stating 'Charging System Fault' or 'Unable to Charge'.
- Possible audible click from the charger contactor opening when the fault occurs.
- Often no symptoms besides the warning light, especially if the fault is intermittent and the charger resets after a key cycle.

Common causes, most likely first

- 1 A failing battery charger control module B, where internal voltage regulation components degrade and allow the output to overshoot.
- 2 High resistance or loose connections in the charger's high-voltage output circuit, causing voltage spikes under load.
- 3 A faulty voltage sense circuit within the charger, leading to inaccurate high-voltage readings and a false forced shutdown.
- 4 Software or calibration errors in the charger control module that misinterpret normal voltage transients as overvoltage events.
- 5 External overvoltage from the alternating current (AC) supply, such as a faulty wall box or grid surge, that exceeds the charger's input protection limits.
- 6 A shorted or leaking suppression capacitor or filter component on the charger's direct current (DC) bus, causing voltage ripple and peaks.



How to diagnose and fix it

- 1 Connect a scan tool and retrieve all stored codes, then record freeze-frame data for P2E40 to see the voltage value and conditions at the moment of fault.
- 2 Inspect the charger's high-voltage cables and connectors for corrosion, loose terminals, or damaged insulation, and repair any faults found.
- 3 Measure the AC input voltage at the charge port during a charging session to confirm it stays within the manufacturer's specified range.
- 4 Check the charger control module's ground connections for cleanliness and tightness, as a poor ground can cause voltage reference errors.
- 5 Perform a guided diagnostic routine for the charger module using the factory scan tool to test the voltage sense circuit and output regulation.
- 6 If the sense circuit and wiring are good, reprogram the charger control module with the latest software calibration from the manufacturer.
- 7 Replace the battery charger control module B if internal overvoltage protection continues to trip after all external causes are ruled out.

When the charger reports high voltage

- A common oversight is blaming the charger module itself when the real cause is a failing 12-volt auxiliary battery that drags down the module's reference voltage and skews its high-voltage readings.
- The code can be set by a momentary voltage spike during plug-in or unplugging, so always check for a history of intermittent charging interruptions before condemning hardware.
- Some vehicles use the same charger module for both AC and DC charging, and a fault in the DC fast-charge path can trigger P2E40 even when AC charging works normally.
- After replacing the charger module, many platforms require a calibration or learn procedure for the voltage sense circuit; skipping it can cause the new module to set the same code.
- A scan tool that only reads generic OBD-II codes may not show the charger module's live voltage data, so a factory-level tool is often needed to see the actual values that triggered the shutdown.

Can I keep driving with P2E40?

You can usually continue driving the vehicle because the fault affects charging rather than propulsion, but avoid repeated charging attempts until the cause is found. If the high-voltage battery state of charge is already low, limit driving to reach a safe location or service center.



Tools that help

- Factory-level scan tool with battery charger module support
- Digital multimeter with high-voltage DC capability
- Insulation tester (megohmmeter) for high-voltage cable checks
- Basic hand tools for connector and ground inspection
- Oscilloscope for viewing voltage ripple on the DC bus

Reading P2E40

- 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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- 40** The exact fault within that area.

Often seen with

P0AA6 Hybrid/EV Battery Voltage System Isolation Fault · **P0AFA** Hybrid/EV Battery System Voltage Low · **P2E41** Hybrid/EV Electronics Coolant Pump B Control Circuit/Open · **P2E42** Hybrid/EV Electronics Coolant Pump B Performance

See it working

Watch the animated explainer [EV Powertrain Trainer: How an Electric Car Drives](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2e40/>

