

GENERIC · POWERTRAIN

P2E31

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2E31

Battery Charger B Module Supply Voltage High

P2E31 indicates that the powertrain control module has detected an abnormally high supply voltage on the control circuit for the battery charger B module, which is often a separate auxiliary or high-voltage charging component. The computer compares the voltage on that circuit to an expected range and flags the code when the signal exceeds the upper limit, pointing to a wiring, connection, or module fault rather than a routine low battery.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon message with no other obvious change in driving behavior
- The battery charger module may stop charging or switch to a reduced power mode, leading to a slow decline in battery state of charge over time
- A warning message on the dash related to the charging system or auxiliary battery, depending on the vehicle's display strategy
- Possible electrical accessories that rely on the charger module behaving erratically or shutting down
- In some cases, the vehicle may enter a limited-power or fail-safe mode if the module is part of a high-voltage charging system
- Often no symptoms besides the warning light, especially if the fault is intermittent or only sets under specific voltage conditions

Common causes, most likely first

- 1 A short to voltage on the supply voltage circuit between the battery charger B module and the control module, often from chafed wiring or a pinched harness
- 2 A faulty battery charger B module internally shorted or failing to regulate its supply voltage
- 3 Corroded, loose, or damaged connector pins at the charger module or at the control module, creating a high-resistance or intermittent high-voltage signal
- 4 A control module software calibration issue that misinterprets a normal voltage spike as excessive
- 5 An overcharging condition from the main charging system that raises the entire electrical system voltage above the module's expected range
- 6 Water intrusion into the charger module or its connectors, causing conductive paths that elevate the supply voltage signal



How to diagnose and fix it

- 1 Verify the code with a scan tool and record freeze-frame data to see the supply voltage value and the conditions under which the fault set
- 2 Inspect the battery charger B module harness and connectors for chafing, corrosion, water intrusion, and loose pins, repairing any damage found
- 3 Measure the supply voltage at the charger module connector with a digital multimeter and compare it to the manufacturer's specification, looking for a value that is consistently higher than expected
- 4 Check the main charging system output to rule out a global overvoltage condition that could affect multiple modules
- 5 Perform a wiggle test on the harness while monitoring the supply voltage parameter to catch intermittent shorts to voltage
- 6 If wiring and connections are good, substitute a known-good battery charger B module or follow the manufacturer's diagnostic flow for module testing
- 7 After repair, clear the code and complete a drive cycle to confirm the fault does not return

What a high supply voltage really means

- A high supply voltage code on a charger module circuit often originates from a short to voltage in the harness rather than from the module itself, so a thorough wiring inspection is more productive than immediately replacing parts.
- Technicians sometimes overlook that a failing main alternator or voltage regulator can raise system voltage enough to set this code in modules that are not directly part of the charging system.
- Intermittent sets of P2E31 that clear on their own frequently trace to a connector that is not fully seated or to a harness that rubs against a metal bracket only during certain driving conditions.
- The code does not necessarily mean the battery charger B module has failed; it only reports that the voltage on its supply circuit exceeded the expected range, which can happen from a poor ground reference elsewhere in the circuit.
- On vehicles with dual batteries or auxiliary charging systems, a weak or mismatched auxiliary battery can cause voltage spikes that the module interprets as a high supply condition.

Can I keep driving with P2E31?

You can generally drive the vehicle with this code if the only symptom is the warning light, but avoid long trips or heavy electrical loads until the fault is diagnosed because a charging system fault could leave you stranded. If the vehicle enters a reduced-power mode or the battery warning light is also on, have it checked promptly.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Manufacturer service information for wiring diagrams and voltage specifications
- Back probe pins or breakout box for connector testing
- Test light or load tester for circuit integrity checks

Reading P2E31

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

Often seen with

P0562 System Voltage Low · **P0563** System Voltage High · **P0A0D** High Voltage System Interlock Circuit A High · **P2E30** Battery Charger B Module Supply Voltage Low · **P2E32** Battery Charger A Module Forced Shutdown Voltage 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/p2e31/>

