

GENERIC · POWERTRAIN

P0AA1

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0AA1

Hybrid/EV Battery Positive Contactor Circuit Stuck Closed

P0AA1 indicates that the battery energy control module has detected the high-voltage positive contactor is stuck in the closed position, meaning the switch that connects the hybrid or electric vehicle battery pack to the rest of the high-voltage system cannot open when commanded. The computer monitors contactor state by comparing commanded open or closed status with actual voltage and current behavior, and it sets this code when the positive contactor remains engaged even after a shutdown request.

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

Symptoms you may notice

- Often no symptoms besides the warning light, especially if the contactor stuck closed while the vehicle was already powered down.
- The high-voltage system may remain energized after the key is turned off, which can be a serious safety concern during service.
- The vehicle may fail to enter sleep mode, leading to a parasitic drain on the 12-volt battery.
- A hybrid or electric vehicle may refuse to start or may show a 'ready' indicator that never turns off.
- The dashboard may display a high-voltage system fault message or a red battery icon.
- In some cases the vehicle may drive normally but store the code intermittently after a shutdown sequence.

Common causes, most likely first

- Contactor coil driver circuit inside the battery energy control module has failed, keeping the contactor energized.
- The positive contactor itself has welded or mechanically stuck closed due to arcing or excessive current.
- A short to voltage in the wiring harness between the control module and the contactor coil.
- A faulty contactor position sensor or voltage sensing circuit that falsely reports the contactor as closed.
- Water intrusion or corrosion in the high-voltage battery pack connector causing unintended continuity.
- A software or calibration issue in the battery energy control module that misinterprets contactor state.



How to diagnose and fix it

- 1 Retrieve all stored codes and freeze-frame data with a scan tool capable of reading hybrid/EV-specific modules, then clear codes and verify whether P0AA1 returns after a key cycle.
- 2 Perform a visual inspection of the high-voltage battery pack connectors and harness for corrosion, water intrusion, or damaged pins.
- 3 Use a multimeter to check for continuity or voltage on the contactor coil control circuit with the module disconnected, looking for a short to voltage.
- 4 Command the contactor open and closed with a bidirectional scan tool while monitoring the contactor state parameter to see if the actual state follows the command.
- 5 If the contactor does not respond correctly, isolate the battery pack and test the positive contactor coil resistance and mechanical operation according to the manufacturer's service information.
- 6 Replace the faulty positive contactor or the battery energy control module as indicated by the test results, then perform any required initialization or calibration.
- 7 After repair, clear codes and road-test the vehicle through several power cycles to confirm the contactor opens and closes properly and the code does not return.

Before you condemn the battery pack

- A stuck-closed positive contactor can leave the high-voltage bus energized even with the vehicle off, so treat any P0AA1 as a live high-voltage hazard until proven otherwise.
- Technicians often replace the contactor when the real fault is a shorted coil driver inside the battery energy control module, so always test the control circuit before condemning the contactor.
- Some vehicles set P0AA1 after a low 12-volt battery causes a module reset during shutdown, and the code may not return once the auxiliary battery is charged and the system is reinitialized.
- A faulty voltage sensor on the high-voltage bus can mimic a stuck contactor by reporting voltage present when the contactor is actually open, so compare sensor readings with a known-good meter.
- The positive contactor is part of a precharge and main contactor pair, and a failure in the precharge circuit can cause the module to misreport the positive contactor state.

Can I keep driving with P0AA1?

Do not continue driving with P0AA1 because the high-voltage system may remain energized when it should be off, creating a shock hazard and potential fire risk. Have the vehicle towed to a qualified hybrid/EV service facility and avoid touching any orange high-voltage cables.



Tools that help

- Hybrid/EV-capable scan tool with bidirectional controls
- Digital multimeter with high-voltage safety rating
- Insulation tester or megohmmeter
- High-voltage safety gloves and insulated tools
- Manufacturer service information for contactor testing

Reading P0AA1

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- A** Hybrid propulsion.
- A1** The exact fault within that area.

Often seen with

P0A0D High Voltage System Interlock Circuit A High · **P0AA0** Hybrid/EV Battery Positive Contactor Circuit · **P0AA2** Hybrid/EV Battery Positive Contactor Circuit Stuck Open · **P0AA3** Hybrid/EV Battery Negative Contactor Circuit · **P0AA4** Hybrid/EV Battery Negative Contactor Circuit Stuck Closed

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/p0aa1/>

