

GENERIC · POWERTRAIN

P0C33

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0C33

Hybrid/EV Battery Temperature Sensor F Circuit

P0C33 indicates that the hybrid or electric vehicle battery pack's temperature sensor F circuit has a fault, meaning the battery energy control module is not receiving a valid signal from that specific sensor. The computer detects an abnormal voltage or resistance on the sensor's signal circuit, which prevents it from accurately monitoring the temperature of the battery cells in that zone.

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

Symptoms you may notice

- Illumination of the check engine light or hybrid system warning light
- Often no symptoms besides the warning light, especially if the fault is intermittent
- Reduced hybrid system power or a forced limp mode in some vehicles
- Failure of the battery cooling fan to operate correctly, leading to overheating in extreme cases
- Inaccurate state-of-charge or state-of-health readings on the dashboard
- Possible refusal to start or engage the hybrid system if the fault is severe

Common causes, most likely first

- 1 Faulty battery temperature sensor F itself (open or shorted thermistor)
- 2 Damaged or corroded wiring harness or connector at the sensor
- 3 Open or shorted signal circuit between the sensor and the battery energy control module
- 4 Poor electrical connection at the battery energy control module connector
- 5 Internal fault in the battery energy control module (less common)
- 6 Physical damage to the sensor or wiring from debris or impact



How to diagnose and fix it

- 1 Connect a scan tool and retrieve all stored codes, then record freeze-frame data for P0C33 to understand the conditions when it set.
- 2 Visually inspect the battery temperature sensor F and its wiring for obvious damage, corrosion, or loose connections.
- 3 Disconnect the sensor and measure its resistance with a multimeter, comparing to the manufacturer's temperature-resistance chart; replace if out of specification.
- 4 Check the signal circuit for continuity and short-to-ground or short-to-power between the sensor connector and the battery energy control module.
- 5 Inspect the battery energy control module connector for bent pins or corrosion, and repair as needed.
- 6 If wiring and sensor test good, substitute a known-good sensor or simulate the signal to verify the control module responds correctly.
- 7 Clear codes and perform a road test to confirm the repair, ensuring the sensor reads within normal range under varying temperatures.

What most technicians overlook on P0C33

- A common mistake is replacing the battery temperature sensor without checking the wiring harness, which often suffers from chafing or corrosion in the harsh environment around the battery pack.
- The code can be set by a faulty cooling fan or blocked air duct that causes the battery to overheat, indirectly triggering the sensor circuit fault if the sensor's resistance goes out of range.
- In some vehicles, the battery temperature sensors are wired in a series or multiplexed configuration, so a fault in one sensor can affect readings from others and set multiple related codes.
- Intermittent faults often occur due to vibration or temperature swings, so a wiggle test of the harness while monitoring sensor data can reveal a poor connection that static tests miss.
- The battery energy control module may need to be reprogrammed or recalibrated after sensor replacement, and failing to do so can leave the code stored even with a new sensor.

Can I keep driving with P0C33?

It is generally safe to drive with P0C33 if the vehicle is not in limp mode and the battery temperature gauge reads normally, but avoid aggressive driving or heavy electrical loads that could stress the battery. If the hybrid system warning light is on or performance is reduced, have the vehicle inspected promptly to prevent battery damage.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Manufacturer service information for wiring diagrams and resistance specifications
- Socket set and trim removal tools
- Insulation piercing probes or back-probe kit

Reading P0C33

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

Often seen with

P0A0D High Voltage System Interlock Circuit A High · **P0AFA** Hybrid/EV Battery System Voltage Low · **P0C32** Hybrid/EV Battery Cooling System A Performance · **P0C34** Hybrid/EV Battery Temperature Sensor F Circuit Range/Perform · **P0C35** Hybrid/EV Battery Temperature Sensor F Circuit Low

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/p0c33/>

