

GENERIC · POWERTRAIN

P0C12

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0C12

Drive Motor A Inverter Phase V Over Temperature

P0C12 indicates that the inverter for drive motor A has reported an over-temperature condition on its phase V output circuit, meaning the power electronics that convert direct current (DC) battery voltage into three-phase alternating current (AC) for the motor are running hotter than the manufacturer's safe limit. The computer detects this through a temperature sensor inside the inverter and sets the code when the reading exceeds a calibrated threshold for a set time, often triggering a power reduction to protect the hardware.

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 a dedicated hybrid/EV warning lamp, often with no other noticeable symptoms at first.
- Reduced propulsion power or a limp-home mode that limits vehicle speed and acceleration.
- The vehicle may refuse to start or shift into gear if the inverter temperature is still above the safe threshold.
- Intermittent power loss during sustained high-load driving, such as climbing a long grade or towing.
- A burning or hot-electronics smell from the inverter area in severe cases, though this is less common.
- Audible cooling fan operation that continues after the vehicle is shut off, as the system tries to cool the inverter.

Common causes, most likely first

- 1 A failing or degraded coolant pump that reduces flow through the inverter cooling circuit.
- 2 Low coolant level or trapped air in the inverter cooling loop, often after service or a slow leak.
- 3 A blocked or clogged inverter radiator or cooling fins packed with debris.
- 4 A faulty inverter temperature sensor that reports a higher temperature than actual.
- 5 A stuck or inoperative cooling fan that prevents airflow over the inverter heat sink.
- 6 Internal inverter degradation, such as failing power modules or thermal paste breakdown, causing excessive heat generation.
- 7 Wiring damage or corrosion in the temperature sensor circuit, leading to an erratic or biased signal.



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data to see the conditions when P0C12 set.
- 2 Check the inverter coolant level and condition, and pressure-test the cooling system for leaks or air pockets.
- 3 Verify that the inverter coolant pump runs with the key on and that flow is visible in the reservoir or service port.
- 4 Inspect the inverter radiator and cooling fan for obstructions, and confirm the fan operates when commanded.
- 5 Measure the resistance and signal voltage of the inverter temperature sensor circuit, comparing to manufacturer specifications.
- 6 Use a scan tool to monitor live inverter temperature data while the vehicle is running and compare it to actual surface temperature readings with an infrared thermometer.
- 7 If all external cooling and sensor circuits check out, follow the manufacturer's diagnostic flow for internal inverter faults, which may require inverter replacement or repair.

Cooling system faults mimic inverter failure

- A significant number of P0C12 cases are caused by a weak coolant pump or a low coolant level rather than a failed inverter, so always verify coolant flow before condemning the power electronics.
- Air trapped in the inverter cooling loop after a coolant service can create hot spots that trigger the code even when the coolant level appears correct, so proper bleeding is essential.
- The inverter temperature sensor circuit can be affected by corrosion at connectors, and a biased signal may set P0C12 without any actual overheating.
- Some vehicles will set P0C12 as a history code after a brief overheating event and will not command a power reduction unless the fault is active, so clearing the code and test-driving may be appropriate after repairs.
- The code does not always mean the inverter is internally damaged; external cooling system components, such as the radiator fan or pump, are common root causes that are often overlooked.

Can I keep driving with P0C12?

Do not continue driving with an active P0C12, because continued operation can overheat and permanently damage the inverter, leading to a costly repair. If the light is on but the vehicle drives normally, limit driving to a short distance to a repair facility and avoid heavy acceleration or sustained high loads.

Tools that help

- OBD-II scan tool with live data and hybrid/EV module access
- Infrared thermometer
- Digital multimeter
- Coolant pressure tester
- Manufacturer service information for cooling system bleeding and sensor specifications



Reading P0C12

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

Often seen with

P0A3F Drive Motor A Position Sensor Circuit · **P0C0E** Drive Motor B Inverter Power Supply Circuit/Open · **P0C0F** Drive Motor B Inverter Power Supply Circuit Low · **P0C10** Drive Motor B Inverter Power Supply Circuit High · **P0C11** Drive Motor A Inverter Phase U Over Temperature

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/p0c12/>

