

GENERIC · POWERTRAIN

P0BDC

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0BDC

Drive Motor Inverter Temperature Sensor E Circuit Range/Performance

P0BDC indicates that the drive motor inverter temperature sensor E circuit is reporting a range or performance fault, meaning the voltage signal from that sensor is outside the expected window for the current operating conditions. The inverter controller compares the sensor's output against plausible limits and sets this code when the signal is erratic, stuck, or implausible rather than completely open or shorted.

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

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon message, often with no other noticeable symptoms
- Reduced power output or limp-home mode as the inverter limits current to protect itself
- Intermittent loss of drive or hesitation under acceleration if the sensor signal drops out briefly
- Overheating warning or shutdown if the inverter misreads temperature and fails to activate cooling
- Poor energy efficiency or reduced electric range on plug-in and hybrid vehicles
- In rare cases, the vehicle may refuse to start or shift into gear when the fault is active

Common causes, most likely first

- 1 Faulty inverter temperature sensor E itself, such as an internal short, open winding, or degraded thermistor element
- 2 Damaged or chafed wiring harness between the sensor and the inverter control module, often from heat, vibration, or rodent damage
- 3 Corroded or loose electrical connector pins at the sensor or controller, causing intermittent high resistance
- 4 Coolant flow problems or air pockets in the inverter cooling circuit that cause the sensor to read outside its expected range
- 5 Failed inverter control module or internal signal conditioning circuit that misinterprets the sensor voltage
- 6 Software calibration issue in the inverter controller that sets an overly tight plausibility threshold
- 7 Extreme ambient temperatures or a recently replaced inverter without proper sensor adaptation



How to diagnose and fix it

- 1 Use a scan tool to read the freeze-frame data and confirm the sensor E voltage is outside the normal range at the reported temperature
- 2 Visually inspect the sensor connector and harness for corrosion, chafing, or loose pins, and repair any damage found
- 3 Measure the sensor resistance with a multimeter and compare it to the manufacturer's temperature-resistance chart for the current coolant temperature
- 4 Back-probe the sensor signal wire at the inverter controller and check for a stable voltage that changes with temperature
- 5 Check the inverter cooling system for proper coolant level, flow, and bleed procedure, and correct any air pockets
- 6 If the sensor and wiring test good, substitute a known-good sensor or use a signal simulator to verify the controller responds correctly
- 7 Replacing the inverter temperature sensor or the inverter assembly only after all electrical and cooling checks have passed

What the inverter temperature sensor E really monitors

- This code often appears after a coolant service or inverter replacement because trapped air causes the sensor to read a temperature spike that never actually occurred.
- A poor ground connection at the inverter housing can shift the sensor reference voltage and set a range code without any sensor fault at all.
- Technicians sometimes replace the inverter assembly when the real problem is a \$20 sensor or a chafed wire behind the connector, so always perform resistance and voltage-drop tests first.
- The sensor E circuit may share a reference voltage with other temperature sensors, so a fault in one sensor can pull down the shared line and set multiple related codes.
- On some vehicles, this code can be set by a low 12-volt battery or charging system issue that causes the controller to boot with an unstable reference voltage.

Can I keep driving with P0BDC?

You can usually drive the vehicle short distances at reduced power to reach a repair shop, but avoid heavy acceleration, sustained high speeds, and towing until the fault is repaired. If the vehicle enters limp mode or shows an overheating warning, stop driving and have it towed to prevent inverter damage.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with temperature probe
- Manufacturer service information for sensor resistance charts and wiring diagrams
- Back-probe kit or breakout box for connector testing
- Coolant refractometer or hydrometer for checking inverter coolant condition

Reading P0BDC

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

Often seen with

P0A3F Drive Motor A Position Sensor Circuit · **P0A93** Inverter A Cooling System Performance · **P0BDB** Drive Motor Inverter Temperature Sensor E Circuit · **P0BDD** Drive Motor Inverter Temperature Sensor E Circuit Low · **P0C00** Drive Motor A Current 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/p0bdc/>

