

MAZDA · POWERTRAIN

P1112

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1112 · Mazda

Intake Air Temperature Sensor Circuit Intermittent

P1112 on Mazda vehicles means the powertrain control module (PCM) has detected an intermittent fault in the intake air temperature (IAT) sensor circuit, where the signal momentarily drops out or jumps erratically rather than failing completely. The PCM logs this code when the IAT voltage moves outside the expected range for a calibrated amount of time, often due to a loose connection or a sensor that breaks down only when hot or vibrating.

SYSTEM

Powertrain

CODE TYPE

Mazda specific

SEVERITY

Low

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Often no symptoms besides the warning light, especially if the intermittent fault is brief and the PCM can still read a plausible temperature.
- A momentary stumble or rough idle that appears and disappears, particularly after the engine bay heat-soaks or the car hits a bump.
- Poor fuel economy or slightly erratic shifting as the PCM substitutes a default intake air temperature and adjusts fuel and ignition timing conservatively.
- A check engine light that comes and goes over several drive cycles, sometimes clearing itself before you can get the car scanned.
- In cold weather, a brief rich-running condition or elevated idle during the first minutes after a cold start.
- A pending P1112 that only sets after a specific drive pattern, such as a long cruise followed by a stop-and-go sequence.



Common causes, most likely first

- 1 A loose, corroded, or backed-out terminal in the IAT sensor connector, which is the most common cause of an intermittent signal on higher-mileage Mazdas.
- 2 A chafed or heat-brittled section of the IAT signal or ground wire where the harness runs near the intake manifold or exhaust heat shielding.
- 3 An IAT sensor that is failing thermally, reading correctly when cold but opening or shorting internally once the intake air or engine bay reaches operating temperature.
- 4 A poor ground connection shared with other sensors on the same circuit, causing the IAT reference voltage to drift intermittently.
- 5 Water or oil intrusion into the sensor connector from a cracked intake boot or a leaking PCV hose, which temporarily shorts the signal.
- 6 A failing PCM driver or internal connection, which is rare but does occur on older Mazda units after repeated heat cycles.
- 7 Aftermarket air intake or filter installations that leave the IAT sensor poorly seated or the harness under tension.

How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P1112, then clear the code and test-drive with a live data stream watching IAT voltage while wiggling the sensor connector and harness.
- 2 Visually inspect the IAT sensor connector for corrosion, loose pins, or pushed-back terminals, and check the intake tract for cracks or oil intrusion.
- 3 Measure resistance across the IAT sensor at room temperature and again after warming the intake area with a heat gun, comparing against Mazda's temperature-resistance chart to catch a thermally intermittent sensor.
- 4 Backprobe the IAT signal wire at the PCM and at the sensor while flexing the harness section by section to locate a chafed or broken conductor.
- 5 Perform a voltage-drop test on the sensor ground circuit under load to rule out a shared ground that drifts intermittently.
- 6 Replace the IAT sensor only after the harness and connector have passed wiggle and resistance tests, then clear the code and complete a full drive cycle to confirm the repair.
- 7 If the fault persists with a known-good sensor and verified wiring, check for PCM software updates or internal driver faults before condemning the module.



Why an intermittent IAT code fools so many techs

- A P1112 that never returns after clearing is often a connector that was disturbed during unrelated service, so always check whether the intake tract was recently removed before replacing parts.
- The IAT sensor on many Mazda engines is integrated into the mass air flow (MAF) sensor housing, so a failing MAF element can set an intermittent IAT code without any separate IAT sensor to replace.
- Technicians who only check the sensor with an ohmmeter at room temperature will miss a thermally intermittent IAT sensor that only fails once the engine bay heat-soaks after a long drive.
- A chafed IAT signal wire can also disturb the shared 5-volt reference circuit, so watch for companion codes such as P0113 or P0108 that point to a harness problem rather than the sensor itself.
- Replacing the IAT sensor without performing a wiggle test on the harness is the most common misdiagnosis, because the new sensor will read correctly on the bench while the original fault remains in the wiring.

Can I keep driving with P1112?

P1112 is safe to drive on in most cases because the PCM substitutes a default intake air temperature and keeps fuel and ignition control within safe limits. Avoid long trips at sustained high speed or heavy towing until the fault is repaired, since the default value can slightly reduce fuel economy and throttle response.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with backprobe pins
- Mazda service information or wiring diagram for the IAT circuit
- Heat gun for thermal testing of the sensor
- Contact cleaner and dielectric grease for connector service

Reading P1112

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (Mazda): its meaning depends on the make.
1	Fuel and air metering.
12	The exact fault within that area.

Often seen with

P0107 MAP/Barometric Pressure Circuit Low Input · **P0108** MAP/Barometric Pressure Circuit High Input · **P0112** Intake Air Temperature Circuit Low Input · **P0113** Intake Air Temperature Circuit High Input · **P0123** Throttle Position Sensor A Circuit High Input



See it working

Watch the animated explainer [Fuel Trims Explained: Short-Term and Long-Term](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/mazda-p1112/>

