

CAN bus and multiplexing basics

Why two wires replaced a hundred, what the termination resistors do, and the resistance check that finds most bus faults.

PROCEDURE

- 1 Read the codes, but do not chase them**
Communication codes tell you who lost contact, not what broke. Note which modules are missing.
- 2 Do the 60 ohm check**
Key off, meter across CAN high and CAN low at a diagnostic connector.
- 3 Interpret the reading**
About 60 Ω healthy, about 120 Ω one terminator missing, open means broken pair, near zero means shorted.
- 4 Isolate by unplugging**
Disconnect modules one at a time to find one pulling the bus down.
- 5 Inspect the pair**
Check for untwisted repairs, chafe points and corroded connectors. The twist matters.

NUMBERS

Bus resistance, key off	about 60 Ω	two 120 Ω terminators in parallel
One terminator missing	about 120 Ω	or a break between the two ends
Termination resistor	120 Ω each end	prevents reflections
J1939 high-speed	250 or 500 kbit/s	heavy truck standard
Repair rule	keep the twist	untwisted repair sections invite noise faults

COMMON MISTAKES

- Measuring bus resistance with the key on — module pull-ups make the reading meaningless.
- Replacing modules that set communication codes when the wiring is the fault.
- Repairing a twisted pair with a straight untwisted splice.
- Assuming one network. Apparatus often runs a bodybuilder multiplex system alongside chassis J1939.

Overhaul Prep · overhaulprep.app/learn/can-bus-basics · practice and prep material, not a substitute for the manufacturer's service information.