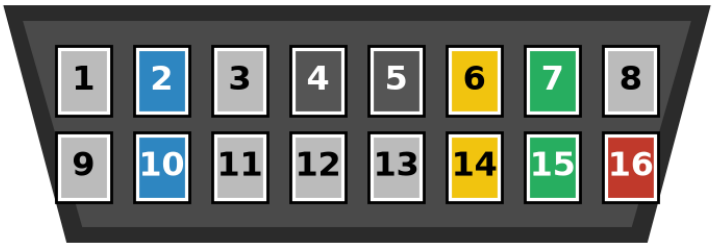
CAN Network Testing Cheat Sheet: 16-Pin OBD II

16-pin OBD II data link connector (SAE J1962), light- and medium-duty. High-speed CAN on pins 6 (High) and 14 (Low).

16-pin OBD II port (SAE J1962), face view



Pin	Function
1	Manufacturer use (GM: single-wire CAN)
2	SAE J1850 Bus + (PWM and VPW)
3	Manufacturer use (Ford: MS-CAN High)
4	Chassis ground
5	Signal ground
6	CAN High (ISO 15765-4)
7	K-line (ISO 9141-2 / ISO 14230 KWP2000)
8	Manufacturer use
9	Manufacturer use
10	SAE J1850 Bus - (PWM only)
11	Manufacturer use (Ford: MS-CAN Low)
12	Manufacturer use
13	Manufacturer use
14	CAN Low (ISO 15765-4)
15	L-line (ISO 9141-2 / ISO 14230)
16	Battery + (unswitched)

Looking into the vehicle connector: pins 1-8 on the wide top row, 9-16 on the bottom row, numbered left to right.

Tools needed

- Digital multimeter (DMM) with ohms and DC volts
- Back probes or a breakout box for the 16-pin DLC
- Optional: 2-channel lab scope for waveform checks
- Wiring diagram and service information for the vehicle

Safety and good practice

Key off for all resistance checks. Never probe with a meter set to ohms on a powered circuit.

Do not spread terminals. Back probe, or use a breakout box or the correct terminal test probe. A spread pin causes intermittent faults.

Let the bus go to sleep (modules shut down) or disconnect the battery before reading resistance. An awake bus gives false ohms readings.

Step-by-step procedure (high-speed CAN on 6 and 14)

1. **Visual and power check.** Inspect the DLC for bent, spread, corroded or pushed-back pins and a loose mount. Check the DLC fuse. Pin **16 to 4** and **16 to 5** should read battery voltage (about 12.6 V on a rested battery). Voltage drop: pins **4** and **5** to battery negative with the key on should each be under about 0.2 V.
2. **Key off, bus asleep or battery disconnected: ohms 6 to 14.**
   - **About 60 ohms:** good, two 120 ohm terminators in parallel
   - **About 120 ohms:** one terminator or one bus section open
   - **About 40 ohms or less:** extra terminator or a partial short
   - **Near 0 ohms:** CAN High and Low shorted together
   - **Open or very high:** both terminators missing or the wiring open between DLC and bus
3. **Shorts to ground and power (key off).** Measure 6 to 4, 14 to 4, 6 to 16 and 14 to 16. Each should read high resistance (kilohms or more). A reading near 0 ohms means that line is shorted.
4. **Key on, DC volts to ground (pin 5).** Pin 6 (High) about **2.6 to 2.7 V**, pin 14 (Low) about **2.3 to 2.4 V**. High plus Low should add up to about **5 V**. (A meter averages bus traffic.)
   - High near 5 V or B+: shorted to power or a 5 V reference
   - Low stuck near 0 V: Low shorted to ground
   - Both near 0 V: no module power/ground, or bus shorted to ground
   - High and Low read the same: lines shorted together
   - Sum well off 5 V: a short or a loading module; go to the scope
5. **Scope (optional, best proof).** Ch1 on pin 6, Ch2 on pin 14, both grounded at pin 5. About 2 V/div, 10 to 20 us/div for 500k.
   - Normal: both idle (recessive) at about **2.5 V**. Dominant: High goes to about **3.5 V**, Low to about **1.5 V**, as clean mirror images
   - Noise or hash on both lines: check grounds, twisted pair condition and routing near ignition or high-current circuits
   - Rounded or slow edges: wet or corroded connector, damaged wire, or extra load on the bus
   - Ringing at the edges: missing or wrong terminator
   - No mirror image: one line open or shorted, or a failing module transceiver
   - One line flat: at 0 V shorted to ground, at battery shorted to power, at about 2.5 V open on that line
6. **Isolate the fault.** Watch ohms (key off) or the scope while you unplug one module at a time, or open splice packs or bus sections one at a time. When the reading goes normal, the fault is in the last module or branch removed. Locate both terminators from the wiring diagram (often inside two modules, such as the ECM and the cluster or gateway). A good terminator measures about 120 ohms on its own.
7. **Confirm the repair.** Recheck 6 to 14 for about 60 ohms and the key-on voltages. Clear codes, cycle the key, and verify every module communicates with the scan tool. Road test if the fault was intermittent.

16-pin connector notes

- **6 / 14:** high-speed CAN High / Low. All 2008 and later US vehicles use it for OBD II
- **4** chassis ground, **5** signal ground, **16** battery (hot key off)
- **GM pin 1:** single-wire CAN. One wire to ground, so no 60 ohm test; check it with a scope and the service info
- **Ford pins 3 / 11:** MS-CAN High / Low. Test it like 6 to 14
- Many vehicles use a gateway or several buses, so the DLC may show only one bus. Test the other buses at their modules
- Pins 1, 3, 8, 9, 11, 12 and 13 are manufacturer use and vary by make and year
- Some medium-duty trucks run J1939 on pins 6 and 14