How a Can Bus works

The CAN bus system enables each ECU to communicate with all other ECUs - without complex dedicated wiring. The broadcasted data is accepted by all other ECUs on the CAN network - and each ECU can then check the data and decide whether to receive or ignore it.

The <u>Controller Area Network</u> (CAN bus) is the system enabling communication. In turn, 'nodes' or 'electronic control units' (ECUs) are like parts of the body, interconnected via the CAN bus. Information sensed by one part can be shared with another.

What is an ECU?

In an automotive CAN bus system, ECUs can e.g. be the engine control unit, airbags, audio system etc. A modern car may have up to 70 ECUs - and each of them may have information that needs to be shared with other parts of the network.



The CAN bus system enables each ECU to communicate with all other ECUs - without complex dedicated wiring.

Specifically, an ECU can prepare and broadcast information (e.g. sensor data) via the CAN bus (consisting of two wires, CAN low and CAN high). The broadcasted data is accepted by all other ECUs on the CAN network - and each ECU can then check the data and decide whether to receive or ignore it.

The Physical Can Bus

On the physical layer, the CAN bus consists of two dedicated wires for communication. These wires are called CAN high and CAN low. When the CAN bus is in idle mode, both of these lines carry 2.5V but when data bits are being transmitted, the CAN high line goes to 3.75V and the CAN low drops to 1.25V.

OBDII Connector

On-board diagnostics (OBD, ISO 15765) is a self-diagnostic and reporting capability that e.g. mechanics use to identify car issues. OBD2 specifies diagnostic trouble codes (DTCs) and real-time data (e.g. speed, RPM), which can be recorded via OBD2 loggers.



Simple checks at the OBDII Connector

With power off and using a Multi Meter check that between pins 4 & 16 have battery voltage and between pins 5 & 16 have battery voltage.

Typical bus resistance should be between 59 & 61 ohms when measured between pin 6 & 14.

If it measures 0 ohms – bus is shorted together. If it measures 120 ohms – one set of resistors not seen.

Use a Multi Meter to measure the voltage between pin 5 & 14, should be 2.3 volts if okay. Measure between pin 5 & 6, should be 2.7 volts if okay. If the measurement equals 2.5 volts then bus possibly shorted together.