

## **CAN TEST BOX**

Many of today's workshops demand a device that helps them diagnose via the communication link, especially inside the latest CAN-Bus vehicles. When the scan tool fails to establish communication with a scan tool, the OBDII system seems not to respond, or a CAN-Bus system related fault code is registered, you need to begin testing at the communication link.



The CAN Test Box (CTB) is a diagnostic tool which connects to a vehicle's OBDII connector and is used to easily diagnose electrical faults.

- Instantly check Power and Ground circuits
- Identify Communication Link Protocols
- Connect an oscilloscope for signal capture and collection of signal waveform data

The concept of the product is simple - a breakout box provides standard banana plug connection points to all lines in the J1962 OBDII connector, which allows connection to individual lines on an OBDII connector easily and securely.

The CTB is a 16 pin breakout box for the OBDII diagnostic link; we have also added the following features, and now it is created as a brand new versatile diagnostic device.

- Pass-through Technology
- Intuitive Interface
- Compatibility with any oscilloscope or scan tool

### **Pass Through Technology**

#### **1. CAN-Bus system**

There is a fixed Female OBDII connector on the CTB. A scan tool is connected here, to establish CAN-Bus communication with the car. This is important because not all CAN-Bus signals are collected at the OBDII connector simply by turning the ignition key ON.

According to the network structure, a scan tool may be needed to log on to the network as one of the communication nodes of the CAN-Bus system to receive the bus signal. Without a scan tool recognized, the system would not send a signal to the unoccupied node. Some network systems may require more than this, and a scan tool shall be approved by the Gateway Control Module to receive the signal at the OBDII connector (e.g. Mercedes Benz or Volvo).

With a dummy breakout box, you cannot gain access to the bus signals if the system requires scan tool connection or gateway authorization. With the CTB, you can establish communication with the CAN-Bus system using a scan tool (Multi-brand or OEM) by passing-through the CTB, and then you can access to the Bus signals regardless of network structure. This is a huge difference in the digital world, where “not all” is translated as “nothing”.

## 2. Other OBDII / EOBD Standard Communication Links

There are several types of protocol for communication between a scan tool and the OBD system suggested as OBDII/EOBD standards by SAE and ISO, and all OBD compliant vehicles had to comply with any of these standards.

SAE document J1850 suggests the VPW and PWM protocols as the standard, and they have been mainly used in American cars before the introduction of CAN-Bus.

ISO 9141-2 document also suggests the standard protocol that has been used in most of Asian and European cars, and it was enhanced and published later as the document ISO 14230, also known as KWP2000.

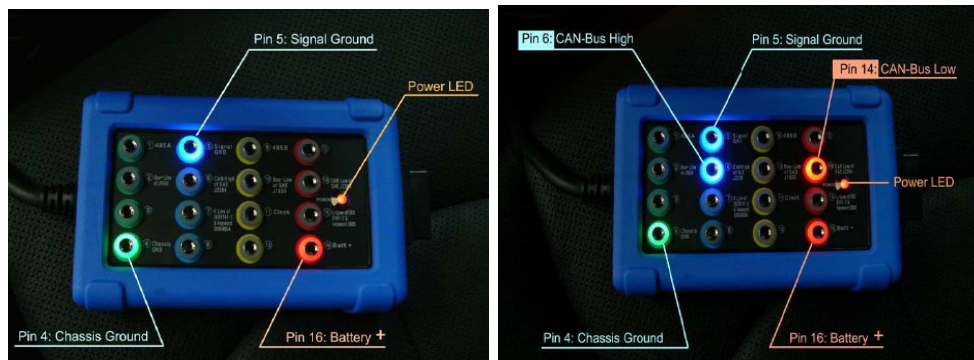
Each of these Pre-CAN Bus OBD standards use different terminals of the OBDII connector for communication as listed below:

Protocol Type	Signal Terminal 1	Signal Terminal 2
SAE J1850 VPW and PWM	Bus (+) at 2	Bus (-) at 10
ISO 9141-2 & KWP2000	K-Line at 7	L-Line at 15

## Intuitive Interface

When the OBDII connector is connected to the car DLC, the LEDs of pin number 4, 5 and 16 should illuminate, indicating the grounds and the power input. The CTB blinks the LEDs of the terminal pins where the Bus signals are detected.

The colored LEDs are so distinctive and intuitive that you can check the power and grounds instantly, and identify the communication system of the car and diagnose the bus signals with your oscilloscope simply by inserting the banana jacks into the terminals with the blinking LEDs.



## Compatibility

The CTB terminal pins are accessible with standard 4mm banana jacks. The CTB kit includes a pair of banana jack silicone shielded probe leads with the standard 8mm BNC connector on the other end which ensures connection with nearly all oscilloscopes available on the market.

The CTB is the ideal accessory for virtually “any” oscilloscope that has the standard 8mm BNC connectors.

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Each probe incorporates banana jacks for the ground. The user may select either the "Chassis Ground" at pin 4 or the "Signal Ground" at pin 5 where the better signal waveform is presented.



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