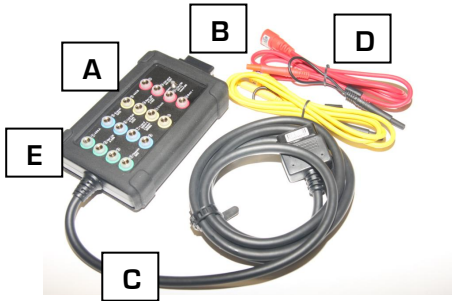




CAN TEST BOX

Quick Start Guide

CTB components:

- A CTB Interface Inlay Panel with LEDs (backlit, numbered & color coded) and Breakout Pin Connections (4mm Jack)
- B OBD Scan Tool “Pass Through” Connector
- C 2.5m Extension Cable
- D Probe Lead Kit (8mm BNC)
- E Silicon Protective Boot

CTB Interface Panel:

The inlay panel utilizes numbered backlit LEDs which illuminate when signal data is present on the corresponding LED line. Pulsing LEDs indicate signals being pulled high/low. CTB LEDs correspond to vehicle DLC (Data Link Connector) Pins 1-16.



GREEN: 1-4 **BLUE:** 5-8 **YELLOW:** 9-12 **RED:** 13-16

CTB POWER LED: RED

CTB LED Description:

If there is signal data present on a pin of the DLC, the corresponding CTB LED will be activated.

LED **1/9** : 485A/485B (Manufacturer's Proprietary Information)

LED **2/10** : Bus + Line J1850/Bus-Line J1850

LED **3/8/12/13** : future upgrade

LED **4** : Chassis GND (GROUND)

LED **5** : Signal GND (SIGNAL)

LED **6/14** : CAN High of SAE J2284/CAN Low of SAE J2284

LED **7/15** : K Line of ISO9141-2 & keyword 2000485A/L Line of ISO9141-2 & keyword 2000

LED **11** : Clock

LED **16** : Batt + (Voltage Supply)

CTB 2.5m Extension Cable & DLC Fast Check OBD Connector

The CTB utilizes a 2.5 meter shielded extension cable with Fast Check OBD Connector. This allows the CTB to connect with the vehicle DLC and permit viewing/operation of the CTB away from closed-in areas. The CTB incorporates diode fuse protection for Pin 5 (Signal Ground) plus Poly Switch Fusing for Pins 4/16 (Chassis Ground/Batt+).



CTB 2.5m Cable and Fast Check OBD Connector



CTB Cable DLC

Vehicle DLC



Connect CTB cable DLC to vehicle DLC.

CTB LED Monitoring:

Establish CTB LED display by connecting the CTB cable DLC to the vehicle DLC. Data signals present on the vehicle DLC will illuminate the corresponding CTB panel LEDs.

Check first for illumination of the following CTB LEDs:

- ✓ CTB POWER - CTB is powered up
- ✓ Batt+ - vehicle DLC Pin 16
- ✓ Chassis GND - vehicle DLC Pin 4
- ✓ Signal GND - vehicle DLC Pin 5
- ✓ Appropriate LED's for the CAN data protocol in use for the vehicle being tested - use the pulsating LEDs to identify the CAN protocol

The image below shows the following CTB LEDs: POWER, 4 (green), 5 (blue) 16 (red) 'ON' indicating power and ground circuits as operational.

Test Vehicle Example - Mazda CX7



CTB LED Monitoring:

The image below shows the following CTB LEDs: 6 (CAN High) and 14 (CAN Low). The system uses the SAE J2284 protocol and shows the system is in 'wake up' mode.

Ignition key turned to 'ON' mode

This example demonstrates the 'wake up' mode of the CAN system

LED's 6 and 14 of the CTB flash and shows the CAN system is now on-line

CTB LED 6 is CAN High and LED 14 is CAN Low

Other LED's may also flash indicating proprietary layered data line activation

CTB LED 3 is also activated on this vehicle

CAN Test Box Diagnostics
Test Vehicle: Mazda CX7

CTB Scan Tool 'Pass Thru' Connector:

The CTB is equipped with a 16 pin 'Pass Thru' which allows the user to connect a scanner (generic or OEM) for the purpose of systems scan data monitoring and/or systems activation.



CTB 16 Pin 'Pass Thru' Connector

Connect the CTB cable DLC to the vehicle DLC.

Connect the scan tool cable DLC to the CTB 'Pass Thru' Connector.



Connect the CTB to the Scan Tool and simultaneously monitor CTB LEDs and Scan Tool Data.

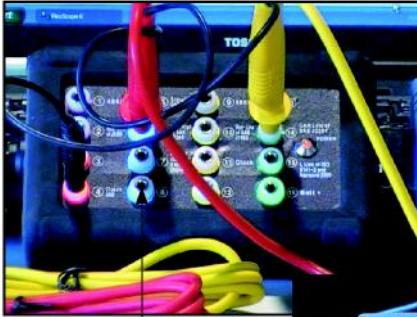
CTB Oscilloscope Connection:

The CTB allows the user to connect any compatible oscilloscope enabling the gathering of oscilloscope waveform data of bus signal data. The CTB terminal pin ports are accessible with standard 4mm jacks.

The CTB Probe/Lead Kit utilizes high quality probe and lead shielding, 4mm banana jacks (CTB connection) and standard 8mm BNC connectors (oscilloscope connection).

As bus signal data is very fast, it is recommended that a high-quality oscilloscope is used for bus signal data gathering.

CTB 4mm Terminal Pin Ports



CTB 4mm Pin Port

CTB Probe/Lead Kit



(4mm)
(8mm)



PC Based Oscilloscope (8mm BNC Connectors)

CTB Oscilloscope Connection:

Connect the CTB cable DLC to the vehicle DLC.

Connect one end of a CTB probe lead (8mm BNC) to the oscilloscope.

Connect the opposite end of the probe (4mm jack) to the CTB Pin Port of the appropriate CTB LED selected for oscilloscope waveform data capture.

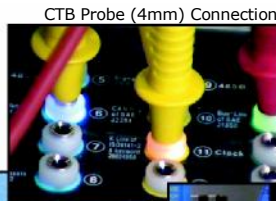
Connect the probe ground (black lead) to either CTB LED Pin Port 4/5 (Chassis GND)/(Signal GND).

Power up the oscilloscope and set up the system as necessary for signal data gathering. Use 2 channels to observe CAN High/CAN Low signal data.

Oscilloscope Waveform Capture



CTB Connected to Vehicle DLC



CTB Probe (4mm) Connection

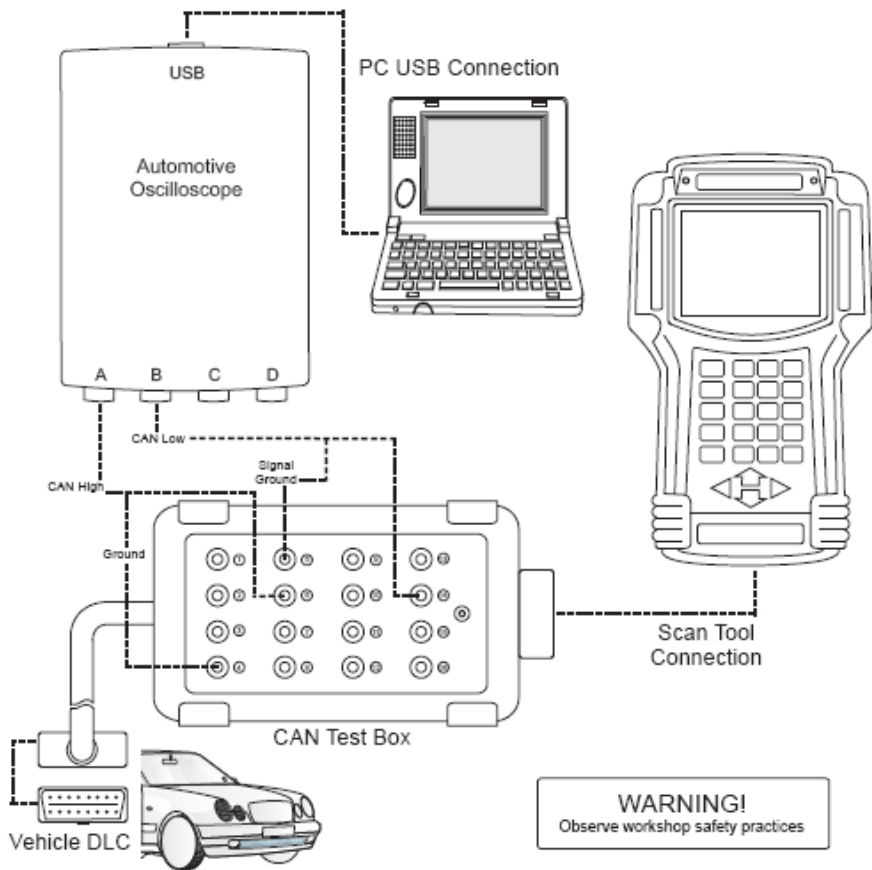


CTB Probe Lead (8mm) Scope Connection

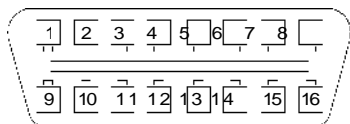
PC based oscilloscope shown in CTB/scope connections and waveform capture



CAN Test Box Schematic:



OBD-II Connector Pin Designation:



OBD II Connector

Note: ISO9141-2 & ISO 14230 (keyword 2000) use the same pinout, thus you cannot distinguish between the two by simply examining the connector. Connect and use the CTB. Monitor the LED indicators for protocols activity to identify the network structure in use.

- 1 - Manufacturer's Proprietary
- 2 - Bus+ Line of J1850
- 3 - Manufacturer's Proprietary
- 4 - Chassis Ground
- 5 - Signal Ground
- 6 - CAN High of SAE of J2284
- 7 - K Line of ISO9141-2 & keyword 2000485A
- 8 - Manufacturer's Proprietary
- 9 - Manufacturer's Proprietary
- 10 - Bus- Line of SAE J1850
- 11 - Clock - Proprietary
- 12 - Manufacturer's Proprietary
- 13 - Manufacturer's Proprietary
- 14 - CAN Low of SAE J2284
- 15 - L Line of ISO 9141-2 & keyword 2000
- 16 - Battery Power (4 AMP MAX)

Note on CTB and CAN-Bus system diagnostics:

Some vehicles may require connection of a scan tool *prior* to connecting the CTB. This is necessary as a scan tool may be needed to log on as a communication node of the CAN-Bus system. Without scan tool recognition, the system will not transmit signal data to the CTB and connection of the CTB may result in failure of the CTB interface LEDs to operate when performing a diagnostic.