



## *Scan Tool Enhanced OBDII*

# 31

J1962  
Cable



Ports

Control  
Buttons



Serial  
Cable



AC Power  
Adapter

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## Qualifications

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This instruction manual will help you understand how to use the Scan Tool. It assumes you are familiar with the operation of the OBDII system found on cars sold in North America since 1996. We strongly recommend you seek additional training to learn how to troubleshoot OBDII vehicles.

The section of the manual that tells how to update software requires the user to have a working knowledge of Windows 95 or Windows 98. If you do not know how to access your hard drive, locate a directory, or how to connect a device to the serial port on your PC, please refer to the owners manuals that came with your PC.

# Introduction

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The Scan Tool Enhanced OBDII Analyzer is compatible with 1996 Model Year vehicles sold in the United States (OBDII) , and 1998 Model Year and later vehicles sold in other countries (EOBD). The Scan Tool can be used to read the datastream, read and erase Diagnostic Trouble Codes (DTC's), display the Readiness Monitors, and read continuous and noncontinuous test modes.

## Specifications

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### Protocol Support

ISO-9141 .....	Both K and L Lines
ISO-9141-2 CARB .....	Both K and L Lines
SAE J1950 .....	VPW and PWM Modes
CANbus .....	up to 1 Mbaud

### Physical Characteristics

Weight .....	1 Pound
Size .....	3.9 x 6.24 x 1.17 inches
Length OBD II/EOBD-cable.....	9 Feet
Power source, connected to the car .....	+12VDC
Power source, Battery Adapter.....	+9VDC
Current Draw .....	< 500 mA

### Environmental Characteristics

Operating temperature .....	+32° - +120°F
Humidity.....	30 - 90 %
Storing temperature.....	-20° - +120°F

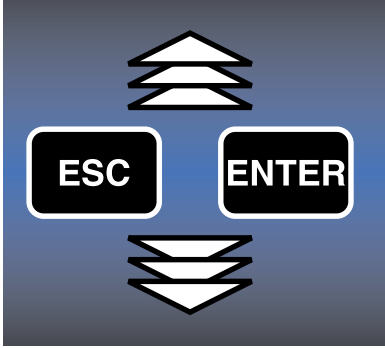
## PC Requirements

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To perform software updates on your Scan Tool, you will need a PC running Windows 95 or 98, and an open serial port.

# Scan Tool Controls

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Four simple buttons control all functions on the Scan Tool. The arrow buttons control up and down scrolling on the screen. ENTER confirms the selection and moves the analyzer through the menus. ESC is escape and exits you from the current screen.

# Scan Tool Ports

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From the Left to Right, the Scan Tool has a 15 Pin connector, a 9-Pin connector, a power port, and two banana jack inputs. The 15-pin connector is where the J1962 OBDII Cable is connected to the Scan Tool. The 9-Pin connector is a serial port used to connect to a PC for software updates. The power port is used when updating software. The Banana Jacks are used by the optional multimeter function.

# Connecting the Scan Tool

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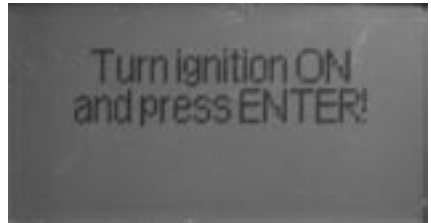
Plug the OBD II cable into the big connector under the dash near the steering wheel. (Location varies from vehicle to vehicle.) To view data from the vehicles on board computers the key must be in the on position, or the engine must be running.

# Accessing OBDII Data

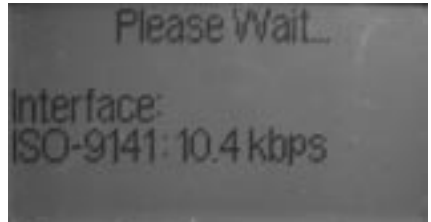
From the Start Menu, select OBDII Session using the up and down arrow keys, then press Enter.



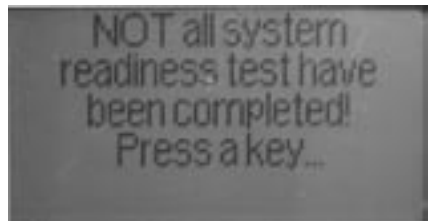
Follow the screen instructions, and turn the Ignition Key to the ON position, or start the engine. Press Enter.



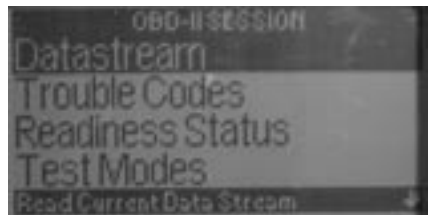
Once you press enter the Scan Tool will try a number of different communication protocols to establish a connection with the vehicle. Even though OBDII is a “standard” for vehicle communication, there are multiple languages that make up the OBDII specification.



Once communication has been established with the vehicle, the Scan Tool will display the results of the comprehensive readiness monitor. If any of the readiness monitors have failed, or are pending, the screen will say “NOT all system readiness tests have been completed. Press Enter when you are finished with this screen.

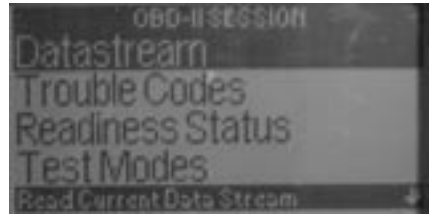


The OBDII Session screen is now displayed. At this point you can select Datastream, Trouble Codes, Readiness Monitors, Test Modes, or Disconnect from the menu.



# Datastream

Select Datastream from the OBDII Session Menu and press enter.



The Scan Tool will search for data and display what it has found. For each item of data, the Scan Tool will display the ECU Number, Name and Value. The ECU number indicates which ECU in the vehicle is reporting the data. It is not uncommon for the transmission to display RPM, and Throttle position in conjunction with the main ECU on the vehicle. The ECU number helps you notice the difference. The name is displayed in an abbreviated manner. To learn the full name of the data bit, just use the up and down arrow keys to highlight the data bit and read the expanded description at the bottom of the screen. The value is the actual data as recorded by the ECU.



The Scan Tool has the ability to lock up to 3 lines of data on the screen.

For example, if you want to see RPM, and vehicle speed all of the time, simply scroll down until the data is highlighted, then press the Enter key. Once the Enter Key is pressed, a lock symbol will appear and the selected data will jump to the top of the list.

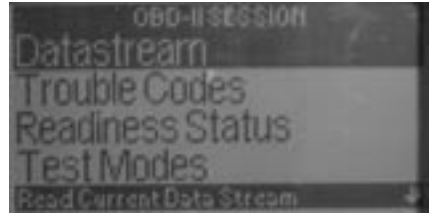


Up to three lines of data can be locked on the screen at any one time. To unlock the data, scroll to the top of the data list, select the line you want to unlock, and press the Enter key again.

In the upper right and lower right of the Datastream screen, a small arrow will appear to help you know where in the data list you are scrolling.

# Trouble Codes

Select Trouble Codes from the OBDII Session Menu and press enter.



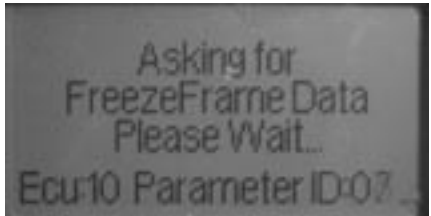
From the Trouble Code menu you can select: View DTC's, Erase DTC's, View Freeze Frame.



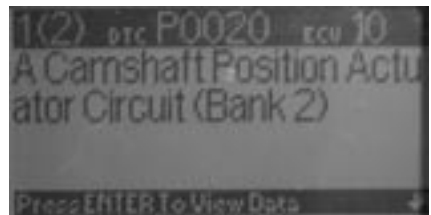
When you select View DTC's, the Scan Tool will retrieve any stored Trouble Codes. The header of the trouble code screen will display how many codes are present. In this example, we are seeing code 3 out of 3. The exact DTC number is also displayed and the ECU number that is responsible for this code. The main part of the screen will display a description of the trouble code.



If you select Erase DTC's from the Menu, all existing trouble codes are erased. Readiness monitors are also reset when trouble codes are erased.



Freeze Frame data is datastream information that is recorded at the instant that the trouble code is set. When you ask for Freeze Frame data The Scan Tool will retrieve the data and the trouble code that is associated with the data. Use the up and down arrow keys to select which freeze frame data to view. Press enter to view data.



Freeze Frame data is cleared when the DTC's are erased.

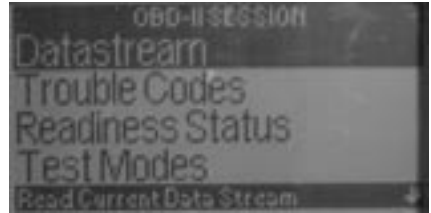
# Readiness Status

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Select Readiness Status from the OBDII Session Menu and press enter.

The status of all monitors, except the comprehensive monitor is displayed. The result of the comprehensive monitor is displayed immediately after the Scan Tool has successfully connected to the vehicle controller.

A Value of “Pending” means that particular monitor has not run. A Value of “Done” means that particular monitor has successfully completed it’s test.



MON	NAME	VALUE
10	Misfire	Pending
10	Fuelsys.	Pending
20	Misfire	Pending
20	A/C Sys.	Done

Misfire

# Accessing Additional Test Modes

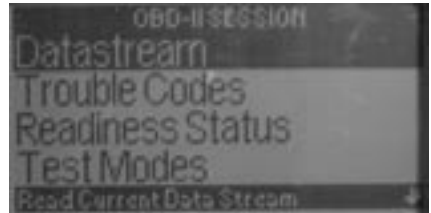
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Select Test Modes from the OBDII Session Menu and press enter.

From the test mode screen you can select O2 Sensor Tests, Non-Continuous Tests, and Continuous System Tests.

For additional information on each test mode, consult the appropriate section of the instruction manual.

Some vehicles do not support additional test modes. If you select one of the test modes listed here and the Scan Tool does not report data within a few minutes, that test mode



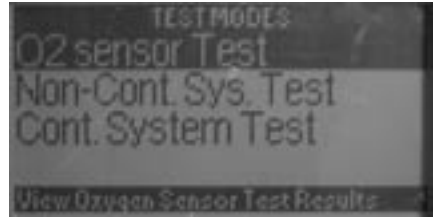
# Oxygen Sensor Test Mode

Select O2 Sensor Test from the Test Mode Menu and press enter.

If this test mode is supported by the vehicle, you will be able to choose which O2 Sensor you wish to test.

For an expanded explanation of the abbreviations, select the item and look at the bottom of the screen.

Use the up and down arrow keys to select which sensor you want to view and press enter. The Scan Tool will retrieve the data and display it on the screen.



ECU NAME	VALUE
10 R-LSTV	0.640 V
10 L-RSTV	0.320 V
10 LSVSTC	0.640 V
10 HSVSTC	0.320 V

Rich->Lean Threshold Voltage

# Non Continuous System Test Mode

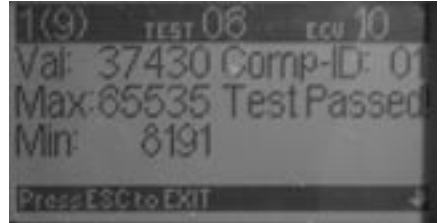
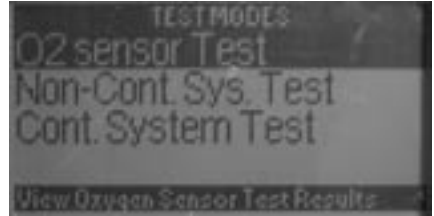
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Select Non-Cont. Sys Test from the Test Mode Menu and press enter.

Non continuous tests are run one time per trip. Testing methods and identification of components differ between vehicles.

Use the up and down keys to scroll through the list of data.

Data regarding Non-Continuous tests modes and results should be available from the vehicle manufacturer and/or publishers of vehicle data.



# Continuous System Test Mode

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Select Cont. System Test from the Test Mode Menu and press enter.

Continuous tests are trouble codes that have not resulted in the MIL light to be illuminated.

Use the up and down keys to scroll through the list of data.



# Analyzer Setups

Select Setup from the Start Menu and press enter.



From the Setup screen select what function you would like to modify.

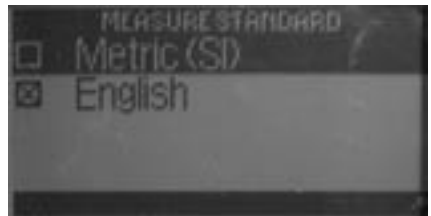


The Adjust Backlight and Adjust Contrast functions use similar screens. Use the Up and Down keys to adjust the brightness or contrast.

The Measure Standard function changes the way the value in the datastream list is calculated. Your choices are Metric or English.



The Version Selection will indicate what version of software is installed on the Scan Tool.



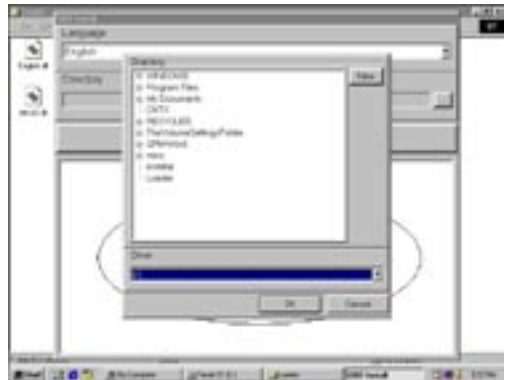
# Installing the Flash Memory Loader

The Loader is the program that you PC uses to reprogram the Flash memory in the Scan Tool. Before the Loader can be used, it must be installed. The installer program will be found on the CD that was packaged with the Scan Tool. A copy of the program is available on-line at [www.fe.retinstruments.com](http://www.fe.retinstruments.com).

Locate the installer and run the program. When the installer program is launched click on the “..” button. This will bring up a directory window. Select a directory where you want the installer to place the Loader.

Once you pick a Directory, click on OK, then click on the “Install” button. A progress bar will indicate the status of the installation. You will receive confirmation of a successful installation.

At this point, you might want to create a shortcut and place it on your desktop.



# Configuring the Scan Tool for Updates

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Connect the serial cable to an open serial port on your PC.

Connect the other end of the serial cable to the Scan Tool.

Plug the power adapter in to a source of AC Power. Press the up arrow key while plugging in the power adapter into the Scan Tool.

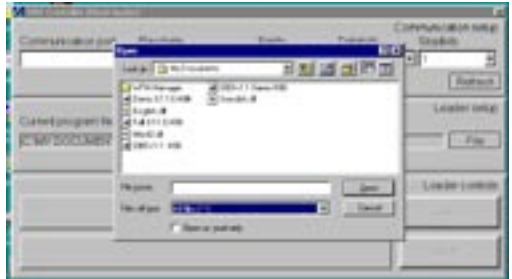


The Scan Tool display should light up, but nothing will appear on the screen. You are now ready to install new software using the Loader.

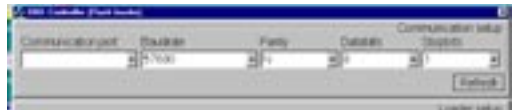
# Using the Loader to Install new Software

All update files are .zip files and need to be decompressed before installation. Once the files are decompressed, locate the Loader on your computer and double-click the icon to start the program. You should see a screen similar to the one at right.

The next step is to select the file you want to transmit to the Scan Tool. Click on The file button and locate the update file. You will need to select “All Files” option to see the file.



The next step is to configure the communication options. Make sure the communications are set up as shown in this example. Change the COM port to match what you are using on your computer.



At this point the file you selected to transmit to the Scan Tool will be visible in the file window. Press the install button.



The Loader will erase the memory, then program the unit. When the “Programming Done” signal appears on the screen, you have successfully reprogrammed the unit.



If a “Programming Failed” message appears, check your cables and connection, and try again.

# Technical Support

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Any questions or inquiries about service can be answered by contacting us at:

Ferret Instruments, Inc.  
1310 Higgins Drive  
Cheboygan, MI 49721  
(231) 627-5664, Fax (231) 627-2727  
Toll Free (800) 627-5655

## Warranty

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### **FERRET BRAND LIMITED PRODUCT WARRANTY**

FERRET INSTRUMENTS, INC. of Cheboygan Michigan, warrants to the original purchaser that any products manufactured or supplied by Ferret Instruments, Inc. are free from defects in materials and workmanship for a period of three years from date of purchase. Our sole obligation for a product within the above warranties will be to repair or replace, at our option, any defective parts and return the product to the sender within the U.S.A., shipping prepaid, if it is sent to our Repair Department shipping prepaid and accompanied by proof of purchase. The above warranty is extended for the flashtubes in timing lights which are within five years of the date of manufacture.

### **EXTENDED SERVICE POLICY**

A Ferret Instruments product less than five years old according to the date of manufacture, and which is returned with transportation charges prepaid to: Ferret Instruments, Inc., Repair Department, 1310 Higgins Drive, Cheboygan, MI 49721, will be repaired or replaced, at factory option, for a service charge not to exceed 40% of the latest factory suggested user price; plus return transportation charges and insurance. If the product has been discontinued, the nearest equivalent product may be substituted.

This Warranty and Extended Service Policy do not apply to products which have been altered outside the factory; or repaired by anyone other than the factory or its authorized service centers; or which have been damaged from accidents, negligence, or abuse; or have been used differently than described in the printed instructions. Please note that wear and tear on leads and replacement of consumable (paper, oxygen sensors, Nox Sensors, etc.) items, is not covered by warranty.

Ferret Instruments, Inc.'s sole liability and buyer's exclusive remedy is limited to repair or replacement of the product as stated in the Limited Product Warranty and the Extended Service Policy. THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND FERRET INSTRUMENTS, INC. SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE SALE OR USE OF THE PRODUCT.

Some states do not allow limitations on the length of implied warranties nor exclusion or limitations of incidental or consequential damages, so that the above limitations and/or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

# SAFETY PRECAUTIONS

## —Read All Instructions Before Using The Analyzer—

Always wear eye protection when testing vehicles. Be extra careful near batteries and moving parts. Do not lay tools on a battery.

Battery gas is highly explosive.

If a battery explodes flush the acid away from skin with generous amounts of water. Follow up with a neutralizing solution of baking soda and then more water.

Never use a wrench on the ungrounded battery terminal until the grounded one has been disconnected. Contact between the vehicle body metal and the hot terminal can cause sparks to ignite gas or even weld tools into a battery short circuit.

Keep the space around a battery well ventilated.

Do not make sparks or allow flames near batteries.

Before working on a vehicle set the brakes and block the wheels. Beware of automatic parking brake releases.

Keep your work area well ventilated and free of exhaust.

Avoid electrical shocks caused by getting close to live ignition wires or touching the coil TACH terminal. A person's reaction near a live engine can be more damaging than the shock.

Keep spark producing devices at least 0.5m (18") above the floor to reduce the hazard of igniting gasoline vapor.

Do not let test leads wind up in a moving fan or pulley. Route leads away.

Remove finger rings and metal wrist bands. They can short terminals and become very hot from electric current.