USERS MANUAL

EZ-Scan 4000

Safety Precautions and Warnings

WARNING: Read and understand all instructions in this manual. Use appropriate personal safety equipment including hearing and eye protection when using the scanner in or near the vehicle engine compartment. Failure to comply can result in accidents involving fire, electrical shock, or serious personal injury.

Electrical

- Do not allow anything to rest on the cable assembly. Do not allow the cable assembly to be pinched. Keep the cable assembly away from contact with heat, oil, sharp edges, or moving parts. Replace damaged cables immediately. Damaged cables increase the risk of electric shock.
- To reduce the risk of electrical shock do not disassemble the scanner. There are no user repairable components inside the unit.
- Please dispose of used batteries properly. Do not incinerate batteries. Consult your local waste authority for information regarding available recycling and/or disposal options.

Use and Care

- Stay alert, pay attention to what you are doing, and use common sense when operating the scanner. Several operational tests require the engine in the vehicle to be running during testing. Keep all children and visitors a safe distance from the work area.
- Keep the scanner dry, clean, and free from oil and grease. Use a mild detergent on a clean cloth to wipe the outside of the scanner, when necessary.
- Only use accessories that are recommended by AutoXray.
- Certain capture mode tests can be performed while driving the vehicle. AutoXray recommends that the person operating the vehicle does not use/view the scanner. Always use an assistant to operate the scanner while driving the vehicle.

Service

Service must only be performed by AutoXray repair personnel. Service or repair by unqualified personnel may result in risk of injury, damage to the unit, and may void your warranty. Refer to the Product Warranty Policy section of this manual.

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Registration Card

Please complete the enclosed Registration Card and return it, or call 480.804.1673. It is the only way AutoXray can notify you of future updates / upgrades for your scanner.

Thank You for buying the **EZ-SCAN Scanner** from **AutoXray**, the leading provider in cost effective automotive diagnostic scanner.

INTRODUCTION

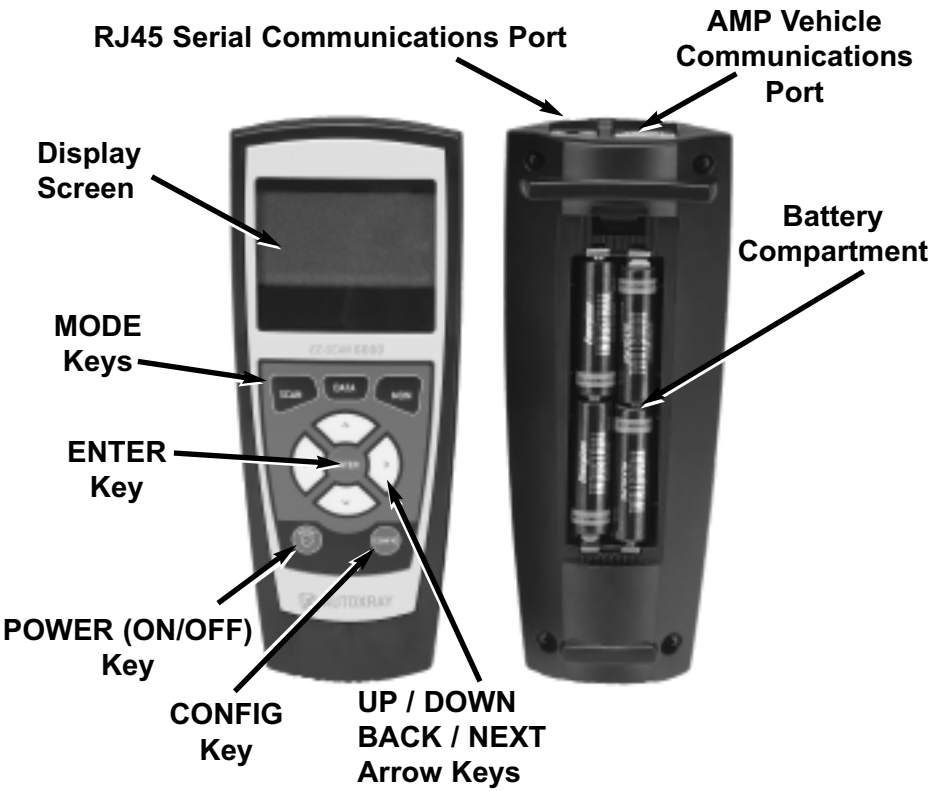


Figure 1. EZ-SCAN Scanner

- AutoXray designed this elegant EZ-SCAN tool with capabilities that are the *best value on the market today*. The compact design has received proprietary patents and makes these scanners so *simple* and easy to use.

INTRODUCTION (CONT.)

Your EZ-SCAN Scanner Will:

• Scan Collects All Values from Vehicles On-Board Computer
• Supports multiple trouble code requests, generic codes (mode 3), pending codes (mode 7), enhanced codes (mode 13)
• On-screen definitions of OBD II generic and OBD II manufacturer specific codes.
• Detects OBD-II Freeze Frame Information
• Displays Readiness Test Status
• Displays O2 Sensor Test
• Test Results (mode 6)
• Vehicle ID (mode 9)
• Live Data Stream Monitoring
• 29 Frame Capture Mode
• Reset Check Engine Lights

AutoXray has made sure your new scanner is computer safe.
It **WILL NOT** accidentally deploy airbags, change transmission gears, affect ABS brake performance, or fire injectors and ignition systems.

Text Styles Used In This Manual

POWER	text in this font is used to designate a button/key on the front of the scanner
`Config Unit`	text in this font is used to designate text that is displayed on the scanner screen
WARNING:	the word WARNING in this font is used to identify an operation or activity that could cause **severe property damage or personal injury**
CAUTION:	the word CAUTION in this font is used to identify an operation or activity that could cause **property damage or personal injury**
NOTE:	the word NOTE in this font is used to identify **information that will assist you** while you are using the scanner

Arrows will be displayed at the right side of the screen to indicate text above and/or below the current screen. Use the arrow keys to view the text.

NOTE: During the procedures in this manual, display all the available menu options by using the ▲ and ▼ arrow keys. Small arrows will be displayed on the screen when there are more options available.

SETUP/OPERATING INSTRUCTIONS

This section gives the information you need to set up and operate your EZ-SCAN Scanner:

- Install New Batteries
- Configure the Scanner for Your Vehicle
- Set the Display Units (SAE/Metric)
- Connect the Scanner to Your Vehicle

Install New Batteries

The EZ-SCAN Scanner is powered by **4 AA batteries**. Before the scanner is used the first time, you need to install batteries in the unit.

Make sure the batteries are put in according to the diagram on the back of the battery compartment door. Refer to the illustration below.

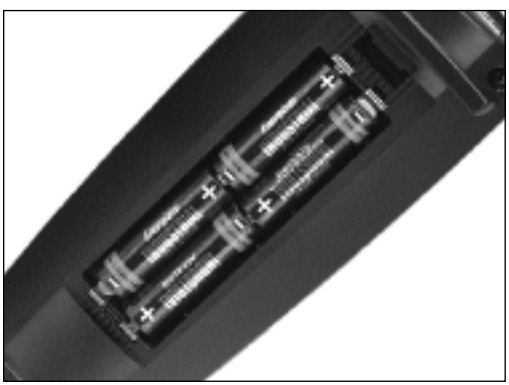


Figure 2. Battery Compartment

- If the screen becomes too dim to view, the batteries need to be replaced. Replace all four batteries to avoid unit malfunction. When it is time to change the batteries, the **Data Holder Feature** will save all Data and configuration information if fresh batteries are installed immediately after removing the old ones.

CAUTION: Leaving used or dead batteries in the scanner beyond the battery date may result in damage to the unit.

SETUP/OPERATING INSTRUCTIONS (CONT.)

- As long as good batteries are in the scanner, the vehicle engine configuration and data will remain in the scanner's memory, even after the unit is powered off.
- Operational data, Trouble Codes, and all remaining scanned information will remain in memory until the unit is reconfigured. A **Power Miser Feature** automatically powers the unit OFF after 30 minutes of no activity.

Configure the Scanner for Your Vehicle

Before the scanner is used, it must be configured for your specific vehicle. Don't worry, it only takes a few steps.

1. Press POWER to turn the unit ON, then press CONFIG.

2. Make sure `1-Config Unit` is displayed on the screen, then press ENTER.

3. Use the arrow keys until the correct vehicle manufacturer name is highlighted, then press ENTER to select it (select `OBD-II Generic` if your specific OBD-II manufacturer is not listed).

4. Use the arrow keys to select the year of the vehicle, then press ENTER.

NOTE: After the unit is configured, it will Initialize then display the opening screen. Continue with **Section 3** to set the display units.

5. Depending on the vehicle selected, you may be asked some additional questions to complete the configuration process. Use the arrow keys to highlight the correct answer, then press ENTER to select it.

Set the Display Units (SAE/Metric)

The EZ-SCAN scanner can be set up to display in SAE or Metric units. The **default** setting **is SAE**. Go to **Section 4** if you do not need to change the display units.

1. To change the unit of measure, press CONFIG from the initial screen.
2. Use the arrow keys until `2-System Config` is displayed, then press ENTER.
3. Use the arrow keys to select `1-SAE/Metric`, then press ENTER.
4. Use the ◀ and ▶ arrow keys to select `1-SAE` or `2-METRIC` then press ENTER to select the highlighted choice (or press the CONFIG Key to Cancel and return to the initial screen).

Adjust the Display Contrast and Backlight

The contrast on your EZ-SCAN scanner can be adjusted for easier viewing under different lighting conditions. Note, if scanner is left in direct sunlight the Display can turn completely black. Should this happen, put the scanner in a cool dark place for approx. 10 to 15 minutes. The display should return to normal.

1. To adjust the contrast of the screen press CONFIG key.
2. Use the arrow keys until 2-System Config is displayed, then press ENTER.
3. Use the arrow keys until 3-Contrast Adjust is displayed, then press ENTER.
4. Use the ◀ and ▶ arrow keys to adjust desired screen contrast

SETUP/OPERATING INSTRUCTIONS (CONT.)

(Fine adjustment)

5. Use the ▲ **and** ▼ arrow keys for course adjustment.

6. The MON key will turn the backlight off. The default position is ON and can be left that way, however it will lessen the life of your batteries.

7. Press the CONFIG or ENTER key to save settings and return to the Opening screen.

NOTE: Not all Scanners support this feature.

Connect the Scanner to Your Vehicle

The EZ-SCAN Scanner communicates with the computer and sensors in your vehicle through a special connection cable. The scanner cable is plugged into a connector on the top of the scanner, and into a computer interface connection in your vehicle.

All 1996 and newer vehicles use one cable, the OBD-II Generic Connector.

OBD-II Generic Connector (Yellow)
This standardized cable is used to scan 1996 and newer Domestic, Asian, and European vehicles.

1. Locate the vehicle computer connection:

- On OBD-II vehicles, the connector is usually located under the drivers side of the dashboard. On some vehicles, the connector is located behind the kick panels, ashtray, or radio.

NOTE: For additional connection location information, including the "OBD Connector Locations Database," please look at the Customer Support page on the AutoXray web site (www.autoxray.com).

2. Make sure that all the pins are straight and that the connecting surfaces are free of oils, grease, and moisture.

CAUTION: Do not force the cable connector into the scanner or into the vehicle computer connection.

3. Push the scanner cable and vehicle connectors together firmly.

NOTE: Make sure the scanner cable and vehicle connectors are always properly seated during all test procedures.

4. Insert the EZ-SCAN cable connector into the top of the scanner.

Set the Time Units for Capture Mode

The EZ-Link scanner can be set up to capture a user defined length of time while in Capture Mode. The default setting is 1000 ms (1 sec) per frame.

1. To change the Capture Time, press CONFIG from the initial screen.

2. Use the ▲ and ▼ arrow keys until `2-System Config` is displayed, then press ENTER.

3. Use the ▲ and ▼ arrow keys to select `2-Capture Time`, then press ENTER.

4. Use the ◀ and ▶ arrow keys to change `Capture Time` to the desired number between 500 and 5000 ms, then press ENTER to select the choice (or press the CONFIG Key to Cancel and return to the initial screen).

NOTE: 500 milliseconds is one-half a second, 1000 milliseconds is 1 second, and 5000 milliseconds is 5 seconds.

SCAN - OBD-II

Before You Start

- Before scanning a vehicle, the EZ-Scan 4000 scanner must be correctly configured for your vehicle. Refer to “Setup / Operating Instructions” on page 7 if you need to configure the scanner.

Scanning the Vehicle

1. Press POWER to display the EZ-Scan 4000 scanner opening screen.

2. Turn the vehicle ignition key to ON or start the engine.

3. Press SCAN.

- When the scanner is ready to scan the vehicle, ENTER to Scan will be displayed on the screen. Press ENTER to start scanning the vehicle computer/sensors. (Pressing SCAN again will take the unit out of Scan mode and display the opening screen.)
- Before an OBD-II vehicle is scanned, the vehicle computer and the EZ-Scan scanner will initialize, do a protocol check, then do Readiness Tests to make sure the vehicle emission control system is

SCAN - OBD-II (CON'T)

working correctly. (VPW, PWM, ISO 9141, Keyword 2000, and CAN protocols are all supported.)

4. The scanner will indicate the MIL status (Malfunction Indicator Lamp, or Check Engine Light), ON or OFF.

If there are Trouble Codes stored in the OBD-II system, the scanner will display the codes as they are read from the vehicle computer. (These codes can also be viewed later. See "View Trouble Codes-OBD-II" on page 18.)

5. After the scanner has read all the data from the vehicle, the Scan Successful message will be displayed on the screen.

If the scanner could not read all the data from the computer or the vehicle sensors, an error message will be displayed.

VIEW THE DATA - OBD-II

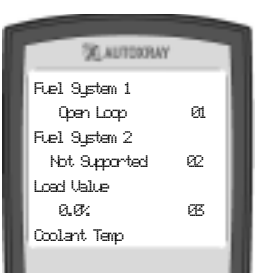
Before You Start

- Your vehicle must be scanned before viewing the data. If DATA is pressed, and the vehicle has not been scanned, the scanner will display Press the Scan key to Scan New Data.

The EZ-Scan 4000 scanner DOES NOT need to be connected to the vehicle to view the scanned data. The vehicle engine configuration and data will remain in the scanner's memory until a vehicle is scanned again. This allows you to review the data at a later time, or to use PC-Link to load the data into a computer.

Viewing the Data

1. If the EZ-Scan 4000 scanner is not ON, press POWER to display the opening screen.
2. Press DATA to display the Data menu. Make sure `1-Op Data` is highlighted, then press ENTER.
3. Information from the computer/sensors in your vehicle (Operational Data Items) will be displayed on the scanner screen.
   A reference number is displayed in the upper right corner of the screen. (The total num-



VIEW THE DATA - OBD-II (CONT.)

ber of sensors and sensor types will vary with each type of vehicle.)

NOTE: The ◀ and ▶ or ▲ and ▼ arrow keys will step through the sensors a page at a time.

4. After viewing the scanned sensor information, press DATA to exit Data mode and display the opening screen.

Operational Data Items

To see a description of each of the Operational Data Items for your vehicle, refer to the appropriate section on the following pages:

- "OBD-II Generic Operational Data Items" on page 32

Monitoring Real Time Data

1. Make sure the EZ-Scan 4000 scanner cable is correctly connected to the scanner and to the vehicle, then press POWER.

2. Press DATA to display the Data menu. Make sure `1-Op Data` is highlighted, then press ENTER.

3. To toggle real-time monitoring ON and OFF, press MON.

4. An `Initializing` screen will be displayed while the scanner establishes a connection to the computer/sensor.

5. When the connection has been made, the reference number in the upper right corner will begin to flash.

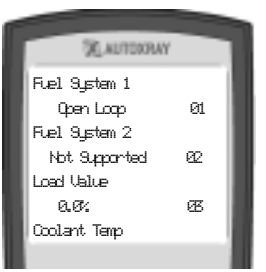
MONITORING REAL TIME DATA (CONT.)

NOTE: If the communication link with the vehicle is broken during Monitor mode, the number in the upper right corner will stop flashing.

6. Use the ◀ and ▶ or ▲ and ▼ arrow keys will step through the sensors a page at a time.

7. When you are done viewing real-time data, press MON. The number in the lower right corner will stop flashing.

8. Press DATA to exit Data mode and display the opening screen.



VIEW FREEZE FRAME DATA

Before You Start

- **[OBD-II]** Freeze Frame is only available on certain OBD-II vehicles.
- Your vehicle must be scanned before viewing Freeze Frame data. If DATA is pressed, and the vehicle has not been scanned, the scanner will display `Press the Scan key to Scan New Data`. Refer to "Scanning the Vehicle" on page 13.

Viewing OBD-II Freeze Frame Data

1. If the EZ-Scan 4000 scanner is not ON, press POWER to display the opening screen.

2. Press DATA to display the Data menu. Press the ▲ and ▼ arrow keys until `2-Freeze` Frame is highlighted, then press ENTER.

NOTE: If no Freeze Frame data is available, the scanner will display a `No Freeze Frame Data` message, then display the Data Menu.

3. The Trouble Code which caused the Freeze Frame data to be captured will be displayed on the screen.

- A down arrow on the screen indicates more information. Use the ▲ and ▼ arrow keys to view the additional text.
- Press ENTER to view Freeze Frame operation data.

VIEW TROUBLE CODES

Before You Start

- Your vehicle must be scanned before clearing trouble codes. If DATA is pressed, and the vehicle has not been scanned, the scanner will display `Press the Scan key to Scan New Data`. Refer to “Scanning the Vehicle” on page 13.

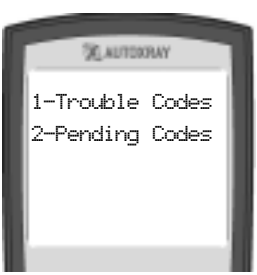
Viewing Trouble Codes - OBD II

1. If the scanner is not ON, press POWER to display the opening screen.

2. Use the ▲ and ▼ arrow keys until `3-Trouble Codes` is highlighted, then press ENTER.

3. **[OBD-II]** OBD-II vehicles read both Pending Codes (codes that have only been detected once by the vehicle computer) and Trouble Codes (codes that have been detected multiple times). Press ENTER to select either `1-Trouble Codes` or `2-Pending Codes`.

4. If no Trouble Codes are in the vehicle’s computer, `No Trouble Codes Found` will be displayed.

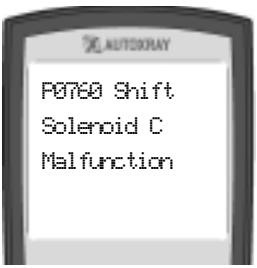


If a Trouble Code is detected, the fault and its description will be displayed on the scanner screen. The fault code number

VIEW THE TROUBLE CODES (CONT.)

will be displayed in the upper left corner of the screen.

- A down arrow on the screen indicates more information. Use the ▲ and ▼ arrow keys to view the additional text.
- Use the ◀ and ▶ arrow keys to view any other Trouble Codes.



CLEAR THE CODES - OBD-II

Before You Start

- Clearing Trouble Codes will remove any Trouble Codes from the vehicle's computer. You can use this feature to make sure vehicle repairs were done correctly by doing a new scan after clearing the codes.
- Your vehicle must be scanned before clearing trouble codes. If DATA is pressed, and the vehicle has not been scanned, the scanner will display `Press the Scan key to Scan New Data`. Refer to "Scanning the Vehicle" on page 13.

Clearing Trouble Codes

1. Make sure the EZ-Scan 4000 scanner cable is correctly connected to the scanner and to the vehicle, the engine is OFF, and the vehicle ignition key is ON, then press POWER.
2. Press DATA to display the

CLEAR THE CODES (CONT.)

Data menu.

[OBD-II] Use the ▲ and ▼ arrow keys until `4-Clear Codes` is high lighted, then press ENTER.

3. `ENTER to Clear` will be displayed on the screen. Press ENTER to clear all the codes in the vehicle's computer. (Pressing DATA again will take the unit out of Data mode and display the opening screen.)

4. After the codes have been cleared, `Function Successful` will be displayed. Press DATA to display the opening screen.

CUSTOMIZING DATA ITEMS

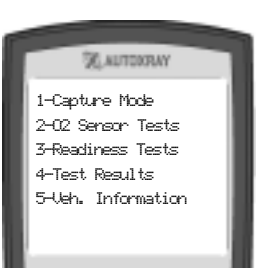
1. Make sure you have completed a vehicle scan. Then press POWER.
2. Press DATA to display the Data menu. Use the ▲ and ▼ arrow keys until `5-Customize Data`, then press ENTER.
3. You may select or deselect all the data items displayed, by pressing ENTER. When you are finished, only the data items you have selected will appear when viewing the Operational Data, Monitoring Real Time Data and Capture Mode Data - up to 20 data items.

CAPTURE MODE

Before You Start

NOTE: The maximum number of data items that can be viewed in Capture Mode is 20.

- Use Capture Mode to help diagnose intermittent problems that occur while driving the vehicle by capturing data before, during, and after a problem occurs.
- **[OBD-II]** The Capture Mode will capture up to a maximum of 20 data items. Use Customize Data function to select which data items to be captured and displayed. See page 21 “Customizing Data Items - OBD-II”.
- **[ALL]** Your vehicle must be scanned before using Capture Mode. If ENTER is pressed to select `1-Capture Mode`, and the vehicle has not been scanned, the scanner will display `Press the Scan key to Scan New Data`. Refer to “Scanning the Vehicle” on page 13.



CAUTION: AutoXray recommends that the person operating the vehicle does not use/view the scanner.

CAPTURE MODE (CONT.)

Always use an assistant to operate the scanner while driving the vehicle.

Capturing the Problem

1. Make sure the EZ-Scan 4000 scanner cable is out of the driver's way, and is correctly connected to the scanner and to the vehicle, then press POWER.

2. Press MON to display Monitor menu. **[OBD-II]** Make sure `1-Capture Mode` is highlighted, then press ENTER.

Make sure `1-Start Capture` is highlighted, then press ENTER.

3. The screen will display Capture Mode and then up to seven '>' symbols. Each '>' symbol represents a user defined length of time.

NOTE: When `Capture Mode` is started, the scanner will begin displaying '>' symbols. Each symbol represents two frames of data. The default setting for each frame is one second. Refer to "Set the Time Units for Capture Mode" on page 11 to change the setting.

4. When the scanner is put in Capture Mode it is ready to capture real-time data (for those problems that only seem to occur while driving). Press ENTER when the intermittent

CAPTURE MODE (CONT.)

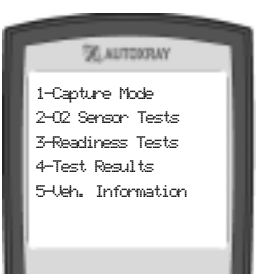
problem occurs. The scanner will capture the data at the trigger point, then will display a '**T**' followed by seven '<' symbols as vehicle data after the trigger is captured and stored.

NOTE: You can press ENTER at any time, even if all seven '>' symbols are not displayed. The scanner always keeps the most recent data while waiting for ENTER (trigger point) to be pressed.

Press MON at any time to abort the capture.

Viewing the Capture Mode Data

Capture Mode data can be viewed on the scanner, or you can use PC-Link to download the data to your personal computer to save it and display it graphically. Data stored on your computer can be used to keep a history of data for the vehicle.



1. Press POWER to display the EZ-Scan 4000 scanner opening screen.

2. Press MON to display Monitor menu. **[OBD-II]** Make sure `1-Capture Mode` is highlighted, then press ENTER.

[All] Use the ▲ and ▼ arrow keys until `2-View Data` is highlighted, then press ENTER.

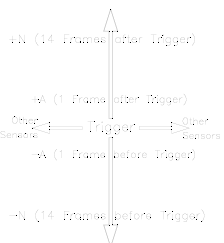
3. Data from each sensor will be displayed on the screen. Use the ▲ and ▼ arrow keys to view data changes as you move up

CAPTURE MODE (CONT.)

and down the capture time line. The (-) indicates time intervals before the trigger point, and (+) indicates time intervals after the trigger point.

- Use the ◀ and ▶ arrow keys to view other sensors.

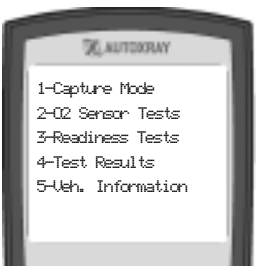
4. Press MON to exit Capture Mode and display the opening screen.



OXYGEN SENSOR TESTS - OBD-II

Before You Start

- **[OBD-II]** Oxygen Sensor Tests are **OBD-II specific** tests of each of the oxygen sensors on a vehicle. Although there are up to eight possible sensors the scanner can test, certain vehicles may not support all eight tests, and most vehicles use only two or four. Oxygen Sensor Test values are divided in two types, a constant reading and a calculated reading. Constant readings are provided by the vehicle computer, calculated readings are determined from the sensor data.



- Your vehicle must be scanned before viewing Oxygen Sensor Test data. If MON is pressed, and the vehicle has not been scanned, the scanner will display `Press the Scan key to Scan New Data`. Refer to “Scanning the Vehicle” on page 13.

- Refer to “OBD-II Oxygen Sensor Test Readings” on page 26 to see a description of each Oxygen Sensor Test data item.

Viewing Oxygen Sensor Test Data

1. Press POWER to display the EZ-Scan 4000 scanner opening screen.
2. Press MON to display Monitor menu. Use the ▲ and ▼ arrow keys until `2-Oxygen Tests` is highlighted, then press ENTER.
3. Use the ▲ and ▼ arrow keys to select an O2 Sensor number, then press ENTER.
4. Use the ◀ and ▶ arrow keys to select which Oxygen Sensor Test to view.
5. Press MON to exit the Oxygen Sensor Tests and display the opening screen.

OBD-II OXYGEN SENSOR TEST READING

Constant Readings

Rich to Lean Sensor Threshold (Volts) - Oxygen sensor voltage that indicates a transition from a rich condition to a lean condition.

Lean to Rich Sensor Threshold (Volts) - Oxygen sensor voltage that indicates a transition from a lean condition to a rich condition.

Low Sensor Voltage for Switch Time Calculation (Volts) or High Sensor Voltage for Switch Time Calculation (Volts) - The computer uses fixed voltage levels to measure the “lean to rich” and “rich to lean” transition times. The computer will measure the amount of time between when the O2 sensor is at the low voltage and when the O2 sensor is at the high voltage to obtain the lean to rich transition time. The computer will measure between the high and low voltages to obtain rich to lean transition time.

OBD-II Oxygen Sensor Test Reading (cont.)

Calculated Readings

Rich to Lean Sensor Switch Time (mS) or Lean to Rich Sensor Switch Time (mS) - The time it takes for the oxygen sensor to transition from a Rich to Lean condition for the Rich to Lean sensor Switch Time, or from a Lean to Rich condition for the Lean to Rich sensor Switch Time.

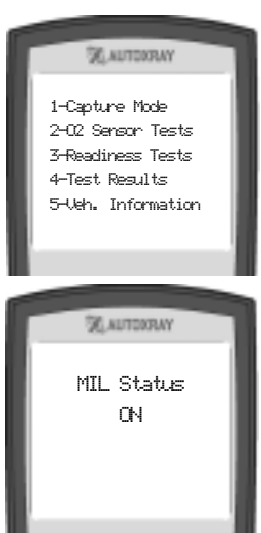
Minimum Sensor Voltage for Test Cycle (Volts) or Maximum Sensor Voltage for Test Cycle (Volts) - The computer keeps track of and reports the minimum voltage level and the maximum voltage level attained during the oxygen sensor test cycle.

Time Between Sensor Transitions (mS) - The computer will calculate the time between a rich to lean trasition and a lean to rich transition and report this value.

View Readiness Test - OBD-II

Before You Start

- **[OBD-II]** Your scanner must be connected, and the key in the ON position, before viewing OBD-II Readiness Test data. If MON is pressed, and the vehicle has not been scanned, the scanner will display `Press the Scan key to Scan New Data`. Refer to "Scanning the Vehicle" on page 13.



1. Press POWER to display the EZ-Scan 4000 scanner opening screen.
2. Press MON to display Monitor menu. Use the ▲ and ▼ arrow keys

VIEW READINESS TEST - (CONT.)

until 3-Readiness Test is highlighted, then press ENTER.

3. The name of the Readiness Test will be displayed, followed by its status. Status is either Completed, Not Completed, or Not Supported.

- A down arrow on the screen indicates other test results. Use the ▲ and ▼ arrow keys to view these other test results.

The following Readiness Tests are supported by the scanner:

CONTINUOUS	NON-CONTINUOUS
Misfire Monitoring	Catalyst Monitoring
Fuel System Monitoring	Heated Catalyst Monitoring
Comprehensive Component Monitoring	Evaporative System Monitoring
	Secondary Air System Monitoring
	A/C System Refrigerant Monitoring
	O2 Sensor Monitoring
	O2 Sensor Heater Monitoring
	EGR System Monitoring

4. Press MON to exit the Readiness Test and display the opening screen.

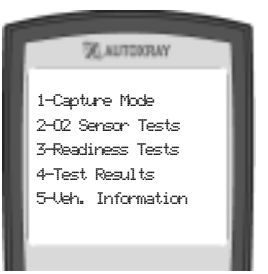
VIEW TEST RESULTS - OBD-II

Test Results

- **[OBD-II]** Your scanner must be connected, and the key in the ON position, before viewing OBD-II Readiness Test data. If MON is pressed, and the vehicle has not been scanned, the scanner will display `Press the Scan key to Scan New Data`. Refer to "Scanning the Vehicle" on page 13.

1. Press POWER to display the EZ-Scan 4000 scanner opening screen.

2. Press MON to display Monitor menu. Use the ▲ and ▼ arrow keys until `4- Test Results` is highlighted, then press ENTER.



3. The Test Result will be displayed, followed by its status.

- Each reading will give the Test Number, the Component Number, Pass or Fail status, whether it is a "Hi" value or "Low" value test, the value reported by the on-board computer, and the limit for that value.
- A down arrow on the screen indicates other test results. Use the ▲ and ▼ arrow keys to view these other test results.

NOTE: OBD-II equipped vehicles, are required to report the results of diagnostic tests for all non-continuously

VIEW TEST RESULTS - (CONT.)

monitored emissions related components, for instance the catalytic converter or the EGR valve. These tests vary among manufacturers and the numbers are assigned arbitrarily by them and should be listed in the service manual for the vehicle.

4. Press MON to exit the Readiness Test and display the opening screen.

REQUEST VEHICLE INFORMATION - OBD-II

Before You Start

- Before scanning a vehicle, the EZ-Scan 4000 scanner must be correctly configured for your vehicle. Refer to “Setup / Operating Instructions” on page 8 if you need to configure the scanner.

1. Press the POWER key to display the EZ-Scan 4000 scanner opening screen.

2. Press the MON key to display the Monitor menu. Use the arrow keys until 5 - Vehicle Indent or 5 - System Info is highlighted, then press ENTER.

3. The Vehicle Information will be displayed, such as (VIN_) Vehicle Identification Number and (CVN) Calibration Verification Number. The IDs can be displayed in Hex values and/or in Mnemonic. Not all Infotypes are applicable or supported by all systems. There can be multiple Calibration IDs from multiple (ECUs) Electronic Control Units, i.e., ECM, TCM, or PCM etc., depending on what your Vehicle supports and the protocol the ECUs use.

Example:

ID#	$00, $01	VIN. MRYN47NH1D65439
CVN.	0013564	MRYN65439

This example shows an ID#, the vehicles ECU’s ID.

This information must be supplied on 2003 and newer vehicles in order to identify VIN’s, CVN’s, and certain ECU ID’s. Use the arrow keys to select more Data items if available.

4. Press the MON key to return to the opening screen.

NOTE: If Vehicle does not support this menu item then, “Not Valid Perform Scan” appears on the display or defaults back to MON main menu. Rescanning the vehicle will not change this message if you have already performed a scan, the vehicle does not support this menu item.

OBD-II Generic Operational Data Items

OL Drive - Vehicle in Open Loop due to driving conditions (power enrichment, deceleration).
OL Fault - Vehicle in Open Loop due to a detected system fault.
CL O2 Fault - Vehicle in Closed Loop, but a fault with at least one oxygen sensor - may be using simple oxygen sensor for fuel control.

Ignition Timing Advance **Range: -64 to 63.5**

The relationship between ignition timing and top dead center, displayed in crankshaft degrees.

Intake Air Temperature **Range: -40°F to 215°F**
Temperature of the air drawn through a cleaner and distributed to each cylinder for use in combustion.

Intake Manifold Pressure **Range: 10 to 105 kPa, or 0 to 5 Volts**
The manifold absolute pressure displayed in kilopascals or volts. A low reading will indicate that the pressure is low (vacuum is high) and a high reading will indicate that the pressure is high (vacuum is low).

Long Term Fuel Trim (Bank 1 / Bank 2)
Long Term adjustments to the Bank 1 fuel calibration schedule which compensate for vehicle differences and gradual changes that occur over time. Range: -100.00% to 99.92% (-100% indicating a maximum lean condition, 99.92% indicating a maximum rich condition, and 0% indicating no adjustment).

OBD-II Require
Requirement level for the On Board Diagnostics designed for the vehicle.
OBD-II (CARB) - Vehicle designed with OBD requirements for California Air Resource Board OBD-II.
OBD (Fed EPA) - Vehicle designed with OBD requirements for Federal EPA OBD.
OBD and OBD-II - Vehicle designed with OBD requirements for OBD and OBD-II.
OBD-I - Vehicle designed with OBD requirements for OBD-I.
Not Intended - Vehicle not intended to meet any OBD requirements.

Oxygen Sensor
The detection of Oxygen (O2) content in the exhaust gases. The sensor readings are used by the ECM to help calculate the air-fuel mixture to

OBD-II Generic Operational Data Items (cont.)

maintain proper vehicle performance.

Short Term Fuel Trim (Bank 1/2)
Dynamic or instantaneous adjustments to the Bank 1 base fuel schedule. Range: -100.00% to 99.92% (-100% indicating a maximum lean condition, 99.92% indicating a maximum rich condition, and 0% indicating no adjustment).

Vehicle Speed (MPH)
Sensor reading displayed in miles per hour.

Enhanced OBD-II Operational Data Items

Activating Enhanced OBD-II

Call AutoXray Customer Service to activate the software in your unit. There is a charge to activate the Enhanced OBD-II upgrades. When you call 1.800.595.9729, a representative will step you through the process to activate your upgrade.

Each vehicle will vary on what specific parameters are available. The list below is a sample of the type of additional data that is available for Enhanced OBD-II. Please check the AutoXray web site for the latest update information at **www.autoxray.com**.

Additional Parameters and Values

Parameters	Values	Parameters	Values
A/C	Requested / Not Req.	Block Learn Idle	Numeric
A/C Clutch	Engaged / Not Eng.	Brake Depressed	Yes / No
A/C Pressure Sensor	High / Low	Calc Air Flow	g/s lbs/min
Actual EGR Duty	Percentage	Calculated Load	Percentage
Air Fuel Ratio	Numeric	Cam Position Err	Percentage
Baro Pressure	kPa/Hg/PSI	Cam Resync Cnt	Count
Battery Voltage	Volts	Cam Retard	Degrees

Additional Parameters and Values (cont.)

Parameters	Values	Parameters	Values
Block Learn Accel	Numeric	Canister Purge	Requested/Not Req
Block Learn Cruise	Numeric	Canister Purge Solen	Percentage
Block Learn Decel	Numeric	Catalyst Freq Bank1	Hz
Catalyst Freq Bank2	Hz	High Adapt Knock Retard	Degrees
Catalytic Convtr Temp	C or F	High Speed Fan	On / Off
Coast Clutch Solenoid	On / Off	IAC Duty Cycle	Percentage
Cool. Gauge Cmd	Numeric	IAC Position	Steps
Coolant Sensor	Volts	IAC with A/C	Steps
Coolant Temp	C or F	IAC without A/C	Steps
Cruise Set Speed	Kph/Mph	Injector Pulse Bank1	mS
Cruise Switch	Volts	Injector Pulse Bank2	mS
Current Gear	Numeric	Intake Air Sensor	Volts
Desired EGR Posn	Percentage	Intake Air Temp	C or F
Desired IAC Posn	Steps	Knock Count	Count
Desired Idle	RPM	Knock Retard	Degrees
EGR DECEL Trip	Numeric	Knock Sensor	Volts
EGR Duty Cycle	Percentage	Lean to Rich Avg Time	mS
EGR Position	Volts	Lean to Rich Counts	Count
EGR Posn Error	Percentage	Line Press. Ctrl	kPa/Hg/PSI
EGR Sensor	Volts	Long Term Cell	Numeric
EGR Valve Posn	Percentage	Long Term Trim Bank1	Percentage
Engine Load	Percentage	Long Term Trim Bank2	Percentage
Engine Run Time	Sec	Loop Status	Closed / Open
Engine Speed	RPM	Low Adapt Knock Retard	Degrees
Engine Torque	Nm	Low Speed Fan	On / Off
Evap Duty Cycle	Percentage	MAF Frequency	Hz
EVO Duty Cycle	Percentage	MAF Sensor	Volts
EVO Feedback	Volts	Malfunction Light	On / Off
Field Octane	Requested / Not Req	MAP Sensor	Volts
Final Block Learn	Numeric	Mass Air Flow	g/s lbs/min
Four Wheel Low	Requested / Not Req	MidAdapt Knock Retard	Degrees
Front O2 Sensor	Volts	Misfire Cur. #1 - #8	Count
Fuel Level	Volts	Misfire Failure Count	Count

ADDITIONAL PARAMETERS AND VALUES

Parameters	Values	Parameters	Values
Fuel Level	Percentage	Misfire History Cyl 1-8	Count
Fuel Rail Press	kPa	Misfire Tests Passed	Count
Fuel Tank Press	"/H20	Misfires/Cycle	Count
Fuel Trim Cell Bank1	Percentage	O2 Bank1 Sensor 3	mV
Fuel Trim Cell Bank2	Percentage	O2 Cross Counts Bank1	Count
O2 Cross Counts Bank2	Count	Shift Delay	ms
O2 Sensor1 Bank1	mV	Shift Solenoid A	On / Off
O2 Sensor1 Bank1 Heater	On / Off	Shift Solenoid B	On / Off
O2 Sensor1 Bank2	mV	Shift Solenoid C	On / Off
O2 Sensor1 Bank2 Heater	On / Off	Short Term Trim Bank1	Percentage
O2 Sensor2 Bank1	mV	Short Term Trim Bank	Percentage
O2 Sensor2 Bank1 Heater	On / Off	Spark Advance	Degrees
O2 Sensor2 Bank2	mV	ST Fuel Trim Bank1	Percentage
O2 Sensor2 Bank2 Heater	On / Off	ST Fuel Trim Bank2	Percentage
OBD Data Cleared	Km/Miles	Start Up Coolant Temp	C or F
OBD II Trip Completed	Yes / No	System Voltage	Volts
Output Shaft	RPM	TCC Duty Cycle	Percentage
Park Neutral	Detected / Not Det	TCC Slippage	RPM
Power Steering Load	Yes / No	Throttle Angle	Percentage
Power Steering Sensor	Volts	Throttle Posn	Volts
Power Take Off	Engaged / Not Eng.	Throttle Sensor	Volts
Rear O2 Sensor	Volts	Total Misfires	Counts
Rear O2 Trim Bank1	Percentage	Trans Control Light	On / Off
Rear O2 Trim Bank2	Percentage	Trans Control Switch	On / Off
Rev Mode Misfire Index	Numeric	Trans Fluid Temp	Volts
Rich to Lean Avg Time	mS	Trans Oil Temp	C or F
Rich to Lean Counts	Count	Turbine Shaft	RPM
Rich/Ln Ln/Rich Ratio	Numeric	Vehicle Speed	Kph/Mph
Secondary Air Pump	On / Off		

UPGRADE, UPDATE, SPECIFICATIONS

This section contains information about the following subjects:

- Scanner Upgrade - Adding Capability (Phone or Internet)
- Scanner Update - Loading New Software Version
- System Information
- Set the Time Units for Capture Mode
- Technical Description of OBD-I and -II

Scanner Upgrade - Adding Capability (Phone or Internet)

Upgrading the scanner involves enabling features in your scanner.

If you have a GM, FORD, Chrysler, or OBD-II scanner, you can add any of the other versions to your scanner for a nominal charge by simply calling AutoXray. One of our Customer Service Representatives will step you through the process (see our web site or contact AutoXray for current prices). Do the following to UPGRADE your scanner:

1. Press CONFIG from the initial screen.

2. Use the ▲ and ▼ keys to display 3-User Upgrade on the screen, then press ENTER.

3. Write down the Serial Number for your scanner software, then press ENTER.

4. Use the ▲ and ▼ arrows until the vehicle application you want to add is displayed, then press ENTER.

5. Write down the Seed Number that is displayed on the screen. The Seed Number is used by AutoXray to generate a unique Upgrade Key for your scanner.

6. Call AutoXray at 480.804.1673 and tell the Customer Service Representative the vehicle application you want to add. AutoXray will ask for your software serial number and seed number, then give you your Upgrade Key.

7. Use the ▲, ▼, ◀, and ▶ arrow keys to enter the new Upgrade Key into your scanner, then press ENTER. The scanner will display a System Activated screen.

8. Press ENTER or CONFIG to display the initial screen.

9. The AutoXray Customer Service Representative will then arrange the purchase and delivery of a new cable that corresponds to your upgrade.

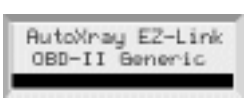
Registration Card

Please complete the enclosed Registration Card and return it, or call 480.804.1673. It is the only way AutoXray can notify you of future upgrades / updates for your scanner.

Scanner Update - Loading New Software Version

Updating your scanner involves loading the latest version of the AutoXray software onto your scanner. This process requires the use of PC-Link. See the Additional Products / Accessories section in this manual for additional information about PC-Link. Do the following to UPDATE your scanner:

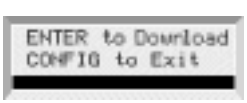
1. Press CONFIG from the initial screen.



2. Use the ▲ and ▼ keys to display 4-Download on the screen, then press ENTER.

3. Press ENTER to prepare the scanner to receive the download.

- When the screen displays a Downloading message, the scanner is in Slave Mode waiting for the PC to begin communication.



System Information

NOTE: Press CONFIG at any time during the following steps to display the initial screen.

1. Press CONFIG from the initial screen.

2. Use the p and q keys to display `5-System Info` on the screen, then press ENTER.

3. Software Version information will be displayed on the screen. Press ENTER to view the next screen.

4. The scanner `Serial Number` will be displayed on the screen. Press ENTER to view the next screen.

5. The scanner software `ID#1` and `ID#2` hex-codes will be displayed on the screen. Press ENTER to display the initial screen.

TECHNICAL DESCRIPTION OF OBD-I AND -II

OBD-I

Original equipment automobile manufacturers (OEM) developed On-Board Diagnostics (OBD) in response to increased diagnostic requirements from the California Air Resource Board (CARB). The regulations that were developed by CARB and accepted by the Environmental Protection Agency (EPA) were designated OBD-I. Beginning in 1982 and by 1989 all new cars and light duty trucks sold in California had to have OBD-I.

OBD-I requires a Malfunction Indicator Lamp (MIL) or check engine light that illuminates to inform the vehicle operator when an emissions related component or a monitored system fails. The MIL dash indicator is usually amber or red in color. Each OEM manufacturer may call it by a different name.

The computer must have the capability to store Diagnostic Trouble Codes (DTCs). When a fault occurs, the MIL will illuminate and a DTC is stored in the computer's memory.

OBD-I requires monitoring of the Oxygen Sensor, EGR System, Fuel Delivery System, ECM or PCM, and Emission Related Electrical Components.

OBD-II

The California Air Resource Board (CARB) found that by the time an emission system component fails and causes the MIL to illuminate, the vehicle may have been emitting excess emissions for some time.

The OEMs had to develop new PCM self-diagnostic strategies in response to increased diagnostic requirements from the California Air Resource Board (CARB). The latest regulations developed by CARB and accepted by the Environmental Protection Agency (EPA) are designated OBD-II.

TECHNICAL DESCRIPTION OF OBD-I AND -II (CONT.)

The Federal Clean Air Act Amendments of 1990 requires that all vehicles sold in the United States meet OBD-II requirements by the 1996 model year. The first OBD-II systems appeared on selected vehicle types in 1994.

Some important OBD-II requirements are: Vehicle service information available to all technicians; Standardization of Terms: Use of SAE J-1930 recommended terms; OBD-II requires a common Diagnostic Link Connector (DLC) and specifies its location in the vehicle; Generic scan tool; Generic emission related Diagnostic Trouble Codes (DTC); and a very specific Malfunction Indicator Light (MIL) illumination protocol.

One very important part of the OBD-II requirements is that technical service information for emissions related components and systems, which could affect the vehicle's emission levels, will be available to all technicians; not just OEM dealership technicians. This will allow all technicians to better understand how the systems recognize faults and set the DTCs. The technician can now make a repair and verify the repair by exactly duplicating the criteria that is required for the DTC to be set.

PRODUCT WARRANTY

1. AutoXray warrants to its customers that, on the date the Products are delivered, they shall be free from defects in manufacture.
2. This warranty shall apply only to defects that appear within 365 days, and which are reported to AutoXray within 455 days, following the date the Products are delivered.
3. New replacement Products are warranted as new.
4. Reconditioned replacement Products and repaired Products are warranted as new for the longer of the remainder of the original warranty period or 90 days from the date of delivery of the repaired or replaced Product.
5. This warranty does not cover defects caused by abuse, mishandling, accident, improper installation or application, the malfunction of another component or part of any device in which the Products installed or with which the Product interfaces, or extend to Products which have been modified or repaired by anyone except AutoXray or its authorized service representative, or to a Product with respect to which the serial numbers or identification marks have been altered or removed.
6. AutoXray makes no other warranties other than those expressly stated herein.
7. AutoXray's customers' exclusive remedy under this warranty is repair or replacement at AutoXray's option and such repair or replacement shall satisfy AutoXray's warranty obligation to its customers whether in contract, tort, negligence, strict liability or otherwise.
8. Prior to returning a Product for warranty adjustment, AutoXray shall require a return authorization and will issue a return authorization number. The return authorization number shall be placed conspicuously on the outer package shipping label. Products returned to AutoXray shall be accompanied by a written description of the reasons for return, the circumstances under which the defect became apparent and the date the defect occurred or, if not known, the date the defect was discovered.
9. If a returned Product is found not to be defective, AutoXray shall return the product and invoice for the costs of testing and return shipment.
10. If a returned Product is found to contain a defect which is not covered by this warranty AutoXray shall provide a written quotation showing the estimated cost of repair or the price of a replacement. In the event instructions as to the disposition of the product are not received within 30 days from receipt of such estimate or quotation, AutoXray shall return the product and invoice for the cost of testing and return shipment.
11. If a returned Product is found to be defective and such defect is covered by this warranty, AutoXray shall at its option and at no charge to the customer, repair or replace the Product. Following such repair or replacement, AutoXray shall return the Product at AutoXray's expense.

You **Must Register** to receive these great added benefits

Register By Mail	Register online at **www.autoxray.com** and receive even more benefits
Free 2 year extended warranty coverage	Free 3 year extended warranty coverage
Free unlimited technical support	Free unlimited technical support
Free minor software updates over the Internet	Free minor software updates over the Internet
Receive information about new products	Receive information about new products
Receive information on major product enhancements	Receive information on major product enhancements

You must register within 60 days of your date of purchase to qualify for these added benefits. Otherwise there may be a fee associated with your technical support.

Return for Repair

If it becomes necessary to send the Scanner back to us for repair, contact AutoXray at 480.804.1673, ask for an RMA number, then send it to:

AutoXray
1800 W. Broadway Rd., Bldg. 5
Tempe, AZ 85282

Additional Products and Accessories

Scanners

EZ-SCAN 6000

Includes: EZ-SCAN 6000 Scanner, GM OBD-I Cable, Ford OBD-I Cable, Chrysler OBD-I Cable, OBD-II Cable, OBD-II MFG Specific Cable, EZ-PC 500

EZ-SCAN 5000

Includes: EZ-SCAN 5000 Scanner, GM OBD-I Cable, Ford OBD-I Cable, Chrysler OBD-I Cable, OBD-II Cable, OBD-II MFG Specific Cable, EZ-Update, and PC Interface.

EZ-SCAN 4000

Includes: EZ-SCAN 4000 Scanner, OBD II Cable, EZ-Update

EZ-SCAN 3000

Includes: EZ-SCAN 3000 Scanner, GM OBD-I Cable, Ford OBD-I Cable, Chrysler OBD-I Cable, Coupon for OBD-II MFG Specific Cable, EZ-Update.

Code Readers

EZ-READ 2000

Includes: EZ-READ 2000 Code Reader, GM OBD-I Cable, Ford OBD-I Cable, Chrysler OBD-I Cable, OBD-II Cable, OBD-II MFG Specific Cable.

EZ-READ 1000

Includes: EZ-READ 1000 Code Reader, OBD-II Cable.

Accessories / Upgrades

EZ-PC 500 Kit - enables your Scanner to interface directly with your PC and AutoXray through the Internet (Includes Serial Interface cable and CD-ROM software)

EZ-Update 400 - Windows based software enables your AutoXray tools to interface directly with you PC and Internet.

Carrying Case - a rugged, impact-resistant, nylon carrying case for individual scanners or ProPacks

ADDITIONAL PRODUCTS AND ACCESSORIES

EZ-SCAN Enhanced OBD-II Software Upgrade

EZ-SCAN ALL Mfg. Software Upgrade - includes software upgrades for OBD-II, GM, Ford, and Chrysler

EZ-SCAN OBD-II Upgrade - for OBD-II

EZ-SCAN GM OBD-I Upgrade - for GM OBD-I support (12-pin ALDL model years '82-'95)

EZ-SCAN Ford OBD-I Upgrade - for Ford OBD-I support (EEC-IV vehicles model years '83-'95)

EZ-SCAN Chrysler OBD-I Upgrade - for Chrysler OBD-I support (SCI vehicles '83-'95, excluding '87-'88)

XP240 Trade in - trade your old unit in for a new EZ-SCAN scanner

EZ-Read Trade in - trade in your old unit for a new EZ-SCAN Scanner

EZ-Link Trade in - trade in your old unit for a new EZ-SCAN scanner

Internet Access

Visit our Internet web site at **www.autoxray.com** for the latest products, accessories, upgrades, and available updates.

Contact us by email at **support@autoxray.com**