

ANCEL[®] AD510



User's Manual

OBD2/EOBD SCANNER



CAN OBDII/EOBD

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1. Safety Precautions and Warnings

To prevent personal injury or damage to vehicles and/or the scan tool, read this user's manual first carefully and observe the following safety Precautions at a minimum whenever working on a vehicle:

- Always perform automotive testing in a safe environment.
- Do not attempt to operate or observe the tool while driving a vehicle. Operating or observing the tool will cause driver distraction and could cause a fatal accident.
- Wear safety eye protection that meets ANSI standards.
- Keep clothing, hair, hands, tools, test equipment, etc. Away from all moving or hot engine parts.
- Operate the vehicle in a well-ventilated work area: Exhaust gases are poisonous.
- Put blocks in front of the drive wheels and never leave the vehicle Unattended while running tests.
- Use extreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs. These components create hazardous voltages when the engine is running.
- Put the transmission in P (for A/T) or N (for M/T) and make sure the parking brake is engaged.
- Keep a fire extinguisher suitable for gasoline/chemical/electrical fires nearby.
- Don't connect or disconnect any test equipment while the ignition is on or the engine is running.
- Keep the scan tool dry, clean, free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the scan tool when necessary.

1. General Information

2.1 On-Board Diagnostics(OBD) II

The first generation of On-Board Diagnostics(call OBD I) was developed by the California Air Resources Board(ARB) and implemented in 1988 to monitor some of the emission control components on vehicles. As technology evolved and the desire to improve the On-Board Diagnostic system increased, a new generation of On-Board diagnostic System was developed.This second generation of On-Board Diagnostic Regulations is called “OBD II ” .

The OBD II system is designed to monitor emission control systems and Key engine components by performing either continuous or periodic Tests of specific components and vehicle conditions.When a problem is detected,the OBD II system turns on a warning lamp(MIL)on the Vehicle instrument panel to alert the driver typically by the phrase Of “Check Engine” or “Service Engine Soon”. The system will also Store important information about the detected malfunction so follow Three pices of such valuable information:

- 1) Whether the Malfunction Indicator Light (MIL) is commanded “on” Or “off”;
- 2) Which,if any, Diagnostic Trouble Codes (DTCs) are stored;
- 3) Readiness Monitor Status.

2.2 Diagnostic Trouble Codes (DTCs)

OBD II Diagnostic Trouble Codes are codes that are stored by the On-Board computer diagnostic system in response to a problem found In the vehicle. These codes identify a particular problem area and Are intended to provide you with a guide as to where a fault might Be occurring within a vehicle.OBD II Diagnostic Trouble Codes Consists of a five-digit alphanumeric code.The first character,a Letter,identifies which control system sets the code.The other Four characters,all numbers,provide additional information on Where the DTC originated and the operating conditions that caused It to set.Here below is an example to illustrate the structure Of the digits:

DTC Example P0202

Identifying specific malfunctioning section of the systems

Systems

B=Body
C=Chassis
P=Powertrain
U=Network

Code Type

Generic (SAE):

P0, P2, P34–P39
B0, B3
C0, C3
U0, U3

Manufacturer specific:

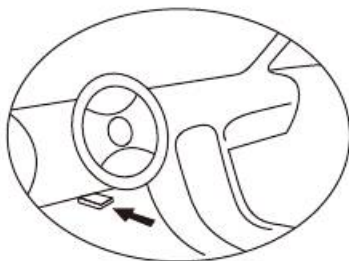
P1, P30–P33
B1, B2
C1, C2
U1, U2

Sub-systems

1=Fuel and Air Metering
2=Fuel and Air Metering
3=Ignition System or Engine Misfire
4=Auxiliary Emission Controls
5=Vehicle Speed Control and Idle Controls
6=Computer Output Circuits
7=Transmission Controls
8=Transmission Controls

2.3 Location of the Data Link Connector(DLC)

The DLC(Data Link Connector or Diagnostic Link Connector) is the Standardized 16-cavity connector where diagnostic scan tools interface With the vehicle's side for most vehicles. If Data Link Connector is not Located under dashboard, a label should be there telling location. For Some Asian and European vehicles, the DLC is located behind the ashtray And the ashtray must be removed to access the connector. If the DLC cannot Be found, refer to the vehicle's service manual for the location.



2.4 OBD II Readiness Monitors

An important part of a vehicle's OBD II system is the Readiness Monitors, which are indicators used to find out if all of the emissions components have been evaluated by the OBD II system. They are running periodic tests on specific systems and components to ensure that they are performing within allowable limits.

Currently, there are eleven OBD II Readiness Monitors (or I/M Monitors) defined by the U.S. Environmental Protection Agency (EPA). Not all monitors in any vehicle depend on the motor vehicle manufacturer's emissions control strategy.

Continuous Monitors – Some of the vehicle components or systems are continuously tested by the vehicle's OBD II system, while others are tested only under specific vehicle operating conditions. The continuously monitored components listed below are always ready:

1) Misfire

2) Fuel System

3) Comprehensive Components(CCM)

Once the vehicle is running, the OBD II system is continuously checking the above components, monitoring key engine sensors, watching for engine misfire, and monitoring fuel demands.

Non-Continuous Monitors –Unlike the continuous monitors, many emissions and engine system components require the vehicle to be operated under specific conditions before the monitor is read. These monitors are termed non-continuous monitors. For different ignition type engines, the available monitors are different too.

The following monitors are to be used for spark ignition (Gasoline) engines only:

- 1) **EGR System**
- 2) **O₂ Sensors**
- 3) **Catalyst**
- 4) **Evaporative System**
- 5) **O₂ Sensor Heater**
- 6) **Secondary air**
- 7) **Heated Catalyst**

The following monitors are to be used for compression ignition (Diesel) engines only:

- 1) **EGR System**
- 2) **NMHC Catalyst**
- 3) **NO_x aftertreatment**
- 4) **Boost pressure system**
- 5) **Exhaust gas sensor**
- 6) **PM filter**

2.5 OBD II Monitor Readiness Status

OBD II systems must indicate whether or not the vehicle's PCM's monitor system has completed testing on each component. Components that have been tested will be reported as "Ready", or "Complete", meaning they have been tested by the OBD II system. The purpose of recording readiness status is to allow inspectors to determine if the vehicle's OBD II system has tested all the components and/or systems.

The power-train control module (PCM) sets a monitor to "Ready" or "Complete" after an appropriate drive cycle has been performed. The drive cycle that enables a monitor and sets readiness codes to "Ready" varies for each individual monitor. Once a monitor is set as "Ready" or "Complete", it will remain in this state. A number of factors, including erasing of diagnostic trouble codes (DTCs) with a scan tool or a disconnected battery, can result in Readiness Monitors being set to "Not Ready". Since the three continuous monitors are constantly evaluating, they will be reported as "Ready" all of the time. If testing of a particular supported non-continuous monitor has not been completed, the monitor status will be reported as "Not Complete" or "Not Ready".

In order for the OBD monitor system to become ready, the vehicle should be driven under variety of normal operating conditions. These operating conditions may include a mix of highway driving and stop and go, city type driving, and at least one overnight-off period. For specific information on getting your vehicle's OBD monitor system ready, please consult your vehicle owner's manual.

2.6 OBD II Definitions

Power-train Control Module (PCM) – OBD II terminology for the on-board Computer that controls engine and drive train.

Malfunction Indicator Light (MIL) – Malfunction Indicator Light (Service Engine Soon, Check Engine) is a term used for the light on the instrument panel. It is to alert the driver and/or the repair technician that there is a problem with one or more of vehicle's systems and may cause emissions to exceed federal standards. If the MIL illuminates with a steady light, it indicates that a problem has been detected and the vehicle should be serviced as soon as possible. Under certain conditions, the dashboard light will blink or flash. This indicates a severe problem and flashing is intended to discourage vehicle operation. The vehicle onboard diagnostic system can not turn the MIL off necessary repairs are completed or the condition no longer exists.

DTC – Diagnostic Trouble Codes (DTC) that identify which section of the emission control system has malfunctioned.

Enabling Criteria – Also termed Enabling Conditions. They are the vehicle-specific events or conditions that must occur within the engine before the various monitors will set, or run. Some monitors require the various to follow a prescribed "drive cycle" routine as part of the enabling criteria. Drive cycles vary among vehicles and for each monitor in any particular vehicle.

OBD II Drive Cycle – A specific mode of vehicle operation that provides conditions required set all the readiness monitors completing and OBD II drive cycle is to force the vehicle to run its onboard diagnostics. Some from the PCM's memory or after the battery has been disconnected. Running through a vehicle's complete drive cycle will "set" the readiness monitors so that future faults can be detected. Drive cycles vary depending on the vehicle and the monitor that needs to be reset. For vehicle specific drive cycle, consult the vehicle's Owner's Manual.

Freeze Frame Data – When an emissions related fault occurs, the OBD II system not only sets a code but also records a snapshot of the vehicle operating parameters to help in identifying the problem. This set of values is referred to as Freeze Frame Data and may include important engine parameters such as engine RPM, vehicle speed, air flow, engine load, fuel pressure, fuel trim value, engine coolant temperature, ignition timing advance, or closed loop status.

2.7 OBD II Modes of Operation

Here is a basic introduction to the OBD II communication protocol.

Mode byte : The first byte in the stream is the mode number. There are 10 modes for diagnostic requests. The first byte in the response data bytes is this same number plus 64. For example, a mode 1 request would have the first data byte =1, and the response would have the first data byte=65. Here is a brief description of the modes :

Mode \$01 – Identifies the Powertrain information and shows current data available to the scan tool. This data includes: DTC set, status of on-board tests, and vehicle data such as engine RPM, temperatures, ignition advance, speed, air flow rates, and closed loop status for fuel system.

Mode \$02 – Displays Freeze Frame data. Same data as in mode 1, but it was captured and stored when a malfunction occurred and a DTC was set. Some of the PIDs for mode one are not implemented in this mode.

Mode \$03 – Displays the type of powertrain or emission related DTCs stored by a 5 digit code identifying the faults. There may be more than one response message if there are more trouble codes than will fit in the data bytes of the response message, or it there are more than one ECU computer responding.

Mode \$04 – Used to clear DTCs and Freeze Frame data. This clears all diagnostic trouble codes that may be set including freeze frame data and readiness monitors.

Mode \$05 – Oxygen Sensor Test Results. This mode displays the oxygen sensor monitor screen and the test results gathered about the oxygen sensor.

There are ten numbers available for diagnostics:

1. \$01 Rich-to-Lean O2 sensor threshold voltage.
2. \$02 Lean-to-Rich O2 sensor threshold voltage.
3. \$03 Low sensor voltage threshold for switch time measurement.
4. \$04 High sensor voltage threshold for switch time measurement.
5. \$05 Rich-to-Rich switch time in ms.
6. \$06 Lean-to-Rich switch time in ms.
7. \$07 Minimum voltage for test.
8. \$08 Maximum voltage for test.
9. \$09 Time between voltage transitions in ms.

Mode \$06 – Non-continuously Monitored Systems test results. There are typically a minimum value, a maximum value, and a current value for each non-continuous monitor. This data is optional, and it is defined by a given vehicle maker if it's used.

Mode \$07 – Request for DTCs (pending) from Continuously Monitored Systems after a single driving cycle has been performed to determine if repair has fixed a problem. This is used by service technicians to verify repair was performed properly and after clearing diagnostic trouble codes.

Mode \$08 – This special Control Mode requests control of the on-board system, test, or component bi-directionally (where applicable). This mode is manufacturer specific.

Mode \$09 – Reports vehicle information. This information includes vehicle VIN number and calibration information stored in the vehicle ECUs.

Mode \$0A – Request Emission-Related Diagnostic Trouble Code with Permanent Status. This presence of permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the on-board monitoring system.

3. Using the Scan Tool

3.1 Tool Description



- 1) **OBD II CONNECTOR** – Connects the scan tool to the vehicle's Data Link Connector (DLC).
- 2) **LCD DISPLAY** – Displays menus and test results.
- 3)  **GREEN LED** – Indicates that engine systems are running normally (The number of monitors on the vehicle which are active and performing their diagnostic testing is in the allowed limit, and no DTCs are present).
- 4)  **YELLOW LED** – Indicates there is a possible problem. A

“pending” DTC is present and/or some of the vehicle’s emission monitors have not run their diagnostic testing.

- 5)  **RED LED** – Indicates there is a problem in one or more of the vehicle’s systems. The red LED is also used to show that DTCs are present. DTCs are shown on the Scan Tool’s emission monitors have not run their diagnostic testing.
- 6)  **One-Click I/M Readiness Key** – Quick-checks State Emissions readiness and drive cycle verification.
- 7)  **ESC BUTTON** – Returns to previous menu.
- 8)  **LEFT SCROLL BUTTON** – Move cursor left for selection, or turn page up when more than one page is displayed.
- 9)  **HELP BUTTON** – Provides help information and Code Breaker function.
- 10)  **UP SCROLL BUTTON** – Move cursor up for selection.
- 11)  **ENTER BUTTON** – Confirms a selection (or action) from a menu list.
- 12)  **RIGHT SCROLL BUTTON** – Move cursor right for selection, or turn page down when more than one page is displayed.
- 13)  **DOWN SCROLL BUTTON** -- Move cursor down for selection.
- 14) **USB CONNECTOR** – Connects the scan tool to the PC for printing and upgrading.

3.2 Specifications

- 1) Display: TFT color display (320 x 240 dpi)
- 2) Operating Temperature: 0 to 60°C (32 to 140 F°)
- 3) Storage Temperature: -20 to 70°C (-4 to 158 F°)
- 4) External Power : 8.0 to 18.0V power provided via vehicle battery
- 5) Dimensions:

Length	Width	Height
199mm (7.83 ")	104.5mm(4.11 ")	37.5mm(1.48 ")

6) weight: 0.28kg(without wire) 0.484kg(with wire)

3.3 Accessories Included

- 1) **User' s Manual** - Instructions on tool operations.
- 2) **OBD2 cable** - Provides power to tool and communicates between tool and vehicle.
- 3) **USB cable** - Used to upgrade the scan tool, and to print retrieved data.
- 4) **Protective Nylon case** - A nylon case to store the tool when not in use.

3.4 Navigation Characters

Characters used help navigate the scan tool are:

- 1) "\$" - Identifies the control module number from which data is retrieved . Indicates the Test ID in On-Board Mon.Test .
- 2) "?" - Indicates help or code breaker information is available .

3.5 Keyboard

No solvents such as alcohol are allowed to clean the keypad or display.
Use a mild nonabrasive detergent and a soft cotton cloth. Do not soak the keypad as the keypad is not waterproof .

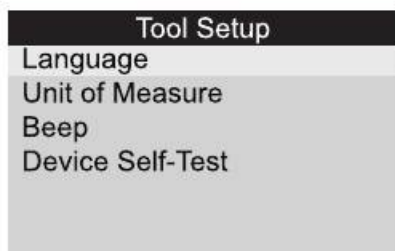
3.6 Power

The scan tool is powered via the vehicle Data Link Connector (DLC) .
Just follow the steps below to turn on the scan tool:

- 1) Connect the OBD II Cable to scan tool .
- 2) Find DLC on vehicle.
. A plastic DLC cover may be found for some vehicles and you need to remove it before plugging the OBDII cable.
- 3) plug OBD II cable to the vehicle's DLC .

3.7 Tool Setup

Use the **UP/DOWN** and **LEFT/RIGHT** scroll button to Select [Tool Setup] in the **Main Menu** and press **OK** , The screen will display the interface as shown below:



The scan tool allows you to make the following adjustments, settings:

- 1) **Select language:** Selects desired language .

press **UP/DOWN** key to Choose [Language] and press **OK** button, the screen will display the interface as shown below:



You can press **UP/DOWN** key to select any language and press **OK** button to confirm . The system will convert to the chosen language interface at once.

- 2) **Unit of Measure:** Measurement unit setting.

press **UP/DOWN** key to Choose [Unit of Measure] and press **OK** button, the screen will display the interface as shown below:

Unit Of Measure	
Flow:	g/s
Speed:	km/h
Distance:	km
Pressure1:	kPa
Pressure2:	kPa
Pressure3:	kPa
Pressure4:	Pa
Temperature:	°C

You can press **UP/DOWN** key to select any option and press **OK** button to convert, Press **ESC** key to return.

3) **Beep** : ON/OFF the Beeper.

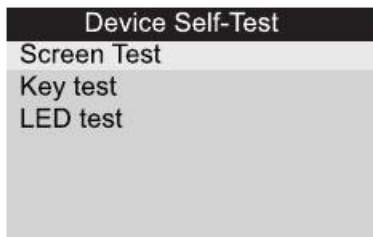
press **UP/DOWN** key to Choose [Beep] and press **OK** button, the screen will display the interface as shown below:

Beep
ON

You can press **OK** button to cover ON or OFF , Press **ESC** key to return.

4) **Device Self-Test:** LED, Keyboard, LCD display detection.

press **UP/DOWN** key to Choose [Device Self-Test] and press **OK** button, the screen will display the interface as shown below:



A. Screen Test

The **Screen Test** function checks if the LCD display is working normally.

- 1) From **Tool Setup** screen, use the **UP/DOWN** scroll button to select **Tool Self-Test**, and press the **OK** button.
- 2) Select **Screen Test** from **Tool Self-Test** menu and press the **OK** button to start test, Press **ESC** key to return.
- 3) Look for missing spots in the colour bar, white , black LCD display.
- 4) When completed, press the **ESC** button to exit.

B. Key Test

The **Key Test** function verifies if the keys are functioning properly.

- 1) Use the **UP/DOWN** scroll button to select Key Test from the **Tool Self-Test** menu, and then press the **OK** button.
- 2) Press any key to start test. When you press a key, the key name should be observed on the display. If the key name does not show up, then the key is not functioning properly. (Figure 3.10)

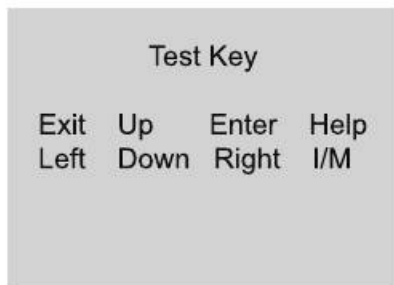


Figure 3.10

- 2) Double press **ESC** to return to previous menu.

C. LED Test

The **LED Test** Function verifies if the I/M Readiness LED indicator lamps are functioning properly.

- 1) When completed, Press any key to exit.

3.8 Vehicle Coverage

The scan tool is specially designed to work with all OBD II compliant vehicles, including control area network (CAN), it is required by EPA that all 1996 and newer vehicles (Cars and light trucks) sold in the united states must be OBD II compliant and this includes all american, asian and European vehicles.

A small number of 1994 and 1995 model year gasoline vehicles are OBD II compliant. To verify if a 1994 or 1995 vehicle is OBD II compliant, check the vehicle emissions control information(VECI) Label, which is located under the hood or by the radiator of most vehicles. If the vehicle is OBD II compliant, the label will designate "OBD II Certified". Additionally, Government regulations mandate that all OBD II compliant vehicles must have a "common" sixteen-pin Data Link Connector (DLC).

For the vehicle to be OBD II compliant is must have a 16-pin DLC (Data Link Connector) under the dash and the vehicle emission control information label must state that the vehicle is OBD II compliant.

4. OPERATION

- 1) Turn the ignition off.
- 2) Locate the vehicle's 16-pin Data Link Connector(DLC).
- 3) Plug the OBD II cable into the vehicle's DLC.
- 4) Turn on the ignition and engine fully.
- 5) After finishing, press **ESC** button enter Main Menu as following

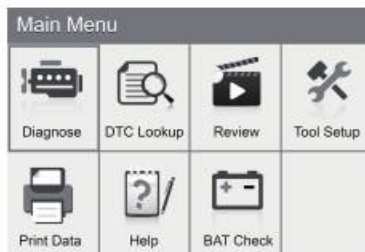


Figure 4.1

CAUTION: Don't connect or disconnect any test equipment with ignition on or engine running .

4.1 Diagnostic

Use the **LEFT/RIGHT** button or **UP/DOWN** button to select [Diagnostic] in Main Menu and press **OK** button, the screen will display Monitor Status interface as following figure4.3:

Monitor Status	
MIL Status	OFF
DTCs in this ECU	0
Readiness Completed	1
Readiness Not Completed	0
Readiness Not Supported	9
Datastream Supported	21
Ignition	Spark
Protocol Type	VPW

Figure 4.3

Press **ESC** button to back to the Main Menu of Diagnostic, the screen will display as following Figure 4.4:

Diagnostic Menu	
Read Codes	?
Erase Codes	?
I/M Readiness	?
Data Stream	?
Freeze Frame	?
o2 Sensor Test	?
On-Board Monitoring	?
Evap System(mode \$ 8)	?

Figure 4.4

4.1.1 Read Codes

Select [Read Codes] and press **OK** button in Diagnostic Menu. If there are some codes, the screen will display the codes as shown below:

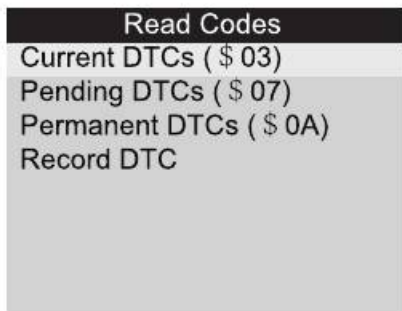


Figure 4.5

• According to the above Figure to select different item by pressing **UP** or **DOWN** and press **OK** to confirm. Then You can user **DOWN** key to view the next code. After viewing all the codes, you can press **ESC** to return to the Diagnostic Menu.

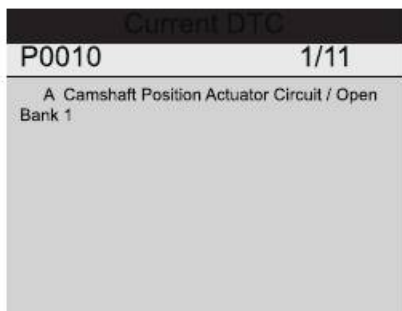


Figure 4.6

1) Current DTCs:

2) Pending DTCs:

Pending DTCs are also referred to as “maturing codes” or “continuous monitor codes”. They indicate problems that the control module has detected during the current or last driving cycle but are not considered serious yet. Pending codes will not turn on the malfunction indicator light (MIL) . If the fault does not occur within a certain number of warm-up cycles, the code clear from memory.

3) Permanent DTCs:

Permanent DTCs are codes that are “confirmed” and are retained in the non-volatile memory of the computer until the appropriate monitor for

each codes has determined that the malfunction is no longer present and is not commanding the MIL on. Permanent codes shall be stored in non-volatile memory and may not be erased by any diagnostic services or by disconnecting power to ECU.

4) Record DTC:

Record DTC are also known as “hard codes ”, which are fault codes , or trouble codes that have been stored in the vehicle computer memory because the faults have reoccurred of more than a specified amount of key-cycles. These codes will cause the control module to illuminate the malfunction indicator light (MIL) when emission-related fault occurs.

4.1.2 Erase Codes

Select [Erase Codes], the screen will display the interface as shown below:

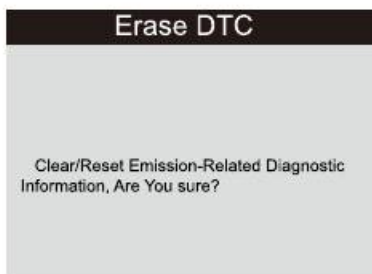


Figure4. 7

Press **OK** to erase DTC's, and the screen will display the interface as shown below:

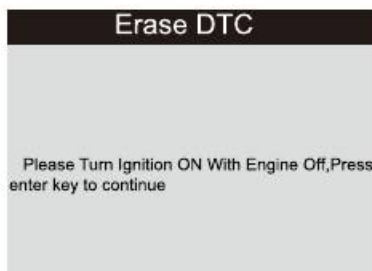


Figure 4.8

According to the above figure to press **OK** button and the screen will display the interface as shown on the next page:

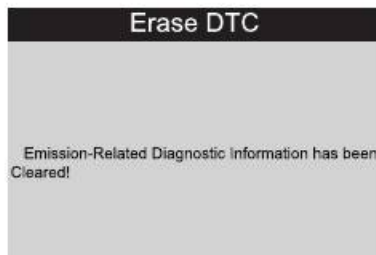


Figure 4.8

Notes:

- Before performing this function, make sure to retrieve and record the trouble codes.
- After clearing, you should retrieve trouble codes once more or turn ignition on and retrieve codes again. If there are still some trouble codes in the system, please troubleshoot the code using a factory diagnosis guide, then clear the code and recheck.

4.1.3 I/M Readiness

I/M refers to Inspection and Maintenance that is legislated by the Government to meet federal clean-air standards. I/M Readiness indicates whether or not the various emissions-related systems on the vehicle are operating properly and are ready for inspection and Maintenance testing.

The purpose of the I/M Readiness Monitor Status is to indicate which of the vehicle's monitors have run and completed their diagnosis and testing (as described in chapter 2.5), and which ones have not yet run and completed testing and diagnosis of their designated sections of the vehicle's emissions system.

The I/M Readiness Monitor Status function also can be used (after repair of a fault has been performed) to confirm that the repair has been performed correctly, and/or to check for Monitor Run Status.

Select [I/M Readiness] and press **OK** button, the screen will display the interface as shown below:

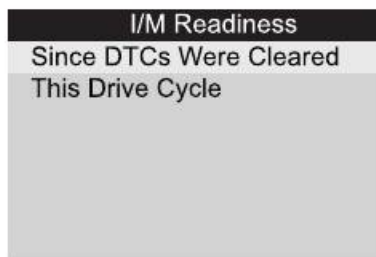


Figure 4.10

You can use **UP/DOWN** button to select and press **OK** button, the screen will display the interface as shown below:

I/M Readiness			
MIL		IGN	Spark
DTC	14	Pd DTC	15
MIS	✓	EVAP	✗
FUE	✓	AIR	⊘
CCM	✓	O2S	✗
CAT	✗	HRT	✗
HCAT	⊘	EGR	⊘

Figure 4.11

You can use **LEFT/RIGHT** button to view other data of vehicle.

Press **ESC** to return to Diagnostic Menu.

N/A means not available on this vehicle, INC means incomplete or not ready, OK means Completed or Monitor OK.

4.1.4 Data Stream

Press **UP** or **DOWN** button to select **Data Stream** in **Main Menu** interface and then press **OK** button to confirm, the screen will display the interface as shown below:

Data stream
View All Items
Select Items
View Graphic Items
Record All
Record Select

Figure 4.13

Select [View All Items] and press **OK** button, the screen will display the interface as shown below:

Datastream		1/17
[]	Fuel system1 status	
[]	Fuel system2 status	
[]	Calculated LOAD Value	
[]	Engine Coolant Temperature	
[]	Short Term Fuel Trim - Bank 1	

Figure 4.14

You can use **LEFT/RIGHT** button to view other data streams .
Press **ESC** to return to Diagnostic Menu.

Select [Select Items] in Data stream menu and press **OK** ,the screen will display the interface as shown below:

Datastream		1/17
[]	Fuel system1 status	
[]	Fuel system2 status	
[]	Calculated LOAD Value	
[]	Engine Coolant Temperature	
[]	Short Term Fuel Trim - Bank 1	

Figure 4.15

You can use **UP/DOWN** button to select data stream items, and press **LEFT/RIGHT** button to turn page, the screen will display the interface as shown on the next page:

Datastream		1/17
[√]	Fuel system1 status	
[√]	Fuel system2 status	
[√]	Calculated LOAD Value	
[√]	Engine Coolant Temperature	
[√]	Short Term Fuel Trim - Bank 1	

Figure 4.16

After selected items and press **ESC**, the screen will display the interface as shown below:

Datastream		1/1
Fuel system 1 status	CL	
Fuel system 2 status	CL	
Calculated LOAD Value	9%	
Engine Coolant Temperature	158°F	
Short Term Fuel Trim - Bank 1	-24.2%	

Figure 4.17

Press **ESC** to return to Diagnostic Menu.

Select [View Graphic Items] in Data stream menu and press **OK**, the screen will display the interface as shown below:

Datastream		1/15
[]	Calculated LOAD Value	
[]	Engine Coolant Temperature	
[]	Short Term Fuel Trim - Bank 1	
[]	Long Term Fuel Trim - Bank 1	
[]	Engine RPM	

Figure 4.18

You can use **UP/DOWN** button to select single data stream items to view of live data with a graph, and press **OK** button, the screen will display the interface as shown below:

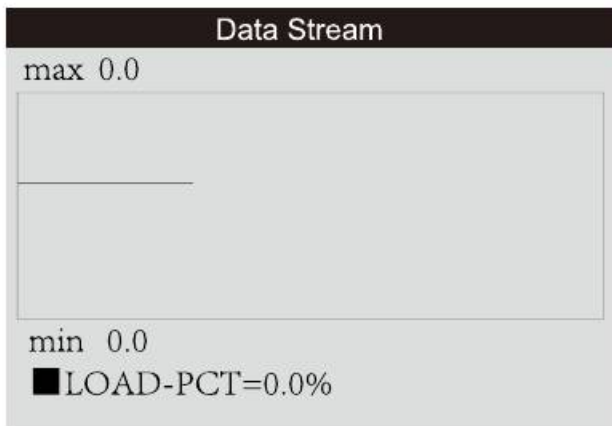


Figure 4.19

Press **ESC** to return to Diagnostic Menu.

You can view all data stream items or select a certain item of live data with a graph.

4.1.5 Freeze Frame

When an emission-related fault occurs, certain vehicle conditions are recorded by the on-board computer. This information is referred to as freeze frame data. Freeze Data is a snapshot of the operating conditions at the time of an emission-related fault.

Note: if DTCs were erased, Freeze Data may not be stored in vehicle memory depending on vehicle.

Select [Freeze Frame] in main menu interface, the screen will display the interface as shown below:

Freeze Frame	
DTC that caused required freeze frame data storage	P0113
Fuel system1 status	OL
Fuel system2 status	---
Calculated LOAD Value	0.0%
Engine Coolant Temperature	96 °C

Figure 4.20

You can use **LEFT/RIGHT** button to view the data.
Press **ESC** to return to Diagnostic Menu.

4.1.6 O2 sensor Test

The results of O2 sensor test are not live values but instead the results of the ECU's last O2 sensor test. For live O2 sensor readings, refer to any of the live sensor screens such as Graph Screen.

Not all test values are applicable to all vehicles. Therefore, the list generated will vary depending on vehicle. In addition, not all vehicles support the Oxygen Sensors screen. For results of latest mandated on-board oxygen sensor monitoring test, see Figure 4.21 below:

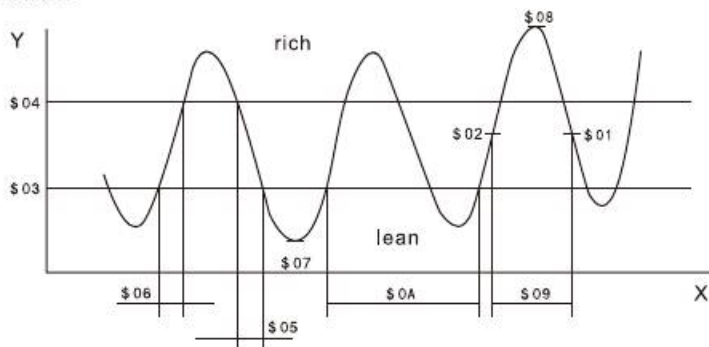


Figure 4.21

Select [O2 Sensor Test] in **Diagnostic Menu** and press **OK** and the screen will display as shown below:

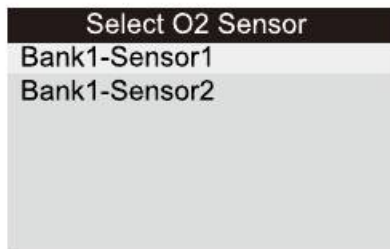


Figure 4.22

Press **OK** button, the screen will display as shown bellow:

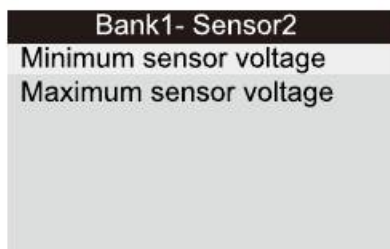


Figure 4.23

You can use **UP/DOWN** button to select an item and press **OK** , the screen will display as shown below:

Minimum sensor voltage	
Test ID	\$ 07
Test Value	1.275
Minimum Limit	0.080
Maximum Limit	0.000
Status	Fail

Figure 4.24

Press **ESC** to return to Diagnostic Menu.

4.1.7 On-board monitoring

This function can be utilized to read the results of on-board diagnostic monitoring tests for specific components/systems.

Select [On-board Monitoring] in main menu and press **OK** and the screen will display

as show below:

On-Board Monitoring	
Test	\$ 01 Data
Test	\$ 02 Data
Test	\$ 04 Data
Test	\$ 06 Data
Test	\$ 08 Data

Figure 4.25

You can use **UP/DOWN** button to select an item and press **OK** , the screen will display as shown below:

Test \$ 01 Data	
Component ID	\$ 07
Limit Type	Max
Test Value	0
Minimum Limit	----
Maximum Limit	128
Status	Pass

Figure 4.26

Press **ESC** to return to Diagnostic Menu.

4.1.8 Evap System The EVAP test function lets you initiate a leak test for the vehicle's EVAP system. The scan tool does not perform the leak test, but signals to vehicle's on-board computer to initiate the test. Before using the system test function, refer to the vehicle's service repair manual to determine the procedures necessary to stop the test.

Select [Evap System] and press **OK**,the screen will display there native information about EVAP system. Some vehicle manufacturers do not allow external devices to vehicle system. If the car supports this function, it will display as below:

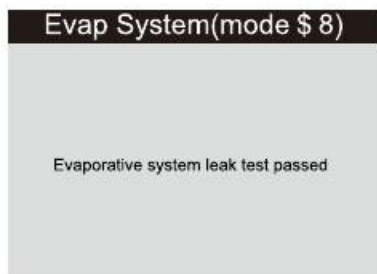


Figure 4.27

4.1.9 Vehicle Information

Select [Vehicle Information] and press **OK**, the screen will display the information, such as VIN (Vehicle identification Number), CID (Calibration ID) and CVN (Calibration verification number), as shown below:

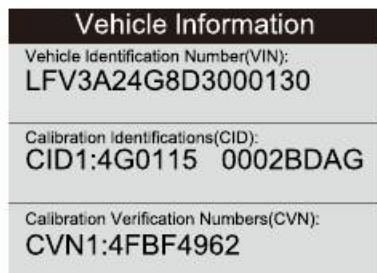


Figure 4.28

Press **ESC** to return to Diagnostic Menu.

4.2 Code Lookup

Select [Code Lookup] in the **Main Menu** and press **OK** and the screen will display the interface as shown below:

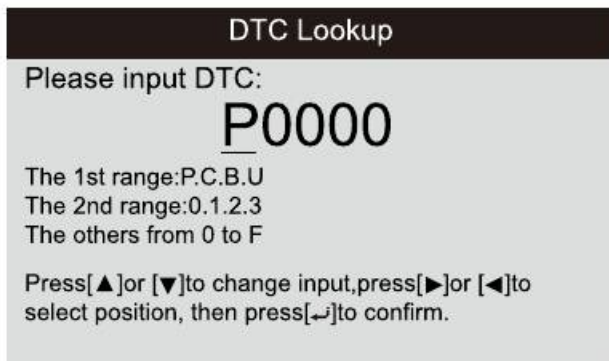


Figure 4.29

You can use **UP/DOWN** key to change the first letter. It can be switched among “P” , “B” , “C” and “U” . Press **OK** moves the cursor to next. And then press **LEFT/RIGHT** key to input number. After you input the code number, press **OK** to view the definition of the code.

4.3 Review

This function is used to review the recorded Data Streams, DTC, and Freeze.

Select [Review] in the Main Menu and press **OK** and the screen will display the interface as shown below:

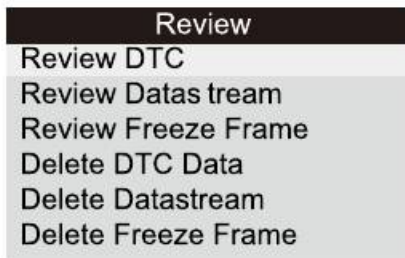


Figure 4.30

1) Review DTC

Select [Review DTC] in the Review and press **OK** and screen will display the interface as shown below:

Tool Setup		
Time And Date	DTC num.	DTC type
DTC RECORD 0 NOT SUPPORT VIN		
DTC RECORD 1 NOT SUPPORT VIN	1	Pending

Figure 4.31

The recorded DTC will be displayed as shown in Figure 4.31.

You can use **UP/DOWN** key and press **OK** button to view detailed information.

2) Review Data stream

The operation is similar to the “Review DTC” function.

3) Review Freeze Frame

The operation is similar to the “Review DTC” function.

4) Delete DTC

Select [Delete DTC] in the Review and press **OK** and the screen will display the interface as shown below:

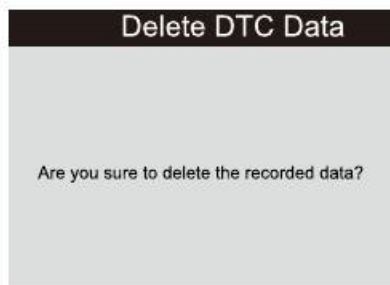


Figure 4.32

Press **OK** to confirm, and press **ESC** to return to Main Menu.

5) Delete Data stream

The operation is similar to the “Delete DTC” function.

6) Delete Freeze Frame

The operation is similar to the “Delete DTC” function.

4.4 Help

This function is used to view tool information, About OBD, and About Data stream.

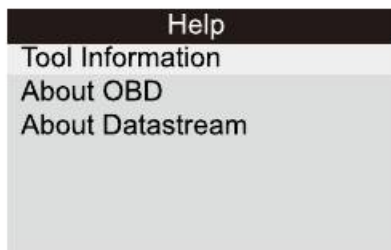


Figure 4.33

Tool Information includes: software version, hardware version, serial number, supported, time and date.

About OBD: Relevant introductions information about OBD.

About Data stream: Relevant introductions information about Data stream.

4.5 BAT Check

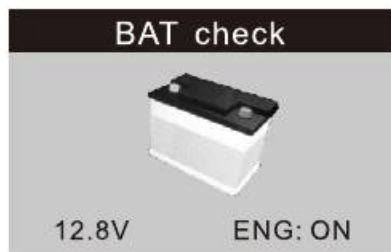


Figure 4.34

4.6 LED Interpretation

1) GREEN LED -- Indicates that engine systems are "OK" and operating normally (the number of Monitors supported by the vehicle which have run and performed their self-diagnostic testing is in the allowed limit. MIL is off). There are no stored and pending DTCs. The vehicle is ready for an Emissions Test, and there is a good possibility that it can be certified.

2) YELLOW LED -- With MIL off, there may be three possible conditions to cause the yellow LED to light.

A. If a "Stored" Diagnostic Trouble Code is causing the Yellow LED to light, it is still possible that the vehicle will be allowed to be tested for emissions and certified.

B. If a "Pending" Diagnostic Trouble Code is causing the Yellow LED to light, it is still possible that the vehicle will be allowed to be tested for emissions and certified.

C. If the illumination of the Yellow LED is being caused by monitors that have not completed their diagnostic testing, then the issue of the vehicle being ready for an Emissions Test depends on the emissions regulations and laws of your local area.

NOTE: From the code retrieval procedure, determine the status of each Monitor, take this information to an emissions professional to determine (based on your test results) if your vehicle is ready for an Emissions Test.

3) RED LED -- Indicates there is a problem with one or more of the vehicle's system. A vehicle displaying a red LED is definitely not ready for an Emissions Test. The red LED is also vehicle's instrument panel will light steady. The problem that is causing the red LED to light must be repaired before an Emissions Test can be performed . It is also suggested that the vehicle be inspected/repared before driving the vehicle further.

A. Repair the vehicle yourself. If you are going to perform the repairs yourself, proceed by reading the vehicle service manual and following all its procedures and recommendations.

B. Take the vehicle to a professional to have it serviced. The problem(s) causing the red LED to light must be repaired before the vehicle is ready for an Emissions Test.

4.7 Audio Tone Interpretation

The audio tone is configured according to the I/M readiness Status. This function is invaluable when performing diagnostics and driving at the same time, or working in bright areas where LED illumination alone is not sufficient.

Different audio tone with different LED light indicates different I/M Readiness Status.

LED Light	Audio Tone	Beep Interval
Green LED	Two long beeps	5 seconds
Yellow LED	short,long,short beep	5 seconds
Red LED	Four short beeps	5 seconds

After you have read the information, pres ESC to exit. The other buttons are disabled to prevent misoperation.

5. Print Data

The Print Data function allows printing out diagnostic data recorded by the scan tool or customized test reports.

• To print out retrieved data, you need the following tools:

1. Scan tool
 2. A PC or laptop with USB ports
 3. An USB cable
- 1) downloading the applications from our website: [www.motorscan.com](#) or our distributors site.
- 2) Connect the scanner to computer with the USB cable supplied.

3) Run uplink.exe in your computer.



Figure 5.1

4) Use the **UP/DOWN** scroll button to select **Print Data** from **Main Menu** in the scan tool, and press the OK button. (Figure 5.2)

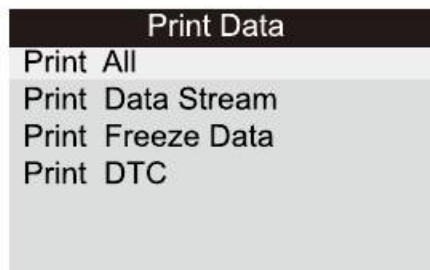


Figure 5.2

5) Use the **UP/DOWN** scroll button to select the desired item to print from **Print Data** menu.

- To print all retrieved data, use the **UP/DOWN** scroll button to select **Print All Data** from **Print Data** menu.

6) Press the **OK** button to upload data to the computer.

7) In the uplink.exe Tool Kit, you could edit ,delete, copy and print the data in the text box by selecting the by selecting the icons on the upper right of window.

NOTE: Data stored in a language different from current system settings of the scan tool will not be printable, please adjust language settings before printing. A reminder would pop up under such circumstances.

6. Update Mode

This function allows you to update the scan tool software and DTC library through a computer.

- To update your scan tool, you need the following items.

1. Scan tool
2. A PC or laptop with USB ports
3. An USB cable

- 1) downloading the applications from our website: www.anceldirect.com
- 2) Run uplink.exe in your computer (Mac OS does not compatible); (Figure 6.1)
- 3) Press and hold any button until the USB cable is connected with computer and Release it after the scan tool displays a message "Update Mode";
- 4) Open the uplink software, click "Check update" button, will download the upgrade file from internet then update to scan tool.
- 5) Wait for few minutes until update succeed.
- 6) During the update procedure.
- 7) Restart the scan tool to finish the whole update.

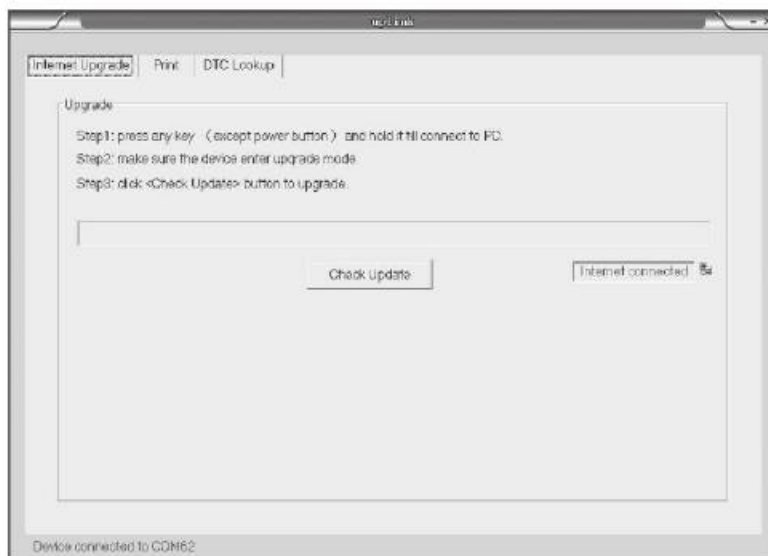


Figure 6.1

NOTE: When you made a wrong choice and the scan tool is unable to work properly, you may need to update the programs. To hold LEFT scroll button and power on the scan tool, you will enter the update mode forcibly. Then follow the update procedure to refresh the program.

7. Service Procedures

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