

***Vehicle Diagnostic
Scan-Tool Software
(VDSTS)
for PDA***

USER'S GUIDE

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Version 1.6



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CHAPTER 1

ABOUT VEHICLE DIAGNOSTIC SCAN-TOOL SOFTWARE

Introduction

The VDSTS is a user friendly software tool able to diagnose engine and system problems.

This PDA based program was designed to communicate with a variety of ECU's.

The interface between the ECU and the PDA is through a micro- interface and a serial cable.

About this Manual

The VDSTS User's Guide is a comprehensive guide that contains all of the procedures you need to work with this software. To help you get familiar with the VDSTS and learn efficiently how to operate it, this manual is organized by chapters that describe the use of the software and the commands general description.

System Requirements

1. Palm OS or Pocket PC (Windows CE) Operating System
2. PDA (Check list of supported PDA)
3. HotSync Serial Cable

Special Terminology

VDSTS: Vehicle Diagnostic Scan-Tool Software.
ECU: Electronic Control Unit.

Technical Support

You can reach TechnoResearch, Inc.'s technical support department in any of the following ways:

By e-mail: info@technoresearch.com

CHAPTER 2

GETTING STARTED

Installing the VDSTS

1. For Palm OS Follow installing applications instructions from you PDA user's manual. Load all the following files from the CD-ROM to your PDA (VDSTS.prc, VDSTSEnglish.pdb, VDSTSFrench.pdb, VDSTSGerman.pdb, VDSTSSpanish.pdb, VDSTSItalian.pdb and Backupbitster.prc)
2. For Pocket PC (Winodws CE) Follow installing applications instructions from you PDA user's manual. Load all the following files from the CD-ROM to your PDA (VDSTS.exe, dg_eng.lng, dg_ger.lng, dg_spa.lng, dg_ita.lng, dg_fre.lng, wsc32.dll, wsc32arm_ppc.dll, mfcce211.dll)

VDSTS Set up

1. Attach one end of the adapter cable to the DB-9 connection port of the cable of your PDA (Hotsync Cable). Attach the other end of the adapter cable (3-way connector) to the data link connector located on the motor cycle. Attach the Battery adapter to the 2-way connector and coonet it to the battery.

NOTE: When unplugging the DB-9 connector, DO NOT pull the cable, grasp the connector to prevent damage.

2. Turn the motorcycle ignition switch to the "Ignition" position and turn the engine stop switch located on the handle bar to the "Run" position (This last operation is performed on Harley-Davidson Bikes).

Starting the VDSTS

Once you have successfully installed the VDSTS, you can run it by clicking the "VDSTS" icon. A multilanguage screen will come up in order to begin using the software.



CHAPTER 3

USING THE VDSTS

Attach the supplied SCM (Smart Communication Module) to the db-9 serial port of your p.d.a.'s "hotsync" cable. plug the other end of the SCM into the harness already installed on the bike. Start the program on your PDA by tapping on the "VDSTS" icon. next, select the language you wish to use (English, French, Italian, German or Spanish).

In order to display the data you wish to monitor, you have to select the type of ECU (Electronic Control Unit) under ECU. and the Function to display. At this point you will have the choice of 11 different "views". To establish communication use the connection command by clicking on the connection button. Once communication is established, the data can be monitored

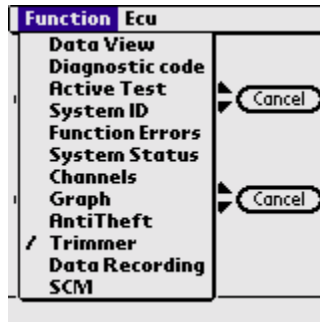
When communication with the ECU is lost or could not be established, the data would not be available to be displayed and the following error message dialog box will come up: "ECU no responding"

Note: Connection must occur within 15 seconds of key on or ECU will enter into sleeping mode and will not respond. At thios point you have to key-off and key-on again. This case applies only for the 5.9M and 5A ECUs. This is done for energy saving purpose

View Menu commands

The Monitor Menu displays a menu with commands used to view data in several forms and test actuators.

These commands are described below:

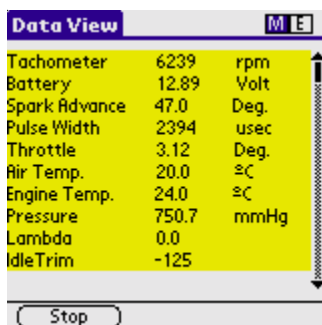


	<u>Description</u>
Data View:	Displays data in real time in a numeric form.
Graph View:	Displays data in graphical form.
Active Test:	Tests actuators such as: Coils, Injectors, etc.
DTC Errors:	Displays the diagnostic trouble codes (DTC) of the Bike.
System Status:	Displays the current system status.

and More...

Data-View monitor command

The Data View monitor command allows to view the data in a numerical form.



Tachometer:

Battery:

Spark Advance:

Pulse Width:

Throttle Position:

Air Temperature:

Engine Temperature:

Barometric Pressure:
value.

Stepper Motor:

and More.....

Description

Engine RPM numeric value.

Battery voltage numeric value.

Spark adv. angle numeric value.

Pulse width numeric value.

Throttle angle numeric value.

Air temperature numeric value.

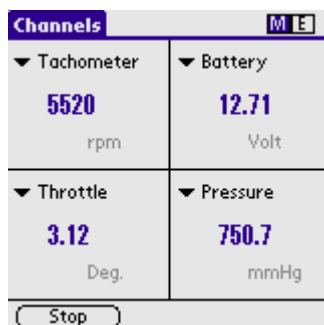
Engine temp. numeric value.

Barometric press. numeric

Stepper motor numeric value.

Channels command

The Data View monitor command allows to view the data in a numerical form.



Tachometer:

Battery:

Spark Advance:

Pulse Width:

Throttle Position:

Air Temperature:

Engine Temperature:

Barometric Pressure:
value.

Stepper Motor:

and More.....

Description

Engine RPM numeric value.

Battery voltage numeric value.

Spark adv. angle numeric value.

Pulse width numeric value.

Throttle angle numeric value.

Air temperature numeric value.

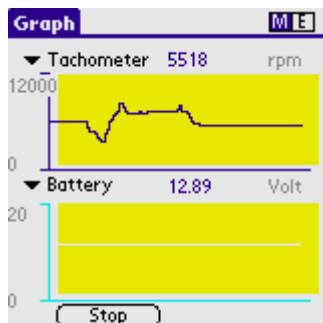
Engine temp. numeric value.

Barometric press. numeric

Stepper motor numeric value.

Graph-View command

The Graph View monitor command allows to view the data in a Graph form. You can view two graphs at the time.



Tachometer:

Battery:

Spark Advance:

Pulse Width:

Throttle Position:

Air Temperature:

Engine Temperature:

Barometric Pressure:
value.

Stepper Motor:
and more....

Description:

Engine RPM numeric value.

Battery voltage numeric value.

Spark adv. angle numeric value.

Pulse width numeric value.

Throttle angle numeric value.

Air temperature numeric value.

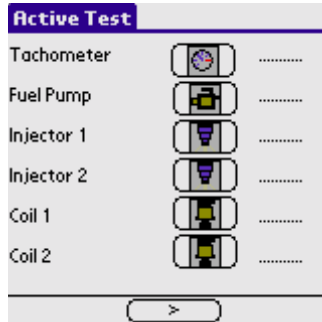
Engine temp. numeric value.

Barometric press. numeric

Stepper motor numeric value.

Active Test command

The Active test command offers a variety of actions in order to test the actuators and erase historic errors.



Description:

Test:

Activates the component being tested for several seconds in order to check its correct operation. The result will be a "PASS" or "FAIL". PASS means the component is good. FAIL means you need to replace it.

This type result will be for the following ECU's: IAW-P8, IAW-16M, IAW-15M, IAW-15P, IAW-15RC.

What you have to do when you perform an active test such as the injector is to hear the injector clicking continuously for 3 or 4 seconds. In the case of the tachometer you will see the tachometer move and so on. This case applies only for the IAW59M and IAW5A ECU.

The following is a description of all Active Test :

All the active test listed are not present in every ECU's. If the response after a test is "test not supported" it means that that ECU was not designed for that test. The following is an explanation of each Active Test.

Tachometer.

The Tachometer displays the engine revolution per minutes. When an active test is performed, the Tachometer will be activated for 2 seconds

Injectors 1, 2, 3 & 4. The injectors are mounted at the end of the inlet manifold feeds into the cylinder head. They are individually driven in synchronization with the valve timing as determined by the predetermined mapping. The injectors are solenoid valves which open to allow a spray of fuel into the inlet ports, to mix with the air which is drawn in by the intake stroke. They are activated for 4ms for 5 seconds

Coil 1 & 2. An integrated unit which is driven by pulses from the computer and generates a spark in the normal way. There are one or two amplifier/coil units and each one feeds two cylinders simultaneously (a spark occurs in the exhaust stroke but does not do any harm). The coil is activated for 2ms for 5 seconds

Throttle Position Sensor (TPS). Mounted on the end of the throttle spindle, the ECU (Electronic Control Unit) reads this value to determine the need for extra fuel when accelerating and to cut the fuel supply when the engine is in overrun.

Fuel Pump.. Electrically driven, situated near the tank, this supplies fuel under pressure as long as the crankshaft is turning. The pump is switched off after a few seconds if the crankshaft stops turning. The fuel is fed via a filter to pipe (rail) which is the common feed to all injectors. When an active test is performed the pump relay is driven for 30 seconds.

Stepper Motor. This is a solenoid operated which allows an alternative air flow path when the throttle is closed. The computer opens and closes this throttle to keep the engine running at idle speeds.

Purge Canister. This valve is activated for 1 second every 2 seconds for a total of 7 seconds

Lamp Maintenance. This lamp is shut-off by the dealer after a service has been performed to the bike.

Cooling Fan 1 & 2.

The radiators in the engine need to cool off in order for the engine to overheat. These fan keep the engine for overheating. When an active test is performed these fan are swiched-on at high speed for 10 seconds.

Intake Geometry.

Warning Lamp. This Lamp is turned-on for 30 seconds

Engine Temperature Lamp. This Lamp is turned-on for 10 seconds

Auto Adaptive. All the adapter parameters are set to zero

Disable Antithef.

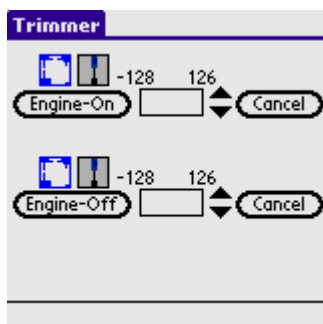
The Antithef system is used to prevent somebody of stealing your bike. These future can be disable in the event that a mechanics need to work on the engine.

Untitheft Reset.

Untitheft Recovery.

Fuel-Trim Setting command

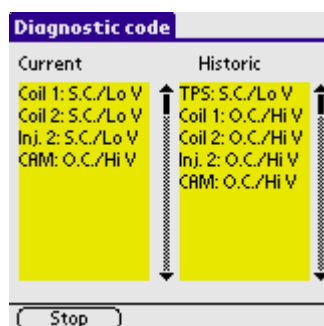
The Fuel-Trim setting command offers the capability to modify the fuel-trim value.



Note: For the 5.9M and 5A. ECU. Engine has run for 2 minutes before saving the value and the Trimmer Setting must be saved within 30 sec after new setpoint. For other ECU this conditions does not apply.

Diagnostic Trouble Code

The ECU records a Diagnostic Trouble Code (DTC) in memory if it detects a related problem on any of the engine sensors. These DTC are display as both current and historic in the following screen:



Diagnostic Trouble Codes (DTC) for IAWP8, IAW16M, IAW26H, IAW15M, IAW15P, IAW15RC

Air temperature sensor:	"O.C./High V." or "S.C./Low V."
Engine temperature sensor:	"O.C./High V." or "S.C./Low V."
Barometric pressure sensor:	"O.C./Low V." or "S.C./High V."
Throttle position sensor(TPS):	"O.C./High V." or "S.C./Low V."
Cam position sensor:	"O.C./High V." or "S.C./Low V."
Tip sensor:	"O.C./High V." or "S.C./Low V."
Crank position sensor:	"Crank Pos Signal Error"
Battery Voltage:	"O.C./High V." or "S.C./Low V."
Crank/Cam sensor:	"Crank/Cam Signal Error"

Injector #1:	"O.C/Low V." or "S.C./High V."
Injector #2:	"O.C/Low V." or "S.C./High V."
Injector #3:	"O.C/Low V." or "S.C./High V."
Injector #4:	"O.C/Low V." or "S.C./High V."
Coil #1:	"O.C/Low V." or "S.C./High V."
Coil #2:	"O.C/Low V." or "S.C./High V."
Tachometer:	"O.C/Low V." or "S.C./High V."
ECU microProcessor:	"ECU microP Signal Error"
ECU EEPROM:	"ECU EEPROM Signal Error"
ECU ROM:	"ECU ROM Signal Error"
ECU RAM:	"ECU RAM Signal Error"

Trip since last fault : Indicates how many trips the
 Motor- cycle has performed
 since an error has been detected.

Note:

O.C.	Open Circuit
S.C.	Short Circuit
High V.	High Voltage
Low V.	Low Voltage

Diagnostic Trouble Codes(DTC) for IAW59M &5A

P0105 Atmospheric Pressure Sensor

SCVBATT
 SCGND/OC

P0110 Air Temperature Sensor

OC/SCVBATT
 CCGND

P0115 Cooling Temperatures Sensor

OC/SCVBATT
 SCGND
 INVALID SIGNAL

P0120 Throttle Position Sensor

OC/SCVBATT
 CCGND

P0130 Lambda (O2) Sensor

SCVBATT
 SCGND/OC
 NOT SIGNAL
 INVALIDSIGNAL

P0170 Starter

SCVBATT

OC

P0201 Injector Cylinder 1

SCVBATT

SCGND

OC

P0202 Injector Cylinder 2

SCVBATT

SCGND

OC

P0203 Injector Cylinder 3

SCVBATT

SCGND

OC

P0204 Injector Cylinder 4

SCVBATT

SCGND

OC

P0230 Fuel Pump

SCVBATT

SCGND

OC

P0335 Crank Sensor

OC

P0351 Coil Ignition 1

SCVBATT

SCGND/OC

P0352 Coil Ignition 2

SCVBATT

SCGND/OC

P0443 Purge Canister

SCVBATT

SCGND

OC

P0460 Fuel Level Sensor

SCVBATT

OC/SCGND

P0480 Engine Fan 1

SCVBATT

SCGND

OC

P0481 Engine Fan 2

SCVBATT

SCGND

OC

P0500 Vehicle Velocity Sensor

INVALID SIGNAL

P0505 Idling Sensor

SCVBATT

SCGND

OC

P0530 Relay Lights shut-off

SCVBATT

OC/SCGND

P0560 Battery Sensor

SCVBATT

SCGND

P0606 Microprocessor

INVALID SIGNAL

P0650 Warning Lamp

SCVBATT

SCGND

OC

P0654 Tachometer

SCVBATT

SCGND

U1600 Immobilizer

INVALID SIGNAL

U1601 CAN Line

SCGND

NOT SIGNAL

Note:

OC	Open Circuit
SC	Short Circuit
SCGND	Short Circuit to Ground
SCVBATT	Short Circuit to Voltage Battery

Units command

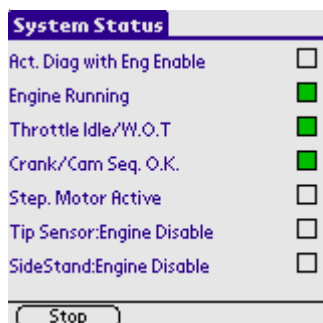
The Unit command offers a window to select the type of unit system.

Options

- (E)** Displays the data using the English unit system. (**°F, inHg**).
- (M)** Displays the data using the SI unit system. (**°C, mmHg**).

System Status Command

The System Status Command displays a window, which shows the status of the system



It display information such as if the wngine is running or If the Trottle Position is at idle or wide open throttle.

Data Recording

This software functionality allows the user to record data such as: RPM, Battery Voltage, Injection Time, TPS, Air Temperature, Engine Temperature and so on.

Data Recording		
Tachometer	<input checked="" type="checkbox"/> Battery	<input checked="" type="checkbox"/>
Spark Advance	<input checked="" type="checkbox"/> Pulse Width	<input checked="" type="checkbox"/>
Throttle	<input checked="" type="checkbox"/> Air Temp.	<input checked="" type="checkbox"/>
Engine Temp.	<input checked="" type="checkbox"/> Pressure	<input checked="" type="checkbox"/>
Speed	<input checked="" type="checkbox"/> Lambda	<input checked="" type="checkbox"/>
Enter file name		
<input type="button" value="Connect"/>		

Run Backup Bitster application from your PDA to export the recorded data file from the PDA to your Desktop/Laptop. After you have selected the file to be extracted using the backupblister, run the hotsync software from your PDA, make sure your PDA is connected to the Hotsync cable. Run Dataview from your Desktop/Laptop to analyzed the data.

Click File and select the file you have exported from your PDA to your PC under the backup directory of the Palm directory of your computer

