

Version

1

PDS User's Manual

PDS
Portable Diagnostic Software



September, 2004

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PDS Quick Start – 10 Steps to Using PDS:

ATTENTION: DO NOT PUT THE VCM CD INTO YOUR PC UNTIL STEP 3 !!!

Step 1. Install Active Sync on your PC

- Be sure to install Active Sync from the CD shipped with your Pocket-PC

Step 2. Synchronize your Pocket-PC with your PC

- Your P-PC must be correctly synchronizing with your PC before installing PDS

Step 3. Installing PFM (PDS File Manager) and PDS software

- Module Reprogramming & PDS web updates **REQUIRE** that you have access to PFM on a PC
- Insert the VCM CD into your PC and wait for the VCM CD Installation screen to display
- Click the 'PFM & PDS' button and follow the prompts to install PFM and then PDS
- Be careful with any Internet Settings as they can not be modified without re-installing PFM
- Note: if the installation does not automatically start in 10 seconds go to:
My Computer > double click on your CD drive > double click the 'Launch.exe' file

Step 4. Installing only PDS on a Pocket-PC

- You can install, or repair, PDS on any P-PC in your facility without re-installing PFM
- Click the 'PDS' button on the VCM Installation screen & follow the prompts
- DO NOT remove or use the P-PC until the screen says 'INSTALLATION COMPLETE'

Step 5. Undock your P-PC, and connect to the VCM and Vehicle

- Connect the following: P-PC >> USB synch cable >> VCM USB Stub cable >> VCM
- Connect the VCM vehicle link cable to the VCM and the vehicle to power up the VCM

Step 6. Start PDS on your P-PC

- On your P-PC select Start > PDS icon - OR - Start > Programs > PDS Tools folder > PDS icon
- The VCM will connect at the logo screen or press the 'No VCM' button to go directly to Toolbox
- The top left button on the Toolbox screen indicates the VCM Connection state

Step 7. Adjust any User Settings & Preferences

- Click the 'Settings' button at the lower left corner of the Toolbox screen
- Adjust any user settings or preferences, then press green Tick to finish and return to Toolbox

Step 8. Identify the Vehicle or open a prior session to work with

- Automatic Vehicle ID – Press the blue 'New Vehicle' button on top row
- Prior Vehicle Sessions – Press the 'Sessions Folder' button on top row
- Manual ID – Press 'New Vehicle' then the 'Keyboard' button at bottom of the next screen

Step 9. Diagnose the Vehicle

- Module & System Tests – Shows you the vehicle's modules or systems. Select one and press Tick
- Sub-Toolbox – Shows you all available tools for the module or system you selected
- Vehicle Tests – Shows tests that work on the complete vehicle (e.g. All CMDTC's)
- Programming – Lets you reprogram modules, keys, parameters, etc.

Step 10. Move to your next vehicle

- You do NOT need to exit PDS for each new vehicle. P-PCs can be turned off at any time
- Return to the Home/Toolbox screen before disconnecting the VCM from the vehicle
- Connect the VCM to the new vehicle, wait for the VCM Connection button to show it is connected, and then identify the new vehicle (Step 8)



Introduction to PDS

Portable Diagnostic Software (PDS) is scan tool diagnostic software for use with a VCM (Vehicle Communication Module) and an off-the-shelf Pocket-PC (P-PC). PDS is used to perform vehicle diagnostics including monitoring, measuring, and recording of vehicle signals, Programming Modules, etc. PDS can be used in the service bay as well as for on-the-road testing.

The PDS File Manager (PFM) software is for use on your PC and manages the delivery of all files and updates to your PDS/P-PC. Detailed instructions are available in the PFM User's Manual.

Electronic versions of all PDS & PFM manuals are available both on the CD or the Internet.

Section
2

Getting Started

PDS to VCM Cables:

The primary method of connecting the VCM to the P-PC is via a USB link. You will need the following three cables to connect and power up your VCM:

1. **P-PC Synchronization (Sync) Cable** – This cable is supplied by the maker of your P-PC as each manufacturer has their own unique connector on the P-PC
2. **VCM to USB Stub Cable** – This 6" cable connects to the VCM and has a standard USB plug at the other end
3. **VCM to Vehicle DLC Cable** – There are two of these in your VCM kit (i.e. Long & Short) one end connects to the VCM and the other to the vehicles DLC cable for both communication and VCM power

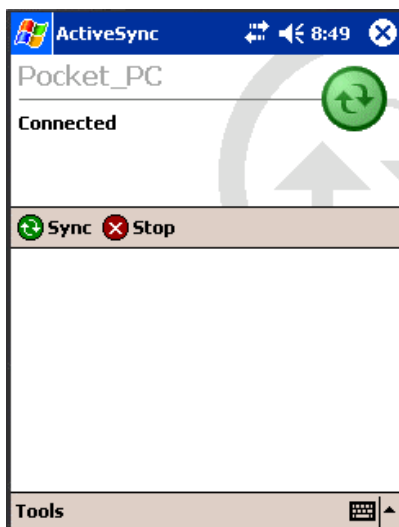
VCM to PDS USB Connection:

You can start the connection to the VCM either before starting PDS –OR– while you are already in PDS. Both paths are described below:

Starting VCM BEFORE PDS:

The most effective way to start PDS is thru the ActiveSync program on your P-PC where you can watch the VCM connection being established and then very quickly start PDS. Follow these steps:

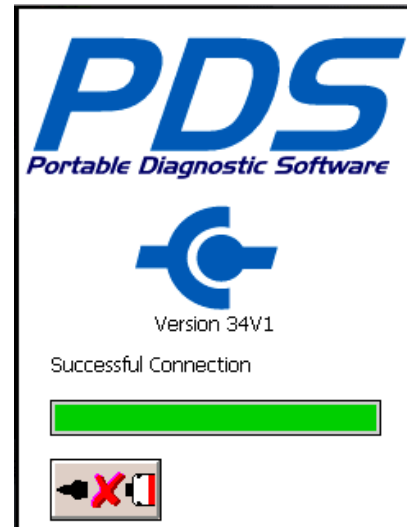
1. Start ActiveSync on your P-PC, i.e. Press Start (upper right corner of P-PC screen) then select ActiveSync, or Start > Programs > ActiveSync
2. Connect the P-PC to VCM cables and the VCM to the vehicle
3. You will see a connection popup and three different messages resulting in a Connected screen (Pic 1)
4. Start PDS, watch PDS link to the VCM and then take you to the PDS Toolbox screen (Pics 2 & 3)



Pic 1: P-PC connected to VCM



Pic 2: PDS Splash screen



Pic 3: PDS connected to VCM

Connecting the VCM DURING PDS:

You often will need to disconnect your P-PC from the VCM during normal usage to get new files, take a break etc. The PDS software is designed to handle re-establishing the connection to the VCM any time you do this without requiring you to exit PDS and restart it.

The safest time to disconnect the VCM is at the Toolbox screen. The upper left button on Toolbox is the VCM Connection button which **always** indicates your VCM connection status:

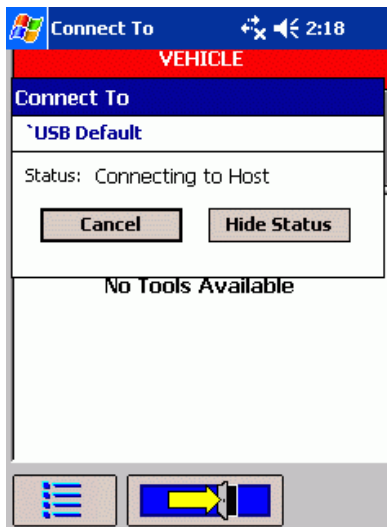
- **Red X & Broken Connection** – Indicates that PDS does not see your VCM or is waiting for the USB connection to be made if you just restarted the VCM (Pic 4)
- **Green Tick & Connected** – Indicates that PDS is ready to use the VCM

To re-connect the VCM while at Toolbox simply:

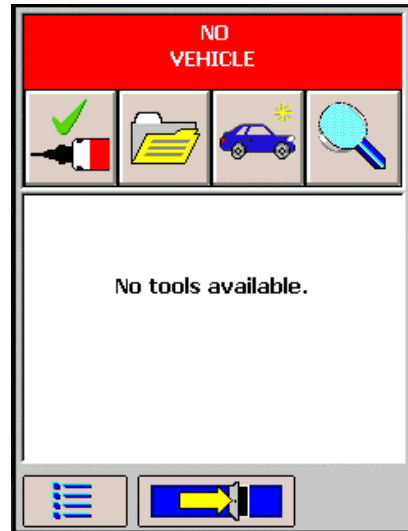
1. Connect the P-PC to VCM cables and the VCM to the vehicle
2. You will see a connection popup and three different messages (Pic 5)
3. Wait for the VCM Connection button to go Green and you are ready to use PDS (Pic 6)



Pic 4: VCM is NOT connected



Pic 5: VCM is re-connecting to the P-PC



Pic 6: VCM IS Connected

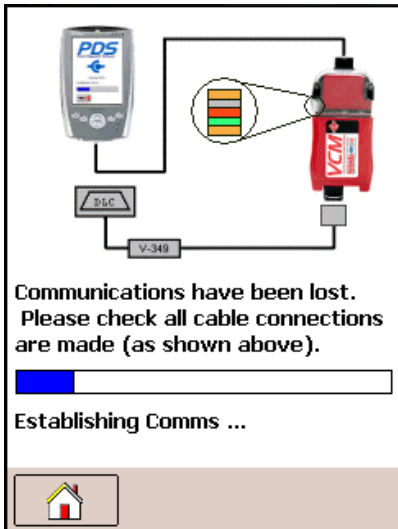
Re-booting Your VCM:

If at any time you want to re-boot your VCM while in PDS (e.g. for new updates, etc.) without disconnecting the vehicle cable, you can simply press the VCM Connection button and the VCM will disconnect, reboot, and then re-connect to PDS.

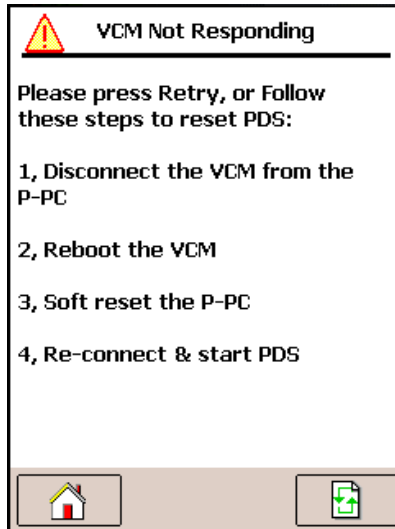
Loss of VCM Connection or Connection Problems:

If the VCM connection is lost while using any tool you will be led thru a reconnection process and then will be able to return to the tool you were using (Pics 7 & 8)

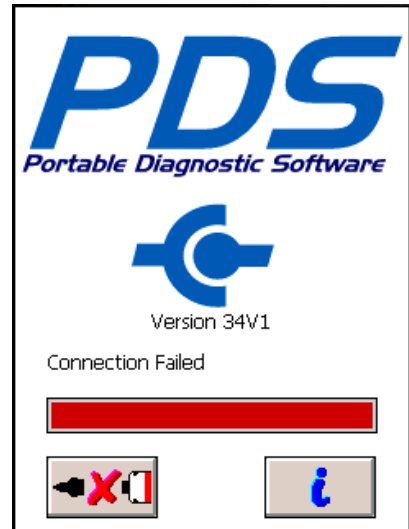
If PDS cannot connect to the VCM while starting PDS, you will see a similar screen that will help you retry the connection (Pic 9). Press the information for more help.



Pic 7: Loss of Comms



Pic 8: Fixing VCM connection



Pic 9: Failed connection starting PDS

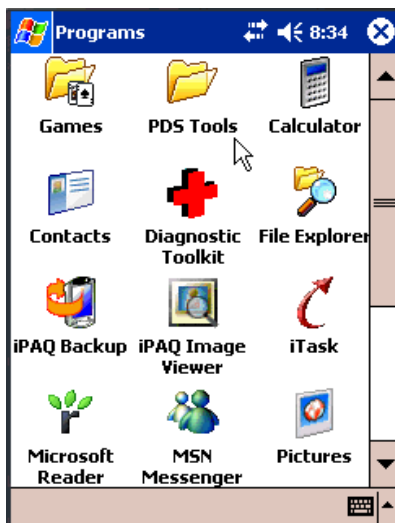
Starting PDS:

The front screen of all P-PCs is the 'Today' screen. The 'Start' button (upper left) is how all functions and programs are launched on a P-PC. There are two ways to start PDS:

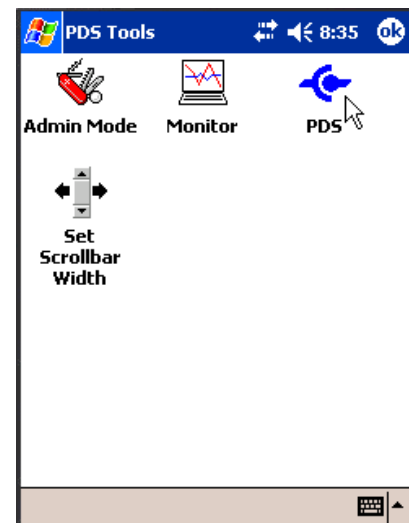
1. **Start > PDS** – PDS will attempt to install the PDS icon directly on the start menu (Pic 10), but the operating system limits how many items can be on the Start menu. If there is not enough room, you will find the PDS icon under the Programs menu item. You can add and delete programs from your Start menu thru Settings > Menus
2. **Start > Programs > PDS Tools folder > PDS** – Folder contains PDS and the following utilities (Pics 11 & 12)
 - **Admin Mode** – In certain situations, such as calls to the hotline, it may be necessary for to enter admin mode for PDS. There is no use for this mode during normal operation
 - **Monitor** – This is another tool available for hotline support if ever needed
 - **Set Scrollbar** – Allows you to enlarge all scroll bars for easier navigation as you can see in Pic 11



Pic 10: Starting PDS



Pic 11: Programs > PDS Tools Folder



Pic 12: PDS Tools folder & utilities

General Navigation Standards:

The following are some common standards used throughout the PDS software and user interface:

1. **Toolbox and Sub-Toolbox** - are considered the Home screens
2. **Tool Screens** – There are three parts to any tool screens:
 - a. Banner bar (Optional) – At top Indicates the type of information below or the tool name
 - b. Main Panel – Where most information, results, and options are presented
 - c. Button Bar – On the bottom where all Navigation buttons are found
3. **Moving Backwards** – The Back button will always be in the Left Most Position on the lower Button Bar
There are three possible states/images for this button:
 - a. Home – The next press will take you out of the current tool and the last Toolbox you were in (i.e. Toolbox or Sub-Toolbox)
 - b. Back – There is at least one screen you can step back too that will not exit the current tool
 - c. Settings – Is seen only on the Toolbox screen for System Settings

Note: Your P-PCs left two physical buttons (typically Calendar & Contacts) will activate the Back button (similar to Cancel on NGS)

4. **Moving Forwards** – The Tick button shall always be in the Right Most Position on the lower Button Bar and will always be the Default Forward button.
5. **Default Forward Button** – The Tick or typical forward button shall have a Bold Green border.
Note: Your P-PCs right two physical buttons (typically email & other) will activate the green bold border button (similar to Trigger on NGS)
6. **Menu Buttons** – All User selectable options shall be shown in the Main Panel:
 - a. All user selectable items will be boxed with a Grey background
 - b. When any item is selected it will turn green with white text for positive feedback
7. **Scrolling** – You can navigate lists of picks and scroll using the multi-way or side-jog physical buttons on P-PC's
8. **Hotspots** – Any text highlighted with blue font is a hotspot, as are most of the buttons in PDS. Simply tap and hold these items for a brief description of the item

Minimum P-PC Requirements:

P-PCs are similar in their specifications across the different manufacturers. At a minimum you will need the following:

- Pocket-PC 2003 or Pocket-PC 2003 SE (Second Edition) operating system
- 400Mhz CPU
- 64MB RAM, 32MB ROM with at least 32MB Usable RAM for PDS
- Secure Digital card slot (SDIO)
- USB synchronization cable for the P-PC to VCM connection

We highly recommend, but do not require, you also purchase devices with the following:

- Removable & hot swappable batteries for extended use
- 802.11 embedded wireless for future PDS use or for wirelessly accessing PTS service information

Specific Pocket-PCs:

The Minimum P-PC requirements give you the flexibility to purchase a P-PC that suits your needs. However, each P-PC manufacturer does design their P-PCs with slight differences that may affect their ability to cleanly communicate with the VCM even though it meets the minimum requirements. We have identified the specific devices that are known to work correctly with the VCM and those that may have issues below.

Note: This information will be updated regularly, check the web site where you download PDS for the latest information

The following P-PCs have been specifically tested and **are supported** for use with PDS:

- HP iPAQ H2200 series (with at least 64MB RAM & 400Mhz CPU)
- HP iPAQ H4000 series (with at least 64MB RAM & 400Mhz CPU)
- Dell Axim X3 (with at least 64MB RAM & 400Mhz CPU)

The following P-PCs are known to periodically lose their USB connection with the VCM which requires restarting PDS. **We will not support any connection related issues with these P-PCs:**

- Dell Axim X30 (Currently under investigation)
- Dell Axim X5

Any P-PCs other than those shown above should be considered untested and therefore cannot be supported for any VCM connection issues.

Moving from NGS+ to PDS:

The VCM is designed for use with multiple diagnostic software packages in the future. The following explains how to share a VCM between NGS+ and PDS:

Note: If your NGS+ VCM is at Release 24.3 or greater, you do not need to do anything to use it for PDS

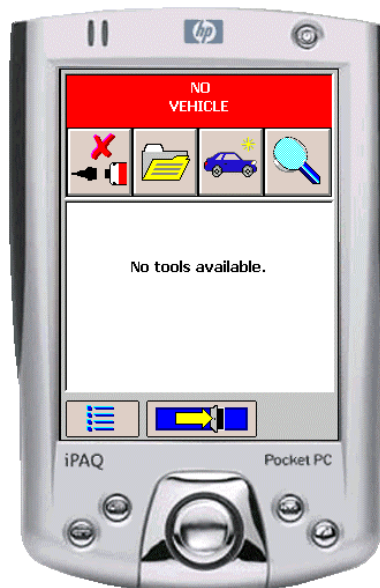
Converting from NGS+ to PDS

Before using an NGS+ VCM for PDS it must first be updated to at least NGS+ version 24.3 by placing it in the Caddy and connecting it to your DBS PC.

The PDS software on a P-PC is then capable of automatically updating any VCM, with NGS+ 24.3 or greater on it, for PDS use, i.e. you do not need a PC to reprogram the VCM like NGS+.

Converting from PDS to NGS+

To use a VCM that has been operating with PDS, for NGS+, it must first be reprogrammed by the NGS+ Diagnostic Base Station (DBS) PC. Place the VCM in the NGS+ Caddy and connect it to your DBS PC for reprogramming.



Toolbox: Start of PDS with No Vehicle Selected

The main screen in PDS is the Toolbox/Home screen shown above. It indicates the vehicle under test, the tools available for that vehicle, and the VCM Connection state. Each time you re-start PDS it will open with No Vehicle selected to prevent accidentally working on the wrong vehicle.

The four buttons at the top of Toolbox are:

1. VCM Connection – Indicates the VCM connection status (i.e. a Green Tick or Red X)
2. Sessions – This will allow the user to select prior vehicle sessions
3. New Vehicle – This button begins the Vehicle ID process
4. Vehicle Details – This gives the specific detail of the vehicle under test

There are three buttons on the bottom Button Bar of Toolbox:

1. Settings – For the System and User settings
2. Exit – For quick one touch exit out of PDS
3. Tick – To launch the selected tool

Settings:

Pressing the 'Settings' button on Toolbox (left button on bottom button bar) leads the user to the screens above starting with the Versions tab. Change any of your settings and preferences as needed and then hit tick to continue.

Training Mode:

If you need to explore PDS for more training while not connected to a VCM and vehicle, do the following:

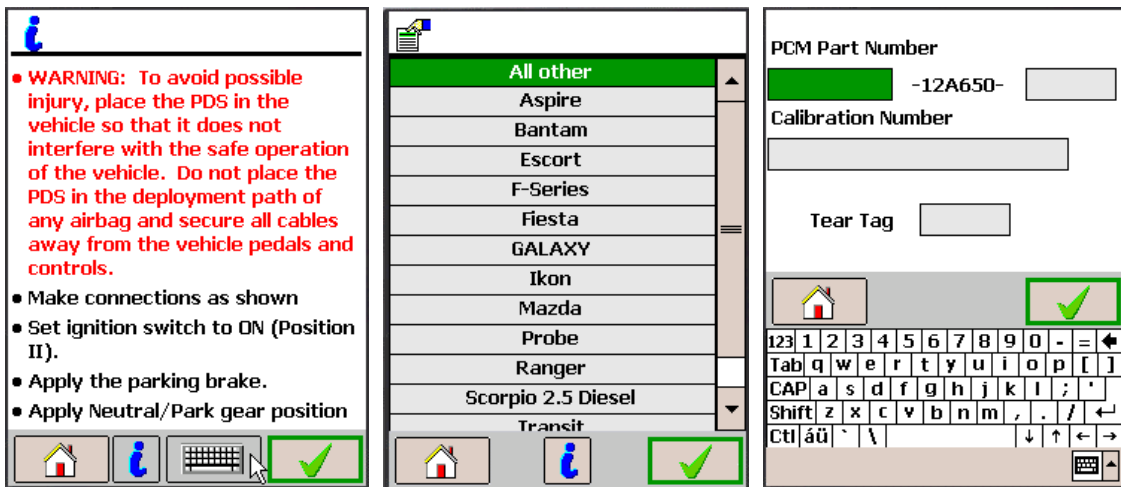
1. Enter the System Settings from Toolbox
2. Select the 'Settings' tab
3. Set 'Training Mode' to Yes, and press Tick
4. Press 'New Vehicle' and the system will identify the demo training vehicle for you to work with
5. Exiting PDS will turn Training Mode off each time

Note: When in Training Mode, all Tick buttons will have a Black Board behind them to make it obvious.

Vehicle Identification:

To begin working you must first ID a New Vehicle or open a Prior Session:

- **Prior Session** – Press the Sessions button and select the desired prior vehicle session to work with
- **New Vehicle (Automatic)** – This is the normal method for identifying a vehicles. Press the New Vehicle button and follow the prompts. If the vehicle fails to communicate during the Vehicle ID process or provides incorrect vehicle information, check the VCM is securely connected to the vehicle and retry. If the retry still fails you will need to identify the vehicle manually
- **New Vehicle (Manual)** – For Manual Vehicle ID (e.g. by Tear Tag, etc.) press the New Vehicle button and on the next screen press the Keyboard button on the lower button bar. The system will display a list of possible vehicles. If your vehicle is not on the list, select "All Other" and enter one of the following three unique identifiers:



If your vehicle is not on the list, select "All Other" and enter one of the following three unique identifiers:

1. **PCM part number** – Located on the PCM
2. **Vehicle calibration number** – Located on certification label
3. **PCM tear tag number** – Located typically in an obvious location such as the inside edge of the door, the A or B pillar, the shock tower, the radiator support, or on the PCM. It is a combination of four letters or numbers that can be used to identify the calibration contained in a PCM.

After one of these identifiers has been entered, the vehicle information will be displayed.



Toolbox: With a Vehicle Selected

The result of vehicle identification is that you will return to the Toolbox screen which will display the current vehicle under test in the upper panel, and all available tools/menus for this vehicle in the lower panel.

- **Module Tests** – Similar to NGS the user is shown the vehicles Standard & Optional modules
- **System Tests** – Similar to WDS the user is shown the vehicles Systems & then Sub-Systems
- **Vehicle Tests** – Allows the user to perform quick Vehicle “health checks” (i.e. All CMDTCs, Network Test)
- **Programming** – Quick access to Module Reprogramming, Programmable Parameters, PATS Keys, and other related programming type functions
- **All Tests & Calibrations** – The Complete list of ALL Service Functions and Tests for the vehicle
- **OBDII Modes** – The standard OBDII Modes 1, 6, & 9, and OBD Drive Cycle

Diagnostics in PDS can begin at either a Module, System, or general Vehicle level depending on your needs.

Module Tests:

To begin diagnosing at a module level, select Module Tests and press tick. You will now be presented with all known modules for the specific vehicle you are testing separated into two tabs:

- **Standard** – These are the modules that should be on all models of this vehicle
- **Optional** – These are the modules that may or may not be present on the vehicle depending on the specific option content of the current vehicle

Select the module you want to work on and press tick to continue to Sub-Toolbox.

System Tests:

To begin diagnosing at a system level, select System Tests and press tick. You will first be presented with the systems on the specific vehicle you are testing, and then any subsystems if they exist. You will then continue to the Sub-Toolbox.

Systems may contain multiple modules. The "ECU Under Test" window at the bottom of the display will indicate which modules are part of the System/Sub-System for the current vehicle. If the System/Sub-System selection does not include the module you are attempting to diagnose, use the "Module Tests" path.

Vehicle Tests:

There are currently two vehicle level tests that can be performed to start your diagnostic session. Select either test, press tick, and then follow the on screen prompts:



All CMDTCs: Code Display



Network Test: Code Display

All CMDTCs:

This tool is a quick Vehicle health check and retrieves ALL Continuous Memory DTCs (Diagnostic Trouble Codes) from every available module on the vehicle currently under test.

Network Test:

Allows PDS to communicate with every module on the vehicle's network testing the integrity of the communication network, as well as the ability of all the modules present on the network to respond. A failure in Network Test may indicate a fault in the vehicle communication link wiring, connectors, or in rare cases, a faulty module. Modules that are optional equipment are identified by the test. If an optional Module fails to respond to Network Test, the first step in diagnosis is to confirm the optional module is installed on the vehicle.

Code Display:

The result of All CMDTCs, Network Test, and any other Module Self Test is the Code Display screen seen above. This results screen has been designed to speed your access to relevant data:

- Any module that has set a DTC will be indicated by a Red border around its Tab
- Selecting a code on any modules tab will display its description in the lower panel
- For more detailed information press the 'i' button
- Press the default forward button in the lower right corner to go directly to Sub Toolbox for the module

Programming:

After performing Vehicle ID, the user can reprogram an existing electronic module or install a new module and program it. Three options are available:

- **Programmable Module Installation (PMI)** – Used when installing a new module
- **Module Reprogramming** – For reprogramming a module, such as a PCM, with an updated calibration

- **Programmable Parameters** – Used to change specific module configuration parameters due to customer preference (e.g., horn chirp or auto lock) or vehicle modifications (e.g., tire size or axle ratio)

When a Vehicle is ID'd all information from the vehicle's programmable modules is stored with the session information for use during module programming.

Programmable Module Installation (PMI):

Step 1: Select "Module Programming" and press Tick

Step 2: Select "Programmable Module Installation" and press Tick

Step 3: From the menu, select the module to be installed and press Tick

Step 4: Follow the instructions on the screen. The instructions vary depending on the type of module.

NOTE: Be sure to follow these instructions in the exact order that they are given. Do not remove or install any modules until instructed to do so. Failure to follow the instructions correctly may result in the configuration data received during vehicle identification to program incorrectly or not at all.

Step 5: If Module Programming was unable to retrieve the configuration data due to either a non-functioning module or a module which was removed before the data was retrieved, the application will request that the user obtain information from the Module Build Data (As Built) database. Obtain the needed Module Build Data (As Built) and follows the instruction on the screen, through the programming of the module.

Step 6: If necessary, apply the reprogramming label to the PCM. If an emissions recall has been performed or a required emissions-related TSB has been completed, an Authorized Modification label must be placed on the PCM. These labels can be purchased at the parts counter of a Ford or Lincoln/Mercury dealership.

NOTE: It is the responsibility of the technician to inform the customer that Ford Motor Company will not reimburse the vehicle owner for field service actions that are not completed at a Ford or Lincoln/Mercury dealership.

Step 7: When the "Programming complete" screen appears, select the tick mark. If PATS (Passive Anti-Theft System) initialization is required, Ford Module Programming may automatically link to the PATS parameter reset and/or key relearn procedures. Two ignition keys may be required to complete the PATS initialization procedure.

Step 7A: If PATS initialization is required and Ford Module Programming did not link to that functionality automatically, go to the Selection Menu and select "PATS". Detailed instructions are provided in the PATS section.

Module Reprogramming:

When a module such as a PCM is reprogrammed, it is not removed from the vehicle. All programming is done through the communications network. To reprogram an existing module, follow these steps:

Step 1: Select "Module Programming" and press Tick

Step 2: Select "Module Reprogramming" and press Tick

Step 3: From the menu, select the module to be reprogrammed and press Tick

Step 4: The application will compare the current calibration level to the latest one available for that vehicle. A message will appear:

Step 4A: If no later calibration is available, a message will appear indicating this. Select the tick mark or the Enter key to return to the Module Programming menu.

Step 4B: If a later calibration is available, a message will appear asking if you want to reprogram the module with this calibration. If you do not want to reprogram the module, select "No". You will be returned to the Module Programming menu.

Step 5: If you want to reprogram the module, select "Yes" in response to the question "Do you want to program the vehicle with this calibration?"

Step 6: You will be presented with a screen that recommends that you carry out Self Test. If you choose to complete this test, you may receive a list of Diagnostic Trouble Codes (DTC's) that have been set on the vehicle. When finished viewing this list, select "Exit".

Step 7: The PDS will require you to dock the unit to the base station to retrieve the required calibration file. A

message will be displayed on the PDS when the file has been successfully transferred onto the PDS and you can return to the vehicle.

Step 8: Follow the on-screen instructions to prepare the vehicle for programming the module. Please follow the instructions through to completion.

Step 9: If necessary, apply the reprogramming label to the PCM. If an emissions recall has been performed or a required emissions-related TSB has been completed, an Authorized Modification label must be placed on the PCM. These labels can be purchased at the parts counter of a Ford or Lincoln/Mercury dealership.

NOTE: It is the responsibility of the technician to inform the customer that Ford Motor Company will not reimburse the vehicle owner for field service actions that are not completed at a Ford or Lincoln/Mercury dealership.

Step 10: Press Tick to return to the Programming menu.

Programmable Parameters:

Some modules support the ability to program individual parameters based on customer preferences. For instance, the security module may allow the customer to select whether or not they want to have the horn chirp when the security system is activated. Other modules require parameters to be changed if the vehicle is modified, such as when different tires are installed.

In order to reprogram programmable parameters, complete the following steps after Vehicle Identification is complete:

Step 1: Select "Module Programming" and press Tick

Step 2: Select "Programmable Parameters" and press Tick

Step 3: Select the desired parameter from the menu and press Tick

Step 4: A list of available values for the selected parameter will appear. The current setting, if known, will be indicated with an asterisk (*). If more selections are available than can be displayed on one screen, use the slide bar at the right side of the touch screen to scroll through the selections.

Step 5: Select a setting for each item that requires modification. There must be a value for each parameter to continue and press Tick. Allow PDS to reprogram parameters.

Step 6: Press Tick when complete, you will be returned to the Programming menu.

All Tests & Calibrations:

This selection will provide quick access to functional tests, service functions, & calibrations available specifically for the current vehicle under test.

Selecting 'All Tests & Calibrations' from the Toolbox menu will show you every test supported for the current vehicle.

If you select 'Tests & Calibrations' from the Sub-Toolbox menu, you will see a filtered list of tests that are tied to the current system or module you are working with in Sub-Toolbox

To run a test, select it from the menu and follow the on-screen instructions. The functions are broken into two tabs (i.e. Tests, Calibrations) to aid finding them.

The list of all tests on PDS is continually growing. The following lists the more common and frequently used such tests:

PATS	Erase & re-program keys, program additional keys, reset parameters between PATS/IC module and PCM, enable/disable customer spare key programming ability, and use Unlimited Key Mode on applicable systems.
ABS Service Bleed	Actuates the ABS pump and valves to assist in removing air from the brake system. Some tests may require the technicians to open bleeder screws and/or to pump the brake to help the bleed process.
IVD Calibration	Calibrates the Yaw, Lateral Accelerometer, Brake booster, and Steering Wheel Angle sensors.

G-Sensor Calibration	Calibrates the G-sensor, which is a longitudinal accelerometer used on 4x4 vehicles.
Remote Keyless Entry	Enables the technician to view keyfob TIC's (Transmitter Identification Codes). May also program additional keyfobs for the same vehicle.
Keypad	Displays the factory keyless entry code.
Ride Height Calibration	Calibrates the ride height settings for vehicles equipped with an air suspension. Technicians can change the height at the front and back of the vehicle, and then store them to the module memory.
Accurate Trim Test	Sets the air suspension to trim position.
Pneumatic Test	Verifies that the air lines are connected and not blocked. It also checks that the air compressor, vent valve, and air spring valves are all functioning on an air suspension-equipped vehicle.
EVAP Test	Checks the EVAP system for gross leaks. The test controls the EVAP solenoids and attempts to pull down the fuel tank pressure to a minimum level and maintain it for a period of time. A large leak is suspect if the pressure does not reach the initial minimum level or a smaller leak is suspect if the pressure bleeds up too quickly.
OBD II Drive Cycle	Executes & completes the OBDII monitors, and clears the P1000 code. Provides a display of the OBDII monitor PIDS and instructions on how to complete each monitor. As the monitors are completed the status of each is updated. This test can also be used to complete a specific monitor in order to verify a repair.
Passenger Seat Weight Re-Zero	Calibrates an empty passenger seat so that the passenger side airbag will deploy in the optimal way to protect the passenger
Power Seat Calibration	Checks the power seat for full range of motion and travel. Other actuators equipped on the vehicle, such as adjustable foot pedals and power mirrors, may be tested as well
Neutral in Tow Feature	Calibrates vehicle to allow for optimal towing capability
Zero Speed Dealer Test	Checks for functionality of the ABS wheel sensors while stationary
Radar Sensor Calibration	Calibrates the back-up sensors
Radar Switch Test	Verifies functionality of the back-up sensor enable/disable switch
Microphone Test	Checks for speaker functionality and for microphone operation
Wiggle Test	Checks for poor wiring connections and can detect them when the technician shakes the wiring harness
Delete Crash Recorder	Resets the crash counter on equipped vehicles

Generic OBDII:

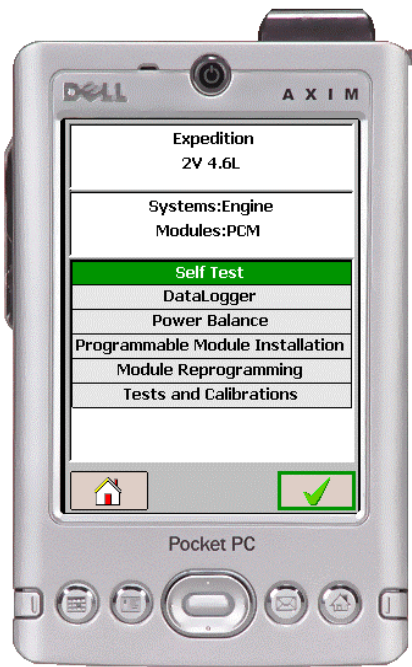
By selecting Generic OBDII (On-Board Diagnostics) you can perform the following tests:

1. OBDII Drive Cycle
2. Mode 1 Powertrain Data
3. Mode 6 On-Board Test Results
4. Mode 9 Vehicle Information

The OBD Drive Cycle executes & completes the OBDII monitors, and clears the P1000 code. It provides a display of the OBDII monitor PIDS and instructions on how to complete each monitor. As the monitors are completed the status of each is updated. This test can also be used to complete a specific monitor in order to verify a repair.

Section
4

Sub Toolbox



Sub Toolbox: For Engine System



Sub Toolbox: For RCM Module

Sub Toolbox is the result of selecting a Module or System to work with. Its appearance and operation are similar to Toolbox. However, the upper panel indicates what you have chosen to work on, and the list of available tools in the lower panel is filtered down to only those that are supported for the given Module or Modules in the selected System. All tools in Sub Toolbox are pre-configured to work for the selected modules, i.e. you will not have to re-pick the module when you move from tool to tool.

Self Test:

For the PCM there are three self tests for Gasoline Engines:

1. KOEO (Key On Engine Off) On Demand Self Test
2. KOER (Key On Engine Running) On Demand Self Test
3. Retrieve CMDTCs

There are up to an additional five options for Diesel Engines:

1. KOER - Glow Plug Monitor Test
2. KOEO - Injector Electrical (Buzz) Test
3. KOER - Cylinder Contribution Test

4. KOEO - Switch Test
5. KOEO - Output Cycling Test

For Body/Chassis Modules, "Self Test" retrieves both On-demand and Continuous Memory DTCs

For any of these tests simply ensure the initial test conditions and safety notices are met, and then follow the on screen prompts. The result of any Module Self Test is the Code Display screen described above in Vehicle Tests. Selecting each code in Code Display allows you to view its description in the lower panel. For more detailed information on the code press the 'i' button on the lower bar.

Data Logger:

Most (but not all) modules will allow you to run Data Logger. Some modules will have pre-selected PIDs already highlighted, but you are always free to make your own PID selections. Selected or pre-selected PIDs can be de-selected individually or all selections can be erased using the eraser icon at the bottom of the display.

When the PIDs you need are selected, press tick to continue to live display. Use the slide bar on right side of Graphs to view all displays. Dragging the slider on the scroll bar will show a small popup indicating which PIDs you will be viewing when you release the slider.

Output State Control:

Certain PIDs are designated with a "#" symbol. This symbol indicates that the PID is an Output State Control PID for Powertrain, or an Active Command PID for Body/Chassis Modules. To take control of the PID function, touch the screen to highlight the PID. A new button appears on the bottom button bar indicating plus & minus. Touch the icon to take control of the PID. When control is established, the "#" symbol will change to "@". If, for some reason, conditions are not correct to control the PID, the "#" symbol changes to "!". Control of the PID is only possible when the "@" is displayed.

When the control icon is selected, two more buttons appear at the bottom of the display. Select the "+" symbol to increase the PID function, and the "-" button to decrease it. To release control of the PID, the control icon must be selected again before selecting a new PID. The control icon will disappear and the "#" will reappear in the PID when control is terminated.

As long as any PID is selected for control, the Module will be in diagnostic state. While in diagnostic state, the module will not perform other functions or respond to other inputs. All PIDs must be out of control mode before the module will return to normal operation state.

"System" Data Logger:

For convenience, using Data Logger on a "System" will allow you to select PIDs from all the modules in the selected system. PIDs will display the same as in "Modules", but some PIDs may appear as duplicates if they exist in multiple modules. Remember, when viewing PIDs in a system with multiple modules, PID data will be coming from more than one module. PDS does not currently designate which module in the system is the source of a particular PID.

Because a "System" may be trying to communicate with multiple modules at the same time, there may be cases where certain PIDs, especially Output State or Active Command PIDs, may not be displayed. If you are uncertain which module a PID is coming from, or you do not find a PID you expect to see, attempt to run Data Logger again from the "Module" path on the individual modules in the system.

Power Balance:

Power balance is an electronic cylinder contribution test that is available for the PCM module or Powertrain > Engine System/Sub-System. This test can be used to help identify one or more weak cylinders. The test will only highlight which cylinders are contributing differently, but it does not determine root cause. Further diagnosis is needed to identify fuel, ignition, or mechanical problems manifested by the weak cylinder or cylinders.

Programmable Module Installation (PMI):

See the description above under "Programming" in Toolbox.

Module Reprogramming:

See the description above under "Programming" in Toolbox.

Tests & Calibrations:

Like "All Tests & Calibrations" on the Toolbox menu (See above) "Tests & Calibrations" on the Sub-Toolbox will provide quick access to functional tests, service functions, & calibrations available specifically for the System and/or Modules selected in Sub-Toolbox.

To run a test, select it from the menu and follow the on-screen instructions. The functions are broken into two tabs (i.e. Tests, Calibrations) to aid finding them.

See "All Tests & Calibrations" above for more details on the supported tests.

Troubleshooting

PDS Quick Fixes:

Before calling for Technical support with any issues, be sure to try the following common repairs:

1. **Soft Reset your Pocket-PC** – This is often the quickest solution to any issue you might have. Simply press the P-PC's reset button with the stylus, then re-start PDS
2. **Reboot your VCM** – Any time you soft reset your P-PC you should reboot your VCM
3. **Update your VCM to the latest software** – Return to the PDS Toolbox/Home screen, reboot the VCM while attached to PDS and let it connect (VCM Connection button shows a Green Tick). Then press the VCM Connection button to reboot the VCM and update its software automatically
4. **Check for PDS Software and/or Database updates in PFM regularly** – Just docking your P-PC with your PFM PC should regularly check for updates for you
5. **Make sure your P-PC is Fully Charged** – Charging your battery nightly is the best method

If after performing these checks you are still having trouble follow the steps below to contact Technical Support:

PDS Technical Support – Information You Will Need:

You will need access to your P-PC when calling the hotline. Ideally having access to your VCM when powered up and your PFM PC would also be very useful. Make sure you have the following information available:

1. **PDS & VCM Versions** – These can be found on the Settings > Versions tab:
 - a. PDS Version
 - b. VCM Expiration
 - c. VCM Serial#
 - d. BCF
 - e. Prom
 - f. Bootstrap
2. **Pocket-PC Make and Model** – For example 'Dell Axim X50'
3. **VCM Light Sequence you are seeing** – Jot down the LED states by their numbers
4. **PFM Version** – Under the Help > About menu
5. **PFM PC's operating system**
6. **Vehicle Type and Model Year** – for vehicle specific problems

With this information, contact your region's hotline.

North American Dealers & Technicians:

1. **YOU MUST HAVE THE ABOVE INFORMATION BEFORE CALLING THE HOTLINE**
2. Call the Technical Information Support hotline at **1-800-826-4694**
3. Select **Option #1**



Glossary

DLC	Data Link Connector, the connector under the instrument panel of the vehicle used to connect the SAE J2534 pass-thru device to the vehicle
Hard Reset	Resetting the P-PC back to its new from factory state. Each P-PC has a factory specific process for doing this
Hotspot	Blue underlined text Items that can be selected by the user to see a full definition of the term. Press and holding the link for the hotspot definition.
Soft Reset	This button is found on the bottom or side of the P-PC used to 'reboot' the it with out factory resetting the device
Sub Toolbox	Similar to Toolbox but present only those tools that support a selected Module or Modules in a selected System
Toolbox	The main screen of PDS that handle Vehicle Selection, VCM Connection state, and available tools for a Vehicle
VCM	Vehicle Communication Module – Hardware used to communicate between the pocket PC and the vehicle