



Dearborn Protocol Adapter 5 Dual-CAN / Bluetooth® (DPA 5 DCBT)

Installation and User Manual

Driver Version:	1.20
Native Drivers Version:	10.00
Firmware Version:	65.007



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IMPORTANT

To ensure your success with this product, it is essential that you read this document carefully before using the hardware. Damage caused by misuse of the hardware is not covered under product warranty.

When using this manual, please remember the following:

- ❑ This manual may be changed, in whole or in part, without notice.
- ❑ Dearborn Group Technology assumes no responsibility for any damage resulting from the use of this hardware and software.
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The DPA Product line has been awarded the following U.S. Patents:

Patent #	Date	Patent Overview
6,772,248	08-03-04	Protocol adapter for in-vehicle networks.
7,152,133	12-19-06	Expanded functionality protocol adapter for in-vehicle networks.
7,337,245	02-26-08	Protocol Adapter for Passing Diagnostic Messages between Vehicle Networks and a Host Computer.

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1. Safety First

It is essential that the user read this document carefully before using the DPA 5 hardware.

The DPA 5 device is to be used by those trained in the troubleshooting and diagnostics of light-duty through heavy-duty vehicles. The user is assumed to have a very good understanding of the electronic systems contained on the vehicles and the potential hazards related to working in a shop-floor environment.

Dearborn Group Technology understands that there are numerous safety hazards that cannot be foreseen, so we recommend that the user read and follow all safety messages in this manual, on all of your shop equipment, from your vehicle manuals, as well as internal shop documents and operating procedures.



- ✓ Always block drive and steer wheels both front and back when testing the vehicle.
- ✓ Use extreme caution when working around electricity. When diagnosing any vehicle, there is the risk of electric shock from battery-level voltages, vehicle voltages, and from building voltages.
- ✓ Do not smoke or allow sparks or open flames near any part of the vehicle fueling system or vehicle batteries.
- ✓ Always work in an adequately ventilated area, and route vehicle exhaust outdoors.
- ✓ Do not use this product in an environment where fuel, fuel vapor, exhaust fumes, or other potentially hazardous liquids, solids, or gas/vapors could collect and/or possibly ignite, such as in an unventilated area or other confined space, including below-ground areas.

2. Introducing the DPA 5

The DPA 5 product is used to connect vehicle communication networks to personal computers (PCs). This allows programs written for the PC to retrieve pertinent vehicle information such as fault codes, component information, as well as perform vehicle and component level diagnostics and tests.

The DPA 5 communicates with the PC using either a USB cable or via Bluetooth. Note that before switching communications modes from USB to Bluetooth and vice-versa, the DPA 5 must be powered off and then back on.



The DPA 5 with Bluetooth Communications

2.1. OEM Software Compatibility

The adapter you have purchased is provided with an RP1210B-compliant interface and has been validated against the following OEM and component applications:

- ✓ Allison DOC®
- ✓ Bendix® ACOM
- ✓ Caterpillar® Electronic Technician
- ✓ Cummins® INSITE™
- ✓ Cummins PowerSpec
- ✓ Dana Diagnostic Tool™
- ✓ Detroit Diesel Diagnostic Link™
- ✓ Detroit Diesel Reprogramming Station™
- ✓ Eaton ServiceRanger
- ✓ Freightliner ServiceLink
- ✓ International® Diamond Logic Builder
- ✓ International® InTune
- ✓ International® Master Diagnostics
- ✓ International ServiceMaxx
- ✓ Mack and Volvo VCADS/PTT
- ✓ Meritor-WABCO Toolbox™
- ✓ Vansco VMMS
- ✓ ZF-Meritor TransSoft



Any application claiming RP1210A or RP1210B compliance should work if the application and adapter both support the same protocol(s) and operating system(s).

2.2. Standards and Protocols Supported

The DPA 5 provides more protocol and standards support than any other commercially available vehicle diagnostic adapter. The following are the protocols, standards, and operating systems supported:

2.2.1. Operating Systems and Standards Supported

- ✓ Windows 2000/XP/Vista (32 and 64-bit versions)
- ✓ TMC RP1210A/RP1210B (Revised 6/2007)
- ✓ CE Certification
- ✓ J1979
- ✓ VEPS J2214/J2461

2.2.2. RP1210 Defined Protocols Supported

- ✓ J1939
- ✓ CAN (ISO11898) – Including Two Simultaneously Active CAN Channels (Dual-CAN)
 - CAN@500k/J2284/GMLAN - Supported under the “IESCAN” protocol name.
- ✓ J1708/J1587
- ✓ J1850 Variable Pulse Width, GM (Class 2)
- ✓ ISO15765

2.2.3. Additional Protocols Supported by Native Drivers

- ✓ J2411 (GM Single Wire CAN)
- ✓ ISO9141 and KWP2000 Over ISO9141
- ✓ ALDL

2.3. System Requirements

If you are not familiar with selecting a PC platform for your diagnostic applications, Dearborn Group Technology recommends starting with a computer that is compatible with the latest version of the Technology and Maintenance Council (TMC) Recommended Practice RP1208 (PC Selection Guidelines for Service Tool Applications).

In addition to the aforementioned document, the following items are recommended or required. Note that Bluetooth is entirely optional.

Item	Requirement
PC	IBM-Compatible
Processor	1GHz or Faster
RAM	256MB (512MB Preferred)
USB Port	USB Version 1.1 or Higher (USB 2.0 Preferred)
Operating System	Windows 2000/XP/Vista (32 or 64-bit)
Bluetooth	Bluetooth PC Dongle (Class 1 Bluetooth Recommended)

2.4. Single-Application versus Multi-Application Drivers

Release 1.0 of the DPA 5 drivers does not support multiple OEM applications running simultaneously.

- ✚ This release includes what are called the DPA 5 single-application drivers, named *DGDPA5SA* and will appear in OEM applications as *Dearborn Group DPA 5 Single Application*.
- ✚ A future release will include the DPA 5 multi-application drivers which will be named *DGDPA5MA* and will appear as *Dearborn Group DPA 5 Multi Application* in OEM applications.

It has been DG's experience that when several OEM applications are running simultaneously, especially on a crowded J1939 data bus, they sometimes miss critical timing events and as a result do not behave as they would normally. Therefore, DG will be installing the single-application drivers as well as the multi-application drivers (when they are released) separately since the single-application drivers are much faster and require less PC resources.



Use Single Application Drivers
If Possible...

Because of the added overhead and resources involved with handling multiple OEM applications simultaneously, DG recommends that you use the *DGDPA5SA* single application drivers as much as possible. They are a much better choice for time-critical applications such as reflashing.

Use the *DGDPA5MA* drivers only as necessary such as when needing to run an engine application alongside a transmission application; or when needing to record vehicle data with one program while running an OEM application.

3. Installation and Getting Started with the DPA

Items included with the DPA 5 diagnostic tool are the Dearborn Group Technology DPA Installation Disc and a printed Quick Start Sheet. If you ordered the standard DPA 5 Kit, it should include the following items:

- ✓ Rugged Plastic Carrying Case
- ✓ DPA 5 Diagnostic Tool
- ✓ 6-pin/9-pin Deutsch Connector “Y” Cable, for vehicle-side connection
- ✓ USB Cable, gold-plated with screw-in ears to secure the cable to the DPA 5 case
- ✓ Printed Quick Start Sheet
- ✓ Dearborn Group Technology DPA 5 Installation Disc

Please note that Dearborn Group Technology customizes our kits for our vendors. If you order your DPA through someone other than Dearborn Group Technology what you receive may vary.

3.1. Step 1. Driver Installation

Attention – Do Not Connect the DPA 5 to the PC!

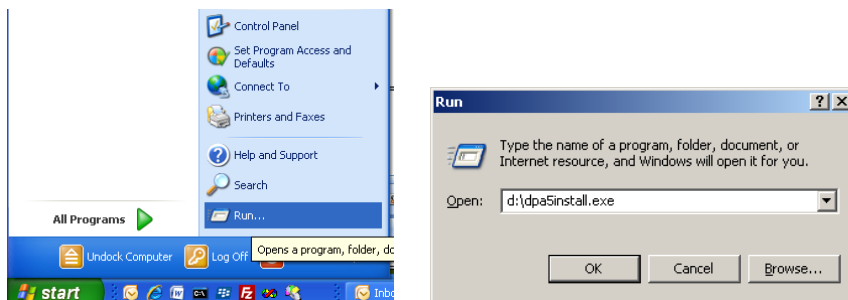
- ✓ Do Not Connect the DPA 5 to the PC until the drivers have been installed!
- ✓ Install DPA 5 drivers from CD or from your internet download.
 - To install drivers you must have administrator privileges.
- ✓ If you have problems installing the drivers, please contact technical support at (248) 888-2000.

Attention

The DPA drivers provided on the installation CD are installed by inserting the disc into your PC's CD-ROM drive. The latest drivers and firmware are always available at www.dgtech.com/download.php. If you have any questions about the install, please contact our technical support staff.

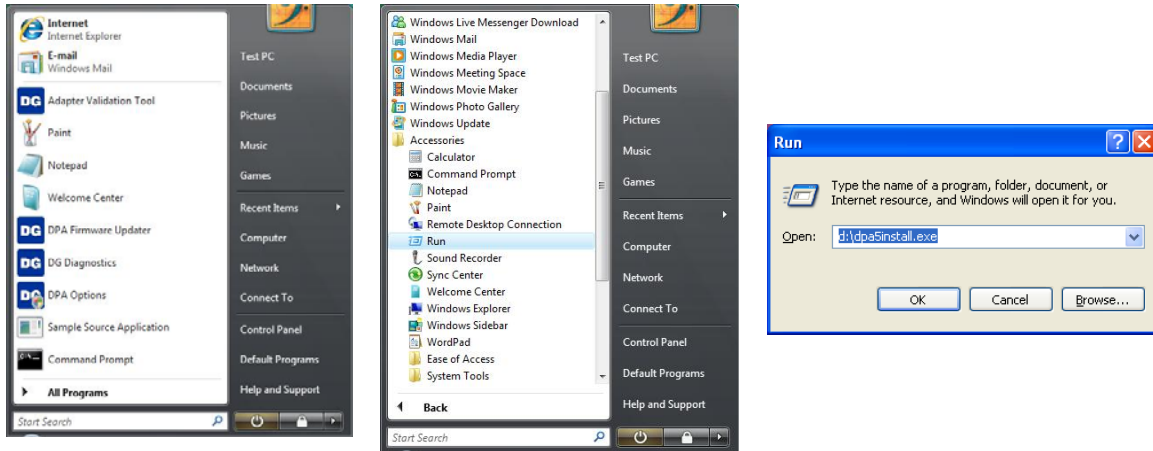
If setup does not begin automatically, use the following sequence for Windows XP:

Start → Run → [CD_Drive_Letter]:\DPA5Install.exe and click **OK**



If setup does not begin automatically, use the following sequence for Windows Vista:

Start → All Programs → Accessories → Run → [CD_Drive_Letter]:\DPA5Install.exe and click **OK**



After the drivers are installed, you will be prompted to restart your computer. While your PC is rebooting, continue following the next instructions.

3.2. Step 2. Connect USB Cable to the DPA and PC

Remove the sticker covering the USB port and connect the USB cable to the DPA and PC. The USB cable that comes with the DPA 5 has ears that allow the cable to be screwed into standoff screws on the DPA 5 frame, greatly reducing the chance of breaking the USB connector on the DPA circuit board.

PC-side USB Cable

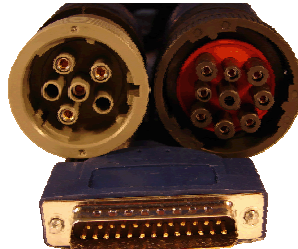


3.1. Step 3. Connect Vehicle-Side Cable to the DPA

Connect the vehicle-side of the cable (the DB25 connector) to your DPA before you connect to the vehicle (see the note below).

- ✓ **Do not connect to vehicle first! Pins 6 and 8 on the DB25 connector are power and ground and are very close together.**

Vehicle-side Cable



6-pin/9-pin Deutsch "Y" Cable (Heavy-Duty)

3.2. Step 4. Connect DPA to Vehicle

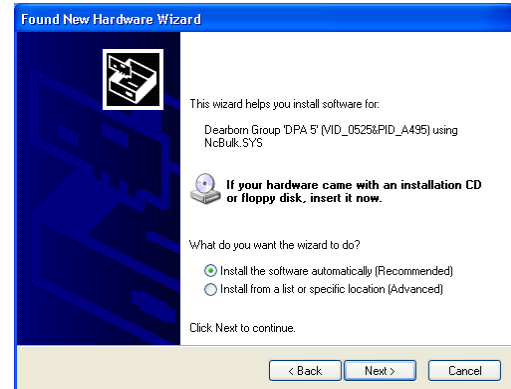
Now, connect the DPA to the vehicle, verifying that the DPA **Power** LED is lit.

3.3. Step 5. Finalize PC Install

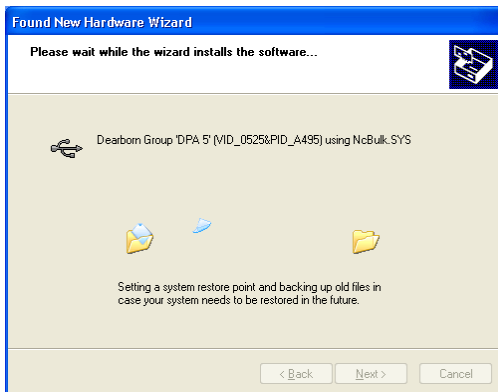
The DPA is now connected to the PC and powered on. In some versions of Windows the final step in driver installation is automatic. In others, the Windows Found New Hardware Wizard will run to finalize driver installation. What appears in Windows XP is shown below.



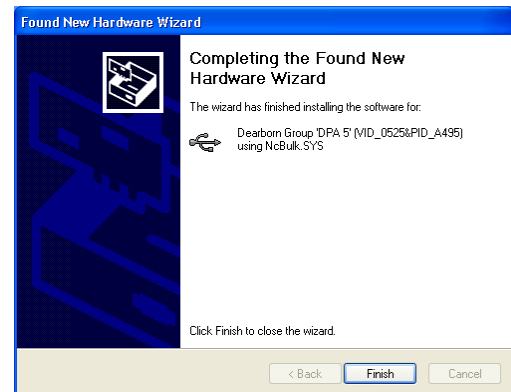
1. Select **No, not this time** and press the **Next** button.



2. Select **Install the software automatically (Recommended)** and press the **Next** button.



3. This screen appears while Windows installs the drivers.



4. This screen appears when Windows has finished installing the drivers. Press the **Finish** button.


3.4. Notes on USB

If you plug in a DPA (or any other USB device) that does not have Microsoft Certification associated with it into a different USB port than where it was installed the first time, you are going to get the *New Hardware Found* wizard again. Repeat steps in 3.3 again for each new USB port. **IF YOU SELECT Cancel, THE DPA WILL NOT WORK!**

USB traits inherent to the PC sometimes cause the DPA to lose communications, if this happens:

1. Unplug the USB cable from the PC and unplug the vehicle-side cable from the vehicle (power off 3-5 seconds).
2. Plug the USB cable into a different USB port than previously connected to.
3. Reconnect the DPA to the vehicle.

4. Windows Vista Support Notes

Microsoft® has made great strides in updating their operating systems to protect against malicious software. With Windows Vista, Microsoft introduced User Account Control (UAC). UAC strictly enforces the differences between an administrator and a standard user account. When an action that could potentially compromise the PC such as writing files to the C:\Windows directory or registry is requested, the user is prompted for an administrator name and password. If the user is already an administrator, they are still prompted to confirm the action. Generally speaking, whenever you see the Microsoft security shield  icon on a button, you will need an administrator's password to perform that operation.

4.1. UAC and the TMC RP1210 Standard

Before Windows Vista, it was common for applications to put INI and other types of configuration files in the default Windows directory, typically C:\Windows. The RP1210 standard requires that the RP121032.INI file be located in this directory, along with all of the vendor INI files (i.e. DGDPA5SA.INI). On Windows Vista, this means that a standard user cannot make changes to the main RP121032.INI file, nor can they make changes to the vendor INI files when UAC is enabled.

4.2. UAC and the Dearborn Group Adapter Validation Tool (AVT)

A standard user will be able to run the AVT program and troubleshoot the PC-DPA-vehicle connection, but will not be able to fix a problem in the RP121032.INI file without an administrator password (see section on troubleshooting later in this document). The graphic below is from AVT, showing the Microsoft security shield on the **Fix/Change RP121032.INI File** button.



4.3. UAC and the DPA Options/Bluetooth Configuration Programs

Only an administrator will be able to run the DPA Options and Bluetooth Configuration programs.

4.4. UAC Requirements for Dearborn Group DPA Utility Programs

The DPA utility programs (listed below) have been written to conform to UAC. The following list shows these programs and privileges required to run them:

Program	Privileges Required	Notes
Adapter Validation Tool (AVT)	Standard User	Administrator needed for Fix/Change RP121032.INI File.
DPA 5 Options	Administrator	
DPA 5 Bluetooth Configuration Utility	Administrator	
DG Diagnostics	Standard User	Cannot save/record data bus files to a protected directory.
DPA Firmware Updater	Standard User	
Sample Source Code	Standard User	

4.5. More Information on UAC

For more detailed information on UAC, there is a helpful article at <http://www.wikipedia.org> or you can go directly to the Microsoft website <http://www.microsoft.com> and search for "UAC".

5. Setting Up Your OEM Diagnostic Applications

The DPA works with all RP1210A and RP1210B compliant applications that support J1708/J1587, CAN/J1939, J1850 VPW (GM Class II) and the ISO15765 protocols. The DPA also works with applications that were specifically written to use the DG non-RP1210-compliant *native drivers* for other protocols, such as GM UART and ISO9141. This section shows how to configure the most common RP1210-compliant diagnostic applications to work with the DPA 5.

5.1. Notes on Selecting an RP1210 Compliant Adapter

Selecting a RP1210 adapter, commonly referred to as a Vehicle Datalink Adapter (VDA) varies widely from application to application; however, the terminology remains pretty much the same. The following table helps to introduce you to the terminology and helps you to make the correct selections the first time.

✦ You must set up every application (in their own individual way) to use the DPA!

If You See These Terms	Select This
Vendor API DLL Manufacturer Adapter Manufacturer	Dearborn Group DPA 5 Single Application Or DGDPA5SA
Device Name Adapter Name	DG DPA 5 Dual-CAN USB, USB Or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth, Wireless
Device Number DeviceID	1 Or Bluetooth Wireless DeviceID
Protocol (Depends on Application)	Most Commonly Encountered: <ul style="list-style-type: none"> ✓ J1708 (J1708/J1587) ✓ J1939 ✓ ISO15765 ✓ CAN

5.2. Configuring Applications to Use the DPA 5

The following examples show how to select your DPA 5 device using the USB cabling method. Bluetooth device entries are based on the DPA 5 Bluetooth ID (see Bluetooth appendix).

5.3. Allison DOC

1. Start program.
2. Click **Connect to Vehicle**.
3. Select the Correct Transmission Type.
4. Uncheck **Smart Connect**.
5. Click **Connect**.
6. Click **Advanced Setup**.
7. Select vendor of **Dearborn Group DPA 5 Single Application**.
8. Select protocol of **J1939** or **J1708**.
9. Select correct device of **DPA 5 Dual-CAN USB**.
10. Click **OK**.

5.4. Bendix ABS Diagnostics

NOTE: DO NOT RUN Bendix ABS Diagnostics until you have done the following:

1. Start program.
2. If *Diagnostic Interface Selection* dialog box does not appear, click on **Vehicle Interface Adapter** icon.
 - a. Select **RP1210A Device Using J1708 Line: DPA 5 Dual-CAN USB**
3. Click **OK**.

A screen appears indicating that device selection was a success.

5.5. Caterpillar Electronic Technician

1. Start Program.
2. Click Utilities → Preferences → Communications from the menu bar.
3. Click on **Communication Interface Device** dropdown box.
4. Select **RP1210 Compliant Device**.
5. Click **Advanced**
6. Select **DPA 5 Dual-CAN USB** in the RP1210 Communication Adapter Device box.
7. Click **OK**
8. Check **Enable Dual Data Link Service**
9. Click **OK**.

5.6. Cummins Insite

1. Start Program.
2. Click on File → Connections → Add New Connection.
3. Click **Next**.
4. Click radio button for **RP1210A** and click **Next**.
5. Select correct device **DPA 5 Dual-CAN USB**, and protocol you want to use, J1708/J1939.
6. Click **Next** and a Connection Name screen appears.
7. Click **Next** and a screen prompts you to indicate whether you want to make this connection active or set up another connection.
8. Click on ***make this connection active***.
9. Click **Finish**.

5.7. Detroit Diesel Diagnostic Link V7

5.7.1. From Windows Start Menu

1. Start → Programs → Detroit Diesel → Diagnostic Link → SID configure
2. Select **DPA 5 Dual-CAN USB**.
3. Click **OK**.

5.7.2. From Inside DDDL

1. Tools → Options → Connections Tab → SID Configure.
2. Select **DPA 5 Dual-CAN USB**.
3. Click **OK**.

5.8. Eaton ServiceRanger 3.x

1. Start Program
2. Click Tools → Settings → Connection.
3. Under **Driver** choose **Dearborn Group DPA 5 Single Application**
4. Select **DPA 5 Dual-CAN USB** for both the J1708 and J1939 device.
5. Click **OK**.

5.9. Freightliner ServiceLink

1. Start program.
2. From the top menu bar, choose **Admin**.
3. From the left menu bar, choose **Vehicle**.
4. Click on **Show All Devices**.
5. In the *Vendor* box, choose **Dearborn Group DPA 5 Single Application**.
6. Select **DPA 5 Dual-CAN USB** in the J1708, J1939, and CAN dropdowns.
7. Click **Save Settings**.

5.10. International Truck and Engine

5.10.1. Master Diagnostics (MD Fleet)

1. Start program.
2. Choose File → MD Settings → COM Device → Window with general VDA selection
3. Select *Dearborn Group DPA 5 Single Application* → Window with specific port **DPA 5 Dual-CAN USB**

5.10.2. Navistar Hydraulic ABS

1. Start program.
2. Choose File → Hydraulic ABS Settings → COM Device → Window with general VDA selection
3. Select *Dearborn Group DPA 5 Single Application* → Window with specific port **DPA 5 Dual-CAN USB**

5.10.3. Navistar IPC

1. Start program.
2. Choose File → Settings → COM Device → Window with general VDA selection
3. Select *Dearborn Group DPA 5 Single Application* → Window with specific port **DPA 5 Dual-CAN USB**

5.10.4. Diamond Logic Builder (DLB)

1. Start program.
2. Choose Tools → Select Com Link → Listing of adapters
3. Select *Dearborn Group DPA 5 Single Application* → Listing of ports **DPA 5 Dual-CAN USB**

5.10.5. Service Assistant (The new MD Fleet)

1. Start program.
2. Press third button from the top along the left side (has an icon that looks like a miniature interface cable.)
 - a. A window comes up that says Communication Device Selection and has two drop down boxes.
 - b. Select *Dearborn Group DPA 5 Single Application* → **DPA 5 Dual-CAN USB**

5.11. Meritor-WABCO ABS Toolbox

1. Start Program.
2. Click **System Setup**; then select **COM Port**.
3. Select **Dearborn Group DPA 5 Single Application**; the protocol to use is J1939 or J1708.
4. Select **DPA 5 Dual-CAN USB** and click **OK**.

5.12. Volvo/Mack VCADS Pro

5.12.1. From Initial VCADS Setup

1. When prompted to configure a Communication Unit select **RP1210A adapter**.
2. When prompted for the adapter, select **DPA 5 Dual-CAN USB**.
3. Select **USB** for the Port.
4. Select **J1708** for the protocol.
5. When prompted for the Electrical Systems.
 - a. Click **Volvo Trucks – VERSION2** and select **RP1210A Adapter**
 - b. Click **Volvo Trucks – Vehicle electronics '98** and select **RP1210A Adapter**
 - c. Click **Mack Trucks – V-MAC I/II/III, ITC** and select **RP1210A Adapter**
 - d. Click **Volvo Trucks – V-MAC IV** and select **RP1210A Adapter**
6. Continue with installation.

5.12.2. From Inside VCADS

1. Start Program.
2. Click the **Tools** menu and choose **Options**.
3. Select the **Comm. Unit Configuration** tab.
4. Select **RP1210A Adapter** and then select **DPA 5 Dual-CAN USB**.
5. Select **USB** for the Port.
6. Select **J1708** for the protocol.
7. Go to the **Comm. Unit Selection** tab.
 - a. Click **Volvo Trucks – VERSION2** and select **RP1210A Adapter**
 - b. Click **Volvo Trucks – Vehicle electronics '98** and select **RP1210A Adapter**
 - c. Click **Mack Trucks – V-MAC I/II/III, ITC** and select **RP1210A Adapter**
 - d. Click **Volvo Trucks – V-MAC IV** and select **RP1210A Adapter**
8. Click **Ok**.

5.13. Volvo/Mack Premium Tech Tool (PTT)

1. Start Program.
2. Select Settings from the PTT menu.
3. Go to the Communication Unit configuration tab:
 - a. It is here that you select the settings for each adapter that you may use. For example, if you have an RP1210A adapter, it is here that you select which adapter, port, and protocol.
 - b. NOTE: This identifies the settings for each adapter. It does not select which adapter the PTT application will use to communicate with the vehicle.
4. Go to the Comm unit selection tab:
 - a. It is here that you identify which adapter is to be used by the PTT application to communicate with the vehicle. You may have to change this selection depending upon the vehicle.
 - b. For example, if you typically use an 88890020 adapter in direct mode, when you need to communicate with an older vehicle you will need to change to RP1210A adapter or the 9998555 adapters, depending upon the vehicle.

6. Troubleshooting Your DPA

There are typically four problem areas with VDA devices. Each problem is discussed in following sections:

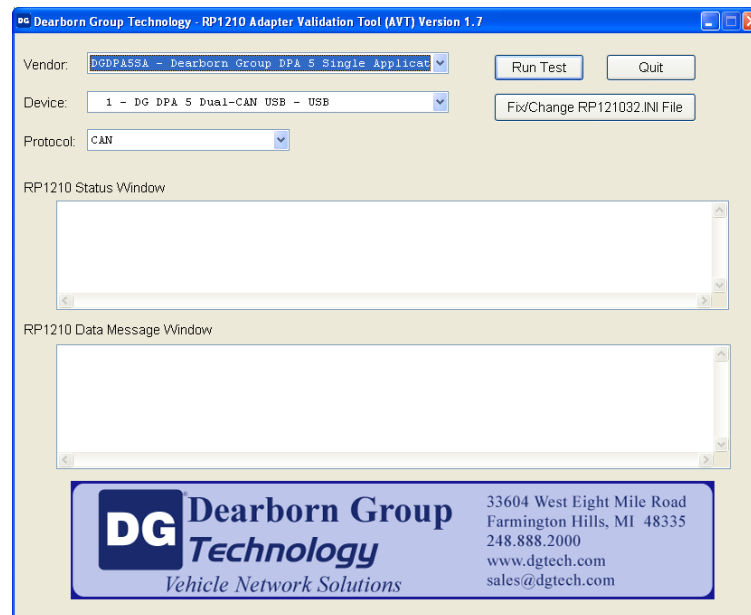
1. Connection related – unable to communicate from the PC to the adapter, the adapter to the vehicle, or both.
2. Inability to select the adapter in your OEM diagnostic application.
3. Problems re-flashing/reprogramming with the J1939 protocol.
4. USB Issues.

6.1. Connection-Related Issues

After you have installed the DPA drivers and connected the DPA 5 to both the PC and vehicle, make sure that the DPA **Power** LED is lit. Then configure your OEM diagnostic program to use the DPA. Should the DPA 5 not work with the OEM software, run the DG Adapter Validation Tool (AVT) to ensure that the PC is able to communicate with the DPA, and that the DPA is able to see vehicle data bus traffic.

Windows Vista Users: When AVT is launched, you will be told if a problem exists in the main RP121032.INI file. If you wish to fix this issue, press the **Fix/Change RP121032.INI File** button and you will be prompted for administrator privileges (see section on Windows Vista).

Start → Programs → Dearborn Group Products → DPA 5 → Adapter Validation Tool



Select the correct DPA adapter (USB DPA 5 is used in this example):

- ❑ **Vendor** DGDPA5SA – Dearborn Group DPA 5 Single Application
- ❑ **Device** 1 – DG DPA 5 Dual-CAN USB - USB
- ❑ **Protocol** J1708, J1850, CAN or J1939 (depending on your application)

Then click the **Run Test** button. Depending on the results of the test, both the **RP1210 Status Window** and **RP1210 Data Message Window** will turn **green** (pass) or **red** (fail).

6.1.1. AVT Test Outcomes

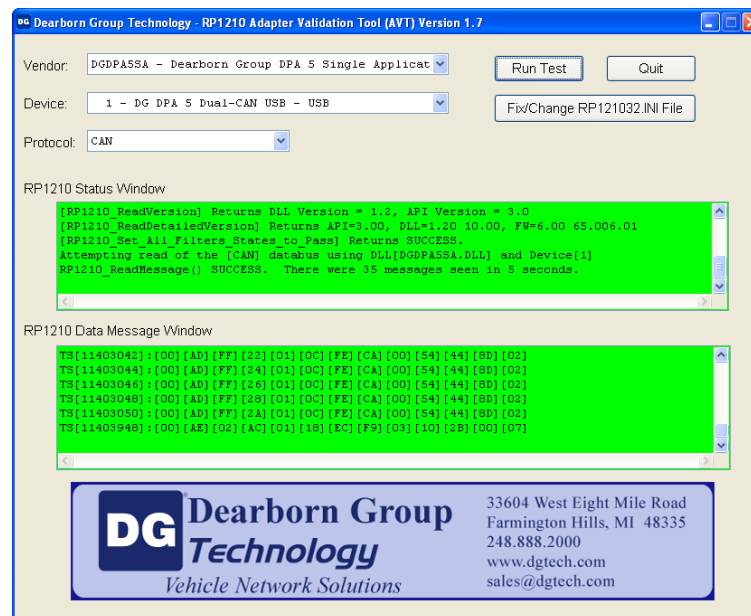
If the **RP1210 Status Window** turns red, then there is a problem with something causing the PC not to communicate with the DPA 5. This may be something as simple as having power to the adapter or having a USB cabling issue. Disconnect the adapter from the vehicle and PC; then reconnect them, this time connecting to another USB port on the PC. **Ensure you hear the familiar “da-ding” sound when connecting the DPA 5 into the USB port. The “da-ding” sound indicates that the PC has found, and can talk to, the DPA 5 device.**

If the **RP1210 Status Window** turns green and the **RP1210 Data Message Window** turns red, then the PC is seeing the adapter, but not seeing messages from the vehicle. Check the vehicle ignition switch and vehicle to adapter cabling; disconnect the adapter from the vehicle and PC; then reconnect them. The vehicle may not be communicating over the protocol that you have chosen (some tractor OEMs are not using the J1708 databus anymore).

If you see data in the **RP1210 Data Message Window**, then the adapter is installed and functioning properly. Contact the manufacturer of the diagnostic software you are using and tell them the test scenario you just tried.

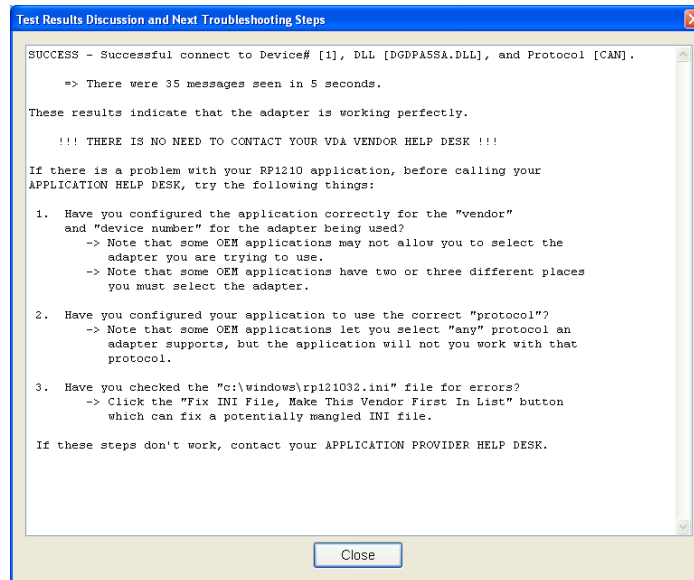
If after following the **Test Results Discussion and Next Steps** screen, you cannot get the adapter to read data, contact Dearborn Group technical support.

6.1.2. Good Connection (PC to DPA), Good Read of Data (DPA to Vehicle)



6.1.3. Test Results Discussion and Next Steps

Once the test is complete, the application will display an informational screen listing some steps to correct the issues based upon what the results of the test were. If one of the windows turned red, then read the instructions carefully to see if you can determine where the source of the problem is. The next image is from a successful read of vehicle data (green/green).



6.2. Not Seeing DPA 5 in OEM Application VDA Selection List

If you have installed the DPA 5 drivers, and your diagnostic application does not display **DG DPA 5 Dual-CAN USB** in their VDA selection dialog box, this could indicate one of three things about the diagnostic application. Most oftentimes, item #3 is the main culprit, and has been causing problems for several years.

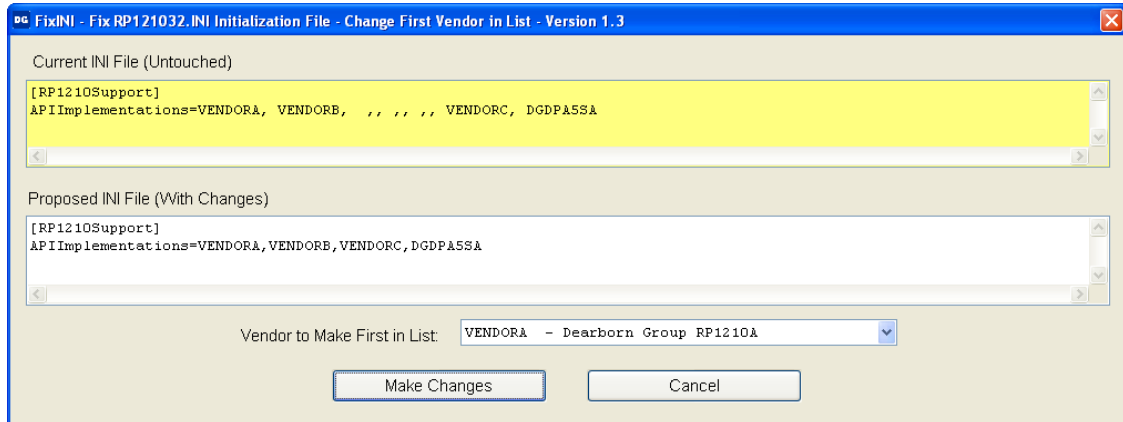
1. Application is not RP1210A or RP1210B compliant and does not work with the DPA 5.
 - a. Some applications require a specific, proprietary adapter.
2. Application is RP1210A or RP1210B compliant, but DPA does not support the protocol needed.
 - a. For example, ISO9141 in the RP1210 layer.
3. Problem with the main RP1210 INI file, typically C:\Windows\RP121032.INI.
 - a. Some VDAs create issues with the RP121032.INI file when they install/uninstall.
 - b. You will be notified by a dialog box when you run AVT if there is a problem. If so, you should fix the problem. On Windows Vista, you will be required to have administrator privileges.

The AVT application has a button **Fix/Change RP121032.INI File** that will allow you to view and fix the RP121032.INI file if there are errors detected. You can also change the VDA vendor that appears first in the list of the OEM diagnostic software applications. When you click this button and there are errors, this screen will be displayed. Click **OK** and you will get a screen allowing you to make the changes necessary:



In the example below, a bad INI file was detected and is depicted by a yellow background. Note the multiple commas and spaces between entries. The user then chose that they wanted DGDPA5SA be the first vendor in the list. Click the **Make Changes** button and the INI file problem will be corrected.

NOTE: Many OEM diagnostic applications are aware of this issue and can read through the errors.



6.3. Possible J1939 Speed Related Issues (FAST_TRANSPORT)

There has long been a DPA option to speed up reprogramming times called FAST_TRANSPORT. Many OEM and component manufacturers using the DPA for end of line (EOL) programming stations have known about this option and have used it successfully. DG has decided to turn FAST_TRANSPORT on by default to speed up your vehicle reprogramming times. In one instance after turning FAST_TRANSPORT on, reprogramming of an engine dropped from fifty minutes to eight minutes, however little if any difference will be seen during standard diagnostic sessions.

If you have difficulty reprogramming or using your diagnostic software with the J1939 protocol (erratic behavior), try turning the FAST_TRANSPORT option off. This can be done with the DPA 5 Options program (see the DPA 5 Options Program section).

6.4. USB-Related Issues

If you plug in a DPA (or any other USB device) that does not have Microsoft Certification associated with it into a different USB port than where it was installed the first time, will see the *New Hardware Found* wizard again. Repeat steps in 3.3 again for each new USB port.

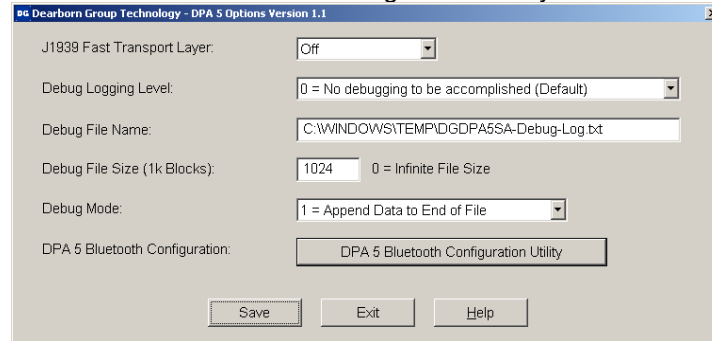
IF YOU SELECT **Cancel, THE DPA WILL NOT WORK!**

Other USB traits inherent to the PC sometimes cause the DPA to lose communications. If a loss of communications with the PC occurs:

1. Unplug the USB cable from the PC.
2. Unplug the vehicle-side cable from the vehicle (ensure power is off for 3-5 seconds).
3. Plug the USB cable into a different USB port than previously connected to.
4. Reconnect the DPA to the vehicle.

7. DPA 5 Options Program

The DPA 5 Options program allows you to set and configure various aspects of the DPA 5. The following sections describe the roles of that variable. The DPA 5 Bluetooth Configuration Utility is discussed later.



7.1. J1939 Fast Transport Layer (FAST_TRANSPORT Option)

When this option is in the **On (Default)** position, it significantly decreases reprogramming and reflashing times over the J1939 data bus by reducing the amount of time between J1939 transport protocol packets (used to break large messages into CAN 8-byte packets for transmitting on the data bus). If you encounter a diagnostic or reprogramming/reflashing application that is having problems with the DPA using the J1939 protocol, we recommend setting this parameter temporarily to the **Off** position and then retrying the application.

7.2. Debug Logging Level, Debug File Name, Debug File Size, Debug Mode

These options have to do mainly with being able to debug potential issues with the DGPA5SA drivers, and are a new feature of RP1210B. You may be asked by DG technical support personnel to modify these options; otherwise leave these variables at their default settings.

7.2.1. Debug Logging Level (RP1210 INI File Variable DebugLevel)

To use API level debugging, modify the **DebugLevel** variable to one of the following values:

- 0 = No debugging to be accomplished (Default).
- 1 = Only Connect/Disconnect/Error Messages.
- 2 = Add RP1210_SendCommand calls.
- 3 = Add all Sent Messages (with filtering).
- 4 = Add all Received Messages (with filtering).

7.2.2. Debug File Name (RP1210 INI File Variable DebugFile)

The **DebugFile** variable is the file where you want to see the debugging information written to.

7.2.3. Debug File Size (RP1210 INI File Variable DebugFileSize)

The **DebugFileSize** variable is how many 1k chunks you will allow the API to write before it begins to write over previously written entries. A value of 1024 is 1 megabyte (default). A value of zero means that there is no file size limit (allow infinite file size).

7.2.4. Debug Mode (RP1210 INI File Variable DebugMode)

The **DebugMode** variable describes how the API will interact with the DebugFile. Should it overwrite (value = 0) any previous entries or should it append entries (value = 1) to the end of the file.

7.3. DPA 5 Bluetooth Configuration Utility

This button opens the DPA 5 Bluetooth Configuration Utility. This allows the user to create RP1210 DeviceID entries from DPA 5 Bluetooth pairings. See the section on *Bluetooth and the DPA 5* for more information.


8. Bluetooth and the DPA 5

8.1. Bluetooth Overview for the DPA 5

Bluetooth has become a very popular short-range wireless protocol for devices such as cell phone headsets. The DPA 5 is equipped with a Bluetooth antenna that can be used instead of using a USB cable. The following are some very broad notes to be considered with using the DPA 5 in Bluetooth mode:

- ✓ Your DPA 5 can be *paired* with, and be used by any Bluetooth equipped PC throughout your shop. In simple terms, the DPA 5 in Bluetooth mode is not locked into one specific PC in the shop.
- ✓ The range of communication is dependent on Bluetooth PC dongle radio power output. Typically, micro-sized USB Bluetooth PC dongles do not transmit/receive as far as full-size USB Bluetooth PC dongles. There are even large differences in the power outputs of the full-size USB PC dongles. Range is also dependent on shop operating conditions and electromagnetic interference sources such as fluorescent lights, HVAC systems, and welding equipment. Therefore, a specific range for communications cannot be guaranteed.
- ✓ Note that the RP1210 committee, OEMs, and DG, do not recommend reprogramming or recalibrating equipment using any type of wireless protocol. A physical cable is much more reliable and not as prone to the electromagnetic interference found in a shop floor environment.

Since Bluetooth has become so popular, there are literally hundreds of models of Bluetooth-to-PC dongles that can be used to communicate with the DPA 5 device. This large number makes it impossible to cover the configuration of each one in this manual, as the documentation for those models would be outdated in weeks or months. What we will try to accomplish in the next sections is to introduce you to the correct terminology that will be required to *pair* your DPA 5 with your PC and create a *Virtual COM Port* so that the DPA 5 Bluetooth Configuration Utility can be used to create an RP1210 DeviceID that can be used by your OEM application software.

	<p>We apologize in advance and request your understanding.</p> <p>Because there are so many dongles on the market, we are unable to provide technical support for the installation and configuration of your Bluetooth dongle unless that dongle was purchased from DG. The Bluetooth dongle installations range from very simple and straightforward to extremely complex and time-consuming.</p> <p>If you cannot get your dongle paired with the PC into what is called a <i>Virtual COM Port</i>, we suggest that you visit the website for the manufacturer of the dongle, or contact their help desk.</p> <p>Once you have your DPA 5 <i>paired</i> and have a <i>Virtual COM Port</i> assigned to it, you can call our technical support department for assistance using the DPA 5 Bluetooth Configuration Utility (covered below).</p>
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8.2. Steps in Using the DPA 5 in Bluetooth Mode

8.2.1. Installing Your Bluetooth-to-PC Dongle Drivers

Ensure that when you install the Bluetooth-to-PC dongle that you select any option that says create/configure/install a *Virtual COM Port*. A *Virtual COM Port* is what will be used by the DPA 5 Bluetooth Configuration Utility to create a DeviceID that can be used by your OEM application software.

8.2.2. Pairing Your DPA 5 Device and Creating a Virtual COM Port

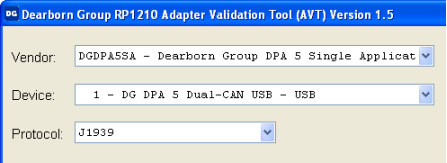
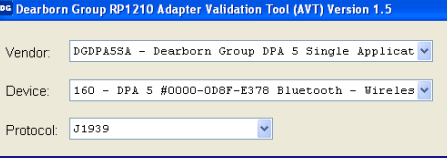
Creating a *Virtual COM Port* and *pairing* your device requires two things you have to provide to your Bluetooth dongle configuration utility. Both of these appear on the back of the DPA 5.

1. DPA 5 Bluetooth ID
2. DPA 5 Bluetooth Passkey

✓ Note that the DPA 5 must have power to be paired.

When you use the Bluetooth dongle configuration utility to discover/pair new devices in order to create a *Virtual COM Port*, have your DPA 5 powered up and you will see the DPA 5 device and the DPA 5 Bluetooth ID that is written on the back of the DPA. When asked for the passkey/password/passcode to create the *Virtual COM Port* pairing, enter “dgtech” (do not enter the quotation marks) in all lower case letters. Once you have successfully created the Virtual COM Port, continue to the next step.

8.2.3. From Virtual COM Port to RP1210 DeviceID; the DPA 5 Bluetooth Configuration Utility

What is a DeviceID and Why Is it Necessary?	
<p>A DeviceID is a VDA device's entry in the VDA vendor's RP1210 INI file. These entries are read by OEM software applications and displayed in a list to the user so they can be chosen and used. For example, the following is how AVT displays the following entry (for the DPA 5 in USB mode) from the DGDPA5SA.INI file:</p>	
<pre>[DeviceInformation1] DeviceID=1 DeviceDescription=DG DPA 5 Dual-CAN USB,USB DeviceName=DG DPA 5 Dual-CAN USB DeviceParams=DG USB</pre>	
<p>The DG Bluetooth Configuration Utility is used to create DeviceID entries in the DGDPA5SA.INI file with DPA 5 units that have been paired with that PC into Virtual COM Ports. The below example shows how the DPA 5 with the DPA 5 Bluetooth ID “0000-0D8F-E378” became DeviceID=160, and the DeviceParams=/B,COM10 reflected the Virtual COM Port that was assigned to that entry (COM10). The illustration on the right shows what AVT would show for this entry.</p>	
<pre>[DeviceInformation160] DeviceID=160 DeviceDescription=DPA 5 #0000-0D8F-E378 Bluetooth,Wireless DeviceName=DPA 5 #0000-0D8F-E378 Bluetooth DeviceParams=/B,COM10</pre>	

After you have successfully paired your DPA 5 with the Bluetooth dongle and have created the *Virtual COM Port*, run the DG Bluetooth Configuration Utility:

1. Start → Programs → Dearborn Group Products → DPA 5 → DPA 5 Options
2. Then press the button **DG Bluetooth Configuration Utility**
3. Ensure the Bluetooth dongle is connected to the PC and that the DPA 5 has power

You must go through this configuration utility to create DeviceID entries, or the DPA 5 in Bluetooth mode will not work with your OEM applications.

What the DG Bluetooth Configuration Utility does is to:

- ✓ Display existing DPA 5 Bluetooth DeviceID pairings that are found in the DGDPA5SA.INI file, allowing you to delete a DeviceID pairing if you wish.
- ✓ Discover DPA 5 Bluetooth devices on Virtual COM Ports and create a new DeviceID pairing that can be used by OEM software applications.

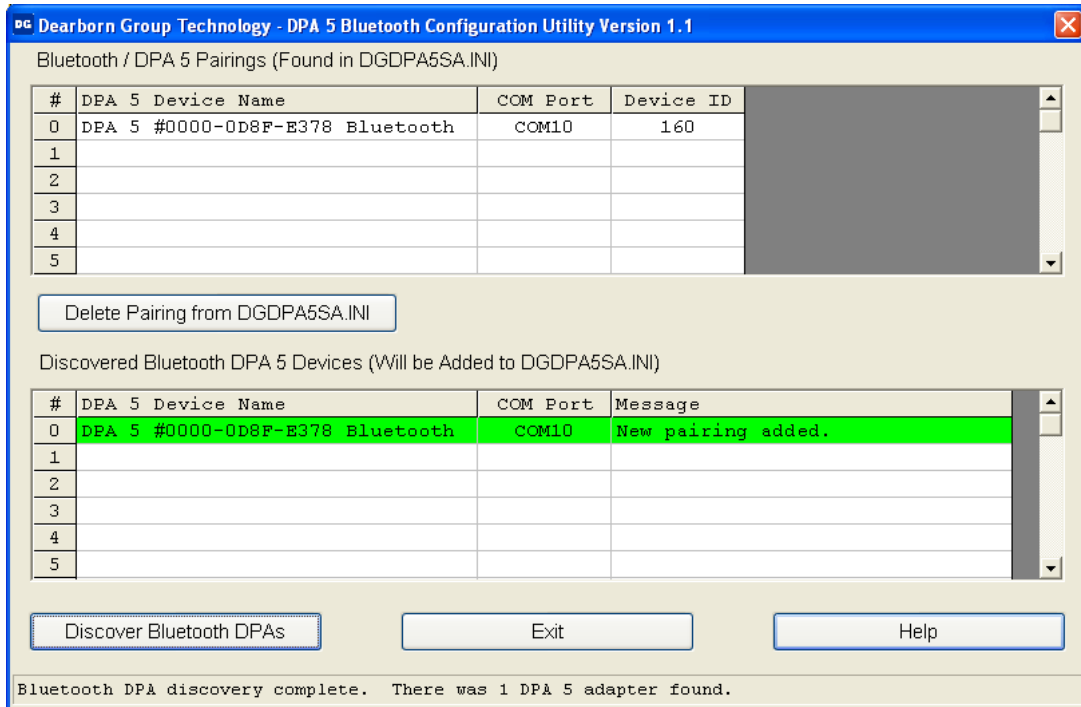


Image showing a newly discovered DPA 5.

8.2.4. Creating a New DeviceID from a Newly Paired DPA 5

After you have paired a DPA 5 to your PC and have created a Virtual COM Port for it, click the Discover Bluetooth DPAs button, and any DPA found will be automatically added to the DGDPA5SA.INI file. Above is an illustration as to how it would look. OEM applications will now be able to see and use that particular DPA 5 as DeviceID=160.

8.2.5. Deleting a DeviceID

If you want to delete a DeviceID, simply select that entry and click the Delete Pairing from DGDPA5SA.INI file. Note that after the DeviceID has been deleted, it will NOT appear in OEM software applications for selection.

8.3. Using Multiple DPAs on One PC – Use XP Windows Service Pack 3

As noted above, there are many different possibilities for Bluetooth PC dongles and their PC installations. There are also major differences in the Bluetooth protocol stack (drivers) on various operating systems. The Bluetooth protocol stack on the different operating systems is what the DPA 5 drivers use to communicate with the DPA 5.

Depending on the Bluetooth protocol stack that is being used, some will only pair a device to a single virtual COM port. This would mean that if you wanted to use more than one DPA with one specific PC, you would have to do the following (the example uses DPA 5 #1 and DPA 5 #2):

1. Use the DG Bluetooth Configuration Utility to remove DPA #1's DeviceID.
2. Use the Bluetooth software provided with the PC dongle to remove DPA #1 from the virtual COM port.
3. Use the Bluetooth software provided with the PC dongle to pair DPA #2 to the virtual COM port.
4. Use the DG Bluetooth Configuration Utility to create a DeviceID for DPA #2.

Our experiences have shown that if you use the PC dongles that DG is distributing in conjunction with the Microsoft Bluetooth stack, these steps are not necessary and multiple adapters can be paired to different COM ports (which is the easiest way to communicate with multiple devices). These two Bluetooth devices being distributed are:

- ✓ IOGear GBU321 – a Bluetooth Class I adapter
- ✓ IOGear GBU 421 – a Bluetooth Class II adapter

If you are using Windows XP, the Microsoft Bluetooth stack works with these devices only when Service Pack 3 is installed (SP3). For more information on downloading SP3, visit www.microsoft.com. Just remember, do not install the software that comes with these devices, just plug them into the PC and the Microsoft Bluetooth stack will take care of them.

9. Product Specifications

9.1. DPA 5 Physical and Electrical

Feature	Data
Dimensions	6.1 x 2.5 x 1.2 inches
Voltage Requirements	9 – 32 Volts DC
Current Requirements	250mA maximum through voltage range
Operating Temperature Range	-40 to +85C
Wired PC Communications Type	USB Version 1.1 or Higher
Wired Connection	Gold-plated USB Cable (up to 15 feet)
Wireless Connection	Bluetooth (DPA hardware equipped with Class 1 radio)
Vehicle-Side Connector	DB25 Female
PC-Side Connector	Standard B-Type USB Jack
PC Device Drivers	TMC RP1210A/RP1210B Compliant Drivers DG Native Drivers

9.2. DPA 5 Pinouts

Pin	DPA 5
Ground	6
Power (9-32vdc)	8
J1708-	14
J1708+	15
CAN1 Shield	7
CAN1 Lo	12
CAN1 Hi	13
CAN1 Term 1*	3
CAN1 Term 2*	4
CAN TX	NC
CAN RX	NC
SW CAN	10
ALDL	16
ALDL RX	NC
9141 K Line	1
9141 L Line	11
J1850 Hi	5
J1850 Lo	NC
A TEC Data	NC
A TEC Diag	NC
Discrete In	NC
Discrete Out	NC
CAN2 Term 1*	20
CAN2 Term 2*	21
CAN2 Shield	23
CAN2 Lo	22
CAN2 Hi	24
HALDEX	NC

Vehicle-Side Assignments for DPA 5 (DB25 Female).

* Shunting these two pins (Term1/Term2) applies a 120-Ohm terminating resistor to the CAN/J1939 network.

Pins that are not mentioned are reserved and should not have anything attached to them.

10. Technical Support and Return Merchandise Authorization (RMA)

10.1. Technical Support

For users in the United States, technical support is available from 9 a.m. to 5 p.m. Eastern Time. You may also fax or e-mail your questions to us. For prompt assistance, please include your voice telephone number.

Users not residing in the United States should contact your local Dearborn Group Technology representative.



Dearborn Group Technology Support

Phone: (248) 888-2000
Fax: (248) 888-1188
E-mail: techsupp@dgtech.com
Web site: www.dgtech.com

10.2. Return Merchandise Authorization (RMA)

If technical support has deemed that there may be a physical problem with your DPA, you will be issued you an RMA number. You would then return the product along with any documentation of ownership you have (proof of purchase/price) to the following address:



Dearborn Group Technology
Product Service/Repairs
Attn: RMA# xxxxxxx
Dearborn Group Technology
33604 West 8 Mile Road
Farmington Hills, MI 48335

11. Warranty Information and Limitation Statements

11.1. Warranty Information

The Dearborn Group Technology DPA 5 is warranted against defects in materials and workmanship for two (2) years following date of shipment. Cables (both USB and vehicle) are warranted for 90 days.

Dearborn Group Technology will, at its option, repair or replace, at no cost to the customer, products which prove to be defective during the warranty period, provided the defect or failure is not due to misuse, abuse, or alteration of the product. The customer is responsible for shipment of the defective product to DG. This warranty does not cover damage to any item that Dearborn Group Technology determines has been damaged by the customer's abuse, misuse, negligence, improper assembly, modification, or operation of the product.

A Return Merchandise Authorization (RMA) number must be issued to the customer by our Technical Support Department at (248) 888-2000 and must be included with the product being returned (for more details, see section *Return Merchandise Authorization (RMA)*).

11.2. Limitation Statements

11.2.1. General Limitation and Risk Assignment

To the maximum extent permitted by applicable law, Dearborn Group Technology and its suppliers provide support services on an "as-is" basis and disclaim all other warranties and conditions not specifically stated herein, whether express, implied or statutory, including, but not limited to, any warranties of merchantability or fitness for a particular purpose, lack of viruses, accuracy or completeness of responses, results, lack of negligence or lack of workmanlike effort, and correspondence to description. The user assumes the entire risk arising out of the use or performance of the device, its operating system components, and any support services.

11.2.2. Exclusion of Incidental, Consequential and Certain Other Damages

To the maximum extent permitted by applicable law, in no event shall Dearborn Group Technology or its suppliers be liable for any special, incidental, indirect or consequential damages whatsoever, including but not limited to: damages for loss of profit, loss of confidential or other information; business interruption; personal injury; loss of privacy, failure to meet any duty (including good faith or of reasonable care); negligence; and any other pecuniary or other loss related to the use of or the inability to use the device, components or support services or the provision of or failure to provide support services or otherwise in connection with any provision, even if Dearborn Group Technology or any supplier has been advised of the possibility of such damages.

11.2.3. Limitation of Liability and Remedies

Notwithstanding any damages that you might incur for any reason whatsoever (including, without limitation, all damages referenced above and all direct or general damages), in no event shall the liability of Dearborn Group Technology and any of its suppliers exceed the price paid for the device. The user assumes the entire risk and liability from the use of this device.

11.2.4. Right to Revise or Update without Notice

Dearborn Group Technology reserves the right to revise or update its products, software and/or any or all documentation without obligation to notify any individual or entity.

11.2.5. Governance

The user agrees to be governed by the laws of the State of Michigan, USA, and consents to the jurisdiction of the state court of Michigan in all disputes arising out of or relating to the use of this device.

11.2.6. Contact

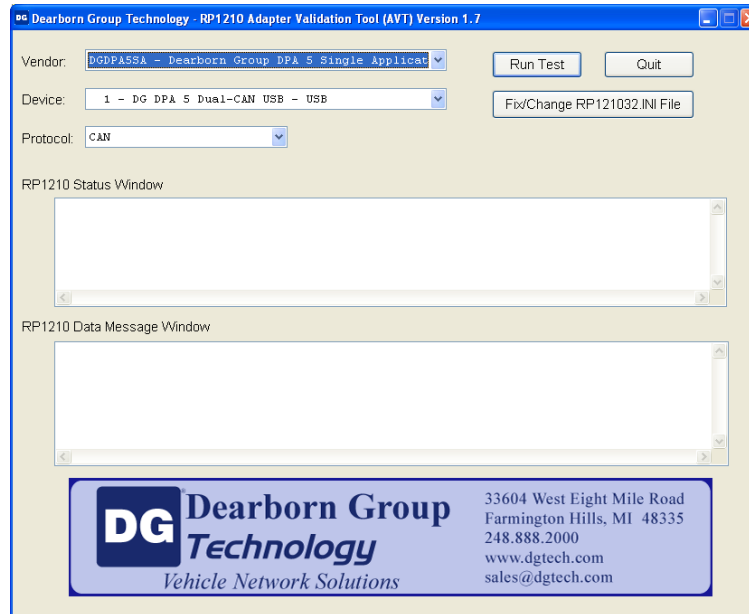
Please direct all inquiries to:

Dearborn Group Technology
33604 West 8 Mile Road
Farmington Hills, MI 48335
Phone (248) 888-2000
Fax (248) 888-1188

12. Appendix A – DPA 5 Firmware Update

If you have purchased a DPA 5 with the 1.20 driver CD, your DPA 5 will have version 65.007 firmware. If you have an older DPA 5 and have downloaded the 1.20 drivers from the internet, or have obtained a 1.20 CD, you may need to upgrade the DPA firmware. To find which version of firmware you have, use AVT after connecting the DPA to a power source.

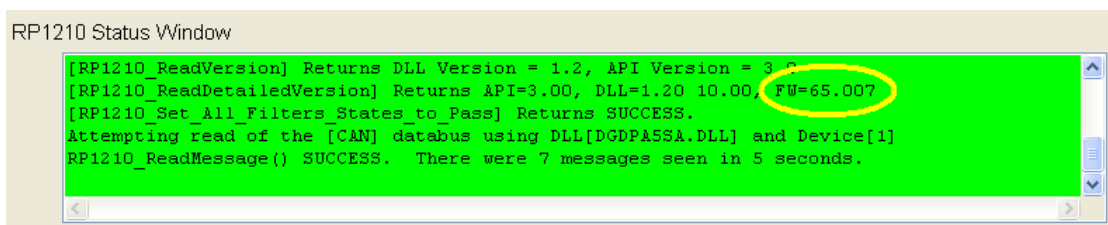
Start → Programs → Dearborn Group Products → DPA 5 → Adapter Validation Tool



Select the correct DPA adapter:

- Vendor** DGDPA5SA – Dearborn Group DPA 5 Single Application
- Device** 1 – DG DPA 5 Dual-CAN USB - USB
- Protocol** J1708 (any protocol works)

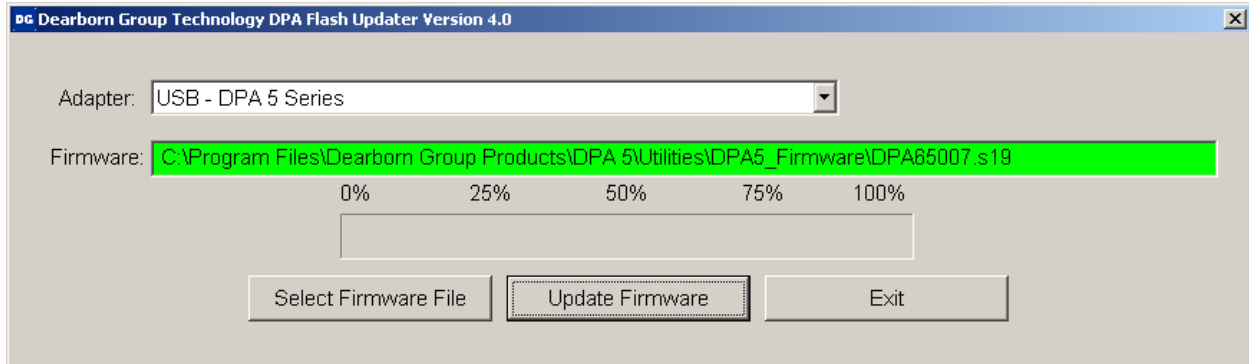
Then click the **Run Test** button. When the test has finished running, go to the **RP1210 Status Window** and scroll down to the line that reads [RP1210_ReadDetailedVersion] and look for the entry “FW=”. The last numbers on the line indicates which version of firmware you have (note the yellow circle). If you are not at 65.007, then you need to run the DPA Flash Updater outlined in the following steps.



12.1. Launch the DPA Flash Updater Program

1. Stop all applications that are using the DPA 5 (if any).
2. Start the DPA Flash Updater program:

Start → Programs → Dearborn Group Products → DPA 5 → DPA Flash Updater



3. Select the correct firmware file (the latest version 65.007 is already selected by default). If the firmware file exists, the Firmware box will turn **green**.
 - a. NOTE: Firmware files are located in separate sub-directories under the Utilities directory where the DPA drivers are installed, typically:
C:\Program Files\Dearborn Group Products\DPA 5\Utilities\DPA5_Firmware\
4. Click on the **Update Firmware** button and select **Yes** if you receive a warning dialog.
5. After the download is finished, disconnect power from the DPA, wait 5 seconds and then reconnect power.

13. Appendix B – Software Developer/Integrator Notes

This section is relevant only to software development engineers and systems integrators.

13.1. Bundling the DPA with Your OEM Installation – Silent Install

The installation application can be ran in silent mode which removes all required user interaction.

- ❑ The silent installation does not prompt the user or display a screen at any point.
- ❑ After the install, a reboot of the PC is necessary.

13.1.1. Silent Install Command Line

DPA5Install.exe /s /d_SILENT_[components to install]

The [components to install] can be any combination of the following:

A = DPA 5 Dual-CAN USB drivers and associated files

B = DPA 5 Bluetooth drivers and associated files

Examples:

Silently install DPA 5 drivers with Bluetooth Option:

```
DPA5Install.exe /s /d_SILENT_=AB
```

NOTE: Please test and ensure that the command line you provide to DPA4Install.exe is correct. Otherwise, only the baseline components will be installed, but the RP1210 API will not be functional.

14. Appendix D - Federal Communications Commission, Certification Industry Canada Information

The DPA 5 has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules (see the back of the DPA 5 for FCC and IC specific identifications). These limits are designed to provide reasonable protection against harmful interference in a residential installation. The DPA 5 uses and generates radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. If the DPA 5 does cause harmful interference to radio or television reception, which can be determined by turning the affected equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:







- Reorient or relocate the receiving and/or sending antennas.
- Increase the separation between the DPA 5 and the affected receiving equipment.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This product complies with FCC OET Bulletin 65 radiation exposure limits set forth for an uncontrolled environment.

Operation of the DPA 5 is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes not expressly approved by Dearborn Group Technology to the DPA 5 could void the user's authority to operate the DPA 5.

	Dearborn Group Technology			
www.dgtech.com	Model: DPA5			
	FCC ID: XOV13EAVOX			
	IC: 8377A-DGDPA5			
DPA 5 Bluetooth® Passkey: dgtech				
DPA 5 Bluetooth® ID: <input type="text"/>				
				

The following are the DPA 5 Bluetooth details as required to be published by the FCC.

Operating Frequency	2.4GHz
Power Output Maximum	< 4.4dBi
Contains Transmitter Module FCC ID:	QOQWT11
Transmitter Bluetooth QDID	B012647

Industry Canada

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference. and
- (2) This device must accept any interference received, including interference that may cause undesired operation.