Dearborn Protocol Adapter
DPA 5 Series

Installation and User Manual

Driver Version:	1.24
Native Drivers Version:	10.03
DPA 5 Dual-CAN/Bluetooth Firmware Version:	65.107
DPA 5 Quad-CAN Firmware Version:	67.105

CE

I M P O R T A N T

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.
- ❑ DG assumes no responsibility for any damage resulting from the use of this hardware and software.
- ❑ Specifications presented herein are provided for illustration purposes only and may not accurately represent the latest revisions of hardware, software or cabling.
- ❑ No license is granted, by implication or otherwise, for any patents or other rights of DG or of any third party.

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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 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.

DG 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, steer, and trailer wheels both front and back when testing.
- ❏ Use extreme caution when working around electricity. When diagnosing any vehicle, there is the risk of electric shock both from battery-level voltage, vehicle voltages, and from building voltage.
- ❏ 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 (Class I or Class II).
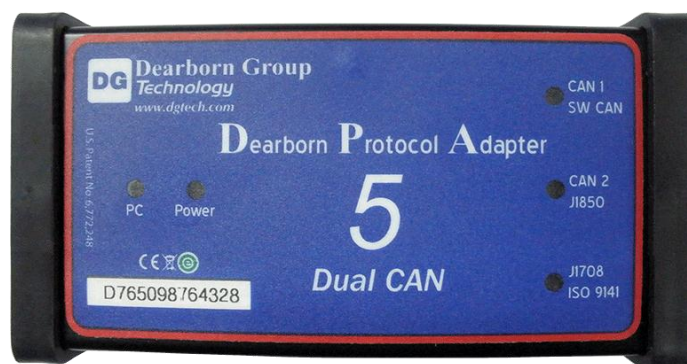
The DPA 5 with Dual CAN Channels and Bluetooth Communications

Bluetooth/USB	Before switching communications modes from USB to Bluetooth and vice-versa, the DPA 5 must be powered off and then back on

2.1.   OEM SOFTWARE COMPATIBILITY

The adapter you have purchased is provided with a Technology and Maintenance Council (TMC) RP1210B-compliant (backwards compatible with RP1210A) 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 adapter you have purchased provides more protocol and standards support than any other commercially available diagnostic adapter.

2.2.1. Operating Systems and Standards Supported

❑ Operating Systems
  o Windows 2000®
  o Windows XP®
  o Windows Vista® 32-bit and 64-bit Versions
  o Windows 7® 32-bit and 64-bit Versions
❑ TMC RP1210A
❑ CE Certification
❑ J1979
❑ Vehicle Electronic Programming Station (VEPS) J2214/J2461

2.2.2. RP1210 Defined Protocols Supported

❑ J1939
❑ J1708/J1587
❑ J1850 GM (Class 2)
❑ CAN (ISO11898)
❑ CAN@500k/J2284/GMLAN
  o Supported under the IESCAN protocol name.

2.2.3. Additional Protocols Supported by Native Drivers

❑ J2411 (GM SWCAN)
❑ ALDL

2.3. SYSTEM REQUIREMENTS

If you are not familiar with selecting a PC for your diagnostic applications, we recommend starting with a computer compatible with the latest version of the TMC RP1208 (PC Selection Guidelines for Service Tool Applications).

In addition to the aforementioned document, the following items are recommended or required.

Item	Requirement
PC	IBM-Compatible
Processor	1GHz or Faster
RAM	256MB (512MB Preferred)
USB Port	USB Version 1.1 or Higher
Operating System	Windows 2000 Windows XP Windows Vista (32-bit or 64-bit) Windows 7 (32-bit or 64-bit)

3.   Windows Vista and Windows 7 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.

3.1.   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 RP1210A standard requires that the RP121032.INI file be located in this directory, along with all of the vendor INI files. 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.

3.2.   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 the Adapter Validation Tool (AVT), showing the Microsoft security shield on the **Fix/Change RP121032.INI File** button.

3.3.   UAC Requirements for All DPA Utility Programs

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

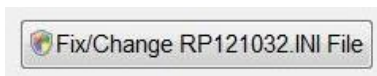| Program	Privileges Required	Notes
Adapter Validation Tool (AVT)	Standard User	Administrator needed for **Fix/Change RP121032.INI File**.
DPA Options	Administrator	
DG Diagnostics	Standard User	Cannot save/record data bus files to a protected directory.
DPA Firmware Updater	Standard User	
Sample Source Code	Standard User	
Bluetooth Configuration	Administrator	
DG Update	Standard User	Standard user can use program but install of new drivers will prompt the user for the administrator password.

3.4.   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".

3.5. SINGLE-APPLICATION VERSUS MULTI-APPLICATION DRIVERS

This release 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 messages. As a result applications 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. Another note is that OEM applications are generally not tested with other applications running at the same time.

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 and diagnostic tests (i.e. cylinder cutout). 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.

4. GETTING STARTED WITH THE DPA (STEPS 1-4 OF 6)

If you ordered the DPA 5 as part of a 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
    - o The cable supports two CAN channels (configured for the Freightliner Cascadia)
- ✓ USB Cable, gold-plated with screw-in ears to secure the cable to the DPA 5 case
- ✓ DPA 5 Installation Disc
- ✓ Printed Quick Start Sheet
- ✓ Bluetooth PC dongle (if a Bluetooth kit was purchased)

Please note that DG Technologies does customize our kits for our vendors, so what you receive may vary.

4.1. DRIVER INSTALLATION

<table>
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- ✓ Install DPA drivers from CD before connecting DPA to your PC.

- ✓ To install drivers you must be logged into the administrator account or have administrator privileges.

- ✓ If you run into problems installing the drivers or the DPA, please do not hesitate to contact technical support at (248) 888-2000.

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Attention!

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</table>

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 2000 and XP:

Start ➜ Run ➜ [CD_Drive_Letter]:\DPA5Install.exe and click **OK**
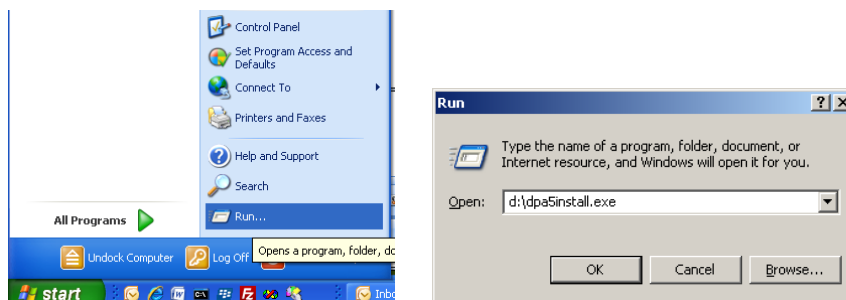
If setup does not begin automatically, use the following sequence for Windows Vista or Windows 7:

Start ➔ All Programs ➔ Accessories ➔ Run ➔ [CD_Drive_Letter]:\DPA5Install.exe and click **OK**
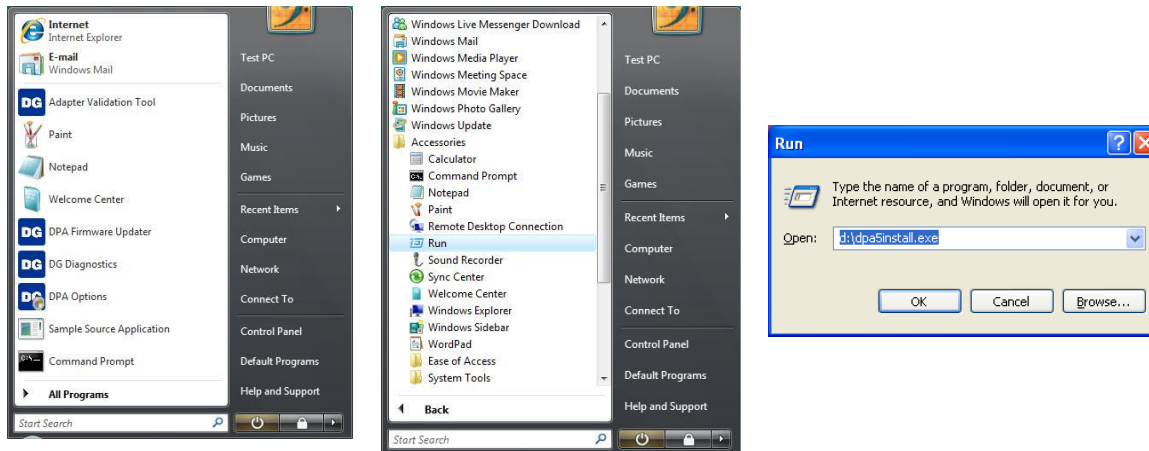
After the drivers are installed, you will be prompted to restart your computer. While your PC is rebooting, continue following the next instructions.

4.2. Connect USB Cable to the DPA and Then to 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

4.1. Connect Vehicle-Side Cable to the DPA

Connect the vehicle-side of the cable (the DB26 connector) to your DPA before you connect to the vehicle (see the note below). Do not connect to vehicle first!

Vehicle-side Cable

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

4.2. Connect Vehicle-Side Cable to the Vehicle

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

5. FINALIZE PC INSTALL (STEP 5 OF 6)

This step differs depending on which version of Microsoft Windows you are installing on.

5.1. FINALIZE PC INSTALL ON WINDOWS 2000, XP, VISTA OR 7 32-BIT

If you are installing on either Vista or Windows 7 64-bit, go to section 5.2 "Finalize PC Install on Vista or 7 64-bit".

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.
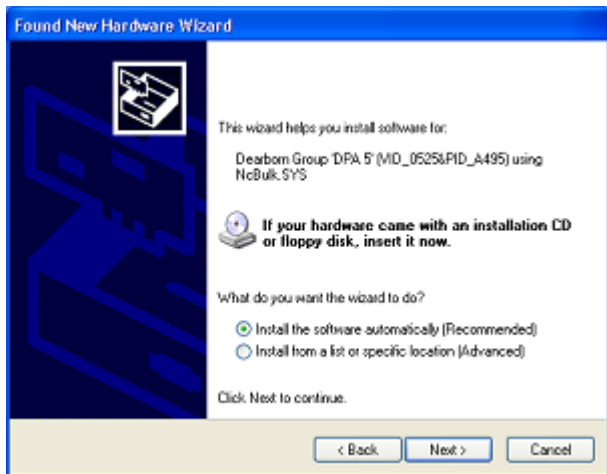
Select **Install the software automatically (Recommended)** and press the **Next** button.
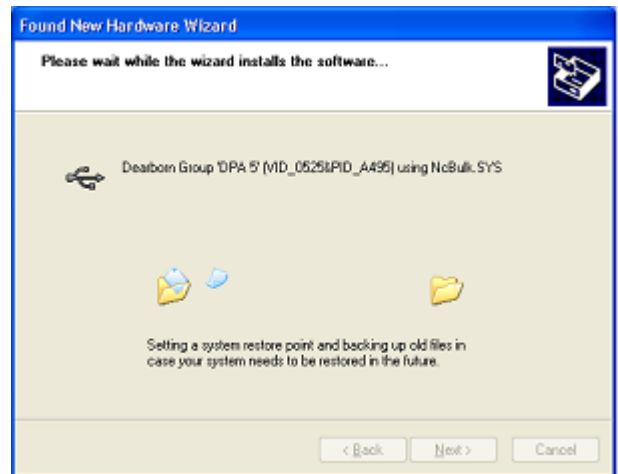
This screen appears while Windows installs the drivers.
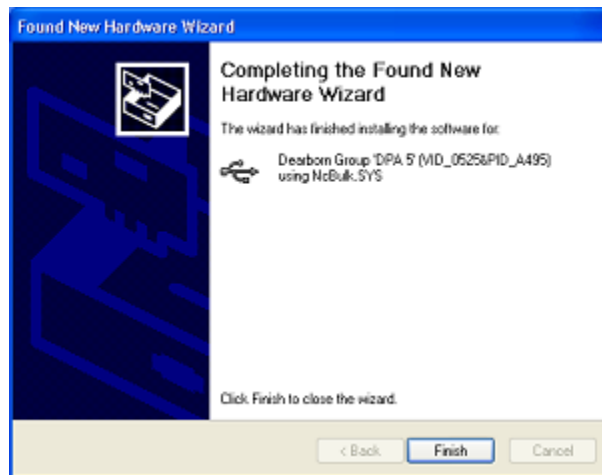
This screen appears when Windows has finished installing the drivers. Press the Finish button. Your DPA drivers have been installed successfully.

5.2. Finalize PC Install on Vista or 7 64-bit

5.2.1. 64-bit Vista and Windows 7 installed successfully

After installing on Vista or Windows 7, simply plug the DPA5 into the PC via the USB cable. The DPA 5 is powered on. The following screen will display in the lower right corner for about five seconds.

Followed by this screen. Your DPA 5 is now ready for use.
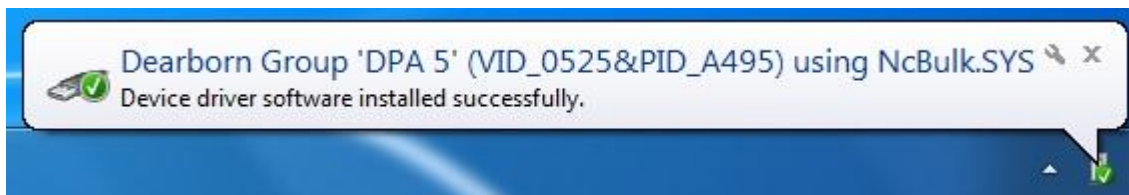
6. AUTOMATIC FIRMWARE UPDATE (STEP 6 OF 6)

When a DPA drivers release is made, a specific set of DPA firmware is validated with that release. In this release the firmware that was validated can be found on the cover page of this manual.

DG strongly recommends that users keep their DPA up-to-date with the latest firmware revision.

Automatic Firmware Update is an option that is most likely turned **On** in your installation. Some customers receive special drivers where this is not the case, however this paragraph assumes that this option is turned on, and set to a value of 1. To learn more about this option, see the chapter entitled **Modifying DPA Settings – DPA 5 Options Program**.

After you have finished installing the Windows device drivers (Step 5 of 6) you can begin using your DPA. If the *Automatic Firmware Update* option is on (by default, it is), every time you connect to the DPA, the drivers check to see if a newer version of firmware is available on the hard drive. If a newer version is available the user will be prompted (see Figure 6.1) to upgrade to that version. If the user selects **Yes,** the upgrade process begins automatically. When the upgrade process is complete, the connect sequence for that application will continue. Most applications can handle the delay; however there is a possibility that the user may have to restart their application.

The following is the dialog box that will be displayed if out-of-date firmware is detected. The version number changes depending on what DPA the user has, and what the current revision of firmware is for that particular DPA type.
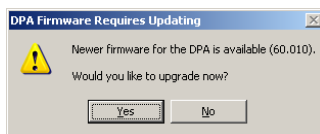
Figure 6.1. DPA Firmware Out of Date Dialog Box

7. 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.

7.1. 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: ✓ J1708 (J1708/J1587) ✓ J1939 ✓ ISO15765 ✓ CAN

7.2. 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).

7.3. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).
10. Click **OK**.

7.4. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).
3. Click **OK**.

7.5. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**) in the RP1210 Communication Adapter Device box.
7. Click **OK**
8. Check **Enable Dual Data Link Service**
9. Click **OK**.

7.6. CUMMINS INSITE

1. Start Program.
2. Click on File ➔ Connections ➔ Add New Connection.
3. Click **Next**.
4. Click radio button for **Datalink Adapter** and click **Next**.
5. Select correct device **DPA 5 Dual-CAN USB (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**), 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**.

7.7. DETROIT DIESEL DIAGNOSTIC LINK V7

7.7.1. From Windows Start Menu

1. Start ➔ Programs ➔ Detroit Diesel ➔ Diagnostic Link ➔ SID configure
2. Select **DPA 5 Dual-CAN USB (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).
3. Click **OK**.

7.7.2. From Inside DDDL

1. Tools ➔ Options ➔ Connections Tab ➔ SID Configure.
2. Select **DPA 5 Dual-CAN USB (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).
3. Click **OK**.

7.8. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**) for both the J1708 and J1939 device.
5. Click **OK**.

7.9. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**) in the J1708, J1939, and CAN dropdowns.
7. Click **Save Settings**.

7.10. INTERNATIONAL TRUCK AND ENGINE

7.10.1. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).

7.10.2. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).

7.10.3. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).

7.10.4. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).

7.10.5. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).

7.11. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**) and click **OK**.

7.12. Volvo/Mack VCADS Pro

7.12.1. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).
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.

7.12.2. 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 (or DPA 5 #[DPA 5 Bluetooth ID] Bluetooth**).
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.**

7.13. 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.

8. TROUBLESHOOTING YOUR DPA

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

8.1. CONNECTION-RELATED ISSUES

After you have installed the DPA drivers and connected the DPA 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 (see chapter 7). Should the DPA 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.

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

When the Adapter Validation Tool software 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. Windows Vista/Windows 7 users will be prompted for administrator privileges.
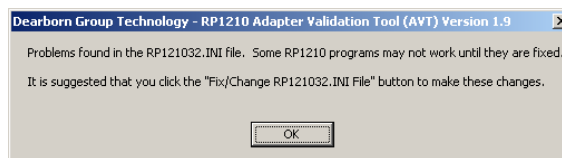
If there is not a problem, the following dialog box will be displayed.
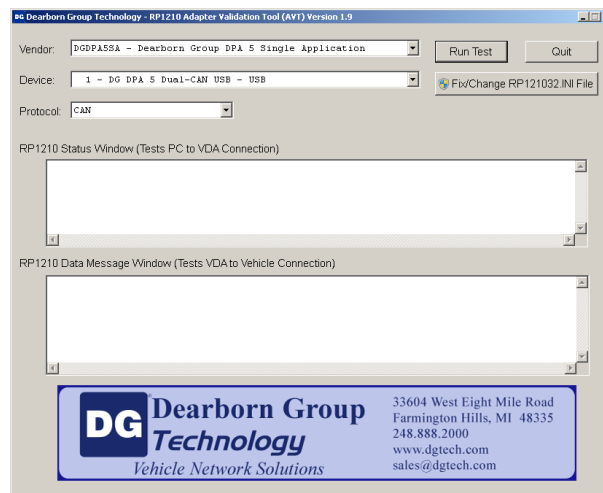
Select the correct DPA adapter:
- ❑ **Vendor**   DGDPA5SA - Dearborn Group DPA 5 Single Application
- ❑ **Device**   1 – DG DPA 5 Dual-CAN USB – USB or

  ### – DPA 5 #[DPA 5 Bluetooth ID] Bluetooth – Auto
- ❑ **Protocol**   J1708 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).

8.1.1. 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 adapter. 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.

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.

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.

### 8.1.2. Good Connection (PC to DPA), Good Read of Data (DPA to Vehicle)
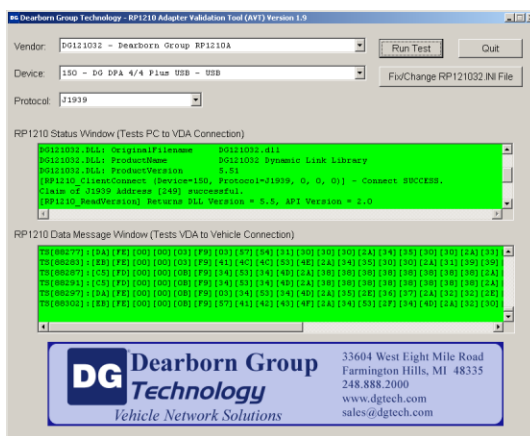
Screen snapshot showing the PC successfully connecting to a DPA
and reading of vehicle data bus data.

8.1.3. 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.
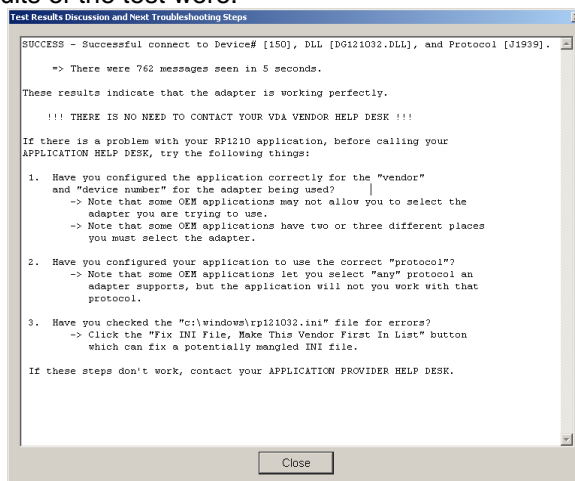
## 8.2. NOT SEEING DPA 5 IN OEM APPLICATION VDA SELECTION LIST

If you have installed the DPA 5 drivers, and your diagnostic application does not display **DG DPA 5 Dual-CAN USB i**n 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 compliant and does not work with the DPA 5.
    a. Some applications require a specific, proprietary adapter.

2. Application is RP1210A 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.

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.
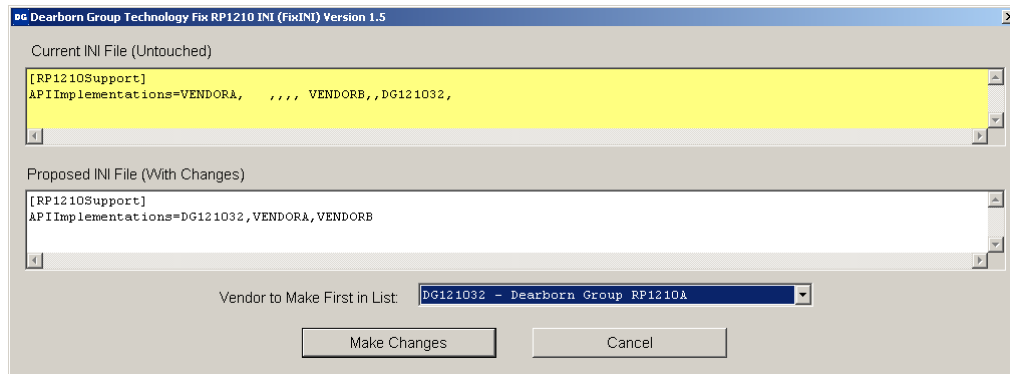
8.3. USB-RELATED ISSUES

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, you are going to get the New Hardware Found wizard again. Repeat Section 4.3, Step 5 (Found New Hardware wizard) for each new USB port.

<p align="center">IF YOU SELECT Cancel, THE DPA WILL NOT WORK!</p>

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

1. Unplug the USB cable from the DPA.

2. Unplug the vehicle-side cable from the vehicle (ensure power is off for 3-5 seconds).

3. Plug the USB cable into the DPA.

4. Reconnect the DPA to the vehicle.

9. 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.
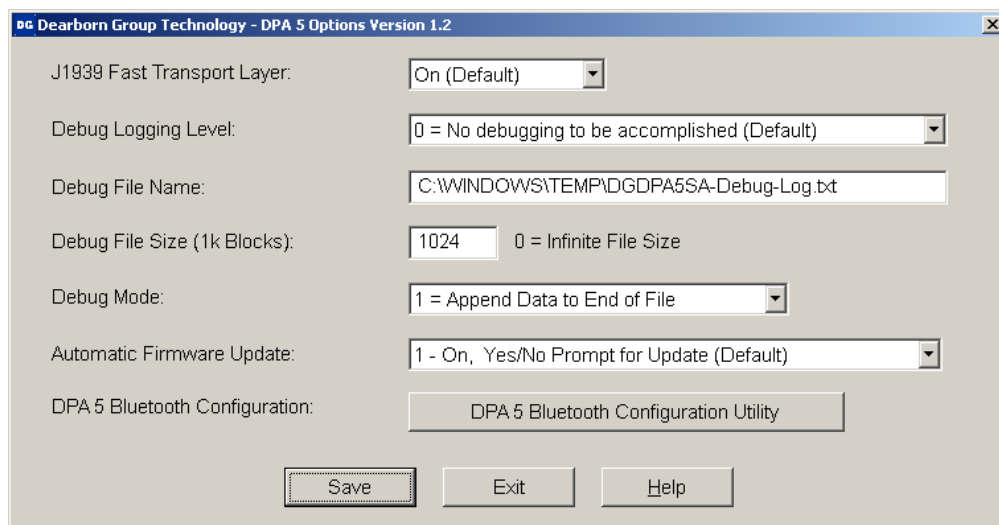
9.1. J1939 Fast Transport Layer (FAST_TRANSPORT Option)

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.

9.2. 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 DGDPA5SA 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.

9.2.1. 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).

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

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

9.2.3. 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).

9.2.4. 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.

9.3. AUTOMATIC FIRMWARE UPDATE

Setting the variable **Automatic Firmware Update** to the **Value** causes the drivers to exhibit the behavior in the **Action** column. For more information on **Automatic Firmware Update**, see the section entitled **Automatic Firmware Update (Step 6 of 6)**.

Value	Action
0	Automatic firmware update is turned off. No automatic checking for new firmware.
1	Automatic firmware update is turned on. The user has a choice as to whether or not to upgrade. If the user selects "Yes", the firmware is automatically updated. If the user chooses "No", then the drivers connect the application to the vehicle. This is the default.
2	Automatic firmware checking is turned on. The user is only told that there is new firmware available and told they should run the DPA Firmware Updater. When the user chooses "Ok", then the drivers connect the application to the vehicle. The user can then update the DPA at their convenience.
3	Automatic firmware update is turned on. The user is told there is new firmware and the firmware is downloaded automatically as soon as they press the "OK" button. When the user selects "Ok", the firmware is automatically updated.

9.3.1. When the Drivers Call the DPA Firmware Updater

In the event that the automatic update is chosen, the DPA drivers launch the DPA Firmware Updater, which handles the downloading of new firmware. Once the firmware has started downloading, the user cannot stop it. The following is the dialog box showing the DPA Firmware Updater during an automatic update:
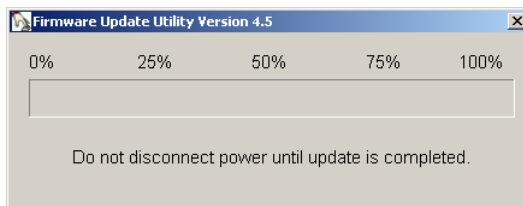
When the update is complete, the following dialog box is displayed and the DPA drivers attempt to let the application that was suspended continue executing. Most applications can handle the interruption; however there is a possibility that the user may have to restart their application.
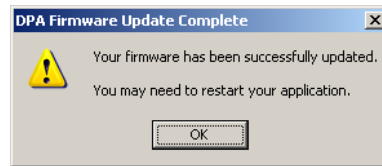
9.4. DPA 5 Bluetooth Configuration Utility

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.

10. Bluetooth and the DPA 5

For information on Bluetooth (including FCC and IC identification), see the Bluetooth Configuration Manual. It can be found in the Windows Start Menu.

11. PRODUCT SPECIFICATIONS

11.1. 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

11.2. DPA 5 PINOUTS

Signal	DPA5 Dual CAN/BT	DPA 5 Quad CAN
Ground	6	6
Power (9-32vdc)	8	8
J1708-	14	14
J1708+	15	15
CAN1 Shield	7	7
CAN1 Lo	12	12
CAN1 Hi	13	13
CAN1 Term 1	3	3
CAN1 Term 2	4	4
CAN TX		
CAN RX		
SW CAN	10	10
ALDL/GM UART	16	16
ALDL RX		
9141 K Line	1	1
9141 L Line	11	11
J1850 Hi	5	5
J1850 Lo		
ATEC Data		
ATEC Diag		
Discrete In		
Discrete Out		
CAN2 Term 1	20	20
CAN2 Term 2	21	21
CAN2 Shield	23	23
CAN2 Lo	22	22
CAN2 Hi	24	24
LIN		
HALDEX		
CAN3 Lo		2
CAN3 Hi		17
CAN3 Shield		18
CAN4 Lo		19
CAN4 Hi		9
CAN4 Shield		25

* 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.

12. DG Update — Program Overview

DG Update is an application that is installed with your DPA drivers. It will run once a month, and will keep you up-to-date with the latest versions of DPA drivers for all your DPA products. With this application running once a month and Automatic Firmware Update (see DPA user manual) turned on, this will always keep your DPAs up-to-date with drivers and firmware! DG recommends our customers keep up-to-date so that your OEM and component manufacturer diagnostic applications run smoothly.

The utility will runs once every 30 days as a user logs on, or it can be invoked manually from the Windows Start Menu:

Start->Programs->Dearborn Group Products->DPA Utilities->DG Update

12.1. DG Driver Update — Internet Connection Required

The DG Driver Update utility depends on successfully connecting to the Internet (to one of DG's servers) to retrieve the latest version numbers of the DPA drivers, files and firmware, and to download the latest drivers if necessary.

Many companies install firewalls and virus protection and these may block the DG server queries and responses. If you are connected to the Internet and have issues running DG Update (getting "Unable to connect to the internet to check for updates." messages), ensure that your firewall or virus protection will allow a connection to the following Internet host/site and port: **fh.dtech.com, port 8888**. There are too many firewall and virus programs on the market to cover in this manual, however if you contact your network administrator and give him the host and port number, he should be able to configure your PC to allow the communication. You may also consult the Windows help system and/or the documentation for your firewall and/or virus protection software.

Due to the nature of TCP/IP communications, errors connecting or sending/receiving of data are slow to appear, however the user will eventually be notified if there was a problem.

12.2. DG Driver Update — Initial Screen

When the utility runs as a user logs on, the following screen will appear in the lower right hand corner of the screen. If you want to check for updates, ensure that your PC is connected to the Internet and click "Continue". Clicking "Cancel" will cause DG Update to wait another month to run. Clicking "Continue" will bring up the main update screen.

12.3.   DG Driver Update – Main Update Screen

The main screen appears looking like this. Depending on which DPA versions are installed on your PC, the grid will display pertinent information about those drivers and firmware. In this case, both the DPA 4 Plus and DPA 5 drivers are installed. When selecting DG Update from the Windows Start Menu, this is the first screen to appear.
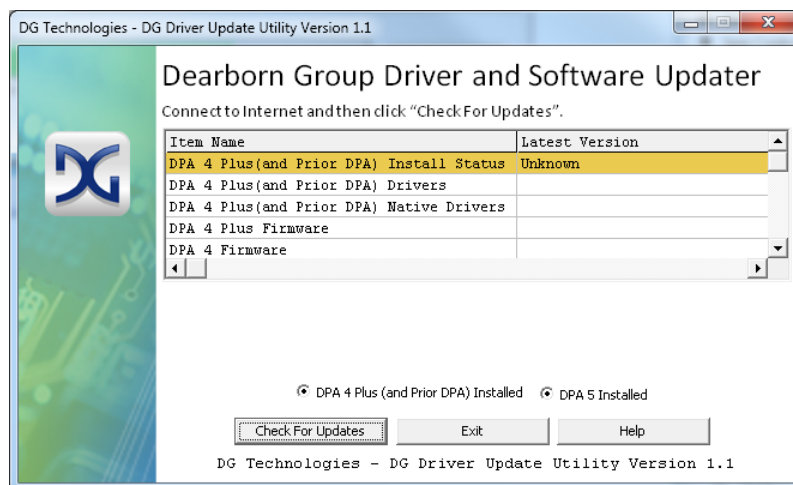
Connect your PC to the Internet and click the "Check For Updates" button. Due to the nature of TCP/IP communications, errors connecting or sending/receiving of data are slow to appear, however the user will eventually be notified if there was a problem.

If the check for updates was successful, the second column of the grid will display information returned from the DG server showing the most current versions and the "Install Status" row will change to red, green or blue.

Note: There are three possible outcomes:

Color	Description
Green	Drivers up-to-date. No update necessary.
Red	Drivers are outdated. Update recommended.
Blue	Drivers on your PC are newer than current version. This usually indicates you are running a "beta" copy of the DPA drivers.

12.3.1. Successful Connect – No Updates Available
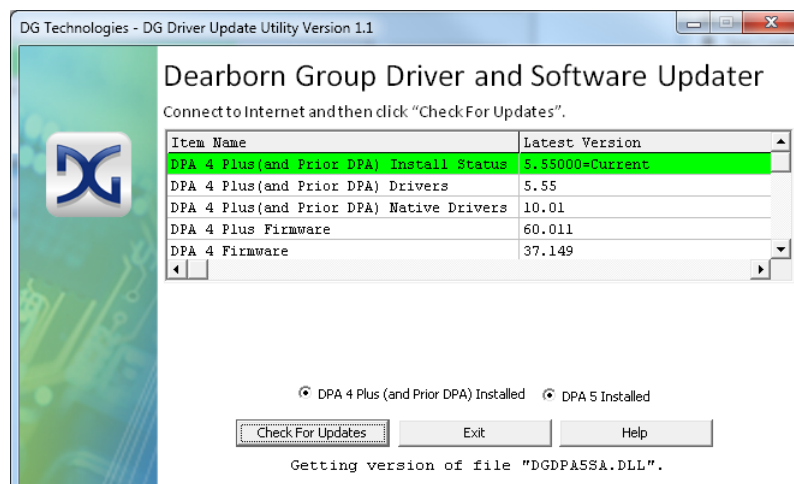
In this case, the DPA 5 and DPA 4 Plus drivers are current (green), and the "Download" button and progress bar do not display (see next paragraph). Clicking "Exit" will exit the program and you will be prompted to update in another month.

12.3.2. Successful Connect – Updates Available
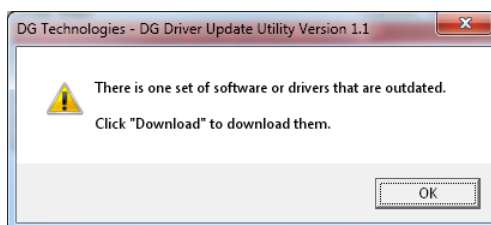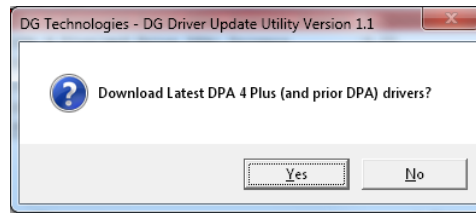

In this case, the DPA 4 Plus drivers are out of date (red), and the "Download" button and progress bar show up on the screen. The progress bar will keep you informed of the download progress should you choose to download the latest drivers by clicking the "Download" button.
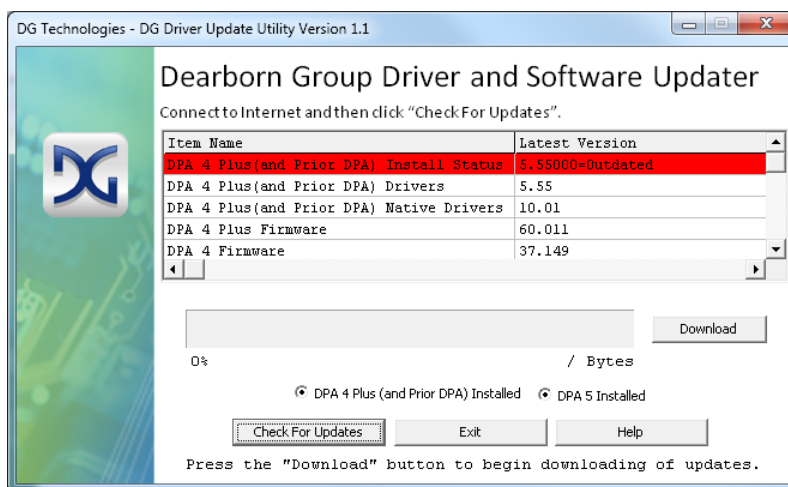
When you click the "Download" button, you will be prompted to confirm starting of the download.

Note: The DG Update application can only download and install one set of drivers at a time. The user will be prompted and can say Yes/No to download whichever one they want to update first. The reason that only one can be downloaded at a time is that the after the drivers are unzipped the installation program begins automatically. The DG Update program must exit because the installation program may have a newer version of the DG Driver Update utility to install.

After choosing "Yes", the program will download the drivers and update the progress bar while doing so.
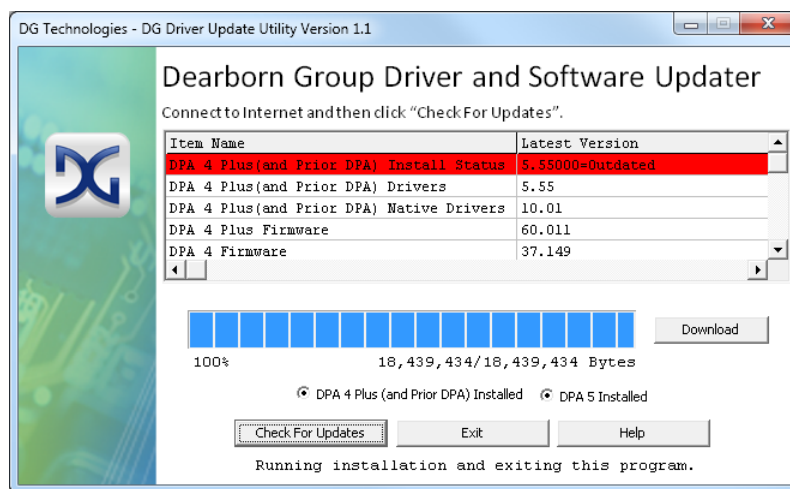
After the drivers have been downloaded (to the Windows "TEMP" directory – if you wish to save them for other machines), they will be unzipped and the program will exit right after starting the new driver installation. Follow the installation instructions in the appropriate DPA User Manual.

13. TECHNICAL SUPPORT AND RETURN MERCHANDISE AUTHORIZATION (RMA)

13.1. 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 representative.

DG Technologies Technical Support

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

13.2. 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:

Product Service/Repairs
Attn: RMA# xxxxxxx
DG Technologies
33604 West 8 Mile Road
Farmington Hills, MI 48335

14. WARRANTY INFORMATION AND LIMITATION STATEMENTS

14.1. WARRANTY INFORMATION

The Dearborn Group, Inc. 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, Inc. 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, Inc. 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)*). A DPA is warranted for 90 days after a warranty repair, or to end of the original factory warranty period, whichever is longer.

14.2. LIMITATION STATEMENTS

14.2.1. General Limitation and Risk Assignment

To the maximum extent permitted by applicable law, Dearborn Group, Inc. 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.

14.2.2. Exclusion of Incidental, Consequential and Certain Other Damages

To the maximum extent permitted by applicable law, in no event shall Dearborn Group, Inc. 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, Inc. or any supplier has been advised of the possibility of such damages.

14.2.3. 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, Inc. 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.

14.2.4. Right to Revise or Update without Notice

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

14.2.5. 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.

14.2.6. Contact

Please direct all inquiries to:

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

15. APPENDIX A – DPA 5 MANUAL FIRMWARE UPDATE

Even though automatic firmware update comes defaulted to "on", there may be a time you need to update your DPA firmware manually. The first step in a manual firmware update is to find which version of firmware you have. You can use the AVT utility after connecting the DPA to a power source.
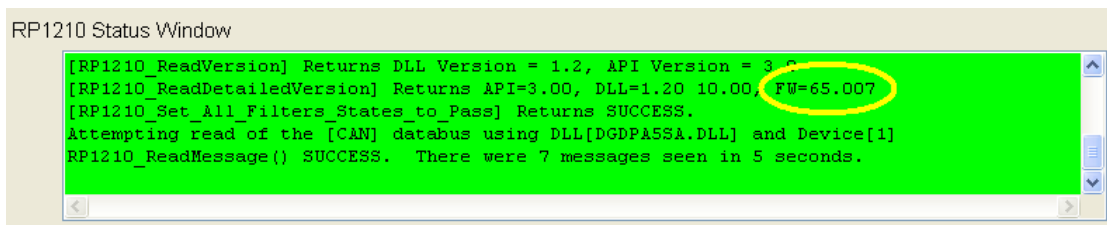
Start ➔ Programs ➔ Dearborn Group Products ➔ DPA 5 ➔ Adapter Validation Tool
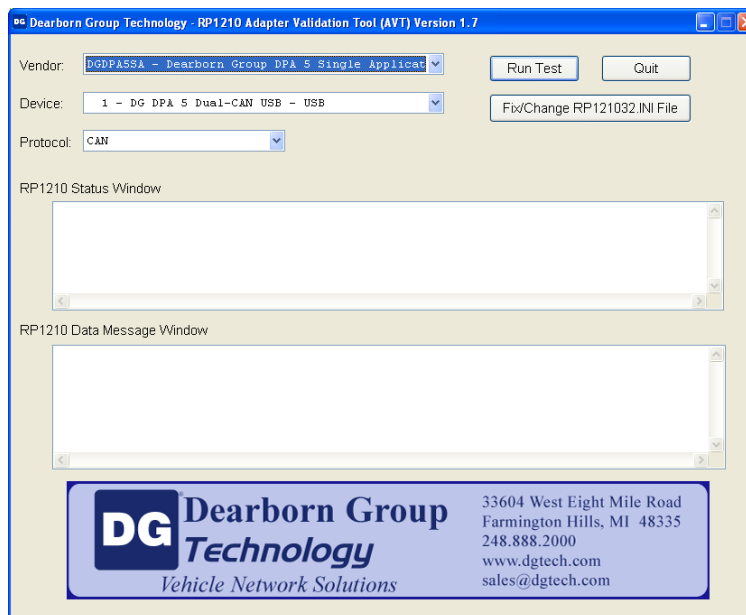
Select the correct DPA adapter:

- ❑ **Vendor**   DGDPA5SA – Dearborn Group DPA 5 Single Application
- ❑ **Device**   1 – DG 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 the correct level (see manual cover page for which version you should be at), then you need to run the DPA Flash Updater outlined in the following steps.

15.1. 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
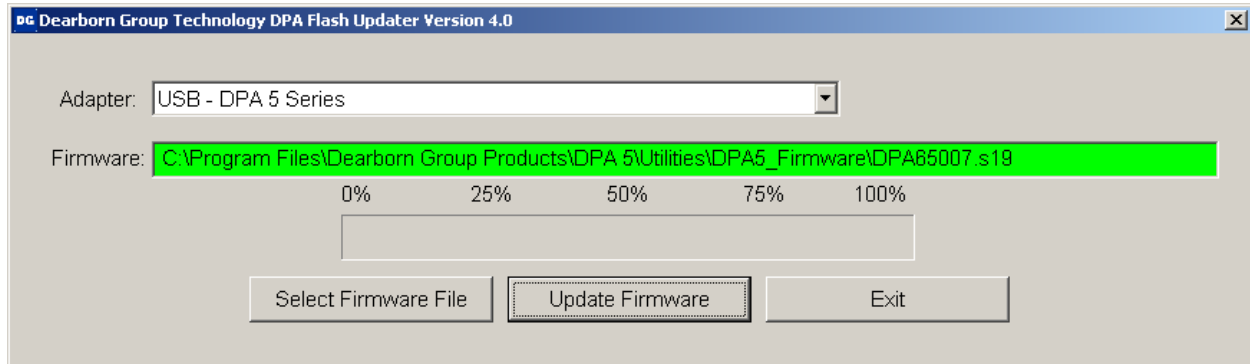
3. Select the correct firmware file (the latest version is already selected by default). If the firmware file exists, the Firmware box will turn green.
   a. NOTE: Firmware files are located in separate sub-directories under the Utilities directory where the DPA drivers are installed, typically:

      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.

16. APPENDIX B – SOFTWARE DEVELOPER/INTEGRATOR NOTES

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

16.1. 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.

16.1.1. Silent Install Command Line

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

The [components to install] can be any combination of the following:
        A = DG 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.

17. APPENDIX D – FCC AND 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.

17.1. INDUSTRY CANADA

Operation of the DPA 5 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.

Changes not expressly approved by Dearborn Group, Inc. to the DPA 5 could void the user's authority to operate the DPA 5. The following is a sample rear label from the DPA 5 depicting the FCC and IC identifiers.
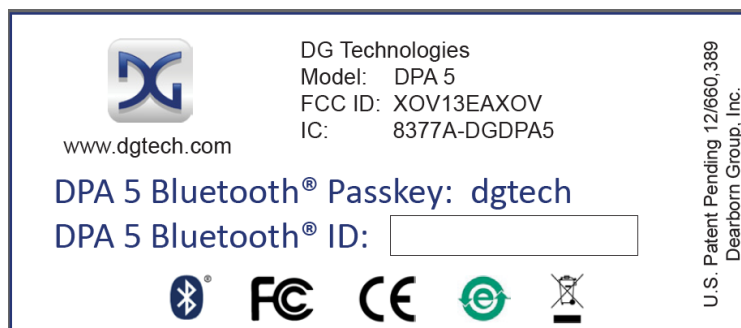
The following are the DPA 5 Bluetooth details as required to be published by the FCC.

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