



DREW TECHNOLOGIES



DrewLinQ User Manual

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Safety Information



The DrewLinQ is designed to be used by those trained in the diagnostics and reprogramming of vehicles and equipment. The user is assumed to have a good understanding of vehicle electronic systems and the potential hazards involved while working in a shop environment. There are numerous safety situations that cannot be enumerated or foreseen, so DrewTech recommends that the user read and follow all safety messages in this manual, on all shop equipment, from vehicle manuals, as well as internal shop documents and operating procedures.

- ❑ Always block/chock all wheels (front and back) when testing.
- ❑ Use caution when working around electricity. There is the risk of shock from vehicle and building-level voltages.
- ❑ Do not smoke, or allow sparks/flame near any part of the vehicle fuel system or vehicle batteries.
- ❑ Always work in an adequately ventilated area. Route vehicle exhaust fumes to the outdoors.
- ❑ Do not use this product where fuel, fuel vapors, or other combustibles could ignite.

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2. Introducing the DrewLinQ

The DrewLinQ is a Vehicle Diagnostic Adapter (VDA) that connects vehicle communication networks to diagnostic or reprogramming software running on a Windows-based personal computer (PC). The DrewLinQ allows software applications to read diagnostic information, monitor parameters, perform component level testing, and reprogram vehicle Electronic Control Modules (ECMs).

The DrewLinQ supports both the Technology and Maintenance Council (TMC) RP1210 and the Society of Automotive Engineers (SAE) J2534 application programming standards.



DrewLinQ Standard Kit (PN# DL-LD-HD-KIT)

Includes 6/9-pin Deutsch "Y" Cable (CBL-DL-FTL-69Y) and Volvo 2013+/OBDII Cable Kit (DL-CBL-VV-KIT-01)

2.1. Operating Systems Supported

- Windows 7® 32-bit and 64-bit Versions
- Windows 8® 32-bit and 64-bit Versions
- Windows 8.1® 32-bit and 64-bit Versions
- Windows 10® 32-bit and 64-bit Versions

2.2. TMC/SAE Standards






- TMC RP1210D (Draft-September-2016), RP1210C, RP1210B, RP1210A
- SAE J2534-1, 04.04 and 02.02 Versions
- J2214/J2461, Vehicle Electronic Programming Station (VEPS)

2.3. Protocols Supported

- CAN (ISO11898-2), 3 High-Speed CAN Channels
 - J1939, ISO15765, CAN, PTCAN, J2284/GMLAN, IESCAN
 - CAN Automatic Baud Rate Detection Supported
 - Supports all CAN baud rates.
- J1708/J1587
- SWCAN (J2411) - Single Wire CAN - 1 Channel
- FTCAN (ISO 11898-3) - Fault Tolerant CAN - 1 Channel
- ISO9141 (K, K+L, 5-baud init)
- ISO14230 (K, K+L, 5-baud init, FAST init)
- J1850 VPW - J1850 Variable Pulse Width
- J1850 PWM - J1850 Pulse Width Modulation
- Allison CEC1
- Automotive Ethernet, ISO13400 (DoIP)
- ALDL - Assembly Line Data Link

2.4. DrewLinQ Light Emitting Diode (LED) Indicators

The following is a table of the DrewLinQ LEDs and what each indicator means. The icons appear left to right.

LED Name	Icon Image	Description
Wireless Data		<input type="checkbox"/> If flashing, indicates wireless traffic between the PC and the DrewLinQ. This is only for wireless versions of the DrewLinQ.
USB Data		<input type="checkbox"/> LED blinks green indicating active USB data transmissions. <input type="checkbox"/> LED solid green indicates an active PC connection to the device, but no USB data transmission. <input type="checkbox"/> LED off indicates you have vehicle power and a USB port connection, but not connected and no USB data transmission. <input type="checkbox"/> LED is red if plugged into vehicle power, but not into a USB port.
Vehicle Power		<input type="checkbox"/> LED on, indicates power from the vehicle or external power.
Vehicle Data		<input type="checkbox"/> Blinks to indicate messages are being seen on the data bus. <input type="checkbox"/> Solid green if a "software connection" has been made.
Power		<input type="checkbox"/> Solid green indicates power to the microprocessor.

3. Installing the DrewLinQ

STOP!!!



Please Read The Following Instructions!!!

1. Log onto the PC as an Administrator. The account you log into must have Administrator privileges to install the drivers.
2. Connect your PC to the Internet. Internet access is required to activate the DrewLinQ. The DrewLinQ cannot be used until it is activated. You can run the install and then activate the DrewLinQ at a later date, however it will not work until it has been activated. If you need to activate it later, the instructions for doing so are in "[Chapter 4, Activating the DrewLinQ](#)".
3. Run the DrewLinQ installation (DrewLinQ_Setup.exe) from the DrewLinQ CD.
4. Follow onscreen instructions to complete product installation and activation.

3.1. If Install Does Not Run When Inserting the CD into the PC

If setup does not begin automatically, you can manually run the install through the Windows Start Menu:

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

3.2. Latest Drivers

The latest drivers are always available for download at www.drewtech.com.

4. Activating the DrewLinQ

To help deter unauthorized hardware reproductions (a.k.a. "knock-offs" or "clones"), each DrewLinQ must be activated before it can be used. The activation process is part of the installation, however if an internet connection is not available during installation, it can be ran at any time from the Windows Start Menu:

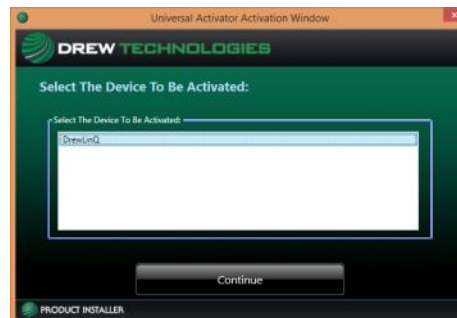
- ❑ Start → All Programs → Drew Technologies, Inc. → Universal Activator → DrewTech Activator

The activation process is simple.

- ❑ Ensure you have a good internet connection and then plug the DrewLinQ into the PC.
- ❑ Run the activator which is part of the installation, or from the Windows Start Menu. The following screen appears:



- ❑ Press the "Activate My Device!" button and the following screen will be displayed. Select the "DrewLinQ" entry and press the "Continue" button.

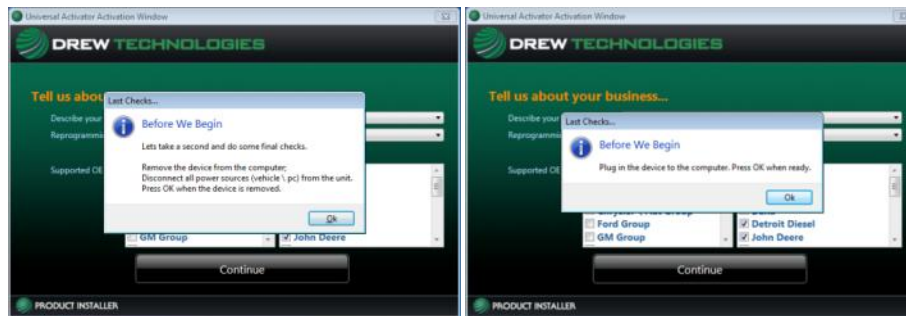


- ❑ The next screen will be displayed. Please fill out the form in its entirety and press the "Continue" button. DrewTech uses this information for warranty purposes and not for unsolicited e-mails or telephone calls (SPAM). We may send information from time to time about updates to drivers or other pertinent product information.

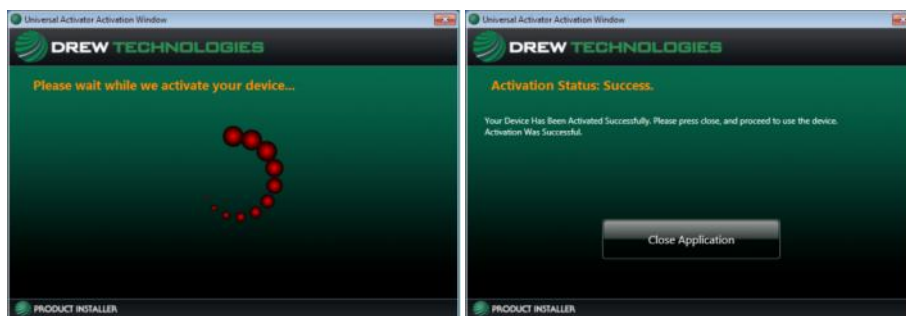
- The next screen will be displayed asking which OEMs or component suppliers you provide service for and how experienced you are at diagnostics and reprogramming. This allows us to send specific product bulletins. Please select each OEM or component supplier and after filling in the data, press the "Continue" button.



- The next steps ensure the DrewLinQ can be recognized by the PC after a disconnection (USB drivers properly installed and working). Press the OK button after removing the DrewLinQ from the PC. After the activator sees the DrewLinQ removed, it will tell you to reinsert it. After the activator sees the DrewLinQ, it will bring up another dialog box. Press OK to continue.



- After the activator has seen the DrewLinQ device disconnect and connect, it will send the information to a DrewTech server and complete the product activation. Press the "Close Application" button to continue.



5. Troubleshooting the DrewLinQ with VDA Validation Tool (VVT)

Most support calls are from users who have not correctly configured the application to use the DrewLinQ or who have selected the incorrect protocol and/or CAN channel. The VVT application is the first tool that DrewTech support personnel use to troubleshoot the DrewLinQ.

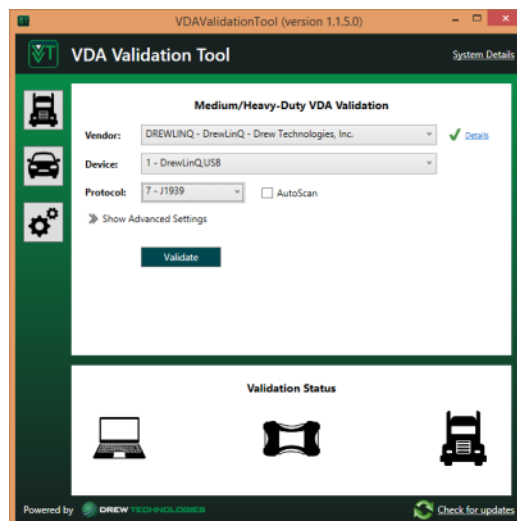
If the application you are running is having trouble using the DrewLinQ, read the chapter in this manual ([Setting Up RP1210 Applications](#)) on configuring the application to use the DrewLinQ. If you have ensured the application is configured properly, you can use the VDA Validation Tool(VVT) to troubleshoot the DrewLinQ. DrewTech encourages DrewLinQ users to use VVT to ensure end-to-end communications before starting any application using the DrewLinQ.

The VVT application:

1. Ensures the VDA drivers are installed properly.
2. Determines if the PC can communicate with the DrewLinQ.
3. Determines if the DrewLinQ can see messages on the vehicle.
4. Provides information about the version of drivers and firmware that are installed.
5. Provides information about the PC (Windows version, memory, Java, .NET, etc).

Here are the basic troubleshooting steps:

1. Connect the DrewLinQ to the vehicle and ensure the Vehicle Power LED is illuminated.
 - 1.1. Not seeing the Vehicle Power LED illuminated usually indicates the ignition key is not on. The PC will be able to see the DrewLinQ, but the DrewLinQ will not be able to read messages from the vehicle databus.
2. Connect the DrewLinQ to the PC and ensure the Power LED is illuminated.
 - 2.1. Not seeing the Power LED illuminated usually indicates an inoperative USB port (very common among heavily used service-bay diagnostic PCs). Try another USB port until the LED becomes illuminated and you can hear the "dah-ding" Windows "USB device found" sound.
3. Start the VDA Validation Tool (VVT) application using the icon on the desktop.



VVT Main Screen (RP1210 Test)

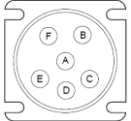
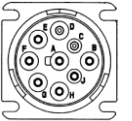
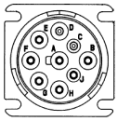
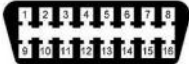
4. Follow the instructions in the next chapters for troubleshooting using the [RP1210](#) or [J2534](#) standards.

6. Troubleshooting RP1210 Devices

Most Heavy-Duty (HD) and Medium-Duty (MD) applications are based on the TMC RP1210 standard. Click on the icon of the truck if your application uses the RP1210 standard. The most common connectors for HD/MD are the 6-pin or 9-pin Deutsch connectors (typically grey, black, or green). The most common protocols for HD/MD are J1939 and J1708. For the 2013 (or newer) Volvo chassis with Volvo engine that has the OBDII connector, see "[Appendix A - Volvo/Mack 2013 and Newer Vehicles](#)" for the special description and testing required of this platform.

6.1. Common HD/MD Connectors and Typical Protocols to Test

This table shows the most commonly found connectors and the potential protocols on them. It also shows what can be tested using the "simple" Vendor/Device/Protocol test, and also what can be tested using the "Advanced Settings" information (CAN Channel/Baud Rate).

Connector				
Connector	6-pin Deutsch	9-pin Deutsch J1939 Type I - Black	9-pin Deutsch J1939 Type II - Green	Volvo 2013 and Newer (Modified OBDII)
Simple Test	❖ J1708	❖ J1708 ❖ J1939	❖ J1708 ❖ J1939	❖ J1708 ❖ ISO15765 ❖ CAN
Advanced Settings Test	❖ None	❖ CAN on Channel 1/2, Auto Baud ❖ J1939 on Channel 1/2, Auto Baud ❖ ISO15765 on Channel 1/2, Auto Baud ❖ IESCAN on Channel 1/2, Auto Baud	❖ J1939 on Channel 1/2/3, Auto Baud ❖ CAN on Channel 1/2/3, Auto Baud ❖ ISO15765 on Channel 1/2/3, Auto Baud ❖ IESCAN on Channel 1/2/3, Auto Baud	❖ CAN on Channel 1/2/3, Auto Baud ❖ J1939 on Channel 1/2/3, Auto Baud ❖ ISO15765 on Channel 1/2/3, Auto Baud

6.2. Validating a J1939 or J1708 Vehicle - Simple Test

If you are connecting to a J1708 or J1939 vehicle that is using a black or grey 6-pin or 9-pin Deutsch connector, follow these instructions. If you are connecting to a J1939 vehicle with a green 9-pin Deutsch connector you will need to use the "Advanced Settings" fields (next subsection).

- 1) Select the DrewLinQ using the Vendor, Device, Protocol dropdown boxes:

Vendor: DREWLINQ - DrewLinQ - Drew Technologies, Inc.
Device: DrewLinQ, USB
Protocol: J1939 or J1708

Medium/Heavy-Duty VDA Validation

Vendor:

Device:

Protocol: AutoScan

» Show Advanced Settings

Selecting DrewLinQ and the J1939 Protocol

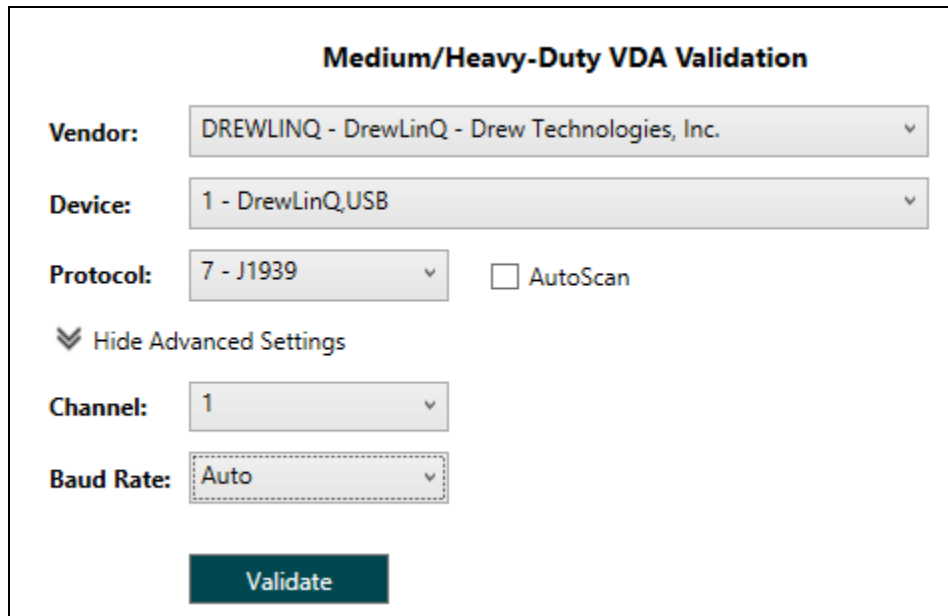
- 2) Click the Validate button.
- 3) The possible test results are described below in section "[6.4. Validation Test Results](#)".

6.3. Validating J1939@500k or Multi-CAN-Channel Vehicles - Advanced Settings

If you are connecting to a vehicle using the new green 9-pin Deutsch connector, or you want to check the status of a CAN channel other than CAN channel 1 (the default), follow these instructions.

- 1) Click the hyperlink ">> Show Advanced Settings".
- 2) Select the DrewLinQ using the Vendor, Device, Protocol dropdown boxes:

Vendor: DREWLINQ - DrewLinQ - Drew Technologies, Inc.
Device: DrewLinQ, USB
Protocol: J1939, CAN, or ISO15765
Channel: 1 or the CAN channel you want to test with
Baud Rate: Auto



The screenshot shows a web form titled "Medium/Heavy-Duty VDA Validation". It contains several dropdown menus and a checkbox. The "Vendor" dropdown is set to "DREWLINQ - DrewLinQ - Drew Technologies, Inc.". The "Device" dropdown is set to "1 - DrewLinQ,USB". The "Protocol" dropdown is set to "7 - J1939". To the right of the "Protocol" dropdown is an unchecked checkbox labeled "AutoScan". Below the "Protocol" dropdown is a link with a downward arrow icon labeled "Hide Advanced Settings". The "Channel" dropdown is set to "1". The "Baud Rate" dropdown is set to "Auto". At the bottom of the form is a dark green button labeled "Validate".

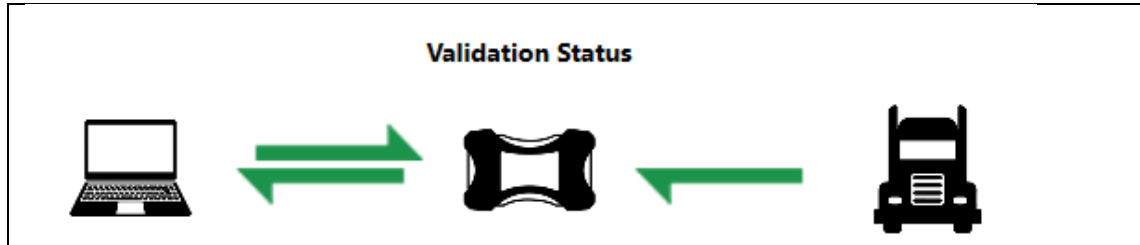
Selecting DrewLinQ and the J1939 Protocol (CAN Channel 1, Auto Baud Detect)

- 3) Click the Validate button.
- 4) The possible test results are described below in section "[6.4. Validation Test Results](#)".

6.4. Validation Test Results

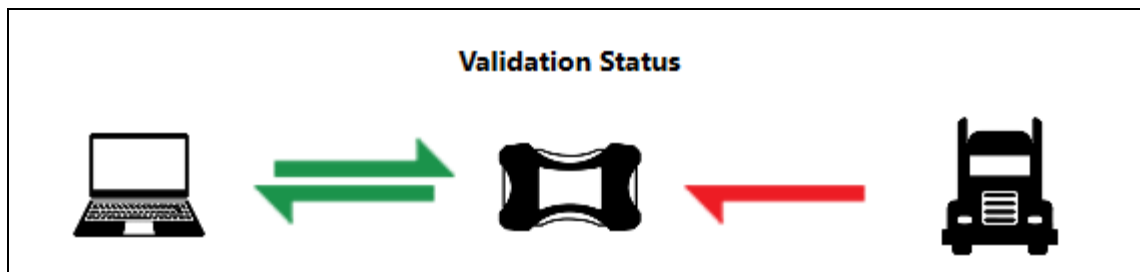
6.4.1. Green/Green - PC to DrewLinQ Successful, DrewLinQ to Vehicle Successful

- ✓ The green arrows between the picture of the PC and the picture of the DrewLinQ indicate that there was a successful connection between the PC and the DrewLinQ device.
- ✓ The green arrow between the picture of the DrewLinQ and the picture of the truck indicate that there were messages seen on the vehicle.



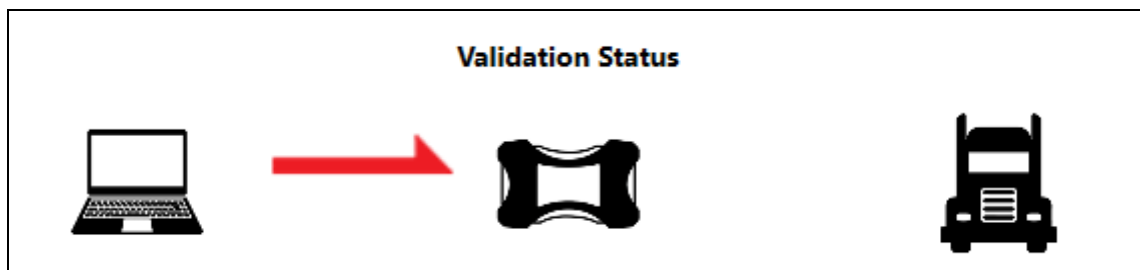
6.4.2. Green/Red - PC to DrewLinQ Successful, DrewLinQ to Vehicle Failure

- ✓ The green arrows between the picture of the PC and the picture of the DrewLinQ indicate that there was a successful connection between the PC and the DrewLinQ device.
- ✓ The red arrow between the picture of the DrewLinQ and the picture of the truck indicate that there were no messages seen on the vehicle using the selected protocol (and/or CAN channel).
- ✓ It is possible the ignition is turned off, or the wrong protocol/CAN channel was selected.



6.4.3. Red/Blank - PC to DrewLinQ Failure, DrewLinQ to Vehicle Not Tested

- ✓ The red arrows between the picture of the PC and the picture of the DrewLinQ indicate that there was a failure connecting to the DrewLinQ.
- ✓ Since connecting to the DrewLinQ failed, there were no attempts to read messages from the vehicle...
- ✓ Try a different USB port on the PC. If that fails, reboot the PC and retry all USB ports.

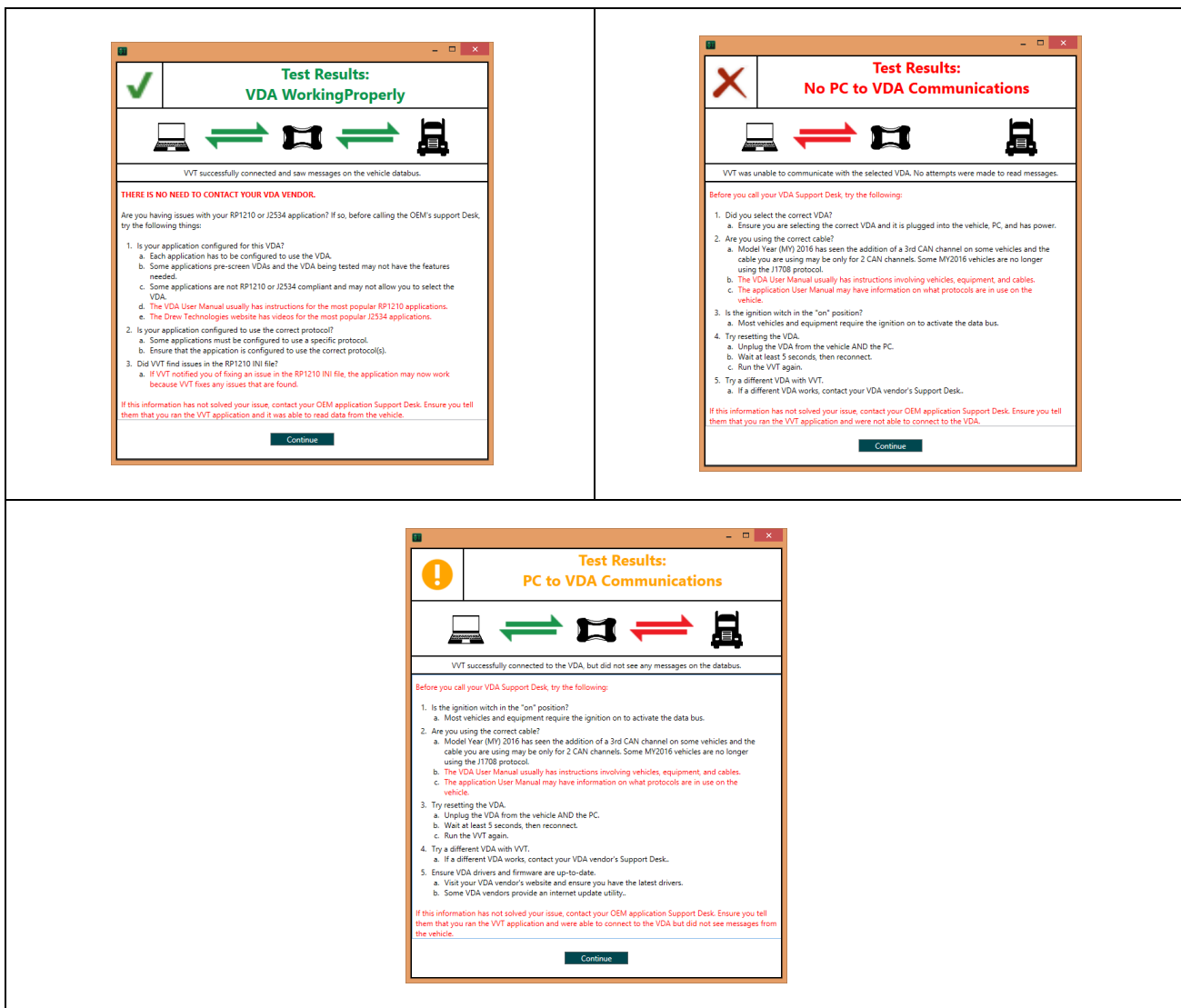


6.5. Troubleshooting Suggestions and Next Steps

After a test has been completed, a window will appear with instructions on how to self-diagnose and resolve potential issues. For example:

- ❑ If you get Green/Green (image on the top left), the DrewLinQ is working perfectly. Your focus should be on configuring your application to use the DrewLinQ and/or select another protocol or CAN channel.
- ❑ If you get Red/Blank (image on the top right), then there is something wrong with the USB port or drivers that is keeping the PC from seeing the DrewLinQ. You should probably focus on USB ports.
- ❑ If you get Green/Red (bottom image), then VVT could not see or provoke a response on the selected protocol (and/or CAN channel). You should try another protocol, CAN channel, and ensure the ignition is turned on.

Following these instructions will probably resolve your problem, however if after trying all of the protocols mentioned for your connector, don't hesitate to call our technical support personnel at (734) 222-5228; Option 3.



7. Troubleshooting J2534 Devices

The VVT application does not yet support troubleshooting of J2534 devices. If you need help troubleshooting a J2534 application using the DrewLinQ, don't hesitate to call our technical support personnel at (734) 222-5228; Option 3.

8. Heavy-Duty and Medium-Duty Software Compatibility

DrewLinQ has Technology and Maintenance Council (TMC) RP1210D (Draft-September-2016), RP1210C, RP1210B, and RP1210A compliant drivers. Any application that claims to be completely RP1210 compliant should work as long as the DrewLinQ supports the protocols needed by that application. DrewLinQ has been validated with the most common OEM and component applications:

- ❑ Allison DOC
- ❑ Bendix ACOM
- ❑ Caterpillar Electronic Technician*
- ❑ Cummins INSITE™
- ❑ Cummins INSITE™ Fault Viewer
- ❑ Cummins PowerSpec
- ❑ Dana Diagnostic Tool
- ❑ Detroit Diagnostic Link
- ❑ Eaton ServiceRanger
- ❑ International Diamond Logic Builder
- ❑ International NavKal
- ❑ International ServiceMaxx (J1939, J1708)
- ❑ Meritor-WABCO Toolbox
- ❑ Noregon - JPRO™ Professional
- ❑ PACCAR DAVIE**
- ❑ Perkins EST*
- ❑ PocketFleet PF-Diagnose
- ❑ RA Consulting - Silver Scan Tool
- ❑ Volvo/Mack Premium Tech Tool (PTT)

* See the addendum on CAT ET for special notes regarding this software.

** Supposedly PACCAR DAVIE is RP1210 compliant, but has not been tested.

Below are specialty apps, outdated apps, or are being replaced. The DrewLinQ should work with them as well.

- ❑ Detroit Diesel Diagnostic Link
- ❑ Detroit Diesel Reprogramming Station
- ❑ Freightliner ServiceLink
- ❑ International InTune
- ❑ International IPC Fleet
- ❑ International Master Diagnostics
- ❑ Mack/Volvo VCADS
- ❑ Vansco VMMS
- ❑ ZF-Meritor TransSoft

9. Light-Duty/Medium-Duty J2534 Software Compatibility

DrewLinQ has SAE J2534 compliant drivers that support the J2534 04.04 and J2534 02.02 API standards. Any application that claims to be completely J2534 (04.04) or J2534 (02.02) compliant should work as long as DrewLinQ supports the protocols and features needed by that application.

- ❑ If your OEM diagnostic/reprogramming software is not listed, it may still work. In the event it does not, a DrewTech CarDAQ or a Mongoose product should work. Feel free to contact DrewTech with any questions.

DrewLinQ is able to diagnose and reprogram vehicles using the J1850VPW, J1850PWM, ISO9141, ISO14230, and ISO15765 OBDII/J1979 protocols with the following exceptions:

- ❑ DrewLinQ does not support the application of a programming voltage, nor grounding of pins, which are needed for various reprogramming applications. For these vehicles, the CarDAQ or Mongoose is the best option. Feel free to contact DrewTech with any questions.

DrewLinQ has been validated against the following applications using the following protocols:

- ❑ Chrysler J2534 Application (11-bit CAN)
- ❑ DashLogic - PassThruScope (11-bit/29-bit CAN, ISO15765, J1850VPW, J1850PWM, ISO9141, ISO14230)
- ❑ Ford Module Programming (CAN Vehicles)
- ❑ General Motors SPS (J1850VPW/11-bit CAN)
- ❑ General Motors GDS2 (11-bit CAN on pins 6,14)
- ❑ Hino DIAGNOSTIC EXPLORER (DX2)
- ❑ Toyota CUW (11-bit CAN)

9.1. Setting Up J2534-Compliant Applications

Setting up and reprogramming using a J2534-compliant application is not part of this manual. DrewTech offers many videos describing the diagnostic adapter selection, also known as Vehicle Communications Interface (VCI), and reprogramming processes. They can be found at www.drewtech.com.

10. Setting Up Common Applications for the DrewLinQ

This section shows how to configure the most common RP1210-compliant applications to work with the DrewLinQ. Since Hino is a medium-duty vehicle so Hino DX2 (a J2534 application) is included in this section as well.

10.1. Allison DOC

1. Click the F4-Connect to vehicle icon.
2. Select the correct transmission type.
3. Uncheck Smart Connect.
4. Click Connect.
5. Click Advanced Setup.
6. Select vendor of DREWLINQ.
7. Select protocol of J1939 or J1708.
8. Select correct device of DrewLinQ, USB
9. Click OK.

10.2. Bendix ABS Diagnostics

1. Click the Communication Device Options icon.
2. Select DrewLinQ, USB
3. Click the green check mark icon.

10.3. Caterpillar Electronic Technician (CAT ET) and Notes

1. Click Utilities → Preferences → Communications from the menu bar.
2. Click on Communication Interface Device dropdown box.
3. Select RP1210 Compliant Device.
4. Click Advanced
5. Select DrewLinQ, USB.
6. Click OK
7. Check Enable Dual Data Link Service*
8. Click OK.

- Enable Dual Data Link. This checkbox should be checked for most cases. However, some older J1708 (ATA) only vehicles and industrial stationary equipment will not work with it checked. If ET does not connect, uncheck this box.
- The DrewLinQ product line does not support the CAT Data Link (CDL) protocol that is still common among certain CAT off-highway vehicles and industrial stationary equipment. CDL is a **proprietary protocol** and requires you go to your local CAT distributor and purchase a CAT adapter. To determine if you need to purchase a CAT branded adapter, see "[Appendix B - CAT Electronic Technician \(ET\) Compatibility](#)".

10.4. Cummins INSITE

1. File → Connections → Add New Connection.
2. Click Next.
3. Click radio button for RP1210 Adapters and click Next.
4. Select correct vendor, device, and choose Auto Detect for the protocol:
5. DrewLinQ - Drew Technologies, Inc.
6. DrewLinQ, USB
7. Auto Detect
8. Click Next.
9. Name the connection "DrewLinQ-USB - Auto Detect - RP1210A"
10. Click Next
11. Click on make this connection active.
12. Click Finish

- ❑ If you want to define a DrewLinQ entry for J1708 and J1939 individually, you can repeat steps 1-4 and name the entries based on the protocol, for example "DrewLinQ-USB - J1939 - RP1210A"

10.5. Dana Diagnostic Tool

1. Under Adapter Selection, choose DrewLinQ - Drew Technologies, Inc.: DrewLinQ, USB
2. Select Connect J1708 or Connect J1939 depending on your ECM.

10.6. DashLogic - PassThruScope

1. Under Connection Settings section, click "Add Channel".
2. Give the channel a descriptive name such as "CAN1-250k", "CAN1-500k", etc.
3. Select DrewLinQ under J2534 Device. The J2534 Driver will be filled in automatically.
4. Select Device Instance of 0.
5. Select the protocol you want attached to this channel (i.e. CAN).
6. Choose the baud rate desired for the protocol, such as 250000 or 500000.
7. Select the connector you are using and which pins the protocol is on (i.e. J1962 Pin 6 & 14).
8. Either set specific connect flags (not usually needed), or just Click OK.
9. Click the "Save Config" button on the menu bar and save the configuration to a file.

10.7. Detroit DiagnosticLink 8

1. Click Tools → Options → SID Configure.
2. Select DrewLinQ, USB.
3. Click OK.

10.8. Eaton ServiceRanger

1. Choose Go To → Settings
2. Choose "DrewLinQ - Drew Technologies, Inc. (DREWLINQ)"
3. Select the correct J1587 and J1939 options for the vehicle you are connecting to.
4. For J1939, choose the correct CAN channel, and use the "Speed:Auto" setting.
5. Click Apply.

10.9. Hino DIAGNOSTIC EXPLORER (DX2)

1. Click Settings (S) → Communication setting (D)
2. In the "Select Interface" dropdown select DLNQ0202.
3. Click OK.

10.10. NAVISTAR ServiceMaxx J1708

1. Choose Tools → Select Com Link → DrewLinQ - Drew Technologies, Inc → DrewLinQ, USB

10.11. NAVISTAR ServiceMaxx

1. Choose Tools → Select Com Link → DrewLinQ - Drew Technologies, Inc → DrewLinQ, USB
2. Select either J1939 or KWP2000 depending on your ECM.

10.12. NAVISTAR Diamond Logic Builder (DLB)

1. Choose Tools → Select Com Link → DrewLinQ - Drew Technologies, Inc → DrewLinQ, USB

10.13. Meritor-WABCO Toolbox

1. Click Utilities Icon
2. Select DrewLinQ - Drew Technologies, Inc.
3. Select the protocol to use based on the vehicle connection, J1939 or J1708.
4. Select DrewLinQ, USB.

10.14. Noregon JPRO^(tm) Professional

1. Instructions for this application are pending.

10.15. PocketFleet PF-Diagnose

1. Click Tools → Setup Defaults.
2. Under Select Primary Protocol:
 - a. J1939 HD and Ind.
3. Under CAN Channel:
 - a. Select the correct CAN channel (CAN 1 is most common).
4. Check the "Connect with both J1708 and J1939" checkbox.
5. In both "RP1210 Adapter" and "J2534 Pass-Thru" boxes, select the DrewLinQ.
6. Click the Save button.

10.16. RA Consulting Silver Scan Tool

1. Click Options → Interface
2. Select table entry showing DrewLinQ, USB and Interface Type of RP1210 (for J1939) or Interface Type of PassThru for OBDII protocols.

10.17. Volvo/Mack Premium Tech Tool (PTT)

1. Click Settings icon.
2. Click Communication Unit tab.
3. Click Configuration icon.
4. Select Advanced Settings button.
5. Select DrewLinQ.
6. Click the OK button.
7. Select the DrewLinQ entry in the Communication Unit tab and press the Activate button.
8. Select the OK Button.

- Volvo/Mack PTT is very finicky about VDA connections. **Never press the "Connect" button.** If you do the connection usually fails. Just wait a few minutes for PTT to establish its own connection. If connection doesn't occur, re-boot the PC.

11. Product Specifications

11.1. DrewLinQ Physical and Electrical

Feature	Data
Dimensions (approximately)	6" (length) x 3.75" (width) x 1.25" (height)
Voltage Requirements	8 to 32 Volts DC
Current Requirements	300mA maximum within voltage range
Operating Temperature Range	0 to 70 Degrees Celsius
PC Communications Type	USB Version 1.1 or Higher

11.2. DrewLinQ Pinouts High-Density DB26

Pin	Protocol 1	Protocol 2	Protocol 3	Protocol 4
1	SW_CAN	FT_CAN+		
2	J1850+ (VPW/PWM)			
3	CAN2+	GM_UART	DolP Ethernet TX+	CEC1 Enable
4	Case Ground			
5	Signal/Battery Ground			
6	CAN1+			
7	ISO9141/ISO14230 K-Line	J1708+ (J2534 PS)		
8	DolP Ethernet Sense			
9	CEC1	FT_CAN-		
10	J1850- (PWM)			
11	CAN2-	ISO9141/ISO14230 K-Line	DolP Ethernet TX-	
12	J1708+ (Primary)	CAN3+	DolP Ethernet RX+	GM_UART
13	J1708- (Primary)	CAN3-	DolP Ethernet RX-	
14	CAN1-			
15	ISO9141/ISO14230 L-Line	J1708- (J2534 PS)		
16	V+ Battery (8-32V)			
17	Do Not Connect			
18	Do Not Connect			
19	Reserved/TBA			
20	Do Not Connect			
21	Do Not Connect			
22	Do Not Connect			
23	Do Not Connect			
24	Reserved/TBA			
25	Reserved/TBA			
26	Signal/Battery Ground			

12. Technical Support and Return Merchandise Authorization (RMA)

12.1. Technical Support

Technical support is available from 8:30 a.m. to 5:30 p.m. Eastern Time.



DrewTech Technical Support

Phone: (734) 222-5228 Option 3

E-mail: support@drewtech.com

12.2. Return Merchandise Authorization (RMA)

If Technical Support has determined a physical problem may exist, they will issue an RMA number. Please return the DrewLinQ and all cables along with any proof of purchase to the following address:



DrewTech Product Support

Attn: RMA# xxxxxxxxx

3915 Research Park Drive, Suite A10

Ann Arbor, MI 48108

(734) 222-5228

13. Appendix A - Volvo/Mack 2013 and Newer Vehicles

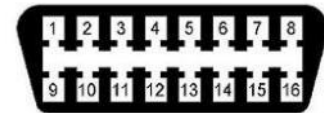
This section is applicable only for the 2013 and newer Volvo/Mack chassis that have Volvo engines and are using the OBDII connector. This section does not apply to a Volvo/Mack chassis that has a Cummins engine using the 9-pin Deutsch connector.

Starting in model year 2013, Volvo/Mack introduced a new diagnostic connector for a Volvo/Mack chassis with a Volvo engine. The connector is roughly based on the SAE standard J1962/OBDII connector commonly seen in automobiles. It contains two separate CAN channels as well as J1708:

- ❑ CAN1 is using the ISO15765 protocol.
- ❑ CAN2 is the J1939 protocol.
- ❑ The J1708/J1587 protocol is also in the connector.

Below are the pinouts of the connector and the usage by Volvo as compared to the OBDII standard.

Pin	Volvo Function	CAN	J1962/OBDII Standard
1			N/C
2			J1850 VPW/PWM+
3	J1939+	CAN2+	Ford DCL+ (Argentina/Brazil Pre-OBDII) 1997-
4			Chassis Ground (Vehicle Ground)
5	Ground		Signal Ground
6	ISO15765+	CAN1+	CAN+
7			ISO9141/ISO14230 K-Line
8			N/C
9			N/C
10			J1850-
11	J1939-	CAN2-	Ford DCL+ (Argentina/Brazil Pre-OBDII) 1997-
12	J1708+		N/C
13	J1708-		N/C
14	ISO15765-	CAN1-	CAN-
15			ISO9141 L-Line
16	Power		Power



13.1. Connector and Component (i.e. Transmission, ABS) Application Issues

The second CAN channel and J1708 are not part of the OBDII standard, but the second CAN channel on pins 3, 11 is becoming somewhat commonplace. However, placing the J1708 protocol on pins 12, 13 is a proprietary implementation and requires a special cable (or set of cables) to handle this scenario. This section describes the choices faced by VDA vendors, DrewTech's solution, and how to apply DrewLinQ cables to perform diagnostics on this platform. This section also shows the settings to use for VVT when testing this platform.

The underlying issue regarding special cabling is not because of J1708, the two CAN channels, or the Volvo PTT application. The Volvo PTT application automatically handles the connections between CAN1 and CAN2 as well as J1708. The issue is with **component applications** (i.e. transmission, ABS) and **J1939 being on CAN2**.

RP1210 was developed before multiple CAN channels appeared on vehicles, so when an application connects to "J1939", "CAN", or "ISO15765", the VDA directs the connection to CAN1. RP1210 was modified to allow connecting to any CAN channel, and allowing the application to let the VDA do automatic CAN baud rate detection. At the time of fielding this vehicle, PTT implemented scanning CAN channels and using automatic baud rate detection, however **some component applications still have not**. There was no way other than special cabling to place J1939 (CAN channel 2) on CAN channel 1 and to also to pass the J1708 protocol. This left two scenarios for VDA vendors as far as cabling:

- 1) Create a special Volvo cable that crosses CAN1 to CAN2 and vice versa along with passing the J1708 protocol. Both PTT and the component applications work in this single cable scenario. However, the cable in this solution is not OBDII compliant. If a customer wants to work on an OBDII vehicle, they have to purchase a separate OBDII compliant cable.
- 2) Create an OBDII compliant cable that also passes J1708, and then create a second "crossover cable" that crosses CAN1 to CAN2 and vice versa along with passing J1708. This allows the component applications to work. It also allows the user to remove the crossover cable and work on OBDII compliant vehicles.

DrewTech chose the second way because the cost of the two OBDII connectors and small length of cable are far less than the price of a second complete cable. This cost savings is passed along to our customers.



CBL-DL-VV-OBD-T2
Volvo 2013+/OBDII Compliant Cable



CBL-DL-VV-XO
XOVER Cable

Volvo 2013 and Newer Cable Kit (DL-CBL-VV-KIT-01)

13.2. Cable for Volvo PTT or OBDII Applications

Use the CBL-DL-VV-OBD-T2 cable **by itself** for running Volvo PTT on this platform. You can also use this cable for any OBDII compliant application. The cable also has a standard J1939 Type II connector which allows the user to work on the most common HD vehicles (up to 3 CAN channels) without having to switch out cables.

13.3. Cable for Component Applications

Connect the CBL-DL-VV-XO (XOVER) cable to the CBL-DL-VV-OBD-T2 cable when you want to use component applications on this platform (i.e. transmission, ABS). This cable crosses CAN2 to CAN1 and vice versa and also passes the J1708/J1587 protocol.

13.4. Using VVT to Test This Platform - J1708

Connect only the CBL-DL-VV-OBD-T2 to the DrewLinQ and set up VVT to the following:

Medium/Heavy-Duty VDA Validation

Vendor: DREWLINQ - DrewLinQ - Drew Technologies, Inc. ▼

Device: 1 - DrewLinQ,USB ▼

Protocol: 9 - J1708 ▼ AutoScan

» Show Advanced Settings

Validate

13.5. Using VVT to Test This Platform - J1939 (CAN Channel 2 - Auto Baud Detect)

Connect only the CBL-DL-VV-OBD-T2 to the DrewLinQ and set up VVT to the following:

Medium/Heavy-Duty VDA Validation

Vendor: DREWLINQ - DrewLinQ - Drew Technologies, Inc. ▼

Device: 1 - DrewLinQ,USB ▼

Protocol: 7 - J1939 ▼ AutoScan

Hide Advanced Settings

Channel: 2 ▼

Baud Rate: Auto ▼

Validate

13.6. Using VVT to Test This Platform - ISO15765 (CAN Channel 1 - Auto Baud Detect)

Connect only the CBL-DL-VV-OBD-T2 to the DrewLinQ and set up VVT to the following:

Medium/Heavy-Duty VDA Validation

Vendor: DREWLINQ - DrewLinQ - Drew Technologies, Inc. ▼

Device: 1 - DrewLinQ,USB ▼

Protocol: 8 - ISO15765 ▼ AutoScan

Hide Advanced Settings

Channel: 1 ▼

Baud Rate: Auto ▼

Validate

14. Appendix B - CAT Electronic Technician (ET) Compatibility

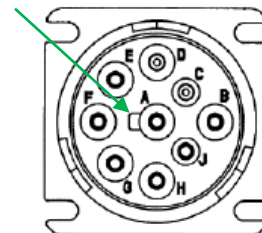
This addendum deals with CAT ET and whether it will work with the DrewLinQ, and if so, whether you will need to purchase the special DrewLinQ cable (CBL-DL-CAT-EQ).

- ❑ The DrewLinQ works on CAT engines and equipment that use the J1939 and/or J1708/J1587/ATA protocols.
 - You may be able to use the standard DrewLinQ 9-pin Deutsch vehicle cable.
 - You may have to purchase the DrewLinQ CAT cable (CBL-DL-CAT-EQ).
- ❑ The DrewLinQ will not work on CAT engines and industrial stationary equipment using only the proprietary CAT Data Link (CDL) protocol.
 - If your CAT engine/equipment only uses the CDL protocol, then you will be required to purchase the proprietary CAT adapter. Continue reading to determine if this is necessary.

The top illustration shows the SAE standard J1939 connector in contrast to the CAT Proprietary Connector below. The DrewLinQ J1939 Type II cable (lime green) will fit both types (J1939 Type I, J1939 Type II). If the vehicle or equipment with the CAT engine uses either one of these connectors, the DrewLinQ will work with that vehicle.

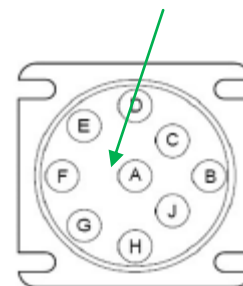
- ❑ Note that the "A pin" has a keyway (see green arrow), whereas the CAT connector below does not.
- ❑ Note that the Ground/Power pins on the CAT connector are reversed compared to the SAE standard. Cutting the "A pin" key off of the standard DrewLinQ cable will not allow it to work because the J1708/J1587/ATA protocol and the J1939 protocol are on different pins.

Pin	J1939 Type I	J1939 Type II
A	Ground	Ground
B	Power	Power
C	CAN1/J1939 Hi	CAN1/J1939 Hi
D	CAN1/J1939 Lo	CAN1/J1939 Lo
E	CAN1/J1939 Shield	CAN1/J1939 Shield
F	J1708/J1587/ATA Hi	J1708 or CAN3 Hi
G	J1708/J1587/ATA Lo	J1708 or CAN3 Lo
H	OEM Specific	OEM Specific or CAN2 Hi
J	OEM Specific	OEM Specific or CAN2 Lo



J1939 Standard Type I or Type II

Pin	CAT Proprietary Connector
A	Power
B	Ground
C	CAN1 Shield
D	CAT Data Link (CDL) Hi
E	CAT Data Link (CDL) Lo
F	CAN1/J1939 Lo
G	CAN1/J1939 Hi
H	J1708/J1587/ATA Lo
J	J1708/J1587/ATA Hi



CAT Proprietary Connector

If you have the CAT Proprietary Connector and A/B (Power/Ground) and D/E (CDL) are populated, you need to purchase the CAT branded diagnostic adapter and associated cabling from your local CAT dealership.

If A/B (Power/Ground) pins and F/G (J1939) or H/J (J1708/J1587/ATA) are populated, you can use your DrewLinQ; however you will need the special DrewLinQ CAT cable(CBL-DL-CAT-EQ).

15. Addendum C - DrewLinQ Cables

	<p>CBL-DL-FTL-69Y</p>	<ul style="list-style-type: none"> • Most commonly sold cable for MD/HD vehicles with a 6 or 9-pin SAE J1939 standard Deutsch Type I (black) or Type II (green) connector. • 6-Pin covers 1995 to present Class 4-8 MD/HD OEMs and suppliers. Protocols: <ul style="list-style-type: none"> ○ J1708/J1587 • 9-Pin covers 1998 to present Class 4-8 MD/HD OEMs and suppliers. Protocols: <ul style="list-style-type: none"> ○ J1708, J1939, CAN1, CAN2, CAN3. • Compatible with Freightliner Cascadia. • Compatible with PACCAR Class 8 (and “Baby 8”) trucks built on and after 2010 (Dual-CAN) as well as after 2016 (Tri-CAN).
	<p>CBL-DL-FTL-9</p>	<ul style="list-style-type: none"> • Same wiring as CBL-DL-FTL-69Y however does not include the Deutsch 6-pin connector.
	<p>DL-CBL-VV-KIT-01</p>	<ul style="list-style-type: none"> • Compatible with Volvo 2013 and newer vehicles with the modified J1962/OBDII connector. • The 9-pin Deutsch is wired the same as the CBL-DL-FTL-69Y and CBL-DL-FTL-9). • See chapter on Volvo/Mack PTT.
	<p>CBL-DL-OB2</p>	<ul style="list-style-type: none"> • Generic J1962/OBDII cable. • Works on all standard OBDII vehicles.
	<p>CDP2-CBL-OB2-02 PGM</p>	<ul style="list-style-type: none"> • Complete OBDII cable passing all 16 pins from the OBDII connector to the DrewLinQ. • Used for SWCAN and FTCAN applications. • Same cable that comes with the CarDAQ-Plus 2
	<p>CBL-DL-CAT-EQ</p>	<ul style="list-style-type: none"> • Works on CAT equipment (off-highway, industrial-stationary) using J1939 and/or ATA/J1708/J1587 data buses. Will not work on CAT equipment using CAT Data Link (CDL) protocol.

	<p>CBL-DL-VVE-14</p>	<ul style="list-style-type: none"> • Volvo Construction Equipment • 14-Pin Round Cable
	<p>CBL-DL-VVE-8</p>	<ul style="list-style-type: none"> • Volvo Construction Equipment • 8-Pin Square Cable
	<p>CBL-DL-KME-12</p>	<ul style="list-style-type: none"> • Komatsu Construction Equipment • 12-Pin Deutsch Cable
	<p>CBL-DL-GMC-TK</p>	<ul style="list-style-type: none"> • GMC Topkick/Kodiak Cable • Also works on some Isuzu F-series models using the J1708/J1587 protocol. • Modified J1962/OBDII
	<p>CBL-DL-J1939-BB</p>	<ul style="list-style-type: none"> • J1939-11 Backbone Cable for use on J1939-11 Twisted-Shielded-Pair (TSP) networks using the Deutsch 3-pin triangle connector. • Comes with 20 foot battery/power cable with battery clips and banana plugs.
	<p>CBL-DL-PC-NV-KJ</p>	<ul style="list-style-type: none"> • PACCAR/NAVISTAR Type I (Black Connector) with K-Line (ISO9141) communications on Pin J.
	<p>CBL-DL-C3C1</p>	<ul style="list-style-type: none"> • The CAN3 – CAN1 crossover cable is designed for use on 2016 vehicles, including Peterbilt, Kenworth and Volvos with Cummins engines. The product provides the ability to move J1939/CAN3 diagnostic communications over to the J1939/CAN1 channel. • CAN1->CAN3 • CAN2->CAN2 • CAN3->CAN1 • Power/Ground->Power/Ground

16. Appendix D - Sample Source Code for Software Developers

DrewTech's goal is to provide a comprehensive set of RP1210 and J2534 sample source code for engineers. The goal is to show all software engineering concepts for using either the RP1210 or J2534 API, including:

- ❑ Declaring RP1210 and J2534 function headers, and function pointers.
- ❑ Loading the Dynamic Link Library (DLL) and then assigning function pointers.
- ❑ Opening a protocol and setting filters.
- ❑ Reading messages, printing messages to the screen, and decoding message data into engineering values.
- ❑ Sending messages, printing transmitted messages to the screen, and encoding engineering values to be sent.
- ❑ Disconnecting from the data bus, releasing resources and releasing the DLL.

Currently there is only RP1210 sample source code in the C++ language.

The source code will be in the following directory:

- ❑ C:\Program Files\Drew Technologies, Inc\SampleSource\RP1210

17. Appendix D - Warranty Information and Limitation Statements

17.1. Warranty Information - Two Year Limited Warranty on DrewLinQ Hardware

The DrewLinQ product is warranted to be free from defects in materials or workmanship for two years from the date of purchase. Within this period, DrewTech will, at its sole option, repair or replace any component that fails under "normal" usage. Such repairs or replacement will be made at no charge to the customer for parts or labor; however in no event shall DrewTech liability exceed the initial price paid for the DrewLinQ.

If the product proves defective during this warranty period, contact DrewTech Technical Support in order to obtain a Return Merchandise Authorization (RMA) number. The customer is responsible for shipment of the defective product to DrewTech. When returning a product, the customer shall mark the RMA clearly on the outside of the package and include all cables and accessories purchased with the DrewLinQ along with any proof of purchase if available.

A DrewLinQ is warranted for 90 days after a warranty repair, or to end of the original factory warranty period (or if an extended warranty was purchased, the extended warranty period), whichever is the longest.

The limited warranty does not apply to:

- Cosmetic damage such as scratches, nicks, and dents.
- Damage caused by accident, abuse, misuse, water, flooding, fire, modification, or other acts of nature or external causes.
- Damage caused by service by a non-authorized service provider of DrewTech.
- Damage by connecting to cables not provided by DrewTech.

DrewTech retains the exclusive right to repair or replace (with a new or newly overhauled replacement product) the device or offer a full refund of the purchase price at its sole discretion.

SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

17.2. Warranty Information - 90 Day Warranty on Cables

Detachable cables for the DrewLinQ product are warranted for 90 days.

17.3. Governance

The user agrees to be governed by the laws of the State of Michigan, United States of America, 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.

17.4. Contact

Please direct all inquiries to:

Drew Technologies, Inc.
3915 Research Park Drive, Suite 10A
Ann Arbor, MI 48108
(734) 222-5228