

***Drew
Technologies, Inc.***

AVIT – Quick Start Guide



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Introduction

Thank you for choosing AVIT! This multi-protocol “PassThru” vehicle interface tool lets your PC communicate and perform ECU reprogramming on any modern heavy duty vehicle diagnostic bus.

This Quick Start Guide covers only the initial setup of the AVIT. Refer to the *AVIT Manual* online for full documentation of all features and procedures.

AVIT Advanced Pass-Thru Device

AVIT is a partially compliant SAE J2534-1 PassThru device that incorporates many optional features published in J2534-2. As a PassThru device, it can be connected to a laptop, PC, or network and incorporates the following features:

- A CAN channel for J1939 or 500K CAN (passenger vehicles)
- A J1708 and J1587 link
- A J1850 link
- A second CAN channel, dual or single wire
- Software controlled low power modes for in vehicle monitoring
- Wake input manual switch or Ignition input
- Optional internal Wireless Ethernet as a host interface
- 16 general purpose analog inputs
- 4 Digital input and 4 Digital outputs
- The rugged aluminum case, standard connectors, extended temperature range and non-slip rubber end caps make AVIT ideal for in-vehicle testing and other harsh environments.

AVIT and RP1210

Drew Technologies also offers a RP1210 DLL that allows the AVIT to work with existing RP1210 applications.

AVIT for Vehicle Diagnostics

The AVIT has optional software available from both Drew Technologies and third parties for data logging, diagnostics and measurement. Drew Technologies offers a licensable API called JVCi that developers can use to collect sensor data from passenger vehicles. This API, when integrated with a GUI application, can reduce the need to instrument vehicles with external sensors by collecting data directly from the in-vehicle network.

AVIT for ECM Reprogramming

Because J2534-1 and RP1210 are widely accepted standards, the AVIT will work with a variety of ECM reprogramming applications. The EPA-Published regulation has led to publicly available reprogramming applications from almost every major automaker. These applications will allow independent repair shops to update the calibrations on newer heavy-duty vehicles and passenger vehicles.

Automakers and Tier 1 engineering groups commonly have special J2534-1 applications used for vehicle development. More information on this can be obtained by contacting Drew Technologies directly.

AVIT as a Standalone Device

AVIT contains a powerful microprocessor; it can host logging or testing software internally and can act as a full, standalone computer. With few modifications, a J2534 program can be recompiled to run inside the *AVIT*.

This is the world's first open development platform for heavy duty vehicle applications. The SDK is included for free, and there are no royalties to pay.

Measuring Analog Voltages

AVIT provides 16 general purpose analog inputs: voltage range -5V - 5V, sampling rates up to 10 kHz, resolution 12 bits. The 16 Analog channels are divided into 2 banks of 8 channels. Each bank can be set to sample at a different rate. In addition, software selectable Low Pass filters can be set on each bank.

AVIT for other uses

With all of the customizable software and features of the *AVIT*, it also can be used for a variety of different purposes. With minimal development efforts, the *AVIT* could accommodate the following operations:

- Crash Data Recovery Tool
- End-of-Line Manufacturing and Test Tool
- Fleet and rental vehicle long term data recording
- CAN Interface, J1939 Adapter, and Dealer service tool
- J1850 to CAN gateway
- CAN to J1939 gateway

Getting to Know AVIT

AVIT supports all modern heavy duty vehicle diagnostic protocols including: J1850VPW, J1850PWM, CAN, ISO 15765, J1708 and J1939.

Your package includes the AVIT hardware and two types of Ethernet cables. The vehicle interface cable is not included. The AVIT vehicle interface is the standard heavy truck 15 pin DSUB connector.

Connectors and Status Indicators

Front Panel

Connections to Ethernet, USB host and RS232 are available on the front panel.

There are 4 status lights on the front panel of AVIT. For all new or upgraded units (v2.0.2 and later), these status lights are useful for troubleshooting the AVIT's connection to a PC.

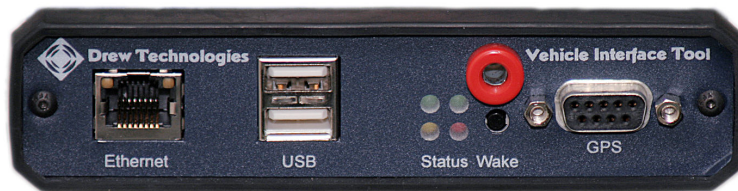


Figure 1: AVIT front panel

The yellow warning light indicates that AVIT is communicating with the vehicle. Do not disconnect while this is illuminated! If you interrupt a reflash while the vehicle's ECU is blank or only partially programmed, the module may be unrecoverable. Refer to Table 1 for a description of the other status lights.

Table 1: Status lights on the front panel of AVIT

	Light	Description
Top left	Power	Power (Solid Green)
Top right	Network	Green indicates a good connection directly to a PC or an existing Ethernet network or to an existing wireless access point.
Bottom left	Vehicle	Yellow warns that AVIT is talking to a vehicle. Blinks to indicate activity on the vehicle's network.
Bottom right	Fault	Red indicates a momentary network fault or a serious hardware failure. Please call technical support for assistance.

Rear Panel

Connections to the vehicle Digital I/O and analog inputs are available on the rear panel.



Figure 2: Rear panel with vehicle and analog

Vehicle Connector

The mating connector is a DB-15.

Pin #	Function
1	No Connect
2	CAN2-
3	CAN2+
4	J1850-
5	J1850+
6	Ground
7	Shield Ground
8	Battery In (250mA @ 12V DC)
9	No Connect
10	Single Wire CAN
11	No Connect
12	CAN1-
13	CAN1+
14	J1708-
15	J1708+

Ethernet Lights

Use the standard Ethernet cable (black) to connect to an existing network, or use the crossover cable (blue with red ends) to connect directly to a laptop.

	Color	Description
Left	Green	Ethernet Activity
Right	Green	Ethernet Link Light

Analog Connector

The 12-bit analog inputs are setup for an input range of -5V to +5V DC and are electrically protected against reverse voltage and over voltage conditions. The Mating connector is a DB-25

Pin #	Function	Direction
1	Channel 1	In
2	Channel 2	In
3	Channel 3	In
4	Channel 4	In
5	Channel 5	In
6	Channel 6	In
7	Channel 7	In
8	Channel 8	In
10	Digital I/O 1	In/Out
11	Digital I/O 2	In/Out
12	Digital I/O 3	In/Out
13	Digital I/O 4	In/Out
14	Channel 9	In
15	Channel 10	In
16	Channel 11	In
17	Channel 12	In
18	Channel 13	In
19	Channel 14	In
20	Channel 15	In
21	Channel 16	In
22, 23, 25	Ground	
24	Battery Voltage (200mA max)	Out

Setting up the AVIT

Powering AVIT

First, determine how the AVIT will receive power:

- a) Vehicle power: Connect the AVIT to the vehicle diagnostic connector.
- b) Bench top power supply: When using the AVIT on a bench, put power on pin 8 (VBATT) and ground on pin 6 (Ground).

When AVIT is first powered-on, the lights will cycle through a self-test procedure. Remember that the AVIT does not receive power from your PC's Ethernet port. The 2 USB ports are host ports; they provide power to your USB device.

Connecting and Configuring AVIT

Second, connect the AVIT to your PC:

Using Ethernet

We strongly recommend AVIT's default Client then Server mode, because no configuration changes would be required when moving the AVIT between LAN and in-vehicle use.

To a Laptop Directly

Connect the direct-connect Ethernet cable (blue with red ends) between a PC and the AVIT. This is a crossover type, intended to connect directly to a computer.

To an Existing LAN

Connect the standard Ethernet cable (black). On most LANs, AVIT can obtain its IP address automatically using DHCP. Ask your network administrator if this service is available on your network.

User-Configurable Options for Ethernet Users

The AVIT offers web-based configuration. Start a web browser and type <http://avit/> in the location bar.



Some areas of the AVIT website are password protected. Please enter user name "root" and password "powerful" to gain access to these areas.

To reset configuration to default, select "Boot Options" and click the "Load Factory Default Settings" button. If all else fails, hold down the black button on the front of the unit while powering on AVIT to enter recovery mode.

Installing Drivers on the Laptop / PC for Ethernet

Finally, install the driver software on your computer and select the AVIT as a PassThru (SAE J2534) vehicle interface:

1. On the PC, start a web browser and enter <http://avit/> in the location bar.
2. On the AVIT main page, find the link to the **Installer v2.0.6.zip** file, under the section heading "**How do I get the AVIT to be a J2534 PassThru device?**"
3. Click on the link and select **Run**.

This will install the AVIT driver and register the AVIT as an available PassThru device. Be sure to select "Drew Technologies Inc. - **AVIT**" on the configuration screen of your reprogramming software.

Initial setup of the **AVIT** is now complete. The full *AVIT Manual* has further instructions for using the *AVIT*.

Reprogramming with J2534

The AVIT can be used to reprogram heavy-duty vehicles and some passenger vehicles (with CAN or J1850). The AVIT is not a fully compliant J2534-1 reprogramming tool. Use the Drew Technologies CarDAQ-Plus if you need a fully compliant J2534-1 device.



When reprogramming, always be sure the vehicle battery is fully charged and in good working condition. We recommend connecting an external battery charger to ensure a successful operation.

More information on how to use J2534 reprogramming can be found in the support section of Drew Tech's website at www.drewtech.com

GM TIS2000 and SPS

If using GM's TIS or SPS, you will need to setup a J2534 Pass-Thru Driver. You can do this by following these steps:

- 1) Click on the configuration drop-down menu and select IO Management
- 2) On the IO Management screen, click DRIVER to add J2534 support to TIS. In the INSTALL DRIVER box, type or browse to *c:\program files\cosids\bin\j2534.dll* and click INSTALL. This will install the driver and bring you back to the IO management screen.
- 3) On the IO Management screen, click ADD to add the new interface. For the LOGICAL NAME type "Generic Pass Thru" and for Driver choose "J2534 Pass Thru Driver". For TIS 6.5 and earlier, you must type the LOGICAL NAME exactly as shown with a single space between words.
- 4) On the IO Management screen, click PROPERTIES to choose a specific J2534 device. In the DEVICE NAME list choose AVIT PLUS. Return to this screen if you want to change to a Mongoose later.
- 5) Close I/O management and choose Service Programming System. Use the new GENERIC PASS THRU option as your diagnostic interface.

Diagnostics with the AVIT

The AVIT may be used as a PassThru diagnostics tool with additional software. Currently PCMScan and ScanMaster are both supported applications for the AVIT. Please contact Drew Technologies for a free demo of either product.

Using either application, you can read and clear Diagnostics Trouble Codes and data log PIDS.

Specifications

AVIT Specifications:

Name	Value
Input Voltage Range	7VDC to 32VDC
Supply Current	420mA @ 7VDC 300mA @ 12VDC 270mA @ 15VDC 200mA @ 24VDC
Operating Temperature	-40C to +70C ambient
Storage Temperature	-65C to +100C ambient
Size	1.25"H x 9.5"D x 5.5"W

Bus Protocols

- Primary CAN / ISO15765 / GMLAN / J1939
- Secondary CAN / ISO15765 / GMLAN (Dual or Single Wire) / J1939
- Ford SCP (J1850PWM)
- GM Class2 (J1850VPW)
- J1708 / J1587

Other

- Compatible with [SAE J2534](#) (Feb 2002) and [SAE J2534-1](#) (Dec 2004)
- Analog input range -5V to +5V
- Digital input and output maximum range 0V to 32V. Digital input triggers at TTL levels. Digital outputs sink current to ground. For each of the Digital output, the maximum sink current is 20ma.

Troubleshooting and Support

If you cannot communicate with AVIT

Ask the following questions:

- Does AVIT have power, and is the green power LED illuminated?
- Is the battery or power supply voltage between 7VDC and 32VDC, with correct polarity?
- Could any firewall software be interfering with the Ethernet port?
- Are you using the correct Ethernet cable: black for LAN, or blue for direct laptop connection?
- Is the green status light illuminated for Ethernet or wireless?

If these issues have been addressed, verified, and you are still having trouble, please email support@drewtech.com.

If you need to recover from incorrect settings (Ethernet Only)

If you are using Ethernet and would like to reset configuration to default, go to <http://avit/>, select “Boot Options” and click the “Load Factory Default Settings” button. Use the default username **root** and password **powerful** when requested.

If you need to generate a logfile for debugging

For troubleshooting purposes, you can enable debugging by running the following command at a Windows command prompt:

```
dir > %TEMP%\DebugPlusEnable.txt
```

To disable debugging, run:

```
del %TEMP%\DebugPlusEnable.txt
```

Be aware that debug files can be large and slow down J2534 applications. The debug logs will be in %TEMP%. This is usually C:\Documents and Settings**USERNAME**\Local Settings\Temp.

If you need to update drivers or firmware

Your AVIT contains field-upgradeable firmware. Updates are regularly released which: include new features, improve performance, and correct problems. Please visit the DrewTech download page at:

<http://www.drewtech.com/downloads>

To update the AVIT firmware: Apply power to AVIT. Load the configuration webpage in a web browser, and follow the instructions for selecting and uploading a new firmware file.

To update the PC driver: click on the Installer link like a new installation.

Verify the network is configured correctly

There are two ways to do this:

- 1) Run an AVIT sample application and see if it connects. (Get sample applications from the Drew Tech website.)
- 2) Try to connect to the AVIT web page. Consult the networking section above for details.

If neither of these works, try:

- Turning off any firewall/antivirus software.
- Picking a different connection method. For example, try the fixed IP addressing mode. See the *AVIT Manual* for details.
- Using recovery mode to make sure the AVIT is configured correctly. Recovery mode is entered by holding down the front button during power-on. See the *AVIT Manual* for details on recovery.

If the AVIT web page works, but applications don't work:

- The DLL may not be installed. Install the DLL using the instructions on page 7 of this quick start guide.
- The network settings may be incorrect. Specifically, verify that the AVIT netmask setting is the same as the PC/laptop's netmask setting.
- The application may be looking for the wrong J2534 device. Make sure "AVIT" is selected.

If applications work, but not the AVIT web page:

- Verify that your web browser is not using a proxy. (Under **Tools >> Options >> Local Area Network Settings**)
- If your PC/Laptop is running firewall software, try turning it off to see if that is the problem.
- In DHCP Client mode, the IP address of the AVIT can change. Enter <http://avit/> in your browser, but only after waiting a few minutes for the AVIT to register itself on the network. Alternately, look at the logs for your network DHCP server.
- Use recovery mode to verify the AVIT has the correct settings.

If all else fails...

Please contact Drew Technologies for technical support at 734-222-5228 or support@drewtech.com. If technical support finds it necessary for the unit to be returned for repair, you will be asked for your contact information and then provided with a Return Merchandise Authorization number (RMA#) that Drew Technologies will use to track the unit through the repair department back to you. Please write this number on the outside of your shipping box so it can be routed to the correct department. If the necessary repair is not covered by Drew Technologies' warranty, you will be contacted for payment arrangements.