ValueCAN 4-2

Low Cost High Performance CANFD - USB Interface with IP65 aluminium enclosure

User's Guide

Version 1.1 - April 25, 2020

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Version History

Version Number	Date	Description / Major Changes
1.0	2018/07/12	Initial release.
1.1	2020/04/25	Edits to remove material redundant of the Vehicle Spy Manual, additional description of how CoreMini scripts run.

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1. Introduction and Overview

1.1 Introduction

The ValueCAN 4-2 is Intrepid Control Systems' fourth-generation general purpose interface tool, providing access to multiple channels of CAN FD. The ValueCAN 4-2 can be used to monitor and transmit on CAN and CAN FD networks. It can also create hardware simulations for network analysis.

The ValueCAN 4-2 provides numerous improvements over the original ValueCAN3, including CAN FD support, greater performance, more robust case, and connectors

1.2 Package Contents

The ValueCAN 4-2 package includes both hardware and software:

Hardware

The package contains the following:

- The ValueCAN 4-2 network interface device.
- Your choice of cable, see *Section 2.2*.
- Quick Start Card to help you get going quickly with your device.

Software

The ValueCAN 4-2 package includes media containing:

- A copy of Intrepid Control Systems' Vehicle Spy vehicle network software.
- Drivers for the ValueCAN 4-2 series adapters.
- An API install kit containing the neoVI Explorer utility for configuring the device.

If you did not purchase Vehicle Spy, a free trial version with the program's minimum features is provided instead.

It is also possible to control the ValueCAN 4-2 from within other software using APIs that the device supports.

Figure 1: ValueCAN 4-2 in packaged form.

If anything is missing or damaged, please contact Intrepid Control Systems for assistance. The contact for your locale can be found at https://www.intrepidcs.com/worldwide or refer to *Section 7* within this document.

1.3 Operational Overview

The ValueCAN 4-2's operation can broadly be broken down into three categories: vehicle network interfacing, data acquisition, and simulation and scripting.

Vehicle Network Interfacing

Using the provided cables, you can connect the ValueCAN 4-2 to either a bench test setup or a vehicle to monitor live network activity. All channels are monitored simultaneously and are hardware time-stamped.

Data Acquisition

The ValueCAN 4-2 enables the acquisition of data from networks with precise control over collection parameters. The data can be captured in Vehicle Spy or using the Intrepid APIs.

Simulation and Scripting

Using Vehicle Spy, you can define transmit messages with custom data and send them manually or on a schedule of your choosing. You can also write intelligent scripts that implement arbitrary logic and compile them into CoreMinis that run within the device itself. This functionality allows you to create specialized test scenarios, and to simulate ECUs and gateways.

1.4 Summary of Key Features

This section includes a summary of the device's most important design, construction, operational and performance features:

Construction, Controls and Cabling

- Compact design: 2" x 1.3" x 0.5".
- Light weight: less than 3 oz (80 g).
- Solid powder-coated aluminum case.
- Thick rubber boot for shock protection.
- Water tight metal connector.
- Multiple USB cable options including USB type A and USB type C connections.
- CAN/CAN FD channel status LEDs.
- Ability to control CAN/CAN FD termination resistance on both channels.

Performance

- Fourth-generation neoVI architecture, offering over ten times the performance of earlier devices.
- Field-upgradeable firmware.
- Reduced USB latency.
- CAN FD baud rates supported upto 8 Mbps.
- Lower power consumption.
- Powered exclusively over USB.

Network Interfaces and Features

- Two dedicated dual-wire CAN / CAN FD channels (ISO 11898-2:2015).
- Both dual wire CAN channels have CAN FD support.
- Support for ISO CAN FD and NON-ISO CAN FD.
- Software-programmable CAN termination resistance.
- Real-time clock for 64-bit message timestamping.

Simulation

- Fully-programmable scripting using CoreMini and Vehicle Spy Professional or Enterprise versions.

PC Interface Support

- High-speed isolated USB connection protects PC from potential damage.

Advanced Features

- Device control by external software using three open APIs: neoVI DLL, SAE J2534, and TMC RP1210 A/B.

1.5 Hardware and Software Requirements

Hardware:

It is recommended to have a CAN or CAN FD network, either in-vehicle, test bench, or other environment.

A PC with a USB 2.0 port (Type A or USB-C connector). It is recommend to use a native USB port to ensure that sufficient power is provided.

Software:

The setup program for Vehicle Spy will install the necessary drivers for the ValueCAN 4-2. If you do not have a Vehicle Spy license, you can use the Vehicle Spy trial version for basic network interfacing and driver setup. Drivers can also be set up using the API kit installer. All of this software can be downloaded from the Intrepid Control Systems web site at https://www.intrepidcs.com/support/.

Please refer to the Vehicle Spy documentation for more specific PC hardware and operating system requirements and recommendations.

2. A Tour of ValueCAN 4-2 Hardware

> **Warning:** Do not attempt to open the case unless specifically instructed to do so by a technician at Intrepid Control Systems. Otherwise there is risk of possible injury or damage to the unit.

2.1 Case and Overall Design

The ValueCAN 4-2 is enclosed in a sturdy powder-coated metal case. The device has been designed and tested for in-vehicle use. It is operational from -40°C to +85°C. An overall view of the ValueCAN 4-2 can be seen in Figure 2.

Figure 2: ValueCAN 4-2 device.

Connectors are ruggedized by using reinforced metal connectors and it has a rubber boot to protect the device against bumps and drops.

Overview of the neoVI ValueCAN 4

The label of the ValueCAN 4-2 shows the device serial number and the pinouts of its DB-9 connector. The pinouts for the ValueCAN 4-2 connector and cable can be found in Figure 3.

There are three LEDs on the device signifying status of the device and CAN connections. Two are on the top of the device and another LED under the USB cable. See *Section 6.2* for reference regarding the LED indications and modes.

Figure 3: ValueCAN 4-2 top view.

2.2 Cable Options

The ValueCAN 4-2 has several cable options available. Cables and harnesses created for earlier ValueCAN models are compatible to the pinout of ValueCAN 4-2. Three different cables are available for the ValueCAN 4-2.

Figure 4: ValueCAN OBD-II Cable (DB-9F to OBD-11) Part # OBD2-Y-SPLIT

Figure 5: ValueCAN Deutsch 9-Pin (J1939-RP1210) Cable (DB-9F to Deutsch 9-Pin) Part # J1939-CABLE

Figure 6: ValueCAN3 Channel Y Cable (DB-9F to 2x DB-9M) Part # VCAN3-Y-DB9

3. Hardware Setup

3.1 Connection Diagrams

Hookup diagrams show at a glance on how to physically connect your ValueCAN 4-2 to vehicle networks and your PC.

Deutsch 9-Pin Hardware Connection Diagram

Figure 7: Connector Diagram with ValueCAN Deutsch 9-Pin (J1939-RP1210) Cable (DB-9F to Deutsch 9-Pin) Part # J1939-CABLE

OBD II Hardware Connection Diagram

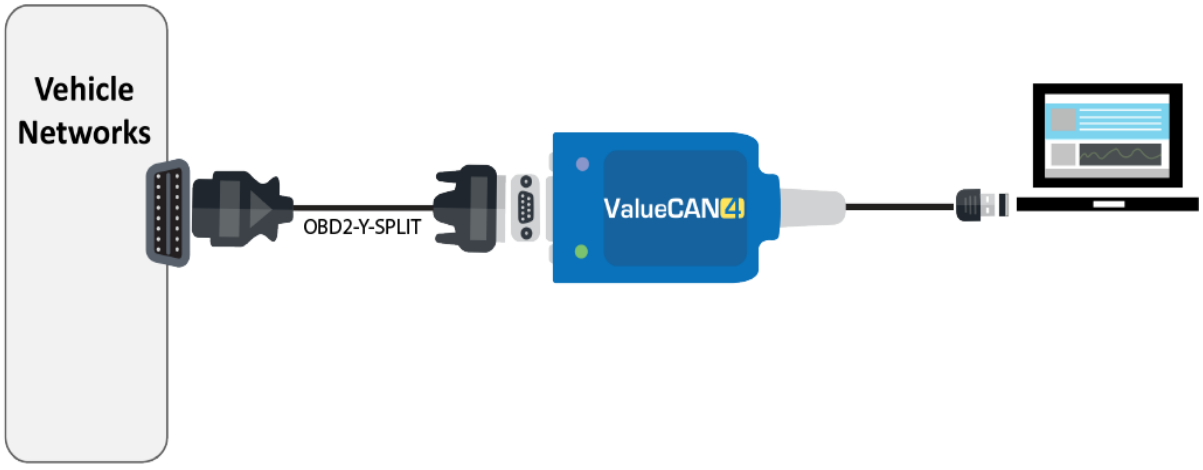

Figure 8: Connector Diagram with ValueCAN OBD-II Cable (DB-9F to OBD-11) Part # OBD2-Y-SPLIT

DB9 Y - Splitter Cable Hardware Hookup Diagram

Figure 9: Connector Diagram with ValueCAN DB9 2x Y-Splitter Cable Part # VCAN3-Y-DB9

3.2 Vehicle Network and Power Connections

The integrated DB9 connector is used to connect to the vehicle/bench CAN network(s). CAN termination is integrated into the ValueCAN 4-2 and can be enabled from the neoVI Explorer software interface.

> ⚠ **Caution:** The ValueCAN 4-2 can only be powered via the USB cable.

> ⚠ **Caution:** CoreMini scripts run when the device is powered and not connected to a PC's USB port (that is, enumerated).
>
> Therefore to run a script stand alone, it is recommended to use a power-only USB cable to prevent enumeration. Using a charger or power pack to power the ValueCAN 4-2 will also work

3.3 PC Connection

Connect the USB Type A/Type C to USB port on the PC. It is possible to use a powered USB hub to connect the ValueCAN 4-2, but performance varies due to the quality of the hub and its ability to provide power. Make sure to use a high-power USB hub and test the hub with the ValueCAN 4-2 before use.

4. Device Configuration

The ValueCAN 4-2 ships from the factory with default settings.

Default settings to consider are:

- Both CAN FD networks enabled
- Classical CAN mode set to 500 Kbps
- CAN FD mode set to 2Mbps
- CAN Termination disabled
- Normal communication mode (allows transmit, receive, and acknowledges CAN/CAN FD frames)

Other defaults are indicated later in this section.

Note that the settings needed for your application may not match the default settings. You can customize the settings to your exact needs. This section covers how to manage and fine-tune your ValueCAN 4-2.

4.1 Starting neoVI Explorer

Starting neoVI Explorer from within Vehicle Spy

This section introduces how to open neoVI Explorer from within Vehicle Spy:

- **Menu Item:** From the top menu select "*Setup"* and then select *"Hardware"*.
- **Hardware Setup Button:** Click the "*Setup Hardware*" button located in the main Vehicle Spy toolbar just under its menu (Figure 10).

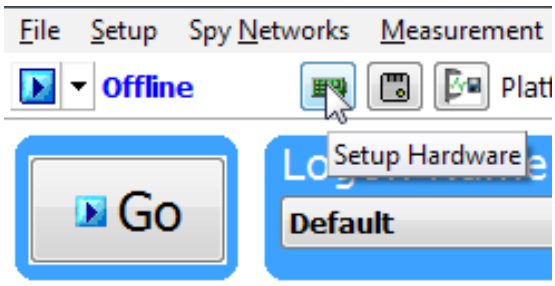

Figure 10: Starting neoVI Explorer from within Vehicle Spy.

Note that you cannot start neoVI Explorer when Vehicle Spy is online (even if in simulation mode). If you attempt to do so, Vehicle Spy will prompt you to either go offline to launch neoVI Explorer or remain online with Vehicle Spy.

Starting neoVI Explorer as a Standalone Program

If you want to work with your ValueCAN 4-2 without opening Vehicle Spy, you can launch neoVI Explorer directly. First, if using Windows OS open the *"Windows Start Menu"*, navigate to the IntrepidCS folder, then under the Vehicle Spy 3 or ICS API Install Kit subfolder, and select "*neoVI Explorer"* as shown in Figure 11.

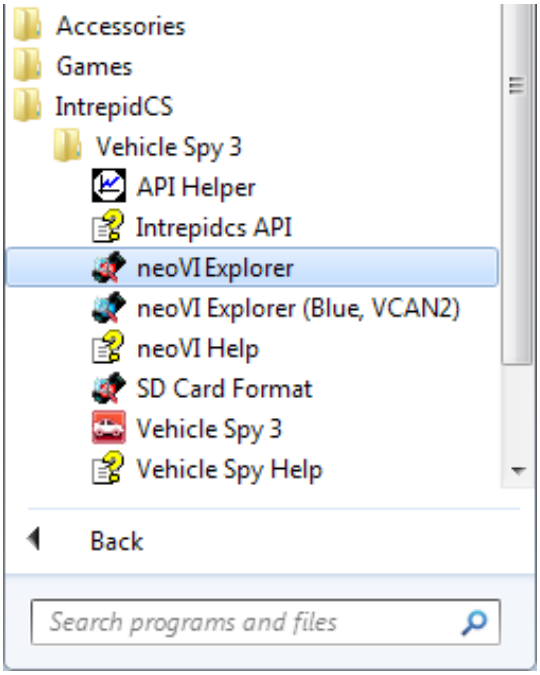

Figure 11: Starting neoVI Explorer directly with Vehicle Spy 3 installed.

Connecting to the ValueCAN 4-2

When neoVI Explorer loads, it will start up with the first hardware device it can find selected in the menu pane on the left. You will be able to see your device listed here with its serial number. If you do not see the device but see other Intrepid Control Systems' devices, be sure to scroll down to look for it. If it is still not visible, either its drivers have not been installed correctly or it is not powered properly.

To manage your ValueCAN 4-2, click on its entry in the navigation pane and then press the "*Connect"* button. After successfully connecting to the device, you will see a thumbs up icon next to the device's name. Check marks icons will appear next to enabled networks in the explorer area on the left. You will also see a message in the message box on the right saying, "*ValueCAN 4 Settings have been read*". The information in the upper right-hand part of the window is device-specific and described in *Section 4.2*. The screen as a whole should appear similar to that shown in Figure 12.

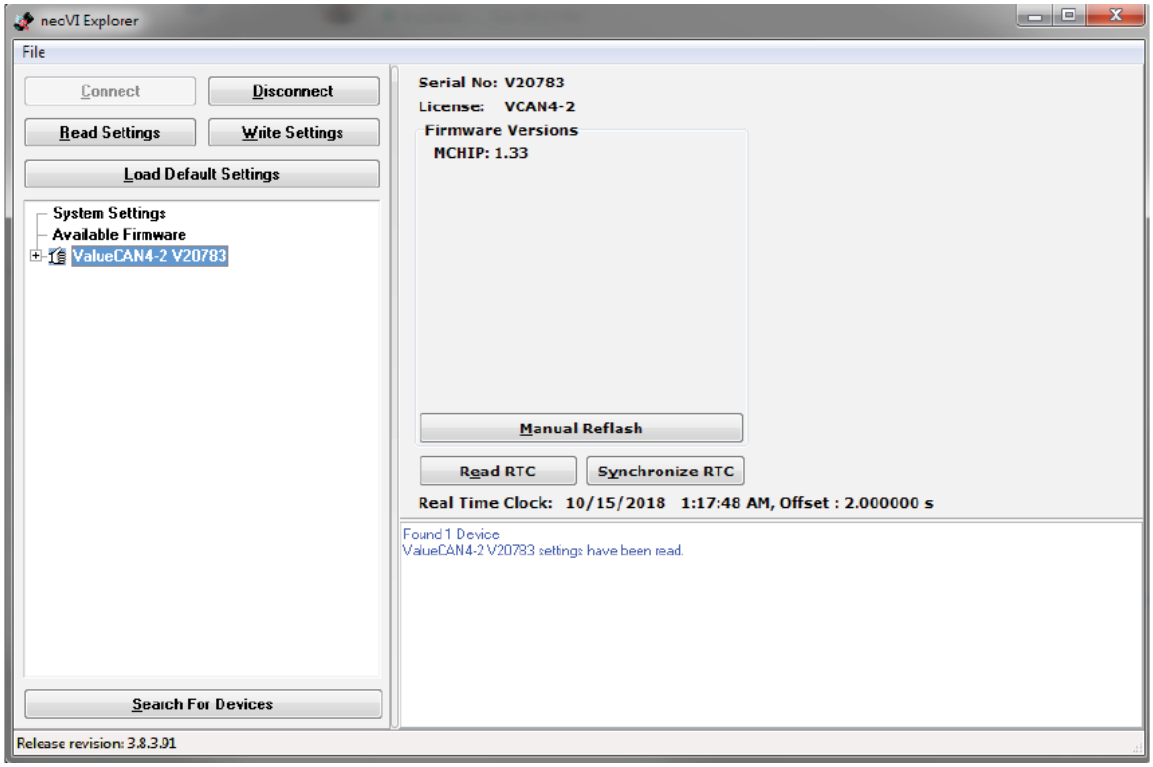

Figure 12: Typical neoVI Explorer window After initial connection to the ValueCAN 4-2.

Note: The listed settings are updated when *"Connect"* is clicked. Any changes made before connecting to the hardware will be overwritten.

Writing and Reloading Settings

To avoid potential problems, neoVI Explorer will not save any changes to device parameters until you instruct it to do so. This is done by pressing the *"Write Settings"* button, which will update the parameters within the firmware in your device. If you make changes you do not want to keep, pressing the *"Read Settings"* button will reload the settings stored in the device, wiping out any modifications made in neoVI Explorer that had not yet been saved.

Settings are only saved to the device after *"Write Settings"* is clicked. Once clicked, the hardware configuration will be saved to the hardware. You can revert the settings shown in neoVI Explorer back to what is currently stored in the hardware using the *"Read Settings"* button.

Reloading Device Defaults

To return all settings to factory defaults, press the "*Load Defaults"* button. You will see messages in the message area telling you that defaults have been sent to the device and then read from it. The "*Load Defaults"* feature automatically performs the "*Write Settings*" button, so there is no need to write settings when using "*Load Defaults*".

Disconnecting from the ValueCAN 4-2

Press the "*Disconnect"* button after you are done with the device settings. This step is optional, because neoVI Explorer will disconnect from any connected devices when you exit the program.

Searching for Devices

If you attach new hardware to your PC after starting neoVI Explorer, press the "*Search For Devices"* button at the bottom left of the dialog box to prompt the program to scan for new hardware you can manage.

Exiting neoVI Explorer

Like any Windows program, you can close neoVI Explorer by clicking the "*X*" in the top right corner.

4.2 System Settings and Firmware Updates

The top two entries in the explorer window on the left side of neoVI Explorer contain system-wide settings that apply to all hardware devices and information related to firmware updates.

System Settings

By clicking "Systems Settings" in the right-hand pane you will see four settings that you can enable or disable (Figure 13):

- **Enable Server:** Turns on the neoVI Server feature, a background program that allows your hardware to be used by multiple applications at the same time.
- **Enable Low Latency:** This is an advanced setting for applications where fast response is needed after transmission. It is not applicable for the ValueCAN 4-2 device.
- **Enable Slave VNET Settings:** This setting has no effect for the ValueCAN 4-2.
- **Enable Auto Update:** When enabled, both neoVI Explorer and Vehicle Spy will automatically update firmware. It is recommended to leave this check box checked. If this box is not checked, firmware must be updated manually. (See below for details.)

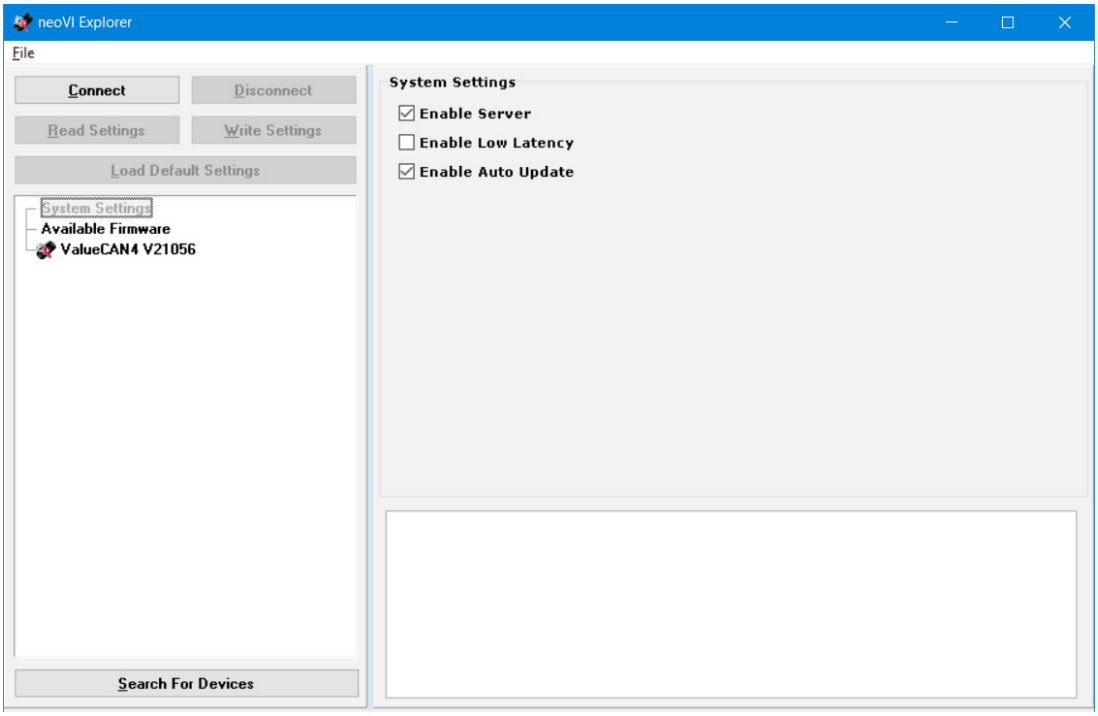

Figure 13: NeoVI Explorer System Settings Pane

Updating Firmware

New versions of firmware are created regularly to implement new features and correct problems that have been identified.

If you have "*Enable Auto Update"* on—the firmware will be updated if there is a mismatch. You will see dialog boxes on the screen showing you the progress of this operation, which takes only a few seconds; an example is shown in Figure 14. The firmware version in red means the firmware in the hardware does not match the software. Black firmware versions mean everything is up to date.

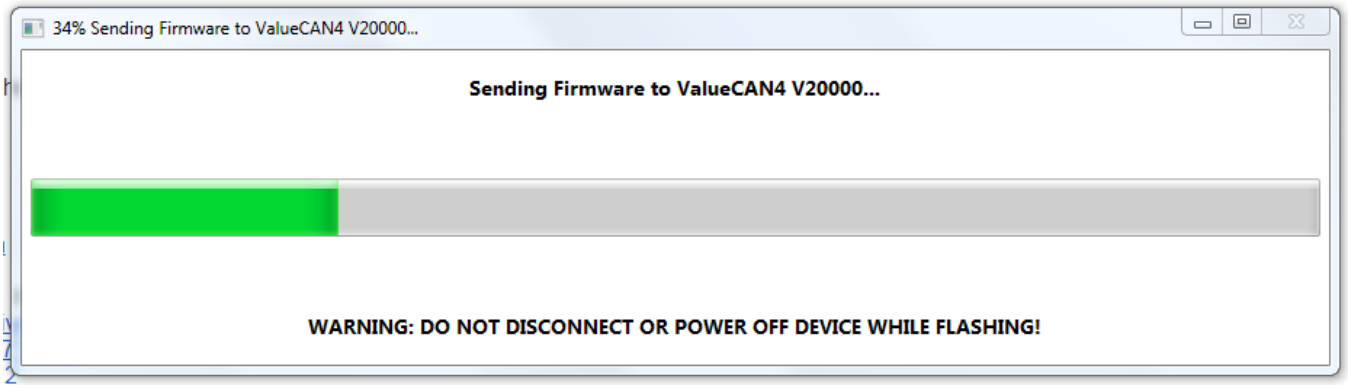

Figure 14: Firmware Download Message Box.

If you do not have automatic updates enabled, you can manually control when your firmware is updated. When new firmware is available, you will be notified in the right hand pane as shown in Figure 15 on the next page. Simply press the "*Manual Reflash*" button to update the firmware. You will see messages as the MCHIP firmware program is sent to the device and a message will appear in the message box on the right to tell you that the process has completed.

Figure 15: neoVI Explorer Firmware Message Box and Manual Reflash Button.

4.3 General Settings and Product Details

These two areas of the ValueCAN 4-2's setup provide information about the device and allow you to perform a few basic maintenance tasks.

General Settings

After connecting to the device you will see basic information about it in the right-hand pane of the window as shown in Figure 16:

- The device's serial number.
- The firmware versions currently in the device. It will reveal an indicator if new firmware is available.
- A message showing the hardware license for the device was recognized.
- A current readout of the ValueCAN 4-2's real-time clock.

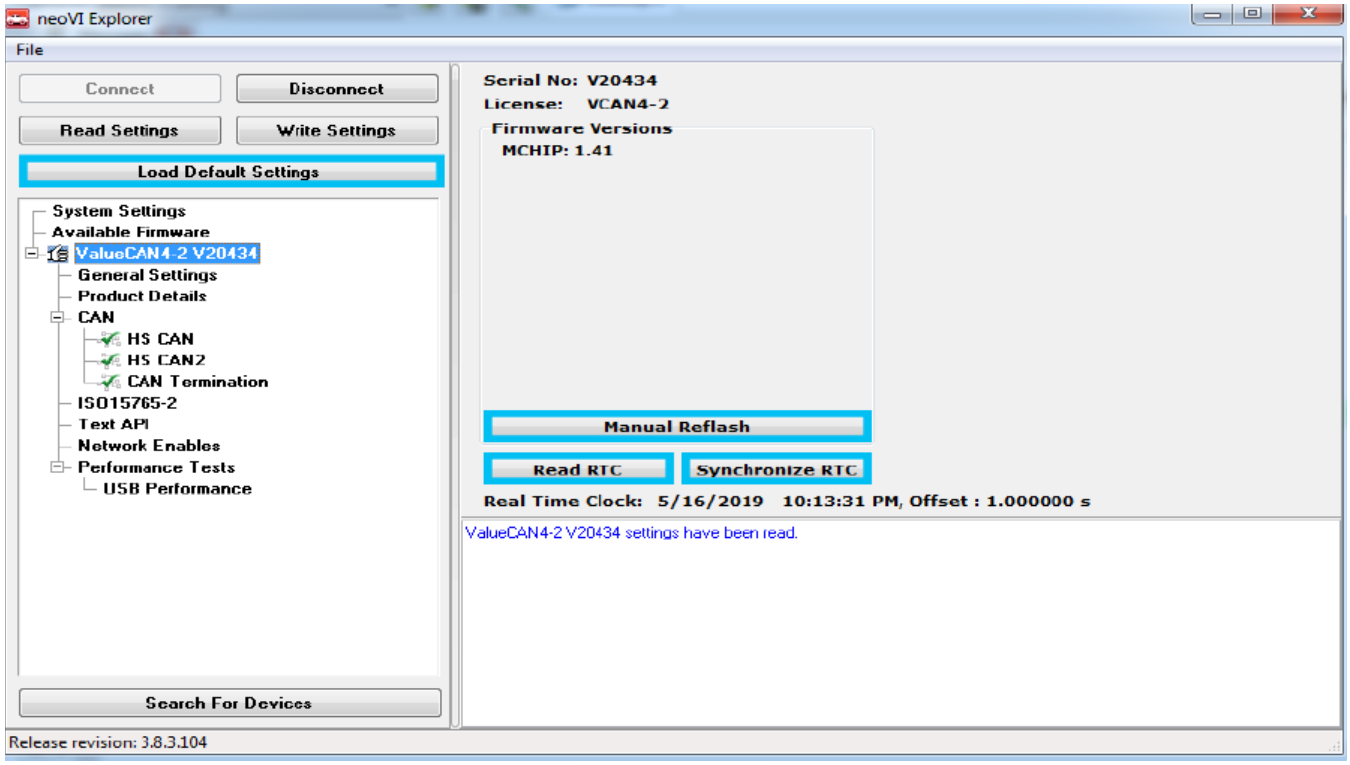

Figure 16: NeoVI Explorer VCAN 4-2 General Settings

This information can be displayed again at any time by clicking the device serial number in the explorer navigation window on the left side of the screen or the "*General Settings*" entry immediately below it.

The versions of the MCHIP and CCHIP firmware for the ValueCAN 4-2 each will be shown in black if they match the firmware versions within neoVI Explorer. The latest version will be shown in red if there is a mismatch indicating an update is needed.

There are four buttons on this screen.

"Load Defaults": Loads the default factory settings for the device.

"Manual Reflash": Updates mismatched firmware manually.

"Read RTC": Reloads the device's internal time clock.

"Synchronize RTC": Sets the device's clock to the same value as that of the PC.

Product Details

This area provides technical data on the ValueCAN 4-2's hardware and internal setup. In general, you would need the product details of your device in order for a technician at Intrepid Control Systems to facilitate support or troubleshooting. You can use the "*Copy To Clipboard"* button to copy all of the information to the "*Windows Clipboard*", so you can then paste it into an email or file.

4.4 Standard CAN Networks (HS CAN and HS CAN2)

This area of neoVI Explorer is used to enable, disable and configure the two standard dual wire CAN networks in the ValueCAN 4-2:

Two High Speed CAN channels 1 and 2 (HS CAN and HS CAN2).

Each channel has an entry under the *"CAN"* group (which cannot be clicked itself). The current status of each channel is shown next to its name; a green checkmark indicates that the channel is enabled, while a red X means it is disabled. Figure 17 shows an example of the CAN channels area.

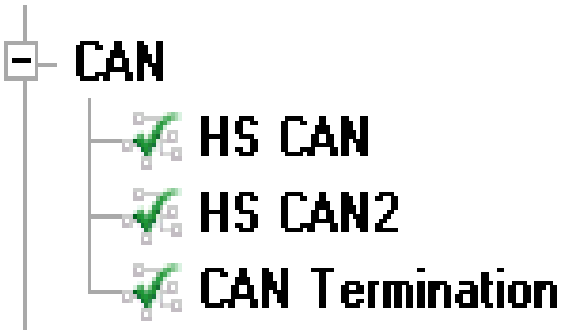

Figure 17: NeoVI Explorer CAN Group.

These can be configured using the controls in the right-hand pane; the default settings are shown in Figure 18.

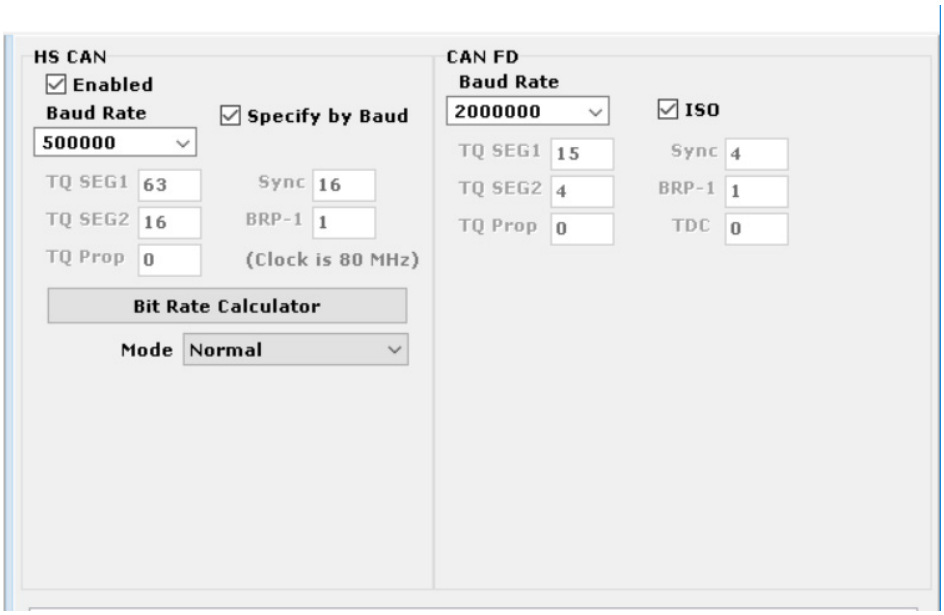

Figure 18: NeoVI Explorer Standard CAN Parameters with Default Settings.

Enabled

Place a checkmark in this box to enable the channel, or clear the checkmark to disable it. When disabled, all of the other parameter controls are disabled (grayed out). Note: if disabled, data will not be recieved on this channel.

Specify by Baud

This is a master control that determines whether the operation of the channel is controlled by a numeric baud rate, or is calculated from lower-level timing parameters. When the "*Specify by Baud"* is selected, then you can simply pick the baud rate from the pull down list. Specifying by baud rate is the default and is recommended except for advanced users with special requirements.

Baud Rate

When "*Specify by Baud"* is selected, choose a baud rate for the channel from the drop-down box below. The default value is 500000.

CAN Timing Settings

When "*Specify by Baud"* is deselected, the baud rate and sample point of the CAN channel is based on these five settings: *TQ SEG1*, *TQ SEG2*, *TQ Prop*, *Sync*, *BRP-1*. These settings are for advanced users and normally should be left at their default values.

CAN FD Baud Rate

When "*Specify by Baud"* is selected, choose a baud rate for the data phase of CAN FD messages. The default value is 2000000.

CAN FD Timing Settings

When "*Specify by Baud"* is deselected, use these settings the *TQ SEG1*, *TQ SEG2*, *TQ Prop*, *Sync*, *BRP-1* values are used for calculating the baud rate and sample point for the data phase of CAN FD messages.

Mode

The operating mode of the channel, choose from one of these three options:

- **Normal:** Normal operation (default). This setting allows transmitting, receiving, and acknowledging of CAN Frames.
- **Disable:** Channel is disabled.
- **Listen Only:** This channel only receives messages with no transmissions. No error frames are generated nor acknowledgments sent. Note: this setting overrides any transmits or related settings in Vehicle Spy.

Transceiver

The operating mode of the CAN transceiver:

- **Auto:** The transceiver is automatically controlled by the CAN logic for the channel (default).
- **Enabled:** The transceiver is always enabled.
- **Disabled:** The transceiver is disabled.

Bit Rate Calculator

Press this button to launch the Intrepid Bit Timing Calculator.

5. Core Features

This chapter will show you some of the various applications of the ValueCAN 4-2.

Each of section contains an example application, and where possible, step-by-step instructions are provided for those who wish to duplicate the results on their own device. The goal of this chapter is specifically to assist those who are new to Intrepid Control Systems' hardware and software. Simplified examples for users to follow are provided. Advanced users may wish to skim or even skip to the last 2 examples.

The examples use Intrepid Control Systems' Vehicle Spy. It is the ideal tool for working with your ValueCAN 4-2. Due to the complexity of Vehicle Spy, only the basics necessary are described for the examples; for full details on this software tool, please see the separate Vehicle Spy documentation.

5.1 Monitoring CAN/ CAN FD Networks

The most basic use of the ValueCAN 4-2 is to monitor the activity on conventional CAN/CAN FD vehicle networks.

Once the device is configured correctly, follw the example to see how the ValueCAN 4-2 can monitor CAN traffic on a bench network using Vehicle Spy 3.

Assuming that your network already has CAN messages being transmitted by other devices, you can monitor that traffic with these steps:

1. **Launch Vehicle Spy:** Start Vehicle Spy by double-clicking its icon or selecting it from the "*Windows Start Menu"*.

2. **Select ValueCAN 4-2:** On the "*Logon Screen"*, select the ValueCAN 4-2 if it does not already have a checkmark next to it. To do so, right-click the device name and choose "*Select Hardware"* (Figure 19).

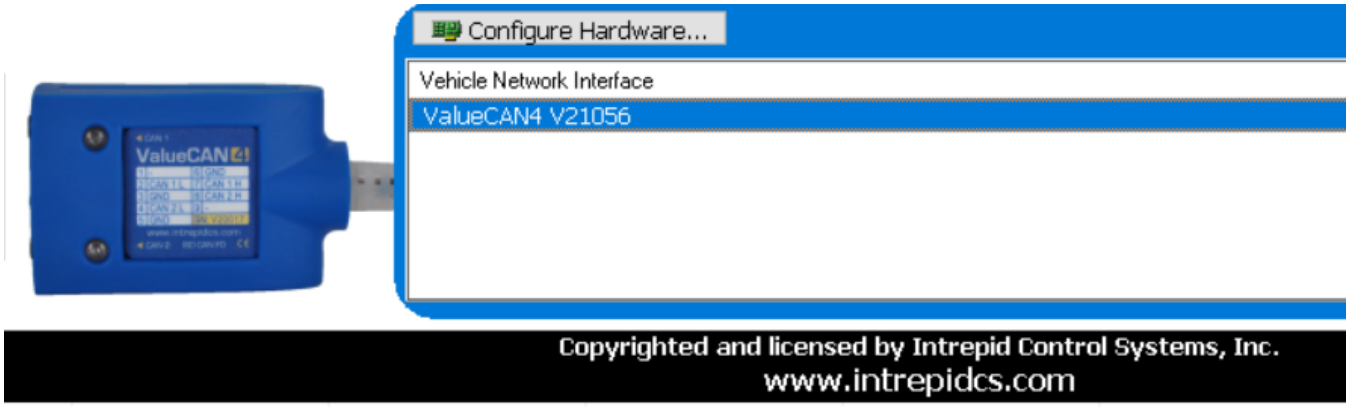

Figure 19: Selecting the ValueCAN 4-2 from the Logon Screen of Vehicle Spy.

3. **Go Online:** Press the blue button in the top left corner of Vehicle Spy.

The program will go online and automatically switch to "*Messages View"*, showing you the incoming traffic. An example can be found in Figure 20, which shows CAN messages that are being transmitted to the ValueCAN 4-2. By default, messages sharing the same Arbitration ID (Arb ID) will be shown with the latest update of data bytes available (Static View). If you prefer to see the messages in chronological order, press the "*Scroll"* button located just above the message display.

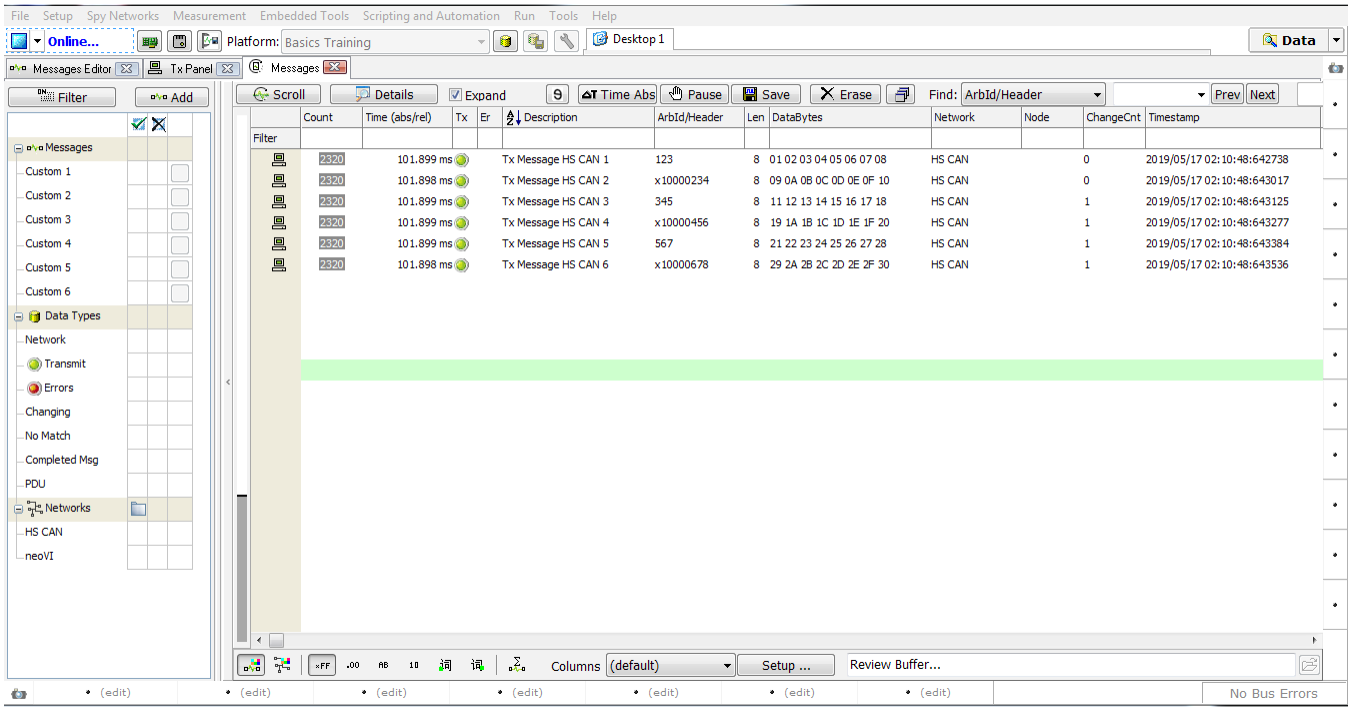

Figure 20: Monitoring Message Traffic in Vehicle Spy Using the ValueCAN 4-2.

Notice that the CAN messages are shown in their raw form, with arbitration IDs and data bytes. If you have a database matching the message traffic being monitored, you can load it into a platform. Vehicle Spy will decode the messages and show the signals within each. For details on how to accomplish this, please consult the Vehicle Spy documentation.

5.2 Transmitting on Conventional Vehicle Networks

In addition to monitoring network traffic with the ValueCAN 4-2, you can generate and transmit traffic of your own. This is done by creating and then transmitting a custom CAN message on the HS CAN channel.

Make sure the ValueCAN 4-2 is connected to your vehicle network, refer back to *Section 3* as needed. Then follow these steps to create and transmit a message:

1. **Launch Vehicle Spy:** Start Vehicle Spy by double-clicking its desktop icon or selecting it from the "*Windows Start*" menu.

2. **Select ValueCAN 4:** On the logon screen, select the "*ValueCAN 4-2*" if it is not already selected: right-click the device name and choose "*Select Hardware*".

3. **Load Messages Editor:** Choose "*Spy Networks*" from the top menu bar then select "*Messages Editor*".

4. **Select Transmit Messages:** Click *"Transmit"* found left, below the top menu bar.

5. **Create Transmit Message:** To the right of the drop-down box that currently shows "*HS CAN*", click the button.

Vehicle Spy will generate a new HS CAN transmit message called "Tx Message HS CAN 1", preset with default values.

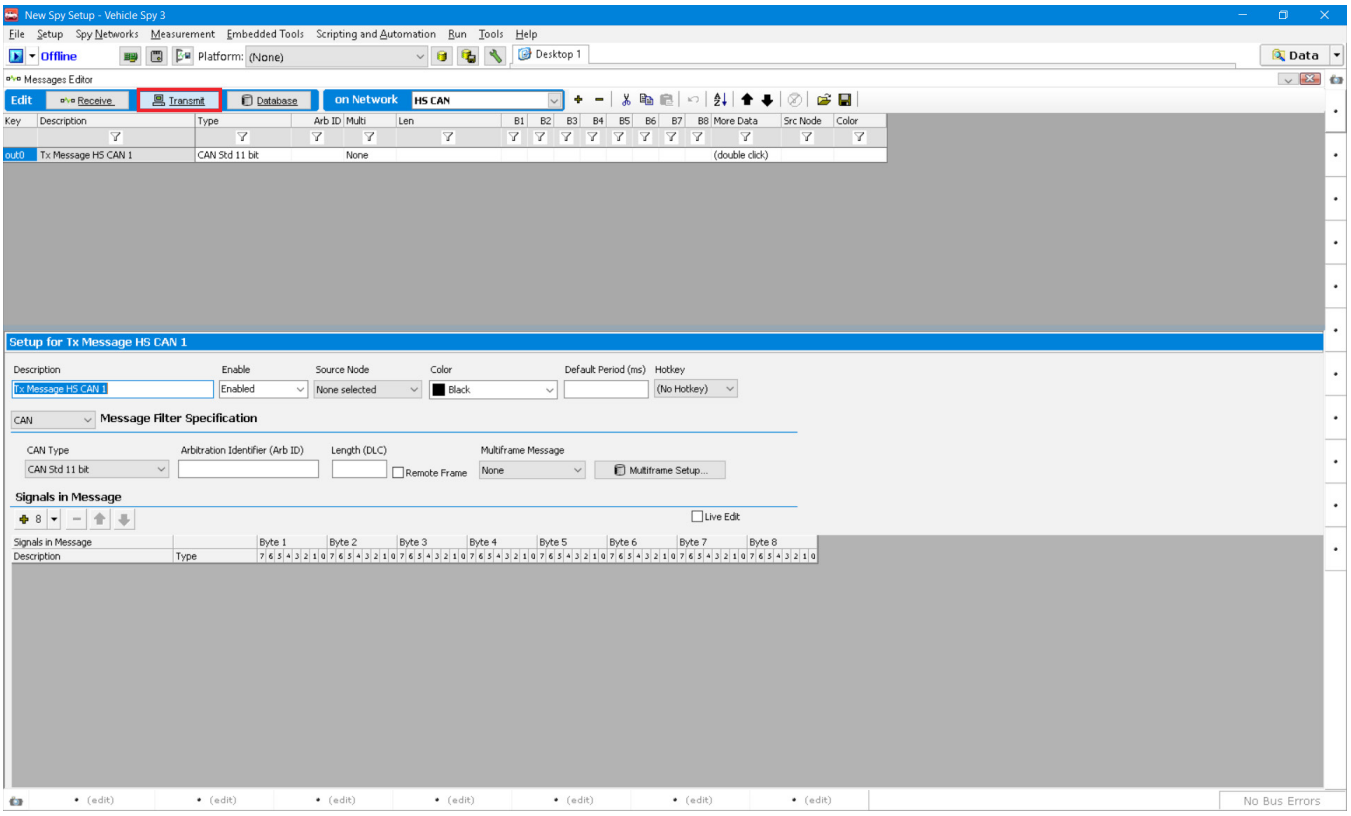

Figure 21: A Default Transmit Message Created in Vehicle Spy.

Next, we will change the default message by assigning an arbitration ID to it, adding a signal, and renaming it.

6. Set Message to Arbitration ID 7E0: Under the "*Arb ID"* column for the message, enter the value "*7E0*".

7. Add Message Signal: In the middle of the screen, find "*Signals in Message*"; just below this click the button. A signal called "*Signal 0*" is created.

8. Rename Message Signal: Under the Description column, double-click "*Signal 0*" and change the name to "*Engine Speed*".

As seen in Figure 22, the signal should appear as "*Engine Speed*" according to Step 8 above.

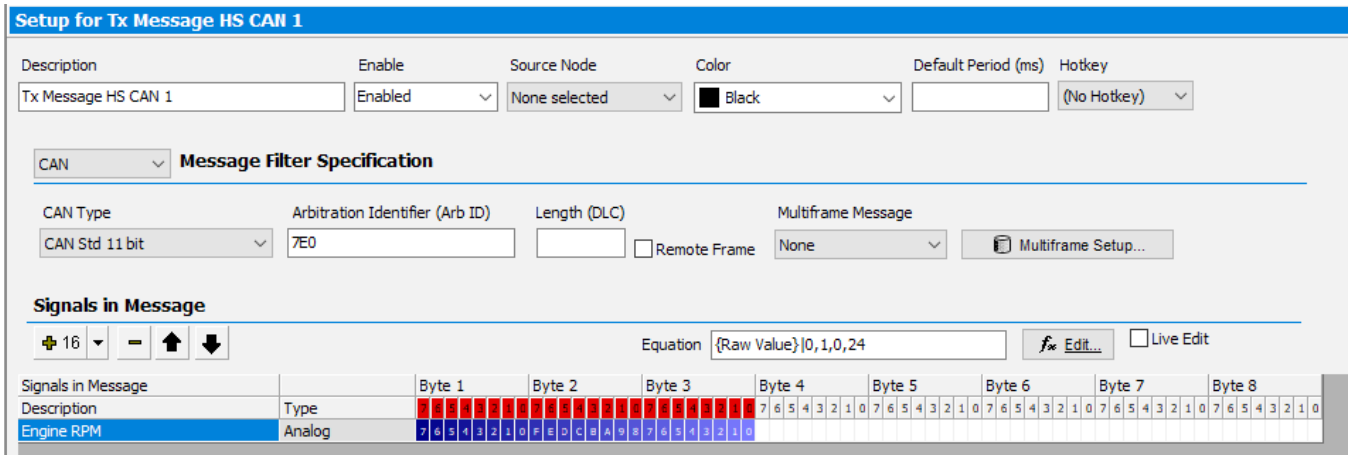

Figure 22: Vehicle Spy Transmit Message with Arb ID and Named Signal.

The Tx Panel will be used to specify a simple static value to send in that signal, and then instruct Vehicle Spy to transmit the message periodically.

9. Load Tx Panel: Select "*Tx Panel"* from the "*Spy Networks"* menu.

10. Select Message: Click on "*HS CAN Message 1*" under "*Description"* on the left side of the screen.

11. Select Transmission Rate: The message by default is set to "*Periodic*" transmissions, but the rate says "*None*". Double-click in this field, scroll down and choose "*0.100*".

12. Set Signal Data Value: On the right side of the screen, double-click under "*Value"* for the Engine Speed signal, and enter "*207*". (You may need to first move the vertical divider bar that seperates the two halves of the Tx Panel, by clicking on it and dragging it to the left.)

The Tx Panel in Vehicle Spy should now appear similar to Figure 23. Our custom message is ready to transmit.

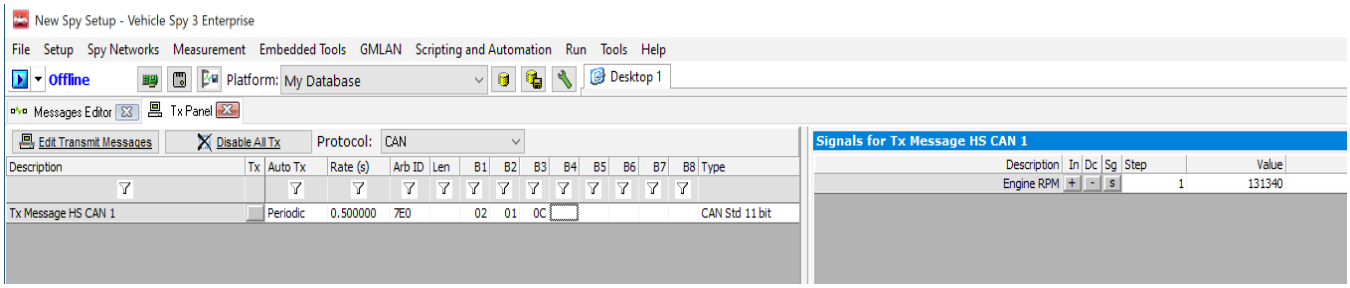

Figure 23: Vehicle Spy Tx Panel with 100 Millisecond Periodic Rate Set and Signal Value Assigned

Switch to "*Messages View"* and go online to see the message being transmitted on the CAN network.

13. **Switch to Messages View:** Select "*Messages"* from the "*Spy Networks"* menu.
14. **Go Online:** Press the blue arrow button in the top left corner of Vehicle Spy.

You will be able to see a new "Message HS CAN 1" message show up about every 100 ms as shown in Figure 24. Notice the green dot under the Tx column which labels this as a transmitted message.

15. **Expand Message:** Press the + sign to the left of "*Message HS CAN 1*".

Vehicle Spy shows you the "*Engine Speed"* signal with the value we set in both decimal (207) and hexadecimal (0xCF).

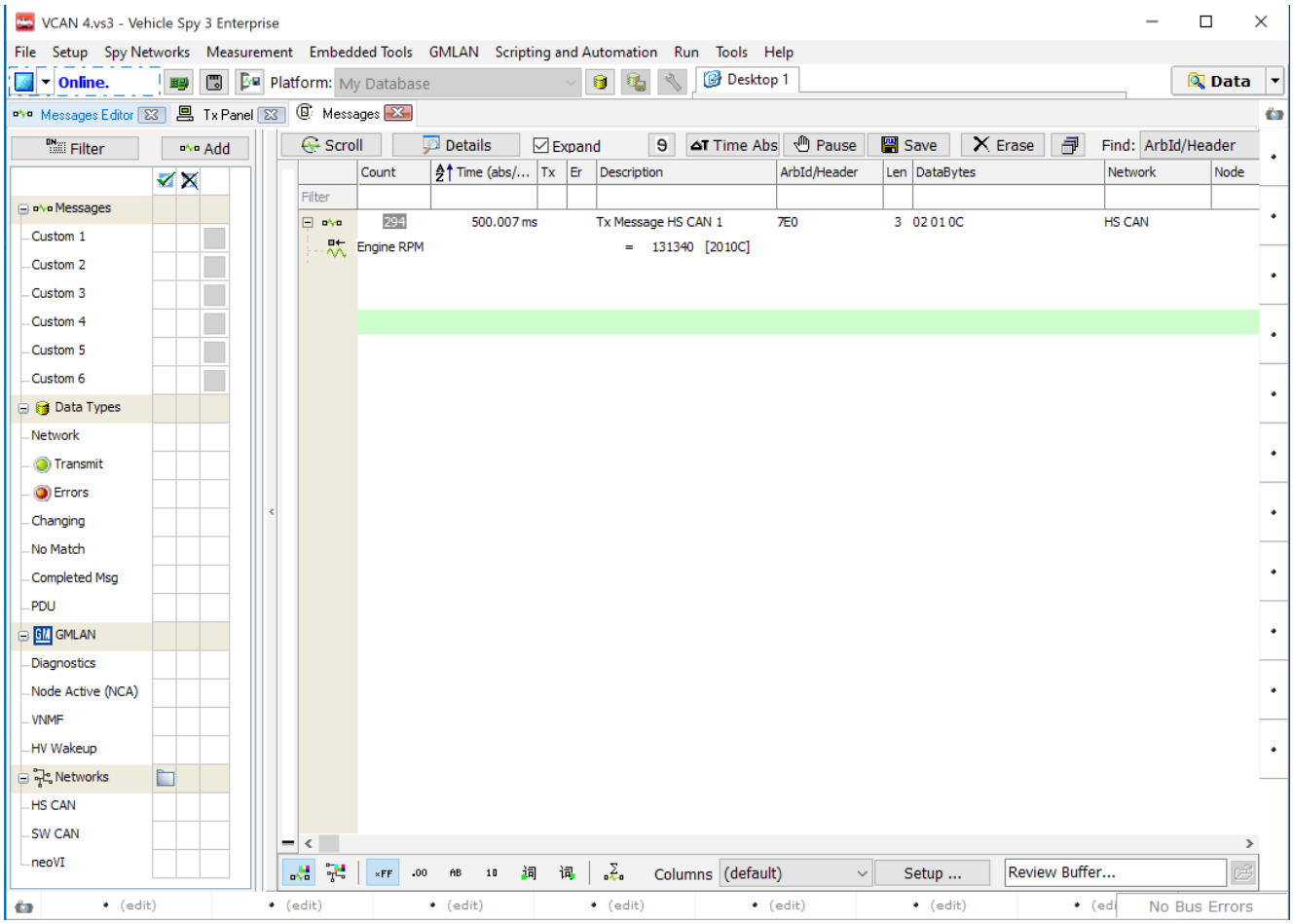

Figure 24: Vehicle Spy Messages View Showing Custom Transmitted Message and Signal

Naturally, in a real example you would want to create a more realistic depiction of engine speed. This can be done in a variety of ways in Vehicle Spy, such as writing a function block program to describe engine behavior and control message transmission. Please refer to the Vehicle Spy documentation, Intrepid Control Systems' website, or tech support for examples of transmits and simulation of frames.

5.3 CoreMini Scripting

The ValueCAN 4-2 is capable of running CoreMini scripts independent of a PC, or while connected to a PC and running Vehicle Spy.

Once a script is loaded into the ValueCAN 4-2, it can run in one of two ways:

- With a script loaded into the device, connect the ValueCAN 4-2 to a USB charger, power bank, or other USB power source that does not enumerate the ValueCAN 4-2. The ValueCAN 4-2 will run the script once power is applied and the ValueCAN 4-2 is not enumerated or connected to a PC.
- Connect the ValueCAN 4-2 to a standard USB port on a computer. When sending the script to the device, use the "*Run CoreMini after download*" option. This will run the script in the hardware and Vehicle Spy can be used at the same time and perform additional tasks concurrently. The ValueCAN 4-2 will function in this manner until the script is cleared or disconnected from the USB port.

Please consult the Vehicle Spy documentation for more information on CoreMini scripting.

5.4 neoVI API

The ValueCAN 4-2 comes with support for full APIs that allows you to control the device from other software packages or custom-written software. For instructions on using the APIs, please consult its documentation on the Intrepid Control Systems' website at:

https://cdn.intrepidcs.net/support/neoVIDLL/neoVIDLLhelpdoc.html

6. Reference: Connector Pinouts and Cable Signal Mappings

6.1 ValueCAN4 Connector Pinouts

9-Pin Connector Pinout

Pin	Description	Pin	Description
1	NC	6	GND
2	CAN 1 Low	7	CAN 1 High
3	GND	8	CAN 2 High
4	CAN 2 Low	9	-
5	GND (Shield)		

Figure 25: List of pin assignments for the ValueCAN 4-2

6.2 LED Indications and Modes

USB LED:

- **Power -** blinking orange
- **USB Connected -** blinking white
- **Online -** alternating green/blue
- **CoreMini Running -** blinking magenta
- **USB Errors -** blink red + function color; *(this indicates DLL errors. Errors can be cleared by closing the error window in Vehicle Spy.)*

CAN LED:

- **Transmit -** green
- **Transmit & Receive -** cyan
- **Receive -** blue
- **Errors** (at a slower message rate) - blink red
- **Errors** (at a higher message rate) - blink red & green

7. Support Contact Information

If you have questions on our products or your application, technicians from Intrepid Control Systems are here to help. Please contact Intripid Control Systems for assistance at one of our offices.

7.1 USA

Customers in the USA can reach support via phone or email:

Phone: (800) 859-6265 or (586) 731-7950, extension 1

Email: icssupport@intrepidcs.com

Intrepid Control Systems' normal support hours are from 8 am to 8 pm, Monday to Friday, Eastern Standard/Daylight Time (EST/EDT).

7.2 ICS International Offices

For support in other regions, please refer to our website which lists the latest info for our other offices:

https://www.intrepidcs.com/worldwide/

Support is normally provided from 09:00 to 17:00 in the time zone of your local office. You can also contact our headquarters in the USA if your region is not listed.

