



Software User Guide

VA 1051000 | Parker Vehicle System Gateway



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Revision History

Rev #	Release Case	Date
00A	Case 34734	2016-Oct-25
01A	Case 35553	2016-Nov-30
02C	Case 35723	2017-Jan-16
03A	Case 36610	2017-Feb-14
04A	Case 37055	2017-Mar-13
05A	Case 37804	2017-Apr-10
06A	Case 38567	2017-May-08
07A	Case 39163	2017-Jun-02
08A	Case 40034	2017-Jun-30
09A	Case 40817	2017-Jul-28
09B	Case 40817	2017-Jul-28
10A	Case 41105	2017-Aug-25
11A	Case 41679	2017-Sept-25
12A	Case 42431	2017-Oct-20
13A	Case 43593	2017-Nov-17
14A	Case 44222	2017-Dec-15
15A	Case 43594	2018-Jan-19
16A	Case 45444	2018-Feb-16
17A	Case 46176	2018-Mar-16
18A	Case 46879	2018-Apr-13
19A	Case 47350	2018-May-11
20A	Case 47961	2018-Jun-08
20B	Case 47961	2018-Jun-11
21A	Case 48811	2018-Jul-06
22A	Case 49270	2018-Aug-03
23A	Case 49807	2018-Aug-31
24A	Case 50833	2018-Sep-28
25A	Case 51751	2018-Oct-25
26A	Case 52269	2018-Nov-22
27A	Case 52994	2018-Dec-20
28A	Case 53329	2019-Feb-01
29A	Case 54038	2019-Feb-22
30A	Case 54952	2019-Apr-08
31A	Case 55043	2019-Apr-15

1. Overview

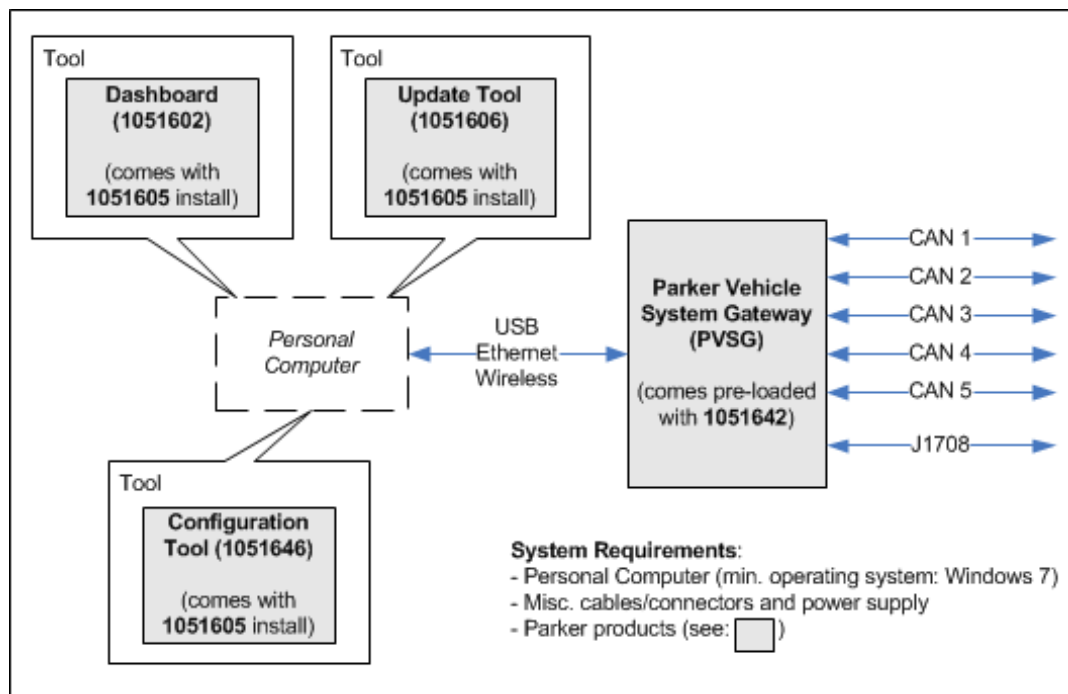
This document provides information relevant to those using the Parker Vehicle System Gateway (PVSG).



Note: this document is subject to change. Contact Parker for more information should you have questions not covered by this document.

1.1. Product Overview

The following diagram shows an overview of the software components and communication interfaces currently supported by the PVSG.



Internally, the PVSG consists of three basic components:

- Router: provides CAN and J1708 interface including all functionality related to CAN message filtering performed to allow CAN messages received on one CAN port to be transmitted on one or more of the other CAN ports.
- Server: provides on board management capabilities including USB / Ethernet / Wireless interface and all functionality associated with them.
- Power Control: performs power management functions including controlling when the product goes to sleep and wakes up.

1.2. Connector Pinout

The pinout for PVSG connectors are as follows:

J1 Connector			
Pin	Function	Pin	Function
J1-1	GPIO2	J1-11	CAN3 Shield
J1-2	GPIO1	J1-12	CAN3 High
J1-3	CAN2 Shield	J1-13	CAN3 Low
J1-4	CAN2 Low	J1-14	CAN4 Shield
J1-5	CAN2 High	J1-15	CAN4 High
J1-6	CAN1 Shield	J1-16	CAN4 Low
J1-7	CAN1 Low	J1-17	CAN5 Shield
J1-8	CAN1 High	J1-18	CAN5 High
J1-9	Ground	J1-19	CAN5 Low
J1-10	Power	J1-20	Ground

Note: GPIO1 and GPIO2 are configurable wakeup sources (active high, see "Power Management" section below).

Note: CAN1, CAN2, CAN3, CAN4, CAN5 are configurable wakeup sources (see "Power

Management" section below).

Note: Power (J1-10) requires greater than 8V to wakeup and more than 6V to continue operating.

J2 Connector

Pin	Function	Pin	Function
J2-1	J1708A	J2-9	RS232 RTS
J2-2	J1708B	J2-10	Ground
J2-3	Ground	J2-11	LIN4
J2-4	LIN2	J2-12	Recovery
J2-5	Ground	J2-13	RS232 RX
J2-6	LIN1	J2-14	RS232 TX
J2-7	RS232 CTS	J2-15	Ground
J2-8	Output 1	J2-16	LIN3

Note: All RS232 signals are labelled as DTE (Data Terminal Equipment) signals (TX & RTS are outputs and RX & CTS are inputs).

Note: Access to RS232 signals should be restricted to only those authorized to use them (e.g. place PVSG inside a locked compartment, don't include RS232 connection in production harness).

Note: Access to the Recovery input (J2-12) should be restricted to only those authorized to use it (e.g. place PVSG inside a locked compartment, don't include recovery connection in production harness).

Note: Output 1 may appear to toggle due to the strobing of the open load detection circuitry if the load attached is small.

J12 Connector (USB)

Pin	Function
J12-1	USB GND
J12-2	USB PWR
J12-3	USB DP
J12-4	USB DN
J12-5	USB OTG ID

Note: USB is one of the configurable wakeup sources (see "Power Management" section below).

Note: Access to J12 should be restricted to only those authorized to use it (e.g. place PVSG inside a locked compartment, don't leave mating connector with standard USB connector connected to PVSG).

J11 Connector (Ethernet)

Pin	Function
J11-1	Ethernet TXP
J11-2	Ethernet RXP
J11-3	Ethernet TXN
J11-4	Ethernet RXN

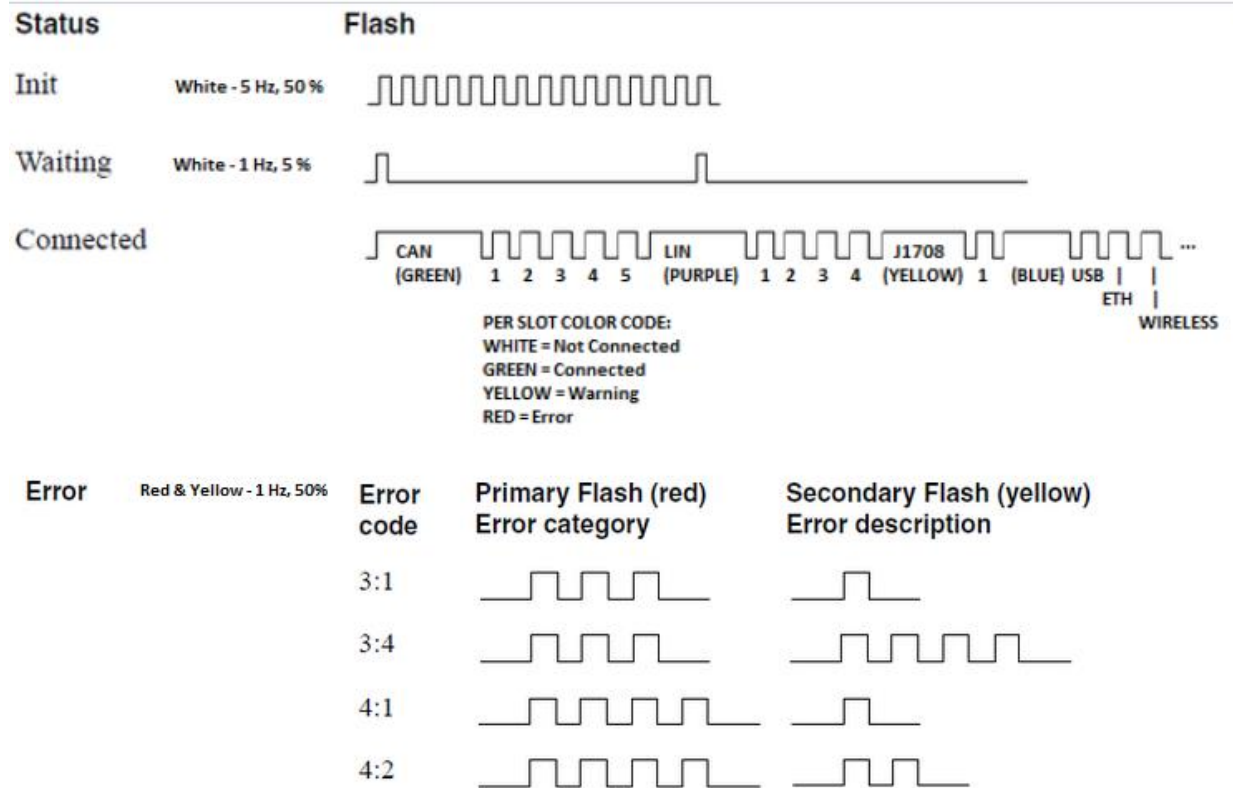
Note: When Ethernet is enabled (see "Network Configuration" section below), access to J11 should be restricted to only those authorized to use it (e.g. place PVSG inside a locked compartment, don't leave mating connector with standard Ethernet connector connected to PVSG).

SMA Connector (External Antenna)



1.3. Status LED

The LED on the PVSG is a multi-color LED that provides diagnostic information as follows (drawing is not to scale):



Where:

- **Init** indicates PVSG is performing some form of initialization (i.e. a portion of the PVSG is still booting up, or performing a configuration/programming step).
- **Waiting** indicates nothing is connected to the PVSG (i.e. no CAN traffic detected, no USB connection, etc.).
- **Connected** indicates something is connected to the PVSG. Use legend to decode connected network status.
 - CAN slot color codes as follows:
 - White: CAN bus inactive (no transmitted or received messages).
 - Green: CAN bus actively transmitting and/or receiving messages.
 - Yellow: Not used.
 - Red: CAN "bus off" or "error passive".



Note: it may be required to successfully transmit and receive a message to clear "error passive" state.

- **Error** indicates an error has been detected.
 - Error codes shown in the diagram are examples.

- The error codes supported by the PVSG are available in the "Error Codes" section below.

1.4. Error Codes

The following table is a list of error codes supported by the PVSG.

Error Code	Description	Detectable via	Disabled Function(s)	Recovery
1:1	Server offline (not detected at all since startup).	LED	Server disabled.	Reset PVSG.
1:2	Server offline (detected at startup, but then later not detected).	LED	Server disabled.	Reset PVSG.
1:3	Configuration missing or invalid. Note: CAN bit rate defaulted to 250 kbps.	LED	CAN transmission disabled.	Configure PVSG.
1:4	Invalid hardware. Note: CAN bit rate defaulted to 250 kbps.	LED	CAN transmission disabled.	Verify version of 1051642 in use supports the hardware in use.
2:1	USB communications failure.	LED	USB disabled.	Reset PVSG.
2:2	Server failed to load configuration.	LED, Dashboard	Default configuration.	Configure PVSG.
2:3	Server failed to mount internal storage.	LED, Dashboard	Server disabled.	Reset PVSG.
2:4	Power control offline.	LED, Dashboard	Power management disabled (PVSG will not sleep regardless of configured wakeup sources).	Reset PVSG.
2:5	Server internal service has stopped responding.	LED, Dashboard, DM1	Server disabled.	Reset PVSG.
2:6	Router offline.	LED, Dashboard	CAN receive/transmit not available.	Reset PVSG.
2:7	Shutdown not possible.	LED, Dashboard	Server shutdown is not possible due to an internal error.	Reset PVSG.
20:1	Missing modules.	Dashboard, DM1	Expected modules are missing from the system.	Connect the missing modules.

Error Code	Description	Detectable via	Disabled Function(s)	Recovery
20:2	Unknown modules detected.	Dashboard, DM1	Unexpected modules are connected to the system.	Remove the unknown modules from the system.
21:1	Custom logic: incompatible SDK.	Dashboard, DM1	Custom logic halted.	Update PVSG and/or custom logic SDK in use. Consult document 1051G05, <i>Custom Logic User Guide</i> for more details.
21:2	Custom logic: resource utilization limits exceeded.	Dashboard, DM1	Custom logic halted.	Debug/rework custom logic. Consult document 1051G05, <i>Custom Logic User Guide</i> for more details.
21:3	Custom logic: failed to load.	Dashboard, DM1	Custom logic halted.	Check PVSG configuration.
21:4	Custom logic: terminated.	Dashboard, DM1	Custom logic halted.	Debug custom logic. Consult document 1051G05, <i>Custom Logic User Guide</i> for more details.
21:5	Custom logic: stalled.	Dashboard, DM1	Custom logic halted.	Debug custom logic. Consult document 1051G05, <i>Custom Logic User Guide</i> for more details.

Where possible, error information is also available in the **PVSG Dashboard**. See the "Dashboard" section of this document for more details.

Error information is available in a periodic DM1 message broadcast by the PVSG on J1939 interfaces that have management enabled (see "J1939 Configuration" section below). Each active Diagnostic Trouble Code (DTC) included in the DM1 message uses proprietary SPN 52xxyy, where x and y are taken from the error code in the table above. E.g. SPN 520205 is error 2:5, and SPN 521510 is error 15:10. Each active DTC uses Failure Mode Identifier (FMI) 31, where 31 is defined by J1939-73 JAN2016 to mean "Condition Exists ... the reported SPN name spells out the component and a non-standard failure mode". Each active DTC sets Amber Warning Lamp (AWL) to flash slow and Red Stop Lamp (RSL) to off.



Note: LED off indicates the PVSG is not operating due to power off, or powered without an activated unmasked wakeup source.

2. Licensing

Licensing is covered in several contexts with respect to the PVSG. The following is a summary of the contexts and specific license related references in this document:

1. Section "Software Licensing & Copyright" below deals with the GPL code used in the PVSG that is licensed under the GNU General Public License (refer to section "GNU GENERAL PUBLIC LICENSE" at the end of this document).
2. Section "Licensing" under "Configuration Tool" describes how a tool license is required to view or edit a PVSG configuration file. A configuration tool license is not required to download a PVSG configuration file to a PVSG.
3. Section "Licences" under "Dashboard" describes how the dashboard provides an interface to install a tool license (e.g. Configuration Tool License) or a PVSG feature license.
4. Section "Variants" under "Configuration Tool" > "Creating/Editing Configurations" describes how PVSG feature licenses can be used to enable functionality on certain variants of the PVSG.
5. Document 1051G05, *Custom Logic User Guide* describes additional licenses for the development of custom applications and programming plugins.



Note: License and licence is used interchangeably in this document and in the software.

2.1. Software Licensing & Copyright

The software running on the PVSG makes use of code built around the GNU General Public License, version 2.

All Parker-modified GPL code continues to be licensed under the GNU General Public License. This license is available in its entirety at the end of this document. You may obtain the complete Corresponding Source code from us for a period of three years after our last shipment of this product, which will be no earlier than 2021-01-01, by a request to:

Parker Hannifin Canada
Electronic Controls Division
1305 Clarence Avenue
Winnipeg, MB R3T 1T4 Canada

Please include the following with your request: "Request for source code corresponding to Parker-modified GPL code licensed under GNU General Public License in product PVSG 1051000". This offer is valid to anyone in receipt of this information.

All Parker-generated code is copyright Parker-Hannifin Corporation, all rights reserved. No part of this Parker code may be reproduced, published, or distributed in any form or by any means (electronically, mechanically, photocopying, recording or otherwise), or stored in a database or retrieval system, without the prior written permission of Parker-Hannifin Corporation in each instance.



3. Security

The following security related risk reductions factors are included in the PVSG to reduce the risk associated with security threats (including cybersecurity related threats):

- Configuration file includes optional password-based protection to restrict view and/or edit access. Configuration files are encrypted to prevent unauthorised access and modification. See "Configuration Security" section below for details. This can be used to:
 - Prevent unauthorised users from modifying the installed configuration.
 - Prevent unauthorised users from reading an installed configuration and gaining unapproved knowledge of the system.
- Wireless configuration includes optional support for connection-oriented security modes to restrict access when wireless is enabled. See "Network Configuration" section below for details.
 - The configuration warns the user if an acceptable level of security has not been configured.
- User access control provides optional support for restricting access to certain PVSG features. See "User Accounts" and "User Access Control" sections below for details.
 - The configuration tools warns the user if the specified user account password does not meet specific security criteria.
- Critical data exchange with the PVSG (e.g. configuration, authentication) uses a secure session to prevent eavesdropping and man-in-the-middle attacks. This uses industry standard transport layer security (TLS) mechanisms to protect the system and its users.
- Data signing techniques are employed where necessary to validate the authenticity of specific data and its sender.
- Open TCP/IP ports limited to only required ports in use.
- Some critical functions are protected by hardware separation.
- Internal access to the PVSG is protected via a layered security approach to prevent unauthorised access.

When incorporating the PVSG into a system with security requirements, ensure that the optional security related PVSG features are configured appropriately and that any system level security related risk reduction factors are also considered to reduce the risk associated with security threats (including cybersecurity related threats).

Contact Parker for more information should you have questions not covered by this document.

4. Embedded Software

Embedded software for the PVSG is distributed as a deployment package, software part number 1051642. 1051642 is pre-programmed in the PVSG, and upgradable using the update tool (1051606).

4.1. J1939

J1939 Controller Applications (J1939 CAs) are configurable for each physical CAN interface via the configuration tool (1051646).

4.1.1. Version Information

Version information is available on each configured J1939 CA via the J1939 Software Identification (SOFT) and Component Identification (CI) messages. The information can be requested from the CA using the J1939 Request (RQST) message. Note that the information returned by each CA will be identical. The response for both SOFT and CI is compliant with 983F17.01A (internal Parker ECD Standard). In the case of the SOFT message, the fields present are as shown in the following table.

Field Name	Use
APP	The version of the 1051642 embedded deployment package.
PAR	Information pertaining to the installed configuration. This includes the configuration version, label and file name information.
MODE	The current operating mode of the product. Valid values are "Run" and "Test".
FMT	The specification with which the J1939 SOFT output is compliant. Currently, this is 983F17.01A.

For the Component Identification message, the final SAP number and final serial number are published for the "Model" and "Serial Number" fields respectively. The format is governed by J1939DA August 2015.

Example:

Below is an example trace from CANsniff:

Timestamp | Len. | PGN | P SA DA | Data

```

-----
12:57:40.260 | 3 | 00EA00 | 6 F9 00 | DA FE 00 |
12:57:40.307 | 94 | 00FEDA | 6 00 FF | 04 41 50 50 2C 31 30 35 31 36 34 32 2C 56 30 2E 35
42 32 37 2A 50 41 52 2C 2C 56 30 2E 30 42 31 2C 31 30 35 31 4D 30 36 20 54 31 31 38 2C
31 30 35 31 4D 30 36 5F 30 34 41 5F 54 31 31 38 2E 70 76 73 67 63 2A 4D 4F 44 45 2C 52
75 6E 2A 46 4D 54 2C 39 38 33 46 31 37 2C 52 30 31 41 2A |
APP,1051642,V0.5B27*PAR,,V0.0B1,1051M06
T118,1051M06_04A_T118.pvsgc*MODE,Run*FMT,983F17,R01A*
13:05:19.997 | 3 | 00EA00 | 6 F9 00 | EB FE 00 |
13:05:20.031 | 25 | 00FEEB | 6 00 FF | 2A 31 36 32 37 35 30 2A 50 52 4F 31 30 35 31 30 30
31 52 30 30 3F 3F 2A 2A | *162750*PRO1051001R00??**

```



The following information was returned upon request of the SOFT message:

APP,1051642,V0.3B18*PAR,,V0.0B1,1051M06

T118,1051M06_04A_T118.pvsgc*MODE,Run*FMT,983F17,R01A*

The following information was returned upon request of the CI message:

*162750*PRO1051001R00??**

where the final SAP number was set to "162750" and the final serial number was set to "PRO1051001R00??".

5. PC Software

5.1. Overview

PC software for the PVSG is distributed via a single installer (1051605). This installer currently installs the following components:

Component Name	Software Number
Core Driver (*)	1051602
Update Tool	1051606
Configuration Tool	1051646

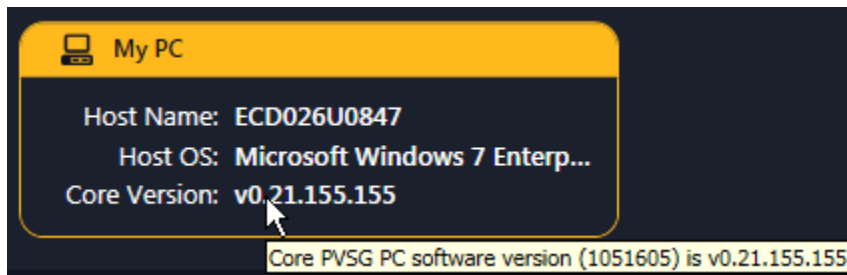
* - The core driver is made up of more than just 1051602, but 1051602 includes the dashboard which is the only user-visible piece.



Note: Refer to the "Software Release Notes" section in this document to determine the correct version of PC software to use with the version of 1051642 used in the PVSG.



Note: The current installed version of the PC software (1051605) can be determined from the dashboard:



The current installed version of the PC software (1051605) can also be determined by going to **Control Panel > All Control Panel Items > Programs and Features** and examining the version reported by **Parker Vehicle System Gateway Suite**. For example:

Parker Vehicle System Gateway Suite	Parker Hannifin Corp.	30/11/2016	59.9 MB	0.2.9.9
-------------------------------------	-----------------------	------------	---------	---------



Note: The security principal of an administrator may be required to install the PVSG PC software.

5.1.1. System Requirements

The PVSG PC Software currently requires Windows 7 / 10 (32-bit or 64-bit), a minimum screen resolution of 1024 x 768, and USB 2.0 or higher.

5.1.2. File Types

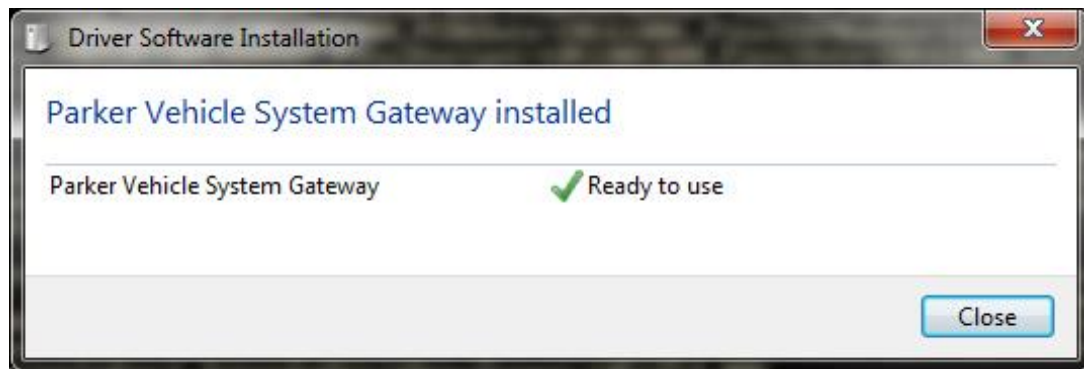
The following file types are used by the PVSG PC software.



File Extension	Type	Used By	Description
.pvsgs	PVSG Software	Update Tool (1051606)	PVSG embedded software package. Created by Parker Engineering.
.pvsgc	PVSG Configuration	Configuration Tool (1051646)	PVSG configuration source file. Configuration can also be distributed in this format.
.pvsgapp	PVSG Custom Logic	Configuration Tool (1051646)	PVSG custom logic file (custom application or custom programming plugin). Contact Parker for more details.

5.1.3. USB Driver Software Installation

The first time a PVSG is connected to a PC via USB, Windows will initiate a PVSG USB Driver Software installation. The PVSG PC Software should not be used until the PVSG USB Driver Software installation has completed:



5.1.4. Management Connectivity

It is possible to connect to the PVSG for management purposes via 3 interfaces:

- USB
- Ethernet
- Wireless

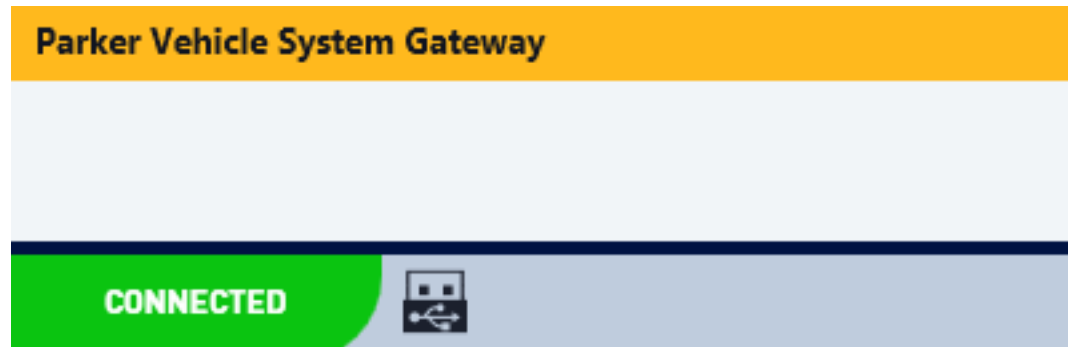
The PVSG PC drivers can handle all 3 types of communication link. From an architectural perspective, Ethernet and Wireless are the same mechanism and are categorised herein simply as "Network" since the underlying layer (TCP/IP) is the same for each. The active communication mechanism can be selected from the **Dashboard** application within the **Connection** tab.

5.2. Dashboard

The dashboard is the user-visible portion of the core driver (1051602) that is the single endpoint for PVSG communication with the PC. Any PC tool(s) needing to communicate with the PVSG does so via this service.

5.2.1. Accessing the Dashboard

The dashboard will start automatically when you log in to Windows as a tray application. Connection change notifications will be shown near the system tray area, for example:



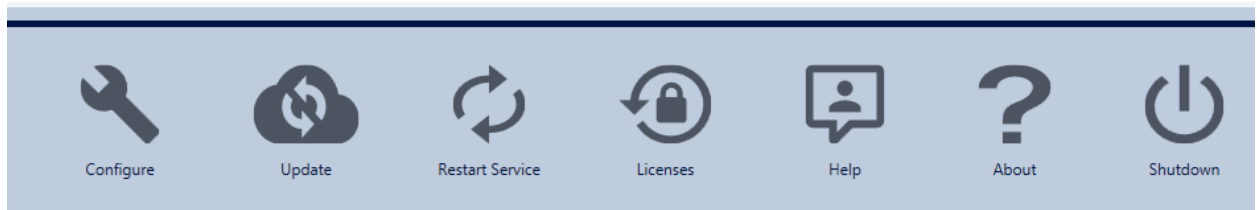
The dashboard tray application can be opened by double-clicking the 'Parker' icon in the system tray area:



When closed, the dashboard will be hidden and continue to run in the background. The dashboard tray application can be permanently shutdown using the **Shutdown** option on the dashboard dock. The dashboard dock can be accessed by clicking the dock button in the top right corner:



Or pressing **Ctrl + D** when the dashboard is in focus. The dock appears at the bottom of the dashboard window:



The dock provides quick access to other PVSG tools as well as access to the help files and version information.

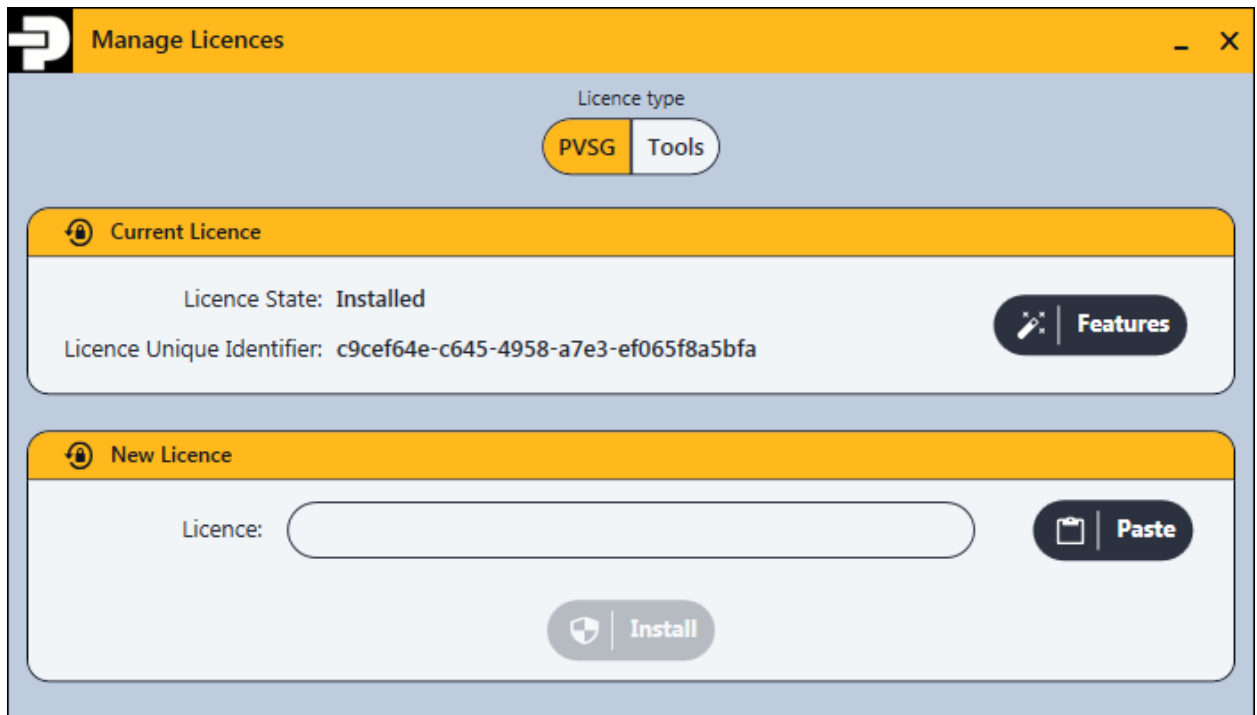
If needed to be relaunched after a permanent shutdown, run **PVSG Dashboard** (shortcut added to Windows start menu by default as part of the installer (1051605) under **Parker > ECD > PVSG**).



Note: Shutting down the dashboard does not shut down the portion of the core driver (1051602) that runs as a Windows service. If you need to restart the core driver, select **Restart Service** from the dashboard dock. Alternatively, from the Windows start menu select **Run**, enter **services.msc** and click **OK**. This should launch a **Services** screen listing Windows services. In the list of services, find **PVSG Driver Core Manager**, right-click on it and select **Restart**. The security principal of an administrator may be required to restart the **PVSG Driver Core Manager** service. If you can't restart the service, restart Windows.

5.2.2. Licences

PVSG feature licences and tool licences can be installed via the licence manager.



5.2.2.1. PVSG

PVSG feature licences can be obtained from Parker Hannifin Corporation, or are pre-installed on a PVSG unit. To install a licence, copy the licence data provided by Parker to the Windows clipboard, and click the **Paste** button under **New Licence**. The PVSG must be restarted (per the prompt) in order for the new licence to take effect. The state of any installed licence is reported under **Current Licence** along with a summary of the enabled feature state via the **Features** button.



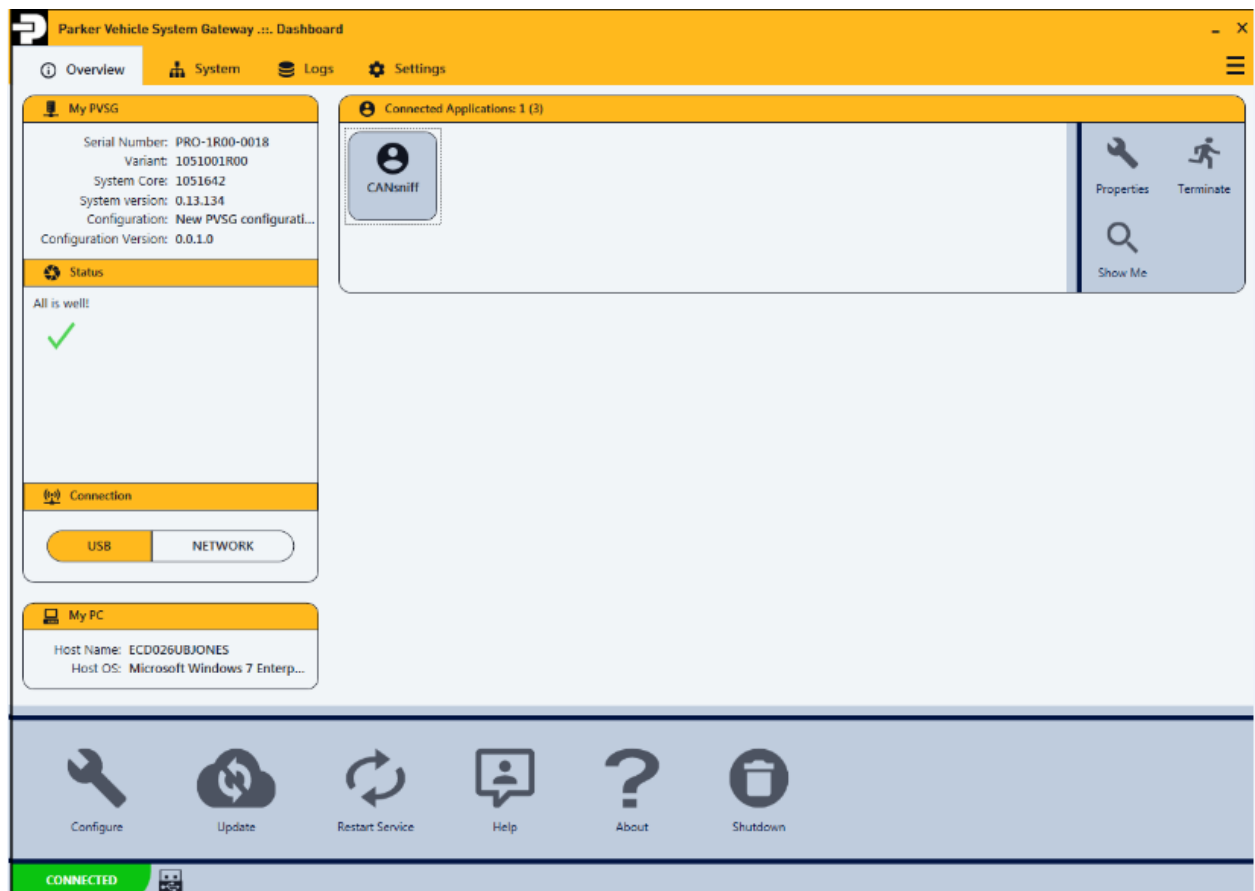
Note: the state of any installed licence is only available when the PVSG has a valid configuration installed.

5.2.2.2. Tools

This section provides easy access to licence data for installed PVSG tools. Refer to the specific tool help for more details on the licence in relation to that particular tool.

5.2.3. Overview

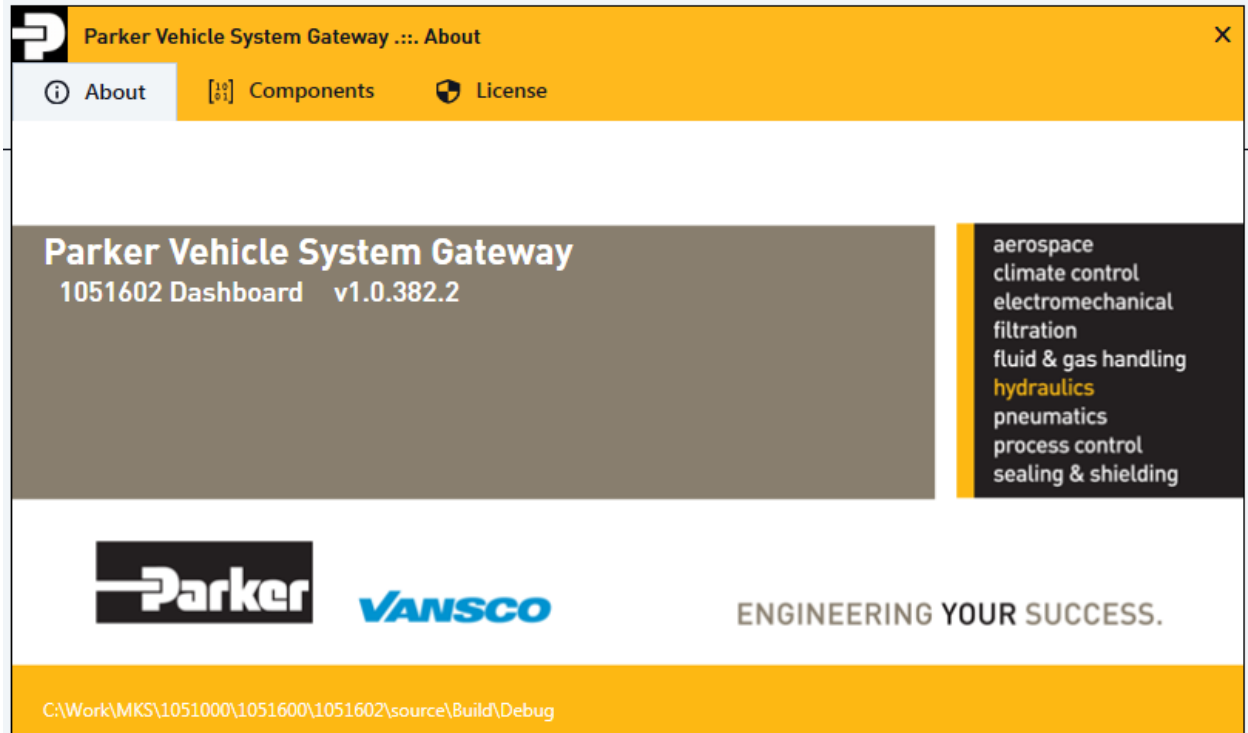
The **Overview** tab provides a quick view of the current state of the connected PVSG (if one exists) and the current state of the PC drivers, including which applications are connected.







Note: The **Configuration Version** number is composed as follows: the first three numbers match the major version, minor version, and build number entry in the configuration tool, and the fourth number (is known as the 'runtime configuration version') is a number updated by PVSG whenever configuration is modified internally (incremented per change at shutdown) or a new configuration is installed (set to 0).


Driver version information can be obtained by selecting the **About** option on the dashboard dock:




The **Components** tab provides detailed information on all major driver components:



Parker Vehicle System Gateway ... About

 About


Components

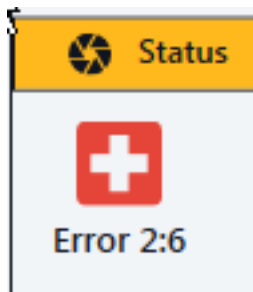
 License

Component Name	Version
cantypes.dll	0.1.9.0
cldp.dll	0.1.10.1
j1939stack.dll	0.10.69.2
j1939types.dll	0.8.23.1
libnetdisco.dll	0.5.9.1
logprocabinet.dll	0.2.3.1
libvsgcontrols.dll	1.0.44.2
PH105132.dll	0.5.15.5
pvsgconfig.dll	0.11.43.6
pvsgdcs.dll	0.1.4.0
pvsgsuppkg.dll	0.27.283.4
nvsgsvc.exe	0.16.22.6

 **Copy Info**

Note that the **Copy Info** button can be used to help provide diagnostic information to Parker; this will copy all of the component version information to the Windows clipboard which can then be pasted into an email, for example.

Active target errors are shown within the **Status** panel. The error codes match those shown on the PVSG's status LED and the "Error Codes" section within this document can be used to lookup the meaning.






5.2.4. Connection Information

The bottom right corner of the Dashboard provides connection information summary.



The connection status indicator on the left reports the connection state as **CONNECTED** or

NOT CONNECTED. When connected, the connection method will be shown as USB ()

or network (). In addition, when connected, a lock symbol () will appear when a secure session has been established with the PVSG.



Note: A secure session is required to perform critical data exchange with the PVSG (e.g. configuration, authentication).

The **Connection** panel provides an interface to select between available target connection methods (USB or Network (including Ethernet and wireless)).

5.2.4.1. USB

USB is the primary management connection mechanism. If another management connectivity mechanism is in use and the USB connection becomes connected, communication will transition to the USB link once a connection is established.

5.2.4.2. Network

The default network connection mechanism is Ethernet. If Ethernet and/or wireless is enabled in the configuration and depending on whether Ethernet is physically connected to the target or not, one or the other will become active whenever the USB link is determined to be disconnected. If wireless is enabled in the configuration, the radio will power up and down as necessary when the network connection mechanism is available.

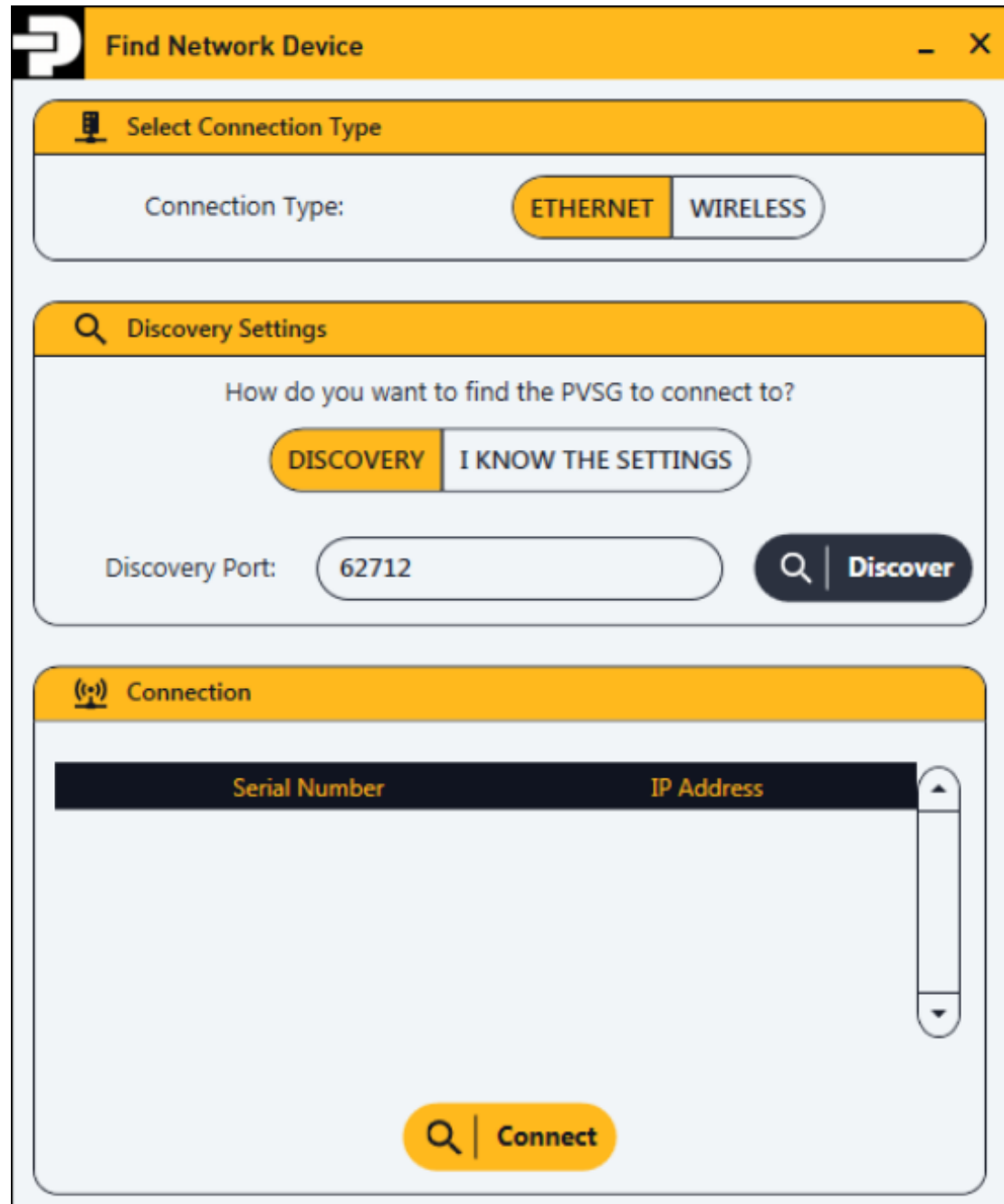
All network configuration can be done via the configuration tool (1051646) from the **Network Configuration** menu option.

Discovery

The network communication mechanism provides a discovery feature which allows one or more PVSGs to be discovered on the network. This allows such devices to be connected to without knowing their address details. For this to work, discovery must be enabled in the configuration and the discovery port must be known. The discovery mechanism uses broadcast UDP transmissions, and so PVSGs can **ONLY** be discovered within the broadcast domain of the network to which they are connected. The broadcast domain is controlled by

both the physical topology of the network and the addressing scheme in use. Importantly, note that broadcast transmissions are never forwarded by network routers. The PVSG(s) which you wish to discover and the PC performing the discovery operation must be on the same network segment and be visible to one another.

The discovery interface can be accessed from the dashboard by going to the **Connection** panel and clicking on **Network**. This will bring up the following screen.



The interface is titled "Find Network Device" and is divided into three main sections:

- Select Connection Type:** A section with a "Connection Type:" label and two buttons: "ETHERNET" (selected) and "WIRELESS".
- Discovery Settings:** A section with a search icon and the text "How do you want to find the PVSG to connect to?". It contains two buttons: "DISCOVERY" (selected) and "I KNOW THE SETTINGS". Below this is a "Discovery Port:" label with a text input field containing "62712" and a "Discover" button with a search icon.
- Connection:** A section with a connection icon and the text "Connection". It features a table with two columns: "Serial Number" and "IP Address". The table is currently empty. At the bottom of this section is a "Connect" button with a search icon.

Click **Discover** to discover available PVSGs. Available PVSGs will appear in the *Connection* area of the screen. Select the desired PVSG and then click **Connect** to establish a connection with it.



Ports

As is good practice with services which use TCP/IP communication, the ports used are configurable. Note that the default values have been carefully chosen to avoid collision with known standard ports, and so should not be changed by the user without very good reason.

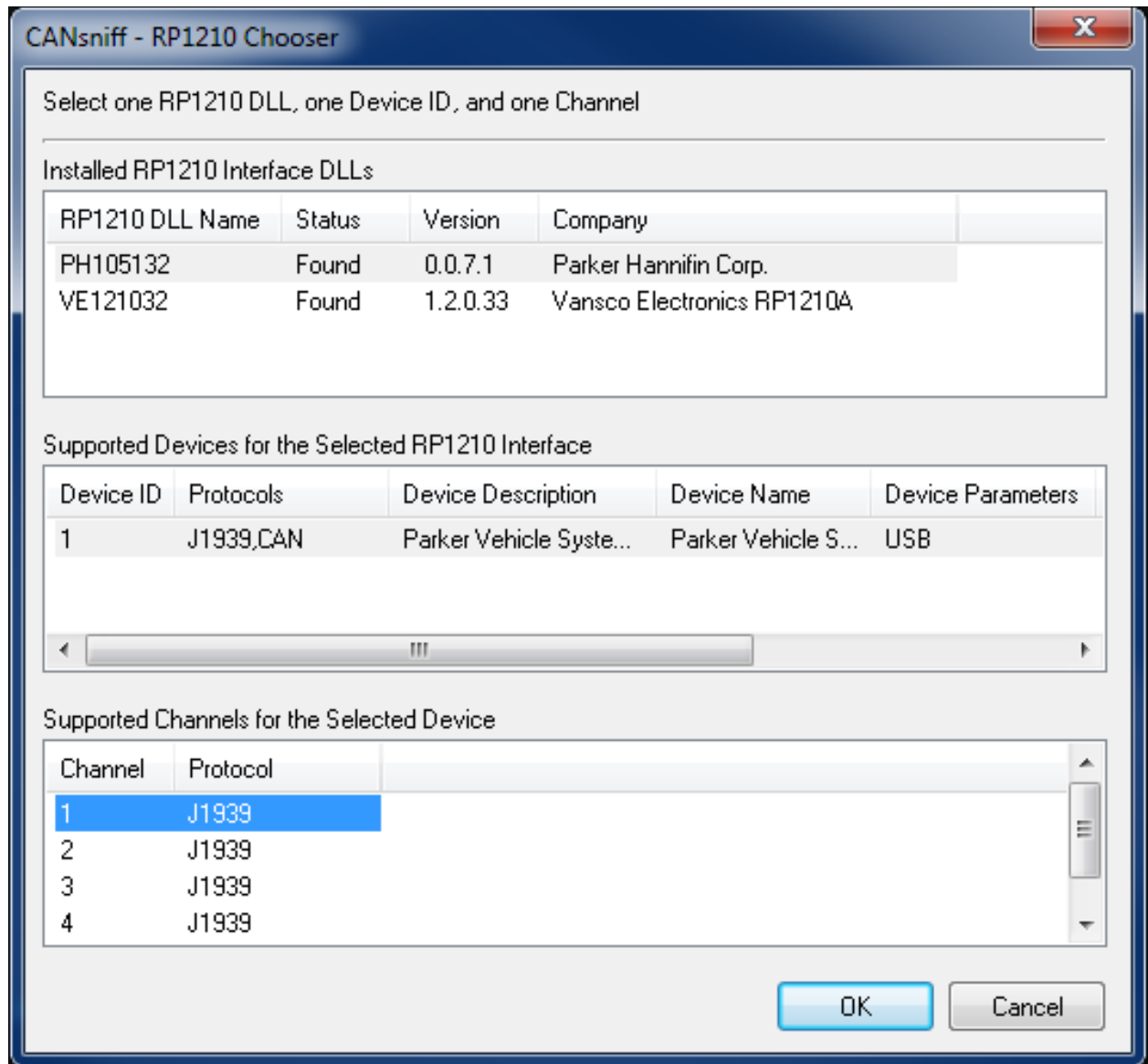
5.2.5. Client Information

The dashboard provides information on the clients connected to the target. The **Connected Applications** panel provides an interface to select between connected applications.

5.2.5.1. Connecting a RP1210 Client

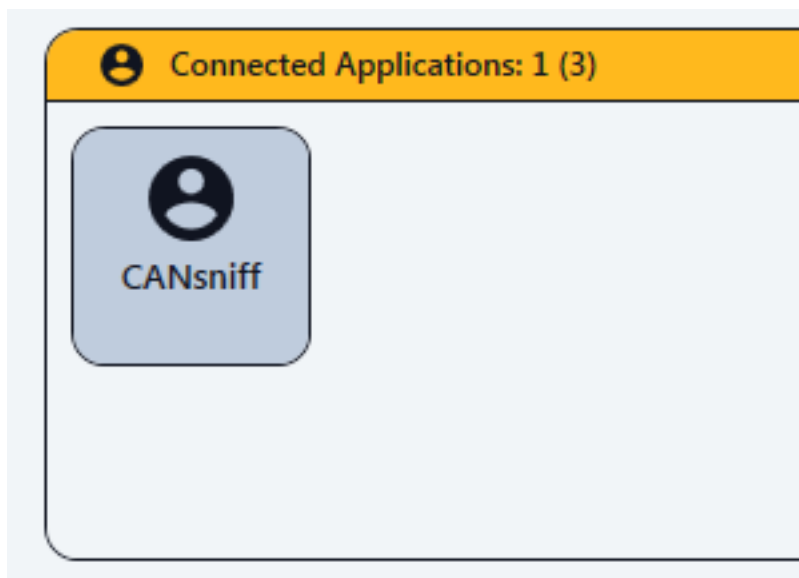
The PVSG supports a subset of RP1210C (reference *TMC RP 1210C - Windows Application Program Interface*) to provide diagnostic tool access to all of the PVSG CAN, J1939 and J1708 interfaces.

In order to connect a RP1210-based tool to the PVSG (e.g. CANsniff), the PVSG DLL (i.e., PH105132) must be specified as the RP1210 Vehicle Datalink Adapter (VDA) to use. For example, CANsniff supports a built-in RP1210 chooser that allows you to choose the RP1210 VDA to use. Note other tools may require other steps to be taken to specify the PVSG DLL.

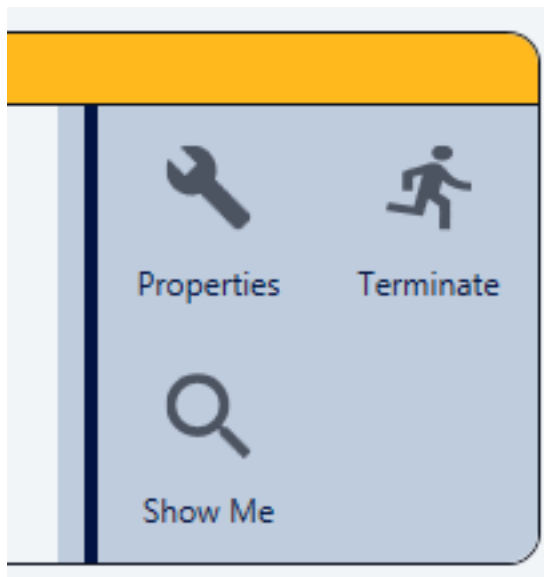


Note: The physical CAN bus with which an RP1210 client is associated is set by channel selected for the supported device when specifying PH105132 (third section of the screen above *Supported Channels for the Selected Device*). The channel number is the physical CAN bus number (i.e. Channel 1 is CAN 1, Channel 2 is CAN 2, etc.).

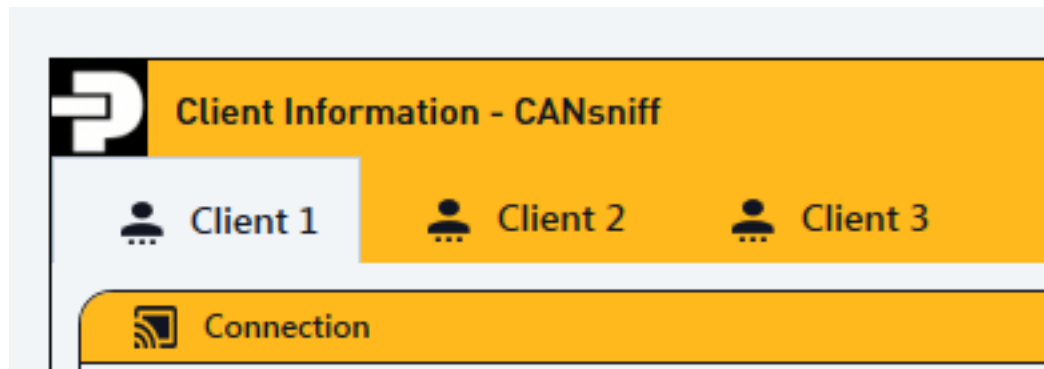
Once connected, the client can be seen from the dashboard tray application, **Connected Applications** panel.



Clicking on any client application will bring up a menu with actions that can be performed upon the application attached to the PVSG.

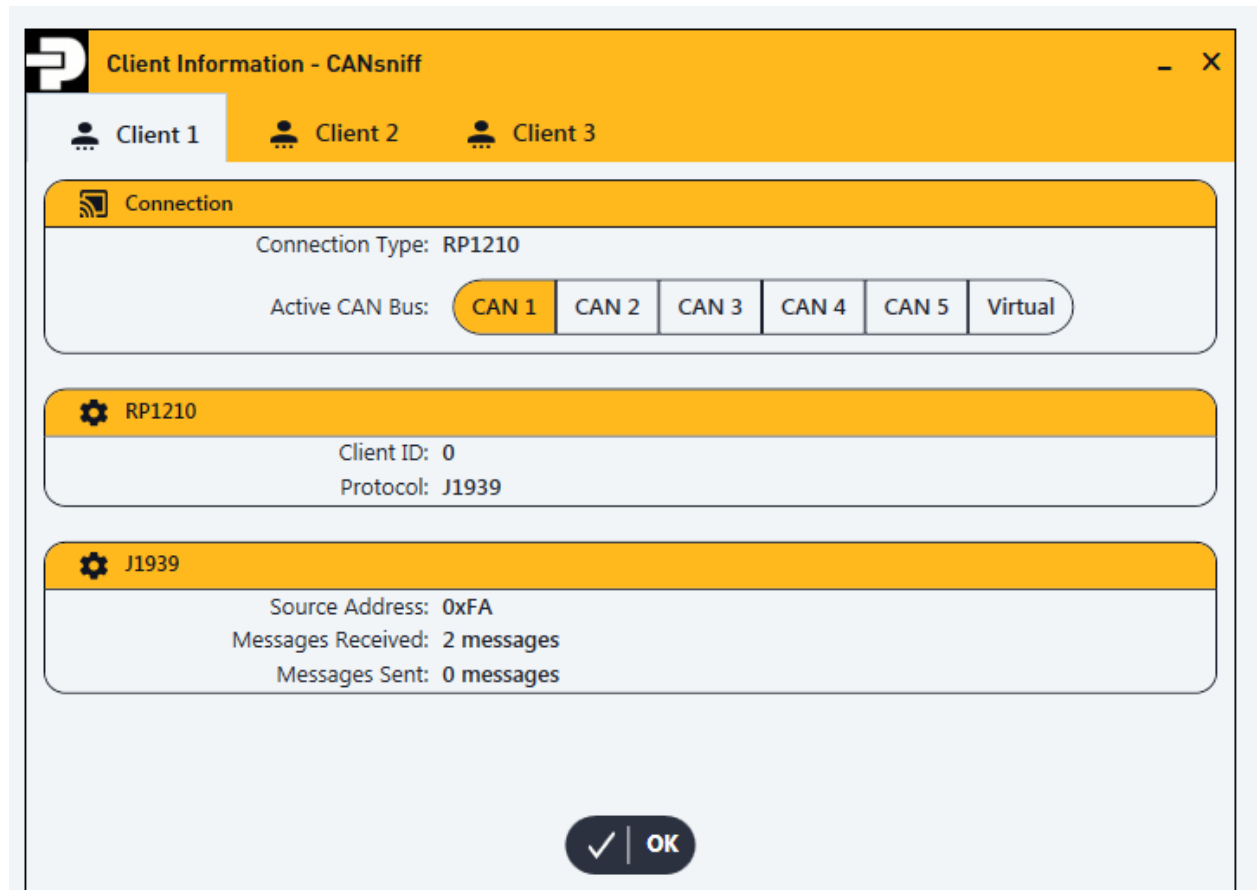


Note: A single application may contain multiple "clients". In terms of RP1210 clients, for example, a single application instance may open more than one RP1210 client connection. Each logical connection which a connected application owns is shown as a tab in the properties window:



5.2.5.2. Properties

The **Properties** window shows various metric information about a particular client connection. For CAN (or J1939) type connections, it also allows the active CAN bus to be changed:



Notes:

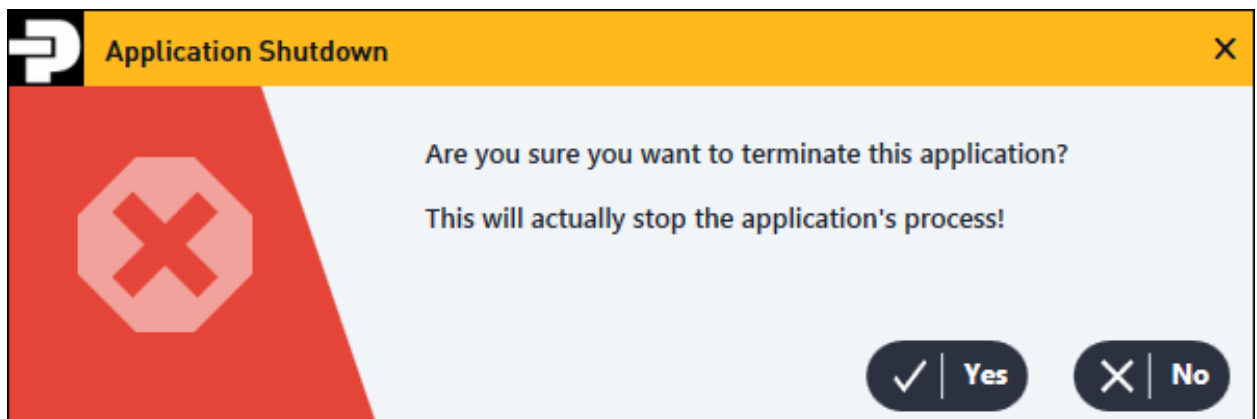
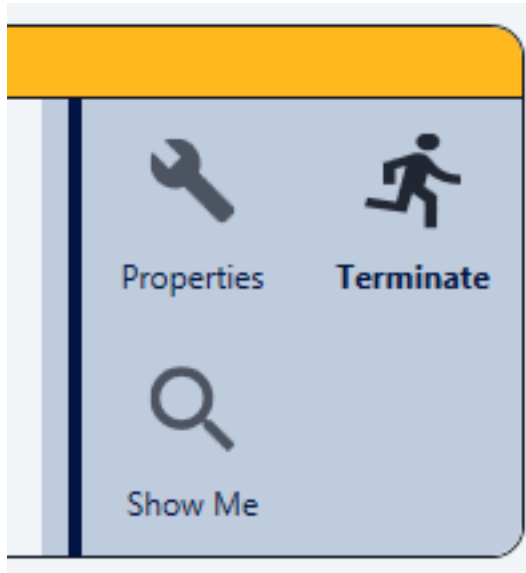
- The virtual CAN bus connection (the *Virtual* tab seen above) is currently a stub (non-existent).
- Some applications (e.g. CANsniff) may make more than one RP1210 client connection and all of the RP1210 client connections associated with a particular instance of an



application may need to be updated to the same CAN bus in order for the application to function properly.

5.2.5.3. **Terminate**

The **Terminate** option can be used to stop the connected application's process:



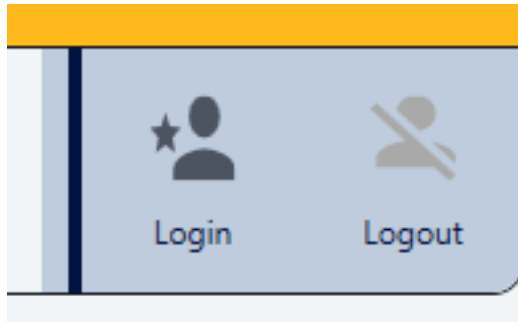
This terminates any logical client connections and then shuts down the application's process.

5.2.5.4. **Show Me**

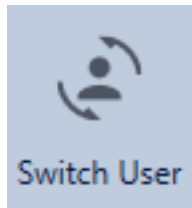
The **Show Me** option can be used to give visual focus to the selected application's process.

5.2.6. **User Access Control**

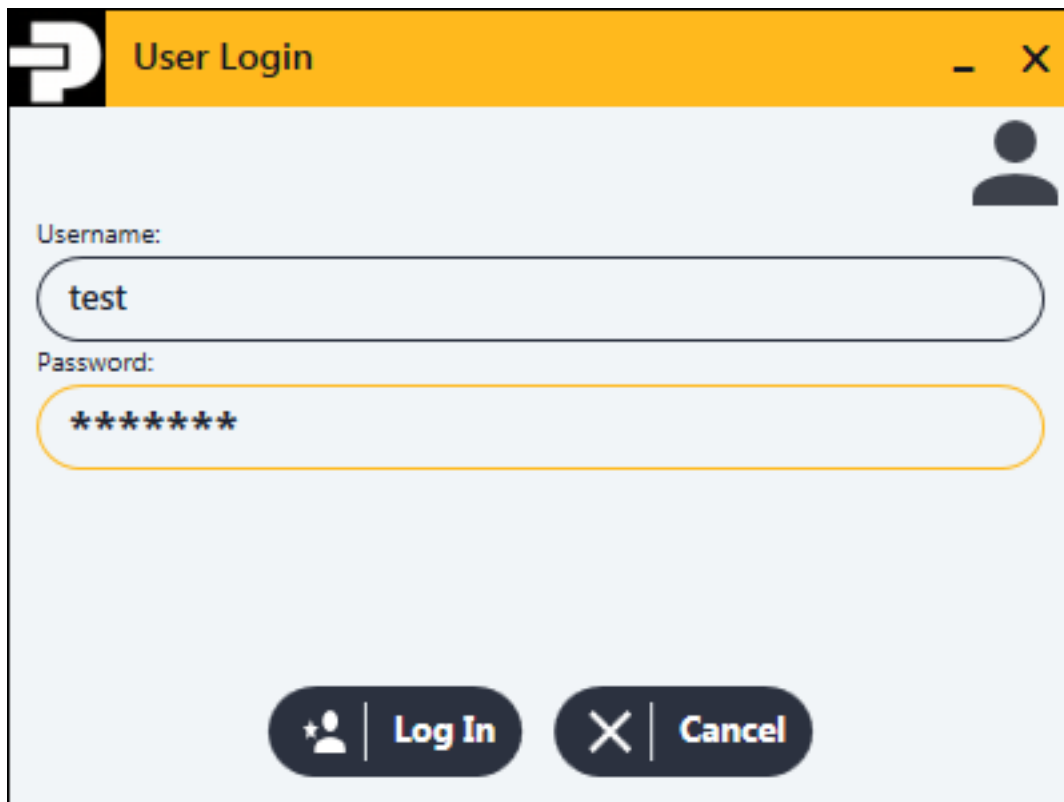
The dashboard provides the ability to log in to the PVSG. By default, the anonymous user is logged in. The current user will be logged out whenever an attached management device is disconnected, or the PVSG is rebooted. The **Login** and **Logout** buttons may be used to log in as a new user, or log out as the current user respectively:



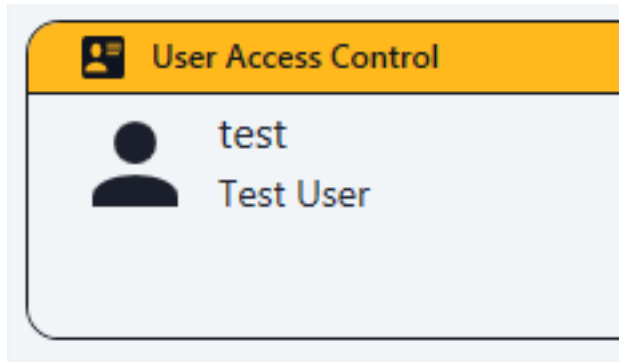
If a user is already logged in, the **Switch User** option appears:



When logging in (or switching user), the **User Login** window is displayed:

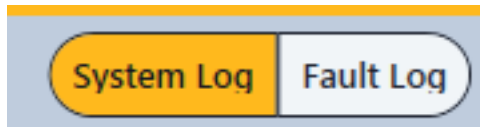
A screenshot of the 'User Login' window. It has a title bar with the Parker logo and the text 'User Login'. Inside, there's a 'Username:' label followed by a text input field containing 'test'. Below that is a 'Password:' label followed by a password input field containing '*****'. At the bottom, there are two buttons: 'Log In' with a person icon and 'Cancel' with an 'X' icon.

Entering the correct username and password will log the respective user in. Entering an incorrect username and password will log in the anonymous user.



5.2.7. Logs

The **Logs** tab provides an interface to retrieve logs, including system logs and fault logs. The log type can be selected using the toolbar buttons:



Refresh the logs by clicking the **Request** button in the top right corner.

Level	Source	Time	Username	Detail
Information	Programming	01-Jan-1970 12:12 AM	system	System module 0x28 on CAN 2 was reprogrammed successfully.
Information	Programming	01-Jan-1970 12:04 AM	system	System module 0xe4 on CAN 2 was reprogrammed successfully.
Information	Configuration	01-Jan-1970 12:00 AM	512118	Configuration was updated.
Information	Configuration	01-Jan-1970 4:10 AM	512118	Configuration was updated.
Information	Configuration	01-Jan-1970 12:00 AM	512118	Configuration was updated.
Information	Configuration	01-Jan-1970 12:00 AM	512118	Configuration was updated.
Information	Configuration	01-Jan-1970 12:01 AM	512118	Configuration was updated.
Information	System	22-Feb-2014 5:39 PM	system	The system has been successfully upgraded to 1051642, version 0.16.192.
Information	System	01-Jan-1970 12:00 AM	system	The system has been successfully upgraded to 1051642, version 0.16.190.
Critical	System	22-Feb-2014 1:44 PM	system	The XMC has gone missing but the recovery mode is set to warn.
Information	System	22-Feb-2014 1:43 PM	system	The system has been successfully upgraded to 1051642, version 0.12.107.
Critical	System	22-Feb-2014 6:26 PM	system	The M0 has gone missing but the recovery mode is set to warn.
Information	Configuration	22-Feb-2014 6:25 PM	512118	Configuration was updated.
Information	Programming	22-Feb-2014 6:01 PM	system	System module 0x21 on CAN 2 was reprogrammed successfully.
Warning	System	22-Feb-2014 6:01 PM	system	XMC reset was detected.
Critical	System	22-Feb-2014 6:01 PM	system	The XMC has gone missing but reset was inhibited by the user.
Critical	System	22-Feb-2014 6:01 PM	system	The XMC has gone missing and will be reset to attempt recovery.
Critical	System	22-Feb-2014 6:01 PM	system	The M0 has gone missing but the recovery mode is set to warn.

Parker Vehicle System Gateway :: Dashboard

Overview System **Logs** Manage Settings

System Log Fault Log

Request Export

SPN	FMI	Fault Code	Occurrence Count	Time	Engine Hours
521719	5		1	01-Jan-1970 12:00 AM	0
521719	5		1	01-Jan-1970 12:00 AM	0
521719	5		1	22-Feb-2014 5:46 PM	0
521719	5		1	01-Jan-1970 12:00 AM	0
521719	5		1	01-Jan-1970 12:00 AM	0
521719	5		1	01-Jan-1970 12:00 AM	0
521719	5		1	01-Jan-1970 12:00 AM	0
521719	5	Test	1	22-Feb-2014 3:12 PM	0
521719	5	Test	1	01-Jan-1970 12:00 AM	0
521719	5	Test	1	01-Jan-1970 12:00 AM	0
521719	5	Test	1	01-Jan-1970 12:00 AM	0
521064	5	Test Code	1	01-Jan-1970 12:00 AM	0

The listing of logs are displayed in reverse chronological order.

To export logs to a .csv file, select **Export** button in the top right corner.

For system logs, the following events are logged:

- Configuration failed to load
- eMMC failed to mount
- Softdog related events (server services/router (XMC)/power control (M0) gone missing)
- Configuration updated (including username of user who performed the update)
- System update events
- Shutdown provider stopped
- USB service stopped

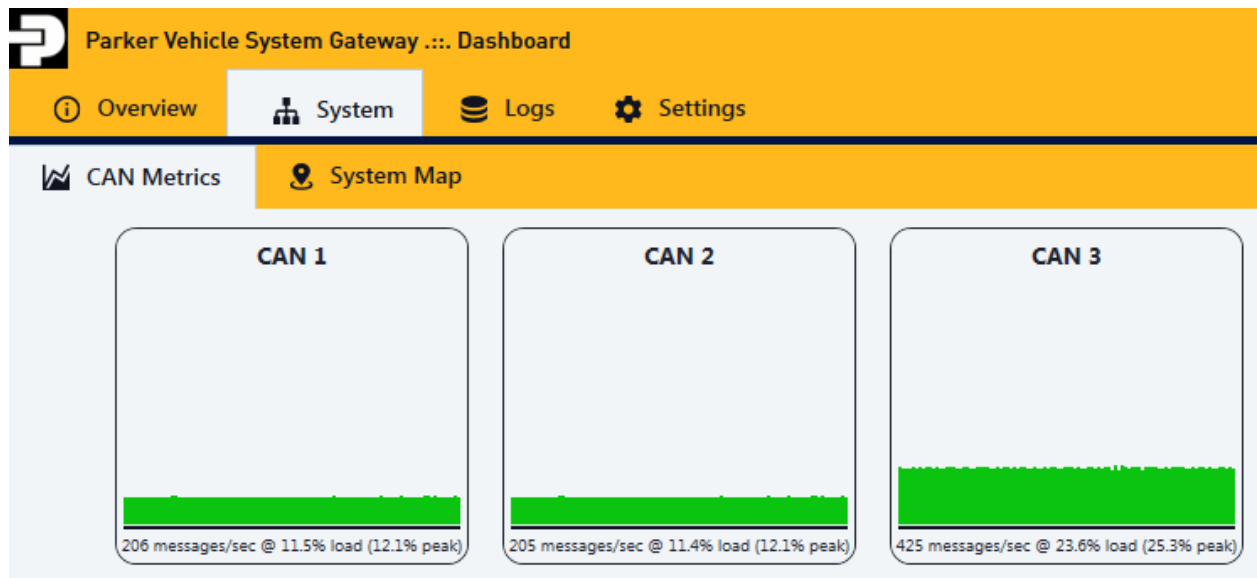
For details on the data logged within a fault log, see the **Fault Logging** section under **Configuration Tool**.

5.2.8. System

The **System** tab provides access to CAN metric information and the system map.



5.2.8.1. CAN Metrics



This shows the number of CAN messages being received by the PVSG per second, for each available CAN bus. The approximate bus load is also shown as a percentage, given the configured baud rate. The traffic graph uses the following colours:

- Green. 0% <= CAN bus load < 40%
- Yellow. 40% <= CAN bus load < 70%
- Red. 70% <= CAN bus load <= 100%

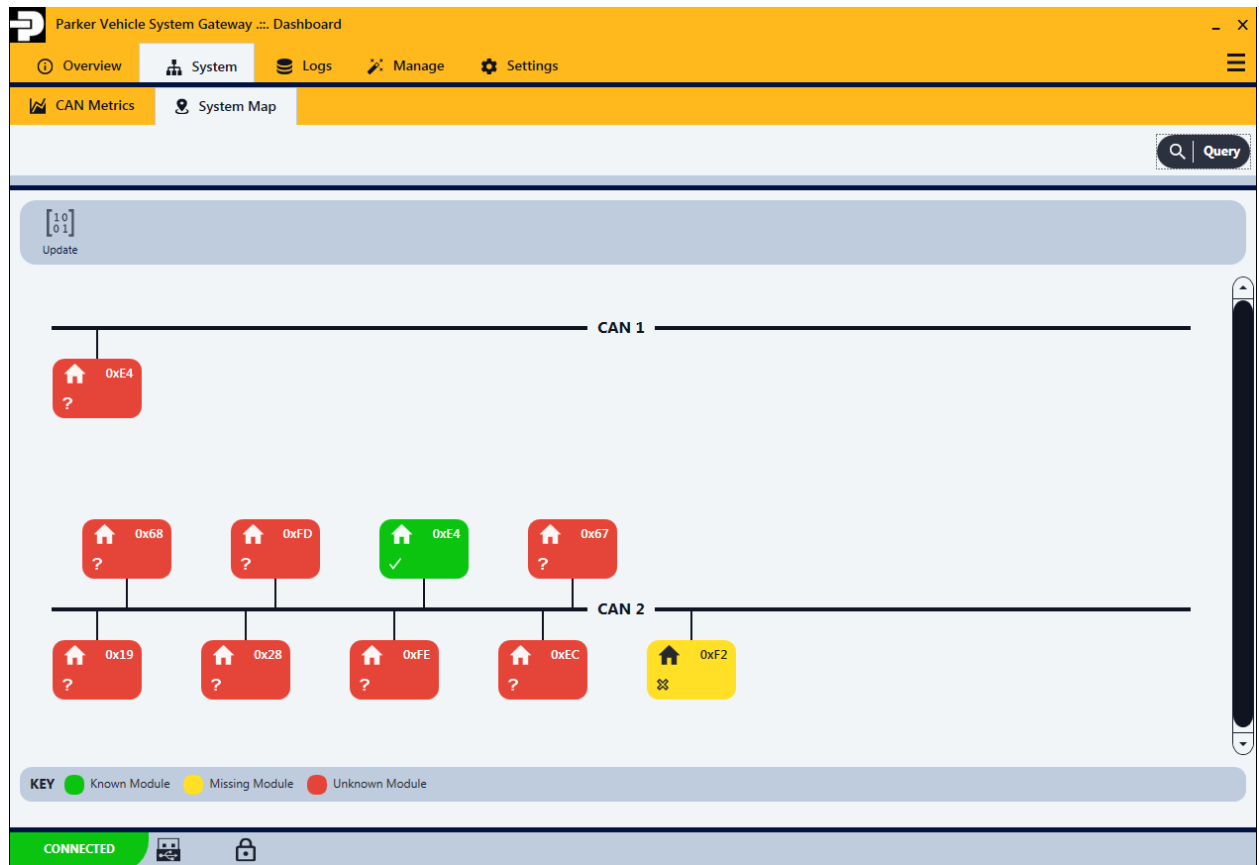


Note: The CAN bus metric colour scheme is merely used to provide a visual aid. It does not provide any indication as to the state of the system and should not be used as such.





5.2.8.2. System Map

The **System Map** tab shows a visual representation of the modules connected to the system in which the currently attached PVSG resides. Clicking **Request** retrieves the module data currently stored by the PVSG. Clicking **Probe** forces the PVSG to detect new modules first.


Modules are detected by the PVSG making a "J1939 global request for address claim" on all configured CAN buses (see the "Configuration Tool" section for details on how to configure module detection). Additional information is retrieved from modules which respond, where possible.




The icons shown within a module card differ depending upon the state of the module:


Icon	Description
	Module is known, and is expected on the system.
	Module is not known, and is not expected on the system.
	Module is missing from the system.
	The configuration holds software for this module, and it can be updated.

Clicking on a particular module shows additional information, where available:



Module Information


0x2E on CAN 2


Bus: CAN 2
Address: 0x2E


Component Identification

Model: 161561
Serial Number: 81985529216486895

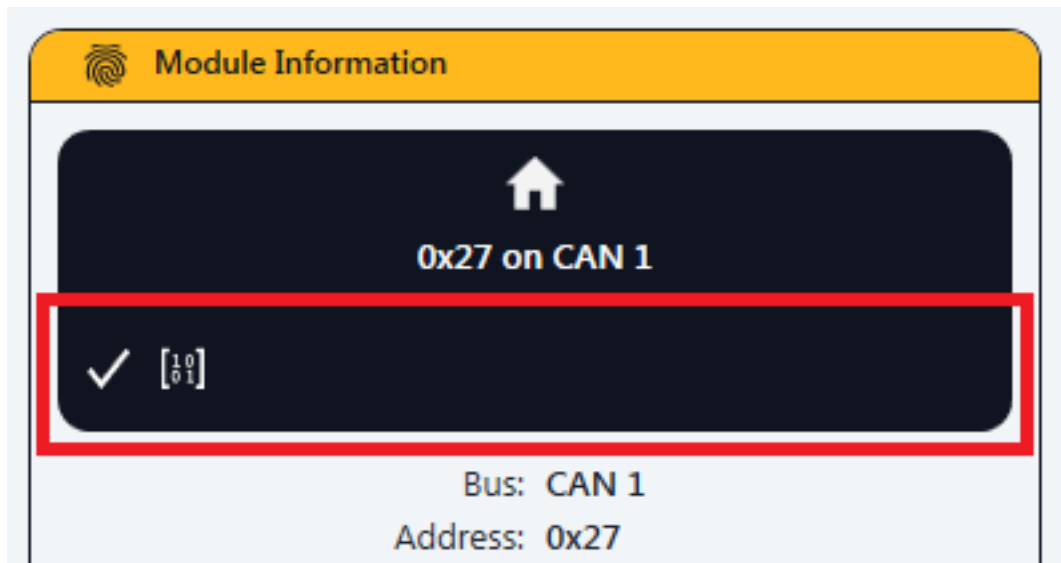

Software Identification

Active: Application 1
Application 1: DPS-C Construction X,Y,Z
Application 1 Software: 971611
Application 1 Version: 1.18 Build 34
Application 2: DPS-C Agriculture
Application 2 Software: 971688
Application 2 Version: 1.00 Build 12
Boot Block Software: 971602
Boot Block Version: 1.02 Build 17
Images Software: 971620




J1939 NAME

Arb Address Capable 0
Industry Group 3
Vehicle System 0
Vehicle System Instance 0
Function 34
Function Instance 0
ECU Instance 0

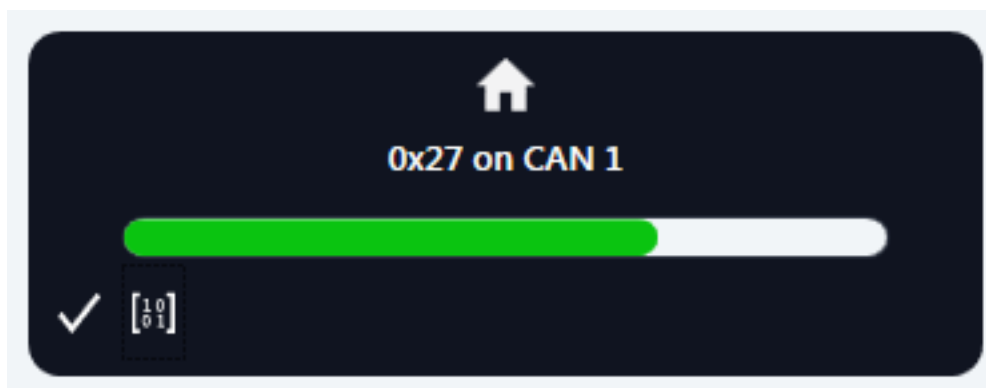
If a module is "known" to the system (i.e. it is present in the configuration), an extra section appears under the module header, known as the **Module Toolbox**:



Several icons/buttons are available (note that the module toolbox contents are dynamic and different icons/buttons will appear depending on the state of the module and the installed configuration):

Icon/Button	Function (click)	Description
	None	Indicates that the identity of the detected module matches that set in the configuration.
	Updates module software	Only appears if the module ID matches and the module is configured for software updates (i.e. the configuration contains software for this module). When selected, the module will be updated with the software contained within the configuration.

If an operation is currently in progress on a module, a progress bar is also shown within the module toolbox:



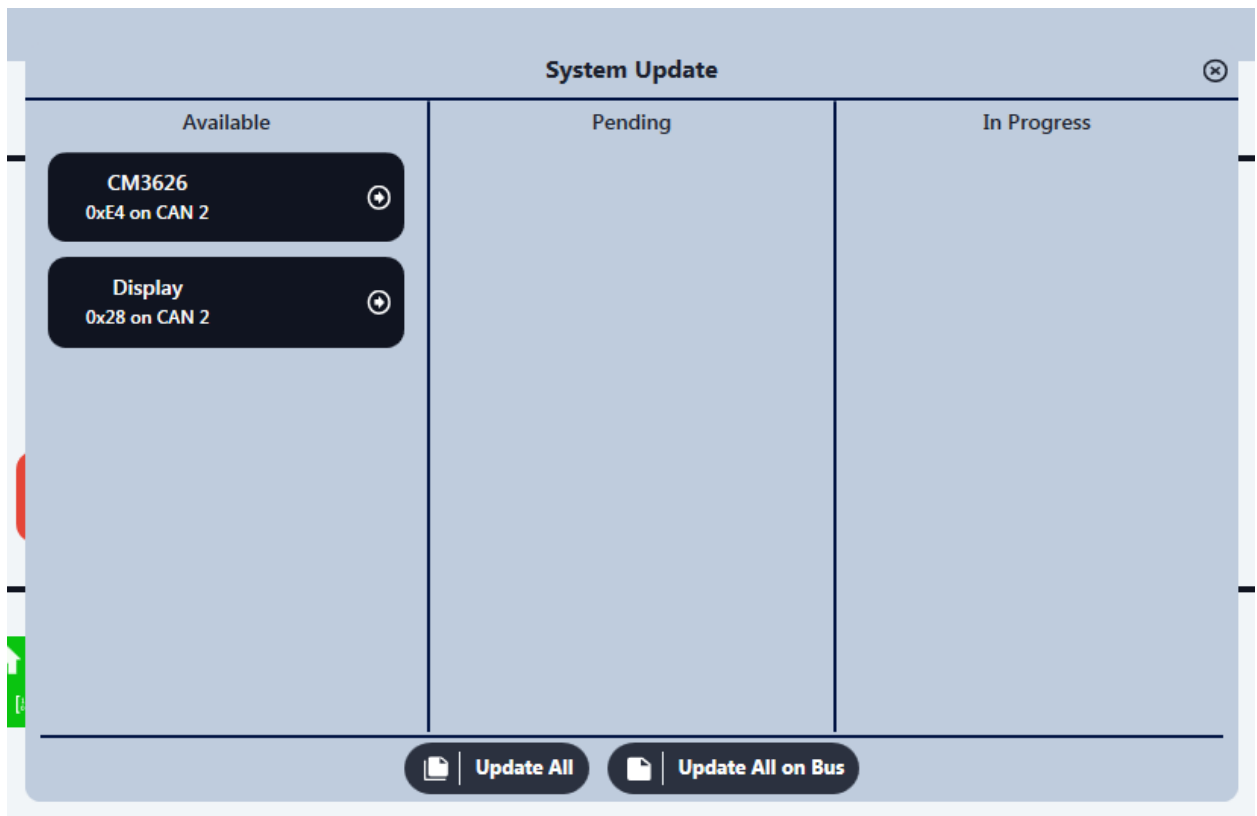
The **System Toolbox** is shown at the top of the system map:



This contains available "global" (to the system) actions.

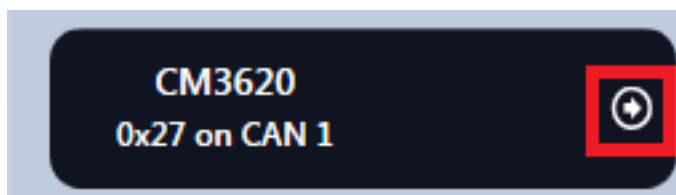
5.2.8.3. Update

Opens a popup giving access to system software update options:



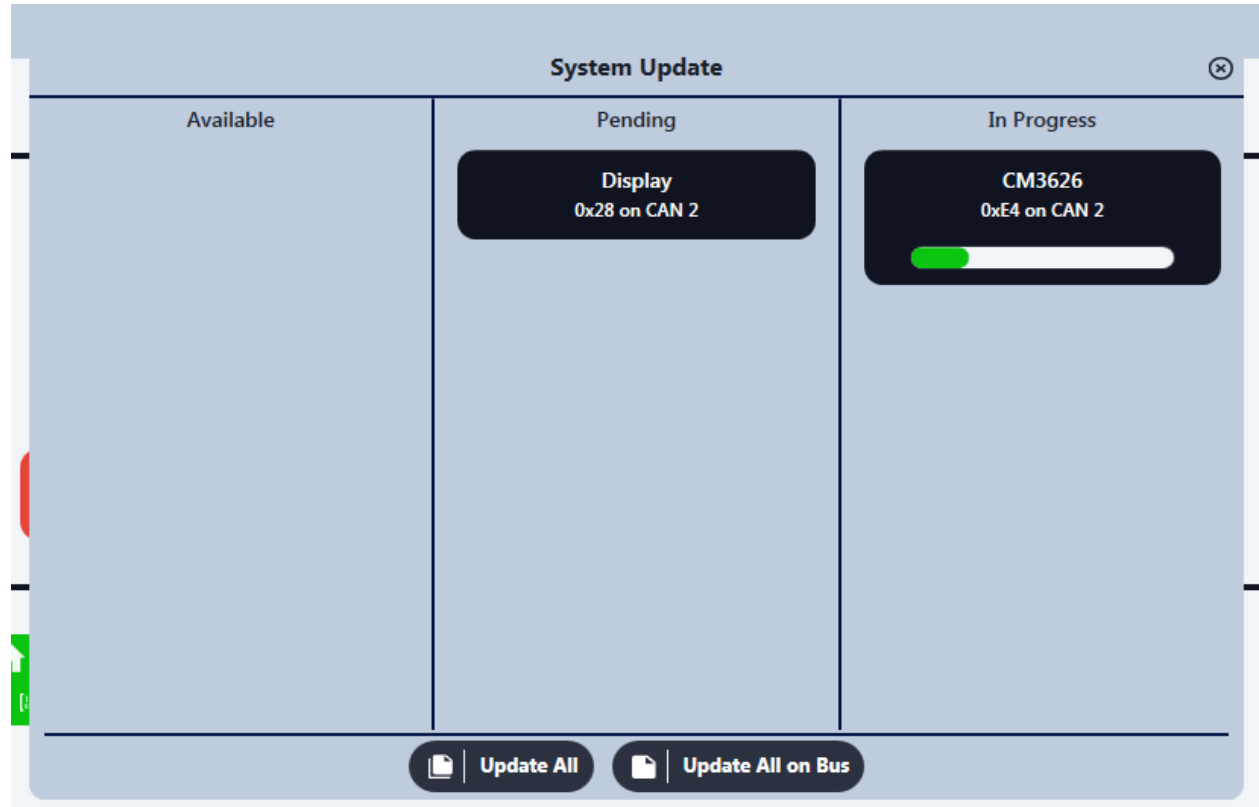
Modules which are available for software update are shown in the **Available** column.

Individual modules can be updated by clicking the arrow on the module info within the **Available** column:



Using the **Update All** and **Update All on Bus** buttons at the bottom of the popup, all eligible modules and all eligible modules on a chosen CAN bus can be updated respectively.

Operations currently in progress are shown under the **In Progress** column. Operations which cannot start yet are shown within the **Pending** column.



Concurrent operation policies are controlled via the configuration tool.

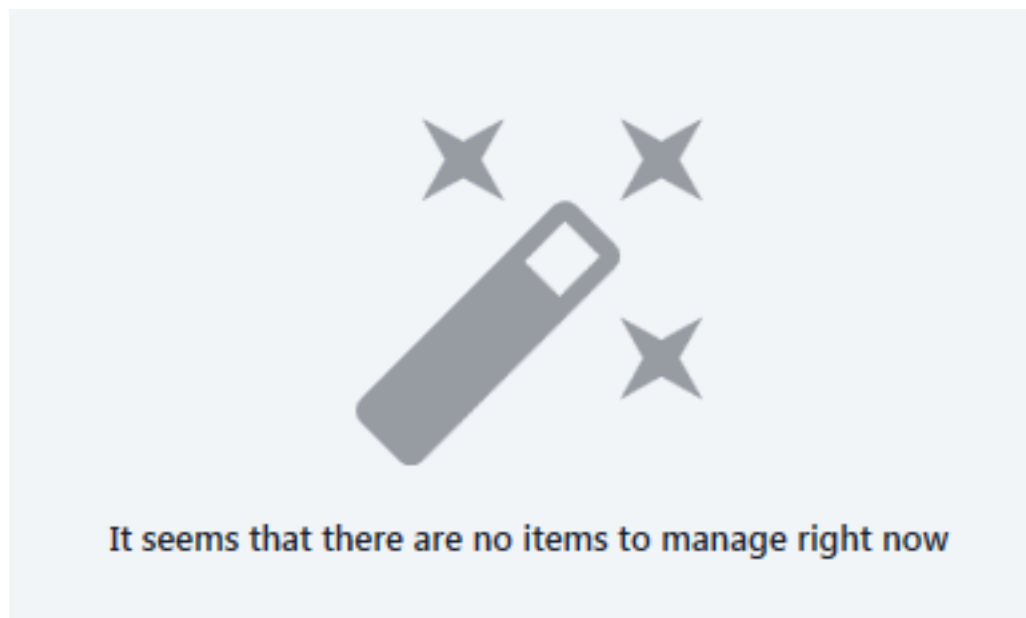
System module update operations are logged in the system log (refer to **Logs** section above). In the case of failure, the meaning of the returned status codes are dependent upon the protocol in use.

5.2.8.4. Vansco Flashload-over-CAN

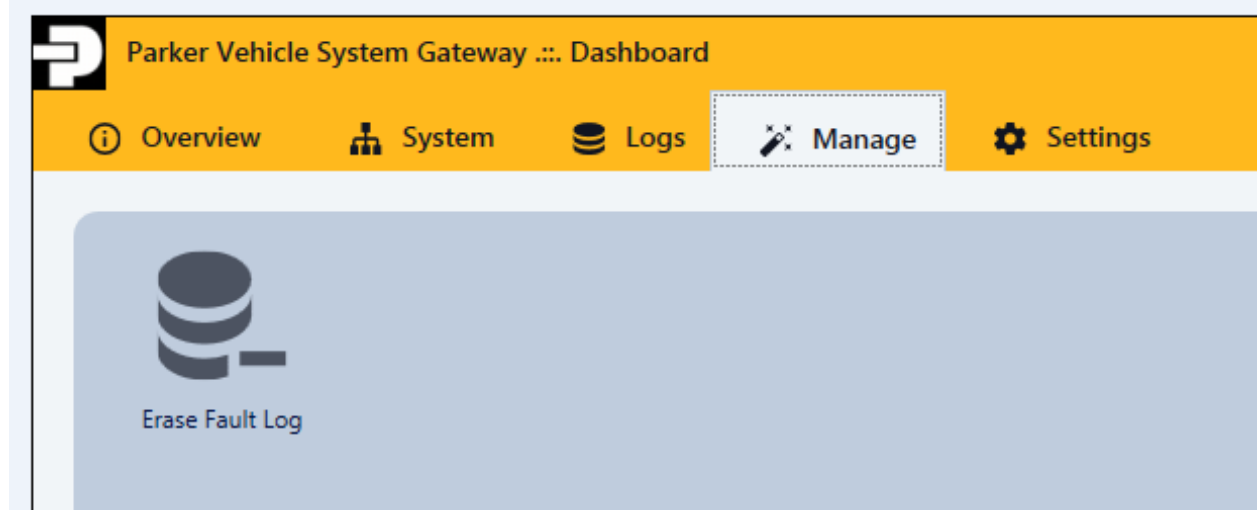
Code	Description
-9	The system module software file header was malformed.
-61	There was insufficient memory available to perform the operation.
-61	The system module software file was empty.
-125	Operation cancelled.
-131	A general error occurred which could not be recovered from.

5.2.9. Manage

Management options are available under the **Manage** tab. If no management options are available for the currently logged in user, the following is seen:



To access management options, log in as a user (if user management is not configured, all possible management options are displayed without a user being logged in).

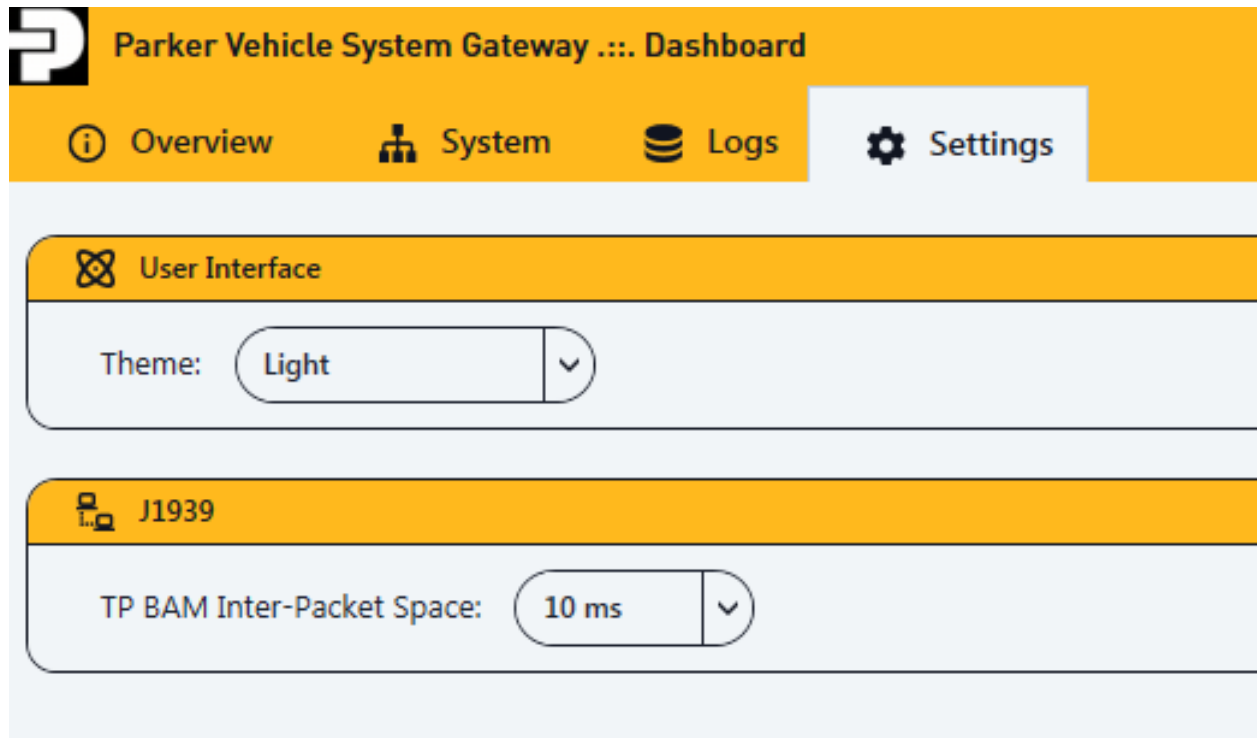


Possible management options are listed below.

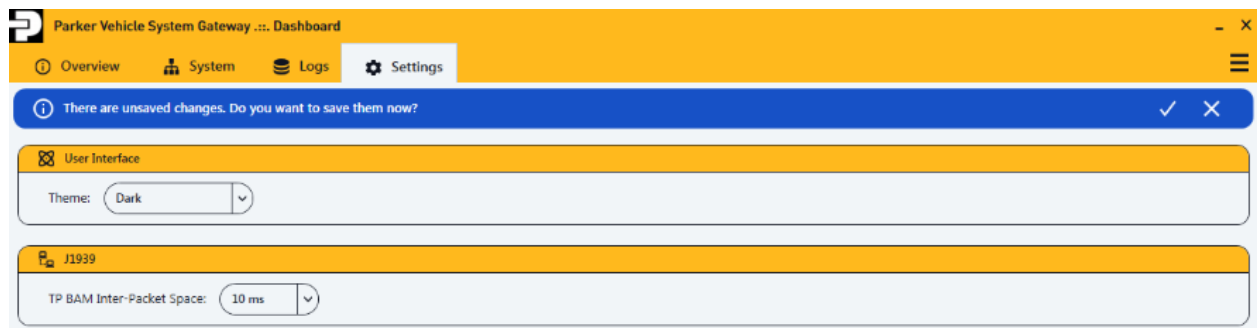
Option	Description
Erase Fault Log	Erases all logs currently stored in the fault log database. This action cannot be undone.

5.2.10. Settings

The **Settings** tab gives access to available user settings:



When settings are changed, the user is prompted to save them:



The following settings are available:

- User Interface: Theme. This sets the current visual theme from two available options:
 - Light
 - Dark
- J1939: TP BAM Inter-Packet Space: Sets the time interval between consecutive data packets on a J1939 Transport Protocol Broadcast Announce Message transmission. The J1939 standard states that this should be set between 50ms and 200ms. 10ms is also provided as an optional performance enhancement at the user's discretion.



Note: Once changes are saved, they are not applied until the relevant PC software component is restarted.

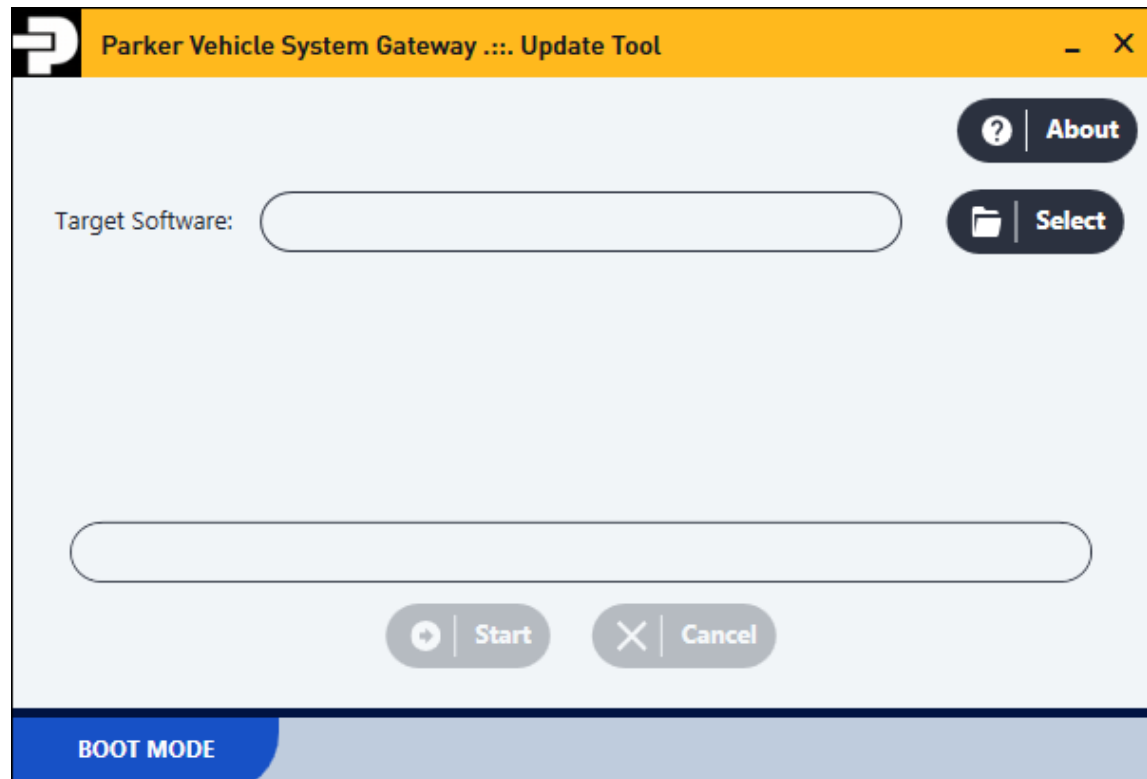


5.3. Update Tool

The update tool may be used to update the version of the software (1051642) installed on the PVSG. The update tool requires a USB connection to the PVSG to update.

5.3.1. Accessing the Update Tool

The update tool can be accessed by using the **PVSG Update** shortcut added to the Windows start menu by default as part of the installer (1051605) under **Parker > ECD > PVSG**.



In order to update a PVSG, with the PVSG connected, run the update tool, select the appropriate file and click Start. Then follow the on screen instructions to complete the update process.



Note: The update tool also provides a command line interface. Locate pvsgupd.exe (installed as part of the installer 1051605), and run "pvsgupd.exe -h" to get a listing of all of the available commands.

5.3.2. Downgrading

In some circumstances, it may be desirable to "downgrade" the version of embedded and PC software to an earlier version than that currently installed. When doing this, it is important to ensure that the version of PC software installed always matches the version of embedded software installed. The release notes for the particular version in question should be consulted to determine compatibility. Downgrading steps are outlined below.

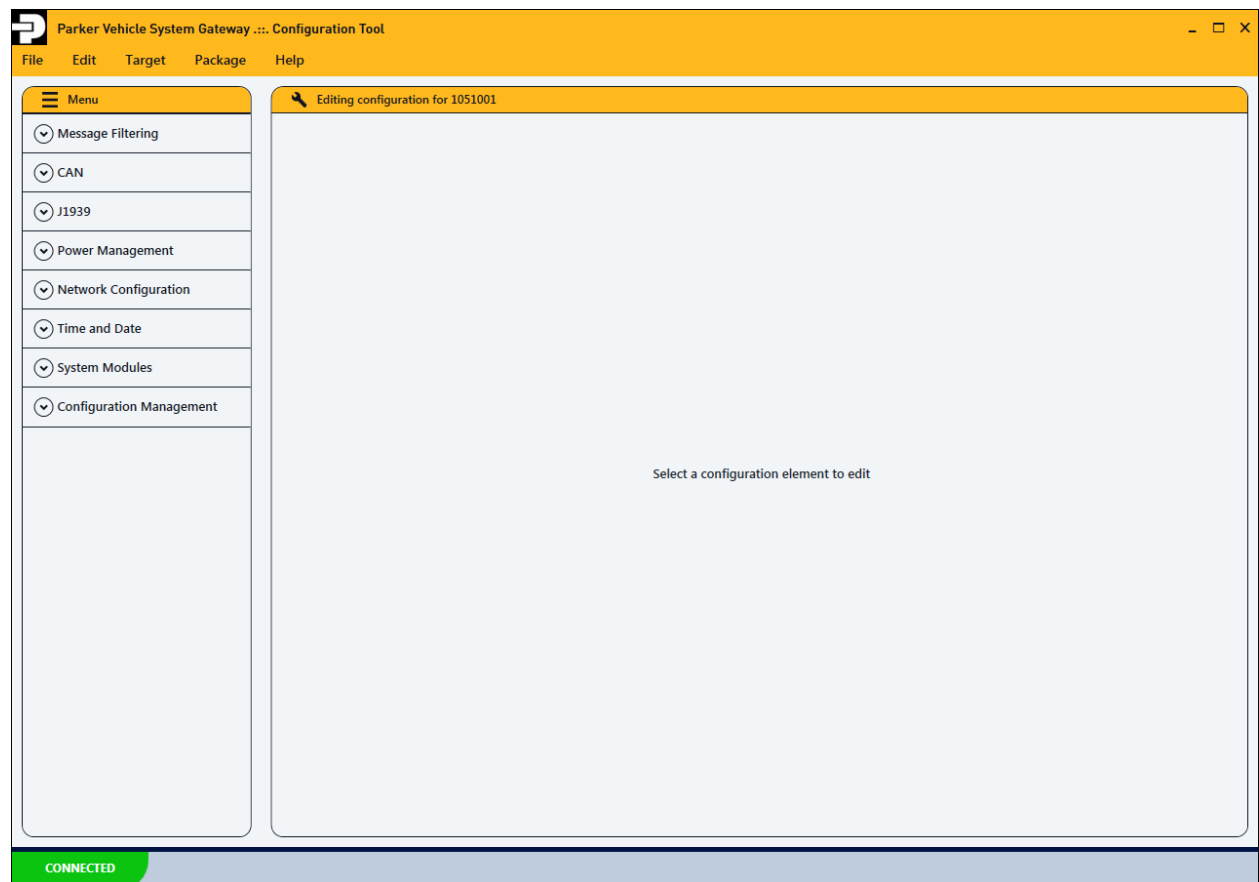
1. Ensure that the version of PC software (1051605) installed matches the version required for the installed embedded software (1051642). Consult the release notes to determine the correct version.
2. Downgrade the embedded software (1051642) to the desired version.
3. Downgrade the PC software (1051605) to the version required by the now installed embedded software (1051642).

5.4. Configuration Tool

The PVSG is configured using the configuration tool.

5.4.1. Accessing the Configuration Tool

The configuration tool can be accessed by using the **PVSG Configuration** shortcut added to the Windows start menu by default as part of the installer (1051605) under **Parker > ECD > PVSG**. Configurable elements are accessible via the menu system on the left side of the tool and are organized by area.



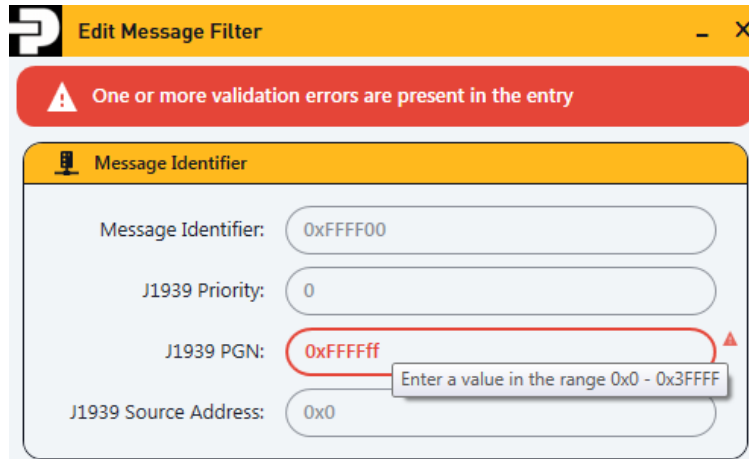
Note: The configuration tool also provides a command line interface. Locate `pvsgcfg.exe` (installed as part of the installer 1051605), and run "`pvsgcfg.exe -h`" to get a listing of all of the available commands.



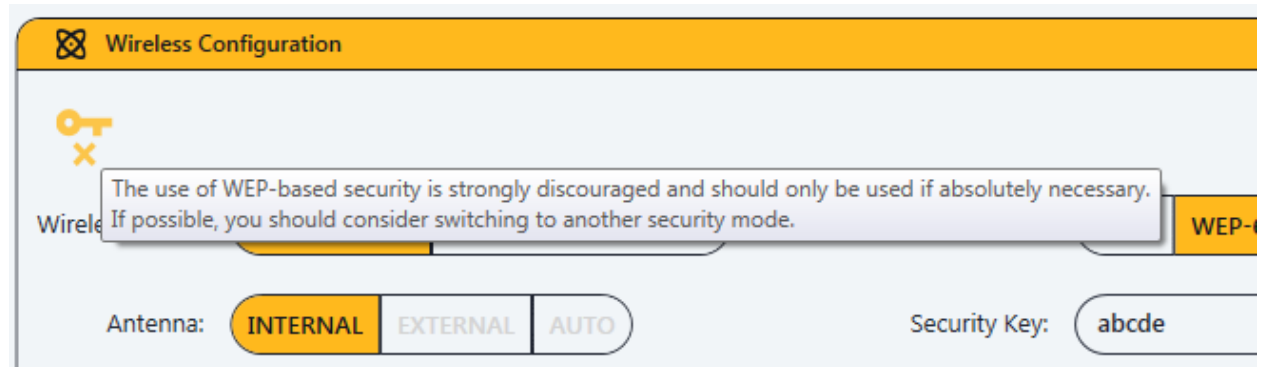
Note: The configuration tool will show/popup (wherever applicable) a symbol on its interface to bring attention to:

- an error (with a red color scheme),
- a warning (with a yellow color scheme), or
- information (with a blue color scheme)

Further information can often be found on the symbol tooltip (place the mouse cursor over the symbol to access). Some examples:




The screenshot shows the 'Edit Message Filter' window with a red error bar at the top stating 'One or more validation errors are present in the entry'. Below this, the 'Message Identifier' section contains four input fields: 'Message Identifier' (0xFFFF00), 'J1939 Priority' (0), 'J1939 PGN' (0xFFFFff), and 'J1939 Source Address' (0x0). The 'J1939 PGN' field is highlighted with a red border and a red triangle icon, with a tooltip indicating 'Enter a value in the range 0x0 - 0x3FFFF'.




The screenshot shows the 'Wireless Configuration' window. A yellow warning icon is present, and a tooltip message states: 'The use of WEP-based security is strongly discouraged and should only be used if absolutely necessary. If possible, you should consider switching to another security mode.' Below the message, the 'Antenna' section has three buttons: 'INTERNAL' (selected), 'EXTERNAL', and 'AUTO'. The 'Security Key' field contains the text 'abcde'.


5.4.2. Licensing

The configuration tool behavior is dependent upon a license. If no license is installed, the tool can only be used to load a configuration and transfer it to the PVSG. Viewing/editing configurations require a specific license to grant that privilege. To install a license, go to **Edit > License**. The license uses a challenge/response system whereby the local computer generates a challenge value specific to that PC. This is then used to generate a response value which provides access to certain features. Note that licenses are locked to a particular PC; the mechanism used to do this is proprietary and confidential to Parker.


 **Edit License** ✕


 **License Control**

Challenge:

 **Copy**


Response:

 **Paste**

 **License Summary**


No license is installed.

Licenses are currently available from Parker ECD Engineering.
Once a license is installed, a summary is shown:



Edit License


X



License Control


Challenge:

7tFcVFmBoA3fRKcux0mXqjKzVck7AGhVhYKt




Copy

Response:



Paste



License Summary

Licensee:

A Test User

License Company:

Test Incorporated

Licensee Email:

test@parker.com

Expires:

Never

Feature	Privilege Level
View Configuration	Enabled
Edit Configuration	Enabled

Note that the configuration tool must be launched in the security principal of an administrator in order to install a license.

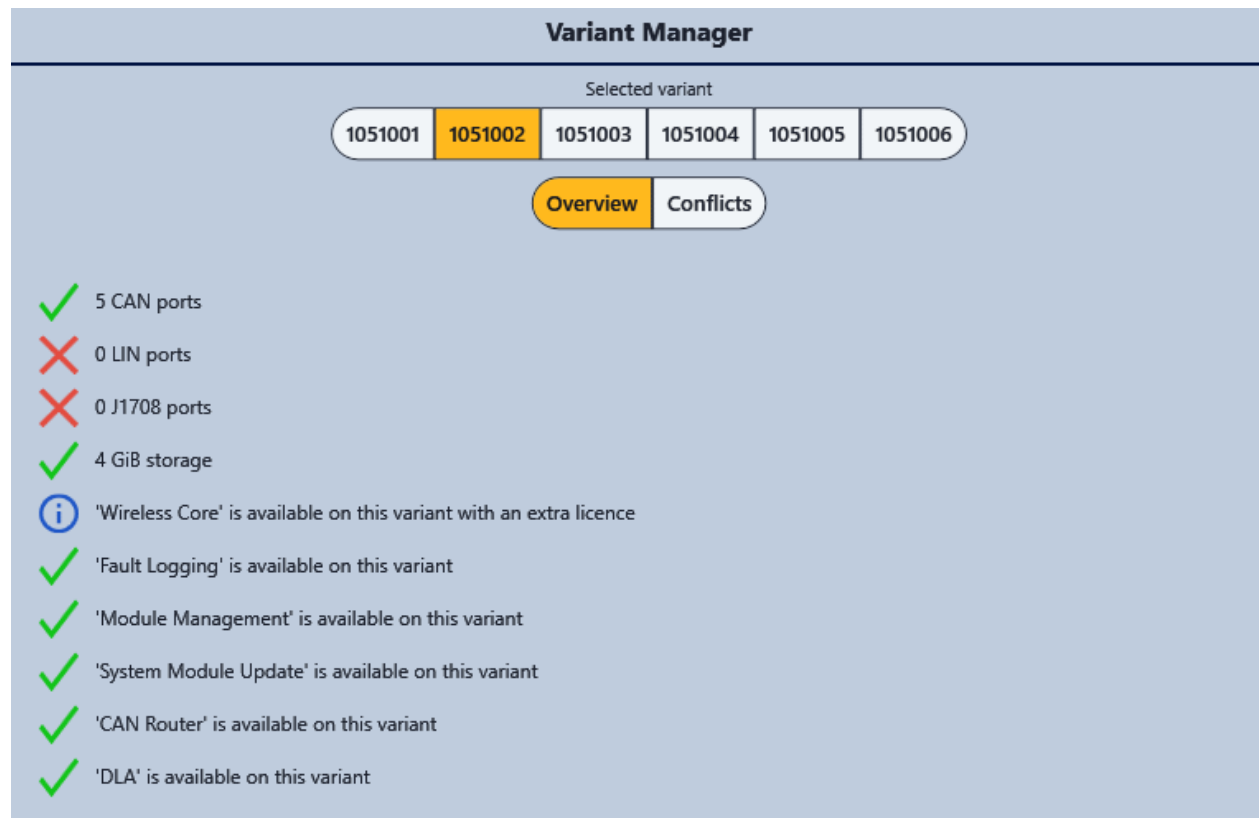
5.4.3. Creating/Editing Configurations

A blank configuration is created by default every time the tool is started. To destroy any unsaved changes and start a new configuration, select **File -> New**.


5.4.3.1. Variants

The configuration tool supports multiple variants of the PVSG product. The configuration tool allows all options and features to be configured irrespective of which variant of PVSG is connected or selected in the Variant Manager. If a feature or option is configured which is not supported on the variant on which the configuration is deployed, the particular feature or option will be disabled and the configuration will fall back to a default state.

In order to assist with understanding the particular features available on a particular variant, the **Variant Manager** is available. Open the **Variant Manager** by selecting **Variant** from the menu bar and then the **Summary** option. This can also be accessed using the icon in the bottom right-hand corner of the tool.



The **Overview** view shows the features which are available on the selected variant. A feature can be configured in one of 3 states, per the table below.

Feature State	Description
	The feature is available by default on the selected variant.
Enabled with License	The feature is not available by default on the selected variant, but can be enabled with the addition of a license.



Feature State	Description
Disabled 	The feature is not available on the selected variant.

The **Conflicts** view shows any features which have been configured in the configuration but are not available on the selected variant.

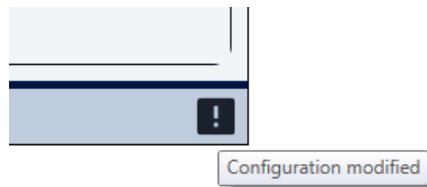
The following is a table of supported variants, and features supported:

Features / Variant	1051001	1051002	1051003	1051004	1051005	1051006	1051007
5 - CAN							
1 - J1708							
Internal Storage	4 GiB	4 GiB	4 GiB	4 GiB	4 GiB	4 GiB	4 GiB
Wireless Core							
External Antenna							
Fault Logging							
Module Management							
System Module Update							
CAN Router							
DLA							
Custom Applications							
Custom Programming Plugins							
Sleep Mode 2 Supported							

5.4.3.2. Opening and Saving Configurations

Configurations can be opened/saved using the **File -> Open** and **File -> Save** menus respectively. The .pvsgc format is used for configuration files (See File Types table above); this format is a proprietary format belonging to Parker. Note that these files cannot be edited manually and should only be modified using the configuration tool.

Unsaved changes to the current configuration are indicated by an icon in the status bar (bottom right corner):



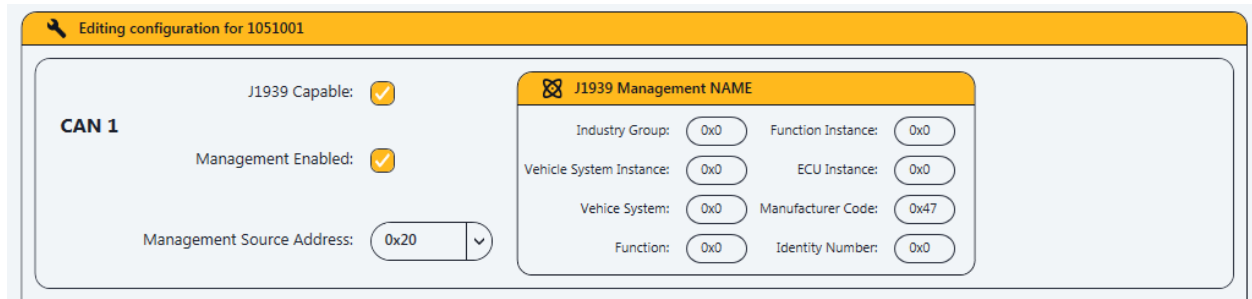
5.4.4. Keyboard Shortcuts

The following 'special' keyboard shortcuts can be used:

Keyboard Shortcut	Area Active	Function
Ctrl + S	Global (all areas)	Saves the current configuration (equivalent to a File > Save).
Ctrl + C	Message filter list editor	Copies the currently selected message filter entry/entries. Note that groups of entries may be selected by selecting the first entry, holding the SHIFT key and then selecting the last entry.
Ctrl + V	Message filter list editor	Pastes any message filter entries on the clipboard into the current list.
Del	Message filter list editor	Deletes the currently selected message filter entry/entries. Note that groups of entries may be selected by selecting the first entry, holding the SHIFT key and then selecting the last entry.
Ctrl + A	Message filter list editor	Selects all message filter entries in the current view.
Ctrl + left mouse click(s)	Message filter list editor	Allows multiple non-contiguous message filter entries to be selected/deselected for further operation (copy, delete, etc.).
Shift + left mouse click	Message filter list editor	Allows multiple contiguous message filter entries to be selected/deselected for further operation (copy, delete, etc.).

5.4.5. J1939 Configuration

The PVSG contains 5 physical CAN interfaces, each of which is capable of supporting J1939 communication. J1939 configuration can be adjusted using the **J1939 Management** section under the **J1939** menu.



To support J1939, an interface must have its **J1939 Capable** property set. This denotes that the interface is connected to a J1939 capable network but does not necessarily create any Controller Applications (CAs) on it. To create a CA which can be used for management purposes (for SOFT and CI retrieval, for example), the **Management Enabled** property must also be checked. When both **J1939 Capable** and **Management Enabled** are checked, the management configuration fields become visible which allows the management source address and NAME field to be configured.



Note: A periodic DM1 message is broadcast on J1939 interfaces that have management enabled. See "Status LED" section above for details on how error information is made available in a DM1 message.


5.4.6. Power Management


Power management features of the PVSG can be controlled via sub-menus of the **Power Management** menu. Currently, this allows the wakeup sources to be selected, via the **Wakeup Options** section.

When one or more enabled wakeup sources become active, the PVSG will wake up. When all enabled wakeup sources are no longer active, the PVSG will initiate a proper shutdown and go to sleep.



Note: There is a risk of corrupting the PVSG filesystem if power is removed from a PVSG prior to allowing a PVSG to go to sleep. Therefore it is recommended to always use Wakeup control to put the PVSG to sleep if power needs to be removed.


 Editing: Power Management :: Sleep/Wake Configuration

 Wakeup Control


The following options enable or disable the sources which may wake the PVSG. When one or more wakeup sources become active, the PVSG will wake up. When all enabled wakeup sources are no longer active, the PVSG will go to sleep after the timeout period has elapsed.

GPIO 1 ☐
 GPIO 2 ☐
 CAN 1 ☐
 CAN 2 ☐
 CAN 3 ☐
 CAN 4 ☐
 CAN 5 ☐
 USB ☐

Wakeup timeout: seconds

 Sleep Mode

The following options control the behaviour of the PVSG when it goes to sleep. *Sleep Mode 1* provides the lowest sleep mode current consumption possible, but with a longer time to resume on wake. *Sleep Mode 2* has a higher sleep mode current consumption, but with the benefit of resuming much more quickly. For a full description of the sleep mode options, please refer to the user manual.

Sleep Mode: 



Note: The **Wakeup timeout** defines the duration that all enabled wakeup sources must be idle for before being considered inactive, allowing the PVSG to go to sleep.



Note: When wakeup is enabled (any **GPIO 1 .. USB** checkbox (as seen above) is checked), upon waking (regardless of the wakeup source), the PVSG will require the **Wakeup timeout** to expire before going to sleep.

5.4.6.1. Sleep Mode

The **Sleep Mode** setting controls what the PVSG does when it goes to sleep. This happens when all of the unmasked wakeup sources become inactive. Available options are documented in the tables below. Note that the available sleep modes depend upon the variant used.

Sleep Mode

Description

On Wakeup

Supported Variants

Router

Server

Sleep Mode 1

Sleep mode with the lowest current consumption possible. Slower to fully wake from sleep than sleep mode 2.

Restart

Restart

All



Sleep Mode 2

Wakes from sleep much faster than sleep mode 1, but at the expense of slightly higher current consumption.

Restart

Resume

1051004 only

Example Start-up Times

Function	On Power Up	Sleep Mode 1	Sleep Mode 2
Critical Tasks (CAN routing)	456 ms	432 ms	97.2 ms
Non-Critical Tasks (ex. DLA functionality, product reprogramming)	9.92 secs	7.89 sec	468 ms

Example Current Draw

Sleep Mode	12V	24V
Sleep Mode 1	3.2 mA	1.7 mA
Sleep Mode 2	11.4 mA	5.9 mA

5.4.7. Network Configuration

PVSG network configuration is controlled by the **Network Configuration** menu. This menu can be used to configure a PVSG to use Ethernet and/or wireless as a management connection interface. For a description of each network configuration option please refer to the tool-tip that appears when hovering over an option in the configuration tool.

Editing configuration for 1051001

Basic Configuration

Ethernet Enabled: ☒ YES ☐ NO Ethernet Management Enabled: ☒ YES ☐ NO Wireless Enabled: ☒ YES ☐ NO

Ethernet Address Configuration

Address Mode: ☒ DHCP SERVER ☐ DHCP CLIENT ☐ STATIC

Server Address:

Network Mask:

Start Address:

End Address:

Wireless Address Configuration

Address Mode: ☒ DHCP SERVER ☐ DHCP CLIENT ☐ STATIC

Server Address:

Network Mask:

Start Address:

End Address:

Wireless Configuration

Wireless Mode: ☒ ACCESS POINT ☐ CONNECT TO EXISTING

Security Mode: ☒ OPEN ☐ WEP-64 ☐ WEP-128 ☐ WEP-152 ☐ WPA ☐ WPA 2

Antenna: ☒ INTERNAL ☐ EXTERNAL ☐ AUTO

Band: ☒ 2.4 GHz ☐ 5.8 GHz Channel:

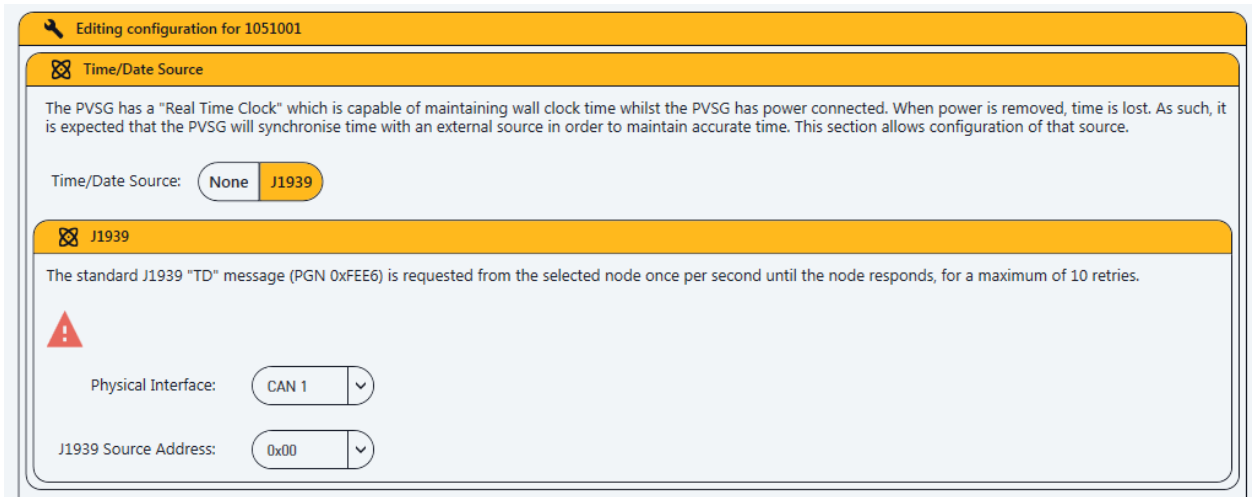
SSID: SSID Suffix:

Management Settings

Discovery Enabled: ☒ YES ☐ NO Discovery Port: Communication Port:

5.4.8. Time and Date

PVSG Time and Date configuration is controlled by the **Time/Date Configuration** menu. This menu allows the user to specify the time/date source (either **None** or **J1939**) for setting the PVSG Real Time Clock (RTC) time and date values. For a description of each **Time/Date Source** option, please refer to the tooltip that appears when hovering over a non-selected time/date source option in the configuration tool.



Editing configuration for 1051001


Time/Date Source

The PVSG has a "Real Time Clock" which is capable of maintaining wall clock time whilst the PVSG has power connected. When power is removed, time is lost. As such, it is expected that the PVSG will synchronise time with an external source in order to maintain accurate time. This section allows configuration of that source.

Time/Date Source: None **J1939**

J1939

The standard J1939 "TD" message (PGN 0xFEE6) is requested from the selected node once per second until the node responds, for a maximum of 10 retries.



Physical Interface: CAN 1

J1939 Source Address: 0x00

If the **J1939** option is selected, the physical CAN bus where the external source resides as well as its source address need to also be specified. Note that the user is required to enable and configure (via the **J1939 Management** menu) the J1939 management settings for the chosen **Physical Interface** (which houses the time/date source, a J1939-based node). The time and date configuration takes effect as soon as the configuration becomes active. The RTC will only be set via J1939 once per power session; once the first received message has been processed, all future time/date messages received by the PVSG will be ignored until the PVSG is power cycled.

Regardless of the **Time/Date Source** option selected, the RTC will contain a random time and date every time the PVSG is power cycled (until the time/date is set, if applicable).

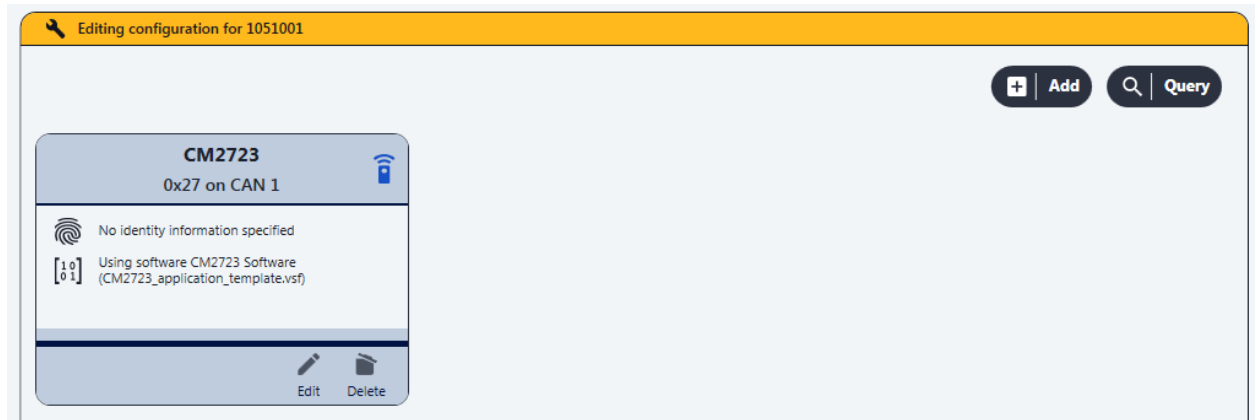
5.4.9. System Modules

This section relates to other modules within the system to which the PVSG is connected.

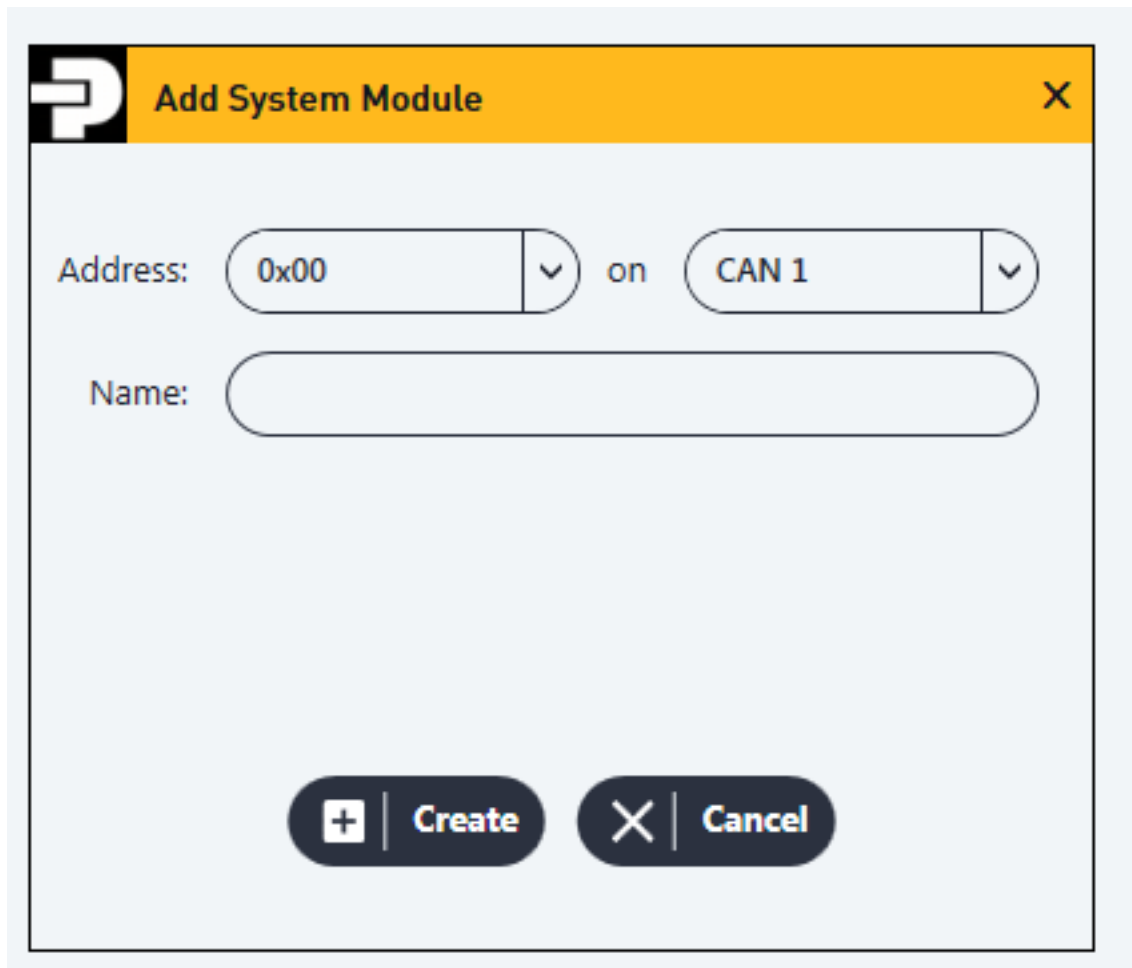
5.4.9.1. Module Management

"Modules of interest" in the target system can be identified within the module management interface. A module's core identity is comprised of its J1939 source address and the physical CAN bus on which it resides. It is possible to further refine a module's identity by using the following pieces of information:

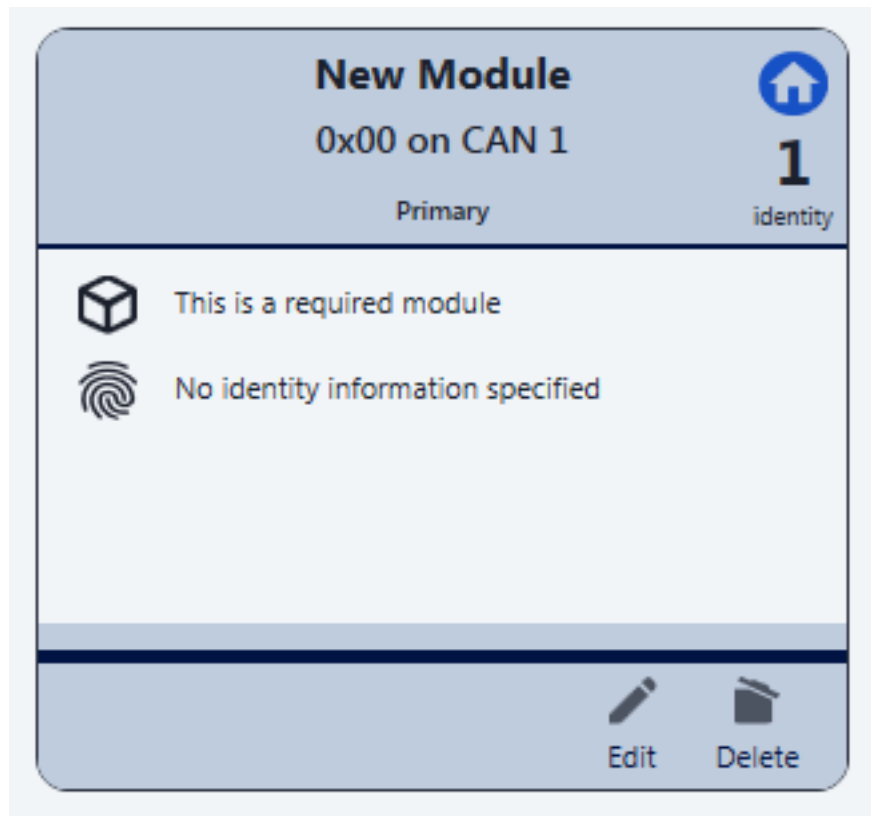
- J1939 NAME Field
- J1939 Software Identification message (PGN 0xFEDA) data
- J1939 Component Identification message (PGN 0xFEED) data



Selecting the **Add** button under the **Module Management** configuration applet allows a new module to be created:





The J1939 source address and physical CAN bus should be set, along with a descriptive name for the module. Clicking **Create** adds the module to the current configuration and shows a new **Module Card**:





The module card data changes depending upon the configuration:


CM3626
0xE4 on CAN 2
Primary



1
identity

 This is a required module


 No identity information specified


 Using software 3626 Software
(991619_V0_02_build2.vsf)


 Edit


 Delete


Display
0x28 on CAN 2
Primary



1
identity

 This is an optional module

 Identity is formed from J1939 NAME, Software
Identity

 Using software Display Software
(1007677_JCB_Loadall_P493_DECU_v0_02.vsf)

 Edit

 Delete

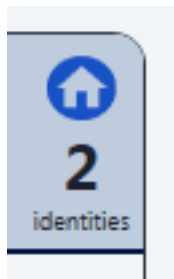


Each module offers options of **Edit** (covered in the following section) and **Delete** which, as the name suggests, allows the module to be removed from the configuration.

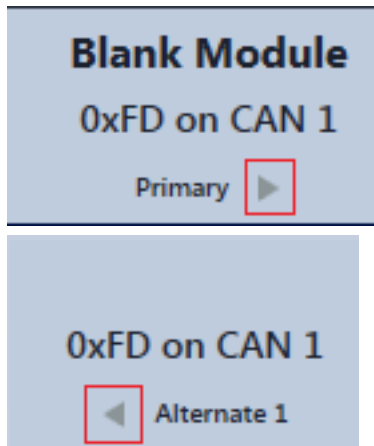
If the PC is connected to a PVSG, the **Query** button queries the information from the modules connected to the system in which the currently connected PVSG resides. The icon in the top right corner of the module information control shows the status of the module in the current system, if the PC is connected to a PVSG. It can show one of four states:

- Not queried. It isn't currently known whether this module exists or not. Icon is blue. Click **Query** to begin.
- Not connected. The module is not present in the current system. Icon is red.
- Connected, but the identity does not match. The module source address was found on the particular CAN bus, but the identity was different than configured. Icon is yellow.
- Connected, and the identity matches. The module source address was found on the particular CAN bus, and the identity matches that which was configured. Icon is green.

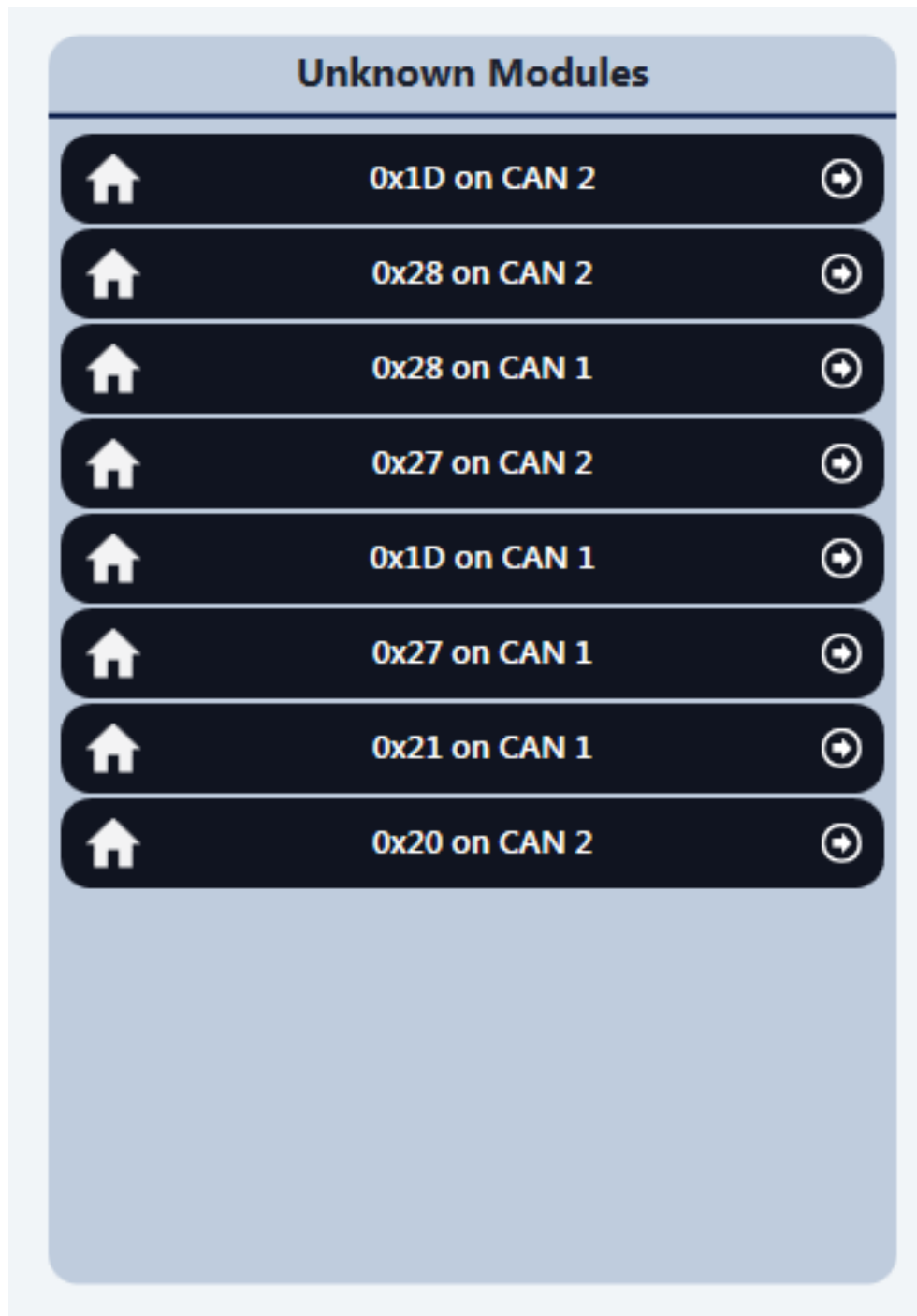
Each module may contain multiple identities; a module's core identity is formed from the J1939 source address and CAN bus though it is possible under certain conditions for a particular source address and CAN bus combination to change meaning, or be used for multiple purposes within a single system. An example of this is a blank module, containing no application software; such modules often use 0xFD as their J1939 source address until they have been programmed with a valid application. Alternate identities can be used to handle such cases, by using extra identity information to identify a unique instance of a module and then apply a different behaviour, such as installing different module software. A module must contain a primary identity, and may contain multiple alternate identities. The number of available identities is indicated in the module card header:



The module card can show information about alternate identities by cycling through the available identities:



If modules are detected on the system which are not listed in the configuration, an **Unknown** button appears. Clicking this shows the **Unknown Modules Popup**:



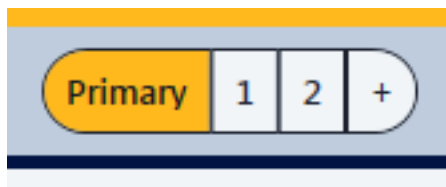
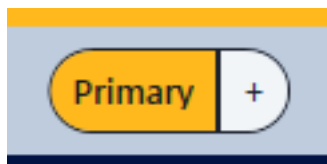
Modules listed here can be added to the configuration by clicking the arrow button beside each set of module information. When using this method, a module is added with all known properties selected. They can be removed as required using the **Edit System Module** interface.



5.4.9.2. Editing a Module

A module can be changed by clicking the **Edit** button on a particular module instance. This shows the **Edit System Module** window:

This allows the user to specify which components make up a module's identity. Additional alternate identities may be added and switched between using the toolbar buttons at the top of the window:



Note that when editing an alternate identity, only a subset of the module properties may be available for editing; in order to edit these properties, switch to the primary identity.

J1939 NAME

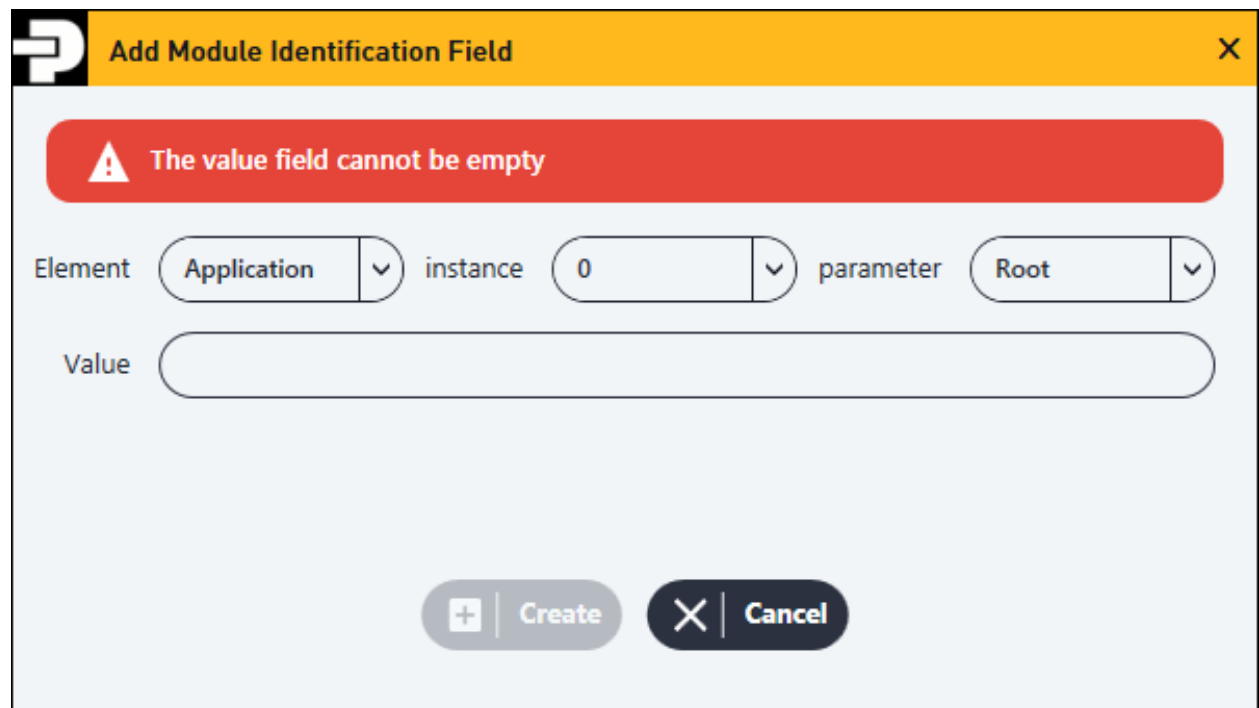
The J1939 NAME field components can be used to identify a module. To enable this, tick the box labelled **Does J1939 NAME form part of the identity?**. Values can then be specified for the individual fields of interest. For fields which are not required to be part of the identity, an asterisk (*) should be placed to indicate that any value is acceptable.

Software Identification

To make software identification a part of a module's identity, tick the box labelled **Does software identification form part of the identity?**. The SOFT message format must then be specified:


- Parker. The SOFT message uses the format defined in 983F17. Currently, R00A, R01A and R02A revisions of the standard are supported. Advanced element matching is supported.
- Raw. The SOFT message will be inspected as a raw string. Only basic value matching is provided.

When the format is chosen, use the **Add Element** button to add a new element to the identity:





The element, the instance of that element and the parameter within that element must be chosen. Refer to 983F17 for a description of the format. The value field should be populated with the ASCII string data which should be expected for the particular element and parameter combination. Click **Create** to finish.


In raw mode, only basic string comparison is supported. The user may enter any number of fields which the SOFT message data should contain:

**Add Module Identification Field**×

Value


 **Create**


 **Cancel**


 **Software Identification**

Does software identification form part of the identity? ☒

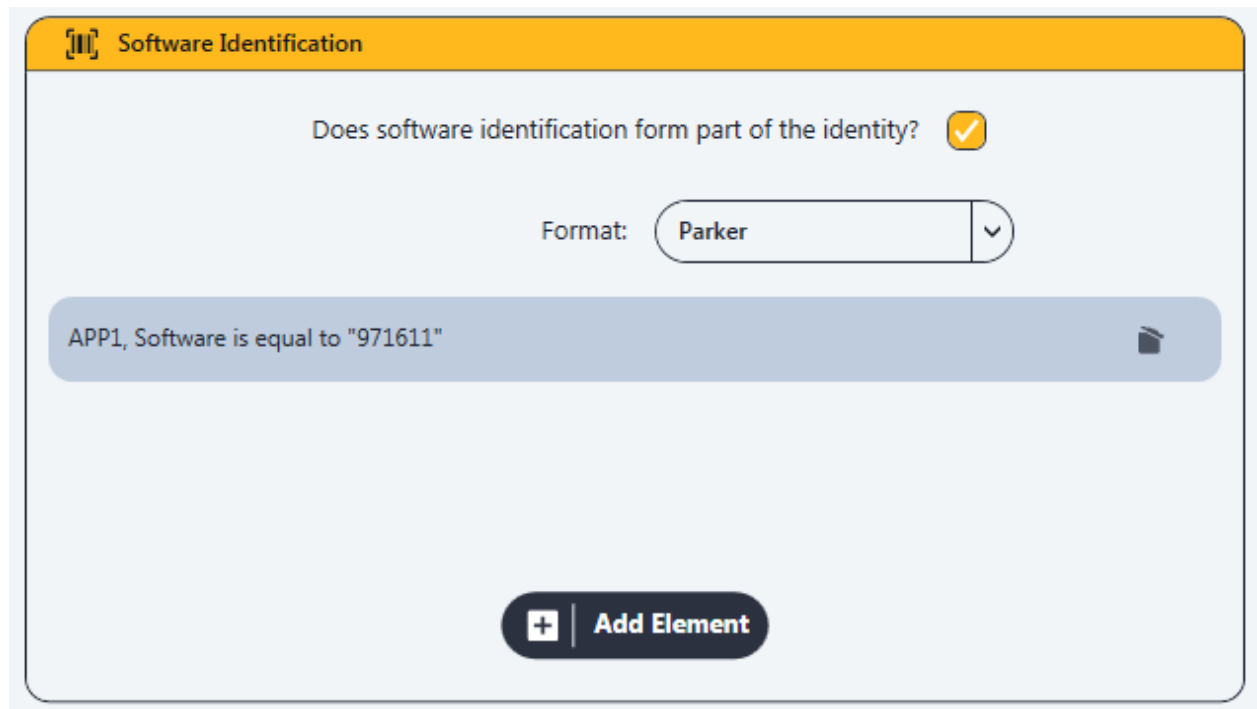
Format:

Contains "test" 

Contains "Parker" 

 **Add Element**

In **Parker** format mode, the view is enhanced:



The interface is titled "Software Identification" in an orange header bar. Below the header, there is a question "Does software identification form part of the identity?" with a checked checkbox. Underneath, a "Format:" label is followed by a dropdown menu currently set to "Parker". A light blue box displays the text "APP1, Software is equal to '971611'" with a delete icon on the right. At the bottom, there is a dark blue button with a plus icon and the text "Add Element".



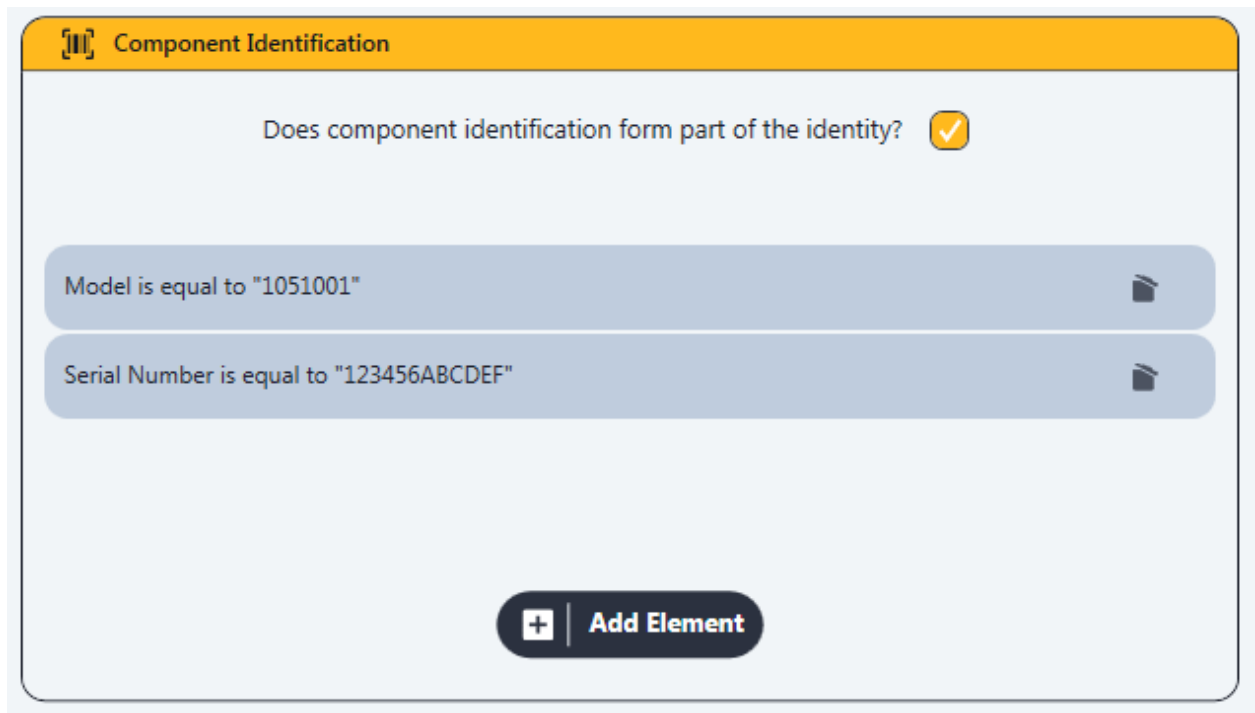
Note: Changing the software identification format when elements already exist will erase any currently stored elements.

A matching element can be removed by clicking the **Delete** icon to the far right side of the particular element to remove.

Component Identification

Component identification follows the same principle as software identification. To make component identification a part of a module's identity, tick the box labelled **Does component identification form part of the identity?**. The user may choose to match the following fields:

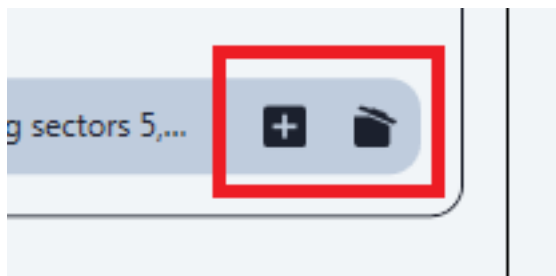
- Model. The "model" field from the component identification message. See J1939-71.
- Serial Number. The "serial number" field from the component identification message. See J1939-71.



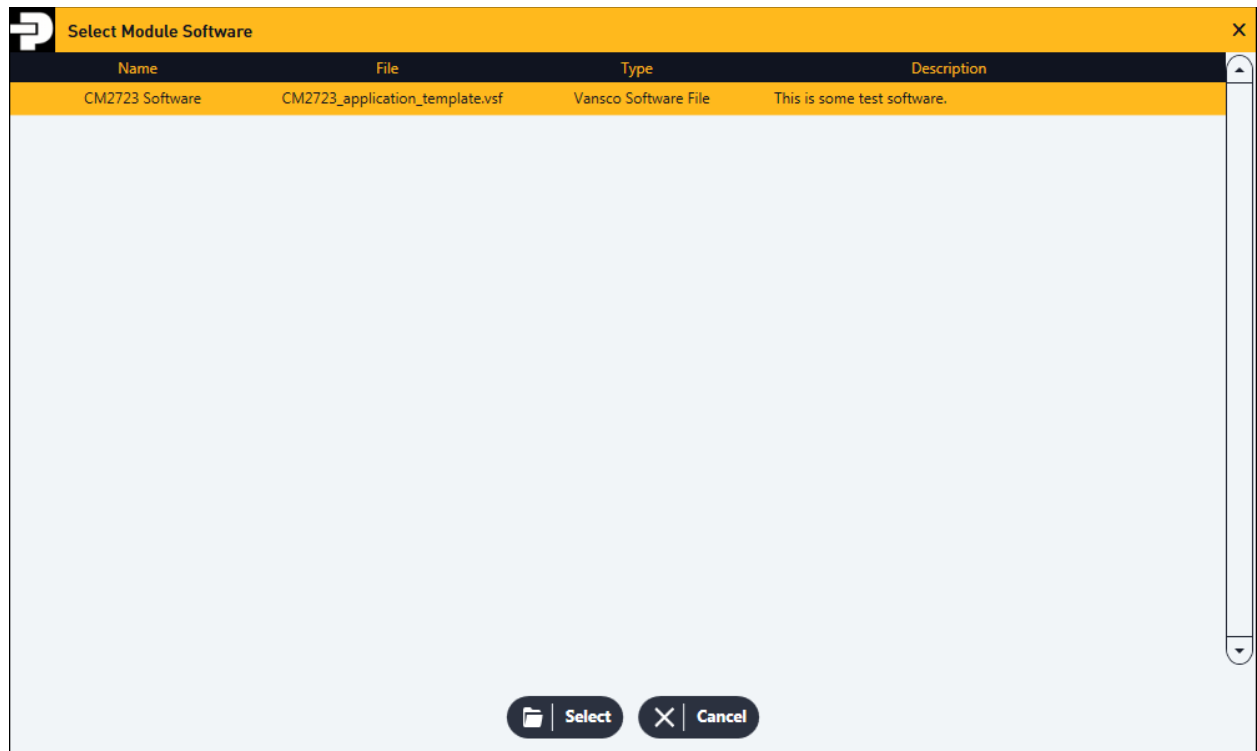
5.4.9.3. Module Software

This section controls whether the configuration stores software for this module or not, and if it does, which software is used and how and when it is deployed.

To attach a pre-configured software element to this module, tick the box labelled **Store software for this module?**. Software can be selected and removed using the **Add** and **Remove** buttons:



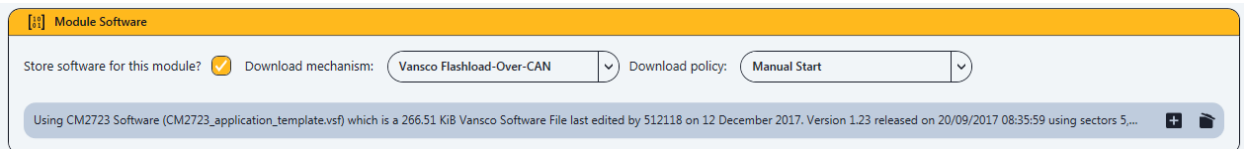
Clicking the **Add** button shows the **Select Module Software** dialog:



This dialog allows the user to select from software already loaded into the configuration via the **Software Archive** interface (see below). Clicking **Select** attaches the selected software to the module.

Note that the **Remove** button does *not* remove the software item from the configuration; it simply disassociates the software with the current module.

When selected, some detail on the software is shown:



Note that the detail shown will change depending upon the file type selected and the information actually available in the selected file.

The supported download mechanisms and download policies are per the following:

Download Mechanism	Description
Vansco Flashload-Over-CAN (VFOC)	The Vansco Flashload-Over-CAN-Protocol per Parker document 983F08.
Download Policy	Description
Manual Start	The module software is updated via manual invocation from a user via the PVSG dashboard (see "Dashboard" section in this document).



5.4.9.4. Software Archive

The **Software Archive** holds all system module software for this configuration; that is, the software which is used by the external modules attached to the PVSG system.

Software must be added here before it can be used by a module.

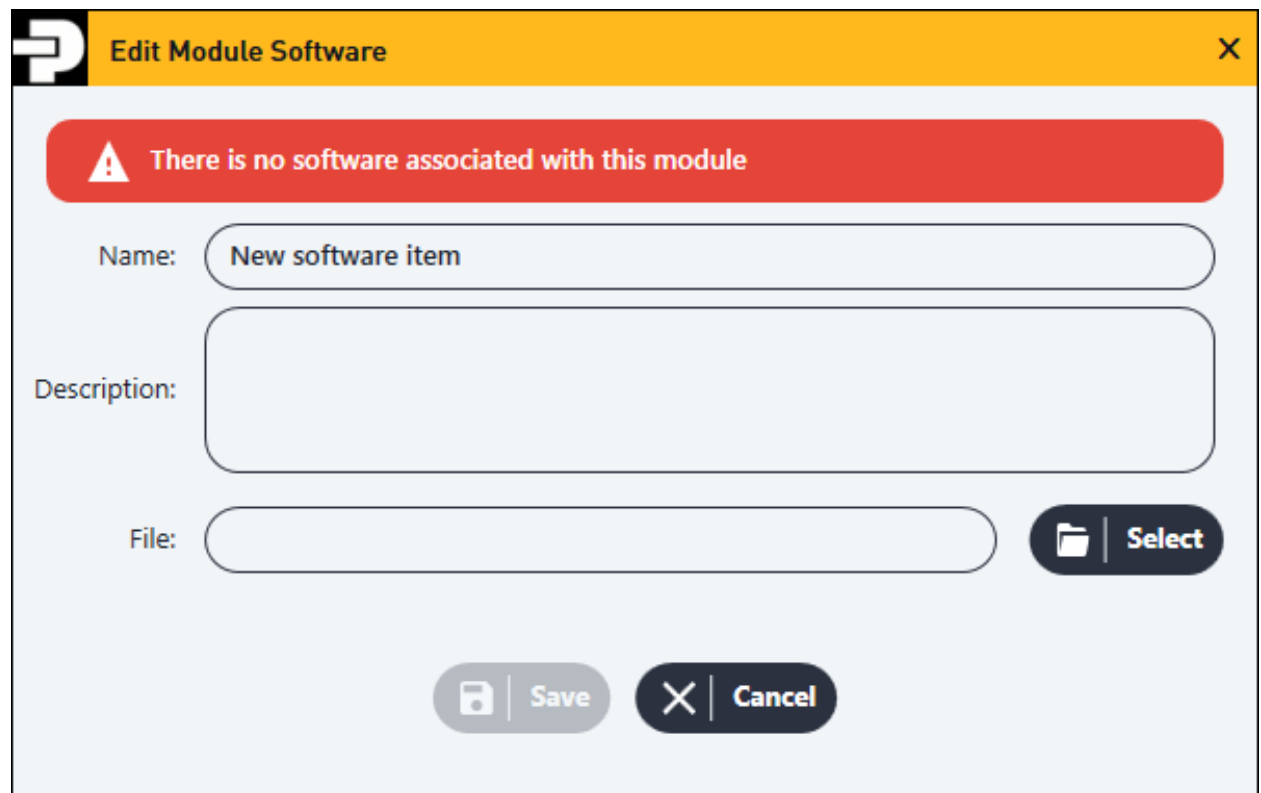


To add a software item, click the **Add** button. This adds a blank software item:




The red exclamation mark icon indicates that there is an error with the software item. This is expected because it has not yet been configured.

To edit a software item, click the **Edit** button:



Edit the **Name** and **Description** and select a software **File** to use. When complete, click **Save**.

Note that it is not required for the software item name to be unique within a configuration. The information bar at the top of the **Software Archive** applet shows information on the software stored:


 This configuration contains 266.51 KiB of software. 1 out of 2 are unused.

This includes the total size of the software stored, and whether any items are unused. Note that unused software items waste space and so it is encouraged to remove them when possible.

When software archive editing is complete, click the **Save** button to save the changes.

5.4.9.5. Module Management Settings

This section covers settings which are related to the PVSG module management system.

 **Unknown Modules**

A "missing module" is a module which is present in the configuration but has not been found on the system. The module may have been disconnected, or be in a faulted state.

When module is missing:


When matching a module, match:

An "unknown module" is a module which is not present in the configuration but has been found on the system. The module may have been incorrectly configured, or should not be connected to the system altogether.

When an unknown module is detected:

Typically, modern vehicle systems start asynchronously. That is, multiple modules are powered on simultaneously, and are ready for operation at different times. To ensure reliable module detection, the PVSG will wait for the period defined below before testing the module configuration.

Before checking for modules, wait for:

 **Concurrency**

Concurrency with respect to system module configuration relates to how multiple module programming operations are handled. Specifically, this concerns the action taken during the condition when multiple programming operations **could** occur concurrently.

Concurrency policy:

Setting	Description
Missing module action	Controls the action taken when a module is determined to be missing from the system. Possible actions are Do Nothing , or Show a Fault (error code 20:1, see "Error Codes" section within this document for details) .
Module matching scheme	Controls how the PVSG determines whether a module matches its configured identity or not. Available options are using any identity, or requiring the primary identity.
Unknown module action	Controls the action taken when an unknown module is connected to the system. Possible actions are Do Nothing , or Show a Fault (error code 20:2, see "Error Codes" section within this document for details).
Module check hold off time	Controls the time which will be waited by the PVSG on startup before checking for modules on the system.
Concurrency policy	Controls the number of software update operations which may happen simultaneously. Options are limiting concurrency to one simultaneous operation, or one simultaneous operation per CAN bus.



5.4.9.6. Custom Programming Plugins

The **Custom Programming Plugin** manager allows the user to add a custom programming plugins, built specifically to run on the PVSG. Consult document 1051G05, *Custom Logic User Guide* or contact Parker for more information on custom programming plugins.

5.4.10. User Accounts

5.4.10.1. User Account Management

User accounts can be managed via the **User Account Management** section. If user management is configured, certain operations can be restricted to specific users. If user management is not configured (i.e. there are no users present), all available end-user operations are possible via the anonymous user, which is logged in by default. Add a new user by clicking the **Add** button.

Add User

Core Properties

Username: test

Display Name: Test User

Can Login? ☒

Description: This is a test user.

Authentication

Authentication Mode: Password

Password: test123

Permissions

Erase Fault Logs ☒

Write Configuration ☒

Read Configuration ☒

Save **Cancel**



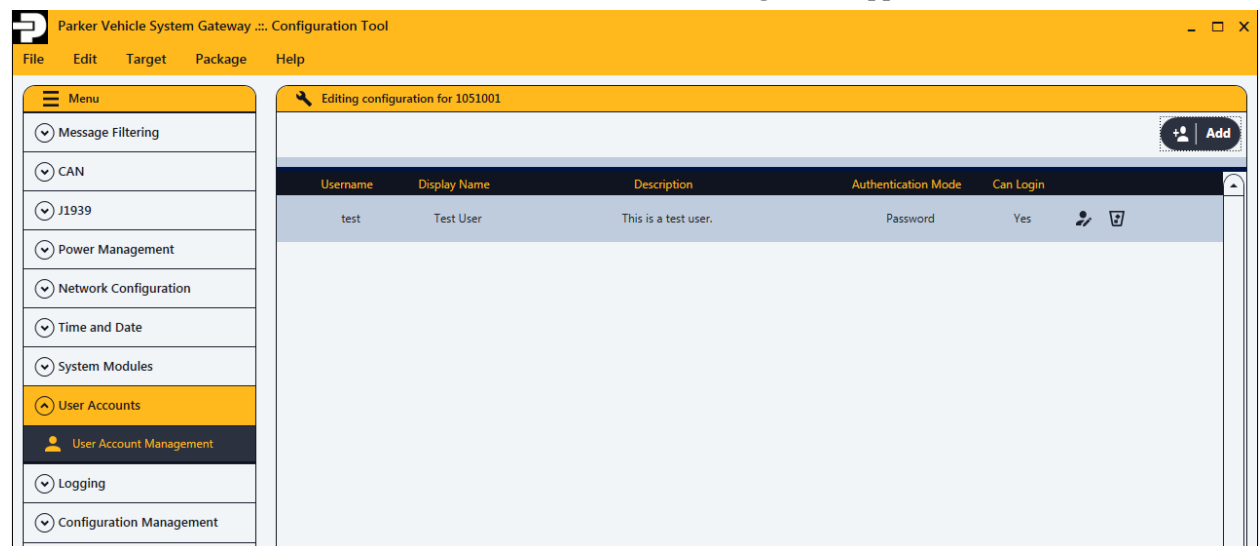
Basic user properties may be configured, in addition to the authentication mechanism and accessible features. Possible authentication mechanisms are listed below:

Authentication Mechanism	Description
Password	A username and password combination is required to log in as this user. The padlock icon at the end of the password field indicates the strength of the password; to be considered secure, a password should contain at least 5 characters including upper case and lower case letters, one number and one symbol. "Weak" passwords may still be used at the discretion of the user.



Available permissions, and their meaning, are listed below:

Permission	Description
Erase Fault Logs	Controls whether or not the fault logs may be erased by this user.
Read Configuration	Controls whether or not the configuration may be read by this user.
Write Configuration	Controls whether or not the configuration may be written by this user.

Available users are listed within the main **User Account Management** applet:




A specific user may be edited or deleted using the buttons within the user information:

Username	Display Name	Description	Authentication Mode	Can Login	
test	Test User	This is a test user.	Password	Yes	 

5.4.11. Logging

5.4.11.1. Fault Logging

Fault logging configuration relates to specific J1939 Diagnostic Trouble Codes (DTCs) contained within J1939 DM1 messages which should be logged to non-volatile memory within the PVSG.



Add Fault to Log

X

Address: 0x00 ▼ on CAN 1 ▼

SPN: 519712

FMI: 31

Debounce Time (ms): 2500

Fault Code: Test

Description: This is a test fault code.

Save

Cancel

Specific faults are configured in terms of Suspect Parameter Number (SPN), Failure Mode Index (FMI) and the J1939 source address and CAN bus of the originating module. A customer specific "code" can optionally be specified (which is logged with the fault information). Note that the description field is for configuration management purposes only and is not logged with the fault data. The debounce time relates to the minimum time period for which a fault must be seen to be inactive before another occurrence of the fault will be logged. This helps to prevent multiple faults from being logged for a single fault event. Note that the minimum debounce time is 2.5 seconds, which is required due to the period of the J1939 DM1 message.

Editing configuration for 1051001
Add

Source	SPN	FMI	Debounce Time (ms)	Code	Description
0x00 on CAN 1	12345	31	2500	P1234	This is a test fault.

Settings

When the fault log becomes full: Stop logging

Metadata

Certain metadata components can be logged in addition to the core fault information. Which metadata elements are logged can be controlled with the options below.

Log engine hours: ☐

Engine hours source: 0x00 on CAN 1

Engine hours must be requested: ☐

The action taken when the fault log becomes full (per storage limits, see "Storage Administrator" section) can be set within the **Settings** group. The following actions are available.

Action	Description
Stop Logging	Faults will no longer be logged until the fault log is manually cleared via the dashboard.
Overwrite Oldest Logs	Each time a new fault instance is required to be logged, the oldest fault log at that time will be erased.

Optionally, metadata may be logged with each fault. Currently available metadata types are listed below.

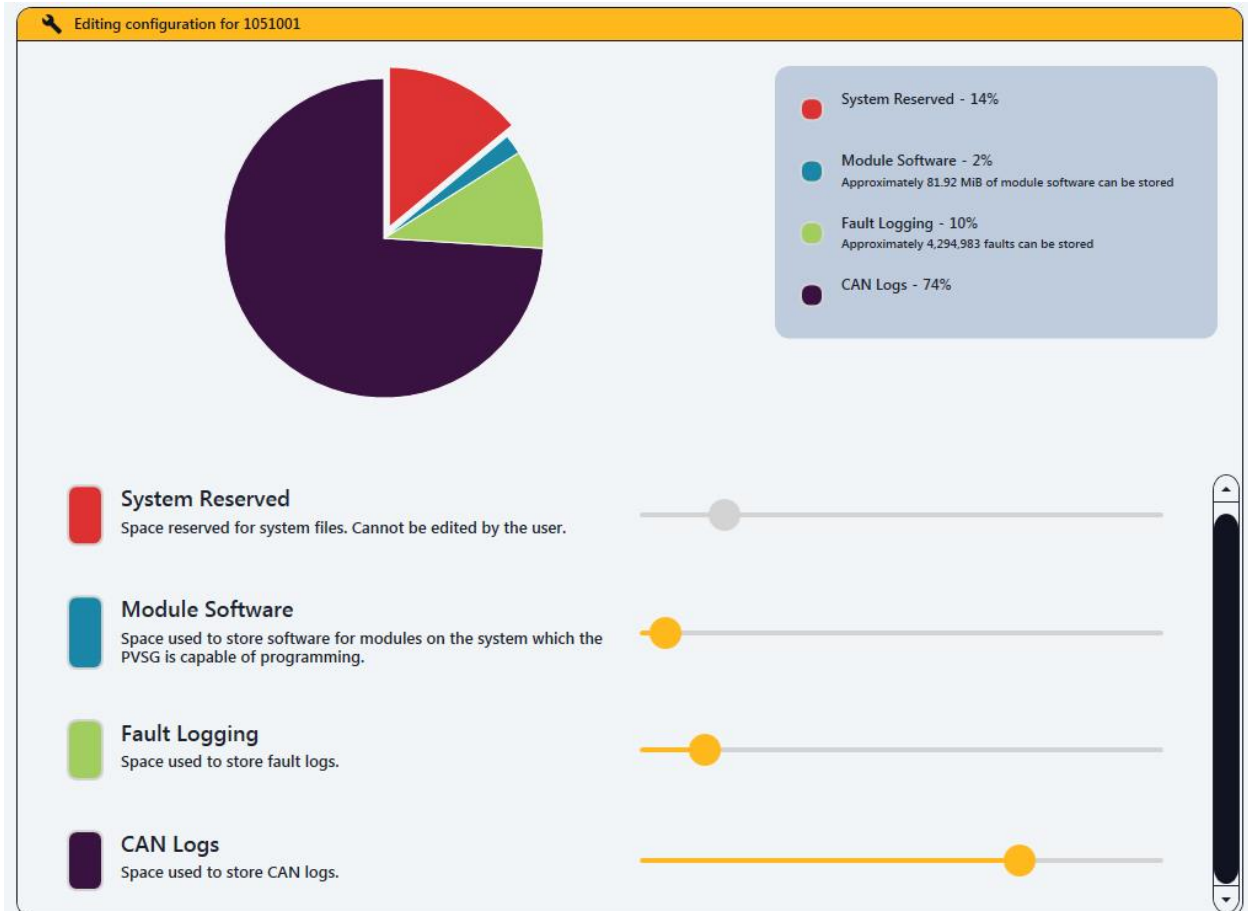
Metadata	Description
Engine Hours	The current running hours of the engine. Obtained via J1939 PGN 0xFEE5. The PVSG can optionally request this information (via the J1939 RQST message) if required. If request is enabled, the information will be queried at an interval of 5 seconds.

5.4.12. Custom Applications

The **Custom Application Manager** allows the user to add a custom application, built specifically to run on the PVSG. Consult document 1051G05, *Custom Logic User Guide* for more details or contact Parker for more information on custom applications.

5.4.13. Storage Administrator

The **Storage Administrator** allows the user to configure how the 'data log' memory on the PVSG is used by various features. Each feature which requires storage space on the data log memory is allocated a percentage of the available space. The per-feature allocation is adjusted using the control sliders. Note that some elements are set as 'read only' to indicate that these features require space though the user cannot control them.

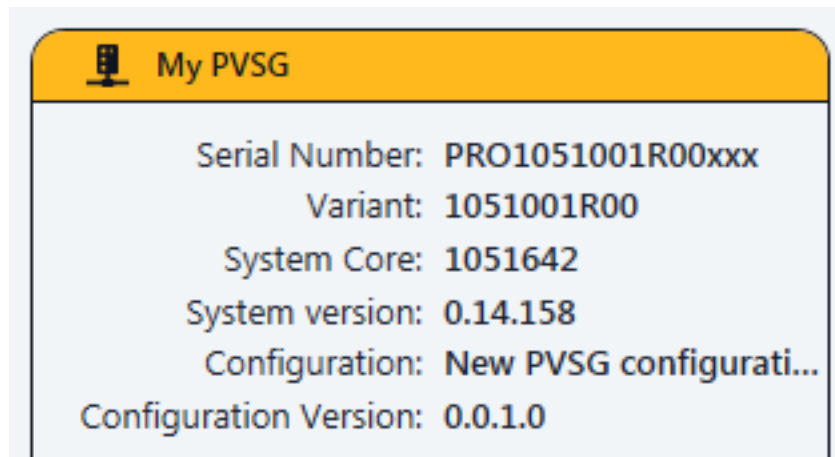


The system sets recommended defaults for new configurations. In the allocation summary, an approximate translation of percentage storage allocation to feature specific units is given, though it should be noted that this translation is approximate.

Note that storage allocation limits are approximate and subject to a certain amount of error. The PVSG platform software will do its best to achieve the desired limits, however a certain degree of variance is expected.

5.4.14. Configuration Management

It is recommended to use the **Version Information** section under the **Configuration Management** menu to properly version control your configuration files. This allows both a 3-component version number to be attached to your configuration as well as a label of your choosing. It is recommended to increment the version number upon configuration changes according to your local version control scheme. The information inputted here will be shown in the PVSG dashboard window under the *Target Info* section:



5.4.15. Exporting Configurations

A configuration report can be generated in HTML format via the **File > Export > Report** menu. Any modern web browser should be capable of viewing the report.

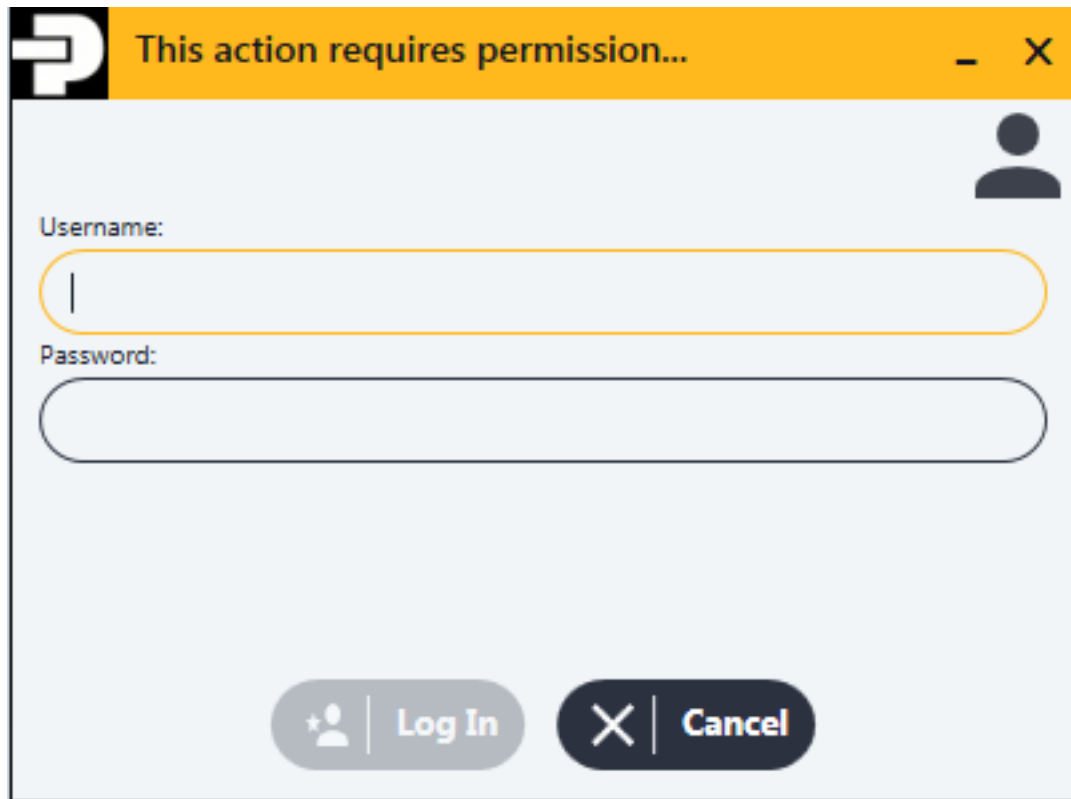
5.4.16. Transferring Configurations

The active configuration can be transferred to the target directly from the tool. With the target connected (LED status shows connected to USB, Ethernet or Wireless and dashboard reports connected), select **Target > Send Configuration** to start the process. Note that the process will require the target to be rebooted before the new configuration takes effect. In addition, after rebooting, there may be a delay until the target reports it is back online (LED status reports "Waiting" or "Connected") as it performs any necessary internal reconfiguration steps (LED status will report "Init" while reconfiguring).

The configuration from a currently connected PVSG can be read using the **Target > Read Configuration** menu. Note if the configuration is password protected (see the "Configuration Security" section of this document for details on how to password protect a configuration), you will be prompted for this during the read procedure. Also note that if you have not reset the PVSG (either manually or via prompt from configuration tool) after transferring a configuration, the retrieved configuration is the new configuration, not the currently active configuration.

5.4.16.1. Configuration Security

If user management has been configured (see "User Account Management" section) on the configuration already installed on the PVSG, attempting to read or write the configuration will result in a request for authentication if the currently logged in user does not have permission to read/write the configuration respectively. Note that the need for user authentication is based on the configuration already installed on the PVSG, and not the configuration loaded into the configuration tool. If authentication is required, the following window will appear:



This action requires permission...

Username:

Password:

Log In Cancel

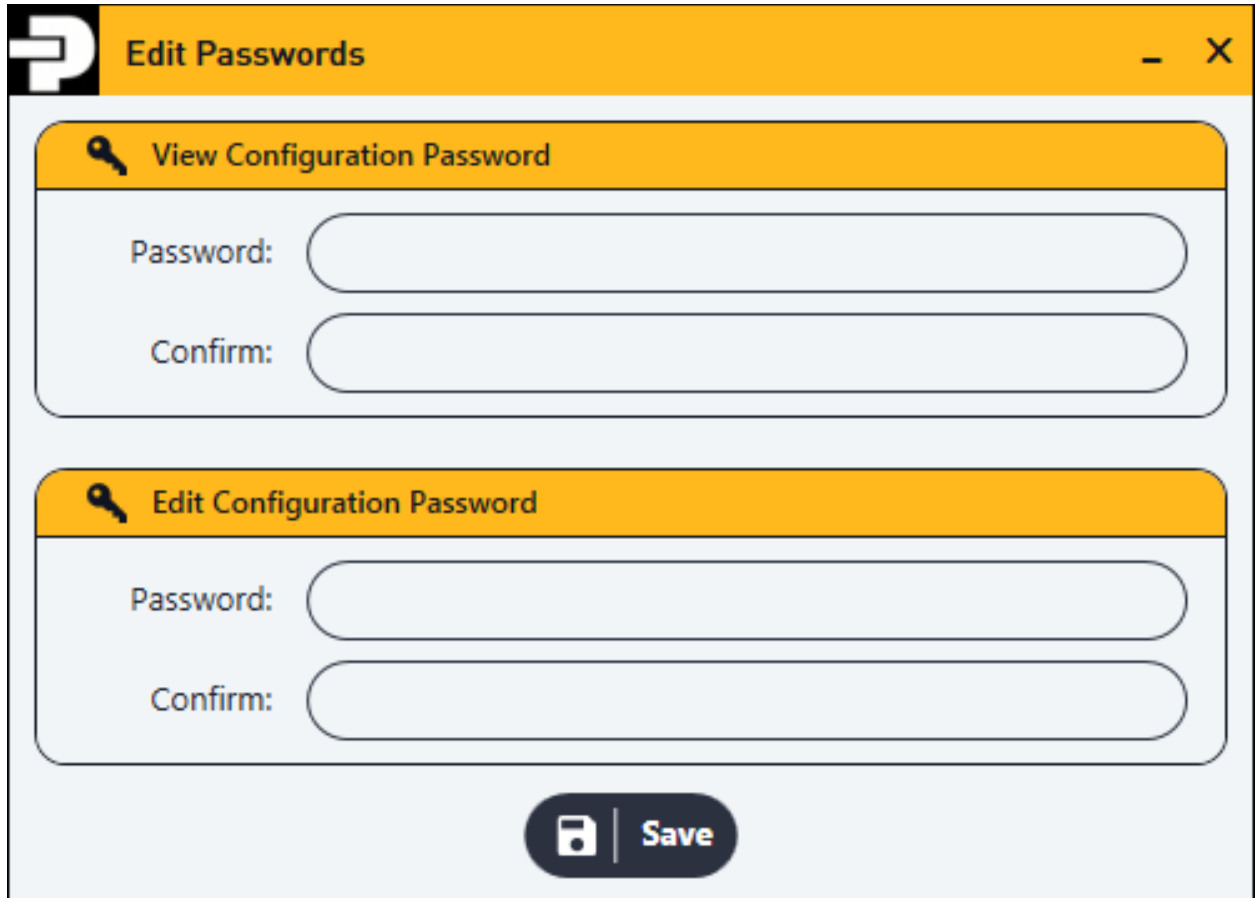
To continue, enter the username and password of a user who has permission to perform the respective operation (either read configuration or write configuration).

Configuration Overwrite

The option labelled **Force Configuration Overwrite** on the *Build Combined Target Package* window allows control over whether the configuration already installed on the target is overwritten. If selected, the combined configuration will always be deployed to the target and will overwrite any installed configuration. If not selected, the combined configuration will only be written to the target if no configuration is already present.

5.4.17. Configuration Security

A configuration can be protected with one or more passwords to provide security. Separate passwords for 'view' and 'edit' can be set. This can be done via the **Edit > Passwords** menu.



Passwords are operated in a hierarchical manner; that is if the user has the 'edit' password, then they can of course 'view' the configuration as well.

Note that the resultant granted permission is taken as a combination of the password (if one is required) provided and the tool license you have. For example, if you provide the 'edit' password but do not have 'edit' abilities enabled in your license, then you still cannot edit the configuration.

5.4.18. Tool Information

Version information for the configuration tool can be sought using the **Help > About** menu.

5.4.19. Command Line Interface

The configuration tool also provides a command line interface. Locate pvsgcfg.exe (installed as part of the installer 1051605), and run "pvsgcfg.exe -h" to get a listing of all of the available commands.

6. Recovery

In the event a PVSG is corrupted or embedded software upgrade has failed, attempt recovery via:

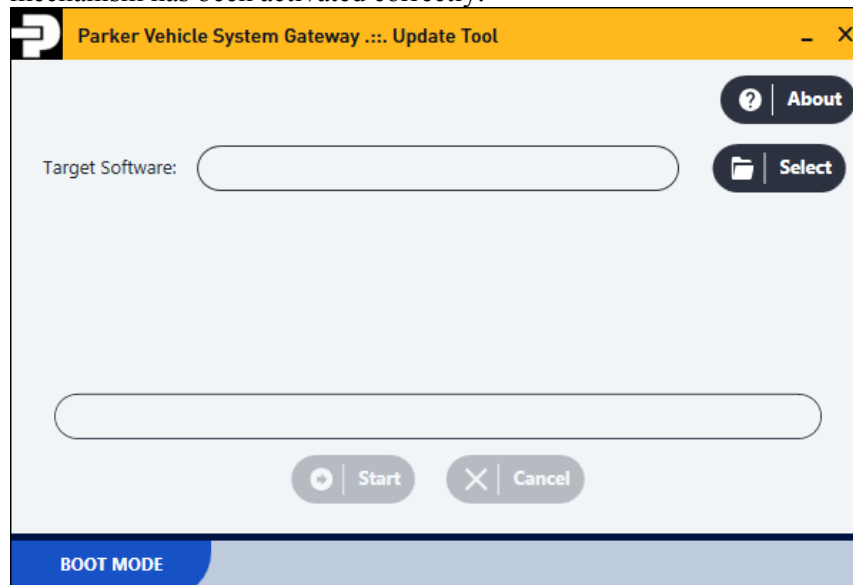
1. run update tool (1051606),
2. (if previous step did not work) activate hardware recovery mechanism (see "Connector Pinout" section of this document for "Recovery" pin, active high), power cycle the PVSG to enter bootstrap mode (see Note below), and redo 1.



Note: The first time a PVSG is connected to a PC via USB with the "Recovery" pin active, Windows will initiate a USB Driver Software installation. The PVSG PC Software should not be used until the USB Driver Software installation has completed.



Note: update tool status will show BOOT MODE to indicate hardware recovery mechanism has been activated correctly:



7. Known Limitations

Component	Case	Description	Workaround
USB	30575	USB interface is not isolated. This can result in damage to the PVSG or a PC when the PC is powered off of the Mains (as opposed to powered by a battery alone). This is a known limitation that was decided upon at design time and will not be changed.	Use of a USB isolator is recommended to reduce the risk of damage to the PVSG or other equipment, when connecting to the PVSG from a USB host port on a PC connected to Mains supply.
PVSG Software	41399	The PVSG currently utilises an internal system clock whereby the maximum encodable time is 03:14:07 19 January 2038.	It is expected that a workaround will be available in a future software update.
PVSG Software	35254	PVSG message routing operates according to a FIFO algorithm whereby messages are dispatched in the same order as they are received.	None.
PVSG Software	45300	Serialisation error when using trying to save configuration files created with 1051605 V0.14.x.x when using 1051605 V0.15.x.x or newer.	Goto System Modules > Module Management Settings and select something from each of the drop down boxes.
PVSG Hardware	47460	There is a known issue with wireless channel 6 where the connections can be unexpectedly dropped.	Avoid using channel 6.
PVSG Software	46924	With J1939 management and wakeup enabled on the same CAN bus, once awake, the PVSG will not go sleep due to the periodic J1939 DM1 message sent by the PVSG keeping the CAN bus active.	Avoid using J1939 management and wakeup on the same CAN bus if wake to sleep transition is required.
PVSG Software	51900	System and Fault log databases can become corrupt if the server is not properly shutdown before removing power from the PVSG.	Always use a wake up to initiate a server shutdown before powering off the PVSG.



8. Software Release Notes

This section provides software release notes for the distributed PVSG software components referenced by this document.

Each section below provides a summary of the software released that corresponds to a release of this document. For each software item listed the following is provided:

- Part Number: Parker internal software part number
- Software Version: Software version reported by the software
- Config Format: Internal configuration format. Configuration created with one software version should be compatible with another software version that uses the same configuration format. In general, configuration created with software that is one configuration format older, can be opened and saved using the current configuration format.
- Plugin SDK Version: Internal plugin SDK version. Used to indicated compatibility with custom logic (custom application or custom programming protocol plugin) created with [10516C2](#) & [10516C3](#).
- Release Case: Parker internal case number associated with a software release

8.1. 1051G02.31

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00
- 1051007R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.31.194.194	19	Not Applicable	Case 55044
Embedded Software Deployment Package	1051642	v0.27.362	19	2	Case 53953

Summary of changes from 1051G02.30:

- PVSG Dashboard Window Behavior has changed (Case [53316](#)):
 - The dashboard will open maximized if the argument --open-maximized is used when opening pvsgray.exe.



- The dashboard now has a maximize button on the top right.
- The dashboard now minimizes to taskbar and not the system tray.
- The dashboard is now in the list of applications when alt-tab is used.

8.2. 1051G02.30

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00
- 1051007R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.30.190.190	19	Not Applicable	Case 55003
Embedded Software Deployment Package	1051642	v0.27.362	19	2	Case 53953

Summary of changes from 1051G02.29:

- PVSG is now added to the end of the RP1210 APIImplementations string during fresh install, matching RP1210 spec (Case [55000](#)).

8.3. 1051G02.29

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00
- 1051007R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite	1051605	v0.29.186.186	19	Not	Case



Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
Installer				Applicable	53952
Embedded Software Deployment Package	1051642	v0.27.362	19	2	Case 53953

Summary of changes from 1051G02.28:

- Resolved more issues with J1939 large messages using the embedded J1939 stack. (case [53641](#))

8.4. 1051G02.28

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00
- 1051007R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.28.185.185	19	Not Applicable	Case 53328
Embedded Software Deployment Package	1051642	v0.26.361	19	2	Case 53284

Summary of changes from 1051G02.27:

- Resolved issue with system module programming in which timeouts deem a programming operation a success. (case [53242](#))
- Resolved issues with J1939 large messages using the embedded J1939 stack. (case [53264](#))

8.5. 1051G02.27

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00

- 1051007R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.27.183.183	19	Not Applicable	Case 52948
Embedded Software Deployment Package	1051642	v0.25.355	19	2	Case 51749

Summary of changes from 1051G02.26:

- Resolved issue with tool licensing in which removable storage devices caused license validation to fail. (case [52417](#))
- Resolved PVSG driver service crash when PVSG is used as a DLA. (case [52124](#))

8.6. 1051G02.26

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00
- 1051007R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.26.178.178	19	Not Applicable	Case 52270
Embedded Software Deployment Package	1051642	v0.25.355	19	2	Case 51749

Summary of changes from 1051G02.25:

- Updated variant manager to match 1051002 variant in 1051F79.02A. (Case [51924](#))
- Updated variant manager to match requirements for 1051005, 1051006 and 1051007. (Case [50943](#))

8.7. 1051G02.25

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01



- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.25.173.173	19	Not Applicable	Case 51750
Embedded Software Deployment Package	1051642	v0.25.355	19	2	Case 51749

Summary of changes from 1051G02.24:

- Resolved issue with Plugin SDK asynchronous threads persisting longer than intended. (case [50974](#))

8.8. 1051G02.24

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.24.171.171	19	Not Applicable	Case 50832
Embedded Software Deployment Package	1051642	v0.24.351	19	2	Case 50834

Summary of changes from 1051G02.23:

- Resolved issue with Plugin SDK (TaskScheduleAt()). (case [50127](#))
- Resolved issue with Ethernet. (case [51048](#))

8.9. 1051G02.23

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01

- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.23.169.169	19	Not Applicable	Case 49806
Embedded Software Deployment Package	1051642	v0.23.341	19	2	Case 49808

Summary of changes from 1051G02.22:

- General improvements and bug fixes to custom logic (including custom applications and custom programming plugins). (Case [50151](#), [50152](#), [50153](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.10. 1051G02.22

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	v0.22.165.165	19	Not Applicable	Case 49273
Embedded Software Deployment Package	1051642	v0.22.331	19	2	Case 49271

Summary of changes from 1051G02.21:

- General improvements and bug fixes to custom logic (including custom applications and custom programming plugins). (Case [48989](#))
- Added custom logic related error codes (21:1 to 21:5). (case [49743](#))
- Enhanced support for variants 1051005R00 and 1051006R00. (Case [49796](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)



8.11. 1051G02.21

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00
- 1051005R00
- 1051006R00

with the following software:

Software	Part Number	Software Version	Config Format	Plugin SDK Version	Release Case
PC Software Suite Installer	1051605	0.21.159.159	19	Not Applicable	Case 48813
Embedded Software Deployment Package	1051642	0.21.299	19	2	Case 48815

Summary of changes from 1051G02.20:

- More support for custom applications. (Case [48730](#))
- Added preliminary support for custom programming plugins. (Case [48991](#))
- The version of the installed PVSG PC Software (1051605) can be obtained from the dashboard. (Case [49282](#))
- Added preliminary support for variants 1051005R00 and 1051006R00. (Case [48649](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.12. 1051G02.20

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.20.149.149	18	Case 47957
Embedded Software Deployment Package	1051642	0.20.280	18	Case 47956

Summary of changes from 1051G02.19:



- Resolved an issue with establishing a secure session with a connected PVSG. (Case [48919](#))
- Wake On CAN Timeout was modified to a general purpose timeout for all wakeup sources. (Case [47680](#))
- DM1 messages sent by the PVSG server are now sent to connected RP1210 clients. (Case [48011](#))
- Added preliminary support for custom applications. (Case [47964](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.13. 1051G02.19

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.19.140.140	17	Case 47346
Embedded Software Deployment Package	1051642	0.19.261	17	Case 47345

Summary of changes from 1051G02.18:

- User login operations are now logged in the system log. (Case [47560](#))
- Source bus and address are now logged in the fault log. (Case [47538](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.14. 1051G02.18

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.18.127.127	17	Case 46875
Embedded Software	1051642	0.18.254	17	Case 46876



Software	Part Number	Software Version	Config Format	Release Case
Deployment Package				

Summary of changes from 1051G02.17:

- Added support for features enabled by license. (case [31668](#))
- File extension .pvsgx no longer supported. (Case [46768](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.15. 1051G02.17

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00
- 1051004R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.17.111.111	16	Case 46178
Embedded Software Deployment Package	1051642	0.17.230	16	Case 46177

Summary of changes from 1051G02.16:

- Configuration read/write operations can be restricted via user management. (Case [45917](#))
- Storage control mechanism added to allow user control of how the data log memory is used. (Case [46280](#))
- Added preliminary support for sleep mode 2. (Case [46213](#))
- J1708 software support requires hardware modifications captured in case [46240](#), which are available in PVSG 1051004. (case [46242](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.16. 1051G02.16

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case



Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.16.97.97	14	Case 45418
Embedded Software Deployment Package	1051642	0.16.202	14	Case 45417

Summary of changes from 1051G02.15:

- Added fault logging. (Case [45432](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.17. 1051G02.15

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.15.86.86	11	Case 44865
Embedded Software Deployment Package	1051642	0.15.177	11	Case 44864

Summary of changes from 1051G02.14:

- J1708 messages sent from the PVSG are echo'd back to the RP1210 client. (Case [44400](#))
- System modules using the Vansco Flashload over CAN protocol can now be updated by the PVSG (prototype only). (Case [44872](#))
- Alternate identities for system modules are now supported. (Case [44918](#))
- Missing and unknown system modules are now handled. (Case [44923](#))
- System software update/reprogramming operations are now logged in the system log. (Case [44913](#))
- System module configuration is now part of the HTML export report. (Case [44832](#))
- System modules can now be configured as optional. (Case [45149](#))
- System module identities can now be compared to determine whether a module matches the expected configuration or not. (Case [44197](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.18. 1051G02.14

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01



- 1051002R00, 1051002R01
- 1051003R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.14.73.73	10	Case 44219
Embedded Software Deployment Package	1051642	0.14.160	10	Case 44217

Summary of changes from 1051G02.13:

- Configuration tool enhanced to accept a list of known modules and associated software archive(s). (Case [44345](#))
- J1708 support via RP1210. (Case [44343](#))
- J1708 connected status available on status LED. (Case [44368](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.19. 1051G02.13

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.13.59.59	9	Case 43589
Embedded Software Deployment Package	1051642	0.13.143	9	Case 43588

Summary of changes from 1051G02.12:

- System mapping (J1939-based) added to dashboard. (Case [43586](#))
- CAN metrics added to dashboard. (Case [44195](#))
- Misc GUI enhancements including support for user configurable themes. (Case [44195](#))
- Added option to configure J1939 TP BAM inter-packet message spacing. (Case [40205](#))
- Preliminary J1708 support via RP1210. (Case [43572](#), [43599](#))
- Other miscellaneous software enhancements. (see cases linked to release cases)

8.20. 1051G02.12

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01



- 1051002R00, 1051002R01
- 1051003R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.12.41.41	9	Case 42427
Embedded Software Deployment Package	1051642	0.12.107	9	Case 42426

Summary of changes from 1051G02.11:

- Resolved issue with unexpected "Driver connection aborted" when connected to Parker VMM Software. (Case [42273](#))
- Resolved issue that prevented some users from accessing licensed features of the Configuration Tool. (Case [42475](#))
- Other miscellaneous software enhancements (see cases linked to release cases)

8.21. 1051G02.11

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG)

- 1051001R00, 1051001R01
- 1051002R00, 1051002R01
- 1051003R00

with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.11.38.38	8	Case 41680
Embedded Software Deployment Package	1051642	0.11.103	8	Case 41681

Summary of changes from 1051G02.10:

- Corrected issue with routing to disconnected CAN port causing CAN routing on other ports to fail. (Case [41852](#))
- Added support for RP1210 clients connected to PVSG receiving messages sent by PVSG. (Case [32506](#), [42138](#))
- Configuration tool enhancements. (Case [41520](#), [38942](#), [42476](#), [40943](#), [41205](#), [41504](#))
 - Support for variants 1051001R01, 1051002R02 and 1051003R00 added. (Case [42324](#), [42341](#))
- Update tool enhancements. (Case [41283](#))
- Miscellaneous PC software enhancements (Case [41648](#), [40866](#), [41829](#), [41929](#))
- Miscellaneous embedded software enhancements (Case [37613](#), [38936](#), [41257](#), [41410](#), [42229](#), [41847](#), [41857](#), [42060](#), [42446](#), [42170](#), [42137](#))



8.22. 1051G02.10

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), 1051001R00 & 1051002R00 with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.10.34.34	8	Case 41102
Embedded Software Deployment Package	1051642	0.10.77	8	Case 41101

Summary of changes from 1051G02.09:

- Added periodic transmission of J1939 DM1 to report PVSG status. (Case [41785](#))
- PVSG startup time shortened. (Case [41239](#))
- Dashboard enhancements. (Case [40981](#), [41854](#))
- Configuration tool enhancements. (Case [41435](#), [41525](#), [41411](#))
- Update tool enhancements. (Case [41412](#), [41283](#))

8.23. 1051G02.09

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), 1051001R00 & 1051002R00 with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.9.32.32	8	Case 40813
Embedded Software Deployment Package	1051642	0.9.41	8	Case 40812

Summary of changes from 1051G02.08:

- Dashboard enhancements:
 - Resolved issue of unexpected error being reported in Dashboard (Case [40876](#))
 - Resolved issue of unexpected critical/warning entry in system log (Case [40875](#))
 - Decoupled system log detail text from database to allow supporting different language requirements in the future (Case [40894](#))
- Configuration tool enhancements:
 - Added time and date interface to configure PVSG RTC and supporting cases (Case [40873](#), [40604](#), [41400](#), [41401](#))
 - Destination address is used when routing PDU1 messages (Case [40509](#))
 - Miscellaneous enhancements (Case [37209](#), [41388](#), [37214](#), [41043](#), [40213](#), [39115](#))
- Update tool enhancements. (Case [38656](#), [37182](#))
- USB enhancements and supporting cases: (Case [40925](#), [41274](#), [41277](#), [41193](#))

8.24. 1051G02.08

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), 1051001R00 & 1051002R00 with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.8.29.29	7	Case 40037
Embedded Software Deployment Package	1051642	0.8.37	7	Case 40036

Summary of changes from 1051G02.07:

- Dashboard enhancements:
 - Added logs interface to retrieve system logs. (Case [39997](#))
 - Added support for displaying more than one active server error code. (Case [40239](#))
- Configuration tool enhancements:
 - Miscellaneous enhancements. (Case [39093](#), [38588](#))

8.25. 1051G02.07

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), 1051001R00 & 1051002R00 with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.7.27.27	7	Case 39155
Embedded Software Deployment Package	1051642	0.7.35	7	Case 39154

Summary of changes from 1051G02.06:

- Configuration tool enhancements:
 - Command line interface added to support sending a configuration file to the PVSG. (Case [38627](#))
 - Other miscellaneous enhancements. (Case [38622](#), [39290](#), [39304](#), [37866](#), [39368](#), [39456](#), [39457](#), [40165](#), [40160](#))
- Update tool enhancements:
 - Retry counter visible in bottom right corner of update tool. (Case [39289](#))
- Dashboard enhancements. (Case [39071](#), [39190](#))
- New error codes: 2:4, 2:5, 2:6 and 2:7. (Case [39863](#))
- Corrected issue that resulted in router based error codes (1:x) being off by one in the dashboard. (Case [39426](#))

8.26. 1051G02.06

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), 1051001R00 & 1051002R00 with the following software:



Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.6.25.25 (*)	6	Case 38547
Embedded Software Deployment Package	1051642	0.6.33	6	Case 38546

* NOTE: The version of the update tool distributed with this release is not able to install older versions of 1051642.

Summary of changes from 1051G02.05:

- Configuration tool enhancements:
 - Delete key supported as a means to remove message filter entries. (Case [38575](#))
 - Resolve issues related to message filter entries. (Case [38582](#), [38532](#))
 - All configuration changes require reboot before taking effect. (Case [36679](#), [38591](#))
 - Other miscellaneous enhancements. (Case [37984](#), [38319](#))
- Update tool enhancements:
 - Only one instance of the tool can be opened. (Case [38689](#))
 - Other miscellaneous enhancements. (Case [38599](#), [39095](#), [39118](#), [39308](#))
- Dashboard enhancements. (Case [39042](#), [38551](#))
- Installer registers PVSG file extensions with Windows to link them to the appropriate PVSG tool. (Case [36599](#))
- Ethernet and wireless enhancements. (Case [38342](#), [38361](#), [38907](#), [39111](#), [39291](#), [39292](#), [38664](#), [38665](#))
- Status LED enhancements:
 - Ethernet and wireless status. (Case [38345](#))
 - CAN bus off & error passive status. (Case [38390](#))

8.27. 1051G02.05

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), PRO1051001R00 with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.5.21.21	5	Case 37722
Embedded Software Deployment Package	1051642	0.5.28	5	Case 37721

Summary of changes from 1051G02.04:

- Wake on CAN supported. (Case [37699](#), [38126](#))
- Configuration tool now supports PVSG variants. (Case [38132](#))
- Configuration tool notifies user when configuration file contains unsaved changes. (Case [37984](#))
- Configuration tool now supports keyboard shortcuts. (Case [37983](#))
- Configuration tool now supports a command line interface. (Case [37642](#))

- J1939 Software Identification (SOFT) message now includes configuration label in addition to version and file name information. (Case [37220](#))
- Preliminary Ethernet and wireless support. (Case [37976](#))

8.28. 1051G02.04

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), PRO1051001R00 with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.4.17.17	2	Case 37190
Embedded Software Deployment Package	1051642	0.4.24	2	Case 37189

Summary of changes from 1051G02.03:

- The configuration tool now requires a license in order to view/edit a configuration. Configurations now support password protection for view/edit ability. (case [36794](#))
- The configuration tool can now generate a report which can be viewed without the configuration tool. (case [36811](#))
- The configuration tool can read configuration directly from the PVSG. (Case [36796](#))
- The dashboard replicates the error information available from the Status LED. (Case [37191](#))
- Added status LED error code 1:4. (Case [37549](#))
- Configurable wakeup sources are now supported. (Case [36509](#))

8.29. 1051G02.03

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), PRO1051001R00 with the following software:

Software	Part Number	Software Version	Config Format	Release Case
PC Software Suite Installer	1051605	0.3.14.14	1	Case 36503
Embedded Software Deployment Package	1051642	0.3.18	1	Case 36501

Summary of changes from 1051G02.02:

- Added status LED error codes 1:3, 2:1, 2:2, and 2:3. (Case [34175](#), [37094](#))
- The physical CAN bus with which a RP1210 client is associated with can be set by specifying the appropriate channel when the the RP1210 client connects to the PVSG. (Case [35455](#))
- Command line interface provided to update tool. (Case [35605](#))
- Configuration tool now provided by 1051646 as opposed to 1051695/1051696. Configuration file format is now .pvsgc. (Case [36499](#), [35601](#))
- Combined target software and configuration packages are now supported. (Case [35601](#))



- Support for CAN port pairs added to configuration tool (1051646) and embedded software (1051642). (Case [37108](#))



Note: as a result of the CAN port pair addition, PVSG's upgraded to embedded software 1051642 V0.3.18 will report a configuration error (i.e. status LED error 1:3) until their configuration is upgraded with configuration generated by the configuration tool included with 1051605 V0.3.14.14.

8.30. 1051G02.02

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), PRO1051001R00 with the following software:

Software	Part Number	Software Version	Release Case
PC Software Suite Installer	1051605	0.2.9.9 (*)	Case 35814
Embedded Software Deployment Package	1051642	0.2.16	Case 35798
Configuration Tool (Executable)	1051695	2.0.0.0	Case 33864
Configuration Spreadsheet (Excel Template)	1051696	1.0.3.2	Case 35521

* NOTE: Prior to upgrading 1051605, it is important that any old installations of 1051605 are removed by navigating to **Control Panel > Programs and Features**, selecting **Parker Vehicle System Gateway Drivers** and selecting **Uninstall**.

Summary of changes from 1051G02.01:

- Update Tool available. (Case [35603](#))
- J1939 Software Identification (SOFT) and Component Identification (CI) messages supported. (Case [33149](#))
- Preliminary ignition control added (wake on GPIO1 or GPIO2). (Case [34753](#))
- Able to recover from unsuccessful configuration programming. (Case [34973](#))
- Unsupported bit rate removed from configuration spreadsheet (125 kbps option removed from 1051696). (Case [35516](#))

8.31. 1051G02.01

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), PRO1051001R00 with the following software:

Software	Part Number	Software Version	Release Case
PC Software Suite Installer	1051605	0.0.0.7	Case 35046
Embedded Software Deployment Package	1051642	0.1.14	Case 35046
Configuration Tool (Executable)	1051695	2.0.0.0	Case 33864
Configuration Spreadsheet (Excel Template)	1051696	1.0.3.1	Case 34357

Summary of software changes from 1051G02.00:

- Supports intended operating voltage range for PVSG. (Case [35024](#), [34719](#))



Note: as a result of this change, the PVSG requires Power (J1-10) to be greater than 8V in order for it to wakeup and after wakeup greater than 6V to continue operating. Previously it required greater than 11V to wakeup and greater than 9V to continue operating.

- Status LED improvements. (Case [35076](#), [34743](#))

8.32. 1051G02.00

This revision provided information supporting use of the Parker Vehicle System Gateway (PVSG), PRO1051001R00 with the following software:

Software	Part Number	Version	Release Case
PC Software Suite Installer	1051605	0.0.0.6	Case 33629
Embedded Software Deployment Package	1051642	0.0.10	Case 33629
Configuration Tool (Executable)	1051695	2.0.0.0	Case 33864
Configuration Spreadsheet (Excel Template)	1051696	1.0.3.1	Case 34357

Initial release.



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Version 2, June 1991

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