neoVI FIRE 2

Multi-Protocol Vehicle Network Interface

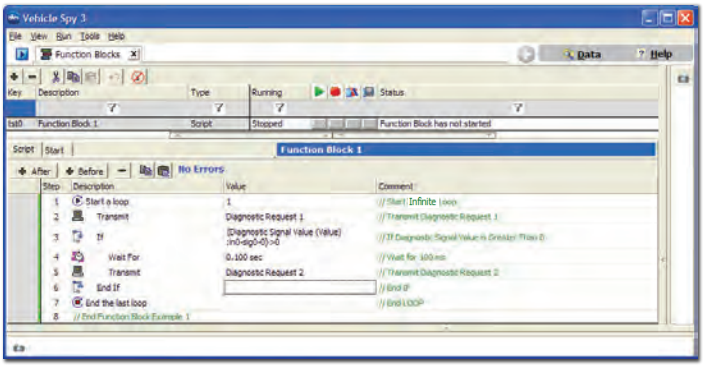
neoVI FIRE 2: 8x CAN FD, 4x LIN, Ethernet:DoIP/XCP, Cybersecurity
Modern vehicle architectures are expanding to include Ethernet, CAN FD, and Cybersecurity in addition to existing CAN and LIN networks. In response, neoVI FIRE 2 provides Ethernet, a cybersecurity security module, eight channels of CAN (FD) and four channels of LIN in one tool. All channels run simultaneously and are time stamped in hardware. A fully isolated high speed USB interface allows a PC to send and receive messages without worry of damage to the PC.

Stand-Alone Logging, Scripting, and Simulation
In addition to working as a PC interface, neoVI FIRE 2 supports operating in stand-alone mode. In this mode, neoVI FIRE 2 can run real-time scripts, log data to a removable microSD card, and simulate ECUs and gateways. With these features, it is possible to run a script to reflash ECUs using the data from the microSD card.

neoVI DLL, J2534, Linux, and RP1210 Support
Since some users prefer to write their own software, neoVI FIRE 2 supports three open APIs: neoVI DLL API, SAE J2534 API, and the TMC RP1210 A/B API. The neoVI DLL API includes examples for all popular development environments including C#, VB. NET, VB6, Delphi, C++ Builder, Visual C++, LabVIEW, and LabWindows. Examples and drivers for Linux are also available. There is also an API to allow 3rd parties to license their applications using neoVI FIRE 2 as a secure hardware key.

Vehicle Spy Application Software
Our Vehicle Spy software fully supports neoVI FIRE 2. With Vehicle Spy, users can monitor and transmit on all neoVI FIRE 2 networks simultaneously. Vehicle Spy is used (and required) to configure stand-alone mode. Users can take advantage of the powerful interface to load databases and to write and debug scripts before downloading them to the device.

Hardware-in-the-Loop Real-Time Performance
neoVI FIRE 2 includes a real-time scripting engine that can be used to perform real-time messaging. For example, someone creating an application can load a script into the hardware and interface with the script variables allowing microsecond measurement and control. Through a new feature called hardware acceleration, Vehicle Spy can also be configured to send real-time functions to the device such as periodic messaging, replay, or scripting.



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Logging Features

neoVI FIRE 2 is capable of logging to a removable microSD card. This logging feature includes a real-time, fail-safe FAT32 storage system. neoVI FIRE 2 also has a real-time clock for hardware timestamping all messages. Finally, a robust power management system automatically powers down neoVI FIRE and can wake the device again based on network activity or PC connection.

The Evolution of the Original neoVI FIRE

neoVI FIRE 2's predecessor, the original neoVI FIRE, was very successful. While the neoVI FIRE 2 has been developed primarily to provide new vehicle networks and features, it also includes significant improvements to existing features. These include the following: 1) a more robust case and connectors, 2) 1000 times larger script space, 3) the ability to off load the SD Card from the PC, 4) the ability to power the device from USB during configuration, 5) support for a larger voltage range, and 6) expanded voltage range on MISC IOs.

Device Specifications

- neoVI 4G Architecture over 10x performance over previous devices
- Power Consumption (typical) : 200mA @ 14.4 VDC
- Sleep Power Consumption (typical) : 3mA @ 12.0 VDC
- Comatose Power Consumption (typical) : 1mA @ 12.0 VDC
- Power Supply: 4.5-40 Volt Power Operation
- LED Membrane Keypad : 10 Full Color LEDs indicate network status, 2 LEDs for legacy status, two user buttons
- Temperature Range: -40C to +85C
- On board UPS power supply for safe shutdown of data logger
- Vehicle Connectors : 26 Pin male HD D-SUB and 9 Pin Micro D-SUB
- Warranty: One Year Limited Warranty
- Firmware: Field upgradeable design (flash firmware)
- General Purpose IO: 4 MISC IO, 2 (0 - 3.3V), 2 (0-40V) 2 IO can be configured as analog/PWMIO
- General Purpose IO rate report interval: 10 Hz to 1 Khz or based on digital change
- Microsoft Certified USB drivers
- USB Host for neoVI MIC GPS or Powering RAD Moon accessories
- Isolated High Speed (480 MBPS) USB
- Stand-Alone Mode Including Scripting, Receive Messages, Transmit Messages, Expressions, IO, and Transport Layers
- J2534 and RP1210 A/B compatible for CAN/ISO15765, Keyword, and ISO9141
- microSD card slot support for up to 128 Gigabytes of storage (or up to the limit of newer SDHC cards). The removable card is formatted using FAT32 for direct usage in a PC.
- Battery backed real time clock (RTC).
- Bluetooth 4.0 Smart/Low Energy interface (BLE) to scripting engine

Intrepid Security Module (ISM) for Cybersecurity

- Removable MicroSIM Smart card interface with connection to PC and data logger
- Open Real Time Hardware Crypto Processor: 180Mhz, CortexM4, Hardware real time AES, SHA, HMAC, & True RNG, Software RSA, 96 bit SERIAL NO, RTC, NVRAM, SSL Library
- Authentication Processor : ECC, Elliptic Curve Digital Signature Algorithm, Serial No, True RNG, Die Shield, Key-store

Networks - General

- 64 Bit timestamping to accuracy of 10 microseconds on CAN and LIN networks and never overflows. 0.5 microsecond accuracy timestamp available if using one network only.
- Simultaneous operations on all CAN/LIN networks.
- Transmit message double-buffering on all networks allows back to back message transmission.

Ordering Information:

Part Number	Description
NEOVI-FIRE2	neoVI FIRE 2 device with Vehicle Spy 3 Trial

Network Specifications

8x CAN Channels

- 6 Dedicated ISO11898 Dual Wire CAN FD Physical Layer (MCP2561FD)
- 2 CAN with CAN MODE with 3 software selectable PHY options
- DW CAN MODE Dual wire : 2 Dedicated ISO11898 Dual Wire CAN FD Physical Layers (MCP2561FD)
- LSFT CAN MODE : 2 ISO11519 Low Speed Fault Tolerant CAN Physical Layers (TJA1055)
- SW CAN MODE: 2 Single Wire CAN Physical Layers GMW3089 / SAE J2411(MC33897)
- CAN FD Support on all dual wire channels
- Up to 1 M-Bit Software Selectable Baud Rate for arbitration phase (auto baud capable)
- Up to 8 M-Bit Software Selectable Baud Rate for data phase (auto baud capable)
- Listen only mode support
- Single Wire High Speed Mode, Test Tool Resistor, and High Voltage Wakeup support
- Two software programmable DW CAN termination circuits
- Super Bitsmash feature allows FPGA controlled CAN error and waveform generation
- Logic analysis mode to discover low level CAN errors

4x LIN (Local Interconnect), ISO9141, Keyword 2000, or K and L Line

- Full support for LIN 1.X, 2.X and J2602
- LIN J2602 / 2.X compatible physical layer
- Software enabled 1K LIN Master Resistor PER CHANNEL
- LIN Bus Monitor Mode identifies errors: Sync Break Error State and Length, Sync Wave Error, Message ID parity, TFrameMax/Slave Not Responding, Checksum Error and Transmit Bit Errors
- LIN Bus Master Mode operates at same time as LIN Bus Monitor
- LIN Bus Slave simulation - with or without an LDF file
- LIN Bus hardware schedule table with support for LIN diagnostics
- UART Based State Machine
- Programmable Timing Parameters including Inter-Byte, TX Inter-Frame,RX Inter-Frame and Initialization Waveforms (0.5 ms Resolution)
- Initialization Waveforms including Fast Init, Five Baud, and Custom
- Software Selectable Baud Rate
- Logic analysis mode to discover low level LIN or K Line errors

DoIP/XCP/Automotive Ethernet

- 10/100 Ethernet PHY with low power mode
- Compatible with BroadR-Reach® with RAD-Moon Ethernet Converter Accessory
- DoIP Activation provided by LIN channel

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