neoVI RED 2

Vehicle Network Interface and Data Logger for CAN FD, LIN & 1Gb Ethernet (DoIP/XCP)

PC to Vehicle Interface and Data Logging Systems
8x CAN FD, 2x LIN, Ethernet: DoIP/XCP

The neoVI RED 2 combines the best of vehicle network interfaces with the Linux embedded operating system. The result is a solution unparalleled in capability with support for multiple network interfaces and standalone logging.

The neoVI RED 2 Series has up to eight dual wire CAN FD channels, two LIN channels, and two Gigabit Ethernet channels. The neoVI RED 2 fills the need for multiple protocol tools with a low-cost, high-value vehicle bus interface that fits in your backpack.

Features

- Option for 2, 4 or 8x DW CAN / CAN FD channels
- Up to 8x software enabled CAN termination
- 2x LIN channels
- 1x DoIP activation line
- 2x Gigabit Ethernet (1000BASE-T) for use with DoIP, XCPoE and more
- 10x Programmable tri-color LEDs
- 2x full-size SD cards for up to 2 terabytes of storage with support for SD 3.0 with 800 Mbps logging performance
- Real Time Clock for hardware timestamping of all messages and backup at 25ns
- Internal dual-band 802.11a/b/g/n Wifi with software selectable internal or external antenna
- Membrane LEDs to show link, error, and activity status
- Membrane Buttons to control trigger data logger
- Absolute orientation sensor combining accelerometer and gyroscope
- Internal extended temperature battery for safe shutdown
- High precision GPS with external GPS antenna
- Vehicle battery level wakeup
- Buzzer
- 1x USB type A connector for accessories such as RAD-IO2 or neoVI MIC2 manual trigger

Planned Future Development Features

- 4x General Purpose MISC IO
- Instant wake on 2 CAN FD channels
- Intrepid Security Module provides hardware cybersecurity and embedded C Code capability
- Generalized Precision Timing Protocol (gPTP)
- HD video recording for head unit, display and instrument cluster monitoring, active safety testing, lane departure, adaptive cruise control, back up camera testing, etc: Supports AXIS P-Series and F-Series cameras at 720p and up to 30 FPS
- Up to 4 Terabytes of storage

INTREPID CONTROL SYSTEMS
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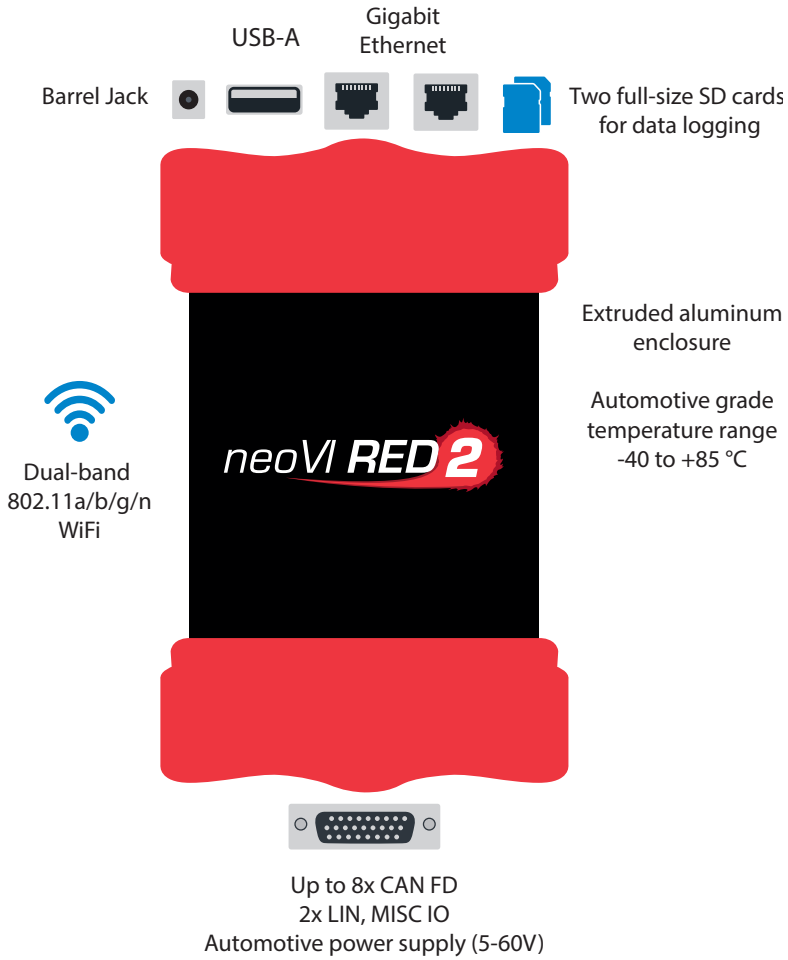
Applications

- Standalone data logger
- Data logger with auto-download via Wi-Fi or Ethernet
- Standalone ECU or vehicle simulator
- In-vehicle data acquisition system
- Captive test fleet data collection
- Fleet management
- Vehicle interface with J2534 and RP1210 support over 1000BASE-T1 (GM DPS, Ford DET, DiagRA, Chrysler CDA)



Standalone Logging, Scripting, and Simulation

In addition to working as a PC interface, the neoVI RED 2 can operate in standalone mode. It can run real-time scripts, log data to two removable full-size SD cards, and simulate ECUs and gateways. With these features, it is also possible to run a script to reflash ECUs using data from the SD card.

The neoVI RED 2 is capable of logging to two full-size SD cards, using real-time, fail-safe FAT32 storage for reliability and PC compatibility.

The neoVI RED 2 also has a real-time clock for hardware timestamping of all messages. A robust power management system automatically powers down the neoVI RED 2 and it wakes up again based on network activity or the connection of a PC.

The Power of Scripting – CoreMini

If you need to support a proprietary protocol, set up a simulation to run in parallel with the data logger, or any other custom action, the system offers a scripting environment for you to expand the base functionality to fit your unique needs. This makes the entire system very flexible and adaptable.

Remote Connectivity GPS Location

TThe neoVI RED 2 provides several ways of connecting remotely: external 4G data modem (RAD-4G), onboard dual-band 802.11a/b/g/n WiFi. In addition, the neoVI RED 2 has a 10 Hz GPS accurate to within 2.5 meters. GPS is provided both as a fleet management tool and within the data logging session for correlating location to your test data.

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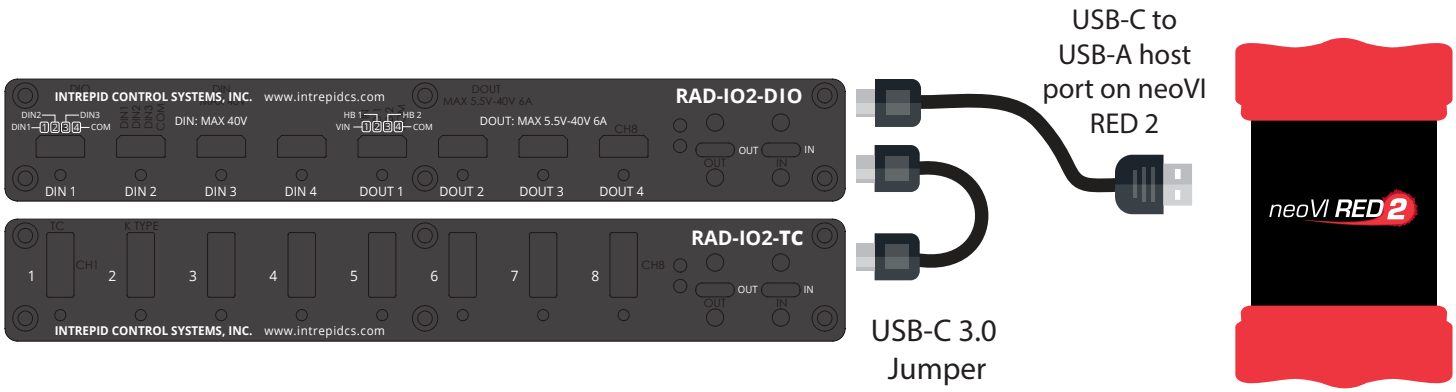
RAD-IO 2 Device Support

The neoVI RED 2 can also be paired with the ruggedized RAD-IO2 products that provide an isolated analog, digital or temperature interface to a PC via USB type C port. In addition, the RAD-IO2 family communicates on an open-source UART based serial communication protocol. Up to four devices can be daisy-chained. The chain length is limited by the current supplied to the chain through USB.

Software Support:

Create Your Application Using the Included Intrepid DLL API, J2534 API, RP1210 API, libicsneo Open Source API or SocketCAN kernel. For those who wish to write their own applications, the ValueCAN 4 includes a DLL and helpful examples for Python, Visual C++ and Visual Basic.



HD26 Pinout

1	MISC 1	14	DW CAN 1 H
2	DW CAN 4 L	15	DW CAN 8 H
3	DW CAN 5 L	16	DW CAN 2 H
4	DW CAN 1 L	17	DW CAN 3 H
5	DW CAN 8 L	18	DW CAN 6 H
6	DW CAN 2 L	19	VBAT
7	DW CAN 3 L	20	MISC 4
8	DW CAN 6 L	21	DW CAN 7 L
9	MISC 2	22	LIN 01 / ISO K 01
10	GND	23	LIN 02
11	MISC 3	24	EXT WAKE
12	DW CAN 4 H	25	ETH 01 ACTIVATE
13	DW CAN 5 H	26	DW CAN 7 H

Antenna

1	Wi-Fi
2	NC
3	GPS
4	Wi-Fi DIVERSITY

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Protocol Support

- OBD
- J1939: Includes J1939 DBC, BAM, RTS/CTS
- UDS (ISO14229):
  - Services include $19, $22, $23, $2A, $2C
  - DBC, A2L (ASAP2 File), GDX, MDX, ODX support
- CCP: Includes A2L (ASAP2 file) and ROB support
- XCP: Includes A2L (ASAP2 file) and ROB support

Networks / Inputs

- 2, 4, or 8 x Dual wire CAN (all baud rates supported)
- 2 LIN / K Line / KW2K / ISO 9141
- 2 Gigabit Ethernet (1000BASE-T)

Device Specifications

- Low power consumption
- Comatose: 500 microamps
- Fast wake 70 milliamps
- Power supply: 5-60V operation
- LEDs: 10 programmable tri-color LEDs
- 2 LEDs for legacy status; 2 user buttons
- Temperature range: -40°C to +85°C
- On-board UPS power supply for safe shutdown of data logger
- Dimensions: 13.60cm by 11.22cm by 3.97cm
- LEDs (user programmable): 10 programmable tri-color LEDs
- SD card: 2 card slot support for up to 2 TB of storage; card formatted using FAT32 for PC compatibility
- DAQ Ethernet
- Vehicle connectors: 26-pin male HD D-sub
- One-year limited warranty
- Field-upgradeable flash firmware
- General purpose I/O: 4 MISC IO (0-40V); can be configured as analog/ PWMIO
- General purpose I/O rate report interval: 10 Hz to 1 kHz, or based on digital change
- USB host for RAD-IO2 or neoVI MIC2
- Standalone mode, including scripting, receive messages, transmit messages, expressions, I/O and transport layers
- J2534 and RP1210 A/B compatible for CAN / ISO15765-2:2016 (CAN FD)
- Battery-backed real-time clock (RTC)

Timing Specifications

- 64-bit timestamping to an accuracy of 25 nanoseconds on all networks
- Simultaneous operation on all CAN/LIN networks
- Transmit message double-buffering on all networks, allowing back-to-back message transmission

Network Specifications – CAN

- 2, 4 or 8 x ISO CAN FD channels
- CAN 2.0B compatible for all CAN networks
- 2-8 dedicated ISO11898 Dual Wire CAN FD physical layers (TJA1043)
- Up to 1 Mb/s software-selectable baud rate for arbitration phase (auto baud capable)
- Up to 8 Mb/s software-selectable baud rate for data phase (auto baud capable)
- Listen-only mode support

Network Specifications – LIN / K Line / KW2K / ISO 9141

Up to 2x LIN (Local Interconnect Network)

- 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
- Initialization Waveforms, including Fast Init, Five Baud, and Custom
- Software-selectable baud rate

Ordering Information

Part Number	Description
NEOVI-RED2-2	neoVI RED 2-2 - 2x CAN FD, 2x LIN, 2x 1000BASE-T (DoIP/XCP)
NEOVI-RED2-4	neoVI RED 2-4 - 4x CAN FD, 2x LIN, 2x 1000BASE-T (DoIP/XCP)
NEOVI-RED2-8	neoVI RED 2-8 - 8x CAN FD, 2x LIN, 2x 1000BASE-T (DoIP/XCP)

Specifications subject to change; please contact Intrepid for the latest information. All trademarks are the property of their respective owners. Rev. 20240405

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