VN4610

Powerful Interface for Car2x/V2x Communication

What is the VN4610 Network Interface?

The VN4610 is a powerful interface with USB and Ethernet PC connection for accessing IEEE 802.11p and CAN (FD) networks. The IEEE 802.11p based dedicated short range communication (DSRC) communicates in the 5.9 GHz range. The VN4610 supports the unfiltered receiving and sending of IEEE 802.11p frames used for the implementation of Car2x/V2x applications. The received IEEE 802.11p radio signal based frames are transferred to the application synchronously to the CAN (FD) messages. The built-in GNSS receiver supplies the GNSS time and the current GNSS position.

Overview of Advantages

> Sending/receiving frames according to IEEE 802.11p
> Two configurable IEEE 802.11p WLAN channels
> Unfiltered forwarding of IEEE 802.11p data packets to the application

> Adjustable communication parameters such as radio channel selection, bandwidth, transmission power, modulation type and protocol format LPD/ EPD
> Two CAN high-speed channels CAN (FD) capable
> GNSS receiver provides current position and time
> Precise time stamp (accuracy 1µs) based on GNSS time
> VN4610 and CANoe. Car2x/CANalyzer. Car2x are optimally matched to each other
> Synchronization with several interfaces and with other bus systems (Ethernet, CAN, LIN, FlexRay,...)
> Robust housing, power supply and temperature range ideal for automotive and industrial applications
> Time synchronization with PTP according to IEEE 1588 standard

VN4610 Network Interface with GNSS receiver
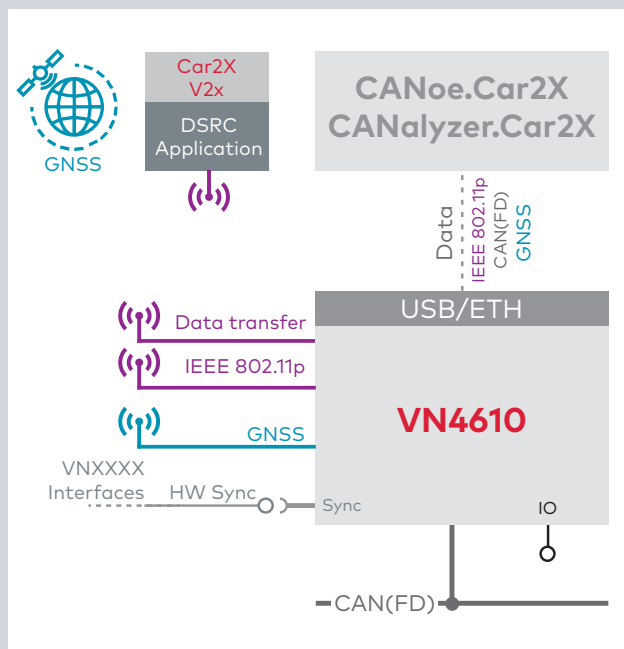
VN4610: Wiring options and applications

Application Areas

The VN4610 meets all hardware requirements that are required as a basis for testing DSRC applications via IEEE 802.11p radio channels.

Analysis:

The VN4610 forwards all received radio frames of the two radio channels unfiltered to the test tool for analysis. Therefore, frames can also be analyzed which would be rejected by a ECU due to timing, geo information or protocol errors caused by Car2x/V2x. Since the time stamps of the messages on the bus channels are synchronized in time, latency measurements can also be carried out.

Simulation/Stimulation:

CANoe. Car2x together with the VN4610 offers a perfectly coordinated solution for creating an environment stimulation for testing Car2x/V2x applications. The VN4610 sends the transmitted frames, whereby the communication parameters can be easily and individually configured for the different tests.

GNSS Receiver:

The VN4610 provides precise position, time and speed information that can be used by the application as test stimulus or for documentation. In addition, the absolute GNSS timestamps can be used to synchronize recordings of distributed measurements for subsequent analysis.

Time Synchronization:

The VN4610 enables precise time synchronization with PTP according to IEEE1588 standard. For example, the device can be configured as a PTP master with UTC time base provided by the built-in GNSS receiver.

Technical Data

	VN4610
802.11p channels/transceiver	2 channels with NXP SAF5100
GNSS channel/transceiver	uBlox NEO-M8U supports GPS, GLONASS, Beidou, Galileo; up to 3 systems simultaneously
CAN/CAN FD channels/transceiver/ physical layer	2 x NXP TJA1057G CAN Highspeed (CAN FD capable)
Analog and digital I/O	1 x analog in, 2 x digital in, 1 x digital out
Time stamp accuracy within one device sync. of multiple devices with sync cable	1 µs typ. 50 µs typ. 1 µs
Time synchronization	PTP according to IEEE1588-2008 standard
Connectors	2 x SMA for 802.11p; 1 x SMA for GNSS; 2 x DSUB9 for CAN/CAN-FD (single channel); 1 x DSUB9 for I/O
Baudrates	CAN up to 2 Mbit/s. CAN FD up to 8 Mbit/s. 802.11p depending on modulation type up to 27 Mbit/s
PC interface	USB 2.0 highspeed / Ethernet IEEE 100Base-TX/1000Base-T
Average response time	250 µs
External power supply	6 V...50 V DC
Power consumption	typically 7 W
Operating system requirements	Windows 10 (64 bit)
Driver library	XL Driver Library for CAN
Temperature range operating: storage:	-40...+60°C -40...+85°C
Dimensions (WxHxD)	111mm x 45mm x 157mm (without antennas)
Weight	ca. 610g
Housing	Robust aluminium housing

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