VN5620/VN5430

Network Interfaces for Automotive Ethernet
Agenda

- Introduction of VN5620/VN5430
  VN5620/VN5430 Use Cases
  3rd Generation of Ethernet Interface Software
  Demo Example
Introduction of VN5620/VN5430

Overview

- **VN5620**
  - **4 port** Ethernet Interface with IEEE 100BASE-T1/1000BASE-T1 and IEEE 100BASE-TX/1000BASE-T

  Application areas:
  - Monitoring, stimulation and manipulation of multiple Ethernet link

- **VN5430**
  - **6 port** Ethernet Interface with IEEE 100BASE-T1/1000BASE-T1 and IEEE 100BASE-TX/1000BASE-T

  Application areas:
  - Stimulation and manipulation of multiple Ethernet link
Introduction of VN5620/VN5430

VN5620/VN5430 Hardware

- VN5620 and VN5430 are Ethernet Interfaces with a mid-range port-size of four respectively six ports of 100BASE-T1/1000BASE-T1
- The Interfaces are designed for the use in office, laboratory or test-stand
- The features are universal for several engineering tasks like simulation and test or analysis of Automotive Ethernet Networks
Introduction of VN5620/VN5430

VN5620 – Ethernet/CAN Interface

- **Ports/Channels:**
  - 4 x 100 BASE-T1/1000BASE-T1
  - 2 x CAN-FD
  - 1 x digital IO

- **Host connection**
  - USB 3.0 Gen.1
  - Ethernet (100BASE-TX/1000BASE-T)

- **Powering**
  - USB-C*
  - External Power

- **Kensington Lock**
  - lock and secure the devices with a Kensington MicroSaver® 2.0

*Host-PC must support USB-C - 3 ampere
Introduction of VN5620/VN5430

VN5430 – Ethernet Interface

- **Ports Channels**
  - 6 x 100 BASE-T1/1000BASE-T1

- **Host connection**
  - Ethernet (100BASE-TX/1000BASE-T)

- **Powering**
  - External Power

- **Kensington Lock**
  - lock and secure the devices with a Kensington MicroSaver® 2.0
## Technical Data

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<tr>
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<th>VN5620</th>
<th>VN5430</th>
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<tr>
<td><strong>Ethernet channels</strong> transceiver/supported physical layer</td>
<td>4 x Marvell 88Q2112-A2 (IEEE 100BASE-T1/1000BASE-T1)</td>
<td>6 x Marvell 88Q2112-A2 (IEEE 100BASE-T1/1000BASE-T1)</td>
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<tr>
<td></td>
<td>2 x Broadcom BCM54210 (IEEE 1000BASE-T)</td>
<td>2 x Broadcom BCM54210 (IEEE 1000BASE-T)</td>
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<td>Connectors</td>
<td>2 x ix Industrial®</td>
<td>3 x ix Industrial®</td>
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<td></td>
<td>2 x RJ45</td>
<td>2 x RJ45</td>
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<td><strong>CAN/CAN FD channels</strong></td>
<td>2 x NXP TJA1057</td>
<td>-</td>
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<td><strong>Digital InOut</strong></td>
<td>Output high (no load): 13 V</td>
<td>-</td>
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<tr>
<td></td>
<td>Output high (load 346Ω): 5,3 V</td>
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<td></td>
<td>Output low: 0V</td>
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<td>Input range: 0V...16 V</td>
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<td></td>
<td>Input Schmitt trigger high: 3,4 V</td>
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<td>Input Schmitt trigger low: 2,5 V</td>
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<td></td>
<td>Rout: 503 Ω</td>
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<td><strong>PC interface</strong></td>
<td>USB 3.0 / IEEE 1000BASE-T</td>
<td>IEEE 1000BASE-T</td>
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<td><strong>Power Interface/ Input voltage</strong></td>
<td>External powered 10...36 V (typ. 12 V)</td>
<td>External powered 10...36 V (typ. 12 V)</td>
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<td></td>
<td>or USB-C powered (must support USB-C - 3 ampere)</td>
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<tr>
<td><strong>Temperature range</strong></td>
<td>Operation: 0°C ... +45°C</td>
<td>Storage: -40°C ... +85°C</td>
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<td><strong>Operating system requirements</strong></td>
<td>Windows 10 (64 Bit)</td>
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<td><strong>Scope of delivery</strong></td>
<td>USB cable 3.0 (A-C, 1,8m – dual screw)</td>
<td>Ethernet cable CAT6A (2m)</td>
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<td></td>
<td>USB cable 3.0 (C-C, 1,8m – dual screw)</td>
<td>Vector power supply Binder</td>
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<td>Vector power supply Binder</td>
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Agenda

Introduction of VN5620/VN5430

- **VN5620/VN5430 Use Cases**
  - 3rd Generation of Ethernet Interface Software
  - Demo Example
Use Cases

**VN5620/VN5430 Use Cases**

- **Network Interface**
- **Extension device for VN8914**
- **Channel extension (Cascading)**

*supported with a later SW release in 2020*
Network Analysis

- Verification of entire data paths:
  - Transparent data validation (e.g. Frame Errors)
  - End-to-End transmission times
  - Pass-through times of switches
  - Information about dropped frames
  - Possibility to affect communication with frames sent by a tool
Simulation within an existing network

- Simple network access over integrated switch
  - variable ECU wiring possible, without simulation impact
Direct Access

- **Individual access to each link e.g. for**
  - Flash reprogramming of ECUs (Electronic Control Units)
  - Vehicle diagnostics
  - Test benches (test of multiple identical systems)
Media Conversion

- Media conversion between different physical layers
- VN5620:
  - Up to 2 converters between IEEE 100BASE-T1/ IEEE 1000BASE-T1 and 100BASE-TX/1000BASE-T
- VN5430:
  - One converter between IEEE 100BASE-T1/ IEEE 1000BASE-T1 and 100BASE-TX/1000BASE-T
Agenda

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Overview

A new network based accessing approach for an optimal interaction between tools and network.

**Benefits:**
- Flexible and scalable approaches for the test setup
- Additional test and recording components are easy to integrate
- Extended filter possibilities
- Free definition of topologies
- Simple configuration

Channel-based mode (legacy)
3rd Generation of Ethernet Interface Software

Vector Ethernet Device Configuration

Segmentation Elements

Network

Physical Port

Virtual Port*

*dynamically attached by PC Tools (e.g. CANoe, CANape)
Flexible, Configurable Filters or Forwarding Algorithms

- **Monitor filter**
  - Hardware based frame filter with support of several protocol-parts:
    - MAC-address (source/destination)
    - Ethertype
    - Double tagged VLAN IDs
    - IPv4-address (source/destination)
    - IPv6-address (source/destination)
    - TCP/UDP port
Agenda

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VN5620/VN5430 Use Cases
3rd Generation of Ethernet Interface Software

Demo Example
3rd Generation of Ethernet Interface Software

Demo Example

- CANoe -
References

▶ Vector Home Page: VN5620/VN5430 – High-Performance Network Interfaces for Automotive Ethernet and CAN/CAN FD

▶ CANoe Help: CANoe » Ethernet » Port-based Network Access

▶ Support Email: Support@kr.vector.com
For more information about Vector and our products please visit

www.vector.com

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Vector Korea