



Manual

FlexRay Interface Family

VN3300/VN3600/VN7600

Version 2.1

English

Imprint

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Art. 80310

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1 Introduction

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1.1 About this User Manual

To Find information quickly








This user manual provides you with the following access help:

- ➔ At the beginning of each chapter you will find a summary of the contents
- ➔ In the header you can see in which chapter and paragraph you are

Conventions

In the two following charts you will find the conventions used in the user manual regarding utilized spellings and symbols.

Style	Utilization
bold	Blocks, surface elements, window- and dialog names of the software. Accentuation of warnings and advices. [OK] Push buttons in brackets File Save Notation for menus and menu entries
Microsoft	Legally protected proper names and side notes.
Source Code	File name and source code.
Hyperlink	Hyperlinks and references.
<CTRL>+<S>	Notation for shortcuts.

Symbol	Utilization
	Here you can obtain supplemental information.
	This symbol calls your attention to warnings.
	Here you can find additional information.
	Here is an example that has been prepared for you.
	Step-by-step instructions provide assistance at these points.
	Instructions on editing files are found at these points.
	This symbol warns you not to edit the specified file.

1.1.1 Certification

Certified Quality Management System Vector Informatik GmbH has ISO 9001:2008 certification. The ISO standard is a globally recognized standard.

1.1.2 Warranty

Restriction of warranty We reserve the right to change the contents of the documentation and the software without notice. Vector Informatik GmbH assumes no liability for correct contents or damages which are resulted from the usage of the documentation. We are grateful for references to mistakes or for suggestions for improvement to be able to offer you even more efficient products in the future.

1.1.3 Support

You need support? Please check the addresses at the end of this manual for your local support.

1.1.4 Registered trademarks

Registered trademarks All trademarks mentioned in this documentation and if necessary third party registered are absolutely subject to the conditions of each valid label right and the rights of particular registered proprietor. All trademarks, trade names or company names are or can be trademarks or registered trademarks of their particular proprietors. All rights which are not expressly allowed are reserved. If an explicit label of trademarks, which are used in this documentation, fails, should not mean that a name is free of third party rights.

→ **Windows, Windows XP, Windows Vista, Windows 7** are trademarks of the Microsoft Corporation.

2 FlexRay Interface Family

In this chapter you find the following information:

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2.1 Introduction

FlexRay Interfaces for PCI and USB

The FlexRay interface family offers a future-proofed and powerful solution for development, simulation, test, measurement or calibration of FlexRay networks through an FPGA-based FlexRay communication controller.

The devices have a fast 32 bit microcontroller (312 MHz) and allow, besides the ability of transmitting and receiving of data and null frames, the detection of invalid frames on the bus. Future features can also be added in the field by FPGA updates.

Further properties

- Simulation of comprehensive networks due to the 2 MB transmission
- Time synchronization of multiple devices of the FlexRay or XL interface family
- Cycle multiplexing
- Trigger input and output
- Supports 254 byte maximum payload
- In-cycle response
- Hardware-based incrementing of a payload area
- Startup monitoring
- FlexRay-Driver-Library for creating own applications

Configuration

The FlexRay interface family can be configured with the **Vector Hardware Config** tool (**Windows | Start | Settings | Control Panel | Vector Hardware**). Further details about the tool can be found in the separate installation instructions at the end of this manual.

Bus types

The connection of the devices to the FlexRay bus is done by transceivers that are available as plug-in boards (Piggybacks). A list of compatible Piggybacks can be found in the accessories manual on the driver CD:

`\Documentation\Accessories_for_Network_Interfaces.pdf`

2.2 Installation



Note: Information about the driver installation process can be found in the separate installation instructions at the end of this manual.

2.3 Synchronization

General information Time stamps, which are created during a measurement by two or more Vector devices can be synchronized by software or hardware.

2.3.1 Software Sync

Synchronization by software The software synchronization is driver-based and available for all applications without any restrictions. This kind of synchronization can be switched on in **Vector Hardware Config | General information | Settings | Software time synchronization**.

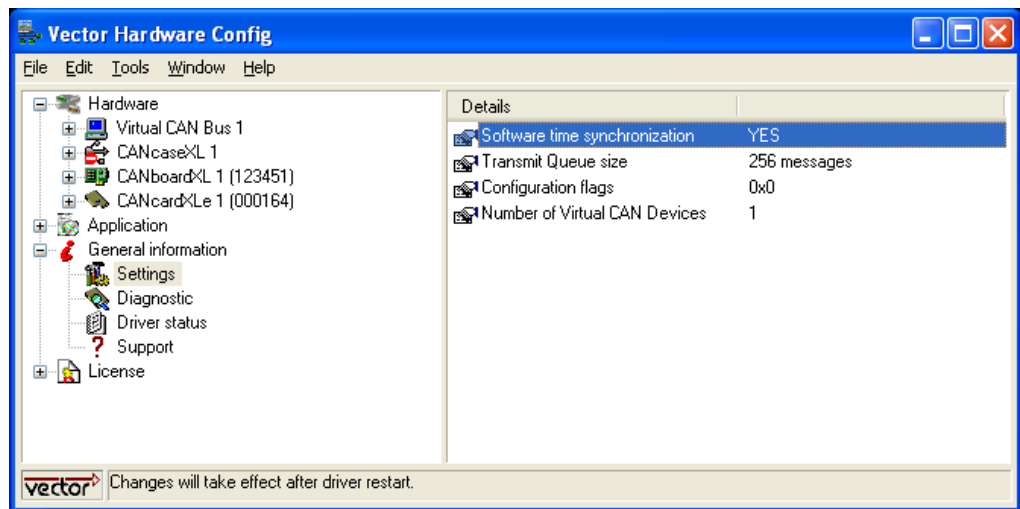


Figure 1: Switching on the software synchronization.

The accuracy of the time stamp correction depends on the device and is typically 50 μ s.

2.3.2 Hardware Sync

Synchronization by hardware

A more precise synchronization of multiple devices is possible via the hardware synchronization. The hardware synchronization with a maximum of four devices is done with the SYNCcableXL (see accessories manual, article number 05018) and has to be supported by the application. The accuracy of the time stamp correction depends on the application and is typically 1 μ s.

Synchronization through sync connector

The synchronization of multiple VN3300 can be done either through the Binder connector outside the PC housing or by the internal sync connector. The internal sync connector is a 10-pin connector (90° offset) and available next to the Piggyback slot. The synchronization is done through a ribbon cable with a 10-pin standard socket.



Info: The synchronization through the Binder and sync connector at the same time is not possible.

Functionality of the hardware synchronization

The devices to be synchronized must be interconnected by a two-wire bus (signals: SYNC and GND). The devices have a 3-pin connector for this use case (Binder type 712).

At each high-low edge of the sync line the FlexRay interface generates a time stamp that is provided to the application. This allows the application to synchronize the time stamps of different devices to a common time base. The synchronization edges can be generated by the VN or the XL interface family.



Note: The hardware synchronization must be supported by the application. For further information please refer to the relevant manual. Please note that the software synchronization must be disabled (see **Vector Hardware Config | General information | Settings | Software time synchronization**) if the hardware synchronization is used.

2.4 Trigger

Trigger inputs and outputs

The devices of the FlexRay interface family have a trigger connector each with four lines (see the according pin assignment). Pin 2 is an independent trigger input and pin 3 an independent trigger output. Pin 4 and 5 can be used as trigger input as well as trigger output. The configuration of the triggers and their actions is set in the application (e. g. CANoe). The following picture depicts the internal circuit of pin 4 and 5.

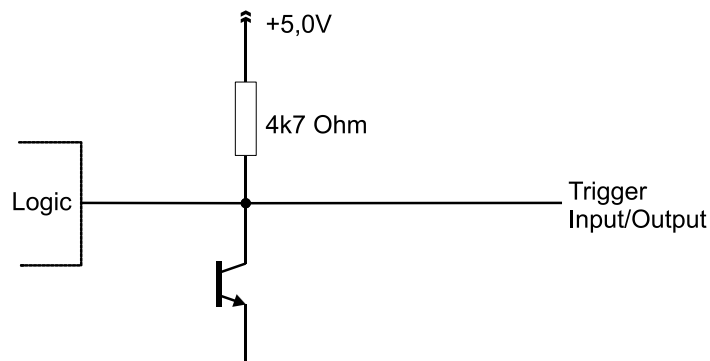


Figure 2: Trigger input and output.

Pin 4 and 5 used for trigger input

If pin 4 and 5 are being used for trigger input, the trigger will be fired by a falling edge on the trigger line. The trigger is processed inside the application. If the trigger input is being wired, the internal 4.7 kOhm resistor must be kept in mind.

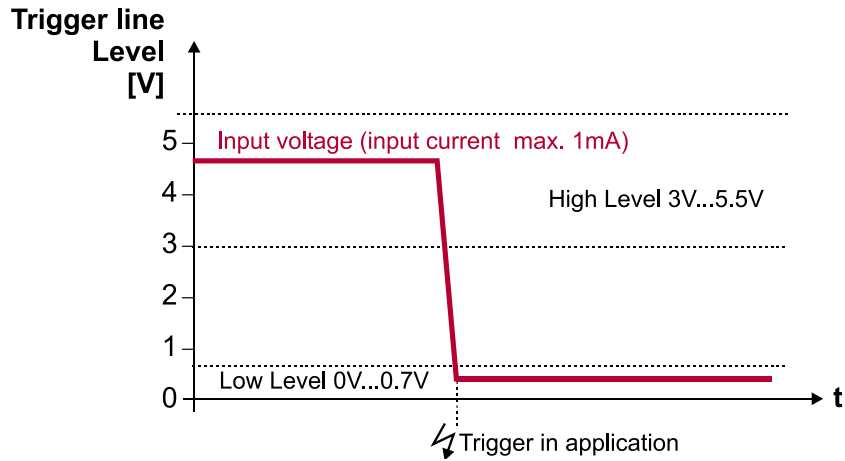


Figure 3: Trigger input.

Pin 4 and 5 used for trigger output

If pin 4 and 5 are being used for trigger output, the trigger of the application releases a falling edge on the trigger line. By using external pull up resistors, the maximum allowed load is 5 mA.

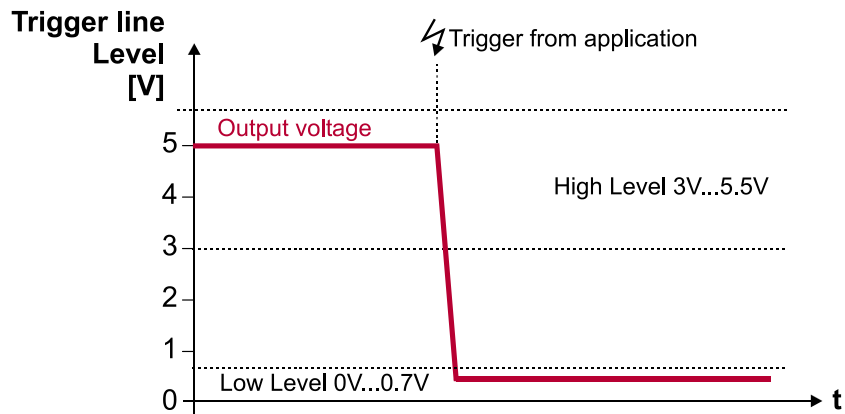
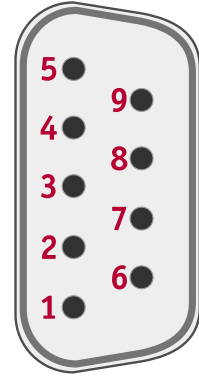


Figure 4: Trigger output.

2.5 Main Connectors

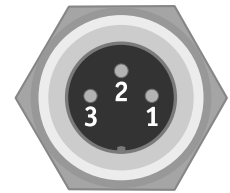
D-SUB9 connector The devices have a FlexRay connector (channel A and B) which is available as D-SUB9 (male). The pin assignment is as follows:

Pin	Assignment
1	N.C.
2	BM Channel A
3	GND
4	BM Channel B
5	Shield
6	N.C.
7	BP Channel A
8	BP Channel B
9	VB+



Binder connector The pin assignment of the Binder connector (type 712) is as follows:

Pin	Assignment
1	VN3300: N.C. VN3600/7600: power supply
2	Synchronization line (low active)
3	GND of voltage supply and sync line



2.6 Technical Data

Microcontroller	Intel PXA270 (312 MHz)
FlexRay communication-controller (analysis)	Bosch E-Ray (Altera Cyclone II EP2C70)
FlexRay communication-controller (startup)	Fujitsu MB88121B
Memory for data transmission	2 MB
FlexRay cluster	1
FlexRay channels	2 (Channel A & B of a cluster) 1x D-SUB9 connector (male)
CAN channels	VN3300: 0 VN3600: 0 VN7600: 3, each with 1x D-SUB9 (male)
Maximum payload	254 bytes
Transceiver	See plug-in board (FRpiggy)
PC interface	VN3300: PCI VN3600: USB 2.0 VN7600: USB 2.0

Temperature range	Operation: -0..+55 °C Storage : -40..+85 °C
External power supply	VN3300: 5 V, typical 3.2 W VN3600: 5 V..50 V (startup min. 8 V), typical 3 W VN7600: 5 V..50 V (startup min. 8 V), typical 4.5 W
Dimensions (LxWxH)	VN3300: 167 x 107 x 15 mm VN3600: 151 x 110 x 35 mm VN7600: 151 x 110 x 45 mm
Operating system	Windows XP, 32 bit (SP3) Windows Vista, 32 bit (SP1) Windows 7, 32 bit or 64 bit



Info: The temperature of single housing parts may be higher than the temperature of the environment, even if the device is correctly operated.

2.7 VN3300

2.7.1 Connectors

VN3300 (PCI)

The VN3300 has the following connectors:

- 1x D-SUB9 connector for FlexRay (channel A und channel B)
- 1x Binder connector for synchronization between other devices of the FlexRay and XL interface family (type 712, 3-pin)
- 1x Internal sync connector
- 1x Internal trigger connector (10-pin)

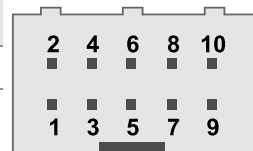
Main connectors

The pin assignment of the main connectors can be found in section [Main Connectors](#) on page 12.

Trigger connector

The following table shows the pin assignment of the 10-pin trigger connector.

Pin	Assignment	Software Port ¹
1	Output voltage 5 V (max. 35 mA)	-
2	Trigger In (TTL 5 V, low active) V_{Hmin} : 3.0 V / V_{Hmax} : 5.5 V V_{Lmin} : 0.0 V / V_{Lmax} : 0.7 V	3
3	Trigger Out (TTL 5 V, low active)	0
4	Trigger In/Out (5 V, low active) V_{Hmin} : 3.0 V / V_{Hmax} : 5.5 V V_{Lmin} : 0.0 V / V_{Lmax} : 0.7 V	1
5	Trigger In/Out (5 V, low active) V_{Hmin} : 3.0 V / V_{Hmax} : 5.5 V V_{Lmin} : 0.0 V / V_{Lmax} : 0.7 V	2
6	Reserved. Do not connect.	-
7	Reserved. Do not connect.	-
8	GND	-
9	Reserved. Do not connect.	-
10	Reserved. Do not connect.	-



Connecting cable

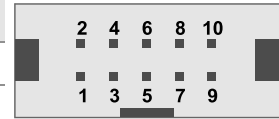
A fitting cable for the trigger connector is available from Samtec named IDSD-05-S-xxxx (xxxx means further cable details which depend on the application).

¹ Used by Vector software, e. g. in CANoe

Sync connector

The following table shows the pin assignment of the 10-pin sync connector (90° offset).

Pin	Assignment
1	GND
2..8	Reserved. Do not connect.
9	Synchronization line (low active)
10	Output voltage 5 V (output, 35 mA)



Caution: In order to avoid electrical damages on the device, the trigger and sync connector must not be connected at any time!

2.8 VN3600

2.8.1 Connectors

VN3600 (USB)

The VN3600 has the following connectors:

- 1x USB 2.0 connector
- 1x D-SUB9 connector for FlexRay (channel A und channel B)
- 1x Binder connector for trigger (type 712, 8-pin)
- 2x Binder connector for power supply and synchronization between other devices of the VN and XL interface family (type 712, 3-pin)

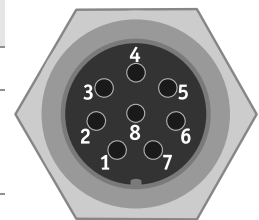
Main connectors

The pin assignment of the main connectors can be found in section Main Connectors on page 12.

Binder connector

The following table shows the pin assignment of the 8-pin Binder connector:

Pin	Assignment	Software Port ²
1	Output voltage 5 V (max. 35 mA)	-
2	Trigger In (TTL 5 V, low active) V_{Hmin} : 3.0 V / V_{Hmax} : 5.5 V V_{Lmin} : 0.0 V / V_{Lmax} : 0.7 V	3
3	Trigger Out (TTL 5 V, low active)	0
4	Trigger In/Out (5 V, low active) V_{Hmin} : 3.0 V / V_{Hmax} : 5.5 V V_{Lmin} : 0.0 V / V_{Lmax} : 0.7 V	1
5	Trigger In/Out (5 V, low active) V_{Hmin} : 3.0 V / V_{Hmax} : 5.5 V V_{Lmin} : 0.0 V / V_{Lmax} : 0.7 V	2
6	Reserved. Do not connect.	-
7	Reserved. Do not connect.	-
8	GND	-



² Used by Vector software, e. g. in CANoe

2.8.2 LED Display

FlexRay A, B and Sync

The VN3600 has four LEDs with the following meanings:

- **FlexRay A**
Lights up when data is received or transmitted on channel A.
- **FlexRay B**
Lights up when data is received or transmitted on channel B.
- **Sync**
LED for both FlexRay channels. Displays the state of the CC:
 - Off : Offline.
 - Green : Synchronized.
 - Orange : Not synchronized.
 - Red : Error.
- **Power**
Displays the state of operation:
 - Green : The device is ready for operation.
 - Orange : The device is ready for host pc connection.
 - Orange (blinking) : An automatic FPGA update is executed.
 - Red : Error, the device is not ready for operation.

Rx, Tx, sync and power

The first hardware revision of VN3600 has six LEDs with the following meanings:

- **Rx**
Lights up when data is received.
LED for both FlexRay channels available.
- **Tx**
Lights up when data is transmitted.
LED for both FlexRay channels available.
- **Sync**
LED for both FlexRay channels. Displays the state of the CC:
 - Off : Offline.
 - Green : Synchronized.
 - Orange : Not synchronized.
 - Red : Error.
- **Power**
Displays the state of operation:
 - Green : The device is ready for operation.
 - Orange : The device is ready for host pc connection.
 - Orange (blinking) : An automatic FPGA update is executed.
 - Red : Error, the device is not ready for operation.

2.9 VN7600

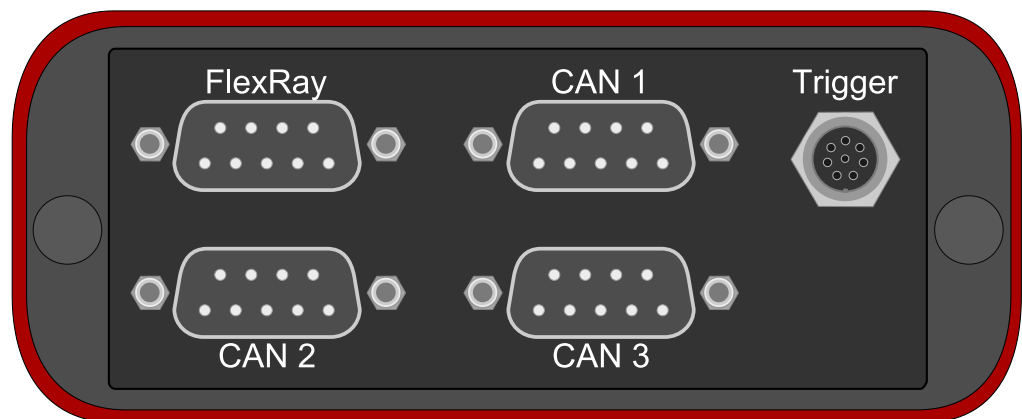
2.9.1 Connectors

VN7600 (USB)

The VN7600 has the following connectors:

- 1x USB 2.0 connector
- 1x D-SUB9 connector for FlexRay (channel A und channel B)
- 3x D-SUB9 connector for CAN
- 1x Binder connector for trigger (type 712, 8-pin)
- 2x Binder connector for power supply and synchronization between other devices of the VN and XL interface family (type 712, 3-pin)

Alignment of the connectors



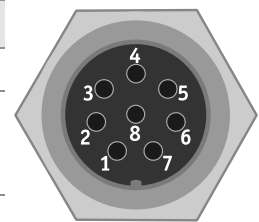
Main connectors

The pin assignment of the main connectors can be found in section Main Connectors on page 12.

Binder connector

The following table shows the pin assignment of the 8-pin Binder connector:

Pin	Assignment	Software Port ³
1	Output voltage 5 V (max. 35 mA)	-
2	Trigger In (TTL 5 V, low active) $V_{Hmin}: 3.0\text{ V} / V_{Hmax}: 5.5\text{ V}$ $V_{Lmin}: 0.0\text{ V} / V_{Lmax}: 0.7\text{ V}$	3
3	Trigger Out (TTL 5 V, low active)	0
4	Trigger In/Out (5 V, low active) $V_{Hmin}: 3.0\text{ V} / V_{Hmax}: 5.5\text{ V}$ $V_{Lmin}: 0.0\text{ V} / V_{Lmax}: 0.7\text{ V}$	1
5	Trigger In/Out (5 V, low active) $V_{Hmin}: 3.0\text{ V} / V_{Hmax}: 5.5\text{ V}$ $V_{Lmin}: 0.0\text{ V} / V_{Lmax}: 0.7\text{ V}$	2
6	Reserved. Do not connect.	-
7	Reserved. Do not connect.	-
8	GND	-



³ Used by Vector software, e. g. in CANoe

D-SUB9 connector The VN7600 has three CAN channels through D-SUB9 connectors (male). The connection to the CAN bus is done by transceivers which are available as plug-in boards (Piggybacks). The pin assignment of a CAN channel depends on the inserted CANpiggy. Further information can be found in the accessories manual on the Driver Disk: \Documentation\Accessories_for_Network_Interfaces.pdf

2.9.2 LED Display

**FlexRay
A, B and Sync**

The VN7600 has four LEDs with the following meanings:

- **FlexRay A**
Lights up when data is received or transmitted on channel A.
- **FlexRay B**
Lights up when data is received or transmitted on channel B.
- **Sync**
LED for both FlexRay channels available, which displays the state of the CC:
 - Off : Offline.
 - Green : Synchronized.
 - Orange : Not synchronized.
 - Red : Error.
- **CAN 1, 2 and 3**
Lights up when data is received or transmitted.
- **Power**
Displays the state of operation:
 - Green : The device is ready for operation.
 - Orange : The device is ready for host pc connection.
 - Orange (blinking) : An automatic FPGA update is executed.
 - Red : Error, the device is not ready for operation.

3 Hardware Installation

In this chapter you find the following information:

3.1	General Information VN3300 VN3600/VN7600	page 20
3.2	Replacing Piggybacks VN3300 VN3600/VN7600	page 21

3.1 General Information

3.1.1 VN3300



Caution: Turn off the main power supply and disconnect your computer's power cord. Otherwise systems using an ATX power supply unit with soft power off may still be powering the PCI slot. This can damage your PCI card when it is inserted into the slot.



Caution: Do not force the VN3300 into the slot. Make sure that the connectors of the card's PCI connector are aligned with the bus connector on the motherboard before you insert the card into the slot. If it does not fit properly, gently remove it and try again.



Info: Please observe all safety precautions prescribed by your PC manufacturer for card installation!



Info: Do not touch the bottom and the topside of the PCBs (VN3300 main board and Piggybacks).



1. Turn off the computer and all peripheral devices.
2. Unplug the power cord from the wall outlet.
3. Touch a metal plate on your computer to ground yourself to discharge any static electricity.
4. Remove the computer cover and the metal brackets from an unused slot.
5. Align the VN3300 with the PCI slot and press the gently but firmly into the slot.
6. Replace the computer cover.
7. Plug in the power cord.

3.1.2 VN3600/VN7600



1. Connect the VN3600/VN7600 to the power supply.
2. Plug the VN3600/VN7600 with the USB cable to any free USB2.0 port.

3.2 Replacing Piggybacks

3.2.1 VN3300



1. Turn off the computer and all peripheral devices.
2. Unplug the power cord from the wall outlet.
3. Touch a metal plate on your computer to ground yourself and to discharge any static electricity.
4. Remove the computer cover and unplug the VN3300.

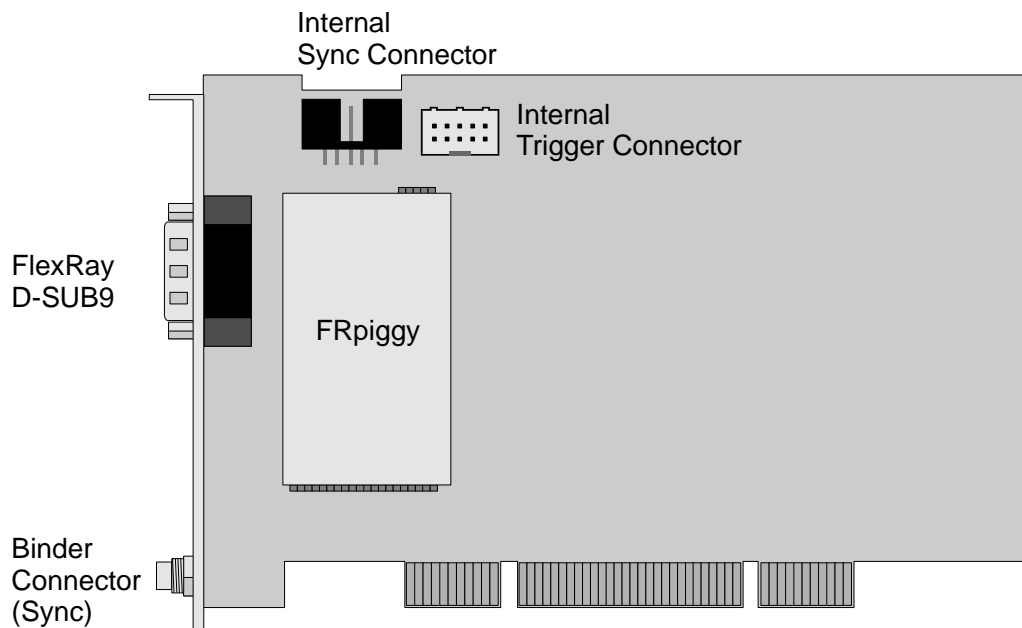


Info: The Piggyback is fixed with a screw.



5. Detach the screw with the screw protection and remove the Piggyback **carefully**.
6. Plug in the alternative FRpiggy.

VN3300



Info: The connectors must fit and must not be displaced laterally.

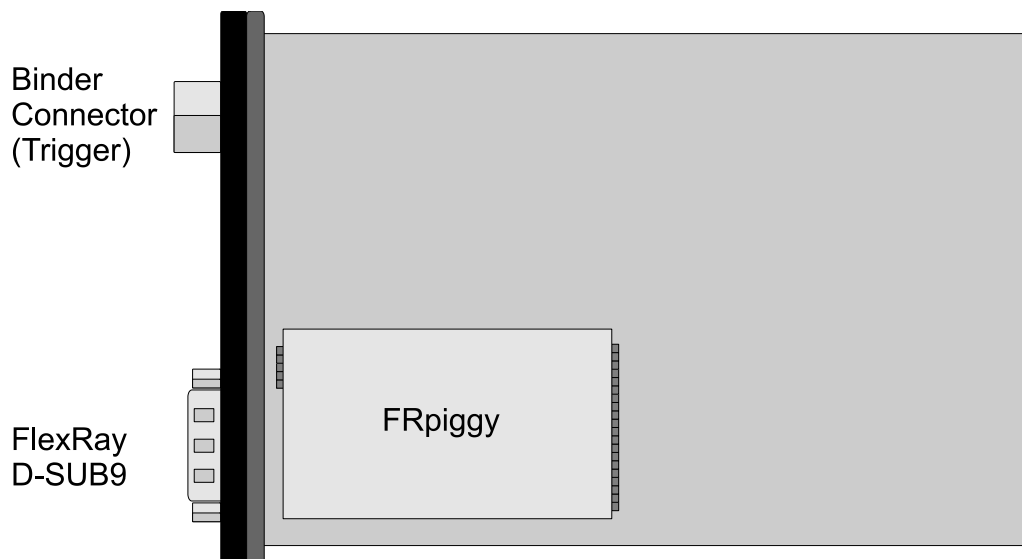
7. The FRpiggy has to be fixed again with the screw and the screw protection.
8. Firmly insert the card into the selected slot. Push down to ensure the card is fully seated.
9. Replace the computer cover.
10. Plug in the power cord.

3.2.2 VN3600/VN7600



1. First, loosen the VN3600/VN7600 housing screws on the side with the D-SUB9 connector. This requires removing the two black decorative caps. Then carefully pull the PC-board out of the housing.
2. The FRpiggy is fastened by a screw and retainer. Please loosen the appropriate screw including the retainer and carefully remove the FRpiggy from the mounting location.
3. Insert the replacement FRpiggy. When doing this please make sure that the connectors are not laterally offset.
4. Secure the new FRpiggy with the appropriate screw and retainer.
5. Place the VN3600/VN7600 main board back in the housing verifying that it is inserted properly. This operation involves placing the housing on a table with its back side (side with the bar code) facing upward. Then the main board with the FRpiggy is inserted into the upper guide rails with the VN3600/VN7600 facing upward.
6. It should be possible to slide the main board in the housing up to a few millimeters from the end without forcing it in. Close the housing by applying light pressure, and then secure it with the appropriate screw fasteners. The screws should be secure but not excessively tight.
7. Please also attach the two black decorative caps.

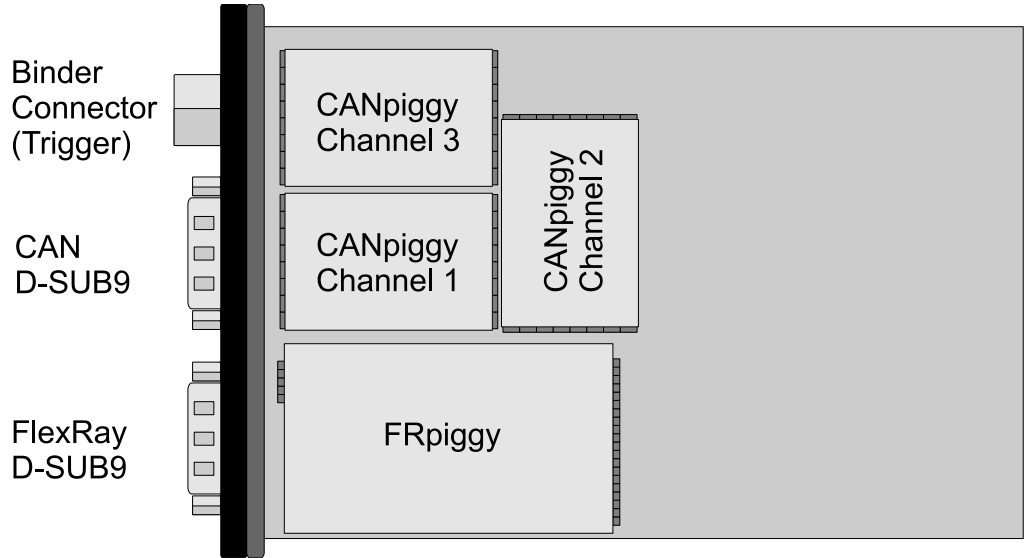
VN3600





Info: The replacing of CANpiggy is identical to the FRpiggy.

VN7600



4 FlexRay Accessories

In this chapter you find the following information:

4.1 Accessories

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4.1 Accessories



Reference: Further information about the available accessories can be found in the separate accessories manual on the driver CD:
`\Documentation\Accessories_for_Network_Interfaces.pdf`

5 Appendix A: Addresses

Vector Informatik GmbH

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Fax: +33 1 4231 4009
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Manual

Installation Instructions

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1 Introduction

In this chapter you find the following information:

1.1	About this User Manual Certification Warranty Support Registered Trademarks	page 4
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1.1 About this User Manual

To find information quickly








This user manual provides you with the following access help:

- ➔ At the beginning of each chapter you will find a summary of the contents
- ➔ In the header you can see in which chapter and paragraph you are

Conventions

In the two following charts you will find the conventions used in the user manual regarding utilized spellings and symbols.

Style	Utilization
bold	Blocks, surface elements, window- and dialog names of the software. Accentuation of warnings and advices. [OK] Push buttons in brackets File Save Notation for menus and menu entries
Microsoft	Legally protected proper names and side notes.
Source Code	File name and source code.
Hyperlink	Hyperlinks and references.
<CTRL>+<S>	Notation for shortcuts.

Symbol	Utilization
	Here you can obtain supplemental information.
	This symbol calls your attention to warnings.
	Here you can find additional information.
	Here is an example that has been prepared for you.
	Step-by-step instructions provide assistance at these points.
	Instructions on editing files are found at these points.
	This symbol warns you not to edit the specified file.

1.1.1 Certification

Certified Quality Management System Vector Informatik GmbH has ISO 9001:2008 certification. The ISO standard is a globally recognized standard.

1.1.2 Warranty

Restriction of warranty We reserve the right to change the contents of the documentation and the software without notice. Vector Informatik GmbH assumes no liability for correct contents or damages which are resulted from the usage of the documentation. We are grateful for references to mistakes or for suggestions for improvement to be able to offer you even more efficient products in the future.

1.1.3 Support

You need support? Please check the addresses at the end of this manual for your local support.

1.1.4 Registered Trademarks

Registered trademarks All trademarks mentioned in this documentation and if necessary third party registered are absolutely subject to the conditions of each valid label right and the rights of particular registered proprietor. All trademarks, trade names or company names are or can be trademarks or registered trademarks of their particular proprietors. All rights which are not expressly allowed are reserved. If an explicit label of trademarks, which are used in this documentation, fails, should not mean that a name is free of third party rights.

→ **Windows, Windows XP, Windows Vista, Windows 7** are trademarks of the Microsoft Corporation.

2 Driver Installation

In this chapter you find the following information:

2.1	Minimum Requirements	page 8
2.3	Vector Driver Setup	page 9
2.4	Vector Hardware Configuration	page 11

2.1 Minimum Requirements

Hardware

CPU	Pentium 4 or higher
Memory	512 MB or more
Network interface	CANcardXL : PCMCIA CANcardXLe : ExpressCard 54 CANboardXL PCI : PCI CANboardXL PCIe : PCI Express 1x CANboardXL PXI : Compact PCI/PXI CANcaseXL : USB CANcaseXL log : USB VN1610 : USB VN1611 : USB VN1630 : USB VN2610 : USB VN2640 : USB VN3300 : PCI VN3600 : USB VN7600 : USB VN8910 : USB

Software

Operating system	Windows XP SP3 (32 bit) Windows Vista SP1 (32 bit) Windows 7 (32/64 bit)
Driver version	8.x
Measurement application	The devices can be run with several applications from Vector (e. g. CANoe, CANalyzer) or with measurement applications from other companies. Therefor the devices require a related license. Applications based on the Vector XL Driver Library can be run without a license.

2.2 Hints



Note: Many desktop PCs have power managers which block the CPU for a specific time. This impairs accuracy of the time system. If your application has stringent timing requirements (e. g. time-driven sending of messages or time-driven evaluations), you have to deactivate these power managers. Power management settings may be contained in the BIOS setup or on the Control Panel of **Windows XP / Vista / Windows 7** (e. g. Power options).

No further mention will be made of the power manager in this document.



Info: Please note that you will need **Administrator Rights** for the following steps.

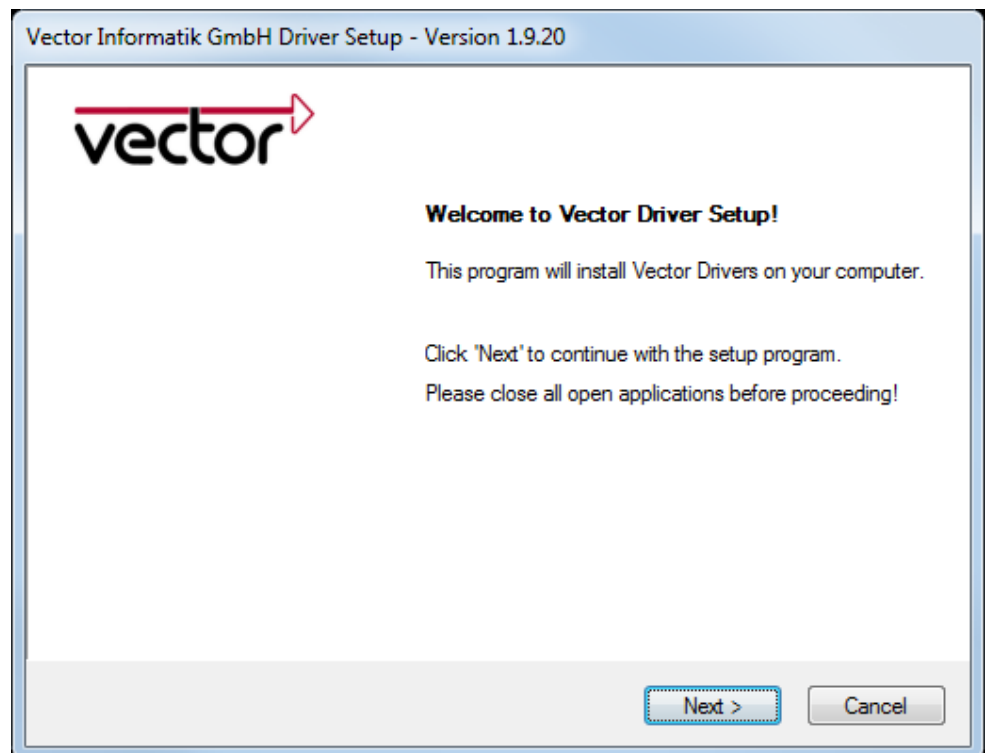
2.3 Vector Driver Setup

General information The Vector Driver Disk offers a driver setup which allows the installation or the removal of Vector devices.



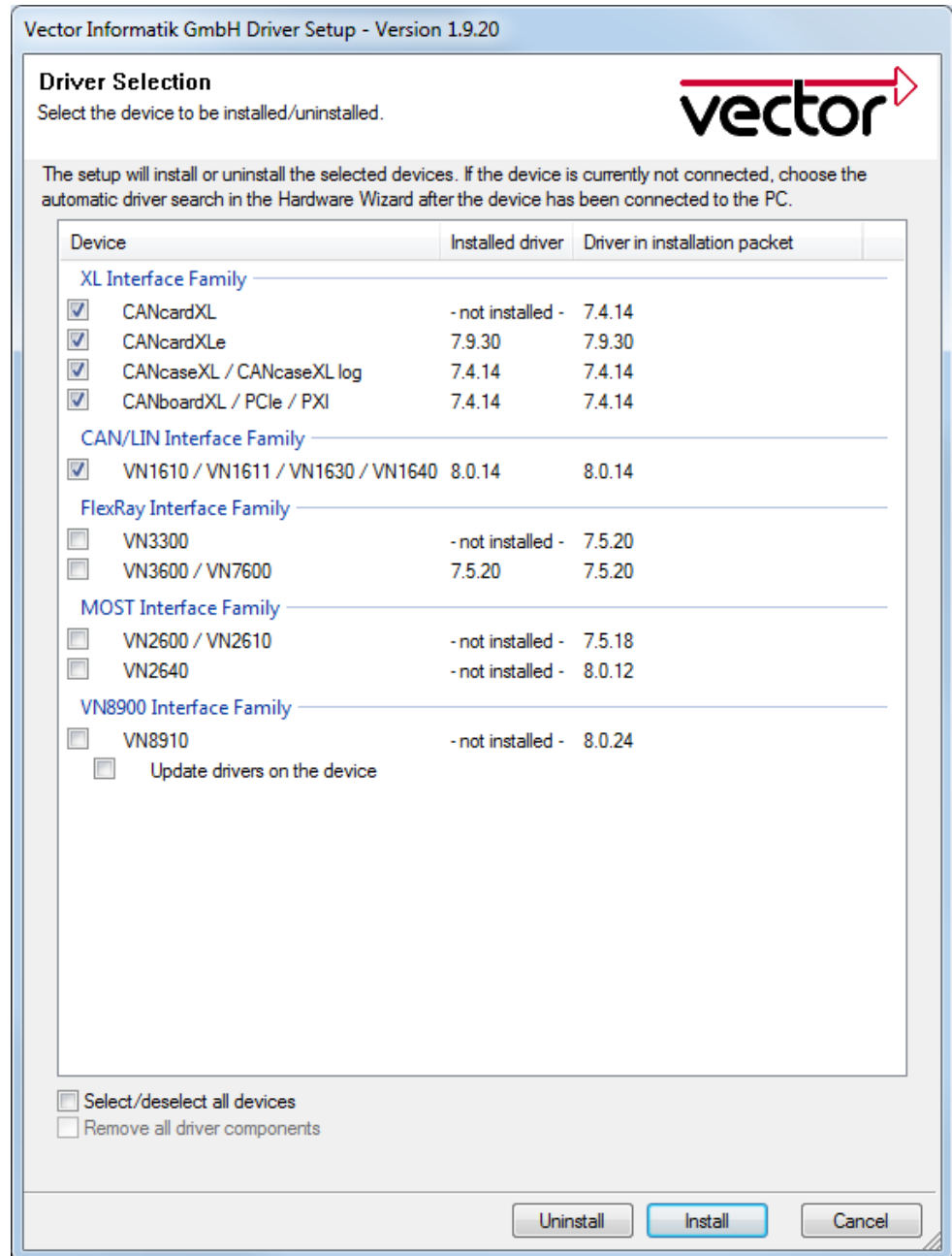
1. Execute the driver setup from the autostart menu or directly from `\Drivers\Setup.exe` before the device is inserted or connected to the PC with the included USB cable.

If you have already inserted or connected the device to the PC, the **Windows found new Hardware** wizard appears. Close this wizard and then execute the driver setup.



2. Click **[Next]** in the driver setup dialog. The initialization process starts.

3. In the driver selection dialog select your devices to be installed (or to be uninstalled).



4. Click **[Install]** to execute the driver installation, or **[Uninstall]** to remove existing drivers.
5. A confirmation dialog appears. Click **[Close]** to exit.
If the driver has been properly installed, the device can be inserted or connected to the PC with the included USB cable. The device is ready for operation now.
6. For Windows XP users only:
If the **Windows found new Hardware** wizard appears, select the option for automatic driver search to complete the installation.

2.4 Vector Hardware Configuration

Executing Vector Hardware Config

After the successful installation you will find the configuration application **Vector Hardware** in the Control Panel (see below). The tool gives you information about the connected and installed Vector devices. There are also several settings that can be changed.

Control panel Windows XP

→ Category view
Start | (Settings) | Control Panel, click in the left part of the window for further Control Panel options followed by **Vector Hardware**.

→ Classic view
Start | (Settings) | Control Panel, click **Vector Hardware** in the list.

Control panel Windows Vista

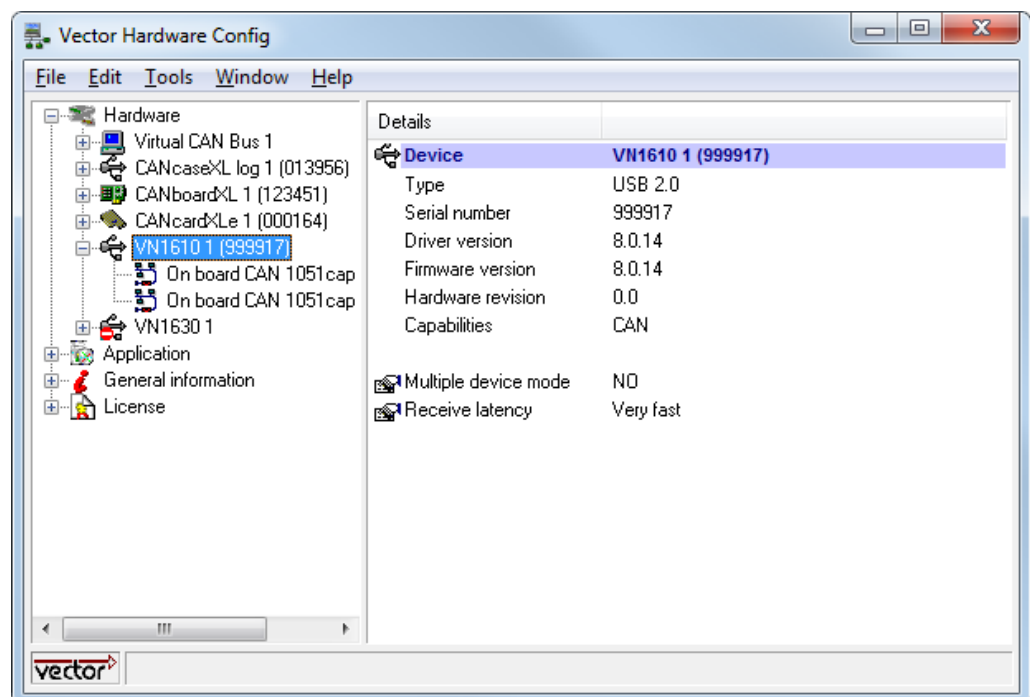
→ Category view
Start | (Settings) | Control Panel, click in the right part of the window for Additional Options followed by **Vector Hardware**.

→ Classic view
Start | (Settings) | Control Panel, click **Vector Hardware** in the list.

Control panel Windows 7

→ Category view
Start | Control Panel | Hardware and Sound, click **Vector Hardware** in the list.

→ Symbols view
Start | Control Panel, click **Vector Hardware** in the list.



The tool is split into two windows. The left window lets you access the installed Vector devices, the right window displays the details of the selection. The following nodes are available in the left window:

Hardware

Each installed Vector device is shown in **Hardware**. Additional details of available channels are shown in a tree view. Status information on the device components and the channels are also shown in this dialog.

Application

In **Application** all available applications are shown with their configured channels. If you click on an application, all of its channels are displayed in the right pane on the screen.

General information

The **General information** section contains general information on Vector devices and applications.

License

The **License** section contains information on all currently valid licenses.



Note: You will find a detailed description of **Vector Hardware Config** in the online help (**Help | Contents**).

3 Operating Test

In this chapter you find the following information:

3.1	Loop Test	page 14
	CAN	
	FlexRay	
	MOST	

3.1 Loop Test

Operating test

The test described here can be performed to check the functional integrity of the driver and the device. This test is identical for **Windows XP**, **Windows Vista**, **Windows 7** and independent of the application being used.

3.1.1 CAN

Device test

The operating test for CAN can be executed with the following devices:

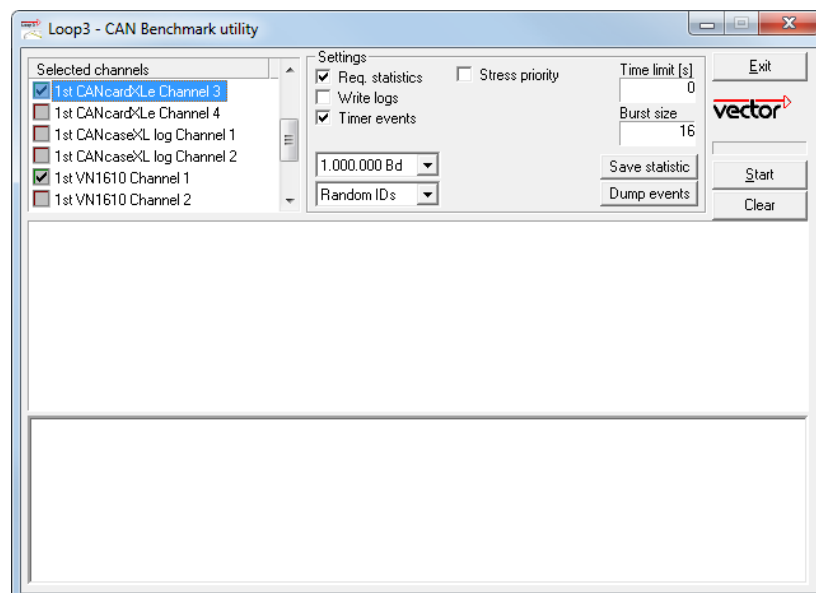
- CANcardXL
- CANcardXLLe
- CANcaseXL
- CANcaseXL log
- CANboardXL Family
- VN1610
- VN1630
- VN7600

Loop3.exe

Either two High-Speed or two Low-Speed transceivers are necessary for this functional test:

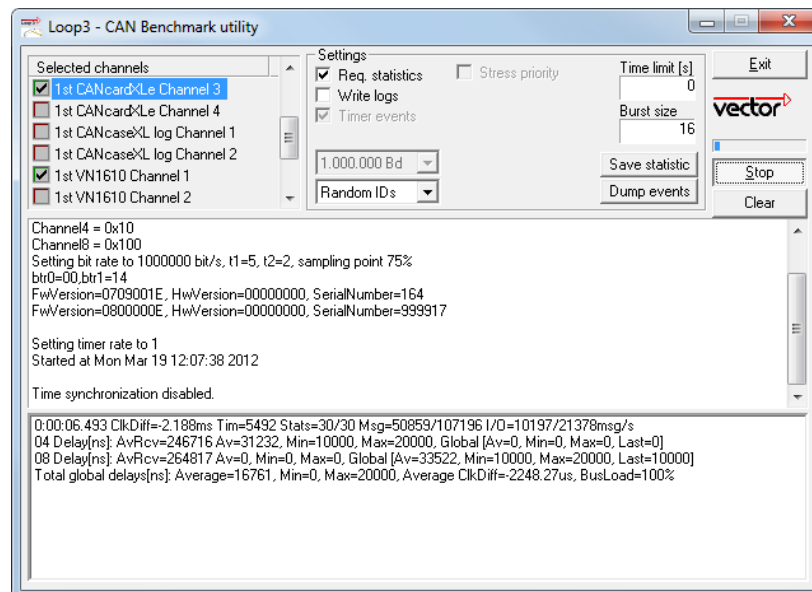


1. Connect two CAN channels with a suitable cable. If two High-Speed transceivers are being used, we recommend our **CANcable 1** (**CANcable 0** for Low-Speed transceivers).
2. Start `\Drivers\Common\Loop3.exe` from the driver CD. This program accesses the Vector devices and transmits CAN messages.
3. Select the connected CAN channels of the device(s) to be tested.
4. Set the appropriate baudrate depending on the transceiver being used (High-Speed max. 1,000,000 Bd, Low-Speed max. 125,000 Bd).
5. Click **[Start]**.

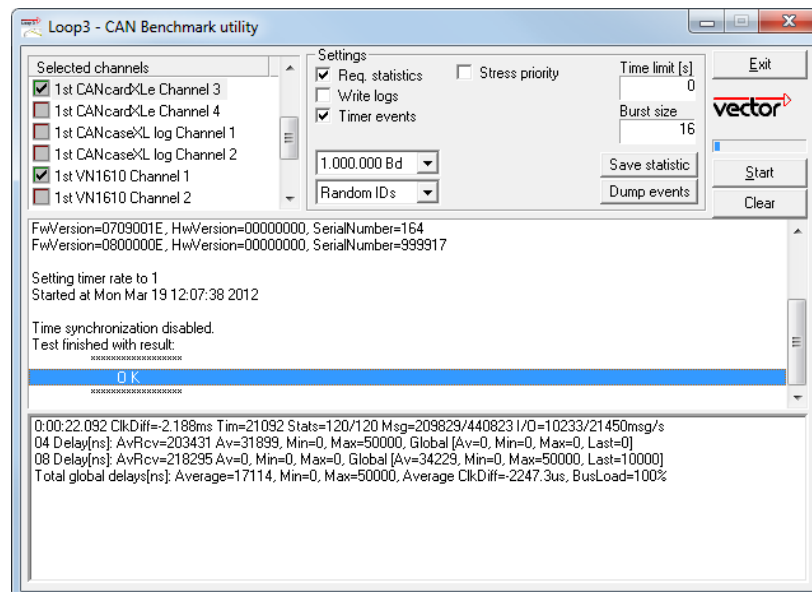


6. You will see statistical data in the lower part of the window if the system has been configured properly.

Loop3 application



7. The test procedure can be terminated with the **[Stop]** button. An **OK** should appear in the upper part of the window.



3.1.2 FlexRay

Device test

The operating test for FlexRay can be executed with the following devices:

- VN3300
- VN3600
- VN7600

FRLoop.exe

This operating test requires an inserted FRpiggy.



1. Remove the FlexRay cable if it is connected.
2. Start \Drivers\Common\FRLoop.exe from the driver CD.
3. Execute the test.
4. If no error messages occur, the operating test was successful.



3.1.3 MOST

Device test

The operating test for MOST can be executed with the following devices:

- VN2610
- VN2640

MLoop.exe

This functional test requires a MOST fiber optic cable and a fiber coupler for HFBR connectors.



1. VN2610
Start `\Drivers\Common\MLoop.exe` from the driver CD
- VN2640
Start `\Drivers\Common\M150Loop.exe` from the driver CD.
2. Select the VN2610/VN2640 to be tested from the list of detected devices.
3. Click **[Twinkle]** and check if the power LED of the VN2610/VN2640 is blinking at least for one second.
4. Connect the MOST fiber optic cable with the VN2610/VN2640 device, select **Master** mode and check if the program displays the status **Unlock**. Check if red light comes out of the Tx fiber of the MOST fiber optic cable.
5. Connect both ends of the fiber with one fiber coupler to a ring and check if the program displays the status **Lock**.
6. Close `MLoop.exe` with **[Exit]**.

4 Appendix A: Addresses

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