VECTOR >

VN7572
Manual

Version 6.8 | English

Contents

1 Introduction

In this chapter you find the following information:

1.1 About this User Manual

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
`Source Code`	File name and source code.
Hyperlink	Hyperlinks and references.
<CTRL>+<S>	Notation for shortcuts.

Symbol	Utilization
	This symbol calls your attention to warnings.
	Warning of damages by electrostatic discharge (ESD = Electrostatically Sensitive Device).
	Here you can obtain supplemental information.
	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 Warranty

Restriction
of warranty

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Registered
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► Windows, Windows 7, Windows 8.1, Windows 10, Windows 11
are trademarks of the Microsoft Corporation.

1.2 Important Notes

> **Caution!**
> We provide our important notes and safety instructions in several languages, including Englisch (EN) and German (DE). For more details, see the relevant section:
>
> ► EN: Important Notes - Details
> ► DE: Wichtige Hinweise

2 Device Description

In this chapter you find the following information:

2.1 Scope of Delivery

Contents

The delivery includes:
► VN7572 FlexRay/CAN/LIN IO interface

2.2 Introduction

About the
VN7572

The VN7572 offers a future-proof and powerful solution for development, simulation, test, measurement or calibration of FlexRay and CAN networks via FPGA-based communication controllers for FlexRay and CAN. With this, new features can be added in the field via software and FPGA updates.
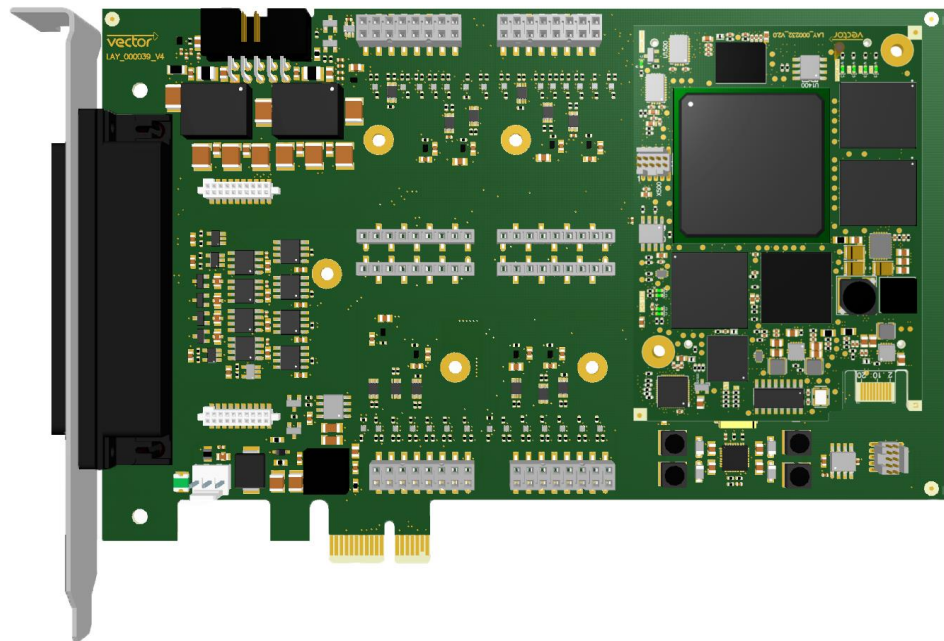
Figure 1: VN7572 FlexRay/CAN/LIN IO Interface

Features of the VN7572:
► 1x D-SUB62 connector for FlexRay, CAN/LIN and IO
► 1x Binder connector for hardware time synchronization
► 1x internal connector for hardware time synchronization
► 2x plug-in locations for FR compact Piggybacks or CAN/LINpiggies (CH1/CH2)
► 2x plug-in locations for CAN/LINpiggies (CH3/CH4)
► 4x on-board CAN high-speed 1051cap transceivers (capacitively decoupled, CH5…CH8)
► 1x plug-in location for IOpiggy (digital/analog input/output)

FlexRay features

The FPGA-based Startup Monitoring is particularly helpful at the beginning of a FlexRay development. It allows you to detect FlexRay frames and symbols, even before the communication controller has synchronized itself to the bus. This also facilitates the analysis of problems during network startup. Another advantage of the independent Startup Monitoring unit is that it can be operated at the same time as the communication controller. This allows you to do both Startup Monitoring and normal transmit operation without restart.

You can easily test non-coldstart nodes with only one interface. For this purpose the FlexRay interface family offers you a second communication controller.

The highlights at a glance:

► Detailed analysis of the FlexRay communication
through the FPGA-based communication controller

► Simulation of comprehensive networks due to the 2 MB transmission memor
(parallel configuration of more than 1000 transmit messages)

► Coldstart of the FlexRay cluster without needing to add a network node

► FlexRay channel A and B

► FlexRay Gateway (channel A and B)

► Analysis of the network startup via an independent monitoring unit

► Transmission and reception of data and null frames

► Detection of invalid frames

► Cycle multiplexing

► In-cycle response

► Hardware-based incrementing of a payload area

► Support of PDUs

► Low PC load due to DMA (Direct Memory Access)

► Trigger out pin via FRpiggyC 1082cap

2.3 Accessories

Reference
Information on available accessories can be found in the separate accessories manual on our website.

2.4 Connectors
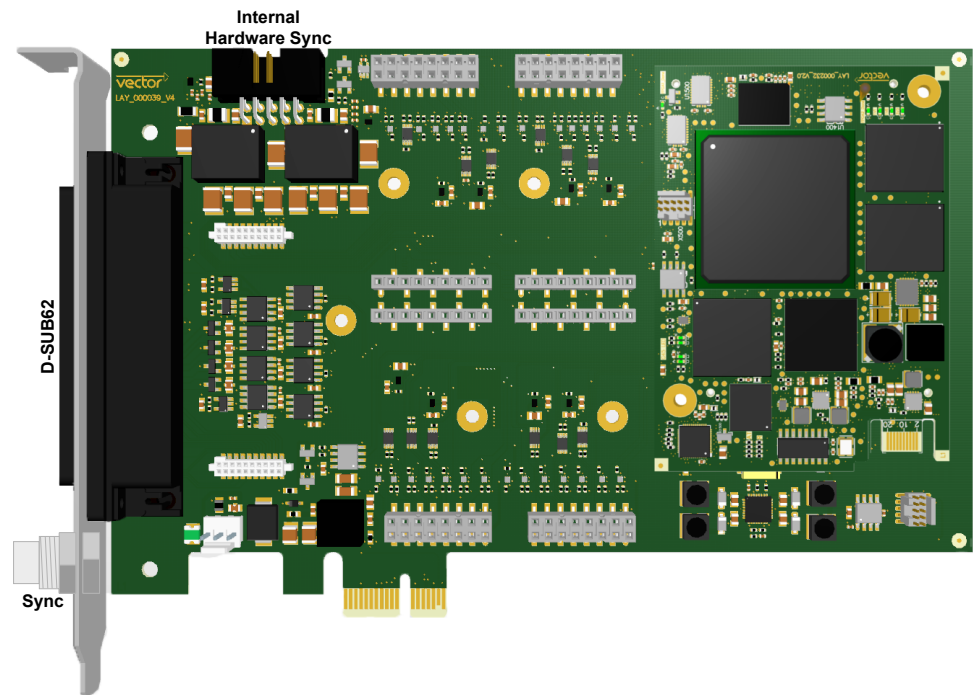
Figure 2: VN7572 connectors

▶ **D-SUB62**

The D-SUB62 connector provides all input and output pins of the inserted Piggy-backs including the on-board CAN transceivers. The pins of the D-SUB62 connector are grouped as follows:
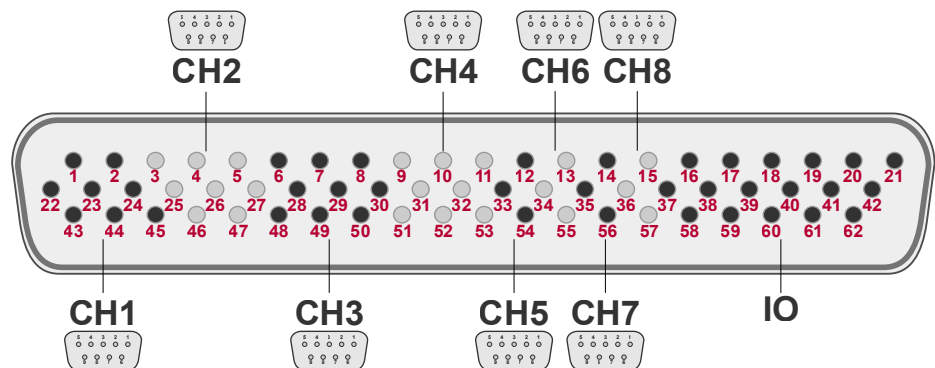
Figure 3: D-SUB62 connector pin assignments

The pin assignments of CH1…CH4 depend on the inserted Piggybacks. CH5…CH8 are assigned to the on-board CAN transceivers. The remaining pins are reserved for IO purposes and are assigned to the IOpiggy.

D-SUB62/9 Matrix

Assignment for Piggybacks					Assignment for On-board CAN				
D-SUB62				**D-SUB9**	**D-SUB62**				**D-SUB9**
CH1	CH2	CH3	CH4	CH1…CH4	CH5	CH6	CH7	CH8	CH5…CH8
45	47	50	53	(1)*	-	-	-	-	(1) N.C.
22	3	28	9	(2)*	12	13	14	15	(2) CAN Low
1	25	7	31	(3)*	54	55	56	57	(3) GND
23	4	29	10	(4)*	-	-	-	-	(4) N.C.
6	6	6	6	(5)*	6	6	6	6	(5) Shield
2	26	8	32	(6)*	-	-	-	-	(6) N.C.
24	5	30	11	(7)*	33	34	35	36	(7) CAN High
43	27	48	51	(8)*	-	-	-	-	(8) N.C.
44	46	49	52	(9)*	-	-	-	-	(9) N.C.

*   Depends on the inserted Piggyback in VN7572.

N.C.   Not connected.

Trigger pins

The D-SUB62 connector offers up to two trigger outputs (low active, 5 V/GND, max. input current 200 mA) if an FRpiggyC 1082cap is inserted (see section Bus Configuration on page 15).

► Trigger output at CH1: pin 45.

► Trigger output at CH2: pin 47.

IO pins (IOpiggy)

If an IOpiggy is inserted the pin assignment at the D-SUB62 connector is as follows:

Assignment for IOpiggy 8642				
D-SUB62	Pinout 1	Pinout 2	Pinout 3	Pinout 4
16	Digital In 1	Digital Out 1[1]	Digital Out 1[2]	-
17	Digital In 3	Digital Out 3[1]	Digital Out 3[2]	-
18	Digital In 5	Digital Out 4b[3]	-	-
19	Digital In 7	Digital Out 5b[3]	-	-
20	Digital GND			
37	Digital In 0	Digital Out 0[1]	Digital Out 0[2]	PWM 1
38	Digital In 2	Digital Out 2[1]	Digital Out 2[2]	-
39	Digital In 4	Digital Out 4a[3]	-	-
40	Digital In 6	Digital Out 5a[3]	-	-
41	PWM 0	Capture	-	-
58	Analog GND			
59	Analog In 0	Analog Out 0[1]	-	-
60	Analog In 1	Analog Out 1[1]	-	-
61	Analog In 2	-	-	-
62	Analog In 3	-	-	-

[1] Push-Pull

[2] Open-Drain

[3] a/b line: switched by PhotoMOS relais, external signal at a is switched to b.

Reference
Further details on the internal wiring at each IO pin can be found in the separate accessories manual (section IOpiggy) on our website.

Hardware sync

► **Binder connector**
This connector (Binder type 711) can be used for time synchronization of different Vector devices (see section Time Synchronization on page 29).

Pin	Assignment
1	Not connected
2	Synchronization line
3	Ground

► **10-pin connector (internal hardware sync)**
Multiple VN7572 can also be synchronized via the internal 10-pin connector (angled) above the IOpiggy slot. For synchronization, a ribbon cable with a 10-pin standard connector is required.

Pin	Assignment
1	GND
2...8	Reserved. Do not connect.
9	Synchronization line (low active)
10	Internal sync supply (output 5 V, 35 mA)
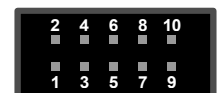
Note
The simultaneous use of the external and internal time synchronization between two devices is not possible.

2.5 Bus Configuration

Piggybacks for
CH1...CH4

The VN7572 offers four Piggyback plug-in locations (CH1…CH4). Depending on requirements, electrically decoupled FlexRay, CAN High-Speed, CAN Low-Speed, CAN Single Wire, J1708 or LIN transceivers may be used. In addition, four electrically decoupled built-in CAN TJA1051 (high-speed) transceivers are available (CH5…CH8). The remaining pins are reserved for dedicated IO tasks (CH9).

Figure 4: Piggyback plug-in locations

Note
Inserting order for FRpiggies: CH1…CH2.
Inserting order for LINpiggies: CH4…CH1.
Inserting order for CAN/J1708piggies: CH1…CH4, but after FRpiggies and before LINpiggies.

Piggyback
order

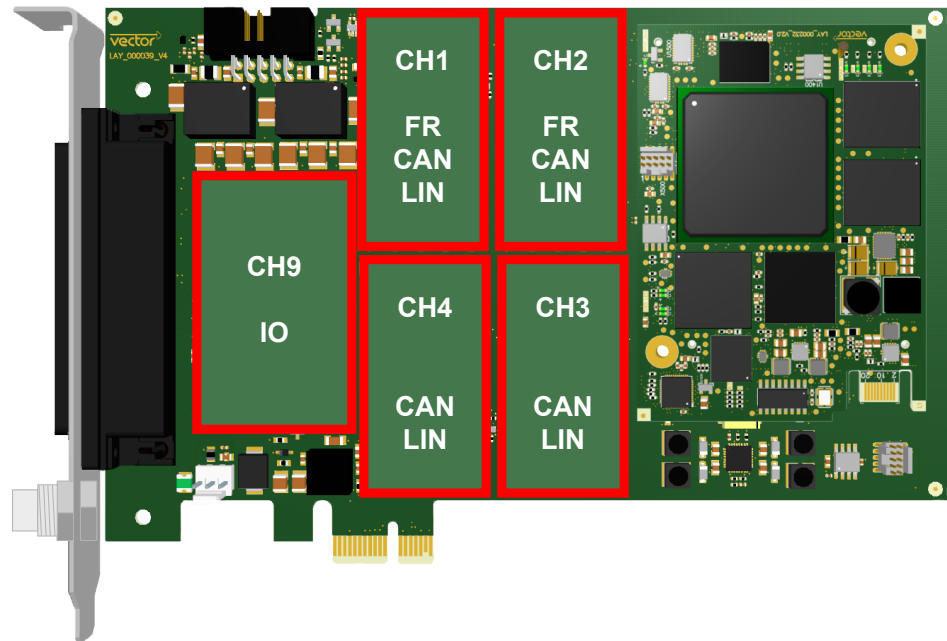|	CH1	CH2	CH3	CH4
Piggyback	FlexRay1 or CAN1 or LIN4	FlexRay2 or CAN2 or LIN3	CAN3 or LIN2	CAN4 or LIN1

Examples

The following tables show examples of possible combinations:

4x CAN

	Piggybacks				On-Board Transceiver			
CH1	**CH2**	**CH3**	**CH4**	**CH9**	**CH5**	**CH6**	**CH7**	**CH8**
-	-	-	-	-	CAN	CAN	CAN	CAN

8x CAN
1x IO

	Piggybacks				On-Board Transceiver			
CH1	**CH2**	**CH3**	**CH4**	**CH9**	**CH5**	**CH6**	**CH7**	**CH8**
CAN	CAN	CAN	CAN	IO	CAN	CAN	CAN	CAN

2x FlexRay
4x CAN

	Piggybacks				On-Board Transceiver			
CH1	**CH2**	**CH3**	**CH4**	**CH9**	**CH5**	**CH6**	**CH7**	**CH8**
FR	FR	-	-	-	CAN	CAN	CAN	CAN

5x CAN
2x LIN

	Piggybacks				On-Board Transceiver			
CH1	**CH2**	**CH3**	**CH4**	**CH9**	**CH5**	**CH6**	**CH7**	**CH8**
CAN		LIN	LIN	-	CAN	CAN	CAN	CAN

2x FR
5x CAN
1x LIN
1x IO

	Piggybacks				On-Board Transceiver			
CH1	**CH2**	**CH3**	**CH4**	**CH9**	**CH5**	**CH6**	**CH7**	**CH8**
FR	FR	CAN	LIN	IO	CAN	CAN	CAN	CAN

2.6 Device Preparation

General
information

In order to connect the device to the FlexRay/CAN/LIN bus, one or more Piggybacks with suitable transceivers have to be inserted before (see section Bus Configuration on page 15). For CAN, there are also on-board transceivers available.

> **Reference**
> A list of compatible piggybacks can be found in the accessories manual or on our website.

2.6.1 Replacing Piggybacks

> **Caution!**
> Please follow these instructions if no Piggyback is inserted or if another Piggyback needs to be inserted.

> **Caution!**
> Ensure an ESD safe working environment during disassembly and assembly. Avoid touching the top, bottom or connectors of the boards during this process to avoid ESD damage.

Step by Step Procedure
1. Detach the screw with the screw protection and remove the Piggyback carefully.
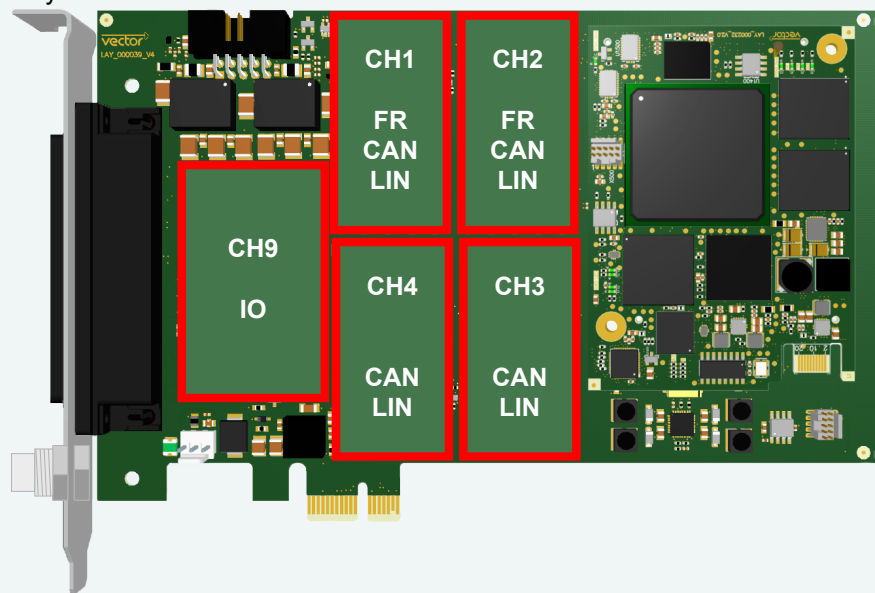
Figure 5: Piggyback plug-in locations

2. Insert the replacement Piggyback. The connectors must fit and must not be displaced laterally.

3. The Piggyback has to be fixed again with the screw and the screw protection.

2.6.2 Device Installation

	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 PCIe slot. This can damage your PCIe card when it is inserted into the slot.

	Caution! Do not force the VN7572 into the slot. Make sure that the connectors of the card's PCIe 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.

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

Step by Step Procedure

1. Install the drivers as described in section Driver Installation on page 22.

2. Turn off the computer and all peripheral devices.

3. Unplug the power cord from the wall outlet.

4. Touch a metal plate on your computer to ground yourself to discharge any static electricity.

5. Remove the computer cover and the metal brackets from an unused slot.

6. Align the VN7572 with the PCIe slot and press it gently but firmly into the slot.

7. Replace the computer cover.

8. Plug in the power cord.

9. Turn on the computer.

2.7 Technical Data

FlexRay	
Communication-controller	Analyse: Bosch E-Ray (FPGA) Startup: Bosch E-Ray (FPGA)
Channels	2x channel A and B
Data transmission memory	2 MB
CAN/CAN FD channels	Max. 8 (four configurable via Piggybacks) 4x CAN/CAN FD onboard - NXP TJA1051 - electrically decoupled Bitrates - CAN: up to 1 Mbit/s (up to 2 Mbit/s depending on wiring and transceivers) - CAN FD: up to 5 Mbit/s (up to 8 Mbit/s depending on wiring and transceivers)
LIN channels	Max. 4 (configurable via Piggybacks), Bitrates - Normal-Mode: up to 20 kBit/s - Flash-Mode: up to 115.2 kBit/s (depending on wiring higher bitrates are possible)
K-Line channels	Max. 2 at channel 3/4 (with LINpiggy 7269mag)
Transceiver	Configurable via piggybacks (FRpiggyC, CAN/LIN piggybacks)
Channel configurations	Configurable with Piggybacks 1x FlexRay, 7x CAN 1x FlexRay, 6x CAN, 1x LIN/K-Line 1x FlexRay, 5x CAN, 2x LIN/K-Line 2x FlexRay, 6x CAN 2x FlexRay, 5x CAN, 1x LIN/K-Line 2x FlexRay, 4x CAN, 2x LIN/K-Line 8x CAN 7x CAN, 1x LIN/K-Line 6x CAN, 2x LIN/K-Line 5x CAN, 3x LIN/K-Line* 4x CAN, 4x LIN/K-Line* * max. 2x K-Line channels available Additional: Digital/analog channel via IOpiggy 8642 digital: 8 inputs, 6 outputs analog: 4 inputs, 2 outputs
Time stamps	Accuracy (within one device): 1 μs Accuracy software sync: typ. 10 μs Accuracy hardware sync: typ. 1 μs
PC interface	PCIe 1x
Power supply	Internal via PCIe, 3.3 V

	Typ. 7 W (1x FRpiggy, 3x CANpiggy, 1x IOpiggy)
Temperature range (ambient temp. of the device)	Operation: -30 °C ... +50 °C Storage: -40 °C ... +85 °C
Relative humidity of ambient air	15 %...95 %, non-condensing
Dimensions (LxWxH)	Approx. 181 mm x 127 mm x 22 mm
Operating system requirements	Windows 10 (x64, 64 bit) Windows 11 (x64, 64 bit)

3 Getting Started

In this chapter you find the following information:

3.1 Driver Installation

3.1.1 General Information

The Vector Driver Setup allows the installation or the removal of Vector devices.
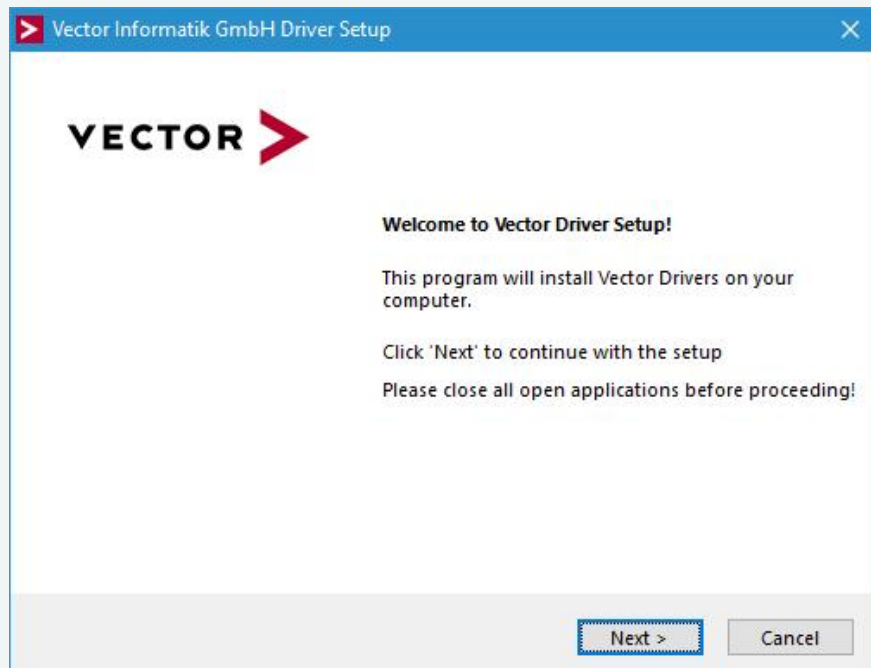
Note
Please note that you will need **Administrator Rights** for the following steps.

3.1.2 Installation Instructions

Step by Step Procedure

1. Execute the driver setup `\Drivers\Setup.exe` before the card is inserted into the PC.

   If you have already inserted the card, 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).
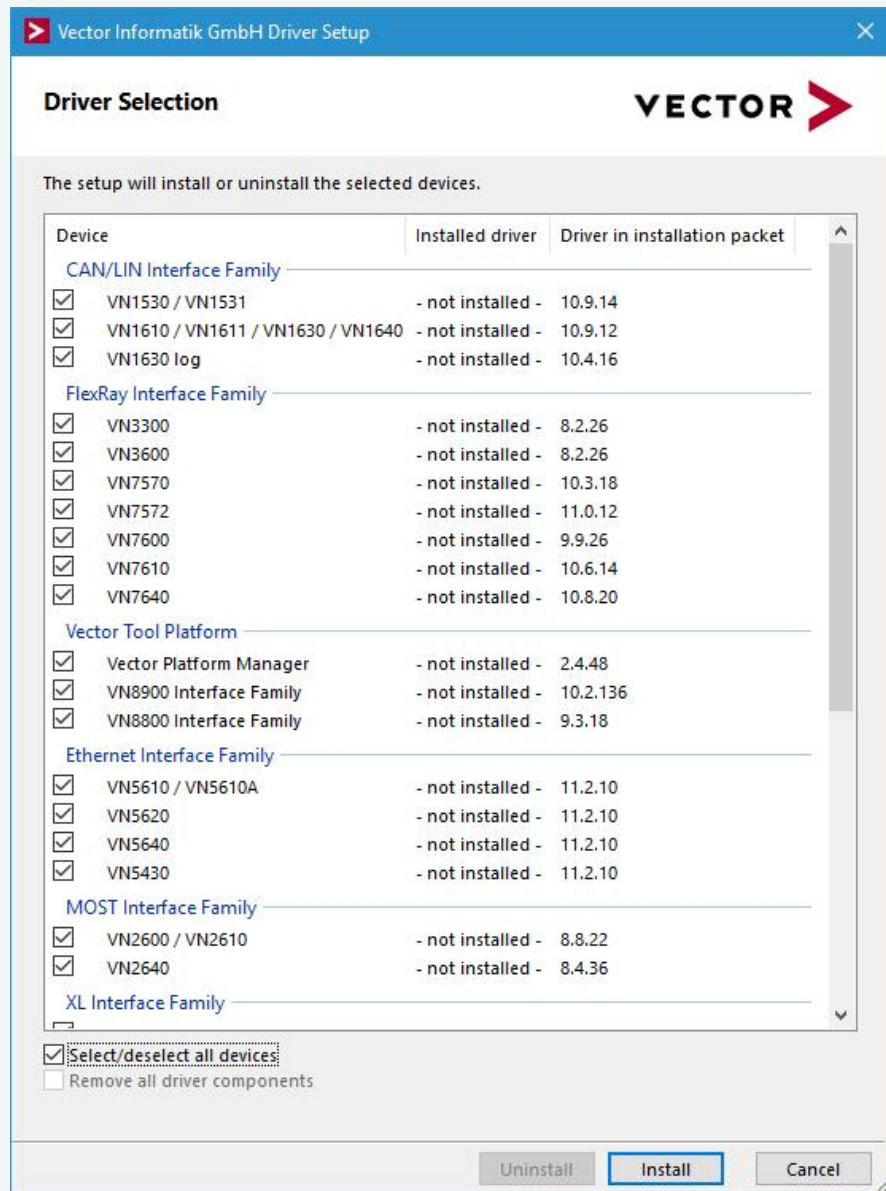

4. Click **[Install]** to execute the driver installation, or **[Uninstall]** to remove existing drivers.

5. A confirmation dialog appears. Click **[Close]** to exit. After successful installation, the card is ready for operation and can be inserted into the PC.
Note: Please find further details on PCI/PXI or PCIe card installation in this manual.

3.2 Vector Hardware Manager

3.2.1 Hardware Configuration

General information

The **Vector Hardware Manager** is the successor of the Vector Hardware Config tool and a newly developed configuration and diagnostic tool for your installed Vector devices. It is strongly needed to set up your Vector devices for use with your Vector applications (e. g. CANoe, CANalyzer, CANape, XL API applications, ...).
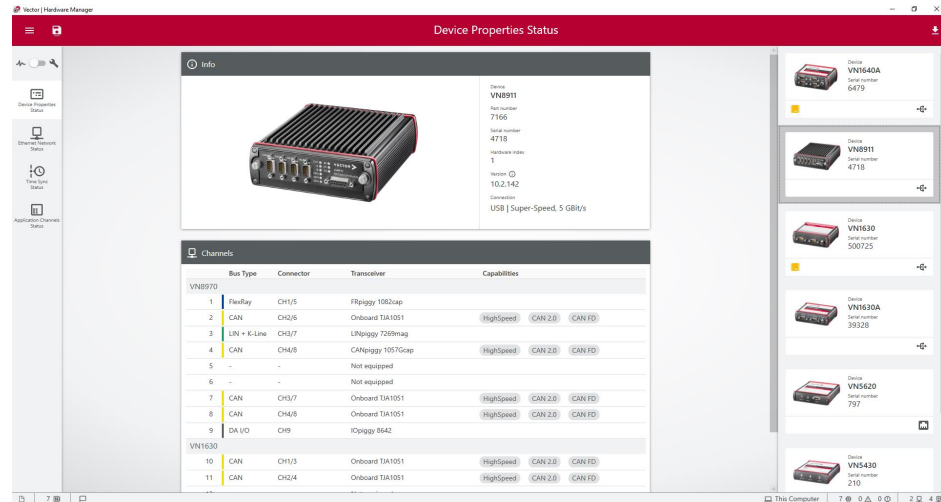
3.2.2 Tool Location and Help

After successful driver installation of your Vector device, you will find the Vector Hardware Manager in the Windows Start menu or in the installation folder:
`C:\Program Files (x86)\Vector Hardware Manager\vHardwareManager.exe`

Reference
Details, tips and instructions for the Vector Hardware Manager can be found in the supplied help. You can open the help by pressing **<F1>** in the Vector Hardware Manager or directly via:
```
C:\Program Files (x86)\Vector Hardware Man-
ager\Help01\HTML5\VectorHardwareManager.htm
```

For a brief introduction, we recommend reading the sections **Basic Concept** and **Quick Start Guide**. Furthermore, we have provided additional information for you in the section **Tips and Tutorials**.

3.3 Loop Tests

Operation 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 10 / Windows 11 and inde-
pendent of the used application.

3.3.1 CAN

Device test   The operating test for CAN requires either two high-speed or two low-speed trans-
             ceivers and can be executed as follows:

Step by Step Procedure

1. Connect two CAN channels with a suitable cable.
   If two high-speed transceivers are being used, we recommend our
   CANcable1 (**CANcable0** for low-speed transceivers).

2. Start `\Drivers\Common\Loop3.exe` from the Vector Driver Setup.
   This program accesses the Vector devices and transmits CAN messages.
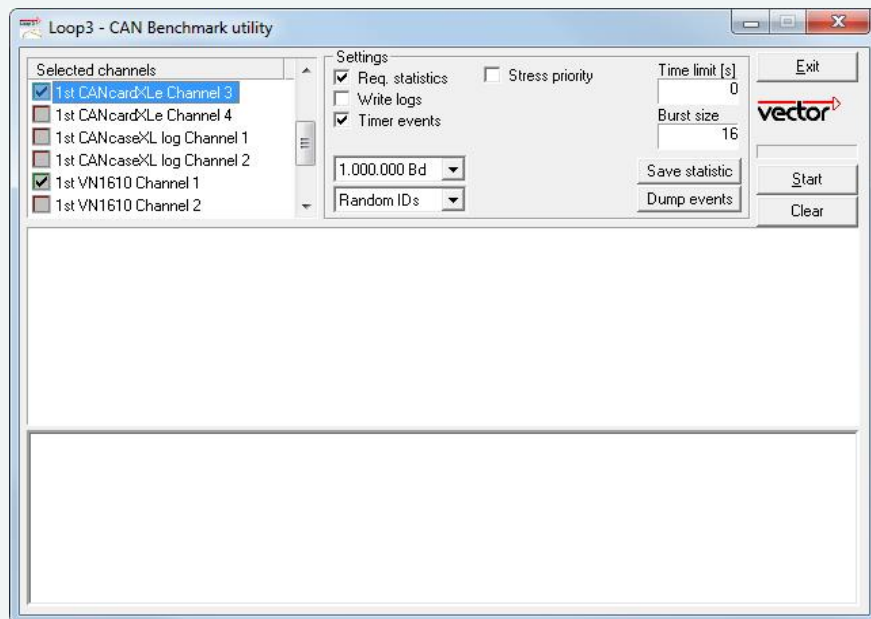

3. Select the connected CAN channels of the device(s) to be tested.

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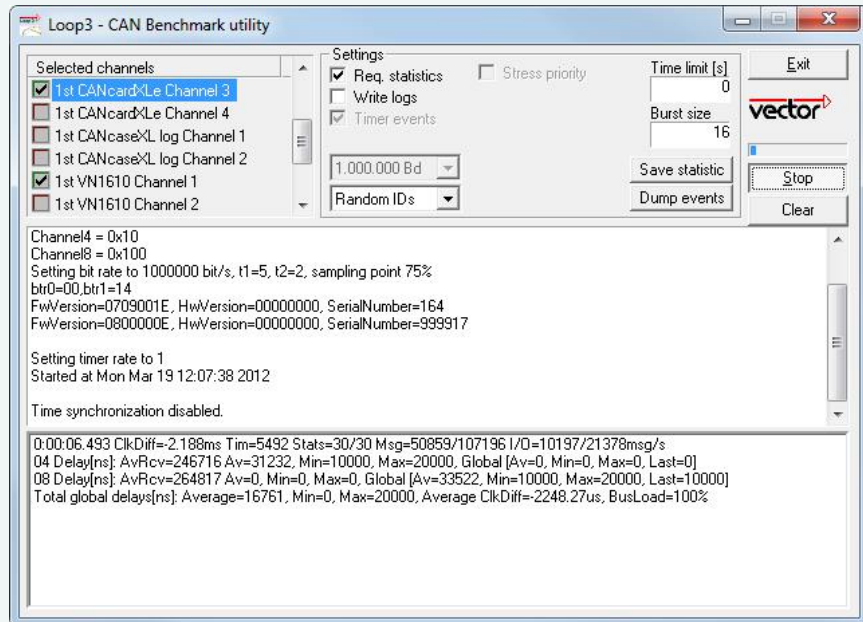
7. The test procedure can be terminated with the **[Stop]** button.
   An **OK** should appear in the upper part of the window.
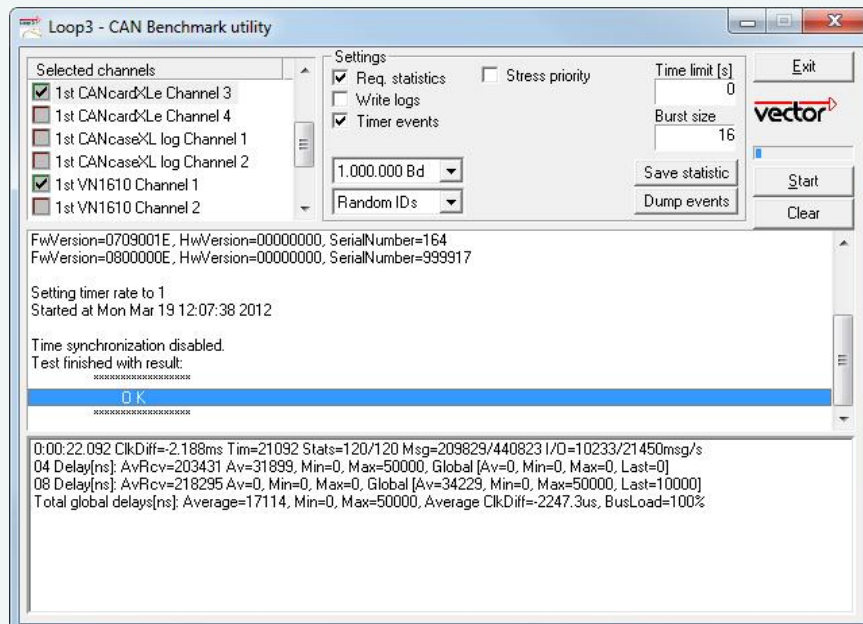
3.3.2 FlexRay

Device test The operating test for FlexRay requires an inserted FRpiggy (except for VN7610) and can be executed as follows:

Step by Step Procedure

1. Remove the FlexRay cable if it is connected.

2. Start `\Drivers\Common\FRLoop.exe` from the Vector Driver Setup.

3. Execute the test.

4. If no error messages occur, the operating test was successful.
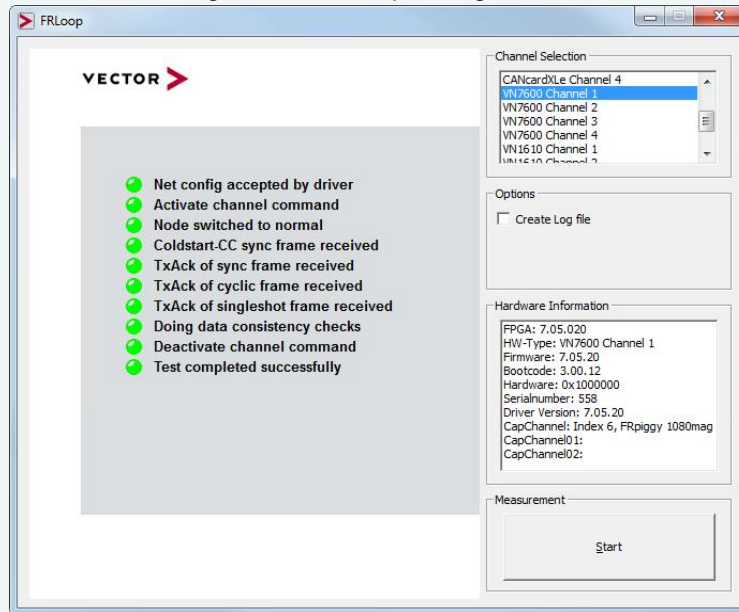
4 Time Synchronization

In this chapter you find the following information:

4.1 General Information

Time stamps
and events

Time stamps are useful when analyzing incoming or outgoing data or event sequences on a specific bus.
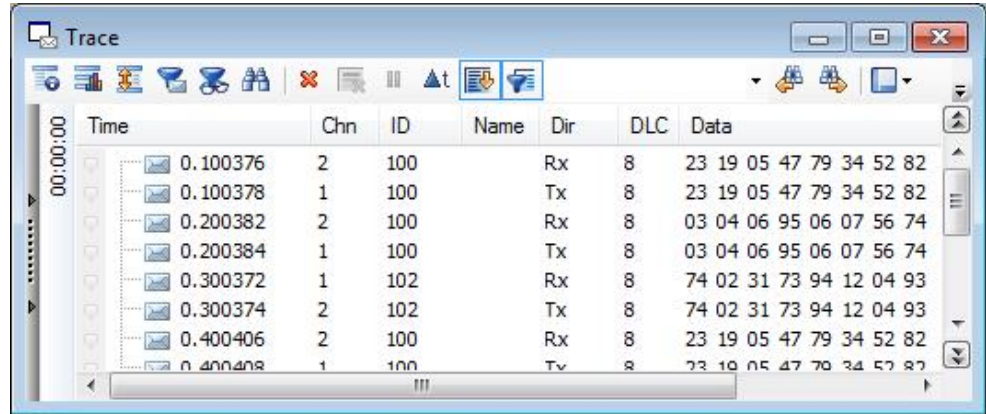
Figure 6: Time stamps of two CAN channels in CANalyzer

Generating
time stamps

Each event which is sent or received by a Vector network interface has an accurate time stamp. Time stamps are generated for each channel in the Vector network interface. The base for these time stamps is a common hardware clock in the device.

Figure 7: Common time stamp clock for each channel

If the measurement setup requires more than one Vector network interface, a synchronization of all connected interfaces and their hardware clocks is needed.

Due to manufacturing and temperature tolerances, the hardware clocks may vary in speed, so time stamps of various Vector devices drift over time.

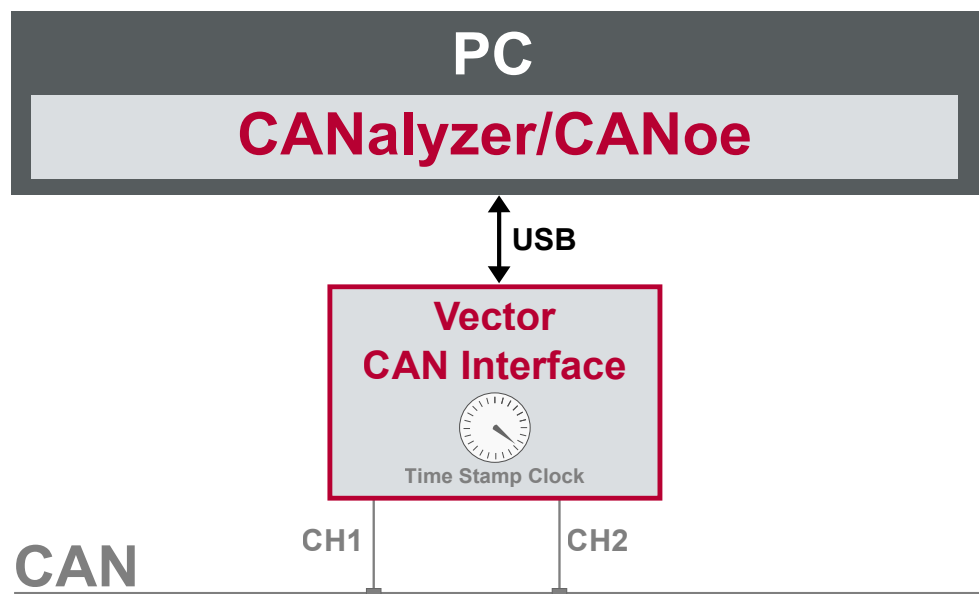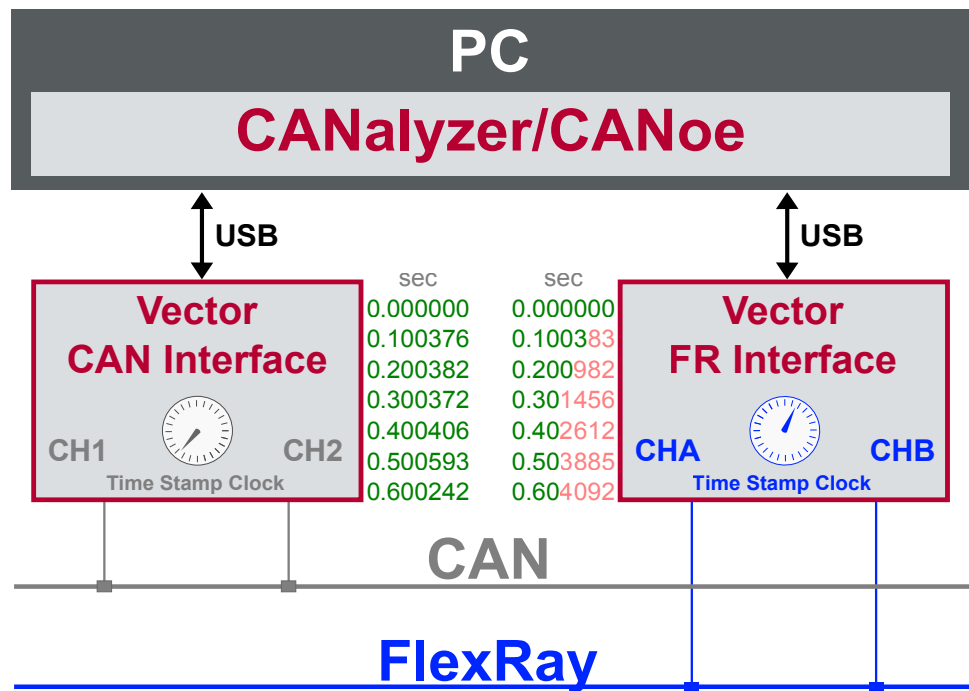Figure 8: Example of unsynchronized network interfaces. Independent time stamps drift apart

To compensate for these time stamp deviations between the Vector network interfaces, the time stamps can be either synchronized by software, hardware, PTP or GNSS (capability depends on the Vector device).

Note
The accuracy of the software, hardware, PTP or GNSS sync depends on the interface. Further information on specific values can be found in the technical data of the respective devices.

4.2 Software Sync

4.2.1 General Information

Synchronization by software

The software time synchronization is driver-based and available for all applications without any restrictions. The time stamp deviations from different Vector network interfaces are calculated and synchronized to the common PC clock. For this purpose no further hardware setup is required.
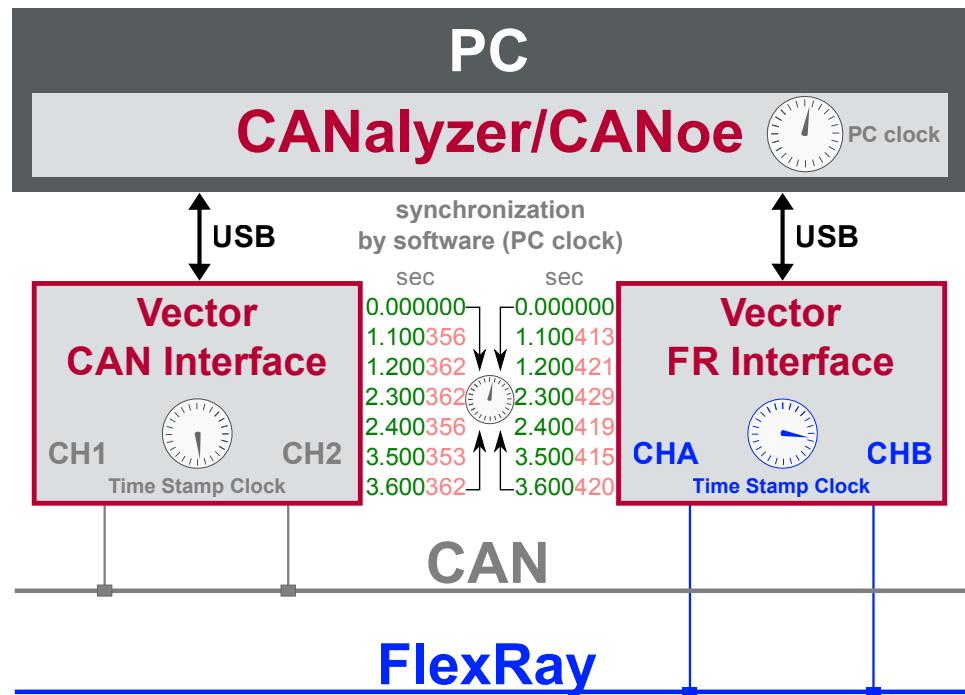
Figure 9: Time stamps of devices are synchronized to the PC clock

> **Note**
> Software time synchronization may lead to an increased latency for all connected Vector network interfaces. If a use case requires low latency, deactivate this option and use another synchronization mechanism.

4.2.2 Configuration

Vector Hardware Manager

Use the software synchronization if at least one device has no hardware sync connector. Also to synchronize the device clock to the computer time, use the software synchronization (legacy).

> **Reference**
> Further details and tips on the time sync configuration can be found in the Vector Hardware Manager help in section **User Interface | Navigation Rail | Time Sync**.

4.3 Hardware Sync

4.3.1 General Information

Synchronization
by hardware

A more accurate time synchronization of multiple devices is provided by the hardware synchronization. Two Vector network interfaces can therefore be connected with the SYNCcableXL (see accessories manual, part number 05018).

In order to synchronize up to five devices at the same time, a distribution box is available (see accessories manual, part number 05085).

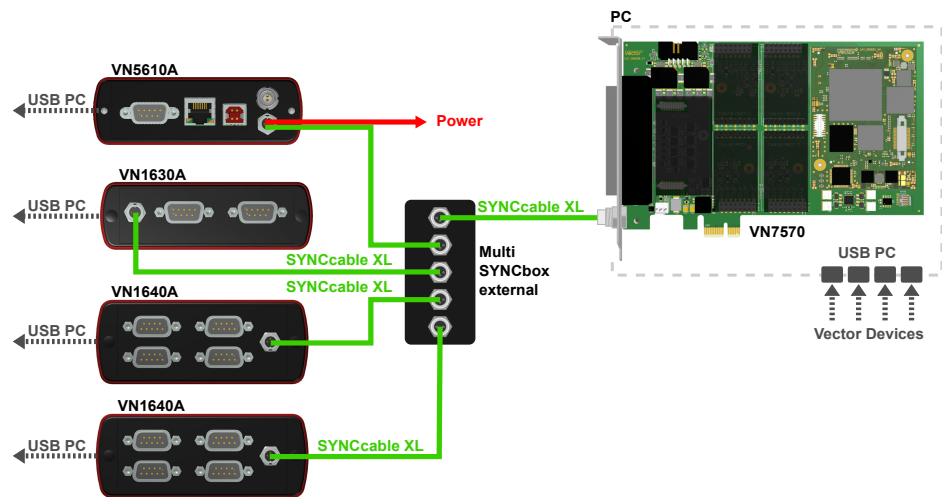Figure 10: Example of a time synchronization with multiple devices
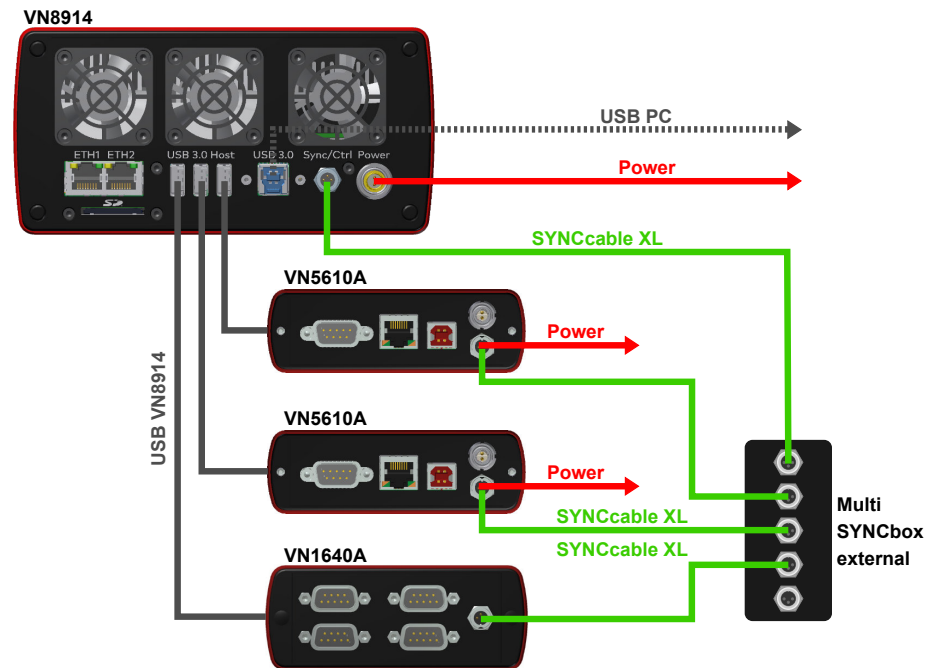

Figure 11: Example of a time synchronization with VN8914 and additional devices

At each falling edge on the sync line which is initiated by the driver, the Vector network interface generates a time stamp that is provided to the driver. This allows the driver to calculate the deviations between the network interfaces and to synchronize

the time stamps to a common time base (master clock) which can be defined by the user.
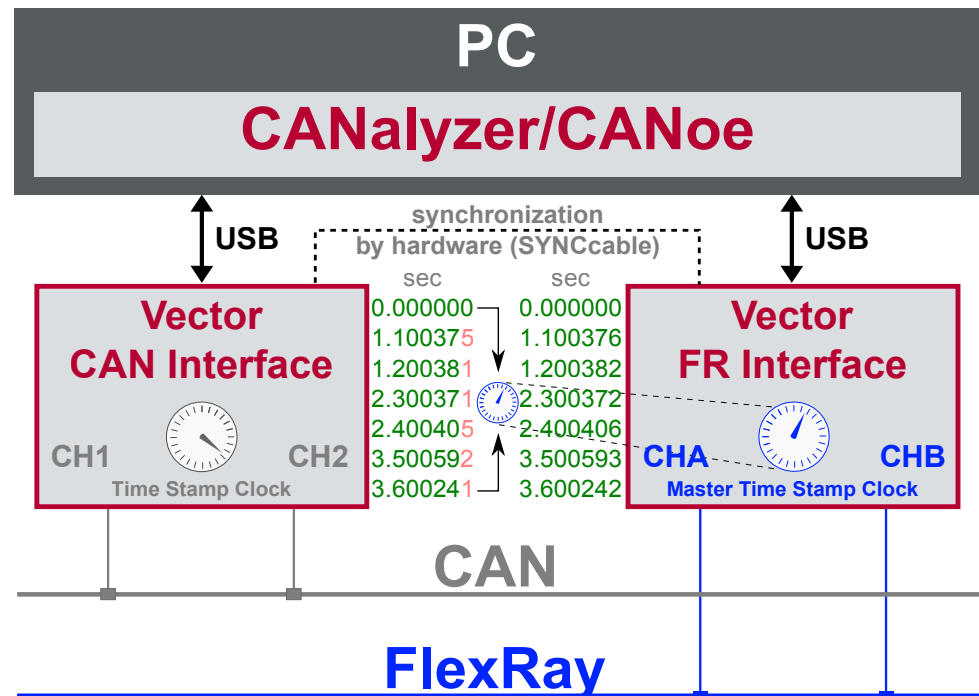
Figure 12: Time stamps are synchronized to the master clock

4.3.2 Configuration

Vector
Hardware Manager

Use hardware synchronization if at least one device is connected with USB or PCIe to the PC and all devices are hardware sync capable. One device should be configured as master and all other devices as slaves. Therefore, all devices must be interconnected with SYNCcableXL and Multi SYNCbox external or SYNCbox active.

Reference
Further details and tips on the time sync configuration can be found in the Vector Hardware Manager help in section **User Interface | Navigation Rail | Time Sync**.

5 Important Notes - Details

In this chapter you find the following information:

5.0.1 Safety Instructions and Hazard Warnings

> **!** **Caution!**
> In order to avoid personal injuries and damage to property, you have to read and understand the following safety instructions and hazard warnings prior to installation and use of this interface. Keep this documentation (manual) always near the interface.

5.0.1.1 Proper Use and Intended Purpose

> **!** **Caution!**
> The interface is designed for analyzing, controlling and otherwise influencing control systems and electronic control units. This includes, inter alia, bus systems like CAN, LIN, K-Line, MOST, FlexRay, Ethernet, BroadR-Reach and/or ARINC 429.
>
> The interface may only be operated in a closed state. In particular, printed circuits must not be visible. The interface may only be operated (i) according to the instructions and descriptions of this manual; (ii) with the electric power supply designed for the interface, e.g. USB-powered power supply; and (iii) with accessories manufactured or approved by Vector.
>
> The interface is exclusively designed for use by skilled personnel as its operation may result in serious personal injuries and damage to property. Therefore, only those persons may operate the interface who (i) have understood the possible effects of the actions which may be caused by the interface; (ii) are specifically trained in the handling with the interface, bus systems and the system intended to be influenced; and (iii) have sufficient experience in using the interface safely.
>
> The knowledge necessary for the operation of the interface can be acquired in work-shops and internal or external seminars offered by Vector. Additional and interface specific information, such as „Known Issues", are available in the „Vector KnowledgeBase" on Vector´s website at www.vector.com. Please consult the „Vector KnowledgeBase" for updated information prior to the operation of the interface.

5.0.1.2 Hazards

! **Caution!**
The interface may control and/or otherwise influence the behavior of control systems and electronic control units. Serious hazards for life, body and property may arise, in particular, without limitation, by interventions in safety relevant systems (e.g. by deactivating or otherwise manipulating the engine management, steering, airbag and/or braking system) and/or if the interface is operated in public areas (e.g. public traffic, airspace). Therefore, you must always ensure that the interface is used in a safe manner. This includes, inter alia, the ability to put the system in which the interface is used into a safe state at any time (e.g. by „emergency shutdown"), in particular, without limitation, in the event of errors or hazards.

Comply with all safety standards and public regulations which are relevant for the operation of the system. Before you operate the system in public areas, it should be tested on a site which is not accessible to the public and specifically prepared for performing test drives in order to reduce hazards.

5.0.2 Disclaimer

Caution!
Claims based on defects and liability claims against Vector are excluded to the extent damages or errors are caused by improper use of the interface or use not according to its intended purpose. The same applies to damages or errors arising from insufficient training or lack of experience of personnel using the interface.

5.0.3 Disposal of Vector Hardware

Please handle old devices responsibly and observe the environmental laws applicable in your country. Please dispose of the Vector hardware only at the designated places and not with the household waste.
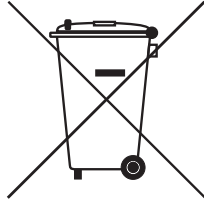
Within the European Community, the Directive on Waste Electrical and Electronic Equipment (WEEE Directive) and the Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive) apply.

For Germany and other EU countries, we offer free take-back of old Vector hardware.

Please carefully check the Vector hardware to be disposed of before shipping. Please remove all items that are not part of the original scope of delivery, e.g. storage media. The Vector hardware must also be free of licenses and must no longer contain any personal data. Vector does not perform any checks in this regard. Once the hardware has been shipped, it cannot be returned to you. By shipping the hardware to us, you have relinquished your rights to the hardware.
Before shipping, please register your old device via:

https://www.vector.com/int/en/support-downloads/return-registration-for-the-disposal-of-vector-hardware/

6 Wichtige Hinweise

In diesem Kapitel finden Sie die folgenden Informationen:

6.0.1 Sicherheits- und Gefahrenhinweise

> **!** **Achtung!**
> Um Personen- und Sachschäden zu vermeiden, müssen Sie vor der Installation und dem Einsatz dieses Interfaces die nachfolgenden Sicherheits- und Gefahrenhinweise lesen und verstehen. Bewahren Sie diese Dokumentation (Handbuch) stets in der Nähe dieses Interfaces auf.

6.0.1.1 Sach- und bestimmungsgemäßer Gebrauch

> **!** **Achtung!**
> Das Interface ist für die Analyse, die Steuerung sowie für die anderweitige Beeinflussung von Regelsystemen und Steuergeräten bestimmt. Das umfasst unter anderem die Bussysteme CAN, LIN, K-Line, MOST, FlexRay, Ethernet, BroadR-Reach oder ARINC 429.
>
> Der Betrieb des Interfaces darf nur im geschlossen Zustand erfolgen. Insbesondere dürfen keine Leiterplatten sichtbar sein. Das Interface ist entsprechend den Anweisungen und Beschreibungen dieses Handbuchs einzusetzen. Dabei darf nur die dafür vorgesehene Stromversorgung, wie z. B. USB-powered, Netzteil, und das Originalzubehör von Vector bzw. das von Vector freigegebene Zubehör verwendet werden.
>
> Das Interface ist ausschließlich für den Einsatz durch geeignetes Personal bestimmt, da der Gebrauch dieses Interfaces zu erheblichen Personen- und Sachschäden führen kann. Deshalb dürfen nur solche Personen dieses Interface einsetzen, welche die möglichen Konsequenzen der Aktionen mit diesem Interface verstanden haben, speziell für den Umgang mit diesem Interface, den Bussystemen und dem zu beeinflussenden System geschult worden sind und ausreichende Erfahrung im sicheren Umgang mit dem Interface erlangt haben.
>
> Die notwendigen Kenntnisse zum Einsatz dieses Interfaces können bei Vector über interne oder externe Seminare und Workshops erworben werden. Darüber hinausgehende und Interface-spezifische Informationen wie z. B. „Known Issues" sind auf der Vector Webseite unter www.vector.com in der „Vector KnowledgeBase" verfügbar. Bitte informieren Sie sich dort vor dem Betrieb des Interfaces über aktualisierte Hinweise.

6.0.1.2 Gefahren

! **Achtung!**
Das Interface kann das Verhalten von Regelsystemen und Steuergeräten steuern und in anderweitiger Weise beeinflussen. Insbesondere durch Eingriffe in sicherheitsrelevante Bereiche (z. B. durch Deaktivierung oder sonstige Manipulation der Motorsteuerung, des Lenk-, Airbag-, oder Bremssystems) und/oder der Einsatz des Interfaces in öffentlichen Räumen (z. B. Straßenverkehr, Luftraum) können erhebliche Gefahren für Leib, Leben und Eigentum entstehen. Stellen Sie daher in jedem Fall eine gefahrfreie Verwendung sicher. Hierzu gehört unter anderem auch, dass das System, in dem das Interface eingesetzt wird, jederzeit, insbesondere bei Auftreten von Fehlern oder Gefahren, in einen sicheren Zustand geführt werden kann (z. B. durch Not-Abschaltung).

Beachten Sie alle sicherheitstechnischen Richtlinien und öffentlich-rechtlichen Vorschriften, die für den Einsatz des Systems relevant sind. Zur Verminderung von Gefahren sollte das System vor dem Einsatz in öffentlichen Räumen auf einem nicht-öffentlich zugänglichen und für Testfahrten bestimmten Gelände erprobt werden.

6.0.2 Haftungsausschluss

> **Achtung!**
> Soweit das Interface nicht sach- oder bestimmungsgemäß eingesetzt wird, übernimmt Vector keine Gewährleistung oder Haftung für dadurch verursachte Schäden oder Fehler. Das Gleiche gilt für Schäden oder Fehler, die auf einer mangelnden Schulung oder Erfahrung derjenigen Personen beruhen, die das Interface einsetzen.

6.0.3 Entsorgung von Vector Hardware

Bitte gehen Sie verantwortungsvoll mit Altgeräten um und beachten Sie die in Ihrem Land geltenden Umweltgesetze. Entsorgen Sie die Vector Hardware bitte nur bei den dafür vorgesehenen Stellen und nicht über den Hausmüll.
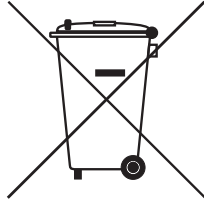
Innerhalb der Europäischen Gemeinschaft gelten die Richtlinie über Elektro- und Elektronik-Altgeräte (WEEE-Richtlinie) und die Richtlinie zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (RoHS-Richtlinie).

Für Deutschland und andere EU-Länder bieten wir Ihnen eine kostenlose Rücknahme der alten Vector Hardware an.

Bitte überprüfen Sie die zu entsorgende Vector Hardware vor dem Versand sorgfältig. Bitte entfernen Sie alle Gegenstände, die nicht zum ursprünglichen Lieferumfang gehören, z. B. Speichermedien. Die Vector Hardware muss außerdem frei von Lizenzen sein und darf keine personenbezogenen Daten mehr enthalten. Vector führt keine Kontrollen diesbezüglich durch. Sobald die Hardware versandt wurde, kann sie nicht mehr an Sie zurück geliefert werden. Mit dem Versand der Hardware an uns haben Sie Ihre Rechte an der Hardware abgetreten.
Bitte melden Sie vor dem Versand Ihr Altgerät an über:

https://www.vector.com/de/de/support-downloads/return-registration-for-the-disposal-of-vector-hardware/

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