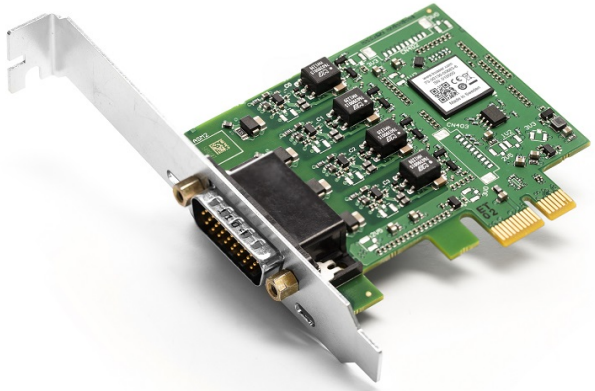
Kvaser PCIEcan 4xHS User's Guide



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1 About this manual

This manual is intended for Kvaser PCIEcan 4xHS users. This document contains a description of the hardware's properties and general instructions for connecting the device to a computer.

2 Introduction

This section will describe the functions and features of the Kvaser PCIEcan 4xHS.

2.1 Welcome to Kvaser PCIEcan 4xHS

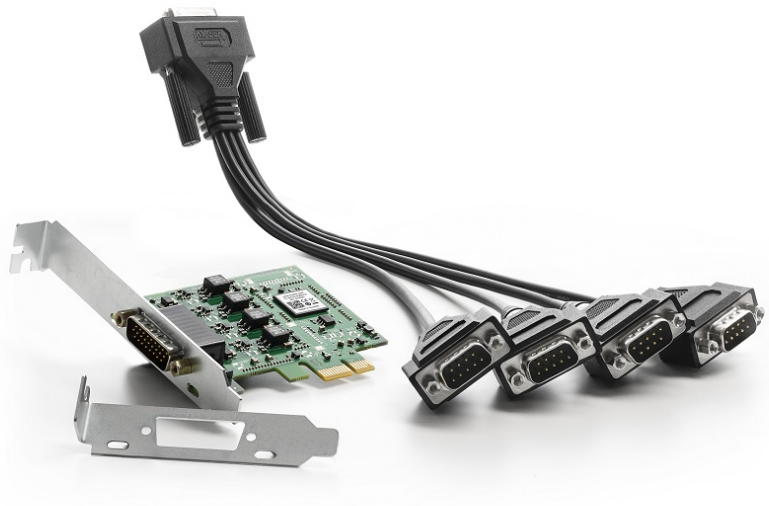

Figure 1: Kvaser PCIEcan 4xHS

Kvaser PCIEcan 4xHS is a small, yet advanced, CAN multi channel real time CAN interface that handles transmission and reception of standard and extended CAN messages on the bus with a high time stamp precision. It is compatible with applications that use Kvaser's CANlib.

This guide applies to Kvaser PCIEcan 4xHS devices listed in Table 1.

Device	Product Number (EAN)
Kvaser PCIEcan 4xHS	73-30130-00683-6

Table 1: Kvaser PCIEcan 4xHS devices and their product numbers.

2.2 Major features

- PCI Express CAN interface.
- CAN FD ready.
- Quick and easy plug-and-play installation.
- Supports both 11-bit (CAN 2.0A) and 29-bit (CAN 2.0B active) identifiers.
- 100 % compatible with applications written for other Kvaser CAN hardware with Kvaser CANlib.
- High-speed CAN connection (compliant with ISO 11898-2), up to 1 Mbit /s.
- Fully compatible with J1939, CANopen, NMEA 2000 and DeviceNet.
- Supports silent mode for analysis tools – listen to the bus without interfering.
- Simultaneous operation of multiple devices.
- Low profile board.
- Includes 4 channel breakout cable.

2.3 Interface

Kvaser PCIEcan 4xHS provides a CAN bus interface through a standard PCI Express x1 interface.

2.4 Additional software and documentation

The Kvaser CANlib SDK includes everything you need in order to develop software for the Kvaser CAN hardware. It contains full documentation and many sample programs, written in C, C++, C#, Delphi, Python and Visual Basic. All Kvaser CAN interface hardware share a common software API. Programs written for one device type will run without modification on other device types.

The latest versions of documentation, software and drivers can be downloaded for free at http://www.kvaser.com/download/.

3 Kvaser PCIEcan 4xHS hardware

In this section you can read more about the CAN channels, power supply and LED indicators.

3.1 Hardware installation

The Kvaser PCIEcan 4xHS may be inserted in any free PCI Express slot on the host computer. You do need to switch the power off before inserting or removing the device.

3.2 CAN channels

The Kvaser PCIEcan 4xHS has four CAN Hi-Speed channels in a single 26-pin HD D-SUB CAN connector (see Figure 2). See Section 4.2, CAN connectors, on Page 9 for pinout information.

Figure 2: CAN connector on Kvaser PCIEcan 4xHS

3.3 Power supply

The Kvaser PCIEcan 4xHS is powered from the PCI Express connector.

3.4 LED Indicators

The Kvaser PCIEcan 4xHS has four yellow LED indicators, one for each channel, that indicates with a short flash that a CAN message was received or sent. A single flash may be hard to see and a continuous set of flashes will be indistinguishable from a steady light.

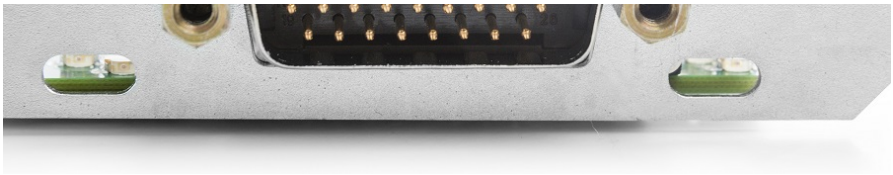

Figure 3: LEDs on the Kvaser PCIEcan 4xHS.

3.5 Troubleshooting

Use "Kvaser Hardware" in the Control Panel to verify that the computer can communicate with the Kvaser PCIEcan 4xHS. If the firmware version shown is all zeroes, there are communication problems.

4 Appendices

In this section you will find technical information about the Kvaser PCIEcan 4xHS and its connectors.

4.1 Technical data

In Table 2 below you will find the Kvaser PCIEcan 4xHS's technical specifications.

CAN Channels	4
CAN Transceivers	MCP2561FD (Compliant with ISO 11898-2)
CAN Controller	Kvaser CAN IP in FPGA
Galvanic isolation	Yes
CAN Bit Rate	40 kbit/s to 1 Mbit/s "Classic CAN"
CAN FD ready	Yes
Time stamp resolution	1 µs
Max message rate	20000 per channel
Error Frame Detection	Yes
Error Frame Generation	Yes
Silent mode	Yes
PC interface	PCI Express
Hardware configuration	Done by software.
Software requirements	Windows Vista or later. (For other operating systems, contact Kvaser support.)
Dimensions	Low profile, 86 x 69 mm
Weight	50 g (200g including HD26-4DS9 Splitter)
Operating temperature	0 °C to +85 °C
Storage temperature	−40 °C to +85 °C
Relative humidity	0 % to 85 % (non-condensing.)

Table 2: Technical Specifications.

4.2 CAN connectors

Kvaser PCIEcan 4xHS devices that uses the 26-pin HD D-SUB connector (see Figure 4 on Page 10) has the pinning described in Table 3 on Page 10. This table also describes how the HD26-4xDS9 splitter (see Figure 6 on Page 11) connects to four seperate 9-pin DSUB connectors, CAN 1 to CAN 4.

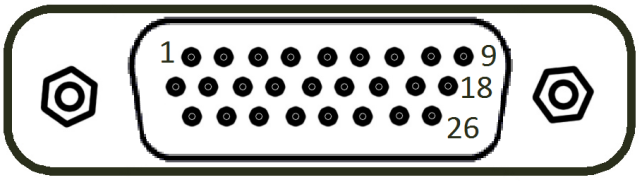

Figure 4: The male 26 pin HD D-SUB connector pin numbers

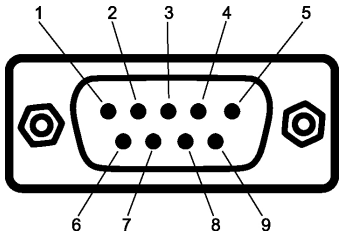

Figure 5: The male D-SUB 9 connector pin numbers

HD D-SUB	CAN 1	CAN 2	CAN 3	CAN 4	Function
1	2				CAN_L channel 1
2		2			CAN_L channel 2
3			2		CAN_L channel 3
4				2	CAN_L channel 4
5					Not connected
6					Not connected
7					Not connected
8	4				Not used by Kvaser PCIEcan 4xHS
9					Not connected
10					Not connected
11	7				CAN_H channel 1
12		7			CAN_H channel 2
13			7		CAN_H channel 3
14				7	CAN_H channel 4
15					Not connected
16					Not connected
17					Not connected
18		4			Not used by Kvaser PCIEcan 4xHS
19	3				GND channel 1
20		3			GND channel 2
21			3		GND channel 3
22				3	GND channel 4
23					Not connected
24					Not connected
25					Not connected
26					Not connected

Table 3: Pin configuration of the 26-pin HD D-SUB (and HD26-4xDS9 splitter)

Figure 6: The HD26-4xDS9 Splitter

4.3 CAN bus termination

Every CAN bus must be terminated with a 120 Ohm resistor at each end of the bus. The Kvaser PCIEcan 4xHS does not contain any CAN bus termination, because their inclusion could cause severe disturbance in a system which is already correctly terminated.

For laboratory or testing use, the exact value of the termination resistors is not always critical. Sometimes a single terminator is sufficient. For production, proper termination is essential. If you see error frames on the bus, you should check the termination.

To save yourself a lot of trouble, always terminate the CAN bus properly.

5 Disposal and Recycling Information

When this product reaches its end of life, please dispose of it according to your local environmental laws and guidelines.

For information about Kvaser's recycling programs, visit:
http://www.kvaser.com/en/kvaser/recycling-policy.html

6 Legal acknowledgements

6.1 Usage warning

WARNING FOR ALL USERS

WARNING! - YOUR USE OF THIS DEVICE MUST BE DONE WITH CAUTION AND A FULL UNDERSTANDING OF THE RISKS!
THIS WARNING IS PRESENTED TO INFORM YOU THAT THE OPERATION OF THIS DEVICE MAY BE DANGEROUS. YOUR ACTIONS CAN INFLUENCE THE BEHAVIOR OF A CAN-BASED DISTRIBUTED EMBEDDED SYSTEM, AND DEPENDING ON THE APPLICATION, THE CONSEQUENCES OF YOUR IMPROPER ACTIONS COULD CAUSE SERIOUS OPERATIONAL MALFUNCTION, LOSS OF INFORMATION, DAMAGE TO EQUIPMENT, AND PHYSICAL INJURY TO YOURSELF AND OTHERS. A POTENTIALLY HAZARDOUS OPERATING CONDITION IS PRESENT WHEN THE FOLLOWING TWO CONDITIONS ARE CONCURRENTLY TRUE: THE PRODUCT IS PHYSICALLY INTERCONNECTED TO A REAL DISTRIBUTED EMBEDDED SYSTEM; AND THE FUNCTIONS AND OPERATIONS OF THE REAL DISTRIBUTED EMBEDDED SYSTEM ARE CONTROLLABLE OR INFLUENCED BY THE USE OF THE CAN NETWORK. A POTENTIALLY HAZARDOUS OPERATING CONDITION MAY RESULT FROM THE ACTIVITY OR NON-ACTIVITY OF SOME DISTRIBUTED EMBEDDED SYSTEM FUNCTIONS AND OPERATIONS, WHICH MAY RESULT IN SERIOUS PHYSICAL HARM OR DEATH OR CAUSE DAMAGE TO EQUIPMENT, DEVICES, OR THE SURROUNDING ENVIRONMENT.
WITH THIS DEVICE, YOU MAY POTENTIALLY:

- CAUSE A CHANGE IN THE OPERATION OF THE SYSTEM, MODULE, DEVICE, CIRCUIT, OR OUTPUT.
- TURN ON OR ACTIVATE A MODULE, DEVICE, CIRCUIT, OUTPUT, OR FUNCTION.
- TURN OFF OR DEACTIVATE A MODULE, DEVICE, CIRCUIT, OUTPUT, OR FUNCTION.
- INHIBIT, TURN OFF, OR DEACTIVATE NORMAL OPERATION.
- MODIFY THE BEHAVIOR OF A DISTRIBUTED PRODUCT.
- ACTIVATE AN UNINTENDED OPERATION.
- PLACE THE SYSTEM, MODULE, DEVICE, CIRCUIT, OR OUTPUT INTO AN UNINTENDED MODE.

ONLY THOSE PERSONS WHO:
(A) ARE PROPERLY TRAINED AND QUALIFIED WITH RESPECT TO THE USE OF THE DEVICE,
(B) UNDERSTAND THE WARNINGS ABOVE, AND
(C) UNDERSTAND HOW THIS DEVICE INTERACTS WITH AND IMPACTS THE FUNCTION AND SAFETY OF OTHER PRODUCTS IN A DISTRIBUTED SYSTEM AND THE APPLICATION FOR WHICH THIS DEVICE WILL BE APPLIED, MAY USE THE DEVICE.
PLEASE NOTE THAT YOU CAN INTEGRATE THIS PRODUCT AS A SUBSYSTEM INTO HIGHER-LEVEL SYSTEMS. IN CASE YOU DO SO, KVASER AB HEREBY DECLARES THAT KVASER AB'S WARRANTY SHALL BE LIMITED TO THE CORRECTION OF DEFECTS, AND KVASER AB HEREBY EXPRESSLY DISCLAIMS ANY LIABILITY OVER AND ABOVE THE REFUNDING OF THE PRICE PAID FOR THIS DEVICE, SINCE KVASER AB DOES NOT HAVE ANY INFLUENCE ON THE IMPLEMENTATIONS OF THE HIGHER-LEVER SYSTEM, WHICH MAY BE DEFECTIVE.

6.2 EC Regulatory Compliance

The product(s); 73-30130-00683-6, is in conformity with the essential requirements of the following regulations and directives:

- DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 (WEEE)
- REGULATION (EC) No. 1907/2006 (REACH), Annex XIV (the 'Candidate list') and Annex XVII ('Restriction of Substances')

The products listed above also complies with DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 (RoHS) and is in conformity with the following standards and/or other normative documents:

Standard	Description
EN 50 581 (2012)	Assessment with respect to restriction of hazardous substances

Table 4: Standards and normative documents for RoHS 2011

The products listed above also complies with DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 (EMC-directive) and is in conformity with the following standards and/or other normative documents:

Standard	Description
EN 55 022 (2010)	Class B, radiated. IT equipment, commercial emission
EN 55 024 (2010)	IT equipment, commercial immunity
EN 61 000-6-2 (2005)	Generic, industrial immunity

Table 5: Standards and normative documents for EMC 2004

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

6.3 Patents, Copyrights and Trademarks

7 Document Revision History

Version history for document UG_98168_pciecan:

Revision	Date	Changes
1.0	2015-04-28	Initial version