

CAN-IB100/PCIe

CAN-IB200/PCIe

PCI Express CAN Interface





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1	Introduction	5
	1.1 Overview	5
	1.2 Features	5
2	Installation	6
	2.1 Software installation	6
	2.2 Hardware installation	6
3	Connections	7
	3.1 PCI Express	7
	3.2 CAN bus	7
	3.3 Fieldbus expansion	8
	3.4 CAN expansion board	8
	3.5 Synchronization plug	8
4	Extensions	9
	4.1 Overview	9
	4.2 Fieldbus module	9
	4.3 CAN expansion board	10
5	Programming the firmware	11
6	Support	11
7	Returning hardware	11
8	Information on EMC	11
9	Appendix	12
	9.1 Technical data	12
	9.2 FCC compliance	12
	9.3 EC declaration of conformity	13

1 Introduction

1.1 Overview

Congratulations on your purchase of the IXXAT CAN-IB100/PCIe or CAN-IB200/PCIe PC-CAN interface, high-quality electronic components developed and manufactured according to the latest technological insights. This manual describes both the CAN-IB100/PCIe CAN interface board (passive card) and the CAN-IB200/PCIe CAN interface board (active card). Both interface boards are also available in low-profile versions. The term "CAN interface board" will be used in the remainder of this manual to refer to either of the cards.

1.2 Features

- Single Lane (x1) PCI Express card
- Coupling according to the PCI Express Base Specification version 1.1
- 2 independent CAN circuits
- ISO 11898-2 CAN bus coupling (high speed)
- Optionally galvanic decoupled
- Can be extended with ISO 11898-3 low-speed CAN
- Can be extended with a K line and LINE (CAN-IB200/PCIe only)
- Other interface extensions upon request
- Can be extended to up to 4 CAN circuits

2 Installation

2.1 Software installation

A driver is needed for the operation of the CAN interface board. This driver is a component of the VCI (Virtual CAN Interface) V3 for Windows, which you can download free of charge from <http://www.ixxat.com>.

Please follow the VCI installation manual to install the VCI V3 CAN driver under Windows.

For many interfaces, IXXAT also offers ECI drivers for Linux and real-time operating systems. You can find information about the operating systems and interfaces supported at <http://www.ixxat.com>.

2.2 Hardware installation

You should install the software driver before inserting the CAN interface board into the PCIe slot (see previous section).

Proper ESD precautions must be practiced before performing the following tasks in sequence:

- (1) Turn the PC off and pull the power cord.
- (2) Open the PC according to the instructions of the PC manufacturer and determine a suitable slot. The CAN interface board is designed according to the PC standard and can easily be installed into the corresponding slot. Do not use force when inserting it.
- (3) Be sure the interface is securely held in the PC.
- (4) Close the PC; the hardware installation is now complete.

3 Connections

Figure3-1 shows the position of the connections of the CAN interface boards, which will be described below.

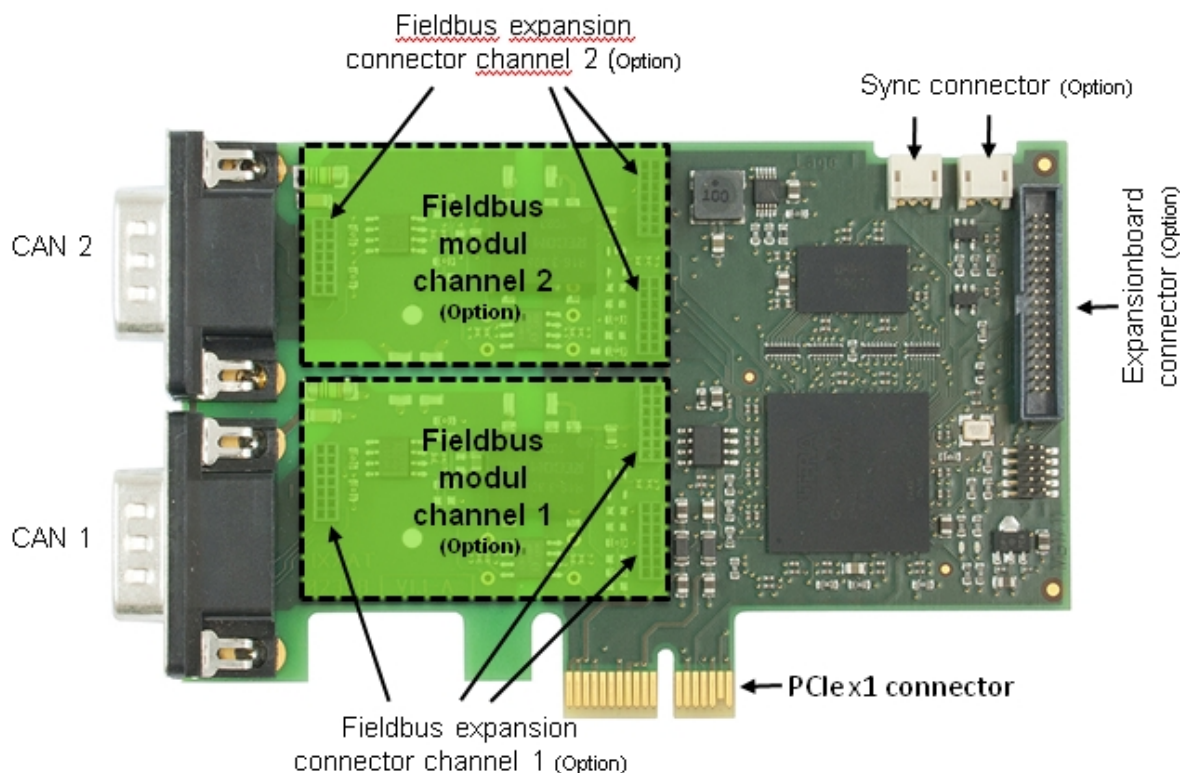


Figure 3-1: Connections of the CAN interface board

3.1 PCI Express

The pinouts of the PCI Express connector are compliant with the specification "PCI Express Card Electromechanical Specification version 1.1". The CAN interface board can be operated in any PCI Express slot (x1, x4, x8, x16).

3.2 CAN bus

The CAN interface board has an ISO 11898-2 bus coupling that can optionally be switched to ISO 11898-3 (with a low-speed fieldbus module) for each CAN circuit. The signals for CAN 1 are output on the lower SubD plug, the signals for CAN 2 on the top plug (see Figure3-1). In the low-profile version, only the SubD plug of the first CAN circuit is implemented. The signals of the second CAN circuit are output through a flat cable to a second slot bracket.

The shield of the CAN connector is connected to CAN ground through a 1 M Ω resistor and a 10 nF capacitor. The shields of the CAN connectors are connected directly together.

Connections

For a not galvanically decoupled CAN interface board, the CAN ground and PC ground are at the same potential.

For best noise immunity, the shields of the CAN cables have to be grounded.

The pinouts of the SubD plugs are listed in Table 3-1. The bus coupling can optionally be galvanically isolated.

Pin no.	Signal	Option
1	CAN-Low (Low-Speed)	via field bus module
2	CAN-Low (High-Speed)	
3	GND	
4	CAN-High (Low-Speed)	via field bus module
5	-	
6	-	
7	CAN-High (High-Speed)	
8	LIN/K-Line	via field bus module
9	VBAT _{LIN}	via field bus module

Tabelle 3-1: Pinbelegung des Sub-D9-Anschlusses

3.3 Fieldbus expansion

The fieldbus expansion plug can be used to extend each CAN circuit with fieldbus modules for additional fieldbuses (see Extensions). The signals of the additional fieldbuses are applied to the corresponding CAN connector.

You can find an overview of the available fieldbus modules on our Website.

3.4 CAN expansion board

The CAN expansion board connector provides the option of connecting a CAN expansion board that can provide up to two additional CAN interfaces and fieldbus extensions (see Extensions).

3.5 Synchronization plug

The optional synchronization plug can be used to connect multiple CAN interface boards together for synchronization (CAN-IB200/PCIe only). You can find the order number of the cable needed on our Website.

4 Extensions

4.1 Overview

The functionality of the CAN-IB100/PCIe and CAN-IB200/PCIe CAN interface boards can be extended with additional modules. The CAN interface boards detect installed extensions automatically if the extensions have been properly installed.

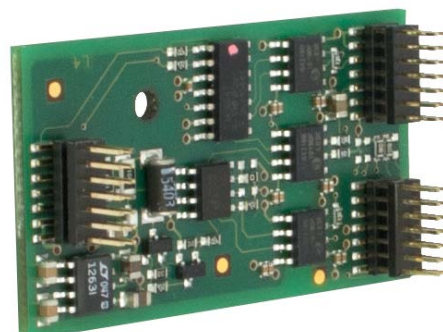
The available fieldbus modules and CAN extension boards, as well as their compatibility with the CAN interface board you are using, are all listed in detail on our Website.

4.2 Fieldbus module

A fieldbus module can be used to extend any CAN circuit with additional fieldbuses.

If there is a low-speed CAN transceiver on the fieldbus module, you can switch between the high-speed CAN transceiver on the CAN interface board and the low-speed CAN transceiver on the fieldbus module. The signals of the low-speed CAN transceiver of the fieldbus module are available on pins 1 and 4 of the corresponding SubD plug (see Table 3-1). The CAN-IB200/PCIe can also be extended with a K-line or LIN fieldbus interface using a fieldbus module. The signals of these fieldbus interfaces are available on pin 9 of the corresponding SubD plug (see Table 3-1). The simultaneous operation of low-speed CAN and K-line/LIN is also possible. Figure 3-1 shows the positions of the extension slots on the CAN interface board.

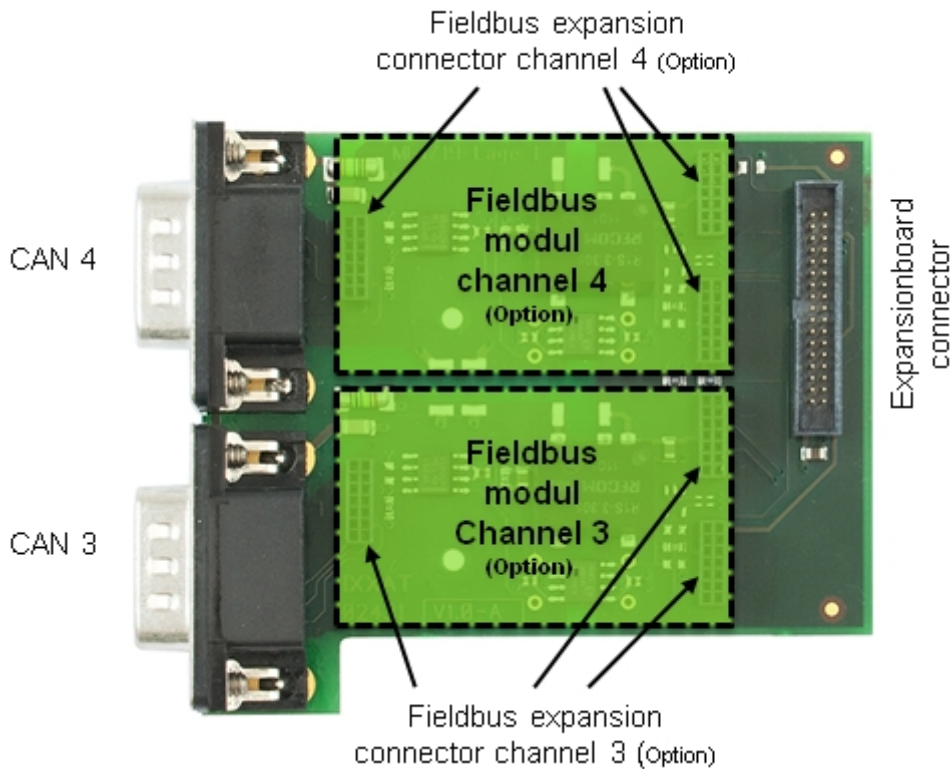
Please ensure during installation that the fieldbus module is correctly plugged onto the connector strips provided.



4.3 CAN expansion board

The CAN expansion board provides the option of increasing the number of available CAN channels up to four. The CAN expansion board can also be extended with additional fieldbus modules.

To do this, the CAN expansion board must be connected to the CAN interface board with the flat connector cable provided. Please be sure the cable is in the right orientation. Figure 3-1 shows the position of the CAN expansion board connection on the CAN interface board.



5 Programming the firmware

The CAN-IB200/PCIe active CAN interface board is always delivered with the latest firmware. If you require a different firmware or if a firmware update is required, you can download the files and tools you need from the download area of our Website.

6 Support

For more information on our products, FAQ lists and installation tips, please refer to the support area on our homepage (<http://www.ixxat.com>). There you will also find information on current product versions and available updates.

7 Returning hardware

If it is necessary to return hardware to us, please download the relevant RMA form from our homepage and follow the instructions on this form.

8 Information on EMC

The product is a class A device. If the product is used in office or home environment, radio interference can occur under certain conditions. To ensure faultless operation of the device, the following instructions must be followed due to technical requirements of EMC:

- use only the included accessories
- the shield of the interfaces must be connected with the device plug and with the plug on the other side

9 Appendix

9.1 Technical data

PCI Express Interface:	PCI Express single lane port (x1) according to PCI Express Base Specification, Revision 1.1
CAN Transceiver (High Speed):	TI SN65HVD251
CAN Transceiver (Low Speed):	TJA1054, via optional fieldbus module
LIN Transceiver:	TJA1020T, via optional fieldbus module
K-Line Transceiver	SI9243AEY, via optional fieldbus module
CAN propagation delay:	with galvanic isolation typ. 6 ns, max. 10 ns
CAN baudrates:	10 kBaud – 1 MBaud (High Speed), 10 kBaud - 125 kBaud (Low Speed)
Power supply:	via PCIe socket (3.3 V DC)
Current consumption (normal operation):	CAN-IB100/PCIe typ. 400 mA (3.3 V DC)
Dimensions:	64 x 105 mm
Weight:	approx. 55 g
Operating temperature range:	0 °C .. +70 °C
Storage temperature range:	-40 °C .. +85 °C
Relative humidity:	10 - 95 %, no condensation
Galvanic isolation:	500 V AC for 1 minute between CAN bus and internal logic
EMC testing according to:	DIN EN 55022:2006 + A1:2007 - Class B EN 61000-6-2:2005

9.2 FCC compliance

Declaration of conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation

Class A digital device – Instructions

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 own expense.

9.3 EC declaration of conformity

IXXAT Automation declares, that the product:

CAN-IB100/PCIe with the article numbers: 1.01.0231.xxxxx
1.01.0232.xxxxx

CAN-IB200/PCIe with the article numbers: 1.01.0233.xxxxx
1.01.0234.xxxxx

and optional available extensions

field bus module with the article numbers: 1.01.0241.xxxxx
expansion board with the article numbers: 1.01.0240.xxxxx

complies with the EU directive 2004/108/EC.

Applied harmonized standards: EN 55022:2006 + A1:2007
EN 61000-6-2:2005

22.03.2011, Dipl.-Ing. Christian Schlegel, Managing Director



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