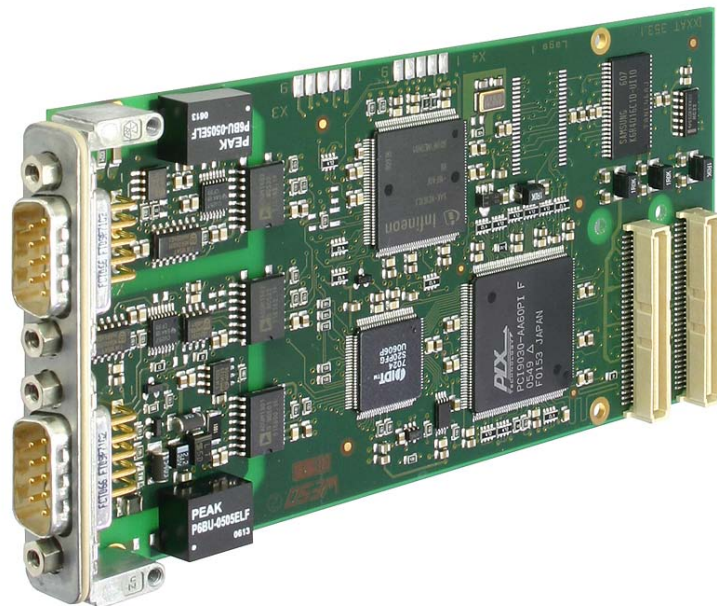


iPC-I XC16/PMC

Intelligent PC/CAN Interface



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1 Introduction

1.1 Overview

The IXXAT PC-CAN interface iPC-I XC16/PMC is a powerful electronic component, developed and manufactured in accordance with the latest technological standards. This manual is intended to familiarize you with your iPC-I XC16/PMC interface. Please read this manual before beginning with the installation.

1.2 Features

- PMC connection in accordance with the PCI specification 2.2, 32 bit, 33 MHz
- Utilizable in both 5 V and 3.3 V PCI signal environment
- Infineon 16 bit microcontroller with 40 MHz clock
- 512 kByte RAM, 128 kByte Flash
- Data exchange between PC and microcontroller system via 8 kB dual-port RAM
- Two independent CAN lines; CAN bus connection in accordance with ISO/IS 11898-2, switchable to CAN bus connection in accordance with ISO/IS 11898-3 (low speed), both galvanically isolated. Each CAN bus connection can be switched over independently

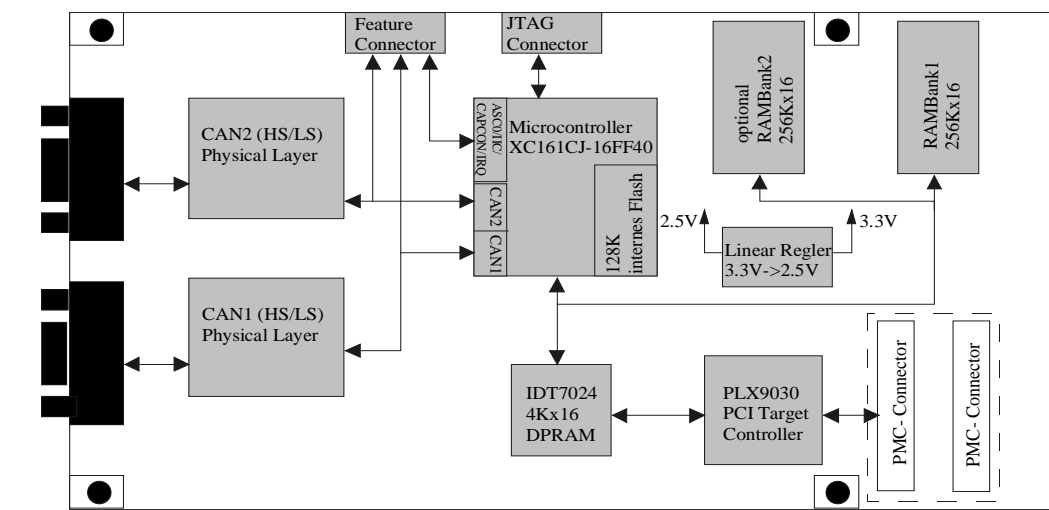


Fig. 1-1: Block diagram of the iPC-I XC16/PMC

1.3 Support

For more information on our products, FAQ lists and installation tips, please refer to the support section of our website (<http://www.ixxat.de>), which also contains information on current product versions and available updates.

If you have any further questions after studying the information on our website and the manuals, please contact our support department. The support section on our website contains the relevant forms for your support request. In order to facilitate our support work and enable a fast response, please provide precise information on the individual points and describe your question or problem in detail.

If you would prefer to contact our support department by phone, please also send a support request via our website first, so that our support department has the relevant information available.

1.4 Returning hardware

To enable fast, correct processing of returns, please apply for an RMA number before returning hardware using our on-line "RMA form", which you will find in the Support section on our website.

After applying for the RMA number, you will receive a return delivery note from us, which you should enclose with the return delivery. If returns are made without an RMA number or a return delivery note, we reserve the right to return the delivery at your expense. A detailed description of the RMA procedure can be found in the Support section on our website.

2 Installation

2.1 Software installation

A PC driver is required to operate the interface. This driver is an integral part of the VCI (Virtual CAN Interface), which can be downloaded free of charge from the Internet at <http://www.ixxat.de>.

For installation of the VCI driver under Windows, please refer to the VCI installation manual.

2.2 Hardware installation

Before inserting the iPCI-I XC16/PMC in the PCI slot, you should install the software driver (see previous section).

For all work on the PC and interface, you must be statically discharged. Work must be carried out on an earthed, anti-static work mat.

Take the following steps in sequence:

- (1) Switch off the PC and remove the mains plug.
- (2) Open the PC according to the instructions of the PC manufacturer and find a suitable slot.
The interface is designed according to the PC standard and can easily be installed. Do not use force when plugging in.
- (3) Make sure that the interface sits tightly in the PC.
- (4) Close the PC; the hardware installation is now complete.

3 Connections and displays

3.1 Pin assignment

3.1.1 CAN bus connection

The iPC-I XC16/PCI has a bus connection in accordance with ISO 11898-2 switchable to ISO 11898-3 for each CAN line. The signals for CAN line 1 are connected to the Sub-D connector X1, the signals for CAN line 2 to the Sub-D connector X2 (see Fig. 3-1).

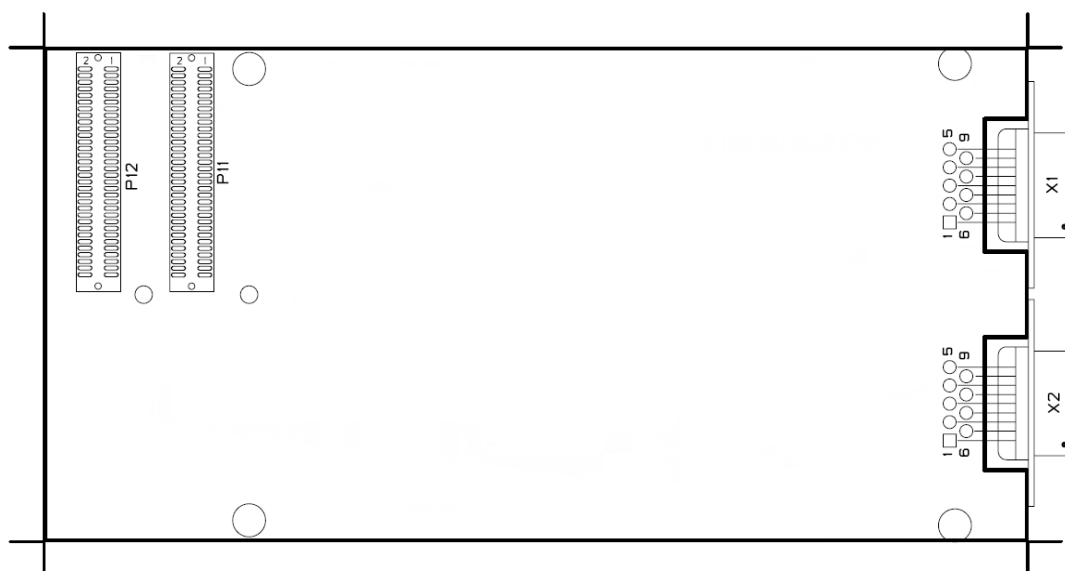


Fig. 3-1 Position of the CAN connections

The shield of the CAN socket is connected to the ground of the CAN connection via a 1 M Ω resistor and a 10 nF capacitor to the ground of the CAN connection. The shields of the CAN sockets are connected directly with each other.

Maximum interference immunity is achieved when the shield of the CAN cable is earthed.

The assignment of the Sub-D connectors is shown in Table 3-1 and Table 3-2.

3.1.1.1 Assignment for CAN line 1 (X1)

In addition to the CAN bus connection according ISO 11898-2 (high speed) and ISO 11898-3 (low speed), the iPCI-I XC16/PMC hardware also has a LIN interface. For further questions about using this interface please contact our support department.

The assignment of the Sub-D connector X1 is shown in Table 3-1:

| Pin no. X1 | Signal |
|-------------------|------------------------------|
| 1 | CAN-low (low speed) |
| 2 | CAN-low |
| 3 | GND |
| 4 | CAN-high (low speed) |
| 5 | LIN |
| 6 | GND |
| 7 | CAN-high |
| 8 | - |
| 9 | V_LIN (12 V DC, max. 200 mA) |

Table 3-1: Pin assignment of the CAN bus connection X1

3.1.1.2 Assignment for CAN line 2 (X2)

The assignment of the Sub-D connector X2 is shown in Table 3-2:

| Pin no. X2 | Signal |
|------------|----------------------|
| 1 | CAN-low (low speed) |
| 2 | CAN-low |
| 3 | GND |
| 4 | CAN-high (low speed) |
| 5 | - |
| 6 | - |
| 7 | CAN-high |
| 8 | - |
| 9 | - |

Table 3-2: Pin assignment of the CAN bus connection X2

3.1.2 PMC bus connection (32-Bit) in accordance with IEEE P1386.1

The assignment of the PMC connectors is designed in accordance with IEEE P1386.1 (PCI bus signals according to the PCI specification 2.2). The iPC-I XC16/PMC can be operated both in a 3.3 V and in a 5 V PCI signal environment. The maximum PCI bus frequency with which the interface can be operated is 33 MHz.

3.2 CAN bus termination

There is no bus termination resistor assembled on the iPC-I XC16/PMC.

A bus termination resistor is available at IXXAT as an accessory (order number 1.04.0075.03000).

4 Firmware update

To enhance the performance, the software runs on the flash memory of the microcontroller. The card is always supplied with the latest UCI firmware in the flash. The VCI can be operated with this firmware. If you require a different firmware (e.g. for the CANopen Master API, BCI etc.) or an update of the UCI firmware, you can download the necessary files and tools from the support section of our website.

Appendix

Technical specifications

| | |
|-------------------------------------|--|
| IEEE P1386.1 PMC interface: | 32 Bit/33 MHz, PMC signals according PCI Specification rev 2.2 |
| Microcontroller: | Infineon XC161CJ, 40 MHz |
| RAM / Flash: | 512 kByte / 128 kByte |
| CAN controller: | TwinCAN (integrated in the microcontroller) |
| CAN transceiver (high-speed): | Texas Instruments SN65HVD251 |
| CAN transceiver (low-speed): | Philips TJA1054 |
| Max. number of CAN bus nodes: | high-speed: 120 low-speed: 32 |
| CAN bus terminal resistor: | high-speed: none low-speed: $R_{TH}=R_{TL}=4,7\text{ k}\Omega$ |
| CAN run delay: | with galv. isolation typically 32 ns, max. 50 ns |
| CAN baud rates: | high-speed: 10 kBaud – 1 MBaud low-speed: 10 kBaud - 125 kBaud |
| Max. CAN throughput (with VCI): | 42000 messages/s |
| Power supply: | via PMC slot (5 V DC and 3.3 V DC) |
| Power consumption normal operation: | typically 100 mA (5 V DC), 185 mA (3.3 V DC) |
| Dimensions: | Standard Single Size PMC (74 mm x 149 mm) Standard PMC- Stacking Height (10 mm) |
| Weight: | approx. 87 g |
| Working temperature range: | -20 °C .. +70 °C |
| Storage temperature range: | -40 °C .. +85 °C |
| Relative humidity: | 10 - 95%, non-condensing |
| Galvanic isolation: | 1000 V DC between CAN bus and internal logic |

Accessories

CAN bus terminal resistor

To terminate the CAN bus, a Sub-D9 feed-through connector with integrated 120 Ohm bus terminal resistor is available.

Order number: 1.04.0075.03000

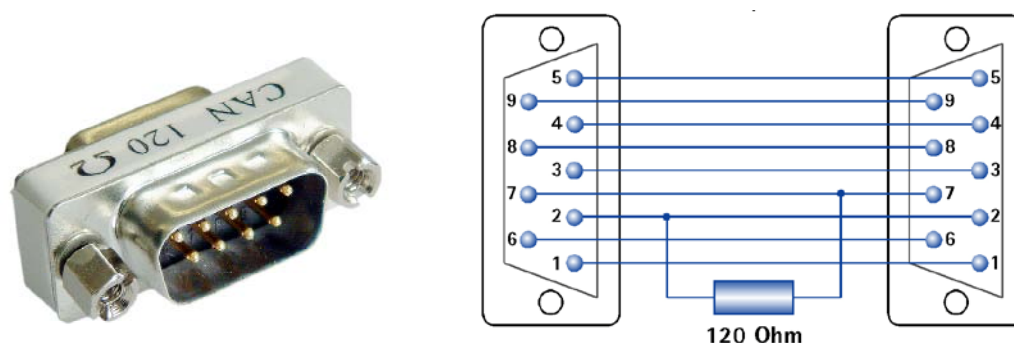


Fig. 4-1: CAN bus terminal resistor and internal wiring

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.

EC Declaration of Conformity

IXXAT Automation hereby declares that

the product: iPC-I XC16/PMC

with the article numbers: 1.01.0049.33660
1.01.0049.33110
1.01.0049.33220

do comply with the EC directives 2004/108/EC.

Applied harmonized standards in particular:

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

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



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