IXXAT®

iPC-I 320/PCI II

Intelligent PC/CAN Interface

HARDWARE MANUAL
ENGLISH

HMS *Connecting Devices*™

HMS Technology Center Ravensburg GmbH
Helmut-Vetter-Straße 2
88213 Ravensburg
Germany

Tel.: +49 751 56146-0
Fax: +49 751 56146-29
Internet: www.hms-networks.de
E-Mail: info-ravensburg@hms-networks.de

Support

For problems or support with this product or other HMS products please request support at www.ixxat.com/support.

Further international support contacts can be found on our webpage www.ixxat.com

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1 Introduction

1.1 Overview

With the IXXAT PC/CAN interface iPC-I 320/PCI II you have purchased a high-quality electronic component which has been developed and manufactured according to the latest technological standards.

The aim of this manual is to help you familiarize yourself with your interface, also referred to in the following as iPC-I 320/PCI II. Please read this manual before beginning with the installation.

1.2 Features

The most important technical features are as follows:

- 5 V PCI connection in accordance with PCI specification 2.1, 32 bit, 33 MHz

- 32 bit memory mapped access (needs 8 kBytes memory and 128 Byte I/O address space)

- Micro controller DALLAS 80C320 clocked with 22,1184 MHz (code compatible with INTEL 8032)

- 4 kBytes Dual-Port-RAM, 8 semaphore registers

- 2 x 63.75 kBytes flash memory

- Up to 63.25 kBytes code can be downloaded

- Up to 2 x 56 kBytes XDATA-RAM addressable

- One or two CAN circuits with Philips SJA1000 CAN controller clocked with 16 MHz

- CAN bus interface according to ISO/IS 11898-2 on board (high speed); optional galvanic decoupled

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.
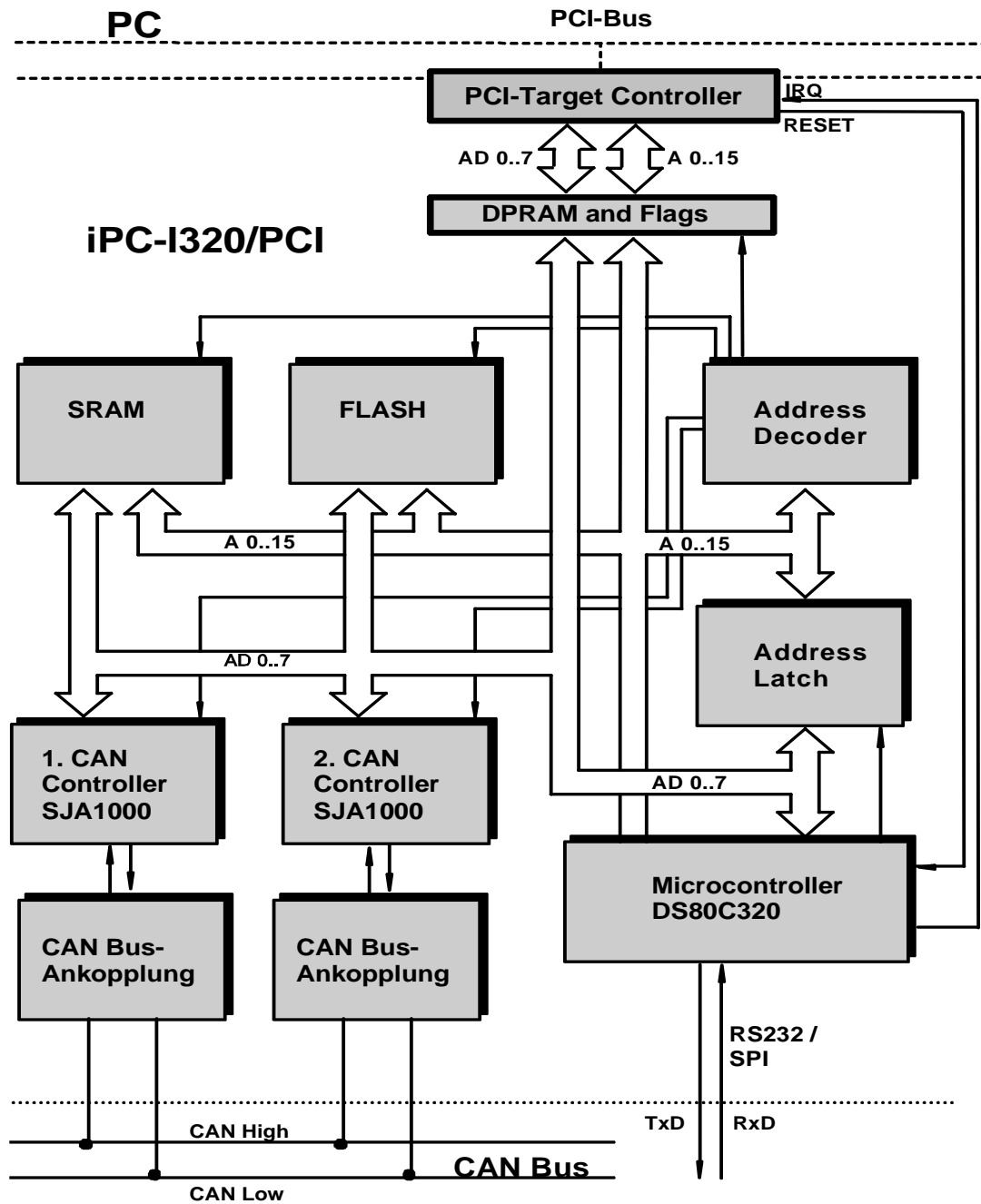
1.5 Block diagram

Fig. 1-1: Block diagram iPC-I 320/PCI II

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 iPC-I 320/PCI II 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 the PC off 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 the computer. Do not use force when plugging in.

(3) Make sure the interface sits tightly in the PC.

(4) If your interface is assembled with 2 isolated CAN-circuits, you must fix the additional slot plate and plug in the header on the interface (see section 3.1.1).

(5) Close the PC; the hardware installation is now complete.

3 Configuration

3.1 Settings on the interface

The diagram Fig. 3-1 shows the positions of the plugs and the dip-switches on the interface.
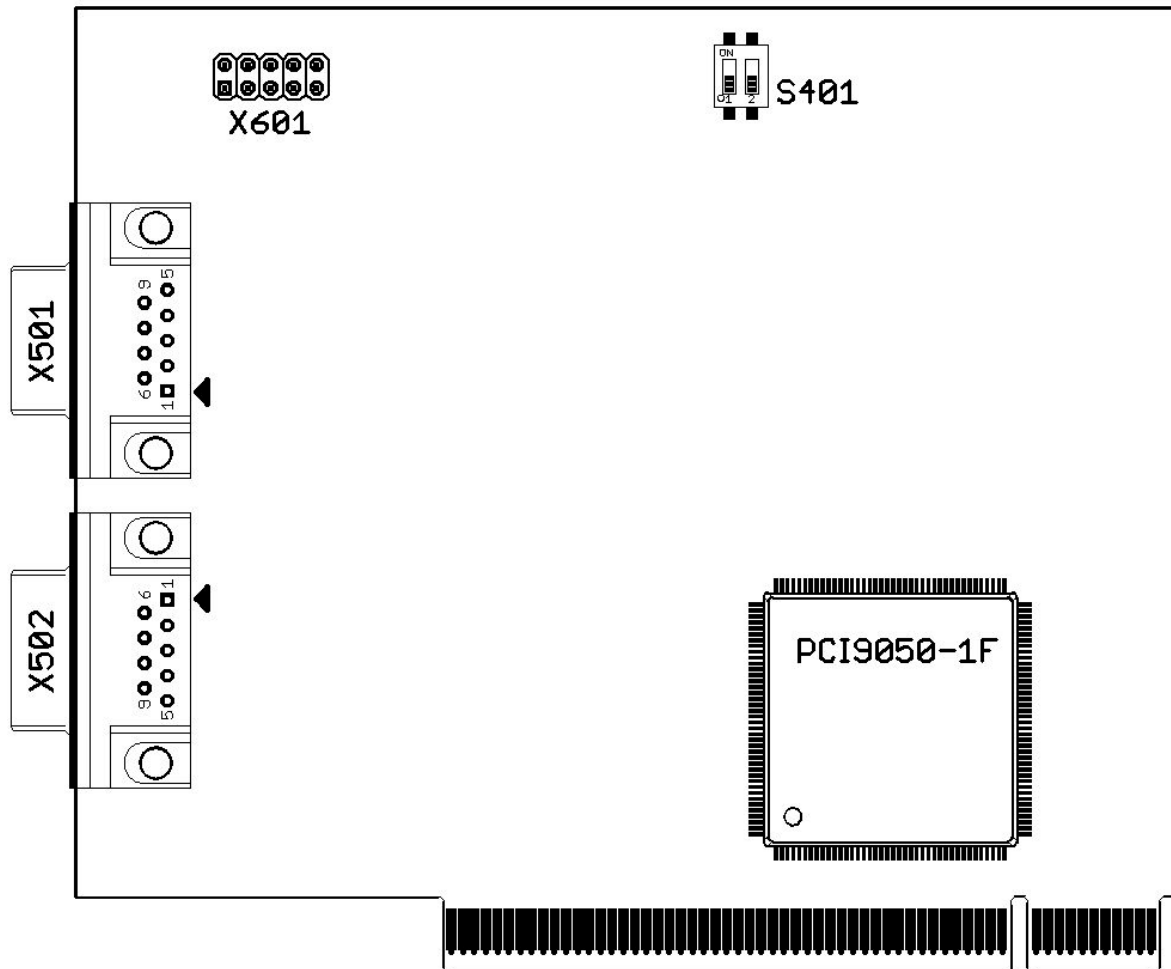
Fig. 3-1: iPC-I 320/PCI II interface

3.1.1 CAN bus connection

One (common) or two high-speed bus transceivers according to ISO/IS 11898-2 may be present on the iPC-I 320/PCI II interface. The signals of the first bus transceiver connect with the 9-pin sub-D pin/bush X501/X502. If two isolated bus transceivers are assembled, the signals for the CAN bus of the second bus transceiver connect with the header X601. As an option, the bus connection can be galvanically isolated from the CAN bus.

The shield of the CAN socket is connected via a 1 MΩ resistor and a 10 nF capacitor to the ground of the CAN connection. In the case of a non-galvanically isolated device version, CAN ground and PC ground have to the same potential.

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.

Pin no. X501/X502	Signal
1	Not connected
2	CAN-Low_1
3	GND/GND_1
4	Not connected
5	Not connected
6	Not connected
7	CAN-High_1
8	Not connected
9	Not connected

Table 3-1: Pin assignment of X501 und X502

The pin assignment of the 10 pin plug X601 for the connection of the second CAN line is showed in the following table:

Pin no. X601	Signal
1	Not connected
2	Not connected
3	CAN-Low_1
4	CAN-High_1
5	GND/GND_2
6	Not connected
7	Not connected
8	Not connected
9	Not connected
10	Not connected

Table 3-2: Pin assignment of X601

3.1.2 PCI bus connection

The assignment of the PCI connector is designed in accordance with the PCI specification 2.2. The iPC-I 320/PCI II can be operated in a 5 V PCI signal environment. The maximum PCI bus frequency with which the interface can be operated is 33 MHz.

3.1.3 Switching between loader and application mode (S401, SW1)

By using dip switch S401 (SW1), it can be achieved that the board executes a user defined application after reset, which has to be in flash bank 0. As default, the IXXAT boot loader, which is in flash bank 1, is executed.

Mode	S401, (SW1)
Loader mode (default)	OFF
Application mode	ON

3.1.4 EPLD update (S401, SW2)

Using dip switch S401 (SW2), allows to perform an EPLD update while the board is installed in the PC.

Mode	S401, (SW2)
Programming disabled (default)	OFF
Programming enabled	ON

3.2 CAN bus terminal

There is no bus termination resistor for the CAN bus assembled on the iPC-I 320/PCI II board. A bus terminal resistor in the form of a feed-through connector is available as an accessory from IXXAT (order number 1.04.0075.03000).

4 Appendix

4.1 Technical Data

The following data refer to the iPC-I320/PCI II interface version with two Philips SJA1000 CAN controllers and two galvanically isolated bus transceivers according to ISO/IS 11898-2.

PCI interface:	32 Bit / 33 MHz, PCI Specification 2.1
Microcontroller:	Dallas DS80C320-ECG, 22,1184 MHz
RAM/Flash:	128 kByte / 128 kByte
CAN controller:	Philips SJA1000T, 16 MHz
CAN transceiver (high-speed):	Texas Instruments SN65HVD251 or Philips PCA 82C251
Max. number of CAN bus nodes:	120
CAN bus terminal resistor:	none
CAN run trip delay:	with galv. isolation typically 50 ns, max. 75 ns
CAN baud rates:	5 kBaud - 1 MBaud

Max. CAN throughput per channel:

9500 messages/s (Reception with VCI V3)

2000 messages/s (Transmission with VCI V3)

Galvanic isolation:	500 V AC for one minute between CAN bus and internal logic
Power supply:	5 V DC $\pm$ 5 % via PCI slot
Power consumption:	typically 320 mA
	max. 380 mA
Dimensions:	124 mm x 97.5 mm (without CAN Sub-D9 connectors)
Weight:	without additional slot plate for second CAN approx. 91 g
	with additional slot plate for second CAN approx. 128 g
Working temperature range:	0 to 70 °C
Storage temperature range:	-40 °C to +85 °C
Relative humidity:	10 - 95 %, non-condensing

4.2 Accessories

4.2.1   CAN bus terminal resistor

To terminate the CAN bus, a Sub-D9 feed-through connector with integrated 120 Ohm bus terminal resistor is available.
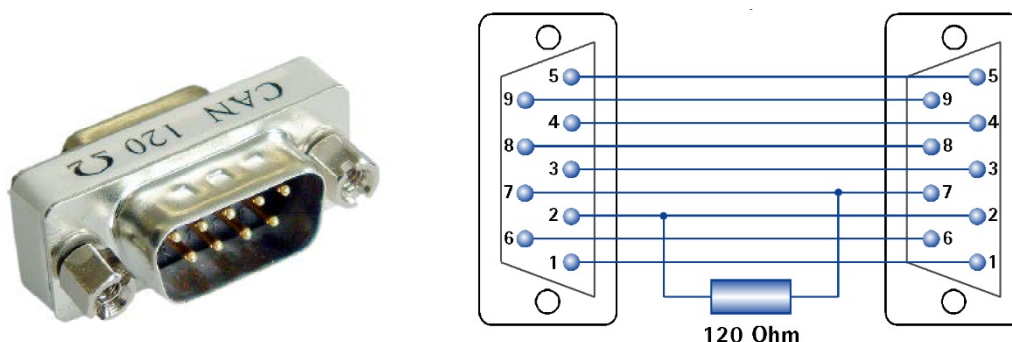
Order number: 1.04.0075.03000

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

4.3 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.

4.4 EC Declaration of Conformity

IXXAT Automation hereby declares
that the product: iPC-I 320/PCI II

with the article numbers: 1.01.0039.10100
                                                            1.01.0039.10200
                                                            1.01.0039.11110
                                                            1.01.0039.11220
                                                            1.01.0039.90001
                                                            1.01.0039.90002
                                                            1.01.0039.90003
                                                            1.01.0039.90004
                                                            1.01.0039.90006

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

Applied harmonized standards in particular:

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

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Dipl.-Ing. Christian Schlegel
Managing Director of IXXAT Automation GmbH