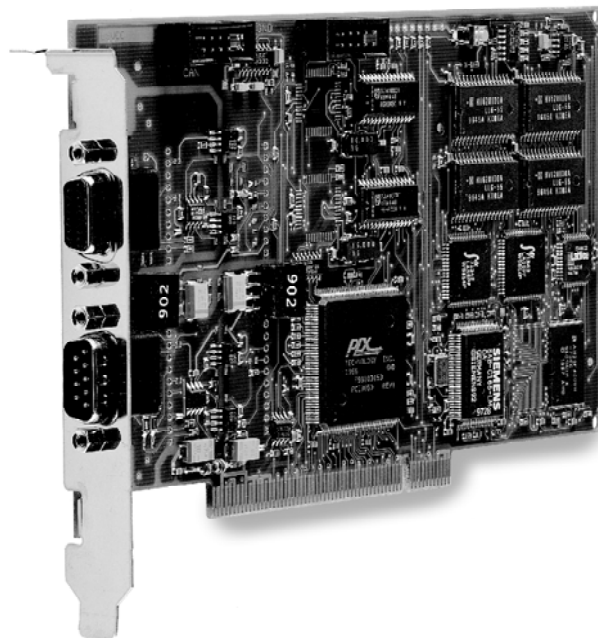


iPC-I 165/PCI

Intelligent PC/CAN Interface



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1 Introduction

1.1 Overview

With the IXXAT PC/CAN interface iPC-I 165/PCI 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 165/PCI. Please read this manual before beginning with the installation.

1.2 Features

- Design as PCI board
- 32 bit memory mapped access (needs 16 kBytes memory address space)
- Base address and PC interrupts via PCI Plug'n Play bios
- Microcontroller SAB C165 clocked with 20 MHz
- One or two CAN circuits with Philips SJA1000 and/or INTEL 82527 CAN controller, clocked with 16 MHz
- 8 kBytes Dual-Port-RAM, 16 semaphore registers
- 512 kByte RAM (optional up to 2 MByte)
- 512 kByte Flash (optional up to 1 MByte)
- CAN bus connection separate for each CAN controller or combined
- CAN bus interface according to ISO/IS 11898-2 (optional galvanic decoupled)
- DeviceNet bus interface optional
- Customer specific bus interfaces by using a piggyback board
- Optional CAN protection circuit
- CAN connection by 9-pin Sub-D connector (male and female)

1.3 Block diagram

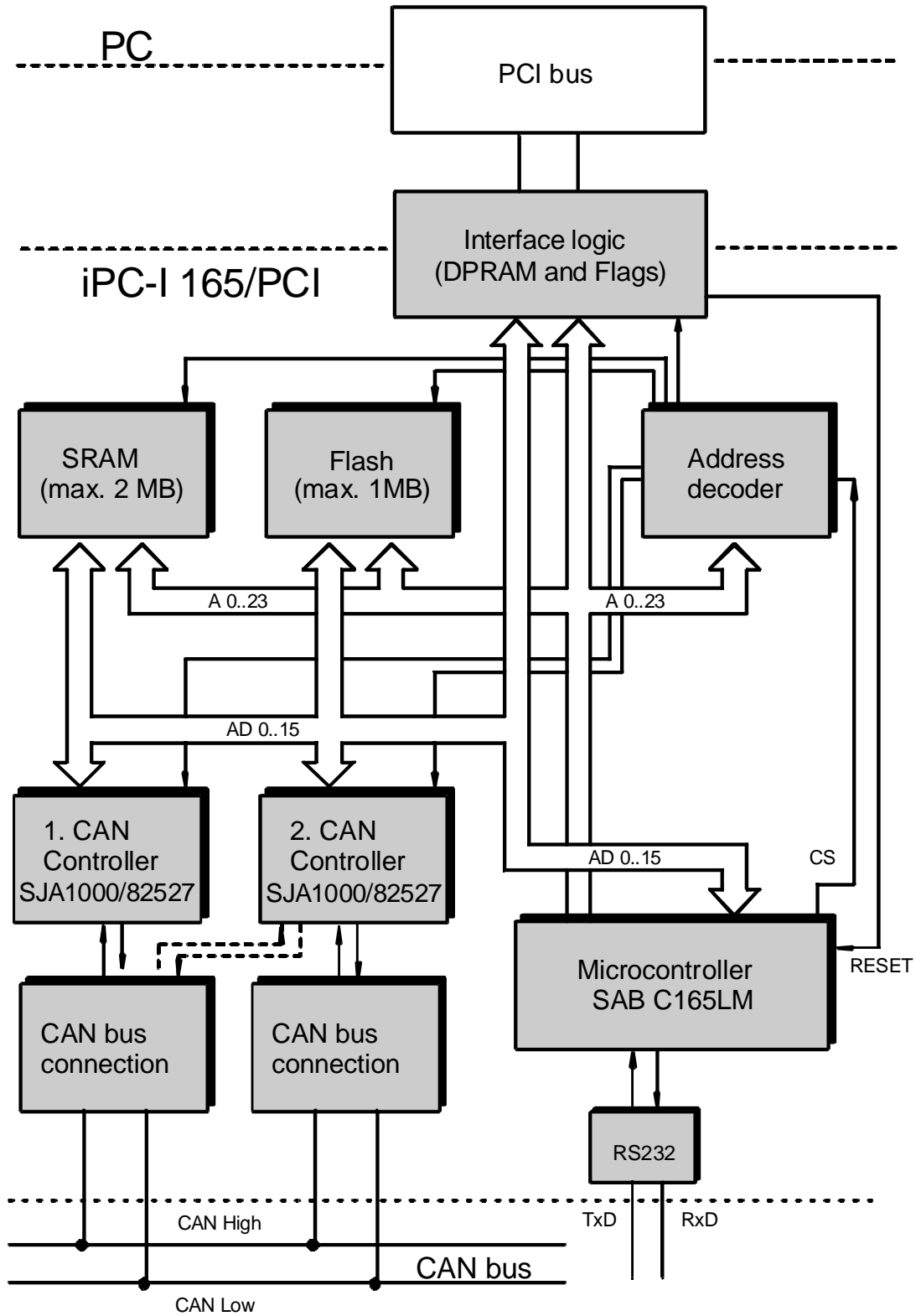


Fig. 1-1: iPC-I 165/PCI block diagram

2 Installation

2.1 Hardware installation

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

Carry out the following work 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 determine a suitable plug-in space.
The interface is designed according to the PC-standard and can be easily built into the computer. Do not use force when plugging in.
- (3)** Ensure that the interface is held safely in place 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 3.2).
- (5)** Close the PC; the hardware installation is now completed.

2.2 Software installation

To operate the interface, a driver is required.

For the installation of the CAN driver VCI under Win9x/Me/NT/2000/XP, please read the VCI installation manual.

3 Configuration

3.1 Plugs and jumpers

The Figure 3-1 shows the positions of the plugs and jumpers on the interface.

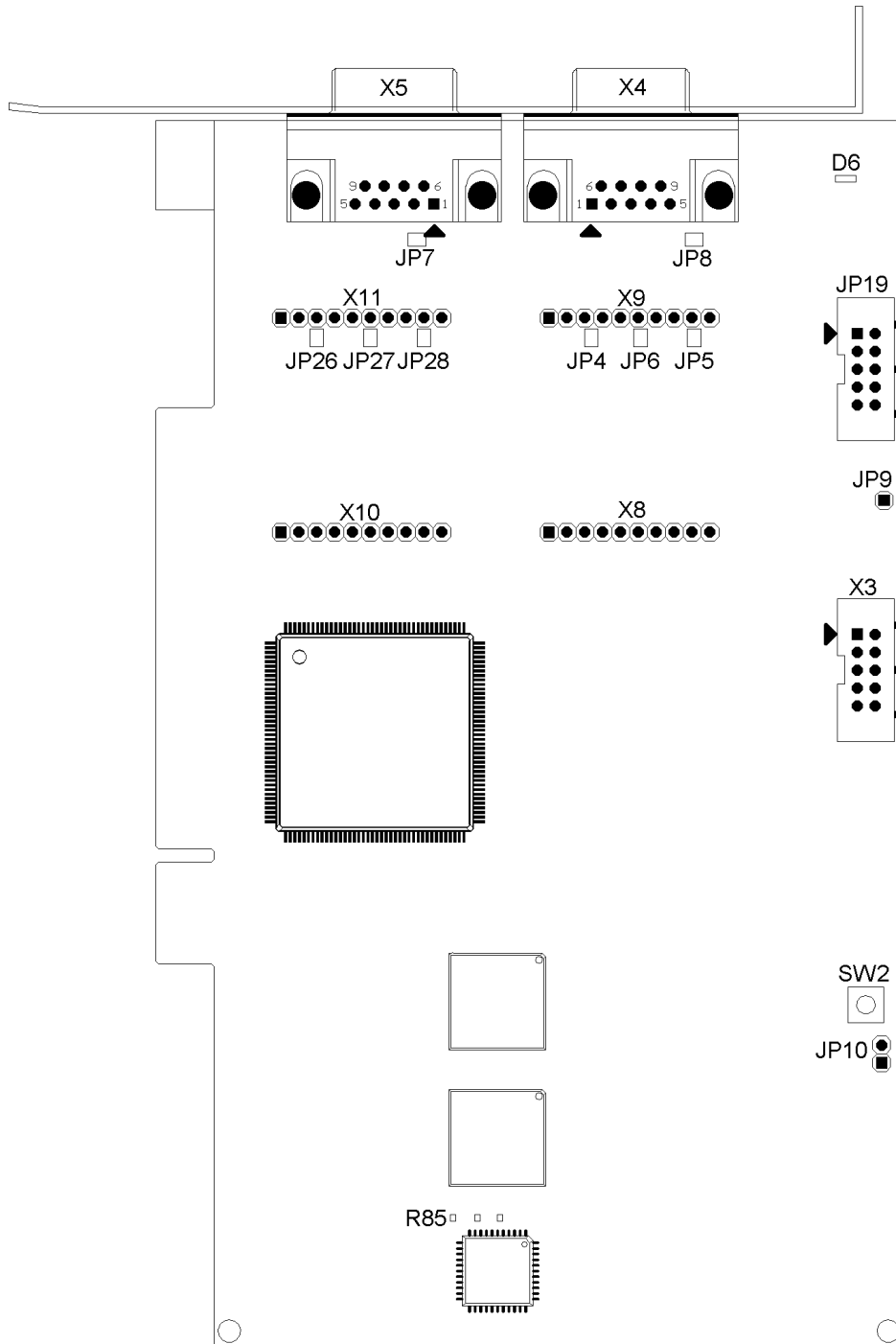


Fig. 3-1: iPC-I 165/PCI interface

3.1.1 Bootstrap loader

With JP10 closed the integrated bootstrap loader of the SAB C165 is activated after a hardware reset. The bootstrap loader is not necessary by using the iPC-I 165/PCI with IXXAT software. The bootstrap loader is described in detail in the data book of the Infineon SAB C165.

Bootstrap loader	JP10
not active (def.)	open
active	closed

Tab. 3-1: Bootstrap loader

3.1.2 Providing current supply via CAN plug

With the solder jumpers JP4, JP5, JP6, JP26, JP27 and JP28, the VCC (5V) or GND signals can be connected to the CAN plug of the two CAN circuits. For this, the jumpers given in the following table have to be closed.

Pin board X9/X11 Pin - Signal	Default setting	CAN circuit 1	CAN circuit 2
3 - GND	closed	JP4	JP26
6 - GND	open	JP6	JP27
9 - VCC	open	JP5	JP28

Tab. 3-2: Providing current supply via CAN plug

If the bus transceiver is electrically isolated, GND and VCC are also connected electrically isolated from the interface to the plugs via the solder jumpers. The voltage may be loaded with max. 100 mA.

3.1.3 Termination resistors

On the iPC-I 165/PCI termination resistors for the CAN bus are implemented. By closing the solder jumper JP8 (1st CAN) resp. JP7 (2nd CAN) these resistors are connected to the CAN high and CAN low line. The value of the resistors is 120 Ohm.

3.1.4 Reset button and LED

With the order option "developer version" the iPC-I 165/PCI is delivered, besides one serial interface, with a reset button SW2 and a LED D6.

3.2 Pin assignment

3.2.1 CAN bus connection

One (common) or two independent bus connectors according to ISO/IS 11898-2 can be installed on iPC-I 165/PCI.

The signals of the 1st bus interface are provided by the 9 pole sub-D plug/sleeve. If two independent bus interfaces are installed the signals for the CAN bus of the 2nd bus interface are provided by the connector JP19. Both of the CAN interfaces can be optionally galvanic decoupled from the CAN bus.


As another option a version without any bus interface on the board is available. In this case the signals are provided by separate connectors (X8/X9 for the 1st CAN, X10/X11 for the 2nd CAN circuit).

The 1st CAN circuit is connected to the 9 pole pin/sleeve X4/X5 via the plug connectors X8 and X9. If both CAN lines are installed and connected together then they will be connected via these plug connectors, too.

The 2nd CAN circuit is connected to the connector JP19 via the plug connectors X10 and X11. If the bus interface according to ISO/IS 11898-2 is already installed on-board the plug connectors X8/X9 and X10/X11 are not present.

The signals of the CAN controllers 1 and 2 and four portpins of the microcontroller are available at X8 / X10.

Pin No. X8/X10	Signal
1	VCC
2	GND
3	Port 3.10*
4	RX0
5	RX1
6	TX1
7	TX0
8	Port 5.2
9	Port 3.11*
10	Port 5.3



Tab. 3-3: Pin assignment X8/X10

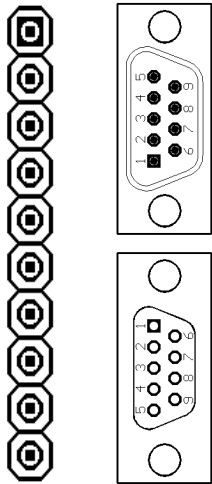
* If a serial interface is assembled, the port pins 3.10 and 3.11 must not be used by a piggyback board!

CAN protection circuit

As an option for iPC-I 165/PCI a CAN protection circuit is available containing a special CAN choke, a fast rectifier and a suppressor diode. The circuit keeps disturbances and short spikes on CAN lines away from the electronics of the iPC-I 165/PCI.

X9 leads the signals of the 1st bus interface to the 9 pole pin X5 and to the 9 pole sleeve X4.

Pin No. X9	Pin No. X4 / X5	Signal
1	1	-
2	2	CAN Low
3	3	GND (via JP4)
4	4	-
5	5	-
6	6	GND (via JP6)
7	7	CAN High
8	8	-
9	9	VCC (via JP5)
10		-



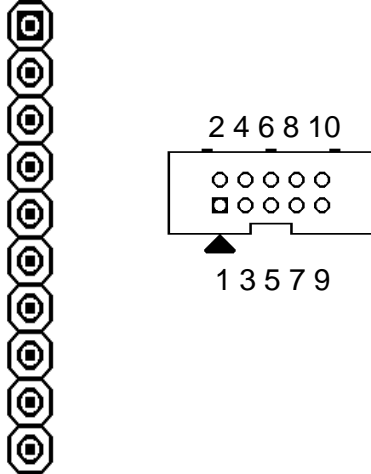
Tab. 3-4: Pin assignment X9, X4/X5

With electrically isolated bus transceivers the signals GND and VCC are also electrically isolated from the GND and VCC signals of the interface.

Configuration

X11 leads the signals of the 2nd bus interface to the 10 pole connector JP19.

Pin No. X11	Pin No. JP19	Signal
1	1	-
2	3	CAN Low
3	5	GND (via JP26)
4	7	-
5	9	-
6	2	GND (via JP27)
7	4	CAN High
8	6	-
9	8	VCC (via JP28)
10	10	-



Tab. 3-5: Pin assignment X11, JP19

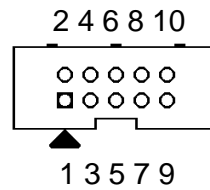
With electrically isolated bus transceivers the signals GND and VCC are also electrically isolated from the GND and VCC signals of the interface.

If the CAN protection circuit is installed on the board the signals CAN low and CAN high of X9 (X11) are connected to X4/X5 (JP19) via the protection circuit.

3.2.2 Serial RS232C interface

The serial interface can be optional assembled according to the RS232C standard. The signals TxD, RxD and GND are connected to X3. The interface is operated by the internal SAB C165 serial interface via the port pins 3.10 and 3.11.

Pin No. X3	Signal
1	-
2	-
3	RxD
4	TxD
5	-
6	-
7	-
8	-
9	GND
10	-



Tab. 3-6: Pin assignment X3

Appendix

Technical data

The following data are referred to the basic equipment of the iPC-I 165/PCI (one Philips SJA1000 CAN controller, one bus interface according to ISO/IS 11898-2, 512 kBytes SRAM, 512kb FLASH).

Dimensions:	105 x 180 (without connectors)
	16 mm overall height
Weight:	approximately 160 g
Operating temperature range:	0 - 50°C
Supply voltage:	5V DC \pm 5%
Input current:	typical 250 mA
	max. 800 mA
EMC test according to:	DIN EN 55022:05.1995 Class B
	DIN EN 55022 A1/12.1995
	DIN EN 61000-3-2:03.1996
	DIN EN 61000-3-3:03.1996
	DIN EN 50082-2:02.96

EMC information

The PC/CAN interface iPC-I 165/PCI has to be used only in a CE compliant PC. The case of the PC should be sealed up against high frequency electrical noise. Use only shielded cables for connecting the PC/CAN interface to the CAN bus and connect the cable shield to the connector case. The connector case has to be sealed up against high frequency electrical noise. All unused connectors of the PC/CAN interface card have to be closed with a cover which is sealed up against high frequency electrical noise and ESD.

Information for programming own firmware

This manual describes how to install and use the interface in combination with IXXAT software. If you intend to develop your own customer specific firmware, you can get the necessary information about the hardware architecture by writing to support@ixxat.de

Supply sources for data sheets

Dual-port-RAM IDT 71342LA:

<http://www.idt.com>

CAN controller Philips SJA1000:

<http://www.philips-semiconductors.com>

CAN controller Intel 82527:

<http://www.intel.com>

Microcontroller Infineon SAB C165:

<http://www.infineon.com>