

TECHNOLOGIEN MIT  
VORSPRUNG



isCAN USB  
isCAN PCI

User Manual



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# CHAPTER 1 :

## HARDWARE INSTALLATION

### General Information

#### Documentation

This documentation contains important information for the secure and correct operation of the interfaces isCAN USB and isCAN PCI. Please read this documentation carefully before using one of the devices.

Throughout the manual different fonts are used to indicate different meanings. A short explanation can be found below:

`Courier New`: file names, code sequences  
`Arial`: names, commands, remarks

#### Our Service

In case you have any questions which can't be solved by this manual, please contact our service by phone, fax or e-mail.

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## Interface isCAN USB

The advantages of the Universal Serial Bus (USB) combined with the operational range of CAN: these practically orientated features turn the device isCAN USB in a state of the art fieldbus component. Desktop PCs as well as notebook devices without CAN interfaces can be made CAN nodes within seconds based on the plug & play features of USB. The device is bus powered, thus not depending on external power connections.

Up to 16 isCAN USB interfaces can be connected to one notebook or PC (depending on the hub topology). Therefore a multi-line CAN network can be set-up easily. The mobile set-up and the monitoring are improved noticeably.

*Figure 1: The CAN interface isCAN USB for mobile access*



It supports the CAN specifications 2.0A (11 bit identifier) and 2.0B (29 bit identifier). The device provides one male D-SUB 9 pin connector in accordance with CiA standards. It supports transmission rates up to 1MBit/s. The device comes with a Windows-DLL which allows the easy integration of the dongle into any application.

## PC Connection

### System Requirements

To connect the isCAN USB interface with your computer an available USB port is required. Operating systems Windows 2000, XP and Vista are supported.

On request drivers for the PocketPC 2002 operating system are available. Please note that the PocketPC hardware must support the host capabilities of USB (eg. Cassiopeia E-200G).

### Delivery Contents

The interface isCAN USB is delivered with an user manual (English/German) and the driver and configuration software on CD.

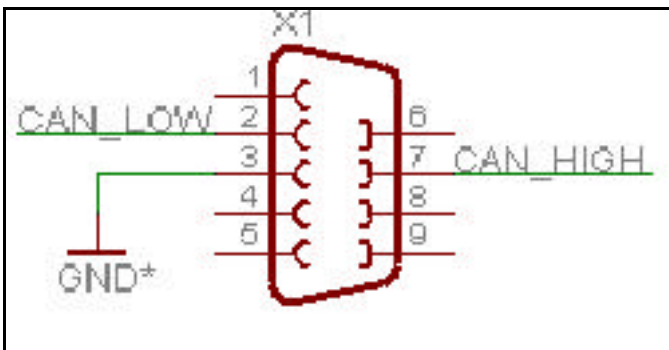
### Pin Assignment

The D-SUB 9 pin connector shows following assignment.  
Pin 2: CAN Low, Pin 7: CAN High, Pin 3: Ground.

The additional (optional) pins

Pin 5: Shield, Pin 6: Ground, Pin 9: CAN external Supply are **not** supported by the interface.

Figure 2: Pin assignment of isCAN USB



## Technical Data

*Table 1: Hardware capabilities of isCAN USB*

<b>Hardware</b>	
<b>CAN</b>	
Asic	SJA1000
Connector	1 D-Sub 9 pin connector (male) acc. CiA standard DS-102
Transmission speed	10 kbit/s to 1.0 Mbit/s
<b>USB 2.0</b>	
Connector	1 device connector
Transmission speed	Full Speed: 12 Mbit/s High Speed: 480 Mbit/s
Operation	up to 16 devices in parallel

*Table 2: Software capabilities*

<b>Driver</b>	
Interfaces	DLL, OPC (optional)
Operating systems	Windows 2000, XP; Vista Windows CE 3.0/PocketPC2002

## Installation

### Steps of Installation

1. Driver installation  
The driver software has to be installed **before** the hardware installation. Otherwise the operating system can't find the respective driver.
2. Interface installation
3. Configuration

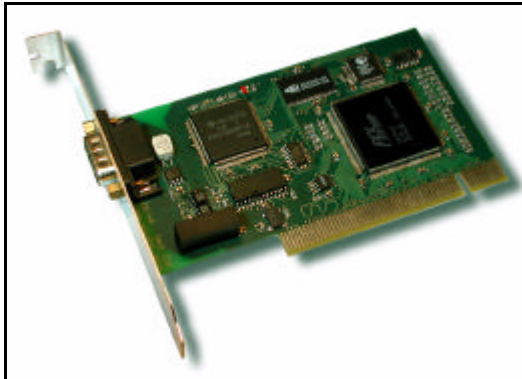
The Interface can be connected to the CAN/CANopen network with its D-Sub 9 pin connector directly. With the integrated USB cable the interface can be connected with the PC/notebook.

Two LEDs indicate the actual operation mode. The green LED indicates the presence of the operating voltage and flashes during the start-up/reset process. The red LED indicates the occurrence of an error during start-up/reset by flashing three times.

## Interface isCAN PCI

The isCAN PCI interface was designed as an active component, meaning that it contains its own microprocessor. This microprocessor handles all the time-critical tasks on the CAN bus. Regardless of the performance of the host PC a maximum of security against the loss of data due to PC overload is guaranteed. The data exchange between host PC and interface takes place via a 2kByte DP-RAM.

*Figure 3: The CAN interface isCAN PCI for stationary access*



The isCAN PCI interface employs the same application interface as the isCAN USB dongle. Applications developed for the USB interface can be used with the isCAN PCI at once without any modifications.

The isCAN PCI interface supports the CAN specification 2.0A (11 bit ID) and 2.0B (29 bit ID). It is connected with a 9 pin D-Sub connector according to the CiA specification DS-102. The interface can be upgraded to run as CANopen device by downloading the respective firmware. This firmware is available as an optional extra from ifak system.

The board is equipped with a configuration program which allows a comfortable addition to an existing configuration. Available servers are CAN OPC server and CANopen OPC server.

## PC Installation

### System Requirements

- A PCI slot must be available on your motherboard.
- The operating systems Windows 2000, XP and Vista are supported.
- At least 2 kByte of memory must be left for the PCI board.

### Delivery Contents

The board isCAN PCI is delivered with a user manual (English/German) and the driver and configuration software on CD.

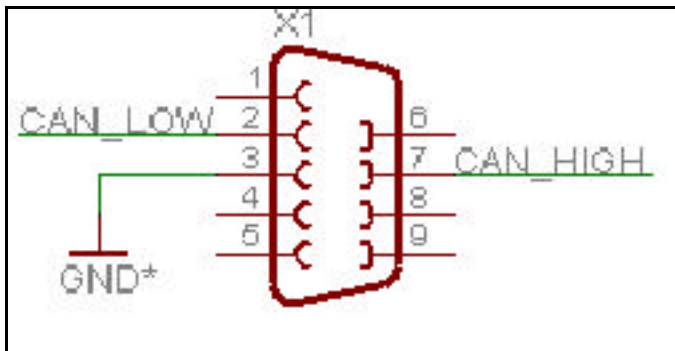
### Pin Assignment

The D-SUB 9 pin connector shows following assignment.  
Pin 2: CAN Low, Pin 7: CAN High, Pin 3: Ground.

The additional (optional) pins

Pin 5: Shield, Pin 6: Ground, Pin 9: CAN external Supply are **not** supported by the interface.

Figure 4: Pin assignment of isCAN PCI



## Technical Data

*Table 3: Hardware capabilities*

<b>Hardware</b>	
Processor	H8/3003, Asic SJA 1000
RAM/DP-RAM	128 kByte/2 kByte
Galvanic decoupling	yes
Connector	1 D-Sub 9 pin connector (male) acc. CiA standard DS-102
Transmission speed	10 kbit/s to 1.0 Mbit/s
Dimensions	120 mm x 68 mm
Operating voltage	5 Volt
Operating current	max. 200 mA
Supported bus clock	33 MHz

*Table 4: Software capabilities*

<b>Driver</b>	
Interfaces	DLL, OPC (optional)
Operating systems	Windows 2000, XP, Vista

## Installation

### Steps of Installation

1. Driver installation  
The driver software has to be installed **before** the hardware installation. Otherwise the operating system can't find the respective driver.
2. Reboot the PC
3. Interface installation
4. Configuration

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ATTN: The interface should only be inserted into the computer after the power supply of the PC was switched off.

- Switch your computer off, but don't disconnect it from the power line.
- **To reduce the risk of damage to the sensitive electrical components on the board, you must make contact to the chassis of your computer before touching the interface.**
- Disconnect your computer from the power line.
- Then open your computer housing.
- Choose an available PCI slot.
- Remove the corresponding blind bracket.
- Insert the board into the slot and screw the mounting bracket to the housing.
- Reboot the PC.



## CHAPTER 2 :

SOFTWARE INSTALLATION AND  
CONFIGURATION

## Software Installation

The driver software has to be installed **before** the hardware installation. Otherwise the operating system can't find the respective driver.

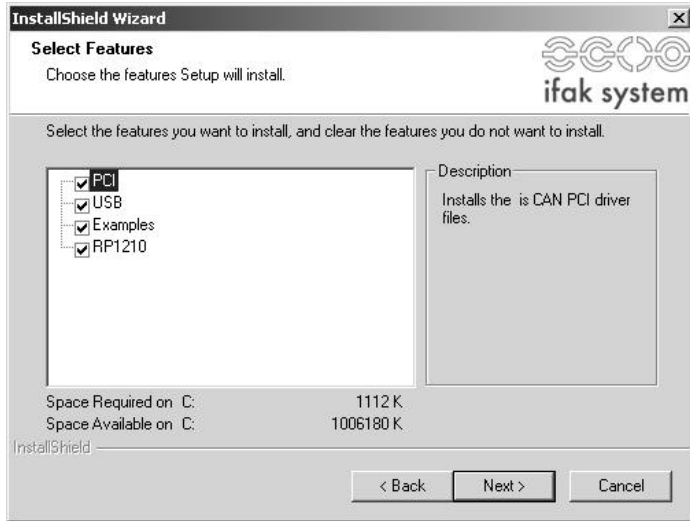
The driver software package isCAN Multidriver contains a Dynamic Link Library (DLL) which allows the access to the firmware under the operating systems Windows 2000, XP and Vista. The actual operating system is detected automatically by the driver DLL.

The configuration of the interface can be done fast and easily with the configuration software isCAN Driver Configurator which is installed into the ifak system directory of the Start Menu.

The installation follows the steps mentioned below:

- Login as administrator under the operating systems Windows 2000, XP and Vista.
- Insert the installation CD-ROM into your CD drive.
- The setup starts with an autoroutine; proceed according to the instructions displayed on the screen.
- The software is installed in the default program directory of your computer under the subdirectory  
*ifak system\isCAN Multidriver \*

Figure 5: Installation program: driver selection



## Installed Files

Depending on the operating system the following files are installed on your computer.

*Table 5: Installed files*

<b>DLL:</b>	
isCANdrv.dll	Dynamic Link Library providing access to the firmware (driver DLL)
isCANdrv.lib	corresponding library for C/C++ environments
<b>INC:</b>	
isCANdrv.h isCANext.h	definition of software interface and error codes
<b>USB Driver:</b>	
W2000\isCANusb.sys	provides access to the USB device driver under Win 2000, XP and Vista
W2000\isCANusb2000.inf	installation information for Win 2000, XP and Vista
W9x\isCANusb.sys	provides access to the USB device driver under Win 98
W9x\isCANusb.inf	installation information for Win 98
<b>PCI Driver:</b>	
W2000\isCANpci.sys	provides access to the USB device driver under Win 2000, XP and Vista
W2000\isCANpciW2k.inf	installation information for Win 2000, XP and Vista
W9x\isCANpci.sys	provides access to the USB device driver under Win 98
W9x\isCANpci.inf	installation information for Win 98

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<b>Configuration Software:</b>	
bin\CANDriverConfig.exe	Setup Program
<b>Test Software:</b>	
bin\isCANTest.exe	Test Program
<b>Examples:</b>	
VC-Examples	Programming example in Visual C++

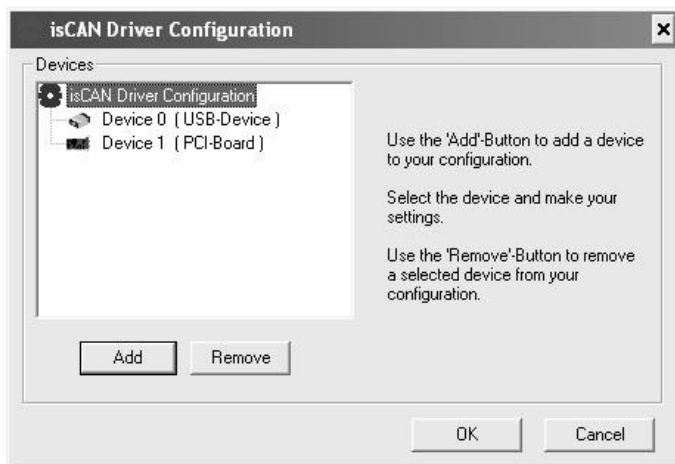
## Configuration Software

The configuration software isCAN Driver Configurator is provided in order to adapt the DLL access to your hardware. It is installed in the MS Windows Start Menu.

This dialog based application allows the easy addition and removal of DeviceNet interfaces. It also applies serial numbers of connected interfaces.

A device number is assigned to each interface which enables the software to address the device. Empty devices can be included in order to allow gaps in the enumeration of devices.

*Figure 6: Configuration program: add and remove devices*



## Add a Device

Please press the button **Add**, choose the device type you would like to add. Then make your settings.

*Figure 7: Configuration software: add a device*



The USB-interface isCAN USB possesses an unique **serial number** for clear identification. The number is located on the down-side of the case and additionally stored in the interface.

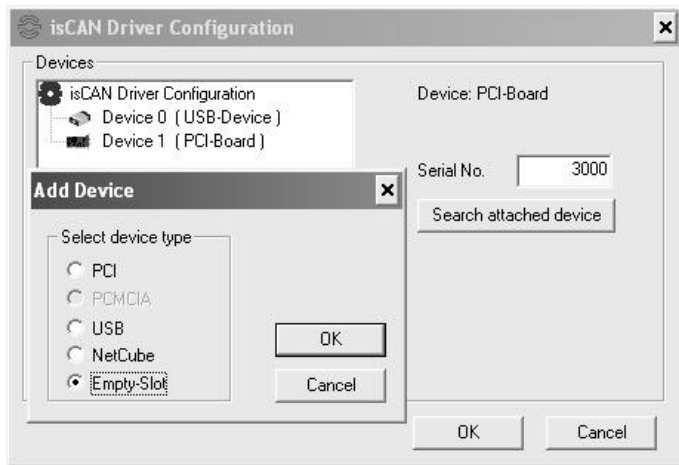
The configuration software offers the possibility to search automatically for all attached devices and to detect their serial numbers.

When you are working under Windows 2000, XP or Vista just fill in your settings and end with **OK**.

## Empty Slot

The empty device does not contain any resources. It serves as a substitute for device numbers not yet assigned. Using this devices enables a free enumeration of devices by inserting empty devices between existing ones.

Figure 8: Configuration software: add an empty slot



## Remove a Device

Mark the device you wish to remove and press the button Remove.



## Test Software

The correct operation of isCAN interfaces which have been added with the isCAN Driver Configurator can be checked with the help of the test program isCAN Test. It is installed in the ifak system folder of the Start Menu.

The following functions are provided by the application:

- Choice of configured interfaces (isCAN USB, isCAN PCI)
- Baudrate settings
- Transmission of messages
- Display of received messages

Figure 9: Baudrate setting

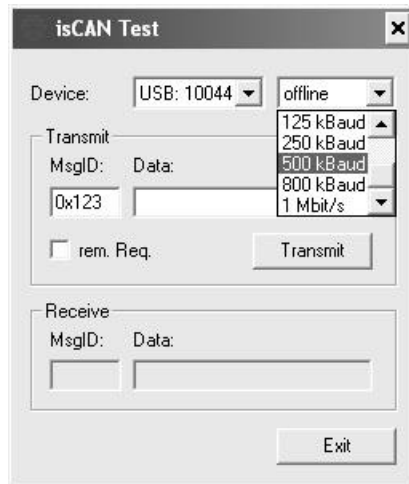
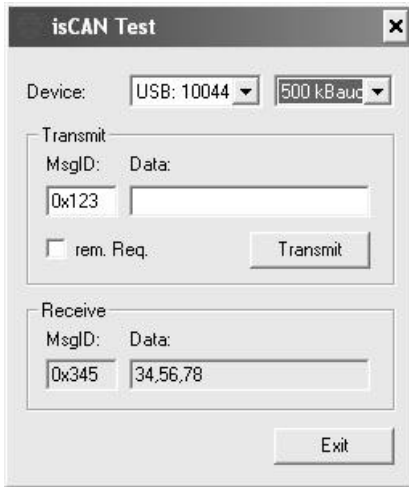


Figure 10: Display of a received message



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