Softing Industrial Automation GmbH
Richard-Reitzner-Allee 6
D-85540 Haar
Tel.:   (++49) 89/4 56 56-0
Fax.:   (++49) 89/4 56 56-399
http://www.softing.com

CANpro PC/104plus
(dual channel)

Hardware User Manual

Part number: CAN-PRO2-PC104+
             and
             CAN-PRO2-PC104+XT (extended temperature)

 Copyright Softing Industrial Automation GmbH, Munich Germany

Information in this document is subject to change without notice.

V1.00.03

1 Installation

To properly install the CAN-PRO2-PC104+ in your PC, please follow the instructions detailed in the next sections.

1.1 System requirements

To run the CAN-PRO2-PC104+ on a PC, the PC must meet the following requirements:

- PC/104plus socket with active PCI signaling
- Windows7, Windows XP or Windows 2000 installed

1.2 Software installation

The CAN-PRO2-PC104+ software is part of the "CAN Drivers and API" CD which is also available from the download section at www.softing.com.

- Insert the CD in your PC's CD/DVD drive.
- Run the *CANDriversAndSoftware32.exe* for 32 bit operating systems or *CANDriversAndSoftware64.exe* for 64 bit operating systems.
- Please follow the instructions given by the setup software.

NOTE:
Make sure to install the software b e f o r e you install
your CAN-PRO2-PC104+ hardware for the first time.

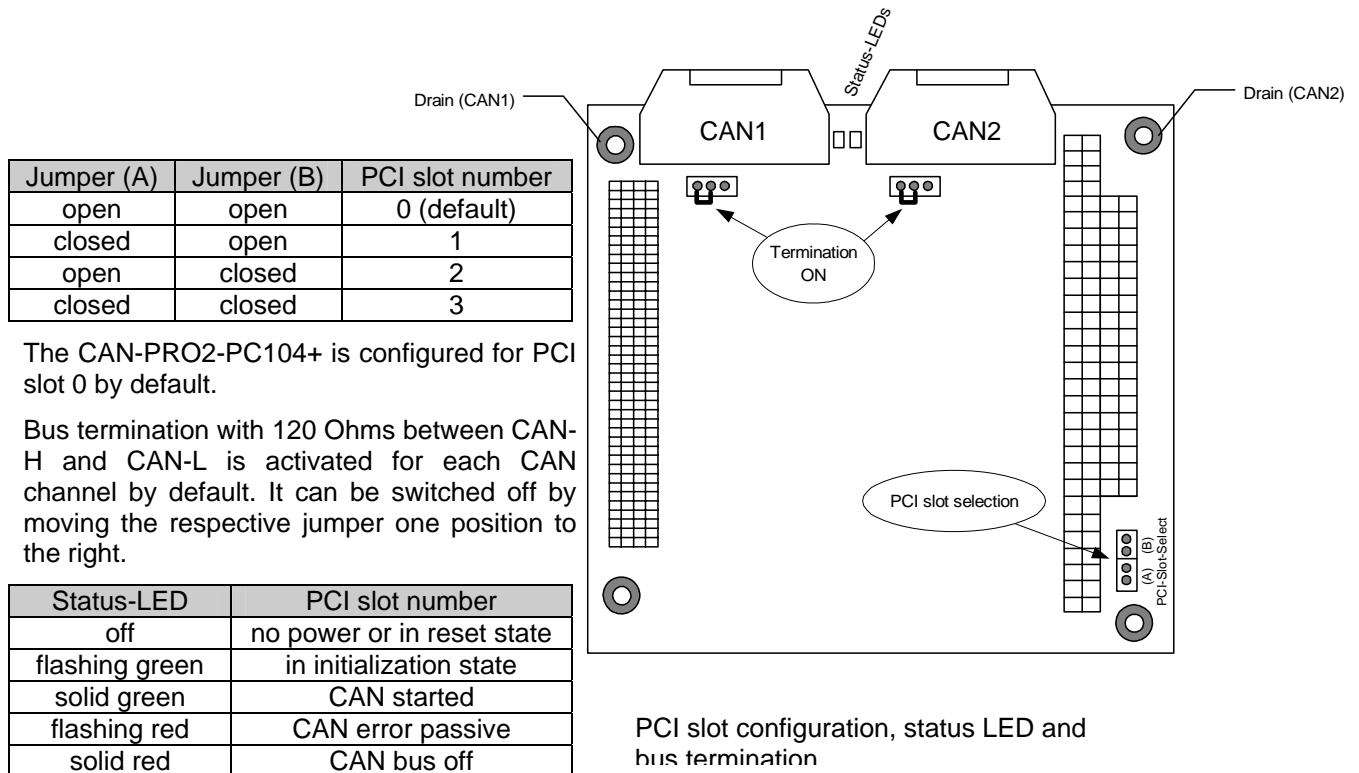## 1.3 Hardware and driver installation

Once the software setup is finished please shut down the PC and follow the steps listed below to install the CAN-PRO2-PC104+ hardware.

NOTE:
To prevent damage to the CAN-PRO2-PC104+ or to the
PC, discharge yourself on a grounded object such as the
metal housing of the PC before touching the board.

- First switch OFF the PC.
- Make sure that all peripheral devices are powered down.
- Remove the housing cover (refer to the PC manual).
- Plug the board at a suitable location within your PC/104plus stack.
- PC/104plus requires to select a distinct "PCI slot" not in use by any other device. This is accomplished by the jumpers "A" and "B" (see illustration below).

Jumper (A)	Jumper (B)	PCI slot number
open	open	0 (default)
closed	open	1
open	closed	2
closed	closed	3

The CAN-PRO2-PC104+ is configured for PCI slot 0 by default.

Bus termination with 120 Ohms between CAN-H and CAN-L is activated for each CAN channel by default. It can be switched off by moving the respective jumper one position to the right.

Status-LED	PCI slot number
off	no power or in reset state
flashing green	in initialization state
solid green	CAN started
flashing red	CAN error passive
solid red	CAN bus off

PCI slot configuration, status LED and bus termination

- Fix the PC/104plus stack with appropriate mounting parts and reassemble the housing.
- Turn ON the PC and applicable peripherals. ->*The computer will recognize the new hardware.*
- When "New Hardware Wizard" asks if Windows Update should be connected select *No.*
- In the next step select *automatic software installation.*This will install all required drivers.

1.4 Driver configuration

CAN-PRO2-PC104+ is recognized by the driver automatically. Nothing more is usually required. However, advanced configuration – like changing the name of a CAN channel or setting a default baudrate - is possible with the Softing CAN Interface Manager.

- Click *Start – All Programs – CAN – Runtime System Configuration – Softing CAN Interface Manager (SCIM)*
- For more details on the driver configuration click
  Start – All Programs – CAN – Runtime System Configuration – SCIM_Manual

1.5 Application Software

How to use CAN-PRO2-PC104+ and how to write application software, is described in the Software Manual.

- To open this manual click
  Start – All Programs – CAN – CAN_API - DOC – Softing Layer2

2 RoHS Information

CAN-PRO2-PC104+ is RoHS compliant.

3 CE Information

This device complies with the requirements of the EC directive 2004/108/EC "Electromagnetic Compatibility" (EMC directive).

The product meets the following requirements:

- Emission: EN61000-6-4:2007 Generic emission Standard (industrial environments)
  EN55022:2006 + A1:2007 Class B (ITE Product Standard)
  EN55011:2007 + A2 :2007 Group1 Class B (ISM Product Standard)
- Immunity: EN61000-6-2:2005 Generic Immunity Standard (industrial environments)
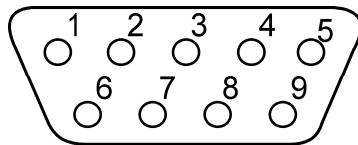
A "Declaration of Conformity" in accordance with the above standards has been made and is filed at Softing AG, Germany.

NOTE:
- To satisfy the EMC requirements, the equipment used (PC, monitor, CAN stations, etc.) also has to meet the EMC requirements.

4 Pin Assignment

The CAN D-Sub 9 connectors are plugged into the PC/104 interface by a 10 pin ribbon cable connector. They can be individually fixed at the housing of the PC as required by the target system. The connector pinning complies to CiA standard DS 102.

Pinning of the 9 pin D-Sub connector

Pin	Signal
1	N.C.
2	CAN_L
3	Isolated GND
4	N.C.
5	Drain (1M/2.2n to isolated GND)
6	Isolated GND
7	CAN_H
8	N.C.
9	N.C.

The shield is connected to system GND via the PC housing. To prevent high compensation currents due to ground loops, the cable shield can be connected instead to pin 5 of the D-Sub 9. This signal is also available at the mounting hole on the PCB near the onboard connector. In this case the CAN-PRO2-PC104+ must be installed using isolated screws.

5 Technical data

- Unit: PC/104plus card, acc. to PC/104plus specification V 2.0
- CPU: XC161, 40 MHz with internal TwinCAN CAN controller
- Memory: 256 kbytes XC161 on-chip Flash, 512 kbytes RAM,
- PC interface: PCI specification V2.2 compliant, 512 kbytes shared RAM
- PC interrupt: controlled by the operating system
- CAN interface: galvanically isolated (1kV) CAN high speed according to ISO 11898-2
- CAN connector: 2 Sub-D 9 pin male, pin assignment acc. to CiA DS102
- Baud rate: 3.125 kbit/s up to 1 Mbit/s
- Power supply: +5V (±5%); typ. 350mA
  +3.3V (±5%); typ. 150mA
- Temperature range: Operation: 0 (-40) °C … 70 (85)°C (board ambient, inside the PC)
  (XT version in brackets) 0 (-25) °C … 55 (75)°C (typ. PC ambient)
  Storage: -20 (-40)°C … 70 (85)°C
- Relative humidity < 90% (non-condensing)