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CAN-ACx-104

Hardware User Manual

Part number: CAN-AC1-104 (single CAN channel)

Part number: CAN-AC2-104 (dual CAN channel)

Part number: CAN-AC2-104I (dual CAN channel, extended temperature)

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V1.02.01

1 Installation

To properly install the CAN-ACx-104 in your PC, please follow the instructions detailed in the next sections.

1.1 System requirements

To run the CAN-ACx-104 on a PC, the PC must meet the following requirements:

- free 16-bit PC/104 socket
- Windows 7, XP or 2000 installed

1.2 Software installation

The CAN-ACx-104 software is part of the “CAN Drivers and Software” 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.

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-ACx-104 hardware.



NOTE:

To prevent damage to the CAN-ACx-104 or to the PC, discharge yourself on a grounded object such as the metal housing of the PC before touching the board.

- Configure the 4 byte I/O address range of the CAN-ACx-104 (see 8 DIP switches “S2” in Figure 1). It is adjustable in the address range between 0 and 3FFhex. Table 1 shows possible settings and the related I/O addresses. For other I/O areas you can calculate the address by adding the values of every switch which is ‘OFF’ (see Table 2).
- Configure the bus termination: The CAN High Speed (ISO 11898-2) bus should be terminated with 124 Ω between CAN_H and CAN_L at each end of the network. This termination resistance is usually realized externally at the network cable. Nevertheless, the CAN-ACx-104 provides onboard termination resistances which can be optionally activated by jumpers (see Figure 1):

J1 - Termination for CAN channel 1

J9 - Termination for CAN channel 2 (only for dual channel version)



NOTE:

Invalid bus termination may cause communication errors.

- Make sure that all peripheral devices are powered down.
- Remove the housing cover of the PC and disassemble the PC/104 components (refer to the PC manual).
- Plug the card to the PC/104 connector at a suitable position.
- Reassemble the PC and its housing.
- Turn ON the PC and applicable peripherals.

Table 1: I/O address selection (1=ON, 0=OFF)

DIP switch (S2)								I/O Range (hex)
1	2	3	4	5	6	7	8	
0	1	1	0	1	1	1	1	240-243
0	1	1	0	1	1	1	0	244-247
0	1	1	0	1	1	0	1	248-24B
0	1	1	0	1	1	0	0	24C-24F
0	1	0	1	1	1	1	1	280-283
0	1	0	1	1	1	1	0	284-287
0	1	0	1	1	1	0	1	288-28C
0	1	0	1	1	1	0	0	28C-28F

Table 2: I/O base address values (OFF)

DIP switch	Value (hex)
1	200
2	100
3	80
4	40
5	20
6	10
7	8
8	4

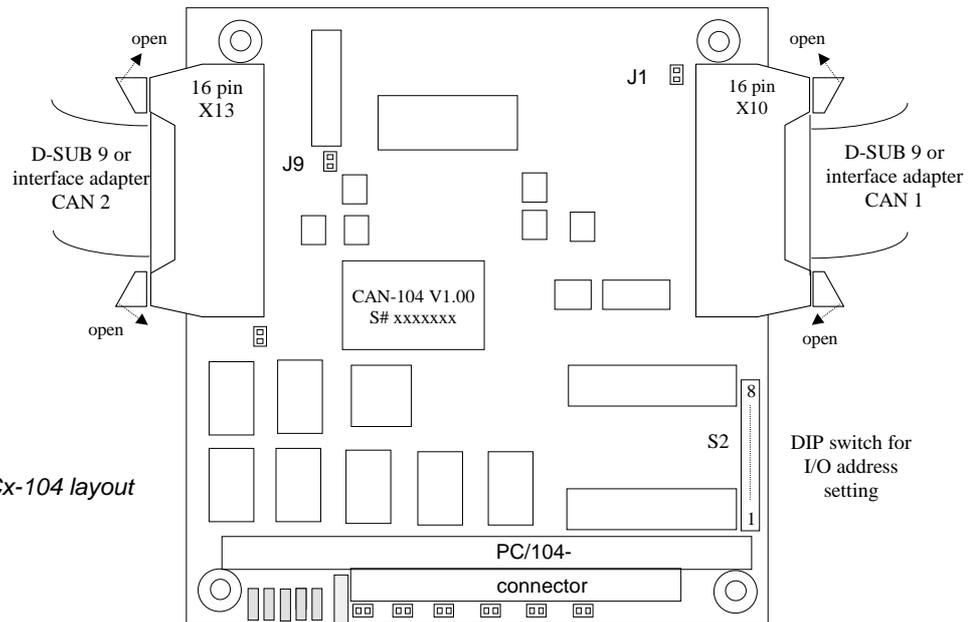


Figure 1: CAN-ACx-104 layout scheme

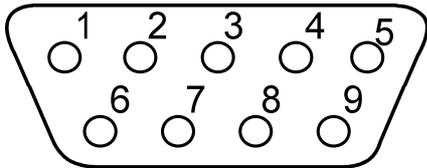
1.4 Driver configuration

CAN-ACx-104 needs to be added to the runtime configuration, by the following steps.

- Click *Start – All Programs – Softing CAN – Runtime System Configuration – Softing CAN Interface Manager*
- Select the CAN-ACx-104 branch of the tree view at the left side and click *Add*.
- Enter the information you are asked for and proceed with the *Next* button.
- The board will then be added to the system configuration.
- For more details on the driver configuration click *Start – All Programs – Softing CAN – Runtime System Configuration – SCIM Manual*

2 Pin Assignment

The D-Sub 9 connectors are replaceably plugged into the PC/104 interface by a 16 pin ribbon cable connector (see Figure 1). They can be individually fixed at the housing of the PC as required by the customers system. The pinning of the D-Sub 9 connectors is defined according to the CiA recommendation for the CAN High Speed Bus The shield is connected to earth via the PC housing.



Pinning of the 9-pin D-sub connector

Pin	Signal
1	N.C.
2	CAN_L
3	GND (DCDC)
4	N.C.
5	Drain (1M/100n to PC GND)
6	GND (DCDC)
7	CAN_H
8	N.C.
9	N.C.

3 CE Information

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



- Emission: EN61000-6-4 Generic emission Standard (industrial environments)
EN55022 Class A (ITE Product Standard)
EN55011 Group1 Class A (ISM Product Standard)
- Immunity: EN61000-6-2 Generic Immunity Standard (industrial environments)

A "Declaration of Conformity" in accordance with the above standards has been made and is filed at Softing Industrial Automation GmbH, Germany.

NOTE:

- To satisfy the EMC requirements, the equipment used (PC, monitor, CAN stations, etc.) also has to meet the EMC requirements. A shielded cable must be used. In addition, the cable shield must be grounded properly.

Warning! This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

4 RoHS Information

CAN-AC1-104 and CAN-AC2-104(I) are RoHS compliant.



5 Technical data

- Unit: PC/104 board
- CPU: Infineon SAB-C165
- Memory: 256Kbyte SRAM, 4Kbyte dual-port RAM
- Supported PC IRQs: 5, 9, 10, 11, 12 and 15
- Physical interface: CAN High Speed according to ISO 11898-2
- Connector type: Sub-D 9-pin male
- Connector assignment: According to CIA recommendation
- CAN controller: SJA1000
- Transfer rate: 10 1000 kbit/s
- Power supply: +5V ($\pm 5\%$); max. 500mA by the PC
- Temperature range: Operation: 0 (-40) °C ... 70 (85)°C (board ambient, inside the PC)
0 (-25) °C ... 55 (70)°C (typ. PC ambient)
(CAN-AC2-104 I version in brackets) Storage: -20 (-40)°C ... 70 (85)°C
- Relative humidity: < 90% (non-condensing)