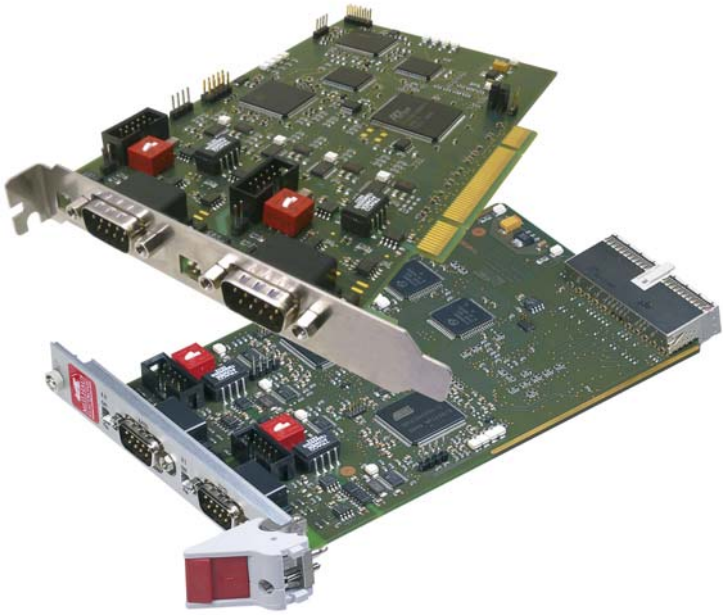
Meilhaus Electronic Manual

ME-CAN-4 1.0E

PCI- and CompactPCI Models



Interface Board with 4 CAN Bus Ports

Imprint

Manual ME-CAN-4 cPCI/PCI

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1 Important Information

1.1 Warning regarding use of the products

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In any application, including the above, reliability of operation of the (software) products can be impaired by adverse factors, including but not limited to fluctuations in electrical power supply, computer hardware malfunctions, computer operating system software fitness, fitness of compilers and development software used to develop an application, installation errors, software and hardware compatibility problems, malfunctions or failures of electronic monitoring or control devices, transient failures of electronic systems (hardware and/or software), unanticipated uses or misuses, or errors on the part of the user or applications designer (adverse factors such as these are hereafter collectively termed "system failures"). Any application wherein a system failure would create a risk of harm to property or persons (including the risk of bodily injury and death) should not be reliant solely upon one form of electronic system due to the risk of system failure. To avoid damage, injury or death, the user or application designer must take reasonably prudent steps to protect against system failures, including but not limited to back-up or shut down mechanisms. Because each end-user system is customized and differs from Meilhaus Electronic's testing platforms and because a user or application designer may use Meilhaus Electronic's products in combination with other products in manner not evaluated or contemplated by Meilhaus Electronic, the user or application designer is ultimately responsible for verifying and validating the suitability of Meilhaus Electronic's products whenever Meilhaus Electronic's products are incorporated in a system or application, including, without limitation, the appropriate design, process and safety level of such system or application.

1.2 Handling and Cautions

In the handling of the ME-CAN-4 cPCI/PCI proper care should be used to ensure that the device will not be damaged by Electrical Static Discharge (ESD), physical shock, or improper power surges and that precaution is taken to avoid electrocution. Ensure that standard ESD precautions are followed. As a minimum, one hand should be grounded to the power supply in order to equalize the static potential.

2 Introduction

2.1 Package Content

We take great care to make sure that the package is complete in every way. We do ask that you take the time to examine the contents of the box.

Your box should consist of:

- ME-CAN-4 cPCI or PCI: Interface board with 4 CAN bus ports for PCI or CompactPCI bus
- Additional slot bracket for 2 CAN bus ports with dedicated Sub-Ds
- 4 x 9pin D-Sub female connector
- Driver software on CD/DVD
- Manual in PDF format on CD/DVD

2.2 About ME-CAN-4 cPCI/PCI

The ME-CAN-4 cPCI/PCI enables you to connect a standard PC System to a CAN bus system. The CAN protocol is widely used in avionic, automotive and automation application.

The ME-CAN-4 cPCI/PCI is optimized for real-time applications especially simulation.

2.3 Features

- 4 physically independent CAN channels
- Up to 1 Mbit/s data transmission rate, all channels may be configured independently
- 4 independent CAN controller
- TX queue with 30 slots per channel
- RX queue with 80 slots per channel
- Electrical isolation/DC isolated of CAN-channels (pair wise)
- Switchable termination resistor

- PCI 32 bit, 33 MHz, 3.3 V/5 V
- Physical Size
- Single slide-in card
- Standard Short Card Format 175 x 107 mm
- Low power consumption
- Four Sub-D9 connector (included two SUB-D9 connect via slot bracket for extensions)
- Temperature (operational) 0 ... 55 °C
- Temperature (storage) –10 ... 75 °C
- Relative humidity 5 ... 95 % non condensing
- Drivers for SCALE-RT, Windows, Linux, LabVIEW, Agilent VEE

3 Installation

3.1 System Requirements

- PC, 100% IBM compatible
- One resp. two free PCI slot according to PCI spec 2.1 or one resp. two free CompactPCI slots

3.2 Software Support

Drivers for SCALE-RT, Windows, Linux, LabVIEW and Agilent VEE

3.3 Mechanical Installations

1. Switch OFF power of the PC. Make sure that all peripherals are powered down, too.
2. Remove the housing cover of the PC (refer to the PC's manual for details).
3. Remove slot cover if necessary (refer to the PC's manual for details).
4. Plug the ME-CAN-4 cPCI/PCI interface card into a free PCI slot.
5. Fasten the bracket of the ME-CAN-4 cPCI/PCI with the enclosed screw.
6. Reassemble the housing of the PC.
7. Switch ON power of the PC.

4 Hardware

4.1 Environmental conditions

- Temperature (operational): 0…55°C
- Temperature (storage): -10…75°C
- Maximum temperature drift: 3°/min
- Relative humidity (non condensing): 5…95%
- Power supplied by the PCI Interface +5V ±5% with max 750mA

4.2 Overview

The ME-CAN-4 cPCI/PCI card provides up to 4 channels for interfacing a standard PC to an CAN bus system. The card is connected to the host via a PCI Interface (rev 2.1).

The host and the ME-CAN-4 cPCI/PCI communicate via a dual ported RAM mounted on the board.

Two powerful 32 bit microcontroller processes all request from the host or data from another CAN bus unit.

4.3 Block Diagram

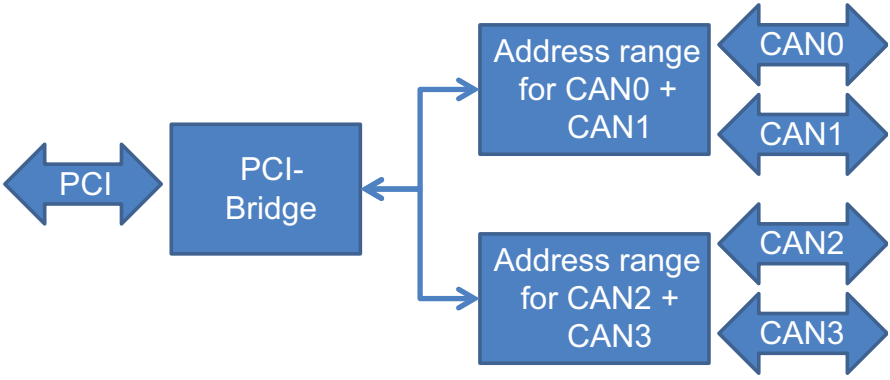

Diagram 1: Block diagram ME-CAN-4

4.4 Details on the Board

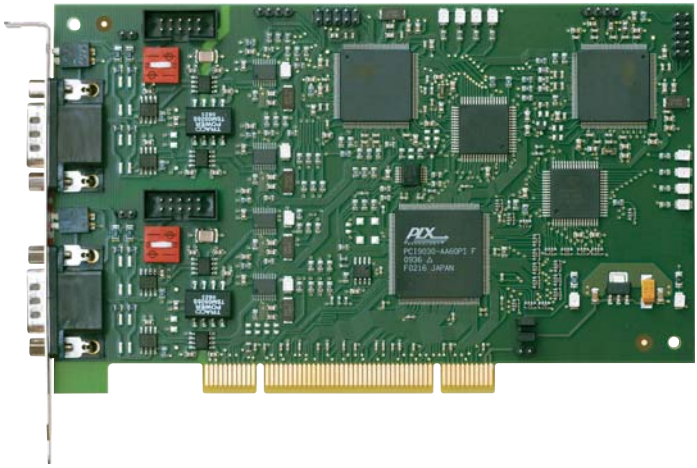

Diagram 2: ME-CAN-4 PCI

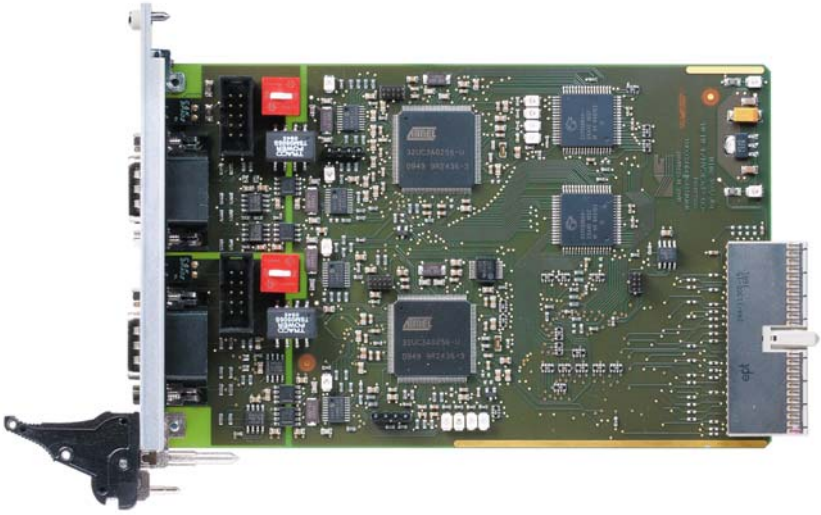

Diagram 3: ME-CAN-4 cPCI

4.4.1 Routing of the Ports

① CAN Network x.1 and x.2 are routed to one 9pin D-Sub connector.

② CAN Network x.1 is routed to the 9pin D-Sub connector at the slot bracket and x.2 is routed to the 10pin IDC connector on board (and next to the 9pin D-Sub connector of the additional slot bracket)

See diagrams 2 and 3 as well as chapter 4.5 "Pin Assignment" on page 14.

4.4.2 CAN-Bus Termination

For turning on or off the terminators on CAN network use the dip switches 14… on the slot bracket of the board.

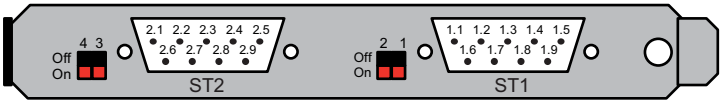

Diagram 4: Slot bracket with DIP switches for termination

DIP Switch	CAN Network	DIP Switch	CAN Network
1	CAN 1	**3**	CAN 3
2	CAN 2	**4**	CAN 4

Table 1: DIP switches for termination

4.5 Pin Assignment

4.5.1 Pin Assignment ME-CAN-4 cPCI/PCI

Pin assignment in dependency of port routing set with the two DIP switches on the board (see chapter 4.4.1).

4.5.1.1 Pinning at the board´s slot bracket with one CAN Port per D-Sub

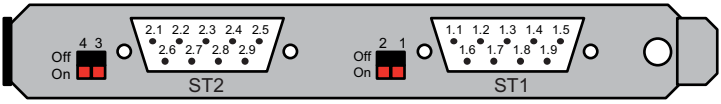

Diagram 5: Slot bracket with DIP switches

D-Sub9 (ST2)	CAN Network	D-Sub9 (ST1)	CAN Network
2.1	Open	1.1	Open
2.2	**CAN_L4**	1.2	**CAN_L2**
2.3	**GND**	1.3	**GND**
2.4	Open	1.4	Open
2.5	Open	1.5	Open
2.6	Open	1.6	Open
2.7	**CAN_H4**	1.7	**CAN_H2**
2.8	Open	1.8	Open
2.9	Open	1.9	Open

Table 2: Slot bracket with 1 port per D-Sub connector

4.5.1.2 Pinning at the additional slot bracket with one CAN Port per D-Sub

Diagram 6: Additional slot bracket

D-Sub9 (ST4)	CAN Network	D-Sub9 (ST3)	CAN Network
4.1	Open	3.1	Open
4.2	**CAN_L3**	3.2	**CAN_L1**
4.3	**GND**	3.3	**GND**
4.4	Open	3.4	Open
4.5	Open	3.5	Open
4.6	Open	3.6	Open
4.7	**CAN_H3**	3.7	**CAN_H1**
4.8	Open	3.8	Open
4.9	Open	3.9	Open

Table 3: Additional slot bracket with 1 port per D-Sub connector

4.5.1.3 Pinning at the board´s slot bracket with two CAN Ports per D-Sub

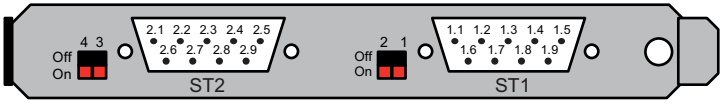

Diagram 7: Slot bracket with DIP switches

D-Sub9 (ST2)	CAN Network	D-Sub9 (ST1)	CAN Network
2.1	CAN_L3	1.1	CAN_L1
2.2	CAN_L4	1.2	CAN_L2
2.3	GND	1.3	GND
2.4	CAN_H3	1.4	CAN_H1
2.5	Open	1.5	Open
2.6	GND	1.6	GND
2.7	CAN_H4	1.7	CAN_H2
2.8	Open	1.8	Open
2.9	Open	1.9	Open

Table 4: Slot bracket with 2 ports per D-Sub connector

Appendix

A Specifications

PC interface	PCI connector rev 2.1, 32-bit, capable of 3.3V and 5V signaling environment
Form factor	CompactPCI or PCI PC Board
Memory	2x 16kByte Dual Port RAM
CAN-Connectors	9pin D-Sub male connectors
Max. number of CAN ports	4
Transfer rates	10k…1MBaud
Power supply	5V (±5%) max. 750mA via the PCI interface
Temperature (operational)	0…55°C
Temperature (storage)	-10…75°C
Relative humidity	5…95%

B Technical Questions

B1 Hotline

If you should have any technical questions or problems that can be put down to your Meilhaus device, please send a fax to our hotline:

Fax hotline: + 49 (0) 89/89 01 66 28
eMail: support@meilhaus.de

Please give a full description of the problems and as much information as possible, including operating system information.

B2 Service address

If a technical error should occur with your device please contact us at the following address:

Meilhaus Electronic GmbH

Service Department
Fischerstraße 2
D-82178 Puchheim/Germany

If you want to send back a device to be repaired it is strictly necessary to request for a RMA number and to follow the notes to deal with the RMA process. Please attach a detailed error description of the problem, including information about operating system and application software!

B3 Driver Update

The current driver versions for Meilhaus devices and our manuals in PDF format are available under www.meilhaus.com.

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