Modular Computers ®

PMC245

PMC Quad High-Speed Serial Controller Card

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Nov 00

The product described in this manual is in compliance with all applied CE standards.

Revision History

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Rev. Index	**Brief Description of Changes**	**Board Index**	**Date of Issue**
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This manual was realized by: **TPD/Engineering, PEP Modular Computers GmbH**.

Preface

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Preface

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This manual has been written for OEM software and hardware engineers to correctly understand the features and specifics of the product described in it. The manual is intended also for professional training purposes.

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Related Publications

For any details not described in the product documentation of the CP345 serial controller board, please refer to the following publications.

- PICMG CompactPCI Specification, V. 2.0, Rev. 3.0
- PCI Special Interest Group: PCI Local Bus Specification, V. 2.1 of 1 June 95
- Draft Standard for a Common Mezzanine Card Family, P1386/Draft 2.0
- Draft Standard Physical and Environment Layers for PCI Mezzanine Cards, P1386-1/Draft 2.0
- *PEP Modular Computers GmbH:* CompactPCI System Manual, ID 19954

Terminology

In the following a glossary of technical terms and acronyms is supplied which may be used in this document.

ADC	Analog to Digital Converter
API	Application Program Interface
ASIC	Application-Specific Integrated Circuit
BIOS	Basic Input / Output System
BSP	Board Support Package
CPCI	CompactPCI
CPLD	Complex Programmable Logic Device
CPU	Central Processing Unit
DAC	Digital to Analog Converter
DIL	Dual In-Line package for components
DMA	Direct Memory Access
DOS	Disk-based Operating System
DP	Decentralized Periphery
DPRAM	Dual-Ported Random-Acces Memory
DRAM	Dynamic Random-Access Memory is a volatile memory known for its density and low cost
EEPROM	Electrically Erasable Programmable Read-Only Memory is nonvolatile and electrically byte-erasable
EMC	Electro Magnetic Compatibility
EPROM	Erasable Programmable Read-Only Memory is a mature, high-density, nonvolatile technology which provides a degree of updatability not found in ROM
FET	Field Effect Transistor
FIFO	First In / First Out memory
Flash EPROM	Block Erasable and Programmable Read Only Memory which combines advantages from each of the above mentioned memory technologies. In embedded memory applications, Flash EPROM memory provides higher performance for more flexibility then ROM and EPROM, while providing higher density and better cost effectiveness than battery-backed SRAM or EPROM.
FM-DP	PROFIBUS DP slave add-on module
GND	Signal Ground
HW	Hardware
HF	High Frequency
I/O	Input / Output

IRQ	Interrupt request
ISA	Industrial Standard Architecture compatible with IEEE P996
OS	Operating System
PB	Piggyback, small exchangeable interface board plugged onto a mainboard.
PC	IBM compatible Personal Computer
PCB	Printed Circuit Board
PCI	Peripheral Component Interface
PICMG	PCI Industrial Computers Manufacturers Group
PLL	Phase-Lock Loop
PMC	PCI Mezzanine Card
PROFIBUS	PROcess FIeld BUS
RAM	Random Access Memory
ROM	Read-Only Memory is a mature, high-density, nonvolatile, reliable and low cost memory technology
RTOS	Real Time Operating System
SW	Software
SIMM	Single In-Line Memory Module
SMD	Surface Mount Device
SRAM	Static Random-Access Memory is a high-speed, reprogrammable memory technology which is limited by its volatility and relative high cost
SSP	System Support Package
STP	Shielded Twisted Pair cable (used for 10BT Ethernet transmissions)
TBD	To Be Defined
TSOP	Thin Small Outline Package
TTL	Transistor Transistor Logic
VCC	Supply Voltage (+5V)
XDR	External Data Representation

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Explanation of Symbols



CE Conformity

This symbol indicates that the product described in this manual is in compliance with all applied CE standards. Please refer also to the section “Applied Standards” in this manual.



Caution, Electric Shock!

This symbol and title warn of hazards due to electrical shocks (> 60V) when touching products or parts of them. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.

Please refer also to the section “High Voltage Safety Instructions” on the following page.



Warning, ESD Sensitive Device!

This symbol and title inform that electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Please read also the section “Special Handling and Unpacking Instructions” on the following page.



Warning!

This symbol and title emphasize points which, if not fully understood and taken into consideration by the reader, may endanger your health and/or result in damage to your material.



Note...

This symbol and title emphasize aspects the reader should read through carefully for his or her own advantage.



Developer’s Note

This symbol and title emphasize aspects that concern only system integrators including a *PEP* device into a larger equipment , or developers programming application software.



PEP Advantage

This symbol and title emphasize advantages or positive aspects of a product and/or procedure.

For Your Safety

Your new *PEP* product was developed and tested carefully to provide all features necessary to ensure the renown electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interests of your own safety and of the correct operation of your new *PEP* product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions



Warning!

All operations on this device must be carried out by sufficiently skilled personnel only.



Caution, Electric Shock!

However, serious electrical shock hazards exist during all installation, repair and maintenance operations with this product. Therefore, always unplug the power cable to avoid exposure to hazardous voltage.

Before installing your new *PEP* product into a system always ensure that your mains power is switched off. This applies also to the installation of piggybacks.

Special Handling and Unpacking Instructions



ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

- Do not handle this product out of its protective enclosure while it is not used for operational purposes, unless it is otherwise protected.
- Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where safe work stations are not guaranteed, it is important for the user to be electri-cally discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.
- It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory back-up, ensure that the board is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or tracks on the board.

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- This device should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This applies also to the operational temperature range of the specific board version, which must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.
- In performing all necessary installation and application operations, please, follow only the instructions supplied by the present manual.
- Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the board please re-pack it as nearly as possible in the manner in which it was delivered.
- Special care is necessary when handling or unpacking the product. Please, consult the special handling and unpacking instruction on the following page of this manual.

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If the customer's eligibility for warranty has not been voided, in the event of any claim, he may return the product at the earliest possible convenience to the original place of purchase, together with a copy of the original document of purchase, a full description of the application the product is used on and a description of the defect. Pack the product in such a way as to ensure safe transportation (see our safety instructions).

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Contents

Preface

Preface v
Proprietary Note v
Documentation Overview v
Trademarks v
Related Publications v
Terminology vi
Explanation of Symbols viii
For Your Safety ix
High Voltage Safety Instructions ix
Special Handling and Unpacking Instructions ix
General Instructions on Usage x
Two Year Warranty xi

Chapter 1

1. Introduction ..... 1 - 3
1.1 System Overview ..... 1 - 3
1.2 Board Overview ..... 1 - 4
1.2.1 Board-Specific Information ..... 1 - 4
1.2.2 Board Variants ..... 1 - 4
1.2.3 Frontpanel Adapter ..... 1 - 5
1.2.4 Rear I/O Connectivity ..... 1 - 5
1.2.5 System-Relevant Information ..... 1 - 5
1.3 Board Diagrams ..... 1 - 7
1.3.1 Functional Block Diagram ..... 1 - 7
1.3.2 Frontpanels ..... 1 - 8
1.3.3 Board Layout ..... 1 - 9
1.4 Technical Specifications ..... 1 - 10

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1.5 Applied Standards ..... 1 - 11
1.5.1 CE Compliance ..... 1 - 11
1.5.2 Mechanical Compliance ..... 1 - 11
1.5.3 Electrical Compliance ..... 1 - 11
1.5.4 Environmental Tests ..... 1 - 11

Chapter 2

2. Functional Description ..... 2 - 3
2.1 General Information ..... 2 - 3
2.2 Specifics ..... 2 - 3
2.3 Functional Block Diagrams ..... 2 - 5
2.4 Board Interfaces ..... 2 - 6
2.4.1 Front-End Serial I/O Interface ..... 2 - 6
2.4.2 PMC Interface ..... 2 - 10

Chapter 3

3. Installation ..... 3 - 3
3.1 Hardware Installation ..... 3 - 3
3.1.1 PMC Module Installation ..... 3 - 3
3.1.2 Board Location in the System ..... 3 - 5
3.1.3 Cabling ..... 3 - 5
3.2 Software Installation ..... 3 - 6

Chapter 4

4. Configuration ..... 4 - 3
4.1 Hardware Configuration ..... 4 - 3
4.2 Software Configuration ..... 4 - 3

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Figures

Chapter 1

PMC245 Functional Block Diagram ..... 1 - 7
PMC245 Bezel (mounted on a *PEP Modular Computers* CP390 carrier) ..... 1 - 8
PMC245 Board Layout (Front) ..... 1 - 9

Chapter 2

PMC245 Functional Block Diagram ..... 2 - 5
Orientation of Frontend Serial I/O Connector ..... 2 - 6

Chapter 3

Installation Diagrams ..... 3 - 4
Four-Channel Frontpanel Adapter ..... 3 - 5
Null-Modem Pin Assignment ..... 3 - 6

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Tables

Chapter 1

Board Connectivity .....1 - 4
PMC245 Technical Specification (Sheet 1 of 2) .....1 - 10

Chapter 2

Pinouts of Frontend Connector (Sheet 1 of 2) .....2 - 7
Pinouts of Frontpanel Adapter Connectors (Sheet 1 of 2) .....2 - 9

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Chapter 1

Introduction

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1. Introduction

1.1 System Overview

The *PEP Modular Computers* CompactPCI product described in this chapter operates with the PCI bus architecture to support additional I/O and memory-mapped devices as required by various industrial applications. For detailled information concerning the CompactPCI standard, please consult the complete Peripheral Component Interconnect (PCI) and CompactPCI Specifications. For further information regarding these standards and their use, visit the homepage of the *PCI Industrial Computer Manufacturers Group (PICMG): http://www.picmg.org*.

Many system-relevant CompactPCI features that are specific for *PEP Modular Computers* CompactPCI systems can be found in the *PEP* CompactPCI System Manual. Please refer to the section “Related Publications” of this chapter for the relevant ordering information.

The CompactPCI System Manual includes the following information:

- Common information that is applicable to all system components, such as safety information, warranty conditions, standard connector pinouts etc.
- All necessary information to combine *PEP Modular Computers* racks, boards, backplanes, power supply units and peripheral devices in a customized CompactPCI system, as well as configuration examples.
- Data on rack dimensions and configurations as well as information on mechanical and electrical rack characteristics.
- Information on the distinctive features of *PEP Modular Computers* CompactPCI boards, such as functionality, hot-swap capability. In addition, an overview is given for all existing *PEP Modular Computers* CompactPCI boards with links to the relating datasheets.
- Generic information on the *PEP Modular Computers* CompactPCI backplanes, such as the slot assignment, PCB form factor, distinctive features, clocks, power supply connectors and signalling environment, as well as an overview over the *PEP Modular Computers* CompactPCI standard backplane family.
- Generic information on the *PEP Modular Computers* CompactPCI power supply units, such as the input/output characteristics, redundant operation and distinctive features, as well as an overview over the *PEP Modular Computers* CompactPCI standard power supply unit family.

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1.2 Board Overview

1.2.1 Board-Specific Information

The PMC245 is a high speed, 4-channel serial I/O device supporting the RS232, RS422 and RS485 industry standards. The single-size PCI mezzanine card is provided with a 50-pin row D-Sub to which a frontpanel adapter (CP-ADAP-CP345-DSUB50) can be connected for separate channelling. The main features of the PMC245 card are listed in the following:

- 32-bit PMC card, 33 MHz
- Up to 1 MBaud asynchronous transmission
- Up to 10 MBaud synchronous transmission
- 4 independent serial channels
- One 50-pin row D-Sub connector (non-optoisolated)
- DMA-transfer, bus master capable
- RS232, RS422, and RS485 standards
- Each channel individually programmable per software
- Bus termination resistors (RS422/RS485) software selectable
- Control LED's on the card's bezel or, if implemented, on a rear I/O module
- Jumperless configuration
- Windows NT® 4.0, QNX® and VxWorks® drivers

1.2.2 Board Variants

Only one variant of the PMC245 PCI mezzanine card is available:

- Non-optoisolated standard version

The non-optoisolated standard version is provided with four individually programmable RS232, RS422 or RS485 channels.

A complete list of the physical board interfaces of the non-optoisolated standard module is given in the following table:

Table 1-1: Board Connectivity

Connectivity	Description
Frontend Connectors	Serial I/O connector (50-pin D-Sub)
On-Board Connectors	PMC-to-PCI interface (PN1, PN2)

The size of the PMC module (74mm x 149mm) is such to allow the placement of two modules on a 6U carrier board.

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1.2.3 Frontpanel Adapter

The PMC245 serial I/O card is provided with a 50-pin row serial I/O connector including the pinouts of all four serial I/O channels. In order to provide separate serial I/O channelling, a frontpanel adapter (CP-ADAP-CP345-DSUB50) can be connected to the 50pin frontend connector. This adapter terminates on the user side with four male 9-pin DSub connectors, one per serial I/O channel.

1.2.4 Rear I/O Connectivity

As an alternative to the 50-pin frontend interface, it is technically possible to implement rear I/O connectivity on the PMC245 module. For this purpose, frontend signals are routed at TTL level to a matching rear I/O module via a PN4 connector. However, the PN4 connector must be equipped by the customer and is not supplied by *PEP Modular Computers*.



Note...

The kind of rear I/O connectivity you can obtain with the PMC245 module not only depends on the mezzanine card itself, but also on the kind of carrier it is intended to be installed on, and on the rear I/O module itself that is intended to be used.

Please note that the *PEP Modular Computers* rear I/O modules for the CP345-RIO are not suitable for the PMC245.

1.2.5 System-Relevant Information

1.2.5.1 Board Location in the System

Board location within a system must be considered carefully. Depending on the number of boards, their locations in a given system, and the operating system being used by application programs may have difficulty identifying boards properly. In particular, when configuration changes such as board replacement, movement to another slot, etc. are made after the initial system implementation. Therefore, any changes made to a system should be carefully considered prior to making the change and proper operation be verified before the system is put into operation again.



Note...

When configuring a system it is recommended that all boards to be used be installed in the system prior to installing any drivers or other board-related software. Failure to do so may result in the non-identification of a given board or boards.

1.2.5.2 Operating Systems

The PMC245 can operate under the following operating systems:

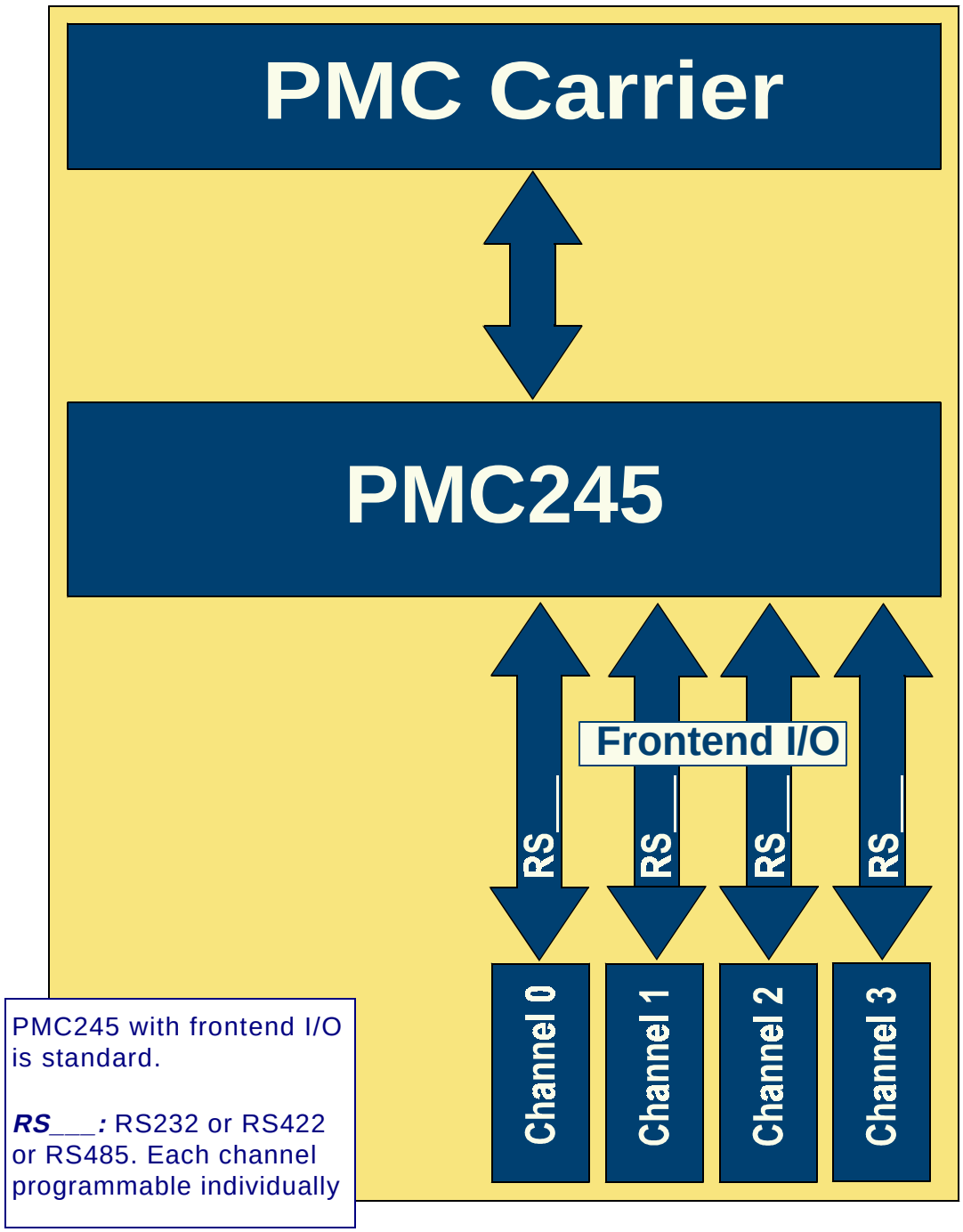
- Windows© NT 4.0
- QNX©
- VxWorks©

Drivers are supplied for these operating systems.

1.3 Board Diagrams

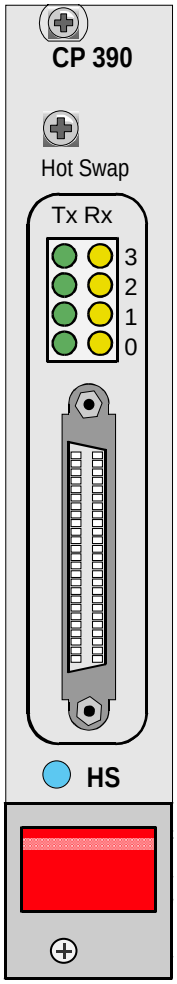
1.3.1 Functional Block Diagram

Figure 1-1: PMC245 Functional Block Diagram



1.3.2 Frontpanels

Figure 1-2: PMC245 Bezel (mounted on a *PEP Modular Computers* CP390 carrier)



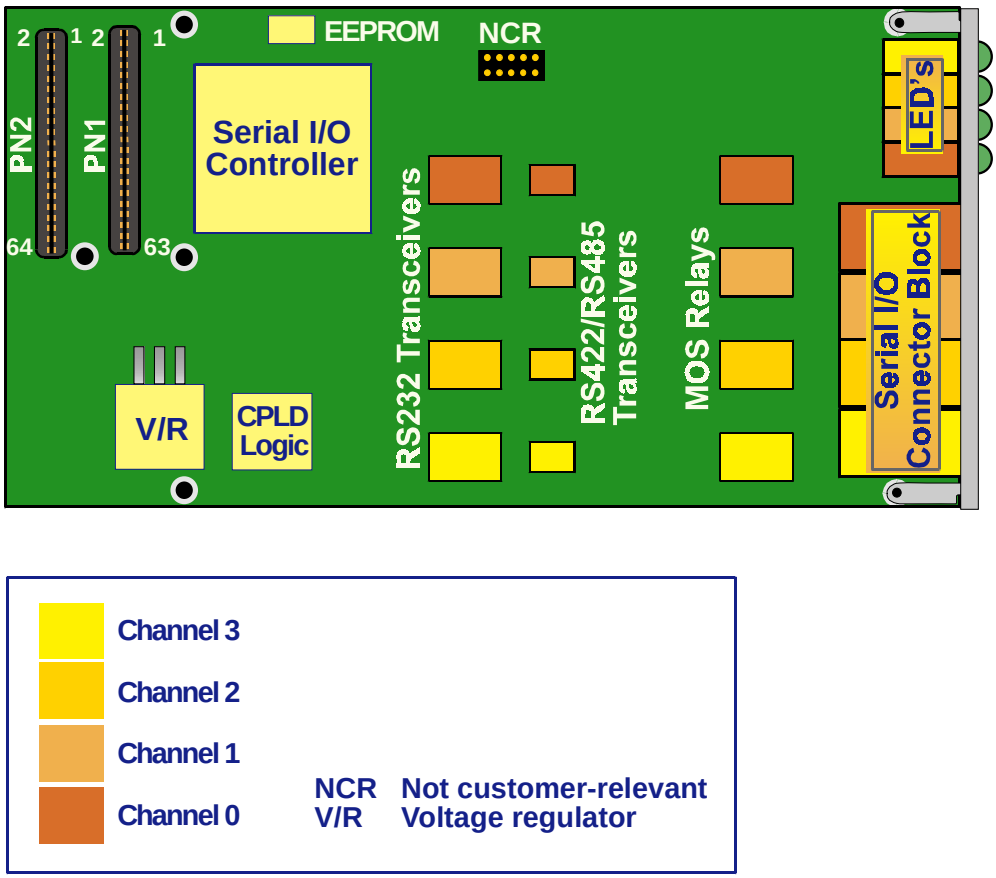
Note...

The PMC245 bezel is provided with a single 50-pin D-Sub connector. However, a special adapter (CP-ADAP-CP345-DSUB50) can be connected to the frontend connector. The four adapter cables terminate on the user side with a 9-pin D-Sub connector each, one per serial I/O channel.

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1.3.3 Board Layout

Figure 1-3: PMC245 Board Layout (Front)



1.4 Technical Specifications

Table 1-2: PMC245 Technical Specification (Sheet 1 of 2)

PMC245	Specification
Serial I/O Standards	RS-232, RS-422 and RS-485
Channels	Four serial I/O channels, individually configurable via software
Controller	Infineon® DSCC-4 (PEB 20534)
Data Rates	• asynchronous: max. 1 MBaud (RS-232: max. 120kBaud) • synchronous: max. 10 MBaud (optional)
Programmable Data Formats	Data Bits: 5 to 8 Parity: Odd, even, none Stop Bits: 1 or 2
Programmable Channel Modes	RS232 • unbalanced • disabled RS422 • balanced, half duplex • balanced, full duplex • disabled RS485 • balanced, half duplex • balanced, full duplex • disabled Disabled
Resources Required	• One IRQrequired • Memory-mapped areas of 256 Byte and 64 kByte required
PMC-to-PCI Interface	PN1/PN2, 32-bit bus at 33MHz, VIO = 3.3V (5V-tolerant) (PMC/CMC IEEE P1386.1/Draft 2.0)
External Board Interfaces	50-pin high-density D-Sub, no optoisolation
Indicators	8 operation indicator LED's, two for each channel: • Yellow RxD • Green TxD
Overvoltage Protection	±12 V, both variants
Power Supply	5V DC ±5%
Power Consumption	Typ. power consumption measured with Windows© NT V.4.0 driver in RS232 mode at 9.6kBaud (2 channels active): • 540mA at 5V DC

Table 1-2: PMC245 Technical Specification (Sheet 2 of 2)

PMC245	Specification
Temperature Ranges	Operation: • 0°C to +60°C (standard) • -25°C to +75°C (extended) Storage: • -55°C to +125°C (storage)
Humidity	0..95%, non-condensing
Mechanical Compliance	Single-size PMC (IEEE P1386.1/Draft 2.0) • 74mm x 149mm
Weight	78g

1.5 Applied Standards

1.5.1 CE Compliance

The *PEP Modular Computers'* CompactPCI systems comply with the requirements of the following CE-relevant standards:

- Emission EN50081-1
- Immission EN50082-2
- Electrical Safety EN60950

1.5.2 Mechanical Compliance

- Mechanical Dimensions IEEE 1101.10

1.5.3 Electrical Compliance

- Signalling TIA/EIA-232, TIA/EIA-422, TIA/EIA-485

1.5.4 Environmental Tests

- Vibration IEC68-2-6
  Random Vibration, Broadband IEC68-2-64 (3U boards)
- Permanent Shock IEC68-2-29
- Single Shock IEC68-2-27

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Chapter 2

Functional Description

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2. Functional Description

2.1 General Information

The PMC245 serial communications controller card is the realization of a low cost, high speed solution for industrial automation communication purposes and represents the implementation of a serial communication controller board at the basic OSI levels.

The main functions implemented on the PMC245 card are the OSI Layer 2 control for RS232, RS422 and RS485 communication purposes as well as the OSI Layer 1 physical signal level adaptation for the above mentioned interfaces, where the RS422/RS485 interface is realized for half duplex as well as for full duplex operation.

The physical layer adaptation (OSI Layer 1) of the CSI-TTL interface signals is realized independently for each channel via corresponding on-board RS232, RS422/RS485 transceivers where each of the four serial communication links are configured individually for serial interface operation per software including the serial line termination for balanced serial communication.

2.2 Specifics

The OSI Layer 2 functions for serial communication are handled entirely by the enhanced, DMA-supported, Infineon® intelligent serial communication controller DSCC4. This controller handles all the onboard serial communication tasks related to OSI Layer 2 comminication tasks for synchronous and asynchronous serial communication, significantly reducing the workload to the system host CPU.

Configuration of the serial communication links for the various operation types as well as serial line termination for differential communication (RS422/RS485) is accomplished via software. The four serial I/O channels are independent and can be software configured individually for RS232, RS422/RS485 serial communication.

Data transfer operation of the serial channels is indicated at the front panel by four, channel-related pairs of LED's for the indication of receive and transmit operations.

All the above mentioned communication functions including the RS232, RS422 and RS485 serial I/O functions are tied to the host system via the standard CompactPCI interface provided directly on the Infineon® serial communication controller DSCC4. Work load data transfer to and from the PCI host system is done in a DMA based manner for all four serial channels. Logical control of the PMC245 serial communication operation is accomplished via the DSCC4 command and status registers which can be accessed independently for each channel directly from the PCI side.

The common serial interface (CSI) subsequently provides an identical set of serial communication interface signals at TTL signalling level for RS232 unbalanced and for RS422/RS485 balanced serial communication purposes for each of the four serial channels. Additionally, the common serial interface provides all necessary signals for "full modem" serial communication for four serial I/O channels as well as a subset of supply and ground lines for the corresponding serial communication interfacing devices, and a three wire serial SPI interface utilized for communication purposes to the local EEPROM and CPLD logic device.

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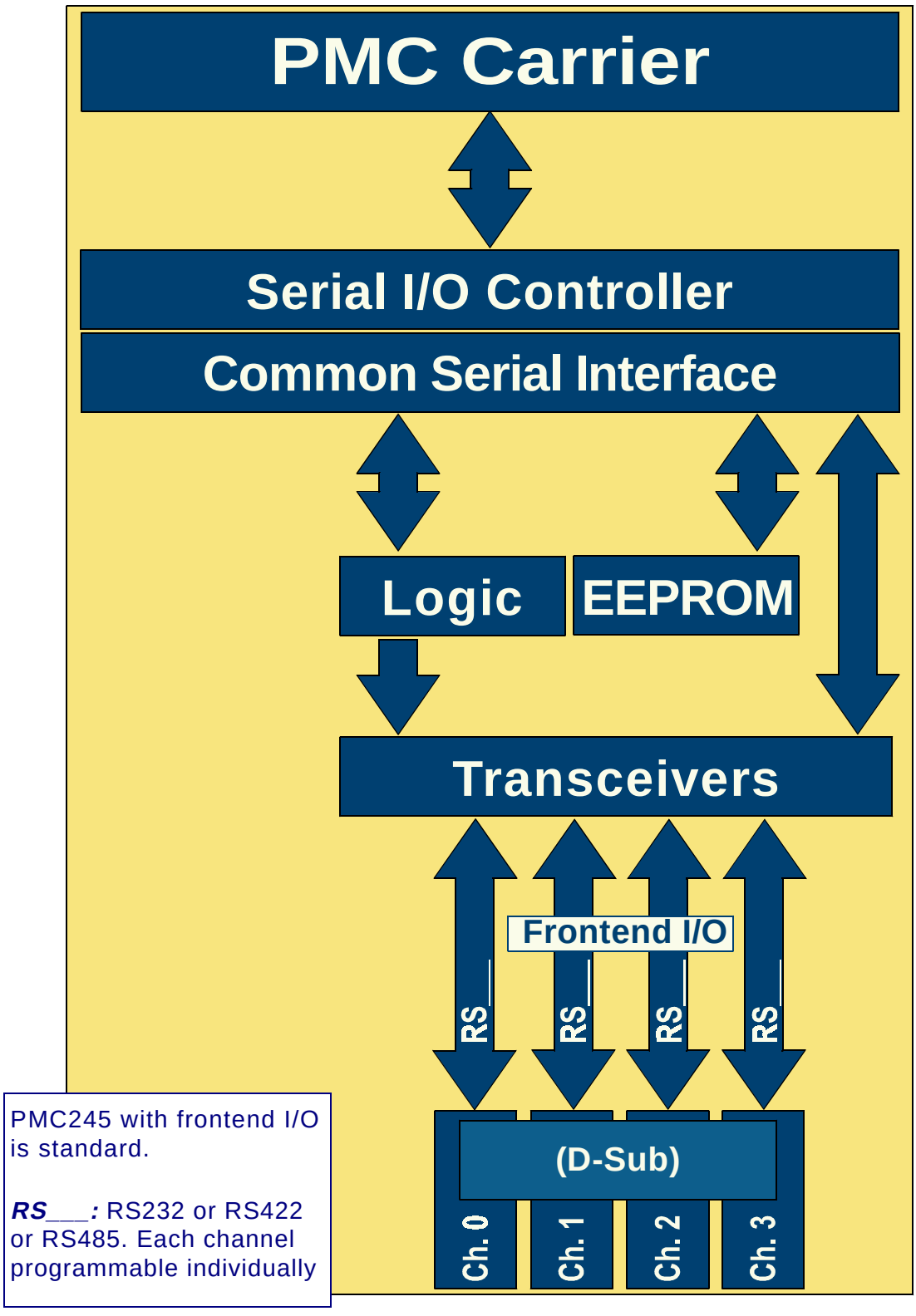
The standard variant of the PMC245 serial I/O board, which does not provide optical isolation of the serial port, is equipped with a single 50-pin high-density D-Sub serial I/O connector providing the pinouts of the four dedicated serial I/O channels. In order to provide separate serial I/O channelling, a frontpanel adapter (CP-ADAP-CP345-DSUB50) can be connected to the 50-pin frontend connector. This adapter terminates on the user side with four male 9-pin D-Sub connectors, one per serial I/O channel.

The PMC245 card is equipped also with a 10-pin row JTAG/ISP connector for test purposes and in-system programming of the control logic. This functionality would normally not be used by the customer and is, therefore, marked as “NCR”, i.e. not customer-relevant on the board diagram.

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2.3 Functional Block Diagrams

Figure 2-1: PMC245 Functional Block Diagram

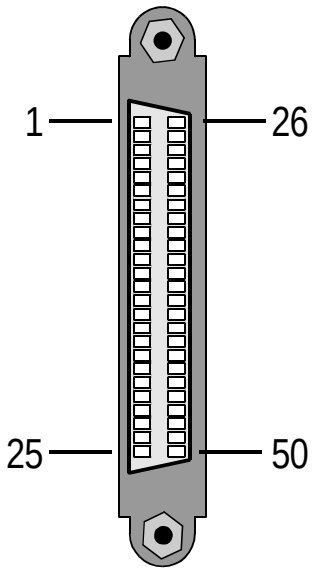


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2.4 Board Interfaces

2.4.1 Front-End Serial I/O Interface

Figure 2-2: Orientation of Frontend Serial I/O Connector



Note...

This section includes pinout tables of the 50-pin D-Sub frontend connector as well as of the 50-pin and 9-pin D-Sub connectors of the four-channel frontpanel adapter CP-ADAP-CP345-DSUB50.

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2.4.1.1 Frontend Connector

The PMC245 module is equipped with a 50-pin row high-density female connector comprising the signals of serial I/O channels 0 to 3. The pinouts of the 50-pin D-Sub connector are shown in the following table.



Warning!

Where signals are not indicated in the below table, please do not connect external wiring to the connector pins. Failure to comply may result in damage to your board.

Table 3-1: Pinouts of Frontend Connector (Sheet 1 of 2)

RS232	RS422/RS485 Half Duplex	RS422/RS485 Full Duplex	Pins		Channel
TxD	TRxD+	TxD+	1	—	0
CTS	TRxD-	TxD-	—	26	
—	—	—	2	—	
—	—	—	—	27	
DCD	—	RxD+	3	—	
DSR	—	RxD-	—	28	
—	—	—	4	—	
—	—	—	—	29	
RTS	—	—	5	—	
DTR	—	—	—	30	
GND	GND	GND	6	—	
RxD	—	—	—	31	
TxD	TRxD+	TxD+	7	—	1
CTS	TRxD-	TxD-	—	32	
—	—	—	8	—	
—	—	—	—	33	
DCD	—	RxD+	9	—	
DSR	—	RxD-	—	34	
—	—	—	10	—	
—	—	—	—	35	
RTS	—	—	11	—	
DTR	—	—	—	36	
GND	GND	GND	12	—	
RxD	—	—	—	37	

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Table 3-1: Pinouts of Frontend Connector (Sheet 2 of 2)

RS232	RS422/RS485 Half Duplex	RS422/RS485 Full Duplex	Pins		Channel
TxD	TRxD+	TxD+	13	—	2
CTS	TRxD-	TxD-	—	38	
—	—	—	14	—	
—	—	—	—	39	
DCD	—	RxD+	15	—	
DSR	—	RxD-	—	40	
—	—	—	16	—	
—	—	—	—	41	
RTS	—	—	17	—	
DTR	—	—	—	42	
GND	GND	GND	18	—	
RxD	—	—	—	43	
TxD	TRxD+	TxD+	19	—	3
CTS	TRxD-	TxD-	—	44	
—	—	—	20	—	
—	—	—	—	45	
DCD	—	RxD+	21	—	
DSR	—	RxD-	—	46	
—	—	—	22	—	
—	—	—	—	47	
RTS	—	—	23	—	
DTR	—	—	—	48	
GND	GND	GND	24	—	
RxD	—	—	—	49	
—	—	—	25	—	—
—	—	—	—	50	

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2.4.1.2 Connectors of Frontpanel Adapter

In order to provide separate serial I/O channelling, a four-channel frontpanel adapter (CP-ADAP-CP345-DSUB50) can be connected to the 50-pin frontend connector. This adapter terminates on the user side with four male 9-pin D-Sub connectors which include the signals of channels 0 to 3. The pinouts of the adapter's 50-pin and 9-pin DSub connectors are shown in the following table.



Warning!

Where signals are not indicated in the below table, please do not connect external wiring to the connector pins. Failure to comply may result in damage to your board.

Table 3-2: Pinouts of Frontpanel Adapter Connectors (Sheet 1 of 2)

50-Pin Row Connector	RS232	RS422/RS485 Half Duplex	RS422/RS485 Full Duplex	9-Pin Row Connectors	Channel
1	TxD	TRxD+	TxD+	3	0
26	CTS	TRxD-	TxD-	8	
2	—	—	—	—	
27	—	—	—	—	
3	DCD	—	RxD+	1	
28	DSR	—	RxD-	6	
4	—	—	—	—	
29	—	—	—	—	
5	RTS	—	—	7	
30	DTR	—	—	4	
6	GND	GND	GND	5	
31	RxD	—	—	2	
7	TxD	TRxD+	TxD+	3	1
32	CTS	TRxD-	TxD-	8	
8	—	—	—	—	
33	—	—	—	—	
9	DCD	—	RxD+	1	
34	DSR	—	RxD-	6	
10	—	—	—	—	
35	—	—	—	—	
11	RTS	—	—	7	
36	DTR	—	—	4	
12	GND	GND	GND	5	
37	RxD	—	—	2	

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Table 3-2: Pinouts of Frontpanel Adapter Connectors (Sheet 2 of 2)

50-Pin Row Connector	RS232	RS422/RS485 Half Duplex	RS422/RS485 Full Duplex	9-Pin Row Connectors	Channel
13	TxD	TRxD+	TxD+	3	2
38	CTS	TRxD-	TxD-	8	
14	—	—	—	—	
39	—	—	—	—	
15	DCD	—	RxD+	1	
40	DSR	—	RxD-	6	
16	—	—	—	—	
41	—	—	—	—	
17	RTS	—	—	7	
42	DTR	—	—	4	
18	GND	GND	GND	5	
43	RxD	—	—	2	
19	TxD	TRxD+	TxD+	3	3
44	CTS	TRxD-	TxD-	8	
20	—	—	—	—	
45	—	—	—	—	
21	DCD	—	RxD+	1	
46	DSR	—	RxD-	6	
22	—	—	—	—	
47	—	—	—	—	
23	RTS	—	—	7	
48	DTR	—	—	4	
24	GND	GND	GND	5	
49	RxD	—	—	2	
25	—	—	—		—
50	—	—	—		

2.4.2 PMC Interface

The PMC245 is equipped with the standard PMC interface connectors PN1 and PN2. Please refer to the PMC Draft Specification or the *PEP Modular Computers* CompactPCI System Manual for the pinouts of these connectors.

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Chapter 3

Installation

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3. Installation

3.1 Hardware Installation

The board described in this manual can be installed in any CompactPCI compatible computer with a free bus master slot. The frontpanel of the board should be safely secured by screws to the chassis to avoid lossening of the board through vibration and to ensure correct earth connection.



Caution, Electric Shocks!

If your board type is not specifically qualified as hot-swap capable, please switch off the CompactPCI system before installing the board in a free CompactPCI slot. Failure to do so could endanger your life/health and may damage your board or system.



ESD Equipment!

Your CompactPCI board contains electrostatically sensitive devices. Please observe the necessary precautions to avoid damage to your board:

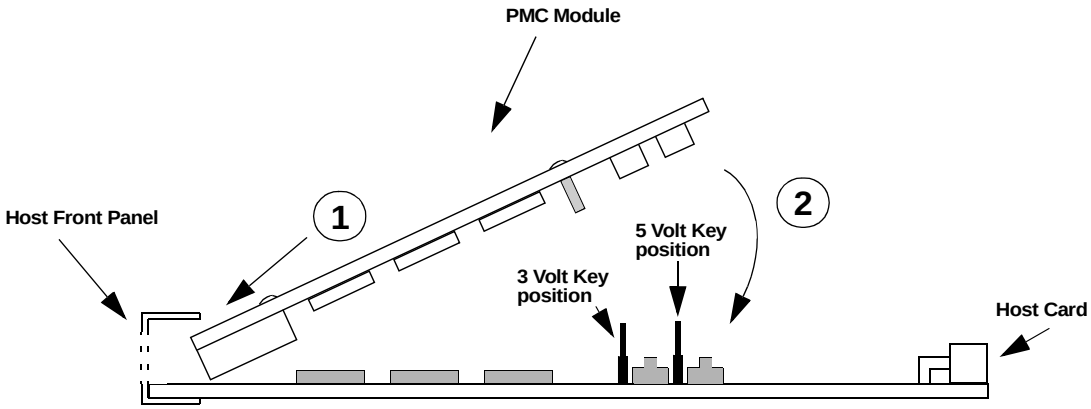
- Discharge your clothing before touching the assembly. Tools must be discharged before use.
- Do not touch components, connector-pins or traces.
- If working at an anti-static workbench with professional discharging equipment, please do not omit to use it.

3.1.1 PMC Module Installation

To install your PCI mezzanine card on its carrier board or system controller board provided with PMC connectivity, please proceed as follows:

1. Ensure that the safety requirements indicated above are observed
2. Place the EMC gasket on the bezel of your PMC module
3. Push the PMC bezel into the mounting break-out of the frontpanel of the carrier and plug the PMC interface connectors together
4. Use three screws (M2.5 x 6mm) to fix the board
5. Connect external interfacing cables to the board as required
6. Ensure that the board and interfacing cables are properly secured

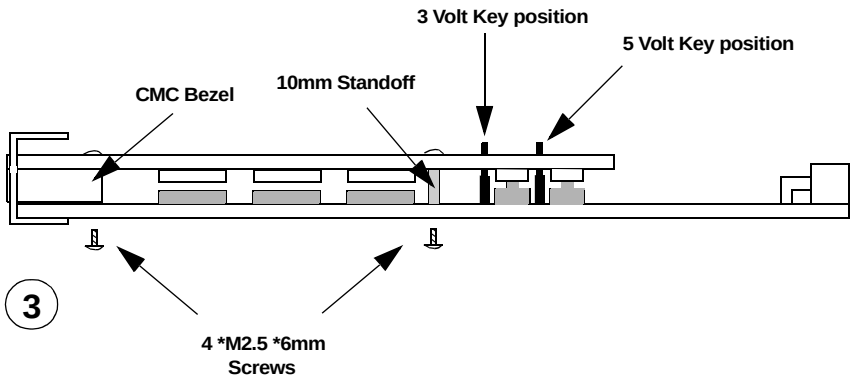
Figure 3-1: Installation Diagrams



Note...

Only one key is present on your carrier board, either 3V or 5V, depending on the signalling used.

I



To remove the PMC mezzanine card, please proceed as follows:

1. Ensure that the safety requirements indicated above are observed
2. Disconnect any interfacing cables that may be connected to the board
3. Loosen the fastening screws of the bezel
4. Disconnect the PMC interface connectors between the module and the carrier and pull the module out of its mounting break-out in the carrier's frontpanel

3.1.2 Board Location in the System

Board location within a system must be considered carefully. Depending on the number of PMC245 boards, their locations in a given system and the operating system being used, application programs may have difficulty to identify boards properly. In particular, when configuration changes such as board replacement, movement to another slot etc. are made after the initial system implementation. Therefore, any changes made to a system should be carefully considered before making the change, and proper operation be verified before the system is put into operation again.



Note...

When configuring a system it is recommended that all boards to be used first be installed in the system prior to installing any drivers or other board related software. Failure to do so may result in the non-identification of a given board or boards.

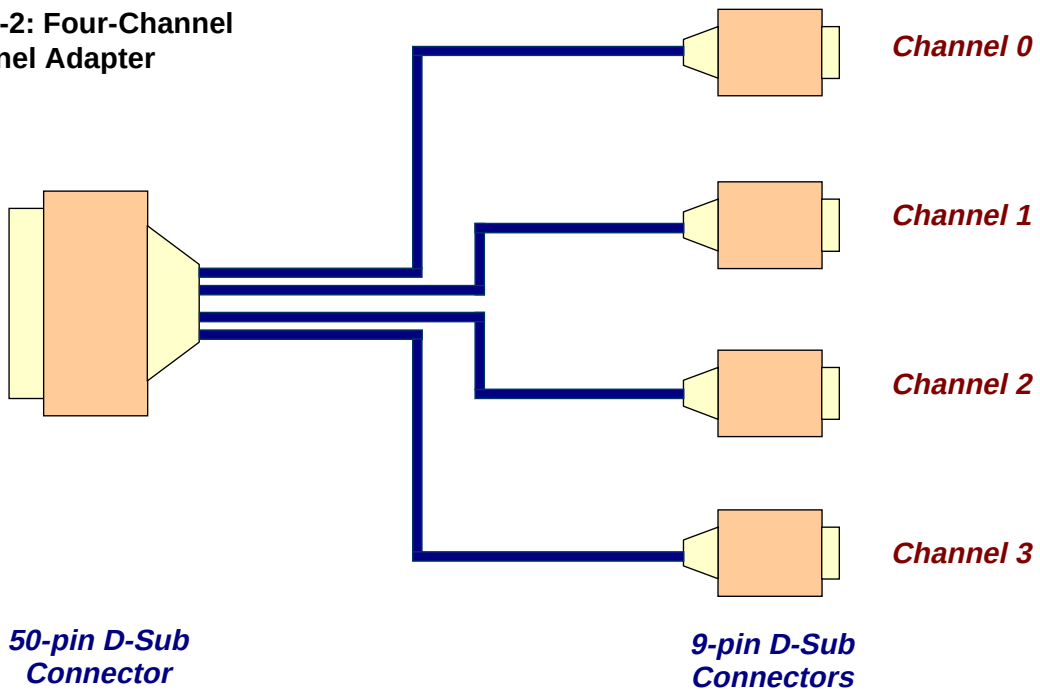
3.1.3 Cabling

3.1.3.1 Four-Channel Frontpanel Adapter

In order to provide separate serial I/O channelling, a four-channel frontpanel adapter (CP-ADAP-CP345-DSUB50) can be connected to the 50-pin frontend connector. This adapter terminates on the user side with four male 9-pin D-Sub connectors which include the signals of channels 0 to 3. The adapter cables have a length of approx. 15 cm.

The pinouts of the adapter's 50-pin and 9-pin DSub connectors are shown in the Functional Description chapter of this manual.

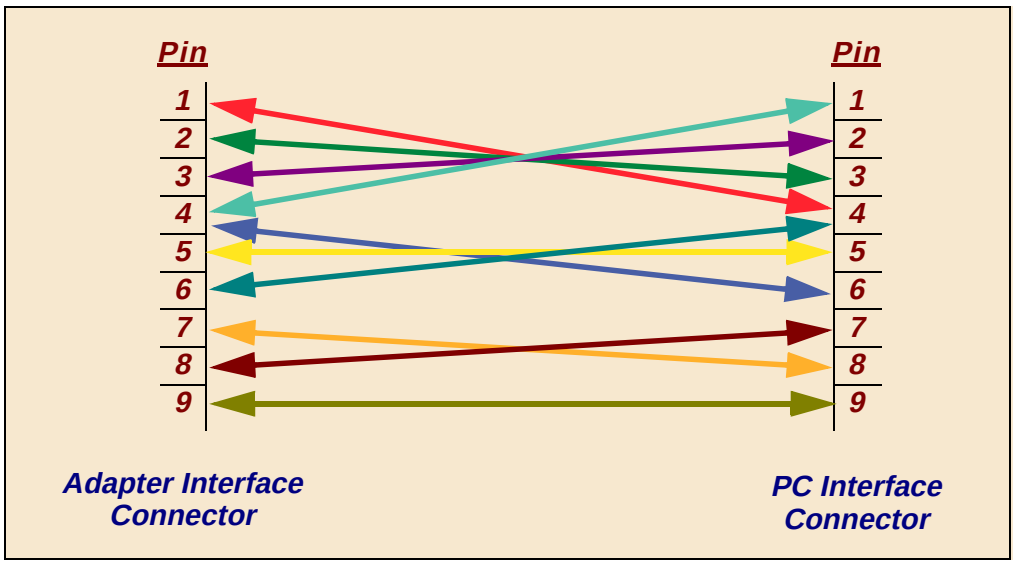
Figure 3-2: Four-Channel Frontpanel Adapter



3.1.3.2 Null-Modem Cable

If operating in RS232 mode, a null-modem cable can be used in order to allow the use of a terminal program. The null-modem cable is provided with a 9-pin female D-Sub connector on either end, thus linking the adapter interface with the PC interface. The null-modem cable is not supplied by PEP Modular Computers. It can be manufactured by the customer according to the following pin assignment diagram.

Figure 3-3: Null-Modem Pin Assignment



3.2 Software Installation

Drivers for Windows© NT, QNX© and VxWorks© are available for the PMC245. For the installation of any required driver, please refer to the driver documentation contained in the software kit.



Note...

Before installing the driver software it is recommended that all boards required for the application be installed. Failure to do so may result in improper operation of the system.

Chapter 4

Configuration

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4. Configuration

4.1 Hardware Configuration

The PMC245 complies fully with the Plug and Play philosophy. The board has no jumpers to be configured by the customer.

4.2 Software Configuration

Configuring is done as required using the drivers for Windows© NT, QNX© or VxWorks©. For driver installation, please refer to chapter 3.2 of this manual and to the driver documentation supplied on the driver kit.

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