Modular Computers ®

PMC252

PMC SERCOS Controller Card
for Full Digital Motion Control

Manual ID 21417, Rev. Index 0100
Feb 00

CE

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

Revision History

Manual/Product Title:	PMC252		
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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**.

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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.

PEP Advantage

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

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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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General Instructions on Usage

- In order to maintain *PEP's* product warranty, this product must not be altered or modified in any way. Changes or modifications to the device, which are not explicitly approved by *PEP Modular Computers* and described in this manual or received from *PEP* Technical Support as a special handling instruction, will void your warranty.
- 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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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: 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. Due to its size, this manual cannot be downloaded via the internet. 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 PMC252 module described by this manual is a single-size PCI mezzanine card provided with dual SERCOS control functionality. The two physical SERCOS interfaces of the PMC252 consist of two fiber optic transceivers. To each of these transceivers an optical fiber ring can be connected.

The SERCOS control is accomplished by two integrated controllers based on the SERCON 410B or on the SERCON 816 chip. Data between the SERCOS controller and the host CPU is exchanged via the PCI target chip PLX9052.

The main features of the PMC252 SERCOS controller module are the following:

- master/slave SERCOS controller functionality
- 2 separately controlled SERCOS rings
- internal and external synchronization
- full PCI Plug & Play operation

Board Variants

PMC252 modules are available in two minor board variants with different maximum data rate depending on the SERCOS controller chip installed:

- SERCON 410B: data rate: ≤ 4MBaud
- SERCON 816: data rate: ≤16MBaud

Connectivity

A PMC252 SERCOS controller module is provided with the following physical interfaces:

- SERCOS fiber optic transmitter/receiver 1
- SERCOS fiber optic transmitter/receiver 2
- RS422 connector for external synchronization (on board)

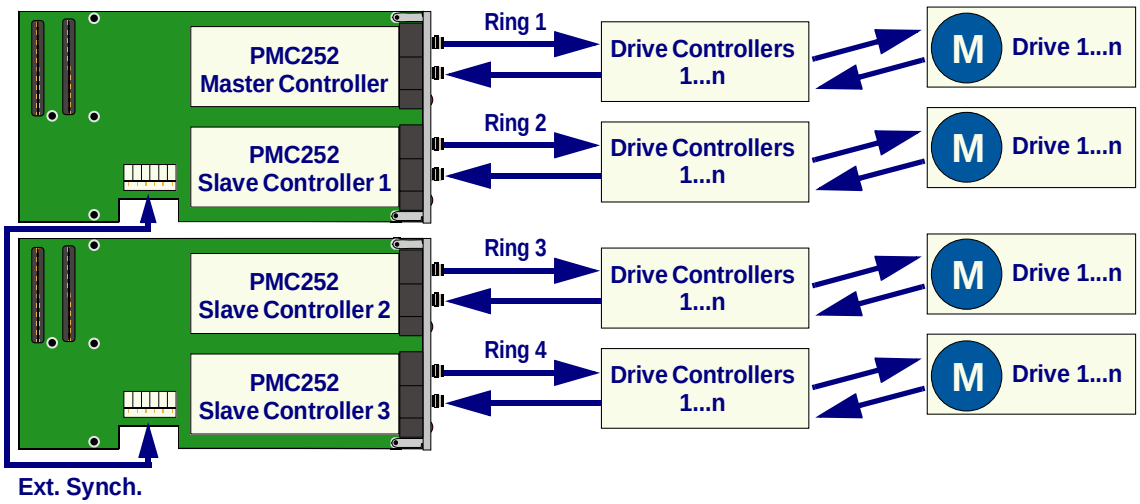
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1.2.2 System-Relevant Information

The following information should be taken into account before running or installing a PMC252 SERCOS controller module in your CompactPCI system.

System Configuration

Figure 1-1: Architecture of a PMC252-Controlled System



A PMC252-controlled system is made up of the following components:

- one *PEP Modular Computers* **system controller board** is capable of controlling one **PMC252 master controller**;
- one PMC252 master controller is capable of synchronizing up to three **PMC252 slave controllers** (theoretically, it is capable of synchronizing an unlimited number of slave controllers);
- each PMC252 controller (master or slave) is capable of controlling up to 254 **drive controllers**;
- the number of **drives** controlled by each drive controller depends on the type of drive controller installed.

SERCOS Ring Synchronization

The SERCOS rings of PMC252 modules can be used as both master and slave for internal and/or external synchronization via an opto-isolated RS422 line. Internal and external synchronization are achieved by setting a dedicated register bit. They do not exclude one another.

Internal Synchronization

Internal synchronization means that one SERCOS controller of a given PMC252 module is used as a master to synchronize the other controller (ring) of the same module.

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External Synchronization

External synchronization implies that the SERCOS controller provides synchronization for one or more controllers (rings) on another PMC252 module in the same system.

Hardware Requirements

PMC252 modules can be installed on the various *PEP Modular Computers* carrier boards or system controller boards with PMC connectivity.

CompactPCI Systems

- CP390, CP690
- CP302, CP602
- CP600, CP610, CP611, CP612
- CP320

VMEbus Systems

- VMP1

Operating Systems

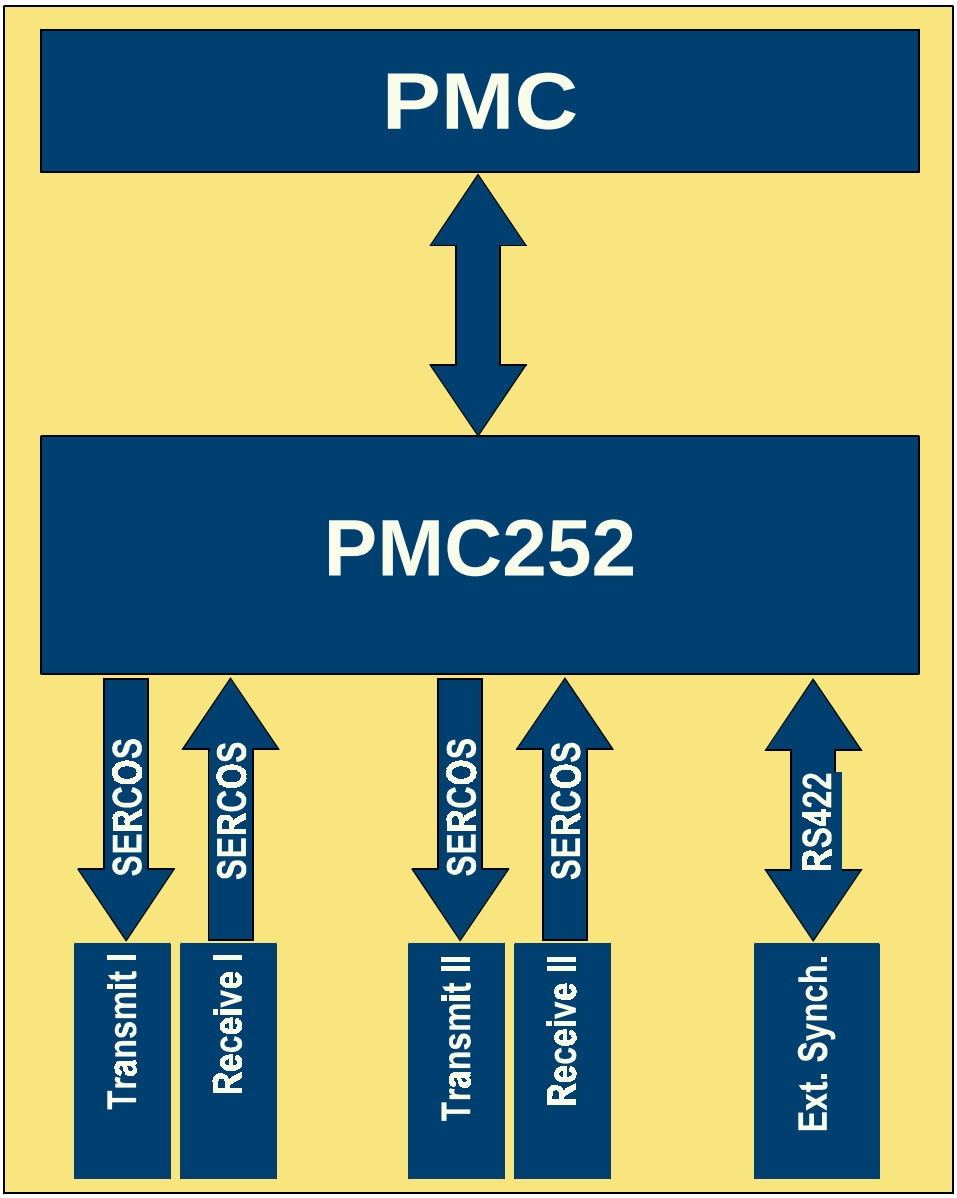
The PMC252 can operate under different operating systems. Please contact *PEP Modular Computers* or one of their authorized agents for available solutions.

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1.3 Board Diagrams

1.3.1 Functional Block Diagram

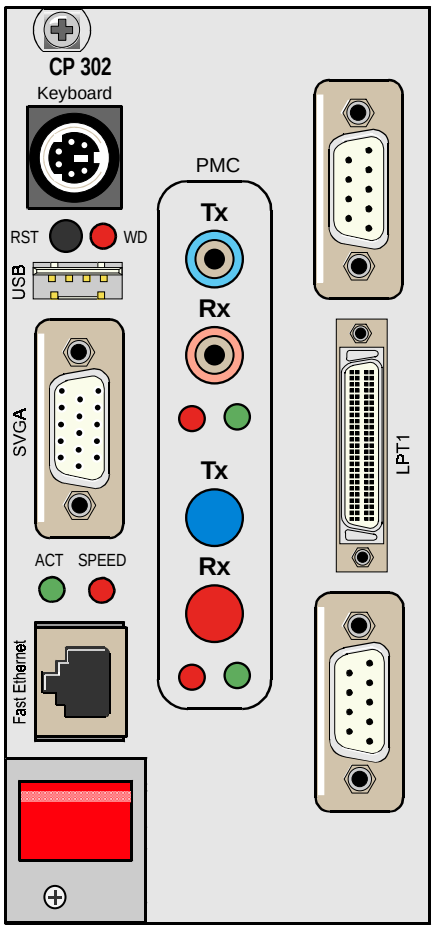
Figure 1-2: PMC252 Functional Block Diagram



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1.3.2 Front Panel/Bezel

Figure 1-3: PMC252 Bezel (mounted on CP302 as a carrier)



Legend:

Ring 1 (Top, uncapped)

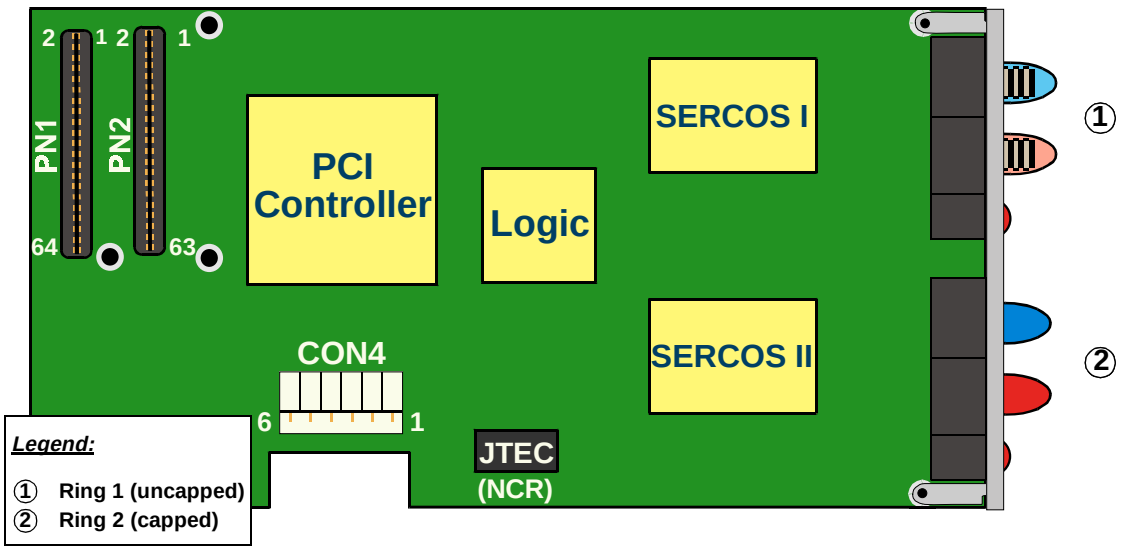
Tx	Transmit
Rx	Receive
LED's:	
- Red:	Error on Ring 1
- Green:	User-defined

Ring 2 (Bottom, capped)

Tx	Transmit
Rx	Receive
LED's:	
- Red:	Error on Ring 2
- Green:	User-defined

1.3.3 Board Layout

Figure 1-4: PMC252 Board Layout (Front)



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1.4 Technical Specifications

Table 1-1: PMC252 Technical Specifications

PMC252	Specification
PMC-to-PCI Interface	PN1/PN2, 32-bit bus at 33MHz, VIO = 5V (PMC/CMC IEEE P1386.1/Draft 2.0)
PCI Bridge	PLX 9052 compliant with PCI 2.2 specifications 32-bit PCI target device at 33MHz
SERCOS Interface	Two SERCOS controllers: • SERCON 410B (data rate: ≤4MBaud) or • SERCON 816 (data rate: ≤16MBaud)
Connectivity	2 pairs of front-end fiber optic • transmitter • receiver 6-pin opto-isolated RS422 connector for external synchronization (on-board)
Synchronization	Internal/external: max. 1 master and 3 slave SERCOS rings (2 PMC252 modules)
Indicators	2 pairs of front-end LED's: • Red: Error • Green: User-defined
Mechanical Compliance	Single-size PMC (IEEE P1386.1/Draft 2.0)
Power Supply	Used: 5V
Power Consumption	0.33A at 5V (1.65W)
Temperature Ranges	Operation: • 0°C..60°C (standard) • -25°C..75°C (E1) Storage: • -55°C..85°C
Humidity	0..95%, non-condensing
Dimensions	74mm x 149 mm x 13 mm
Weight	71g

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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 Environmental Tests

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

1.6 Related Publications

1.6.1 CompactPCI Systems/Boards

- CompactPCI Specification, V. 2.0, Rev. 3.0
- *PEP Modular Computers* CompactPCI System Manual, ID 19953

1.6.2 PMC Mezzanine Cards

- 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

1.6.3 SERCOS

- SERCOS Interface Standard IEC 61491
- SERCON 410B and SERCON816 Reference Manuals

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Chapter 2

Functional Description

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2. Functional Description

2.1 General Information

The PMC252 SERCOS controller module is a fully PCI Plug&Play-compatible, single-size PCI mezzanine card equipped with two separately controlled SERCOS rings. As the PMC252 module provides both master and slave controller functionality, it can be used for internal and/or external synchronization of independent SERCOS rings.

The module itself is provided with two SERCOS interfaces which are compliant with the IEC 61491 standard. The interfaces are designed to provide digital data exchange between intelligent motion controllers (system controller board + PMC252) and intelligent drives (drive controller). In the case of the PMC252, exact synchronization between axes is achieved by means of a fiber optic medium, allowing also on-demand transmission for setup purposes and diagnostics between drive and controller.

The use of fiber optics guarantees an absolutely disturbance-free transmission that covers also de-centralized drive solutions. Thanks to the compliance with an international standard, compatibility is ensured with different control systems and drives.

With the solution provided by the PMC252, SERCOS control signals are transmitted via optical fiber, which is terminated on both ends with standard F-SMA IEC 86B connectors.

2.2 Specifics

The PMC252 SERCOS controller module is based on the ASIC SERCON 410B or SERCON 816 respectively and supports, for the most part, all the functions of the ASIC. It is possible to operate the PMC252 at different data rates, depending on the type of controller installed:

The data exchange between both SERCOS controllers and the host controller is accomplished by the PCI target chip PLX9052.

In addition, the module is provided with two LED’s for each SERCOS ring, one to indicate transmission errors on the ring, while the other one is user-definable.

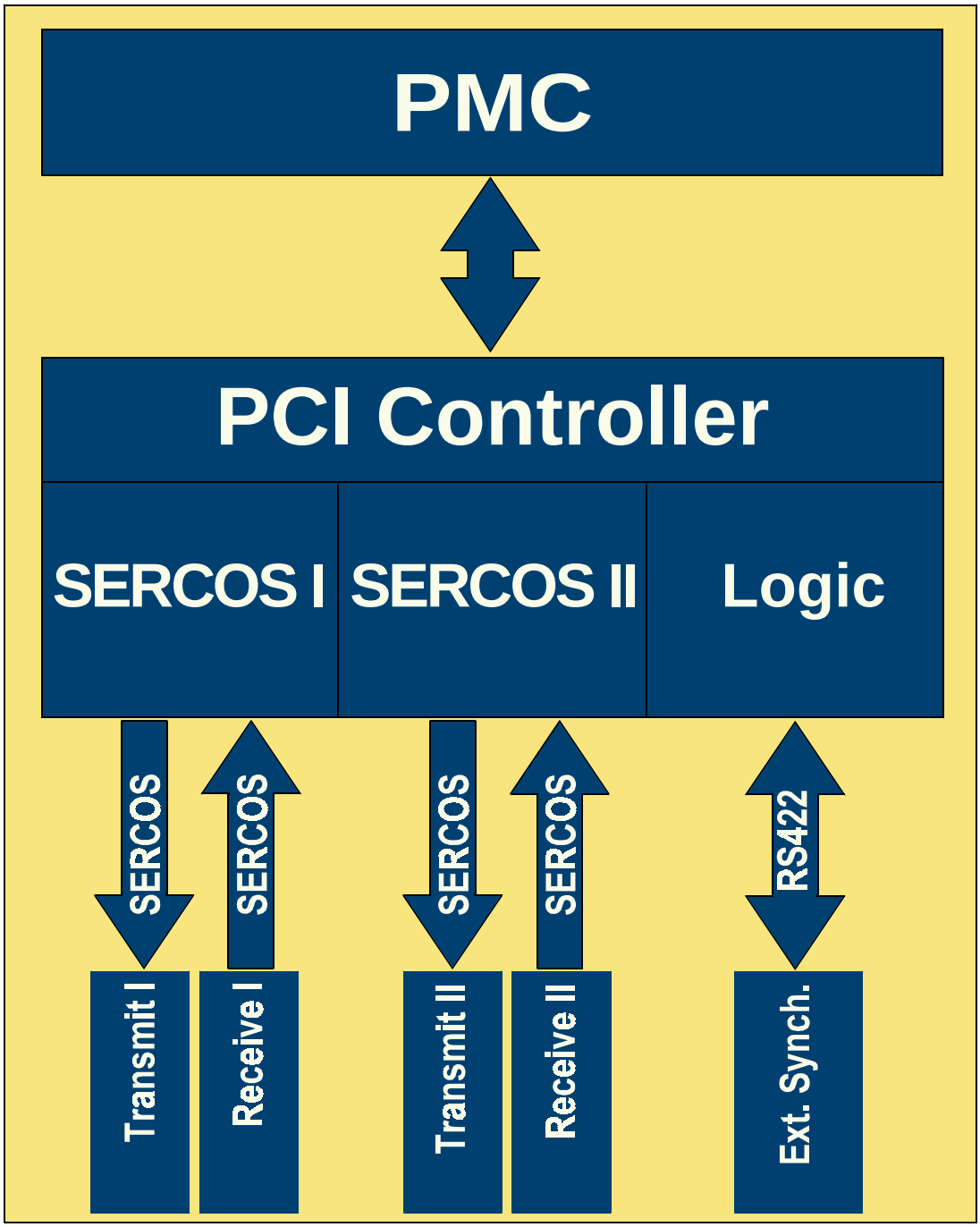
The module can be operated either as a master or slave. If used as a master, ring 1 of a PMC252 module can synchronize either ring 2 of the same module (internal synchronization), or one or more rings of an additional PMC252 module (external synchronization). Synchronization is accomplished by routing the control signals of the SERCOS controller to the on-board RS422 connector CON4.

Internal and external synchronization do not exclude one another.

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2.3 Functional Block Diagram

Figure 2-1: PMC252 Functional Block Diagram



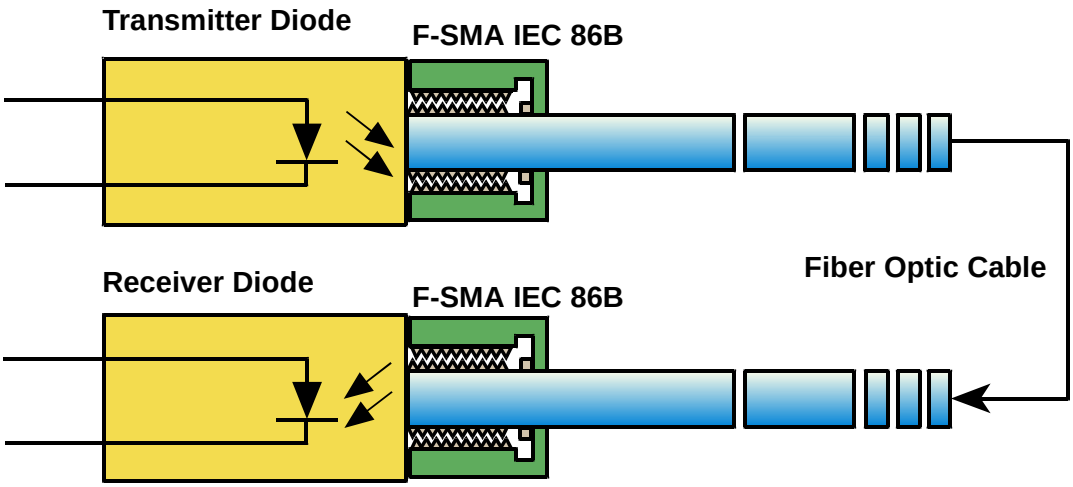
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2.4 Board Interfaces

2.4.1 SERCOS Interfaces

The PMC252 is provided with two pairs of F-SMA IEC 86B connectors for fiber optic connections.

Figure 2-2: Schematics of F-SMA IEC 86B Connector Interface



2.4.2 External Synchronization Interface

The PMC252 is equipped with a 6-pin row on-board RS422 connector (CON4) for external synchronization. The CON4 pinouts are shown in the folllowing table.

Table 2-1: CON4 Pinouts

Pin	Function
1	/EXTSYNC_OUT
2	EXTSYNC_OUT
3	Shield
4	Shield
5	/EXTSYNC_IN
6	EXTSYNC_IN

2.4.3 PMC Interface

The PMC252 is equipped with the standard PMC connectors PN1 and PN2. Please refer to the CompactPCI Specification or *PEP Modular Computers* CompactPCI System Manual for the pinouts of these connectors.

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2.5 SERCOS Control Logics

The PMC252 is assembled with two SERCON controllers (ASIC's) and all related logical components to handle two SERCOS rings. Both function blocks (SERCOS 1 and 2) are identical from the hardware point of view. They differ only in address ranges and bit assignment in the control registers.

The following description is related to any of the two SERCOS function blocks.

Interrupt Sources

Each SERCOS function block has three interrupt sources towards the PCI interface. It is possible to use interrupt sources simultaneously.

- signal CON_CLK (pin 35) of the SERCON controller
- signal WDOGN (pin 24) of the SERCON controller (SERCON 816 only)
- signal INT0 (pin 44) of the SERCON controller

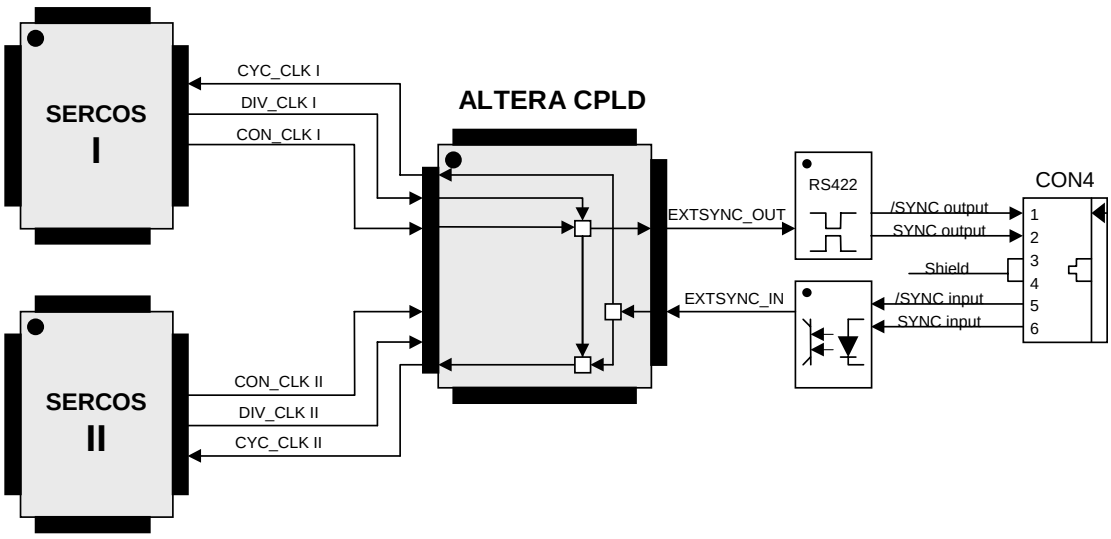
The signals CON_CLK and INT0 can be used to generate a cyclic interrupt to synchronize the SERCOS cycle with the application software.

The signal WDOGN is a safety feature of the SERCON 816 ASIC. This watchdog signal can be used to trigger the system controller via interrupt for error handling.

Synchronization

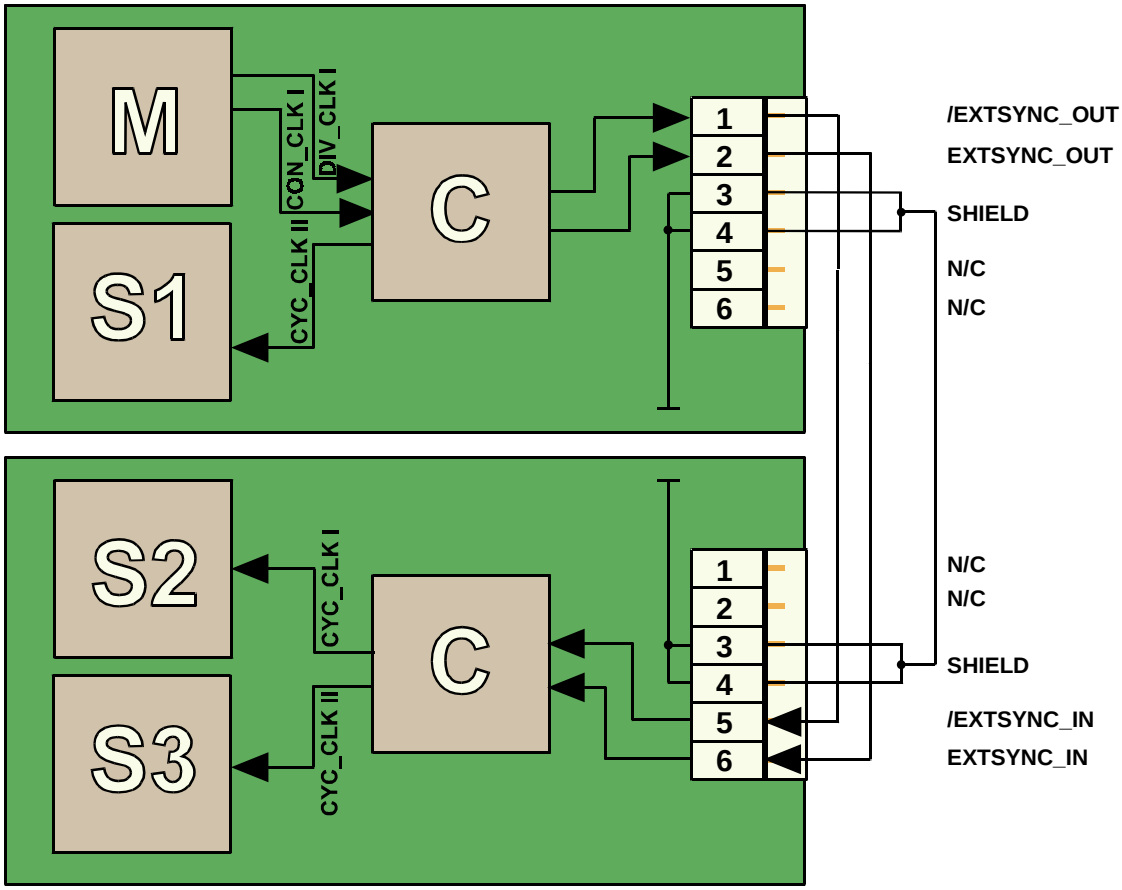
The following picture shows the wiring for the internal synchronization of the two on-board SERCOS rings and the external synchronization with an additional PMC252 controller module. The signal flow is controlled via an on-board register (refer also to the description of the SERCOS Control Register in the Configuration chapter in this manual).

Figure 2-3: PMC252 Internal Synchronization Wiring



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Figure 2-4: PMC252 External Synchronization Wiring



Legend:

M	**Master Ring**
S_n	**Slave Ring**
C	**ALTERA Controller**

Synchronization Signals

Internal Synchronization of Rings 1 and 2

SERCOS ring 1 is operated as master. One of the signals `DIV_CLK I` or `CON_CLK I` has to be connected to `CYC_CLK II`.

External Synchronization of Ring 1

SERCOS ring 1 is operated as slave. The signal `EXTSYNC_IN` has to be connected to `CYC_CLK I`.

External Synchronization of Rings 1 and 2

SERCOS rings 1 and 2 are operated as slaves. The signal `EXTSYNC_IN` has to be connected to `CYC_CLK I` and `CYC_CLK II`.

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External Synchronization of Ring 2

SERCOS ring 2 is operated as slave. The signal EXTSYNC_IN has to be connected to CYC_CLK II.

Ring 1 Synchronizes an External Ring

SERCOS ring 1 is operated as master. One of the signals DIV_CLK I or CON_CLK I has to be connected with EXTSYNC_OUT.

Ring 1 Synchronizes Ring 2 and an External Ring

SERCOS ring 1 is operated as master. One of the signals DIV_CLK I or CON_CLK I has to be connected to CYC_CLK II and EXTSYNC_OUT.



Note...

For a correct programming of the signals CYC_CLK, CON_CLK and DIV_CLK of the SERCON controllers please refer to the SERCON410B or SERCON816 reference manuals.

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Chapter 3

Installation

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3. Installation

3.1 Hardware Installation

The PMC252 module can be installed in any PMC-compatible computer with a free slot (bus master or non). The frontpanel of the carrier board or system controller board with PMC connectivity should be safely secured by screws to the chassis to avoid lossening of the board through vibration and to ensure correct earth cnnection.



Caution, Electric Shock!

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



ESD Equipment!

Your carrier board and PMC module contain electrostatically sensitive devices. Please observe the necessary precautions to avoid damage to your board:

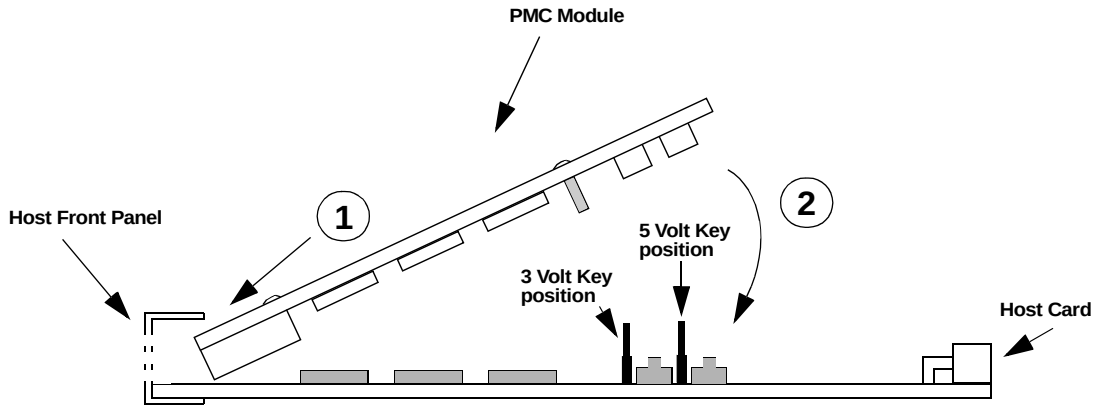
- Discharge your clothing before touching the assembly. Tools must be discharged before use.
- Do not touch components, connector pins or traces.
- If working at an anti-static workbench with professional discharging equipment, please do not fail to use it.

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. Place the EMC gasket on the bezel of your PMC module.
2. Push the PMC bezel into the mounting hole of the front-panel of the carrier and plug the connectors together.
3. Use three screws (M2.5 x 6mm) to fix the board.

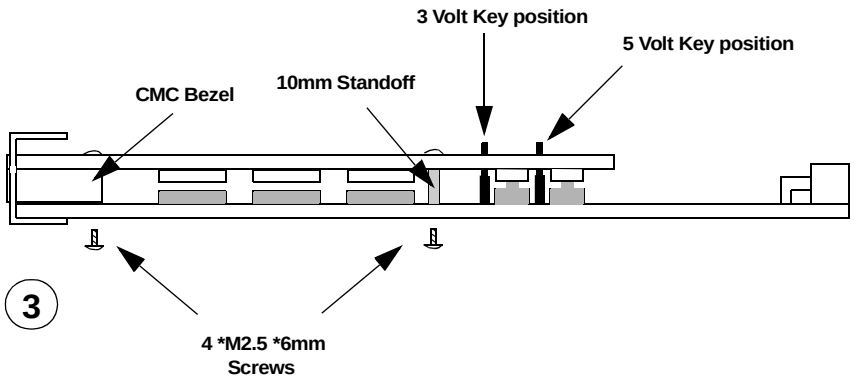
Figure 3-1: Installation Diagrams



Note...

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

I



3.1.2 Cabling

The fiber optic cable for the SERCOS motion control rings can consist of either plastic or glass. The cable specification must comply with the SERCOS interface standard EN 61491.

Transmit and receive connectors are both of the F-SMA IEC 86B. It is important to protect the connectors from contamination when the fiber optic cable is not connected. Therefore, all connectors are delivered with a protection cap, which should be used on disconnected fiber optic cables. Contamination can lead to a distorted data transmission. It is possible to program the SERCON controller to indicate conditions like “open SERCOS ring, fiber optic break” or “line distortion” via the yellow front-end LED. This LED is connected to the L_ERRN signal (pin 32) of the SERCON controllers.

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3.2 Software Installation

The PMC252 is a passive board without any on-board software. It is supplied complete with the SERCOS drivers for the supported operating systems. Please contact *PEP Modular Computers* or one of their authorized agents for the supported operating systems.

The main driver features are listed below:

- Support of several SERCOS rings
- No restrictions in number of SERCOS slaves per ring
- Fully configurable ring and transmission parameters
- Time slot calculation for MST, MDT and AT telegrams
- Real-time data transmission with configurable size of command and feedback values
- Full support of service channel
- Read/write of slave parameters (all elements of a parameter are supported)
- Handling of commands (set, state, delete, suspend)
- Phase switching
- Parallel processing of jobs

For any detailled information on the driver installation and its features, please refer to the driver manual.

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Chapter 4

Configuration

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4. Configuration

The PMC252 is fully PCI Plug & Play-compatible. Therefore, no hardware configuration is required.

Software applications may require to configure data in the PMC252 registers. For this purpose, the configurable memory is described in the following.

4.1 Local Memory Map

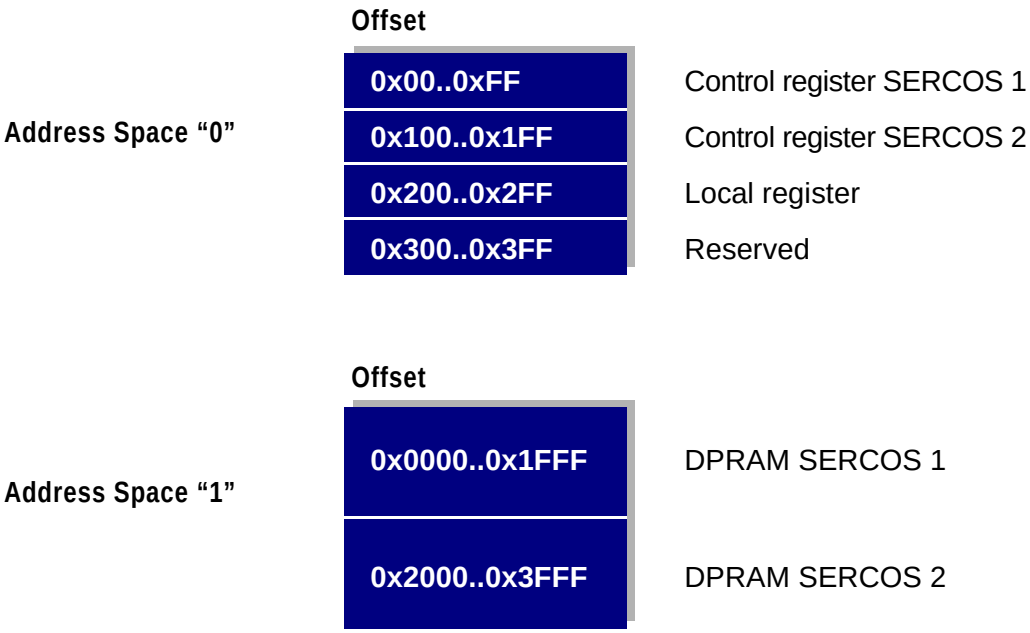
The two SERCOS controllers and the on-board registers are mapped into the PCI memory space. The PCI base address for the two SERCOS control registers and the on-board registers is the local address space “0” of the PLX 9052 target chip. There are fourty 16-bit SERCOS control registers for each SERCOS controller and eight 16-bit on-board registers.

The total extension of the local address space “0” is 1 kB.

The PCI base address for the two SERCOS DPRAM blocks is the local address space “1” of the PCI 9052 target chip. There are 2048 words of DPRAM storage for each SERCOS controller.

The total extension of the local address space “1” is 16 kB.

Figure 4-1: Local Memory Map (Address Spaces “0” and “1”)



4.2 Hardware Control Registers

The following PMC252 registers are special registers for the control of the on-board hardware.

4.2.1 Hardware Ident Number

This register describes the type of hardware.

The location of the hardware ident number register is 0x00.

Table 4-1: Hardware ID Control Register

Bits	Type	Default	Function/Values	
7-0	R	1	Board ident number:	
			0 1	Reserved PMC SERCOS controller board

4.2.2 Hardware Revision Index

The hardware revision index can be used by software drivers to identify the device.

The location of the hardware index control register is 0x04.

Table 4-2: Hardware Index Control Register

Bits	Type	Default	Function/Values	
7-0	R	–	Hardware revision index:	
			0	Index 0000

The hardware revision ID is incremented by 1 for each hardware revision.

4.2.3 Logic Version

The logic version can be used for support purposes to determine the current logic version.

The location of the logic version register is 0x08.

Table 4-3: Logic Version Control Register

Bits	Type	Default	Function/Values	
7-0	R	–	Logic version:	
			0	Index 0000

The logic version is incremented by 1 for each logic update.

4.2.4 SERCOS Control Register

This register controls the SERCOS configuration registers.

The I/O location of the SERCOS control register is 0x0C.

Table 4-4: SERCOS Control Register

Bits	Type	Default	Function/Values	
7-6	RW	0	External synchronization EXTSYNC_OUT output:	
			00 01 10	Disabled (input low) EXTSYNC_OUT connected to DIV_CLK1 of SERCOS 1 EXTSYNC_OUT connected to CON_CLK1 of SERCOS 1
5-3	RW	0	Input of synchronization signal CYC_CLK2 from SERCOS 2:	
			000 001 010 100	Disabled (input low) CYC_CLK2 connected to DIV_CLK1 of SERCOS 1 CYC_CLK2 connected to CON_CLK1 of SERCOS 1 CYC_CLK2 connected to the external synchronization connector signal EXTSYNC_IN
2	RW	0	Input of synchronization signal CYC_CLK1 from SERCOS 1:	
			0 1	Disabled (CYC_CLK1 low) CYC_CLK1 is connected to the external synchronization connector EXTSYNC_IN
1	RW	1	Configuration of data rate SBAUD16 of SERCOS 2 (important for SERCON816)	
			1 0	2.4 MBaud 8.16 MBaud
0	RW	1	Configuration of data rate SBAUD16 of SERCOS 1 (important for SERCON816)	
			1 0	2.4 MBaud 8.16 MBaud

4.2.5 I/O Control Register

This register describes the status of the I/O control signals.

The location of the I/O control register is 0x10.

Table 4-5: I/O Control Register

Bits	Type	Default	Function/Values	
7-2	–	0	Reserved	
1	RW	0	Status of external LED 2:	
			1 0	ON OFF
0	RW	0	Status of external LED 1:	
			1 0	ON OFF

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4.2.6 Interrupt Configuration Register

The interrupt configuration register contains a series of bits defining the interrupt routing for the local interrupt signals. The interrupt mask register bits enable the appropriate bits when high, and disable them when low.

The location of the interrupt configuration register is 0x14.
The default configuration is “all interrupts disabled”.

Table 4-6: Interrupt Configuration Register

Bits	Type	Default	Function/Values	
7	RW	0	Reserved	
6	RW	0	SERCOS 2 control clock interrupt (Pin 35, CON_CLK)	
			1 0	Enable Disable
5	RW	0	SERCOS 2 watchdog interrupt (Pin 24, WDOGN)	
			1 0	Enable Disable
4	RW	0	SERCOS 2 controller interrupt (Pin 44, INT0)	
			1 0	Enable Disable
3	RW	0	External synchronization interrupt (INPUT)	
			1 0	Enable Disable
2	RW	0	SERCOS 1 control clock interrupt (Pin35, CON_CLK)	
			1 0	Enable Disable
1	RW	0	SERCOS 1 watchdog interrupt (Pin 24, WDOGN)	
			1 0	Enable Disable
0	RW	0	SERCOS 1 controller interrupt (Pin 44, INT0)	
			1 0	Enable Disable

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4.2.7 Interrupt Status Register

This register describes the status of interrupts. “1” indicates that interrupts are active, “0” that they are inactive.

The location of the interrupt status register is 0x18.

Table 4-7: Interrupt Configuration Register

Bits	Type	Default	Function/Values	
7	R	0	Reserved	
6	R	0	SERCOS 2 control clock interrupt (Pin 35, CON_CLK)	
			1 0	Active Inactive
5	R	0	SERCOS 2 watchdog interrupt (Pin 24, WDOGN)	
			1 0	Active Inactive
4	R	0	SERCOS 2 controller interrupt (Pin 44, INT0)	
			1 0	Active Inactive
3	R	0	External synchronization interrupt (INPUT)	
			1 0	Active Inactive
2	R	0	SERCOS 1 control clock interrupt (Pin35, CON_CLK)	
			1 0	Active Inactive
1	R	0	SERCOS 1 watchdog interrupt (Pin 24, WDOGN)	
			1 0	Active Inactive
0	R	0	SERCOS 1 controller interrupt (Pin 44, INT0)	
			1 0	Active Inactive

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4.2.8 Interrupt Clear Register

This register controls the state of the interrupt clear register. Writing a “1” to “0” sequence to a bit of this register clears the corresponding interrupt request bit to “0”. Reading this register returns the current value of the clear bits.

The location for the interrupt clear register is 0x1C.

Table 4-8: Interrupt Configuration Register

Bits	Type	Default	Function/Values	
7	R	0	Reserved	
6	R	0	SERCOS 2 control clock interrupt (Pin 35, CON_CLK)	
			1 0	Clear bit No clearing
5	R	0	SERCOS 2 watchdog interrupt (Pin 24, WDOGN)	
			1 0	Clear bit No clearing
4	R	0	SERCOS 2 controller interrupt (Pin 44, INT0)	
			1 0	Clear bit No clearing
3	R	0	External synchronization interrupt (INPUT)	
			1 0	Clear bit No clearing
2	R	0	SERCOS 1 control clock interrupt (Pin35, CON_CLK)	
			1 0	Clear bit No clearing
1	R	0	SERCOS 1 watchdog interrupt (Pin 24, WDOGN)	
			1 0	Clear bit No clearing
0	R	0	SERCOS 1 controller interrupt (Pin 44, INT0)	
			1 0	Clear bit No clearing

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