PMC-8631

NuIPC / NuDAQ

Ultra320 SCSI Interface

PMC Module

User's Manual

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1 Introduction

The PMC-8631 single-channel Ultra320 SCSI PMC card offers data transfer rates up to 320MB/s and achieves maximum transfer rates on a Wide SCSI bus (16-bit) with both Single-Ended (SE) and Low Voltage Differential (LVD) devices. The PMC-8631 is PCI Local Bus Specification, Revision 2.3; SCSI Parallel Interface-4 (SP1-4), Revision 10; and SCSI-3 standard compliant in addition to supporting multimode.

1.1 Features and Specifications

PCI Interface Features

- Supports 66-MHz, 64-bit interface down to PCI-33MHz, 32-bit interface
- Performance-enhanced 32-bit operating mode allows 32-bit data transactions with 32- and 64-bit addressing (SAC/DAC)
- Supports 3.3V power supply, 5V tolerance

SCSI Features

- SCSI data transfers up to 320 MB/sec
- 8- or 16-bit SCSI data path
- SCSI data offsets to 254 transfers
- Supports rear SCSI by JP1 jumper setting
- Advanced multimode I/O cell is compatible with LVD or SE devices
- Extensive hardware support for disconnect/reconnect and scatter/gather
- Full support for initiator operation
- Full support for domain validation, which provides two levels (basic and enhanced) of SCSI bus configuration testing to help ensure Ultra320 and Ultra160 SCSI topologies operate at optimum speed
- Multiple target ID enables responses to multiple IDs as a SCSI target
- Full support for Cyclic Redundancy Check (CRC) for 16-bit SCSI synchronous data transfers. CRC detects data integ-

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rity errors that would not be detected by simple parity checking used by previous SCSI generations. The higher data rates achieved on existing LVD cable configurations mandated this improved data integrity feature.

- Supports Quick Arbitration and Selection (QAS) and SCSI arbitration fairness. QAS reduces overhead when bus control is transferred between devices. Arbitration fairness prevents devices from hogging the bus by guaranteeing each device a chance to win arbitration.
- Supports Seamless Streaming technology, which allows full implementation of SCSI packet protocol for sending multiple commands, receiving multiple statuses, and transferring data for multiple commands during one SCSI connection. There is virtually no delay between packets for different commands.

SCSI Device Support:

- Using LVD devices, each channel supports up to 15 devices on a 12-meter cable. In a point-to-point arrangement, cabling can extend to 25 meters.
- Support for a combination of 16-bit Ultra320, Ultra160 (Ultra3), Ultra2, Ultra, and standard SCSI devices including disk drives, disk arrays, tape drives, CDROM and CD-R drives, jukeboxes, removable drives, scanners, and printers.

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2 Getting Started

This chapter describes how to prepare the PMC-8631 for installation. Please carefully review the unpacking information before removing the product. The optional settings are also specified below.

2.1 Unpacking Checklist

Check the shipping carton for any damage. If the shipping carton and contents are damaged, notify the dealer for a replacement. Retain the shipping carton and packing materials for inspection by the dealer. Obtain authorization before returning any product to ADLINK.

Check the following items are included in the package, if there are any items missing, please contact your dealer:

Included Items

- PMC-8631 Ultra320 SCSI Interface PMC Module
- Ultra320 SCSI cable
- This User's Manual

Note: The packaging of OEM versions with non-standard configuration, functionality, or package may vary according to different configuration requests.

CAUTION: The boards must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the board. Wear a grounded wrist strap when servicing

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2.2 Unpacking Procedure

The PMC-8631 card contains sensitive electronic components that can be easily damaged by static electricity.

Prepare a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the card module carton for obvious damage. Shipping and handling may cause damage to the module. Be sure there is no obvious damage due to shipping and handing by examining the shipping box.

After opening the card module carton, extract the system module and place it only on a grounded anti-static surface, component side up.

Note: DO NOT APPLY POWER TO THE CARD IF IT HAS BEEN DAMAGED.

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2.3 PCB Layout

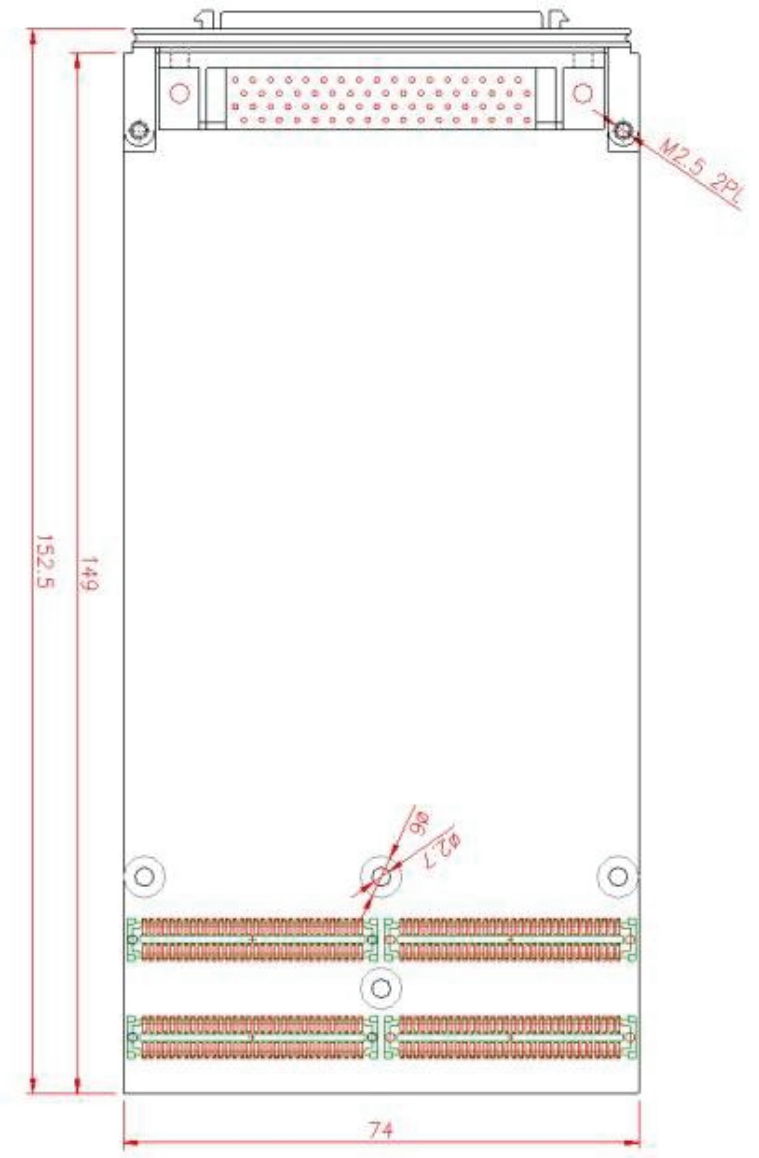


Figure 2-1: PMC-8631 Layout

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2.4 Functional Block Diagram

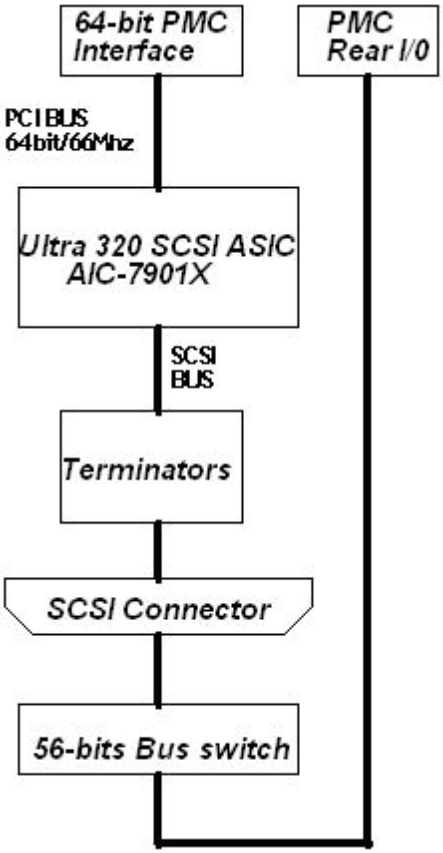


Figure 2-2: PMC-8631 Functional Layout

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2.5 Connectors and Pinouts

PMC CONNECTOR: PN1

SIGNAL	PIN	PIN	SIGNAL
RESERVED	1	2	RESERVED
GND	3	4	INTA#
RESERVED	5	6	RESERVED
RESERVED	7	8	5V
RESERVED	9	10	RESERVED
GND	11	12	RESERVED
SCSI_PCICLK	13	14	GND
GND	15	16	GNT#
REQ#	17	18	5V
VIO	19	20	AD[31]
AD[28]	21	22	AD[27]
AD[25]	23	24	GND
GND	25	26	CBE[3]#
AD[22]	27	28	AD[21]
AD[19]	29	30	5V
VIO	31	32	AD[17]
FRAME#	33	34	GND
GND	35	36	IRDY#
DEVSEL#	37	38	5V
RESERVED	39	40	RESERVED
RESERVED	41	42	RESERVED
PAR	43	44	GND
VIO	45	46	AD[15]
AD[12]	47	48	AD[11]
AD[9]	49	50	5V
GND	51	52	CBE[0]#
AD[6]	53	54	AD[5]
AD[4]	55	56	GND
VIO	57	58	AD[3]
AD[2]	59	60	AD[1]
AD[0]	61	62	5V
GND	63	64	REQ64#

Table 2-1: PN1 Pin Assignment

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PMC CONNECTOR: PN2

SIGNAL	PIN	PIN	SIGNAL
RESERVED	1	2	RESERVED
RESERVED	3	4	RESERVED
RESERVED	5	6	GND
GND	7	8	RESERVED
RESERVED	9	10	RESERVED
RESERVED	11	12	3.3V
PCIRST#	13	14	RESERVED
3.3V	15	16	RESERVED
RESERVED	17	18	GND
AD[30]	19	20	AD[29]
GND	21	22	AD[26]
AD[24]	23	24	3.3V
IDSEL	25	26	AD[23]
3.3V	27	28	AD[20]
AD[18]	29	30	GND
AD[16]	31	32	CBE[2]#
GND	33	34	RESERVED
TRDY#	35	36	3.3V
GND	37	38	STOP#
PERR#	39	40	GND
3.3V	41	42	SERR#
CBE[1]#	43	44	GND
AD[14]	45	46	AD[13]
RESERVED	47	48	AD[10]
AD[8]	49	50	3.3V
AD[7]	51	52	RESERVED
3.3V	53	54	RESERVED
RESERVED	55	56	GND
RESERVED	57	58	RESERVED
GND	59	60	RESERVED
ACK64#	61	62	3.3V
GND	63	64	RESERVED

Table 2-2: PN2 Pin Assignment

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PMC CONNECTOR: PN3

SIGNAL	PIN	PIN	SIGNAL
RESERVED	1	2	GND
GND	3	4	CBE7#
CEB6#	5	6	CBE5#
CEB4#	7	8	GND
VIO	9	10	PAR64
AD63	11	12	AD62
AD61	13	14	GND
GND	15	16	AD60
AD59	17	18	AD58
AD57	19	20	GND
VIO	21	22	AD56
AD55	23	24	AD54
AD53	25	26	GND
GND	27	28	AD52
AD51	29	30	AD50
AD49	31	32	GND
GND	33	34	AD48
AD47	35	36	AD46
AD45	37	38	GND
VIO	39	40	AD44
AD43	41	42	AD42
AD41	43	44	GND
GND	45	46	AD40
AD39	47	48	AD38
AD37	49	50	GND
GND	51	52	AD36
AD35	53	54	AD34
AD33	55	56	GND
VIO	57	58	AD32
RESERVED	59	60	RESERVED
RESERVED	61	62	GND
GND	63	64	RESERVED

Table 2-3: PN3 Pin Assignment

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PMC CONNECTOR: PN4

SIGNAL	PIN	PIN	SIGNAL
RSD0+	1	2	RSD0-
RSD1+	3	4	RSD1-
RSD2+	5	6	RSD3+
RSD3-	7	8	RSD4+
RSD4-	9	10	RSD2-
RSD5+	11	12	RSD5-
RSD6+	13	14	RSD6-
RSD7+	15	16	RSD8+
RSD8-	17	18	RSD9+
RSD9-	19	20	RSD7-
RSD10+	21	22	RSD10-
RSD11+	23	24	RSD11-
RSD12+	25	26	RSD13+
RSD13-	27	28	RSD14+
RSD14-	29	30	RSD12-
RSD15+	31	32	RSD15-
RSDP0+	33	34	RSDP0-
RSDP1+	35	36	RSBSY+
RSBSY-	37	38	RSACK+
RSACK-	39	40	RSDP1-
RSRST+	41	42	RSRST-
RSMSG+	43	44	RSMSG-
RSSEL+	45	46	RSCD+
RSCD-	47	48	RSREQ+
RSREQ-	49	50	RSSEL-
RSIO+	51	52	RSIO-
RESERVED	53	54	RESERVED
RESERVED	55	56	RSATN+
RESERVED	57	58	RSATN-
RESERVED	59	60	RESERVED
RESERVED	61	62	RDIFFSEN
RESERVED	63	64	RTERMEN

Table 2-4: PN4 Pin Assignment

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REAR SCSI JUMPER SETTING

JP1	2-3 Short	1-2 Short
REAR SCSI	OFF	ON

Table 2-5: Rear SCSI Jumper Setting

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3 Installation

3.1 PMC Board Installation

Insert the face of the PMC module into the front of the cPCI carrier board. Carefully align the PMC connector to the carrier board and firmly place it in the slot. Secure the module to the carrier board with the screws provided (see Figure 3.1 below).

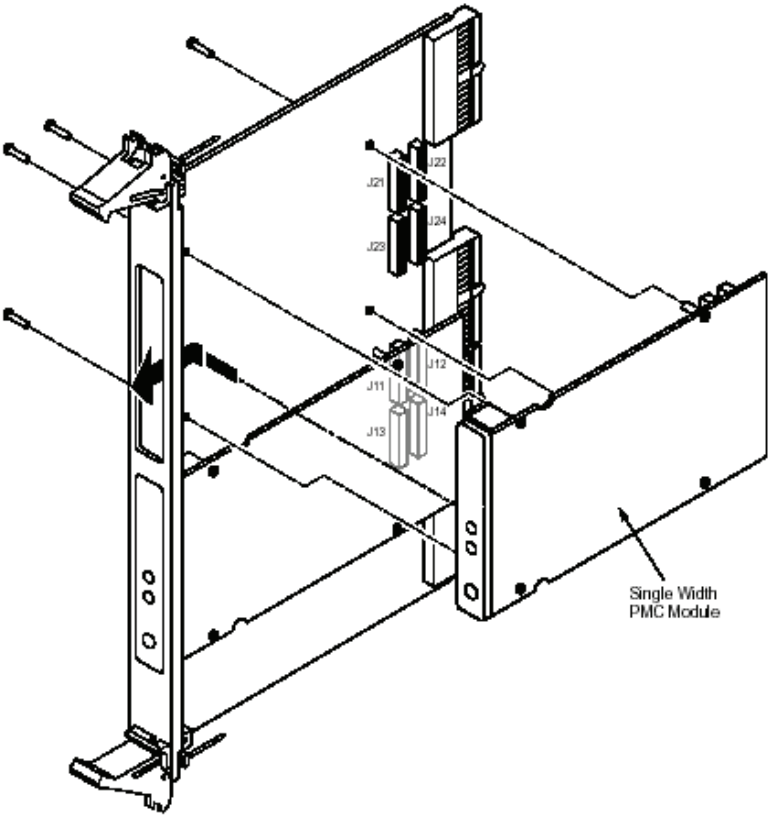


Figure 3-1: PMC Module Installation

Note: Ensure that the PMC module(s) are properly installed before connecting the cPCI carrier board to the system.

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3.2 Device Driver Installation

This section describes the installation procedure for the Adaptec AIC-7901X chipset device driver under Linux Redhat and Windows 2000, XP, and Server 2003.

The drivers are provided on the ADLINK All-in-One CD. Start your system and place the disk into the CD-ROM drive. The drivers are located in the X:\PMC\PMC-8631\ folder (where X:\ is the drive letter assigned to the CD-ROM drive). The operating system will detect new hardware and the Found New Hardware Wizard will appear. Navigate to the appropriate folder on the CD for your operating system and install the driver.

Fedora Core 1 and Core 2 are not officially supported for the PMC-8631. We have provided the Linux driver source code on the ADLINK All-in-One CD so customers can integrate it into their Fedora operating system.

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   - Other categories not protected under our warranty.
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5. To ensure the speed and quality of product repair, please download an RMA application form from our company website: http://rma.adlinktech.com/policy. Damaged products with attached RMA forms receive priority.

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