PMC-8681

Quad UART Port PMC Module

User's Manual

Manual Rev.:	2.00
Revision Date:	March 8, 2010
Part No:	50-13035-1000

Recycled Paper

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Revision History

Revision	Release Date	Description of Change(s)
1.00	2003/08/14	Initial Release
2.00	2010/03/08	Add board layout diagram, switch settings; update formatting.

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Preface

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Using this Manual

Audience and Scope

The PMC-8681 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating industrial grade single board computers.

Manual Organization

This manual is organized as follows:

Preface: Presents important copyright notifications, disclaimers, trademarks, and associated information on the proper understanding and usage of this document and its associated product(s).

Chapter 1, Introduction: Introduces the PMC-8681, its features, applications, and specifications, including functional descriptions and board layout.

Chapter 2, Getting Started: Provides technical information on connectors and jumpers, as well as pin assignments for configuring the PMC-8681.

Chapter 3, Installation: Describes how to install the PMC-8681.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Getting Service: Contact information for ADLINK's worldwide offices.

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.


NOTE:

Additional information, aids, and tips that help users perform tasks.


CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.


WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

1.1 Overview

The PMC-8681 is a four-port UART (Universal Asynchronous Receiver/Transmitter) PCI Mezzanine Card (PMC). The PMC-8681 uses the OX16PCI954 that provides quad serial ports and supports a PCI interface for four 16C950 high performance UART channels. The UART ports use a flat cable to DB-9 connector. All UART ports are fully software compatible with 16C550-type devices. The PMC-8681 is compatible with single board computers that support PMC slots.

1.2 Specifications

Form Factor	• PCI Mezzanine Card Single PCB Size (75 mm × 150 mm)
UART Chip	• Oxford Semiconductor OX16PCI954 integrated Quad-UART with PCI interface
UART Interface	• Four box headers with flat cable to DB-9 connector • 2 ports RS-232, 2 ports RS-232/422/285

1.3 Functional Description

OX16PCI954 Overview

The OX16PCI954 is a single chip solution containing four ultra-high performance UARTs for PCI-based serial expansion add-in cards. Each channel in the OX16PCI954 offers data rates up to 15Mbps, 128-deep transmitter and receiver FIFOs, data rates up to 60Mbps, flexible clock options, automatic flow control, programmable interrupt and flow control trigger levels, and readable FIFO levels.. Deep FIFOs reduce CPU overhead and allow utilization of higher data rates.

Each channel is software compatible with widely used industry-standard 16C550 devices and is compatible with the OX16C95x family of high performance UARTs. In addition to increased performance and FIFO size, the UART also provides the full set of OX16C95x enhanced features including automated in-band flow control and readable FIFO levels.

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Improved Access Timing

Access to internal UARTs require zero or one PCI wait states. A PCI read transaction from an internal UART can complete within five PCI clock cycles and a write transaction to an internal UART can complete within four PCI clock cycles.

Reduces Interrupt Latency

The OX16PCI954 offers shadowed FIFO levels and interrupt status registers of internal UARTs and MIO pins to reduce device driver interrupt latency.

MAX213E Transceiver

The MAX213E line driver/receiver is designed for RS-232 and V.28 communications in harsh environments. The transmitter output and receiver input is protected against ±15kV electrostatic discharge (ESD) shocks, without latch-up. The driver and receiver meet all EIA/TIA-232E and CCITT V.28 specifications at data rates up to 120kbps, when loaded in accordance with the EIA/TIA-232E specification. The MAX213E operates with four 0.1µF capacitors, further reducing cost and board space.

UART Interface

The PMC-8681 provides four 10-pin box-headers with flat cable to DB-9 connectors.

PMC Interface

The PMC-8681 requires two 64-pin connectors for 32-bit PCI bus.

PMC Voltage Keying

The PMC-8681 is a universal card that works with +3.3V or +5V (VIO) single board computer.

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1.4 Block Diagram

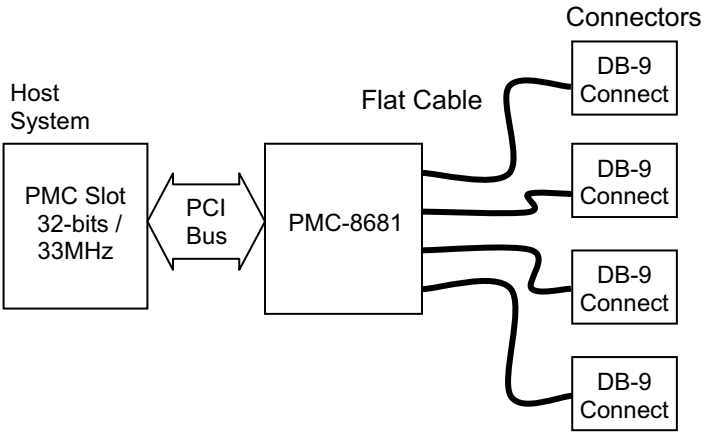


Figure 1-1: PMC-8681 Block Diagram

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1.5 Unpacking

The PMC-8681 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.



Do NOT apply power to the card if it has been damaged.

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2 Getting Started

This chapter provides information on the PMC-8681 board layout, connector pin assignments, and jumper settings.

2.1 Board Layout

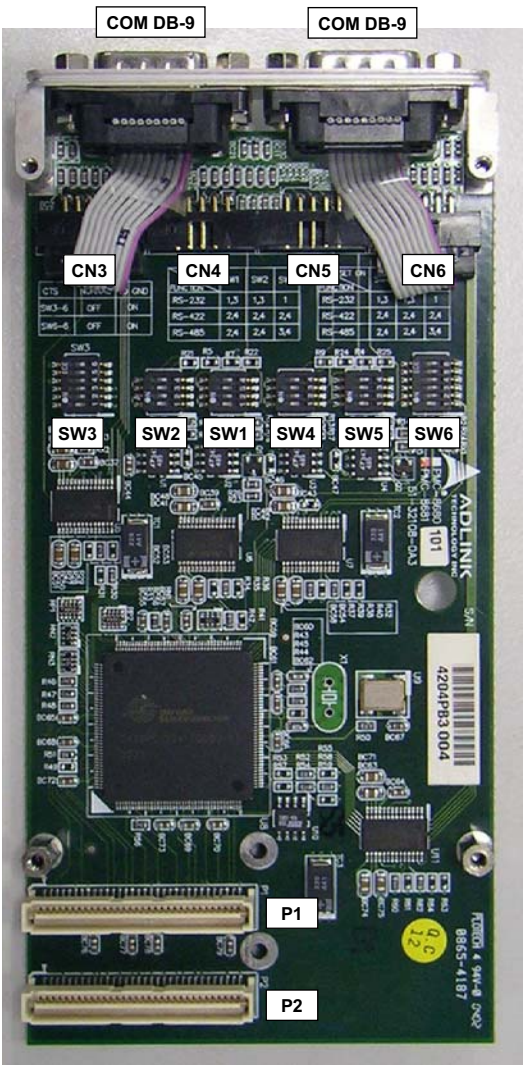


Figure 2-1: PMC-8681 Board Layout

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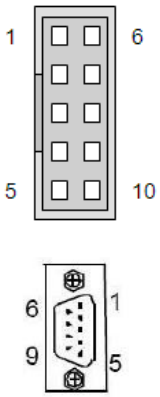
PMC-8681 Board Layout Legend

Connector	Description
CN3, CN6	RS-232 serial ports
CN4, CN5	RS-232/422/285 serial ports
SW1-6	Serial port mode setting switches
P1, P2	PMC connectors
COM DB-9	External serial port DB-9 connectors

2.2 Connectors and Jumpers

CN3-6 Serial Port Box Headers (DB-9 connectors)

Pin #	RS-232 Signal	RS-422*	RS-485*
1	DCD	TX-	Data-
2	RxD	TX+	Data+
3	TxD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC
10	NC	NC	NC



***Note:** Only CN4 and CN5 support RS-422/285 modes.

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CN4 Mode Switch Settings

Function	SW1	SW2	SW3
RS-232	1, 3 ON	1, 3 ON	1 ON
RS-422	2, 4 ON	2, 4 ON	2, 4 ON
RS-485	2, 4 ON	2, 4 ON	3, 4 ON

CN5 Mode Switch Settings

Function	SW4	SW5	SW6
RS-232	1, 3 ON	1, 3 ON	1 ON
RS-422	2, 4 ON	2, 4 ON	2, 4 ON
RS-485	2, 4 ON	2, 4 ON	3, 4 ON

CN3, CN6 CTS Mode Switch Setting

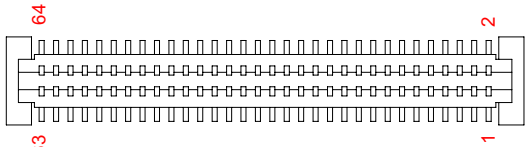
CTS*	Normal	Ground
SW3 Pin 6	OFF	ON
SW6 Pin 6	OFF	ON

***Note:** If CN3, CN6 must send data to 422/485, CTS must be defined.

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PMC Connectors (P1, P2))

Signal Name	P1 Pin	P1 Pin	Signal Name	Signal Name	P2 Pin	P2 Pin	Signal Name
TCK	1	2	-12V	+12V	1	2	TRST#
GND	3	4	INTA#	TMSS	3	4	TDO
INTB#	5	6	INTC#	TDI	5	6	GND
NC	7	8	+5V	GND	7	8	NC
INTD#	9	10	NC	NC	9	10	NC
GND	11	12	NC	NC	11	12	+3.3V
CLK	13	14	GND	RST#	13	14	NC
GND	15	16	GNT#	+3.3V	15	16	NC
REQ#	17	18	+5V	NC	17	18	GND
V(I/O)	19	20	AD[31]	AD[30]	19	20	AD[29]
AD[28]	21	22	AD[27]	GND	21	22	AD[26]
AD[25]	23	24	GND	AD[24]	23	24	+3.3V
GND	25	26	C/BE[3]#	IDSEL	25	26	AD[23]
AD[22]	27	28	AD[21]	+3.3V	27	28	AD[20]
AD[19]	29	30	+5V	AD[18]	29	30	GND
V(I/O)	31	32	AD[17]	AD[16]	31	32	C/BE[2]#
FRAME#	33	34	GND	GND	33	34	NC
GND	35	36	IRDY#	TRDY#	35	36	+3.3V
DEVSEL#	37	38	+5V	GND	37	38	STOP#
GND	39	40	LOCK#	PERR#	39	40	GND
NC	41	42	NC	+3.3V	41	42	SERR#
PAR	43	44	GND	C/BE[1]#	43	44	GND
V(I/O)	45	46	AD[15]	AD[14]	45	46	AD[13]
AD[12]	47	48	AD[11]	M66EN	47	48	AD[10]
AD[09]	49	50	+5V	AD[08]	49	50	+3.3V
GND	51	52	C/BE[0]#	AD[07]	51	52	NC
AD[06]	53	54	AD[05]	+3.3V	53	54	NC
AD[04]	55	56	GND	RSVD1	55	56	GND
V(I/O)	57	58	AD[03]	RSVD2	57	58	RSVD3
AD[02]	59	60	AD[01]	GND	59	60	RSVD4
AD[00]	61	62	+5V	ACK64#	61	62	+3.3V
GND	63	64	REQ64#	GND	63	64	NC



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3 Installation

This chapter provides information on how to install the PMC-8681.

3.1 Installing the PMC

Remove the filler panel from the host board. Insert the faceplate of the PMC-8681 into the PMC slot in the front of the host board with 32-bit/33MHz PMC interface. Carefully align the PMC connectors with the host board and firmly press the PMC onto the host board's connectors. Secure the PMC with the screws provided.

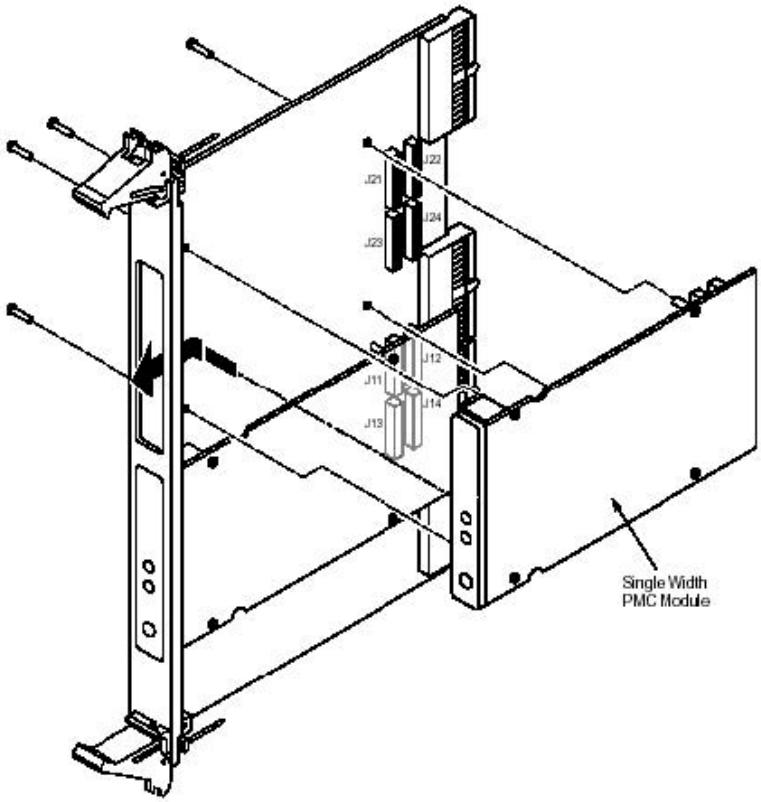


Figure 3-1: PMC-8681 Installation

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Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

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- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

A Lithium-type battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

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Contact us should you require any service or assistance.

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