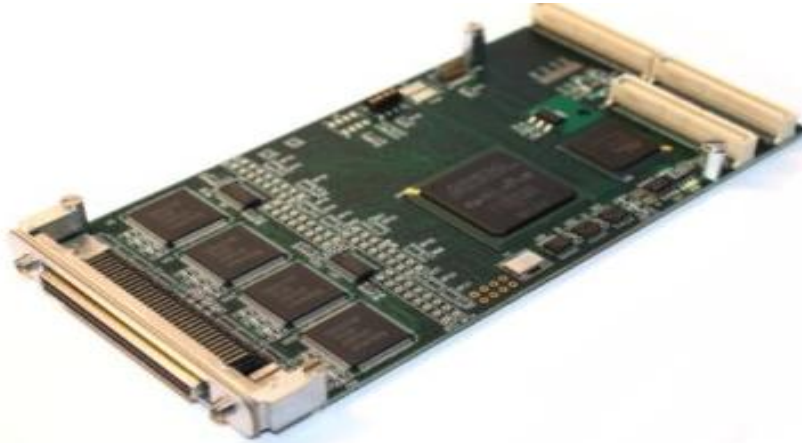


# **General Standards Corporation**

## **High Performance Bus Interface Solutions**

# **PMC66-SIO4BXR-SYNC**

**Four Channel High Performance Serial I/O PMC Card**  
**Featuring RS422/RS485/RS232/RS423 Software Configurable Transceivers**  
**and 32K Byte FIFO Buffers (256K Byte Total)**



The PMC66-SIO4BXR-SYNC is a four channel synchronous serial interface card which provides high speed, full-duplex, multi-protocol serial capability for PMC applications. The PMC66-SIO4BXR-SYNC combines a flexible serial interface, deep external FIFOs, and software selectable multi-protocol transceivers to provide four fully independent synchronous serial channels. These features, along with a high performance 66MHz PCI interface engine, give the PMC66-SIO4BXR-SYNC unsurpassed performance in a synchronous serial interface card.

### **Features:**

- Four Independent Multi-Protocol Serial Channels
- Independent Transmit and Receive FIFOs for each Serial Channel – 32K byte each
- Multi-protocol Transceivers support RS422/RS485, RS232, RS423
- Fast RS422/RS485 Differential Cable Transceivers Provide Data Rates up to 10Mbps
- RS423 and RS232 Cable Transceivers Provide Data Rates up to 230kbps
- Two Signal (Clock/Data) or Three Signal modes (Clock/Data/Data Valid)
- Programmable Oscillators provide increased flexibility for Baud Rate Clock generation
- Programmable Transmit Bit Counts allow for various transmit word lengths
- Programmable Transmit Gap Bit Counts allow for variable gap between words
- Fully Programmable Polarity on all signals
- Eight signals per channel, configurable as either DTE or DCE:  
3 Serial Clocks (Tx<sub>C</sub>, Rx<sub>C</sub>, Aux<sub>C</sub>), 2 Serial Data (Tx<sub>D</sub>, Rx<sub>D</sub>), 2 Data Valid (Tx<sub>E</sub>, Rx<sub>E</sub>), plus Spare
- Unused signals may be reconfigured as General Purpose IO
- SCSI type 68 pin front edge I/O Connector
- Standard Cable to four DB25 connectors and Custom Cables available
- Interchangeable 120Ω Termination Resistors (RS422/RS485 Mode)
- Available drivers include VxWorks, WinNT, Win2k, WinXP, Linux, and Labview
- Industrial Temperature Option Available
- May be mounted on various adapters to fit PCI, PCIe, PXI, and cPCI form factors

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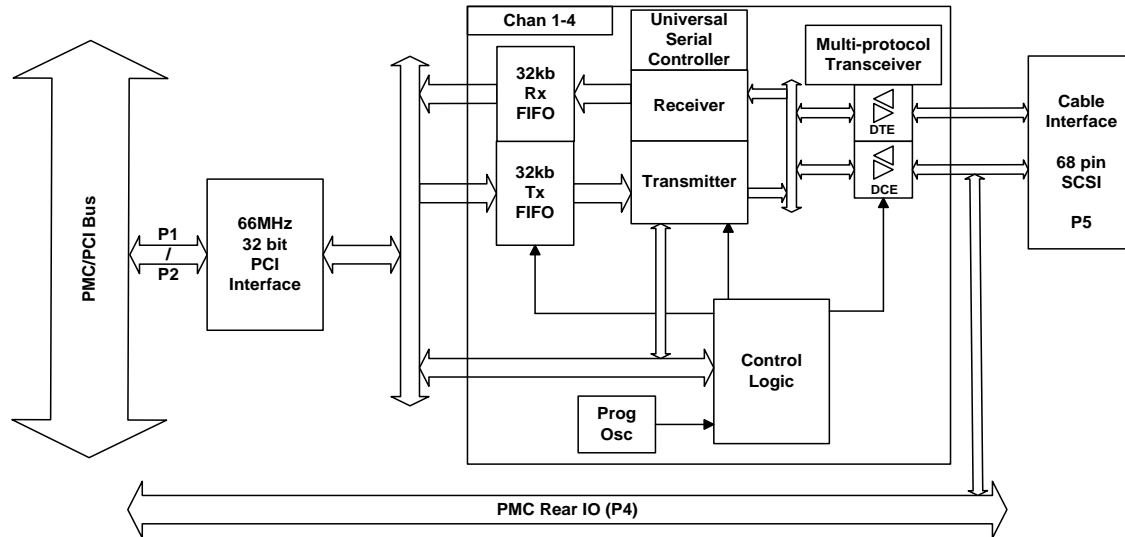
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## High Performance Bus Interface Solutions

### Functional Diagram:

The PMC66-SIO4BXR-SYNC is a high performance, four channel serial board from the SIO4BX-SYNC product line from General Standards Corporation. The PMC66-SIO4BXR-SYNC has a 66MHz PCI interface, multi-protocol transceivers, and supports PMC Rear IO. This card may also be mounted on various adapters to fit PCI, PCIe, PXI, and cPCI form factors.



### Serial Interface:

The flexible synchronous interface may be configured as a three signal interface - Clock, Data, and Envelope (Data Valid), or an even simpler two signal interface - Clock and Data. The PCIe4-SIO8BX-SYNC allows the serial interface to be further customized with the following user configurable options:

- Clocking Data on either rising or falling edge of the clock
- Active Hi or Active Lo polarity for the Envelope Signal
- NRZ (Level) or NRZB (Inverted Level) Data Encoding
- Clock and/or Data may be configured high or low while idle
- Transmit Word Size may be configured from 1 to 64k bits (consecutive bit count)
- Transmit Gap Size (clocks between words) can be configured from 0 to 64k bits
- Data may be transmitted MSB first or LSB first (8-bit or less word size).
- Transmit Clock may be configured from 10MHz down to 50Hz on a per channel basis
- Auxiliary Clock input from cable may be used as Transmit Clock
- Transmit and Receive direction may be defined as DTE or DCE for each channel

### Serial Signals:

- TxC - (Out) Transmit Clock
- TxD - (Out) Transmit Data
- TxE - (Out) Transmit Envelope (Data Valid)
- RxC - (In) Receive Clock
- RxD - (In) Receive Data
- RxE - (In) Receive Envelope (Data Valid)
- AuxC - (In/Out) Auxiliary Clock
- Spare - (In/Out) Spare General Purpose IO (May also be used as interrupt input)

The location of the transmit signals (TxC/TxD/TxE) and receive signals (RxC/RxD/RxE) on the cable may be swapped via software by setting DTE/DCE mode.

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## High Performance Bus Interface Solutions

### Power Requirements (@25° C):

- +5VDC ±0.2 VDC at 1.5 Amps Max(typical 1.0 Amps)
- +12VDC ±0.2 VDC at 0.03 Amps Max(typical 0.02 Amps)
- Typical Total Power Dissipation: ~5.5W

### PMC Compatibility:

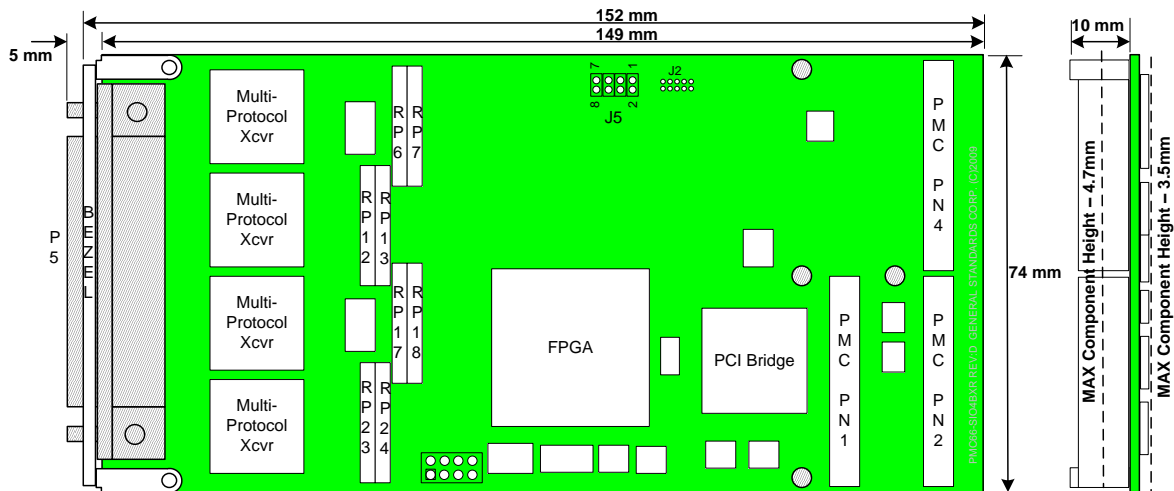
- 32bit / 66MHz PCI r2.2 Compliant
- Direct master DMA transfer
- Provides a single multifunction interrupt (INTA)
- 3.3V IO / 5V tolerant PCI bus interface

### Physical Characteristics:

Conforms to PMC Mezzanine Specification

Length: 149 mm

Width: 74 mm



### Environmental Specifications:

Ambient Temperature Range: Operating: 0° to +70° C (Commercial Option)  
 -40° to +85° C (Industrial Option)  
 Storage: -40° to +85° C

Relative Humidity: Operating: 0 to 80%, non-condensing  
 Storage: 0 to 95%, non-condensing

Altitude: Operation to 10,000 ft

### Cooling Requirements:

Conventional air-cooling, 200 LPFM (typical mezzanine environment)

### Ordering Information:

PMC66 – SIO4BXR - SYNC - <FIFO Size> - <Temperature>

Option	Valid Selections	Description
FIFO Size	48KLC	(software selectable) 4K byte Tx / 8K byte Rx FIFO or 8K byte Tx / 4K byte Rx FIFO
	64K	software selectable) 8K byte Tx / 16K byte Rx FIFO or 16K byte Tx / 8K byte Rx FIFO
	256K	32K byte Tx / 32K byte Rx FIFO
Temperature	<blank>	0°C to +70°C – Commercial (Standard)
	I	-40°C to +85°C – Industrial

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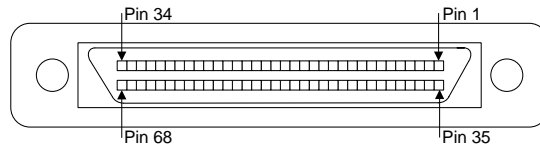
Email: sales@generalstandards.com

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## High Performance Bus Interface Solutions

### System I/O Connections:

User I/O Connector:: 68-pin SCSI connector (female) - P5  
 Part Number: AMP/TYCO 787170-7  
 Mating Connector: AMP/TYCO 749111-6 (or equivalent)



Note: Protocol Mode is set on a per channel basis.

Pin #	RS422/RS485 V.35		RS232		RS423		Pin #	RS422/RS485 V.35		RS232		RS423	
	DTE	DCE	DTE	DCE	DTE	DCE		DTE	DCE	DTE	DCE	DTE	DCE
1	AUXC1+		Unused		TXC1	RXC1	35	AUXC3+		Unused		TXC3	RXC3
2	AUXC1-		AUXC1		RXC1	TXC1	36	AUXC3-		AUXC3		RXC3	TXC3
3	SPARE1+		Unused		TXD1	RXD1	37	SPARE3+		Unused		TXD3	RXD3
4	SPARE1-		SPARE1		RXD1	TXD1	38	SPARE3-		SPARE3		RXD3	TXD3
5	RXE1+	TXE1+	Unused		Unused		39	RXE3+	TXE3+	Unused		Unused	
6	RXE1-	TXE1-	RXE1	TXE1	RXE1	TXE1	40	RXE3-	TXE3-	RXE3	TXE3	RXE3	TXE3
7	RXD1+	TXD1+	Unused		Unused		41	RXD3+	TXD3+	Unused		Unused	
8	RXD1-	TXD1-	RXD1	TXD1	Unused		42	RXD3-	TXD3-	RXD3	TXD3	Unused	
9	RXC1+	TXC1+	Unused		Unused		43	RXC3+	TXC3+	Unused		Unused	
10	RXC1-	TXC1-	RXC1	TXC1	Unused		44	RXC3-	TXC3-	RXC3	TXC3	Unused	
11	TXE1+	RXE1+	Unused		Unused		45	TXE3+	RXE3+	Unused		Unused	
12	TXE1-	RXE1-	TXE1	RXE1	TXE1	RXE1	46	TXE3-	RXE3-	TXE3	RXE3	TXE3	RXE3
13	TXD1+	RXD1+	Unused		Unused		47	TXD3+	RXD3+	Unused		Unused	
14	TXD1-	RXD1-	TXD1	RXD1	Unused		48	TXD3-	RXD3-	TXD3	RXD3	Unused	
15	TXC1+	RXC1+	Unused		Unused		49	TXC3+	RXC3+	Unused		Unused	
16	TXC1-	RXC1-	TXC1	RXC1	Unused		50	TXC3-	RXC3-	TXC3	RXC3	Unused	
17	SGND1		SGND1		SGND1		51	SGND3		SGND3		SGND3	
18	SGND2		SGND2		SGND2		52	SGND4		SGND4		SGND4	
19	RXE2+	TXE2+	Unused		Unused		53	RXE4+	TXE4+	Unused		Unused	
20	RXE2-	TXE2-	RXE2	TXE2	RXE2	TXE2	54	RXE4-	TXE4-	RXE4	TXE4	RXE4	TXE4
21	RXD2+	TXD2+	Unused		Unused		55	RXD4+	TXD4+	Unused		Unused	
22	RXD2-	TXD2-	RXD2	TXD2	Unused		56	RXD4-	TXD4-	RXD4	TXD4	Unused	
23	RXC2+	TXC2+	Unused		Unused		57	RXC4+	TXC4+	Unused		Unused	
24	RXC2-	TXC2-	RXC2	TXC2	Unused		58	RXC4-	TXC4-	RXC4	TXC4	Unused	
25	TXE2+	RXE2+	Unused		Unused		59	TXE4+	RXE4+	Unused		Unused	
26	TXE2-	RXE2-	TXE2	RXE2	TXE2	RXE2	60	TXE4-	RXE4-	TXE4	RXE4	TXE4	RXE4
27	TXD2+	RXD2+	Unused		Unused		61	TXD4+	RXD4+	Unused		Unused	
28	TXD2-	RXD2-	TXD2	RXD2	Unused		62	TXD4-	RXD4-	TXD4	RXD4	Unused	
29	TXC2+	RXC2+	Unused		Unused		63	TXC4+	RXC4+	Unused		Unused	
30	TXC2-	RXC2-	TXC2	RXC2	Unused		64	TXC4-	RXC4-	TXC4	RXC4	Unused	
31	SPARE2+		Unused		TXD2	RXD2	65	SPARE4+		Unused		TXD4	RXD4
32	SPARE2-		SPARE2		RXD2	TXD2	66	SPARE4-		SPARE4		RXD4	TXD4
33	AUXC2+		Unused		TXC2	RXC2	67	AUXC4+		Unused		TXC4	RXC4
34	AUXC2-		AUXC2		RXC2	TXC2	68	AUXC4-		AUXC4		RXC4	TXC4

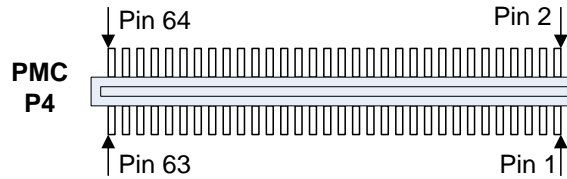
Table 1- Front Panel (P5) IO Connections

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## High Performance Bus Interface Solutions

### System I/O Connections (cont):



Note: Protocol Mode is set on a per channel basis.

Pin #	RS422/RS485 V.35		RS232		RS423		Pin #	RS422/RS485 V.35		RS232		RS423	
	DTE	DCE	DTE	DCE	DTE	DCE		DTE	DCE	DTE	DCE	DTE	DCE
1	TXC1-	RXC1-	TXC1	RXC1	Unused		33	TXC3-	RXC3-	TXC3	RXC3	Unused	
2	TXC1+	RXC1+	Unused		Unused		34	TXC3+	RXC3+	Unused		Unused	
3	TXD1-	RXD1-	TXD1	RXD1	Unused		35	TXD3-	RXD3-	TXD3	RXD3	Unused	
4	TXD1+	RXD1+	Unused		Unused		36	TXD3+	RXD3+	Unused		Unused	
5	TXE1-	RXE1-	TXE1	RXE1	TXE1	RXE1	37	TXE3-	RXE3-	TXE3	RXE3	TXE3	RXE3
6	TXE1+	RXE1+	Unused		Unused		38	TXE3+	RXE3+	Unused		Unused	
7	AUXC1-		AUXC1		RXC1	TXC1	39	AUXC3-		AUXC3		RXC3	TXC3
8	AUXC1+		Unused		TXC1	RXC1	40	AUXC3+		Unused		TXC3	RXC3
9	SPARE1-		SPARE1		RXD1	TXD1	41	SPARE3-		SPARE3		RXD3	TXD3
10	SPARE1+		Unused		TXD1	RXD1	42	SPARE3+		Unused		TXD3	RXD3
11	RXC1-	TXC1-	RXC1	TXC1	Unused		43	RXC3-	TXC3-	RXC3	TXC3	Unused	
12	RXC1+	TXC1+	Unused		Unused		44	RXC3+	TXC3+	Unused		Unused	
13	RXD1-	TXD1-	RXD1	TXD1	Unused		45	RXD3-	TXD3-	RXD3	TXD3	Unused	
14	RXD1+	TXD1+	Unused		Unused		46	RXD3+	TXD3+	Unused		Unused	
15	RXE1-	TXE1-	RXE1	TXE1	RXE1	TXE1	47	RXE3-	TXE3-	RXE3	TXE3	RXE3	TXE3
16	RXE1+	TXE1+	Unused		Unused		48	RXE3+	TXE3+	Unused		Unused	
17	TXC2-	RXC2-	TXC2	TXC2	Unused		49	TXC4-	RXC4-	TXC4	RXC4	Unused	
18	TXC2+	RXC2+	Unused		Unused		50	TXC4+	RXC4+	Unused		Unused	
19	TXD2-	RXD2-	TXD2	RXD2	Unused		51	TXD4-	RXD4-	TXD4	RXD4	Unused	
20	TXD2+	RXD2+	Unused		Unused		52	TXD4+	RXD4+	Unused		Unused	
21	TXE2-	RXE2-	TXE2	RXE2	TXE2	RXE2	53	TXE4-	RXE4-	TXE4	RXE4	TXE4	RXE4
22	TXE2+	RXE2+	Unused		Unused		54	TXE4+	RXE4+	Unused		Unused	
29	AUXC2-		AUXC2		RXC2	TXC2	55	AUXC4-		AUXC4		RXC4	TXC4
30	AUXC2+		Unused		TXC2	RXC2	56	AUXC4+		Unused		TXC4	RXC4
25	SPARE2-		SPARE2		RXD2	TXD2	57	SPARE4-		SPARE4		RXD4	TXD4
26	SPARE2+		Unused		TXD2	RXD2	58	SPARE4+		Unused		TXD4	RXD4
27	RXC2-	TXC2-	RXC2	TXC2	Unused		59	RXC4-	TXC4-	RXC4	TXC4	Unused	
28	RXC2+	TXC2+	Unused		Unused		60	RXC4+	TXC4+	Unused		Unused	
29	RXD2-	TXD2-	RXD2	TXD2	Unused		61	RXD4-	TXD4-	RXD4	TXD4	Unused	
30	RXD2+	TXD2+	Unused		Unused		62	RXD4+	TXD4+	Unused		Unused	
31	RXE2-	TXE2-	RXE2	TXE2	RXE2	TXE2	63	RXE4-	TXE4-	RXE4	TXE4	RXE4	TXE4
32	RXE2+	TXE2+	Unused		Unused		64	RXE4+	TXE4+	Unused		Unused	

**Table 2- PMC (P4) Rear IO Connections**

General Standards Corporation assumes no responsibility for the use of any circuits in this product. No circuit patent licenses are implied. Information included herein supersedes previously published specifications on this product and is subject to change without notice.

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