

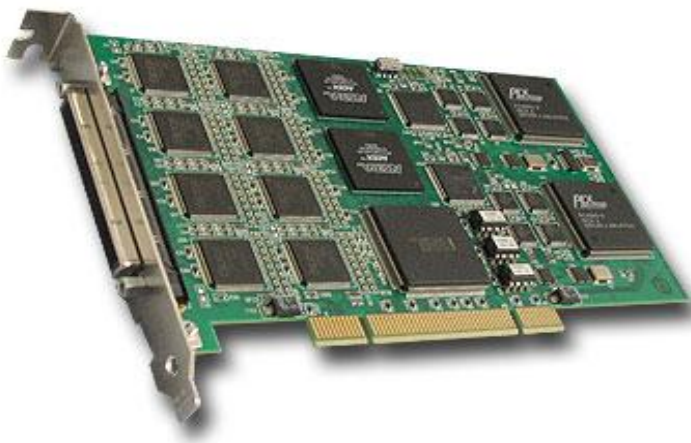
General Standards Corporation

High Performance Bus Interface Solutions

PCI-SIO8BXS-SYNC

Eight Channel High Performance Serial I/O PCI Card

**Featuring RS422/RS485/RS232/RS423 Software Configurable Transceivers
and 32K Byte FIFO Buffers (512K Byte total)**



The PCI-SIO8BXS-SYNC is an eight channel synchronous serial interface card which provides high speed, full-duplex, multi-protocol serial capability for PCI applications. The PCI-SIO8BXS-SYNC combines a flexible serial interface, deep external FIFOs, and software selectable multi-protocol transceivers to provide eight fully independent synchronous serial channels. These features, along with a high performance 33MHz PCI interface engine, give the PCI-SIO8BXS-SYNC unsurpassed performance in a synchronous serial interface card.

Features:

- Eight Independent Multi-Protocol Synchronous 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
- RS232 and RS423 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 (TxC,RxC,AuxC), 2 Serial Data (TxD,RxD), 2 Data Valid (TxE,RxE), plus Spare
- Unused signals may be reconfigured as General Purpose IO
- Low Force Helix (LFH) type 160 pin front edge I/O Connector
- Standard Cable to eight DB25 connectors and Custom Cables available
- Interchangeable 120 Ω Termination Resistors (RS422/RS485 Mode)
- Available drivers include VxWorks, WinNT, Win2k, WinXP, Linux, and Labview
- Industrial Temperature Option Available

General Standards Corporation

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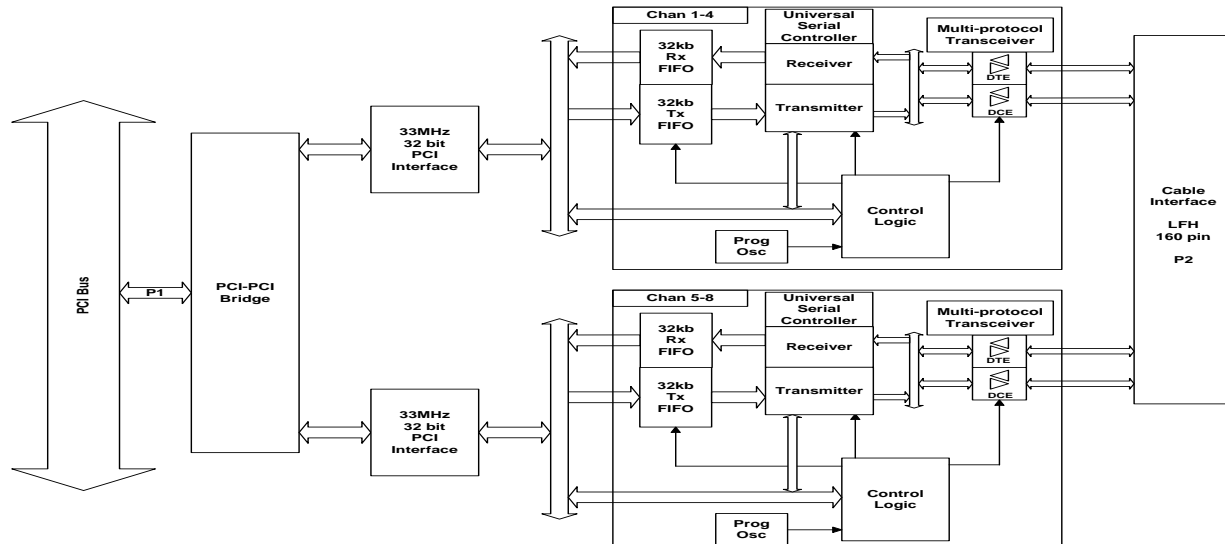
Rev 3

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Functional Diagram:

The PCI-SIO8BXS-SYNC is a high performance, eight channel serial board based on the SIO4BX-SYNC product line from General Standards Corporation. In order to maintain software compatibility, the PCI-SIO8BXS-SYNC is implemented as two independent four channel SIO4BX cards.



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.

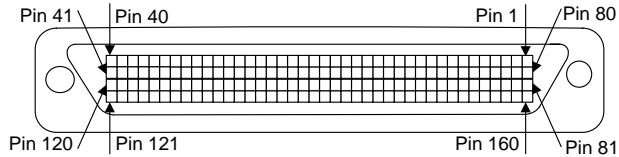
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System I/O Connections:

User Interface Connector: 160-pin LFH connector (female) - P2.
 Part Number: Molex 51-24-1040.
 Mating Connector: Molex 70984-4009 (contacts – qty 4)
 Molex 71624-3000 (housing).



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+	Unused		Unused		80	TXD1+	RXD1+	Unused		Unused	
2	TXC1-	RXC1-	TXC1	RXC1	Unused		79	TXD1-	RXD1-	TXD1	RXD1	Unused	
3	RXC1+	TXC1+	Unused		Unused		78	RXD1+	TXD1+	Unused		Unused	
4	RXC1-	TXC1-	RXC1	TXC1	Unused		77	RXD1-	TXD1-	RXD1	TXD1	Unused	
5	AUXC1+		Unused		Unused		76	DCD1+		Unused		TXD1	RXD1
6	AUXC1-		AUXC1		Unused		75	DCD1-		DCD1		RXD1	TXD1
7	Unused		Unused		TXC1	RXC1	74	RXE1+	TXE1+	Unused		Unused	
8	Unused		Unused		RXC1	TXC1	73	RXE1-	TXE1-	RXE1	TXE1	RXE1	TXE1
9	TXE1+	RXE1+	Unused		Unused		72	SGND1		SGND1		SGND1	
10	TXE1-	RXE1-	TXE1	RXE1	TXE1	RXE1	71	Unused		Unused		Unused	
11	TXC2+	RXC2+	Unused		Unused		70	Unused		Unused		Unused	
12	TXC2-	RXC2-	TXC2	RXC2	Unused		69	SGND2		SGND2		SGND2	
13	RXC2+	TXC2+	Unused		Unused		68	TXD2+	RXD2+	Unused		Unused	
14	RXC2-	TXC2-	RXC2	TXC2	Unused		67	TXD2-	RXD2-	TXD2	RXD2	Unused	
15	AUXC2+		Unused		Unused		66	RXD2+	TXD2+	Unused		Unused	
16	AUXC2-		AUXC2		Unused		65	RXD2-	TXD2-	RXD2	TXD2	Unused	
17	Unused		Unused		TXC2	RXC2	64	DCD2+		Unused		TXD2	RXD2
18	Unused		Unused		RXC2	TXC2	63	DCD2-		DCD2		RXD2	TXD2
19	TXE2+	RXE2+	Unused		Unused		62	RXE2+	TXE2+	Unused		Unused	
20	TXE2-	RXE2-	TXE2	RXE2	TXE2	RXE2	61	RXE2-	TXE2-	RXE2	TXE2	RXE2	TXE2
21	TXC5+	RXC5+	Unused		Unused		60	TXD5+	RXD5+	Unused		Unused	
22	TXC5-	RXC5-	TXC5	RXC5	Unused		59	TXD5-	RXD5-	TXD5	RXD5	Unused	
23	RXC5+	TXC5+	Unused		Unused		58	RXD5+	TXD5+	Unused		Unused	
24	RXC5-	TXC5-	RXC5	TXC5	Unused		57	RXD5-	TXD5-	RXD5	TXD5	Unused	
25	AUXC5+		Unused		Unused		56	DCD5+		Unused		TXD5	RXD5
26	AUXC5-		AUXC5		Unused		55	DCD5-		DCD5		RXD5	TXD5
27	Unused		Unused		TXC5	RXC5	54	RXE5+	TXE5+	Unused		Unused	
28	Unused		Unused		RXC5	TXC5	53	RXE5-	TXE5-	RXE5	TXE5	RXE5	TXE5
29	TXE5+	RXE5+	Unused		Unused		52	SGND5		SGND5		SGND5	
30	TXE5-	RXE5-	TXE5	RXE5	TXE5	RXE5	51	Unused		Unused		Unused	
31	TXC6+	RXC6+	Unused		Unused		50	Unused		Unused		Unused	
32	TXC6-	RXC6-	TXC6	RXC6	Unused		49	SGND6		SGND6		SGND6	
33	RXC6+	TXC6+	Unused		Unused		48	TXD6+	RXD6+	Unused		Unused	
34	RXC6-	TXC6-	RXC6	TXC6	Unused		47	TXD6-	RXD6-	TXD6	RXD6	Unused	
35	AUXC6+		Unused		Unused		46	RXD6+	TXD6+	Unused		Unused	
36	AUXC6-		AUXC6		Unused		45	RXD6-	TXD6-	RXD6	TXD6	Unused	
37	Unused		Unused		TXC6	RXC6	44	DCD6+		Unused		TXD6	RXD6
38	Unused		Unused		RXC6	TXC6	43	DCD6-		DCD6		RXD6	TXD6
39	TXE6+	RXE6+	Unused		Unused		42	RXE6+	TXE6+	Unused		Unused	
40	TXE6-	RXE6-	TXE6	RXE6	TXE6	RXE6	41	RXE6-	TXE6-	RXE6	TXE6	RXE6	TXE6

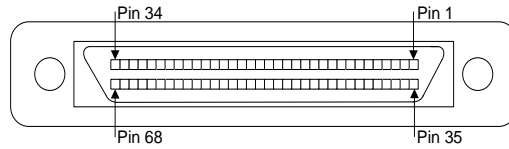
Table 1- Front Panel (P2) IO Connections

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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
81	TXD3+	RXD3+	Unused		Unused		160	TXC3+	RXC3+	Unused		Unused	
82	TXD3-	RXD3-	TXD3	RXD3	Unused		159	TXC3-	RXC3-	TXC3	RXC3	Unused	
83	RXD3+	TXD3+	Unused		Unused		158	RXC3+	TXC3+	Unused		Unused	
84	RXD3-	TXD3-	RXD3	TXD3	Unused		157	RXC3-	TXC3-	RXC3	TXC3	Unused	
85	DCD3+		Unused		TXD3	RXD3	156	AUXC3+		Unused		Unused	
86	DCD3-		DCD3		RXD3	TXD3	155	AUXC3-		AUXC3		Unused	
87	RXE3+	TXE3+	Unused		Unused		154	Unused		Unused	TXC3	RXC3	
88	RXE3-	TXE3-	RXE3	TXE3	RXE3	TXE3	153	Unused		Unused	RXC3	TXC3	
89	SGND3		SGND3		SGND3		152	TXE3+	RXE3+	Unused		Unused	
90	Unused		Unused		Unused		151	TXE3-	RXE3-	TXE3	RXE3	TXE3	RXE3
91	Unused		Unused		Unused		150	TXC4+	RXC4+	Unused		Unused	
92	SGND4		SGND4		SGND4		149	TXC4-	RXC4-	TXC4	RXC4	Unused	
93	TXD4+	RXD4+	Unused		Unused		148	RXC4+	TXC4+	Unused		Unused	
94	TXD4-	RXD4-	TXD4	RXD4	Unused		147	RXC4-	TXC4-	RXC4	TXC4	Unused	
95	RXD4+	TXD4+	Unused		Unused		146	AUXC4+		Unused		Unused	
96	RXD4-	TXD4-	RXD4	TXD4	Unused		145	AUXC4-		AUXC4		Unused	
97	DCD4+		Unused		TXD4	RXD4	144	Unused		Unused	TXC4	RXC4	
98	DCD4-		DCD4		RXD4	TXD4	143	Unused		Unused	RXC4	TXC4	
99	RXE4+	TXE4+	Unused		Unused		142	TXE4+	RXE4+	Unused		Unused	
100	RXE4-	TXE4-	RXE4	TXE4	RXE4	RT4	141	TXE4-	RXE4-	TXE4	RXE4	TXE4	RXE4
101	TXD7+	RXD7+	Unused		Unused		140	TXC7+	RXC7+	Unused		Unused	
102	TXD7-	RXD7-	TXD7	RXD7	Unused		139	TXC7-	RXC7-	TXC7	RXC7	Unused	
103	RXD7+	TXD7+	Unused		Unused		138	RXC7+	TXC7+	Unused		Unused	
104	RXD7-	TXD7-	RXD7	TXD7	Unused		137	RXC7-	TXC7-	RXC7	TXC7	Unused	
105	DCD7+		Unused		TXD7	RXD7	136	AUXC7+		Unused		Unused	
106	DCD7-		DCD7		RXD7	TXD7	135	AUXC7-		AUXC7		Unused	
107	RXE7+	TXE7+	Unused		Unused		134	Unused		Unused	TXC7	RXC7	
108	RXE7-	TXE7-	RXE7	TXE7	RXE7	TXE7	133	Unused		Unused	RXC7	TXC7	
109	SGND7		SGND7		SGND7		132	TXE7+	RXE7+	Unused		Unused5	
110	Unused		Unused		Unused		131	TXE7-	RXE7-	TXE7	RXE7	TXE7	RXE7
111	Unused		Unused		Unused		130	TXC8+	RXC8+	Unused		Unused	
112	SGND8		SGND8		SGND8		129	TXC8-	RXC8-	TXC8	RXC8	Unused	
113	TXD8+	RXD8+	Unused		Unused		128	RXC8+	TXC8+	Unused		Unused	
114	TXD8-	RXD8-	RXD8	TXD8	Unused		127	RXC8-	TXC8-	RXC8	TXC8	Unused	
115	RXD8+	TXD8+	Unused		Unused		126	AUXC8+		Unused		Unused	
116	RXD8-	TXD8-	RXD8	TXD8	Unused		125	AUXC8-		AUXC8		Unused	
117	DCD8+		Unused		RXD8	TXD8	124	Unused		Unused	TXC8	RXC8	
118	DCD8-		DCD8		RXD8	TXD8	123	Unused		Unused	RXC8	TXC8	
119	RXE8+	TXE8+	Unused		Unused		122	TXE8+	RXE8+	Unused		Unused	
120	RXE8-	TXE8-	RXE8	TXE8	RXE8	TXE8	121	TXE8-	RXE8-	TXE8	RXE8	TXE8	RXE8

Table 1- Front Panel IO (P2) Connections (continued)

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