

General Standards Corporation

Flying High-Performance Bus Interface Solutions

October 2007



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All products are available on all form factors

PCI66-18AISS8AO8

18-Bit, 8-Input, 8-Output High-Precision Wideband 500KSPS PCI Analog Input/Output Board With Selectable Current-Loop Input Terminators

The PCI66-18AISS8AO8 provides 8 differential 18-bit analog input channels with 500KSPS sample rates per channel. Inputs are software-configurable with or without 0-20ma current-loop input termination (500 Ohms, 0.05%, 0.4 Watt, individually selectable for each input channel). A continuous time 4-pole lowpass filter is available and selectable as FC= 80kHz or 200kHz (Custom frequencies also available). The DMA engine supports block-mode transfers in two channels, and on-demand autocalibration ensures DC precision as well as AC performance. The PCI66-18AISS8AO8 also provides a hardware sync and clock I/O for multiboard synchronization.

PMC66-14HSAI4

High-Speed Analog Input; 64-bit PCI; Huge FIFO Buffer; 50 MSPS per channel

The PMC66-14HSAI4 is a four-channel, 14-bit wideband analog input board with sampling rates to 50 MSPS per channel. It has four wideband analog inputs with a dedicated 14-bit ADC per channel, and offers aggregate burst rates up to 200 MSPS and sustained aggregate rates up to 100 MSPS. This board provides software-selectable input ranges: $\pm 2.5V$, $\pm 1.25V$, $\pm 0.625V$, with optional input ranges: $\pm 10V$, $\pm 5V$, $\pm 2.5V$, or transformer-coupled 2Vp-p, 1Vp-p. It offers a 1-MByte FIFO data buffer. 66MHz PCI compatibility and DMA engine provide maximum throughput. Software-configurable data path supports data packing. This board also offers simultaneous sampling of all channels; sample clocking supplied by internal rate generator or external source. Conforms to PCI Local Bus Specification, Revision 2.3, with Universal Signaling.

PCI-SIO8BXS

8-channel High-performance Multi-Protocol Serial I/O with Software Configurable Cable Transceivers (RS422, RS232 and others)

The PCI-SIO8BXS board is an eight channel serial interface card which provides high speed, full-duplex, multi-protocol serial capability. The SIO8BX combines four multi-protocol Dual Universal Serial Controllers (USC®), 16 external FIFOs, and multi-protocol transceivers to provide eight fully independent asynchronous or synchronous serial channels. Multiprotocol Transceivers support RS422 (V.11)/RS485, RS423 (V.10), RS232 (V.28), V.35, RS530, as well as other Mixed Protocol modes. These features, along with a high performance PCI interface engine, give the PCI-SIO8BX unsurpassed performance in a serial interface card.

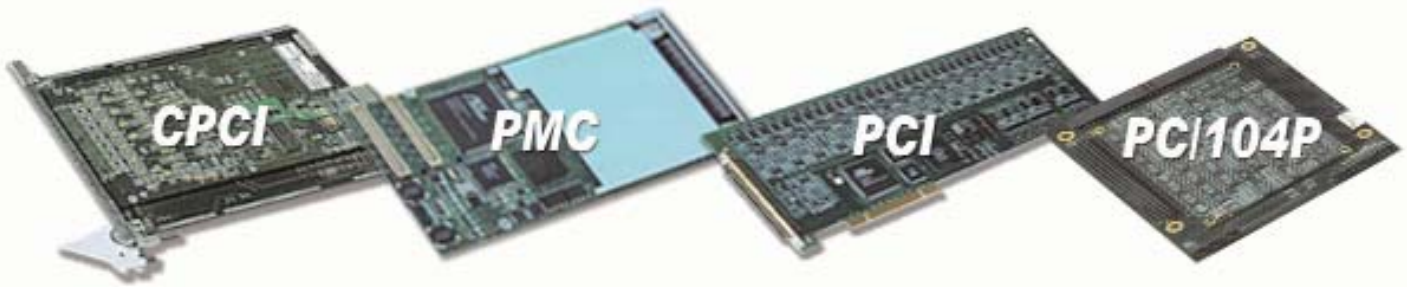
PMC66-16AISS16AO2

16-Bit, 18-Channel, 1.0-MSPS PMC Analog Input/Output Board With 16 Simultaneously Sampled Analog Inputs, Two Analog Outputs, and Input Sampling Rates to 1.0 MSPS per channel

The 16-Bit PMC66-16AISS16AO2 analog I/O module samples and digitizes 16 input channels simultaneously at rates up to 1.0 million samples per second per channel, and the resulting 16-bit sampled data is available to the PCI bus through a 256K-Sample FIFO buffer. Sampling can be controlled in groups of 1 through 16 channels, and the sample clock can be generated either from an internal rate generator, or by software or an external source. Both burst and continuous sampling modes are supported, and input ranges are software-selectable as $\pm 10V$, $\pm 5V$ or $\pm 2.5V$. The inputs are divided into two channel groups, with an independent software-controlled range assignable to each group.

Coming Soon

General Standards



All products are available on all form factors

PMC-SIO4BXR

High-performance Multi-Protocol Serial I/O with Software Configurable Cable Transceivers (RS422, RS232 and others) with Rear I/O

The PMC66-SIO4BXR board is a four channel serial interface card which provides high speed, full-duplex, multi-protocol serial capability for PMC applications with Rear I/O . The SIO4BX combines two multi-protocol Dual Universal Serial Controllers (USC®), 8 external FIFOs, and multi-protocol transceivers to provide four fully independent asynchronous or synchronous serial channels. Multiprotocol Transceivers support RS422 (V.11)/RS485, RS423 (V.10), RS232 (V.28), V.35, RS530, as well as other Mixed Protocol modes. These features, along with a high performance PCI interface engine, give the PMC-SIO4BXR unsurpassed performance in a serial interface card.

PCIe-16AI64SSC

64-Channel, 16-Bit Simultaneous Sampling PMC Analog Input Board with Large FPGA

The 16-Bit PCIe-16AI64SSAC analog input board samples and digitizes 64 input channels simultaneously at rates up to 200,000 samples per second for each channel. Each input channel contains a dedicated 16-Bit sampling ADC, and the resulting 16-bit sampled data is available to the PCI bus through a 1 MByte FIFO buffer. The 32-Bit local data path supports full D32 local-bus data packing. Throughput capacity is further enhanced with 66MHz PCI support and increased local clocking frequency. All operational parameters are software configurable. Inputs can be sampled in groups of 2, 4, 8, 16, 32 or 64 channels; or any single channel can be sampled continuously. The sample clock can be generated from an internal rate generator, or by software or external hardware. Input ranges are software-selectable as $\pm 10V$, $\pm 5V$ or $\pm 2.5V$.

Custom Board Development

Our claim to fame is our ability to develop custom boards as well as new products quickly and efficiently. We emphasize the use of small development teams with one (or more) persons assigned to each major aspect of the design effort (conceptual design, FPGA design entry, simulation, schematic entry, test code, and documentation). We place a lot of emphasis on making documentation easy to understand; this allows for easier customization and re-use of core designs on variations of a product.

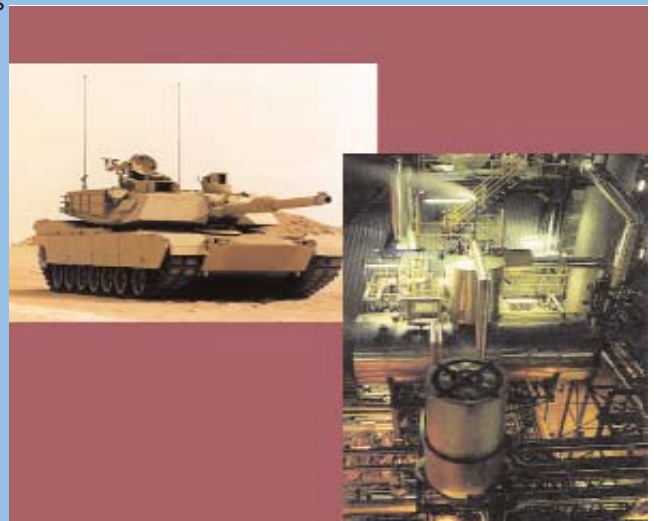
The time span to develop a new product is typically 8 to 14 weeks.

In one case we made a major design variation (doubled FIFO width) in less than two weeks (from decision to delivered product); this included new artwork, raw board fab, assembly, and testing.

The challenge of doing a high quality design in the shortest time possible is an important part of our company's culture.

We have a winning team focused on high quality, state-of-the-art products, and good customer service.

Give us a call. We will help you any way we can.



The Choice is Clear for Sonar, Seismic, and Recording Studio Applications

Now your choice is easy. General Standard's Data Acquisition Boards are more precise, use less power, less noise, and are lower in price than the closest competitor. See the comparison table below and visit our website for full technical specs:

www.generalstandards.com/delta-sigma.php

Get our free report: **Top Ten Things to Remember Before Specifying a Data Acquisition Board**. Even if you don't buy from us, don't design in anyone's board until you have the answers indicated in this report.

The following is a comparison of Delta-Sigma Data Acquisition Board Characteristics of General Standards' offering and the leading competitor:

Key Features	General Standards	Leading Competitor
Power Dissipation/ 32-Channel	12 Watts Typical**	35 Watts
Phase Skew	55ns (0.1 deg at 5KHz)	Not specified
Crosstalk	96dB	90dB
SINAD	93dB (PCI, cPCI,PMC, & PC104+)	86dB (cPCI), 90dB (PCI)
Gain Accuracy	+/- 0.1mV, +/- 0.1 percent	Not specified
Sample Rate	200K per Chan (PCI,PMC,PC104+ & cPCI)	108K per Chan (PCI) 216K per Chan (cPCI)
Industrial Temp Range	-40° to 85°C	-40° to 85°C
Commercial Temp Range	0° to 65°C	0° to 50°C
Cost for 32-Channel	\$5,995 (Qty 1)*	\$9,000

* Cost is for 32-Channel Commercial Temp Version. Quantity discounts available. Conformal coating available.

**Power is for the 32-channel version of the board. Power dissipation for other versions is 6 Watts typical.



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Advantages and Features of General Standards' Sigma-Delta and Delta-Sigma Products

Precision 8K Sampling Rate Combined with Integral Filters Make Sigma-Delta A/D Ideal for Telecom Applications.

Antialiased Input Sampling to 1.1M Samples/Sec:

Oversampling provides effective sampling rates equal to many times the corresponding rates for successive-approximation converters.

No External Filters Required:

You always have the maximum input bandwidth available for any selected sampling rate. Integral antialiasing uses both digital and analog filters to adjust the bandwidth automatically to just under one-half of the selected sampling rate. Out-of-band interference is stopped in its tracks, and never reaches your data arrays.

Large Data Buffers:

Large FIFO buffers are often required to cope with operating system latencies. Data loss is often unacceptable. They also minimize the number of PCI transactions required to move a specific block of data across the bus.

Flexible Sample Rate Control:

Sampling rates can be adjusted individually for each channel, or all channels can be sampled at a single common rate. Sampling rates are adjustable from 5 KSPS to 1.1 MSPS in increments of 0.2 percent. Custom oscillator frequencies are available to provide the exact set of sampling rates required for specific applications.

EMI Shields on PMC Boards:

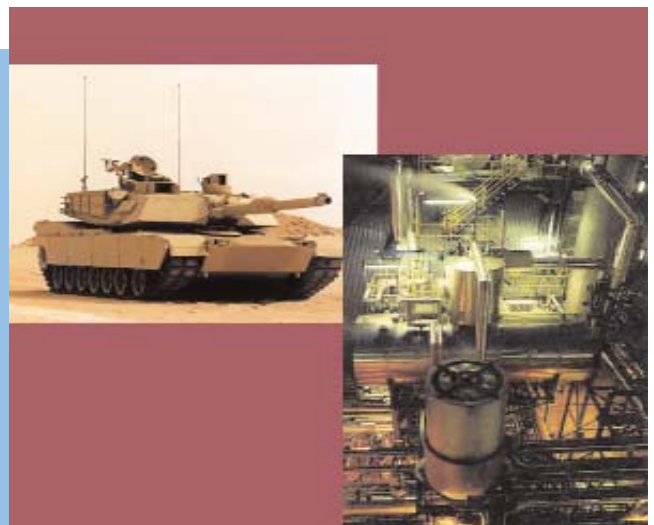
The PMC environment can position sensitive analog components within a fraction of a millimeter of high-energy digital devices and busses. To minimize induced noise, General Standards provides an essential EMI shield between the analog section of our PMC board and the host board.

Extremely Low Noise Levels:

Experience superior low-noise performance with a 1.5 LSB RMS typical noise specification, corresponding to just 57 microvolts on a +1.25 Volt range, or a signal-to-noise ratio of 93dB from 10Hz to 100kHz.

Applications:

- Acoustic Analysis
- Precision Voltage Measurement
- Audio and Sonar
- Sonograms, Ocean and Underground Radar
- Target Locator (VHF & UHF)
- Analog Inputs
- Audio Spectral Analysis
- Harmonic Sampling
- Telephony
- Telecom (8K Samples/sec)



Distinct Features and Advantages of General Standards' Products

Advantages of Sigma-Delta and Delta-Sigma

- Multiple, adjustable high-resolution clocks
- Independent sample rate control per channel
- Asynchronous or synchronous inter-channel operation
- Programming harmonic sampling rates
- Image filters
- Software sampling rates from 5 KSPS to 1.1 MSPS
- Software-selectable input voltage ranges from +1.25 Volts to +10 Volts

Distinct Features and Unique Advantages of Analog I/O Boards

- Hardware Autocalibration; no missing codes introduced
- Autonomous operation; no host overhead
- Integrated EMI Shield for analog components reduces radiated EMI from host CPU
- Includes absolute Analog accuracies in spec
- Lo-Profile 5-Volt DC/DC converters; integrated design; clean power and maximum efficiency with no +12 Volt power requirement
- Autonomous built-in test (Autocal); no host involvement
- No field jumpers; completely configurable via software
- Pluggable firmware; easy to upgrade; custom features available
- Individually buffered Analog inputs; minimizes cross-talk and input leakage

Distinct Features and Unique Advantages of Digital I/O Boards

- Fastest general purpose Digital I/O board on the market (HPDI32 family)
- Deepest Buffer storage (Up to 1 Mbyte total FIFO)
- Most Flexible parallel I/O interface (Able to meet most peripheral requirements)
- We change our cable interface to meet customer requirements (Approximately half of our customers request this)
- We routinely modify and ship custom handshake modifications in 3-4 weeks

Distinct Features and Unique Advantages of Serial I/O Boards

- Deep FIFO Buffers (32 Kbyte deep) for both Transmit and Receive on each channel
- Up to 10 Mbits/sec operation on all four channels simultaneously
- High-end Universal Serial Controller supports Asynchronous, Bisync, HDLC, SDLC, & 9-Bit protocols
- Serial I/O protocol (RS-232, RS-422/485, V.35, EIA-530) is software selectable on some models

Advantages of Working with General Standards Corporation

- Comprehensive Documentation
- Expanding Product Line
- Commitment to continued growth and support
- Explicit Specifications
- Include Absolute Accuracies
- Talk directly to an application design engineer
- Customization to meet your requirements on most boards

Software Drivers:

- Linux, Win2k, NT, XP/XPE, ME, 98, LabView & VxWorks drivers are available. Call for Solaris and others.

Custom Board Design Service

Your Competitive Edge in Custom Designed Board Products

How do you select a business partner in custom-designed board products? If quality, service, and value are important to you—not to mention leading-edge design, engineering, and manufacturing capabilities—General Standards Corporation is tough to beat. In short, we give you the edge you deserve.

Founded in 1990, we have been a stable, professionally managed, customer-driven organization. You can trust us as your partner in custom-designed High Performance Bus Interface Solutions.

The General Standards' Advantage: Meeting Your Most Demanding Challenges Fast

The speed of the engineers in our design department, and the turnaround time of those who make our prototypes, is unsurpassed. Combine that with the quality of our customer service resources, and you begin to understand how General Standards can ship even your largest order so quickly. And that's a competitive edge you can use to your advantage in today's hurry-up marketplace. Another way General Standards gives you an edge is by constantly staying abreast of new technology. If there is a better way to do something, we will find it or invent it. Many of General Standards' processes are innovative and a direct result of our employees and clients collaborating, recognizing, and acting on new opportunities.

Responsive General Standards' Service Before, During, and After Your Order

To General Standards, customer service actually starts before you are technically a customer. It starts with our listening and learning from you. Top management is accessible to every client, large or small, taking the time to understand your requirements up front. We are careful to build products that meet your needs in your specific application. Not only is your product custom-designed, but the process that creates it is too.

When You Call General Standards, You Will Talk to an Engineer

Our thoroughly trained design engineers make sure you never have to wait for answers or more importantly, action. Why do we work so hard at customer service? To save you valuable time—it's an edge we think you deserve.

General Standards: The Comprehensive Source for ALL Your Custom I/O Needs

We think about quality, service, and value so you don't have to. We make sure things are done right, consistently, and predictably. We stake our reputation on our ability to work with customers to solve any problems that may arise without saying "it's not our problem." We help you explore new ways of doing things, so why not choose us to take your project to the next level. Besides, it just makes good sense!

Flying High-Performance Bus Interface Solutions



Product Selection Guide

Analog I/O

Available Form Factor	Model Series	Applications	Resolution Bits	Input Channels	Input Max Sampling Rate	Input Range	ADC
PMC PCI cPCI PC104+	16AI64SSA	Analog Event Capture Industrial Robotics Acoustic Sensor Arrays	16	64 SE/32 Diff	200 KSPS per channel	±2.5V ±5V ±10V	Simultaneous Sampling
PMC PCI cPCI PC104+	16AIO	Data Acquisition Systems Automatic Test Equipment Function and Waveform Generation	16	32 SE/ 16 Diff	300 KSPS Aggregate	±2.5V ±5V ±10V	Scanning
PMC PCI cPCI PC104+	12AIO	Acoustics Analysis Voltage Measurement Audio Waveform Analysis	12	32 SE/ 16 Diff	1500 KSPS (Any single channel) 1000 KSPS	±2.5V ±5V ±10V	Scanning
PMC PCI cPCI PC104+	ADADIO	Supervisory Control Systems Research Instrumentation Simulators and Trainers	16	8 Diff	200 KSPS per channel	±2.5V ±5V ±10V (Fixed)	Simultaneous Sampling
PMC PCI cPCI PC104+	16AIO88	Function Generation Data Acquisitions Systems Precision Voltage Sources	16	8 SE/ 4 Diff	73 KSPS	±2.5V ±5V ±10V (Fixed)	Scanning
PMC PCI cPCI PC104+	16AI64	Acoustics Analysis Voltage Measurement Audio Waveform Analysis	16	64 SE/ 32 Diff	500 KSPS (Any single channel) 350 KSPS (scanning)	±2.5V ±5V ±10V	Scanning
PMC PCI cPCI PC104+	12AI64	Acoustics Analysis Voltage Measurement Audio Waveform Analysis	12	64 SE/ 32 Diff	1500 KSPS (Any single channel) 1000 KSPS	±2.5V ±5V ±10V	Scanning
PMC PCI cPCI PC104+	16A012	Waveform Synthesis Audio Synthesis Acoustic Research	16	-----	-----	-----	-----
PMC PCI cPCI PC104+	16AO2MF	Arbitrary Functions Precision Voltage Source Industrial Robotics	-----	-----	-----	-----	Scanning
PMC PCI cPCI PC104+	16AIO168	Function and Waveform Generation Research Instrumentation Precision Voltage Sourcing and Measurement	16	16SE/ 8 Diff	300 KSPS	±2.5V ±5V ±10V	Scanning
PMC PCI cPCI PC104+	12AISS44AO4	Event Capture Closed-Loop Systems Acoustic Sensor Inputs	12	8 Diff	2 MSPS	±1V ±10V ±100mV	Simultaneous Sampling
PMC PCI cPCI PC104+	12AISS8AO4	Dynamic Test Systems Transducer Inputs Voltage Control	12	8 Diff	2 MSPS	±1V ±10V ±100mV	Simultaneous Sampling
PMC PCI cPCI PC104+	16AICS32	Resistance Transducers Process Monitoring Temperature Measurement	16	32 Diff	0.06 to 3000 32-channel Scans per Second	±2.5V ±5V ±10V	Scanning
PMC66 PCI66 cPCI66 PC104+66	16AISS8AO4	High Performance Data Acquisition Arbitrary Waveform Generation Ultrasound	16	8 Diff, Simultaneous	2.0 MSPS per channel , Simultaneous	±2.5V ±5V ±10V 0 to +5V 0 to +10V	Simultaneous Sampling

Analog I/O Table Continued

	Output Channels	Output Max Clock Rate	Output Range	Digital I/O Lines	Key Features
	-----	-----	-----	-----	64 analog input channels, Simultaneous Sampling
	4 SE	300 KSPS per channel	$\pm 2.5V$ $\pm 5V$ $\pm 10V$	18	High density analog I/O, Dual buffers
	4 SE	400 KSPS per channel	$\pm 2.5V$ $\pm 5V$ $\pm 10V$	18	High density analog I/O, Dual buffers
	4 SE	250 KSPS Aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ (fixed)	10	ADC per channel, Simultaneous input sampling, 32K input buffer
	8 SE	250 KSPS Aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$	-----	Dual buffers
	-----	-----	-----	-----	High density analog inputs, 64K buffer
	-----	-----	-----	-----	High density analog inputs, 64K buffer
	12 SE	400 KSPS per channel	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ (fixed)	-----	High density analog outputs. 128K buffer
	2 Diff	400 KSPS per channel	$\pm 5V$ $\pm 10V$ (fixed)	-----	Differential outputs, Dual clocks, 128K buffer
	8 SE	300KSPS per channel	$\pm 2.5V$ $\pm 5V$ $\pm 10V$	4	High density analog I/O, 32K Sample FIFO buffers
	4 SE	1.0 MSPS per channel	$\pm 2.5V$ $\pm 5V$ $\pm 10V$	-----	Simultaneous input sampling, high input bandwidth
	4 SE	1.0 MSPS	$\pm 2.5V$ $\pm 5V$ $\pm 10V$	-----	Simultaneous input sampling, software selectable input ranges
	-----	-----	-----	-----	32-Channel Transducer Input board with Scanning Input Current Source
	4 SE	1.0 MSPS per channel , Simultaneous	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	16 Bidirectional	66 MHz PCI Support 12-Channel, 16-Bit PMC Analog Input/Output Board With Eight Simultaneously Sampled Analog Inputs, Four Analog Outputs, and Input Sampling Rates to 2.0 MSPS per channel

Product Selection Guide

Analog I/O

Available Form Factor	Model Series	Applications	Resolution Bits	Input Channels	Input Max Sampling Rate	Input Range	ADC
PMC66 PCI66 cPCI66 PC104+66	16AI64SSC	Analog Event Capture Industrial Robotics Acoustic Sensor Arrays	16	64 SE/ 32 Diff	200KSPS per channel	±2.5V ±5V ±10V	Simultaneous
PMC66 PCI66 cPCI66 PC104+66	14HSAI4	Spectrum Analysis Imaging Systems Telecommunications	14	4 Diff	50 MSPS per channel	±2.5V ±5V ±10V	Scanning
PMC66 PCI66 cPCI66 PC104+66	16A016	Audio Synthesis Acoustic Research Waveform Synthesis	16	-----	-----	-----	Simultaneous Scanning
PC104+	16A020	Audio Synthesis Acoustic Research Waveform Synthesis	16	-----	-----	-----	Simultaneous Scanning
PMC PCI cPCI PC104+	16AO4MF	Arbitrary Functions Precision Voltage Source Industrial Robotics	-----	-----	-----	-----	Scanning
PMC66 PCI66 cPCI66 PC104+66	18AISS8AO8	Waveform generation Servo Systems Acoustic Sensor Systems	18	8 Diff	-----	-----	Simultaneous Sampling
PMC66 PCI66 cPCI66 PC104+66	16AISS16AO2	Arbitrary Functions Event Capture Robotics Ultrasound	16	16	1.0 MSPS per channel	±2.5V ±5V ±10V	Simultaneous

Memory

Available Form Factor	Model Series	Applications	Max Flash memory	Max battery-backed SRAM	Features
PMC PCI cPCI PC104+	FLASH	Code Storage Data Logging Calibration Data	up to 64M	512K	Useful for code-storage, look-up tables, and data logging
PMC PCI cPCI PC104+	FLASH2	Code Storage Data Logging Calibration Data	up to 64M	512K	Useful for code-storage, look-up tables, and data logging

Memory in Development

Available Form Factor	Model Series	Applications	Max Flash memory	Max battery-backed SRAM	Features
PMC	FLASH2A	Code Storage Data Logging Calibration Data	up to 256MBytes		Useful for code-storage, look-up tables, and data logging
PMC	FLASH2G	Code Storage Data Logging Calibration Data	up to 2Gbytes		Useful for code-storage, look-up tables, and data logging

Analog I/O Table Continued

	Output Channels	Output Max Clock Rate	Output Range	Digital I/O Lines	Key Features
	-----	-----	-----	-----	66 MHz PCI Support, 64-channels, Simultaneous Sampling
	-----	-----	-----	-----	14-Bit, 4-Channel, 50MSPS/Channel PMC Analog Input Board with 66MHz PCI Compatibility, Multiple Ranges, and Data Packing
	16 Diff	440KSPS per channel	±2.5V ±5V ±10V	-----	66 MHz PCI Support, 16-channels, Simultaneous Sampling
	20 Diff	440KSPS per channel	440KSPS per channel	-----	20-channels, Simultaneous Sampling
	4 Diff	400KSPS per channel	±5V ±10V (fixed)	-----	Differential outputs, Dual clocks, 128K buffer
	8 Diff	500KSPS per channel	±10V, ±5V, ±2.5V, 0/+10V, 0/+5V	-----	Continuous time 4-pole lowpass filter
	2	1.0 MSPS per channel	±2.5V ±5V ±10V	4	256K-Sample FIFO Buffer; 4 Bidirectional digital I/O lines programmable as inputs or outputs

Digital Video Input/Output

Available Form Factor	Model Series & Transceiver Type	Applications	Cable Data Width	Control Lines	Max Cable Speed	Max Bus Speed	Key Features
PMC PCI cPCI PC104+	HPDI32A-VIDEO	Video Recording/Playback	32	6 General Purpose I/O lines	50MHz/200Mbytes per second	100 Mbytes per second	Adapted to work with CCD and video cameras
PMC PCI64	HPDI32A-VIDEO	Video Recording/Playback	32	6 General Purpose I/O lines	50MHz/200Mbytes per second	400 Mbytes per second	Adapted to work with CCD and video cameras

Product Selection Guide

Sigma-Delta & Delta-Sigma I/O

Available Form Factor	Model Series	Applications	Resolution Bits	Input Channels	Input Max Sampling Rate	Input Range
PCI PC104+	16SDI	Acoustic Analysis Audio Waveform Analysis "Sonar Applications	16	16 Diff (6 Diff on PC104P)	220 KSPS per channel	±1.25V ±2.5V ±5V ±10V
PMC PCI cPCI	16SDI-HS	Software Radio Radar Target Locating Recording Studio	16	6 Diff (8 Diff on PCI)	1100 KSPS per channel	±1.25V ±2.5V ±5V ±10V
PMC cPCI	6SDI	Acoustic Analysis Audio Waveform Analysis "Sonar Applications	16	6 Diff	220 KSPS per channel	±1.25V ±2.5V ±5V ±10V
PMC cPCI PC104+	16HSDI	Telecom Precision Voltage Measurement Audio Sonograms (Ocean and Underground)	16	6 Diff	1100 KSPS per channel	±1.25V ±2.5V ±5V ±10V
PCI	24DSI32	Sonar Applications Audio Sonograms Acoustic Analysis	24	32 Diff	200 KSPS per channel	±2.5V ±5V ±10V
PMC PCI cPCI PC104+	24DS12	Sonar Applications Audio Sonograms Acoustic Analysis	24	12 Diff	200 KSPS per channel	±2.5V ±5V ±10V
PMC66 PCI66 cPCI66 PC104+66	16VSDI2 (in development)	Waveform Analysis Acoustic Analysis Data Acquisition	16	2 Diff	10 MSPS per channel	±1.25V ±2.5V ±5V ±10V
CPCI6U	24DSI32R	Sonar Applications Audio Sonograms Acoustic Analysis	24	32 Diff	200 KSPS per channel	±2.5V ±5V ±10V

Sigma-Delta & Delta-Sigma I/O Table Continued

ADC	FIFO Buffer Size	Sample Clocks	Noise Level	Key Features
Sigma-Delta	256K	4	1.5LSB-RMS on all ranges, 10Hz-100KHz, typical	ADC per channel, Antialiasing, 256K buffer, 4 sample clocks.
Sigma-Delta	256K	4	3.0LSB-RMS on all ranges, 10Hz-500KHz, typical	High speed inputs, ADC per channel, Antialiasing, 256K buffer, 4 sample clocks. Aircraft style I/O connector
Sigma-Delta	64K	2	1.5LSB-RMS on all ranges, 10Hz-100KHz, typical	ADC per channel, Antialiasing, 64K buffer, 2 sample clocks.
Sigma-Delta	64K	2	0.4mVRMS, typical	High-speed inputs, ADC per channel, Antialiasing, 64K buffer, 2 sample clock.
Delta-Sigma	256K	optional	93dB typical to 10 kHz input bandwidth; 86 dB typical to 40 kHz (93dB typical to 40kHz with optional extended low-distortion range)	Superior Synchronization between channels and boards
Delta-Sigma	256K	optional	93dB typical to 10 kHz input bandwidth; 86 dB typical to 40 kHz (93dB typical to 40kHz with optional extended low-distortion range)	Superior Synchronization between channels and boards
-----	-----	-----	-----	Wideband inputs, ADC per channel, Antialiasing, Dual 64K buffers, 2 sample clocks. 66 MHz PCI Support
Delta-Sigma	256K	optional	93dB typical to 10 kHz input bandwidth; 86 dB typical to 40 kHz (93dB typical to 40kHz with optional extended	Superior Synchronization between channels and boards

Available Form Factor	Model Series & Transceiver Type	Applications	Chan	Max Synchronous Data Speed	Max Asynchronous Data Speed	Key Features
PMC PCI cPCI PC104+	HPDI32A-ASYNC (RS-485/422)	High Speed Data Acquisition and Control High-speed Video and Data Capture Development and Research	1	25 M bits/sec sync	5 M bits/sec async	High-speed async, Deep FIFO Buffering up to 1M byte
VME	SIO4 (RS-485/422)	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bit/sec async	4 channel, high-speed I/O
PMC	SIO4AR-SYNC(RS-485/422)	LAN/WAN Networking Telecommunications Serial Interface	4	8 M bits/sec sync	N/A	Simple 4 channel synchronous serial/parallel converter up to 8Mb/sec
PMC	SIO4AR (RS-485/422)	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bit/sec async	4 channel, high-speed I/O. Also rear panel I/O
PCI PC104+	SIO4B	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bit/sec async	4 channel, high-speed I/O. Also rear panel I/O
PCI	SIO4B-SYNC	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	-----	4 QUAD channel synchronous serial to parallel controller with optional deep transmit and receive FIFOs.
PMC PCI cPCI PC104P	SIO4BX	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bits/sec async	4 channel, high-speed I/O. Serial mode protocols include asynchronous, Bisync, SDLC, HDLC, IEEE 802.3, and Nine-Bit. Multi-protocol transceivers support RS422, RS423, RS323, V.35, RS530, as well as multi-protocol modes.
PMC PCI cPCI PC104+	SIO4BX-SYNC	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bit/sec async	4 channel synchronous, high-speed I/O. Multi-protocol transceivers support RS422, RS423, RS323, V.35, RS530, as well as multi-protocol modes.
cPCI	SIO4ARHM	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bit/sec async	4 channel, high-speed I/O. Also rear panel I/O
PMC PCI cPCI PC104+	HPDI32A-DIPHASE	Telemetry Telecommunications Serial Interface	1	10 M bits/sec	-----	High-speed di-phase I/O, deep FIFO buffering up to 1M byte
PCI	SIO8BXS	LAN/WAN Networking Telecommunications Serial Interface	8	10 M bits/sec sync	1 M bits/sec async;	Multi-protocol transceivers support RS422, RS423, RS323, V.35, RS530, as well as multi-protocol modes.
PMC66	SIO4BXR	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bits/sec async;	Multi-protocol transceivers support RS422, RS423, RS323, V.35, RS530, as well as multi-protocol modes; rear I/O.

Serial I/O In Development

Available Form Factor	Model Series & Transceiver Type	Applications	Chan	Max Synchronous Data Speed	Max Asynchronous Data Speed	Key Features
PMC PCI CPCI PC104P	SIO8		8	10 M bits/sec		
PMC66	USD32SLX	LAN/WAN Networking Telecommunications Serial Interface	4	10 M bits/sec sync	1 M bits/sec async	8 Clock Generators, Cyclon
PMC	HPDI32A-TELEM	Telemetry Links	1	20	N/A	FPGA provides flexibility

Available Form Factor	Model Series & Transceiver Type	Applications	Cable Data Width	Control Lines	Max Cable Speed	Max Bus Speed	Key Features
PMC PCI cPCI PC104+	HPDI32A (RS-422/485) (PECL)	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	25MHz/100Mbytes per second	100 Mbytes per second	Deep FIFO buffering up to 1M byte, 32-bit PCI interface.
PMC PCI cPCI PC104+	HPDI32A-COS	Change-of-state monitor General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	25MHz/100Mbytes per second	100 Mbytes per second	Selectable sample rate, change-of-state detection.
PMC PCI cPCI PC104+	OPTO32A	Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	24 in 8 out	N/A	PIO	N/A	Optically isolated I/O change-of-state interrupts
PCI64	HPDI32AL (RS-422/485) (PECL) (LVDS)	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	25MHz/100Mbytes per second	400 Mbytes per second	Deep FIFO buffering up to 1M byte, 64-bit PCI interface.
PCI64 PMC64 cPCI	HPDI32ALT (LVDS or TTL)	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	50MHz/200Mbytes per second	400 Mbytes per second	Deep FIFO buffering up to 1M byte, 64-bit PCI interface
PC104+	HPDI32ALT (LVDS or TTL)	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	50MHz/200Mbytes per second	200 Mbytes per second	Deep FIFO buffering up to 1M byte, 64-bit PCI interface
PMC PCI cPCI PC104+	DIO24	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	24	1 General Purpose Input	PIO	N/A	Parallel I/O; Flexible cable interface
PCI	DMI32	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	14 General Purpose I/O lines	50MHz/200Mbytes per second	100 Mbytes per second	Very high-speed parallel digital input/output, Up to 4G byte of SDRAM

Digital I/O In Development

Available Form Factor	Model Series & Transceiver Type	Applications	Cable Data Width	Control Lines	Max Cable Speed	Max Bus Speed	Key Features
PMC64	HPDI32B (in Development; call for availability)	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	25MHz/100Mbytes per second	100 Mbytes per second	Deep FIFO buffering up to 1M byte, 32-bit PCI interface.
PMC64 PCI64 cPCI64 PC104+64	HPDI40LS (LVDS or RS485)	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	50MHz/200Mbytes per second	400 Mbytes per second	Deep FIFO buffering up to 1M byte, 64-bit PCI interface
PMC64 PCI64 cPCI64 PC104+64	HPDI40LS-PIO (in Development; call for availability)	High Speed Data Acquisition and Control General Purpose Parallel DMA interface Development and Research	32	6 General Purpose I/O lines	50MHz/200Mbytes per second	400 Mbytes per second	Deep FIFO buffering up to 1M byte, 64-bit PCI interface

Product Selection Guide

Analog Products in Development

Available Form Factor	Model Series	Res. Bits	Input Channels	Input Max Sampling Rate	Input Range	Output Channels	Output Max Clock Rate	Output Range	Digital I/O Lines	Key Features
PMC66 PCI66 cPCI66 PC104+66	16AI2O8	16	2 Diff, Simultaneous	1.0 MSPS per channel, Simultaneous 2.0MSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	8 SE	1.0 MSPS per channel, Simultaneous 8.0MSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	8 Bidirectional	1.0 MSPS inputs and outputs, simultaneous input sampling, Dual 64K buffers; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	16AISS16AO4	16	16 Diff, Simultaneous	200 KSPS per channel, Simultaneous 3.2MSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	4 SE	400 KSPS per channel, Simultaneous 1.6MSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	8 Bidirectional	Simultaneous mid-speed analog inputs, Dual 32K buffers; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	16AI4020	16	4 Diff, Simultaneous	200 KSPS per channel, Simultaneous 800KSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	20 SE	400 KSPS per channel, Simultaneous 8.0MSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	8 Bidirectional	High density, fast analog outputs, 32K Dual buffers; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	16AI64SL	16	64 SE/ 32 Diff	500 KSPS (Any single channel) 350 KSPS (scanning)	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V or 4-20ma	-----	-----	-----	-----	High density scanned analog inputs, Scan list control, 64K buffer; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	16AI32O4	16	32 SE/ 16 Diff	500 KSPS (Any single channel) 350 KSPS (scanning)	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V or 4-20ma	4 SE	400 KSPS per channel, 8.0 MSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	8 Bidirectional	High density scanned analog inputs, Scan list control, Dual 32K buffer. 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	16AI1604CL	16	16 SE/ 8 Diff	50 KSPS aggregate	$\pm 2.5V$ $\pm 5V$ $\pm 10V$ 0 to +5V 0 to +10V	4 SE	400 KSPS per channel, 8.0 MSPS aggregate	$\pm 2.5V$ $\pm 5V, \pm 10V$ 0 to +5V 0 to +10V or 4-20ma	8 Bidirectional	Scanned excitation current source at inputs. Optional 4-20ma Outputs. 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	16AI16LV	16	16 Diff	50 KSPS aggregate	$\pm 10mV$ $\pm 100mV$ $\pm 1.0V$ $\pm 10V$	-----	-----	-----	-----	Low-level analog inputs, scanned excitation current source at inputs. Expandable to 256 channels. 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	16AI8TC	16	8 Diff	50 KSPS aggregate	$\pm 10mV$ $\pm 100mV$ $\pm 1.0V$ $\pm 10V$	-----	-----	-----	-----	Low-level analog inputs, Thermocouple support. Expandable to 128 channels. 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	SC16MX	n/a	16 Diff	50 KSPS aggregate	$\pm 10mV$ $\pm 100mV$ $\pm 1.0V$ $\pm 10V$	-----	-----	-----	-----	Low-level analog inputs expansion board. Companion to 16AI16LV and 16AI8TC. 66 MHz PCI Support

Available Form Factor	Model Series	Res. Bits	Input Channels	Input Max Sampling Rate	Input Range	Output Channels	Output Max Clock Rate	Output Range	Digital I/O Lines	Key Features
PMC66 PCI66 cPCI66 PC104+66	MI-6AI4WR	16	4 Isolated, Simultaneous	200 KSPS per channel, Simultaneous 800 KSPS aggregate	$\pm 25\text{mV}$ to $\pm 10\text{V}$	-----	-----	-----	-----	Mutually isolated inputs, Total interchannel isolation, Wide signal range, 240 VAC isolation, Simultaneous input sampling; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	BI-16AI8WR	16	8 Isolated, Simultaneous	200 KSPS per channel, Simultaneous 1.6 MSPS aggregate	$\pm 25\text{mV}$ to $\pm 10\text{V}$	-----	-----	-----	-----	Bus-isolated Inputs, Common isolated return, Wide signal range. 240 VAC isolation, Simultaneous input sampling; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	MI-16AO4	16	-----	-----	-----	4 Isolated	400 KSPS per channel, 1.6 MSPS aggregate	$\pm 2.5\text{V}$ $\pm 5\text{V}$ $\pm 10\text{V}$	-----	Mutually isolated outputs, Total interchannel isolation, 240 VAC isolation; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	BI16AO8	16	-----	-----	-----	8 Isolated	400 KSPS per channel, 3.2 MSPS aggregate	$\pm 2.5\text{V}$ $\pm 5\text{V}$ $\pm 10\text{V}$	-----	Bus-isolated Outputs, Common isolated return, 240 VAC isolation; 66 MHz PCI Support
PMC66 PCI66 cPCI66 PC104+66	MI-16AIO24WR	16	16 Isolated, Simultaneous	200 KSPS per channel, Simultaneous 3.2 MSPS aggregate	$\pm 25\text{mV}$ to $\pm 10\text{V}$	8 Isolated	400 KSPS per channel 3.2 MSPS aggregate	$\pm 2.5\text{V}$ $\pm 5\text{V}$ $\pm 10\text{V}$	-----	Mutually isolated inputs and outputs. Total interchannel isolation, Wide range inputs, 240 VAC isolation, Simultaneous input sampling; 66 MHz PCI Support
PMC66	14AISS16	14	16	2.8 MSPS per channel	$\pm 2.5\text{V}$ $\pm 5\text{V}$ $\pm 10\text{V}$ 0/+10 or 0/5V Wideband: $\pm 3\text{V}$, $\pm 1.5\text{V}$, or ± 0.75	2	0	0	0	14-Bit, 16-Channel, 2.8 MSPS/Channel, Simultaneous-Sampling PMC Analog Input/Output Board wth 66/33MHz PCI Compatibility, Byte-Wide Digital I/O, and 2 Analog Outputs
PMC66	14AISS20	14	20	1.3 MSPS per channel	$\pm 2.5\text{V}$ $\pm 5\text{V}$ $\pm 10\text{V}$ 0/+10 or 0/5V	2	0	0	0	14-Bit, 20-Channel, 2.8 MSPS/Channel, Simultaneous-Sampling PMC Analog Input/Output Board wth 66/33MHz PCI Compatibility, Byte-Wide Digital I/O, and 2 Analog Outputs
PMC66	14AISS32 (in Development; call for availability)	14	32	1.3 MSPS per channel	$\pm 2.5\text{V}$ $\pm 5\text{V}$ $\pm 10\text{V}$ 0/+10 or 0/5V	2	0	0	0	14-Bit, 32-Channel, 2.8 MSPS/Channel, Simultaneous-Sampling PMC Analog Input/Output Board wth 66/33MHz PCI Compatibility, Byte-Wide Digital I/O, and 2 Analog Outputs
PMC66	16HSAO2	16	0	0	0	2	40 MSPS	$\pm 3\text{V}$ $\pm 1.5\text{V}$ $\pm 0.75\text{V}$ Optional $\pm 10\text{V}$, $\pm 5\text{V}$, $\pm 2.5\text{V}$	0	2-Channel, 16-Bit, 40 MSPS/Channel, PMC Analog Input/Output Board wth 66/33MHz PCI Compatibility and Multiple Ranges
PMC66	16SAO64	16	0	0	0	64	3KSPS per Channel for 64 Channels, to 50KSPS for 2 Channels	$\pm 2.5\text{V}$ $\pm 5\text{V}$ $\pm 10\text{V}$ or $\pm 1.25\text{V}$	0	64-Channel, 16-Bit, PMC Scanning Analog Output Board wth 200,000 Channels per Second Scan Rate and Output Disconnect

Notes

Notes



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