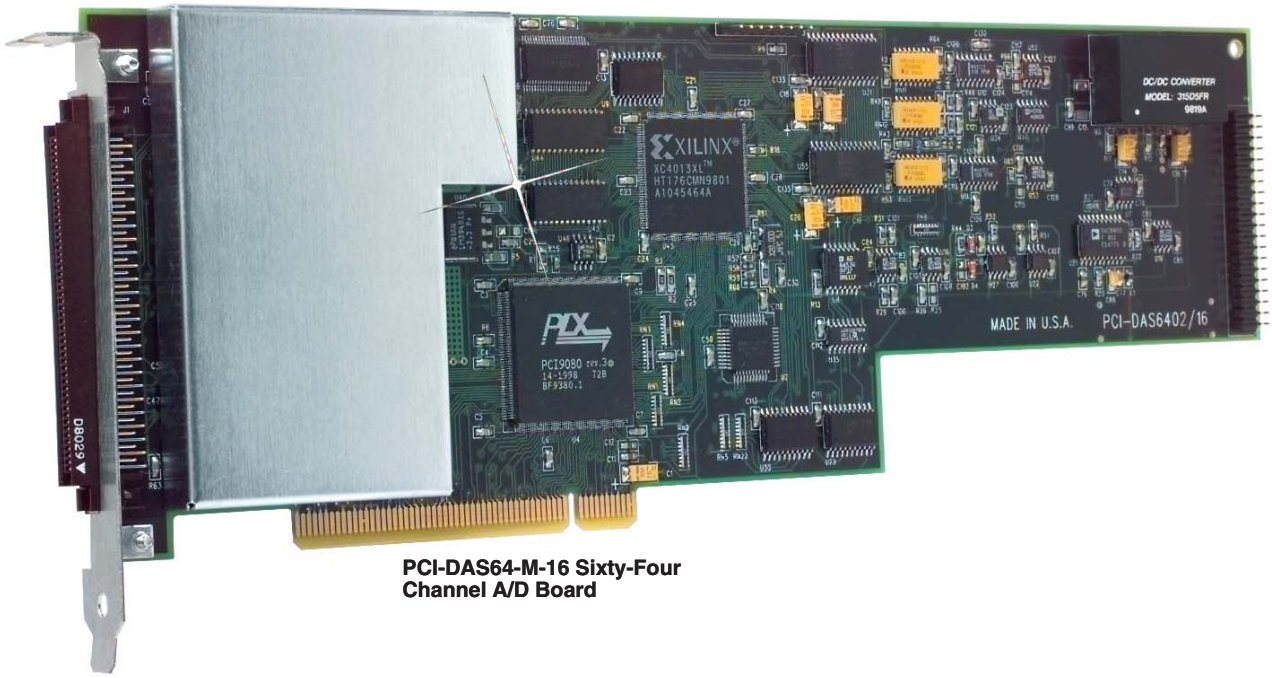
PCI-DAS64-M-16 Series Ultra High-Speed, High Resolution, 64-Channel A/D Board with Dual D/A & 32 Digital I/O



PCI-DAS64-M-16 Sixty-Four Channel A/D Board

MADE IN USA

3 YEAR WARRANTY

CE

OMEGA CARE Extended Warranty Program

$3495
Basic Unit

- **Blazing Speeds Up to 3 MHz Sample Rate**
- **64 Single-Ended or 32 Differential Analog Inputs**
- **16-Bit A/D Resolution**
- **8192 Sample A/D FIFO**
- **Dual 16-Bit Analog Outputs**
- **One 16-Bit Counter/32-Bit Digital I/O**
- **Fully Plug-and-Play and Auto-Calibrating**

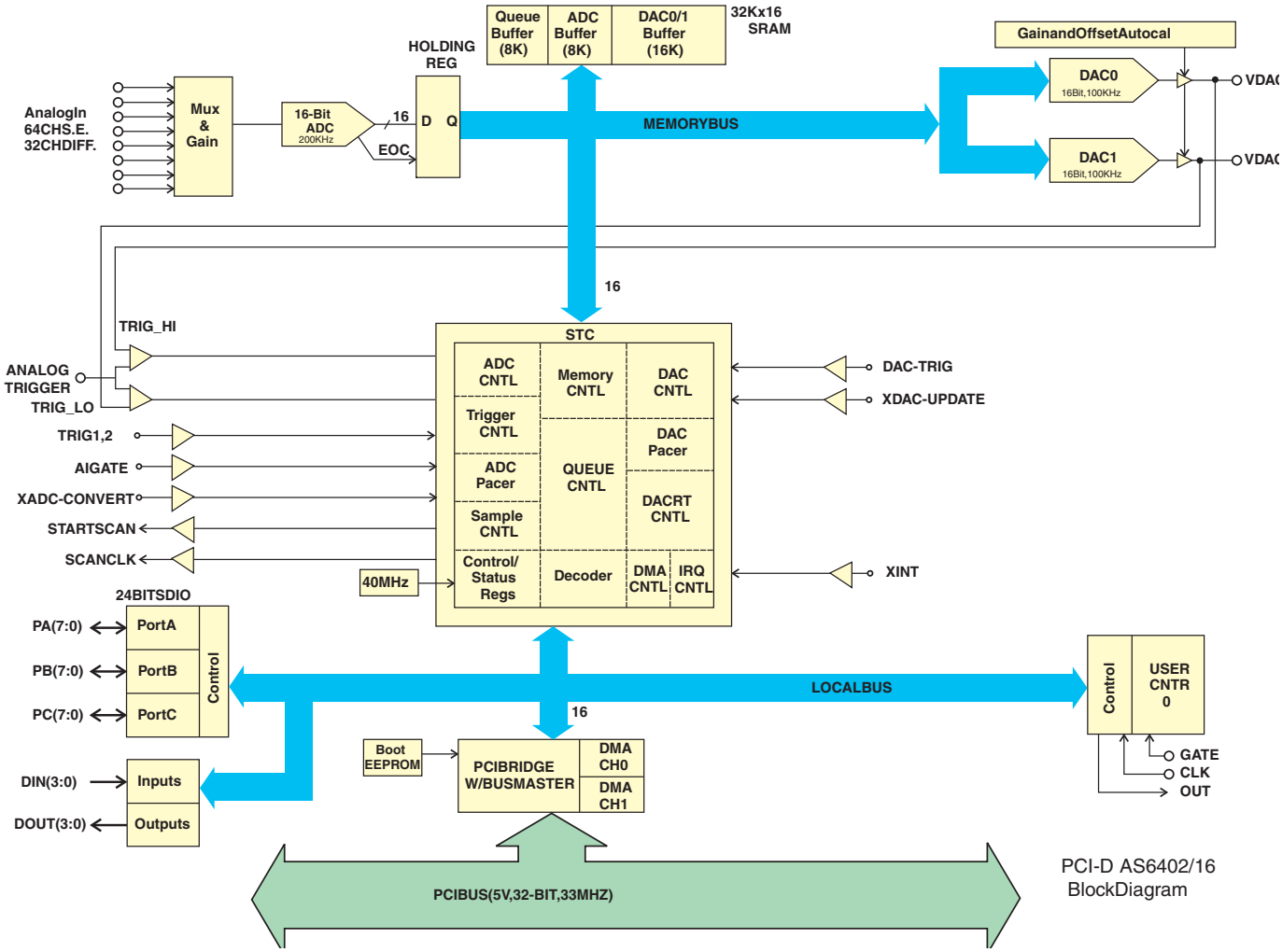
The PCI-DAS64-M family of analog and digital I/O boards offer an incredible combination of high speed and high resolution on a single PCI bus data acquisition board. They feature 64 single-ended or 32 differential 16-bit analog inputs with sample rates up to 3 MHz single-channel (up to 1.5 MHz multi-channel), two 16-bit analog outputs, 32 bits of digital I/O and one 16-bit down counter. The board offers a variety of analog and digital trigger modes with software-selectable trigger levels and direction. The PCI-DAS64-M family is completely plug-and-play. There are no switches, jumpers or potentiometers on the board. All board addresses, interrupt channels, etc., are set by your computer's plug-and-play software. Even calibration is performed via software using on-board trim D/A converters.

Analog Inputs

The PCI-DAS64-M provides 32 fully differential or 64 single-ended analog inputs. The input mode is software-selectable, with no switches or jumpers to set. The PCI-DAS64-M3 board offers a 3 MHz maximum sample rate, while the PCI-DAS64-M2 and PCI-DAS64-M1 offer 2 MHz and 1 MHz sample rates, respectively. The boards offer full speed acquisition in single channel scans, and will perform full accuracy multi-channel scans at half the board's speed regardless of gain setting (divide the sample rate by the number of active channels). An 8 Kilosample gain/channel queue is available, making long, complex sample sequencing simple. An 8 K sample FIFO combines with Bus-Master DMA and scatter-gather to assure that data taken from the board is transferred into computer memory without the possibility of missed samples.

The table below details the input ranges and resolutions for the available input configurations and gains:

Bipolar:		Unipolar:	
Range:	Resolution:	Range:	Resolution:
±5 V	153 µV	0 to 10 V	153 µV
±2.5 V	76.3 µV	0 to 5 V	76.3 µV
±1.25 V	38.1 µV	0 to 2.5 V	38.1 µV
±0.625 V	19.1 µV	0 to 1.25 V	19.1 µV



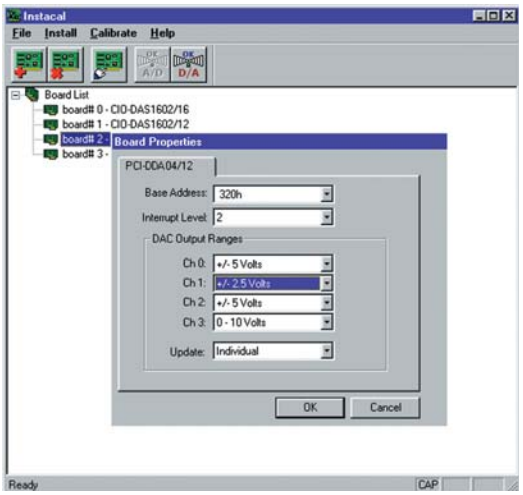
PCI-D AS6402/16 BlockDiagram

Burst Mode

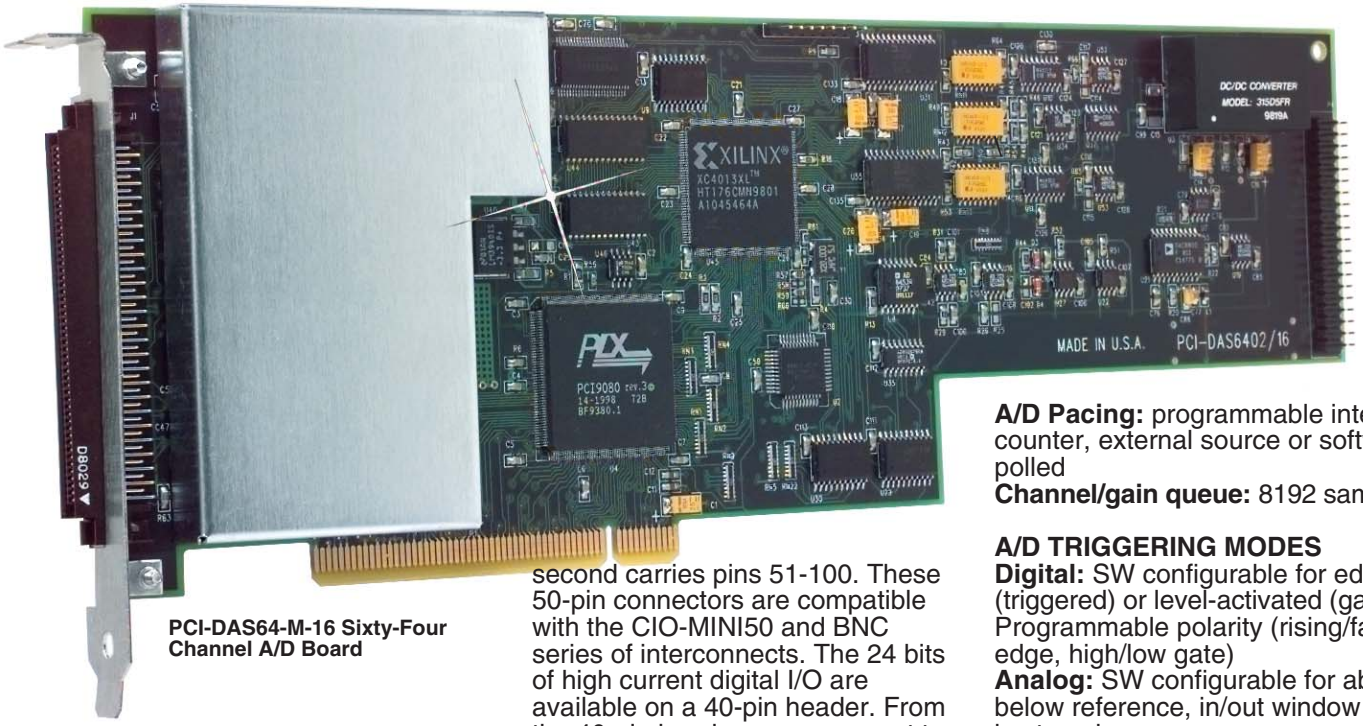
Channel-to-channel skew is the result of multiplexing the A/D inputs, and is defined as the time between consecutive samples. Burst mode minimizes channel-to-channel skew by clocking the A/D at a high rate between successive samples within a scan, then waiting a specified time before starting a new scan. The PCI-DAS64-M provides burst mode with a 667 ns (1 µs on M1) minimum sample skew/delay.

Analog Outputs

The PCI-DAS64-M boards provide two high speed 16-bit analog outputs. The outputs are updated via an on-board 16 K FIFO and provide a 100 kHz max. update rate. Repetitive D/A-based waveforms can be stored in on-board memory and generated without requiring ongoing PCI bus transfers. Software selectable ranges of 0 to 10 V, 0 to 5 V, ±10 V and ±5 V are available, and each channel can be set differently. The outputs are short circuit protected (35 mA limit) and are cleared to 0 volts on power-up or reset. The board supports simultaneous full speed operation of both the A/D and D/A.



The PCI-DAS64-M includes InstaCal Testing and Calibration software



PCI-DAS64-M-16 Sixty-Four Channel A/D Board

Parallel Digital I/O

The PCI-DAS64-M provides 32 bits of digital I/O. An 82C55 chip provides 24 bits of CMOS compatible I/O at the board's 40-pin auxiliary connector. Four LSTTL-compatible digital inputs and four outputs are also provided on the main 100-pin connector.

Counter/Timers

The PCI-DAS64-M provides one 16-bit down counter (⅓ of an 82C54). The counter provides clock, gate and output connections at the I/O connector.

Software Support

The PCI-DAS64-M series is supplied with InstaCal software for calibration and testing. In addition, it is also supported by the optional Universal Library. The Universal Library is a set of I/O libraries and drivers for users creating their own custom programs. The Universal Library is compatible with most Windows (32-bit) based languages and supports the entire PCI-DAS and CIO families of boards.
An optional driver for LabVIEW is also available.

Connectors and Cables

All analog, triggering and counter/timer connections are made through a 100-pin high-density connector. The C100FF series cable splits the 100 pins into two separate 50-pin cables. The first 50-pin cable contains the signals from pins 1-50, while the second carries pins 51-100. These 50-pin connectors are compatible with the CIO-MINI50 and BNC series of interconnects. The 24 bits of high current digital I/O are available on a 40-pin header. From the 40-pin header users connect to the optional BP40-37, which brings these pins out to the standard 37-pin connector and installs in any unused slot. This 37-pin connector is then pin-compatible with all CIO-DIO24 accessory boards. Alternatively, the 40-pin header may be brought out directly with the C40FF-2 cable and connected directly to a CIO-MINI40 screw terminal board.

Specifications

ANALOG INPUTS

Resolution: 16 bits
Number of Channels: 32 differential/64 single-ended, software selectable
A/D Conversion Time: PCI-DAS64-M3/M2/M1: 333 ns: 667 ns: 1 µs respectively
Single Channel, Single Input Range (rate): PCI-DAS64-M3/M2/M1: 3 MHz: 2 MHz: 1 MHz, respectively
Single channel, multiple input gains (rate): PCI-DAS64-M3/M2/M1: 500 kHz, 500 kHz, 500 kHz respectively
Multiple Channel, Single Input Range (rate): PCI-DAS64-M3/M2/M1: 1.5 MHz, 1.5 MHz, 1 MHz, respectively
Multiple Channel, Multiple Input gains (rate): PCI-DAS64-M3/M2/M1: 500 kHz, 500 kHz, 500 kHz respectively
Data Transfer Modes: DMA, interrupt, or software polled
Programmable Ranges: ±5 V, ±2.5 V, ±1.25 V, ±0.625, 0 to 10 V, 0 to 5 V 0 to 2.5 V, 0 to 1.25 V
A/D Pacing: programmable internal counter, external source or software polled
Channel/gain queue: 8192 samples

A/D TRIGGERING MODES

Digital: SW configurable for edge (triggered) or level-activated (gated). Programmable polarity (rising/falling edge, high/low gate)
Analog: SW configurable for above/below reference, in/out window and hysteresis
Pre-trigger: unlimited pre- and post-trigger sample sizes. Compatible with digital and analog trigger modes
Diff. Linearity Error: ±1 LSB max
Integral Linearity Error: ±1.5 LSB
Gain Error: 22.5 ppm typ, 45 max
Input leakage Current: 2.3 nA (25°C)
Input Impedance: 10 MΩ, Min
Maximum Input Voltage: ±15 V

COUNTER/TIMERS

Configuration: Single 16-bit down counter (⅓ of an 82C54)
Clock Input Frequency: 10 MHz max
Input Low/High Voltage: 0.8 V max/2.0V min
Output Low/High Voltage: 0.4 V max/3.0 V min

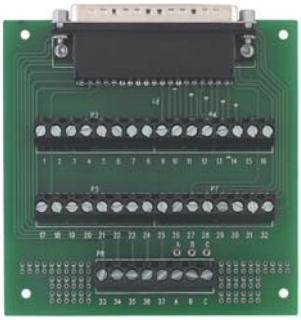
ANALOG OUTPUT

Resolution: 16 bits
Number of Channels: 2
Voltage Ranges: ±10 V, ±5 V, 0 to 5 V, 0 to 10 V
D/A Update rate: 100 kHz on each D/A
Data Transfer Modes: DMA or through programmed I/O
D/A Pacing: Internal or external clock or software paced
D/A Trigger Modes: Software or external gate
Differential Non-Linearity: ±1 LSB max
Integral Non-Linearity: ±1 LSB max
Throughput: 100 kHz, 2 channels simultaneous
Settling Time (10 V step to .0008%): 6 µs typ

Slew Rate: 10 V ranges, 10.7 V/µs; 5 V ranges, 10.7 V/µs
Current Drive: ±5 mA min
Short-Circuit Current: ±35 mA indefinite
Output Impedance: 0.1 Ohms max
Miscellaneous: Power up/reset, all DAC's set to 0 volts
Digital Input/Output
Digital Bits: 32
Configuration: 24-bit, 82C55 at Aux 40-pin connector. 4 dedicated input and 4 dedicated output bits on 100-pin main connector

82C55 Specifications

Configuration: 2 banks of 8, 2 banks of 4, programmable by bank as input or output
Default/Reset State: Input, High Impedance
Output High: 2.4 volts @ -2.5 mA min
Output Low: 0.5 volts @ 2.5 mA min
Input High: 2.0 volts min, 7 volts absolute max
Input Low: 0.8 volts max, -0.5 volts absolute min
Dedicated I/O Bits: 4 input, 4 output
Default/Reset State: all 4 outputs to logic low
Output High: 2.4 volts @ -0.4 mA min
Output Low: 0.5 volts @ 8.0 mA min
Input High: 2.0 volts min, 7 volts absolute max
Input Low: 0.8 volts max, -0.5 volts absolute min



The CIO-MINI 50-screw terminal board

ENVIRONMENTAL
Operating Temperature Range: 0 to 70°C (32 to 158°F)
Storage Temperature Range: -40 to 100°C (-40 to 212°F)
Humidity: 0 to 90% non-condensing
Power Consumption: +5 V, 3.0 A typical, 3.7 A max

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MOST POPULAR MODELS HIGHLIGHTED

To Order *(Specify Model Number)*

Model No.	Price	Description
PCI-DAS64-M3-16	**$6999**	64-channel, 3 MHz, 16-bit analog and digital I/O board for PCI bus
PCI-DAS64-M2-16	**4999**	64-channel, 2 MHz, 16-bit analog and digital I/O board for PCI bus
PCI-DAS64-M1-16	**3495**	64-channel, 1 MHz, 16-bit analog and digital I/O board for PCI bus
CIO-MINI50	**69**	50-pin, screw terminal board (two required)
CIO-MINI40	**69**	40-pin, screw terminal board for digital I/O auxiliary connector (requires C40FF-2)
BNC-16SE	**299**	BNC interface box for single-ended mode. (four required to connect all 64 channels)
BNC-16DI	**299**	BNC interface box for differential mode. (four required to connect to all 32 channels)
C100FF-2	**49**	100-pin ribbon cable, 2' long. Splits 100-pin connector into two 50-pin connectors (one required)
C40FF-2	**25**	40-pin ribbon cable, 2' long, for CIO-MINI40
BP40-37	**25**	40-pin to 37-pin adaptor. Brings out the 40-pin aux. connector to back of PC and uses additional PC slot.

*The **PCI-DAS64-M** series comes with InstaCal testing software and complete operator's manual*

Ordering Example: PCI-DAS64-M3-16** 64-channel card, **C100FF-2** cable, two **CIO-MINI50** terminal panels, **C40FF-2** cable, **CIO-MINI40** terminal panel for digital I/O, and **OMEGACARE**℠ 1-year extended warranty for **PCI-DAS64-M3** adds 1 year to standard 3-year warranty), $6999 + 49 + 138 (2 x 69) + 25 + 69 + 150 = **$7439

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