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PCM-MIO-G

PC/104 Data Acquisition Module Including 16-Bit ADC, 12-Bit DAC, and 48 Digital I/O

Features

Analog Inputs

- 16-bit Analog-to-Digital converter (ADC) with sample-and-hold circuit
- Input ranges: 0-5V, 0-10V, ±5V, and ±10V
- Any combination up to 16 single-ended or eight differential input channels
- Each channel independently software programmable for input type and range
- ±25V input protection on each channel
- No missing codes over full range
- Low-noise DC/DC reference for accuracy
- Programmable interrupt and DMA support

Analog Outputs

- Eight, 12-bit Digital-to-Analog converters (DAC)
- Output ranges: 0-5V, 0-10V, ±2.5V, ±5V, ±10V, and -2.5V to 7.5V
- Each channel independently software programmable
- Output channels can be updated and cleared individually or simultaneously

Digital Inputs/Outputs

- 48 Bidirectional lines with Input, Output or Output with Readback, 24 capable of event-sense interrupt generation
- 12mA sink current per line

General

- No calibration required
- Standard 0.100" headers for easy cable access
- Operating temperature: -40° to +85°C
- +5VDC operation
- 3.6 x 3.8 Inches (90 x 96mm)
- Custom OEM configurations available
- Compatible with industry-standard I/O racks

Product Description

The PCM-MIO-G is a versatile, PC/104-based analog input, analog output, and digital I/O board designed for high-accuracy and high-channel count analog and digital I/O. The board is based upon Linear Technologies' precision converters and voltage references which require no external calibration. The digital I/O utilizes WinSystems' versatile WS16C48 implementation, also available on many of our SBCs and other I/O products.

Analog Input Section - Two analog-to-digital converters (ADCs) are used on the board. Each contains an 8-channel multiplexer with ±25V protection. The multiplexer on each ADC can be programmed for single-ended inputs or pairs of differential inputs or combinations of both. The precision trimmed attenuators ensure accurate input ranges. All channels are fault protected so that a problem on one channel will not affect the conversion result of another channel.

The PCM-MIO-G supports four input voltage ranges. Any input range is independently software selectable for each channel. No jumpers are required.

The board will support up to 16 single-ended input channels, eight differential input channels or various combinations of both. This means that under software control, any channel can be set for either single-ended or differential along with its voltage range.

PCM-MIO-G: ADC, DAC, and DIO PC/104 Module

Analog Output Section - The PCM-MIO uses two Linear Technologies SoftSpan™ quad Digital-to-Analog converters (DACs). They are software programmable for either unipolar or bipolar mode plus specific voltage range on a per channel basis.

There are eight independent, 12-bit, D/A channels, each with six programmable output voltage ranges. They are asynchronously cleared to 0V for all ranges when reset.

Digital Input/Output Section - The PCM-MIO-G contains WinSystems' highly-versatile WS16C48, 48-line digital I/O controller. There are 48 bits of bidirectional digital I/O. Each I/O line is individually programmable for input, output, or output with readback operation. Each output channel is latched and has an open collector driver (with a pull-up resistor) capable of sinking 12mA of current. This allows direct control of up to 48 opto-isolated signal conditioning modules.

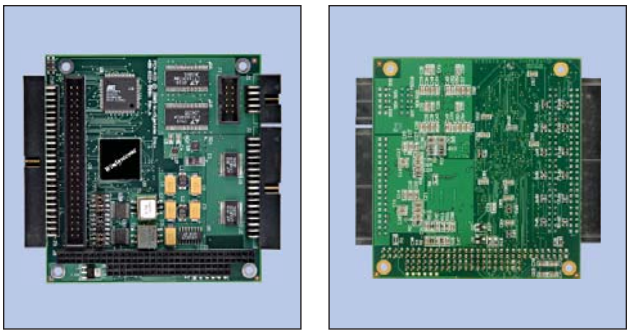
The major feature of the WS16C48 controller is its ability to monitor the 24 of lines of Port 0, 1, and 2 for either rising or falling digital edge transitions, latch them and then interrupt the host processor notifying it that a change-of-input status has occurred. Transition polarity is programmable and enabled on a bit-by-bit basis. Each line's transition is latched.

The pinout is compatible with the industry-standard I/O module mounting racks and WinSystems' termination cards.

PC/104 Interface - The PCM-MIO is I/O mapped, requiring 32 sequential port addresses. The addresses are jumper selectable on any even 32-port boundary. The control, data, and power signals are wired to a 16-bit stackthrough PC/104 connector.

DMA - Direct Memory Access is supported for 8-bit command and 16-bit data transfers for both A/D and D/A. A DOS driver is available that supports DMA.

Custom OEM Configurations - WinSystems can populate this board to meet special OEM applications. Please contact an Applications Engineer with your requirements.



Front and Back Picture of PCM-MIO-G

Technical Specifications

Electrical

PC/104 Bus	16-bit, stackthrough
Voltage	+5V ±5% @ 500mA (typ.) All outputs unloaded.

A/D Section

Input	Up to 16 single-ended or 8 differential
Range	0-5V, 0-10V, ±5V, and ±10V
Resolution	16-bits
Input Impedance	42kohm (typ.) unipolar mode 31kohm (typ.) bipolar mode

D/A Section

Output	Eight channels
Range	0-5V, 0-10V, ±2.5V, ±5V, ±10V, and -2.5V to 7.5V
Resolution	12-bits, no missing codes
Settling Time	2µS to 0.1% full scale step
Output Current	±10mA per output typical with ±30mA maximum per board

Digital I/O

Type	48-bits organized in six, 8-byte segments
Logic	TTL-compatible with 12mA sink for each pin

Environmental

Operational from -40° to +85°C
RoHS compliant

Mechanical

Dimensions	3.6 x 3.8 inches (90 x 96mm)
Weight	3.08 oz. (87.32 gm)

Ordering Information

(See website for complete ordering information and accessories.)

PCM-MIO-G-1	16-bit A/D, 12-bit D/A, and 48 digital I/O lines

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WinSystems | 715 Stadium Drive, Arlington, TX 76011 USA | Tel 817-274-7553 | Info@WinSystems.com | www.WinSystems.com