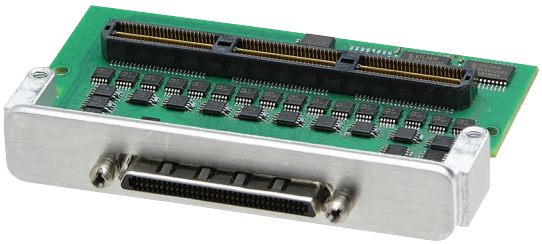
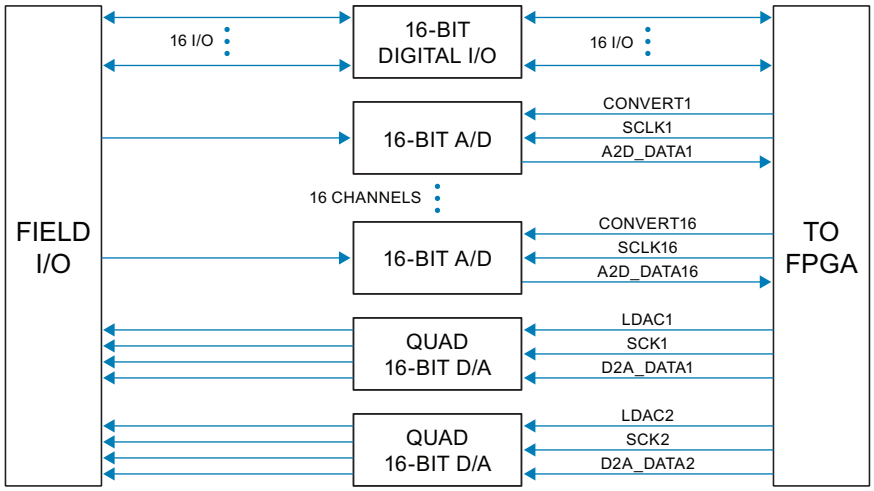
Extension I/O Modules

AXM-A75 Multi-function I/O extension module for Acromag FPGA cards





16 analog inputs, simultaneous A/D ◆ 8 analog outputs, simultaneous D/A ◆ 16 digital I/O channels

Description

The AXM-75 is a multi-function I/O module that adds A/D, D/A, and digital I/O signal processing functions to an FPGA board. These extension I/O modules plug directly onto many Acromag reconfigurable FPGA cards equipped with an AXM mezzanine connector.

Analog Input

There are sixteen differential analog input channels on the AXM-A75. Each input has its own high-speed 16-bit A/D converter offering the ability to simultaneously sample all channels.

At the beginning of the analog signal chain is a low-pass filter to remove any unwanted EMI. A programmable gain instrumentation amplifier scales the input and provides giga-ohm input impedance. Serial FLASH memory is included to store factory calibration constants.

Analog Output

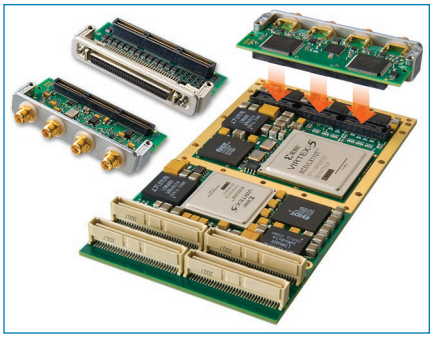
Two quad serial input DAC devices drive eight analog output channels. Each channel has its own high-speed 16-bit D/A converter allowing simultaneous updates to all outputs.

Digital I/O

Sixteen bi-directional digital I/O channels provide the ability to monitor and control discrete devices. Each I/O channel is individually configurable as an input or output for great flexibility to match your requirements

Key Features & Benefits

- 16 channels of analog input capable of simultaneous sampling
- 16-bit 500kHz A/D converter on each channel
- Analog input range of ±10.24 volts
- Programmable gain of 1x, 2x, 4x, or 8x
- 8 channels of analog output capable of simultaneous updates
- Each A/D channel includes a 2K sample FIFO
- FIFO status interrupts configurable for half-full or overflow conditions
- Dual quad 16-bit serial input D/A converters with 10µS settling time
- Analog output range of ±10 volts
- 16 channels of general-purpose digital I/O
- Front panel 68-pin VHDCI receptacle for field I/O connections
- Example VHDL code provided in the base board's Engineering Design Kit to control sample rate and gain selection



AXM extension I/O modules plug into a mezzanine connector on many Acromag FPGA boards to provide additional I/O signal processing capabilities.

Acromag
THE LEADER IN INDUSTRIAL I/O

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Bulletin #8400-646e

Extension I/O Modules

AXM-A75 Multi-function I/O extension module for Acromag FPGA cards

Performance Specifications

Analog Input

Input configuration
16 differential channels with a separate A/D converter on each channel.

A/D resolution
16 bits.

Input range
±10.24 volts.

Programmable gain
1x, 2x, 4x, or 8x.

Input impedance
1 giga-ohm.

Maximum throughput rate
2µS A/D (500kHz).

A/D trigger
FPGA controlled.

Signal-to-noise ratio
69dB (25°C) typical.

Signal-to-noise and distortion
67dB (25°C) typical.

Analog Output

Output configuration
8 channels with a separate D/A converter for each channel provided by two quad serial input DACs. Double buffering allows the simultaneous updating of all channels.

D/A resolution
16 bits.

Output range
±10 volts.

Settling time
10µS (100kHz).

Digital I/O

I/O configuration
16 bi-directional I/O channels, individually configured.

I/O range
5V TTL.

Output type
Open collector type with open drain outputs.

Pull-up resistor
Digital I/O lines are pulled high via a 4.75k ohm resistor to +5 volts.

Physical

Acromag AXM I/O modules plug into a PMC or XMC FPGA module's front mezzanine for additional I/O lines. Analog and digital I/O AXM modules are sold separately.

Size
12.7 mm high x 42.1 mm deep x 74.0 mm wide (0.500 inches x 1.659 inches x 2.913 inches).

The AXM-A75 exceeds the allowable mezzanine envelope as defined in IEEE 1386-2001 and may not be compatible with all PMC/XMC carriers. See user manual for details.

Stacking height
5.0 mm (0.315 in).

Weight
41.3 g (1.46 oz).

Connectors
I/O: 68-pin VHDCI receptacle.
Mezzanine: High-speed 150-pin header.

Environmental

Operating temperature
-40 to 85°C.

Storage temperature
-55 to 125°C.

Relative humidity
5 to 95% non-condensing.

Power
+3.3V: 39mA typical, 50mA maximum.
+5V: 54mA typical, 65mA maximum.
+12V: 103mA typical, 115mA maximum.
–12V: 92mA typical, 115mA maximum.

MTBF
Contact the factory.

Electromagnetic Compatibility (EMC)
Minimum immunity per European Norm EN61000-6-2:2005.

Electrostatic Discharge (ESD) Immunity
4KV direct contact and 8KV air-discharge to the enclosure port per IEC61000-4-2.

Radiated Field Immunity (RFI)
10V/m, 80 to 1000MHz AM; 3V/m, 1.4 to 2.0GHz; 1V/m, 2.0 to 2.7GHz, per IEC61000 4 3.

Electrical Fast Transient Immunity (EFT)
2KV to power, and 1KV to signal I/O per IEC61000-4-4.

Conducted RF Immunity (CRFI)
10Vrms, 150KHz to 80MHz, per IEC61000-4-6.

Surge Immunity
0.5KV to power and 1KV to signal per IEC61000-4-5.

Emissions
Per European Norm EN61000-6-4:2007.

Radiated Frequency Emissions
30 to 1000MHz per CISPR16 Class A.

Ordering Information

AXM Plug-In I/O Extension Modules

For more information, see www.acromag.com.

AXM-A75
16 analog inputs, 8 analog outputs, and 16 digital I/O

AXM-??
Custom I/O configurations available, call factory.

Accessories

For more information, see www.acromag.com.

5025-288
Termination Panel for 68-pin SCSI-3 cable to connect field I/O Signals to the board.

5028-420
Termination shielded cable, 34-wire pairs, ultra SCSI/VHDCI male and SCSI-3 male connectors. Recommended for all I/O connections to model 5025-288 termination panel. 2 meters long.

XMC FPGA Modules

PMC FPGA Modules

ISO9001
AS9100
MADE IN USA

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