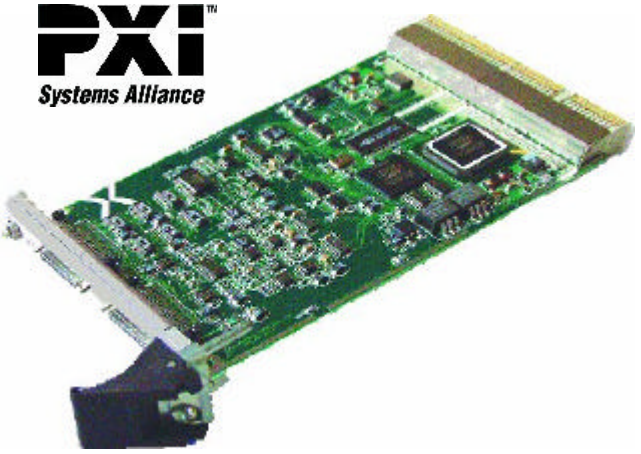
High Quality Instruments

XM Series Multifunction Analog I/O Boards for PXI Bus

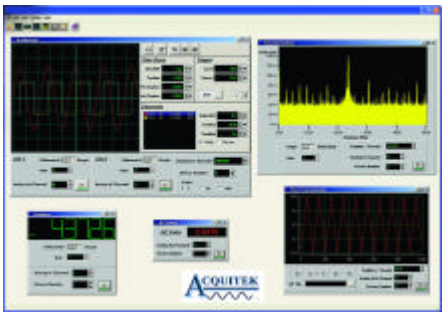
Features

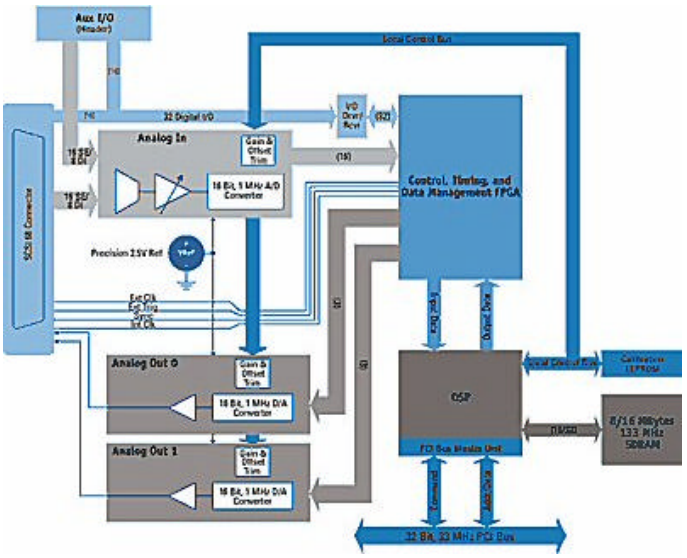
- **16/32 Single Ended Inputs (8/16 in Differential Mode)**
- **Up to 1 MS/s Maximum Sampling Rate**
- **16 Bit A/D Resolution**
- **Up to 16 MB (8 MSample) Local Acquisition Memory**
- **64k Channel-Gain List**
- **Flexible Triggering Modes**
- **Up to 2 Output Channels (Waveform Quality)**
- **Up to 1 MS/s D/A Converter per Channel**
- **16 Bit D/A Resolution**
- **Up to 16 MB (8 MSample) Local Acquisition Memory**
- **1 Hz Sample Clock Resolution from onboard DDS**
- **16/32 Digital I/O's (synchronous with analog I/O)**
- **Up to 3 Counter/Timers**
- **PCI Bus-Mastering Transfers**
- **Onboard 143 MHz, 32 Bit DSP for Real-Time Processing and Control**
- **Windows 98/Me/2000/XP**

PXI Systems Alliance



The Acquitek Technologies XM Series of multifunction analog I/O boards was designed to provide high speed and 16-bit precision at a low price to meet challenging PC-based instrumentation applications. All XM Series boards utilize an onboard processor, large local memory buffers, and PCI bus mastering to provide glitch-free capture and output of analog waveforms with nearly unlimited lengths. This performance is provided even under non-realtime PC operating systems when running complex user applications, which are supported by a comprehensive Software Development Kit and sample code. With up to 32 inputs sampled at up to 1 MHz and flexible triggering, the XM Series is ideal for high-speed automation and control applications. The onboard DSP coprocessor can offload critical real-time tasks, such as event-driven channel sequence changes or sensor input linearization (through look up tables or computation), to free the host program for higher-level algorithms and applications. The outputs are waveform quality with both waveform playback capability and function generation, or they can be slaved to the input channel sequence. The board is PCI Plug-and-Play and autocalibrating, so there are no jumpers or potentiometers to manually adjust.





SOFTWARE INCLUDED

Acquitek Control Center – Easy to use configuration software for all Acquitek Hardware.
Acquitek Bench – Extensive measurement tools, including oscilloscope, spectrum analyzer, waveform generator, DC voltage generator, logic analyzer, multimeter, strip chart recorder.
Acquitek SDK – A complete software developer's kit with a large library of sample code for LabVIEW, MATLAB, C++, Visual Basic, and ActiveX.

ACQUITEK

Detailed Specifications

ANALOG

Number of Inputs:	Up to 32 SE/16 differential
Impedance:	10 MΩ
Bias Current:	< 1 nA
Analog Bandwidth:	500 kHz (3 dB)
Full Scale Input Range:	Software Selectable Normal gain: 1.25, 2.5, 5, 10V unipolar ±1.25, ±2.5, ±5, ±10V bipolar High gain: 10mV, 100mV, 1V, 10V unipolar ±10mV, ±100mV, ±1V, ±10V bipolar
Absolute Max:	±10V
Overvoltage Protection:	±40V
Gain Accuracy:	0.02% of Full Scale ±5 LSB
CMRR:	80 dB (to 60 Hz)
A/D Converter:	
Resolution:	16 bits
DNL:	<1 LSB (no missing codes)
INL:	<3 LSB (typical)
SNR:	75 dB (50 kHz input, ±1V range)
Max Samp Rate:	1 MHz (XM-24xx), 250 kHz (XM-23xx)
System Noise:	1 LSB RMS
Clock Source:	
Internal Clock:	1 Hz - 1 MHz (1 Hz resolution) Software Selectable Synchronous to output clk
External Clock:	Must be 4x sample rate 1 M, 4 MHz max
Triggering:	
Source:	Any channel, S/W, Dig I/O
Levels:	256 Steps per range
Slope:	+ or –
Pattern:	Up to 32 bits Digital Pattern
Memory:	Up to 16 MB Local capture memory (shared with output memory)
Channel Mode:	64K Entry channel-gain list Max sample rate across multiple channels
PCI Interface:	32 bit, 33 MHz Bus Mastering (Continuous full speed capture to PC memory is supported)

ANALOG OUTPUTS

Number of Outputs:	2 (voltage output)
Impedance:	<1Ω (under 10 kHz) <10Ω (under 100 kHz) <30Ω (under 1 MHz)

ANALOG OUTPUTS (CONT'D)

Analog Filters:	None
Resolution:	16 bits
Full Scale Output Range:	Software Selectable 0-10V, ±10V
Current Source/Sink:	30 mA min.
Protection:	Short to ground
Gain Accuracy:	0.05% of Full Scale ±5 LSB
DNL:	<1 LSB (monotonic)
INL:	<4 LSB (typical)
Waveform Mode:	
Internal Clock:	10 Hz - 1 MHz (1 Hz step) Independent from or synchronous to output clk
SNR:	75 dB (50 kHz output, ±10V range)
Memory:	Up to 16 MB Local Memory (shared with capture memory)
Channel Mode:	
Settling Time:	100 nS (to 0.1%)
Memory:	64K Entry channel-gain list

DIGITAL I/O

Number of I/O:	Up to 32 (four 8 bit ports). Each port selectable as input or output
Input High:	2.0V, 5V max
Input Low:	0.8V, 0V min
Output High:	2.4V min @ 24 mA
Output Low:	0.4V max @ 24 mA
Power Up State:	Input (High Impedance)
Counter/Timers:	
Number:	3 (24 bits) on XM-24xx, 2 (24 bits) on XM-23xx
Modes:	8254, modes 1, 2, 3, 5
Clk/Gate:	From connector pins or internal (software selectable)
Speed:	20 MHz Max

PHYSICAL/ENVIRONMENTAL

Dimensions:	7.15 in x 4.20 in 182 mm x 107 mm
Power Consumption:	50 mA +5V 30 mA +12V 610 mW
Operating Temperature:	0°C to 55°C
Storage Temperature:	-20°C to 70°C
Connectors:	68 pin VHDCI female (analog and digital I/O 0-15) 68 pin VHDCI female (analog and digital I/O 16-31, if applicable)

Ordering info

CE

XM Series - 250 kHz (1x, 2x, 4x, 8x Gain)

XM-2320 16 analog in, 16 digital I/O, 2 analog outputs, 250 kHz
XM-2310 16 analog in, 16 digital I/O, 0 analog outputs, 250 kHz
XM-2350 32 analog in, 32 digital I/O, 2 analog outputs, 250 kHz
XM-2340 32 analog in, 32 digital I/O, 0 analog outputs, 250 kHz

XM Series - 1 MHz (1x, 2x, 4x, 8x Gain)

XM-2420 16 analog in, 16 digital I/O, 2 analog outputs, 1 MHz
XM-2410 16 analog in, 16 digital I/O, 0 analog outputs, 1 MHz
XM-2450 32 analog in, 32 digital I/O, 2 analog outputs, 1 MHz
XM-2440 32 analog in, 32 digital I/O, 0 analog outputs, 1 MHz

XM Series - 250 kHz (High Gain: 1x,10x,100x,1000x Gain)

XM-2321 16 analog in, 16 digital I/O, 2 analog outputs, 250 kHz
XM-2311 16 analog in, 16 digital I/O, 0 analog outputs, 250 kHz
XM-2351 32 analog in, 32 digital I/O, 2 analog outputs, 250 kHz
XM-2341 32 analog in, 32 digital I/O, 0 analog outputs, 250 kHz

XM Series - 1 MHz (High Gain: 1x,10x,100x,1000x Gain)

XM-2421 16 analog in, 16 digital I/O, 2 analog outputs, 1 MHz
XM-2411 16 analog in, 16 digital I/O, 0 analog outputs, 1 MHz
XM-2451 32 analog in, 32 digital I/O, 2 analog outputs, 1 MHz
XM-2441 32 analog in, 32 digital I/O, 0 analog outputs, 1 MHz

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