ACQ16PCI
16 Channel Simultaneous, 10 MSPS, 14 Bit Resolution, Intelligent PCI Data Acquisition Card

Features

16 Channels Simultaneous Inputs, options for
  - 1.8 MSPS per channel with 16 channels*
  - 2.5 MSPS per channel with 12 channels*
  - 3 MSPS per channel with 8 channels*
  - 6 MSPS per channel with 4 channels*
  - 10 MSPS per channel with 2 channels*

1.25, 3, or 10 MSPS 14-bit resolution Converters
Flexible Digital I/O Subsystem
Support for multiple board synchronisation

StrongARM™ Microprocessor
Up to 128 MB sample memory
PCI 2.1 Interface, Target and Initiator, DMA
Open Source Linux Driver
Firmware in-system upgradeable.

Applications

Transient Recorders
Simulation
Test and Measurement
Precision Process Monitoring
Industrial Automation
Closed Loop Control

*Conversion Rate dependent on type of converter fitted and number of channels selected for conversion

The ACQ16PCI card represents the latest in intelligent, high channel density, Analog Data Acquisition products from D-TACQ Solutions Ltd. The board samples 16 input channels simultaneously with 14 bit resolution at speeds up to 10 MSPS (mega-samples per second) The board offers excellent AC performance. This board offers the advanced features of an intelligent board including programmable triggering, flexible clocking; and a host of data management functions. High internal data bandwidth gives extremely low latency between clock input and data in local memory. Dedicated, high speed Digital I/O allows multiple boards to be synchronised together for high channel count applications. The ACQ16PCI's onboard intelligence frees the host processor from complex real time design issues, allowing industry standard operating systems like Windows NT™ and Linux to be used in high performance applications, which were previously the province of dedicated real time operating systems.

ACQ16PCI BLOCK DIAGRAM
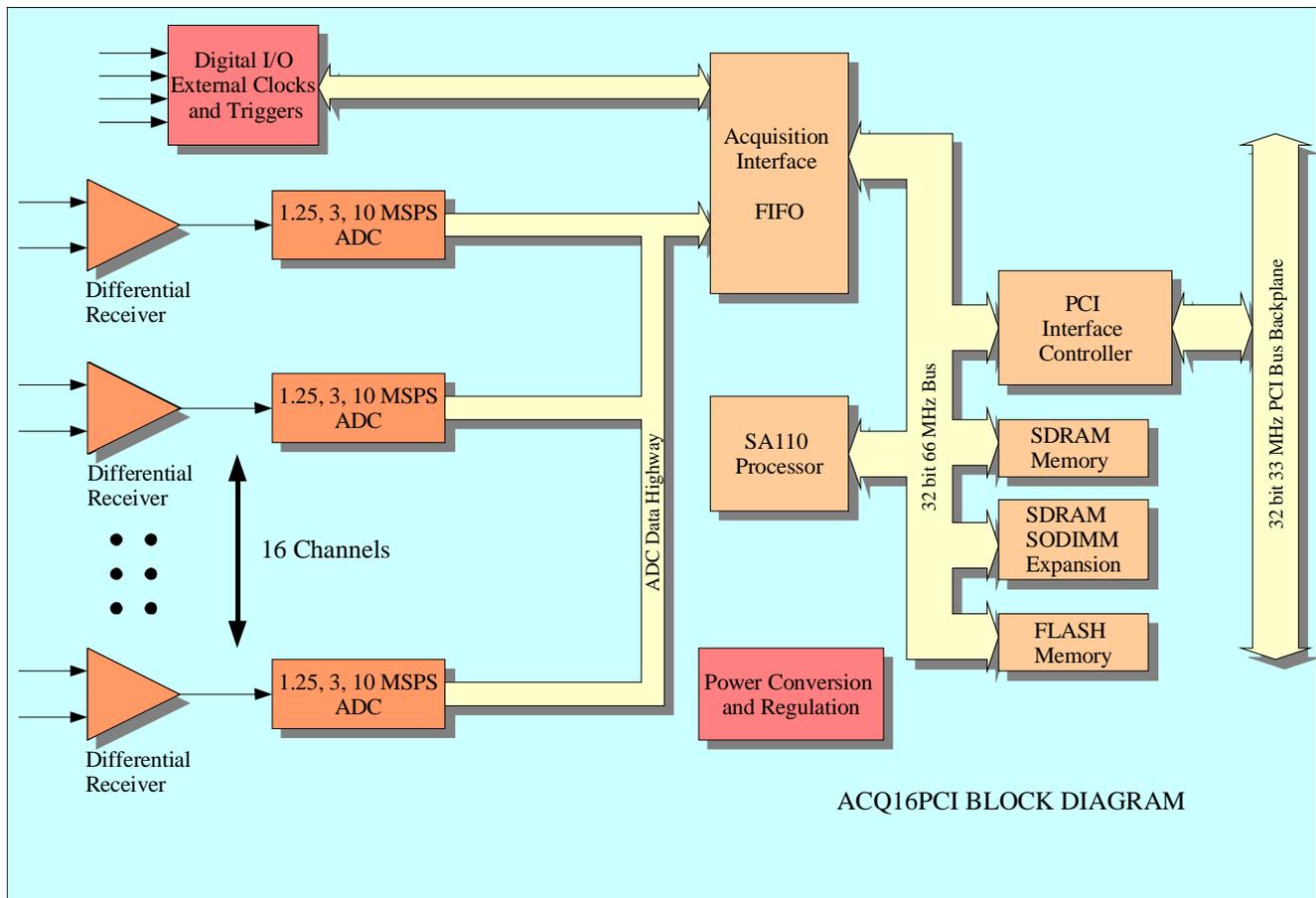
Performance (Typical)

Analog Input

Number Of Channels	16/12/8/4	CMRR	> 80dB FS at 10 kHz
Throughput	See Ordering Information	THD	-84 dB*
Resolution	14 bits	SINAD	76 dB*
Coupling	DC, Differential Input	SFDR	88 dBc*
Sampling	Simultaneous	SNR	77 dB*
Input Impedance	50-100 KΩ user specified	Full Power BW	2.5 MHz
Voltage Range	±2.5V	Small Signal BW	5 MHz
Offset Error	<0.5%	Crosstalk (3 dB)	<88 dB @ 100 kHz FS Input (3 MSPS)
Gain Error	<1.5%		
INL	±3 LSBs	Temperature Stability	<25 ppm/°C
DNL	±1 LSBs		

Typical values measured at full scale 500 kHz input

Digital I/O

Switching Characteristics	TTL	In addition the ACQ16PCI provides a flexible Expansion
Number Of Dedicated Inputs	8	Digital I/O subsystem consisting of an 8 bit address bus, a 16
Number of Dedicated Outputs	8	bit databus and a simple control protocol.

The Dedicated I/Os are used for high-speed control including clocks, triggers and multi-board synchronisation.

Processor Characteristics

Processor	StrongARM™ SA-110, 200 MIPS
FLASH	1 MByte
SDRAM	4 MBytes (2 Mbytes Processor, 2 MBytes Acquisition Data) Standard 144 pin SDRAM SODIMM socket for up to 128 MBytes expansion

Main Operating Modes

Pre/post capture. Digital and analog threshold and edge triggers.

Internal / external clock.

Streaming to PCI bus.

External Connectors

Analog Inputs	37 way D-Type
Front Panel Dedicated Digital I/O	8 way RJ-45 for 4 external connections
Internal Dedicated Digital I/O	20 way IDC Ribbon Header for board to board synchronisation
Expansion Digital I/O	68 D-type (SCSI II). The optional Digital I/O is mounted on a standard bracket

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Ordering Information

16 Channels with 1.25 MSPS Converters Fitted	ACQ16PCI-16L	Maximum Rate = 1.25 MSPS
16 Channels with 3 MSPS Converters Fitted	ACQ16PCI-16	Maximum Rate = 1.8 MSPS
12 Channels with 3 MSPS Converters Fitted	ACQ16PCI-12	Maximum Rate = 2.5 MSPS
8 Channels with 3 MSPS Converters Fitted	ACQ16PCI-8	Maximum Rate = 3 MSPS
4 Channels with 10 MSPS Converters Fitted	ACQ16PCI-4	Maximum Rate = 8 MSPS
2 Channels with 10 MSPS Converters Fitted	ACQ16PCI-4	Maximum Rate = 10 MSPS

Boards may be programmed to sample fewer channels at a higher sample rate; contact D-TACQ Solutions for details

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