ACQ32PCI

32 Channel Simultaneous, 250 kSPS, 16 Bit Resolution,
Intelligent PCI Data Acquisition Card

StrongARM™ Microprocessor
Up to 128 MB sample memory
PCI 2.1 Interface, Target and Initiator
DMA based fast host data upload
Open Source Linux Driver

Applications

Transient Recorders
Simulation
Test and Measurement
Machine Health Monitoring
Precision Process Monitoring
Industrial Automation
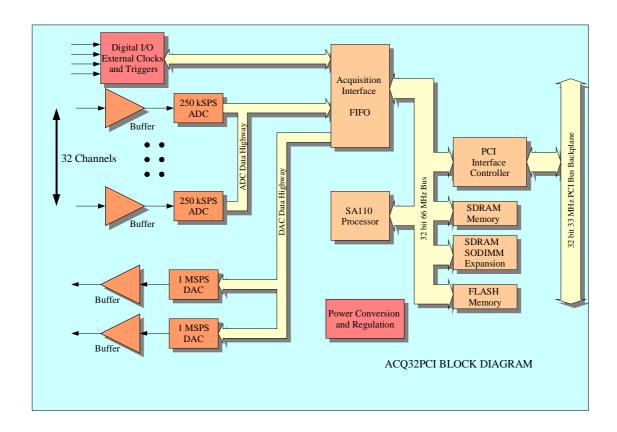Closed Loop Control
Vibration Analysis

Features

32 Channels Simultaneous Inputs
2 Channels Simultaneous Outputs – waveform capable
250 kSPS per channel. 100 kSPS version available
16 bit resolution
Flexible Digital I/O Subsystem
Support for multiple board synchronisation

The ACQ32PCI card represents the latest in intelligent, high channel density, Analog Data Acquisition products from D-TACQ Solutions Ltd. The board samples 32 input channels simultaneously at 250 kSPS (kilo-samples per second) and 16 bit resolution, whilst offering excellent AC and DC performance. In addition to this, the board has 2 channels of analog output offering complementary performance to the inputs. This product 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. On board Xilinx Virtex™ FPGA provides DSP co-processor functions for initial signal processing and digital filtering requirements. Dedicated, high speed Digital I/O allows multiple boards to be synchronised together for high channel count applications. The ACQ32PCI'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.

ACQ32PCI BLOCK DIAGRAM

Performance (Typical)
Analog Input

Number Of Channels	32	THD	-90 dB*
Throughput	250 kSPS	SINAD	84 dB*
Resolution	16 bits	SFDR	100 dBc*
Coupling	DC, Single Ended	SNR	86 dB*
Sampling	Simultaneous	Full Power BW	250 kHz
Input Impedance	Factory Set 100 kΩ	Small Signal BW	2 MHz
Voltage Range	±10V	Crosstalk (3 dB)	<90 dB @ 1 kHz FS Input (250 kSPS)
Offset Error	<0.005%	Temperature Stability	<25 ppm/°C
Gain Error	<0.01%		
INL	±3 LSBs	*Typical values measured at full scale 9.76 kHz input*	
DNL	±1 LSBs		

Analog Output

Number Of Channels	2	Output Capacitance	<30 pF
Throughput	1 MSPS	Voltage Range	±10V
Resolution	16 bits	Offset Error	<0.02%
Coupling	DC, Single Ended	Gain Error	<0.03%
Sampling	Simultaneous	Output Setting Time	3μS (FS Step)
Output Impedance	< 1 Ω	Crosstalk (3 dB)	<90 dB @ 1 kHz FS Output (1 MSPS)
Output Current	±15 mA (max)	Temperature Stability	<25 ppm/°C

Digital I/O

Switching Characteristics	TTL	In addition the ACQ32PCI provides a flexible Expansion Digital
Number Of Dedicated Inputs	8	I/O subsystem consisting of an 8 bit address bus, a 16 bit databus
Number of Dedicated Outputs	8	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

External Connectors

Analog Inputs	68 D-type (SCSI II).
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

---

Ordering Information

32 Inputs, 2 Outputs	ACQ32PCI-250-32/2	16 Inputs, 2 Outputs	ACQ32PCI-250-16/2
8 Inputs, 2 Outputs	ACQ32PCI-250-8/2		

For 100 kSPS version change –250 to –100