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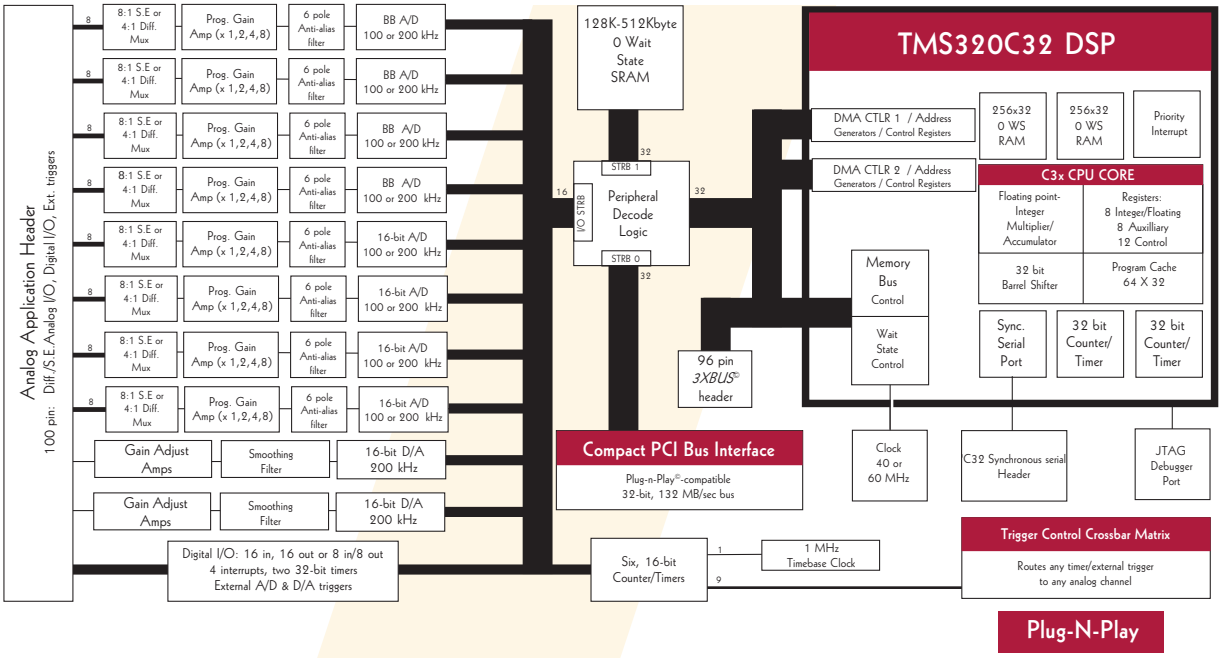
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Find the *Molex / Innovative Integration cADC64* at our website: *Click HERE*

cADC64

Sixty-Four Channel A/D Board with 32-Bit DSP and Compact PCI Bus Interface



The cADC64 30MIPS/60MFLOPS coprocessor features an ultra-high-performance Compact PCI bus interface and the TMS320C32 DSP processor, with up to 512 Kbytes of zero-wait SRAM, FIFO, sixty-four analog inputs, two analog outputs plus 16 bits of digital I/O, one sync serial port, five counter/timers and a choice of software development environments.

The cADC64 is a Compact PCI bus-version of the popular ADC64 supercontroller. It brings together for the first time a low-cost, high-performance DSP core, a dazzling array of analog and digital I/O with screaming fast 132 Mbyte/sec PCI bus performance. The cADC64 is THE value platform for factory-ready, intelligent data acquisition system designs.

The cADC64 features an I/O mix perfect for a wide range of applications in data logging, process control and audio processing. Features include eight channels of 16-bit, instrumentation-grade analog input with -120 dB/decade tunable anti-alias filters and programmable gain (x 1,2,4,8) capable of sampling at **any rate** up to 100K samples/sec (optional 200 kHz A/D's are available). Each A/D channel may optionally be multiplexed either 8:1 (single-ended) or 4:1 (differential) allowing acquisition from up to sixty-four channels using a single card. The board also provides two channels of 16-bit, instrumentation-grade analog output running at up to 200 kHz per channel. Sixteen bits of high-drive digital I/O are also on-card.

The compact cADC64 is an industrialized, miniaturized version of the popular ADC64. It consumes a single 3U slot in standard Compact PCI chassis.

The cADC64 features a bus-mastering PCI bus interface which allows the cADC64 to work in full partnership with the host processor for maximum system efficiency. An onboard communications FIFO between the 'C32 and the host achieves burst transfers up to 132 Mbytes/sec, allowing data and tasks to be efficiently handled at the system level. Full Plug-n-Play compatibility is implemented which is consistent with newer operating systems and eliminates the hassle of system hardware configuration.

Features

- 40 or 60 MHz (20 or 30 MIPS) TMS320C32 processor with hardware Floating point
- Half-size, IBM PC Plug-in Card (PCI Bus) 132 MB/sec, 32-bit Plug-n-Play© interface
- 128K - 512K bytes onboard 0 WS SRAM
- 32-byte bidirectional FIFO
- MPSD debugger interface
- 15 Mbaud synchronous serial port
- Instrumentation-grade analog I/O:
- Eight 100 or 200 kHz, 16 bit A/D channels
  Programmable gain: 1,2,4,8
  120 dB/decade anti alias filter
  8:1 S.E. muxes - up to 64 analog inputs
  4:1 DIFF muxes - up to 32 analog inputs
- Two 200 kHz, 16-bit D/A converters
- Eight independent timebases

Windows Compatible

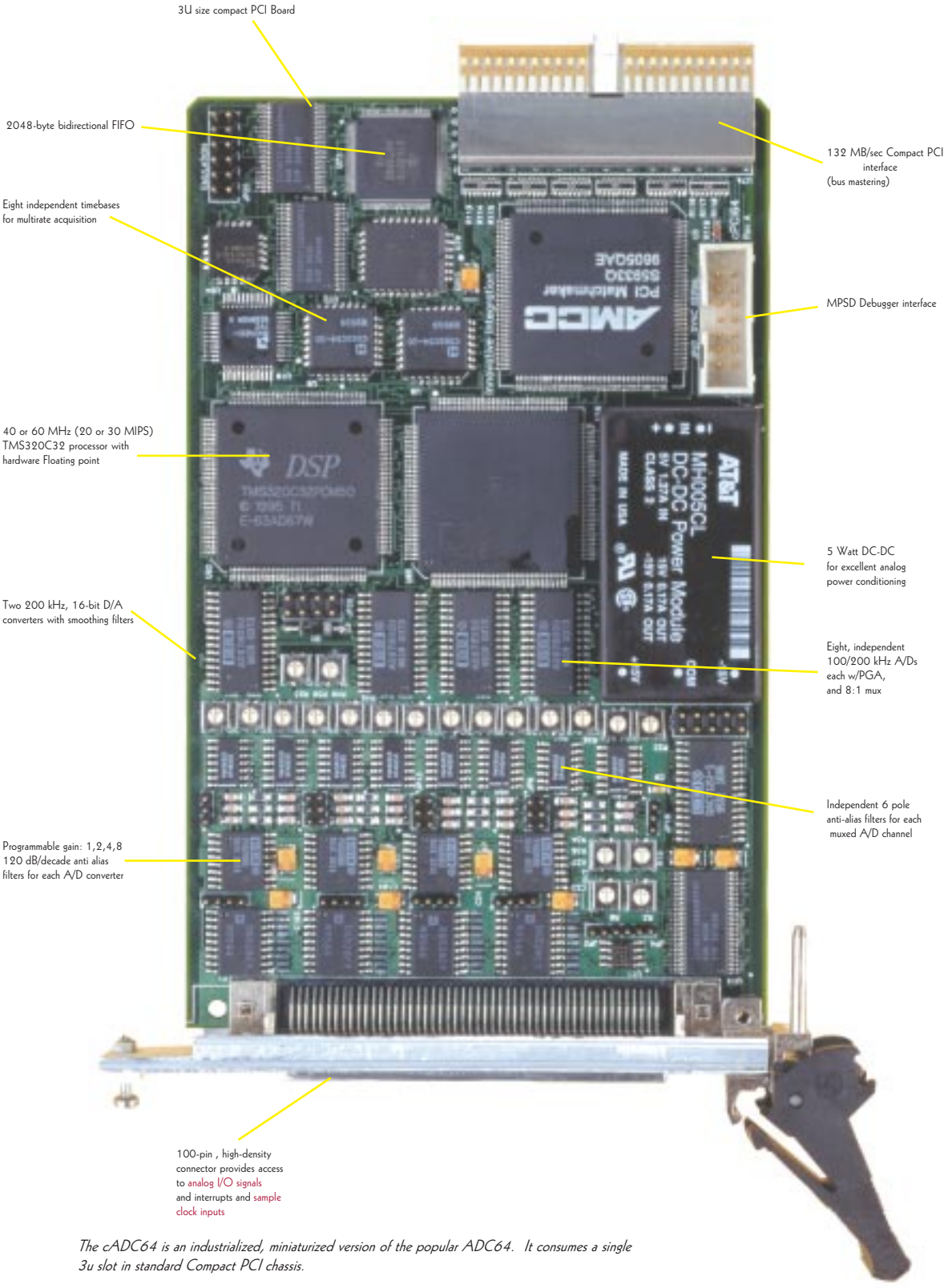
- Full Windows 95 and NT 4.0 support
- Ring 0 device drivers featuring Plug-n-Play and host interrupt support
- 32-bit DLLs and Visual C examples w/source

Tools	DSP Libraries	3rd Party Software	Peripherals
TI C/Assembler JTAG DEBUGGERS: Go DSP, TI Windows 95 & NT DLLs/Drivers Matlab/Visual Basic Interface	Vectar, Sigtar, Flotar Peripheral Libraries	Hypersignal RIDE	N/A

Innovative Integration

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The cADC64 is an industrialized, miniaturized version of the popular ADC64. It consumes a single 3u slot in standard Compact PCI chassis.

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cADC64

Specifications

Digital Signal Processor	Texas Instruments TMS320C32 32 bit floating point DSP optimized instruction set for DSP. On-chip resources: 512 x 32 memory; 8 accumulators; hardware multiplier; barrel shifter; two DMA controllers; serial port; 2 32-bit timers; 16 prioritized interrupts; 64 word instruction cache. DSP speed = 40 or 60 MHz.
Memory	Zero waits state; 32K x 32 standard, expandable on-board to 128K x 32
FIFO Memory	Memory mapped on target DSP.
Debug Port	XDS-510 compatible MPSD port for Emulation and scan path testing; Supports C/Assembly source level debugging with DEBUG3X or Code Composer.
Host PC Interface	PCI 32-bit; consumes 64 I/O locations. FIFO Memory auto-mappable into PC I/O space by PCI BIOS. Supports bidirectional interrupt driven operation - 1 PC interrupt Multiple cards supported.
Digital I/O	16 bits TTL input or output, 64 mA sink, 32 mA source
Timers / Counters	(2) 32 bit timers in DSP clocked at DSP speed/4. (6) 16 bit timers using independent 1 MHz timebase.
Serial Ports	One on DSP chip. ONCHIP: up to 15 M baud; 8, 16 or 32 formats; synchronous serial. Interrupt support.
Power Requirements	+5 Vdc, -5Vdc TBD. On-board 5W DC-DC converter with short protection for clean analog power
Connectors	SCSI-2 100 pin Female for analog and digital I/O; DIN 96 Female for DSP expansion; IDC14 Male for MPSD debugger port. IDC 14 for serial port.
Physicals	Half Size IBM AT card; 7.6 in long x 4.8 in high; Temp range: 0-70C
Compatible Add-on Cards	PROTO3X prototype card, SCSI3X SCSI-2 interface; FIFO3X parallel/serial; 3XPAK industry pack adapter.

Compact PCI: The Emerging Standard

With the ratification of the PCI standard, PCI-compatible plug-in boards have become commonplace. In fact, there is little doubt PCI is the ascendant bus standard for the next generation of PC-compatible plug-in boards.

However, the standard PCI form factor places restrictions on physical size, connector type and location, et. al., that render it suboptimal for use where mechanical packaging is extremely dense or in critical applications such as telephony, industrial control or other situations where extreme reliability and ruggedness are required. To address this shortcoming an industry consortium, spearheaded by Ziatech and a number of other prominent manufacturers, devised a derivative PCI bus specifically tailored for the exploding embedded systems market: Compact PCI (abbreviated cPCI).

The electrical and performance characteristics of cPCI are identical to PCI. cPCI is 32 bits wide and operates at 33 MHz, giving a burst transfer rate of 132 Mbytes/sec, adequate for high speed data acquisition and processing (including real time video). cPCI also supports Plug-n-Play, so installation problems are significantly reduced.

There is currently a dearth of data acquisition interface cards available for the cPCI bus, but we expect that situation to change dramatically as manufacturers such as Innovative migrate their designs to the bus to address the burgeoning demand.

A/D Converter 8 Channels	Burr-Brown ADS 7805 or ADS 7811. Each converter has independent filtering. Interrupt off conversion complete. Each A/D muxed either 4:1 differential or 8:1 single-ended. ADS 7811 specifications in parenthesis.
Resolution	16 bit
Update Rate	100KHz (200 KHz 7811)
Settling Time	10 uS (no filtering) @ 10V step settling to .0008% (2.5 uS 7811)
Analog Input Range	+/-10V, +/-2.5V, 0-10V, 0-5V, +/-5V
S/N Ratio	88dB (84 dB 7811)
THD	-90dB
Dynamic Range	90 dB
Gain Error	+/-5%
Differential Linearity Error	+3/ -2 LSB
Bipolar Zero Error	Trimmable
Aperture Delay	40 nS
Aperture Jitter	Meets AC specs.
Programmable Gain	PGA206: 1,2,4,8 PGA207: 1, 2, 5, 10
Input Impedance	10,000 M ohms || 3 pF
Filter Characteristics	6-pole filter, with user-specifiable vol/off
Conversion timing sources	Software select from one of six 16-bit counter/timer sources or DSP memory mapped access or external TTL source.
Mux Characteristics	DG528 for 8:1 single-ended inputs; DG529 for 4:1 differential inputs Switch time: 300 nS
System Scan Rate	64 Channels: 12.5 KHz; 32 Channels: 25 KHz; 8 Channels: 100 KHz (64 Channels: 25 KHz; 32 Channels: 50 KHz; 8 Channels: 200 KHz)
D/A Converter 2 channels	Two Burr-Brown DAC712. Each D/A channel has independent filtering.
Resolution	16 bits
Output Range	0-5V, +/-5V
Slew Rate	15V/us
Settling Time	13 uS (no filtering) @ 20V step; 2.5 uS for 1LSB step settling to .0008%.
Update Rate	200kHz
S/N Ratio	.0063% max
THD	.009% max
Bipolar Zero Error	trimmable
Bipolar Zero Error Drift	trimmable
Differential Non-Linearity	D/A glitch, impulse 15v/us, +/- LSB max.
Temp Range	0-70 C
Filtering	Output smoothing filter - single pole filter, 200 kHz rolloff (custom with cap/resistor change)
Interface to DSP	Memory mapped
Conversion timing sources	Software select from one of six16-bit counter/timer sources or DSP memory mapped access or external TTL source.

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