

CodaOctopus COLMEK

8225 very low noise, highly configurable, 8-channel analog to digital converter



FEATURES

- Low noise, high accuracy amplifier sections
 - Programmable gain from 1/4 to 4096 in steps of 2*
 - High gain accuracy of ± 0.05 dB over the entire range*
- Programmable analog high pass filtering
- Programmable low pass digital filtering and decimation
- Up to 128k sample/sec on 8 channels per board
- Multi-board operation for up to 32 simultaneously sampled channels
- Bus Mastering PCI Interface

Designed with configurability and customization in mind, the Colmek CSE-8225 board offers the latest analog to digital functionality.

The CSE-8225 provides eight channels of 24-bit Delta-Sigma Analog-to-Digital Conversion with differential inputs and a maximum input range of ± 5 V at unity gain on a full length PCI card. Linking 4 cards together allows for 32 fully differential input channels per system.



The configurable front-end of the CSE-8225 provides the user with a flexible solution for a wide range of applications. The gain for each channel can be individually set in a range of 1/4 to 4096 in steps of 2. Each channel also has configurable high pass and low pass filtering stages.

The CSE-8225 provides compatibility with all current popular software environments and allows users to safely and simply expand their existing hardware and software systems. The CSE-8225 is supplied with drivers for Windows 2000, XP, and Vista and distributions of Linux based on the v2.6 kernel. RTOS and general purpose drivers are available on request.

The supplied driver automatically detects and initializes all cards installed in a system and provides a single interface to access their functionality. The efficient software interface minimizes configuration errors and speeds the integration process.

If your application demands a custom approach, Colmek engineers are standing by to assist with your needs. Our staff offers the ability to design an acquisition package which meets your most demanding requirements. From rapid prototyping and low volume production runs to larger scale builds, our responsiveness is a benefit to any customer seeking an immediate data acquisition solution.

noise, distortion & crosstalk

Equivalent noise density	-156 dBV/rt. Hz maximum at 10 kHz RTI at maximum gain (16nV/rt. Hz) -120 dBV/rt. Hz maximum at 10 kHz RTO at minimum gain (1 μ V/rt. Hz)
Harmonic distortion	0.01% maximum at gains < 256 0.1% maximum at all gains
Ch.-ch. crosstalk	-100 dB at 1 kHz

input amplifier

Input configuration	Differential, AC coupled
Input impedance	1 Mohm per leg (2 Mohm differential)
Input voltage at X1 gain	+/- 5Vpk
Maximum safe voltage	+/- 12.5Vpk
CMRR	70 dB minimum at 1 kHz
Gain settings	$\frac{1}{4}$ to 4096 in steps of 2 (-12.04 dB to 72.25 dB in 6.02 dB increments)
Gain accuracy	+/-0.05 dB (0.6%)
DC offset (50, 2kHz out)	20mV equivalent RTO

high-pass filtering

Input AC coupling	Single-pole at 1 Hz (always present)
Additional filter	Single-pole 50 Hz or 2 kHz high-pass that can be bypassed
Corner frequency accuracy	2%

low-pass filtering

Digital decimation filtering	Programmable linear-phase low-pass Corresponds to decimation rates of 1, 2, or 4 Passband is 45% of output sample rate with < 0.001dB ripple Greater than 96dB stopband attenuation
Analog anti-aliasing	3 pole anti-aliasing filter designed to minimize group delay and amplitude variation in passband

digitization

Number of channels	8 per board with simultaneous sampling
Sampling rate	Programmable 128KHz, 64KHz, 32KHz
Number of bits	24bit 2's complement
Oversampling ratio	64:1
Usable bandwidth	-3dB at 49% of output sample rate

clock

Source	Internal or external, software selectable
Frequency	33.5544 MHz.
Card-card sync.	Up to four cards can be linked for 32 simultaneous sampled channels

pci

Card format	Full sized PCI (other formats available on request)
PCI bus format	PCI 2.1 32-Bit, 33 MHz, 3.3/5V signaling
Data transfer format	32-bit packed mode
Transfer mechanism	Bus mastering DMA
PCI bridge	Bridge core on Spartan 3E FPGA
Estimated power	20W from +3.3V, +5V, and +/- 12V supplies

software provided

Supported Operating System	Microsoft Windows <ul style="list-style-type: none"> · 2000 · XP · Vista Linux distributions using version 2.6 kernels Others on request
Driver Functions:	Standard character device driver with IOCTLs for control and configuration

- 8 Channels Per Board
- 24-bit Resolution
- Variable Sample Rate/FIR Decimation
- Programmable high-pass and low-pass filtering
- Low Noise
- Up to 128k Sample/s Sampling Rate
- Wide Range Programmable Gain
- Standard full length PCI form factor