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KineticSystems

V200

16 or 32-channel Sigma-Delta ADC

The V200 is a single-width, C-size, register-based, VXIbus module that provides 16 or 32-channels of 16-bit resolution analog-to-digital conversion at sample rates up to 200 ksamples/s per channel.

The sigma-delta architecture provides inherent filtering and synchronous sampling without the need for sample/hold amplifiers or sophisticated analog filters.

APPLICATIONS

Acoustic and vibration measurements
Sonar (hydro-acoustics)
Automotive safety testing
High-speed dynamic tests



Sigma-Delta channels that each scan at 200,000 samples/s

FEATURES

- 16 or 32 channels of Sigma-Delta ADCs
- 16-bit resolution at 200,000 samples/s per channel
- Channel-by-channel programmable gain
- Synchronization between channels on multiple modules
- On-board DSP for limit checking
- Internal/external clock selection
- Programmable internal clock rate
- User selection of unified clocking or 2 independent clock rate groups
- A phase-locked-loop multiplier (allowing 1X external clocking)
- AC/DC coupling
- Memory options: 8 or 32 Mbyte multibuffer memory
- Output option: Communication ports for TI TMS320, 'C40 and 'C44 DSPs
- Bridge signal conditioning provided by the V710 active termination panel

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GENERAL DESCRIPTION

The V200 is a single-width, C-size, register-based, VXIbus module that provides 16 or 32-channels of 16-bit resolution analog-to-digital conversion at sample rates up to 200 ksamples/s per channel. The sigma-delta architecture provides inherent filtering and synchronous sampling without the need for sample/hold amplifiers or sophisticated analog filters. A simple, 3-pole pre-filter assures no frequency aliasing. The module is divided into two channel groups, allowing one half of the channels to be operated at one clock rate, while the other half are operated at another clock rate. The groups can also be combined, operating the entire module at one clock rate.

Each channel has independently programmable input spans from ±10 mV to ±10 V provided by an instrumentation amplifier front end. AC/DC coupling can also be programmed on a channel-by-channel basis. Channel calibration and self-test are performed automatically on command by the embedded DSPs. These DSPs also allow programmable level and slope limit checking.

Clocking for the ADCs may be provided by an internal programmable clock, or externally via the VXI trigger lines or via the front panel Clock In connector. A phase-locked loop (PLL) generates the required 64-times oversampling clock needed by the ADCs for these external clock sources. The entire module must be operated at the same clock rate to use the 1X PLL clock.

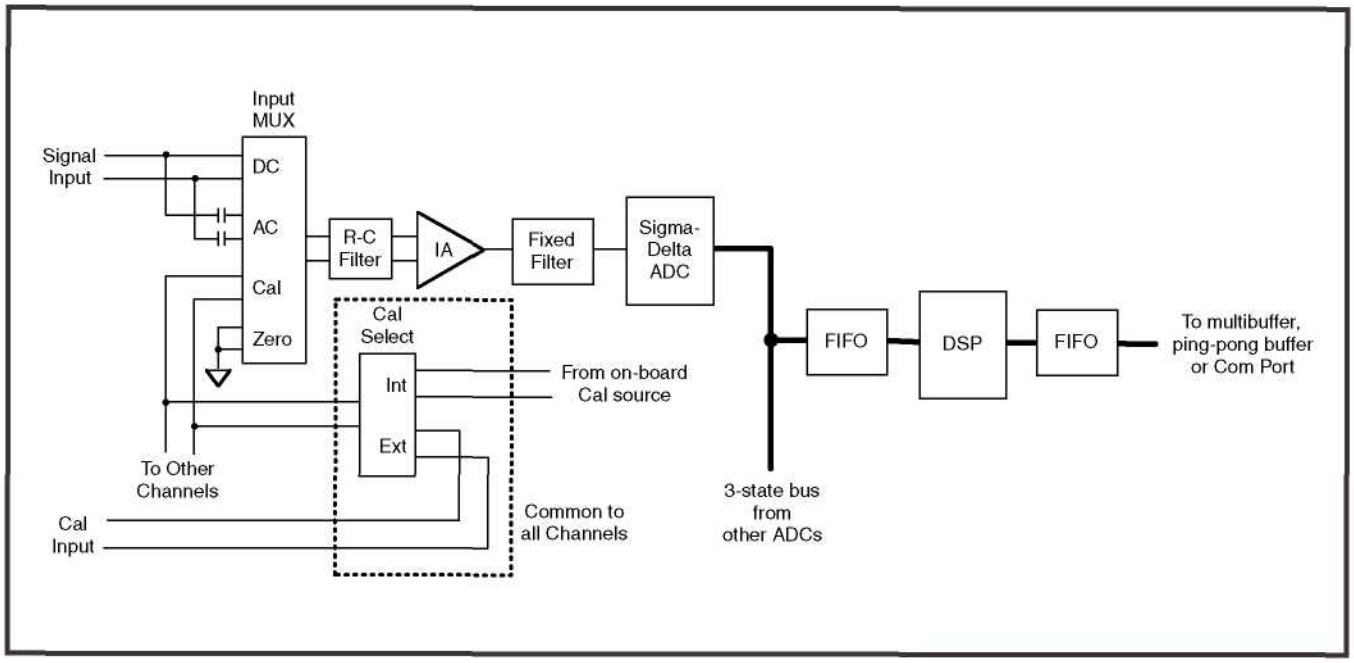
The V200 provides an onboard ping-pong interface to the VXIbus. The module is also available with a multibuffer memory or a communication port interface. The multibuffer permits configuration for continuous operation or for transient capture. In transient capture mode, the number of pre- and post-trigger samples may be programmed, with the trigger source being selectable from either on-board limit checking, the VXIbus trigger lines, or the front panel Trigger In connector. The communication interface option can move the data as it is acquired to an external TI TMS320, 'C40 or 'C44 Digital Signal Processor (DSP). This interface includes two communication ports, one for each V200 channel group.

For more information on the benefits of multibuffer usage verses ping-pong data transfers, view the document, "VXIbus Buffering Methods" at http://www.kscorp.com/Support/technical_notes/VXI_Data_Buffering_Methods.htm on the Internet.

Item	Specifications
Input Channels	
Number	16 or 32
Input Signal Range	±10 mV to ±10 V with 1, 2, 5, 10 progression
Input Bandwidth	Up to 92.8 kHz (±0.05 dB) at maximum sampling rate
Stopband Rejection	-96 dB above 107.2 kHz at maximum sampling rate
Input Protection	±17V
Common Mode Input Range	±10V
Common Mode Rejection	80 dB, DC to 50 kHz
Input Impedance	20 Megohms (DC-coupled)
Channel Group	A & B: 8 or 16 channels/group with independent clock; also independent multibuffers or communication ports (for appropriate module options)
Input Coupling	AC/DC - software selectable
Conversion Data Rate	Programmable, 5 to 200 ksamples/s per channel
RC Filters	3 dB @ 327 kHz (theoretical), 2 pole RC filter
Trigger Line Sources	Front panel trigger input, Limit violation, Synchronous run (starts the sampling of multiple V200s), Synchronize ADC, Ping-pong flip, Sample clock
Trigger Line Monitors	Sample clock in, Start transient capture, Start multi-buffer acquisition, Stop multi-buffer acquisition, Start ADC
Resolution	16 bits
Missing Codes	None
Dynamic Specifications	
Signal-to-Noise + Distortion	89 dB (sampling at 50,000 samples/s)
ENOB	14.8 bits (sampling at 50,000 samples/s)
Frequency Response	0-92 kHz (sampling at 200,000 samples/s)
Power Requirements	+5V 7.0 A max -5.2 V 10 mA max ±24 V 0.2 A max
Environmental and Mechanical	
Temperature range	
Operational	0°C to +50°C
Storage	-25°C to +75°C
Relative humidity	0 to 85%, non-condensing to 40°C
Cooling requirements	10 CFM
Dimensions	340 mm x 233.35 mm x 30.48 mm (C-size VXIbus)
Front-panel potential	Chassis ground

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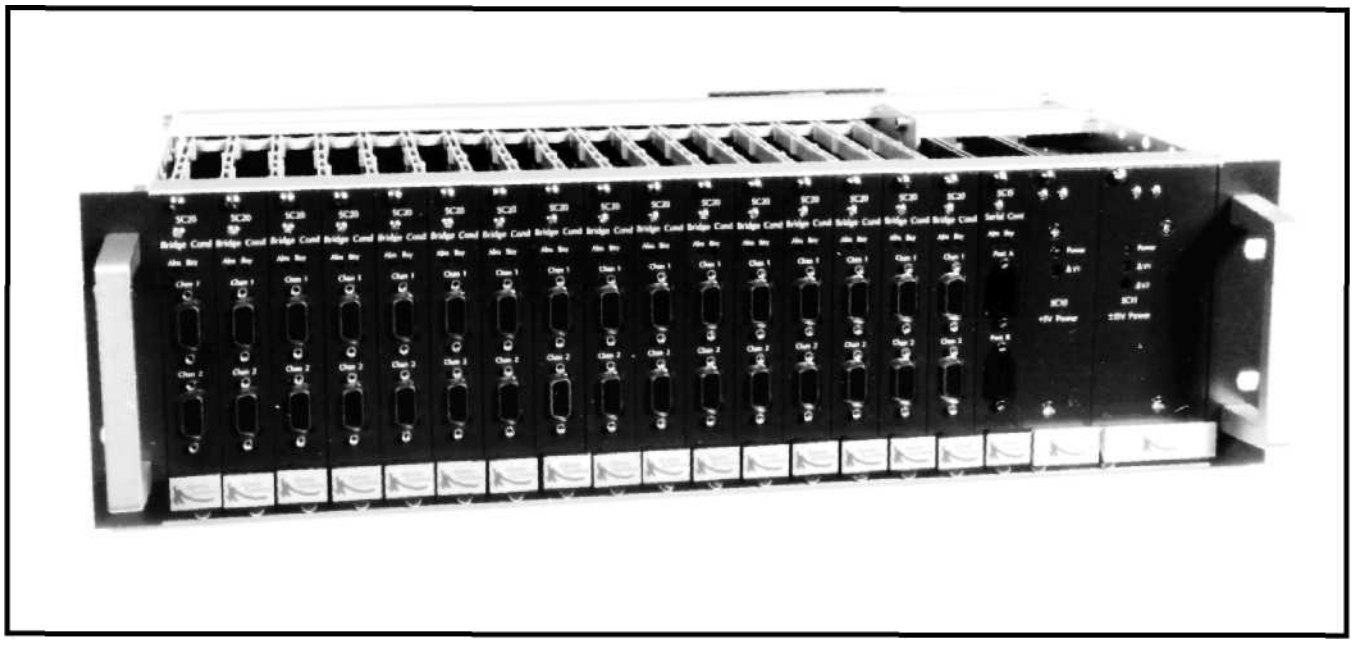
Signal and Data Paths (one channel shown)



The V710 is an active termination panel that provides additional signal conditioning for ADC modules such as the V200 Sigma-Delta ADC and the V213 Scanning ADC. This termination panel is 3U (5.25") high and is arranged for 19" rack mounting. The V710 chassis accommodates up to 16 signal conditioning modules, a serial controller module, a +5 V power supply and a ±15 V power supply.

The two-channel SC20 Wideband Bridge Signal Conditioner module can achieve up to 90 kHz signal bandwidth when used with the V200. The SC15 Serial Controller accepts ASCII commands from a standard computer serial port to control and monitor the signal conditioning modules in the V710 chassis.

V710 Active Termination Panel (shown with 16 SC20 bridge conditioning modules)



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RELATED PRODUCTS

Model V710-AA11	Signal Conditioning Termination Panel (including SC10 - SC25 plug-in modules)
Model V765-ZA11	Rackmount Termination Panel
Model V768-ZA11	Rackmount Termination Panel w/ 32-channel BNC Input Connectors
Model 5819-Fxyz	Cable: 50S High Density to 50P High Density (for the V710 and V765)
Model 5819-Jxyz	Cable: 50S High Density to 50S Amphenol Ribbon (for the V768)

ORDERING INFORMATION

MODEL	DESCRIPTION
V200-AA14	16-channel, 16-bit Sigma-Delta ADC
V200-AA34	16-channel, 16-bit Sigma-Delta ADC w/ Communication Port for TI DSP
V200-AC14	16-channel, 16-bit Sigma-Delta ADC w/ 8 Mbyte Multibuffer
V200-AE14	16-channel, 16-bit Sigma-Delta ADC w/ 32 Mbyte Multibuffer
V200-BA14	32-channel, 16-bit Sigma-Delta ADC*
V200-BA34	32-channel, 16-bit Sigma-Delta ADC w/ Communication Port for TI DSP*
V200-BC14	32-channel, 16-bit Sigma-Delta ADC w/ 8 Mbyte Multibuffer*
V200-BE14	32-channel, 16-bit Sigma-Delta ADC w/ 32 Mbyte Multibuffer*
V200-0001	4 Mbyte Multibuffer Memory Upgrade
V200-0002	16 Mbyte Multibuffer Memory Upgrade
V200-0003	Communication Port for TI DSP Upgrade (factory upgrade only)
V200-0100	Additional 16-channel Upgrade (32 channels total, factory upgrade only)*
** Please contact the factory for the availability of the 32-channel options.*	

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