KineticSystems

V243

96-channel, Low-level Signal Conditioner

The Model V243 is a single-width, C-size, register-based, VXIbus module that is designed for thermocouple and other low-bandwidth, low-level signal applications.

It provides up to 96 differential-input channels with programmable gain per channel and 2-pole, active, low-pass Butterworth filters on each channel.

Provides exceptionally high accuracy at low input levels

APPLICATIONS

Automotive body engineering tests
Automotive powertrain testing
Automotive safety tests
Aircraft engine testing
Rocket engine testing
Satellite testing

FEATURES

- Use with V208 host ADC
- 16, 32, 48, 64 or 96-channel input options
- Differential inputs and programmable gain per channel
- 2-pole, active Butterworth, low-pass filters with programmable cutoff: 10, 50, 500 Hz, or 5 kHz bypass
- Open-thermocouple detection option available
- End-to-end channel calibration

GENERAL DESCRIPTION

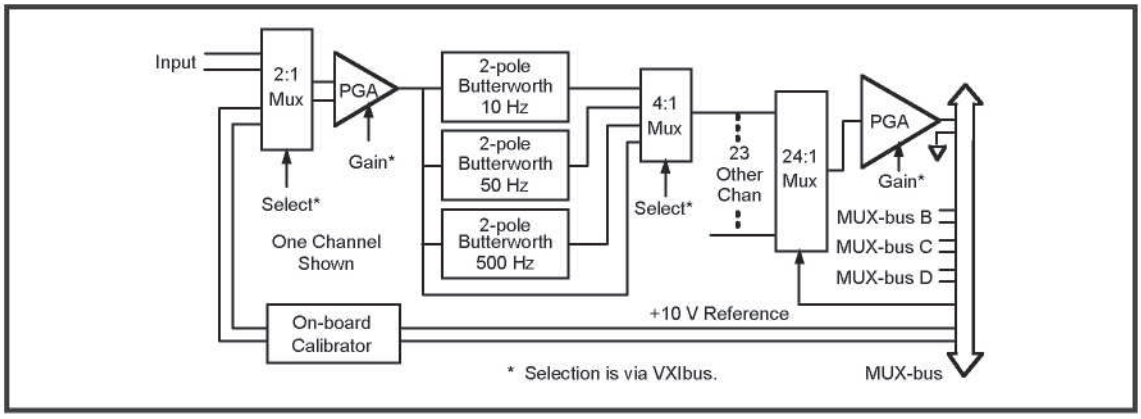
The Model V243 is a single-width, C-size, register-based, VXIbus module that is designed for thermocouple and other low-bandwidth, low-level signal applications. It provides up to 96 differential-input channels with programmable gain per channel and 2-pole, active, low-pass Butterworth filters on each channel. Filter cutoff frequencies of 10, 50 and 500 Hz plus bypass are software-selectable. Software-selectable pre-filter gains of 1, 10, and 100 are provided for each channel. Both filter cutoff and pre-filter gains are programmable in groups of eight channels. A common, multiplexed, post-filter gain of 1, 2, 5, 10, or 20 is selectable on a channel by channel basis. This allows a programmable gain per channel from 1 to 2000 (±10 V to ±5 mV full scale range).

The V243 is designed to work with the V208 16-bit, 100,000 Sample/second ADC module which supports up to 2048 input channels using MUX-bus™. Up to 11 V243s can be placed in adjacent slots to the right of the V208 to provide a full 1056 active input channels.

From one to eleven V243s combined with the V208 provide a low-noise analog subsystem with built-in, per-channel calibration that is traceable to NIST standards. The V208 includes a precision reference source that is calibrated at the factory, and each V243 includes a precision calibrator. Each input channel can be connected to the calibrator output, ground, or the analog input under software control. In addition, for maximum accuracy, a small correction factor for each calibrator output is stored in a EEPROM within each V243. This correction factor can be applied during the calibration process to obtain maximum accuracy.

The V243 supports both static and dynamic configuration. It may be accessed using A24/A16, D16 data transfers.

V243 Block Diagram (one channel shown)



Item	Specification
General	
Number of channels	16, 32, 48, 64 or 96, differential input
Gain ranges	1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000
Cutoff frequencies	10 Hz, 50 Hz, 500 Hz, and Bypass
Input	
Input range	
Common mode:	±10.24 V
Differential:	±10.24 V
Input protection	±35 V continuous
Input impedance	
ZAxx Options:	>100 MΩ
VAxx Options:	10 MΩ
Input impedance (Over temperature)	
ZAxx Options:	20 MΩ min; 100 MΩ typical
VAxx Options:	10 MΩ
Transfer Characteristics	
Linearity error	±0.0015% FSR
Initial accuracy, RTI*	After automatic calibration using a V208:
	ZAxx Options / VAxx Options
Gain = 1	±(900 µV + 0.01% of reading) / ±(900 µV + 0.04% of reading)
Gain = 10	±(90 µV + 0.01% of reading) / ±(90 µV + 0.04% of reading)
Gain = 100	±(9 µV + 0.01% of reading) / ±(9 µV + 0.04% of reading)
Gain = 2000	±(2 µV + 0.04% of reading) / ±(2 µV + 0.04% of reading)
Offset stability, RTI	0.5 µV/°C @ gain ³ 1000
Gain stability	15 ppm/°C
Bandwidth	5 kHz
Common mode rejection	-120 dB typical, -110 dB min at gain ³ 100
Noise, RTI	1 µV RMS typical, gain ³ 1000
Channel-to-channel crosstalk, RTI	
Gain = 1 to Gain = 1	90 dB
Gain = 1 to Gain = 2000	135 dB
I/O Connector Type	68P High Density (24 channels per connector)

Power Requirements (quiescent)	+5V	+24V	-24V
V243-VA11	1.8 A	220 mA	190 mA
V243-VA31	1.8 A	360 mA	300 mA
V243-VA41, V243-ZA11	1.8 A	460 mA	370 mA
V243-VA61	2.0 A	650 mA	520 mA
V243-VA91, V243-ZA21	2.0 A	850 mA	670 mA

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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RELATED PRODUCTS

Model V208	16-bit, 100,000 Sample/second ADC Subsystem
Model 5868-Bxyz	Cable—68S High Density to Unterminated
Model 5868-Dxyz	Cable—68S High Density to 68P High Density
Model V750-ZB11	Termination Assembly for 48 Channel (V243-VA41)
Model V765-ZA11	Rack-mount Termination Panel
Model V765-ZB11	Rack-mount Termination Panel with Improved CMR
Model V792-ZA11	Rack-mount Isothermal Termination Panel
Model V792-ZB11	Rack-mount Isothermal Termination Panel with Im proved CMR

ORDERING INFORMATION

MODEL	DESCRIPTION
V243-ZA11	48-channel, Low-level Multiplexer
V243-ZA21	96-channel, Low-level Multiplexer
V243-VA11	16-channel, Low-level Multiplexer with Open Thermocouple Detection
V243-VA31	32-channel, Low-level Multiplexer with Open Thermocouple Detection
V243-VA41	48-channel, Low-level Multiplexer with Open Thermocouple Detection
V243-VA61	64-channel, Low-level Multiplexer with Open Thermocouple Detection
V243-VA91	96-channel, Low-level Multiplexer with Open Thermocouple Detection
Please note: The V208 must be used as the host ADC for the V243 (not the V207).	

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