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The V252 is a single-width, C-size, register-based, VXIbus module that contains 8 or 16 channels of fixed-frequency, low-pass filtering.

Each differential input signal is received by an instrumentation amplifier which provides a high common mode rejection ratio.

## APPLICATIONS

Shock/vibration tests  
Rocket engine testing  
Wind tunnel data acquisition

## V252 8 or 16-channel, 8-pole Analog Filter



Provides high filter roll-off for excellent anti-alias filtering

## FEATURES

- 8 or 16 differential channels
- 8-pole low-pass filters with plug-in headers provided by factory option: 10 Hz to 100 kHz in a 1,2,5,.. progression
- Optional programmable gain per channel
- Optional simultaneous sampling
- Output available at front panel or MUX-bus™

## GENERAL DESCRIPTION

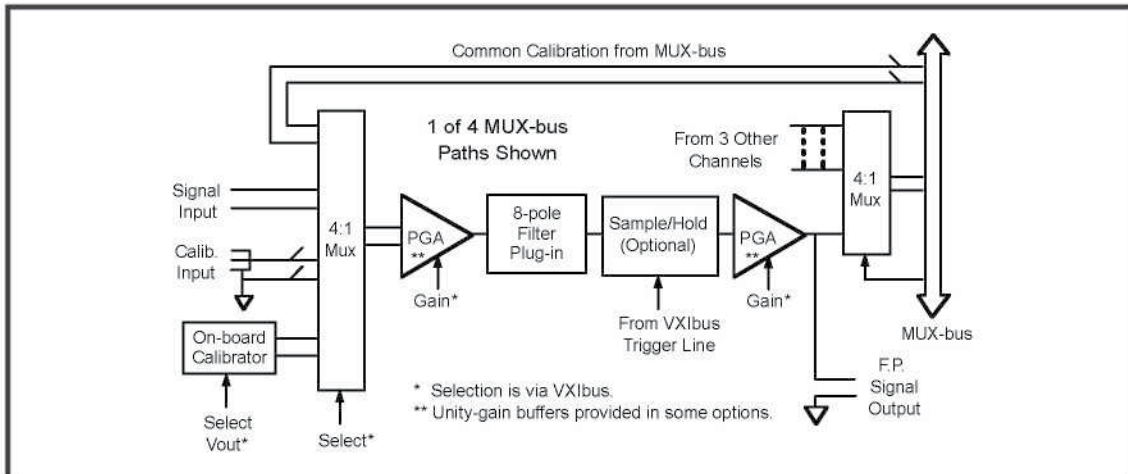
The V252 is a single-width, C-size, register-based, VXIbus module that contains 8 or 16 channels of fixed-frequency, low-pass filtering. Each differential input signal is received by an instrumentation amplifier which provides a high common mode rejection ratio. The V252-ZA12 and -ZC12 options provide filtering at unity gain. Pre-filter gains of 1, 10, and 100 as well as post-filter gains of 0.5, 1, 2, 5, and 10 are provided on the V252-ZB12 and -ZD12 options. The selection of gain is programmable on a channel-by-channel basis.

Eight-pole, low-pass, Bessel, Butterworth, Elliptic, or Constant-delay filters may be selected for each channel. This module is capable of providing filter cutoff frequencies from 10 Hz to 100 kHz. Cutoff frequencies are established by plug-in filter headers. These headers must be ordered separately. Standard headers provide nominal cutoff frequencies from 10 Hz to 100 kHz in a 1, 2, 5, ... progression. Please consult the factory regarding the availability of other cutoff frequencies by special order.

This filter module is also available with an optional sample/hold amplifier per channel. This option provides for simultaneous sampling of all channels by using the VXI trigger lines. Input and output signals appear at the V252 front panel on 68-contact High Density connectors. The differential input signals are brought in via one of these connectors, and the filtered output pairs use a second connector. The output signals are also available as four multiplexed channels on the VXI Local Bus for the V207 or V208 ADC using the Kinetic Systems MUX-bus™ protocol.

Calibration inputs are provided via a host ADC reference from the VXI Local Bus or from an on-board reference. The calibration signals may be selectively placed on any channel. A Calibration Register is used to select the desired channel.

The V252 supports both static and dynamic configuration. It may be accessed using A24/A16, D16 data transfers.



<p>General</p> <p>Number of channels</p> <p>Gain ranges (-ZB12 and -ZD12 options)</p> <p>Standard cutoff frequencies</p> <p>Cutoff frequency accuracy</p> <p>Gain match</p> <p>Phase match</p> <p>Passband ripple (typical)</p>	<p>8 or 16 differential input</p> <p>0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000</p> <p>10 Hz, 20 Hz, 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 5 kHz, 10 kHz, 20 kHz, 50 kHz, and 100 kHz</p> <p>±1%</p> <p>±0.3 dB maximum at fc</p> <p>±0.2 dB maximum, dc to 0.8 fc</p> <p>±3.0° maximum at fc</p> <p>±2.0° maximum, dc to 0.8 fc</p> <p>Bessel, Butterworth: 0.0 dB</p> <p>Elliptic: 0.035 dB</p> <p>Constant Delay: 0.15 dB</p>																																				
<p>Input</p> <p>Input range</p> <p>Input protection</p> <p>Input impedance</p>	<p>Differential: ±10 V</p> <p>Common mode: ±10 V</p> <p>±35 V continuous</p> <p>20 MΩ minimum</p>																																				
<p>Transfer Characteristics</p> <p>Linearity error</p> <p>Initial accuracy</p> <p>Offset stability, RTI</p> <p>Gain stability</p> <p>Bandwidth</p> <p>Common mode rejection</p> <p>Noise, RTI</p> <p>Channel-to-channel crosstalk</p>	<p>±0.005% FSR maximum</p> <p>After automatic calibration using the on-board reference:</p> <p>G=1to5 ±(50 μV + 0.02% of reading)</p> <p>G=10 to 50 ±(50 μV + 0.03% of reading)</p> <p>G=100 to 1000 ±(20 μV + 0.1% of reading)</p> <p>2 uV/°C maximum at G=500</p> <p>20 ppm/°C maximum</p> <p>G=1 to 100 200 kHz</p> <p>G=200 to1000 20 kHz</p> <p>Sample/Hold Options 50 kHz</p> <p>-100 dB typical, -80 dB minimum</p> <p>5 μV RMS maximum at G=500</p> <p>-90 dB minimum at fc</p>																																				
<p>Output</p> <p>Output range</p> <p>Output current</p> <p>Output resistance</p>	<p>±10 V</p> <p>5 mA maximum</p> <p>100 Ω. maximum</p>																																				
<p>I/O Connector Type</p>	<p>68P High Density (input), 68S High Density (output)</p>																																				
<p>Power Requirements (with 16 filters)</p> <p>+5V</p> <p>+24 V</p> <p>-24 V</p>	<table border="1"> <thead> <tr> <th></th> <th>ZA12</th> <th>ZB12</th> <th>ZC12</th> <th>ZD12</th> <th>ZA22</th> <th>ZB22</th> <th>ZC22</th> <th>ZD22</th> </tr> </thead> <tbody> <tr> <td>+5V</td> <td>3.3A</td> <td>3.3A</td> <td>3.3A</td> <td>3.3A</td> <td>2.9A</td> <td>2.9A</td> <td>2.9A</td> <td>2.9A</td> </tr> <tr> <td>+24 V</td> <td>750mA</td> <td>750mA</td> <td>1.1A</td> <td>1.15A</td> <td>415mA</td> <td>440mA</td> <td>595mA</td> <td>620mA</td> </tr> <tr> <td>-24 V</td> <td>750mA</td> <td>780mA</td> <td>1.1A</td> <td>1.15A</td> <td>385mA</td> <td>410mA</td> <td>570mA</td> <td>595mA</td> </tr> </tbody> </table>		ZA12	ZB12	ZC12	ZD12	ZA22	ZB22	ZC22	ZD22	+5V	3.3A	3.3A	3.3A	3.3A	2.9A	2.9A	2.9A	2.9A	+24 V	750mA	750mA	1.1A	1.15A	415mA	440mA	595mA	620mA	-24 V	750mA	780mA	1.1A	1.15A	385mA	410mA	570mA	595mA
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<p>Environmental and Mechanical</p> <p>Temperature range</p> <p>Operational</p> <p>Storage</p> <p>Relative humidity</p> <p>Cooling requirements</p> <p>Dimensions</p> <p>Front-panel potential</p>	<p>0°C to 50°C</p> <p>-25°C to +75°C</p> <p>0 to 85%, non-condensing to +40°C</p> <p>10CFM</p> <p>340 mm x 233.35 mm x 30.48 mm (C-size VXIbus)</p> <p>Chassis ground</p>																																				



**RELATED PRODUCTS**

- Model V207      16-bit, 500,000 Sample/second ADC Subsystem
- Model V208      16-bit, 100,000 Sample/second ADC Subsystem
- Model 5868-Axyz    Cable—68P High Density to Underterminated
- Model 5868-Bxyz    Cable—68S High Density to Underterminated
- Model 5868-Cxyz    Cable—68P High Density to 68P High Density (V252 output to V765)
- Model 5868-Dxyz    Cable—68S High Density to 68P High Density (V765 to V252 input)
- Model 5868-Exyz    Cable—68S High Density to 68S High Density
- Model V752-ZB11    Termination Assembly for V252
- Model V765-ZA11    Rack-mount Termination Panel

**ORDERING INFORMATION**

MODEL	DESCRIPTION
V252-ZA12	16-channel, 8-pole Analog Filter
V252-ZB12	16-channel, 8-pole Analog Filter with Programmable Gain
V252-ZC12	16-channel, 8-pole Analog Filter with Simultaneous Sampling
V252-ZD12	16-channel, 8-pole Analog Filter with Programmable Gain and Simultaneous Sampling
V252-ZA22	8-channel, 8-pole Analog Filter
V252-ZB22	8-channel, 8-pole Analog Filter with Programmable Gain
V252-ZC22	8-channel, 8-pole Analog Filter with Simultaneous Sampling
V252-ZD22	8-channel, 8-pole Analog Filter with Programmable Gain and Simultaneous Sampling
Please consult the factory for additional cutoff frequency options. Example: A Model V252 16-channel Filter module with programmable gain, no simultaneous sampling and 8-pole. Elliptic filters with a 10 kHz cutoff frequency on all 16 channels would be ordered as: Quan 1    V252-ZB12 Quan 16   P708-E103	

*Please note that a complete filter module consists of a V252-Zxy2 main board plus P708-wxyz series filter headers (16P708s for the 16-channel V252 options or 8 P708s for the 8-channel V252 options)..*

**Filter Plug-ins**

Model P708-wxyz Filter Plug-in (16 required for V252-Zy 12, 8 required for V252-Zy22).

w: Filter type: B = Bessel, T = Butterworth, D = Constant Delay, E = Elliptic  
 xyz: Cutoff Frequency:

- 100= 10 Hz      501 =500 Hz      203 = 20 kHz
- 200= 20 Hz      102 = 1 kHz      503 = 50 kHz
- 500 = 50 Hz      202 = 2 kHz      104 = 100 kHz
- 101= 100 Hz      502 = 5 kHz
- 201=200 Hz      103 = 10 kHz

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