FREQUENCY DEVICES™, INC.

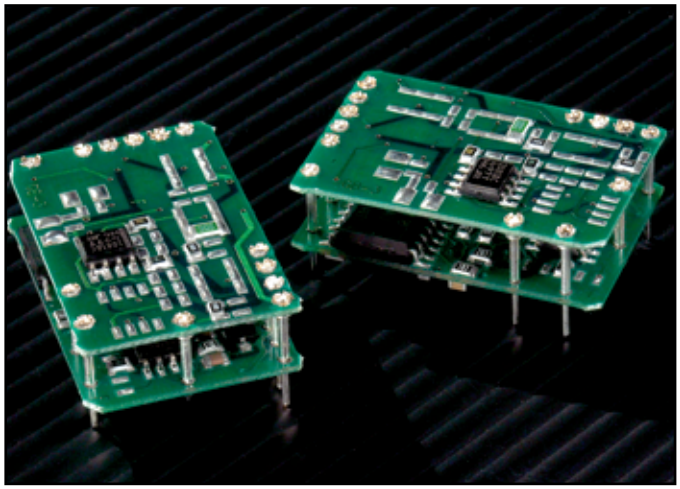
PGA5 Series

for FDI VME Boards — Programmable Amplifiers

Description

The PGA5 Series programmable amplifiers are digitally controlled gain modules that were designed for Frequency Devices' multi-channel VME board products to condition DC-coupled wide-band signals. They are programmed by an 8-bit serial data stream for gain selection using clock, data and strobe inputs.

Other standard performance features include differential input, single ended output, 5V interface logic and low noise/distortion. Available options include AC coupled input (all models) and/or differential output (VM32PA) only.



Features/Benefits:

- Phase match of ±1.0º for the PGA5-100 and ±2.0º for the PGA5-2.0 with Gain accuracy of ±0.1 dB provides precision performance solutions to design engineers, system integrators and OEM's.
- Offers a low cost, versatile and convenient way to provide up to 32 channels of precision amplification in a single width B-size (6U) VME form factor.

Available Amplifier Options:

VM32PA-PGA5-100	-12 dB to +60 dB in 6 dB steps for frequencies to 100 kHz
VM32PA2.0-PGA5-2.0	-12 dB to +36 dB in 6 dB steps for frequencies to 2.0 MHz

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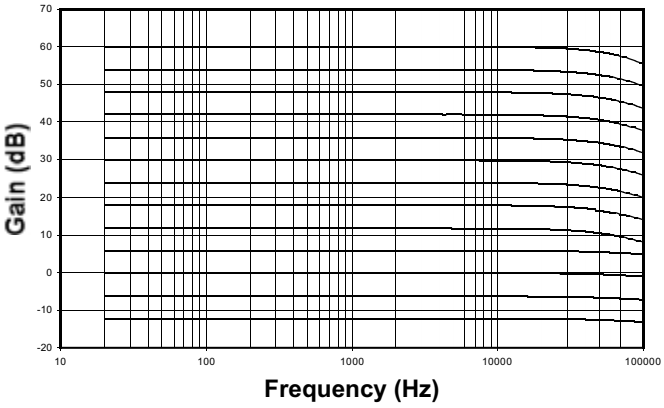
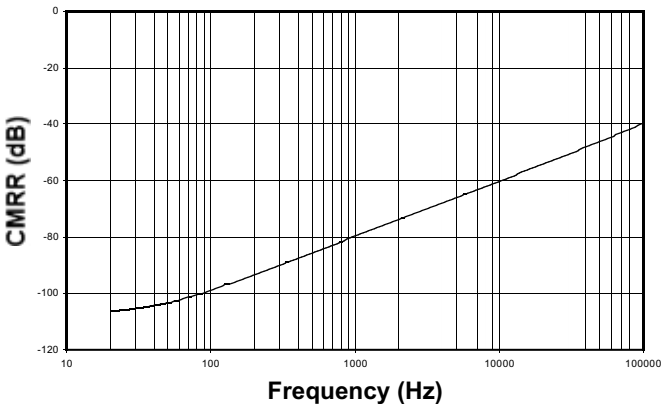
for FDI VME Boards — Programmable Amplifiers

PGA5-100

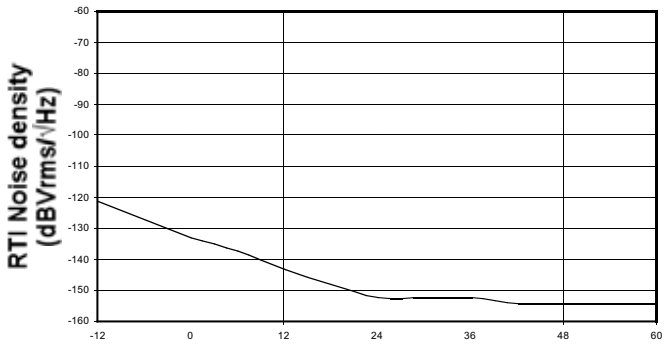
Frequency Response



Common Mode Rejection Ratio

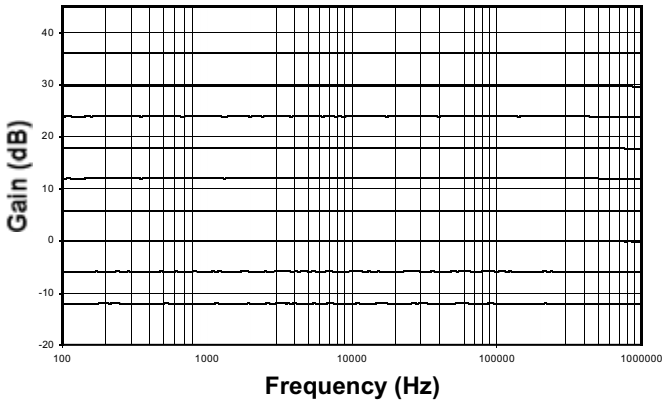


Noise

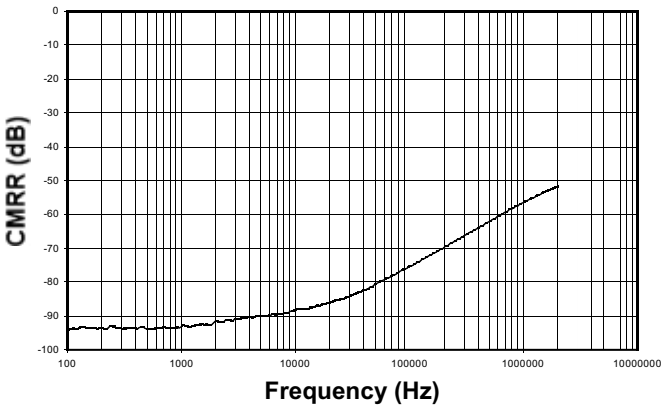


PGA5-2.0

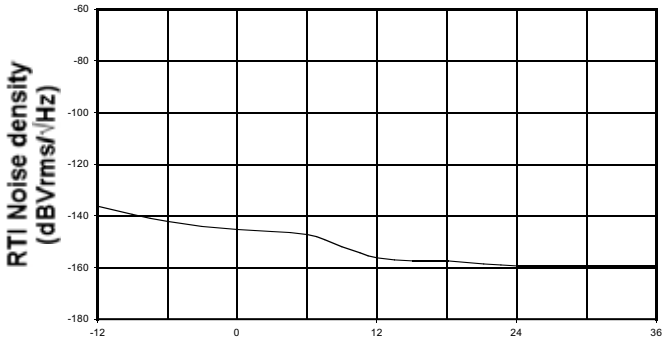
Frequency Response



Common Mode Rejection Ratio



Noise



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Specification

(25°C and rated power input)

Programmable Amplifiers For VME Boards

VME Board	VM32PA PGA5-100	VM32PA2.0 PGA5-2.0
Analog Input		
Configuration	DC coupled, differential input	DC coupled, differential input
Impedance	1 MΩ/22pF	1 MΩ/22pF
Bias Current	20 pA max.	10 pA max.
Offset Current	10 pA max.	10 pA max.
Safe Voltage	±15V	±10V
Linear Input Range	8V pk, each leg	8V pk, each leg
CMRR	Typ. 80 dB @ 1 kHz min. 60 dB, 10 Hz to 100 kHz	≥50 dB, DC to 100 kHz ≥40dB,100kHz to 2MHz
AC Couple (Optional Fixed Freq.)	10Hz to 1.0kHz	20Hz to 1.0k Hz
Analog Output		
Configuration	Single ended, DC coupled	Single ended, DC coupled
Differential Output	Optional	NA
Impedance	<1Ω typ., 10Ω max.	1Ω typ., 10Ω max.
Linear Operating Range	±5V, Output clamped to ±9V	±5V, Output clamped to ±9V
Chl. to Chl. Cross-talk	<-100dB @ 1 kHz, <-90dB @ 20 kHz	<-100dB @ 1 kHz, <-90dB @ 20 kHz
Maximum Current	±5 mA	±5 mA
Offset Voltage	2mV RTI, NTE 40 mV max.	<25 mV typ. At output
Offset Temp. Coeff.	±(5+ 100/G) µV/ºC	1.5 mV/ºC at output 25 mV/ºC referred to input
Programmable Amplifier		
Signal Bandwidth (-3 dB)	100 kHz, Gain ≥6 dB 500 kHz, Gain <6 dB	2 MHz
Amplitude Match*	±0.1dB @ DC, linear to ±0.25dB at 100 kHz	0.2dB over specified bandwidth
Phase Match*	0.2º typ., 1º max @ 10 kHz	±2.0º over specified bandwidth
Noise Voltage Density, RTI	20nV/√Hz @1kHz,G=1,024	16nV/√Hz @1kHz, G=64
Distortion (2V pk-pk)	NA	≤-60db, 20 Hz to 100 kHz ≤-50 dB, 100 kHz to 2 MHz
Distortion G=2X at 3VRMS Output, RL-2kΩ, BW=80 kHz	-83dB, 1 kHz single ended -86dB, 1 kHz differential	NA
Gain Programming	0.25X to 1024X in factors of 2	0.25X to 64X in factors of 2
Gain Accuracy @ DC	±0.1 dB	±0.1 dB

*Any two channels set to same gain and loading
NA – Not Available

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