



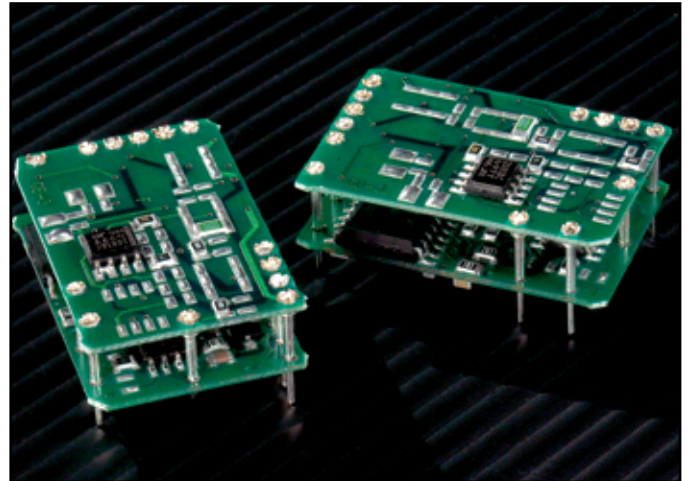
for FDI VME Boards

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 $\pm 1.0^\circ$ for the PGA5-100 and $\pm 2.0^\circ$ 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 |

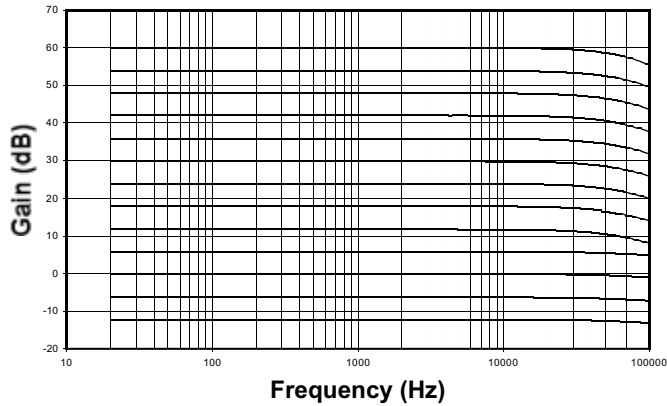


for FDI VME Boards

Programmable Amplifiers

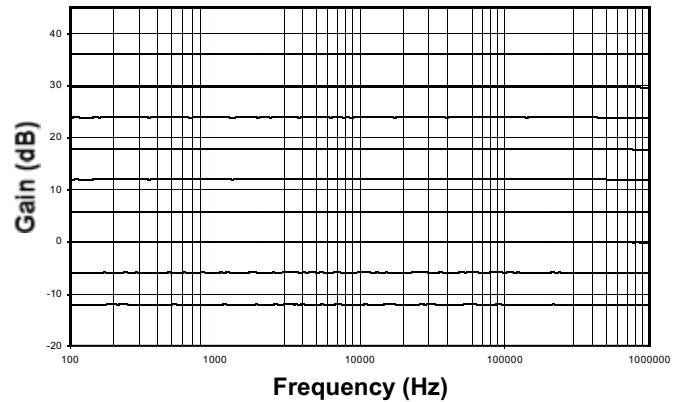
PGA5-100

Frequency Response

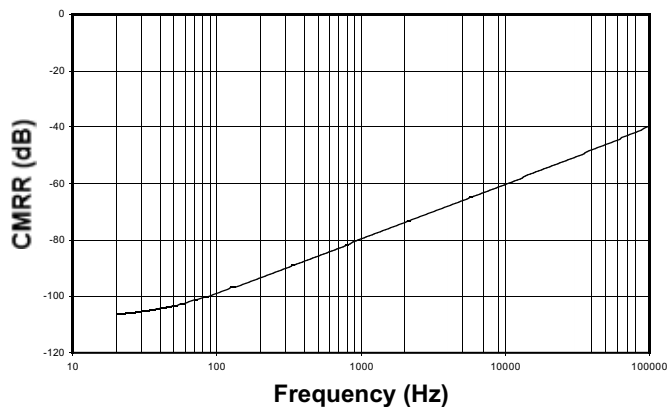


PGA5-2.0

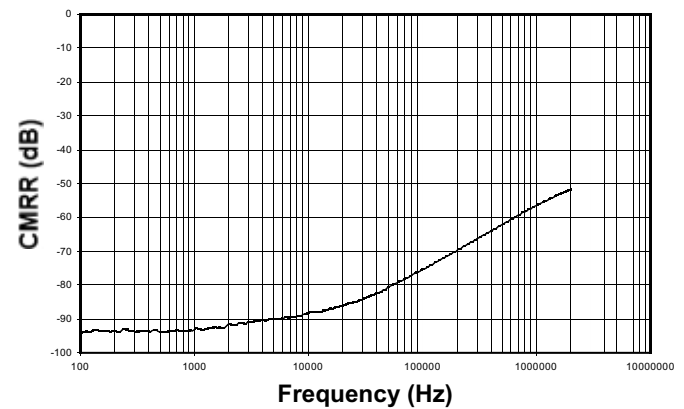
Frequency Response



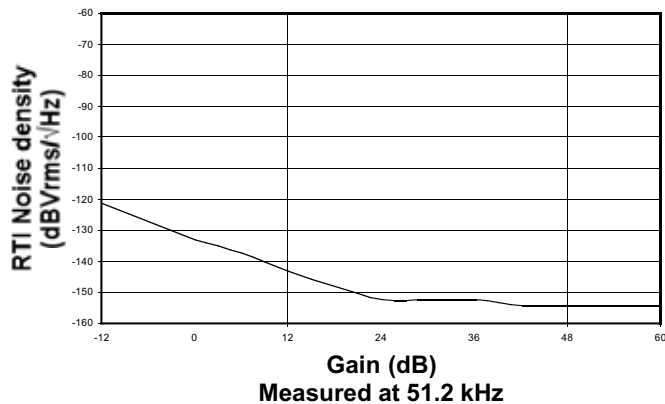
Common Mode Rejection Ratio



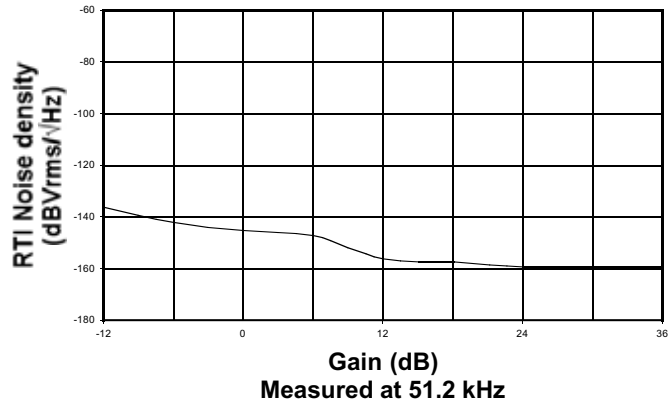
Common Mode Rejection Ratio



Noise



Noise





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

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