

FREQUENCY
DEVICES™, INC.

D83P Series

-12 dB to +60 dB

Programmable Amplifier

Description

The D83P Series programmable amplifiers are digitally controlled gain modules that were designed for conditioning DC-coupled wide-band signals (AC coupled optional). They are programmable from -12 dB to +60 dB in 6 dB steps with an 4-bit parallel word.

Other standard performance features include differential input, single ended output, 5V interface logic, and low noise and distortion, making this plug-in ready-to-use amplifier ideal for many signal conditioning applications. Available options include AC coupled input and/or differential output.

Features/Benefits:

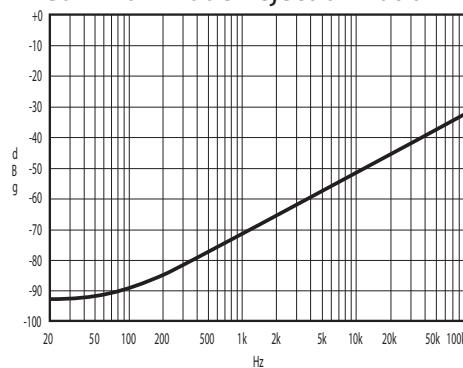
- Full power bandwidth to 100 kHz for wide dynamic range applications
- Compact 1.8" x 0.8" x 0.3" (32 pin DIP) size minimizes board space requirements
- Parallel 4-bit word for easy gain control.
- Data out line allows data verification and cascading of multiple amplifiers over the same serial interface.
- Plug-in ready-to-use, reducing engineering design and manufacturing time.

Applications

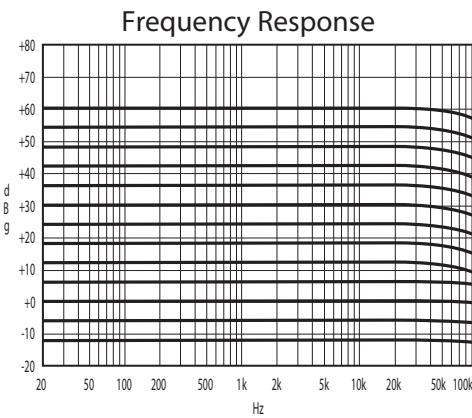
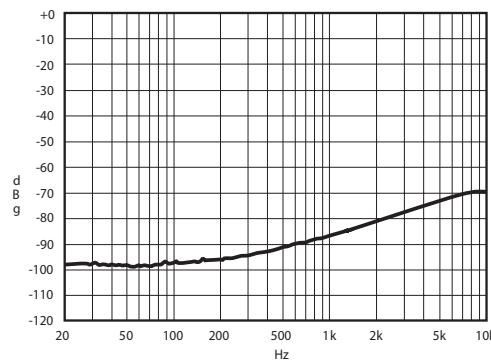
- Data acquisition
- Test equipment
- Remote instrumentation systems
- Ground loop elimination in remote measurements
- Improvements in system dynamic range and resolution
- Telemetry
- Process control
- Digitally controlled auto ranging systems
- Medical, Scientific & engineering research



Common Mode Rejection Ratio



Total Harmonic Distortion + Noise





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Gain Amplifier

Digital Programming & Control

The D83P programs via a four terminal parallel data interface over a gain range from 0.25 (~-12dB) to 1024 (~+60dB).

Two stages of programmable gain/attenuation are used to optimize the D-C offset and gain bandwidth performance.

Recommended Programming Table

Gain (V/V)	Gain (~dB)	D0	D1	D2	D3
1/4	-12.04	0	0	0	0
1/2	-6.02	1	0	0	0
1	0.00	0	1	0	0
2	+6.02	1	1	0	0
4	+12.04	0	0	1	0
8	+18.06	1	0	1	0
16	+24.08	0	1	1	0
32	+30.10	1	1	1	0
64	+36.12	0	0	0	1
128	+42.14	1	0	0	1
256	+48.16	0	1	0	1
512	+54.19	1	1	0	1
1024	+60.21	0	0	1	1



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D83P Series

**Specifications
(25°C and Vs ± 15 Vdc)**

**Pin-Out and Package Data
Ordering Information**

Analog Input Characteristics

Configuration:	DC coupled, differential Input
AC Coupled (Optional):	Fixed @ 10 Hz
Impedance:	1 MΩ 22pF
Bias Current:	20 pA max.
Offset Current:	10 pA max.
Voltage Range:	±10 Vpeak
Max. Safe Voltage:	±Vs
Common Mode Rejection Ratio:	Typ. 80 dB @ 1 kHz Min. 60 dB @ 1 kHz
Noise Voltage Density, RTI:	20 nV/√Hz @ 1 kHz, G=1,024

Analog Output Characteristics

Configuration:	Single ended, DC coupled
Differential Output (Optional):	
Impedance:	<1Ω typ., 10Ω max.
Current (linear operation):	±5 mA max.
Offset Voltage:	2 mV RTI, NTE 40 mV max.
Offset Temp. Coeff.:	±(5 + 100/G) µV/°C

General Analog Characteristics

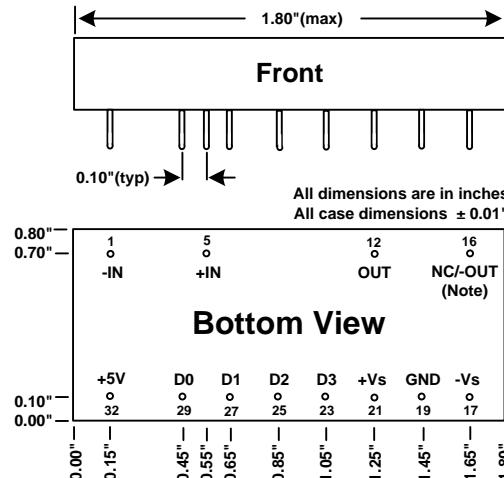
Gain (programmable):	0.25X to 1,024X in factors of 2
Gain Tolerance:	±0.10 dB
Distortion (0 dB gain @ 3.5 Vrms):	-86 dB @ 1 kHz typ.
Full Power Bandwidth (0 dB gain):	100 kHz

Power Supplies (±Vs), +Vd

Rated Voltage:	±15 Vdc, +5 Vdc
Operating Range:	±5 to ±18 Vdc, 5 ± 0.5 Vdc
Maximum Safe Voltage:	±18 Vdc, +5.5 Vdc
Quiescent Current:	±15 V ±12 mA +5 V +0.2 mA

Temperature

Operating:	0 to +70°C
Storage:	-25 to +85°C



Note: NC pin is used as "-OUT" for differential input option.

ORDERING INFORMATION

D83P-D

Options

- A – AC Coupled Input
- D – Differential Output

We hope the information given here will be helpful. The information is based on data and our best knowledge, and we consider the information to be true and accurate. Please read all statements, recommendations or suggestions herein in conjunction with our conditions of sale, which apply, to all goods supplied by us. We assume no responsibility for the use of these statements, recommendations or suggestions, nor do we intend them as a recommendation for any use, which would infringe any patent or copyright.