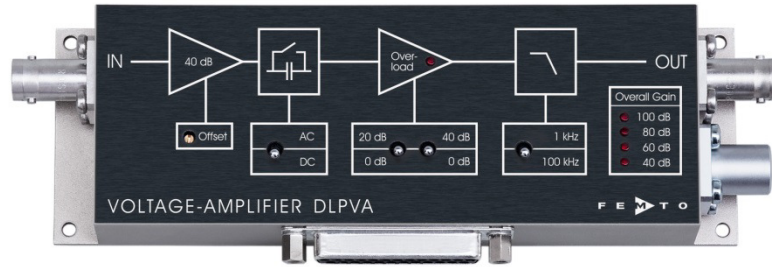




Datasheet

DLPVA-100-BLN-S

**Low-Noise Variable Gain
Low-Frequency Voltage Amplifier**



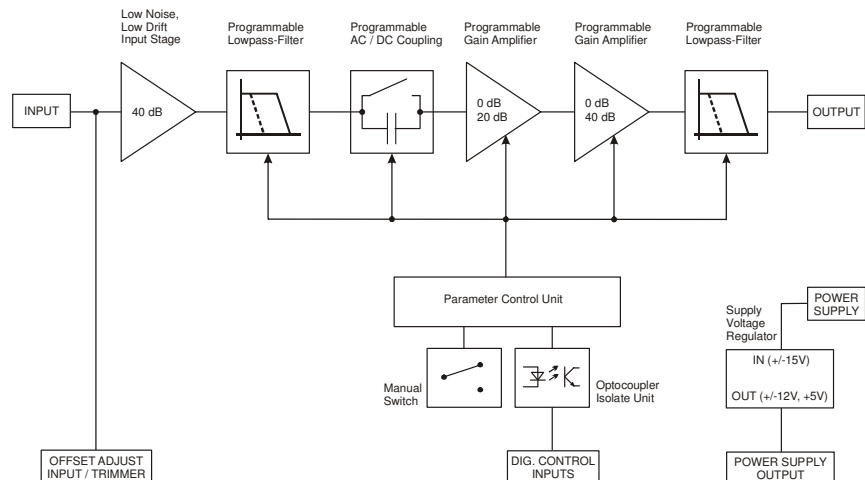
Features

- **Variable gain 40 to 100 dB, switchable in 20 dB steps**
- **Bipolar input stage, recommended for low impedance sources smaller than 100 Ω**
- **Very low input voltage noise: 700 pV/√Hz**
- **DC-coupled, single ended**
- **DC-drift 0.5 μV/°C**
- **Bandwidth DC - 100 kHz, switchable to 1 kHz**
- **Switchable AC/DC-coupling**
- **Local and remote control**

Applications

- **Low-noise laboratory amplifier**
- **Pulsed thermal EMF analysis**
- **Industrial sensors**
- **Detector preamplifier**
- **Integrated measurement systems**

Block Diagram



BS01-0440-20_40dB

Low-Noise Variable Gain Low-Frequency Voltage Amplifier

Specifications	Test conditions	$V_s = \pm 15\text{ V}$, $T_A = 25\text{ }^\circ\text{C}$, load impedance = $1\text{ M}\Omega$		
Gain	Gain values	40, 60, 80, 100 dB Indicated by four LEDs		
	Gain accuracy	$\pm 0.1\%$ (between settings) $\pm 1\%$ (overall)		
	Gain flatness	$\pm 0.1\text{ dB}$		
Frequency Response	Lower cut-off frequency	DC, switchable to 1.5 Hz		
	Upper cut-off frequency	100 kHz, switchable to 1 kHz		
	Upper cut-off frequency rolloff	12 dB/oct.		
Time Response	Rise/fall time (10 % - 90 %)	3.5 μs (@ BW = 100 kHz) 350 μs (@ BW = 1 kHz)		
Input	Input impedance	1 $\text{M}\Omega$		
	Input capacitance	13 pF		
	Input voltage drift	0.5 $\mu\text{V}/^\circ\text{C}$		
	Equivalent input voltage noise (100 Hz ... 100 kHz)	<u>Gain setting</u>	<u>noise</u>	
		100 dB	700 pV/ $\sqrt{\text{Hz}}$	
		80 dB	730 pV/ $\sqrt{\text{Hz}}$	
		60 dB	860 pV/ $\sqrt{\text{Hz}}$	
	40 dB	6 nV/ $\sqrt{\text{Hz}}$		
	Equivalent input current noise	3 pA/ $\sqrt{\text{Hz}}$		
	1/f-noise corner	80 Hz		
Input Bias current	1 μA			
Input bias current drift	8 nA/ $^\circ\text{C}$			
Input offset voltage	$\pm 500\text{ }\mu\text{V}$, adjustable by offset trimmer and external control voltage			
Output	Output impedance	$< 100\text{ }\Omega$ (terminate with $> 10\text{ k}\Omega$ load for best performance)		
	Output voltage range			
	For linear amplification	$\pm 10\text{ V}$ (@ $> 10\text{ k}\Omega$ load)		
	Output current (max.)	$\pm 20\text{ mA}$		
Output overload recovery time	0.5 ms (after 20 x overload)			
Overload LED	<p>The amplifier features a LED to indicate an overload condition. The Overload LED will turn on if the signal level within the signal path exceeds the linear operating range. In order to ensure the correct operation of the amplifier without signal distortions reduce the gain setting until the Overload LED turns off.</p> <p>The Overload LED may also turn on when the amplifier is operated with open input or with a high source resistance, e. g. external AC coupling. In this case the bias current may cause a considerable input voltage. For proper operation please use a source resistance of less than 1 kΩ or switch to a lower gain setting.</p>			
Remote Offset Control	Offset control voltage range	$\pm 10\text{ V}$, corresponds to $\pm 500\text{ }\mu\text{V}$ input offset voltage		
	Offset control input impedance	200 k Ω		
Remote Digital Control	Control input voltage range	Low: $-0.8\text{ ... }+0.8\text{ V}$ High: $+1.8\text{ ... }+15\text{ V}$, TTL / CMOS compatible		
	Control input current	0 mA @ 0 V, 1.5 mA @ +5 V, 4.0 mA @ +12 V		
	Overload output	Non active: +5 V, max. 1 mA, active: 0.8 V, max. -10 mA ;		

Low-Noise Variable Gain Low-Frequency Voltage Amplifier

Specifications (continued)

Power Supply	Supply voltage	±15 V (±14.5 V to ±16 V)
	Supply current	±75 mA typ. (depends on operating conditions, recommended power supply capability min. ±150 mA)
Case	Weight	0.32 kg (0.7 lbs)
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage temperature	-40 °C to +85 °C
	Operating temperature	0 °C to +60 °C

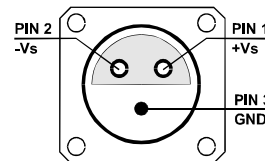
Absolute Maximum Ratings

Power supply voltage	±21 V
Control input voltage	+16 V / -5 V
Signal input voltage	±0.7 V
Input current	±25 mA

Overtolerance at the signal input can severely degrade the noise performance or destroy the amplifier!

Connectors

Input	BNC jack (female)
Output	BNC jack (female)
Power supply	Lemo® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52) Pin 1: +15V Pin 2: -15V Pin 3: GND



Control port

Sub-D 25-pin, female
Pin 1: +12 V (stabilized power supply output, max. 100 mA*)
Pin 2: -12 V (stabilized power supply output, max. 100 mA*)
Pin 3: AGND (analog ground)
Pin 4: +5 V (stabilized power supply output, max. 50 mA*)
Pin 5: digital output: overload
Pin 6: NC
Pin 7: NC
Pin 8: offset control voltage input
Pin 9: DGND (ground f. digital control Pin 10 - 25)
Pin 10: NC
Pin 11: digital control input: gain, LSB
Pin 12: digital control input: gain, MSB
Pin 13: digital control input: AC/DC
Pin 14: digital control input: 100 kHz / 1 kHz
Pin 15 - 25: NC

*check power supply for maximum deliverable current

Low-Noise Variable Gain Low-Frequency Voltage Amplifier

Remote Control Operation

General

Remote control input bits are opto-isolated and connected by logical OR to local switch setting.
For remote control set the corresponding local switch to "0 dB", "AC" and "1 kHz" and select the wanted setting via a bit-code at the corresponding digital inputs.
Mixed operation, e.g. local gain setting and remote controlled bandwidth setting, is also possible.

Gain setting

Gain	Pin 11	Pin 12
40 dB	low	low
60 dB	high	low
80 dB	low	high
100 dB	high	high

AC/DC setting

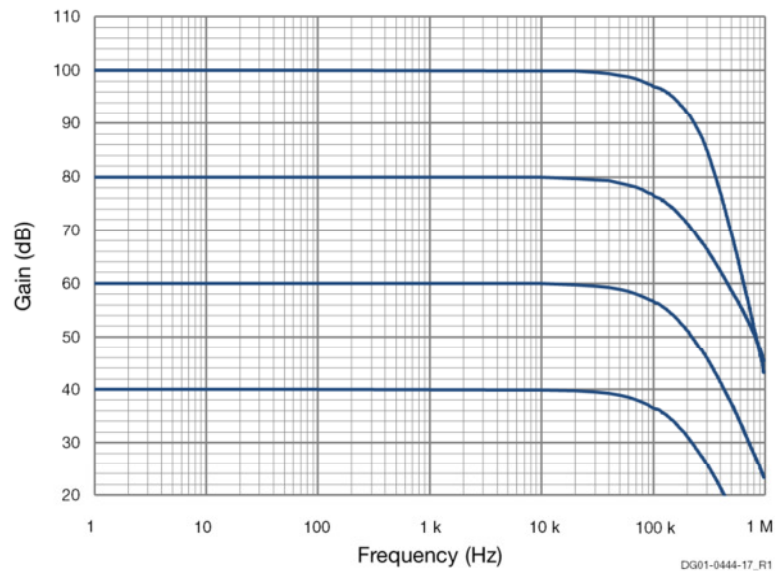
Coupling	Pin 13
AC	low
DC	high

Bandwidth setting

Bandwidth	Pin 14
1 kHz	low
100 kHz	high

Typical Performance Characteristics

Frequency response (logarithmic)



Low-Noise Variable Gain Low-Frequency Voltage Amplifier

Dimensions

