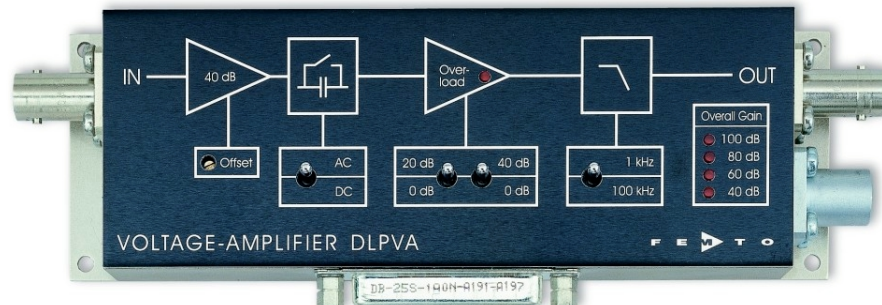


Low Noise Variable Gain Low Frequency Voltage Amplifier



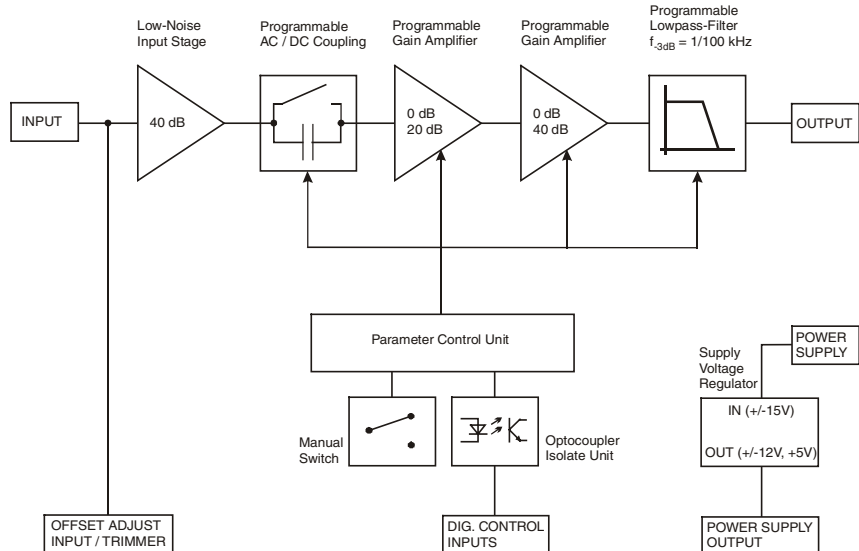
Features

- 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
- 0.5 μV/°C DC-Drift
- 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

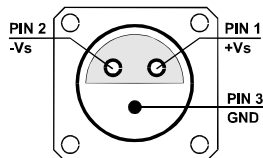


BS01-0440-19

Low Noise Variable Gain Low Frequency Voltage Amplifier

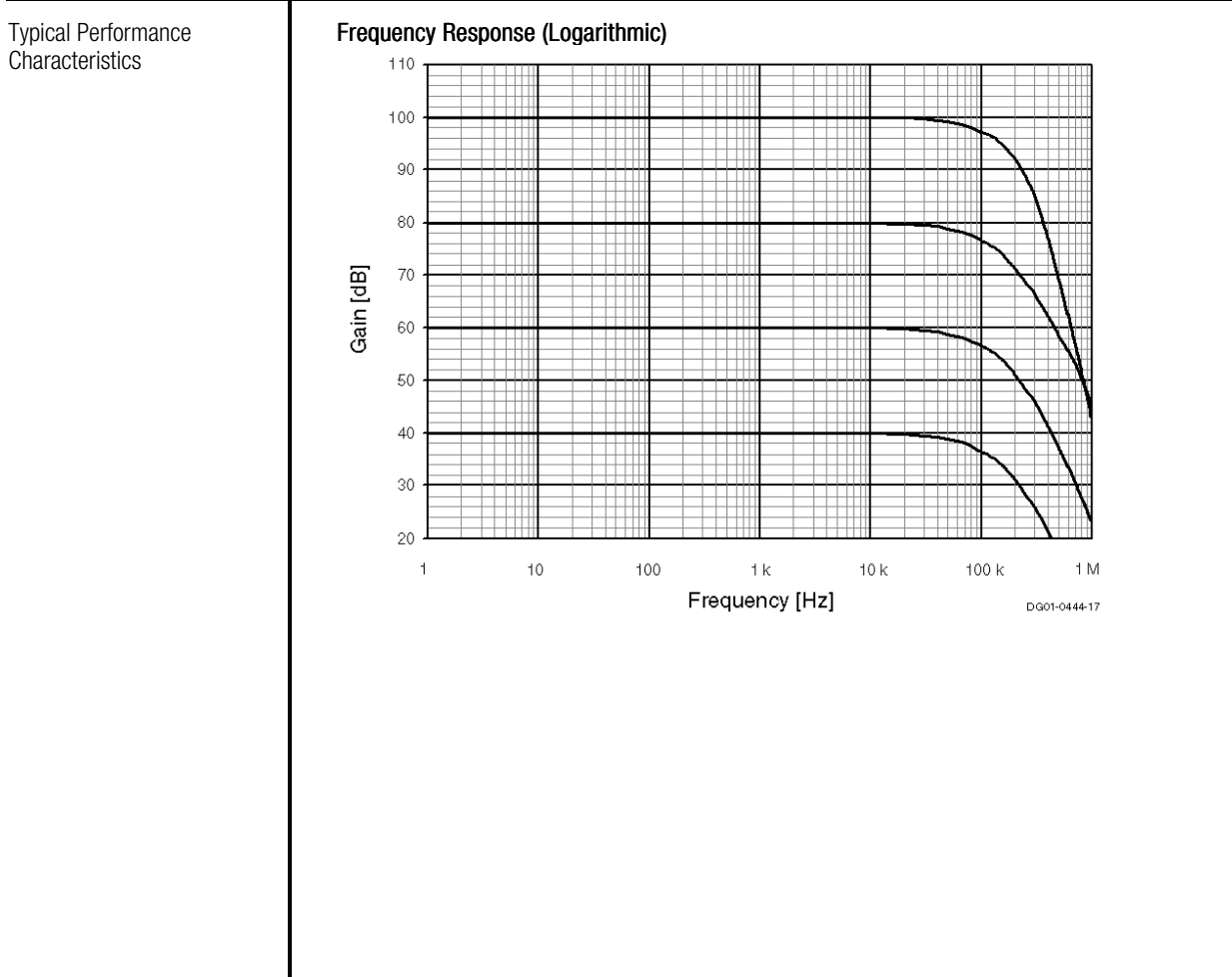
Specifications	<p>Test Conditions Vs = ± 15 V, Ta = 25°C</p>										
Gain	<p>Gain Values 40, 60, 80, 100 dB indicated by four LEDs</p> <p>Gain Accuracy ± 0.1 % (between settings) ± 1 % (overall)</p> <p>Gain Flatness ± 0.1 dB</p>										
Frequency Response	<p>Lower Cut-Off Frequency DC, switchable to 1.5 Hz</p> <p>Upper Cut-Off Frequency 100 kHz, switchable to 1 kHz</p> <p>Upper Cut-Off Frequency Rolloff 12 dB/Oct.</p>										
Time Response	<p>Rise / Fall Time (10% - 90%) 3.5 µs (@ BW = 100 kHz) 350 µs (@ BW = 1 kHz)</p>										
Input	<p>Input Impedance 1 MΩ</p> <p>Input Voltage Drift 0.5 µV/°C</p> <p>Equivalent Input Voltage Noise</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Gain Setting</th> <th>Noise</th> </tr> </thead> <tbody> <tr> <td>100 dB</td> <td>700 pV/√Hz</td> </tr> <tr> <td>80 dB</td> <td>730 pV/√Hz</td> </tr> <tr> <td>60 dB</td> <td>860 pV/√Hz</td> </tr> <tr> <td>40 dB</td> <td>6 nV/√Hz</td> </tr> </tbody> </table> <p>Equivalent Input Current Noise 3 pA/√Hz</p> <p>1/f-Noise Corner 80 Hz</p> <p>Input Bias Current 1 µA</p> <p>Input Bias Current Drift 8 nA/°C</p> <p>Input Offset Voltage ± 500 µV, adjustable by offset trimmer and external control voltage</p>	Gain Setting	Noise	100 dB	700 pV/√Hz	80 dB	730 pV/√Hz	60 dB	860 pV/√Hz	40 dB	6 nV/√Hz
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100 dB	700 pV/√Hz										
80 dB	730 pV/√Hz										
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Output	<p>Output Impedance 50 Ω (terminate with > 10 kΩ for best performance)</p> <p>Output Voltage Range</p> <p>For Linear Amplification ± 10 V (@ > 10 kΩ load)</p> <p>Output Current (max.) ± 20 mA</p> <p>Output Overload Recovery Time 0.5 ms (after 20x overload)</p>										
Overload LED	<p>The amplifier features a LED to signalize 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 impedance. For proper operation please use a source impedance of less than 1 kΩ or switch to a lower gain setting.</p>										
Remote Offset Control	<p>Offset Control Voltage Range ± 10 V, corresponds to ± 500 µV input offset</p> <p>Offset Control Input Impedance 200 kΩ</p>										
Remote Digital Control	<p>Control Input Voltage Range Low: - 0.8 ... + 0.8 V High: + 1.8 ... + 12 V, TTL / CMOS compatible</p> <p>Control Input Current 0 mA @ 0 V, 1.5 mA @ + 5 V, 4.5 mA @ + 12 V</p> <p>Overload Output Non active: + 5 V, max. 1 mA, active: 0.8 V, max. -10 mA</p>										
Power Supply	<p>Supply Voltage ± 15 V (± 14.5 V to ± 16 V)</p> <p>Supply Current ± 75 mA typ. (depends on operating conditions, recommended power supply capability minimum 200 mA)</p>										

Low Noise Variable Gain Low Frequency Voltage Amplifier

Case	Weight Material	0.32 kg (0.7 lbs) AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature Operating Temperature	- 40 °C to + 100 °C 0 °C to + 60 °C
Absolute Maximum Ratings	Power Supply Voltage Control Input Voltage Signal Input Voltage	± 21 V + 16 V / - 5 V ± 4.5 V
Overvoltage at the signal input can severely degrade the noise performance or destroy the amplifier!		
Connectors	Input Output	BNC BNC
	Power Supply	LEMO series 1S, 3-pin fixed socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND
		
	Control Port	Sub-D 25-pin, female, qual. class 2 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

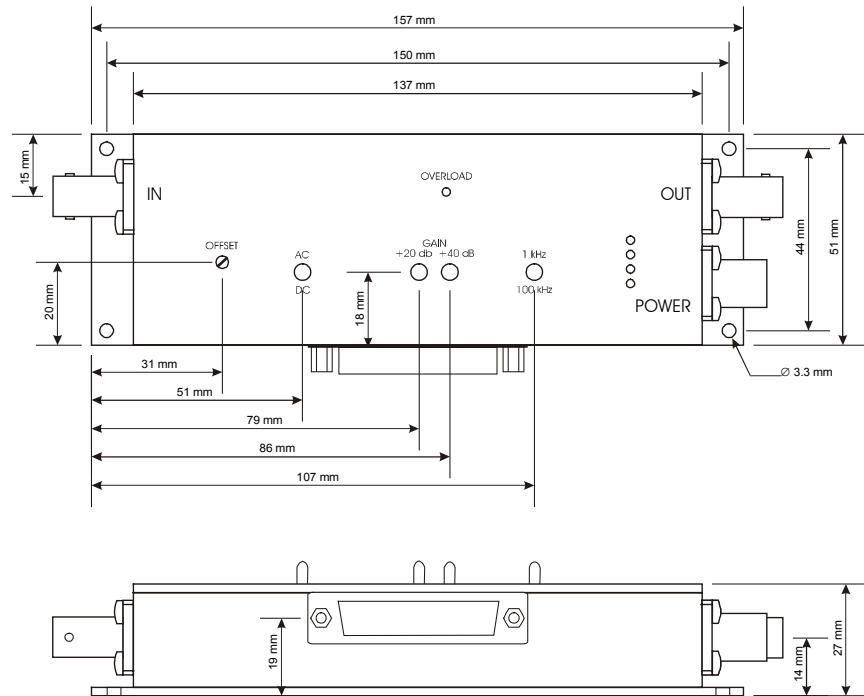
Low Noise Variable Gain Low Frequency Voltage Amplifier

Remote Control Operation	<p>General</p> <p>Remote control input bits are opto-isolated and connected by logical OR to local switch setting. For remote control a switch setting, 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.</p>															
Gain Setting	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Gain</th> <th style="text-align: left; border-bottom: 1px solid black;">Pin 11</th> <th style="text-align: left; border-bottom: 1px solid black;">Pin 12</th> </tr> </thead> <tbody> <tr> <td>40 dB</td> <td>low</td> <td>low</td> </tr> <tr> <td>60 dB</td> <td>high</td> <td>low</td> </tr> <tr> <td>80 dB</td> <td>low</td> <td>high</td> </tr> <tr> <td>100 dB</td> <td>high</td> <td>high</td> </tr> </tbody> </table>	Gain	Pin 11	Pin 12	40 dB	low	low	60 dB	high	low	80 dB	low	high	100 dB	high	high
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Low Noise Variable Gain Low Frequency Voltage Amplifier

Dimensions



DZ01-0440-18

FEMTO Messtechnik GmbH
 Paul-Lincke-Ufer 34
 D-10999 Berlin · Germany
 Tel.: +49 (0)30 – 4 46 93 86
 Fax: +49 (0)30 – 4 46 93 88
 e-mail: info@femto.de
 http://www.femto.de

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