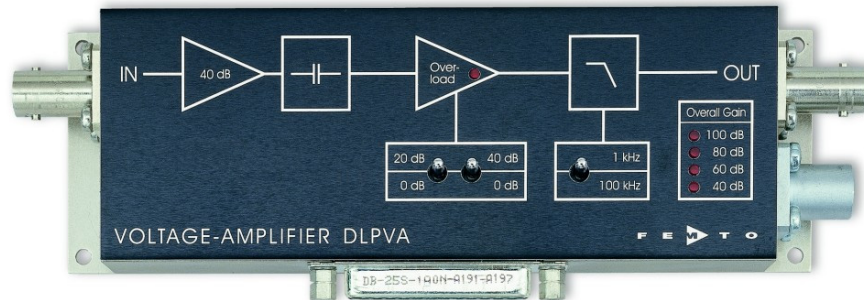




Datasheet

DLPVA-100-BUN-S

Ultra Low Noise Variable Gain Low Frequency Voltage Amplifier



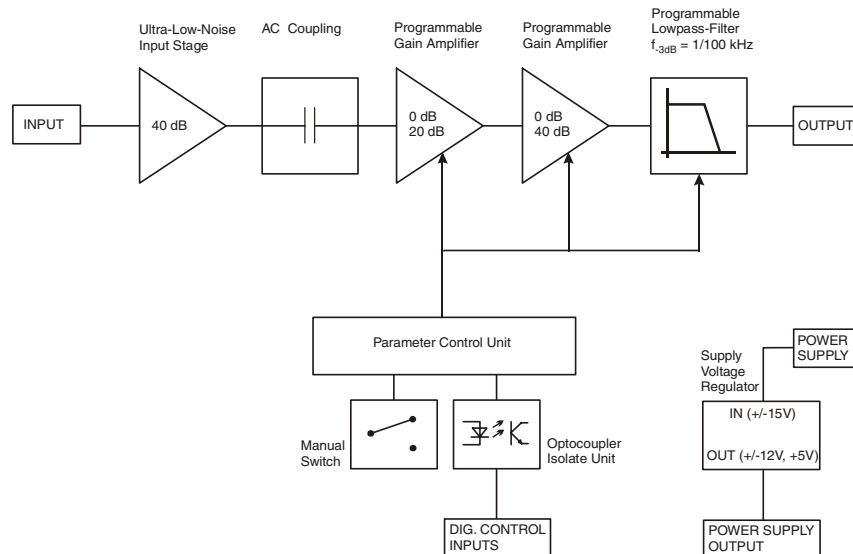
Features

- **Variable Gain 40 to 100 dB, Switchable in 20 dB Steps**
- **Bipolar Input Stage, Recommended for Low Impedance Sources Smaller than 50 Ω**
- **Ultra low Input Voltage Noise: 400 pV/√Hz**
- **AC Coupled, Single Ended**
- **Bandwidth 1.5 Hz - 100 kHz, Switchable to 1 kHz**
- **Local and Remote Control**

Applications

- **Ultra-Low-Noise Laboratory Amplifier**
- **Pulsed Thermal EMF Analysis**
- **Chopped Thermopiles / Bolometers**
- **Industrial Sensors**
- **Detector Preamplifier**
- **Integrated Measurement Systems**

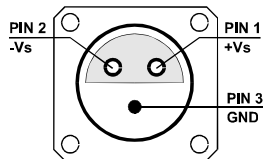
Block Diagram



Ultra Low Noise Variable Gain Low Frequency Voltage Amplifier

Specifications	<i>Test Conditions</i>	<i>V_s = ± 15 V, T_a = 25°C</i>	
Gain	Gain Values	40, 60, 80, 100 dB indicated by four LEDs	
	Gain Accuracy	± 0.1 %	(between settings)
		± 1 %	(overall)
Frequency Response	Gain Flatness	± 0.1 dB	
	Lower Cut-Off Frequency	1.5 Hz	
	Upper Cut-Off Frequency	100 kHz, switchable to 1 kHz	
Time Response	Upper Cut-Off Frequency Rolloff	12 dB/Oct.	
	Rise / Fall Time (10% - 90%)	3.5 μs (@ BW = 100 kHz)	350 μs (@ BW = 1 kHz)
Input	Input Impedance	1 kΩ	
	Equivalent Input Voltage Noise	<u>Gain Setting</u>	<u>Noise</u>
		100 dB	400 pV/√Hz
		80 dB	420 pV/√Hz
		60 dB	800 pV/√Hz
		40 dB	6 nV/√Hz
	Equivalent Input Current Noise	3 pA/√Hz	
	1/f-Noise Corner	100 Hz	
	Input Bias Current	30 μA	
	Maximum Input DC-Offset Voltage for Linear Amplification	± 90 mV	
Important Notice: The input must see a source impedance below 200 Ω to function properly!			
Output	Output Impedance	50 Ω (terminate with > 10 kΩ for best performance)	
	Output Voltage Range for linear Amplification	± 10 V (@ > 10 kΩ load)	
	Output Current (max.)	± 20 mA	
	Output Overload Recovery Time	0.5 ms (after 20x overload)	
Overload LED	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.		
	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 100 Ω or switch to a lower gain setting.		
Remote Digital Control	Control Input Voltage Range	Low: - 0.8 ... + 0.8 V High: + 1.8 ... + 12 V, TTL / CMOS compatible	
	Control Input Current	0 mA @ 0 V, 1.5 mA @ + 5 V, 4.5 mA @ + 12 V	
	Overload Output	Non active: + 5 V, max. 1 mA, active: 0.8 V, max. -10 mA	
Power Supply	Supply Voltage	± 15 V (± 14.5 V to ± 16 V)	
	Supply Current	± 55 mA typ. (depends on operating conditions, recommended power supply capability minimum 150 mA)	
Case	Weight	0.32 kg (0.7 lbs)	
	Material	AlMg4.5Mn, nickel-plated	

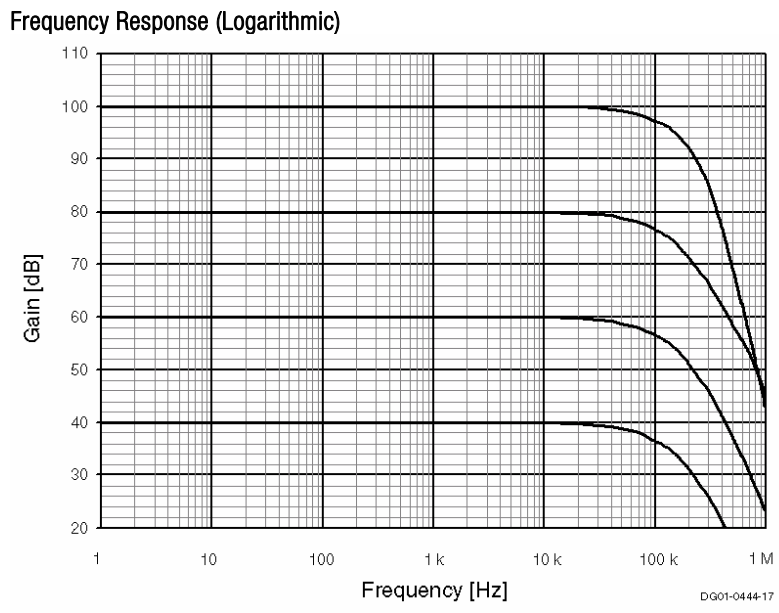
Ultra Low Noise Variable Gain Low Frequency Voltage Amplifier

Temperature Range	Storage Temperature	- 40 °C to + 100 °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	± 4 V	
	Overvoltage at the signal input can severely degrade the noise performance or destroy the amplifier!		
Connectors	Input	BNC	
	Output	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: NC	
		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: NC	
		Pin 14: digital control input: 100 kHz / 1 kHz	
		Pin 15 - 25: NC	

Ultra Low Noise Variable Gain Low Frequency Voltage Amplifier

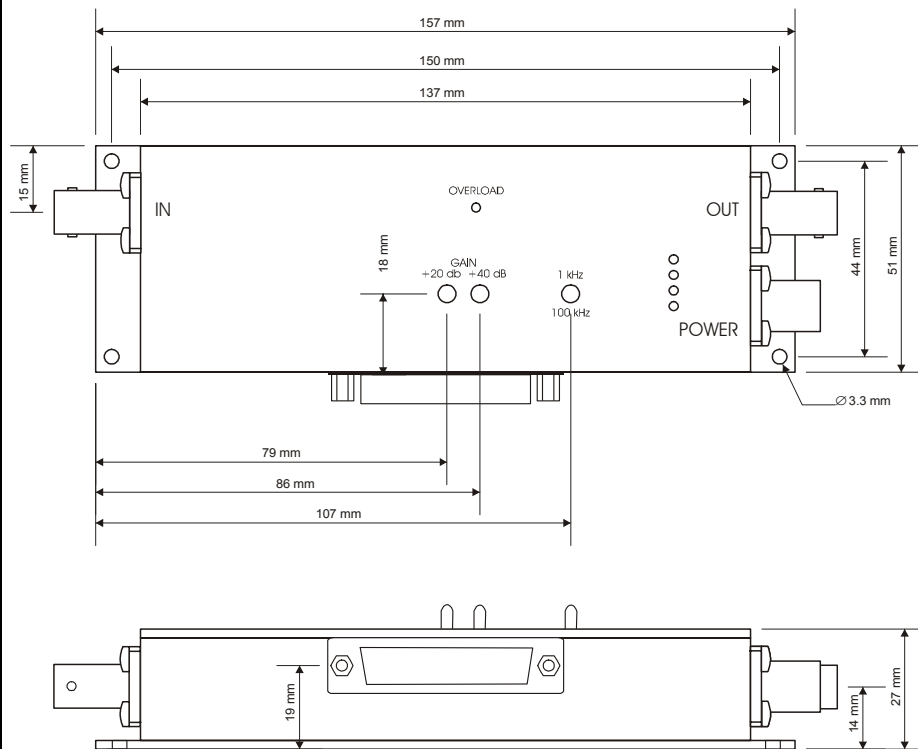
Remote Control Operation	<p>General</p> <p>Remote control input bits are opto-isolated and connected by logical OR to local switch setting. For remote control a switch setting, set the corresponding local switch to "0 dB" and "1 kHz" and select the wanted setting via a bit-code at the corresponding digital inputs. Mixed operation, e.g. local gain setting and remote controlled bandwidth setting, is also possible.</p>																				
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Gain Setting</td> <td style="border-bottom: 1px solid black; text-align: center;">Gain</td> <td style="border-bottom: 1px solid black; text-align: center;">Pin 11</td> <td style="border-bottom: 1px solid black; text-align: center;">Pin 12</td> </tr> <tr> <td></td> <td style="text-align: center;">40 dB</td> <td style="text-align: center;">low</td> <td style="text-align: center;">low</td> </tr> <tr> <td></td> <td style="text-align: center;">60 dB</td> <td style="text-align: center;">high</td> <td style="text-align: center;">low</td> </tr> <tr> <td></td> <td style="text-align: center;">80 dB</td> <td style="text-align: center;">low</td> <td style="text-align: center;">high</td> </tr> <tr> <td></td> <td style="text-align: center;">100 dB</td> <td style="text-align: center;">high</td> <td style="text-align: center;">high</td> </tr> </table>	Gain Setting	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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Typical Performance Characteristics



Ultra Low Noise Variable Gain Low Frequency Voltage Amplifier

Dimensions



DZ-DLPVA-BUN-S

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Datasheet

LUCI-10

USB to D-Sub Control Interface for FEMTO Amplifiers



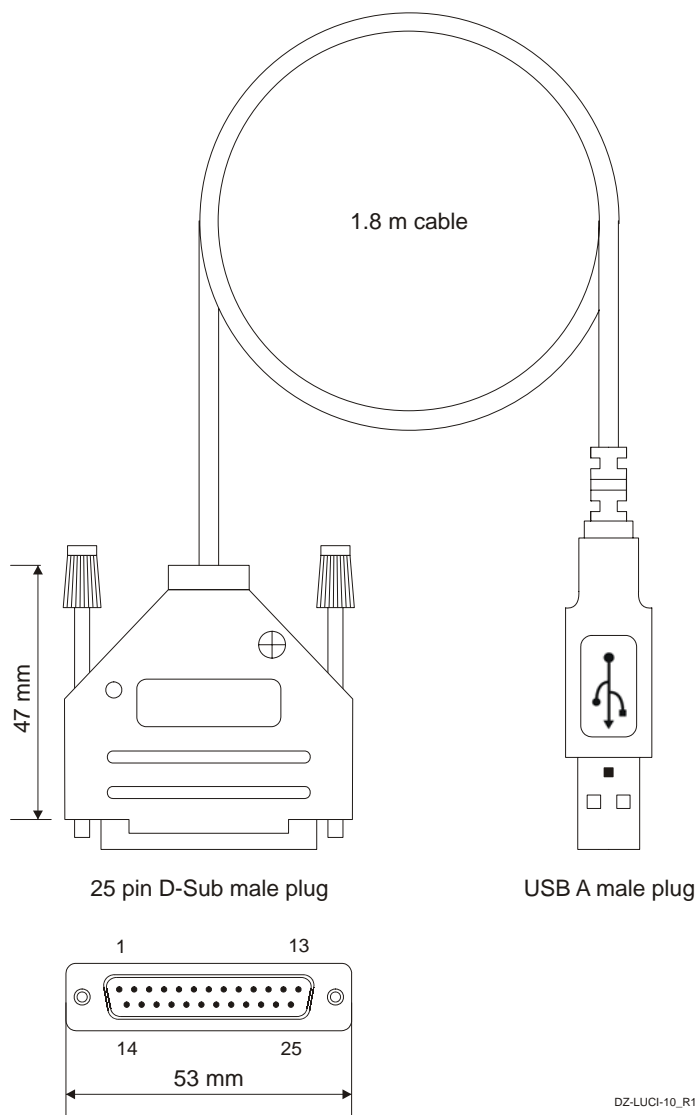
<p>Features</p>	<ul style="list-style-type: none"> • Compact Digital I/O Interface for USB Remote Control of FEMTO Amplifiers • Supports Opto-Isolation of Amplifier Signal Path from PC USB Port • 16 Digital Outputs, 3 Opto-Isolated Digital Inputs • Bus-Powered Operation • System Driver, Application Software and VI's for use with LabVIEW™ Included 				
<p>Applications</p>	<ul style="list-style-type: none"> • Remote Control of FEMTO® Amplifiers and Photoreceivers Directly from a PC 				
<p>Block Diagram</p>	<p style="text-align: right; font-size: small;">BS-LUCI-10_R1</p>				
<p>Hardware Specifications</p>	<table border="0"> <tr> <td style="vertical-align: top;"> <p>General Characteristics</p> </td> <td> <p>Bus Interface USB 2.0 (full-speed)</p> <p>Digital I/O Channels 16 output lines 3 opto-isolated input lines</p> <p>Supply PC USB port, + 5 V, typ. 100 mA, bus-powered (no auxiliary power supply required)</p> <p>Connectors USB type A D-Sub, 25 pin, male</p> <p>Cable AWG 28, length 1.8 m</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>Output</p> </td> <td> <p>Number of Channels 16 output lines, supporting opto-isolation inside FEMTO amplifiers and photoreceivers</p> <p>Output Voltage Range LOW bit: 0 ... + 0.5 V (@ 0 ... 2 mA output current) HIGH bit: + 4 ... + 5.5 V (@ 0 ... 2 mA output current)</p> <p>Max. Current 6 mA per channel</p> <p>Writing Rate max. 800 operations per second</p> </td> </tr> </table>	<p>General Characteristics</p>	<p>Bus Interface USB 2.0 (full-speed)</p> <p>Digital I/O Channels 16 output lines 3 opto-isolated input lines</p> <p>Supply PC USB port, + 5 V, typ. 100 mA, bus-powered (no auxiliary power supply required)</p> <p>Connectors USB type A D-Sub, 25 pin, male</p> <p>Cable AWG 28, length 1.8 m</p>	<p>Output</p>	<p>Number of Channels 16 output lines, supporting opto-isolation inside FEMTO amplifiers and photoreceivers</p> <p>Output Voltage Range LOW bit: 0 ... + 0.5 V (@ 0 ... 2 mA output current) HIGH bit: + 4 ... + 5.5 V (@ 0 ... 2 mA output current)</p> <p>Max. Current 6 mA per channel</p> <p>Writing Rate max. 800 operations per second</p>
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USB to D-Sub Control Interface for FEMTO Amplifiers

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Optional Requirements	<p>For development of own application programs an additional development environment like LabVIEW Version 8 (or higher) or C/C++ is required.</p>												
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USB to D-Sub Control Interface for FEMTO Amplifiers

Dimensions



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