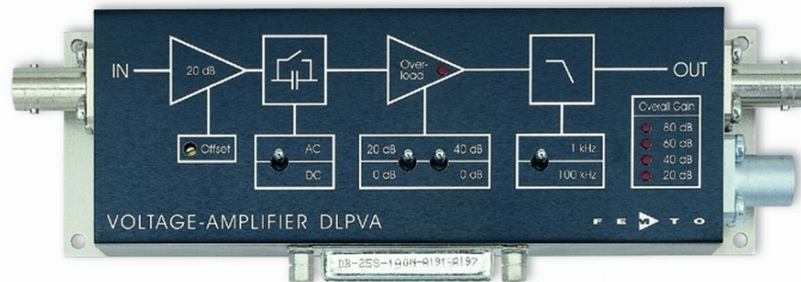


Datasheet

DLPVA-100-B Series

Variable Gain Low Frequency Voltage Amplifier



<p>Features</p>	<ul style="list-style-type: none"> • Variable Gain 20 to 80 dB, Switchable in 20 dB Steps • Bipolar Input Stage, Recommended for Low Impedance Sources Smaller than 1 kΩ • Single Ended and True Differential Input Models • Bandwidth DC - 100 kHz, Switchable to 1 kHz • 0.7 μV/°C DC-Drift • 120 dB CMRR • 2.4 nV/√Hz Input Noise • Switchable AC/DC-Coupling • Local and Remote Control
<p>Applications</p>	<ul style="list-style-type: none"> • Universal Laboratory Amplifier • Automated Measurements • Industrial Sensors • Detector Preamplifier • Integrated Measurement Systems
<p>Block Diagram</p>	

Datasheet

DLPVA-100-B Series

Variable Gain Low Frequency Voltage Amplifier

Specifications	<i>Test Conditions</i>	<i>V_s = ± 15 V, T_a = 25°C</i>		
Gain	Gain Values	20, 40, 60, 80 dB indicated by four LEDs		
	Gain Accuracy	± 0.1 %	(between settings)	
		± 1 %	(overall)	
Frequency Response	Gain Flatness	± 0.1 dB		
	Lower Cut-Off Frequency	DC, switchable to 1.5 Hz		
	Upper Cut-Off Frequency	100 kHz, switchable to 1 kHz		
Time Response	Upper Cut-Off Frequency Roll-off	12 dB/Oct.		
	Rise / Fall Time (10% - 90%)	3.5 μs (@ BW = 100 kHz) 350 μs (@ BW = 1 kHz)		
Input	Input Impedance	1 MΩ		
	Input Voltage Drift	0.7 μV/K		
	Equivalent Input Voltage Noise	Gain Setting	DLPVA-100-B-S	DLPVA-100-B-D
		60, 80 dB	2.4 nV/√Hz	3.6 nV/√Hz
		40 dB	6.4 nV/√Hz	7.3 nV/√Hz
		20 dB	60 nV/√Hz	60 nV/√Hz
	Equivalent Input Current Noise	2 pA/√Hz		
	1/f-Noise Corner	80 Hz		
	Input Bias Current	0.8 μA		
	Input Bias Current Drift	6 nA/°C		
Input Offset Voltage	± 4 mV, adjustable by offset trimmer and external control voltage			
Output	<i>True Differential Input, Model "DLPVA-100-B-D" only:</i>			
	Common Mode Voltage Range	± 9 V		
	CMRR	120 dB	(@ 100 Hz)	
		100 dB	(@ 10 kHz)	
		80 dB	(@ 60 kHz)	
	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)		

Datasheet

DLPVA-100-B Series

Variable Gain Low Frequency Voltage Amplifier

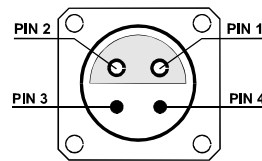
Overload LED	<p>The amplifier features a LED to signalize an overload condition. The Overload LED will turn on if the signal level within the signal path exceeds the linear operating range. In order to ensure the correct operation of the amplifier without signal distortions reduce the gain setting until the Overload LED turns off.</p> <p>The Overload LED may also turn on under the following operating conditions:</p> <ul style="list-style-type: none"> - 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 for model "B-S" and less than 10 kΩ for model "B-D", respectively, or switch to a lower gain setting. - When using a DLPVA-B-D with differential input stage the Overload LED may turn on if the common mode input voltage exceeds ± 5 V or if the source is totally floating with respect to the amplifier ground. For proper operation make sure that the common mode voltage stays within ± 5 V with respect to the amplifier ground and make a valid connection between the source ground and the amplifier ground to ensure that the inputs cannot drift outside the tolerable common mode range.
Remote Offset Control	<p>Offset Control Voltage Range ± 10 V, corresponds to ± 4 mV 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 150 mA)</p>
Case	<p>Weight 0.32 kg (0.7 lbs)</p> <p>Material AlMg4.5Mn, nickel-plated</p>
Temperature Range	<p>Storage Temperature - 40 $^{\circ}$C to + 100 $^{\circ}$C</p> <p>Operating Temperature 0 $^{\circ}$C to + 60 $^{\circ}$C</p>

Absolute Maximum Ratings	Power Supply Voltage	± 21 V
	Control Input Voltage	+ 16 V / - 5 V
	<i>Single Ended Input, Model "DLPVA-100-B-S" only:</i>	
	Signal Input Voltage	± 4.5 V
	<i>True Differential Input, Model "DLPVA-100-B-D" only:</i>	
Signal Input Differential Voltage	± 7.7 V	
Signal Input Com. Mode Voltage	± 12 V	

Datasheet**DLPVA-100-B Series****Variable Gain
Low Frequency Voltage Amplifier**

Connectors

Input

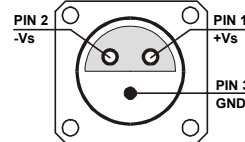
Single Ended Input, Model "DLPVA-100-B-S":
BNC*True Differential Input, Model "DLPVA-100-B-D":*
LEMO series 1S, 4-pin fixed socketPin 1: non inverting input
Pin 2: inverting input
Pin 3: GND
Pin 4: N.C.

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: 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

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 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.

Gain Setting

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

AC/DC Setting

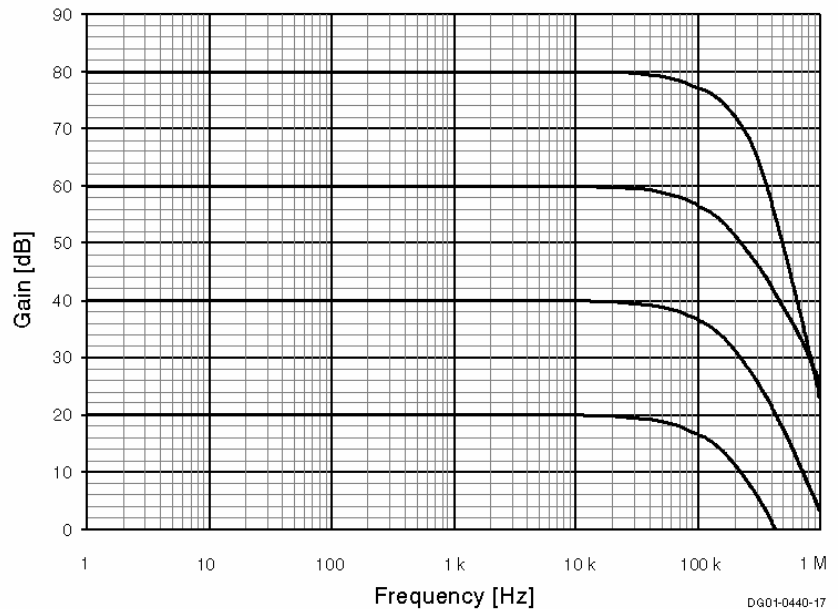
Coupling	Pin 13
AC	low
DC	high

Bandwidth Setting

Bandwidth	Pin 14
1 kHz	low
100 kHz	high

Typical Performance Characteristics

Frequency Response (Logarithmic)

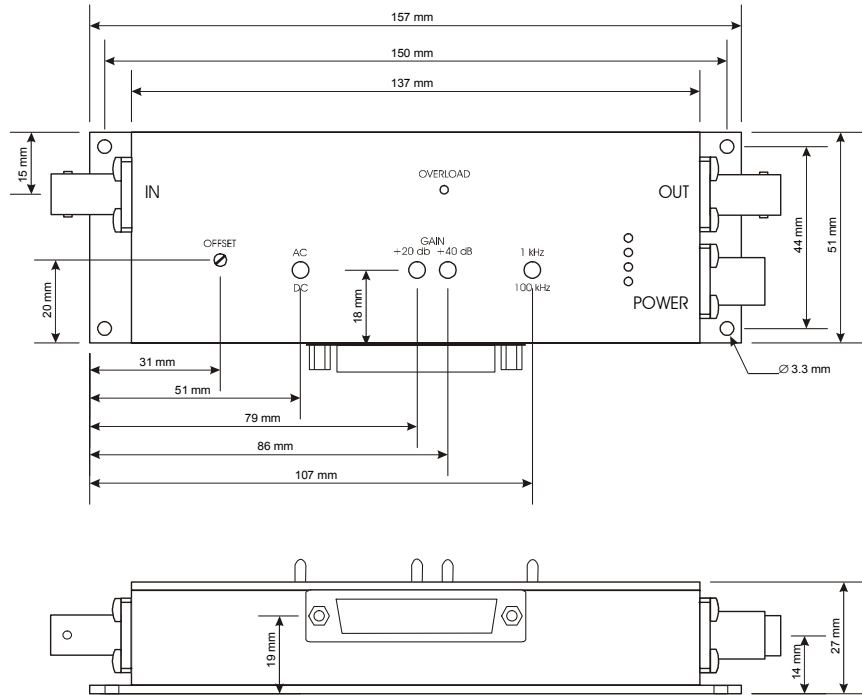


Datasheet

DLPVA-100-B Series

Variable Gain Low Frequency Voltage Amplifier

Dimensions



DZ01-0440-18

Ordering Information

Available Models

Model No.: DLPVA-100-B-S

- Bipolar, single-ended input (BNC-connector input)

Model No.: DLPVA-100-B-D

- Bipolar, true differential input (LEMO-connector input)

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SOPHISTICATED TOOLS FOR SIGNAL RECOVERY





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;">BS-LUCI-10_R1</p>				
<p>Hardware Specifications</p>	<table border="0"> <tr> <td style="vertical-align: top;">General Characteristics</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;">Output</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 Writing Rate: 6 mA per channel, max. 800 operations per second</p> </td> </tr> </table>	General Characteristics	<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>	Output	<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 Writing Rate: 6 mA per channel, max. 800 operations per second</p>
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USB to D-Sub Control Interface for FEMTO Amplifiers

Software Specifications

Software
(included on CD)

Device Driver	dynamic link library (DLL) for integration in Microsoft Windows [®] operating system for use with C/C++, LabWindows [™] /CVI [™] or LabVIEW [™]
Application Software	GUI (graphical user interface) programs for simple remote control of FEMTO amplifiers and photoreceivers provided as executable programs and LabVIEW projects
LabVIEW Programs	sample programs to control and test the LUCI-10 hardware (including front panel and block diagram)
LabVIEW Library	special VI toolkit for integration in LabVIEW development environment

Note: A National Instruments LabVIEW[™] license is not included in this software package. For use of the GUI application programs the LabVIEW Run-Time Engine is required. If not detected on the host PC during the installation process the LabVIEW Run-Time Engine will be installed automatically from the CD.

System Requirements

Operating System	Microsoft Windows XP with Service Pack 2, or higher
Processor	Intel Pentium III or AMD Athlon, or better
System Memory	512 MB of RAM, or more
Hard Disk Space	about 200 MB
Interface Port	USB 1.1 or USB 2.0
Supported FEMTO Modules	any standard FEMTO amplifier or photoreceiver with 25 pin D-Sub socket, except model HLVA-100

Optional Requirements

For development of own application programs an additional development environment like LabVIEW Version 8 (or higher) or C/C++ is required.

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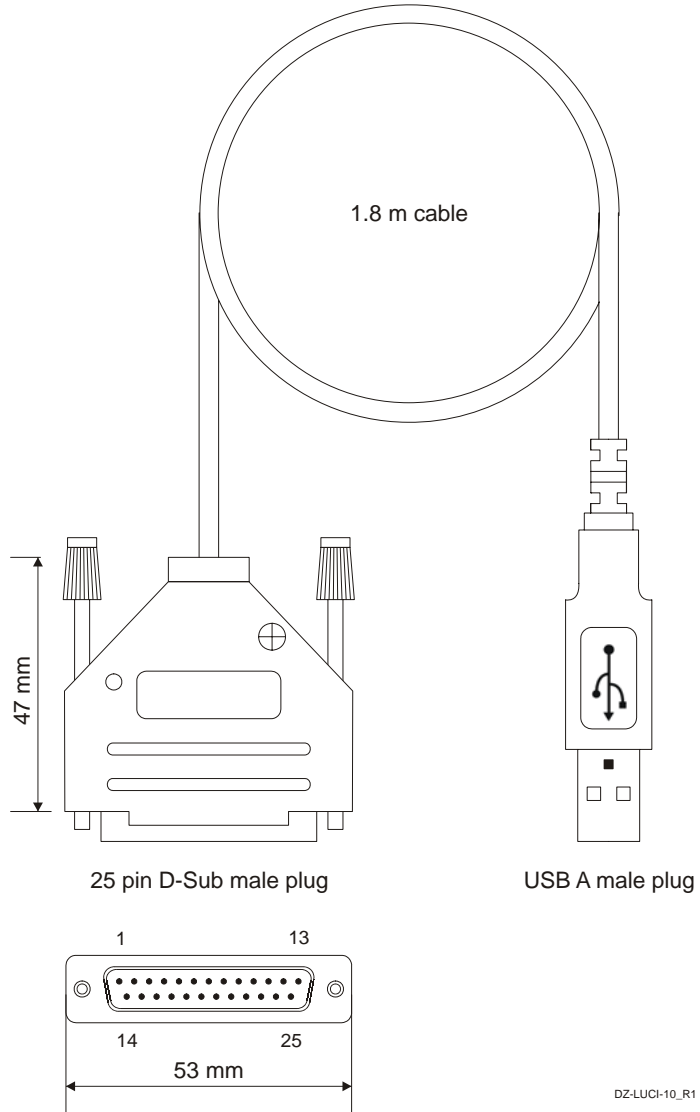
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**USB to D-Sub Control Interface
for FEMTO Amplifiers**

Dimensions



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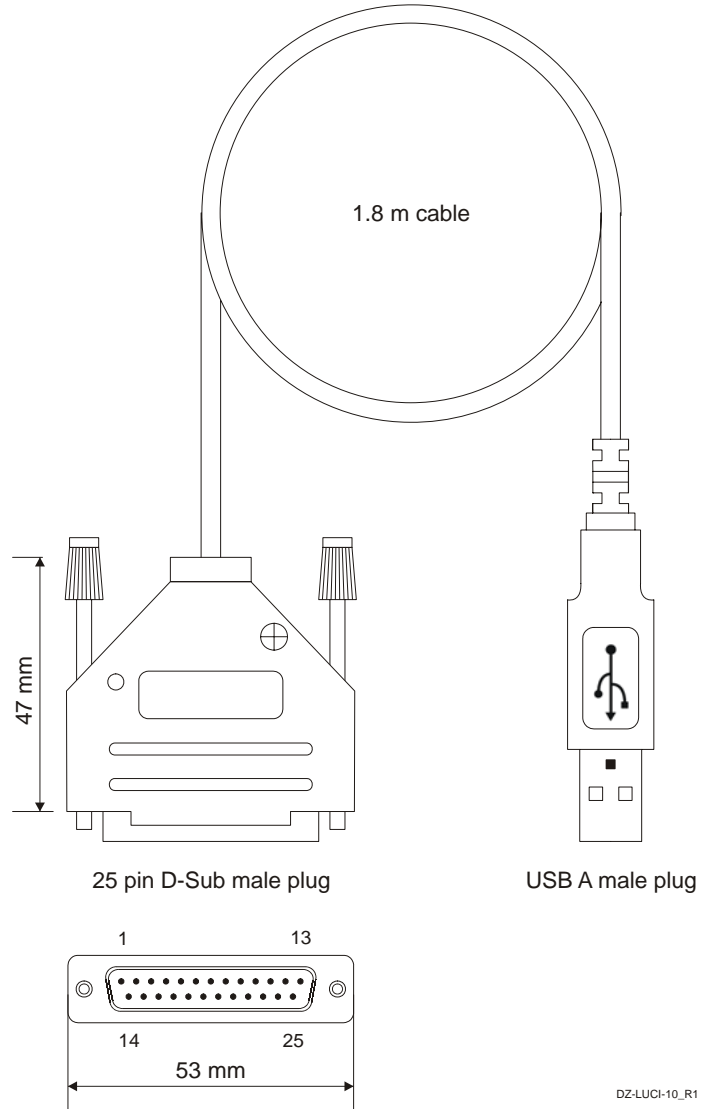
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USB to D-Sub Control Interface for FEMTO Amplifiers

Dimensions



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