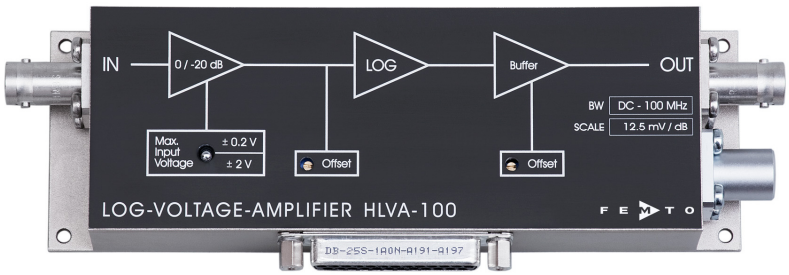
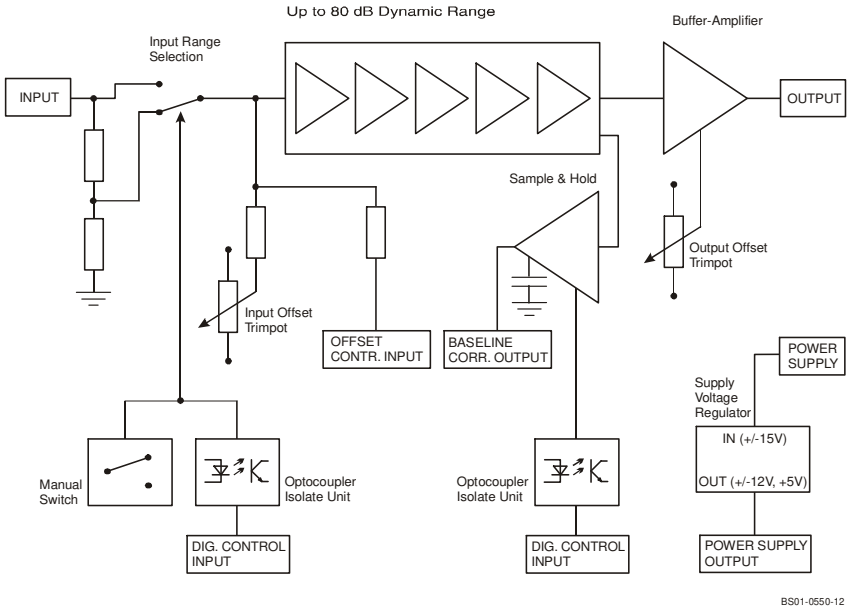
Logarithmic Wideband Voltage Amplifier



Features	• **Wide Dynamic Range typ. 60 dB, max. 80 dB,** • **5 ns Rise/Fall Time @ 40 dB step** • **Accuracy ± 1 dB @ pulse width of min. 20 ns** • **Switchable Input Range ± 20 µV ... ± 200 mV or ± 200 µV ... ± 2 V** • **DC coupled input** • **Local and Remote Control** • **Integrated Sample & Hold Baseline Correction**
Applications	• **LIDAR systems** • **Signal Compression, Pulse Measurements** • **Time-Resolved Pulse and Transient Measurements** • **Mass Spectroscopy** • **Particle Detection**
Block Diagram	

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Specifications	Test Conditions	Vs = ± 15 V, Ta = 25°C, System Impedance = 50 Ω
Dynamic Performance	Dynamic Range	typ. 60 dB (for accurate amplitude measurements) max. 80 dB (signal detection)
	Input Voltage Range	± 20 µV ... ± 200 mV / ± 200 µV ... ± 2 V switchable
	Scaling	12.5 mV/dB equals 250 mV/ decade (@ 50 Ω Load)
	Linearity	± 1 dB (for pulse of min. 20 ns pulse width)
Pulse Response	Rise/Fall time	5 ns @ 40 dB step
Input	Input Impedance	50 Ω
	Input Voltage Drift	0.6 µV/K
	Equivalent Input Voltage Noise	2 nV/√Hz
	Input BIAS Current	< 4 µA
	Input Offset Voltage	± 2.5 mV, adjustable by Offset-Trimpot and external Control Voltage
Output	Output Impedance	50 Ω
	Output Voltage Range	+50 ... +1075 mV typ. (@ 50 Ω Load) (if Output is adjusted to 1V at 100mV Input)
	Output Offset Voltage Range	± 500 mV, adjustable by Offset-Trimmer
Digital Control	Control Input Voltage Range	Low: - 0.8 ...+ 0.8 V High: + 3 ... + 12 V, TTL / CMOS compatible
	Control Input Current	Low: 0 mA High: + 1.5 mA @ + 5 V (Input Range Control) + 7 mA @ + 5 V (Baseline Correction Control)
Baseline Correction	Acquisition Time	30 µs (min. sample pulse width)
	Baseline Hold Droop Rate	1 µV/s (typ. @ 25°C)
	Loop cut-off frequency	1.5 kHz
Ext. Offset Control	Control Voltage Range	± 10 V (for ± 2.5 mV Offset Control)
	Offset Control Input Impedance	100 kΩ
Power Supply	Supply Voltage	± 15 V
	Supply Current	+ 90 / -120 mA typ.
	Stabilized Power Supply Output	± 12 V / max. 100 mA, + 5 V / max. 50 mA
Case	Weight	320 gr. (0.74 lbs)
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature	- 40 ... + 100 °C
	Operating Temperature	0 ... + 60 °C
Absolute Maximum Ratings	Power Supply Voltage	± 20 V
	Signal Input Voltage	± 3 V @ ± 2 V Input Range Setting - 3 V / + 300 mV @ ± 200 mV Input Range Setting
	Digital Control Input Voltage	+ 16 V / - 5 V

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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: +12V (Stabilized Power Supply Output) Pin 2: -12V (Stabilized Power Supply Output) Pin 3: AGND (Analog Ground) Pin 4: +5V (Stabilized Power Supply Output) Pin 5 - 6: NC Pin 7: Baseline Correction Output Pin 8: Offset Control Voltage Input Pin 9: DGND (Ground f. Digital Control Pin 10 - 25) Pin 10: Digital Control Input: Input Voltage Range Pin 11: Digital Control Input: Baseline Correction Pin 12 - 25: NC

Remote Control Operation

Input Range Setting

Remote control input is opto-isolated and connected by logical OR to local switch setting. For remote control the switch setting, set the local switch to " ± 2 V " and select the wanted setting via a bit-code at the digital input.

Input Range	Pin 10
± 2 V	Low
± 200 mV	High

Baseline Correction

The integrated auto-null function can be performed by remote digital control only.
The input is opto-isolated by a ultra-fast opto-coupler.
Please note the min. pulse width.

Function	Pin 11
Hold previous value	Low
Null Output	High

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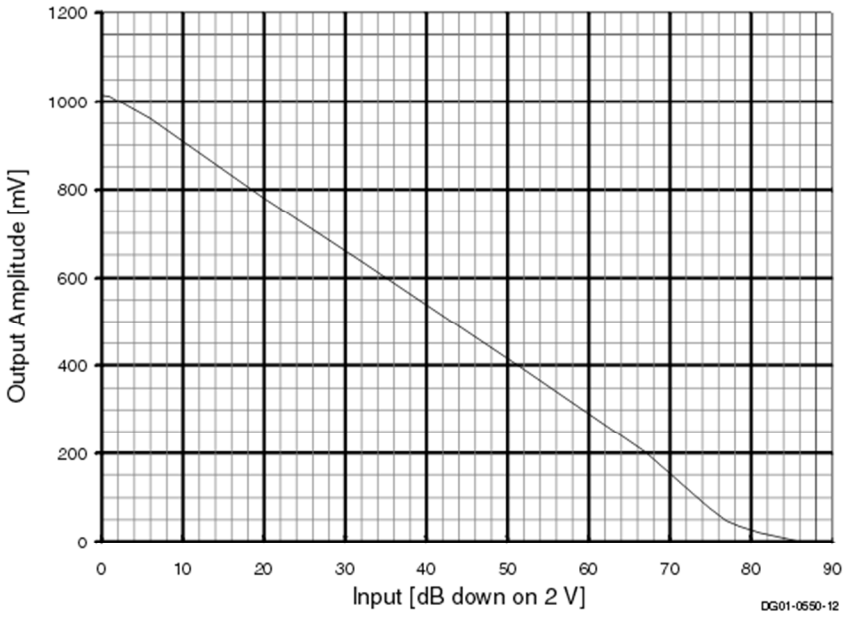
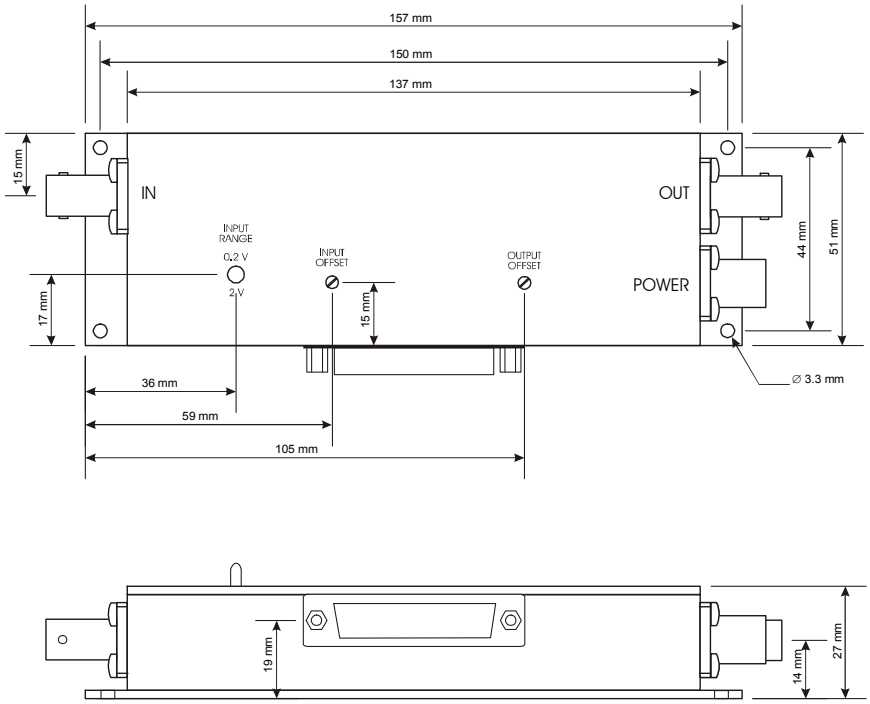
Typical Performance Characteristics

Logarithmic Response (@ ± 2 V Input Range Setting)



Dimensions



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