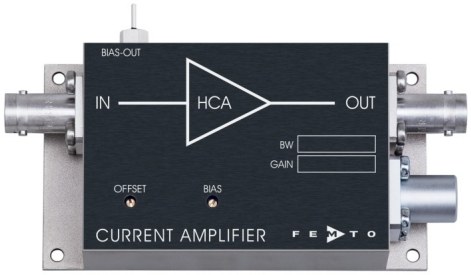
Measurement Devices

FEMTO®

LASER COMPONENTS®

Datasheet HCA-1M-1M

High-Speed Current Amplifier



Features	• **Bandwidth and Frequency Response Independent of Detector Capacitance (up to 50 pF)** • **Low Noise 270 fA/√Hz Equivalent Input Noise Current** • **Bandwidth DC ... 1 MHz** • **Transimpedance (Gain) 1 x 10^6 V/A** • **Protection against ± 3.5 kV Transients**		
Applications	• **Photodiode and Photomultiplier Amplifier** • **Spectroscopy** • **Charge Amplifier** • **Ionisation Detectors** • **Preamplifier for Lock-Ins, A/D Converters, etc.**		
Specifications		Test Conditions	Vs = ± 15 V, Ta = 25°C
	Gain	Transimpedance	1 x 10^6 V/A (@ 50 Ω load)
		Gain Accuracy	± 1 %
	Frequency Response	Lower Cut-Off Frequency	DC
		Upper Cut-Off Frequency (- 3 dB)	1 MHz
		Rise / Fall Time (10 % - 90 %)	350 ns
		Gain Flatness	± 0.3 dB
	Input	Equ. Input Noise Current	270 fA/√Hz (@ 10 kHz)
		Equ. Input Noise Voltage	6 nV/√Hz (@ 10 kHz)
		Input Bias Current	5 pA typ.
		Input Bias Current Drift	factor 1.7 / 10 K
		Offset Current Compensation	± 2.7 µA adjustable by offset trimpot
		Input Current Range	± 1.5 µA (for linear amplification)
		Input Offset Voltage	2 mV
		DC Input Impedance	50 Ω (virtual) // 5 pF
	Output	Output Voltage Range	± 1.5 V (@ 50 Ω load) for linear operation and low harmonic distortion
		Output Impedance	50 Ω (terminate with 50 Ω load for best performance)
	Bias Output	Bias Output Voltage Range	± 12 V, adjustable by bias trimpot
		Bias Output Impedance	10 kΩ // 1 µF

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY FEMTO

DE-HCA-1M-1M_R3/JM/18MAR2019

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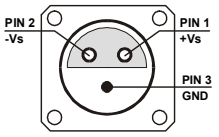
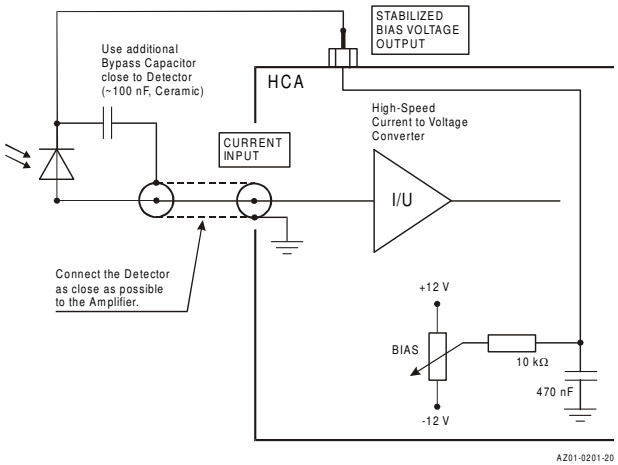
Specifications (continued)		
Power Supply	Supply Voltage	± 15 V
	Supply Current	± 50 mA typ. (depends on operating conditions, recommended power supply capability minimum ± 150 mA)
Case	Weight	210 g (0.5 lbs)
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature	-40 ... +100 °C
	Operating Temperature	0 ... +60 °C
Absolute Maximum Ratings	Input Voltage	± 5 V
	Input Voltage Transient	± 3.5 kV (pulsewidth 10 ns)
	Power Supply Voltage	± 22 V
Connectors	Input	BNC
	Output	BNC
	Power Supply	LEMO series 1S, 3-pin fixed socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND



Application Diagrams

Photo Detector Biasing in Photoconductive Mode:
Best choice for high speed applications and optimum signal to noise performance.



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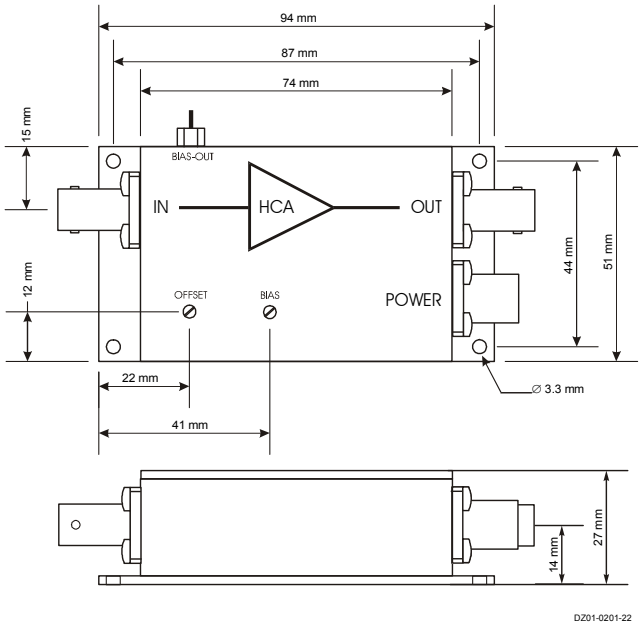
Dimensions



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