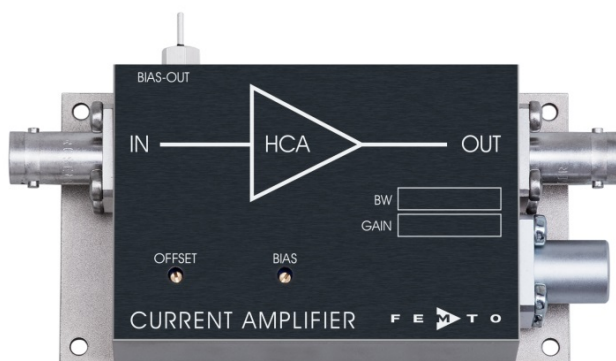


# High-Speed Current Amplifier



<p>Features</p>	<ul style="list-style-type: none"> <li>• <b>Bandwidth and Frequency Response Independent of Detector Capacitance (up to 50 pF)</b></li> <li>• <b>Low Noise 270 fA/√Hz Equivalent Input Noise Current</b></li> <li>• <b>Bandwidth DC ... 1 MHz</b></li> <li>• <b>Transimpedance (Gain) 1 x 10<sup>6</sup> V/A</b></li> <li>• <b>Protection against ± 3.5 kV Transients</b></li> </ul>																																																										
<p>Applications</p>	<ul style="list-style-type: none"> <li>• <b>Photodiode and Photomultiplier Amplifier</b></li> <li>• <b>Spectroscopy</b></li> <li>• <b>Charge Amplifier</b></li> <li>• <b>Ionisation Detectors</b></li> <li>• <b>Preamplifier for Lock-Ins, A/D Converters, etc.</b></li> </ul>																																																										
<p>Specifications</p>	<table border="0"> <tr> <td>Test Conditions</td> <td colspan="2">Vs = ± 15 V, Ta = 25°C</td> </tr> <tr> <td>Gain</td> <td>Transimpedance</td> <td>1 x 10<sup>6</sup> V/A (@ 50 Ω load)</td> </tr> <tr> <td></td> <td>Gain Accuracy</td> <td>± 1 %</td> </tr> <tr> <td>Frequency Response</td> <td>Lower Cut-Off Frequency</td> <td>DC</td> </tr> <tr> <td></td> <td>Upper Cut-Off Frequency (- 3 dB)</td> <td>1 MHz</td> </tr> <tr> <td></td> <td>Rise / Fall Time (10 % - 90 %)</td> <td>350 ns</td> </tr> <tr> <td></td> <td>Gain Flatness</td> <td>± 0.3 dB</td> </tr> <tr> <td>Input</td> <td>Equ. Input Noise Current</td> <td>270 fA/√Hz (@ 10 kHz)</td> </tr> <tr> <td></td> <td>Equ. Input Noise Voltage</td> <td>6 nV/√Hz (@ 10 kHz)</td> </tr> <tr> <td></td> <td>Input Bias Current</td> <td>5 pA typ.</td> </tr> <tr> <td></td> <td>Input Bias Current Drift</td> <td>factor 1.7 / 10 K</td> </tr> <tr> <td></td> <td>Offset Current Compensation</td> <td>± 2.7 μA adjustable by offset trimpot</td> </tr> <tr> <td></td> <td>Input Current Range</td> <td>± 1.5 μA (for linear amplification)</td> </tr> <tr> <td></td> <td>Input Offset Voltage</td> <td>2 mV</td> </tr> <tr> <td></td> <td>DC Input Impedance</td> <td>50 Ω (virtual) // 5 pF</td> </tr> <tr> <td>Output</td> <td>Output Voltage Range</td> <td>± 1.5 V (@ 50 Ω load) for linear operation and low harmonic distortion</td> </tr> <tr> <td></td> <td>Output Impedance</td> <td>50 Ω (terminate with 50 Ω load for best performance)</td> </tr> <tr> <td>Bias Output</td> <td>Bias Output Voltage Range</td> <td>± 12 V, adjustable by bias trimpot</td> </tr> <tr> <td></td> <td>Bias Output Impedance</td> <td>10 kΩ // 1 μF</td> </tr> </table>		Test Conditions	Vs = ± 15 V, Ta = 25°C		Gain	Transimpedance	1 x 10 <sup>6</sup> 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
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# High-Speed Current Amplifier

Specifications (continued)

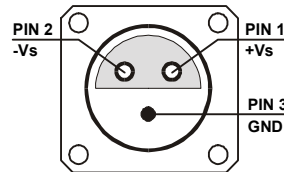
Power Supply	Supply Voltage	$\pm 15\text{ V}$
	Supply Current	$\pm 50\text{ mA typ.}$ (depends on operating conditions, recommended power supply capability minimum $\pm 150\text{ mA}$ )
Case	Weight	210 g (0.5 lbs)
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature	$-40 \dots +100\text{ }^\circ\text{C}$
	Operating Temperature	$0 \dots +60\text{ }^\circ\text{C}$

Absolute Maximum Ratings

Input Voltage	$\pm 5\text{ V}$
Input Voltage Transient	$\pm 3.5\text{ kV}$ (pulsewidth 10 ns)
Power Supply Voltage	$\pm 22\text{ V}$

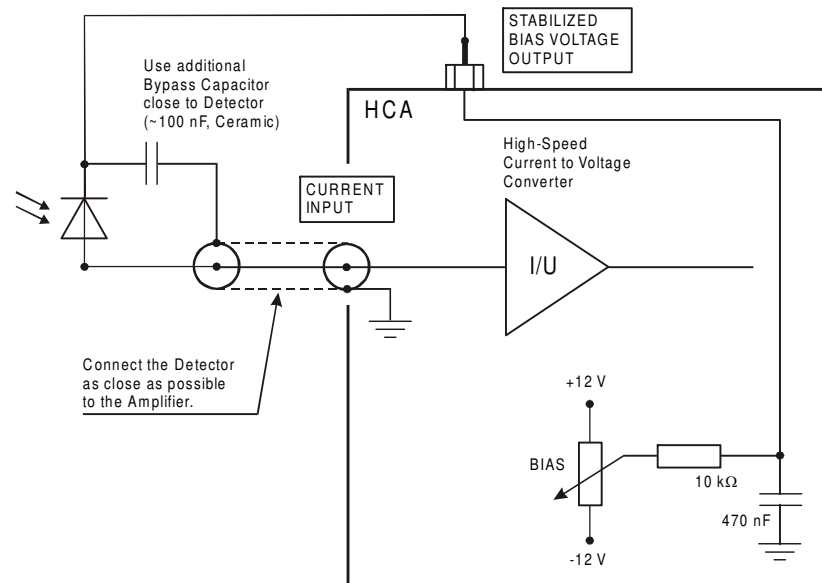
Connectors

Input	BNC
Output	BNC
Power Supply	LEMO series 1S, 3-pin fixed socket
	Pin 1: + 15V
	Pin 2: - 15V
	Pin 3: GND



Application Diagrams

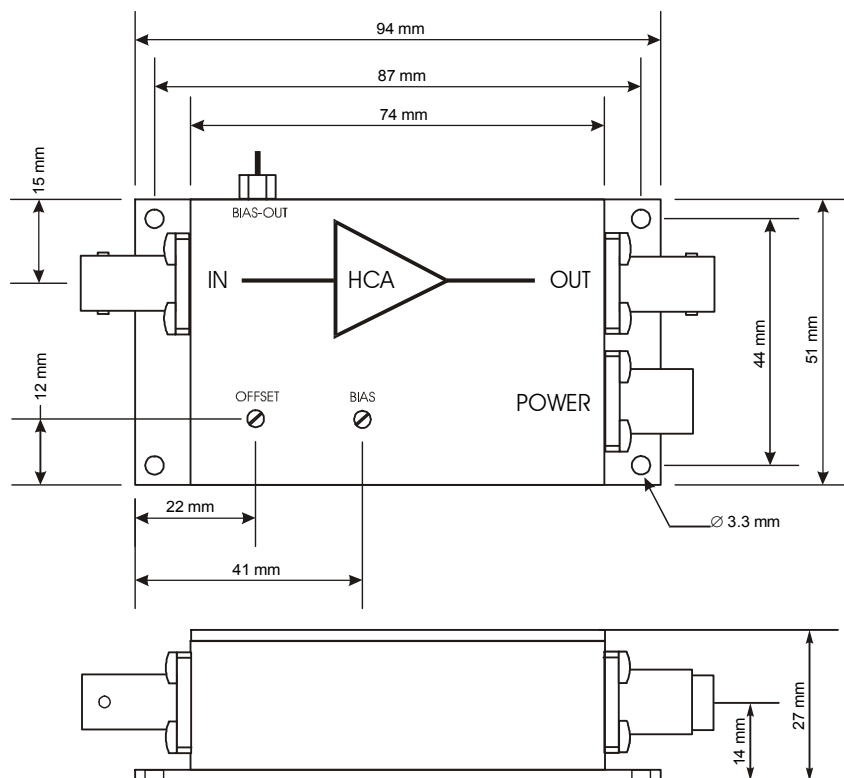
Photo Detector Biasing in Photoconductive Mode:  
Best choice for high speed applications and optimum signal to noise performance.



AZ01-0201-20

# High-Speed Current Amplifier

Dimensions



DZ01-0201-22

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