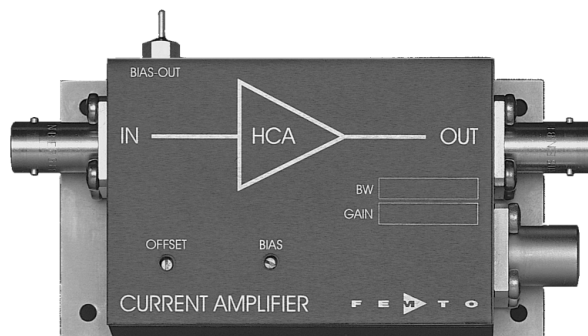


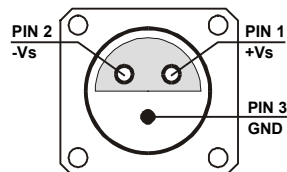
High Speed Current Amplifier



<p>Features</p>	<ul style="list-style-type: none"> • Bandwidth and Frequency Response Independent of Detector Capacitance (up to 2 nF) • Low Noise 3.5 pA/√Hz Equivalent Input Noise Current • Bandwidth DC ... 1 MHz • Transimpedance (Gain) 1 x 10⁶ V/A • Protection against ± 3.5 kV Transients 																																													
<p>Applications</p>	<ul style="list-style-type: none"> • Photodiode and Photomultiplier Amplifier • Spectroscopy • Charge Amplifier • Ionisation Detectors • Pre-amplifier for Lock-Ins, A/D Converters, etc. 																																													
<p>Specifications</p>	<table border="0"> <tr> <td>Test Conditions</td> <td colspan="2">Vs = ± 15 V, Ta = 25°C</td> </tr> <tr> <td rowspan="2">Gain</td> <td>Transimpedance</td> <td>1 x 10⁶ V/A (@ 50 Ω load)</td> </tr> <tr> <td>Gain Accuracy</td> <td>± 1 %</td> </tr> <tr> <td rowspan="4">Frequency Response</td> <td>Lower Cut-Off Frequency</td> <td>DC</td> </tr> <tr> <td>Upper Cut-Off Frequency (- 3 dB)</td> <td>1 MHz</td> </tr> <tr> <td>Rise / Fall Time (10 % - 90 %)</td> <td>350 ns</td> </tr> <tr> <td>Gain Flatness</td> <td>± 0.3 dB</td> </tr> <tr> <td rowspan="8">Input</td> <td>Equ. Input Noise Current</td> <td>3.5 pA/√Hz (@ 100 kHz)</td> </tr> <tr> <td>Equ. Input Noise Voltage</td> <td>0.8 nV/√Hz (@ 100 kHz)</td> </tr> <tr> <td>Input Bias Current</td> <td>18 μA typ.</td> </tr> <tr> <td>Input Bias Current Drift</td> <td>0.8 nA / K</td> </tr> <tr> <td>Offset Current Compensation</td> <td>± 6 μA adjustable by offset trimpot</td> </tr> <tr> <td>Input Current Range</td> <td>± 1.5 μA (for linear amplification)</td> </tr> <tr> <td>Input Offset Voltage</td> <td>3 mV</td> </tr> <tr> <td>DC Input Impedance</td> <td>50 Ω (virtual) // 5 pF</td> </tr> <tr> <td rowspan="2">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>Output Impedance</td> <td>50 Ω (terminate with 50 Ω load for best performance)</td> </tr> <tr> <td rowspan="2">Bias Output</td> <td>Bias Output Voltage Range</td> <td>± 12 V, adjustable by bias trimpot</td> </tr> <tr> <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 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	3.5 pA/√Hz (@ 100 kHz)	Equ. Input Noise Voltage	0.8 nV/√Hz (@ 100 kHz)	Input Bias Current	18 μA typ.	Input Bias Current Drift	0.8 nA / K	Offset Current Compensation	± 6 μA adjustable by offset trimpot	Input Current Range	± 1.5 μA (for linear amplification)	Input Offset Voltage	3 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
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	3.5 pA/√Hz (@ 100 kHz)																																												
	Equ. Input Noise Voltage	0.8 nV/√Hz (@ 100 kHz)																																												
	Input Bias Current	18 μA typ.																																												
	Input Bias Current Drift	0.8 nA / K																																												
	Offset Current Compensation	± 6 μA adjustable by offset trimpot																																												
	Input Current Range	± 1.5 μA (for linear amplification)																																												
	Input Offset Voltage	3 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																																												

High Speed Current Amplifier

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

Use additional Bypass Capacitor close to Detector (~100 nF, Ceramic)

Connect the Detector as close as possible to the Amplifier.

STABILIZED BIAS VOLTAGE OUTPUT

HCA

CURRENT INPUT

High-Speed Current to Voltage Converter

I/U

+12 V

BIAS

-12 V

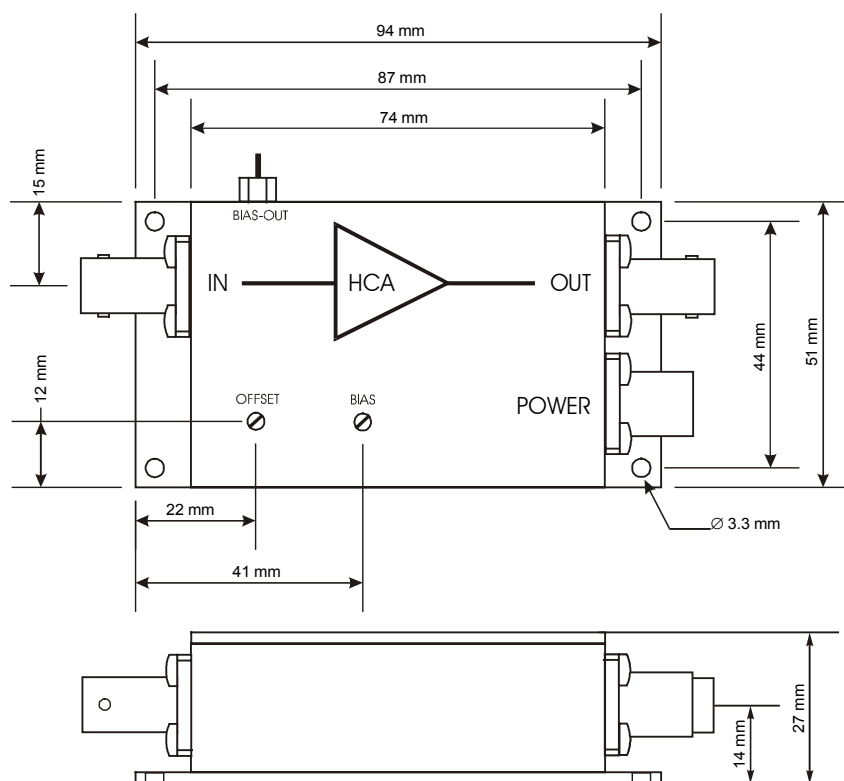
10 kΩ

470 nF

AZ01-0201-20

High Speed Current Amplifier

Dimensions



DZ01-0201-22

12/07 / V1 / HW / femto/current/ hca-1m-1m-c.pdf

Specifications are subject to change without notice. Information furnished herein is believed to be accurate and reliable. However, no responsibility is assumed by FEMTO Messtechnik GmbH for its use, nor for any infringement of patents or other rights granted by implication or otherwise under any patent rights of FEMTO Messtechnik GmbH. Product names mentioned may also be trademarks used here for identification purposes only.

© by FEMTO Messtechnik GmbH
Printed in Germany

www.lasercomponents.com

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY

