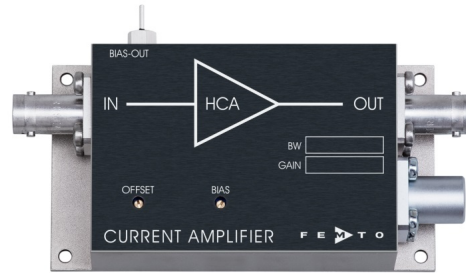


Datasheet

HCA-1M-1M-C

High-Speed Current Amplifier



Features

- 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)  $1 \times 10^6$  V/A
- Protection against  $\pm 3.5$  kV Transients

Applications

- Photodiode and Photomultiplier Amplifier
- Spectroscopy
- Charge Amplifier
- Ionisation Detectors
- Preamplifier for Lock-Ins, A/D Converters, etc.

Specifications

|                    | Test Conditions                 | $V_s = \pm 15$ V, $T_a = 25^\circ$ C   |
|--------------------|---------------------------------|--|
| Gain               | Transimpedance                  | $1 \times 10^6$ V/A (@ 50 $\Omega$ load)   |
|                    | Gain Accuracy                   | $\pm 1$ %  |
| Frequency Response | Lower Cut-Off Frequency         | DC   |
|                    | Upper Cut-Off Frequency (-3 dB) | 1 MHz  |
|                    | Rise / Fall Time (10% - 90%)    | 350 ns   |
|                    | Gain Flatness                   | $\pm 0.3$ 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 $\mu$ A typ.  |
|                    | Input Bias Current Drift        | 0.8 nA / K   |
|                    | Offset Current Compensation     | $\pm 6$ $\mu$ A adjustable by offset trimpot   |
|                    | Input Current Range             | $\pm 1.5$ $\mu$ A (for linear amplification)   |
|                    | Input Offset Voltage            | 3 mV   |
|                    | DC Input Impedance              | 50 $\Omega$ (virtual) // 5 pF  |
| Output             | Output Voltage Range            | $\pm 1.5$ V (@ 50 $\Omega$ load)<br>for linear operation and low harmonic distortion |
|                    | Output Impedance                | 50 $\Omega$ (terminate with 50 $\Omega$ load for best performance)                   |
| Bias Output        | Bias Output Voltage Range       | $\pm 12$ V, adjustable by bias trimpot   |
|                    | Bias Output Impedance           | 10 k $\Omega$ // 1 $\mu$ F   |

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



DE-HCA-1M-1M-C\_R3/JM/18MAR2019

**Datasheet**

**HCA-1M-1M-C**

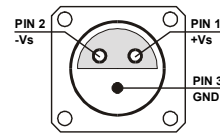
**High-Speed Current Amplifier**

Specifications (continued)

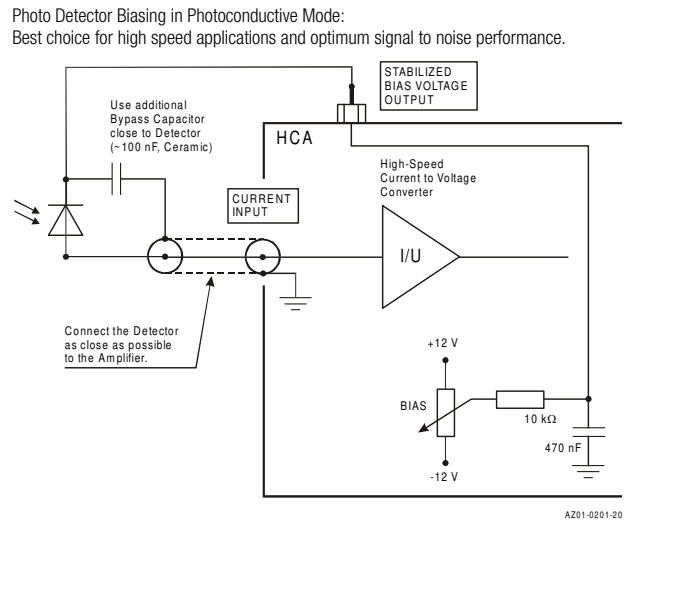
|                          |  |   |
|--------------------------|--|---|
| Power Supply             | Supply Voltage<br>Supply Current                                 | $\pm 15$ V<br>$\pm 50$ mA typ.<br>(depends on operating conditions, recommended power supply capability minimum $\pm 150$ mA) |
| Case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



SOPHISTICATED TOOLS FOR SIGNAL RECOVERY

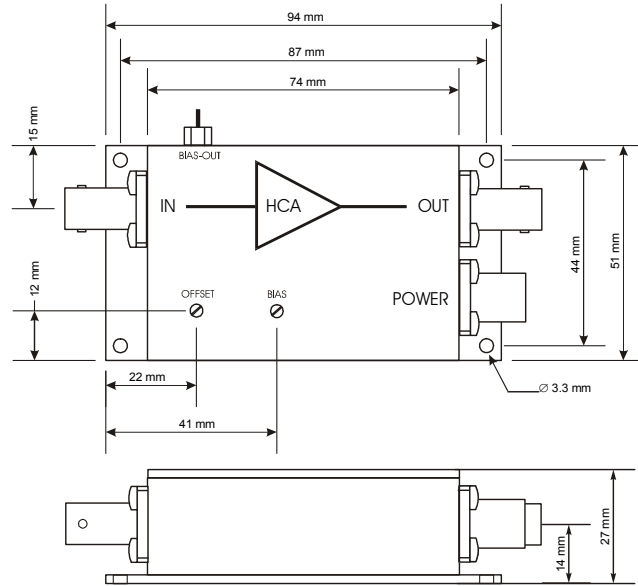


**Datasheet**

**HCA-1M-1M-C**

**High-Speed Current Amplifier**

Dimensions



DZ01-0201-22

Specifications are subject to change without notice. Information provided 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 of third parties which may result from its use. No license is granted by implication or otherwise under any patent or 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

**SOPHISTICATED TOOLS FOR SIGNAL RECOVERY**

