



Features

- Eight Current-to-Voltage Converter Channels
- Current Ranges: $\pm 500\text{pA}$ to $\pm 10\text{mA}$ (16 levels)
- Max Measured Current: $\pm 10\text{mA}$ (typical)
 $\pm 9\text{mA}$ (minimum)
- 4th Order Low-Pass Filter
 - Configurable Cutoff Frequency of 100Hz or 1kHz
- Input Impedance: $>100\text{Gohm} \parallel 11\text{pF}$
- PCB Dimensions: 70.6(2.78) x 43.2(1.70) mm(in)

ADC

- Input Voltage Range: 0-4 V
- 16-bit Resolution
- Max 250 Samples/s for >4 Channels Active
- Max 500 Samples/s for ≤ 4 Channels Active

Resolution

- SNR @ 1Hz: Better than 68dB for all ranges
- 0.05% of current range, 488fA at lowest range

Range	Resolution	Range	Resolution
$\pm 10\text{mA}$	$9.77\mu\text{A}^*$	$\pm 1\mu\text{A}$	977pA^*
$\pm 5\text{mA}$	$4.88\mu\text{A}^*$	$\pm 500\text{nA}$	488pA^*
$\pm 1\text{mA}$	977nA^*	$\pm 100\text{nA}$	97.7pA^*
$\pm 500\mu\text{A}$	488nA^*	$\pm 50\text{nA}$	48.8pA^*
$\pm 100\mu\text{A}$	97.7nA^*	$\pm 10\text{nA}$	9.77pA^*
$\pm 50\mu\text{A}$	48.8nA^*	$\pm 5\text{nA}$	4.88pA^*
$\pm 10\mu\text{A}$	9.77nA^*	$\pm 1\text{nA}$	977fA^*
$\pm 5\mu\text{A}$	4.88nA^*	$\pm 500\text{pA}$	488fA^*

*Values are subject to $\pm 1\%$ board-to-board variation

Applications

- Electrochemical Sensing
- DNA/Protein Sensing
- Environmental Monitoring

Description

The eAMP-I consists of eight current-to-voltage (I/V) converters with input current ranges of $\pm 500\text{pA}$ to $\pm 10\text{mA}$ for interfacing with a wide range of current mode electrochemical sensors. Each I/V stage is followed by a 4th order low-pass filter. Filters output

are interfaced with four 2-channel 16bit Analog-to-Digital Converter.

Block Diagram

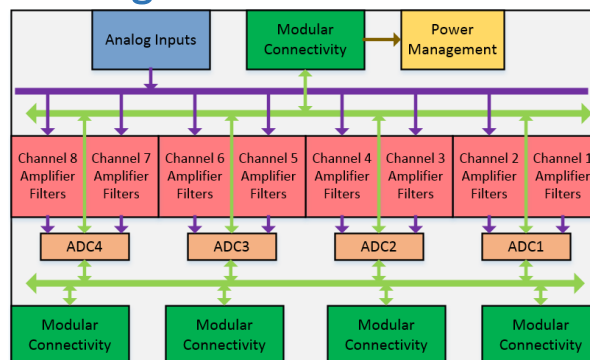


Fig. 1, Top level system diagram



Fig. 2, eAMP-I PCB board (top view)

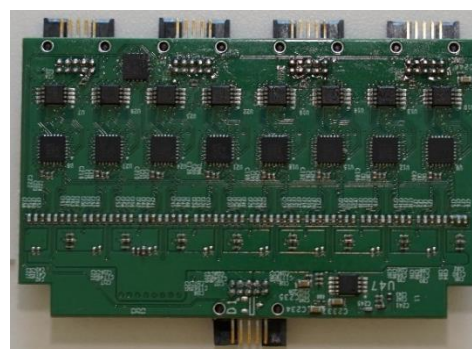


Fig. 3, eAMP-I PCB board (bottom view)