

# Differential Preamp

## ADA400A Datasheet



ADA400A

The ADA400A Differential Preamp allows direct oscilloscope measurements of very low amplitude voltages and signals which are not ground referenced. The high impedance of both inputs eliminates the need to add additional ground points in the DUT, thereby avoiding circulating currents which disturb the measurement or the circuit.

### Key performance specifications

- 10  $\mu\text{V}/\text{div}$  sensitivity
- Typically 100 dB CMRR DC to 10 kHz

### Key features

- Active differential preamp
- Integral probe power with TEKPROBE™ BNC

### Connectivity

- The ADA400A is powered directly from TDS400, TDS500, TDS600, TDS700, TDS5000, TDS7000 (TEKPROBE), TDS7000 (TekConnect) w/ TCA-1MEG Series oscilloscopes.
- The ADA400A may also be powered by a 1103 Probe Power Supply.

### Applications

- Mechanical analysis
- Audio design
- Biomedical research (not certified for patient connection)
- Medical equipment (not certified for patient connection)

### ADA400A

The high gain and extremely high common mode rejection of the ADA400A Differential Preamp provide usable measurements of voltages as low as 5  $\mu\text{V}$ , even in high-noise environments. Selectable bandwidth limiting reduces normal mode noise from digital logic, switch mode power supplies, and line frequency sources. Adjustable differential offset allows the user to null out transducer bridge bias and galvanic potential from the test setup. An "infinite impedance" mode can be selected in the two highest gain ranges allowing accurate measurements of signals with high source impedance.

# Specifications

All specifications apply to all models unless noted otherwise.

**Gain settings** 100x, 10x, 1x, 0.1x  
**CMRR**  $\geq 100,000$ : 1 DC - 10 kHz

**Signal ranges**

Gain setting	Common Mode signal range	Differential signal range <sup>1</sup>	Max offset
100x	$\pm 10$ V	0.1 V	$\pm 1.0$ V
10x	$\pm 10$ V	1 V	$\pm 1.0$ V
1x	$\pm 40$ V	10 V	$\pm 40$ V
0.1x	$\pm 40$ V	80 V	$\pm 40$ V

**Bandwidth limits** 100 Hz, 3 kHz, 100 kHz, full ( $\geq 1$  MHz)  
**Input impedance** 1 M $\Omega$  || ~ 55 pF (infinity  $\Omega$  selectable in 100x and 10x gains)  
**Noise** Typically  $\leq 30$   $\mu V_{RMS}$  at 100x gain (referred to input)

<sup>1</sup> For higher voltages, attenuating probes may be used, but CMRR performance will be degraded.

# Ordering information

## Models

ADA400A Differential Preamplifier

## Standard accessories

Instruction manual 070-9164-XX

Spare input fuses (2) 159-0024-XX

## Recommended accessories

[P6101B 1x passive probe](#) 2 recommended

## Options

### Service options

Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. D1	Calibration Data Report
Opt. D3	Calibration Data Report 3 Years (with Opt. C3)
Opt. D5	Calibration Data Report 5 Years (with Opt. C5)
Opt. R5	Repair Service 5 Years (including warranty)
Opt. SILV200	Standard warranty extended to 5 years

CE Marking Not Applicable.



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**For Further Information.** Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit [www.tektronix.com](http://www.tektronix.com).

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