

AP034 Active Differential Probe



[AP033/34 Accessory Diagram](#)



Main Features of AP034

- 1 GHz Bandwidth
- x1 Gain
- $\div 10$ and $\div 20$ External Attenuators
- 10,000: 1 DC CMRR
- Low 35 nV/ \div Hz Noise
- 1.5 pF/Side Input C
- 2 mV/div - 2 V/div
- Input Protection
- Autobalance Feature

The **AP034** is a high-performance active differential probe. High bandwidth, excellent common-mode rejection ratio, (CMRR) and low noise make the **AP034** ideal for applications such as disk drive design and failure analysis, as well as wireless and data communication design.

Fully Integrated: With the ProBus® interface, the **AP034** probe

becomes an integral part of the oscilloscope. The probe sensitivity and offset can be controlled from the oscilloscope front panel, the probe front panel, or by using remote control commands (GPIB or RS-232).

Sensitivity, offset, input capacitance, and common-mode voltage range are displayed on the oscilloscope screen. When used with a LeCroy digital oscilloscope, no external power supply is required.

Wide Dynamic Range: The **AP034** probe provides a range of sensitivities from x1 gain to $\div 10$ and $\div 20$ attenuation (with plug-on attenuators) for diverse signals. The sensitivity can be adjusted continuously from 2 mV/div to 2 V/div (2 V/div is achieved with plug-on attenuator) when used with a LeCroy oscilloscope.

DC CMRR is greater than 10,000:1 (80 dB).

OFFSET up/down buttons allow OFFSET control from the probe amplifier body. Momentarily holding down both buttons will zero the OFFSET.

A supplied AC coupling capacitor head (0.1 mF) allows operation with large common-mode or differential DC inputs.

Autobalance

Holding both offset buttons down for two seconds with the input connections removed invokes Autobalance. This provides the highest accuracy on all ranges by removing residual DC offset from the probe.

Low Noise

At full gain, the noise is less than 35 nV/ \div Hz, allowing direct measurement of low-amplitude and high-bandwidth signals.

Input Characteristics

The input capacitance is modeled by 1.5 pF to ground from each input, plus 0.10 pF from input to input. This is equivalent to 0.9 pF differential input capacitance. Input resistance is 1 MOhm, including the accessory plug-on attenuator head. An AC coupling plug-on accessory features a 0.1 mF coupling capacitor for each input. Low-frequency CMRR is reduced when using this accessory.

Use with other Instruments

Instruments with 50 Ohm inputs, such as spectrum and network analyzers, time interval analyzers, and others, pose a challenge when the signal to be measured is differential or high-impedance. Low noise, high-bandwidth, and clean phase response make the **AP034** probe an ideal signal conditioner to solve these problems. The optional

ADPPS Power Supply provides power to the **AP034** and converts the output to a conventional male BNC connector.

Specifications

Bandwidth: 1 GHz

Gain: x1 ($\div 10$ and $\div 20$ with plug-on attenuators)

DC Accuracy: 1% typical (probe only)
3% warranted (system with LeCroy oscilloscope)

Input Impedance: 2 MOhm // 0.9 pF between inputs
1 MOhm // 1.5 pF each input to ground

Differential Mode Range: ± 400 mV (x1) ± 4 V ($\div 10$) ± 8 V ($\div 20$)

Offset Range: ± 1.6 V (x1) ± 16 V ($\div 10$) ± 32 V ($\div 20$)

Common Mode Range: ± 16 V (x1) ± 42 V ($\div 10$) ± 42 V ($\div 20$)

Noise: < 35 nV/ \div Hz (x1) CMRR: $> 10,000:1$ at 60 Hz

Standard Accessories:

$\div 10$ Plug-On Attenuator

$\div 20$ Plug-On Attenuator Plug-On AC Coupler

Probe Connection Accessory Kit: Flex Lead Set (1)
Input "Y" Lead (1) Mini Clip, 0.8 mm (3) Mini Clip, 0.5 mm
(2) Ground Lead (1) Offset Pins, Round (2) Square Pin
Header Strip (1)

Cable Length: 1.2 meter