Tektronix® "Every Scope Needs A Probe!" (via Tektronix)

Choose Your Signal

Voltage

ACTIVE | PASSIVE | LOGIC

Single-Ended

Measure the difference between one voltage point and common ground

Voltage

Offered in High and Low Voltage variants.

Used for measuring high-speed, ground-referenced signals. Best choice for high impedance, high frequency circuit elements.

Power Rail

Used for power integrity measurements. Has low loading to improve accuracy, low noise contribution, and has high bandwidth options.

Low Bandwidth

Comes standard with most scopes and offers an affordable, general purpose probing experience.

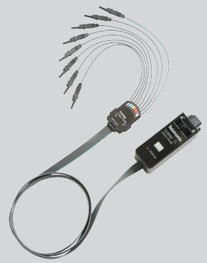
Example Applications:

- Relative low-frequency measurements
- Low-frequency computer and telecom measurements
- Power Supplies
- Low-frequency amplifiers

Determine if the signal is above or below a set point

Used for monitoring digital hardware performance with multiple channels of outputs.

Provides a simple a way to test single or multiple points on a circuit.



Differential

Measure the difference between any two points

Voltage

Offered in High and Low Voltage variants.

Allows for multiple options for solder down tips, making it easier to integrate with the circuit.

Isolated

Measures fast, floating signals while keeping noise to a minimum and has a great CMRR. Offered in a range of bandwidths to suit different needs.

High Bandwidth

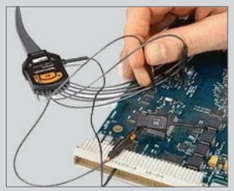
Allows for larger signal input compared to the low bandwidth.

Example Applications:

- Low-power devices
- Manufacturing engineering tests
- Research and development

Determine how many channels needed

Application or input will determine the best logic probe for you. Multi-channel logic probes usually interface with connectors on circuit boards, whereas single channel allow for more precise, focused examination of hardware.



Probe Guidance:

- Account for attenuation – higher attenuation means more noise, it is important to minimize this as much as possible
- Ensure a consistent and stable connection between the circuit and the probe to improve measurement accuracy
- Keep ground leads as short and as direct as possible
- Compensate your passive probes
- Many probe accessories are available, such as ground leads, tip savers, and adapters – use the best adapter for the circuit being measured
- Improve input loading by using a probe with an input capacitance that suits the circuit's needs
- Bandwidth should be at least 5 times the highest frequency component

Key Concepts:

ACTIVE: requires probe power and offers very low resistive loading and tip capacitance

ATTENUATION: the amount by which the probe reduces the signal amplitude

BANDWIDTH: frequency where the response is 3 dB down from the reference level

INPUT LOADING: initial measuring inconsistencies caused by the probe tip drawing current from the circuit

PASSIVE: general purpose – suited for lower frequencies

Current

ACTIVE | PASSIVE

High frequency current measurement applications. Active probes lead to more precise measurements with less interference.

Example Applications:

- Power supplies
- Semiconductor devices
- Power inverter/converters
- Electronic ballasts
- Industrial/consumer electronics
- Mobile communications
- Motor drives
- Transportation systems

General use current measurement applications. Works well for a variety of low frequency applications.

Connect to large connection points such as bus bars or to small IC legs on a MOSFET or IGBT can be wrapped around test points

Example Applications:

- Motor drivers
- Inverters
- Power supplies
- Avionics
- Signal Injection
- Differential Current Measurement

The arrows on the current probes should always point towards the load

IsoVu Isolated Probes:

These probes use optical isolation to separate the reference voltage of the probe from the reference voltage of the oscilloscope. This gives power designers more accurate measurements than traditional differential probes for applications that require high bandwidth while measuring high voltage signals.

Optical

HIGH BANDWIDTH | LOW BANDWIDTH

Use as Optical Reference Receivers (ORR) for high-speed serial data signals (using selectable Bessel-Thomson ORR filters), conventional O/E converter for general wide-bandwidth optical signal acquisition

Connects to:
DPO/MSO70000 C/DX/SX models

Optical-to-electrical analog converters provide an accurate interface for optical pulse shape measurements

Connects to:
DPO7000 and DPO/MSO70000 Series – Adapters required

Verify probe compatibility with oscilloscope model

The complete catalogue of Tektronix probes and accessories can be found at www.tek.com/accessories