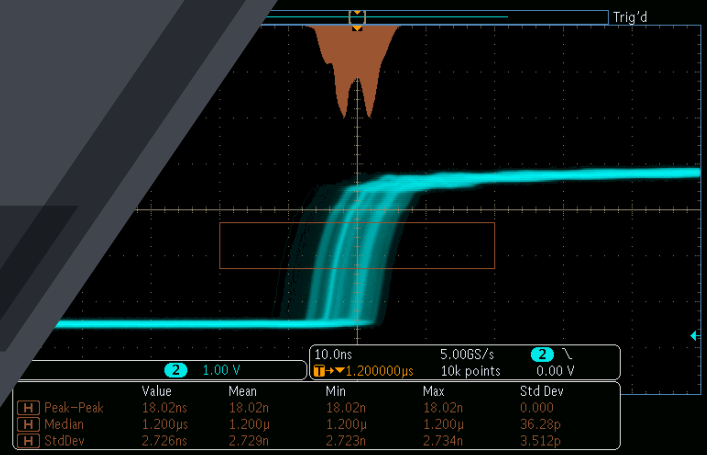


# MEASUREMENTS MATTER

Be right, be sure with the MDO3000



Tektronix engineers are passionate about accurate measurements. Trustworthy measurements are at the core of the engineering process and only with accurate measurements can engineers effectively create and optimize products.

We designed the MDO3000 Series Oscilloscopes with this simple, but important goal – to make the best measurements in the industry. The Keysight 3000T X-Series includes some compromises that impact measurements.

## Consistent, Meaningful Measurements

MDO3000 Series measurements are taken on actual acquisition data, providing as much data to the measurement algorithms as possible. The Keysight X3000 uses the lower-resolution display data, which can produce measurements that are inaccurate and change with zoom settings. Misinterpreting the Keysight measurements could lead you to draw the wrong conclusion, thus impacting overall design quality and integrity.

Example rise time measurement:

Zoom	Tek	Keysight
1x	15.07ns	<93ns
2x	15.07ns	<48ns
20x	15.07ns	low signal
100x	15.07ns	14ns
1000x	15.07ns	15.0ns

Keysight X3000 performs measurement on display data and gives varying values for a simple risetime measurement.

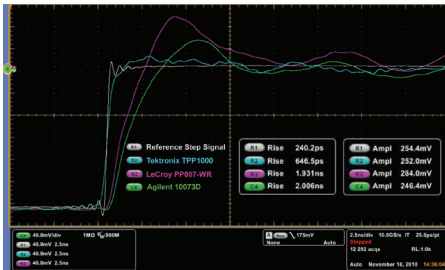
The Tektronix MDO3000 Series oscilloscopes always measure the same risetime regardless of zoom factor.

Value 15.07ns

Value 15.07ns

Value 15.07ns

SEE BACK FOR MORE DETAILS



Comparison of a 0.2 ns edge observed with a Tektronix TPP1000 (blue), Keysight 10073D (green) and LeCroy PP007-WR (red)

## Probe Loading Degrades Your Measurements

Our engineers have worked hard to minimize the impact. Tektronix TPP-Series probes have less than 4 pF of capacitive loading and they're included with every MDO3000. The probes included with the Keysight 3000T X-Series have 11 to 12 pF of loading. Excessive loading can result in inaccurate measurements and even change circuit behavior.

And why buy a 1 GHz scope if you are going to filter the signal with a 500 MHz probe? Probes that match the bandwidth of the scope enable full utilization of the scope. All Tektronix MDO3000 Series oscilloscopes include probes that are at least the bandwidth of the oscilloscope. The Keysight 1GHz 3000T X-Series oscilloscope includes 500MHz probes.

## 18 Guaranteed Specs Mean Your Scope Meets these Specs

Minimizing uncertainty allows you to be more confident in your product specifications and more competitive. Tektronix guarantees 18 specifications on the MDO3000 Series, but Keysight only guarantees 4 specifications on the 3000T X-Series; the rest are just stated as typical. How do you know if your Keysight scope is typical?

Specification	Tektronix MDO3104	Keysight DSO3104T
Bandwidth	Guaranteed ✓	Guaranteed ✓
Input Impedance, DC Coupled	Guaranteed ✓	Typical
DC Gain Accuracy	Guaranteed ✓	Typical
Offset Accuracy	Guaranteed ✓	Typical
DC Voltage Measurement Accuracy (Average mode)	Guaranteed ✓	Not Specified
DC Voltage Measurement Accuracy (Sample mode)	Guaranteed ✓	Guaranteed ✓
Digital Channel Timing Resolution	Guaranteed ✓	Typical
Logic Threshold Accuracy	Guaranteed ✓	Guaranteed ✓
Reference Frequency Error (cumulative)	Guaranteed ✓	Guaranteed ✓
Time Accuracy for Pulse Width or Timeout Triggering	Guaranteed ✓	Not Specified
Maximum Input Voltage	Guaranteed ✓	Typical
DC Balance	Guaranteed ✓	Typical
Random Noise	Guaranteed ✓	Not Specified
Number of Digitized Bits	Guaranteed ✓	Typical
Sensitivity Range (coarse)	Guaranteed ✓	Typical
Sensitivity Range (fine)	Guaranteed ✓	Not Specified
Deskew Range	Guaranteed ✓	Typical
Maximum Triggered Acquisition Rate	Guaranteed ✓	Typical

