If I could capture those elusive glitches and intermittent events the first time…

Tektronix Digital Phosphor Oscilloscopes

If your waveform decides to "blink," be confident your DPO will capture it

Imagine a world where your oscilloscope lets you see a signal anomaly, pinpoint the nature of the fault, and trigger on the event to isolate it—all in a matter of minutes. Imagine debugging your design in minutes, not hours. Imagine having total confidence and trust that you're accurately capturing the details of an entire signal, and viewing a true representation of what it really looks like.

That world exists. Tektronix created it.

It's called the **Digital Phosphor Oscilloscope (DPO)**.

▸ **Digital Storage.** *A conventional DSO's slower waveform capture rate may mean that you miss critical signal information and elusive events.*

▸ **Digital Phosphor.** *A DPO's fast waveform capture rate delivers unmatched signal insight and maximizes the probability of capturing rare or random glitches.*

Tektronix

Enabling Innovation

Speed Design and Troubleshooting With a DPO

Tektronix digital phosphor oscilloscopes show you a world others don't with the speed, precision, and insight needed to quickly verify, characterize, and debug even the most sophisticated designs.

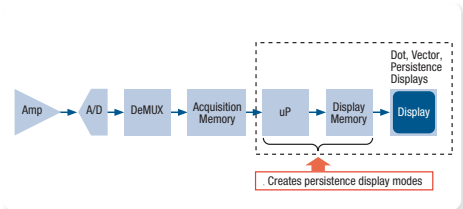
Unique Acquisition Architecture Speeds Measurement and Analysis

The power of a digital phosphor oscilloscope (DPO) lies in its parallel-processing architecture. The DPO uses this unique architecture to dramatically shrink signal-processing time and proportionally increase the time spent capturing valuable signal information. The result – fast waveform capture rates that significantly increase the probability of capturing intermittent and elusive events and provide you with more data for in-depth analysis.

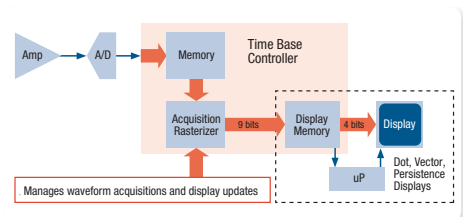
Some oscilloscope vendors claim high waveform capture rates for short bursts of times, but only a DPO can deliver these fast waveform capture rates on a sustained basis – saving minutes, hours, or even days by quickly revealing the nature of faults so powerful triggering modes can be applied to isolate them.

Three Dimensions of Signal Information Provide Unmatched Insight

A DPO also offers unmatched insight into critical signal behavior by acquiring, storing, and displaying complex signals in real-time using three dimensions of signal information – amplitude, time, and distribution of amplitude over time. The subsequent real-time intensity-graded display makes it easy to pinpoint infrequent signals and anomalies, and allows you to characterize dynamic, complex signals and subtle behavior patterns much more quickly.



▶ **DSO.** *A digital storage oscilloscope architecture requires microprocessor intervention in the signal's serial processing acquisition process. The microprocessor slows down the waveform capture rate.*



▶ **DPO.** *A digital phosphor oscilloscope's parallel-processing architecture frees the microprocessor to speed waveform capture.*

Benefits of a DPO

Capture Elusive Glitches In Minutes, Not Hours

The DPO's fast waveform capture rate finds even the most elusive glitches, allowing you to detect and analyze aberrant events in logic circuits. Frequency-of-occurrence information provides relative information about how often aberrant events occur.

Characterize Dynamic, Complex Signals In Record Time

Because the DPO captures more data about the signal than other oscilloscopes, it better addresses the need to capture and analyze dynamic, complex signals, like Quadrature Amplitude Modulated (QAM) signals, asynchronous packetized data, and analog video signals, to name a few. The DPO acquires detailed information about such signals much more quickly, delivering a live-time display that duplicates the feature-rich nature of the signal and revealing the subtle modulation and dynamic characteristics of the signal with eye diagrams, IQ patterns, vector and constellation diagrams.

Quickly Acquire and Analyze I and Q Signals

The DPO simplifies Inphase (I) and Quadrature (Q) alignment, allowing you to quickly detect phase and offset in I and Q signals. The DPO also permits acquisition of qualitative and quantitative information on signal distribution in the XY mode. In addition, the XYZ mode allows you to focus on the symbols that are essential for Quadrature alignment of wireless communication signals.

Detect Subtle Signal Patterns Over Long Time Intervals

The abundance of data captured by the DPO allows you to detect subtle patterns of signal behavior over long time intervals. Nanosecond signal variations within a 1 ms window can be viewed in disk drive applications, providing a window into signal details, down to the bit-level, for entire sectors of a disk track.

Evaluate Jitter With Ease

The DPO allows you to gain visual and statistical insight, in real-time, into the distribution of edge jitter. In communication signal applications, it is possible to "see" jitter in the picosecond range, allowing you to observe real-time updates of jitter while adjusting the circuit.[*1]

Easily Analyze Noise Distribution

The DPO helps solve noise problems by providing qualitative and quantitative feedback on signal noise distribution. Histograms can be used in real-time to analyze video signal noise characteristics.

Observe Amplitude Modulated Signals With Confidence

The DPO accurately displays amplitude modulated signals in a familiar, analog-oscilloscope-like format. Intensity grading and an abundance of waveform data show the details within the signal envelope.

[*1] *TDSJIT3 jitter and timing analysis software, available with the TDS5000B Series, also allows you to decompose jitter into its random and deterministic components to track down and eliminate jitter sources.*

TDS3000B Series Oscilloscope

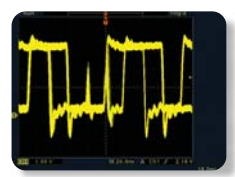
The DPO Advantage

- Real-time acquisition
- Three-dimensional waveform intensity grading
- Anti-aliasing
- Ultra portable with 3 hours of continuous battery operation at 7.0 lbs
- Wide array of application-specific modules

More Powerful. More Portable. Still Affordable.

Bandwidth	Up to 600 MHz
Channels	2, 4
Sample Rate (Real-time)	Up to 5 GS/s on all channels
Continuous Waveform Capture Rate	3,600 wfms/s
Record Length	Up to 10 kB

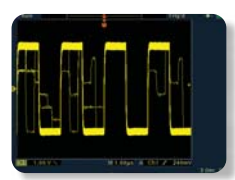
Digital Setup and Hold Violation



▶ TDS3000B DPO

▶ Wavepro 7000 DSO

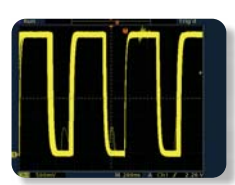
Digital Signal With Random Glitches



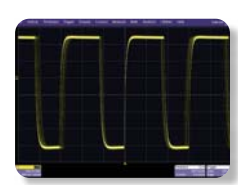
▶ TDS3000B DPO

▶ Wavepro 7000 DSO

Digital Runt Pulses



▶ TDS3000B DPO



▶ Wavepro 7000 DSO

TDS5000B Series Oscilloscope

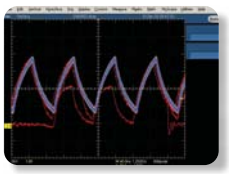
The DPO Advantage

World's Easiest-to-Use Midrange Oscilloscope

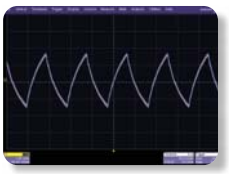
Bandwidth	Up to 1 GHz
Channels	2, 4
Sample Rate (Real-time)	Up to 5 GS/s on all channels
Continuous Waveform Capture Rate	100,000 wfms/s
Record Length	Up to 16 MB

- Unsurpassed measurement and analysis throughput
- Industry-leading suite of powerful triggers
- Open Windows platform
- Comprehensive range of application software
- MyScope™ custom control windows enhance productivity
- Right mouse-click menus for exceptional efficiency

Random Dropouts

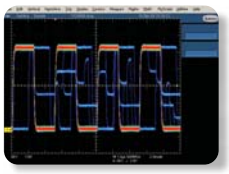


▶ TDS5000 DPO

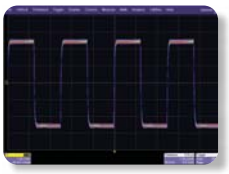


▶ Wavepro 7000 DSO

Digital Signal With Random Glitches

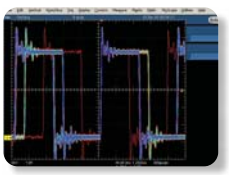


▶ TDS5000 DPO

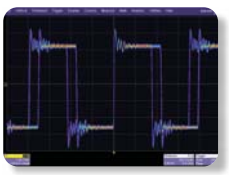


▶ Wavepro 7000 DSO

Digital Timing Error



▶ TDS5000 DPO



▶ Wavepro 7000 DSO

For more information about digital phosphor oscilloscopes, please contact your local authorized Tektronix representative or visit **www.tektronix.com/dpo**.

TDS5000B Series oscilloscopes may not be available through all distributors.

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For Further Information

For more details about digital phosphor oscilloscopes and how they can benefit you, please contact your local authorized Tektronix representative or visit **www.tektronix.com/dpo**

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