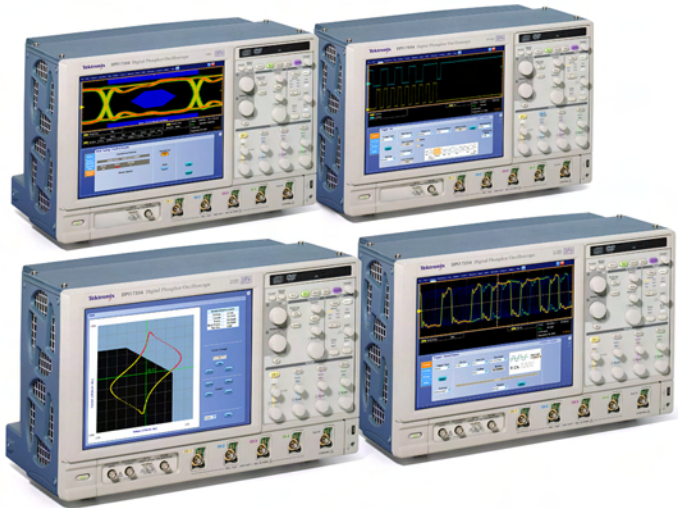


Digital Phosphor Oscilloscopes

DPO7000 Series Data Sheet



Features & Benefits

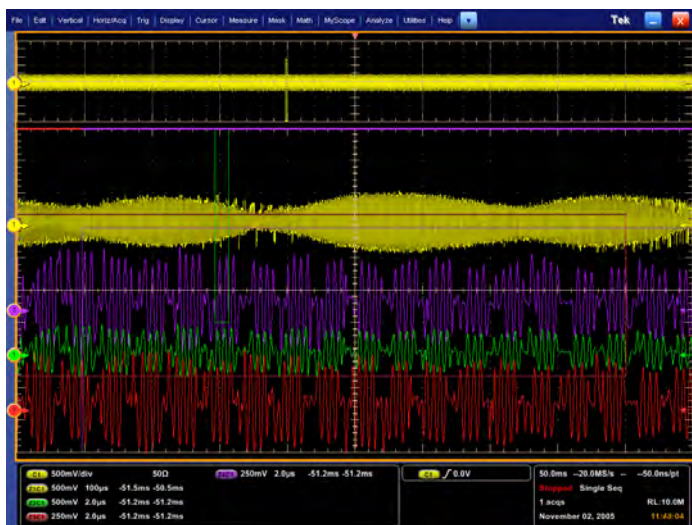
- 3.5 GHz Bandwidth Model for Serial and Digital Applications
- 2.5 GHz, 1 GHz, and 500 MHz Bandwidth Models for All Applications
- Up to 40 GS/s Real-time Sample Rate on One Channel and up to 10 GS/s on All Four Channels
- Up to 500 Megasamples Record Length with MultiView Zoom™ Feature for Quick Navigation
- >250,000 wfms/s Maximum Waveform Capture Rate
- Up to 310,000 Waveforms per Second with FastFrame™ Segmented Memory Acquisition Mode
- User-selectable Bandwidth Limit Filters for Better Low-frequency Measurement Accuracy
- MyScope® Custom Windows and Right Mouse Click Menus for Exceptional Efficiency
- Event Search and Mark to Find Specific Events in the Entire Waveform
- Pinpoint® Triggering provides the Most Flexible and Highest Performance Triggering, with Over 1400 Combinations to Address Virtually Any Triggering Situation.
- 12.1" XGA Display with Touch Screen
- Communications Mask Testing
- Clock Recovery from Serial Data Streams
- 64-bit NRZ Serial Pattern Trigger for Isolation of Pattern-dependent Effects up to 1.25 Gb/s
- Low-speed Serial Protocol Triggering and Decode (I²C, SPI, RS-232, CAN, LIN, and FlexRay)
- Technology-specific Software Solutions provide Built-in Domain Expertise for MIPI® D-PHY, Ethernet, USB 2.0 Compliance Testing, Jitter, Timing, Eye Diagram, Power, DDR Memory Bus Analysis, CAN, LIN, and FlexRay Network Design
- OpenChoice® Software with Microsoft Windows XP OS enables Built-in Networking and Extended Analysis

Applications

- Signal Integrity, Jitter, and Timing Analysis
- Verification, Debug, and Characterization of Sophisticated Designs
- Debugging and Compliance Testing of Serial Data Streams for Telecom and Datacom Industry Standards
- Low-speed Serial Bus Design (I²C, SPI, RS-232, CAN, LIN, and FlexRay)
- Investigation of Transient Phenomena
- Power Measurements and Analysis
- Spectral Analysis

3.5 GHz
3.0 GHz
2.5 GHz
2.5 GHz (HW)
2.0 GHz
1.0 GHz
500.0 MHz
250.0 MHz (HW)
20.0 MHz (HW)

User-selectable bandwidth limiting choices.



Zoom in on four areas of interest simultaneously to compare them.

Unmatched Performance for Greater Insight Into Your Design to Get Your Work Done Faster

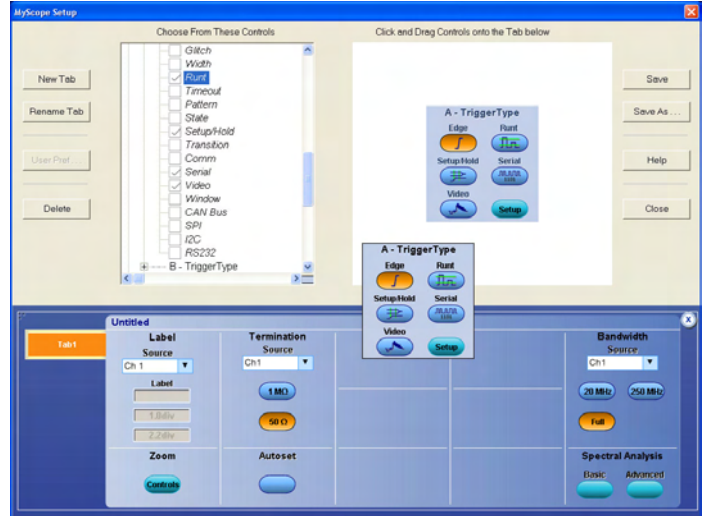
The DPO7000 Series are the new generation of real-time digital phosphor oscilloscopes and are the industry's best solution to the challenging signal integrity issues faced by designers verifying, characterizing, debugging, and testing sophisticated electronic designs.

The family features exceptional performance in signal acquisition and analysis, operational simplicity, and unmatched debugging tools to accelerate your day-to-day tasks. The largest screen in the industry and the intuitive user interface provide easy access to the maximum amount of information.

Unmatched Acquisition Performance

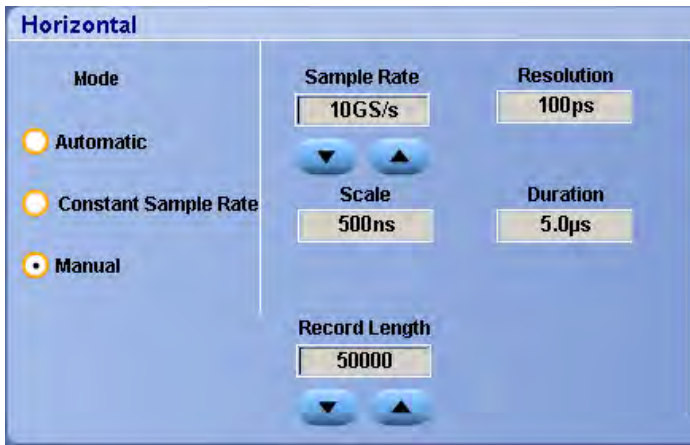
Signal Fidelity of Tektronix Oscilloscopes Ensures Confidence in Your Measurement Results

- High sample rate on all models, on all channels, to capture more signal details (transients, imperfections, fast edges)
 - 40 GS/s on one channel on the 2.5 GHz and 3.5 GHz models
 - Option 2SR to double the maximum real-time sample rate for the 1 GHz model
- High bandwidth up to 3.5 GHz, matched across 2, 3, or 4 channels and enabled by Tektronix proprietary DSP enhancement. The user-selectable DSP filter on each channel provides magnitude and phase correction plus extension to 3.5 GHz for more accurate signal fidelity for complex measurements. The DSP filter on each channel can also be switched off to take advantage of true 2.5 GHz analog bandwidth for applications needing the highest available raw data capture.
- The DPO7000 Series oscilloscopes include as a standard feature a series of user-selectable bandwidth limit filters. These filters preserve the instrument's bandwidth roll-off characteristics, flatness, and phase linearity within the new frequency range, thereby reducing the effects of out-of-band noise on measurements. Now, designers can purchase one instrument for their highest bandwidth needs and easily optimize it to handle lower-frequency measurements as well.
- Very low jitter noise floor and vertical accuracy for very accurate measurements
- Long acquisition to provide more resolution and longer time sequence
 - Standard 10 million data points per channel on the DPO7000 Series
 - Optional up to 500 million total data points on 2.5 GHz and 3.5 GHz models
 - Optional up to 250 million total data points on the 500 MHz and 1 GHz models
 - Easily manage this deep record length, provide detailed comparison and analysis of multiple waveform segments with the MultiView Zoom™ feature. Automatically scroll through deep records visually, or create a math expression to instantly highlight differences
- Highest-performance probing solutions for differential and single-ended voltage signals as well as current measurement, because accurate design verification depends on high-bandwidth access to critical signals and high-fidelity signal capture



Drag and drop menu items of interest to create the MyScope control window.

Tektronix active probes achieve high-speed signal acquisition and measurement fidelity.



3 modes of operation of the horizontal time base.

Unmatched Versatility

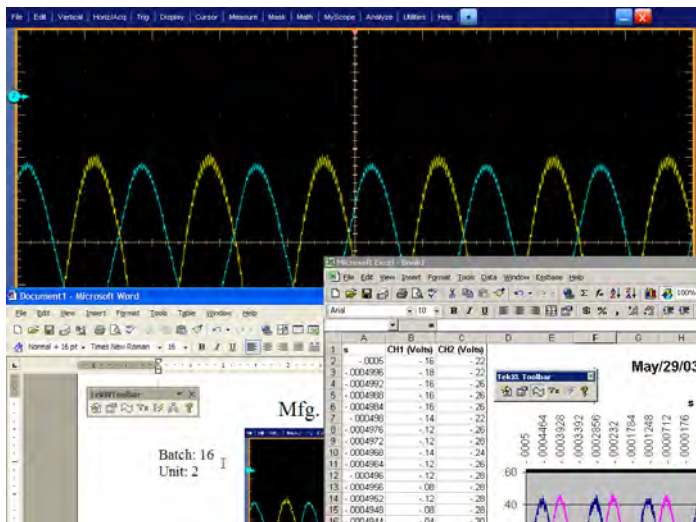
Get the Most of Your Oscilloscope by Fully Controlling its Waveform Acquisition and Display Parameters

You have the choice of three horizontal time base modes of operation. If you are simply doing signal exploration and want to interact with a lively signal, you will use the *Automatic* or interactive default mode that provides you with

the liveliest display update rate. If you want a precise measurement and the highest real-time sample rate that will give you the most measurement accuracy, then the *Constant Sample Rate* mode is for you. It will maintain the highest sample rate and provide the best real-time resolution. The last mode is called the *Manual* mode because it ensures direct and independent control of the sample rate and record length.

With the MyScope® Feature, Create Your Own Control Windows with Only the Controls, Features, and Capabilities that You Care About

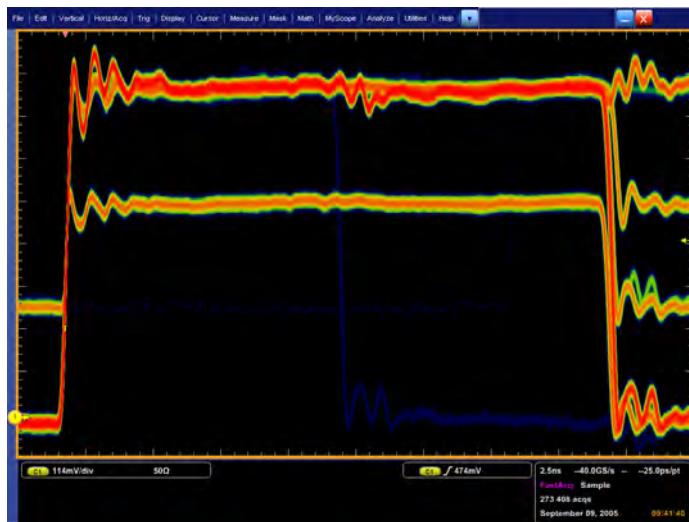
Easily create your own personalized "toolbox" of oscilloscope features in a matter of minutes using a simple, visual, drag-and-drop process. Once created, these custom control windows are easily accessed through a dedicated MyScope button and menu selection on the oscilloscope button/menu bar, just like any other control window. You can make an unlimited number of custom control windows, enabling each person who uses the oscilloscope in a shared environment to have their own unique control window. MyScope control windows will benefit all oscilloscope users, eliminating the ramp-up time that many face when returning to the lab after not using an oscilloscope for a while, and enables the power user to be far more efficient. Everything you need is found in one control window rather than having to constantly navigate through menu after menu to repeat similar tasks.



Capture data into Microsoft Excel using the unique Excel toolbar, and create custom reports using the Word toolbar.

With OpenChoice® Software, Customize Your Test and Measurement System with Familiar Analysis Tools

The analysis and networking features of OpenChoice software add flexibility to Windows XP Tektronix oscilloscopes: The Windows XP Remote Desktop functionality enables remote monitoring of the instrument over the internet. Using the fast embedded bus, waveform data can be moved directly from acquisition to analysis applications on the Windows desktop at much faster speeds than conventional GPIB transfers. Implementation by Tektronix of industry-standard protocols, such as TekVISA™ interface and ActiveX controls, are included for using and enhancing Windows applications for data analysis and documentation. Support for the DPO7000 Series is also available with NI LabVIEW SignalExpress™ Tektronix Edition. IVI-COM instrument drivers are included to enable easy communication with the oscilloscope using GPIB, serial data, and LAN connections from programs running on the instrument or an external PC. Or, use the Software Developer's Kit (SDK) to help create custom software to automate multistep processes in waveform collection and analysis with Visual BASIC, C, C++, MATLAB, LabVIEW, LabWindows/CVI, and other common Application Development Environments (ADE). Integration of the oscilloscope with external PCs and non-Windows hosts is also supported by the DPO7000 Series software solutions. In addition, the OpenChoice architecture provides a comprehensive software infrastructure for faster, more versatile operations. Data transfer programs, such as the Excel or Word toolbar, are used to simplify analysis and documentation on the Windows desktop or on an external PC.

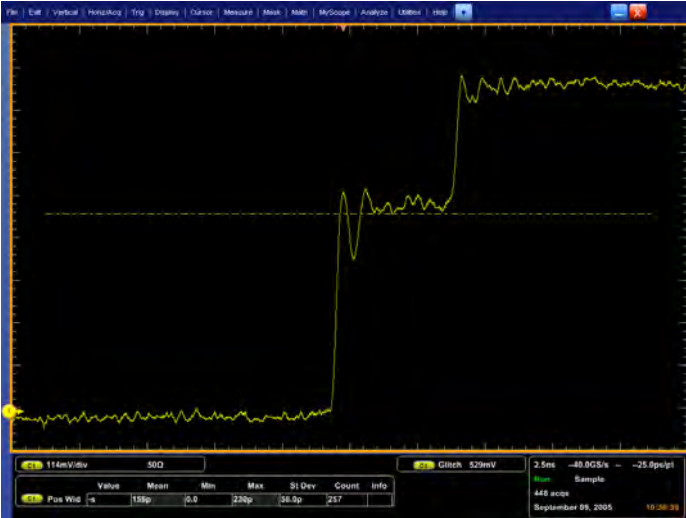


Maximize the probability of capturing elusive glitches and other infrequent events with FastAcq acquisition mode.

Accelerate the Debug of Complex Electrical Designs

FastAcq Acquisition Mode Expedites Debugging by Clearly Showing Imperfections

More than just color grading, FastAcq enabled by Tektronix proprietary DPX® acquisition technology captures signals up to more than 250,000 waveforms per second on all 4 channels simultaneously, dramatically increasing the probability of discovering infrequent fault events. And with a simple turn of the intensity knob you can clearly see "a world others don't see," because frequency of occurrence is color coded. Some oscilloscope vendors claim high waveform capture rates for short bursts of time, but only the DPO7000 Series, enabled by DPX technology, 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 sophisticated trigger modes can be applied to isolate them.



Isolate glitches down to 200 ps wide.



Isolate Setup and Hold violations down to 360 ps.

The Ability to Trigger an Oscilloscope on Events of Interest is Paramount in Complex Signal Debug and Validation

Whether you're trying to find a system error or need to isolate a section of a complex signal for further analysis, like a DDR Read or Write burst, Tektronix Pinpoint® triggering provides the solution. The Pinpoint trigger system uses Silicon Germanium (SiGe) technology to provide trigger sensitivity of up to the bandwidth of the instrument, and allows selection of most trigger types on both A and B trigger circuits. It can capture very narrow glitches with very little trigger jitter. Other trigger systems offer



Easily trigger on a specific I2C address.

multiple trigger types only on a single event (A event), with delayed trigger (B event) selection limited to edge-type triggering and often do not provide a way to reset the trigger sequence if the B event doesn't occur. But Pinpoint triggering provides a full suite of advance trigger types on both A and B triggers with Reset triggering to begin the trigger sequence again after a specified time, state, or transition so that even events in the most complex signals can be captured. Other oscilloscopes typically offer less than 20 trigger combinations; Pinpoint triggering offers over 1400 combinations, all at full performance.

With Enhanced Triggering, you can choose to compensate for the difference in time there is between the trigger path and the display path and eliminate virtually any trigger jitter at the trigger point. In this mode, the trigger point can be used as a measurement reference.

Trigger on the Most Relevant Bit Sequence of the Industry-standard Serial Bus

I2C (Inter-Integrated Circuit) triggering is a standard feature and includes Start Condition, Missing Acknowledge, Restart, Data Read, Address, and/or Data Frame, in a 10 bit or 7 bit format with a specific selection to choose whether or not to include the R/W bit.

SPI (Serial Peripheral Interface) triggering is a standard feature and includes triggering on a data pattern within a user-definable frame.

RS-232 triggering is a standard feature.

CAN (Controller Area Network) triggering is an optional feature (Opt. LSA) and includes synchronization to the Start or End of a CAN frame on any CAN high or CAN low signal, triggering on Type of Frame (Data, Remote, Overload), Identifier, Data, Missing Acknowledge, and Bit Stuffing error.



Triggering on an analog HDTV tri-level sync signal and examining horizontal blanking interval.

Analog HDTV/EDTV Triggering for emerging standards like 1080i, 1080p, 720p, and 480p as well as standard video triggering on any line within a field, all lines, all fields, odd or even fields for NTSC, SECAM, and PAL video signals. In addition, IRE and mV graticules can be selected for easier measurements and visual inspection. This is a standard feature.

Serial Pattern Triggering for NRZ serial data streams with built-in clock recovery (available on models DPO7254 and DPO7354 only) to debug serial architectures. The instrument can recover the clock signal, identify the transitions, and decode characters and other protocol data. With the combination of the Serial Trigger and Protocol Decode software, you can see the captured bit sequences decoded into their words for convenient analysis (for 8b/10b and other encoded serial data streams), or you can set the desired encoded words for the serial pattern trigger to capture. This serial trigger option covers NRZ serial standards up to 1.25 Gb/s.

Pattern Lock Triggering adds a new dimension to NRZ serial pattern triggering by enabling the oscilloscope to take synchronized acquisitions



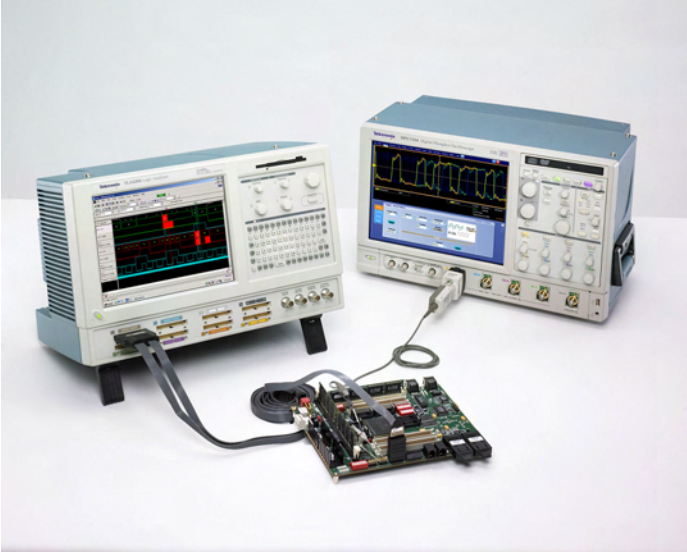
Serial pattern triggering to debug pattern-dependent issues.

of a long serial test pattern with outstanding time base accuracy. Pattern lock triggering can be used to remove random jitter from long serial data patterns. Effects of specific bit transitions can be investigated, and averaging can be used with mask testing. This feature is included as part of Option PTM on the DPO7254 and 7354 models.

Unmatched Usability

The TekVPI™ probe interface provides versatility and ease of use enabled by intelligent bidirectional oscilloscope-to-probe communication.

The DPO7000 Series are fast-responding instruments and contain a comprehensive suite of features such as a touch screen, shallow menu structures, intuitive graphical icons, knob-per-channel vertical controls, support for right mouse clicks, mouse wheel improvements, saving of waveforms and measurements available in Preview mode, and Export/Save/Recall menu improvements.



An integrated toolset for digital design and troubleshooting.

Interoperability with Logic Analyzers for Digital Design and Debug

The Tektronix Integrated View (iView™) data display enables digital designers to solve signal integrity challenges and effectively debug and verify their systems more quickly and easily. This integration allows designers to view time-correlated digital and analog data in the same display window, and isolate the analog characteristics of the digital signals that are causing systems failures. No user calibration is required. And, once set up, the iView feature is completely automated.

More Insight into Your Complex Electrical Design for Characterization and Compliance Testing

The DPO7000 Series oscilloscopes offer the industry's most comprehensive set of analysis and compliance tools, such as a simple math expression, waveform mask testing, a pass/fail compliance test, event searching, event marking, or a custom application that you develop yourself.



Basic spectral UI control window.

A Wide Range of Built-in Advanced Waveform Analysis Tools

Waveform cursors make it easy to measure trace-to-trace timing characteristics, while cursors that link between YT and XY display modes make it easy to investigate phase relationships and Safe Operating Area violations. Select from 53 automatic measurements using a graphical palette that logically organizes measurements into Amplitude, Time, Combination, Histogram, and Communications categories. Gather further insight into your measurement results with statistical data such as mean, min, max, standard deviation, and population.

Define and apply math expressions to waveform data for on-screen results in terms that you can use. Access common waveform math functions with the touch of a button. Or, for advanced applications, create algebraic expressions consisting of live waveforms, reference waveforms, math functions, measurement values, scalars, and user-adjustable variables with an easy-to-use calculator-style editor.

FFT – To analyze your signal in the spectral domain, use the basic spectral (provides you with the best parameter), or use advanced spectral with the manual time base horizontal mode (to directly control the frequency span, center frequency, and resolution bandwidth).

Filtering – Enhance your ability to isolate or remove some important component of your signal (noise or specific harmonics of the signal) by creating your own filters, or using the filters provided as standard with the instrument.



Advanced Analysis, Jitter, Timing, and Eye Diagram Measurements

Advanced Analysis, Jitter, Timing, and Eye Diagram Measurements

Tight timing margins associated with today's serial buses demand stable, low-jitter designs. DPO7000 models include an Essentials version of the DPOJET software package that extends the oscilloscope's measurement capabilities by making measurements over contiguous clock and data cycles in a single-shot real-time acquisition. DPOJET Essentials adds multiple measurements, including Time Interval Error, Phase Noise, Skew, Setup and Hold timing, Duty Cycle, Period, Positive/Negative Width, and others, and provides the ability to measure key jitter and timing parameters to help characterize possible system timing issues. Analysis tools such as plots for time trends and histograms quickly show how timing parameters change over time, like frequency drift, PLL startup transients, or a circuit's response to power supply changes. Spectrum analysis quickly shows the precise frequency and amplitude of jitter and modulation sources.

Further analysis can be added with DPOJET Advanced (Option DJA) that offers extended capabilities, providing a complete suite of analysis tools for insight into jitter and timing as well as other signal quality issues. To the basic jitter and timing measurements described above, DJA adds advanced tools such as Rj/Dj separation, eye diagram masks, and Pass/Fail limits for conformance testing. DPOJET Advanced is the measurement framework that underlies several other Tektronix standards-specific compliance test packages for applications such as DDR memory and USB.

Advanced Event Search and Mark – Event Search and Mark will relieve the user from the tedious task of examining data by highlighting important events, skipping the unimportant ones, and enhancing the comprehension of event relationships. You can navigate between the events of interest effortlessly. Basic event (edge only) search and mark plus support for more advanced event types like transition, setup and hold, or logic pattern are available.

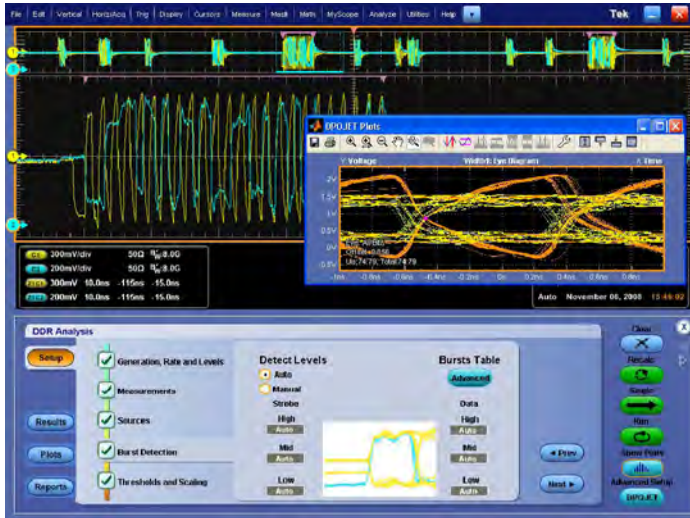


Accelerating the research of specific events in an acquired waveform.

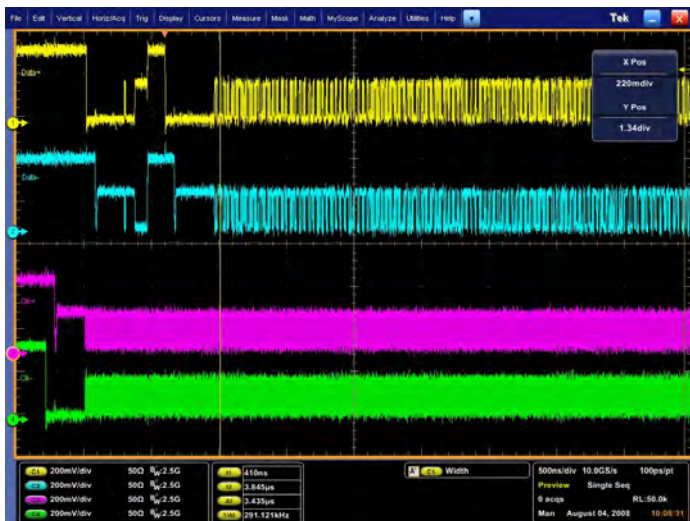
Waveform Limit Testing – This feature consists of comparing an acquired waveform to boundaries. These boundaries are defined by the user to specify a tolerance band around a reference waveform. If any part of the acquired waveform falls outside of the limit, the software returns a failure message and the location of the failure is shown on the waveform.

Communications Mask Testing (Opt. MTM) – This feature provides a complete portfolio of masks for verifying compliance to serial communications standards. It supports 156 Standard Masks:

- ITU-T (64 Kb/s to 155 Mb/s)
- ANSI T1.102 (1.544 Mb/s to 155 Mb/s)
- Ethernet IEEE 902.3, ANSI X3.263 (125 Mb/s to 1.25 Gb/s)
- Sonet/SDH (51.84 Mb/s to 622 Mb/s)
- Fibre Channel (133 Mb/s to 2.125 Gb/s)
- USB (12 Mb/s to 480 Mb/s)
- IEEE 1394 (491.5 Mb/s to 1.966 Gb/s)
- Rapid/I/O (up to 2 Gb/s)
- OIF Standards (1.244 Gb/s)
- Video (143.18 Mb/s to 1.485 Gb/s)

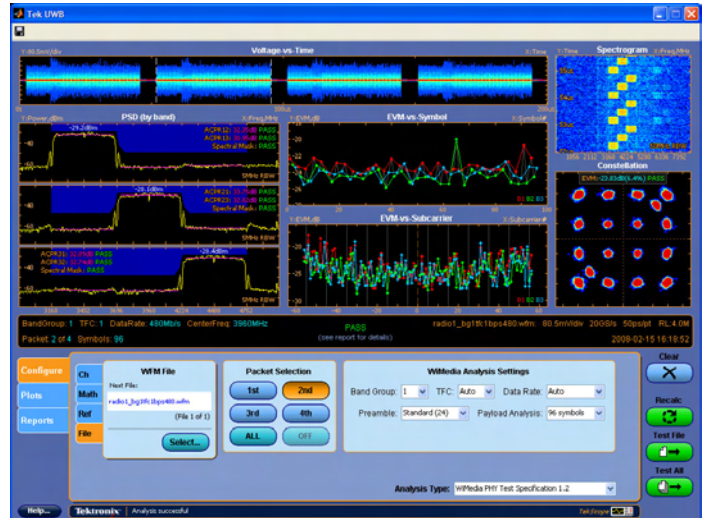


DDR Memory Bus Analysis



Optional MIPI® D-PHY Characterization and Compliance Testing

DDR Memory Bus Analysis (Opt. DDRA) – Automatically identify DDR1, LP-DDR1 DDR2, DDR3, and GDDR3 Reads and Writes and make JEDEC conformance measurements with pass/fail results on all edges in every Read and Write burst. DDRA also provides capabilities for measurements of clock, address, and control signals. In addition to enabling conformance testing, DDRA with DPOJET is the fastest way to debug complex memory signaling issues.



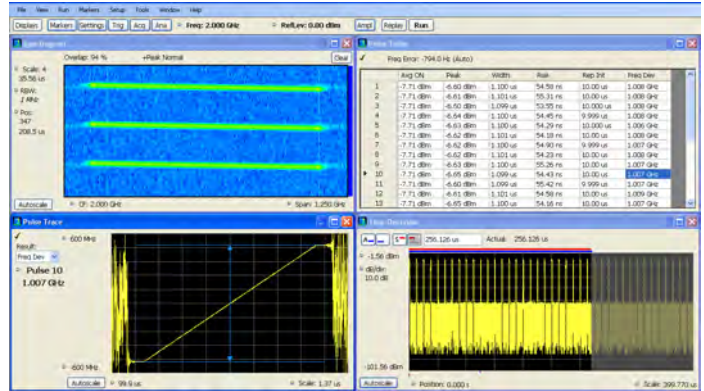
UWB WiMedia Analysis and Measurements

MIPI® D-PHY Characterization and Compliance Testing (Opt. D-PHY) – Verify to the D-PHY specification, rapidly characterize and discover sources of jitter and signal integrity concerns. Perform high-speed data-clock timing measurements, along with other electrical characteristics in high-speed or low-power modes. This option is available on the DPO7254 and DPO7354 models.

Ultra-Wideband Spectral Analysis (Opt. UWB) and Ultra-Wideband Spectral Analysis Essentials (Opt. UWBE) – UWBE: Ultra-Wideband microwave, optical, and electrical signals require more real-time bandwidth than is possible with spectrum analyzer based solutions. Spectral Analysis and Digital Down Conversion of RF data is fast and easy and the down-converted frequency span of interest may be exported for further analysis in tools such as RSAVu and MATLAB.

UWB goes beyond the Essentials version and adds: WiMedia PHY 1.2 analysis with automatic packet, TFC, and data rate detection, support for all band groups, and Time Frequency Codes and data rates. Rapid visualization, debug, and report generation of the Spectrograms, Power Spectral Density, QPSK/DCM Constellations, EVM-vs-Symbol, EVM-vs-Subcarrier, Common-Phase-Error-vs-Symbol, and Voltage-vs-Time plots and complete measurements are captured and documented for each test condition.

SignalVu™ Vector Signal Analysis (Opt. SVE, SVP, SVM) – Easily validate wideband designs and characterize wideband spectral events. By combining the signal analysis engine of the RSA6100A Real-Time Spectrum Analyzer with that of the industry’s widest-bandwidth digital oscilloscopes, you can now evaluate complex signals up to 20 GHz without the need of an external down converter. You get the functionality of a vector signal analyzer, a spectrum analyzer, and the powerful trigger capabilities of a digital oscilloscope – all in a single package. Whether your design validation needs include wideband radar, high data-rate satellite links, or frequency-hopping communications, SignalVu™ vector signal analysis software can speed your time-to-insight by showing you time-variant behavior of these wideband signals.



SignalVu™ enables detailed analysis in multiple domains.

Floating Licenses

Floating licenses offer an alternative method to manage your Tektronix asset. Floating licenses allow license-key enabled options to be easily moved among all your DPO/DSA70000B, MSO70000, and DPO7000 Tektronix oscilloscopes. Floating licenses are available for many

license-key enabled options. To order a floating version of an option license add “DPOFL-” prefix to the option name. (e.g. DPOFL-ET3)

Check www.tek.com/products/oscilloscopes/floatinglicenses for additional information about floating license options.

Characteristics

Vertical System

Characteristic	DPO7054	DPO7104	DPO7254	DPO7354
Input Channels	4			
Bandwidth (DSP Bandwidth Enhance)	500 MHz	1 GHz	2.5 GHz	3.5 GHz*1
Rise Time (DSP Bandwidth Enhance)	460 ps	300 ps	160 ps	115 ps
Hardware Analog Bandwidth (-3 dB)	500 MHz	1 GHz	2.5 GHz	2.5 GHz
Rise Time 10% to 90% (Typical)	460 ps	300 ps	160 ps	145 ps
Rise Time 20% to 80% (Typical)	310 ps	200 ps	100 ps	95 ps
DC Gain Accuracy	±1% with offset/position set to 0			
Bandwidth Limits	Depending on instrument model: 3.0 GHz, 2.5 GHz, 2 GHz, 1 GHz, 500 MHz, 250 MHz, and 20 MHz			
Input Coupling	AC, DC, GND			
Input Impedance (Software selectable)	1 MΩ ±1% with 13 pF ±2 pF or 50 Ω ±1%			
Input Sensitivity	1 MΩ: 1 mV/div to 10 V/div 50 Ω: 1 mV/div to 1 V/div			
Vertical Resolution	8 bit (>11 bit with Hi Res)			
Max Input Voltage, 1 MΩ	±150 V CAT I, derate at 20 dB/decade to 9 V _{RMS} above 200 kHz			
Max Input Voltage, 50 Ω	5 V _{RMS} , with peaks less than ±24 V			
Position Range	±5 divisions			
Offset Range	1 mV/div to 50 mV/div: ±1 V 50.5 mV/div to 99.5 mV/div: ±(1.5 V – 10 divisions) 100 mV/div to 500 mV/div: ±10 V 505 mV/div to 995 mV/div: ±(15 V – 10 divisions) 1 V/div to 5 V/div: ±100 V 5.05 V/div to 10 V/div: ±(150 V – 10 divisions)			
Offset Accuracy	1 mV/div to 9.95 mV/div: ±0.2% (offset value-position) ±0.1 div ±1.5 mV 10 mV/div to 99.5 mV/div: ±0.35% (offset value-position) ±0.1 div ±1.5 mV 100 mV/div to 1 V/div: ±0.35% (offset value-position) ±0.1 div ±15 mV 1.01 V/div to 10 V/div: ±0.25% (offset value-position) ±0.1 div ±150 mV			
Delay between any Two Channels (Typical)	≤100 ps (50 Ω, DC coupling and equal V/div at or above 10 mV/div)			
Channel-to-Channel Isolation (Any two channels at equal Vertical Scale settings) (Typical)	≥100:1 at ≤100 MHz; ≥30:1 between 100 MHz and 2.5 GHz > 20:1 between 2.5 and 3.5 GHz			

*1 3 GHz for sine wave of more than 4 div amplitude (typically).

Time Base System

Characteristic	DPO7054	DPO7104	DPO7254 / DPO7354
Time Base Range	50 ps/div to 1000 s/div	50 ps/div to 1000 s/div	25 ps/div to 1000 s/div
with Opt. 2SR	—	25 ps/div to 1000 s/div	—
Time Resolution (in ET/IT mode)	500 fs	500 fs	250 fs
with Opt. 2SR	—	250 fs	—
Time Base Delay Time Range	5 ns to 250 s		
Channel-to-Channel Deskew	Range ± 75 ns		
Delta Time Measurement Accuracy	$((0.06 / \text{sample rate}) + (2.5 \text{ ppm} \times \text{Reading}))$ RMS		
Trigger Jitter (RMS)	1.5 ps _{RMS} (typical) with enhanced triggering OFF <100 fs _{RMS} with enhanced triggering ON		
Jitter Noise Floor	<1 ps _{RMS} (<2 ps peak) for record duration <10 μ s (typical) <2.5 ps _{RMS} for record duration <30 ms <65 parts/trillion for record durations <10 s		
Time Base Accuracy	± 2.5 ppm + Aging <1 ppm per year		

Acquisition System

Characteristic	DPO7054	DPO7104	DPO7254 / DPO7354
Real-time Sample Rates			
1 Channel (Max)	20 GS/s	20 GS/s	40 GS/s
with Opt. 2SR	—	40 GS/s	—
2 Channels (Max)	10 GS/s	10 GS/s	20 GS/s
with Opt. 2SR	—	20 GS/s	—
3-4 Channels (Max)	5 GS/s	5 GS/s	10 GS/s
with Opt. 2SR	—	10 GS/s	—
Equivalent Time Sample Rate (Max)	4 TS/s (for repetitive signals)		
Maximum Record Length per Channel			
Standard Configuration	50 M (1-CH), 25 M (2-CH), 12.5 M (4-CH)		
Record Length Opt. 2RL	125 M (1-CH), 50 M (2-CH), 25 M (4-CH)		
Record Length Opt. 5RL	250 M (1-CH), 125 M (2-CH), 50 M (4-CH)		
Record Length Opt. 10RL	—	—	500 M (1-CH) 250 M (2-CH) 125 M (4-CH)

Maximum Duration at Highest Real-time Resolution (1-CH)

Characteristic	DPO7054	DPO7104	DPO7254 / DPO7354
Resolution	50 ps (20 GS/s)	50 ps (20 GS/s)	25 ps (40 GS/s)
with Opt. 2SR	—	25 ps (40 GS/s)	—
Max Duration with Standard Record Length and Sample Rate	2 ms	2 ms	1 ms
with Opt. 2SR	—	1 ms	—
Max Duration with Opt. 2RL	4 ms	4 ms	2 ms
with Opt. 2SR	—	2 ms	—
Max Duration with Opt. 5RL	10 ms	10 ms	5 ms
with Opt. 2SR	—	5 ms	—
Max Duration with Opt. 10RL	—	—	10 ms

Acquisition Modes

Mode	DPO7054 / DPO7104 / DPO7254 / DPO7354
FastAcq Acquisition Mode	FastAcq optimizes the instrument for analysis of dynamic signals and capture of infrequent events
Maximum FastAcq Waveform Capture Rate	>250,000 wfms/s on all 4 channels simultaneously
Waveform Database	Accumulate waveform database providing three-dimensional array of amplitude, time, and counts
Sample	Acquire sampled values
Peak Detect	Captures narrow glitches at all real-time sampling rates: 1/sample rate at ≤ 10 GS/s
Averaging	From 2 to 10,000 waveforms included in average
Envelope	From 1 to 2×10^9 waveforms included in min-max envelope
Hi-Res	Real-time boxcar averaging reduces random noise and increases resolution
FastFrame™ Acquisition	Acquisition memory divided into segments; maximum trigger rate >310,000 waveforms per second. Time of arrival recorded with each event. Frame finder tool helps to visually identify transients
Roll Mode	Scrolls sequential waveform points across the display in a right-to-left rolling motion. Up to 10 MS/s with a maximum record length of 40 M

Pinpoint® Trigger System

Characteristic	DPO7054 / DPO7104 / DPO7254 / DPO7354
Sensitivity	
Internal DC Coupled	0.7 div DC to 50 MHz increasing to 1.2 div at rated analog bandwidth (typical); 2.5 div at 3.5 GHz with DSP bandwidth enhance
External (Auxiliary Input) 1 M Ω	250 mV from DC to 50 MHz increasing to 350 mV at 250 MHz (typical)
Trigger Characteristics	
A Event and Delayed B Event Trigger Types	Edge, Glitch, Runt, Width, Transition Time, Time-out, Pattern, State, Setup/Hold, Window – all except Edge, Pattern, and State can be Logic State qualified by up to two channels
Low-speed Serial Protocol Trigger Type (A event only)	I ² C, SPI, and RS-232 (standard). CAN bus available as Opt. LSA. Trigger on address, data, and special handshaking states and other conditions
Main Trigger Modes	Auto, Normal, and Single
Enhanced Triggering	User-selectable; it corrects the difference in timing between the trigger path and the acquired data path (it supports all Pinpoint trigger types on both A and B events except pattern trigger and not available in FastAcq)
Trigger Sequences	Main, Delayed by Time, Delayed by Events, Reset by Time, Reset by State, Reset by Transition. All sequences can include separate horizontal delay after the trigger event to position the acquisition window in time
Communications-related Triggers	Requires Opt. MTM. Support for AMI, HDB3, BnZS, CMI, MLT3, and NRZ encoded communications signals. Select among isolated positive or negative one, zero pulse form, or eye patterns as applicable to the standard
Serial Pattern Trigger	On DPO7254 or DPO7354 only, and requires Opt. PTM. Up to 64 bit serial word recognizer, bits specified in binary (high, low, don't care) or hex format. Trigger on NRZ-encoded data up to 1.25 Gb/s
Video-type Trigger Formats and Field Rates	Triggers from negative sync composite video, field 1, or field 2 for interlaced systems, any field, specific line, or any line for interlaced or noninterlaced systems. Supported systems include NTSC, PAL, SECAM, and HDTV 1080i/24sF, 1080p/25, 1080i/50, 1080i/60, 1080p/24, 720p/60, 480p/60
Clock Recovery System	On DPO7254 or DPO7354 only and requires Opt. PTM or MTM
Clock Recovery Phase Locked Loop Bandwidth	Fixed at FBaud/500
Frequency Range	1.5 MBaud to 1.25 GBaud
Clock Recovery Jitter (RMS)	20 pS _{RMS} + 1.25% Unit Interval RMS for PRBS data patterns. 20 pS _{RMS} + 1.25% Unit Interval RMS for repeating "0011" data pattern.
Tracking/Acquisition Range	$\pm 5\%$ of requested baud (typical)
Minimum Signal Amplitude Needed for Clock Recovery	1 div _{p-p} up to 1.25 GBaud (typical)
Trigger Level Range Internal	± 12 divisions from center of screen
Aux Trigger	TekVPI interface: ± 5 V (50 Ω); 150 V CAT I, derate at 20 dB/decade to 9 V _{RMS} above 200 kHz (1 M Ω)
Line	Fixed at 0 V trigger level
Trigger Coupling	DC, AC (attenuates <60 Hz), HF Rej (attenuates >30 kHz), LF Rej (attenuates <80 kHz), Noise Reject (reduces sensitivity)
Trigger Holdoff Range	250 ns min to 12 s max

Trigger Modes

Mode	Description
Edge	Positive or negative slope on any channel or front-panel auxiliary input. Coupling includes DC, AC, noise reject, HF reject, and LF reject
Glitch	Trigger on or reject glitches of positive, negative, or either polarity. Minimum glitch width is down to 170 ps (typical) with rearm time of 250 ps (for DPO7254 or DPO7354)
Width	Trigger on width of positive or negative pulse either within or out of selectable time limits (down to 225 ps)
Runt	Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again. Event can be time or logic qualified
Time-out	Trigger on an event which remains high, low, or either, for a specified time period. Selectable from 300 ps
Transition	Trigger on pulse edge rates that are faster or slower than specified. Slope may be positive, negative, or either
Setup/Hold	Trigger on violations of both setup time and hold time between clock and data present on any two input channels
Pattern	Trigger when pattern goes false or stays true for specified period of time. Pattern (AND, OR, NAND, NOR) specified for four input channels defined as high, low, or don't care
State	Any logical pattern of channels (1, 2, 3) clocked by edge on channel 4. Trigger on rising or falling clock edge
Window	Trigger on an event that enters or exits a window defined by two user-adjustable thresholds. Event can be time or logic qualified
Trigger Delay by Time	5 ns to 250 s
Trigger Delay by Events	1 to 10,000,000 events
Comm	Provided as part of Opt. MTM. Support for AMI, HDB3, BnZS, CMI, MLT3, and NRZ encoded signals
I ² C, SPI, and RS-232	Protocol trigger on DPO7054, DPO7154, DPO7254, or DPO7354
CAN	Basic protocol trigger on DPO7054, DPO7154, DPO7254, or DPO7354 as part of Opt. LSA. Optional ATM-1 module adds LIN and advanced CAN triggering
Serial Pattern (Option PTM)	Captures serial data stream with built-in clock recovery for NRZ standards up to 1.25 Gb/s. Extended with pattern lock triggering to capture repeated acquisitions of long serial test patterns

Search and Mark Events

Event	Description
Basic	Mark any events and document waveforms. Search positive, negative slopes or both on any channels. Event table summarizes all found events. All events are time stamped in reference to trigger position. Users can choose to stop acquisitions when an event is found
Advanced	Search glitches or runts, as well as transition rate, pulse width, setup and hold, time-out, window violations, or find any logic or state pattern on any number of channels. Search DDR Read or Write bursts with Opt. DDRA

Waveform Measurements

Measurement	Description
Automatic Measurements	53, of which 8 can be displayed on-screen at any one time; measurement statistics, user-definable reference levels, measurement within gates isolating the specific occurrence within an acquisition to take measurements on
Amplitude Related	Amplitude, High, Low, Maximum, Minimum, Peak-to-Peak, Mean, Cycle Mean, RMS, Cycle RMS, Positive Overshoot, Negative Overshoot
Time Related	Rise Time, Fall Time, Positive Width, Negative Width, Positive Duty Cycle, Negative Duty Cycle, Period, Frequency, Delay
Combination	Area, Cycle Area, Phase, Burst Width
Histogram Related	Waveform Count, Hits in Box, Peak Hits, Median, Maximum, Minimum, Peak-to-Peak, Mean (μ), Standard Deviation (σ), $\mu+1\sigma$, $\mu+2\sigma$, $\mu+3\sigma$
Eye-pattern Related	Extinction Ratio (absolute, %, dB), Eye Height, Eye Width, Eye Top, Eye Base, Crossing %, Jitter (p-p, RMS, 6sigma), Noise (p-p, RMS), Signal/Noise Ratio, Cycle Distortion, Q-Factor

Waveform Processing/Math

Characteristic	Description
Arithmetic	Add, Subtract, Multiply, Divide Waveforms and Scalars
Algebraic Expressions	Define extensive algebraic expressions including Waveforms, Scalars, User-adjustable Variables, and Results of Parametric Measurements e.g. $(\text{Integral}(\text{CH1} - \text{Mean}(\text{CH1})) \times 1.414 \times \text{VAR1})$
Math Functions	Average, Invert, Integrate, Differentiate, Square Root, Exponential, Log ₁₀ , Log _e , Abs, Ceiling, Floor, Min, Max, Sin, Cos, Tan, ASin, ACos, ATan, Sinh, Cosh, Tanh
Math Waveforms	4
Relational	Boolean result of comparison >, <, ≥, ≤, ==, !=
Frequency Domain Functions	Spectral Magnitude and Phase, Real and Imaginary Spectra
Vertical Units	Magnitude: Linear, dB, dBm Phase: Degrees, radians, group delay IRE and mV units
Window Functions	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2, Tek Exponential
Waveform Definition	As an arbitrary math expression
Filtering Functions	User-definable filters. Users specify a filter containing the coefficients of the filter. Filter files provided
Mask Function	A function that generates a Waveform Database pixmap from a sample waveform. Sample count can be defined

Display Characteristics

Characteristic	Description
Display Type	Liquid-crystal active-matrix color display
Display Size	Diagonal: 307.3 mm (12.1 in.)
Display Resolution	XGA 1240 horizontal × 768 vertical pixels
Waveform Styles	Vectors, Dots, Variable Persistence, Infinite Persistence
Color Palettes	Normal, Green, Gray, Temperature, Spectral, and User Defined
Display Format	YT, XY

Computer System and Peripherals

Characteristic	Description
Operating System	Windows XP
CPU	Intel Pentium 4, 3.4 GHz processor
PC System Memory	2 GB
Hard Disk Drive	Rear-panel, removable hard disk drive, 80 GB capacity
CD/DVD Drive	Front-panel CD-RW, DVD-R drive
Mouse	Optical wheel mouse, USB interface

Input/Output Ports

Port	Description
Front Panel	
Probe Compensator Output	Front-panel pins. Amplitude 1 V \pm 20% into a \geq 50 Ω load; 500 mV from base to top into a 50 Ω load, frequency 1 kHz \pm 5%
Recovered Clock (for DPO7254 or DPO7354 only)	BNC connector, \leq 1.25 Gb/s, Output swing \geq 130 mV _{p-p} into 50 Ω . Requires Option MTM to enable
Recovered Data (for DPO7254 or DPO7354 only)	BNC connector, \leq 1.25 Gb/s, Output swing 200 mV into 50 Ω . Requires Option MTM to enable
USB 2.0 Port	One USB 2.0 host connector
Aux Trigger Input	See trigger specification
Side Panel	
Parallel Port	IEEE 1284, DB-25 connector
Audio Ports	Miniature phone jacks
Keyboard Port	PS-2 compatible
Mouse Port	PS-2 compatible
USB Ports	Four USB 2.0 host connectors
LAN Port	RJ-45 connector, supports 10BASE-T, 100BASE-T, and Gigabit Ethernet
Serial Port	DB-9 COM1 port
VGA Video Port	DB-15 female connector; connect a second monitor to use dual-monitor display mode. Supports basic requirements of PC99 specifications
Oscilloscope VGA Video Port	DB-15 female connector, 31.6 kHz sync, EIA RS-343A compliant, connect to show the oscilloscope display, including live waveforms on an external monitor or projector
Rear Panel	
Power	100 to 240 V _{RMS} \pm 10%, 47 to 63 Hz, <550 W 115 V _{RMS} \pm 10%, 360 to 440 Hz CAT I, <500 VA
Analog Signal Output	BNC connector provides a buffered version of the signal that is attached to the CH3 input
Amplitude	50 mV/div \pm 20% into a 1 M Ω load, 25 mV/div \pm 20% into a 50 Ω load
Bandwidth	100 MHz into a 50 Ω load
External Time Base Reference In	BNC connector, time base system can phase lock to external 10 MHz reference
Aux Out (Software switchable)	
Time base reference out	BNC connector, provides TTL-compatible output of internal 10 MHz reference oscillator
Trigger output	BNC connector provides a TTL-compatible, polarity switchable pulse when the oscilloscope triggers
GPIB Port	IEEE 488.2 standard

Physical Characteristics**Benchtop Configuration**

Dimension	mm	in.
Height	292	11.48
Width	451	17.75
Depth	265	10.44
Weight		
Net	15	32
Shipping	28.9	63.75

Rackmount Configuration

Dimension	mm	in.
Height	331	12.25
Width	479	18.85
Depth (from rackmounting ear to back of instrument)	231.75	9.12
Weight		
Net	17.4	37.5
Rackmount Kit	2.5	5.5

Mechanical**Cooling – Required Clearance**

Dimension	mm	in.
Top	0	0
Bottom	0	0
Left Side	76	3
Right Side	0	0
Front	0	0
Rear	0	0

Environmental

Characteristic	Description
Temperature	
Operating	0 °C to +50 °C, excluding CD-R/W drive; +10 °C to +45 °C, including CD-R/W drive
Nonoperating	-40 °C to +71 °C
Humidity	
Operating	5% to 95% relative humidity (RH) with a maximum wet bulb temperature of +29 °C at or below +50 °C, noncondensing. Upper limit derated to 45% RH above +30 °C up to +50 °C
Nonoperating	5% to 95% relative humidity (RH) with a maximum wet bulb temperature of +29 °C at or below +60 °C, noncondensing. Upper limit derated to 45% RH above +30 °C up to +50 °C
Altitude	
Operating	10,000 ft. (3,048 m)
Nonoperating	40,000 ft. (12,190 m)
Random Vibration	
Operating	0.000125 G ² /Hz from 5 to 350 Hz, -3 dB/octave from 350 to 500 Hz, 0.0000876 G ² /Hz at 500 Hz. Overall level of 0.27 G _{RMS}
Nonoperating	0.0175 G ² /Hz from 5 to 100 Hz, -3 dB/octave from 100 to 200 Hz, 0.00875 G ² /Hz from 200 to 350 Hz, -3 dB/octave from 350 to 500 Hz, 0.006132 G ² /Hz at 500 Hz. Overall level of 2.28 G _{RMS}
Regulatory	
Electromagnetic Compatibility	93/68/EEC; EN61326:1997 +A1 1998+A2:2000
Certifications	UL 3111-1, CSA1010.1, ISO11469, EN61010-1, IEC 61010-1

Ordering Information**DPO7000 Series**

Product	Description
DPO7054	500 MHz Digital Phosphor Oscilloscope
DPO7104	1 GHz Digital Phosphor Oscilloscope
DPO7254	2.5 GHz Digital Phosphor Oscilloscope
DPO7354	3.5 GHz Digital Phosphor Oscilloscope for Serial and Digital applications

All Models Include: Accessory pouch, front cover, mouse, (4) P6139A 500 MHz, 10x passive probes, quick-start user manual (071-173x-xx), DPO7000 Series product software media, DPO7000 Series operating system restoration media, optional applications software media, performance verification procedure PDF file, GPIB programmer's reference (on product software media), calibration certificate documenting NIST traceability, Z 540-1 compliance and ISO9001, power cord, one-year warranty.

Note: User to specify quick-start user manual language, and power plug when ordering.
(Probes and accessories are not included in the oscilloscope warranty. Refer to the data sheet for each probe for its unique warranty and calibration terms.)

Options**Instrument Options**

Option	Description
Record Length Options	
Opt. 2RL	125 MS max, 25 MS/Ch
Opt. 5RL	250 MS max, 50 MS/Ch

Option	Description
DPO7254/DPO7354 Only	
Opt. 10RL*5	500 MS max, 125 MS/Ch

DPO7104 Only	
Opt. 2SR*2	Double the maximum real-time sample rate to 40 GS/s (1 channel), 20 GS/s (2 channels), 10 GS/s (3 or 4 channels)

Software Options	
Opt. DDRA*9	DDR Memory Bus Analysis
Opt. DJA	DPOJET Jitter and Eye Diagram Analysis – Advanced
Opt. ET3*3	TDSET3 Ethernet Compliance Test Software
Opt. HEAC*11	HEAC Compliance Test Software
Opt. LSA	Low-speed Serial Analysis includes CAN Trigger, and CAN/LIN Decode and Analysis
Opt. MTM	Mask Testing for Serial Communication Standards (up to 1.5 Gb/s). Includes hardware clock recovery on DPO7254/DPO7354
Opt. PWR	DPOPWR Power Measurement and Analysis Software
Opt. SVE	SignalVu™ Essentials – Vector Signal Analysis Software
Opt. SVM*10	General-purpose Modulation Analysis. Requires Opt. SVE
Opt. SVP*10	Advanced Signal Analysis (including pulse measurements). Requires Opt. SVE
Opt. SVT*10	Frequency and Phase Settling Time Measurements. Requires Opt. SVE
Opt. TEKEXP	TekExpress Automation Framework
Opt. USB*4	USB 2.0 Compliance Test Software

DPO7254/DPO7354 Only	
Opt. D-PHY*5,9	MIPI® D-PHY Essentials – Characterization and Compliance test solution
Opt. PTM*5	8b/10b protocol decoding and NRZ serial pattern triggering. Includes hardware clock recovery up to 1.25 Gb/s and pattern lock triggering
Opt. RTE*5	RT-Eye® Serial data compliance and analysis software
Opt. UWB*5	Ultra-Wideband Spectral Analysis Software. Includes WiMedia compliance tests
Opt. UWBE*5	Ultra-Wideband Spectral Analysis Essentials. Does not include WiMedia compliance tests

DPO7354 Only	
Opt. DVI*8	Digital Visual Interface compliance test software
XGBT*8,11	10GBASE-T Automation Solution

Bundle Options	
Opt. PS1	Power Bundle option includes TPA-BNC adapter, probe calibration and deskew fixture 067-1686-xx, P5205, TCP0030, and Opt. PWR

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Check www.tek.com/products/oscilloscopes/floatinglicenses for additional information about floating license options.

*2 DPO7104 only.

*3 Requires Ethernet Test Fixture TF-GBE-ATP or TF-GBE-BTP.

*4 Requires TDSUSB (USB Test Fixture). Greater than 2 GHz bandwidth required for high-speed USB.

*5 DPO7254 or DPO7354 only.

*8 DPO7354 only.

*9 Requires Opt. DJA.

*10 Requires Opt. SVE or SVM.

*11 Requires Opt. TEKEXP.

User Manual Options

Option	Description
Opt. L0	English manual
Opt. L1	French manual
Opt. L3	German manual
Opt. L5	Japanese manual
Opt. L7	Simple Chinese manual
Opt. L8	Standard Chinese manual
Opt. L9	Korean manual
Opt. L10	Russian manual

Power Plug Options

Option	Description
Opt. A0	North America
Opt. A1	Universal European Union
Opt. A2	UK
Opt. A3	Australia
Opt. A5	Switzerland
Opt. A6	Japan
Opt. A10	China
Opt. A11	India
Opt. A99	No power cord

Service Options

(Probes and accessories are not included in the oscilloscope warranty. Refer to the data sheet for each probe for its unique warranty and calibration terms.)

Option	Description
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. R3	Repair Service 3 Years
Opt. R5	Repair Service 5 Years

Recommended Accessories**Probes**

Probe	Description
TCP0150	20 MHz TekVPI™ AC/DC 150 A current probe
TCP202* ⁶	DC coupled current probe
TDP0500	500 MHz TekVPI high-voltage differential probe
TDP1000	1 GHz TekVPI high-voltage differential probe
TDP1500	1.5 GHz TekVPI high-voltage differential probe
TDP3500	3.5 GHz TekVPI high-voltage differential probe
TAP3500	3.5 GHz TekVPI active single-ended probe
TAP2500	2.5 GHz TekVPI active single-ended probe
TAP1500	1.5 GHz TekVPI active single-ended probe
TCP0030	>120 MHz TekVPI AC/DC 30 A current probe
TPA-BNC	TekProbe-BNC Level 2 to TekVPI adapter
P6139A	500 MHz, passive probe (four included with each model)
P6158	3 GHz, 20x low C probe
P6247* ⁶	1 GHz differential probe
P6243* ⁶	1 GHz active probe
P6245* ⁶	1.5 GHz active probe
P6248* ⁶	1.5 GHz differential probe
P6251* ⁶	1 GHz high-voltage differential probe
P6330* ⁶	3 GHz differential probe
P6246* ⁶	400 MHz differential probe
P6101B	1x passive probe 15 MHz
TCPA300/TCPA400* ⁶	Series current measurement systems
P5200/P5205/P5210* ⁶	High-voltage differential probes
P5100/P6015A	High-voltage probes

*⁶ Probe requires TPA-BNC adapter.

Cables

Cable	Description
GPIB Cable (1 m)	Order 012-0991-01
GPIB Cable (2 m)	Order 012-0991-00
Centronics Cable	Order 012-1214-xx

Accessories

Accessory	Description
Mini Keyboard (USB interface)	Order 119-7083-xx (fits in accessory pouch)
Keyboard (USB interface)	Full-size keyboard with 4 port USB hub. Order 119-6633-00
Transit Case	Order 016-1970-xx
Rackmount Kit	Order 016-1985-xx
Front Hard-drive Option for Rackmount Kit	Order 016-1979-xx
Removable HD Spare	Order 065-0744-xx
Oscilloscope Cart	Order K420 (requires 407-5192-xx bracket set)
WSTRO	WaveStar™ Windows application for remote access

Test Fixtures

Fixture	Description
TDSUSBF	Test fixture for use with Opt. USB
Probe Calibration/Power Deskew Fixture	Order 067-1686-xx
TF-GBE-ATP	1000/100/10BASE-T Advanced Ethernet Test Package, includes test fixture, RJ-45 interconnect cable, and 1000BASE-T jitter test channel cable
TF-GBE-BTP	1000/100/10BASE-T Basic Ethernet Test Package, includes test fixture and RJ-45 interconnect cable
ATM-1	Advanced CAN and LIN triggering module

Adapters

Adapter	Description
P6701B ^{*6}	Optical/Electrical converter (Multi Mode)
P6703B ^{*6}	Optical/Electrical converter (Single Mode)

^{*6} Probe requires TPA-BNC adapter.

Optional Software

Software	Description
PDU-R	Prodigy RS-232/UART decode application
PDI-R	Prodigy I ² C decode application
PDS-R	Prodigy SPI decode application
PDF-R	Prodigy FlexRay decode application
SIGEXPTE	NI LabVIEW SignalExpress™ Tektronix Edition Software (Full Version)

Instrument Upgrades

To upgrade your DPO7000 Series oscilloscope, order DPO7UP with option as noted:

Option	Description
To upgrade record length:	
RL02	From Standard Configuration to Opt. 2RL Configuration
RL05	From Standard Configuration to Opt. 5RL Configuration
RL010 ^{*5}	On DPO7254 or DPO7354 from Standard Configuration to Opt. 10RL Configuration
RL25	From Opt. 2RL Configuration to Opt. 5RL Configuration
RL210 ^{*5}	On DPO7254 or DPO7354 from Opt. 2RL Configuration to Opt. 10RL Configuration
RL510 ^{*5}	On DPO7254 or DPO7354 from Opt. 5RL Configuration to Opt. 10RL Configuration

To upgrade DPO7000 Series with:

ASM ^{*12}	Advanced Search and Mark
CP2 ^{*7}	TDSCPM2 ANSI/ITU Telecom pulse compliance testing software
D-PHY ^{*5, 9}	MIP1 [®] D-PHY Essentials
DDRA ^{*9}	Opt. DDRA
DJAM	Opt. DJA
DJEM ^{*12}	DPOJET Jitter and Eye Diagram Analysis – Essentials
DVI ^{*8}	Opt. DVI
ET3 ^{*3}	Opt. ET3
J2	TDSDDM2 disk drive analysis software
LSA	Opt. LSA
LT ^{*12}	Waveform Limit Test
MTM	Opt. MTM
PTM ^{*5}	To upgrade DPO7254 or DPO7354 with Opt. PTM
PWR	Opt. PWR
RTE ^{*5}	Opt. RTE or TDSRT eye software
SVEM	Opt. SVE
SVM ^{*10}	Opt. SVM
SVP ^{*10}	Opt. SVP
SVT ^{*10}	Opt. SVT
USB ^{*4}	Opt. USB
UWB ^{*5}	Opt. UWB
UWBE ^{*5}	Opt. UWBE

^{*3} Requires Ethernet Test Fixture TF-GBE-ATP or TF-GBE-BTP.

^{*4} Requires TDSUSBF (USB Test Fixture). Greater than 2 GHz bandwidth required for high-speed USB.

^{*5} DPO7254 or DPO7354 only.

^{*7} Requires Opt. MTM.

^{*8} DPO7354 only.

^{*9} Requires Opt. DJA.

^{*10} Requires Opt. SVE or SVEM.

^{*12} Included as standard feature on units with serial number above B070000 and C010100.



Product(s) are manufactured in ISO registered facilities.

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* European toll-free number. If not accessible, call: +41 52 675 3777

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