

OSCILLOSCOPE

SELECTION GUIDE



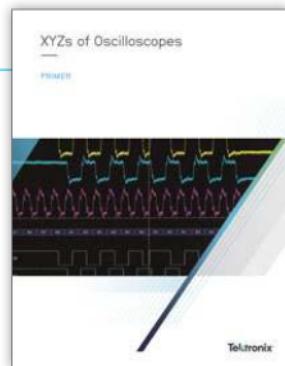
Tektronix®

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OSCILLOSCOPES

Tektronix offers oscilloscopes for many different applications and uses. To help you choose the right scope for your needs, the most common criteria for selecting a scope are listed below, along with helpful tips for determining your requirements.

For more information about oscilloscope specifications, download the XYZs of Oscilloscopes Primer.



Choosing Your Oscilloscope

1 Bandwidth

All oscilloscopes have a low-pass frequency response that rolls off at higher frequencies. Oscilloscope bandwidth is specified as being the frequency at which a sinusoidal input signal is attenuated to 70.7% of the signal's true amplitude – the -3 dB point. Your oscilloscope must have sufficient bandwidth to capture all relevant frequency components of your signal. If you regularly work with digital signals, it may be easier to consider bandwidth by comparing signal and oscilloscope rise time specifications. Use an oscilloscope with a rise time specification five times faster than your signal rise time to keep error below 2%.

Rule: Bandwidth > 5 x Highest Signal Frequency

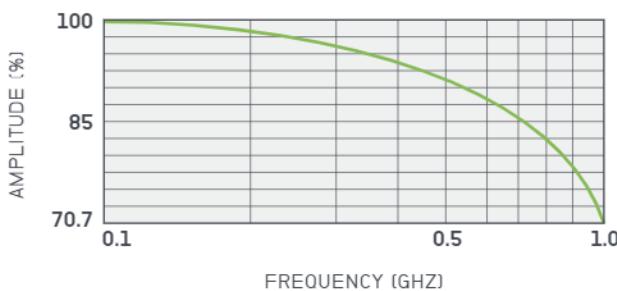


FIG 01 /

Typical frequency response curve for a general-purpose oscilloscope

2 Input Channels

Having more input channels lets you see more of what's going on in your design. Today's oscilloscopes offer more than just 2 or 4 analog input channels.

- Newer scopes are available with up to 6 or 8 input channels
- Mixed signal oscilloscopes offer digital channels to expand visibility beyond the analog channels available on the instrument
- If you are working with RF signals, the Tektronix MDO Series of mixed domain oscilloscopes offers a built-in spectrum analyzer.

3 Sample Rate

The faster an oscilloscope samples, the greater the resolution and detail of the displayed waveform, and the less likely that critical information or events will be lost. Tektronix recommends at least 5X oversampling to ensure signal details are captured and to avoid aliasing.

Rule: Sample Rate > 5 x (Highest Frequency Component)

4 Record Length

Record length is the number of samples the oscilloscope can digitize and store in a single acquisition. Since an oscilloscope can store only a limited number of samples, the waveform duration – or length of “time” captured – will be inversely proportional to the oscilloscope’s sample rate. A longer record length enables a longer time window to be captured with high resolution.

Rule: Captured Time = (Record Length) / (Sample Rate)

5 Vertical Resolution

The resolution of an oscilloscope's analog-to-digital converters determines its ability to capture and measure signal detail. 12-bit converters measures 4096 levels while 8-bit converters measure 256 levels.

6 Features and Analysis Capability

Tektronix oscilloscopes offer a range of features and analysis capabilities. When choosing your scope, you should review available triggers, waveform search tools, automated measurements, and analysis packages such as serial bus analysis, jitter and power analysis to ensure they meet your needs.



Introducing the 3 Series MDO and 4 Series MSO

These new oscilloscopes feature big, crisp 1920 x 1080 displays and the same built-for-touch user interface as the award-winning 5 Series MSO. The 4 Series offers up to 6 FlexChannel® inputs, while the 3 Series offers a choice of a 1 GHz or 3 GHz built-in spectrum analyzer. Now there's a next-generation scope for every engineer.

[LEARN MORE](#)

TYPES OF OSCILLOSCOPES

Mixed Signal Oscilloscopes – 70 MHz to 8 GHz

The engineer's choice for design and debug. They combine traditional oscilloscope input channels with digital input channels, long record length with powerful search features, and protocol support for serial buses.

Mixed Domain Oscilloscopes – 100 MHz to 1 GHz

For design and debug work, they offer the same capabilities as mixed signal oscilloscopes, but also offer a built-in spectrum analyzer, adding RF debugging to the analog/digital capabilities.

Advanced Signal Analysis Oscilloscopes – 350 MHz to 70 GHz

The emphasis is on analysis. They provide high acquisition performance and run Windows, thus supporting a wide range of analysis software. MSO versions include digital channels. They can be equipped for serial data analysis, jitter analysis, standards testing, and serial decoding capability.

High-Speed Digitizers

When performance, channel density and cost-per-channel are critical, these low-profile instruments are a great fit. They offer the same performance as bench instruments in a rack-friendly form factor.

Sampling Oscilloscopes – DC to 80 GHz

For very high speed signal analysis, both electrical and optical, our sampling oscilloscopes support jitter and noise analysis with ultra-low jitter acquisitions. They also perform TDR and S-parameter measurements.

Basic Oscilloscopes – 30 MHz to 200 MHz

For basic signal visualization and more, these instruments are solid performers with ample supporting materials, and generous warranties. Special features for education.

Battery Powered Oscilloscopes with Isolated Channels – 100 MHz to 200 MHz

Safely and easily make 4-channel floating measurements, including 3-phase power measurements

TDS Series Oscilloscopes – 50 MHz to 500 MHz

These capable industry-favorites have a large installed base, and thousands of companies rely on them as part of their test and measurement fleets. They continue to be fully supported.

MIXED SIGNAL AND MIXED DOMAIN OSCILLOSCOPES



	MSO/DPO2000B	3 SERIES MDO
Additional Resources	DATA SHEET	DATA SHEET
Channels	2, 4 analog channels; 16 digital channels (MSO2000B)	2, 4 analog channels; 16 digital channels (MSO option) 1 spectrum analyzer (SA1: 1 GHz or SA3: 3 GHz options) 1 Arbitrary/Function Generator (AFG option)
Bandwidth	70 MHz to 200 MHz	100 MHz to 1 GHz
Sample Rate	1 GS/s (analog); 1 GS/s (digital, only 1 pod); 500 MS/s (digital, both pods)	2.5 GS/s or 5 GS/s (analog); 8.25 GS/s with MagniVu™ (digital)
Max Record Length	1 Mpoints	10 Mpoints
Trigger Types	Edge, Logic, Pulse Width, Runt, Setup and Hold, Rise/Fall Time, Video, I²C*, SPI*, CAN*, LIN*, RS-232/422/485/UART*, Parallel (MSO2000B) <small>*Optional</small>	Edge, Sequence, Logic, Pulse Width, Runt, Timeout, Setup and Hold, Rise/Fall Time, Video, I²C*, SPI*, CAN*, CAN FD*, LIN*, FlexRay*, RS-232/422/485/UART*, I2S/LJ/RJ/ TDM*, MIL-STD-1553*, ARINC 429*, USB2.0*, Parallel* <small>*Optional</small>
Optional Serial Bus Decode and Analysis	DPO2AUTO: CAN and LIN DPO2COMP: RS-232/422/485/UART DPO2EMBD: I²C, SPI DPO2BND: Includes DPO2AUTO, DPO2COMP, DPO2EMBD	3-BND: Adds all serial options and power analysis 3-SRAERO: MIL-STD-1553, ARINC 429 3-SRAUDIO: I2S, LJ, RJ, TDM 3-SRAUTO: CAN, CAN FD, LIN, FlexRay 3-SRCOMP: RS-232/422/485/UART 3-SREMBD: I²C, SPI 3-SRUSB2: USB 2.0
Connectivity	USB Host, USB Device, GPIB*, Optional DPO2CONN Module: LAN (10/100 Base-T Ethernet) and Video Out <small>*Optional</small>	USB Host (x3), USB 2.0 Device, LAN (10/100 BASE-T Ethernet, 1.4 LXI Core 2011 Compliant), HDMI
Waveform Math and Analysis	Automated Measurements, Waveform and Screen Cursors: Arithmetic Waveform Math, FFT	Automated Measurements, Waveform and Screen Cursors, Arithmetic Waveform Math, FFT, Advanced Math, Measurement Statistics Optional: 3-PWR: Power Analysis
Software	PC communications software: OpenChoice® Desktop	Optional: TekScope Anywhere™
Upgrade	Add serial bus triggering and decode	<ul style="list-style-type: none"> • Increase bandwidth • Add Arbitrary/Function generator • Add 16 digital channels • Add 1 GHz or 3 GHz spectrum analyzer • Add serial bus triggering and decode • Add power measurements

MIXED SIGNAL AND MIXED DOMAIN OSCILLOSCOPES



	4 SERIES MSO	MDO3000
Additional Resources	DATA SHEET	DATA SHEET
Channels	4 or 6 FlexChannel® inputs 8 digital channels per FlexChannel with TLP058 logic probe Spectral analysis on any channel (SV-BAS option) 1 Arbitrary/Function Generator (with 4-AFG option)	2, 4 analog channels; 16 digital channels (MDO3MSO option) 1 spectrum analyzer (Standard: 9 kHz to analog bandwidth; Optional: 9 kHz to 3 GHz) 1 Arbitrary/Function Generator (MDO3AFG option)
Bandwidth	200 MHz to 1.5 GHz	100 MHz to 1 GHz
Sample Rate	6.25 GS/s / channel (analog); 6.25 GS/s / channel (digital)	2.5 GS/s to 5 GS/s (analog); 121.2 ps (8.25 GS/s) MagniVu™ (digital)
Max Record Length	Up to 62.5 Mpoints	10 Mpoints
Trigger Types	Edge, Sequence, Logic, Pulse Width, Runt, Visual Trigger, Timeout, Window, Setup and Hold, Rise/Fall Time, I²C*, SPI*, USB*, Ethernet*, CAN*, CAN FD*, LIN*, FlexRay*, RS- 232/422/485/UART*, I²S/LJ/RJ/TDM*, MIL-STD-1553*, ARINC 429*, SENT*, SPMI*, Parallel *Optional	Edge, Sequence, Logic, Pulse Width, Runt, Timeout, Setup and Hold, Rise/Fall Time, Video, Extended Video, I²C*, SPI*, CAN FD*, CAN*, LIN*, FlexRay*, RS-232/422/485/UART*, I²S/LJ/RJ/TDM*, MIL- STD-1553*, ARINC 429, USB 2.0*, Parallel (with MDO3MSO option) *Optional
Optional Serial Bus Decode and Analysis	4-SRAERO: MIL-STD-1553, ARINC 429 4-SRAUDIO: I²S, LJ, RJ, TDM 4-SRAUTO: CAN, CAN FD, LIN, FlexRay 4-SRAUTOSEN: SENT 4-SRCOMP: RS-232/422/485/UART 4-SREMBD: I²C, SPI 4-SRENETH: Ethernet 4-SRI3C: MIPI I3C (decode and search) 4-SRPM: SPMI 4-SRUSB2: USB 2.0	MDO3AERO: ARINC 429, MIL-STD-1553 MDO3AUDIO: I²S, LJ, RJ, TDM MDO3AUTO: CAN FD, CAN and LIN MDO3COMP: RS-232/422/485/UART MDO3EMBD: I²C, SPI MDO3FLEX: FlexRay MDO3USB: USB2.0 MDO3BND: Enables MDO3AERO, MDO3AUDIO, MDO3AUTO, MDO3COMP, MDO3EMBD, MDO3FLEX, MDO3LMT, MDO3PWR, MDO3USB
Connectivity	USB Host (x5), USB 2.0 Device, LAN (10/100/1000 Base-T Ethernet, 1.5 LXI Core 2016 Compliant), HDMI	USB Host (x2), USB Device, LAN (10/100 Base-T Ethernet, LXI Core 2011 Compliant), Video Out, GPIB* *Optional
Waveform Math and Analysis	Automated Measurements, Waveform and Screen Cursors, Arithmetic Waveform Math, FFT, Advanced Math, Measurement Statistics Optional: 4-PWR-BAS: Power analysis 4- SV-BAS: Spectrum View spectrum analysis	Automated Measurements, Waveform and Screen Cursors, Advanced Math, FFT, Measurement Statistics, Waveform Histograms Optional: MDO3PWR: Power Analysis MDO3LMT: Limit/mask test MDO3BND: Enables MDO3AERO, MDO3AUDIO, MDO3AUTO, MDO3COMP, MDO3EMBD, MDO3FLEX, MDO3LMT, MDO3PWR, MDO3USB
Software	Optional: TekScope Anywhere™	PC Communications Software: OpenChoice® Desktop
Upgrade	<ul style="list-style-type: none"> • Increase bandwidth • Add serial bus triggering and decode • Add Arbitrary/Function generator • Add 8 digital channels with each TLP058 logic probe • Add extended record length, up to 62.5 Mpoints • Add power analysis and spectrum view 	<ul style="list-style-type: none"> • Increase bandwidth • Add Arbitrary/Function generator • Add 16 digital channels • Increase spectrum analyzer maximum frequency to 3 GHz • Add measurements and analysis (power, limit/mask) • Add serial bus triggering and decode

MIXED SIGNAL AND MIXED DOMAIN OSCILLOSCOPES



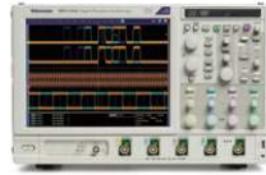
MDO4000C	
Additional Resources	DATA SHEET
Channels	4 analog channels; 16 digital channels (with MDO4MSO option); 1 spectrum analyzer input (SA3: 3 GHz or SA6: 6 GHz options); 1 Arbitrary/Function Generator (with MDO4AFG option)
Bandwidth	200 MHz to 1 GHz
Sample Rate	2.5 GS/s to 5 GS/s (analog); 60.6 ps (16.5 GS/s) MagniVu™ (digital)
Max Record Length	20 Mpoints
Trigger Types	RF Power Level**, Edge, Sequence, Logic, Pulse Width, Runt, Timeout, Setup and Hold, Rise/Fall Time, Video, Extended Video*, I²C*, SPI*, USB*, Ethernet*, CAN FD*, CAN*, LIN*, FlexRay*, RS-232/422/485/UART*, I²S/LJ/RJ/TDM*, MIL-STD-1553*, ARINC 429, Parallel* **With optional MDO4TRIG module, RF power level can be used as source for Pulse Width, Timeout, Runt, Logic, Sequence
Optional Serial Bus Decode and Analysis	DPO4AERO: ARINC 429, MIL-STD-1553 DPO4AUDIO: I²S, LJ, RJ, TDM DPO4AUTO: CAN FD, CAN and LIN DPO4AUTOMAX: CAN FD, CAN, LIN and FlexRay DPO4COMP: RS-232/422/485/UART DPO4EMBD: I²C, SPI DPO4ENET: 10Base-T, 100Base-TX Ethernet DPO4USB: USB DPO4BND: Enables DPO4AERO, DPO4AUDIO, DPO4AUTO, DPO4COMP, DPO4EMBD, DPO4ENET, DPO4LMT, DPO4PWR, DPO4USB, DPO4VID
Connectivity	USB Host (x4), USB Device, LAN (10/100/1000 Base-T Ethernet, LXI Core 2011 Compliant), Video Out, GPIB* *Optional
Waveform Math and Analysis	Automated Measurements, Waveform and Screen Cursors, Spectrum Math, FFT, Advanced Math, Measurement Statistics, Waveform Histograms Optional: DPO4LMT: Limit and Mask Testing MDO4TRIG: Adv. RF Power Level Trigger DPO4PWR: Power Analysis DPO4VID: HDTV and Custom Triggering DPO4BND: Enables DPO4AERO, DPO4AUDIO, DPO4AUTO, DPO4COMP, DPO4EMBD, DPO4ENET, DPO4LMT, DPO4PWR, DPO4USB, DPO4VID
Software	PC Communications Software: OpenChoice® Desktop Vector Signal Analysis Software: SignalVu-PC
Upgrade	<ul style="list-style-type: none"> • Increase bandwidth • Add Arbitrary/Function Generator • Add 16 digital channels • Add or upgrade spectrum analyzer channel • Add measurements & analysis (power, limit/mask, video, RF trigger) • Add serial bus triggering and decode

ADVANCED SIGNAL ANALYSIS OSCILLOSCOPES



	5 SERIES MSO	6 SERIES MSO
Additional Resources	DATA SHEET	DATA SHEET
Channels	4, 6, or 8 FlexChannel® inputs; 8 digital channels per FlexChannel input with TLP058 logic probe; Spectral analysis on any channel 1 Arbitrary/Function Generator (with 5-AFG option)	4 FlexChannel® inputs; 8 digital channels per FlexChannel input with TLP058 logic probe; Spectral analysis on any channel 1 Arbitrary/Function Generator (with 6-AFG option)
Bandwidth	350 MHz to 2 GHz	1 GHz to 8 GHz
Sample Rate	6.25 GS/s (analog); 6.25 GS/s (digital)	25 GS/s / channel (analog); 25 GS/s / channel (digital)
Max Record Length	Up to 125 Mpoints	Up to 250 Mpoints
Trigger Types	Edge, Sequence, Logic, Pulse Width, Runt, Visual Trigger, Timeout, Window, Setup and Hold, Rise/Fall Time, I²C*, SPI*, USB*, Ethernet*, CAN*, CAN FD*, LIN*, FlexRay*, RS-232/422/485/UART*, I²S/LJ/RJ/TDM*, MIL-STD-1553*, ARINC 429*, SENT*, SPMI*, Parallel *Optional	Edge, Sequence, Logic, Pulse Width, Runt, Visual Trigger, Timeout, Window, Setup and Hold, Rise/Fall Time, I²C*, SPI*, USB*, Ethernet*, CAN*, CAN FD*, LIN*, FlexRay*, RS-232/422/485/UART*, I²S/LJ/RJ/TDM*, MIL-STD-1553*, ARINC 429*, SENT*, SPMI*, Parallel *Optional
Optional Serial Bus Decode and Analysis	5-SRAERO: MIL-STD-1553, ARINC 429 5-SRAUDIO: I²S, LJ, RJ, TDM 5-SRAUTO: CAN, CAN FD, LIN, FlexRay 5-SRAUTOSEN: SENT 5-SRCOMP: RS-232/422/485/UART 5-SREMBD: I²C, SPI 5-SRENET: Ethernet 5-SRI3C: MIPI I3C 5-SRPM: SPMI 5-SRUSB2: USB 2.0	6-SRAERO: MIL-STD-1553, ARINC 429 6-SRAUDIO: I²S, LJ, RJ, TDM 6-SRAUTO: CAN, CAN FD, LIN, FlexRay 6-SRAUTOSEN: SENT 6-SRCOMP: RS-232/422/485/UART 6-SREMBD: I²C, SPI 6-SRENET: 10/100 Ethernet 6-SRI3C: MIPI I3C 6-SRPM: SPMI 6-SRUSB2: USB 2.0
Connectivity	USB Host (x7), USB 3.0 Device, LAN (10/100/1000 Base-T Ethernet, 1.4 LXI Core 2011 Compliant), Display Port, DVI-D, Video Out	USB Host (x7), USB 3.0 Device, LAN (10/100/1000Base-T Ethernet, 1.4 LXI Core 2011 Compliant), Display Port, DVI-D, Video Out
Waveform Math and Analysis	Automated Measurements, Waveform and Screen Cursors, Arithmetic Waveform Math, FFT, Advanced Math, Measurement Statistics, Spectrum View spectrum analysis Optional: 5-CMENET: 10/100/1000BASE-T Ethernet Compliance; 5-CMAUTOEN: 100/1000BASE-T1 Automotive Ethernet Compliance; 5-CMUSB2: USB 2.0 Compliance; 5-DJA: Advanced Jitter and Eye Diagram Analysis; 5-PWR: Advanced Power Measurements	Automated Measurements, Waveform and Screen Cursors, Arithmetic Waveform Math, FFT, Advanced Math, Measurement Statistics, Spectrum View spectrum analysis Optional: 6-CMNBASET: 2.5 and 5 GBASE-T Ethernet Compliance; 6-CMXGBT: 10 GBASE-T Ethernet Compliance; 6-CMENET: 10/100/1000BASE-T Ethernet Compliance; 6-CMDPHY: MIPI D-PHY 1.2 Compliance; 6-CMAUTOEN: 100/1000BASE-T1 Automotive Ethernet Compliance; 6-CMUSB2: USB 2.0 Compliance; 6-CMDDR3: DDR3/LPDDR3 Compliance; 6-DJA: Advanced Jitter and Eye Diagram Analysis; 6-PWR: Advanced Power Measurements; 6-DPM: Digital Power Management; 6-DBDDR3: DDR3/LPDDR3 Memory Measurements
Software	Optional: TekScope Anywhere™	Optional: TekScope Anywhere™
Upgrade	<ul style="list-style-type: none"> • Add serial bus triggering and decode • Add serial bus compliance testing • Add digital channels with each TLP058 logic probe • Add extended record length, up to 125 Mpoints • Add advanced measurements and analysis (power, jitter) 	<ul style="list-style-type: none"> • Add serial bus triggering and decode • Add serial bus compliance testing • Add memory debug or compliance testing • Add digital channels with each TLP058 logic probe • Add extended record length, up to 250 Mpoints • Add advanced measurements and analysis (power, jitter)

ADVANCED SIGNAL ANALYSIS OSCILLOSCOPES



	MSO/DPO5000B	DP07000C
Additional Resources	DATA SHEET	DATA SHEET
Channels	4 analog channels; 16 digital channels (MSO5000B)	4 analog channels
Bandwidth	350 MHz to 2 GHz	500 MHz to 3.5 GHz
Sample Rate	5 GS/s to 10 GS/s (analog); 60.6 ps (16.5 GS/s) MagniVu™ (digital)	10 GS/s to 40 GS/s
Max Record Length	Up to 250 Mpoints	Up to 500 Mpoints
Trigger Types	Edge, Sequence, Logic, Pulse Width, Glitch, Runt, Timeout, Transition, Setup and Hold, Rise/Fall Time, Video, I²C*, SPI*, USB (Low, Full, High)*, RS-232/422/485/UART*, USB*, Ethernet*, CAN*, LIN*, FlexRay*, MIL-STD-1553*, Parallel (MSO5000B), Visual Trigger *Optional	Pinpoint™ Triggering, Edge, Glitch, Pulse Width, Runt, Time-out, Transition, Setup/Hold, Pattern, State, Window, Trigger Delay (by Time and by Event), I²C*, SPI*, USB (Low, Full)*, RS-232/422/485/UART*, I²C*, SPI*, USB*, Ethernet*, CAN*, LIN*, FlexRay*, RS-232/422/485/UART*, MIL-STD-1553*, 8b10b*, NRZ* Visual Trigger *Optional
Optional Serial Bus Decode and Analysis	SR-AERO: MIL-STD-1553 SR-AUTO: CAN/LIN/FlexRay SR-COMP: RS-232/422/485/UART SR-DPHY: MIPI D-PHY SR-EMBD: I²C, SPI SR-ENET: 10/100Base-T Ethernet SR-USB: USB	SR-AERO: MIL-STD-1553 SR-AUTO: CAN/LIN/FlexRay SR-COMP: RS-232/422/485/UART SR-DPHY: MIPI D-PHY SR-EMBD: I²C, SPI SR-ENET: 10/100Base-T Ethernet SR-PCIE: PCI Express SR-USB: USB SR-810B: 8b10b
Connectivity	USB Host (x6), USB Device, LAN (10/100/1000 Base-T Ethernet, LXI Class C Compliant), Video Out, GPIB* *Optional	USB Host (x5), LAN (10/100/1000 Base-T Ethernet, LXI Class C Compliant), GPIB, eSATA, DVI, VGA
Waveform Math and Analysis	Automated Measurements, Waveform and Screen Cursors, Arithmetic and Advanced Waveform Math, FFT, Measurement Statistics, Waveform Histograms, Waveform Limit Testing Optional: BRR: BroadR-Reach Compliance Test; DDRA: DDR Memory Bus Analysis; DJA: DPOJET Advanced Jitter and Eye Diagram Analysis; ET3: Ethernet Compliance Test Solution; MTM: Mask Testing; PWR: Power Analysis; SignalVu Vector Signal Analysis; USB2: USB Compliance Test Solution; MOST: MOST 50/150 Compliance Test Solution; USBPWR: USB Power Adapter/ EPS Compliance Automated Test Solution	Automated Measurements, Waveform and Screen Cursors, Arithmetic and Advanced Waveform Math, FFT, Measurement Statistics, Waveform Histograms, Waveform Limit Testing Optional: BRR: BroadR-Reach Compliance Test; DDRA: DDR Memory Bus Analysis; DJA: DPOJET Advanced Jitter and Eye Diagram Analysis; D-PHY: MIPI D-PHY Essentials; ET3: Ethernet Compliance Test Solution; MTM: Mask Testing; PWR: Power Analysis; SignalVu Vector Signal Analysis; USB2: USB Compliance Test Solution; MOST: MOST 50/150 Compliance Test Solution; USBPWR: USB Power Adapter/ EPS Compliance Automated Test Solution
Software	Optional: TekScope Anywhere™	Optional: TekScope Anywhere™
Upgrade	<ul style="list-style-type: none"> • Add 16 digital channels • Add extended record length, up to 250 Mpoints • Add serial bus compliance testing • Add measurements and analysis (power, jitter, mask, RF) • Add serial bus triggering and decode 	<ul style="list-style-type: none"> • Trade in older DPO7000 Series models for credit toward the newest DPO7000C version (50% credit of the old scope price) • Add extended record length, up to 500 Mpoints • Add serial bus compliance testing • Add measurements and analysis (power, jitter, mask, RF) • Add serial bus triggering and decode

ADVANCED SIGNAL ANALYSIS OSCILLOSCOPES



	MSO/DP070000	DP070000SX
Additional Resources	DATA SHEET	DATA SHEET
Channels	4 analog channels; 16 digital channels (MSO70000)	2 or 4 analog channels
Bandwidth	4 GHz to 33 GHz Analog	23 GHz to 70 GHz
Sample Rate	25 GS/s to 100 GS/s (analog); 80 ps (12.5 GS/s) (digital)	50 GS/s to 200 GS/s
Max Record Length	Up to 1 Gpoints	Up to 1 Gpoints
Trigger Types	Pinpoint™ Triggering, Edge, Glitch, Pulse Width, Runt, Time-out, Transition, Setup/Hold, Pattern, State, Window, Trigger Delay (by Time and by Event), I²C*, SPI*, USB (Low, Full)*, RS-232/422/485/UART*, Serial Pattern*, Visual Trigger* *Optional	Pinpoint™ Triggering, Edge, Glitch, Pulse Width, Runt, Time-out, Transition, Setup/Hold, Pattern, State, Window, Trigger Delay (by Time and by Event), Visual Trigger* *Optional
Optional Serial Bus Decode and Analysis	SR-AERO: MIL-STD-1553; SR-AUTO: CAN/LIN/FlexRay; SR-COMP: RS-232/422/485/UART; SR-DPHY: MIPI D-PHY; SR-EMBD: I²C, SPI; SR-ENET: 10/100Base-T Ethernet SR-PCIE: PCI Express; SR-USB: USB; SR-810B: 8b/10b; 10G-KR: 10GBASE-KR/KR4	SR-COMP: RS-232/422/485/UART; SR-EMBD: I²C, SPI; SR-ENET: 10/100Base-T Ethernet SR-PCIE: PCI Express; SR-USB: USB; SR-810B: 8b/10b
Connectivity	USB Host (x5), LAN (10/100/1000 Base-T Ethernet, LXI Class C Compliant), GPIB, eSATA, DVI, VGA	USB2.0 Host (4 on front)/3.0 Host (4 on rear), USB Device, LAN (10/100/1000 Base-T Ethernet, LXI Class C Compliant), DVI, VGA, DisplayPort (2)
Waveform Math and Analysis	Automated Measurements, Waveform and Screen Cursors, Arithmetic and Advanced Waveform Math, FFT, Measurement Statistics, Waveform Histograms Optional: BRR: BroadR-Reach Compliance Test; DDR Memory Bus Analysis; DPOJET Advanced Jitter and Eye Diagram Analysis; Ethernet Compliance; Waveform Limit Testing; Mask Testing; Power Analysis; USB2 and USB3 Compliance and Analysis; USB Power Adapter/ EPS Compliance Automated Test Solution; MOST 50/150 Compliance Test; SignalVu Vector Signal Analysis; HDMI Compliance Test; HSIC Electrical Validation; MIPI D-PHY and M-PHY Characterization and Analysis; SAS Testing; SFP+ Compliance and Debug; Serial Data Link Analysis; 10G-KR Compliance and Debug; PCIe Compliance and Debug; Thunderbolt Characterization, Compliance and Debug; UHS Measurements; PAM4 Transmitter Analysis Software; SignalCorrect Cable, Channel and Probe Compensation Software	Automated Measurements, Waveform and Screen Cursors, Arithmetic and Advanced Waveform Math, FFT, Measurement Statistics, Waveform Histograms Optional: DPOJET Noise, Jitter and Eye Analysis Tools; Frequency Counter-Timer; PAM4 Transmitter Analysis Software; Serial Data Link Analysis; 10G/40G/100G KR4/CR4 Transmitter Compliance; DDR Memory Bus Analysis; DisplayPort 1.2/1.4 Test Software; MIPI D-PHY Transmitter Debug and Compliance Test Solution; EDP Compliance Test Package; Ethernet Compliance Testing; Fiber Channel Essentials; HDMI 2.0 Analysis and Compliance; High Speed Serial Link Training Analysis; HDMI Compliance Testing; MIPI M-PHY Debug and Compliance Test; NBASE-T TekExpress Conformance and Debug Software; PCI Express Gen1/2/3/4 TekExpress Compliance/ Debug; Power Measurement and Analysis Software; SAS-3 Tx Compliance Test; SATA PHY Transmitter Test; SignalCorrect Cable, Channel, and Probe Compensation Software; SFP+ Compliance and Debug Solution; Embedded Serial Triggering and Analysis (I²C, SPI); USB 2.0/3.0/3.1 Automated Compliance Test; SignalVu Vector Signal Analysis
Software	Optional: TekScope Anywhere™	Optional: TekScope Anywhere™
Upgrade	<ul style="list-style-type: none"> • Increase bandwidth • Add 16 digital channels • Upgrade older platforms to the latest platforms • Add extended record length, up to 1 Gpoints • Add serial bus compliance testing • Add measurements and analysis (jitter, DDR, mask, RF) • Add serial bus triggering and decode 	<ul style="list-style-type: none"> • Increase bandwidth • Upgrade older platforms to the latest platforms • Add extended record length, up to 1 G points • Add measurements and analysis (jitter, mask, RF)

BASIC OSCILLOSCOPES



	TBS1000	TBS1000B/ TBS1000B-EDU	TBS2000
Additional Resources	DATA SHEET	DATA SHEET	DATA SHEET
Channels	4	2	2, 4
Bandwidth	60 MHz to 150 MHz	30 MHz* to 200 MHz * 30 MHz TBS1032B available in North America and Europe	70 MHz, 100 MHz
Sample Rate	1 GS/s	500 MS/s to 2 GS/s	1 GS/s
Max Record Length	2.5 k points	2.5 k points	20 M points
Trigger Types	Edge, Pulse (width), Video	Edge, Pulse (width), Video	Edge, Pulse (width), Runt
Optional Serial Bus Decode and Analysis	—	—	—
Connectivity	USB Host, USB Device, Optional: GPIB	USB Host, USB Device, Optional: GPIB	USB Host, Wi-Fi adapter support, 10/100 Base-T Ethernet port
Waveform Math and Analysis	Automated Measurements, Arithmetic Waveform Math, FFT, Waveform Limit Testing, Automated Datalogging	Automated Measurements, Arithmetic Waveform Math, FFT, Dual-Channel Frequency Counter, Waveform Limit Testing*, TrendPlot™ function*, Automated Datalogging* * Not available on EDU models	Automated Measurements, Arithmetic Waveform Math, FFT, Frequency Counter
Software	PC Communications Software: OpenChoice® Desktop, Educator Classroom and Lab Resource CD	PC Communications Software: OpenChoice® Desktop Software, PC Courseware Editor Tool, Product Documentation and Lab Resource CD	PC Communications Software: OpenChoice® Desktop, PC Courseware Editor
Battery Operation	—	—	—



Teaching Oscilloscopes

TBS2000 and TBS1000B-EDU Oscilloscopes have unique features designed to meet the needs of schools and universities. They use an innovative courseware system that enables educators to build teaching materials into the oscilloscope. Along with a powerful PC Courseware Editor Tool and a courseware website, these oscilloscopes support a complete education ecosystem that makes it easier to teach engineering and easier to learn.

[LEARN MORE](#)

SAMPLING OSCILLOSCOPES



DSA8300	
Additional Resources	DATA SHEET
Channels	Six modules support up to 8 single-ended or 4 differential channels and/or 2 optical channels
Bandwidth	Up to 70+ GHz Electrical bandwidth and 80+ Optical bandwidth modules available with intrinsic jitter as low as <100 fs RMS
Sample Rate	300 ks/s Maximum sample rate
Max Record Length	50 to 16,000 per channel native record length; with up to 1M points when using available IConnect Signal Integrity Software, 10M samples (100k unit intervals, 100 samples per unit interval) when equipped with available 80SJNB Jitter, Noise and BER Analysis software
Trigger Types	Clock Input/Prescale Trigger, TDR clock (generated internally), Clock Recovery from Optical Sampling modules and Electrical Clock Recovery modules, and Phase Reference time base supports acquisitions Free Run mode and Trigger Direct Input for <100 fs RMS intrinsic jitter typical
Optional Serial Bus Decode and Analysis	80SJNB Jitter, Noise, BER, Serial Data Link and PAM4 Analysis Software; IConnect Signal Integrity Software; 100GBASE-SR4 Transmitter and Dispersion Eye Closure (TDEC) Automation Test Solution
Connectivity	3 USB 2.0 Port(s) connector on the front panel, 4 USB 2.0 Ports on the rear panel; LAN PORT, RJ-45 connector, supports 10BASE-T, 100BASE-T, 1000BASE-T on rear panel; 1 Serial Port, DB-9 COM1, COM2 ports; 1 DVI IEEE488.2 connector on rear panel; 1 DVI connector, female on rear panel, DVI to VGA 15-pin D-sub connector adapter provided; PS2 Serial Ports Mouse and keyboard inputs; Audio Ports 1/8 in. microphone input and line output
Waveform Math and Analysis	Automated measurements include RZ, NRZ, and pulse signal types, and the following measurement types, plus 8 math waveforms using the following math functions: Add, Subtract, Multiply, Divide, Average, Differentiate, Exponential, Integrate, Natural Log, Log, Magnitude, Min, Max, Square Root, and Filter. In addition, measurement values can be utilized as scalars in math waveform definitions; Mask support for many applications, standard masks are available as predefined, built-in masks; Automated Masked Margin based on Mask Hit Ratio as required by many standards.
Software	Windows® 7 Ultimate (32-bit) Operating System; IConnect Signal Integrity Software for frequency domain analysis, S-parameter measurements, and impedance characterization 80SJNB Jitter, Noise, BER, and Serial Link analysis including Cross-Talk aware TJ (BUJ and PAM4 Analysis); 80SJARB Jitter Analysis of Arbitrary Data with J2-J9 measurements, and support for pattern lengths to PRBS31; 100GBASE-SR4 (IEEE 802.3bm) optical transmitter characterization measurements, including TDEC, signaling rate, Average Launch Power, OMA, ER, Transmitter Eye Mask
Upgrade	<ul style="list-style-type: none"> • Modular architecture lets you add channels or bandwidth • Add TDR, optical and electrical standards support • Add advanced analysis, compliance test, frequency domain analysis software • Add clock recovery trigger pickoff (CRTP) to select optical modules • Enhance system jitter floor performance to <100 fs RMS

HIGH-SPEED DIGITIZERS



5 SERIES MSO LOW PROFILE

Additional Resources	DATA SHEET
Channels	8 FlexChannel® inputs; 8 digital channels per FlexChannel input (optional); 1 Arbitrary/Function Generator (5-AFG option); Aux trigger
Bandwidth	1 GHz
Sample Rate	6.25 GS/s (analog); 6.25 GS/s (digital)
Max Record Length	125 Mpoints
Trigger Types	Edge, Sequence, Logic, Pulse Width, Runt, Visual Trigger, Timeout, Window, Setup and Hold, Rise/Fall Time, I²C*, SPI*, USB*, Ethernet*, CAN*, CAN FD*, LIN*, FlexRay*, RS-232/422/485/UART*, I²S/LJ/RJ/TDM*, MIL-STD-1553*, ARINC 429*, SENT*, SPMI*, Parallel *Optional 5-SRAERO: MIL-STD-1553, ARINC 429 5-SRAUDIO: I²S, LJ, RJ, TDM 5-SRAUTO: CAN, CAN FD, LIN, FlexRay 5-SRAUTOSEN: SENT 5-SRCOMP: RS-232/422/485/UART 5-SREMBD: I²C, SPI 5-SRENETH: Ethernet 5-SRPML: SPMI 5-SRUSB2: USB 2.0
Optional Serial Bus Decode and Analysis	5-SRAERO: MIL-STD-1553, ARINC 429 5-SRAUDIO: I²S, LJ, RJ, TDM 5-SRAUTO: CAN, CAN FD, LIN, FlexRay 5-SRAUTOSEN: SENT 5-SRCOMP: RS-232/422/485/UART 5-SREMBD: I²C, SPI 5-SRENETH: Ethernet 5-SRPML: SPMI 5-SRUSB2: USB 2.0
Connectivity	USB Host (x6), USB 3.0 Device, LAN (10/100/1000) Base-T Ethernet, 1.4 LXI Core 2011 Compliant), DisplayPort, DVI-D, Video Out
Waveform Math and Analysis	Automated Measurements, Waveform and Screen Cursors, Arithmetic Waveform Math, FFT, Advanced Math, Measurement Statistics Optional: 5-DJA: Advanced Jitter and Eye Diagram Analysis; 5-PWR: Advanced Power Measurements
Software	Optional: TekScope Anywhere™
Upgrade	<ul style="list-style-type: none"> • Add serial bus triggering and decode • Add digital channels with each TLP058 logic probe • Add advanced measurements and analysis

BATTERY POWERED OSCILLOSCOPES WITH ISOLATED CHANNELS AND TDS SERIES OSCILLOSCOPES



	THS3000	TPS2000B	TDS2000C	TDS3000C
Additional Resources	DATA SHEET	DATA SHEET	DATA SHEET	DATA SHEET
Channels	4 (isolated)	2, 4 (isolated)	2, 4	2, 4
Bandwidth	100 MHz to 200 MHz	100 MHz to 200 MHz	50 MHz to 200 MHz	100 MHz to 500 MHz
Sample Rate	2.5 GS/s to 5 GS/s	1 GS/s to 2 GS/s	500 MS/s to 2 GS/s	1.25 GS/s to 5 GS/s
Max Record Length	10 k points	2.5 k points	2.5 k points	10 k points
Trigger Types	Edge, Pulse (width), Event, Video, Non-interlaced	Edge, Pulse (width), Video	Edge, Pulse (width), Video	Edge, Logic (Pattern, State), Pulse (Glitch, Width, Runt, Slew Rate), Video, Optional: Extended Video, Comm
Optional Serial Bus Decode and Analysis	—	—	—	—
Connectivity	USB Host, USB Device	RS-232 (includes RS-232-to-USB Host Serial Cable), Centronics, CompactFlash	USB Host, USB Device, Optional: GPIB	USB Host, LAN (10Base-T Ethernet) Optional: TDS3GV Module: GPIB, RS-232, and Video Out
Waveform Math and Analysis	Automated Measurements, Arithmetic Waveform Math, FFT Optional: TPS2PWR1: Power Measurement and Analysis	Automated Measurements, Arithmetic Waveform Math, FFT Optional: TPS2PWR1: Power Measurement and Analysis	Automated Measurements, Arithmetic Waveform Math, FFT, Waveform Limit Testing, Automated Datalogging	Automated Measurements, Arithmetic Waveform Math, FFT Optional: TDS3LIM: Limit Testing, TDS3TMT: Telecom Mask Testing, TDS3VID: HDTV & Custom Video Triggering
Software	PC Communications Software: OpenChoice® Desktop	PC Communications Software: OpenChoice® Desktop	PC Communications Software: OpenChoice® Desktop	PC Communications Software: OpenChoice® Desktop
Battery Operation	One THSBAT Battery Pack Included Standard	One TPSBAT Battery Pack Included Standard	—	Requires Optional TDS3BATC Battery Pack

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- High Voltage Single Ended Probes
- Isolated Measurement Systems
- Logic Analyzer Probe
- Passive Probe

Select an instrument

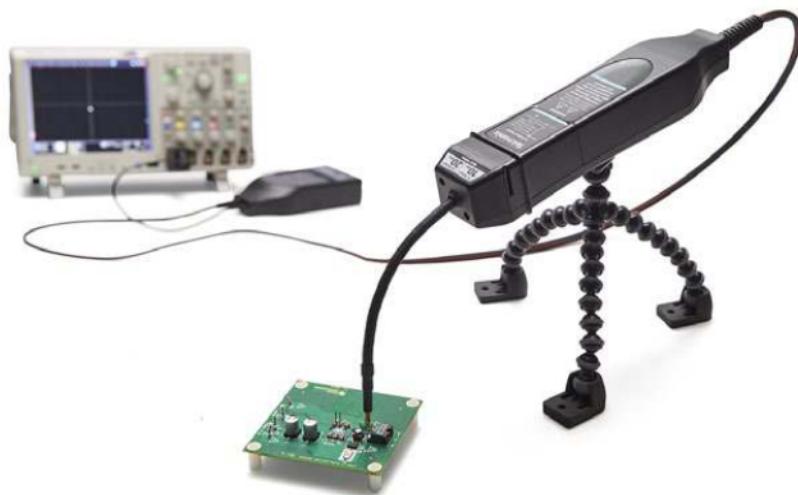
<input type="checkbox"/> DPO7000C	<input type="checkbox"/> DPO70000SX	<input type="checkbox"/> MDO3000	<input type="checkbox"/> MDO4000C
<input type="checkbox"/> MSO/DPO2000B	<input type="checkbox"/> MSO/DPO3000	<input type="checkbox"/> MSO/DPO4000	<input type="checkbox"/> MSO/DPO5000
<input type="checkbox"/> MSO/DPO70000	<input type="checkbox"/> TBS1000	<input type="checkbox"/> NEW! TBS2000	<input type="checkbox"/> TDS2000
<input type="checkbox"/> TDS3000	<input type="checkbox"/> TD55000	<input type="checkbox"/> TPS2000	

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+View Larger	1 GHz	300 V CAT II	Family Datasheet
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<input type="checkbox"/> Compare  TPP0502	Bandwidth	Input Range	CONFIGURE & QUOTE
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tek.com/isolated-measurement-systems



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- Flexible connectivity

tek.com/power-rail-probes



High Voltage Differential Probes

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Current Probes

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- Split core and solid core construction

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tek.com/differential-probe-low-voltage



Low Voltage Single-ended Probes

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- True signal reproduction and fidelity
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tek.com/low-voltage-probe-single-ended



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- Best-in-class bandwidth up to 1 GHz
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