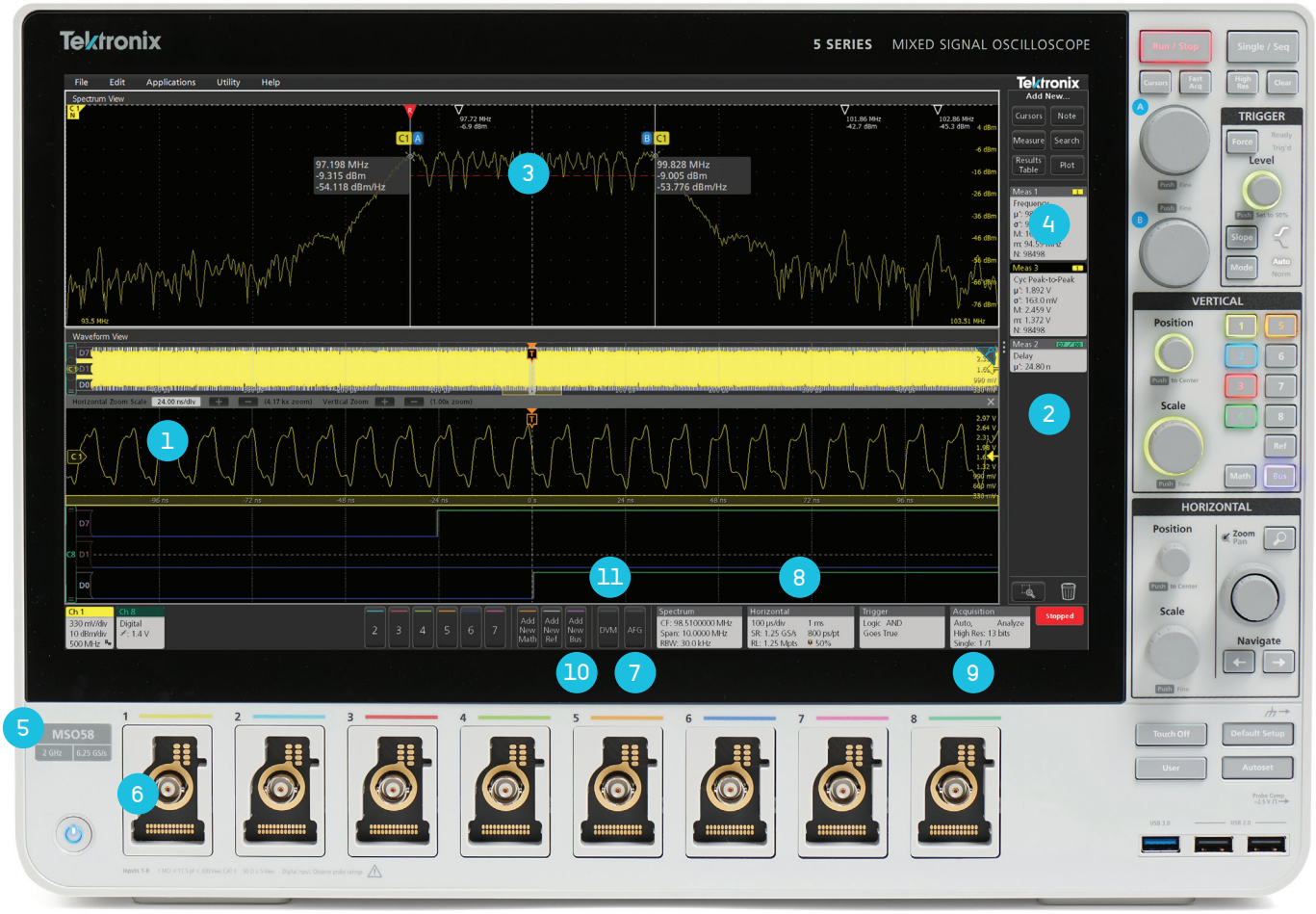
Tektronix®

NEXT–GENERATION OSCILLOSCOPES

3 Series MDO / 4 Series MSO / 5 Series MSO / 6 Series MSO

Next–Generation Oscilloscopes



1) User interface designed for both touch and mouse

2) Large touchscreen HD displays (1,920 x 1,080)

3) Integrated spectrum analysis

4) Powerful analysis
- Automated measurements with trend, histogram, and spectrum plots
- Optional jitter analysis
- Power measurement options

5) Bandwidth
- Models from 100 MHz to 8 GHz
- All models offer upgradeable bandwidth

6) Input channels
- 2 to 8 inputs depending on model

7) Built in Arbitrary/Function Generator option

8) Record length
- 10 to 250 Mpoints depending on model

9) Up to 12–bit vertical resolution (up to 16 bits in High Res mode)

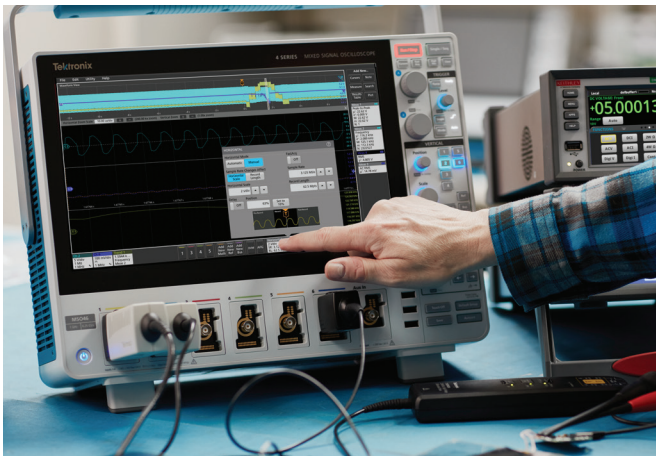
10) Protocol options

Serial bus trigger and analysis
- I²C/SPI
- RS-232/UART
- CAN/CAN FD/ LIN/FlexRay
- USB 2.0
- Ethernet
- Audio
- Aerospace
- SENT
- SPMI
- I3C

11) Integrated DVM and trigger frequency counter free with product registration

Not all features shown are available on all oscilloscope models.

Usability and Display



Touch Interaction Done Right

These next-generation oscilloscopes feature the industry's first oscilloscope user interface truly designed for touch. The same intuitive gestures you use with your phone or tablet, work on the big HD displays and the gestures are common among the 3, 4, 5 and 6 Series.

- Control inputs, triggers and acquisitions by tapping badges in the settings bar at the bottom of the display
- Drag waveforms to adjust position or to pan
- Pinch to change horizontal or vertical scale

3 4 5 6

Stunning HD Displays

The 15.6" displays on 5 and 6 Series MSOs have 1920 x 1080 HD resolution. You can see many signals at once, along with critical readouts and plots for an extensive view of your system.

Even with their bench-friendly footprints, the 3 and 4 Series offer the largest displays in their classes, with full 1920 x 1080 HD resolution.

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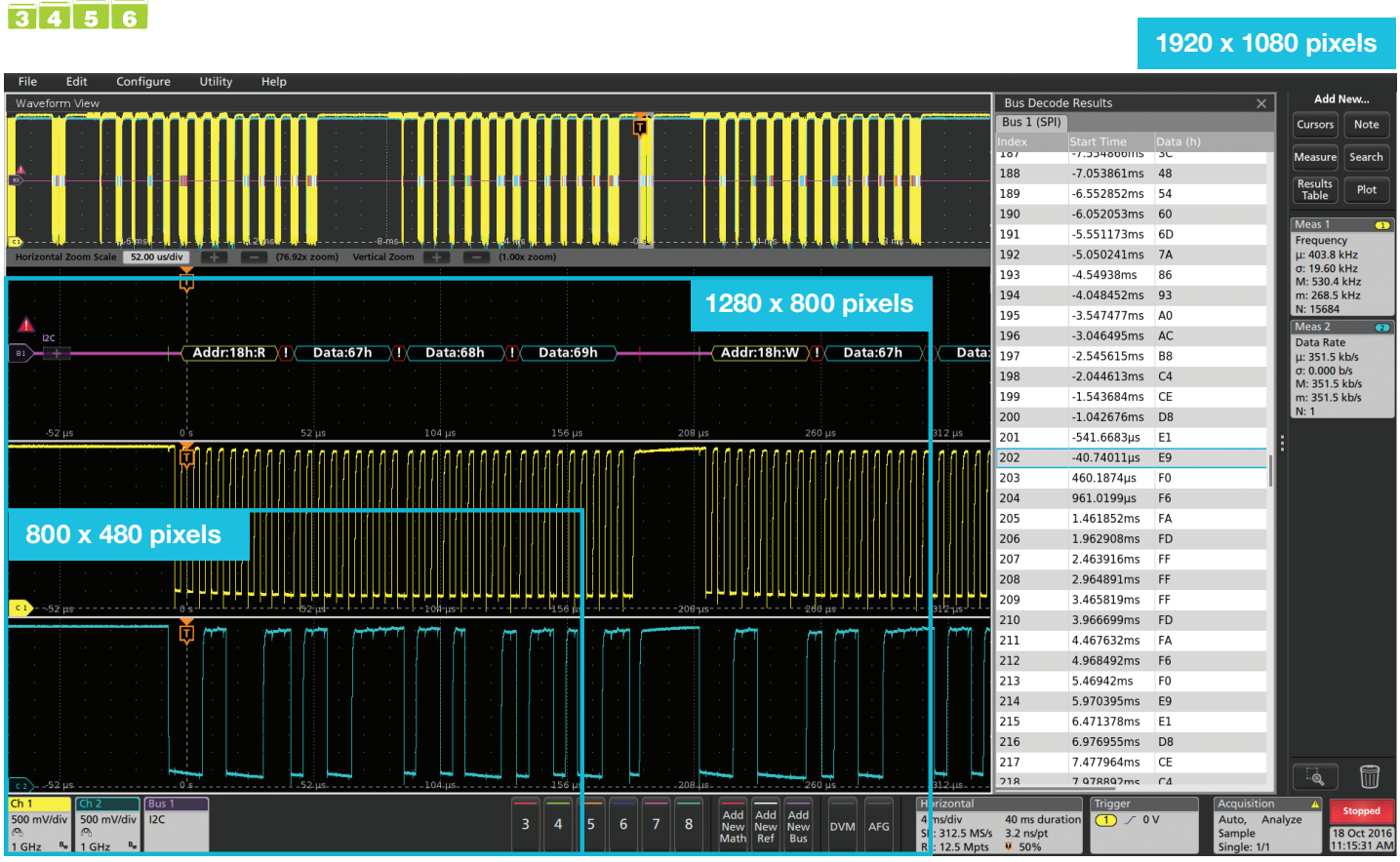

Display resolution on some competitors' products is as low as 800 x 480 pixels. That's less than 20% of the 1920 x 1080 pixel display resolution of the 3, 4, 5, and 6 Series products. Even larger 1280 x 800 pixels do not provide the same level of detail.

Performance and Measurements

More Inputs and Mixed Signal Analysis

The 4 and 5 Series MSOs let you see more signals by going beyond the traditional 4-channel limit, offering up to 8 analog input channels.

FlexChannel® inputs on the 4, 5, and 6 Series MSOs expand your visibility even further. Whenever you need to see more signals, just plug a TLP058 logic probe into any input. The single analog channel converts to 8 digital channels. FlexChannel inputs are backward-compatible with TekVPI probes.

The 3 Series MDO offers 16 digital channels through a dedicated logic probe, included with the MSO option.

3 4 5 6

Industry–leading Vertical Resolution

See more signal detail. The 4, 5, and 6 Series MSOs feature 12-bit analog-to-digital converters (ADCs) that provide 16 times more vertical resolution than common 8-bit ADCs.

A new High Res mode further boosts vertical resolution and uses smart filtering to limit noise. High Res mode always provides at least 12 bits and extends all the way to 16 bits of vertical resolution.

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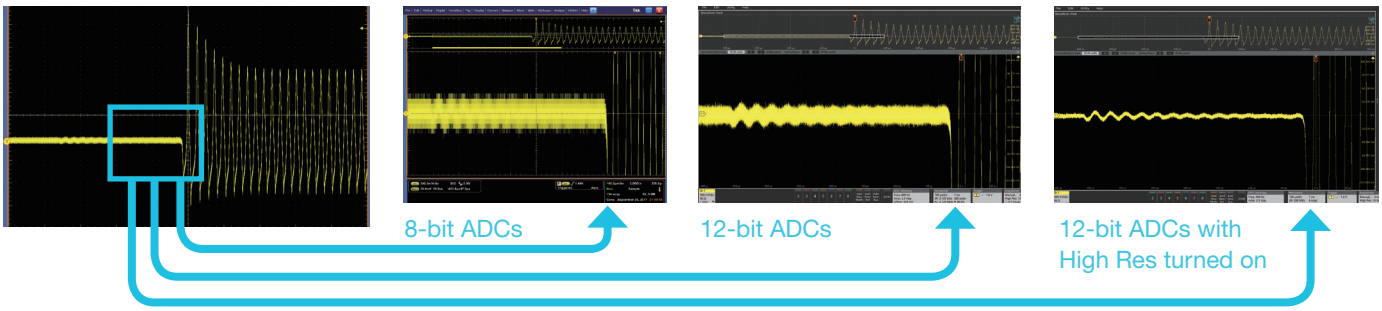

Stacked Display Mode

Most scopes display all waveforms in the same graticule and rely on vertical scale controls to fit signals on the display. Each waveform uses a fraction of the available ADC range, leading to less accurate measurements.

New stacked display mode lets you view each waveform in its own “slice” of the display. Each slice represents the full ADC range for the waveform for more accurate measurements.

The more traditional overlay display mode is also available, for easy direct comparison of waveforms.

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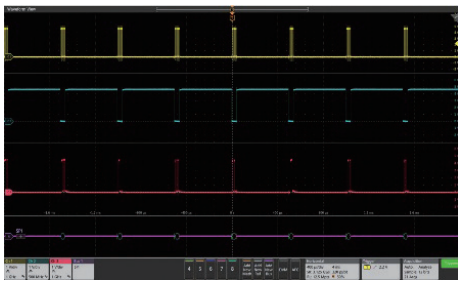
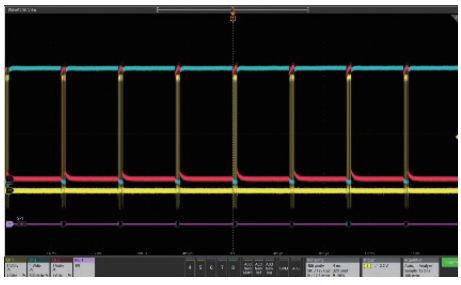


New stacked display mode



Traditional overlay display mode

Powerful Measurements

The Results Bar on the right side of the display includes immediate, one tap access to the most common analytical tools such as:

- Cursors
- Automated measurements
- Searches
- Bus decode tables

These scopes deliver rich insights by providing easy access to measurement statistics. Turn on statistics in the Results Bar to get a quick overview.

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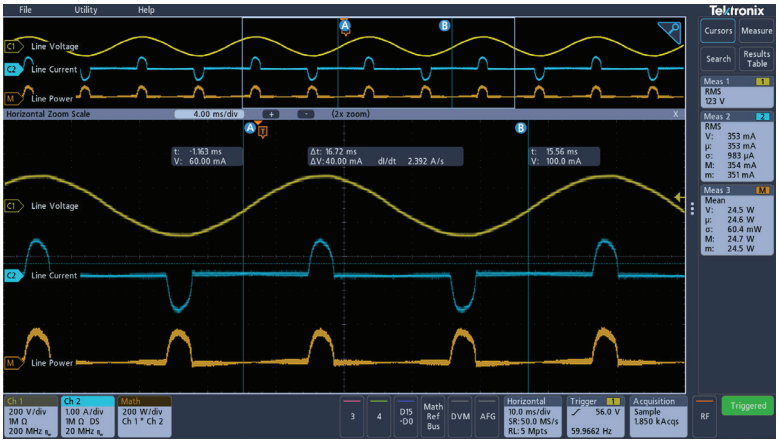

Advanced Measurements and Analysis

Dive into measurements with Results Tables. Results Tables show statistics for the current acquisition and for all acquisitions. Get insight into one measurement, a hundred measurements, or millions of measurements at a glance.

Plots, such as measurement trends and histograms, deliver quick insight.

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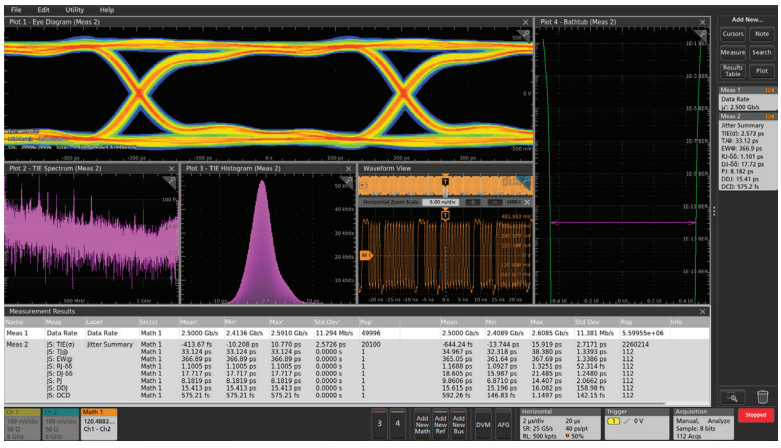

FastAcq™ High Speed Waveform Capture

FastAcq captures at high speed to increase the probability of seeing infrequent problems such as runt pulses, glitches, timing issues, and more.

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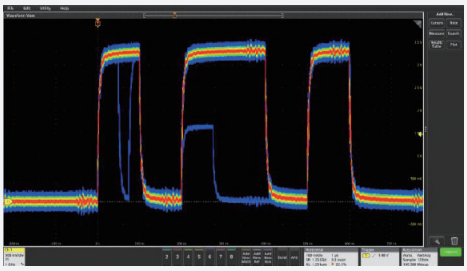


FastFrame™ Segmented Memory

Make the most efficient use of acquisition memory by not storing deadtime between serial packets or bursts. Capture many triggered frames in a single record.

4 5 6

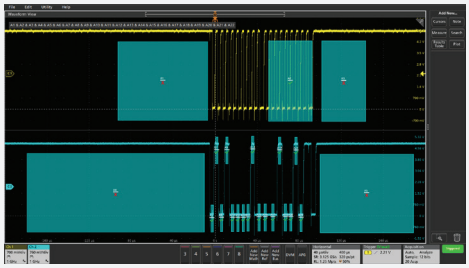
Triggering and Search

A complete set of basic and advanced triggers and search criteria.

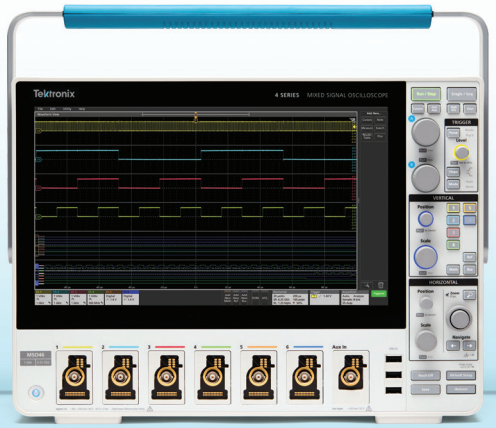
- Runt
- Logic
- Pulse width
- Timeout
- Rise/Fall time
- Setup and hold violations
- Serial and parallel bus activity
- Sequence
- Visual triggers*
- Window*

* 4,5,6 Series only

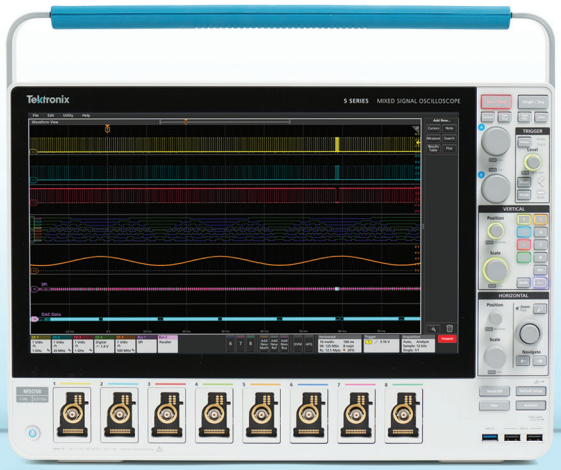
3 4 5 6

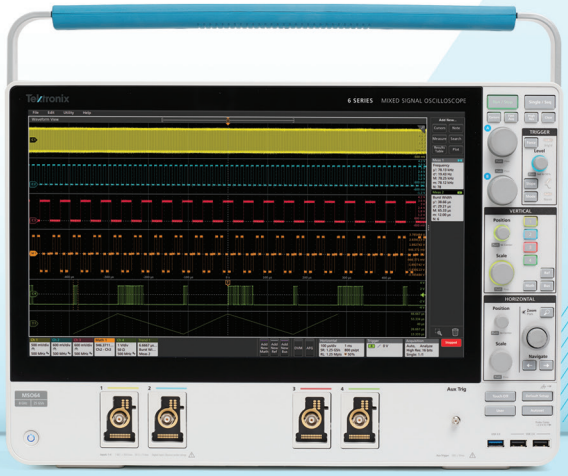


An Oscilloscope for Every Engineer



	3 SERIES MDO	4 SERIES MSO
Bandwidth	100 MHz, 200 MHz, 350 MHz, 500 MHz, 1 GHz	200 MHz, 350 MHz, 500 MHz, 1 GHz, 1.5 GHz
Max channels, analog	4	6
Max channels, digital	16	48
Inputs (see page 4)	TekVPI inputs	FlexChannel inputs
Max sample rate	2.5 GS/s or 5 GS/s, all channels	6.25 GS/s, all channels
Record length	10 Mpoints	Up to 62.5 Mpoints
Vertical resolution (see page 4)	8 bits	12 bits
Advanced analysis (optional) (see page 9)	Serial bus Power	Serial bus Power
Spectrum analysis (see page 8)	Hardware Spectrum Analyzer (optional)	Spectrum View (optional)
Operating system (see page 8)	Embedded	Embedded
Display (see page 3)	11.6" HD, capacitive touch 1920 x 1080	13.3" HD, capacitive touch 1920 x 1080
Starting price	**$3,850**	**$7,550**





5 SERIES MSO	6 SERIES MSO	
350 MHz, 500 MHz, 1 GHz, 2 GHz	1 GHz, 2.5 GHz, 4 GHz, 6 GHz, 8 GHz	**Bandwidth**
8	4	**Max channels, analog**
64	32	**Max channels, digital**
FlexChannel inputs	FlexChannel inputs	**Inputs** (see page 4)
6.25 GS/s, all channels	25 GS/s, all channels	**Max sample rate**
Up to 125 Mpoints	Up to 250 Mpoints	**Record length**
12 bits	12 bits	**Vertical resolution** (see page 4)
Serial bus Power Compliance Jitter	Serial bus Power Compliance Jitter DDR3	**Advanced analysis** (optional) (see page 9)
Spectrum View (standard)	Spectrum View (standard)	**Spectrum analysis** (see page 8)
Embedded Windows (optional)	Embedded Windows (optional)	**Operating system** (see page 8)
15.6" HD, capacitive touch 1920 x 1080	15.6" HD, capacitive touch 1920 x 1080	**Display** (see page 3)
$13,700	**$24,200**	**Starting price**

Integrated Spectrum Analysis

Spectrum View

Because traditional scope FFTs are driven by the same acquisition system that delivers the analog time-domain view, it is virtually impossible to get optimized views in both domains at once.

Spectrum View is different. It lets you independently adjust time- and frequency-domain views, by using patented technology behind each FlexChannel input. You can turn on a spectrum view for any analog channel, enabling multi-channel mixed domain analysis.

Intuitive spectrum analyzer controls like center frequency, span and resolution bandwidth (RBW), make setups easy.

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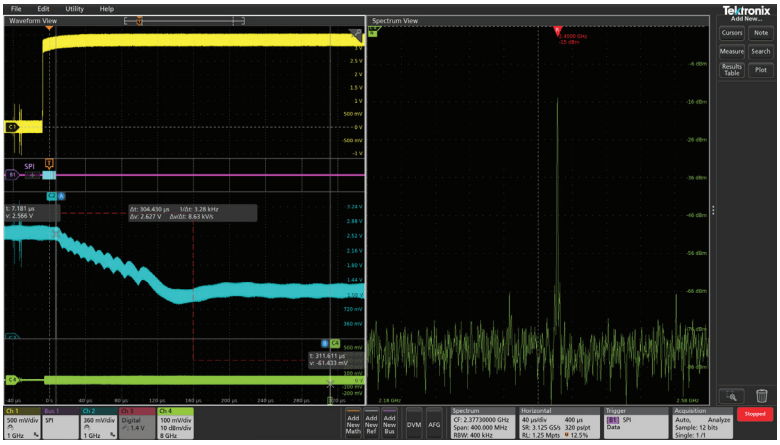

Built–in Spectrum Analyzer

The Tektronix 3 Series MDO offers an integrated, hardware-based spectrum analyzer ranging from 9 kHz to 1 GHz or 3 GHz enabling spectral analysis on IoT and most consumer wireless standards.

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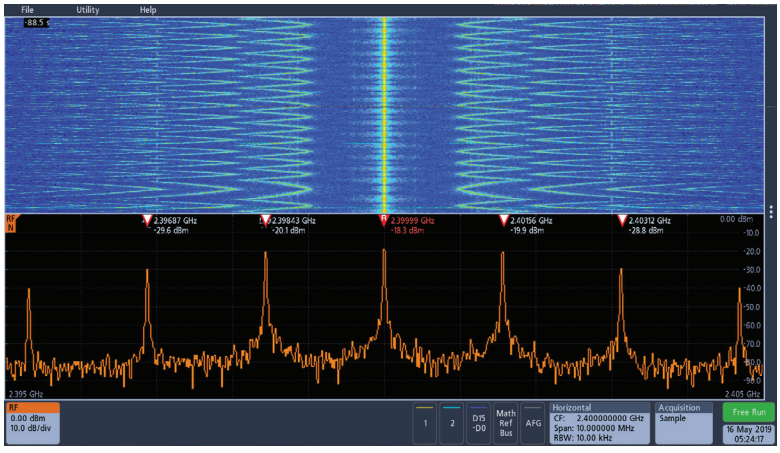

The Spectrogram display illustrates slowly moving RF phenomena. As the peaks change in both frequency and amplitude the changes are easy to see.

Built–in Arbitrary/Function Generator (AFG)

An integrated function generator is perfect for testing frequency response, simulating sensor signals, and adding noise to signals for stress testing.

- 13 standard waveform functions
- 50 MHz Sine / 25 MHz Square and Pulse
- 128k, 250 MS/s arbitrary waveforms

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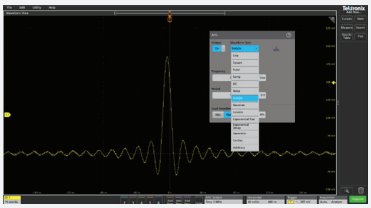

Connectivity

Every instrument includes a USB port and LXI-compliant Ethernet port for remote control. A thoroughly documented programming interface supports custom programming.

With e*Scope built-in, you can control the oscilloscope over a network through a standard web browser.

3 4 5 6

Optional Windows OS

The 5 and 6 Series MSOs offer the option of including a Microsoft Windows™ operating system. The option provides a Windows desktop where you can install and run additional applications on the oscilloscope.

Upgrading to Windows is as simple as plugging in a pre-configured SSD.

5 6

Applications and Advanced Analysis. Emphasis on Analysis.

Built-in features, available probes, and optional analysis packages support a wide range of applications.

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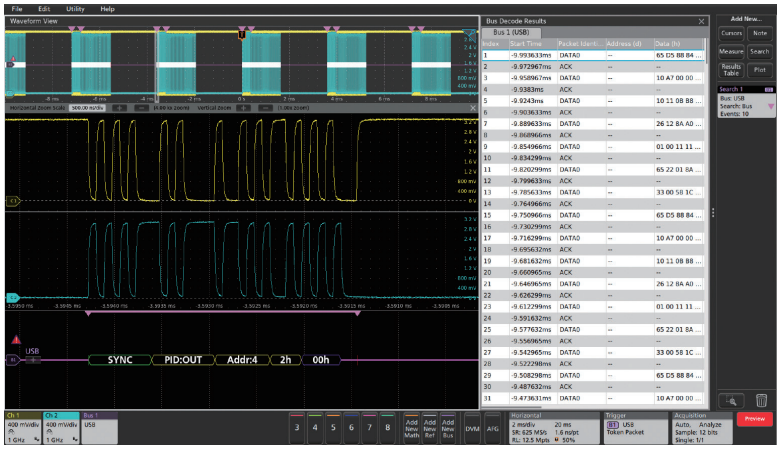
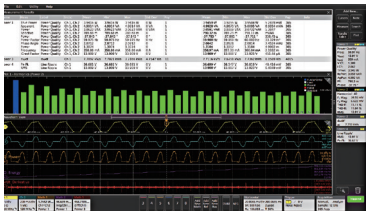
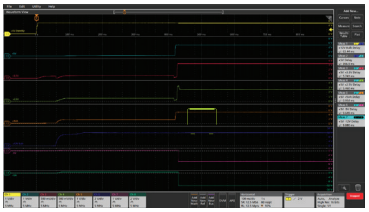


Serial protocol trigger / analysis (optional). Support is available for most common serial bus standards.



Power analysis packages enable automatic measurement of harmonics, switching loss and other key parameters.

EMI Troubleshooting. Spectrum analysis tools help find sources of unwanted emissions.



Power Integrity. Power rail probes and high channel count assist with power rail validation.

Advanced Analysis

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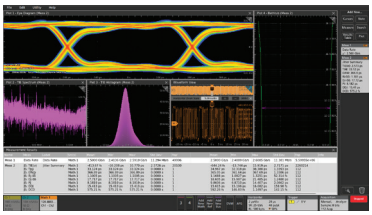
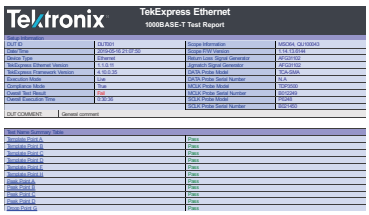


Jitter and timing analysis: Extended analysis functions such as eye diagrams and jitter analysis are optional.



Automatic compliance test and debugging for popular serial standards.

TLP058 Logic Probes

Have the right number of digital channels when you need them. Simply connect a TLP058 logic probe to any FlexChannel input and get 8 digital channels. Connect as many TLP058 probes you want.

4 5 6

TLP058 Specifications	
Number of input channels	8 digital
Input resistance	100 kΩ±1.0%
Input capacitance	3.0pF
Min. detectable pulse width	1ns
Max. input toggle rate	500 MHz
Cable length	1.0m

Power Rail Probes

Probes designed especially for making accurate ripple measurements on power rails, with ± 60 V DC offset range, low noise contribution and bandwidth up to 4 GHz.

4 5 6

TPR1000/TPR4000 Specifications	
Bandwidth	TPR1000: 1 GHz TPR4000: 4 GHz
Attenuation	1.25X
Input impedance	50 kΩ DC - 10 kHz, 50 Ω AC > 100 kHz
Dynamic range	±1 V
Offset range	±60 V

For complete list of available probes visit tek.com/probes

TPP1000/TPP500B

Passive Probes

Model	Bandwidth	Attenuation	Input Impedance	Maximum Voltage
TPP1000	1 GHz	10X	10 MΩ || 3.9 pF	300 V_{rms} (CAT II)
TPP0500B	500 MHz	10X	10 MΩ || 3.9 pF	300 V_{rms} (CAT II)
TPP0502	500 MHz	2X	2 MΩ || 12.7 pF	300 V_{rms} (CAT II)

TAP1500

Active Probes

Model	Bandwidth	Attenuation	Input Impedance	Dynamic Range	Offset Range	Maximum Non-Destruct Voltage
TAP1500	1.5 GHz	10X	1 MΩ || ≤ 1 pF	±8 V	±10 V	±15 V
TAP2500	2.5 GHz	10X	40 kΩ || ≤ 0.8 pF	±4 V	±10 V	±30 V

TDP1500

Differential Probes

Model	Bandwidth	Rise Time	Attenuation	Differential Operating Voltage	Ground Operating Voltage	Input resistance / Input capacitance
TDP0500	500 MHz	≤700ps	5X / 50X	±4.25 V (5X) ±42 V (50X)	±35 V	1MΩ/1pF differential
TDP1000	1 GHz	≤350ps	5X / 50X	±4.25 V (5X) ±42 V (50X)	±35 V	1MΩ/1pF differential
TDP1500	1.5 GHz	≤265ps	1X / 10X	±0.85 V (1X) ±8.5 V (10X)	±7.0 V	200KΩ/1pF differential
TDP3500	3.5 GHz	≤140ps	5X	±2 V	+ 5 to -4 V	100KΩ/0.3pF differential
TDP4000	4.0 GHz	≤126ps	5X	±2 V	+ 5 to -4 V	100KΩ/0.3pF differential

TPP0850

High Voltage Probes

Model	Bandwidth	Max Voltage	Attenuation	Input Impedance	Compensation Range
P6015A	75 MHz	20 kV_{rms} 40 kV peak	1000X	100 MΩ || ≤ 3 pF	7 pF – 49 pF
TPP0850	800 MHz	1000 V_{rms} (CAT II) 2.5 kV peak	50X	40 MΩ || 1.8 pF	Auto compensated by scope

THDP0200

High Voltage Differential Probes

Model	Bandwidth	Rise Time	Attenuation	Maximum Differential Voltage	Maximum Voltage to Earth Ground	Differential Input Capacitance	Differential Input Resistance
TMDP0200	200 MHz	1.8 ns	25X / 250X	±750 V	550 V_{rms} (CAT I)	2 pF	5 MΩ
THDP0200	200 MHz	1.8 ns	50X / 500X	±1500 V	1000 V_{rms} (CAT II)	2 pF	10 MΩ
THDP0100	100 MHz	3.5 ns	100X / 1000X	±6000 V	2300 V_{rms} (CAT I)	2.5 pF	40 MΩ

TCP0030A

Current Probes

Model	Maximum Current	Minimum Current	Bandwidth	Rise Time
TCP0030A	30 A DC; 30 A_{rms}; 50 A peak	1 mA	DC - 120 MHz	≤ 2.92 ns
TCP0020	20 A DC; 20 A_{rms}; 100 A peak	10 mA	DC - 50 MHz	≤ 7 ns
TCP0150	150 A DC; 150 A_{rms}; 500 A peak	5 mA	DC - 20 MHz	≤ 17.5 ns

TDP7708

High Bandwidth Differential Probes

Model	Bandwidth
TDP7704	4 GHz
TDP7706	6 GHz
TDP7708	8 GHz

Tekflex Accessory	Attenuation	Input Impedance	Differential Input Voltage	Operating Window	Offset Range
P77STFLXA, P77STLFXB, P77STCABL	4X	100kΩ || 0.4 pF	5V	±5.25 V	±4 V
P77BRWSR	10X	150kΩ || 22 pF	12V	±10 V	±10 V
P77C292MM	Variable	50Ω (SMA)	2V	±4 V	±4 V

Options at a glance

For complete ordering details see the product datasheet or contact your local sales representative.

Base Models	3 Series MDO	4 Series MSO	5 Series MSO	6 Series MSO
2 TekVPI channels	MDO32			
4 TekVPI channels	MDO34			
4 FlexChannel Inputs		MSO44	MSO54	MSO64
6 FlexChannel Inputs		MSO46	MSO56	
8 FlexChannel Inputs			MSO58	
Bandwidth	**3 Series MDO**	**4 Series MSO**	**5 Series MSO**	**6 Series MSO**
	100 MHz, 200 MHz, 350 MHz, 500 MHz, 1 GHz	200 MHz, 350 MHz, 500 MHz,1 GHz, 1.5 GHz	350 MHz, 500 MHz, 1 GHz, 2 GHz	1 GHz, 2.5 GHz, 4 GHz, 6 GHz, 8 GHz
Instrument Options	**3 Series MDO**	**4 Series MSO**	**5 Series MSO**	**6 Series MSO**
Digital channels	•	*simply order TLP058 probes to enable 8 digital signals per probe*		
Arbitrary function generator	•	•	•	•
Spectrum analyzer	1 GHz, 3 GHz	*see Spectrum View analysis below*		
Extend record length	(10 M standard)	62.5 M/ch max (31.25 M standard)	125 M/ch max (62.5 M standard)	125 M/ch max 250 M/ch max (62.5 M standard)
Analysis Options	**3 Series MDO**	**4 Series MSO**	**5 Series MSO**	**6 Series MSO**
Serial Decode Options	Aerospace serial trig. and analysis (MIL-STD-1553, ARINC429)	•	•	•	•
	Audio serial trig. and analysis (I2S, LJ, RJ, TDM)	•	•	•	•
	Automotive serial trig. and analysis (CAN, CAN FD, LIN, FlexRay)	•	•	•	•
	Automotive sensor serial triggering and analysis (SENT)		•	•	•
	Computer serial triggering and analysis (RS-232/422/485/UART)	•	•	•	•
	Embedded serial triggering and analysis (I^2C, SPI)	•	•	•	•
	Ethernet serial triggering and analysis (10BASE-T, 100BASE-TX)		•	•	•
	I3C serial analysis		•	•	•
	Power management serial triggering and analysis (SPMI)		•	•	•
	USB serial triggering and analysis (USB 2.0 LS, FS, HS)	•	•	•	•
Compliance Options	Automotive ethernet (100BASE-T1, 1000BASE-T1) automated compliance test application			•	•
	MIPI D-PHY 1.2 automated compliance solution				•
	Ethernet (1000BASE-T, 100BASE-T, 10BASE-T) automated compliance solution			•	•
	Ethernet (2.5G and 5G BASE-T) automated compliance solution				•
	USB2.0 automated compliance test solution			•	•
	DDR3 and LPDDR3 automated compliance solution				•
	Ethernet (10G BASE-T) automated compliance solution				•
Analysis Options	Advanced jitter and eye analysis			•	•
	Spectrum View analysis		•	*included standard*	
	Basic power measurements and analysis	•	•		
	Advanced power measurement and analysis			•	•
	DDR3 and LPDDR3 analysis and debug				•
	Enhanced security for instrument declassification	•	•	•	•
	Removable SSD with Windows license			•	•
Service Options	**3 Series MDO**	**4 Series MSO**	**5 Series MSO**	**6 Series MSO**
Calibration service 3 or 5 years	•	•	•	•
Standard warranty extended to 5 years	•	•	•	•
Total product protection 3 or 5 years	•	•	•	•

High Speed Digitizer

Need higher channel density?

The 5 Series MSO is also available in a low-profile form factor - the MSO58LP. With eight 1 GHz input channels plus an auxiliary trigger input, in a 2U high package and with 12-bit ADCs, the 5 Series MSO Low Profile sets a new standard for performance in applications where extreme channel density is required.

Complementary Instruments

Arbitrary / function generators

The AFG31000 arbitrary / function generator is a high-performance AFG providing advanced waveform generation and programming capabilities with a modern touch screen interface.

Digital multimeters

The DMM6500 is an all-purpose touch screen DMM with comprehensive measurement capability - including transient capture, data visualization, and analysis – at the price of other 6½-digit DMMs with far less performance.

Source measure units

Keithley 2400 Series SMU instruments offer four-quadrant precision voltage and current source/load coupled with measurement, with a touch screen user interface.

Power supplies

Series 2230 Multi-Channel Programmable DC Power Supplies are ideal for testing a wide range of devices, circuit boards, modules, and products that require multiple power sources.

Find more valuable resources at TEK.COM

05/19 SMD 48W-61573-0