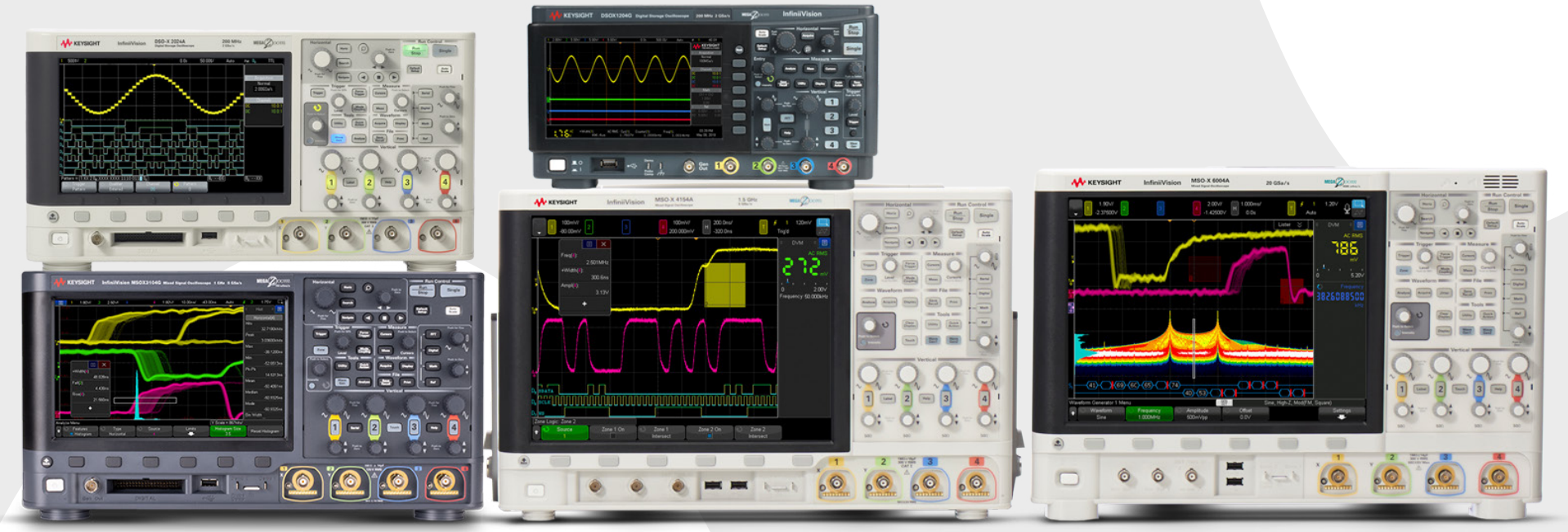
Engineering Essentials
Oscilloscopes

CATALOG



KEYSIGHT

Table of Contents

Get Quality and Confidence with InfiniiVision Oscilloscopes

Test to Impress

Sometimes the job is making a design work better, and sometimes it's just making it work. Whatever challenges you face, Keysight InfiniiVision oscilloscopes, with models from 50 MHz to 6 GHz, can help. Whether you use a scope once a day, once a week, or once a month, InfiniiVision scopes are ready to inspire quicker insight. Keysight's technology puts automated measurements and accessible expertise at your fingertips.

Why choose an InfiniiVision oscilloscope?

- Spend less time testing with tools like zone touch trigger, automatic settings, and built-in help.
- See more of your signal with uncompromising update rates.
- Get more analysis with multiple instruments in one oscilloscope, including digital voltmeter, waveform generator (WaveGen), counter, protocol analyzer, digital channels (MSO), and frequency response analyzer (Bode plot).
- Protect your investment by only purchasing the capability you need today with the ability to upgrade your bandwidth, digital channels (MSO), WaveGen capability, and software applications later.

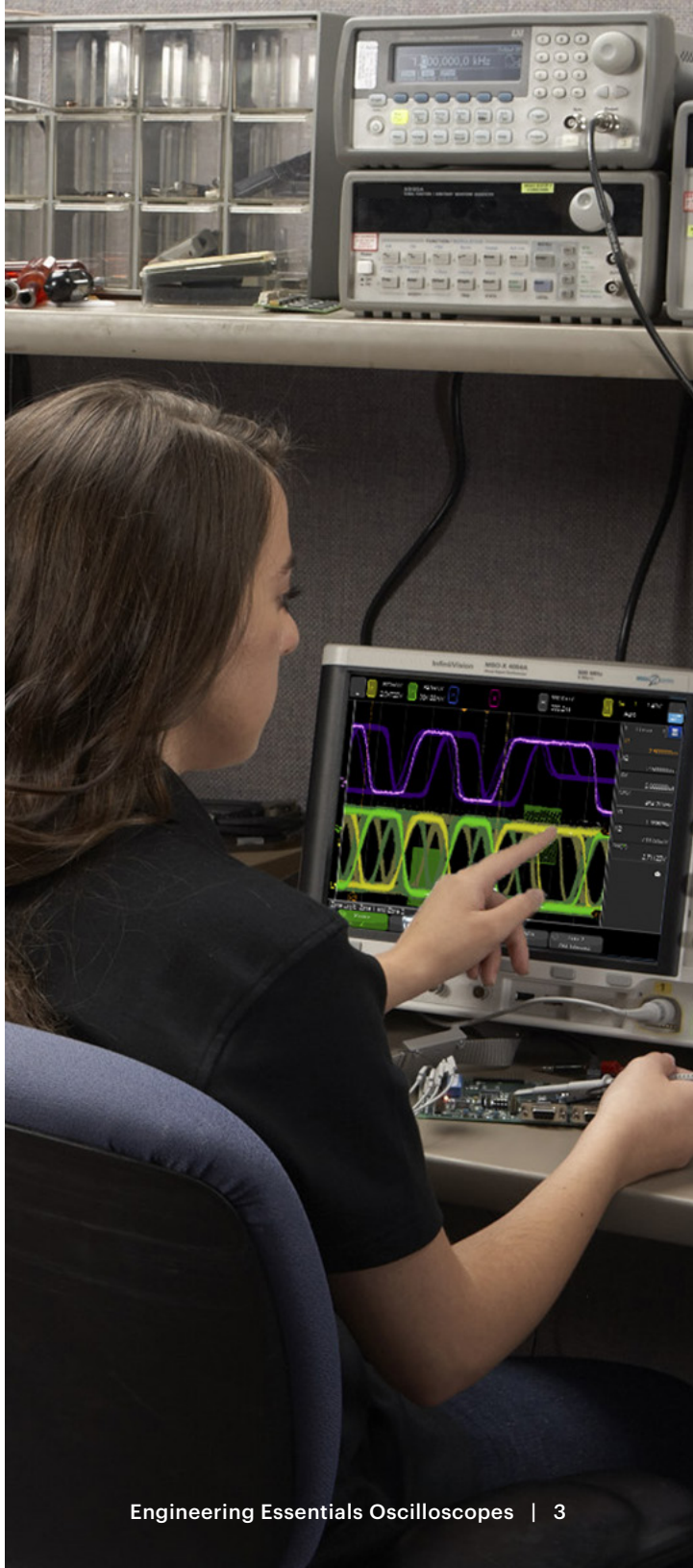
Need an application-specific solution?

InfiniiVision has you covered with software that includes automotive, aerospace and defense, embedded, power, and universal serial bus (USB). Click here to check out popular free software trials.

Get quality and confidence with InfiniiVision — and test to impress.

Save 25% on InfiniiVision application bundles for power, jitter, and automotive. Click here to learn more.

Are you looking for higher-performance oscilloscopes?
Check out the High-Performance Digital Products catalog.



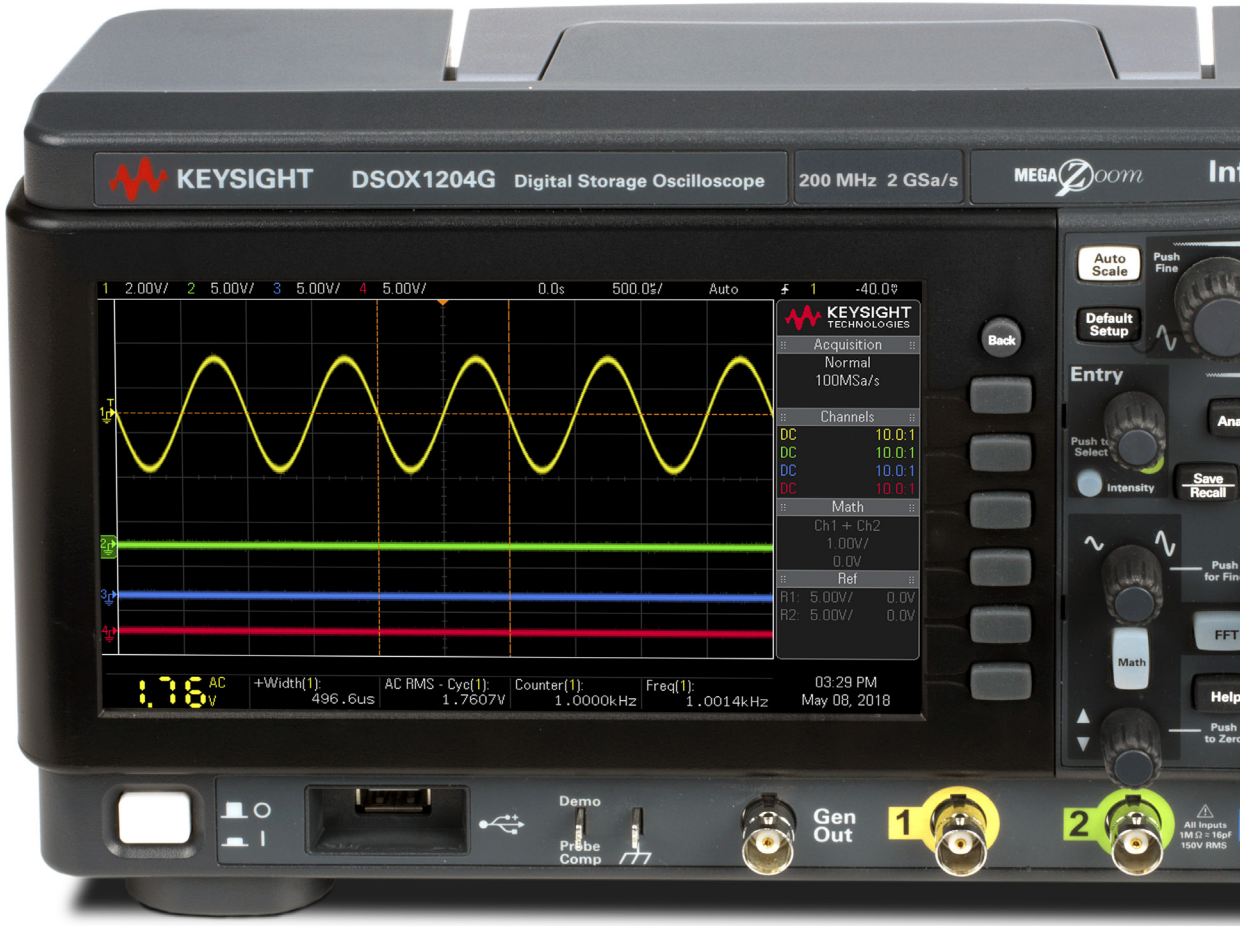
InfiniiVision 1000 X-Series Oscilloscopes

Engineered to give you quality, industry-proven technology at unbelievably low prices.

The 1000 X-Series leverages the same technology we use in our higher-end InfiniiVision family, giving you professional-level measurements you can trust. Now you can get even more functionality with capabilities like 4-wire SPI decode and remote connection via LAN. Get the performance you need to measure with confidence.

- Measure frequency response analysis (Bode gain and phase plots), included in models with WaveGen.
- See more signal detail with up to 200,000 waveforms / second update rate.
- Have confidence in your measurements with Keysight's custom technology.
- Test quickly and easily with a simple, intuitive user interface and built-in help and training signals.
- Get professional-level functionality with industry-leading software analysis, including standard serial bus analysis for the most popular serial bus standards, and 6-in-1 instrument integration.

Learn more about the 1000 X-Series



InfiniiVision 1000 X-Series Oscilloscope
Professional-level capabilities in an entry-level instrument

InfiniiVision 1000 X-Series Oscilloscopes

Specifications	EDUX1052A	EDUX1052G	DSOX1202A	DSOX1202G	DSOX1204A	DSOX1204G
Bandwidth	50 MHz		70, 100, 200 MHz			
Channels	2 channels + external digital channel				4 channels	
Memory	200 k points		2 M points			
Max sample rate	1 GSa/s		2 GSa/s			
Integrated instruments	WaveGen (standard on Keysight EDUX1052G, DSOX1202G, and DSOX1204G models only), hardware-based serial protocol decode and triggering, frequency response analyzer (EDUX1052G, DSOX1202G, and DSOX1204G models only), digital voltmeter (DVM), and frequency counter					
Bode plot (FRA)	No	Standard	No	Standard	No	Standard
Mast testing	No		Standard (200,000 tests / second)			
Serial protocols (Std.)	I^2C, RS232 / UART		I^2C, SPI, RS232 / UART, CAN, LIN			
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Professional-level capabilities in an entry-level instrument

There's plenty of information available about oscilloscope basics and high-end features. What about everything in between?

Learn about some of the less talked about oscilloscope functions with the *A Step Beyond the Basics: 6 Advanced Oscilloscope Tips* - eBook.

Download the eBook

InfiniiVision 3000G X-Series Oscilloscopes

Expect more from your general-purpose oscilloscope.

The 3000G X-Series comes with everything you need to get started in general-purpose electronic design. The included software, probes, other advanced features such as histograms and zone touch triggering, and technical support are ideal for R&D debugging, low-speed serial design and testing, power integrity testing, and equipping the labs of educators who teach engineers in training.

- Trigger and decode on the most common embedded serial buses (I2C, SPI, UART / RS232 / RS485, and USB-PD) with standard embedded analysis software.
- Perform advanced analysis with histograms, hardware-based mask limit and measurement limit testing, frequency response analysis (Bode plots), and HDTV video analysis.
- Isolate signals in seconds with exclusive zone touch triggering using the 8.5-inch capacitive touch screen.
- Capture elusive glitches and anomalies that are not possible on other oscilloscopes with 1,000,000 waveforms / second update rate.
- Get more functionality with 7-in-1 instruments: oscilloscope, protocol analyzer, frequency response analyzer (Bode plots), 20-MHz arbitrary waveform generator, 3-digit voltmeter, 8-digit counter and totalizer, and optional integrated 16 digital channels (MSO models).
- Extend your scope's capabilities and save 25% on InfiniiVision 3000G X-Series power and automotive application bundles. Click here to learn more.
- Protect your investment with full upgradeability at any time for bandwidth, digital channels, and oscilloscope software.

Learn more about the 3000G X-Series

InfiniiVision 3000G X-Series Oscilloscopes
Advanced capabilities simplified

InfiniiVision 3000G X-Series Oscilloscopes

Specifications		3012G	3014G	3022G	3024G	3032G	3034G	3052G	3054G	3102G	3104G
Bandwidth		100 MHz		200 MHz		350 MHz		500 MHz		1 GHz	
Channels	DSOX	2	4	2	4	2	4	2	4	2	4
	MSOX	2 + 16	4 + 16	2 + 16	4 + 16	2 + 16	4 + 16	2 + 16	4 + 16	2 + 16	4 + 16
Memory		4 M points with segmented memory standard									
Max sample rate		5 GSa/s half channels, 2.5 GSa/s all channels									
Waveform update rate		>1,000,000 waveforms / second									
Integrated instruments		Mixed-signal oscilloscope (MSO), 20 MHz arbitrary waveform generator, protocol analyzer, digital voltmeter, 8-digit counter, frequency response analyzer (Bode plots)									
Time base range		5 ns/div ~ 50 s/div		2 ns/div ~ 50 s/div				1 ns/div ~ 50 s/div		500 ps/div ~ 50 s/div	
Serial protocols options		Standard: I2C, SPI, UART / RS232, I2S, and USB PD Optional: CAN / CAN FD / CAN dbc, LIN / LIN symbolic, SENT, FlexRay, MIL-STD1553, CXPI, ARINC429, Manchester / NRZ									
Triggering		Zone touch trigger, edge, edge then edge (B trigger), pulse width, pattern, OR, rise / fall time, Nth edge burst, runt, setup and hold, video, enhanced video (HDTV) (option), and various serial buses (optional)									
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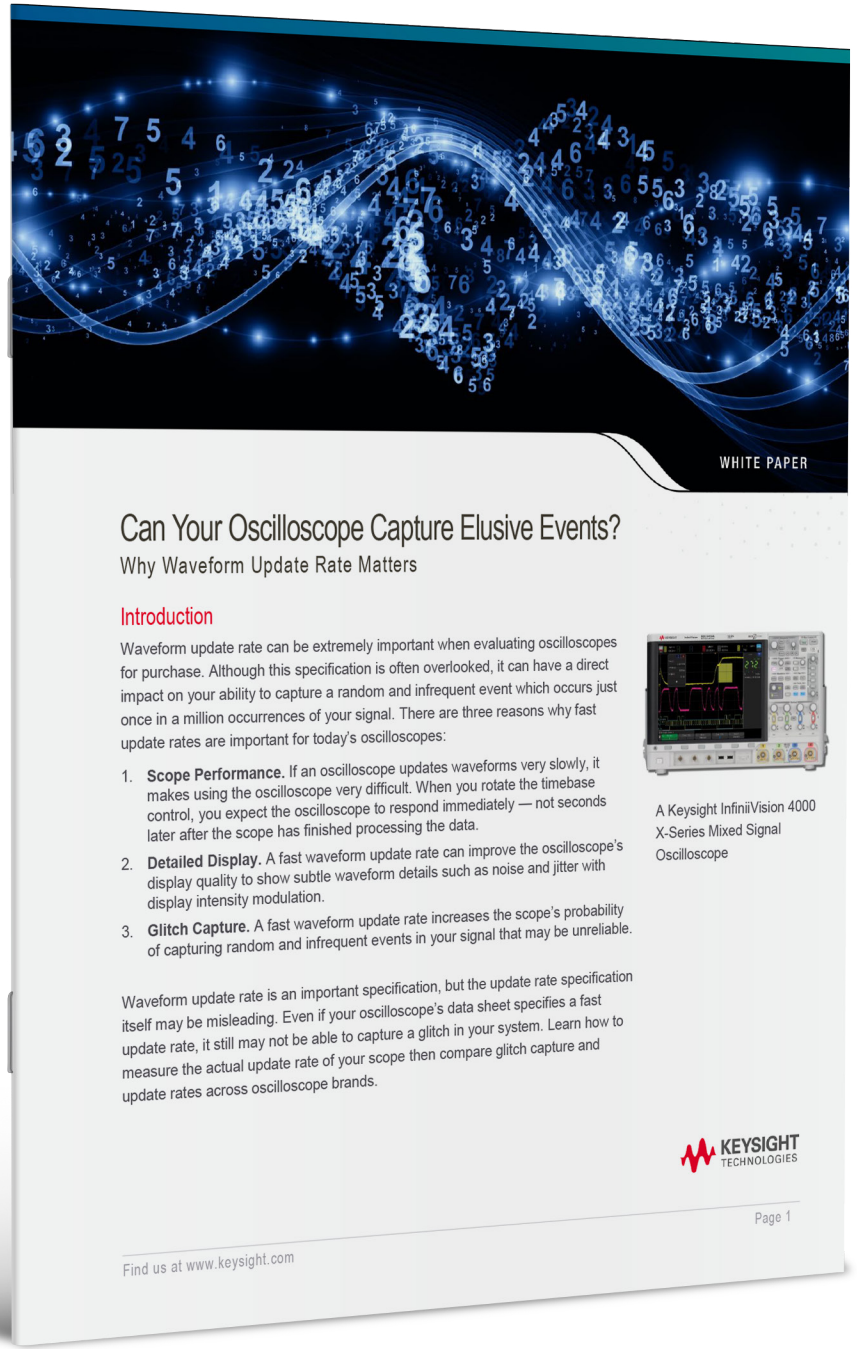
Your oscilloscope's waveform update rate matters. Learn how to measure the update rate of your scope and how it affects the dead time as well as the probability of capturing glitches with *Why Waveform Update Rate Matters* - White Paper.

Download the white paper



InfiniiVision 4000 X-Series Oscilloscopes

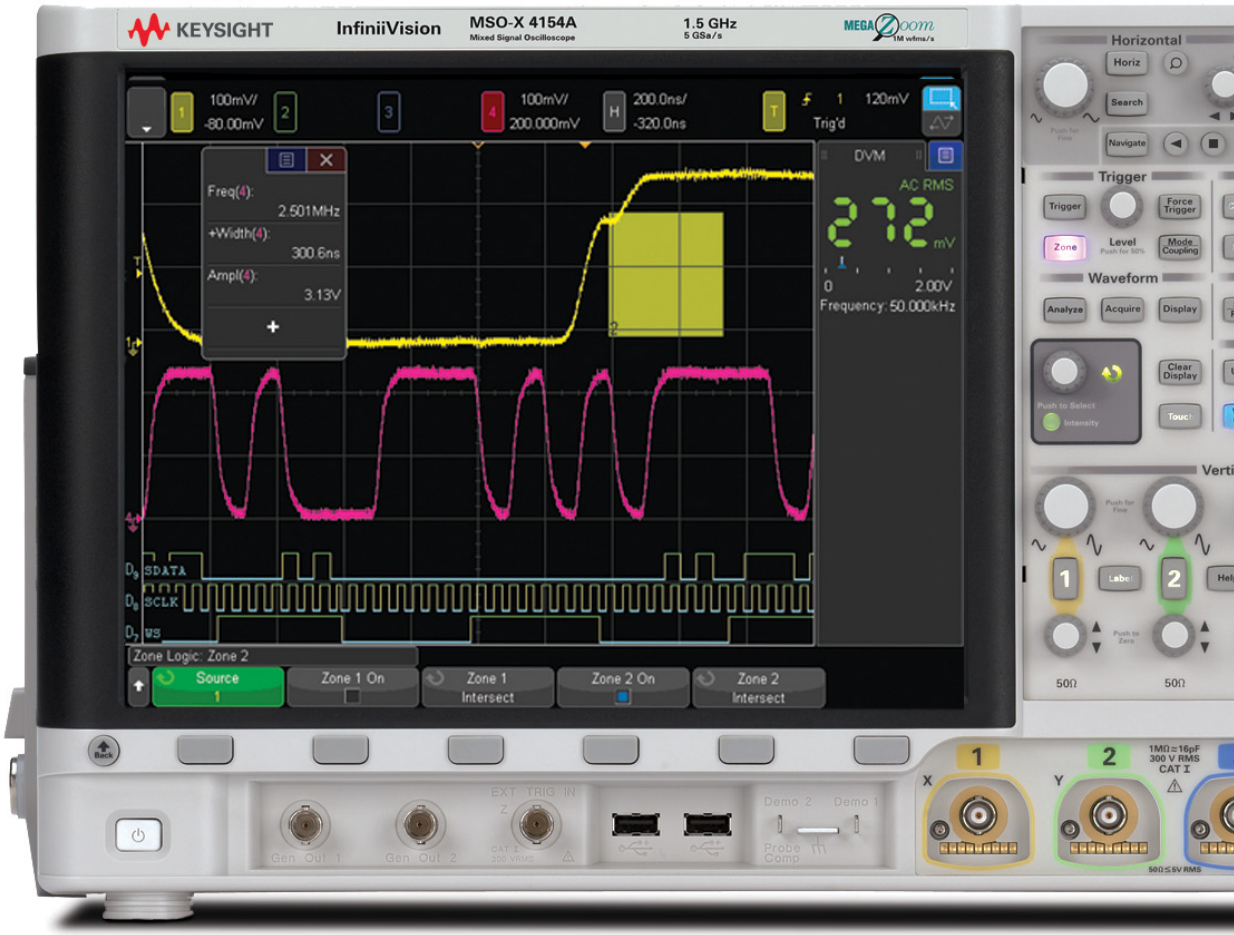
Get next-generation performance.

Imagine an oscilloscope that sees everything, triggers on anything, has the ease-of-use of a tablet device, and grows with your projects. The 4000 X-Series is engineered for next-generation performance, delivering waveform update rates 20 times faster than the competition to display the most signal detail. An industry-leading 12.1-inch capacitive touch screen with innovative hardware-based zone touch triggering provides the most intuitive interface to get you answers faster. These oscilloscopes also provide maximum investment protection with fully upgradeable 7-in-1 instruments.

- Speed testing with simplified operation and documentation, enabled by a 12.1-inch capacitive touch screen.
- Isolate signals in seconds with exclusive zone touch triggering.
- See the most signal detail with 1,000,000 waveforms / second update rate.
- Get more functionality with optional integrated digital channels (MSO), serial protocol analysis, dual-channel WaveGen, frequency response analysis (Bode plots), power analysis, and 3-digit voltmeter.
- Save 25% on InfiniiVision 4000 X-Series power and automotive application bundles. Click here to learn more.
- Protect your investment with full upgradeability — add options and bandwidth at any time.

Learn more about the 4000 X-Series

InfiniiVision 4000T X-Series Oscilloscope
Usability and capability that redefine the oscilloscope experience



InfiniiVision 4000 X-Series Oscilloscopes

Specifications		4022A	4024A	4032A	4034A	4052A	4054A	4104A	4154A
Bandwidth		200 MHz		350 MHz		500 MHz		1 GHz	1.5 GHz
Channels	DSOX	2	4	2	4	2	4	4	4
	MSOX	2 + 16	4 + 16	2 + 16	4 + 16	2 + 16	4 + 16	4 + 16	4 + 16
Memory		4 M points with segmented memory standard							
Max sample rate		5 GSa/s half channels, 2.5 GSa/s all channels							
Waveform update rate		>1,000,000 waveforms / second							
Integrated instruments		Logic channels, digital voltmeter (DVM), dual-channel WaveGen function / arbitrary waveform generator, frequency response analyzer (Bode plots), 8-digit hardware counter, and serial protocol analyzer							
Rise time (10 to 90%)		≤ 1.75 ns		≤ 1 ns		≤ 700 ps		≤ 450 ps	≤ 300 ps
Serial protocols options		I^2C, SPI, UART / RS232, CAN / CAN FD / CAN-dbc, LIN / LIN symbolic, SENT, FlexRay, I^2S, MIL-STD1553, CXPI, ARINC429, USB 2.0, Manchester / NRZ, USB 2.0, USB PD							
Triggering		Zone touch trigger, edge, edge then edge, pulse width (time-qualified) pattern, or rise / fall time, Nth edge burst, runt, setup and hold, enhanced video (HDTV) (option), and various serial buses (optional)							
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Learn how to use oscilloscopes to characterize the performance of your automotive buses, including CAN, CAN FD, LIN, FlexRay, and SENT with the *Automotive Serial Bus Testing Using Oscilloscopes* - White Paper.

Download the white paper

InfiniiVision 6000 X-Series Oscilloscopes

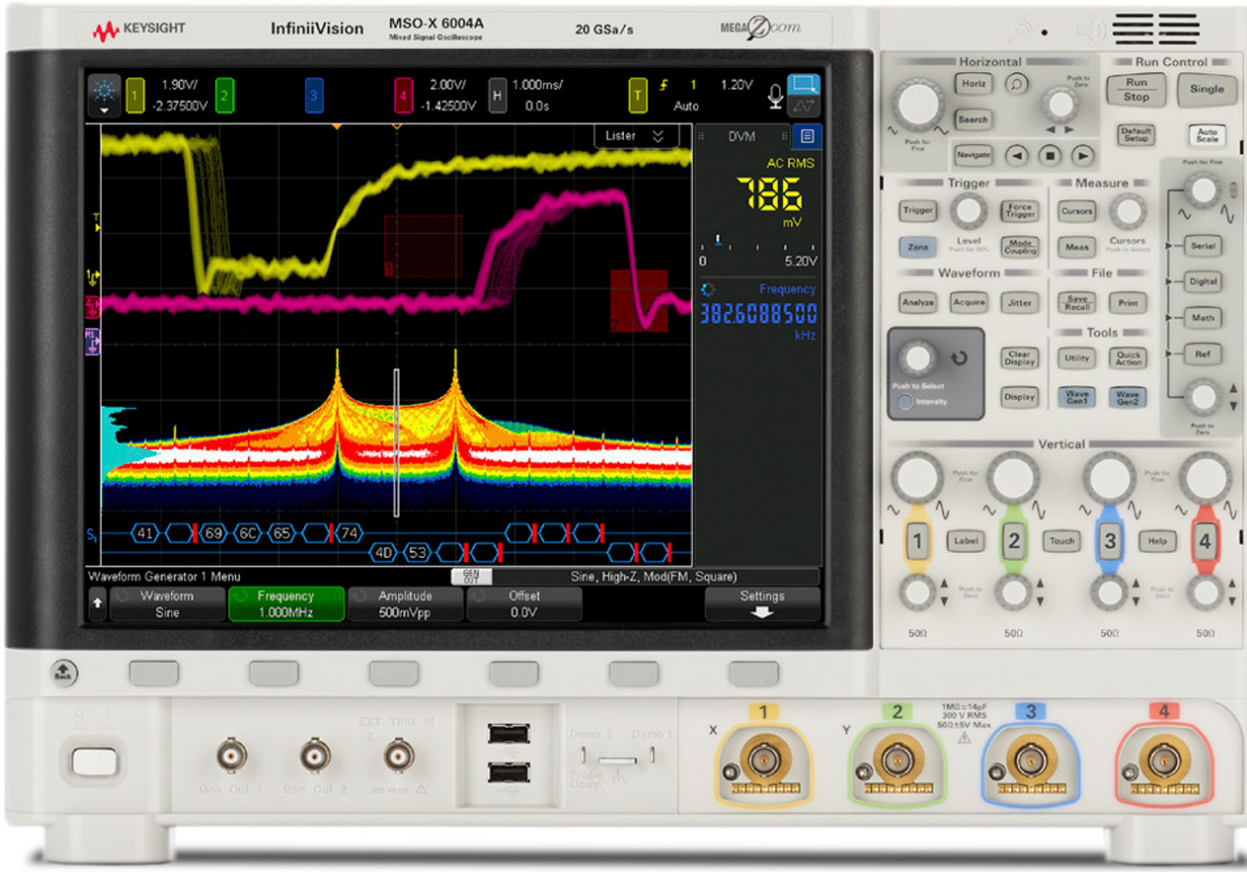
Take advantage of unprecedented visualization power.

In the past, if you wanted an oscilloscope with exceptional performance, you could expect to pay a premium. Not anymore. The 6000 X-Series is designed for engineers who need bandwidth, visualization power, and the flexibility that comes with integrated capabilities. Get unprecedented visualization power with 450,000 waveforms / second update rate coupled with the hardware-based zone touch trigger. Increase your productivity with its 7-in-1 instrument integration and multi-language voice control. The InfiniiVision 6000 X-Series is the new standard in price performance.

- See more signal detail with 450,000 waveforms / second update rate.
- Isolate signals in seconds with exclusive zone touch triggering.
- Operate hands-free with multi-language voice control.
- Get more functionality with optional integrated digital channels, serial protocol analysis, dual-channel WaveGen, frequency response analysis (Bode plots), and 10-digit counter + 3-digit voltmeter.
- Save 25% on the InfiniiVision 6000 X-Series jitter application bundle. Click here to learn more.
- Protect your investment with full upgradeability; add options and bandwidth at any time.

Learn more about the 6000 X-Series

InfiniiVision 6000 X-Series Oscilloscope
The value leader in price for performance



InfiniiVision 6000 X-Series Oscilloscopes

Specifications	DSOX6002A	MSOX6002A	DSOX6004A	MSOX6004A
Bandwidth	1 to 6 GHz options			
Channels	2	2 + 16	4	4 + 16
Memory	4 M points with segmented memory standard			
Max sample rate	20 GSa/s half channels, 10 GSa/s all channels			
Waveform update rate	>450,000 waveforms / second			
Integrated instruments	Digital channels, serial protocol analysis, a built-in dual-channel WaveGen, frequency response analysis, built-in digital multimeter, and built-in 10-digit counter with totalizer			
Noise floor	210-µVrms noise floor at 1 mV/div (6 GHz), 115-µVrms noise floor at 1 mV/div (1 GHz)			
Serial protocols options	I^2C, SPI, UART, CAN / CAN FD / CAN-dbc, LIN / LIN symbolic, FlexRay, SENT, I^2S, MIL-STD1553, ARINC429, USB 2.0, CXPI, Manchester / NRZ, USB PD			
Triggering	Zone touch trigger, edge, edge then edge, pulse width (time-qualified), pattern, or, rise / fall time, Nth edge burst, runt, setup and hold, enhanced video (HDTV) (option), and various serial buses (optional)			
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Learn to identify oscilloscope jitter sources and choose the correct way to reduce or eliminate jitter to improve your designs' transmission performance.

Download the application note

Infiniium EXR-Series Oscilloscopes

Discover an 8-channel oscilloscope that is powerful, easy to own, and intuitive to use.

The EXR-Series incorporates a 10-bit ADC with a sample rate of 16 GSa/s available on all channels simultaneously. A high-resolution ADC's usefulness is dependent on the low-noise front end that supports the additional quantization levels. The EXR-Series' low noise front end includes custom ICs, like the 130 nm Bipolar CMOS (BiCMOS) IC that incorporates user-selectable analog filters and bandwidth upgrades via a software license.

- Get four times more vertical resolution than 8-bit oscilloscopes.
- Experience high-resolution mode with up to 16 bits.
- Acquire clearer signals with noise as low as 43 µV and 9.0 bits of system ENOB with hardware filtering.
- See more information with history mode and segmented memory.
- Protect your investment with fully upgradeability; add options, bandwidth, and more channels at any time.

Learn more about the EXR-Series

Infiniium EXR-Series Oscilloscope
Powerful. Easy to Own. Intuitive to Use.

Infiniium EXR-Series Oscilloscopes

Specifications		EXR05XA	EXR10XA	EXR20XA	EXR25XA
Bandwidth (-3 db)	50 Ω	500 MHz	1 GHz	2 GHz	2.5 GHz
	1 MΩ	500 MHz	500 MHz	500 MHz	500 MHz
Typical rise / fall time	10 / 90%	860 ps	430 ps	215 ps	172 ps
	20 / 80%	620 ps	310 ps	155 ps	124 ps
Channels		4 or 8 channels analog, 16 channels digital (optional)			
Sample rate		16 GSa/s, all analog channels			
Memory		Standard: 100 Mpts / channel (all channels) / Optional: 400 Mpts / channel (all channels)			
Integrated instruments		Digital channels, protocol analysis, arbitrary waveform generator (50 MHz), frequency response analysis (50 MHz), 4-digit digital multimeter (10-digit counters), logic analysis (16 channels), and phase noise analysis			
Noise floor		100 µVrms noise floor at 1 mV / div (2.5 GHz), 43 µVrms noise floor at 1 mV / div (20 MHz)			
Serial protocol options		I^2C, SPI, Quad SPI, eSPI, RS232, UART, JTAG, I^2S, SVID, Manchester, USB 2.0, 10 / 100 Mb/s Ethernet, USB-PD, CAN, CAN-FD, LIN, SENT, FlexRay, RFFE, I^3C, SPMI, ARINC 429, MIL-STD 1553, SpaceWire, 100BASE-T1 automotive Ethernet			
Triggering		Edge, edge transition, edge then edge (time / event), pulse width, glitch, runt, timeout, pattern / state, setup / hold, window, protocol, generic protocol, burst, Nth edge, OR'd edges, Zone touch trigger, measurement limit, and non-monotonic edge			
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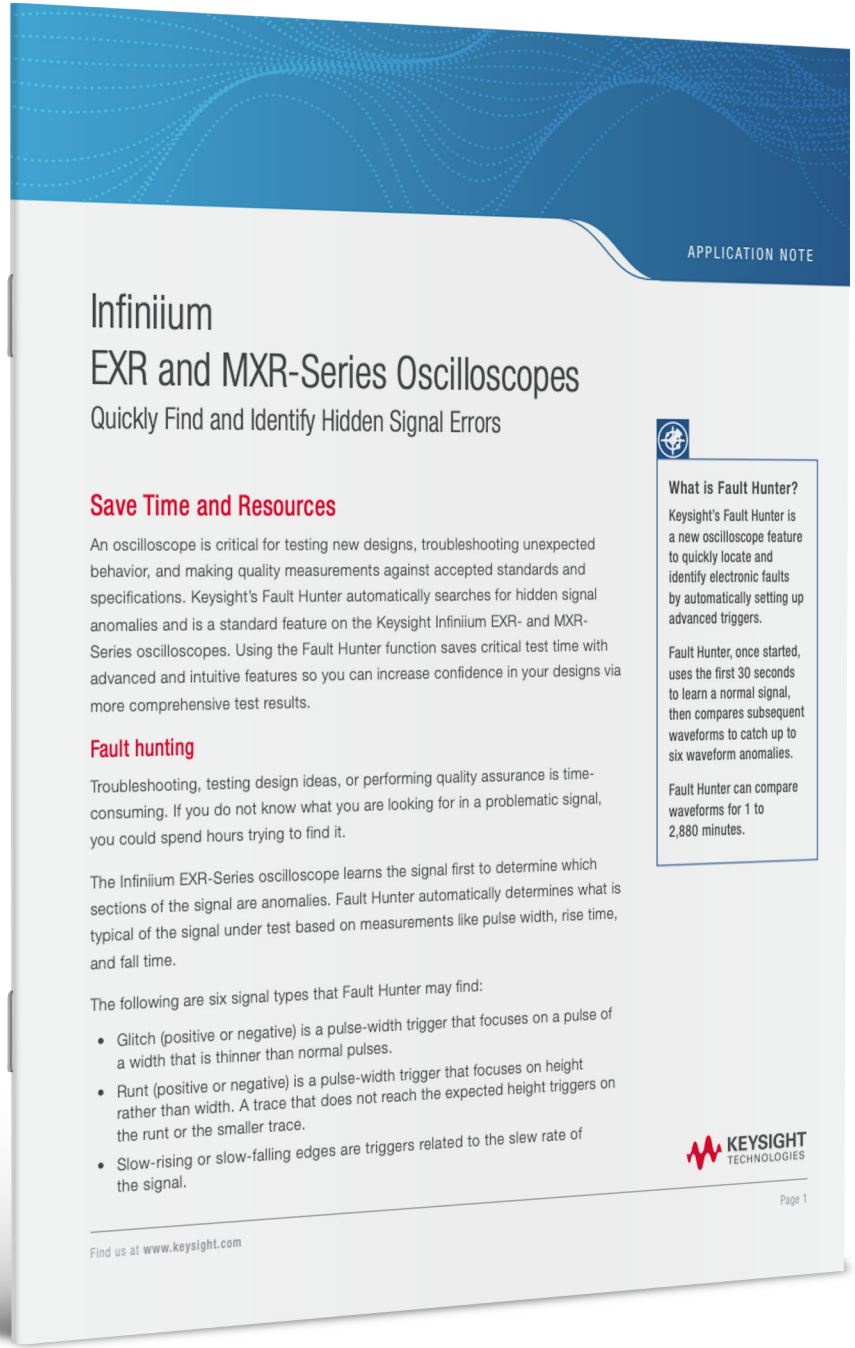
Save Hours of Test Time with New Oscilloscope Feature

Check out the *Quickly Find and Identify Hidden Signal Errors* application note to discover the first-of-its-kind Keysight Fault Hunter oscilloscope feature that characterizes your signal, finds errors, and identifies them.

Download the application note



APPLICATION NOTE

Infiniium
EXR and MXR-Series Oscilloscopes
Quickly Find and Identify Hidden Signal Errors

Save Time and Resources

An oscilloscope is critical for testing new designs, troubleshooting unexpected behavior, and making quality measurements against accepted standards and specifications. Keysight's Fault Hunter automatically searches for hidden signal anomalies and is a standard feature on the Keysight Infiniium EXR- and MXR-Series oscilloscopes. Using the Fault Hunter function saves critical test time with advanced and intuitive features so you can increase confidence in your designs via more comprehensive test results.

Fault hunting

Troubleshooting, testing design ideas, or performing quality assurance is time-consuming. If you do not know what you are looking for in a problematic signal, you could spend hours trying to find it.

The Infiniium EXR-Series oscilloscope learns the signal first to determine which sections of the signal are anomalies. Fault Hunter automatically determines what is typical of the signal under test based on measurements like pulse width, rise time, and fall time.

The following are six signal types that Fault Hunter may find:

- Glitch (positive or negative) is a pulse-width trigger that focuses on a pulse of a width that is thinner than normal pulses.
- Runt (positive or negative) is a pulse-width trigger that focuses on height rather than width. A trace that does not reach the expected height triggers on the runt or the smaller trace.
- Slow-rising or slow-falling edges are triggers related to the slew rate of the signal.

What is Fault Hunter?

Keysight's Fault Hunter is a new oscilloscope feature to quickly locate and identify electronic faults by automatically setting up advanced triggers.

Fault Hunter, once started, uses the first 30 seconds to learn a normal signal, then compares subsequent waveforms to catch up to six waveform anomalies.

Fault Hunter can compare waveforms for 1 to 2,880 minutes.

KEYSIGHT TECHNOLOGIES

Page 1

Find us at www.keysight.com

Expand your InfiniiVision oscilloscope's capabilities with powerful application software

You need fast, accurate answers to your measurement questions — that's why Keysight offers a wide range of application-specific oscilloscope software. We engineered these applications to work with your oscilloscope to provide exceptional insight quickly and easily into your signals.

Click here to check out Keysight oscilloscope software. Most of our software is available for a free 30-day trial.

Automotive

Aerospace & Defense

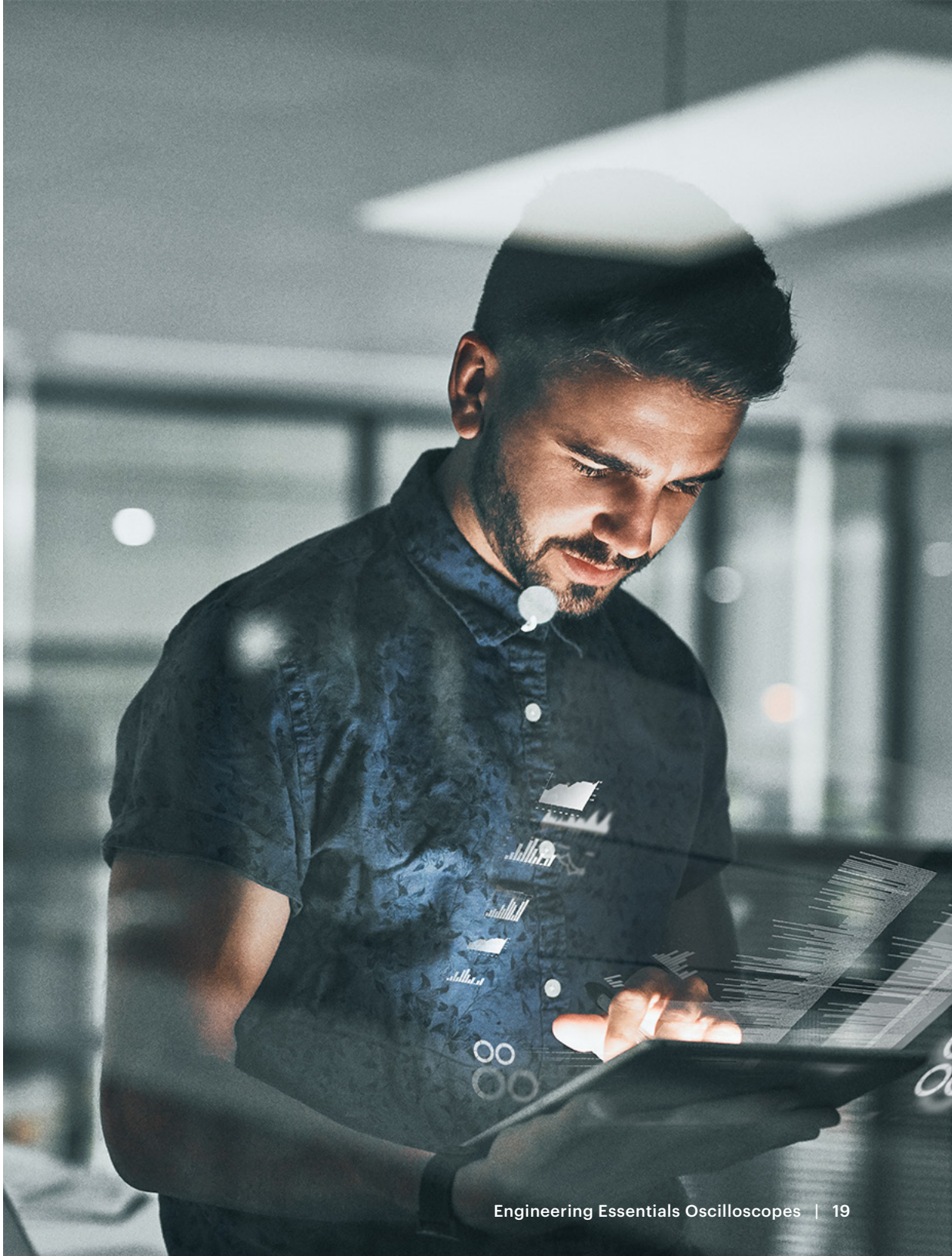
Embedded

Power

USB

Ultimate Bundles

Save 25% on InfiniiVision power, jitter, and automotive application bundles. Click here to view the bundles.



Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.