KEYSIGHT

The All-New InfiniiVision HD3 Series

Making Precision Portable

Erin East – InfiniiVision Product Manager

KEYSIGHT

Down-Deploying Advanced Technology, Making Precision Portable

Infiniium UXR Series

5 GHz to 110 GHz

Infiniium MXR/EXR Series

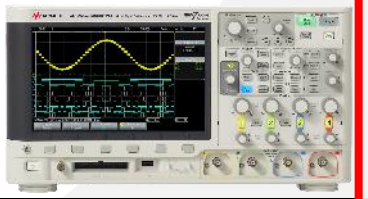
500 MHz to 6 GHz

InfiniiVision HD3 Series

200 MHz to 1 GHz

NEW!

Keysight InfiniiVision Family



InfiniiVision HD3 Series
Portable Precision
200 MHz – 1 GHz

	1000 X-Series	2000 X-Series	6000 X-Series
Bandwidth	50 – 200 MHz	70 – 200 MHz	1 – 6 GHz
Sample Rate	2 GSa/s	2 GSa/s	20 GSa/s
Update Rate	>200,000 wfm/s	>200,000 wfm/s	>450,000 wfm/s
Zone Trigger	N/A	N/A	Yes
MSO	N/A	8 channel	16 channel
Active Probing	N/A	N/A	Up to 4

What is the InfiniiVision HD3 Series?

Portable Precision

- Bandwidths: 200 MHz to 1 GHz
- Offers many of the features people love about InfiniiVision oscilloscopes with significantly **more testing power**

The highest vertical accuracy in class with the strongest combination of ADC + noise + memory + update rate:

- **4x more vertical accuracy** with 14-Bit ADC vs. 12-bit ADC (native 14-bit ADC, 16 bits high res!)
- Up to **10x lower noise floor** than the competition (best in class)
- Deep memory with 100 Mpts (25x more memory than 3000G)
- Industry's only **uncompromised** waveform update rate of 1,300,000 wfms/s (best in class)

Meet the InfiniiVision HD3 Series

Specifications	
Channels	2 or 4 analog + 16 digital
Bandwidth	200 MHz → 1 GHz
Resolution	14 bits, 16 bits high-res
Low Noise	50 µVRMS (2mV/div, 50Ω, 1 GHz)
Max Memory	100 Mpts/ch
Sample rate	3.2 GSa/s (per channel!)
Update Rate	1.3M wfms/sec

Keysight HD3 Series Oscilloscope vs. Key Competitors

Keysight 3000G X-Series

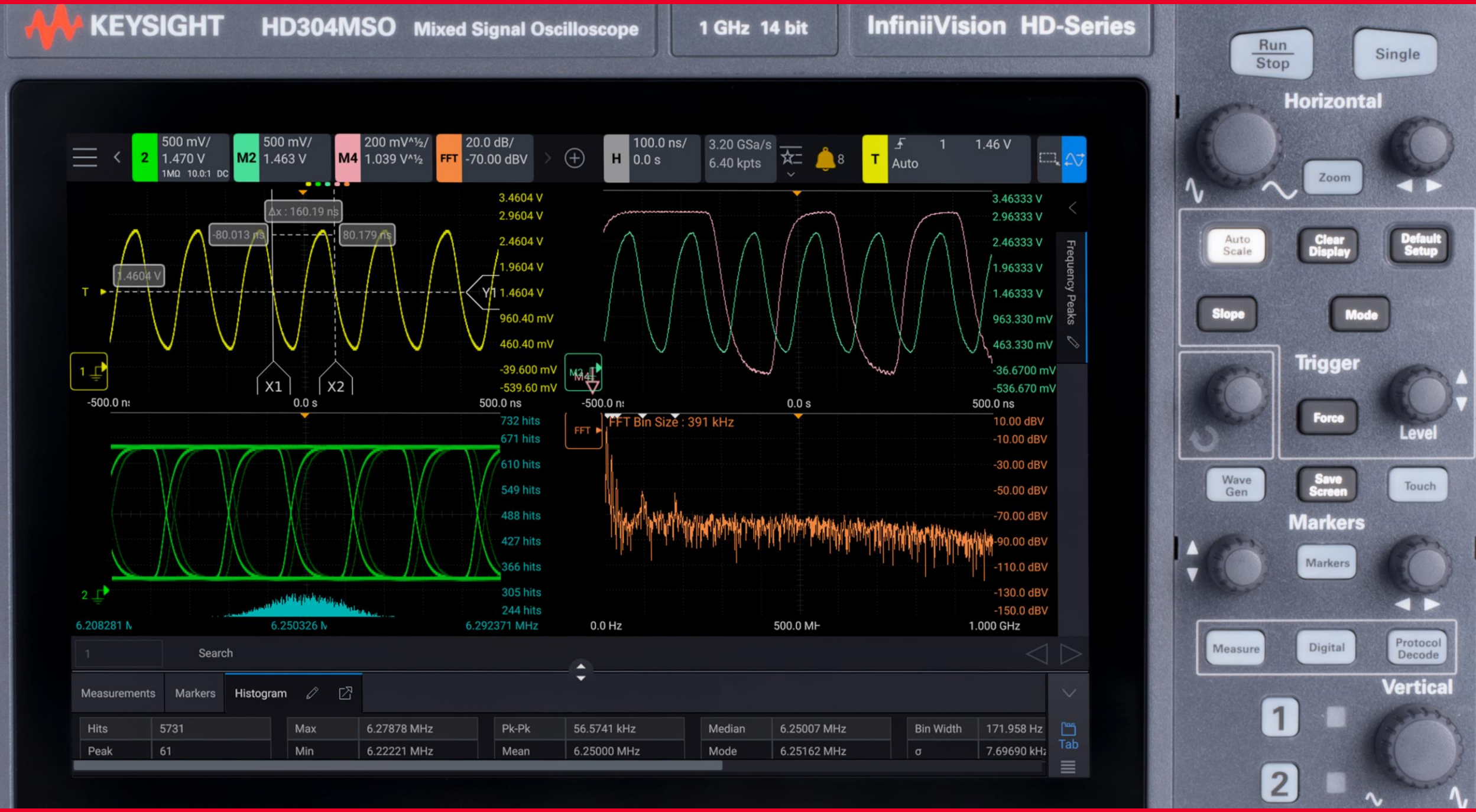
NEW Keysight HD3 Series

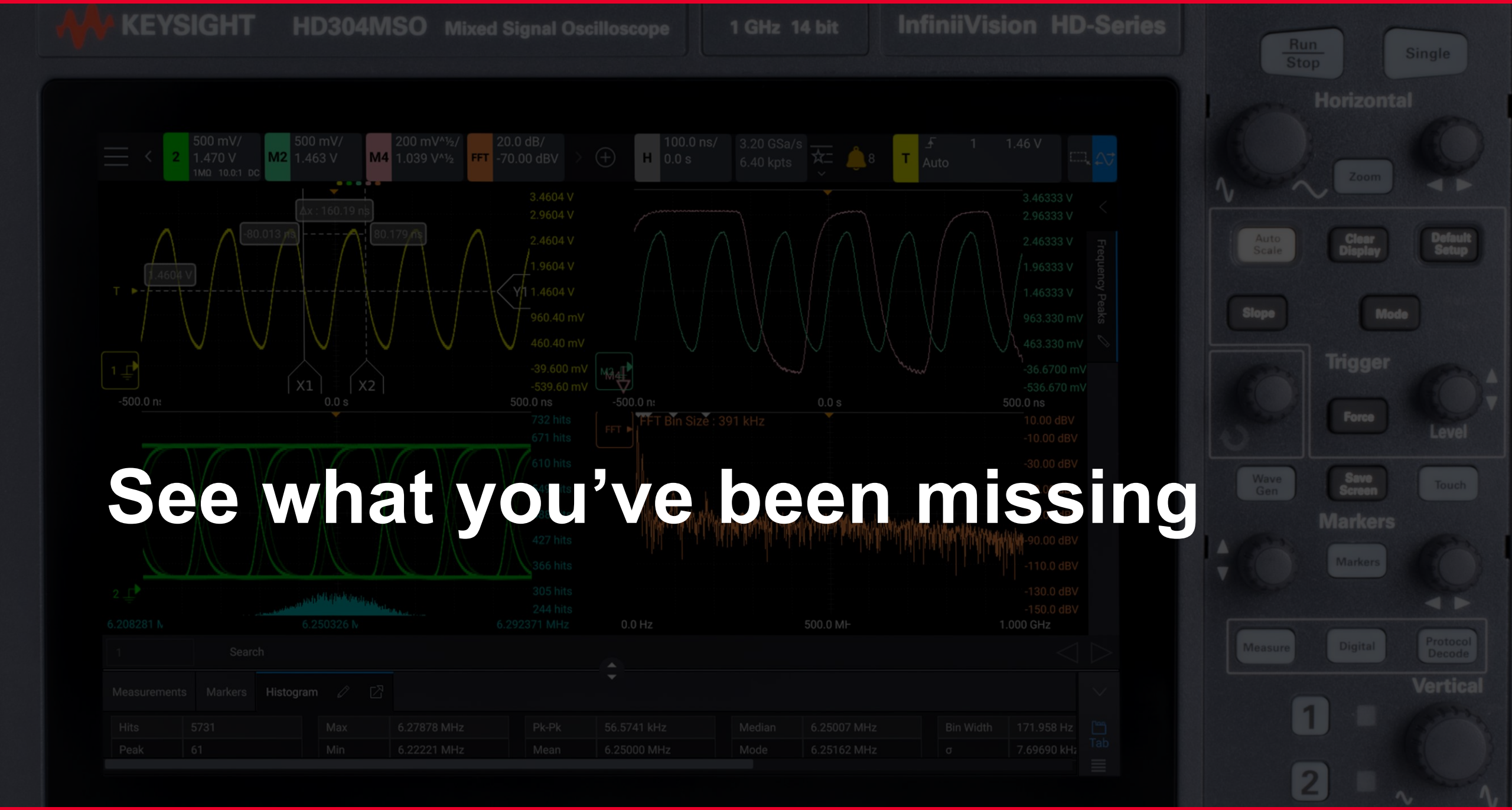
Tektronix 4 Series B MSO

Rohde MXO 4 Series

Bandwidth	100 MHz to 1 GHz	200 MHz to 1 GHz	200 MHz to 1.5 GHz	200 MHz to 1.5 GHz
ADC Bits	8 Bits	14 Bits	12 Bits	12 Bits
Memory	4 Mpts	100 Mpts[1]	62.5 Mpts	400 Mpts
Waveform Update Rate	Uncompromised >1,000,000 wfms/s	Uncompromised[2] >1,300,000 wfms/s	Conditionally up to 500,000 wfms/s	Conditionally[2] up to 4,000,000 wfms/s
Noise Floor[3]	260 μV_{RMS}	50 μV_{RMS}	280 μV_{RMS}	116 μV_{RMS}

1. Best-in-class ADC + memory + waveform update rate combination. Similar to waveform update rate, the memory spec competition shows on their datasheet is not what they are typically operating at. The HD3 operates with higher memory than the competitors in most test scenarios (see measurement examples)
2. On the Keysight HD3 Series it doesn't matter what your other test parameters are, you will ALWAYS get >1,000,000 wfms/s. On the Rohde MXO 4, you only get 4,000,000 wfms/s under very specific test parameters. In most use cases, the Rohde MXO 4 operates around 100k to 500k wfms/s, sometimes even below 10,000 wfms/s
3. RMS Noise floor at 2mV/div, 50Ω, 1 GHz BW – if not specified in competitive datasheets, that typically means they have a very high amount of noise coming from the scope (higher noise floor is bad)
4. Price right between Keysight 3000G and 4000G X-Series oscilloscopes, and right on top of the Tek 4 Series B pricing

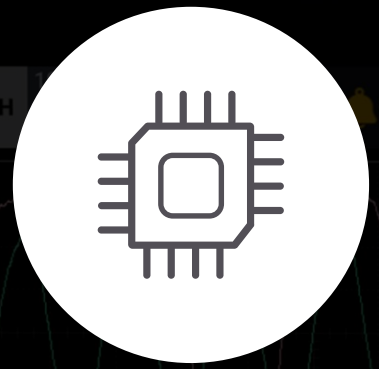




See what you've been missing

Portable Precision

- Analyze the smallest signals in your design with the **highest accuracy**
- **High vertical resolution** (ADC and ENOB)
- **Lowest noise** front-end in class



Custom Technology

- Custom components **optimized for oscilloscope measurements**
- New **deep memory** architecture
- **Hardware-based everything** – zone, serial, mask
- Industry-first software – **fault hunter**

Versatile Functionality

- Dive deeper with **more flexibility** in the user interface
- Immediate license upgrade – **no return to factory**
- From power integrity to medical imaging to general debugging, HD3 provides the most accuracy

Portable Precision

Analyze with the Highest Accuracy

Custom Technology

Best ADC and ENOB in Class

Versatile Functionality

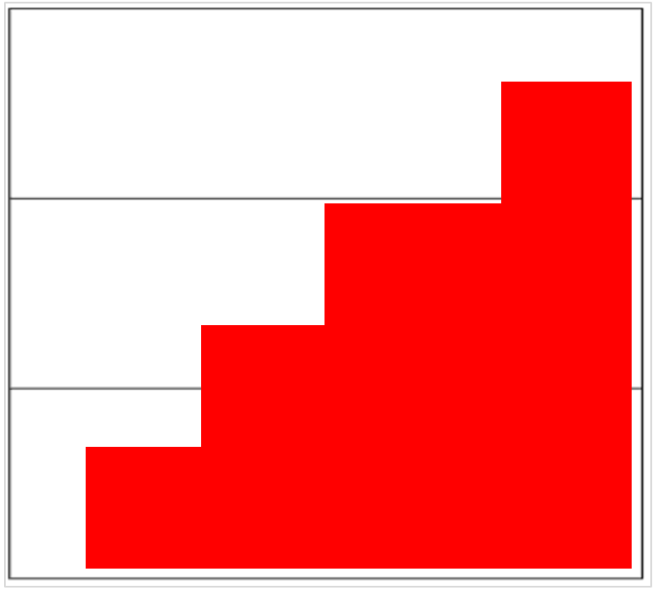
Lowest Noise Front-End

Analyze with the Highest Accuracy

Portable Precision

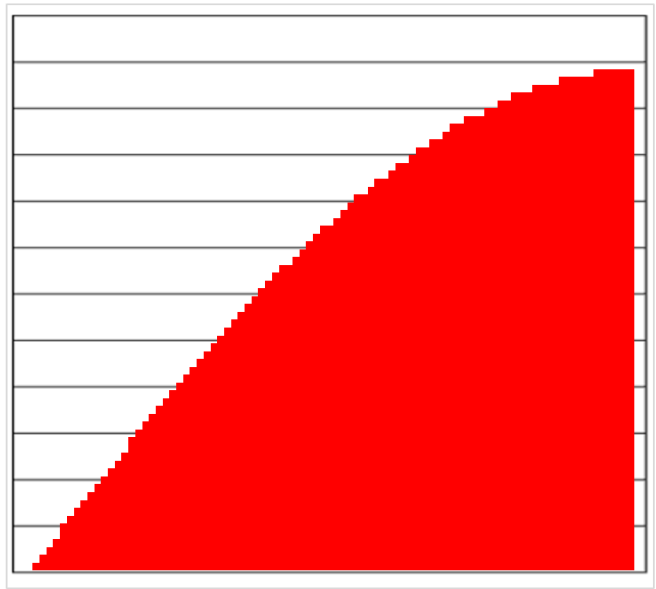
8 bits

256 Q-Levels



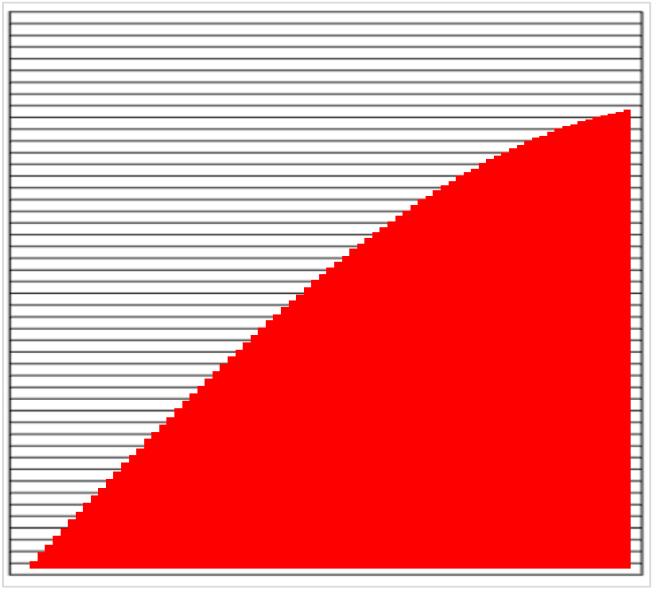
12 bits

4,096 Q-Levels



14 bits

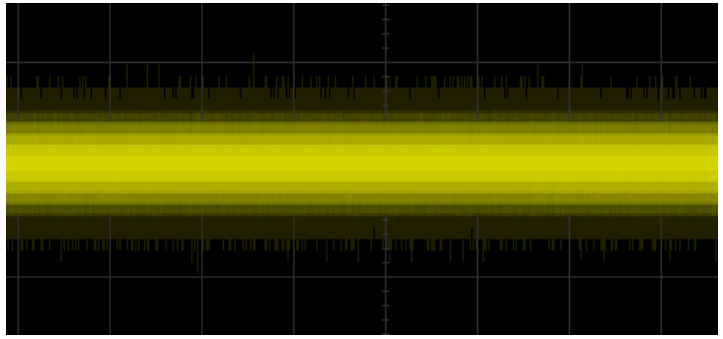
16,384 Q-Levels



Lowest Noise Front-End in Class

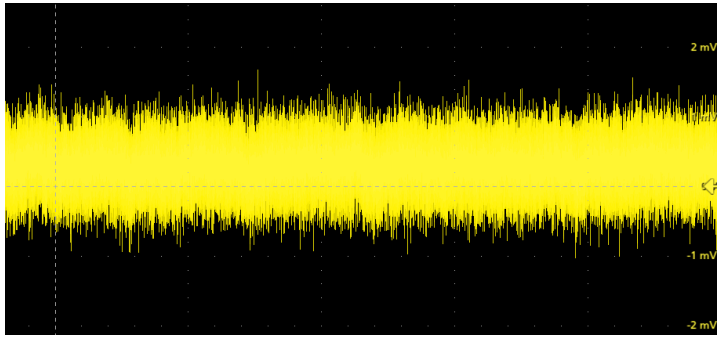
Portable Precision

3000G X-Series



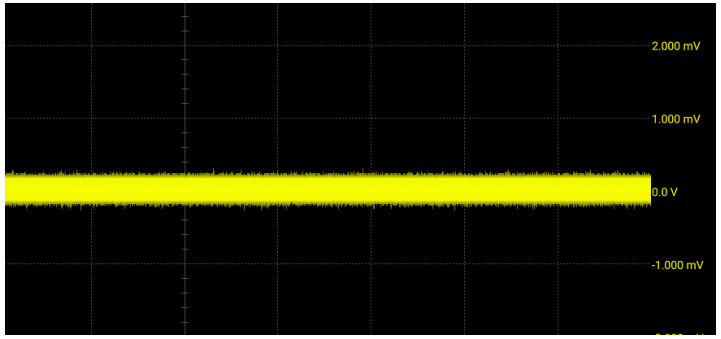
277 μV_{RMS}

Competitor



>280 μV_{RMS}

HD3 Series



31.5 μV_{RMS}

Up to **10x less noise** than the 3000G/4000G and the competition!

Best ENOB in Class

Portable Precision

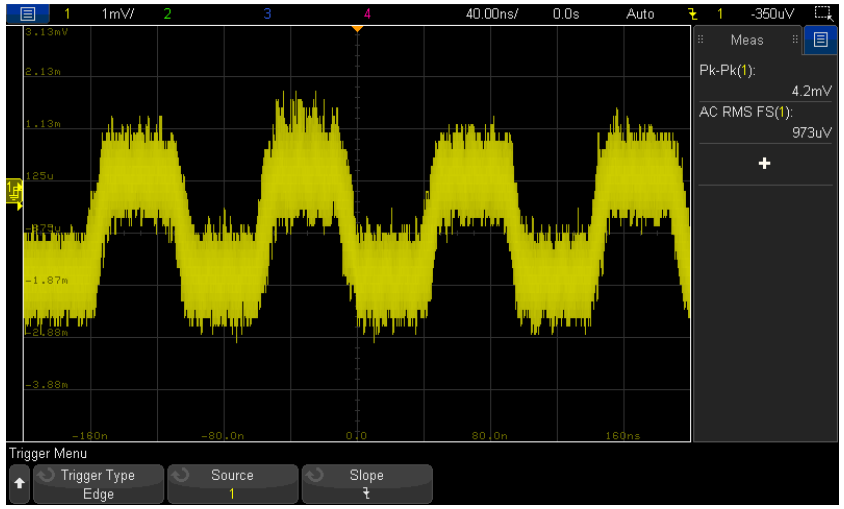
Max ENOB

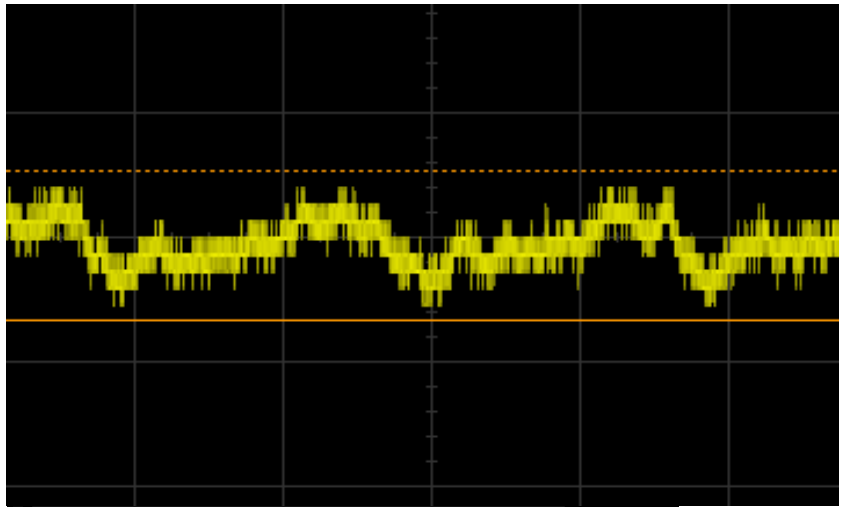
HD3 Series	>10.4 bits
Closest Competitor Spec	8.9 bits
Keysight 3000G/4000G	6.9 bits

Analyze with the Highest Accuracy

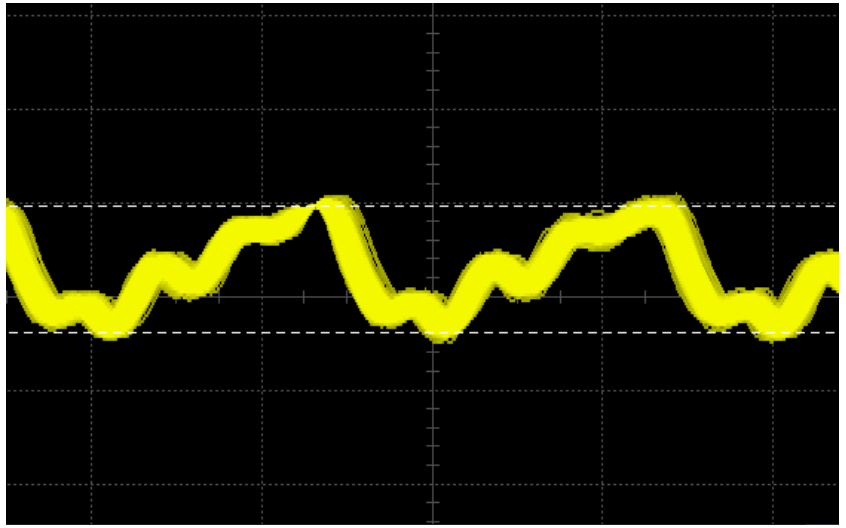
Portable Precision

3000G with 8 bits + high noise:





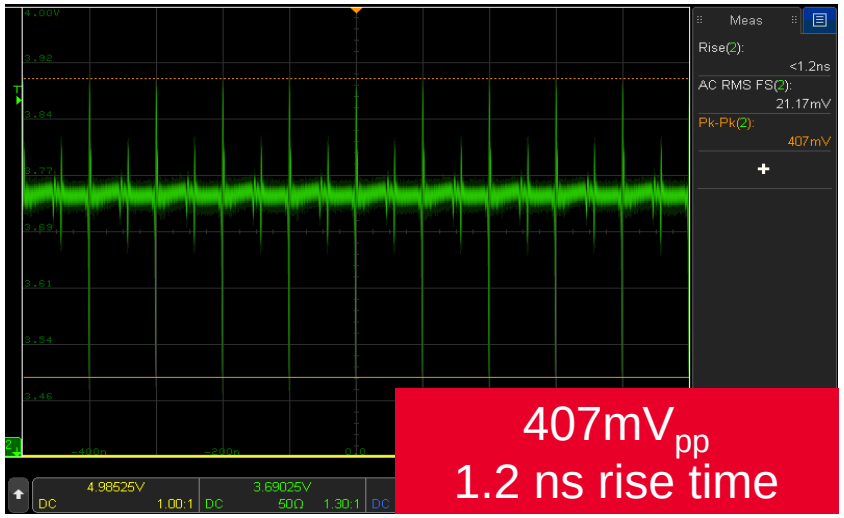
HD3 with 14 bits + low noise:



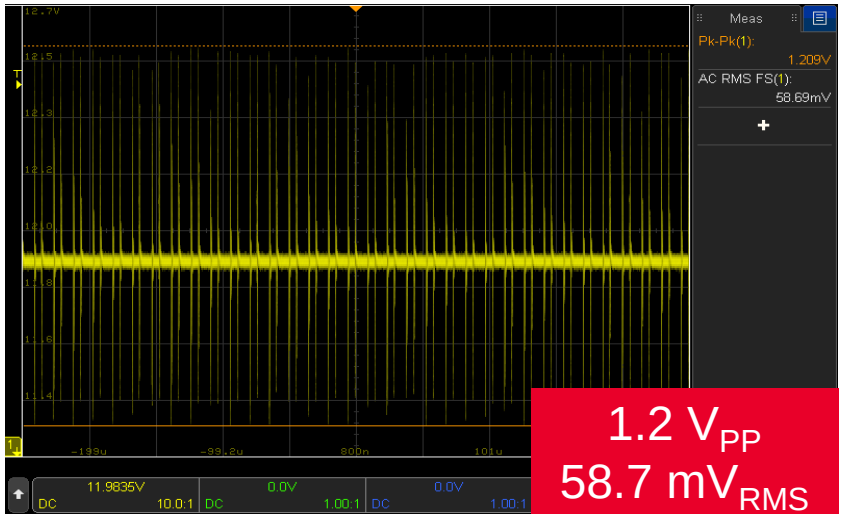
Analyze with the Highest Accuracy

Portable Precision

3000G with 8 bits + high noise:

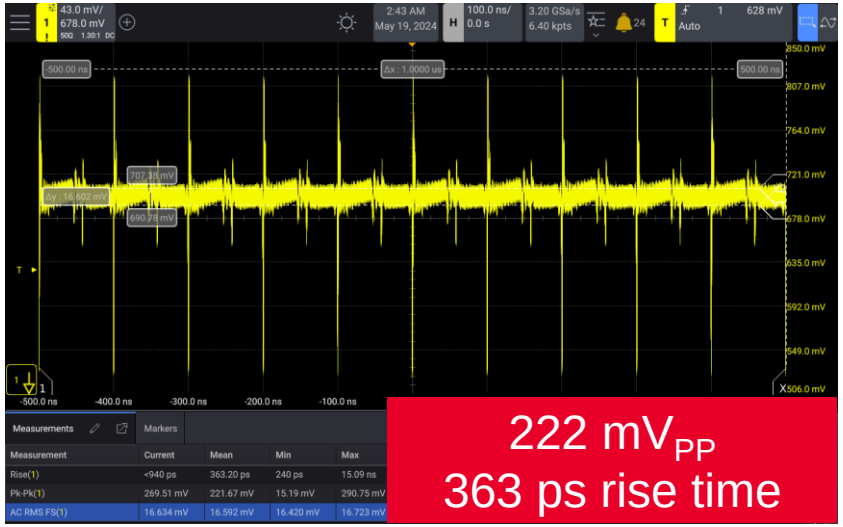


$407mV_{pp}$
1.2 ns rise time

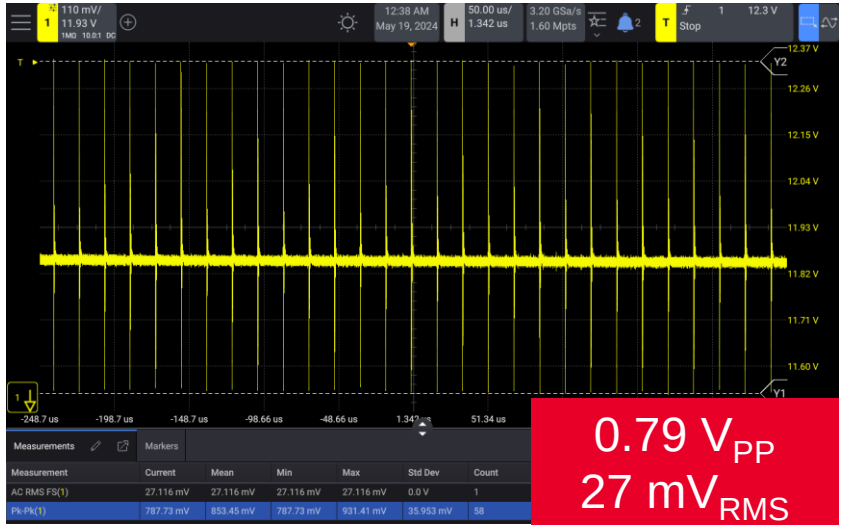


$1.2\ V_{PP}$
$58.7\ mV_{RMS}$

HD3 with 14 bits + low noise:



$222\ mV_{PP}$
363 ps rise time



$0.79\ V_{PP}$
$27\ mV_{RMS}$

Portable Precision

Custom Technology

Versatile Functionality

Optimized for Scope Measurements

Deep Memory Architecture

Industry-first Software Technology

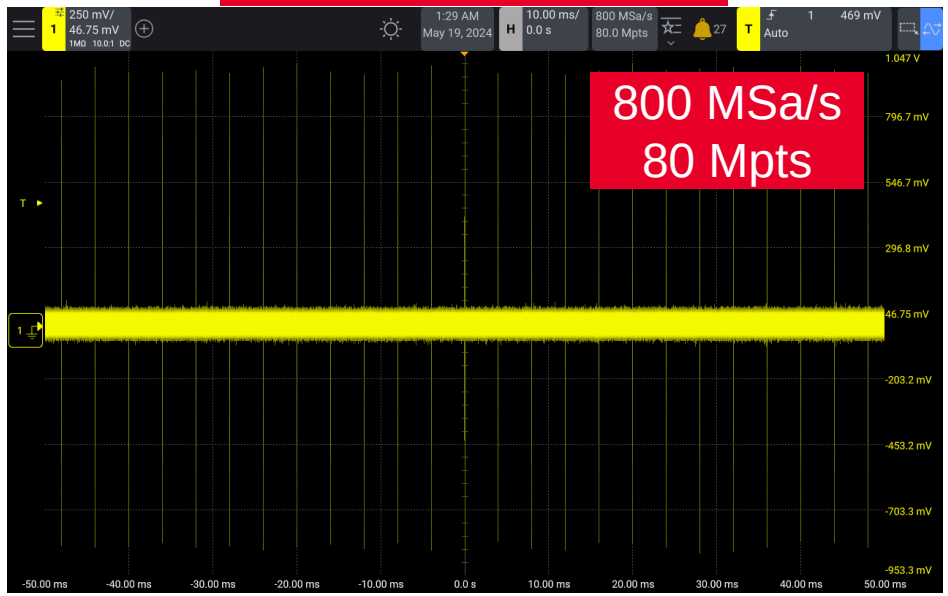
Optimized for Oscilloscope Measurements

Custom Technology

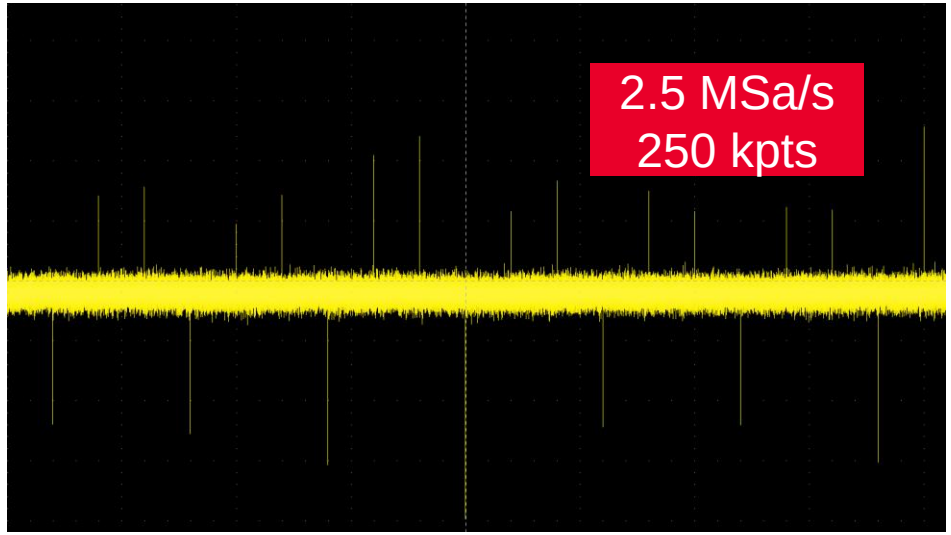
By developing **custom components rather than utilizing off-the-shelf parts** like our competitors, the HD3 Series offers:

- Higher sample rate and memory under typical testing conditions
- The only uncompromised waveform update rate
- The highest vertical resolution, maximizing use of the ADC
- Hardware-based functions: mask, zone, serial, etc.

Keysight HD3 Series



Competitor



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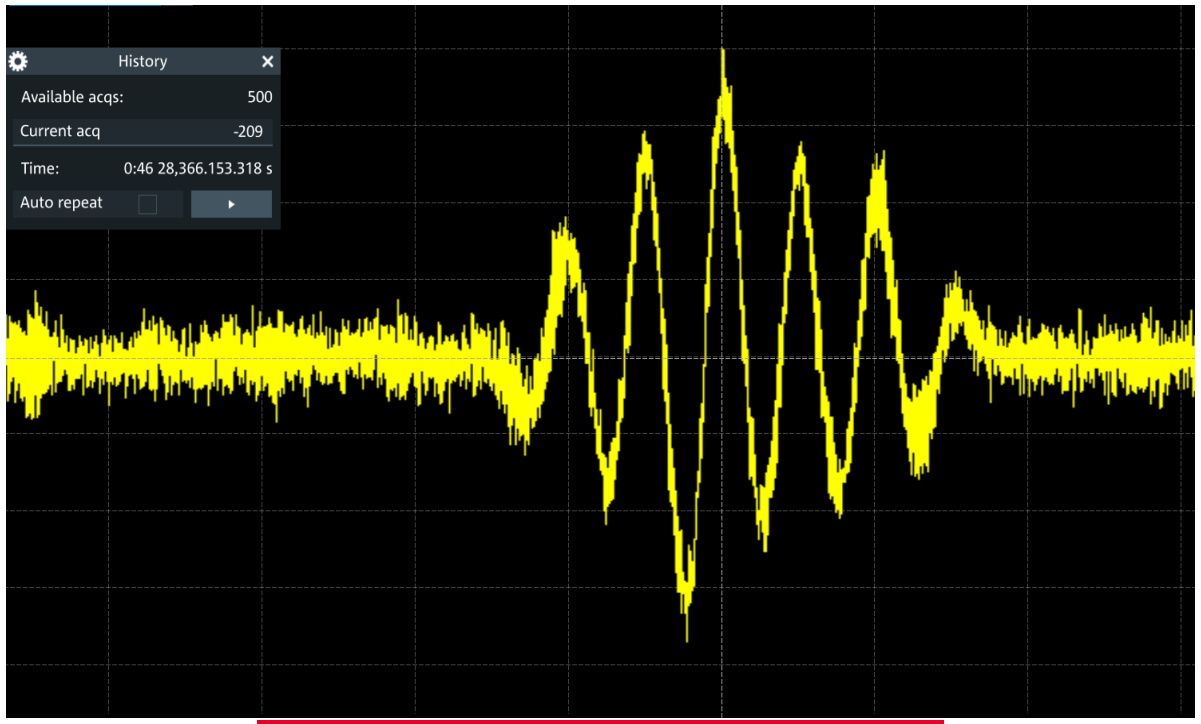
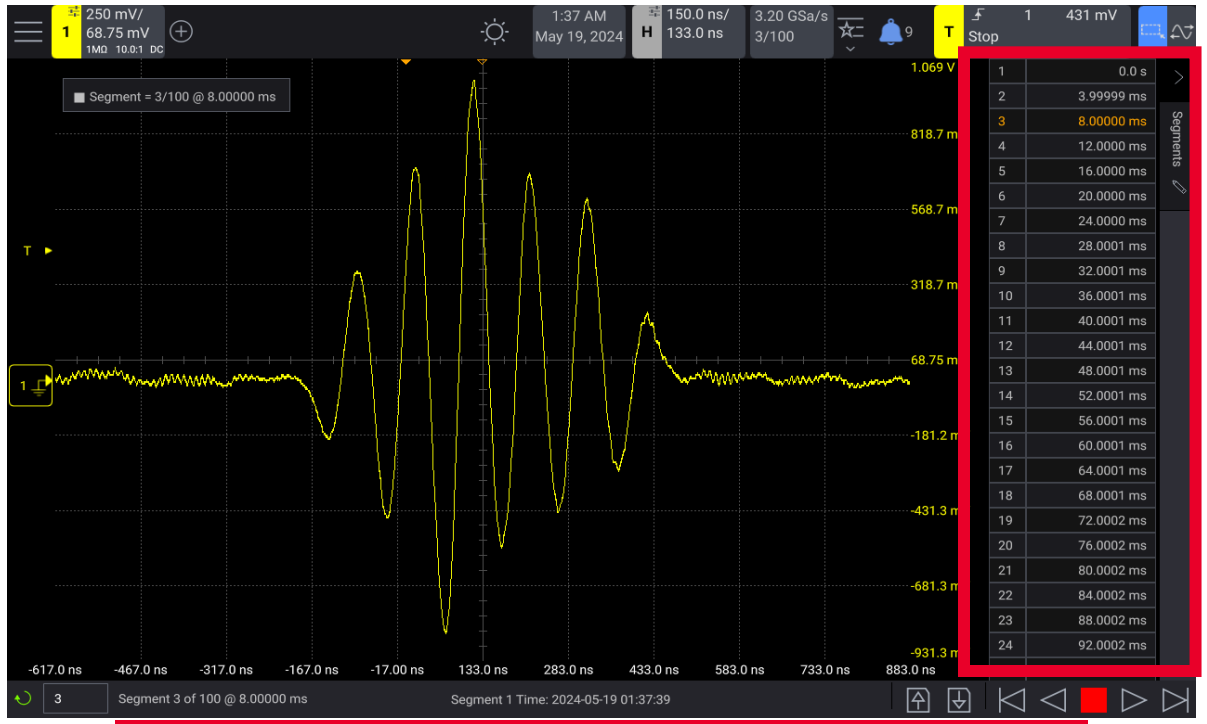
Deep Memory Architecture

Custom Technology

Extend your memory to the Gpts with segmented memory & a time correlated list



Competitor with no list display

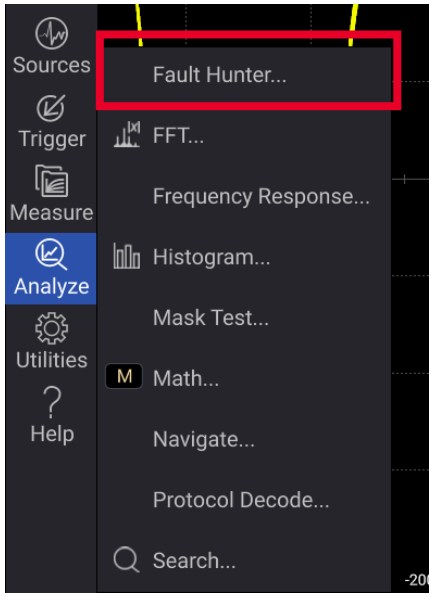


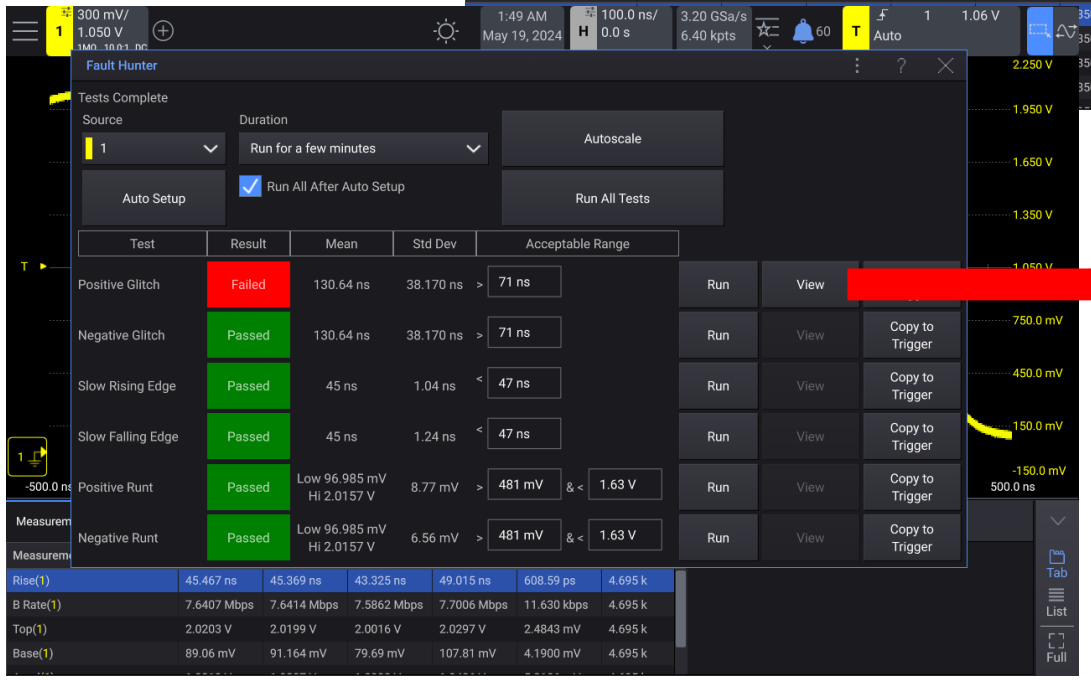
Keysight HD3 Series with time-correlated list

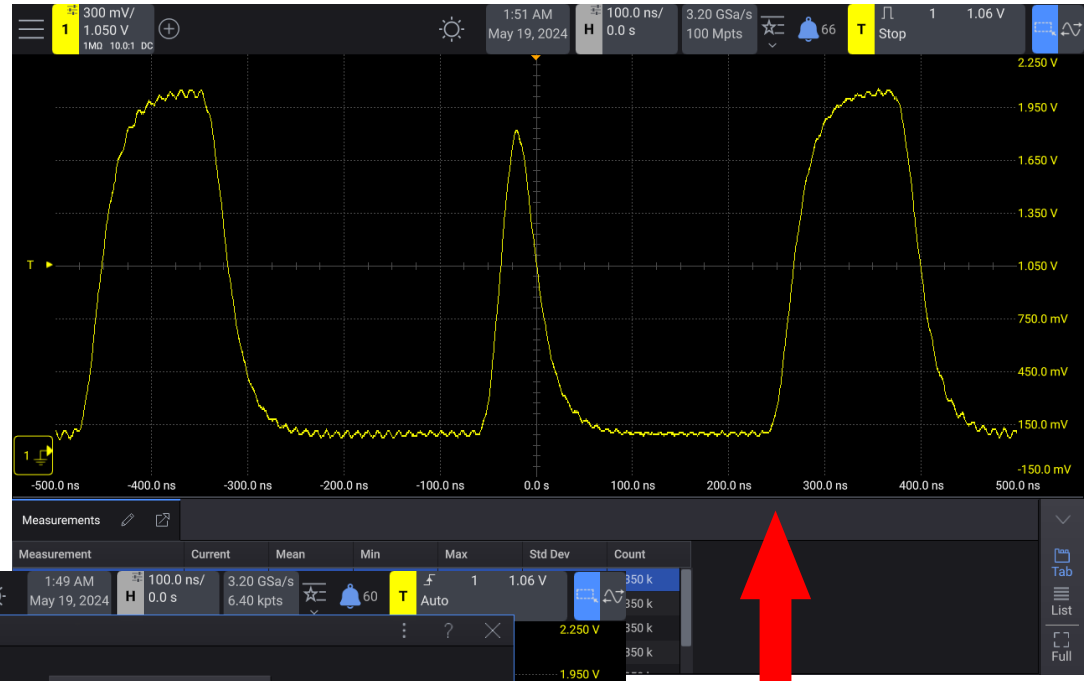
Industry-First Software Technology

Custom Technology

- Industry's only automatic Fault Hunter!
- The perfect tool for general debugging
- Analyze glitches, slow edges, and runts while you do other work







Portable Precision

Custom Technology

Versatile Functionality

New GUI Flexibility

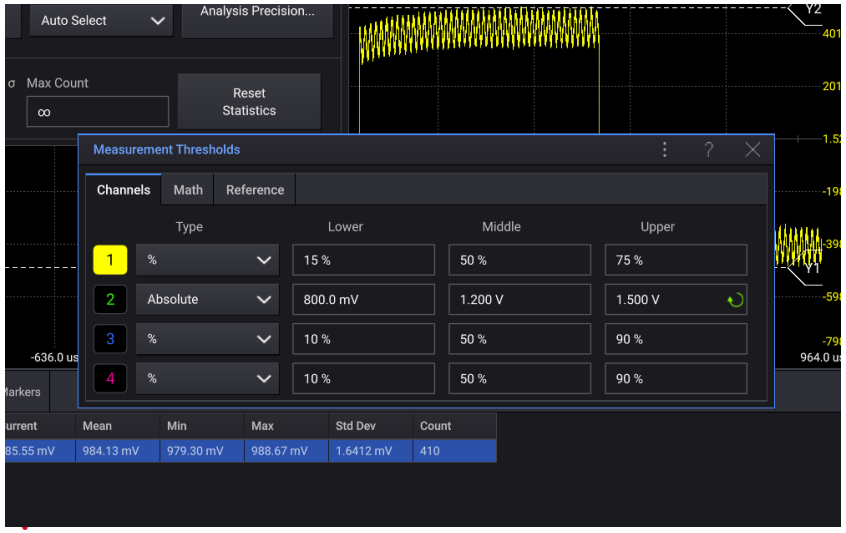
Immediate License Upgrades

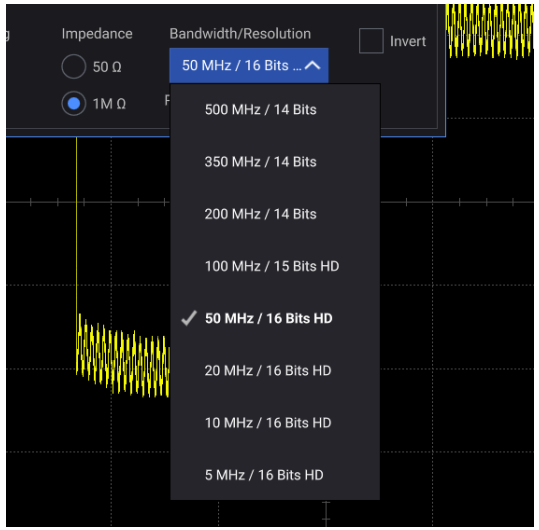
Support for Key Industries

New User Interface Flexibility

Versatile Functionality

- Split grids - utilize full ADC and vertical resolution for every channel
- Several bandwidth limit options – enables HD mode
- Custom measurement thresholds





Immediate Bandwidth & Memory Upgrades

Versatile Functionality

- Bandwidths: 350 MHz, 500 MHz, 1 GHz
- Memory Options: 50 Mpts, 100 Mpts

- Pre-purchase bandwidth options (i.e. HD304MSO-500)

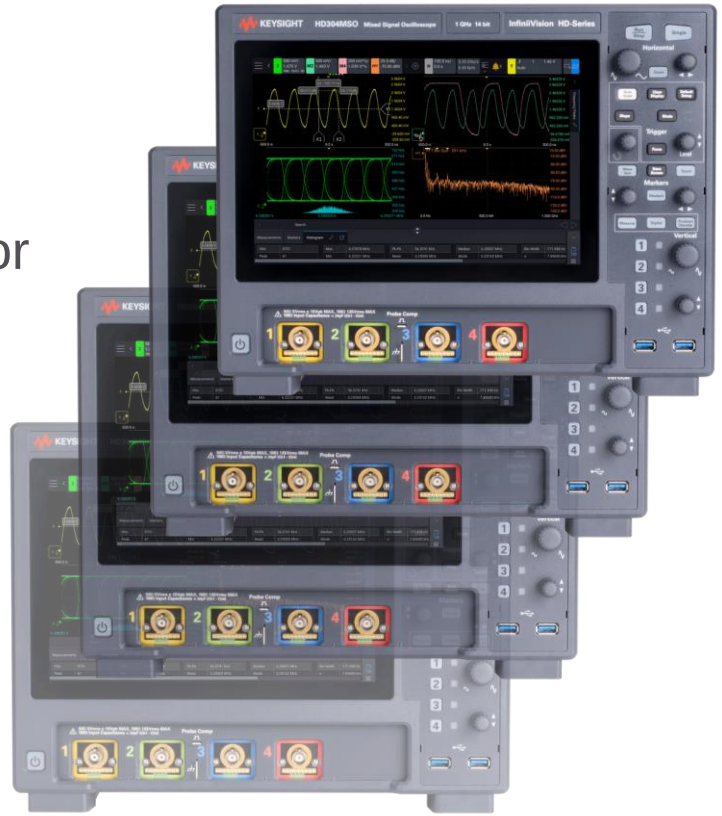
- Post-purchase bandwidth upgrades (i.e. HD3BW-009)

Immediate License Upgradability

Versatile Functionality

Software Upgrades

- ✓ 200 MHz to 1 GHz bandwidth
- ✓ 20 to 100 Mpts memory
- ✓ 100 MHz Waveform Generator (HD3WAVEGEN)
- ✓ Protocol decode/trigger (HD3EMBA, HD3AUTA)
- ✓ Application support
- ✓ Warranty, services

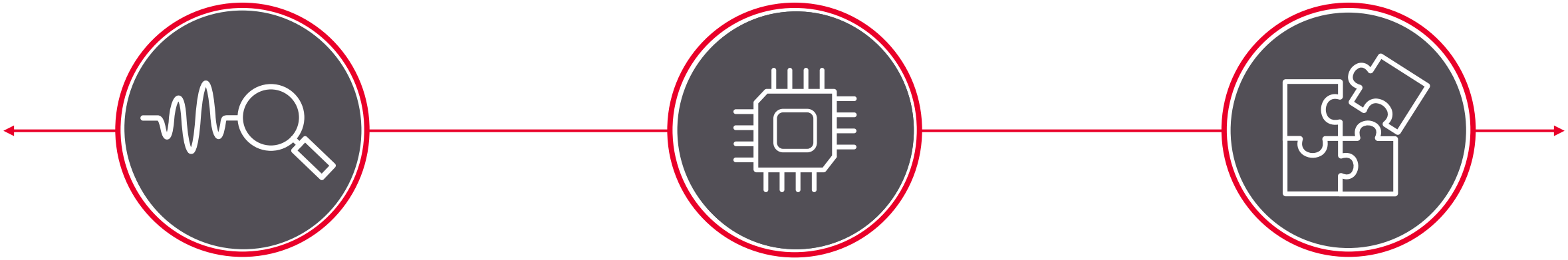


Included Standard

- ✓ Frequency Response Analysis
- ✓ Fault Hunter
- ✓ Zone trigger
- ✓ Segmented Memory
- ✓ MSO License
- ✓ Mask Testing
- ✓ Histograms, FFT, and more!

Why Consider the InfiniiVision HD3 Series

See what you've been missing with ½ the noise and 4x the resolution



Portable Precision

- Analyze the smallest signals in your design with the highest accuracy
- Highest resolution in the industry (ADC and ENOB)
- Lowest noise front-end in class

Custom Technology

- Custom components optimized for oscilloscope measurements
- New deep memory architecture
- Hardware-based everything – zone, serial, mask
- Industry-first software tech – fault hunter

Versatile Functionality

- Dive deeper with more flexibility in the user interface
- Immediate license upgrade – no return to factory
- From power integrity to medical imaging to general debugging, HD3 provides the most accuracy

KEYSIGHT

Thank you!

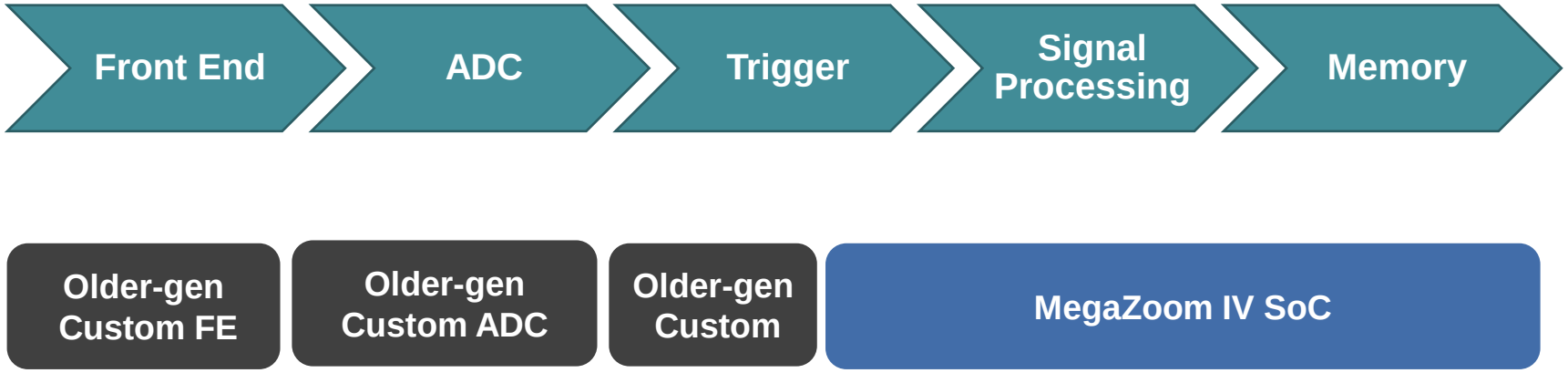
Questions?

Architecture Drives Outcomes

A look at the measurement chain

3000 X-Series
MegaZoom 4

HD3 Series
MegaZoom 5



Architecture shift retains the benefits of integration, while

- Optimizing for signal integrity
  - TRUE 14-bit ADC
  - Lowest noise floor and SFDR
- Allowing for significant expansion of memory depth