Infiniium XR8 Oscilloscopes

A Next-Generation High-Performance Real-Time Oscilloscope with 8–33 GHz Bandwidth, 12-Bit ADCs, 128 GSa/s Sample Rate, and 1 GPt Memory per Channel

Introduction

The Keysight Infiniium XR8 oscilloscope platform redefines high-performance measurement through a smarter software, smaller physical footprint, and superior signal integrity. Built for next-generation SerDes and advanced digital applications, the XR8 delivers faster analysis, lower noise, and improved usability — empowering engineers to extract insight with confidence and efficiency.

KEYSIGHT

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Introduction and Model Overview

Smarter

The XR8 platform is powered by a modernized Infiniium 2026 software architecture designed to accelerate development from initial bring-up through compliance. Multi-core processing enables fast, parallel measurements, while advanced analysis such as jitter decomposition and SNDR provides deeper visibility into signal behavior. Automated compliance testing and user-defined measurements further streamline workflows, all within an intuitive, high-resolution user interface that adapts to each engineer's needs.

Smaller

The XR8 delivers lab-grade precision in a compact, efficient design — over a third lighter, four times quieter, and consuming 33% less power than traditional high-performance oscilloscopes. Its reduced size and acoustic footprint allow greater flexibility in lab layouts and desk-side operation without sacrificing usability. A large, high-resolution touchscreen ensures effortless navigation and analysis, making the XR8 small enough for any workspace and powerful enough for deep, sustained investigation.

Superior

The XR8 provides uncompromised signal fidelity with four channels of simultaneous 33 GHz bandwidth, each sampling at 128 GSa/s using native 12-bit high-definition ADCs. This architecture delivers lower noise, improved vertical resolution, and more accurate insight into high-speed signals, enabling confident characterization of next-generation interfaces. The XR8 further simplifies deployment with a single, scalable model — upgradeable in bandwidth, memory, and software — allowing performance to grow alongside evolving measurement requirements.

Model	Option	Bandwidth (Maximum/Channel)	Connector	Power Required	Sample Rate
XR804KA	XR804KA-084	8 GHz / 4 channels	2.92 mm	100 to 120 V_{AC} or 200 to 240 V_{AC} at 50/60 Hz (auto-ranging) 900 VA (Max)	128 GSa/s per channel
	XR804KA-104	10 GHz / 4 channels			
	XR804KA-134	13 GHz / 4 channels			
	XR804KA-164	16 GHz / 4 channels			
	XR804KA-204	20 GHz / 4 channels			
	XR804KA-252	25 GHz / 2 channels; 13 GHz / 2 channels			
	XR804KA-254	25 GHz / 4 channels			
	XR804KA-332	33 GHz / 2 channels; 25 GHz / 2 channels			
	XR804KA-334	33 GHz / 4 channels			

Vertical System Specifications

Specification				
Sample rate per channel	128 GSa/s (configurable in powers of two)			
Displayed input sensitivity	1 mV/div to 1 V/div (full scale is 10 div)			
Hardware sensitivity	40 mV full scale to 10 V full scale			
Vertical resolution	12 bits			
DC gain accuracy*	±1.5% of full scale			
DC gain accuracy	±1% of full scale ≤ 10 mV/div, ±0.5% of full scale > 10 mV/div (full scale is 10 div)			
DC voltage accuracy Dual cursor: Single cursor:	 ± (DC gain accuracy) ± [(DC gain accuracy) + (offset accuracy)]			
Channel to channel isolation	60 dB			
Maximum input range (Not Exceed GND ± 6.5 V)	Vertical sensitivity (Full Scale) 8 mV fs to 40 mV fs (SW) 41 mV fs to 416 mV fs 417 mV fs to 715 mV fs 716 mV fs to 1.320 V fs 1.321 V fs to 2.346 V fs 2.347 V fs to 4.172 V fs 4.173 V fs to 7.159 V fs 7.160 V fs to 10 V fs	Attenuation 0 dB 0 dB 5 dB 10 dB 15 dB 20 dB 25 dB 30 dB	Offset ±0.40 V ±0.40 V ±0.70 V ±1.25 V ±2.25 V ±4.00 V ±4.00 V ±4.00 V	Maximum Input Offset ±700 mV Offset ±700 mV Offset ±1.24 V Offset ±2.21 V Offset ±3.94 V Offset ±7 V Not Exceed GND ±6.5 V Not Exceed GND ±6.5 V Not Exceed GND ±6.5 V
Offset accuracy*	± (1.5% of channel offset + 1% of full scale + 2 mV)			
Offset accuracy (typical)	± (1% of channel offset + 0.5% of full scale + 2 mV)			

*Denotes warranted specifications, all others are typical. Valid after 30-minute warm up period and ±5 °C from oscilloscope firmware calibration temperature.

Vertical System - Performance Characteristics

Characteristic	XR804KA						
Analog input connector	Ruggedized 2.92 mm male - with AutoProbe III jack						
Input impedance[1]	50 Ω, ± 3%						
Input coupling	DC						
Full bandwidth analog input channels	4	4	4	4	4	4	4
Analog bandwidth (3 dB) Warranted bandwidth*	8.0 GHz	10.0 GHz	13.0 GHz	16.0 GHz	20.0 GHz	25.0 GHz	33.0 GHz
Rise time/fall time 10 to 90%[2]	55.0 ps	44.0 ps	33.8 ps	27.5 ps	22.0 ps	17.6 ps	13.3 ps
20 to 80%[3]	38.8 ps	31.2 ps	23.9 ps	19.4 ps	15.6 ps	12.4 ps	9.4 ps
ENOB typical[4] at 400 mV_{fs}	7.6	7.4	7.2	7.1	6.9	6.7	6.4

1. Input impedance is valid when V/div scaling is adjusted to show all waveform vertical values within scope display.
2. Calculation based on Tr = 0.44/BW.
3. Calculation based on Tr = 0.31/BW.
4. The average value from DC to full bandwidth.

*Denotes warranted specifications, all others are typical. Specifications are valid after 30-minute warm up period and ±5 °C from oscilloscope firmware calibration temperature.

RMS Noise Floor-Performance Characteristics (Measured)

RMS Noise Floor Vertical Setting, Full Scale	8.0 Ghz	10.0 Ghz	13.0 Ghz	16.0 Ghz	20.0 Ghz	25.0 Ghz	33.0 Ghz
40 $mV_{full\ scale\ (fs)}$	129 $\mu V_{(rms)}$	142 $\mu V_{(rms)}$	165 $\mu V_{(rms)}$	175 $\mu V_{(rms)}$	195 $\mu V_{(rms)}$	220 $\mu V_{(rms)}$	261 $\mu V_{(rms)}$
80 $mV_{full\ scale\ (fs)}$	165 $\mu V_{(rms)}$	180 $\mu V_{(rms)}$	200 $\mu V_{(rms)}$	219 $\mu V_{(rms)}$	246 $\mu V_{(rms)}$	279 $\mu V_{(rms)}$	331 $\mu V_{(rms)}$
100 $mV_{full\ scale\ (fs)}$	198 $\mu V_{(rms)}$	213 $\mu V_{(rms)}$	245 $\mu V_{(rms)}$	257 $\mu V_{(rms)}$	287 $\mu V_{(rms)}$	326 $\mu V_{(rms)}$	386 $\mu V_{(rms)}$
160 $mV_{full\ scale\ (fs)}$	242 $\mu V_{(rms)}$	263 $\mu V_{(rms)}$	300 $\mu V_{(rms)}$	325 $\mu V_{(rms)}$	371 $\mu V_{(rms)}$	430 $\mu V_{(rms)}$	524 $\mu V_{(rms)}$
200 $mV_{full\ scale\ (fs)}$	300 $\mu V_{(rms)}$	323 $\mu V_{(rms)}$	370 $\mu V_{(rms)}$	403 $\mu V_{(rms)}$	460 $\mu V_{(rms)}$	533 $\mu V_{(rms)}$	646 $\mu V_{(rms)}$
400 $mV_{full\ scale\ (fs)}$	497 $\mu V_{(rms)}$	547 $\mu V_{(rms)}$	660 $\mu V_{(rms)}$	703 $\mu V_{(rms)}$	824 $\mu V_{(rms)}$	971 $\mu V_{(rms)}$	1.19 $mV_{(rms)}$
500 $mV_{full\ scale\ (fs)}$	760 $\mu V_{(rms)}$	810 $\mu V_{(rms)}$	940 $\mu V_{(rms)}$	981 $\mu V_{(rms)}$	1.11 $mV_{(rms)}$	1.28 $mV_{(rms)}$	1.54 $mV_{(rms)}$
800 $mV_{full\ scale\ (fs)}$	1.22 $mV_{(rms)}$	1.29 $mV_{(rms)}$	1.40 $mV_{(rms)}$	1.57 $mV_{(rms)}$	1.78 $mV_{(rms)}$	2.06 $mV_{(rms)}$	2.49 $mV_{(rms)}$
1.0 $V_{full\ scale\ (fs)}$	1.42 $mV_{(rms)}$	1.54 $mV_{(rms)}$	1.75 $mV_{(rms)}$	1.94 $mV_{(rms)}$	2.24 $mV_{(rms)}$	2.60 $mV_{(rms)}$	3.10 $mV_{(rms)}$
1.6 $V_{full\ scale\ (fs)}$	2.40 $mV_{(rms)}$	2.58 $mV_{(rms)}$	2.95 $mV_{(rms)}$	3.17 $mV_{(rms)}$	3.60 $mV_{(rms)}$	4.14 $mV_{(rms)}$	5.00 $mV_{(rms)}$
2.0 $V_{full\ scale\ (fs)}$	2.53 $mV_{(rms)}$	2.80 $mV_{(rms)}$	3.35 $mV_{(rms)}$	3.58 $mV_{(rms)}$	4.16 $mV_{(rms)}$	4.90 $mV_{(rms)}$	6.03 $mV_{(rms)}$
4.0 $V_{full\ scale\ (fs)}$	4.97 $mV_{(rms)}$	5.48 $mV_{(rms)}$	6.60 $mV_{(rms)}$	7.02 $mV_{(rms)}$	8.21 $mV_{(rms)}$	9.68 $mV_{(rms)}$	11.9 $mV_{(rms)}$
5.0 $V_{full\ scale\ (fs)}$	6.22 $mV_{(rms)}$	6.85 $mV_{(rms)}$	8.30 $mV_{(rms)}$	8.78 $mV_{(rms)}$	10.3 $mV_{(rms)}$	12.1 $mV_{(rms)}$	14.9 $mV_{(rms)}$
8.0 $V_{full\ scale\ (fs)}$	9.94 $mV_{(rms)}$	11.0 $mV_{(rms)}$	13.5 $mV_{(rms)}$	14.0 $mV_{(rms)}$	16.4 $mV_{(rms)}$	19.4 $mV_{(rms)}$	23.8 $mV_{(rms)}$
10.0 $V_{full\ scale\ (fs)}$	12.4 $mV_{(rms)}$	13.7 $mV_{(rms)}$	16.5 $mV_{(rms)}$	17.6 $mV_{(rms)}$	20.5 $mV_{(rms)}$	24.2 $mV_{(rms)}$	29.8 $mV_{(rms)}$

Horizontal System-Performance Characteristics

Characteristic	Measured Performance – All Oscilloscope Input Connector Types	
Main timebase range	2 ps/div to 20 s/div real-time	
Main timebase delay range	200 s to -200 s real-time	
Reference position	Left, 1st Division, Center, Right	
Channel de-skew range	±1 ms range, 10 fs resolution	
Time scale accuracy*,[1]	± (25 ppb initial + 100 ppb/year aging) first year of manufacture ± (25 ppb initial + 30 ppb/year aging) after first year of manufacture	
Intrinsic jitter[3], acquired time range/delta-time interval	Internal reference	External reference
< 1 µs (100 ns/div) < 10 µs (1 µs/div) <100 µs (10 µs/div) <1 ms (100 µs/div)	13 fs rms 18 fs rms 24 fs rms 38 fs rms	13 fs rms 18 fs rms 24 fs rms 34 fs rms
Inter-channel skew[2]	±2 ps pk	
Measured time interval error (TIE)	39 fs rms, 500 mV_{FS}, 33 GHz bandwidth, 90% input signal.	

1. initial = immediately after factory or user calibration.
2. intra-chan = both edges measured on same channel, inter-chan = two edges measured on different channels within the same scope chassis, inter-scope = two edges measured between channels across different scope chassis synchronized to the same time reference
3. Intrinsic Jitter is the time error of a single channel relative to an ideal time reference. External timebase reference values measured with oscilloscope phase-locked to the input test source. Intrinsic jitter value depends on acquisition time range for TIE formula and depends on delta-time between edges for all two-edge formulas.

* Denotes warranted specification, all others are typical. Specs are valid after a 30-minute warm-up period and ±5 °C from calibration temp.

Characteristic	All Oscilloscope Input Connector Types
Jitter measurement floor[1](sec rms)	
Time interval error (sec rms)	$\sqrt{\left(\frac{\text{Noise floor}}{\text{Slew rate}}\right)^2 + (\text{Intrinsic jitter})^2}$
Period jitter (sec rms)	$\sqrt{2} * \sqrt{\left(\frac{\text{Noise floor}}{\text{Slew rate}}\right)^2 + (\text{Intrinsic jitter})^2}$
Cycle-cycle / N-cycle jitter (sec rms)	$\sqrt{3} * \sqrt{\left(\frac{\text{Noise floor}}{\text{Slew rate}}\right)^2 + (\text{Intrinsic jitter})^2}$
Delta-time measurement accuracy[1,2,3,4]	
Intra-channel no averaging	$\pm\left[5 * \sqrt{\left(\begin{matrix}\text{Time interval}\\ \text{error (Edge1)}\end{matrix}\right)^2 + \left(\begin{matrix}\text{Time interval}\\ \text{error (Edge2)}\end{matrix}\right)^2} + \left(\left(\begin{matrix}\text{Time scale}\\ \text{accuracy}\end{matrix}\right) * \left(\begin{matrix}\text{Delta}\\ \text{time}\end{matrix}\right)\right)\right]$
Intra-channel 256 averages	$\pm\left[\frac{5}{16} * \sqrt{\left(\begin{matrix}Time\ interval\\ error\ (Edge1)\end{matrix}\right)^2 + \left(\begin{matrix}Time\ interval\\ error\ (Edge2)\end{matrix}\right)^2} + \left(\left(\begin{matrix}Time\ scale\\ accuracy\end{matrix}\right) * \left(\begin{matrix}Delta\\ time\end{matrix}\right)\right)\right]$
	$\pm$

1. Scope channels and signal interconnect de-skewed prior to measurement.
2. Sample rate set to maximum. Noise and slew rate determined at fixed-voltage measurement threshold, near middle of signal. Displayed signal is not vertically clipped. Slew rate of sine wave = (peak signal amplitude) · 2 · π · f, slew rate of fast step
   ~= 0.8 · amplitude / (risetime 10-90%).
3. intra-chan = both edges on the same channel, inter-chan = two edges on different channels of the same scope chassis, inter-scope = two edges on different scope chassis. TIE(Edge1) = time-interval error measurement floor of first edge, TIE(Edge2) = time-interval error measurement floor of second edge.
4. Reading is the displayed DTMA measurement value. Do not double the listed TSA value in DTMA formula.

Acquisition System-Performance Characteristics

Acquisition Characteristic	
Maximum real-time sample rate	128 GSa/s
Sampling resolution	7.8125 ps/Sample
Memory depth per channel 1 Gpt 2 Gpts 8 Gpts	 Standard XR804KA-02G XR804KA-08G
Memory depth (with RT averaging)	1 Gpt
Acquisition time at max sampling rate 1 Gpt 2 Gpts 8 Gpts	 7.8125 ms 15.625 ms 62.5 ms single acquisition, 31.25ms running acquisition
Sampling modes Real-time	 Successive single shot acquisitions
Real-time with averaging	Selectable from 2 to 1,048,575
Bandwidth filters	Brick wall, 4th order Bessel, Butterworth, Bandpass
Frequency response	Flat mag and linear phase, Gaussian mag and linear phase: slower filter roll off while maintaining linear phase
Sin(x)/x interpolation	On/off selectable FIR digital filter with selectable 2-32x ratio: digital signal processing adds points between acquired data points to enhance measurement accuracy & waveform display

Trigger System-Performance Characteristics

Hardware Trigger

Trigger sources	All channel inputs, 1 auxiliary trigger input
Sensitivity (200 mV/div)	0.5 div p-p 1 div p-p Noise Reject 0 div p-p High
Edge trigger bandwidth	Equal to acquisition analog bandwidth
Edge trigger bandwidth (50 Ω AUX Input)	DC to 2 GHz @ 150 mV_{pp} 4 GHz @ 175 mV_{pp} 5 GHz @ ≥ 400 mV_{pp}
Minimum pulse width trigger Hardware Software	 50 ps 10 ps
Level range Channel input Auxiliary input	 Any onscreen voltage ±5 V
Sweep modes	Auto, triggered, single
Display jitter (trigger jitter)	Equal to TIE Measurement Floor under similar conditions
Trigger holdoff range	Fixed, random 25 ns to 10 s

Trigger Modes – Hardware

Edge	Triggers on a specified slope (rising, falling, or alternating between rising and falling) & voltage level on any channel or auxiliary trigger.
Edge transition	Trigger on rising or falling edges that cross two voltage levels in > or < the amount of time specified. Edge transition setting from 75 ps.
Edge then edge (time)	The trigger is qualified by an edge. After a specified time-delay between 1.5 ns to 20 s, a rising or falling edge on any one selected input will generate the trigger.
Edge then edge (event)	The trigger is qualified by an edge. After a specified delay between 1 to 65,000,000,000 rising or falling edges, another rising or falling edge on any one selected input will generate the trigger.
Glitch	Triggers on glitches narrower than the other pulses in your waveform by specifying a width less than your narrowest pulse and a polarity. Triggers on glitches as narrow as 50 ps. Glitch range settings: < 75 ps to < 10 s.
High-bandwidth Edge	Edge trigger up to scopes maximum bandwidth (works with edge positive slope and edge negative slope only).
Pattern/state	Identifies a trigger condition by looking for a specified pattern or a pattern and an edge (state) across the input channels.
Pulse width	Trigger on a pulse that is wider or narrower than other pulses in waveform by specifying a pulse width & a polarity. Triggers on pulse widths as narrow as 75 ps. Pulse width range settings 75 ps to 20 s. Trigger point can be configured for “end of pulse” or “time out”.
Window	Specify a voltage range and then trigger when the waveform either exits this range, enters this range, stays outside the range for too long or too short, or stays inside the range for too long or too short. Range setting from 75 ps to 20 s.
Runt	Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again. Can be time qualified with minimum setting of 75 ps.
Timeout	Triggers the oscilloscope when the waveform has been at a higher voltage than the voltage specified by the Level control for too long (High Too Long), when the waveform has been at a lower voltage than the Level voltage for too long (Low Too Long), or when the waveform has taken too long to pass through the Level voltage (Unchanged Too Long). Timeout settings from 75 ps to 20 s.
Setup and hold	Trigger on violations of Setup time, Hold time, or both. Setup times from 75 ps to 20 s & hold times from 75 ps to 100 ns.

Trigger Modes – Software

Zone Qualify	Software triggers on the user-defined zones on screen. Zones can be specified as either “must intersect” or “must not intersect.” Up to eight zones can be defined across multiple channels.
Measurement Limit	Software triggers on the results of a measurement value. For example, when the “pulse width” measurement is turned on, measurement software qualify can trigger on a glitch as narrow as 10 ps.

Measurement and Math

Oscilloscope Measurements

Measurement modes	Measure a single occurrence, measure all occurrences, entire waveform, displayed waveform,
Statistics	Displays the current, mean, minimum, maximum, standard deviation, number of measurements value for the displayed automatic measurements. Also shows Fail Min and Fail Max when measurement limit test is enabled

Waveform Measurements

Vertical	Amplitude, Peak-Peak Amplitude, Waveform Top, Waveform Base, Maximum, Minimum, RMS, Carrier Power, Amplitude at Lower, Amplitude at Middle, Amplitude at Time, Amplitude at Upper, Average, Crossing, Effective Bits (ENOB), Overshoot, Preshot (Preshoot), Peak-Peak at Hit Ratio
Time	Rise Time, Fall Time, Period, Setup Time, Hold Time, N-Period, Frequency, Pulse Width, Pulse Count, Delta Time, Duty Cycle, Phase, Slew Rate, Time at Amplitude, Time at Edge, Time at Max, Time at Min, Burst Width, Burst Interval, Burst Period
Frequency domain	FFT Magnitude, FFT Frequency, FFT Delta Magnitude, FFT Delta Frequency, FFT Channel Power, FFT Power Spectral Density, FFT Occupied Bandwidth, Total Harmonic Distortion
Eye-diagram	Jitter, Eye Rise Time, Eye Fall Time, One Level, Zero Level, Eye Height, Eye Width, Crossing %, Signal to Noise Ratio (SNR), Duty Cycle Distortion, Bit Rate, Eye Amplitude, Delta Time (Δt), Crossing Time, Database Peak Hits, TJ, DJ (δ - δ), RJ (rms), Jn, TI, DI (δ - δ), RN (rms)

Jitter Analysis Measurements – Requires D9320JITA Jitter Analysis Application

Clock	Clock TIE, Duty Cycle – Duty Cycle, Period - Period, Pulse Width – Pulse Width
Data	SNDR, CDR Rate, Data TIE, Data Rate, Unit Interval, N-UI, UI-UI, Pattern Length, Symbol Error Ratio (SER), Bit Error Ratio (BER), Noise, Deemphasis
Phase noise	Phase jitter

Pamn Measurements – Requires D9320PAMA PAM Analysis Application

PAMn measurements	Rise/Fall Times, Levels, Levels RMS, Levels, Levels RMS, Levels Peak-Peak, Level Skews, Eye Levels, Eye Skews, Vertical Eye Closure, Eye Heights, Eye Widths, Trans. Time, Outer OMA, PAM Overshoot, PAM Undershoot, Outer Extinction Ratio, Linearity, Pk-Pk Amplitude, Tx Power Excursion
PAM formats	PAM-3, PAM-4, grey coded, uncoded
SNDR measurements	Sigma-n, Sigma-n Per Level, Sigma-e, P-max, SNDR, Level Means

Oscilloscope Measurements (Continued)

Histograms

Source	Waveform (qty 4) and measurement (qty 4)
Orientation	Vertical (for timing and jitter measurements) or horizontal (noise and amplitude change) modes, regions are defined using waveform markers
Measurements	Mean, Median, Std Dev, Total Hits, Minimum, Maximum, Peak-Peak, μ±1σ, Peak Hits, μ±2σ, Mode, μ±3σ
Mask testing	Allows pass/fail testing to user-defined or Keysight-supplied waveform templates. Automask lets you create a mask template from a captured waveform and define a tolerance range in time/voltage or screen divisions. Test modes (run until) include test forever, test to specified time or event limit, and stop on failure. Executes “multipurpose” user setting on failure

Waveform Math

Number of functions	64
Math functions	Absolute Value, Add, Align, Amplify, Average, Common Mode, Delay, Divide, Invert, Maximum, Minimum, Multiply, Smooth, Square, Square Root, Subtract, Versus (XY) 4th order Bessel, Brickwall, Butterworth, CTLE, DFE, Differentiate, Gaussian, High Pass, Integrate, Interpolation, Linear Equalizer, Sin(x)/x FFT magnitude, FFT phase Measurement Trend (1,2 inputs), Gating, Recovered Clock SNDR: Pattern average, Linear fit pulse response, Step response, Pulse corrected pattern average, Pulse corrected error
De-embedding functions	Apply s2p, Remove s2p, Apply s4p, Remove s4p, 2 Port, 4 Port 1 Src, 4 Port (CM, diff, src1, src2)
User defined functions	User defined using MATLAB or Python

FFT

Frequency range	DC to scope’s maximum bandwidth
Frequency resolution	Sample rate/memory depth = resolution
Window modes	Hanning, flattop, rectangular, Blackman-Harris, Hamming

Measurement Modes

Automatic measurements	Measure menu access to all measurements, up to 64 measurements can be displayed simultaneously
Drag-and-drop measurement toolbar	Measurement toolbar with icons that can be dragged and dropped onto the displayed waveforms. Customizable favorites toolbar
Marker modes	Manual markers, track waveform data
On-screen annotations	Waveform tracking, arrow, rectangular, ellipse, stationary for team collaboration and documentation

Platform Characteristics

Computer System, Peripherals and Accessories	
Operating system	Microsoft Windows 11 64-bit or newer Microsoft Windows release
CPU	Intel i7-9700E octa-core CPU up to 4.4 GHz or higher performance CPU
PC system memory	64 GB DDR4 RAM or higher capacity/performance RAM
PC ports	USB 2.0 hi-speed (host), USB 2.0 hi-speed (device), VGA, DisplayPort, USB 3.0 (host), USB 3.0 (device), dual-monitor video output, 10/100/1000 LAN, LXI LAN
Drives (SSD)	960 GB Enterprise grade internal SSD removable hard drive or higher capacity/performance SSD
Peripherals	Optical USB mouse, compact USB keyboard supplied. Any Windows-compatible input device with a USB interface is supported
File Types	
Waveforms	Hierarchal data file (*.h5), comma-separated values (*.csv), public binary format (.bin), and Y value files (*.txt)
Images	BMP, PNG, TIFF, GIF, or JPG format
Included Accessories	
Accessories	Country-specific power cord, front cover, open ended torque wrench (5/16 inch 8-in-lb), open ended torque wrench (20 mm 8-in-lb), dual-ended flat wrench (6 mm / 7 mm), connector adapters (2.92 mm F-F, Qty: 5), USB Keyboard, USB optical mouse, and an ESD mat with wrist straps
I/O Ports	
Auxiliary trigger input	±5 V, 50 Ω impedance
Trigger out	0 V to 2.5 V into 50 Ω impedance, 0 V to 5 V into 1 MΩ impedance
10 MHz input	Input frequency lock range: 10 MHz ±20 ppm, 50 Ω impedance Amplitude, sine wave input: 630 mV_{pp} (0 dBm) min to 3.54 V_{pp} (+15 dBm) max, 50 Ω impedance Amplitude, square wave input: 500 mV_{pp} min to 2.83 V_{pp} max, 50 Ω impedance
10 MHz output	Amplitude into 50 Ω (internal or external timebase reference selected): 1.1 to 2.0 V_{pp} (+ 5 to + 10 dBm) sine wave Frequency (internal timebase reference selected): ± (25 ppb initial + 100 ppb/year aging) first year of manufacture ± (25 ppb initial + 30 ppb/year aging) after first year of manufacture Frequency, external timebase reference selected: external reference frequency
Reference clock input	400 MHz, 0.25 V_{pp} to 0.50 V_{pp}, 50 Ω impedance
Reference clock output	400 MHz, 0.25 V_{pp} to 0.50 V_{pp}, 50 Ω impedance
Sample clock input	8 GHz, -5 dBm to +15 dBm, 50 Ω impedance
Sample clock output	8 GHz, +10 dBm to +15 dBm, 50 Ω impedance
Aux out	0 V to -0.5 V driving 50 Ω impedance
Cal out	-2.4 V to 2.4 V driving 50 Ω impedance
Display	
Display	15.6-inch color (FHD) with capacitive touch screen
Resolution	1920 pixels horizontally x 1080 pixels vertically
Annotation	Up to 16 can be inserted into the waveform window.
Horizontal Divisions	10 divisions
Vertical Divisions	Choose between 8 or 10 divisions per waveform area, 10 divisions default
Waveform layout	Supports 4 waveform windows and a 16-grid layout
Waveform styles	Connected dots, dots, infinite persistence, color graded infinite persistence. Includes up to 256 levels of intensity-graded waveforms, variable persistence

Platform Characteristics

General Characteristics

Temperature	Operating: +5 °C to +40 °C
	Non-operating: -20 °C to +70 °C
Humidity	Operating: 80% relative humidity, non-condensing, up to +40 °C
	≤ 95% relative humidity (non-condensing) up to +70 °C
Altitude	Operating: Up to 3,100 meters (6561.68 feet)
	Non-operating: Up to 4,600 meters (15091.86 feet)
Vibration	Operating random: 0.21 g (rms)
	Non-operating random: 2.0 g (rms)
	Swept sines: 0.50 g (rms)
Power	100 to 120 or 200 to 240 V_{AC} at 50/60 Hz (auto-ranging) Maximum input power 900 VA
Weight	24 kg (53.0 lbs.)
Dimensions	Width: 445 mm with handles removed (17.5″) 543 mm with handles (21.4″)
	Depth: 412 mm main body (16.2″) 429 mm including knobs and rear feet (16.9″)
	Height: 317 mm with feet removed (12.5″) Installations with the optional N2178A rackmount kit will take up 8U to allow for airflow and cabling 339 mm with feet (13.3″)
	Inputs: Connectors are 78 mm apart horizontally. Centers are: 57 mm above the surface when resting flat (no tilt levers) and 100 mm above the surface when using the front tilt levers.
	Clearances: Fans draw cool air in from the sides and bottom and blow it out the back of the oscilloscope. Allow at least 8 inches (203 mm) of clearance from the rear. Side handles provide sufficient airflow clearance side to side.
Safety	IEC 61010-1:2010, AMD1:2016 / IEC 61010-2-030; CAN/CSA-C22.2 No. 61010-1:12, UPD1:2015, UPD2:2016, AMD1:18; CAN/CSA-C22.2 No. 61010-2-030; ANSI/UL Std. No. 61010-1:2012, AMD1:2018; ANSI/UL Std. No. 61010-2-030

Definitions

Measured (meas)
An attribute measured during development for purposes of communicating the expected performance. This data is not warranted, does not include measurement uncertainty, and is measured at room temperature (approximately 23 °C).

Nominal (nom)
The mean or average characteristic performance, or the value of an attribute that is determined by design such as a connector type, physical dimension, or operating speed. This data is not warranted and is measured at room temperature (approximately 23 °C).

Specification (spec)
The warranted performance of a calibrated instrument that has been stored for a minimum of 2 hours within the operating temperature range of 5 – 40 °C and after a 30-minute warm up period.

Typical (typ)
The characteristic performance, which 80% or more of manufactured instruments will meet. This data is not warranted, does not include measurement uncertainty, and is valid only at room temperature (approximately 23 °C).

Operating frequency range
The operating frequency range is the frequency range of corrected signal spectral components by deembeding for frequency and phase characteristics of the individual hardware.

Analog bandwidth
The analog bandwidth describes the 3 dB bandwidth of the full opto-electronic input path without any frequency or phase corrections.

Sensitivity
The sensitivity limit corresponds to the received signal power at the input interface for which a 32 GBaud DP-QPSK exhibits an EVM of 32.5% or less. An EVM of 32.5% corresponds to a BER of 1E-3 for assumed added Gaussian white noise (AWGN) according to =0.5*ERFC(1/(SQRT (2)* (EVM^2+1))).

Effective Number of Bits (ENOB)
Definition in accordance with IEEE 1057: “For an input sinewave of specified frequency and amplitude, ENOB is the number of bits of an ideal waveform recorder for which the rms quantization error is equal to the rms NAD of the waveform recorder under test.” ENOB is determined by equation.

Keysight Support Services

Accelerate your learning curve, enhance your test uptime, and confidently guarantee your instrument accuracy with Keysight Support Services. Keysight Services are here to support your test needs with expert technical support, instrument repair and calibration, training, alternative acquisition program options, and more.

A KeysightCare agreement provides dedicated, proactive support through a single point of contact for an extensive group of instruments, software, and solutions to ensure optimal uptime, with fast response times and resolution. Explore the services that are right for you.

Keysight Services

Offering	Benefits
KeysightCare 	KeysightCare provides elevated support for Keysight instruments and software, with access to technical support experts who respond within a specified time and ensure committed repair and calibration turnaround times (TAT). KeysightCare offers multiple service agreement tiers, including KeysightCare Assured, Enhanced, and Application Software Support. See the KeysightCare data sheet for details.
KeysightCare Assured	KeysightCare Assured provides a commitment to respond to your engineer's technical needs quickly. When unexpected repairs are necessary, you can count on a committed repair service turnaround time to get you back up and running.
KeysightCare Enhanced	KeysightCare Enhanced includes all the benefits of KeysightCare Assured plus Keysight's accurate and reliable Calibration Services, accelerated and committed TAT, and technical response.
Keysight Support Portal & Knowledge Center	All KeysightCare tiers include access to the Keysight Support Portal, where you can manage support and service resources related to your assets, such as service requests and status, or browse the Knowledge Center.
Education Services	Build confidence and gain new skills to make accurate measurements, with flexible Education Services developed by Keysight experts. Including Start-up Assistance.
Alternative Acquisition Options	
KeysightAccess	Reduce budget challenges with a lease-based subscription service that offers low monthly payments, enabling you to get the instruments, software, and technical support you want for your test needs.

Recommended services

Maximize your instrument uptime and confidently make accurate measurements by securing technical support, repair, and calibration services with committed response and turnaround times. High-performance instruments include 1 year of KeysightCare Assured. Obtain multi-year KeysightCare upfront to eliminate the need for lengthy and tedious paperwork and yearly requests for maintenance budget. Plus, you benefit from secured service for 2, 3, or 5 years.

Service	Function
KeysightCare Enhanced*	**Includes Tech Support, Warranty and Calibration**
R-55B-001-1	KeysightCare Enhanced – Upgrade 1 year
R-55B-001-2	KeysightCare Enhanced – Extend to 2 years
R-55B-001-3	KeysightCare Enhanced – Extend to 3 years (Recommended)
R-55B-001-5	KeysightCare Enhanced – Extend to 5 years (Recommended)
KeysightCare Assured	**Includes Tech Support and Warranty**
R-55A-001-2	KeysightCare Assured – Extend to 2 years
R-55A-001-3	KeysightCare Assured – Extend to 3 years
R-55A-001-5	KeysightCare Assured – Extend to 5 years
Start-Up Assistance	
PS-S40-01	Included – instrument fundamentals and operations starter
PS-S40-04	Recommended – instrument fundamentals and operations starter
PS-S40-02	Optional, technology & measurement science standard learning

* Available in select countries. For details, please view the datasheet. R-55B-001-2/3/5 must be ordered with R-55B-001-1.

More Information

Thank you for choosing a Keysight Infiniium XR8 Oscilloscope. The Keysight Infiniium XR8 oscilloscopes set a new standard for real-time oscilloscope accuracy, with models ranging from 8 to 33 GHz. Extreme signal integrity, 12-bits of vertical resolution and ultra-low noise floor specifications allow for the truest representation of signals. Invest with confidence today, knowing you can meet the needs of technology advancements tomorrow. For more information on the XR8, check out the following:

- Infiniium XR8 Configuration Guide
- Infiniium XR8 Technical Overview
- Infiniium Oscilloscope Probes and Accessories