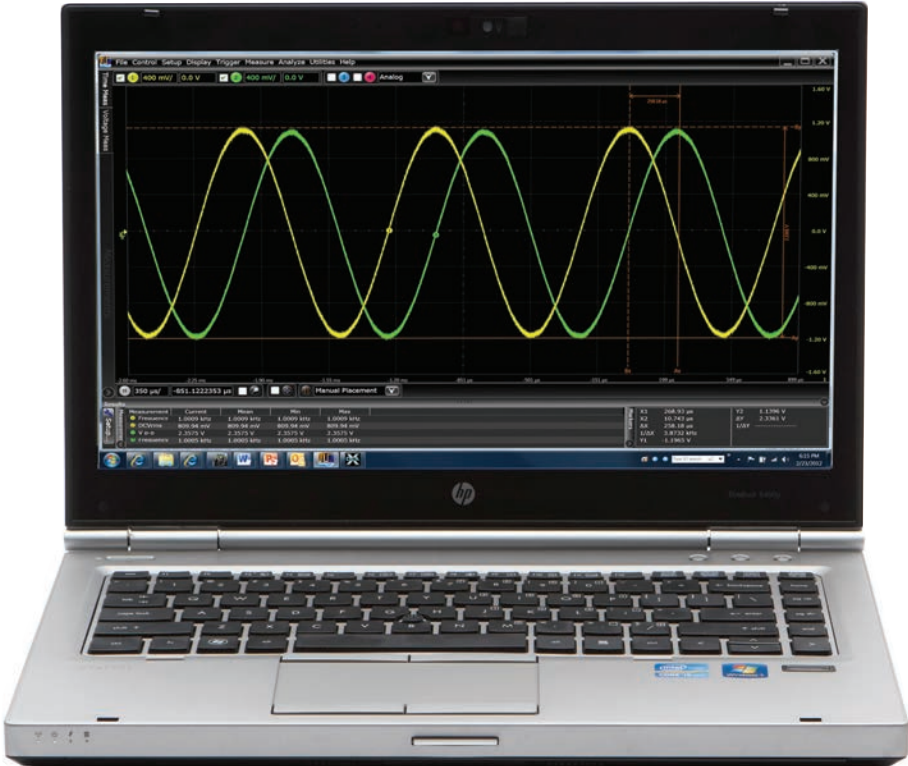


Keysight N8900A Infiniium Offline Oscilloscope Analysis Software

Data Sheet



Unlocking Measurement Insights

Infiniium Offline Oscilloscope Analysis Software

View, analyze, share, and document, where, and how you want.

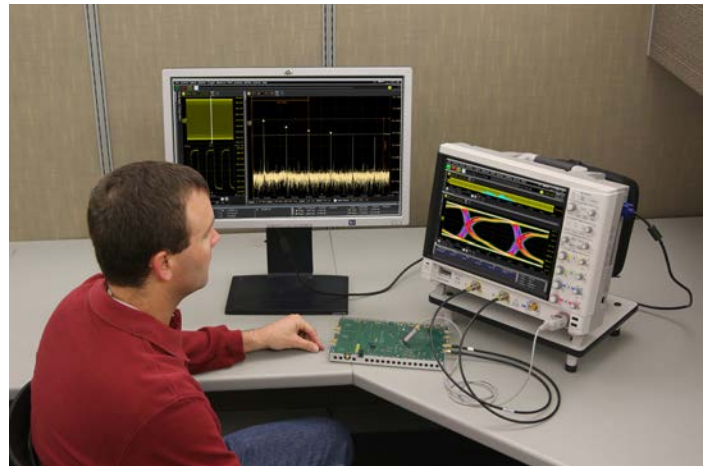
Free 30-day trial

Download the N8900A software and use it free for 30 days. Import your scope waveforms, or use our demo wizard to quickly evaluate the application using previously captured signals. www.keysight.com/find/N8900A-trial



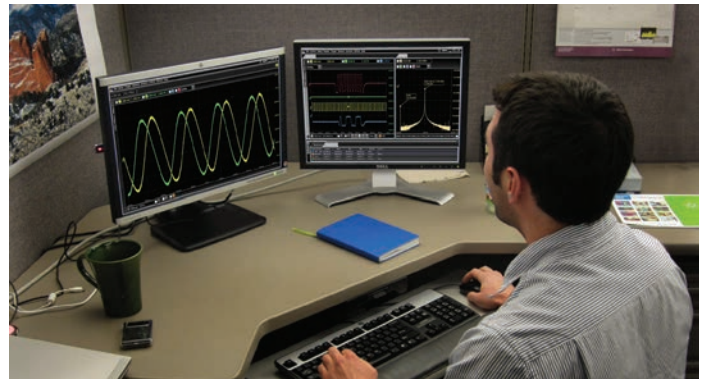
Expand scope measurement access

You depend upon your oscilloscope to capture an accurate picture of what's happening in your design. Ever wish you could do additional signal viewing, analysis and documentation tasks away from your scope and target system?



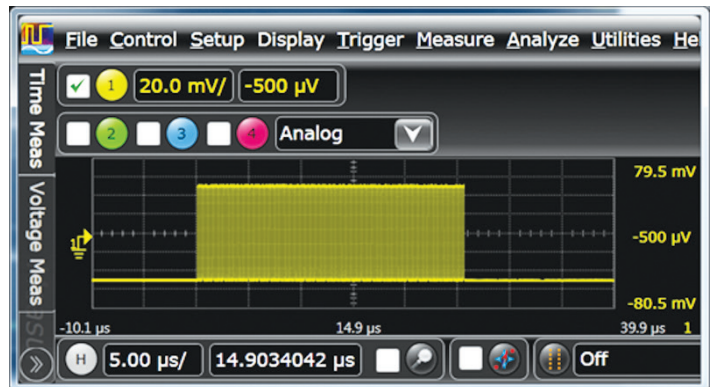
Get more insight from your limited test time

With the Keysight Technologies, Inc. Infiniium Offline oscilloscope analysis software, now you can. You can capture waveforms on your scope, save to a file, and recall the waveforms into Keysight's Infiniium Offline application. The application supports a variety of popular waveform formats from multiple oscilloscope vendors.



Runs like a scope

Now you can view, analyze, share, and document scope measurements anywhere your PC goes. Use familiar controls to quickly navigate and zoom in to any event of interest.

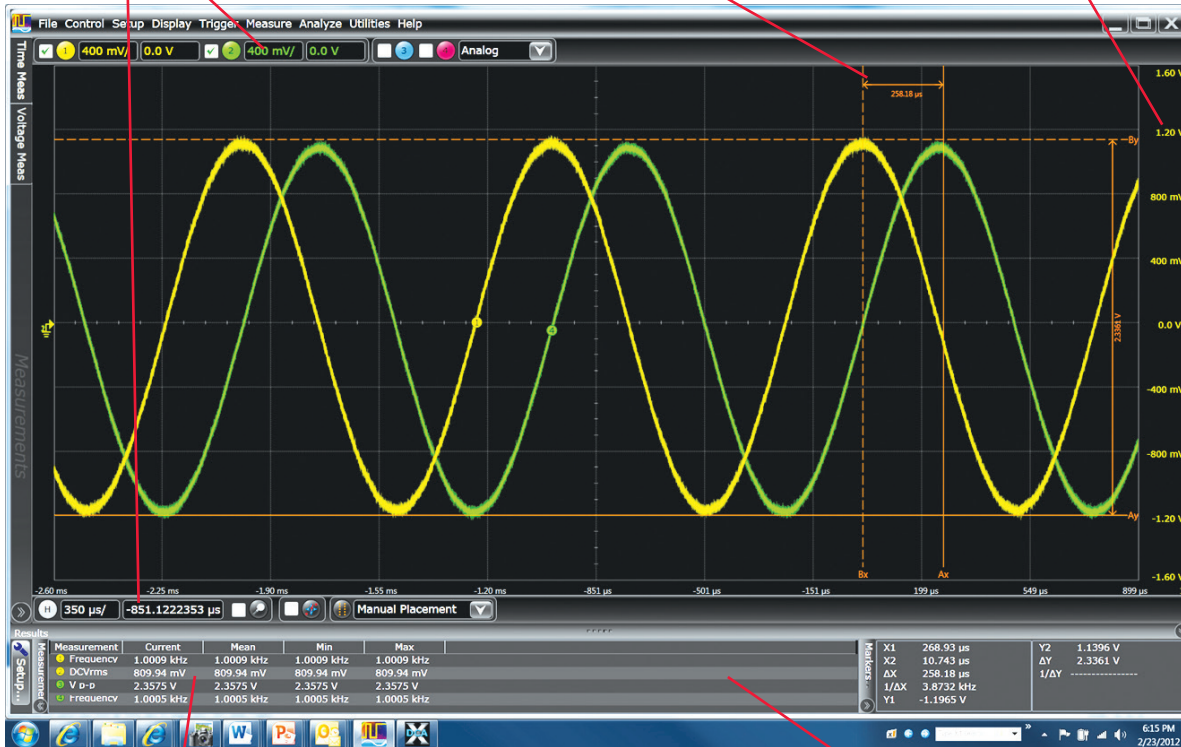


View and Analyze Away from Your Scope and Target System

Use the application to pan and zoom to areas of interest.

When moved, smart markers dynamically update delta values.

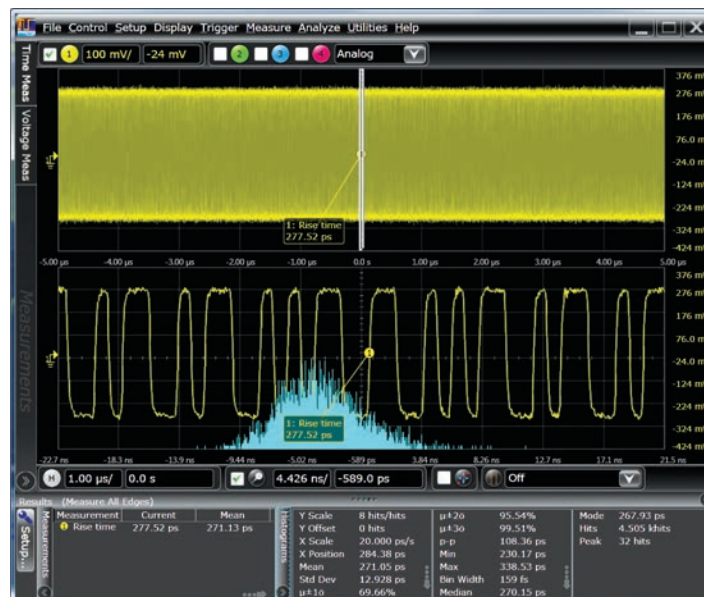
Quickly determine time and vertical values as they are prominently displayed.



Make quick and precise measurements using drag and drop, or by choosing from any of the 50 built-in automated measurements.

See up to 20 measurements simultaneously with user-selectable columns.

- The application allows you to be mobile.
- Use familiar scope controls to quickly navigate and zoom in to any event of interest.
- Access powerful viewing and analysis tools based on Keysight's Infiniium oscilloscopes.
- Use waveform math, filtering, and FFT spectral analysis and to get more insight. Need to see serial decode, analyze jitter, or view eye diagrams? Infiniium Offline helps you get insight in all of these areas.
- Multiple windows, sliders, and user-selectable sizing make for faster creation of custom views.



Share Comprehensive Scope Measurements More Easily

Infiniium Offline will help you share scope measurements more easily across your team, and if needed with customers and vendors. Share using common tools like a USB or network drive, email, and Web-based collaboration.



- Share entire waveform records instead of being limited exclusively to screen shots.
- Use bookmark annotations to share your personal insight more quickly and easily. Mouse-over bookmarks to reveal additional information.



- Easily collaborate with others even if they have different tools. Infiniium Offline's transportable licenses allow you to share not only the measurement data, but also to loan out the application and analysis options so others can see exactly what you are seeing.

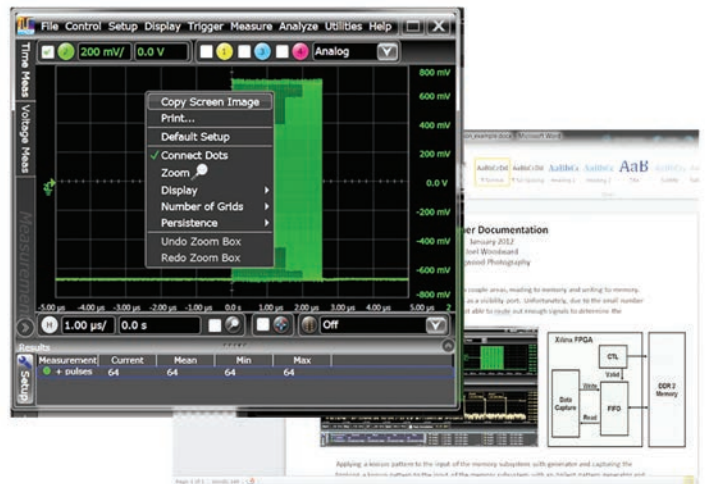


Create More Useful Documentation Faster



Infiniium Offline will help you create more useful documentation, faster. Here's how:

- Use right-click cut-and-paste to move screen images between applications, without ever having to save the image to a file.
- Quickly determine time and vertical values as they are prominently displayed.
- Size and populate measurements in the result window with just the information you need for your documentation.
- Add bookmarks and call outs to produce friendly and useful documentation.
- Save or open the entire measurement record in a mouse click in case there's a need to revisit later.
- Multiple windows and splitters allow you to document just what you want to see and how you want to see it.



Infiniium Offline: Standard Features

Infiniium Offline's standard feature set includes a large array of capabilities to help you view, analyze, share, and document better and faster.

Navigate

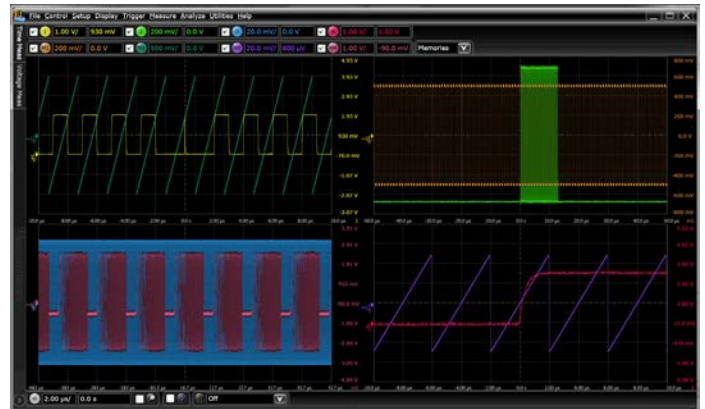
Pan and zoom to anywhere in the data record. Navigate in time, or between bookmarks.

View

Up to 8 waveforms simultaneously, 1, 2, or 4 grids (stacked, side by side, custom layout, zoom)

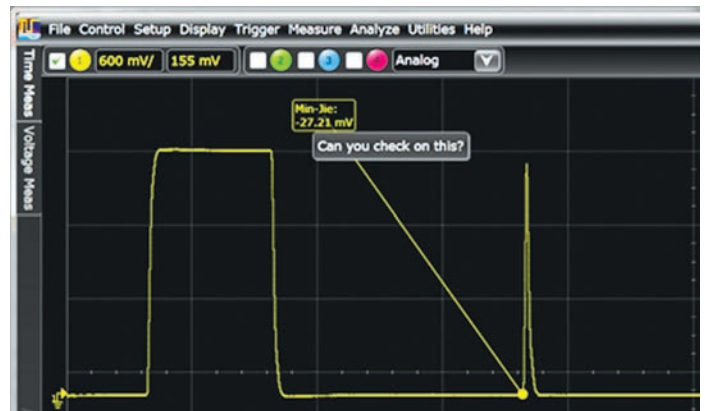
Controls

- Horizontal (5 ps/div to 200 s/div)
- Vertical (100 uV/div to 1000 V/div)
- Offset (± 1000 V)



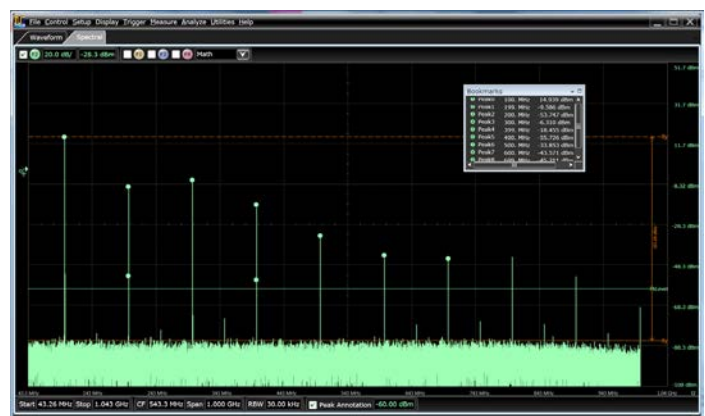
Measurements

- Over 50 automated measurements
- View up to 20 simultaneously
- User-customizable result window (size, position, information)
- X & Y markers with dynamic delta values



Analyze

- 20 math operators including FFT and filters
- Up to four independent/cascaded math functions
- Measurement histogram
- Mask test
- Measurement limit testing



View windows

Analog, math, spectral, measurement results (simultaneous, tabbed, or undocked).

Documentation

- Right-click to copy
- Up to 100 bookmarks
- Annotated axis values
- Markers with dynamic delta value updates when moved
- User-definable views
- One step save/load setup and all waveforms



Infiniium Offline: Serial Decode Upgrades

Need additional capability? Take advantage of the wide range of protocol decode software offered in the Infiniium Offline bundles. There are low speed and high speed protocol decode bundles available, N8900A-004 and N8900A-005 respectively, and several more options in the 2016 add-on bundle, N8900A-007. These can be included in the initial Infiniium Offline purchase or added at a later point in time.

Protocol decode

Quickly navigate between physical and protocol layers using time-correlated markers and serial decode views.

Low-speed serial decode (N8900A-004) includes CAN, LIN, I²C, JTAG, SPI, SVID, FlexRay, RS232, UART and USB 2.0.

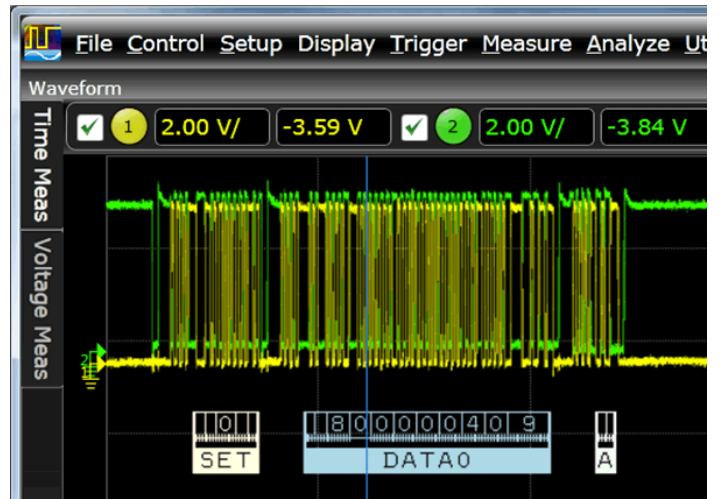
High-speed serial decode (N8900A-005) includes decoding for SATA, DigRF, MIPI[®] (D and M-PHYSM), 10G-KR, PCI Express[®] Gen 1, 2 and 3, USB 2.0/3.0, 8b/10b and DDR 1/2/3.

The 2016 add-on bundle (N8900A-007) includes protocol decode for Ethernet 10/100BaseT, eSPI, USB 3.1, USB PD, CAN FD, LIN, FlexRay, and I²S.

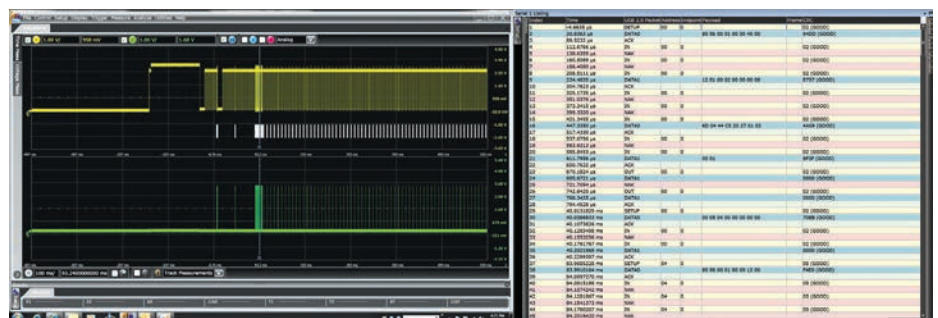
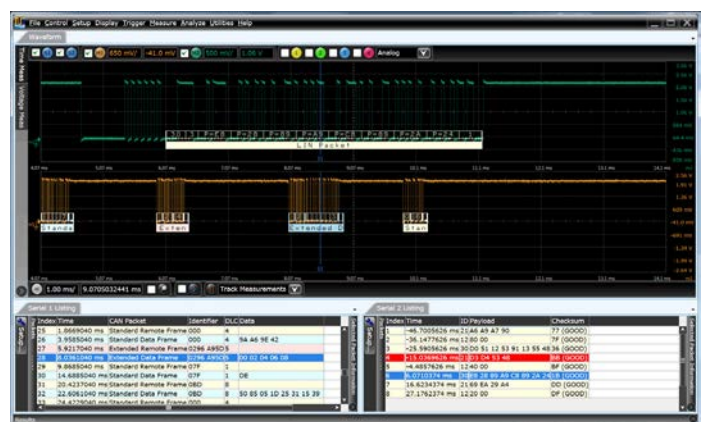
See decode below signals in the waveform area, and create a serial decode listing window. Matching colored packet enables quick navigation between time domain and listing windows. Size decode window as big or small as you want. Customize font size, and which columns you want shown.

Infiniium Offline serial decode offers decode of up to four serial buses simultaneously. Additional listing windows show when decoding multiple buses, or choose to view time-aligned packet decode in the waveforms area.

The decode listing window can be displayed simultaneously with the waveform window, configured as an unique window tab, or undocked and moved to any location on your PC monitor including on extended or multi-displays.



| Index | Time | I2C Packet | Addr | R/W | Ack | Data |
|-------|----------------|--------------------|------|-------|-----|------|
| 24 | -1.25178664 ms | Restart 7-bit Addr | 22 | Read | Ack | 8F |
| 25 | -5.38664 μs | Start 7-bit Addr | 21 | Write | Ack | 00 |
| 26 | 249.25336 μs | Restart 7-bit Addr | 21 | Read | Ack | 00 |
| 27 | 480.49336 μs | Start 7-bit Addr | 21 | Write | Ack | 01 |
| 28 | 732.91336 μs | Restart 7-bit Addr | 21 | Read | Ack | 00 |
| 29 | 964.19336 μs | Start 7-bit Addr | 22 | Write | Ack | 00 |
| 30 | 1.21671336 ms | Restart 7-bit Addr | 22 | Read | Ack | 8C |
| 31 | 2.46329336 ms | Start 7-bit Addr | 21 | Write | Ack | 00 |
| 32 | 2.71777336 ms | Restart 7-bit Addr | 21 | Read | Ack | FF |
| 33 | 2.94909336 ms | Start 7-bit Addr | 21 | Write | Ack | 01 |
| 34 | 3.20141336 ms | Restart 7-bit Addr | 21 | Read | Ack | FF |
| 35 | 3.43265336 ms | Start 7-bit Addr | 22 | Write | Ack | 00 |
| 36 | 3.68511336 ms | Restart 7-bit Addr | 22 | Read | Ack | 8F |
| 37 | 4.93183336 ms | Start 7-bit Addr | 21 | Write | Ack | 00 |
| 38 | 5.18633336 ms | Restart 7-bit Addr | 21 | Read | Ack | 00 |
| 39 | 5.41759336 ms | Start 7-bit Addr | 21 | Write | Ack | 01 |
| 40 | 5.66889336 ms | Restart 7-bit Addr | 21 | Read | Ack | 00 |

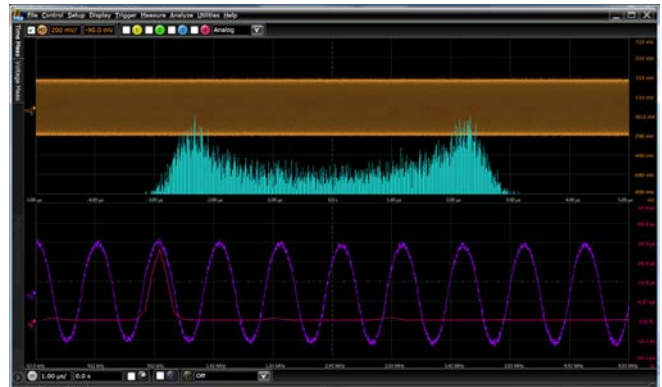


Infiniium Offline: Noise and Jitter Analysis Upgrades

Additional capabilities for real-time eye and jitter analysis are offered in the DSA bundle, N8900A-002.

EZJIT

Characterize and evaluate most commonly needed jitter measurements including TIE, cycle-cycle, N-cycle, period using EZJIT. For any measurement, EZJIT's histogram enables showing a measurement distribution as well as the application provides measurement spectral and trending plots.



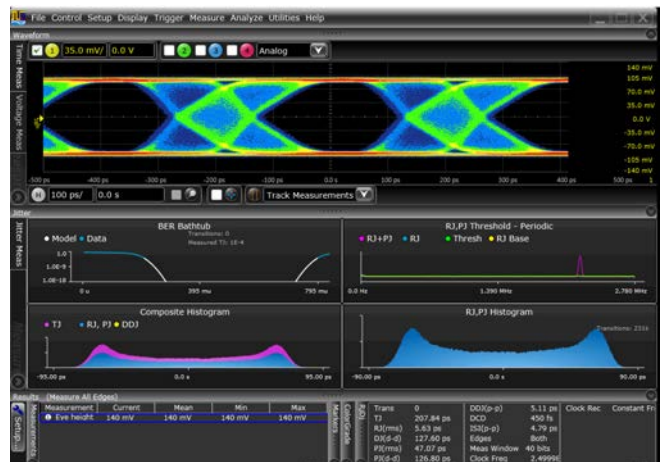
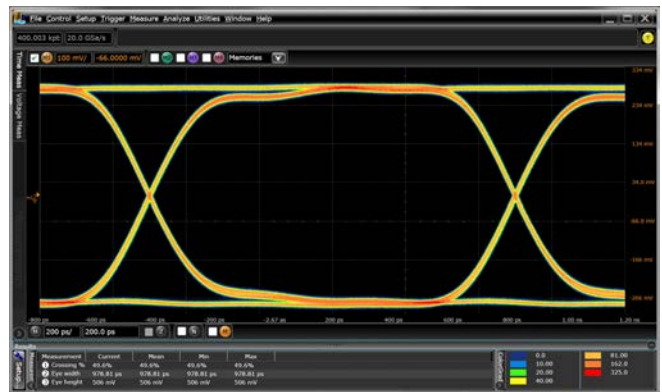
EZJIT Plus and EZJIT complete

EZJIT Plus includes all the capability of EZJIT, plus the ability to separate R_j and D_j . On Infiniium Offline, jitter separation is displayed in it's own unique window, so you can simultaneously see jitter results and waveform information.



Serial data analysis

Quickly validate signal integrity for high-speed serial interfaces with embedded clocks. The application includes clock recovery and automated building of eye diagrams. 8B/10 protocol decode comes standard with the DSA option as well.

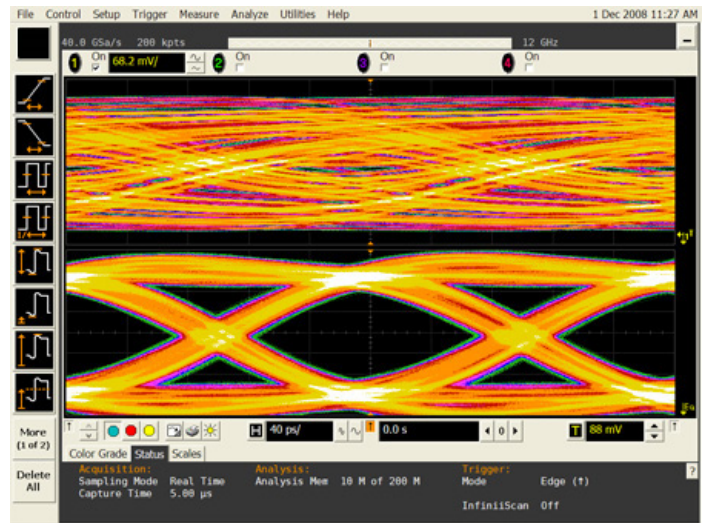


Infiniium Offline: Input Waveform Correction Upgrades

Get deeper analysis and simulation capabilities with the N8900A-003 analysis bundle.

Equalization

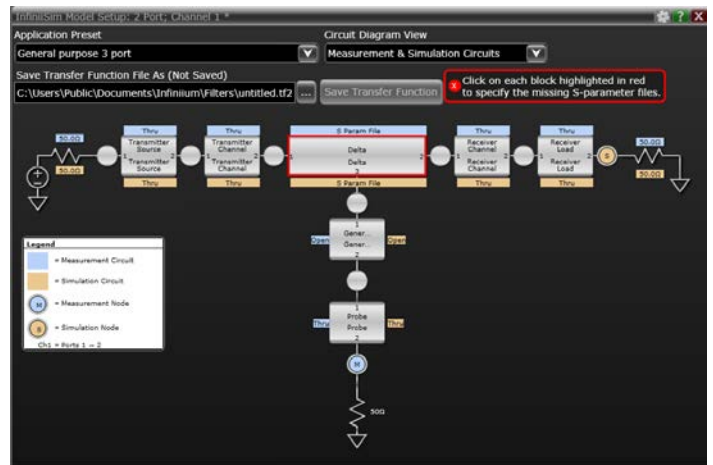
Correct for inter-symbol interference (ISI) that could be causing your eye to close using equalization. Emulate feed-forward (FFE), Decision feedback (DFE), and Continuous-Time Linear Equalization (CTLE).



InfiniiSim Waveform Transformation Toolset

With InfiniiSim software, you can:

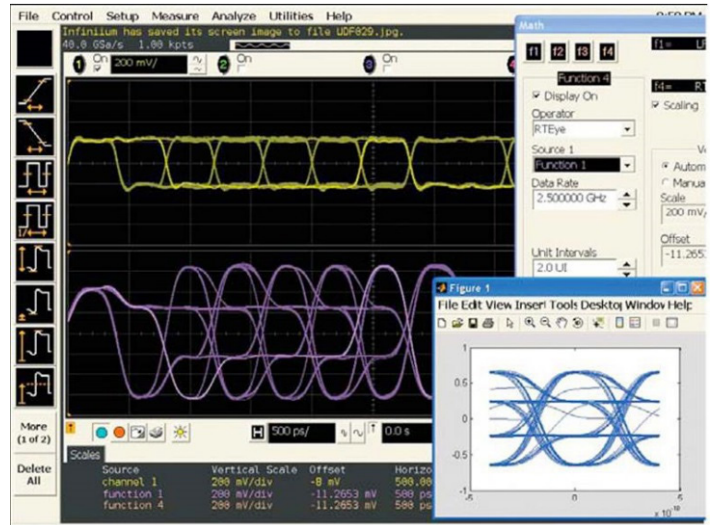
- De-embed fixtures or cables or switch networks that are placed between the oscilloscope and the device to be measured
- Embed cable models as required by several digital standards, or view signal degradation with an inserted element for link margin analysis
- View waveforms in physically un-probable locations
- Compensate for loading of probes or other circuit elements
- Compare different circuits by changing, adding or deleting circuit elements



Infiniium Offline: Input Waveform Correction Upgrades (Continued)

User Defined Function

The User Defined Function software provides new analysis capabilities beyond the traditional math/analysis features of the oscilloscope. Now you have the freedom to develop your own math functions or filters using MATLAB® and its Signal Processing Toolbox. (User must purchase MATLAB from The MathWorks separately).



Infiniium Offline: MultiScope

MultiScope capability allows you to achieve 40 channels of acquisition in a single time base. Connect 2, 5, or 10 oscilloscopes together. MultiScope can be used to connect any combination of Keysight Infiniium 2000X-, 3000T X-, 3000A X-, 4000 X-, 6000, 6000 X-, 7000B Series and Infiniium 9000, S-Series, 90000A, 90000 X-, 90000 Q-, V-Series, Z-Series oscilloscopes.



Infiniium Offline: Opening Saved Waveforms and Setup Files

Infiniium Offline supports a number of popular file waveform and setup formats. As well, you can open .csv, .tsv, and .txt files produced by EDA tools or other test equipment.

| InfiniiView file compatibility | | | |
|---|------------------------------|---------------|-------|
| | Keysight Scopes Infiniium | InfiniiVision | Other |
| Composite file (all data and setup) | | | |
| .osc | √ | | |
| Waveform data record(s) (open and save) | | | |
| .csv, tsv, txt | √ | √ | √ |
| .bin, h5 | √ | √ | |
| .wfm | √ | | |
| Oscilloscope setup file (open and save) | | | |
| .set | √ | | |

Open up to 8 signals one by one, or use Keysight’s composite file to open/save everything in a single mouse click. Composite files include all setup settings, all analog and memory waveforms, and window positioning.



How big are waveform files? Depends on the number of channels, settings, and the file format. File sizes scale linearly with channels and memory depth.

| File size approximations | | | | |
|---------------------------|----------------------|-----------------|--|---|
| # of saved scope channels | Scope memory setting | Saved File type | Resulting PC file size (Interpolation = Off) | Resulting PC file size (Interpolation = On) |
| 1 | 100 Kpts | .osc | 0.2 M | 0.2 M |
| | | .hd5 | 0.3 M | 3.5 M |
| | | .wfm | 0.2 M | 2 M |
| | | .bin | 0.4 M | 6 M |
| | | .csv | 2.7 M | 43 M |

PC Requirements and Infiniium Offline Characteristics

Host PC operating system and resources

- Recommended: Microsoft Win 7 (or newer version) 64-bit, 4G RAM, 1G free hard drive space
- Required: Microsoft Win XP, 2G RAM, 1G hard drive space. When using Windows XP, many features that are available in the Windows 7 version are not available.



Note: Not compatible with 32-bit version of Windows XP

Waveforms

Open up to 40 analog waveforms plus 4 waveform memories simultaneously.

Supported file formats

- Infiniium .osc, .set, .bin, .h5, .wfm
- InfiniiVision: .bin, .h5
- Other formats: csv, .tsv, .txt

View windows

One timebase waveform, one spectral, measurement results (simultaneous, tabbed, or undocked), one for each decode, one for jitter.

Up to 8 waveforms simultaneously, 1, 2, or 4 grids (stacked, side by side, custom layout, zoom)

Controls

- Horizontal (5 ps/div to 200 s/div)
- Vertical (100 uV/div to 1000 V/div)
- Max Vertical offset: ± 1000 V
- FFT: 0 Hz to 1 THz, Start, stop, center, span, resolution BW, threshold for peak magnitude table

Documentation

- Right-click to copy
- Up to 100 bookmarks
- Annotated axis values
- Markers with dynamic delta value update when moved

Application display resolution

User selectable, max of 1600 x 900

Save images

Right-click copy to Windows buffer. File save images as .png, .jpg, .bmp .tif, user selection for setup information inclusion, time stamp appended to image saves

Measurements

Result window user-customizable (size, position,) with up to 20 measurement results shown simultaneously.

- X & Y markers with dynamic delta values
- Time: Rise time, fall time, +width, -width, delta time, edge-edge, +pulse count, -pulse count, period, frequency, duty cycle, burst width, burst period, burst interval, Tmin, Tmax, Tvolt, edge time, slew rate
- Voltage: Average, RMS, amplitude, base, top, overshoot, pre-shoot, crossing, V upper, V middle, V lower, pulse top, pulse base, pulse amplitude, area
- Clock ¹: Time interval error (with EZJIT or EZJIT+ options), N period, period-period, +width +width, -width -width, duty cycle – duty cycle
- Data ¹: N-UI, UI-UI, data rate, clock recovery rate, DDPWS, de-emphasis
- Mixed: Area, slew rate
- Frequency: FFT magnitude, FFT phase, FFT delta frequency, FFT delta magnitude, magnitude peak table
- Eye: Eye height, eye width, eye jitter, eye crossing%, Q factor, duty cycle distortion

Analyze

- Measurement histogram, mask test, measurement limit testing
- Up to four independent/cascaded math functions
- Simple math: +, -, *, /, average, absolute value, magnify, max, min square, square root, Vs
- Advanced math: Integrate, FFT magnitude, FFT phase, high-pass filter, low-pass filter, smooth: differential+, differential-
- User-defined ²: Import of .m Matlab file, Butterworth, FIR, LFE, RTEye, Sqrtsumofsquares

1. Requires DSA option
2. Requires MATLAB

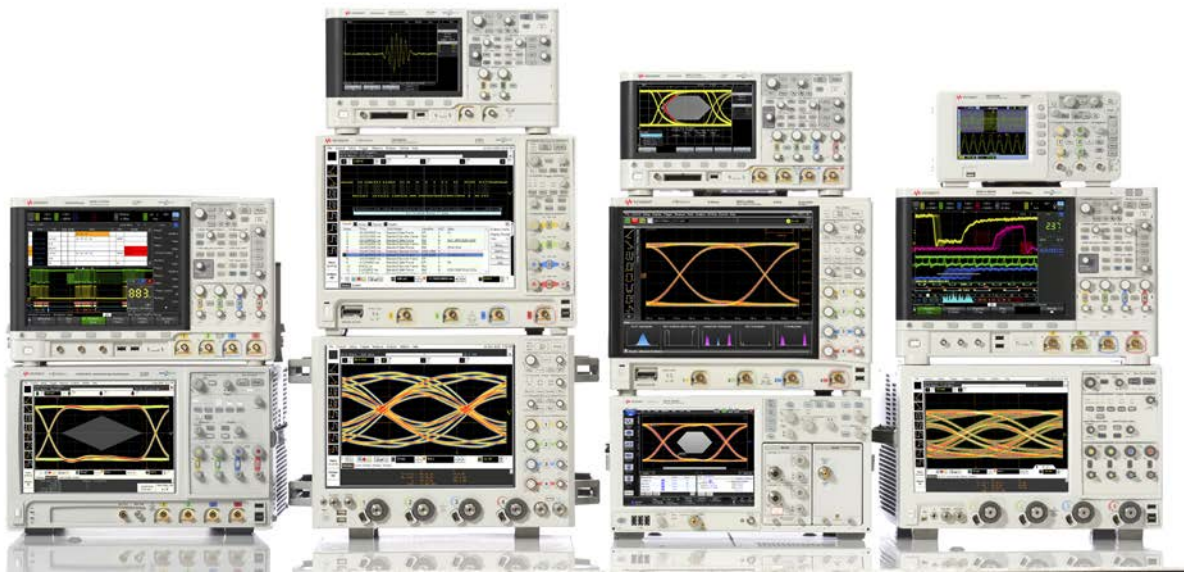
Infiniium Offline Ordering Information

Order N8900A-001 if your PC doesn't already have an Infiniium Offline baseline license. Add any desired options. The N8900A baseline license is transportable and can be moved from PC to PC. Upgrade options can be ordered as transportable or server-based licenses.

| | Model number |
|---|--------------|
| Infiniium Offline software license | N8900A-001 |
| DSA bundle (real-time eye and jitter analysis) | |
| EZJIT | N8900A-002 |
| EZJIT Plus and EZJIT Complete | |
| SDA (Serial Data Analysis) | |
| Analysis bundle (deep analysis) | |
| Equalization | N8900A-003 |
| InfiniiSim (functions only) | |
| User-defined function | |
| Low-speed protocol bundle | |
| CAN protocol decode | N8900A-004 |
| FlexRay protocol decode | |
| I ² C protocol decode | |
| JTAG protocol decode | |
| LIN protocol decode | |
| MIPI RFFE protocol decode | |
| RS232/UART protocol decode | |
| SPI protocol decode | |
| SVID protocol decode | |
| USB 2.0 protocol decode | |
| High-speed protocol bundle | |
| DDR2 and LPDDR2 decode | N8900A-005 |
| DDR3 and LPDDR3 decode | |
| DDR4 and LPDDR4 decode | |
| Ethernet 10GBASE-KR 64/66 protocol decode | |
| MIPI CSI-3 protocol decode | |
| MIPI DigRF [®] v4 protocol decode | |
| MIPI D-PHY protocol decode | |
| MIPI LLI protocol decode | |
| MIPI RFFE protocol decode | |
| MIPI UniPro SM protocol decode | |
| PCI Express Gen1 protocol decode | |
| PCI Express Gen2 protocol decode | |
| PCI Express Gen3 protocol decode | |
| SATA/SAS protocol decode | |
| Universal Flash Storage (UFS) protocol decode | |
| USB 2.0 protocol decode | |
| USB 3.0 protocol decode | |
| USB 3.0 SuperSpeed Inter-Chip (SSIC) protocol decode | |

| | Model number |
|---|--------------|
| 2016 add-on bundle | |
| Pulse amplitude modulation (PAM-4) analysis | N8900A-007 |
| Crosstalk analysis | |
| Ethernet 10/100BaseT protocol decode | |
| eSPI protocol decode | |
| USB 3.1 protocol decode | |
| USB PD protocol decode | |
| CAN FD protocol decode | |
| LIN protocol decode | |
| FlexRay protocol decode | |
| I ² S protocol decode | |
| MultiScope | |
| MultiScope software to connect 2 oscilloscopes | N8834A-ATP |
| MultiScope software to connect of 5 oscilloscopes | N8834A-BTP |
| MultiScope software to connect of 10 oscilloscopes | N8834A-CTP |
| MultiScope software upgrade to connect from 2 to 5 oscilloscopes | N8834A-DTP |
| MultiScope software upgrade to connect from 5 to 10 oscilloscopes | N8834A-ETP |

Note: Each application can be ordered individually as a transportable license.



Keysight Oscilloscopes

Multiple form factors from 20 MHz to > 90 GHz | Industry leading specs | Powerful applications



www.axistandard.org

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www.lxistandard.org

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www.pxisa.org

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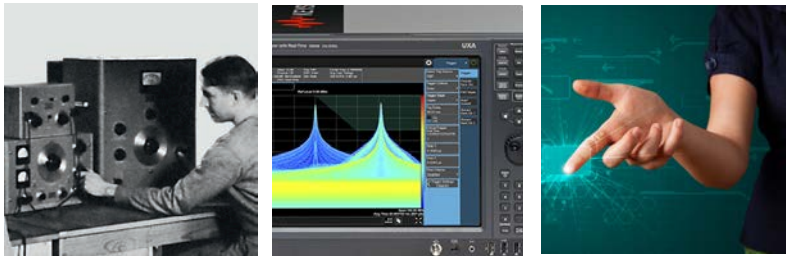
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Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

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| Spain | 800 000154 |
| Sweden | 0200 882255 |
| Switzerland | 0800 805353 |
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| | Opt. 3 (IT) |
| United Kingdom | 0800 0260637 |

For other unlisted countries:
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Unlocking Measurement Insights

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Published in USA, July 27, 2016
5990-9910EN
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