



# Agilent Technologies InfiniiVision 7000 Series Oscilloscopes

Data Sheet

**Engineered for the best signal visibility**



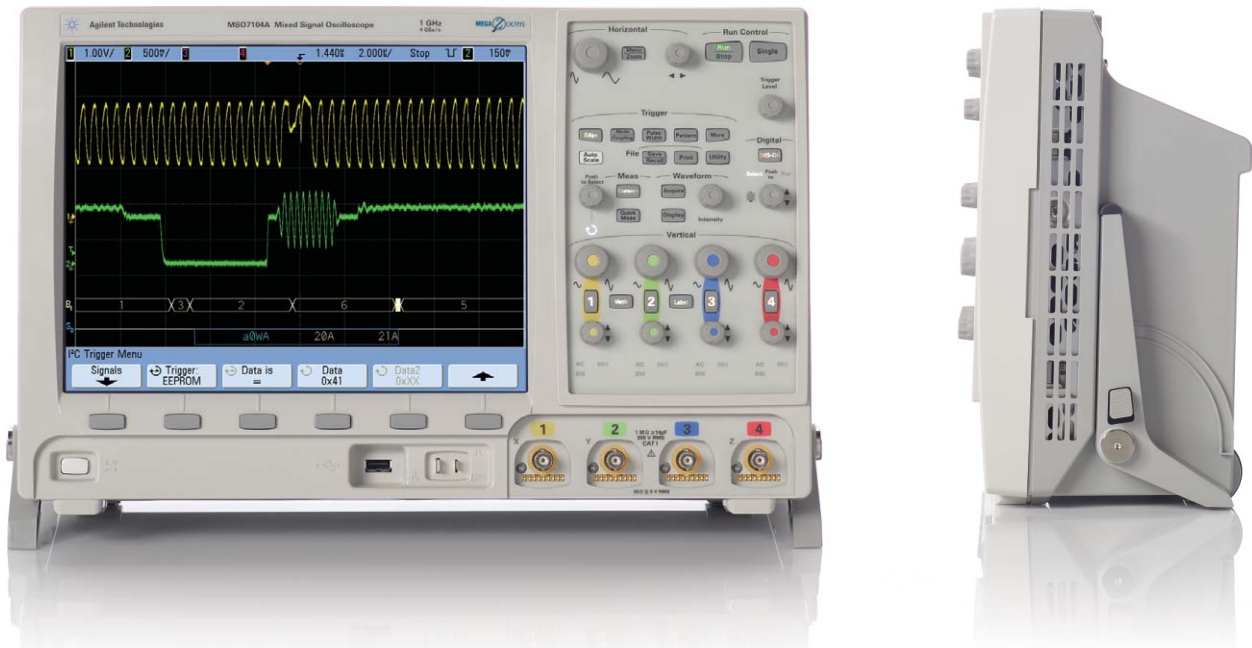
## If you haven't purchased an Agilent scope lately, why should you consider one now?

**Agilent has been the fastest growing oscilloscope supplier since 1997** (source: Prima Data, 2007).

Wonder why? Agilent engineers developed the InfiniiVision 7000 Series with advanced technology that will allow you to see more subtle signal detail and more infrequent events than any other scope on the market. See the InfiniiVision 7000 Series oscilloscope—the industry's best for signal viewing.

*There is no better way to experience the superiority of the InfiniiVision 7000 Series scopes than to see it. Contact Agilent today to request an evaluation.*

*Or visit:  
[www.agilent.com/find/7000](http://www.agilent.com/find/7000)*



**The InfiniiVision 7000 Series offers bandwidths up to 1 GHz. Each model, equipped with a large 12.1" XGA LCD display, comes in an whisper-quiet package that is just 6.5" deep and weighs only 13 pounds.**

| Model    | Bandwidth | Sample rate | Memory | Scope channels | Digital channels | Update rate  |
|----------|-----------|-------------|--------|----------------|------------------|--|
| DSO7032A | 350 MHz   | 2 GSa/s     | 8 Mpts | 2              | 16               | Up to 100,000 deep-memory waveforms per second, even with deep memory, digital channels and serial decode turned on. |
| DSO7034A |           |             |        | 4              |                  |  |
| MSO7032A |           |             |        | 2              |                  |  |
| MSO7034A |           |             |        | 4              |                  |  |
| DSO7052A | 500 MHz   | 4 GSa/s     | 8 Mpts | 2              | 16               |  |
| DSO7054A |           |             |        | 4              |                  |  |
| MSO7052A |           |             |        | 2              |                  |  |
| MSO7054A |           |             |        | 4              |                  |  |
| DSO7104A | 1 GHz     | 4 GSa/s     | 8 Mpts | 4              | 16               |  |
| MSO7104A |           |             |        |                |                  |  |

**Choose from ten InfiniiVision 7000 Series models. Agilent provides an easy 5-minute DSO-to-MSO upgrade kit for previously purchased 7000 Series DSOs.**

# What gives the InfiniiVision 7000 Series the best signal visibility?

## 1. Biggest display

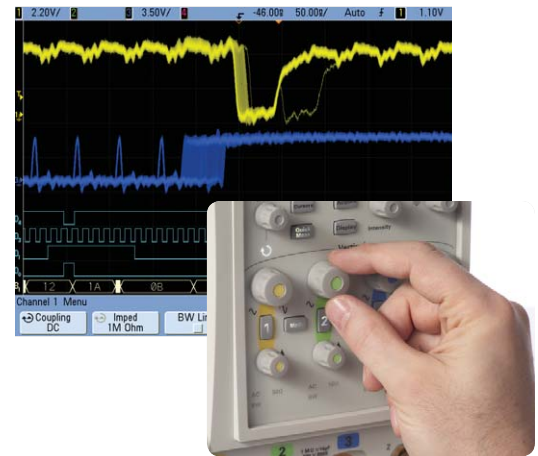
Oscilloscopes are visual tools and large, high-resolution screens make the product better. Bigger displays have become increasingly important as general purpose scopes need more space to display digital and serial signals in addition to traditional scope channels.

The increased display size helps you easily view up to 20 channels simultaneously with serial protocol. At 12.1 inches the display is nearly 40% bigger than any competitive model.



## 2. Fastest architecture

See a display more representative of the actual signals under test than with any other scope. The InfiniiVision 7000 Series shows jitter, infrequent events, and subtle signal detail that other scopes miss. Turn knobs and the instrument responds instantly and effortlessly. Need to also view digital channels? The instrument stays responsive. Decoding serial packets? Offering the industry's only hardware-accelerated serial bus decode, Agilent's InfiniiVision series delivers serial debug without compromising analog measurements.



**MEGA Zoom III**

InfiniiVision scopes incorporate acquisition memory, waveform processing, and display memory in an advanced .13m ASIC. This patented 3rd generation technology, known as MegaZoom III, delivers up to 100,000 waveforms (acquisitions) per second with responsive deep memory always available.

## 3. Insightful applications

Customize your general purpose scope. A wide range of application packages provide meaningful insight into your application-specific problems. (See pages 8-9 and 13-14 for more detail.)

Serial with hardware-accelerated decode

- I<sup>2</sup>C, SPI
- RS-232/UART
- CAN/LIN
- FlexRay

• Segmented memory

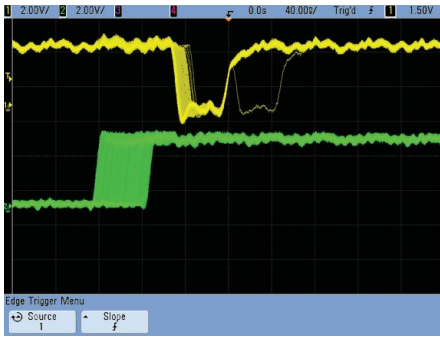
- DSO/MSO offline analysis
- Power measurement

• Vector signal analysis

- Core-assisted FPGA debug
- Secure environment

# Your design has analog, digital and serial signals ... shouldn't your scope?

*Analog: Up to 1 GHz bandwidth and up to 4 GSa/s sample rate*

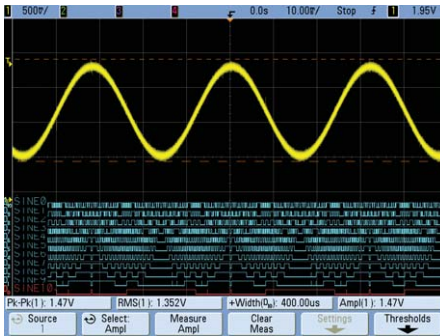


**The InfiniiVision 7000 Series scope channels provide faster identification of your most elusive problems –**

**Revolutionary high-resolution display.** Engineered with an XGA display and 256 levels of intensity grading, see a precise representation of the analog characteristics of the signals you're testing. Equipped with the industry's fastest uncompromised update rate at 100,000 waveforms/sec update rate, you'll capture critical signal detail and see infrequent events that traditional scopes miss.

**MegaZoom III technology.** MegaZoom III responsive deep memory captures long, non-repeating signals and maintains high sample rates, allowing you to quickly zoom in on areas of interest. Sample rate and memory depth go hand-in-hand. Deep memory in oscilloscopes sustains a high sample rate over longer time spans.

*Digital: 16 digital timing channels with mixed signal triggering*



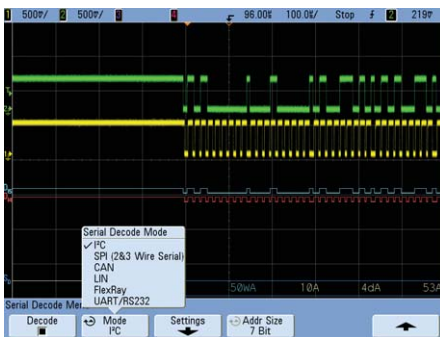
**Capture a mix of analog or digital signals. Compare multiple cycles of digital signals with slower analog signals –**

**16 high-speed timing channels with up to 2 GSa/s deep memory.** Use the timing channels to evaluate control signal relationship. Or capture and view data buses up to 16 bits wide. Trigger on and display individual signals or bus waveforms in hex or binary.

**Mixed signal trigger.** Trigger across any combination of analog and digital signals simultaneously. See precise analog measurements timed with exact digital content, all in one box.

**Applications for digital channels.** Designing with Altera or Xilinx FPGAs? Use the FPGA dynamic probe for rapid internal FPGA measurements. Using I<sup>2</sup>C, SPI, or RS-232? Use the analog or digital signals from a 4-channel model to acquire and decode these serial buses.

*Serial: Hardware-accelerated decode and trigger for I<sup>2</sup>C, SPI, RS-232, CAN, LIN and FlexRay*



**Capture long streams of serial data and gain fast insight into your problems. Agilent 7000 Series oscilloscopes provide the best serial protocol capabilities in their class –**

**Serial bus triggering and decoding.** Display responsive, on-screen decode of serial bus traffic. Isolate specific events with pinpoint accuracy. Show decode to validate serial bus activity in real time.

**Quickly find infrequent errors.** Hardware-accelerated decoding increases your probability of capturing elusive events. Agilent oscilloscopes can help you catch that intermittent problem before it becomes an intermittent customer complaint or quality concern.

## Other useful features

**High resolution mode.** Offers up to 12 bits of vertical resolution in real-time, single-shot mode. This is accomplished by serially filtering sequential data points and mapping the filtered results to the display when operating at time base settings greater than 10- $\mu$ s/div.

**Help is at your fingertips.** An embedded help system – available in 11 languages – gives you quick answers if you don't understand a feature. Simply press and hold the corresponding front-panel key, and a screen pops up to explain its function.

**Waveform math with FFT.** Analysis functions include subtract, multiply, integrate, square root, and differentiate, as well as fast Fourier transforms (FFT).

**Peak detect.** 250 ps on 500-MHz and 1-GHz models, 500 ps on 350-MHz models. Helps you find narrow glitches.

**AutoProbe interface.** Automatically sets probe attenuation factors and provides power for selected active probes, including the award-winning 1130A 1.5-GHz InfiniiMax differential active probe and 1156A 1.5-GHz single-ended active probe systems.

**5-digit hardware counter.** Measures frequency up to the bandwidth of the scope and provides accurate and repeatable results. Can be increased to 8 digits with an external 10 MHz reference.

**Trig Out and Reference Clock In/Out.** Provides an easy way to synchronize your scope to other instruments. Use the Trig Out port to connect your scope to a frequency counter for more accurate frequency measurements or to cross trigger other instruments.

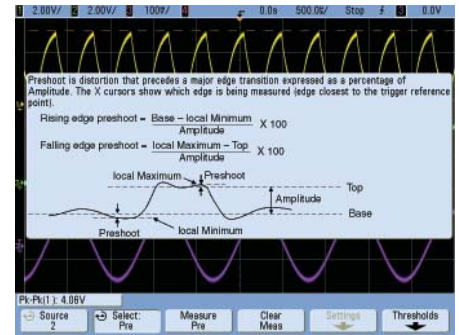
**Autoscale.** Displays all analog and digital active signals, and automatically sets the vertical, horizontal and trigger controls.

**23 automatic measurements with QuickMeas.** Pressing [QuickMeas] brings up the last four automated measurements selected. Cursors automatically track the most recently selected measurement.

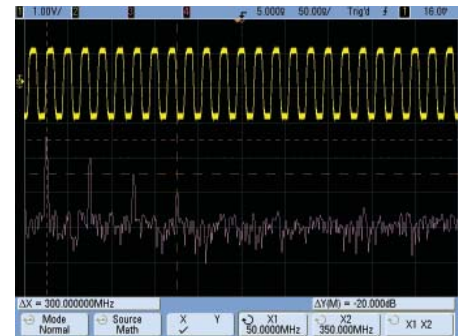
**Analog HDTV/EDTV trigger.** The 7000 Series comes standard with analog HDTV/EDTV triggering for standards like 1080i, 1080p, 720p and 480p as well as standard video triggering on any line within a field, all lines, all fields and odd or even fields for NTSC, SECAM, PAL and PAL-M video signals.

**Bus mode display (on MSO models).** Quick and easy read-out of hexadecimal or binary representation of logic signals.

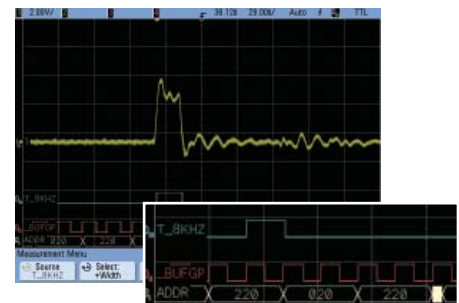
**Easy software upgrades.** System software is stored in flash ROM that can be upgraded from the scope's built-in USB port or LAN. You can find the latest system and IntuiLink software at: [www.agilent.com/find/7000sw](http://www.agilent.com/find/7000sw)



Press and hold a key for instant help.



FFT allows you to view the spectral content of this clock signal.



Digital signals can be displayed individually or as overlaid bus values.

## Why does a fast update rate matter?

While bandwidth, sample rate and memory depth are key criteria for deciding which scope to purchase, an equally important characteristic is update rate.

### What is update rate?

Update rate is how many waveform acquisitions per seconds you scope can acquire, process, and display. Oscilloscope “dead-time” is the time it takes for a scope to process and then display an acquired waveform before re-arming it’s triggering for the next acquisition. For traditional scopes, this time is often orders of magnitude greater than acquisition time on fast time-per-division settings.

If a glitch occurs during the scope’s dead-time, it won’t be captured. The key to improving the probability of capturing a signal anomaly during the scope acquisition time is to minimize dead-time.

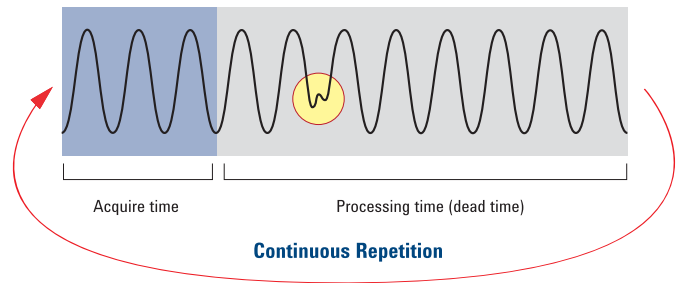
Oscilloscope vendors usually specify what their scope’s “best-case” waveform update rates are. Some scope architectures suffer from factors that can seriously degrade the “best-case” update rates spec. Agilent’s 7000 Series architecture delivers the world’s fastest update rate when using:

- Analog channels
- Analog and digital
- Deep memory
- Serial decode

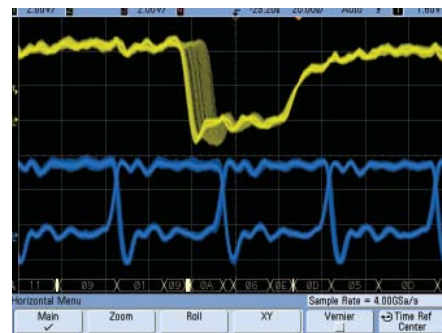
### Why is update rate important?

1. Responsiveness. If you rotate the timebase control, you expect the oscilloscope to respond immediately – not seconds later after the scope finishes processing data.
2. Signal detail. Fast waveform update rates improve the display quality of the waveform that you see on screen.
3. Certainty. Fast waveform update rates improve the scope’s probability of capturing random and infrequent events.

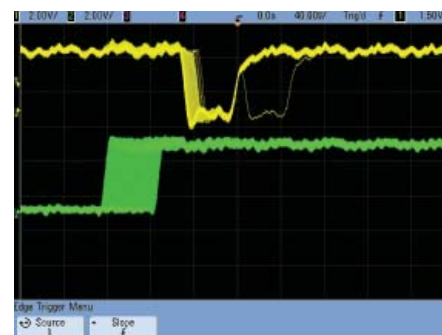
Update rates directly affect a scope probability of capturing and displaying infrequent and random events. Slow update rates will cause a scope to miss subtle or infrequent signal details.



**Improves instrument responsiveness**



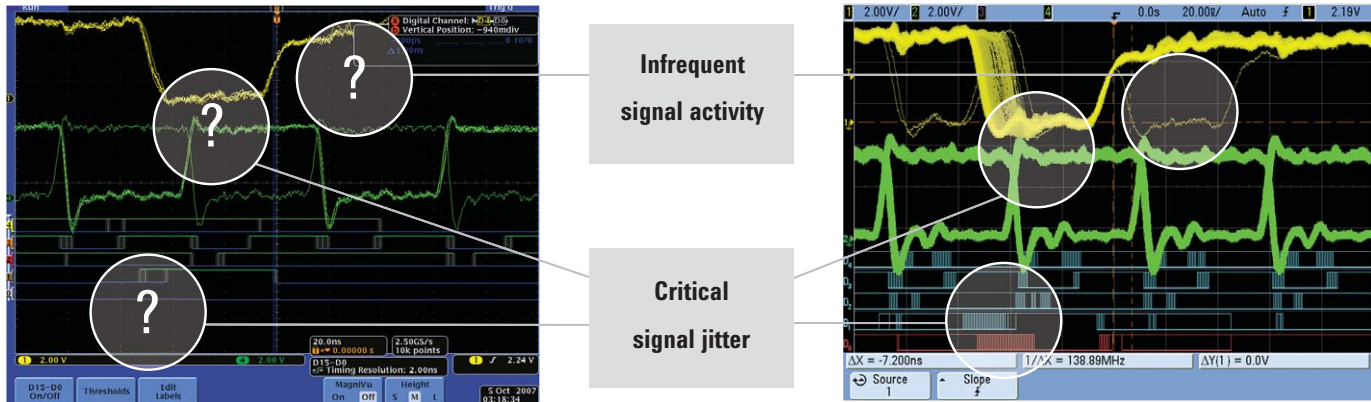
**Improves scope display quality**



**Improves probability of capturing infrequent events**

# How update rate affects signal visibility

Capturing random and infrequent events on an oscilloscope is all about statistical probabilities. The key to improving the probability of capturing a signal anomaly is to minimize dead-time and take more pictures of the signal in a given timeframe. Here is an example with Tek and Agilent scopes both connected to a target with a glitch that occurs 25 times per second.



## Tek MSO4104

- Product data sheet: 35,000 waveforms per second,
- Update rate = 18 waveforms per second with 10 Mpts and digital channels turned on. Resulting measurement shown.
- Probability of capturing the infrequent glitch = 0.09% after running for 10 seconds.
- Average time to capture just one glitch = 128 minutes.

## Agilent MS07104A

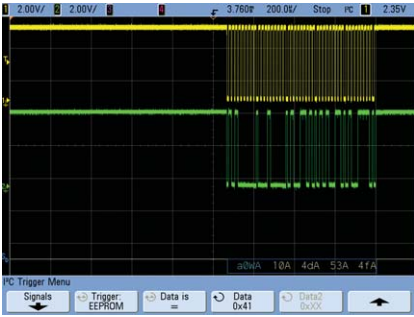
- Product data sheet: 100,000 waveforms per second.
- Update rate = 95,000 waveforms per second with auto memory and digital channels turned on. Resulting measurement shown.
- Probability of capturing the infrequent glitch = 99% after running for 10 seconds.
- Average time to capture just one glitch = 1.5 seconds.

|                         | Memory* |                  | Scope settings   |               | Measured update rates |                 |                  |
|-------------------------|---------|------------------|------------------|---------------|-----------------------|-----------------|------------------|
|                         | Tek     | Timebase setting | Digital Channels | Serial Decode | TEK MSO4104A          | LeCroy WR 104Xi | Agilent MS07104A |
| Initial setup           | 10 Kpts | 20 ns/div        | -                | -             | 41,000                | 27              | 95,000           |
| Change timebase         | 10 Kpts | 10 ns/div        | -                | -             | 2,700                 | 27              | 95,000           |
| Add digital channels    | 10 Kpts | 20 ns/div        | On               | -             | 125                   | 27              | 95,000           |
| Increase memory setting | 10 Mpts | 20 ns/div        | On               | -             | 35                    | 27              | 95,000           |
| Turn on serial decode   | 10 Mpts | 20 ns/div        | On               | On            | 0.2                   | 25              | 95,000           |

\*Agilent and LeCroy memory depth selection is automatic. Memory depth = display window times sample rate with up to 8 Mpts for Agilent and up to 10 Mpts for LeCroy.

Seeing subtle signal detail and infrequent events requires a scope with fast waveform update rates. Don't take a scope vendor's banner waveform update rate specification at face value. Test it yourself. It's actually pretty easy to characterize a scope's update rate. Run a moderately fast signal (e.g. 50 Mhz) into a scope channel. Measure the scope's average trigger output signal frequency. This is your scope's update rate for the specified timebase setting. Test the update rate of the scope under various setup conditions. Setup conditions that Agilent suggests varying include timebase range, memory depth, and number of channels, including analog, digital, as well as channels assigned for serial decoding.

# Software applications



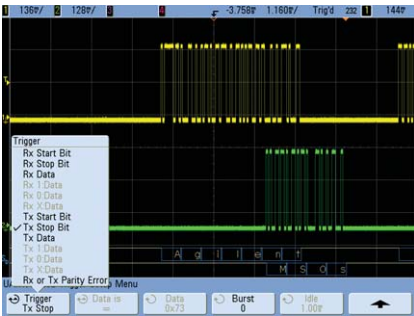
View on-screen serial decode of an I<sup>2</sup>C packet.

## I<sup>2</sup>C/SPI serial trigger and decode (N5423A or Option LSS on new scope purchases)

This application displays real-time time-aligned decode of I<sup>2</sup>C and SPI serial buses. Hardware-accelerated decode means the scope stays responsive and fast.

This application requires a 4-channel DSO or 4-channel MSO and can use any combination of the scope or logic acquisition channels.

For more information:  
[www.agilent.com/find/I<sup>2</sup>C-SPI](http://www.agilent.com/find/I2C-SPI)



Trigger on and decode RS-232/UART transmission.

## RS-232/UART serial decode and trigger (N5457A or Option 232 on new scope purchases)

Does your design include RS-232 or another type of UART? This application eliminates the need to manually decode bus traffic. Using data captured on the scope or logic channels, the application lets you easily view the information sent over a RS-232 or other UART serial bus.

Display real-time time-aligned decode of transmit and receive lines. The application also enables triggering on RS-232/UART conditions.

This application requires a 4-channel DSO or 4-channel MSO and can use any combination of the scope or logic acquisition channels.

For more information:  
[www.agilent.com/find/RS-232](http://www.agilent.com/find/RS-232)



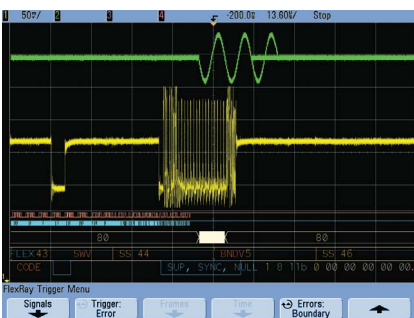
Trigger on and decode CAN serial packets.

## CAN/LIN triggering and decode (N5424A or Option AMS on new scope purchases)

Trigger on and decode serially transmitted data based on CAN and LIN protocols. This application not only provides triggering on complex serial signals, but it also provides unique hardware-accelerated capabilities. Hardware-accelerated triggering and decode means the scope stays responsive and fast.

This application requires a 4-channel DSO or 4-channel MSO and can use any combination of scope or logic acquisition channels.

For more information:  
[www.agilent.com/find/CAN-LIN](http://www.agilent.com/find/CAN-LIN)



See mixed signal measurements in a FlexRay system using an MSO.

## FlexRay triggering and decode (N5432A or Option FRS on new scope purchases)

FlexRay protocol is based on time-triggered and deterministic architecture. Agilent's FlexRay solution for the 7000 Series mixed signal oscilloscopes offers a robust set of FlexRay frame, slot, and error triggering, including the ability to trigger on specific FlexRay communications qualified on base-cycle and cycle-repetition. This

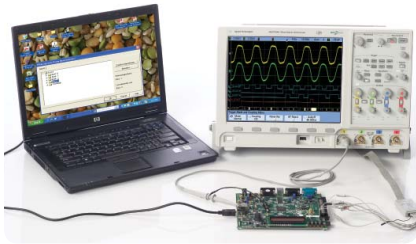
solution combines an Agilent 7000 Series mixed signal oscilloscope (MSO) with an Agilent VPT 1000 vehicle protocol tester for FlexRay protocol analyzer.

This application requires a 4-channel MSO.

For more information:  
[www.agilent.com/find/flexray](http://www.agilent.com/find/flexray)



## Software applications



*Debug and validate your FPGA designs faster and more effectively with the FPGA dynamic probe and an Agilent MSO.*

### FPGA dynamic probe application (N5406A for Xilinx, N5434A for Altera)

Give your MSO internal FPGA visibility. Agilent's MSO FPGA dynamic probe provides internal FPGA visibility and quick instrument setup using an innovative core-assisted debug approach.

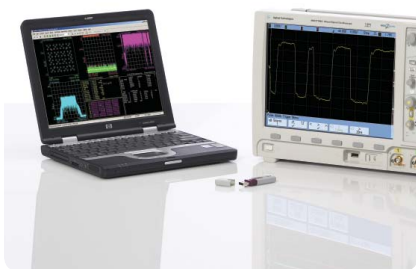
Measurement tasks that previously took hours can be done in a few mouse clicks. In a few seconds,

easily measure a different set of internal signals without changing your FPGA design.

For more information:

[www.agilent.com/find/7000-altera](http://www.agilent.com/find/7000-altera)

[www.agilent.com/find/7000-xilinx](http://www.agilent.com/find/7000-xilinx)



*Expand the capability of your scope with 89601A vector analysis software.*

### Vector signal analysis software (89601A)

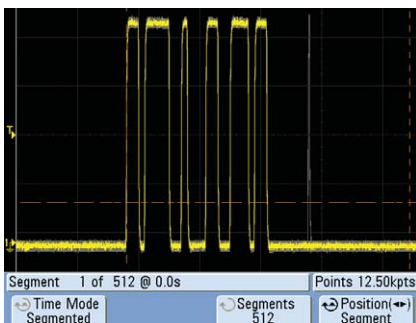
Expand the measurement capability of your scope with the 89601A vector signal analysis software.

This advanced DSP based software takes the digitized signal data provided by the scope and provides FFT based spectrum analysis and wide bandwidth digital modulation analysis for wireless communication signals like WCDMA and cdma2000, and wireless networking signals like 802.11 WiFi and 802.16 WiMax™.

Take advantage of the super wide bandwidth of your scope to capture and evaluate radar signals.

For more information:

[www.agilent.com/find/7000-vsa](http://www.agilent.com/find/7000-vsa)



*Use segmented memory to optimize available memory.*

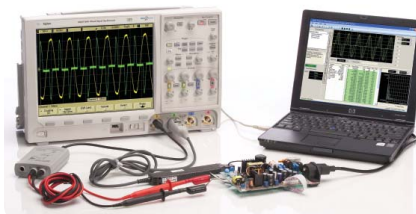
### Segmented memory (N5454A or Option SGM on new scope purchases)

Segmented memory optimizes available memory for data streams that have long dead times between activity. The application excels at analyzing signal activity associated with laser pulses, serial buses, and bursty signals such as radar. View an overlay of all signal segments, including MSO

channels and serial decode, while highlighting the current segment. Quickly move between segments to view signal detail associated with a specific segment.

For more information:

[www.agilent.com/find/segmented](http://www.agilent.com/find/segmented)



*Use your scope to quickly make and analyze power measurements.*

### Power application (U1881A)

Need to make power measurements with your scope? Agilent's power application provides a full suite of power measurements that run on a PC connected to an InfiniiVision 7000 Series oscilloscope. Make more accurate power supply efficiency measurements by using an U1880A deskew fixture to deskew your voltage and current probes.

For more information:

[www.agilent.com/find/power-app](http://www.agilent.com/find/power-app)

# Agilent InfiniiVision 7000 Series oscilloscopes: Engineered for the best signal visibility

**12.1" large display** makes it easier to view analog, digital and serial signals.

**High-resolution color display with XGA resolution and 256 levels of intensity** reveals subtle details that most scopes won't show you.

**Free IntuiLink data capture PC software** makes transferring waveform data or a screen image to a PC fast and easy. Built-in Web viewer via LAN allows for remote measurements and viewing.



**Built-in help in eleven languages** – Simply press and hold the front-panel key of interest for a few seconds, and a help screen pops up to explain its function.

**Built-in 10-MHz reference in/out port** synchronizes multiple measurement instruments in a system.



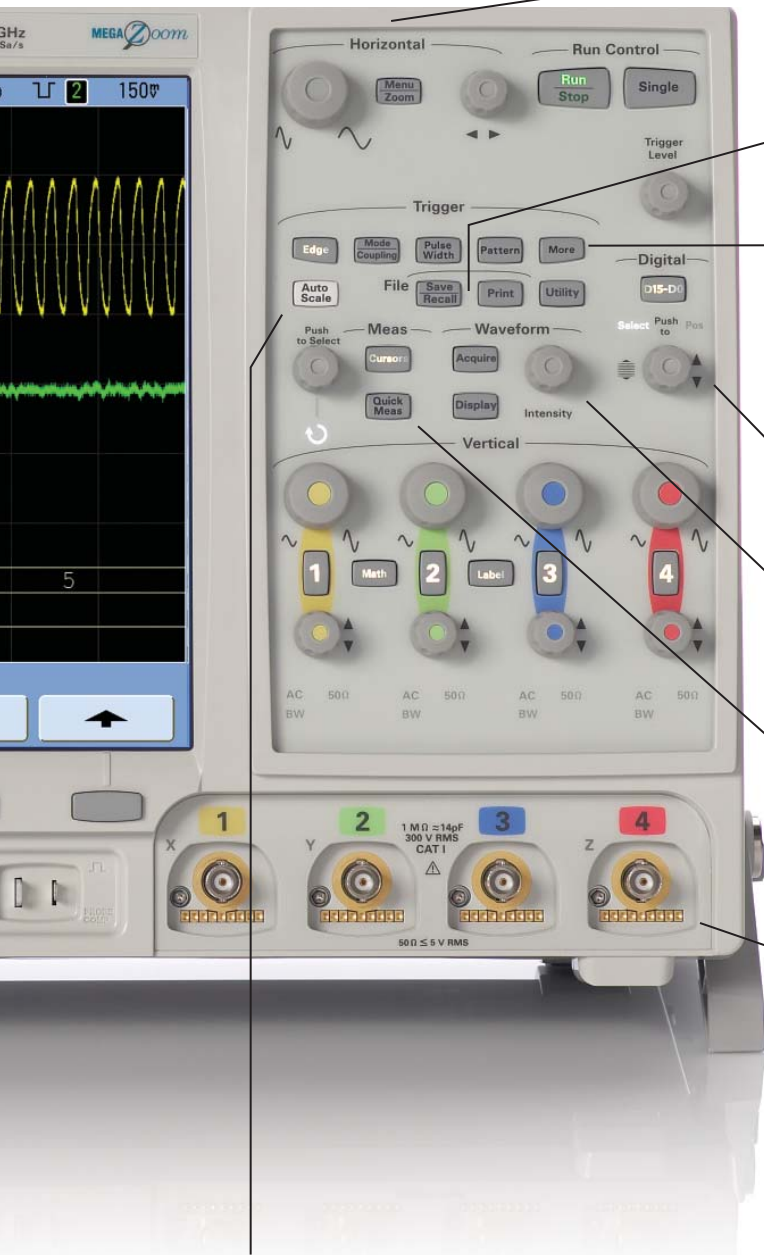
**Trig Out port** provides an easy way to synchronize your scope to other instruments.

**Standard USB and LAN ports** provide PC and printer connectivity.

**An XGA video output port** allows you to connect to a large external monitor.

**Built-in USB port** makes it easy to save your work and update your system software quickly.





**Quickly pan and zoom for analysis** with MegaZoom III's instant response and optimum resolution.

**Save** screen images to a connected USB storage device.

**Standard serial triggering** includes I<sup>2</sup>C, SPI, and USB (optional CAN/LIN, RS-232/UART, and FlexRay advanced triggering and decode).

**Standard analog HDTV/EDTV** triggering supports triggering on 1080i, 1080p, 720p, and 480p HDTV/EDTV standards.

**Digital channel** buttons provide quick set-up access.

**Intensity knob** allows you to see the right level of waveform detail, just like an analog scope.

**QuickMeas** shows up to four automated measurements with the push of a button.

**AutoProbe interface** automatically configures the attenuation ratio of the probe and provides probe power for Agilent's active probes.

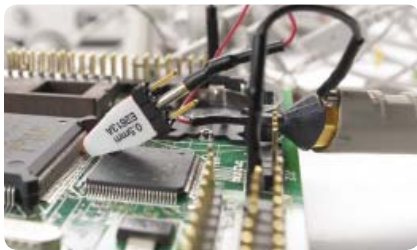
**Autoscale** lets you quickly display any analog or digital active signals, automatically setting the vertical, horizontal and trigger controls for the best display, while optimizing memory.

**Dedicated front panel controls** make it easy to access the most common scope controls, including vertical and horizontal scaling.



**InfiniiVision 7000 Series 2-channel model**

## Probes and accessories



Agilent offers a complete family of innovative passive and active probes for the InfiniiVision 7000 Series scopes helps you get your job done easily and accurately. Choosing the correct probe for your application will help to ensure you accurately acquire signals. Below is a general guide on how to choose the type of probe. For the most up-to-date information about Agilent's accessories, please visit our Web site at [www.agilent.com/find/scope\\_probes](http://www.agilent.com/find/scope_probes).

### Probe type    Key characteristics

**Passive probes:** most common type of probe, rugged and economical with bandwidth generally lower than 600 MHz

|        |   |
|--------|---|
| 10070C | 1:1 20 MHz with probe ID  |
| 10073C | 10:1 500 MHz with probe ID (standard with all 7000 Series scopes) |
| 1165A  | 10:1 600 MHz with probe ID  |

**High voltage passive probe:** view up to 30 kVDC + peak AC voltage referenced to earth ground

|        |                                    |
|--------|------------------------------------|
| 10076A | 100:1, 4 kV, 250 MHz probe with ID |
| N2771A | 1000:1, 30 kV, 50 MHz probe        |

**Single-ended active probes:** contains small, active amplifier and enables the probe input capacitance to be very low resulting in high input impedance on high frequencies. Least intrusive of all probes.

|       |  |
|-------|--|
| 1156A | 1.5 GHz AutoProbe interface                  |
| 1144A | 800 MHz (requires 1142A – power supply)      |
| 1145A | 750 MHz 2-ch (requires 1142A – power supply) |

**Active differential probes:** use to look at signals that are referenced to each others instead of earth ground and to look at small signals in the presence of large DC offsets or other common mode signals such as power line noise.

|        |   |
|--------|---|
| 1130A  | 1.5 GHz InfiniiMax amplifier with AutoProbe interface (requires one or more InfiniiMax probe head – E2675A, E2668A, E2669A) |
| N2772A | 20 MHz, 1.2 kVDC + peak AC max (requires N2773A power supply)   |
| 1141A  | 200 MHz, 200 VDC + peak AC max (requires 1142A power supply)  |

**Current probes:** sense the AC or DC current flowing through a conductor and convert it to a voltage that can be viewed and measured on an oscilloscope. Compatible with 1 M $\Omega$  scope input.

|        |   |
|--------|---|
| 1146A  | 100 kHz, 100 A, AC/DC                               |
| 1147A  | 50 MHz, 30 A, AC/DC with AutoProbe interface        |
| N2780A | 2 MHz, 500 A, AC/DC (use with N2779A power supply)  |
| N2781A | 10 MHz, 150 A, AC/DC (use with N2779A power supply) |
| N2782A | 50 MHz, 30 A, AC/DC (use with N2779A power supply)  |
| N2783A | 100 MHz, 30 A, AC/DC (use with N2779A power supply) |

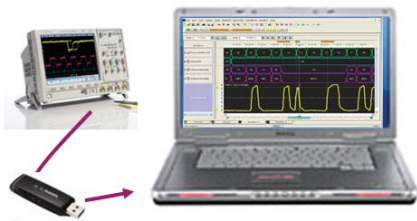
**MSO probes:** offer the best performance and access to the industry's broad range of logic analyzer probing accessories

|             |  |
|-------------|--|
| 01650-61607 | With this 40-pin logic cable, Agilent MSOs accept numerous logic analyzer accessories such as Mictor, Samtec, flying leads or soft touch connectorless probes. |
| 54620-68701 | Included with all MSO models is a logic probe with 2x8 flying leads (includes 20 IC clips and five ground leads)   |

For more comprehensive information, refer to the *Agilent 5000, 6000 and 7000 Series Oscilloscopes Probes and Accessories Data Sheet and Selection Guide* (Agilent publication numbers 5968-8153EN/ENUS and 5989-6162EN).

## Software applications and other accessories

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*View and analyze previously acquired scope data on a PC-based offline tool.*

### Offline viewing and analysis (B4610A)

Need to view and analyze scope data away from your scope? Need to share measurement data with geographically dispersed team members? Save your scope data to a USB or network drive and import the data into a PC-based offline viewer. Pan and zoom. Use searching and filtering to gain

insight on analog and digital buses. Email the data to team members who can use the same tool at their PCs.

For more information:

[www.agilent.com/find/InfiniiVisionOffline](http://www.agilent.com/find/InfiniiVisionOffline)



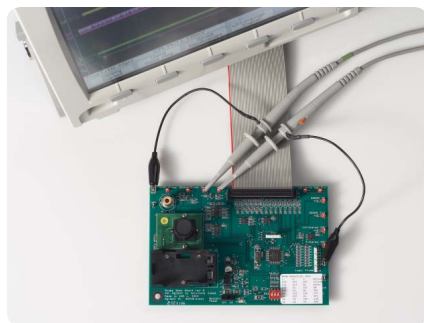
*Secure environment mode ensures volatile memory is cleared on power off.*

### Secure environment mode (Option SEC)

Option SEC – secure environment mode provides the highest level of security by ensuring internal nonvolatile memory is clear of all setup and trace settings in compliance with National Industrial Security Program Operation Manual (NISPOM) Chapter 8 requirements. When this option is installed, it will store setup and trace settings to internal volatile memory only.

Volatile memory will be cleared during the power off cycle of the instrument. So you can move the instrument out of a secure area with confidence.

For more information: *Option SEC Secure Environment Mode Option for Agilent 7000 Series Oscilloscopes Data Sheet*



*The evaluation kit helps you discover the power of InfiniiVision 7000 Series oscilloscopes.*

### Evaluation kit (N2918A)

The evaluation kit includes a variety of signals that demonstrate MegaZoom III technology with its fast deep memory, superior waveform update rate, high definition display and mixed analog, digital and serial abilities.

Using this scope evaluation kit along with the easy-to-follow user's guide, you can quickly become familiar with how to effectively operate an InfiniiVision 7000 Series scopes.



*Soft carrying case holds probes and other accessories.*

### Soft carrying case (N2733A)

Need to travel with your oscilloscope? Agilent's soft carrying case provides a convenient method that includes cushioning as well as a storage pouch. The soft carrying works equally well for storing the oscilloscope with its probes and accessories.

# Connectivity

The 7000 Series scopes come with the most comprehensive connectivity tools in their class.

## LXI

### LXI class C

LAN eXtensions for Instrumentation (LXI) is a standards-based architecture for test systems. By specifying the interaction of system components, LXI enables fast and efficient test system creation and reconfiguration. The 7000 Series oscilloscopes follow specified LAN protocols and adhere to LXI requirements such as a built-in Web control server, IVI-COM driver, and easy-to-use SCPI commands. The standard Agilent I/O Library Suite makes it easy to configure and integrate instruments in your system.

### IntuiLink toolbars and IntuiLink Data Capture

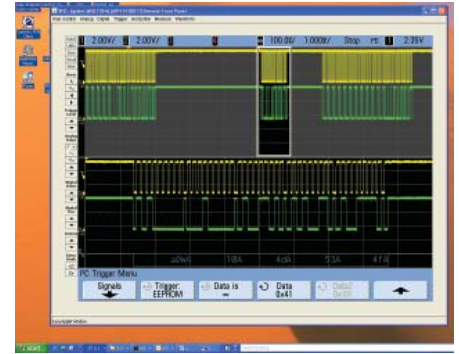
IntuiLink gives you a quick way to move oscilloscope screen shots and data into Microsoft® Word and Excel. These toolbars can be installed from [www.agilent.com/find/intuilink](http://www.agilent.com/find/intuilink).

### ViewScope logic analyzer and oscilloscope correlation

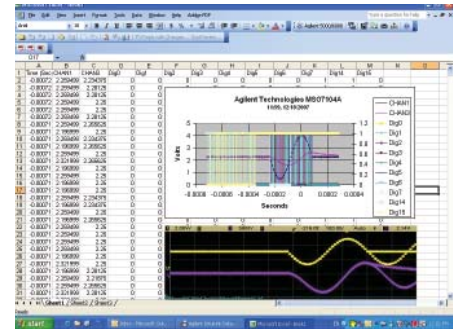
ViewScope enables simple and free time-correlated measurements between a 7000 Series oscilloscope and an Agilent 16900, 16800, 1690, or 1680 Series logic analyzer. Scope and logic waveforms are integrated into a single logic analyzer waveform display for easy viewing analysis – all with a simple point-to-point LAN connection. You can also cross-trigger the instruments, automatically de-skew the waveforms, and maintain marker tracking between the instruments.

### National Instrument drivers

InfiniiVision 7000 Series oscilloscopes are supported by LabVIEW plug-and-play and IVI-C drivers.



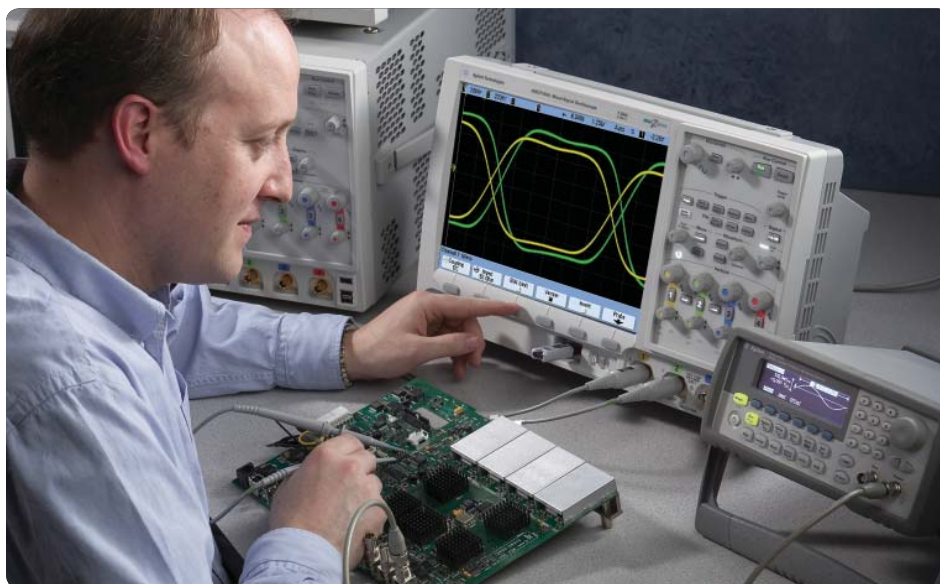
Agilent Remote Front Panel running in a Web browser



Use IntuiLink to import scope screen shots and data into Microsoft Word and Excel.



Use ViewScope to time-correlate oscilloscope and logic analyzer measurements.



# Agilent InfiniiVision Portfolio

Agilent's InfiniiVision lineup includes 5000, 6000 and 7000 Series oscilloscopes. These share a number of advanced hardware and software technology blocks. Use the following selection guide to determine which best matches your specific needs.



Largest display, shallow depth



Optional battery, 100 MHz MSO



Ideal for ATE rackmount applications



Smallest form factor, lowest price

| Bandwidth             | 7000 Series        | 6000A Series       | 6000L Series       | 5000 Series       |
|-----------------------|--------------------|--------------------|--------------------|-------------------|
| 100 MHz Bandwidth     |                    | •                  | •                  | •                 |
| 300/350 MHz Bandwidth | •                  | •                  | •                  | •                 |
| 500 MHz Bandwidth     | •                  | •                  | •                  | •                 |
| 1 GHz Bandwidth       | •                  | •                  | •                  |                   |
| MSO Models            | •                  | •                  | •                  |                   |
| GPIB Connectivity     |                    | •                  | •                  | •                 |
| Rackmount height      | 7U                 | 5U                 | 1U                 | 5U                |
| Battery option        |                    | •                  |                    |                   |
| Display size          | 12.1"              | 6.3"               | 6.3"               |                   |
| Footprint (WxHxD)     | 17.9"x 10.9"x 6.8" | 15.7"x 7.4"x 11.1" | 17.1"x 1.7"x 10.6" | 15.2"x 7.4"x 6.9" |



## Agilent's InfiniiVision oscilloscope portfolio offers:

- A variety of form factors to fit your environment
- Responsive controls and best signal visibility
- Insightful application software
- Responsive deep memory with MegaZoom III

## Performance characteristics

### Acquisition: scope channels

|                          |   |
|--------------------------|---|
| Sample rate              | MSO/DS0703xA: 2 GSa/sec each channel<br>MSO/DS0705xA/710xA: 4 GSa/sec half channel*, 2 GSa/sec each channel<br>Equivalent-time sample rate: 400 GSa/s (when real-time mode is turned off) |
| Memory depth<br>Standard | 2 channels/4 channels<br>8 Mpts/4 Mpts  |
| Vertical resolution      | 8 bits  |
| Peak detection           | MSO/DS0703xA: 500-ps peak detect<br>MSO/DS0705xA/710xA: 250-ps peak detect  |
| Averaging                | Selectable from 2, 4, 8, 16, 32, 64 ... to 65536  |
| High resolution mode     | Average mode with avg = 1<br>12 bits of resolution when $\geq 10 \mu\text{s}/\text{div}$ at 4 GSa/s or $\geq 20 \mu\text{s}/\text{div}$ at 2 GSa/s  |
| Filter                   | Sinx/x interpolation (single shot BW = sample rate/4 or bandwidth of scope, whichever is less) with vectors on and in real-time mode  |

### Acquisition: digital channels (7000 Series MSO or MSO-upgraded 7000 Series DSO)

|                          |  |
|--------------------------|--|
| Sample rate              | 2 GSa/sec one pod**, 1 GSa/sec each pod                                  |
| Maximum input frequency  | 250 MHz  |
| Memory depth<br>Standard | One pod/both pods (with scope channels turned off)<br>8 Mpts/4 Mpts      |
| Standard                 | One pod/both pods (with scope channels turned on)<br>2.5 Mpts/ 1.25 Mpts |
| Vertical resolution      | 1 bit  |
| Glitch detection         | 2 ns (min pulse width)   |

\* Half channel is when one of channel 1 or 2 is turned on, and/or one of channel 3 or 4 is turned on.

\*\* A pod is a group of eight digital channels, either 0-7 or 8-15.



## Performance characteristics (continued)

### Vertical system: scope channels

|  |  |
|--|--|
| Scope channels                         | MSO/DSO7xx2A: Ch 1 and 2 simultaneous acquisition<br>MSO/DSO7xx4A: Ch 1, 2, 3 and 4 simultaneous acquisition   |
| Bandwidth (-3 dB)*                     | MSO/DSO703xA: DC to 350 MHz<br>MSO/DSO705xA: DC to 500 MHz<br>MSO/DSO710xA: DC to 1 GHz  |
| AC coupled                             | MSO/DSO703xA: 3.5 Hz to 350 MHz<br>MSO/DSO705xA: 3.5 Hz to 500 MHz<br>MSO/DSO710xA: 3.5 Hz to 1 GHz  |
| Calculated rise time (=0.35/bandwidth) | MSO/DSO703xA: 1 nsec<br>MSO/DSO705xA: 700 psec<br>MSO/DSO710xA: 350 psec   |
| Single-shot bandwidth                  | MSO/DSO703xA: 350 MHz<br>MSO/DSO705xA: 500 MHz<br>MSO/DSO710xA: 1 GHz (in half-channel mode)   |
| Range <sup>1</sup>                     | MSO/DSO703xA and MSO/DSO705xA: 2 mV/div to 5 V/div (1 M $\Omega$ or 50 $\Omega$ )<br>MSO/DSO710xA: 2 mV/div to 5 V/div (1 M $\Omega$ ), 2 mV/div to 1 V/div (50 $\Omega$ ) |
| Maximum input                          | CAT I 300 Vrms, 400 Vpk; transient overvoltage 1.6 kVpk<br>CAT II 100 Vrms, 400 Vpk<br>With 10073C 10:1 probe: CAT I 500 Vpk, CAT II 400 Vpk                               |
| Offset range                           | $\pm 5$ V on ranges <10 mV/div; $\pm 20$ V on ranges 10 mV/div to 200 mV/div;<br>$\pm 75$ V on ranges >200 mV/div  |
| Dynamic range                          | $\pm 8$ div  |
| Input impedance                        | 1 M $\Omega$ $\pm$ 1%    14 pF or 50 $\Omega$ $\pm$ 1.5%, selectable   |
| Coupling                               | AC, DC   |
| BW limit                               | 25 MHz selectable  |
| Channel-to-channel isolation           | DC to max bandwidth >40 dB   |
| Standard probes                        | 10073C shipped standard for each scope channel (1165A probes optional)   |
| Probe ID                               | Auto probe sense and AutoProbe interface<br>Agilent- and Tektronix-compatible passive probe sense  |

\* Denotes warranted specifications, all others are typical. Specifications are valid after a 30-minute warm-up period and  $\pm 10$  °C from firmware calibration temperature.

<sup>1</sup> 2 mV/div setting for 100 MHz models and 2 mV/div is a magnification of 4 mV/div setting for 350 MHz to 1 GHz models. For vertical accuracy calculations, use full scale of 16 mV for 1 mV/div sensitivity setting and 32 mV for 2 mV/div sensitivity setting.

## Performance characteristics (continued)

### Vertical system: scope channels (continued)

|   |  |
|---|--|
| ESD tolerance                           | ±2 kV  |
| Noise peak-to-peak                      | MSO/DS0703xA: 3% full scale or 3 mV, whichever is greater<br>MSO/DS0705xA: 3% full scale or 3.6 mV, whichever is greater<br>MSO/DS0710xA: 3% full scale or 4 mV, whichever is greater  |
| DC vertical gain accuracy* <sup>1</sup> | ±2.0% full scale   |
| DC vertical offset accuracy             | ≤200 mV/div: ±0.1 div ±2.0 mV ±0.5% offset value;<br>>200 mV/div: ±0.1 div ±2.0 mV ±1.5% offset value  |
| Single cursor accuracy <sup>1</sup>     | ±{DC vertical gain accuracy + DC vertical offset accuracy + 0.2% full scale (~1/2 LSB)}<br><i>Example:</i> for 50 mV signal, scope set to 10 mV/div (80 mV full scale), 5 mV offset,<br>accuracy = ±{2.0% (80 mV) + 0.1 (10 mV) + 2.0 mV + 0.5% (5 mV) + 0.2% (80 mV)} =<br>± 4.785 mV |
| Dual cursor accuracy* <sup>1</sup>      | ±{DC vertical gain accuracy + 0.4% full scale (~1 LSB)}<br><i>Example:</i> for 50 mV signal, scope set to 10 mV/div (80 mV full scale), 5 mV offset,<br>accuracy = ±{2.0% (80 mV) + 0.4% (80 mV)} = ±1.92 mV   |

\* Denotes warranted specifications, all others are typical. Specifications are valid after a 30-minute warm-up period and ±10 °C from firmware calibration temperature.

<sup>1</sup> 2 mV/div is a magnification of 4 mV/div setting for 350 MHz to 1 GHz models. For vertical accuracy calculations, use full scale of 16 mV for 1 mV/div sensitivity setting and 32 mV for 2 mV/div sensitivity setting.

### Vertical system: digital channels (MSO or MSO-upgraded DSO)

|                              |   |
|------------------------------|---|
| Number of channels           | 16 logic timing channels – labeled D15 - D0           |
| Threshold groupings          | Pod 1: D7 - D0<br>Pod 2: D15 - D8                     |
| Threshold selections         | TTL, CMOS, ECL and user-definable (selectable by pod) |
| User-defined threshold range | ±8.0 V in 10 mV increments                            |
| Maximum input voltage        | ±40 V peak CAT I; transient overvoltage 800 Vpk       |
| Threshold accuracy*          | ±(100 mV + 3% of threshold setting)                   |
| Input dynamic range          | ±10 V about threshold                                 |
| Minimum input voltage swing  | 500 mV peak-to-peak                                   |
| Input capacitance            | ~8 pF with flying leads                               |
| Input resistance             | 100 kΩ ±2% at probe tip                               |
| Channel-to-channel skew      | 2 ns typical, 3 ns maximum                            |

\* Denotes warranted specifications, all others are typical. Specifications are valid after a 30-minute warm-up period and ±10 °C from firmware calibration temperature.

## Performance characteristics (continued)

### Horizontal

|                              |  |
|------------------------------|--|
| Range                        | MSO/DSO703xA: 2 nsec/div to 50 sec/div<br>MSO/DSO705xA: 1 nsec/div to 50 sec/div<br>MSO/DSO710xA: 500 psec/div to 50 sec/div   |
| Resolution                   | 2.5 ps   |
| Time base accuracy           | 15 ppm ( $\pm 0.0015\%$ )  |
| Vernier                      | 1-2-5 increments when off, ~25 minor increments between major settings when on   |
| Delay range                  | Pre-trigger (negative delay): Greater of 1 screen width or 1 ms<br>Post-trigger (positive delay): 1 s to 500 seconds   |
| Analog delta-t accuracy      | Same channel: $\pm 0.0015\%$ reading $\pm 0.1\%$ screen width $\pm 20$ ps<br>Channel-to-channel: $\pm 0.0015\%$ reading $\pm 0.1\%$ screen width $\pm 40$ ps<br><i>Same channel example (MSO/DSO705xA):</i><br>For signal with pulse width of 10 $\mu$ s, scope set to 5 $\mu$ s/div (50 $\mu$ s screen width),<br>delta-t accuracy = $\pm\{0.0015\% (10 \mu\text{s}) + 0.1\% (50 \mu\text{s}) + 20 \text{ps}\} = 50.17 \text{ ns}$  |
| Logic delta-t accuracy       | Same channel: $\pm 0.005\%$ reading $\pm 0.1\%$ screen width $\pm (1$ logic sample period, 1 ns)<br>Channel-to-channel:<br>$\pm 0.005\%$ reading $\pm 0.1\%$ screen width $\pm (1$ logic sample period) $\pm$ chan-to-chan skew<br><i>Same channel example:</i><br>For signal with pulse width of 10 $\mu$ s, scope set to 5 $\mu$ s/div (50 $\mu$ s screen width),<br>delta-t accuracy = $\pm\{0.005\% (10 \mu\text{s}) + 0.1\% (50 \mu\text{s}) + 1 \text{ns}\} = 51.5 \text{ ns}$ |
| Modes                        | Main, zoom, roll, XY, segmented (optional)   |
| XY                           | Bandwidth: Max bandwidth<br>Phase error @ 1 MHz: <0.5 degrees<br>Z Blanking: 1.4 V blanks trace (use external trigger on MSO/DSO7xx2A, channel 4 on MSO/DSO7xx4A)  |
| Reference positions          | Left, center, right  |
| Segmented memory re-arm time | 10 $\mu$ s maximum, 7.5 $\mu$ s typical  |

### Trigger system

|                |  |
|----------------|--|
| Sources        | MSO7xx2A: Ch 1, 2, line, ext, D15 - D0<br>DSO7xx2A: Ch 1, 2, line, ext<br>MSO7xx4A: Ch 1, 2, 3, 4, line, ext, D15 - D0<br>DSO7xx4A: Ch 1, 2, 3, 4, line, ext |
| Modes          | Auto, normal (triggered), single   |
| Holdoff time   | ~60 ns to 10 seconds   |
| Trigger jitter | 15 ps rms  |

## Performance characteristics (continued)

### Trigger system (continued)

|                  |  |
|------------------|--|
| Selections       | Edge, pulse width, pattern, TV, duration, sequence, CAN, LIN, FlexRay, USB, I <sup>2</sup> C, SPI, Nth edge burst  |
| Edge             | Trigger on a rising, falling, alternating or either edge of any source   |
| Pattern          | Trigger at the beginning of a pattern of high, low, and don't care levels and/or a rising or falling edge established across any of the analog and digital channels, but only after a pattern has stabilized for a minimum of 2 nsec.<br>The scope channel's high or low level is defined by that channel's trigger level. The logic channel's trigger level is defined by the threshold for the pod, 0 - 7 or 8 - 15.                 |
| Pulse width      | Trigger when a positive- or negative-going pulse is less than, greater than, or within a specified range on any of the source channels.<br>Minimum pulse width setting: 5 ns (MSO/DSO703xA scope channels)<br>2 ns (MSO/DSO705xA/710xA scope channels)<br>2 ns (logic channels on 7000 Series MSO or MSO-upgraded 7000 Series DSO)<br>Maximum pulse width setting: 10 s  |
| TV               | Trigger using any scope channel on most analog progressive and interlaced video standards including HDTV/EDTV, NTSC, PAL, PAL-M or SECAM broadcast standards. Select either positive or negative sync pulse polarity. Modes supported include Field 1, Field 2, all fields, all lines, or any line within a field. TV trigger sensitivity: 0.5 division of sync signal. Trigger holdoff time can be adjusted in half field increments. |
| Sequence         | Arm on event A, trigger on event B (edge or pattern), with option to reset on event C or time delay.   |
| CAN              | Trigger on CAN (controller area network) version 2.0A and 2.0B signals. Trigger on the start of frame (SOF) bit (standard). N5424A option supports triggering on remote frame ID (RTR), data frame ID (~RTR), remote or data frame ID, data frame ID and data, error frame, all errors, acknowledge error and overload frame.  |
| LIN              | Trigger on LIN (local interconnect network) sync break at beginning of message frame (standard). N5424A option supports triggering on frame ID.  |
| FlexRay          | N5432A option supports trigger on FlexRay frame ID or time slot or specific error condition, along with cycle-base and repetition-cycle filtering.   |
| USB              | Trigger on USB (universal serial bus) start of packet, end of packet, reset complete, enter suspend, or exit suspend on the differential USB data lines. USB low speed and full speed are supported.   |
| I <sup>2</sup> C | Trigger on I <sup>2</sup> C (inter-IC bus) serial protocol at a start/stop condition or user defined frame with address and/or data values. Also trigger on missing acknowledge, address with no acq, restart, EEPROM read, and 10-bit write.  |
| SPI              | Trigger on SPI (serial protocol interface) data pattern during a specific framing period. Supports positive and negative Chip Select framing as well as clock idle framing and user-specified number of bits per frame.  |
| RS-232/UART      | This application eliminates the need to manually decode bus traffic. Using data captured on the scope or digital channels, the application provides the ability to easily view the information sent over a RS-232 serial bus. Display real-time time-aligned decode of transmit and receive lines. The application also enables triggering on RS-232/UART conditions.  |
| Duration         | Trigger on a multi-channel pattern whose time duration is less than a value, greater than a value, greater than a time value with a timeout, or inside or outside of a set of time values.<br>Minimum duration setting: 2 ns<br>Maximum duration setting: 10 s   |
| Nth edge burst   | Trigger on the Nth edge of a burst that occurs after an idle time that you specify. Max edge count: 65,536.  |

## Performance characteristics (continued)

### Trigger system (continued)

|           |   |
|-----------|---|
| Autoscale | Finds and displays all active scope and logic (for 7000 Series MSO) channels, sets edge trigger mode on highest-numbered channel, sets vertical sensitivity on scope channels and thresholds on logic channels, time base to display ~1.8 periods. Requires minimum voltage >10 mVpp, 0.5% duty cycle and minimum frequency >50 Hz. |
|-----------|---|

### Scope channel triggering

|                  |   |
|------------------|---|
| Range (internal) | ±6 div from center screen   |
| Sensitivity*     | <10 mV/div: greater of 1 div or 5 mV; ≥10 mV/div: 0.6 div                                       |
| Coupling         | AC, ~10 Hz on MSO/DS0703xA/705xA/710xA),<br>DC, noise reject, HF reject and LF reject (~50 kHz) |

### Digital (D15 - D0) channel triggering (7000 Series MSO or MSO-upgraded 7000 Series DSO)

|                                |   |
|--------------------------------|---|
| Threshold range (user defined) | ±8.0 V in 10 mV increments              |
| Threshold accuracy*            | ±(100 mV + 3% of threshold setting)     |
| Predefined thresholds          | TTL = 1.4 V, CMOS = 2.5 V, ECL = -1.3 V |

| External (EXT) triggering | MSO/DS07xx2A (2-/2+16-ch models)  | MSO/DS07xx4A (4-/4+16-ch models) |
|---------------------------|---|----------------------------------|
| Input impedance           | 1 MΩ ± 3%    14 pF or 50 Ω  | 2.14 kΩ ±5%                      |
| Maximum input             | CAT I 300 Vrms, 400 Vpk, CAT II 100 Vrms, 400 Vpk<br>With 10073C 10:1 probe: CAT I 500 Vpk, CAT II 400 Vpk<br>5 Vrms with 50-Ω input                    | ±15 V                            |
| Range                     | DC coupling: trigger level ±1 V and ±8 V  | ±5 V                             |
| Sensitivity               | For ±1 V range setting:<br>DC to 100 MHz, 100 mV;<br>For ±8 V range setting:<br>DC to 100 MHz, 250 mV;<br>>100 MHz to bandwidth of oscilloscope: 500 mV | DC to 500 MHz: 500 mV            |
| Coupling                  | AC (~3.5 Hz), DC, noise reject, HF reject and LF reject (~50 kHz)   |                                  |
| Probe ID                  | Auto probe sense and AutoProbe interface<br>Agilent- and Tektronix-compatible passive probe sense   |                                  |

\* Denotes warranted specifications, all others are typical. Specifications are valid after a 30-minute warm-up period and ±10 °C from firmware calibration temperature.

## Performance characteristics (continued)

### Display system

|                              |   |
|------------------------------|---|
| Display                      | 12.1-inch (255 mm x 184 mm) diagonal color TFT LCD  |
| Throughput of scope channels | Up to 100,000 waveforms/sec in real-time mode   |
| Resolution                   | XGA – 768 vertical by 1024 horizontal points (screen area);<br>640 vertical by 1000 horizontal points (waveform area)<br>256 levels of intensity scale  |
| Controls                     | Waveform intensity on front panel. Vectors on/off; infinite persistence on/off,<br>8 x 10 grid with intensity control   |
| Built-in help system         | Key-specific help displayed by pressing and holding key or softkey of interest.<br>Language support for 11 languages including English, German, French, Russian, Japanese,<br>Traditional Chinese, Simplified Chinese, Korean, Spanish, Portuguese and Italian. |
| Real-time clock              | Time and date (user adjustable)   |

### Measurement features

|                               |   |
|-------------------------------|---|
| Automatic measurements        | Measurements are continuously updated. Cursors track last selected measurement.<br>Up to four measurements can be displayed on screen at any one time.  |
| Voltage (scope channels only) | Peak-to-peak, maximum, minimum, average, amplitude, top, base, overshoot, preshoot, RMS,<br>standard deviation (AC RMS)   |
| Time                          | Frequency, period, + width, – width and duty cycle on any channel.<br>Rise time, fall time, X at max Y (time at max volts), X at min Y (time at min volts), delay, and<br>phase on scope channels only. |
| Counter                       | Built-in 5-digit frequency counter on any channel. Counts up to the scope's bandwidth (1 GHz<br>max). The counter resolution can be increased to 8 digits with an external 10-MHz reference.            |
| Threshold definition          | Variable by percent and absolute value; 10%, 50%, 90% default for time measurements   |
| Cursors                       | Manually or automatically placed readout of horizontal (X, $\Delta X$ , $1/\Delta X$ ) and vertical (Y, $\Delta Y$ ).<br>Additionally logic or scope channels can be displayed as binary or hex values. |
| Waveform math                 | One function of 1-2, 1x2, FFT, differentiate, integrate, square root.<br>Source of FFT, differentiate, integrate: scope channels 1 or 2, 1-2, 1+2, 1x2.   |

### FFT

|                      |   |
|----------------------|---|
| Points               | Fixed at 1000 points  |
| Source of FFT        | Scope channels 1 or 2 (or 3 or 4 on MSO/DSO7xx4A only), 1+2, 1-2, 1*2 |
| Window               | Rectangular, flattop, Hanning   |
| Noise floor          | –50 to –90 dB depending on averaging                                  |
| Amplitude            | Display in dBV, dBm at 50 $\Omega$                                    |
| Frequency resolution | 0.05/time per div   |
| Maximum frequency    | 50/time per div   |

## Performance characteristics (continued)

### Storage

---

|                            |  |
|----------------------------|--|
| Save/recall (non-volatile) | 10 setups and traces can be saved and recalled internally.<br>Optional secure environment mode ensures setups and traces are stored to internal volatile memory so data is erased when power is removed. Compliant to NISPOM Chapter 8 requirements.                 |
| Storage type and format    | USB 1.1 host ports on front and rear panels<br>Image formats: BMP (8-bit), BMP (24-bit), PNG (24-bit)<br>Data formats: X and Y (time/voltage) values in CSV format, ASCII XY and binary format and .alb for offline viewing on a PC<br>Trace/setup formats: Recalled |

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### I/O

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|                            |   |
|----------------------------|---|
| Standard ports             | USB 2.0 high-speed device, two USB 1.1 host ports, 10/100BaseT LAN, XGA video output  |
| Max transfer rate          | USB (USBTMC-USB488): 3.5 Mbytes/sec<br>100 Mbps LAN (TCP/IP): 1 Mbytes/sec  |
| Supported printers via USB | For a list of currently supported printers visit <a href="http://www.agilent.com/find/InfiniiVision-printers">www.agilent.com/find/InfiniiVision-printers</a> |

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### General characteristics

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|                       |  |
|-----------------------|--|
| Physical size (WxHxD) | 17.9" x 11.7" x 8.6" (45.4 cm x 29.8 cm x 22 cm) with legs extended, with screen cover on<br>17.9" x 10.9" x 6.8" (45.4 cm x 27.7 cm x 17.3 cm) with legs contracted, with screen cover on |
| Weight                | Net: 5.9 kg (13 lbs) Shipping: 9.3 kg (20.5 lbs)   |
| Probe comp output     | Frequency ~2 kHz; Amplitude ~5 V   |

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## Performance characteristics (continued)

### General characteristics (continued)

|                   |   |
|-------------------|---|
| Trigger out       | When Triggers is selected (delay ~17 ns)<br>0 to 5 V into high impedance<br>0 to 2.5 V into 50 $\Omega$<br>When Source Frequency or Source Frequency/8 is selected<br>0 to 580 mV into high impedance<br>0 to 290 mV into 50 $\Omega$<br>Max frequency output: 350 MHz (in source frequency mode when terminated in 50 $\Omega$ )<br>125 MHz (in source frequency/8 mode when terminated in 50 $\Omega$ ) |
| 10 MHz ref in/out | TTL out, 180 mV to 1 V amplitude with 0 to 2 V offset   |
| Kensington lock   | Connection on rear panel for security   |

### Power requirements

|                    |  |
|--------------------|--|
| Line voltage range | ~Line 120 W max, 96-144 V/48-440 Hz, 192-288 V/48-66 Hz, automatic selection |
| Line frequency     | 50/60 Hz, 100-240 VAC; 440 Hz, 100-132 VAC                                   |
| Power usage        | 110 W max  |

### Environmental characteristics

|                        |  |
|------------------------|--|
| Ambient temperature    | Operating -10 °C to +55 °C; non-operating -65 °C to +71 °C   |
| Humidity               | Operating 95% RH at 40 °C for 24 hr; non-operating 90% RH at 65 °C for 24 hr   |
| Altitude               | Operating to 4,570 m (15,000 ft); non-operating to 15,244 m (50,000 ft)  |
| Vibration              | Agilent class B1 and MIL-PRF-28800F; class 3 random  |
| Shock                  | Agilent class B1 and MIL-PRF-28800F; class 3 random; (operating 30g, 1/2 sine, 11 ms duration, 3 shocks/axis along major axis, total of 18 shocks) |
| Pollution degree2      | Normally only dry non-conductive pollution occurs.<br>Occasionally a temporary conductivity caused by condensation must be expected.               |
| Typical operator noise | 30 dBA at front of instrument, 35 dBA at rear of instrument.   |
| Indoor use             | Rated for indoor use only  |

### Other

|                           |   |
|---------------------------|---|
| Measurement categories    | CAT I: Mains isolated<br>CAT II: Line voltage in appliance and to wall outlet   |
| Regulatory information    | Safety IEC 61010-1:2001 / EN 61010-1:2001<br>Canada: CSA C22.2 No. 1010.1:1992<br>UL 61010B-1:2003  |
| Supplementary information | The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, and carries the CE-marking accordingly.<br>The product was tested in a typical configuration with HP/Agilent test systems. |



## Ordering information

| Model    | Bandwidth | Sample rate | Memory depth | Scope channels | Digital channels |
|----------|-----------|-------------|--------------|----------------|------------------|
| DS07032A | 350 MHz   | 2 GSa/s     | 8 Mpts       | 2              |                  |
| DS07034A | 350 MHz   | 2 GSa/s     | 8 Mpts       | 4              |                  |
| MS07032A | 350 MHz   | 2 GSa/s     | 8 Mpts       | 2              | 16               |
| MS07034A | 350 MHz   | 2 GSa/s     | 8 Mpts       | 4              | 16               |
| DS07052A | 500 MHz   | 4 GSa/s     | 8 Mpts       | 2              |                  |
| DS07054A | 500 MHz   | 4 GSa/s     | 8 Mpts       | 4              |                  |
| MS07052A | 500 MHz   | 4 GSa/s     | 8 Mpts       | 2              | 16               |
| MS07054A | 500 MHz   | 4 GSa/s     | 8 Mpts       | 4              | 16               |
| DS07104A | 1 GHz     | 4 GSa/s     | 8 Mpts       | 4              |                  |
| MS07104A | 1 GHz     | 4 GSa/s     | 8 Mpts       | 4              | 16               |

### Accessories included:

| Model number  | DS070xxA | MS070xxA |
|---|----------|----------|
| Standard 3-year warranty  | •        | •        |
| 10073C or 1165A 10:1 divider passive probe per scope channel  | •        | •        |
| 16 channel flying lead set logic probe (two pods with eight channels each)  |          | •        |
| Built-in help language support for English, French, German, Russian, simplified Chinese, traditional Chinese, Korean, Spanish, Portuguese, Japanese and Italian | •        | •        |
| Printed user's guide (option ABA for English, option AB2 for simplified Chinese, option ABJ for Japanese)   | •        | •        |
| Documentation CD (PDFs of Programmer's Quick Start Guide, Programmer's Reference Guide, User Guide, and Service Guide)  | •        | •        |
| Agilent I/O libraries suite 15.0  | •        | •        |
| Localized power cord  | •        | •        |
| Front panel cover   | •        | •        |

Note: IntuiLink Data Capture software available free on Web at [www.agilent.com/find/intuilink](http://www.agilent.com/find/intuilink)

## Ordering information (continued)

### Options

| Product<br>U.S. Price | Description   |
|-----------------------|---|
| DSO to MSO upgrade*   | N2735A for DS0703xA,<br>N2736A for DS0705xA,<br>N2737A for DS0710xA,  |
| SEC                   | Secure Environment Mode - Provides compliance with National Industrial Security Program Operating Manual (NISPOM) Chapter 8 requirements (factory-installed option only for new purchase) |
| A6J                   | ANSI Z540 compliant calibration   |

\*Includes a 54620-68701 logic cable kit, a label and an upgrade license to activate the MSO features. Installs in less than 5 minutes.

### Serial data analysis applications

| Option number – user installed | Option number – factory installed | Description  |
|--------------------------------|-----------------------------------|--|
| N5424A                         | AMS                               | CAN/LIN automotive triggering and decode (4 and 4+16 channel models only)                |
| N5423A                         | LSS                               | I <sup>2</sup> C/SPI serial decode option (for 4/4+16 channel models only)               |
| N5432A                         | FRS                               | FlexRay automotive triggering and decode (4+16 channel models only and required VPT1000) |
| N5457A                         | 232                               | RS-232/UART triggering and decode (4 and 4+16 channel models only)                       |

### User installed

| PC-assisted applications | Description  |
|--------------------------|--|
| N5406A                   | FPGA dynamic probe for Xilinx (MSO models only)      |
| N5434A                   | FPGA dynamic probe for Altera (MSO models only)      |
| B4610A                   | Offline viewing and analysis of MSO/DSO data on a PC |
| U1881A                   | Power measurement and analysis application           |

### Other

| Option number – user installed | Option number – factory installed | Description      |
|--------------------------------|-----------------------------------|------------------|
| N5454A                         | SGM                               | Segmented memory |

### Accessories

| Product number | Description  |
|----------------|--|
| N2733A         | Soft carrying case for 7000 Series oscilloscope  |
| N2732A         | Rackmount kit for 7000 Series oscilloscope   |
| GemStar 5000   | Transit case with foam molding customized for InfiniiVision 7000 Series available from GemStar Mfg. <a href="http://www.gemstarmfg.com">www.gemstarmfg.com</a> |

## Related Literature

| Publication Title  | Publication Type | Publication Number |
|--|------------------|--------------------|
| <i>Agilent Technologies Oscilloscope Family Brochure</i>   | Brochure         | 5989-7650EN        |
| <i>Agilent Technologies Probes and Accessories</i>   | Selection guide  | 5989-6162EN        |
| <i>Agilent Technologies InfiniiVision 5000, 6000 and 7000 Series Oscilloscope Probes and Accessories</i>   | Data sheet       | 5968-8153EN/EUS    |
| <i>N5423A I<sup>2</sup>C and SPI triggering and hardware-accelerated decode options for InfiniiVision 5000, 6000 and 7000 Series oscilloscopes</i> | Data sheet       | 5989-5126EN        |
| <i>CAN/LIN (N5424A) and FleyRay (N5432A) options for automotive applications using InfiniiVision 5000, 6000 and 7000 Series oscilloscopes</i>      | Data sheet       | 5989-6220EN        |
| <i>RS-232/UART triggering and hardware-accelerated decode options for InfiniiVision 5000, 6000 and 7000 Series oscilloscopes</i>                   | Data sheet       | 5989-7832EN        |
| <i>N5434A FPGA Dynamic Probe for Altera with InfiniiVision 6000 and 7000 Series MSOs</i>   | Data sheet       | 5989-5965EN        |
| <i>N5406A FPGA Dynamic Probe for Xilinx with InfiniiVision 6000 and 7000 Series MSOs</i>   | Data sheet       | 5989-1848EN        |
| <i>Segmented memory option for InfiniiVision 5000, 6000 and 7000 Series oscilloscopes</i>  | Data sheet       | 5989-7833EN        |
| <i>Offline viewing and analysis for InfiniiVision 5000, 6000 and 7000 Series oscilloscopes</i>   | Data sheet       | 5989-7834EN        |
| <i>Power application for InfiniiVision 6000 and 7000 Series oscilloscopes</i>  | Data sheet       | 5989-7835EN        |
| <i>Agilent 81150A pulse function arbitrary noise generator</i>   | Data sheet       | 5989-6433EN        |
| <i>Agilent 33220A 20 MHz function/arbitrary waveform generator</i>   | Data sheet       | 5988-8544EN        |
| <i>Agilent 6900 Series logic analysis mainframes</i>   | Data sheet       | 5989-0421EN        |
| <i>Agilent 16800 Series portable logic analyzers</i>   | Data sheet       | 5989-5063EN        |
| <i>VSA for InfiniiVision 5000, 6000 and 7000 Series oscilloscopes</i>  | Application note | 5989-1679EN        |

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[www.lxistandard.org](http://www.lxistandard.org)

LXI is the LAN-based successor to GPIB, providing faster, more efficient connectivity. Agilent is a founding member of the LXI consortium.

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