Keysight N8834A
MultiScope Application
Achieve Greater Insight and Productivity – Infiniium 9000, 9000H, S-Series, 90000A, 90000 X-, 90000 Q-, V-Series and Z-Series
Introducing the new MultiScope application

Need more than four simultaneous oscilloscope channels? Ever placed two oscilloscopes together to see eight channels simultaneously? The Keysight Technologies, Inc. N8834A MultiScope application enables Infiniium real-time oscilloscope users to bring multiple oscilloscopes together for measurement on a single timebase. Capture, view, and analyze up to 40 time-correlated oscilloscope channels. If your need for more than four simultaneous channels goes away, each oscilloscope can be used independently and then brought back together when there are future needs for more than four channel measurements.

Are you working on applications like power rails, high-speed multi-lane serial buses, optical networking, or DDR memory systems? The N8834A MultiScope software allows connection of 2 to 10 oscilloscopes to achieve up to 40 channels on a single timebase. Each oscilloscope is daisy chained via cables and power splitters to the first oscilloscope, called the leader. Automated calibration is available to allow channel correlation across frames down to less than 1 ps. All oscilloscopes connect to a control PC via LAN or USB. The PC runs the Infiniium application (user interface) and allows users to change settings on all oscilloscopes. The Infiniium application on the PC shows all waveforms and measurements and offers analysis in addition to controlling the oscilloscope settings. The leader can also work as the controller in the absence of a control PC.
Features

- Save costs by connecting up to 10 of your existing Infinium Series oscilloscopes to achieve 40 channel acquisitions in a single timebase.
- Data is presented to the user on a control PC or the leader scope as if all oscilloscope channels existed on a single frame.
- Oscilloscopes can be separated and used independently when four channels or fewer are needed.
- Application supports multiple frames using the same family of oscilloscopes (e.g., all V-Series scopes) or a heterogeneous combination of different oscilloscope families (e.g., one 9000 Series and one S-Series). Time-correlation precision depends on which frames are connected together.

Increase your productivity and efficiency

See live signals acquired from the oscilloscopes on a PC installed with the N8900A Infinium Offline oscilloscope analysis software. Users can test lanes on the MultiScope from the comfort of their own workbench. Users can remotely login to the MultiScope application from the PC and observe live traffic. The Infinium Offline oscilloscope analysis software application allows users to save the setup and waveform files in a composite format (.osc) to be analyzed offline on the PC, freeing up the MultiScope connection for others.
MultiScope Software Architecture

Control PC

The N8834A MultiScope application runs on a Windows 7 PC. All the scopes are connected to the control PC (or just the leader oscilloscope) via LAN or USB.

- PC supports both hosted/online and offline analysis.
- Scope front panels are disabled during MultiScope operation.
- MultiScope is controlled by a PC installed with the N8900A Infiniium Offline analysis software or the leader scope in the absence of a PC.
- Display up to 16 grids per window, up to 8 windows.
- Full support of all measurements, functions, and analysis on all channels.
- Test at the comfort of your workbench.

The leader and the followers

The leader oscilloscope connects to the control PC via LAN or USB or can act as the controller in the absence of the PC. The one leader oscilloscope can connect two to nine followers. The connection between oscilloscopes is daisy chained with cables and splitters.

- Support edge or glitch trigger on leader (other triggering modes (including InfiniiScan) are not supported).
- One-time deskew eliminates frame-to-frame skew created by trigger daisy chain connection.
- Achieve inter-scope intrinsic jitter of 150 fs with precision calibration on the Z-Series and 90000 Q-Series Infiniium oscilloscopes.
- 10-MHz reference clock aligns sample for deep memory synchronization.
## N8834A Infiniium MultiScope Configuration Table

<table>
<thead>
<tr>
<th>90000 Q-Series/Z-Series</th>
<th>90000 X-Series/V-Series</th>
<th>S-Series</th>
<th>90000A Series</th>
<th>9000 Series</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Max bandwidth</th>
<th>50 to 63 GHz</th>
<th>33 GHz</th>
<th>20 to 33 GHz</th>
<th>20 to 33 GHz</th>
<th>8 to 16 GHz</th>
<th>6 to 8 GHz</th>
<th>0.5 to 4 GHz</th>
<th>2.5 to 13 GHz</th>
<th>600 MHz</th>
<th>1 to 4 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max sample rate</td>
<td>160 GSa/s</td>
<td>80 GSa/s</td>
<td>80 GSa/s</td>
<td>80 GSa/s</td>
<td>40 GSa/s</td>
<td>20 GSa/s</td>
<td>10 GSa/s</td>
<td>40 GSa/s</td>
<td>10 GSa/s</td>
<td>5 GSa/s</td>
</tr>
<tr>
<td>Max channels/frame</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
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<tr>
<td>Max frames</td>
<td>10</td>
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<td>10</td>
<td>10</td>
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<tr>
<td>Sync port</td>
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<td>Available</td>
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<td>Not available</td>
<td>Not available</td>
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<td>External reference frequency</td>
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<td>10 MHz</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Calibration modes

| | Manual | Yes | Yes | Yes | Yes | Yes |
| | Basic (inter-scope intrinsic jitter) | Yes (10 ps) | Yes (10 ps) | Yes (5 ps) | Yes (5 ps) | Yes (N/A) |
| | Precision ¹ (inter-scope intrinsic jitter) | Yes (0.15 ps) | Yes (0.5 ps) | No | No | No |
| | Cable kit to connect to two frames | N2105A | N2123A | N2124A | N2124A | N2124A |

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1. Precision calibration is available on 90000 Q- and Z-Series for up to 10 scopes and on 90000 X- and V-Series for up to 2 scopes.
2. Inter-scope intrinsic jitter value is used to calculate MultiScope delta-time measurement accuracy.
Recommended Oscilloscopes

The N8834A Multiscope software is compatible with Infiniium Series Oscilloscope with operating software revision 5.60 or higher. For oscilloscopes with earlier revisions, free upgrade software is available at: www.keysight.com/find/scope-apps-sw.

Ordering Information for Infiniium Oscilloscope Multiscope Configuration

Software options

<table>
<thead>
<tr>
<th>Application</th>
<th>License type</th>
<th>Infiniium V/Z-Series</th>
<th>Infiniium S-Series</th>
<th>Infiniium 90000 Series</th>
<th>Infiniium 9000 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infiniium analysis software (optional)</td>
<td>Floating</td>
<td>N8900A-001</td>
<td>N8900A-001</td>
<td>N8900A-001</td>
<td>N8900A-001</td>
</tr>
<tr>
<td>Multiscope software – connect up to 10 scopes</td>
<td>Fixed</td>
<td>N8834A-CFP</td>
<td>N8834A-CFP</td>
<td>N8834A-CFP</td>
<td>N8834A-CFP</td>
</tr>
<tr>
<td>Multiscope software (upgrade to connect from 2 to up to 5 scopes)</td>
<td>Fixed</td>
<td>N8834A-DFP</td>
<td>N8834A-DFP</td>
<td>N8834A-DFP</td>
<td>N8834A-DFP</td>
</tr>
<tr>
<td>Multiscope software (upgrade to connect from 5 to up to 10 scopes)</td>
<td>Fixed</td>
<td>N8834A-EFP</td>
<td>N8834A-EFP</td>
<td>N8834A-EFP</td>
<td>N8834A-EFP</td>
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<tr>
<td></td>
<td>Floating</td>
<td>N8834A-ETP</td>
<td>N8834A-ETP</td>
<td>N8834A-ETP</td>
<td>N8834A-ETP</td>
</tr>
</tbody>
</table>

Note: Transportable license is required for viewing the multiscope channels on a PC via Hosted mode.

Cable kits

- N2123A: Infiniium 90000 X- and V-Series multi-frame cable kit for two frames
- N2124A: Infiniium 9000, 9000H, 90000A, and S-Series multi-frame cable kit for two frames
- N2105A: Infiniium 90000 Q- and Z-Series multi-frame base kit for stacking two frames
Performance Characteristics

| Control PC requirement       | Windows 7 64 bit, minimum 4 G RAM (recommended 8 G), 1 G free hard drive space Infiniium software 5.50 and above
|                             | Note: Control PC is not required for Infiniium Series scopes if leader scope is used as the controller. |
| Leader and followers oscilloscope requirement | Infiniium software 5.50 and above² |
| Channels supported           | Analog channel 1 to 4
|                             | Note: Digital channels on all MSO models are not supported. |

**Trigger modes²**

| Edge                      | Triggers on a specified slope (rising, falling, or alternating between rising and falling) and voltage level on any channel or auxiliary 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 |

Note: All other trigger modes are not supported.

1. Front panel control is disabled during MultiScope operation. Oscilloscope control is handled by the Infiniium Offline software on PC or the leader scope.
2. Software 4.30 or above requires Windows 7. N2753A Infiniium Windows XP to 7 OS upgrade kit (oscilloscope already has M890 motherboard). N2754A Infiniium Windows XP to 7 OS and M890 motherboard upgrade kit (oscilloscope without M890 motherboard). Verify the M890 motherboard using the procedure found in the Windows 7 upgrade kit data sheet with the publication number 5990-8569EN.
3. If leader scope is used as the controller, all trigger modes supported on the leader scope will be available in the multiscope configuration.
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Published in USA, December 1, 2017
5992-0511EN
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