Key Features

- Up to 30 GHz bandwidth and 80 GS/s sample rate
- Most advanced oscilloscope user interface makes configuring complex measurements easy
- The industry’s only true hardware 14.1 Gb/s serial pattern trigger
- Add the Teledyne LeCroy HDA125 High-speed Digital Analyzer to create the most powerful, flexible mixed-signal test solution available
- Low Jitter Measurement Floor and exceptional timebase stability
- Comprehensive set of serial data analysis, debug, validation and compliance tools
- Integrated 50 Ω and 1 MΩ inputs for true connection and probing flexibility
- Integrated standard and custom measurements and math functions for unrivaled analysis capability
- Multi-lane serial data eye, jitter and crosstalk analysis

The WaveMaster 8 Zi-B combines the performance, signal fidelity and feature set needed for today’s high-speed measurements with the ease-of-use of a standard benchtop oscilloscope. Featuring the highest-speed serial data triggers, the only complete multi-lane serial data analysis and eye diagram solution, and the most comprehensive set of compliance packages, the WaveMaster 8 Zi-B simplifies the most complex testing.

Exceptional Performance

With up to 30 GHz bandwidth, 80 GS/s sample rate, low noise, an extremely stable time base and a 14.1 Gb/s serial trigger the WaveMaster 8 Zi-B has the hardware performance to capture today’s high-speed signals.

Most Advanced User Interface

Teledyne LeCroy’s MAUI user interface puts the deepest measurement toolset of any oscilloscope at your fingertips. Coupled with the WaveMaster 8Zi-B’s 15.3” high-resolution touchscreen, MAUI makes advanced analysis easy to set up and use. A flat menu structure puts the most common tools in the easiest reach. Sophisticated multi-grid displays are simple to configure. Vertical, horizontal and acquisition setting changes are made without obscuring waveform display.

Advanced Waveform Processing

A powerful PC with a 3.1 GHz quad core processor and up to 32 GB of RAM enables fast waveform processing for the most advanced analysis. User-defined mathematical functions and measurements are available natively, or through seamless integration with external environments like MATLAB.

Complete Characterization, Compliance Testing and Debug

The WaveMaster 8 Zi-B provides the most powerful analysis tools. SDAIII-CompleteLinQ simultaneously displays eye diagrams and breaks down jitter on four signals. EyeDrill and VirtualProbe options analyze lane interactions using S-parameter files. Crosstalk tools analyze amplitude noise. QualiPHY software simplifies and automates compliance testing and reporting for a wide range of serial data standards.
MAUI – Most Advanced User Interface was developed to put all the power and capabilities of the modern oscilloscope right at your fingertips. Designed for touch; all important oscilloscope controls are accessed through the intuitive touch screen. Built for simplicity; time saving shortcuts and intuitive dialogs simplify setup. Made to solve; a deep set of debug and analysis tools helps identify problems and find solutions quickly.

**Designed for Touch**
MAUI is designed for touch. Operate the oscilloscope just like a phone or tablet with the most unique touch screen features on any oscilloscope. All important controls are always one touch away. Touch the waveform to position or zoom in for more details using intuitive actions.

**Built for Simplicity**
MAUI is built for simplicity. Basic waveform viewing and measurement tools as well as advanced math and analysis capabilities are seamlessly integrated in a single user interface. Time saving shortcuts and intuitive dialogs simplify setup and shorten debug time.

**Made to Solve**
MAUI is made to solve. A deep set of integrated debug and analysis tools help identify problems and find solutions quickly. Unsurpassed integration provides critical flexibility when debugging. Solve problems fast with powerful analysis tools.

**MAUI with OneTouch**
MAUI with OneTouch introduces a new paradigm for oscilloscope user experience. Dramatically reduce setup time with revolutionary drag and drop actions to copy and setup channels, math functions, and measurement parameters without lifting a finger. Use common gestures like drag, drop, and flick to instinctively interact with the oscilloscope. Quickly enable a new channel, math or measurement using the “Add New” button and simply turn off any trace or parameter with a flick of the finger. These OneTouch innovations provide unsurpassed efficiency in oscilloscope operation.

**A** Channel, timebase, and trigger descriptors provide easy access to controls without navigating menus.

**B** Configure parameters by touching measurement results.

**C** Shortcuts to commonly used functions are displayed at the bottom of the channel, math and memory menus.

**D** Use the “Add New” button for one-touch trace creation.

**E** Drag to change source, copy setup, turn on new trace, or move waveform location.

**F** Drag to copy measurement parameters to streamline setup process.

**G** Drag to quickly position cursors on a trace.
With its combination of high bandwidth, excellent signal fidelity, and the most complete toolset in its class, the WaveMaster 8 Zi-B is the ideal platform for high-speed serial data analysis. The SDA 8 Zi-B models have been specifically configured to handle today’s most challenging serial data applications:

The SDA 8 Zi-B comes standard with the SDAIII core toolset, providing tightly-integrated and comprehensive eye diagram and jitter analysis for NRZ signals. SDAIII easily emulates complex clock recovery and PLL behavior, and quickly renders eye diagrams using all acquired unit intervals. Jitter analysis includes Rj - Dj separation, Tj extrapolation, measurements of DDJ, ISI, and Pj, and visualization using histograms, tracks, and jitter spectra.

With 64 Mpts on all four input channels, the SDA 8Zi-B doubles the WaveMaster’s standard acquisition memory. Serial data analysis puts a particular set of demands on an oscilloscope’s timebase capabilities. Decoding up to protocol level typically requires the acquisition of long waveforms. Likewise, slowly-varying physical-layer characteristics such as Spread-Spectrum Clocking (SSC) must be analyzed over periods of milliseconds.

The SDA 8Zi-B comes standard with a true hardware high-speed serial pattern trigger, to ensure capture of even the rarest pattern at up to 6.5 Gb/s. The trigger also natively triggers on 8b/10b and 64b/66b words, with corresponding decoders included in the SDA configuration. And if 6.5 Gb/s is not enough, the high-speed serial trigger can be upgraded to an industry-leading 14.1 Gb/s.
The WaveMaster 8 Zi-B is built on an exceptionally accurate acquisition system, with pristine signal fidelity and high timebase stability. Coupled with the most flexible set of inputs and the highest-performance serial trigger, it represents the most versatile platform in its class.

- Pristine high-bandwidth performance:
  - Up to 30 GHz bandwidth, 80 GS/s sample rate, 512 Mpts of analysis memory on 2 channels
  - Up to 20 GHz bandwidth, 40 GS/s sample rate, 256 Mpts of analysis memory on 4 channels
  - Exceptionally accurate and stable timebase - 100fs (rms) timebase jitter
- Bandwidth upgrade capability from 4 GHz to 30 GHz to maximize investment leverage
- Hardware serial triggering up to 14.1 Gb/s
  - The highest speed true-hardware serial trigger provides capability for 80-bit NRZ serial pattern triggering, 8b/10b and 64b/66b symbol triggering.
  - Teledyne LeCroy's true hardware trigger means even infrequently-occurring patterns can be reliably triggered on and captured. Competing software "serial triggers" risk missing rare events.
  - A 6.5 Gb/s serial trigger is included standard with SDA 8 Zi-B models, upgradeable to 14.1 Gb/s. Either serial trigger may be added to WaveMaster 8 Zi-B and DDA 8 Zi-B models.
- The only high-bandwidth oscilloscope to support both 50 Ω and 1 MΩ inputs on the same instrument without the use of cumbersome external adapters.
- Add HDA125 High-speed Digital Analyzer via the integrated LBUS connector to give 18 digital channels at 12.5 GS/s each - for the most advanced mixed-signal test system available.
The WaveMaster 8 Zi-B’s MAUI advanced user interface combines the deepest toolset with simple operation, making it easy to configure sophisticated measurements. The operating software is seamlessly integrated with the hardware platform, providing the best responsiveness and ease of use in its class.

- The most complete set of measurement and analysis tools in the industry leverage powerful processing capability to provide deeper insight in less time.
- Intel® Core™ i7-4770S Quad-core, 3.1 GHz (per core, up to 3.9 GHz in Turbo mode) CPU with 8 GB of RAM (upgradeable to 32 GB)
- High resolution 15.3” WXGA widescreen color touch screen display.
- X-Stream II streaming architecture — 10-100 times faster analysis and better responsiveness than other oscilloscopes
- QualiPHY serial data compliance packages - speed up testing times and reduce complexity with fully automated compliance packages for PCI Express®, DDR memory, USB 3.0, and many other standards.
- Crosstalk and Vertical Noise Analysis
- SDAIII “LinQ” options provide four simultaneous eye diagrams and jitter calculations for multi-lane serial data link analysis, or for single-lane, multiple location analysis
- Eye Doctor™ II and Virtual Probe Signal Integrity Toolsets provide real-time de-embedding, emulation, and equalization on serial data channels and complex networks
- 325 MB/s data transfer rate from oscilloscope to PC with Teledyne LeCroy Serial Interface Bus (LSIB) option
THE MOST FLEXIBLE MIXED-SIGNAL SOLUTION

Key Features

- 12.5 GS/s sampling rate for 80ps timing accuracy
- 3 GHz leadset for capturing digital signals up to 6 Gb/s
- Add high-speed mixed-signal capability to your Teledyne LeCroy high-bandwidth oscilloscope
  - LBUS connection for precise timing synchronization
  - USB 3.1 for fast data transfer
- Unique QuickLink probing system
  - Differential solder-in tips with 9-inch lead simplify access to difficult test points
  - Ultra low loading for superior performance
  - 8 GHz bandwidth tips are compatible with both HDA digital leadset and Teledyne LeCroy WaveLink differential analog probes for unmatched acquisition flexibility

The HDA125 transforms your Teledyne LeCroy oscilloscope into the highest-performance, most flexible mixed-signal solution for high-speed digital debug and evaluation. With 12.5 GS/s digital sampling rate on 18 input channels, and the revolutionary QuickLink probing solution allowing seamless transitions from digital to high-bandwidth analog acquisitions, validation of challenging interfaces such as DDR4 has never been simpler or more comprehensive.

Complete Embedded System Debug

Modern embedded systems increasingly utilize high-speed digital buses, posing new and evolving challenges to validation and debug engineers. While analog signal-integrity characterization is a critical part of this process, the ability to decode and trigger on related digital buses is becoming a vital capability. The HDA125 High-speed Digital Analyzer addresses this need with the most flexible solution available.

Enhanced DDR Debug

Teledyne LeCroy already offers the industry’s only dedicated DDR Debug Toolkit, designed to simplify challenging memory interface validation. Adding the HDA125 allows the DDR command bus to be directly acquired and integrated into the analysis, enabling advanced command triggering and sophisticated, searchable bus state viewing.

Unique probing solution

One of the most challenging aspects of high-speed embedded test is simply getting the signals from the system under test to the instrumentation with sufficient fidelity. The HDA125 is built around Teledyne LeCroy’s revolutionary QuickLink probing concept - enabling high signal quality, easy access to remote test points, and simple transitions from digital to analog probing.
The SDA 8Zi-B is configured specifically for testing serial data signals. With high-speed serial triggering capability and the most comprehensive analysis software, the SDA 8Zi-B is the obvious choice for the most challenging test and debug tasks:

**DDR Memory**
Verifying DDR memory operation is one of the most common challenges in high-speed electronics today. The SDA 8Zi-B is the ideal platform for validating and debugging DDR implementations.

- Teledyne LeCroy’s unique DDR Debug toolkit is the ultimate DDR analysis package. Perform Read/Write burst separation and display eye diagrams, jitter analysis, and measurements specific to DDR, allowing for a quick understanding of system performance with a push of a button.
- QualiPHY-DDR packages perform automated JEDEC compliance testing for DDR2, DDR3, DDR4, LPDDR2, and LPDDR3.
- Unique probing solutions solve the challenge of probing DDR signals.

**PCI Express®**
The SDA 8Zi-B is the basis of the industry’s most complete PCI Express test solution:

- Automated transmitter and receiver compliance testing using QualiPHY.
- The only certified solution for Link Equalization testing (required for PCI-SIG compliance) using the PeRT³ Phoenix.
- Comprehensive PCIe debug capability:
  - SDAIII eye and jitter analysis with built-in PCIe clock recovery emulation and eye masks
  - Protocol-layer decode correlated to physical-layer traces
  - PCIe-specific measurements.

**Automated Compliance Testing**
Teledyne LeCroy’s QualiPHY software is the ideal solution for physical layer compliance testing, making it easy to produce a comprehensive report of test results including screenshots. QualiPHY reduces the time and effort needed to perform compliance testing on a wide array of serial standards including:

- PCI Express (1.0, 2.0, 3.0)
- USB1, USB2, USB 3.0, USB 3.1
- DDR2, LPDDR2, DDR3, LPDDR3, DDR4
- SAS2, SAS3, SATA
- MIPI D-PHY and M-PHY
- 10/100/100 BASE-T, 10GBASE-T, 10GBASE-KR, SFI
- HDMI 1.4, HDMI 2.0, DisplayPort, eDP
- MOST50, MOST150, BroadR-Reach
The Teledyne LeCroy SDAIII-CompleteLinQ Serial Data Analysis products include multi-lane eye and jitter analysis, LaneScape™ comparison modes, vertical noise measurements, and crosstalk analysis tools. These capabilities provide the deepest insight into the behavior of multi- or single-lane serial data systems.

**SDAIII Core Toolset**

Teledyne LeCroy provides the most complete toolset in the industry for jitter measurements and eye diagram/jitter analysis. Rj and Dj are separated and Dj is decomposed using one of three dual-dirac algorithms. Eye diagrams containing all acquired unit intervals are rendered 10-100x faster than competitive systems. Eye diagram analysis tools, such as the extrapolated IsoBER plot, aid insight. Multiple additional tools, such as Tracks, Histograms, and Spectrum waveforms, enhance the understanding of jitter causes. Sophisticated pattern analysis tools like Intersymbol Interference (ISI) measurements and plots provide deep insight into Data Dependent Jitter (DDj) behavior.

**Measure up to 4 Lanes Simultaneously**

“LinQ” products provide extensive multi-lane analysis capabilities. Quickly understand lane-to-lane differences in jitter measurements, eye diagrams, and jitter analysis. Perform aggressor on/off analysis, and see the results from both scenarios simultaneously. Save the analysis of a particular scenario to the Reference Lane, and configure a LaneScape™ Comparison mode to compare the Reference to either one, two or all lanes. Each “lane” can be a different serial data lane, or a different analysis of data from a single serial data lane - ideal for comparing different equalization schemes (using Eye Doctor II option) or examining system behaviors at different locations in the link (using probes or the VirtualProbe option).

**CompleteLinQ Does it All**

The CompleteLinQ user interface framework provides easy access to all features described above, and also integrates EyeDoctorII and VirtualProbe capabilities for Tx/Rx equalization and fixture/channel de-embedding/emulation. Order SDAIII-CompleteLinQ to equip your oscilloscope with all of Teledyne LeCroy’s Serial Data Analysis and Signal Integrity tools.

Learn More: [teledynelecroy.com/SDAIII](http://teledynelecroy.com/SDAIII)
**Vertical Noise and Crosstalk**

The Crosstalk and CrossLinQ packages provide vertical noise measurements and crosstalk analysis tools for complete aggressor/victim analysis. Use one of three dual-Dirac models to measure and separate noise into total (Tn), random (Rn) and deterministic (Dn) components, and further decompose Dn into Intersymbol Interference Noise (ISIn) and Periodic Noise (Pn). Only Teledyne LeCroy performs this analysis on real-time oscilloscopes. Similar to jitter analysis, noise can be viewed as a noise track, histogram and spectrum, providing insight into the vertical noise resulting from coupling to other active serial data lanes or other interference sources. The Crosstalk Eye shows the probabilistic extent of noise both inside and outside the eye, quickly showing the impact of excessive noise that is not possible to see in a traditional eye diagram.

**EyeDoctorII**

Many high-speed measurements require removing the effects of a fixture, applying a channel model, and emulating the operation of a receiver equalizer on an acquired signal. The EyeDoctorII package includes easy configuration of basic de-embed/emulation scenarios, CTLE, DFE and FFE equalizers, and transmitter emphasis/de-emphasis.

**VirtualProbe**

The VirtualProbe package expands the capabilities of EyeDoctorII. Configure a multi-block circuit using S-parameters, and VirtualProbe will display the signal as it would appear before or after any block in the circuit. The electrical behavior of a block to reflect and transmit signals can be included, added or removed. Probe loading effects can also be removed.

**VirtualProbe shows you the signal where the probe is not located:**

Virtually probe the signal at the transmitter with the fixture present, and then de-embed its effects from the measurement.

View the signal between structures to understand losses, ISI and crosstalk caused by backplanes, interconnects and connectors.

See what the eye looks like at the receiver - even if it is not in reach of a differential probe.

Use EyeDoctor to open the eye by modeling CTLE, FFE and DFE equalizers used by your receiver.

**View the signal between structures to understand losses, ISI and crosstalk caused by backplanes, interconnects and connectors.**

**See what the eye looks like at the receiver - even if it is not in reach of a differential probe.**

**Use EyeDoctor to open the eye by modeling CTLE, FFE and DFE equalizers used by your receiver.**
PAM4 SIGNAL ANALYSIS

Key Features

- PAM4 Eye Diagrams
- Eye Height and Eye Width @BER for upper, middle and lower eyes
- Tj, Rj, and Dj Jitter Decomposition
- Tn, Rn, and Dn Noise Decomposition
- IsoBER Contour Plot
- Jitter and Noise Tracks, Histograms, and Spectra
- Level Measurements
- LaneScape™ Mode Comparisons
- Equalization of PAM4 Signals using EyeDoctorII
- Simulation of PAM4 Waveforms with Jitter Sim

PAM4 represents a new step in the evolution of serial data signaling formats, overcoming some fundamental limitations of traditional NRZ signaling. But with new signal types come new measurement needs. Teledyne LeCroy’s PAM4 analysis package meets these needs by leveraging industry-leading eye, jitter, and noise analysis capabilities to fully characterize PAM4 signals.

PAM4 signaling is being closely considered by standards organizations as the successor to NRZ signaling for the next generation of communication standards.

As with NRZ signal analysis, engineers working with PAM4 require sophisticated tools to measure how effects such as frequency-dependent losses and ISI impair signals and close the eye openings. But unlike NRZ signaling, the science of measuring PAM4 signals is new and evolving quickly to keep pace with the rapid advances in this technology.

Teledyne LeCroy’s PAM4 Signal Analysis gives high-speed design engineers the same familiar NRZ analysis toolkit, but with sophisticated new measurement algorithms specific to the complexities of PAM4.

The PAM4 Signal Analysis package performs a complete analysis of PAM4 waveforms. It analyzes the signals, creates eye diagrams, measures eye closure in voltage and time, and predicts closure as a function of BER. It is fully integrated into Teledyne LeCroy’s sophisticated MAUI user interface, allowing for advanced capabilities like channel emulation and de-embedding.
**COMPLETE SERIAL DATA TEST**

**Data Rate Configuration Chart**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bit Rate</th>
<th>Minimum Bandwidth</th>
<th>Recommended Oscilloscope</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI Express Gen1</td>
<td>2.5 Gb/s</td>
<td>6 GHz</td>
<td>SDA 806Zi-B or Above</td>
</tr>
<tr>
<td>InfiniBand</td>
<td>2.5 Gb/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial Rapid I/O</td>
<td>2.5 Gb/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayPort 1.1</td>
<td>2.7 Gb/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAS Gen1</td>
<td>3 Gb/s</td>
<td>8 GHz</td>
<td>SDA 808Zi-B or Above</td>
</tr>
<tr>
<td>Serial Rapid I/O</td>
<td>3.125 Gb/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XAUI</td>
<td>3.125 Gb/s</td>
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<tr>
<td>HDMI 1.4</td>
<td>3.4 Gb/s</td>
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<td></td>
</tr>
<tr>
<td>SATA Gen2</td>
<td>3 Gb/s</td>
<td>10 GHz</td>
<td></td>
</tr>
<tr>
<td>DDR4</td>
<td>4 GT/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibre Channel 4GFC</td>
<td>4.25 Gb/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial Rapid I/O</td>
<td>4.25 Gb/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>InfiniBand</td>
<td>5 Gb/s</td>
<td>13 GHz</td>
<td>SDA 813Zi-B or Above</td>
</tr>
<tr>
<td>PCI Express Gen2</td>
<td>5 Gb/s</td>
<td></td>
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</tr>
<tr>
<td>PCI Express Gen3</td>
<td>8 Gb/s</td>
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<td>Serial Rapid I/O</td>
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<td>USB 3.0</td>
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<td>DisplayPort 1.2</td>
<td>5.4 Gb/s</td>
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<td>GDDR5</td>
<td>6 Gb/s</td>
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<td>SAS Gen2</td>
<td>6 Gb/s</td>
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<tr>
<td>SATA Gen3</td>
<td>6 Gb/s</td>
<td>16 GHz</td>
<td>SDA 816Zi-B or Above</td>
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<tr>
<td>Serial Rapid I/O</td>
<td>6.25 Gb/s</td>
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<tr>
<td>QPI (Quick Path Interconnect)</td>
<td>6.4 Gb/s</td>
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<td>USB 3.1</td>
<td>10 Gb/s</td>
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<td>10GBase-KR</td>
<td>10.3125 Gb/s</td>
<td></td>
<td>SDA 820Zi-B or Above</td>
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<tr>
<td>SFI/SFP+</td>
<td>10.3125 Gb/s</td>
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<tr>
<td>CEI-11</td>
<td>11 Gbps</td>
<td>25 GHz</td>
<td>SDA 825Zi-B or Above</td>
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<td>SAS12</td>
<td>12 Gb/s</td>
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<td></td>
</tr>
<tr>
<td>InfiniBand</td>
<td>25.78125 Gb/s</td>
<td></td>
<td>SDA 830Zi-B, LabMaster 9 Zi-B or LabMaster 10 Zi up to 100 GHz</td>
</tr>
<tr>
<td>CEI-25/28</td>
<td>25–28 Gb/s</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PeRT³ Phoenix – Protocol Enabled Receiver and Transmitter Tolerance Tester**

Modern high-speed electronics test demands a set of instruments that goes beyond the oscilloscope, for applications such as receiver tolerance testing and interconnect characterization. Teledyne LeCroy addresses these challenges with innovative instruments which are both powerful and easy to use, simplifying test and reducing time-to-market.

Modern serial data standards such as PCI Express 3.0 require negotiation of equalization parameters to ensure interoperability. Truly testing a receiver’s operation demands an instrument which perform more than just the basic BERT functions of pattern generation and error detection. Teledyne LeCroy’s PeRT³ is the industry’s first Protocol-enabled Receiver Tester, a totally new class of instrument designed to overcome these difficult test challenges. The combination of the PeRT³ and the SDA 8Zi-B represents the most complete serial data test system available.
**WaveLink High Bandwidth Differential Probes**

**Ultra-wideband Architecture with Superior Signal Fidelity**
Teledyne LeCroy’s WaveLink® high bandwidth differential probes utilize advanced amplifier architecture to achieve superior analog broadband performance. Exceptional noise characteristics mean the combination of the probe and the oscilloscope results in measurement performance that is nearly identical to that of a cable input.

**Versatile High Bandwidth Probe Tips up to 25 GHz**
Solder-In tips with 25 GHz bandwidth and system (probe + oscilloscope) rise times equal to that of the oscilloscope alone. The most compact positioner tip browser with bandwidth up to 22 GHz makes probing in confined areas easy.

**Superior Probe Impedance Minimizes Circuit Loading**
Circuit and signal loading is reduced by more than 50% compared to competitive probes. In the mid-band frequency range, the difference is even more apparent.

**Other WaveLink Probing Solutions**
With bandwidths from 4 GHz to 13 GHz, wide input dynamic range, exceptionally low loading and versatile tip selections, the Medium- and Low Bandwidth WaveLink Differential Probe Systems are ideal for many applications - including the often-challenging probing of DDR memory signals.

**WaveLink Low Bandwidth Differential Probes**
- 4 and 6 GHz models
- Solder-In, Browser, Quick Connect, Square Pin, Positioner Tip, QuickLink adapter and HiTemp Cables

**WaveLink Medium Bandwidth Differential Probes**
- 8, 10, and 13 GHz models
- 3.5 V pp Input Dynamic Range
- ±4 V Offset
- Solder-in, Positioner (Browser), Square Pin, QuickLink adapter, Hi-Temp cables, and SMA/SMP lead connection
WaveMaster 8 Zi-B oscilloscopes support a broad range of probes for a variety of applications.

### ZS Series High Impedance Active Probes
- 1 GHz (ZS1000), 1.5 GHz (ZS1500) and 2.5 GHz (ZS2500) bandwidths
- High Impedance (0.9 pF, 1 MΩ)
- Extensive standard and available probe tip and ground connection accessories
- ±12 Vdc offset (ZS1500)
- Teledyne LeCroy ProBus system

### High-Voltage Passive Probes
- Suitable for safe, accurate high-voltage measurements
- Fixed-attenuation probes covering a range from 1 kV to 6 kV and varying transient overvoltage ratings
- Works with any 1 MΩ input oscilloscope

### Current Probes
- Range of probes from 30 A_{rms} (50 A_{peak}) to 500 A_{rms} (700 A_{peak})
- 2 MHz to 100 MHz bandwidths
- Small form factor accommodates large conductors with small jaw size
- Teledyne LeCroy ProBus system

### ZD Series Differential Probes
- 200 MHz, 500 MHz, 1 GHz and 1.5 GHz bandwidths
- Wide range of probing accessories
- Teledyne LeCroy ProBus system

### High-Voltage Differential Probes
- 20 MHz and 100 MHz bandwidth
- 1,000 V_{rms} common mode voltage
- 1,400 V_{peak} differential voltage
- EN 61010 CAT III
- 80 dB CMRR at 50/60 Hz
- Teledyne LeCroy ProBus system

### Optical-to-Electrical Converters
- OE6250G-M - 36GHz converter for NRZ and PAM4 signals up to 28 Gbaud and beyond
- OE695G - 9.5 GHz converter for signals up to 12.5 Gb/s
- Fully calibrated and integrated into the oscilloscope software
- Broad wavelength range
- Low noise

### 2 GS/s Mixed Signal Oscilloscope Options (MS-250/MS-500)
The Mixed Signal options allow the WaveMaster 8 Zi-B to operate as a mixed signal oscilloscope with up to 36 digital channels with 2 GS/s digital sample rate and 50 Mpts/Ch.
<table>
<thead>
<tr>
<th>Vertical System</th>
<th>WaveMaster 804Zi-B (SDA)</th>
<th>WaveMaster 806Zi-B (SDA/DDA)</th>
<th>WaveMaster 808Zi-B (SDA/DDA)</th>
<th>WaveMaster 813Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analog Bandwidth</strong></td>
<td>4 GHz (≥ 10 mV/div)</td>
<td>6 GHz (≥ 10 mV/div)</td>
<td>8 GHz (≥ 10 mV/div)</td>
<td>13 GHz (≥ 10 mV/div)</td>
</tr>
<tr>
<td>@ 50 Ω (-3 dB)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
</tr>
<tr>
<td>(ProLink Input)</td>
<td></td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
</tr>
<tr>
<td>Analog Bandwidth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@ 1 MΩ (-3 dB)</td>
<td>500 MHz (typical, ≤ 2 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
</tr>
<tr>
<td>(ProBus Input)</td>
<td></td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
<td>3.5 GHz (≥ 10 mV/div)</td>
</tr>
<tr>
<td><strong>Rise Time</strong></td>
<td>95 ps (test limit, flatness mode)</td>
<td>63 ps (test limit, flatness mode)</td>
<td>49 ps (test limit, flatness mode)</td>
<td>32.5 ps (test limit, flatness mode)</td>
</tr>
<tr>
<td>(10–90%, 50 Ω)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rise Time</strong></td>
<td>71 ps (flatness mode)</td>
<td>47 ps (flatness mode)</td>
<td>37 ps (flatness mode)</td>
<td>24.5 ps (flatness mode)</td>
</tr>
<tr>
<td>(20–80%, 50 Ω)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Input Channels</strong></td>
<td>4 (Any combination of ProLink and ProBus inputs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bandwidth Limiters</strong></td>
<td>20 MHz, 200 MHz, 1 GHz</td>
<td>20 MHz, 200 MHz, 1 GHz, 4 GHz</td>
<td>20 MHz, 200 MHz, 1 GHz, 4 GHz, 6 GHz</td>
<td>20 MHz, 200 MHz, 1 GHz, 4 GHz, 6 GHz</td>
</tr>
<tr>
<td><strong>Input Impedance</strong></td>
<td>ProLink Inputs: 50 Ω ±2% for ≤ 100 mV/div, 50 Ω ±3% for &gt; 100 mV/div</td>
<td>ProLink Inputs: 50 Ω ±2% for ≤ 100 mV/div, 50 Ω ±3% for &gt; 100 mV/div</td>
<td>ProLink Inputs: 50 Ω ±2% for ≤ 100 mV/div, 50 Ω ±3% for &gt; 100 mV/div</td>
<td>ProLink Inputs: 50 Ω ±2% for ≤ 100 mV/div, 50 Ω ±3% for &gt; 100 mV/div</td>
</tr>
<tr>
<td><strong>Input Coupling</strong></td>
<td>ProLink Inputs: 50 Ω: DC, GND</td>
<td>ProLink Inputs: 50 Ω: DC, GND</td>
<td>ProLink Inputs: 50 Ω: DC, GND</td>
<td>ProLink Inputs: 50 Ω: DC, GND</td>
</tr>
<tr>
<td><strong>Maximum Input Voltage</strong></td>
<td>50 Ω (ProLink): ±2 V max. @ ≤ 100 mV/div, 5.5 Vrms @ &gt; 100 mV/div</td>
<td>50 Ω (ProLink): ±2 V max. @ ≤ 100 mV/div, 5.5 Vrms @ &gt; 100 mV/div</td>
<td>50 Ω (ProLink): ±2 V max. @ ≤ 100 mV/div, 5.5 Vrms @ &gt; 100 mV/div</td>
<td>50 Ω (ProLink): ±2 V max. @ ≤ 100 mV/div, 5.5 Vrms @ &gt; 100 mV/div</td>
</tr>
<tr>
<td></td>
<td>50 Ω (ProBus): ±5 V max, 3.5 Vrms</td>
<td>50 Ω (ProBus): ±5 V max, 3.5 Vrms</td>
<td>50 Ω (ProBus): ±5 V max, 3.5 Vrms</td>
<td>50 Ω (ProBus): ±5 V max, 3.5 Vrms</td>
</tr>
<tr>
<td></td>
<td>1 MΩ (ProBus): 250 V max. (peak AC: &lt; 10 kHz + DC)</td>
<td>1 MΩ (ProBus): 250 V max. (peak AC: &lt; 10 kHz + DC)</td>
<td>1 MΩ (ProBus): 250 V max. (peak AC: &lt; 10 kHz + DC)</td>
<td>1 MΩ (ProBus): 250 V max. (peak AC: &lt; 10 kHz + DC)</td>
</tr>
<tr>
<td><strong>Channel-Channel Isolation</strong></td>
<td>DC to 10 GHz: 50 dB (&gt; 315:1)</td>
<td>10 to 15 GHz: 46 dB (&gt; 200:1)</td>
<td>15 to 20 GHz: 40 dB (&gt; 100:1)</td>
<td>(For any two ProLink input channels, same or different v/div settings, typical)</td>
</tr>
<tr>
<td></td>
<td>(For any two ProLink input channels, same or different v/div settings, typical)</td>
<td>(For any two ProLink input channels, same or different v/div settings, typical)</td>
<td>(For any two ProLink input channels, same or different v/div settings, typical)</td>
<td>(For any two ProLink input channels, same or different v/div settings, typical)</td>
</tr>
<tr>
<td><strong>Vertical Resolution</strong></td>
<td>8 bits up to 11 bits with enhanced resolution (ERES)</td>
<td>8 bits up to 11 bits with enhanced resolution (ERES)</td>
<td>8 bits up to 11 bits with enhanced resolution (ERES)</td>
<td>8 bits up to 11 bits with enhanced resolution (ERES)</td>
</tr>
</tbody>
</table>
## SPECIFICATIONS

### Vertical System

<table>
<thead>
<tr>
<th>WaveMaster 816Zi-B (SDA)</th>
<th>WaveMaster 820Zi-B (SDA, DDA)</th>
<th>WaveMaster 825Zi-B (SDA)</th>
<th>WaveMaster 830Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog Bandwidth @ 50 Ω (-3 dB) (2.92 mm input)</td>
<td>16 GHz (≈ 10 mV/div)</td>
<td>20 GHz (≈ 10 mV/div)</td>
<td>20 GHz (≈ 10 mV/div)</td>
</tr>
<tr>
<td>Analog Bandwidth @ 50 Ω (-3 dB) (ProLink Input)</td>
<td>3.5 GHz (≈ 10 mV/div)</td>
<td>3.5 GHz (≈ 10 mV/div)</td>
<td>3.5 GHz (≈ 10 mV/div)</td>
</tr>
<tr>
<td>Analog Bandwidth @ 1 MΩ (-3 dB) (ProBus Input)</td>
<td>500 MHz (typical, ≈ 2 mV/div)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rise Time (10–90%, 50 Ω)</td>
<td>28.5 ps (test limit, flatness mode)</td>
<td>22 ps (test limit, flatness mode)</td>
<td>17.5 ps (test limit, flatness mode)</td>
</tr>
<tr>
<td>Rise Time (20–80%, 50 Ω)</td>
<td>21.5 ps (flatness mode)</td>
<td>16.5 ps (flatness mode)</td>
<td>13 ps (flatness mode)</td>
</tr>
<tr>
<td>Input Channels</td>
<td>4 (Any combination of ProLink and ProBus inputs)</td>
<td>4 (Any combination of ProLink or 3.5 GHz ProBus inputs), 3 (1 @ full BW, 2 with ProLink or ProBus input), or 2 (@ full BW)</td>
<td></td>
</tr>
</tbody>
</table>

### Bandwidth Limiters

| 40 GS/s mode: 20 MHz, 200 MHz, 1 GHz, 4 GHz, 6 GHz, 8 GHz, 13 GHz, 16 GHz | 40 GS/s mode: 20 MHz, 200 MHz, 1 GHz, 4 GHz, 6 GHz, 8 GHz, 13 GHz, 16 GHz | For ≤ 20 GHz Mode: 20 MHz, 200 MHz, 1 GHz, 4 GHz, 6 GHz, 8 GHz, 13 GHz, 16 GHz | For > 20 GHz Mode: 20 GHz |

### Input Impedance

| ProLink Inputs: 50 Ω ±2% for ≤ 100 mV/div, 50 Ω ±3% for > 100 mV/div | 50 Ω ±2% or 1 MΩ || 16 pF, 1 MΩ || 11 pF with supplied Probe |
| ProBus Inputs: 50 Ω ±2% or 1 MΩ || 16 pF, 1 MΩ || 11 pF with supplied Probe |

### Input Coupling

| ProLink Inputs: 50 Ω, DC, GND | 50 Ω, DC, GND |
| ProBus Inputs: 1 MΩ, AC, DC, GND | 50 Ω, DC, GND |
| ProBus Inputs: 1 MΩ, AC, DC, GND |

### Maximum Input Voltage

| 50 Ω (ProLink): ±2 V max. @ ≤ 100 mV/div, 5.5 Vrms @ > 100 mV/div | 50 Ω (ProBus): ±5 V max., 3.5 Vrms |
| 1 MΩ (ProBus): 250 V max. (peak AC: < 10 kHz + DC) |
| ±2 V max. @ ≤ 100 mV/div, 5.5 Vrms @ > 100 mV/div | 50 Ω (ProLink): ±2 Vmax @ ≤ 100 mV/div, 5.5 Vrms @ > 100 mV/div |
| 50 Ω (ProBus): ±5 Vmax, 3.5 Vrms | 1 MΩ (ProBus): 250 Vmax (peak AC: < 10 kHz + DC) |

### Channel-Channel Isolation

| DC to 10 GHz: 50 dB (> 315:1) | 50 dB (> 315:1) |
| 10 to 15 GHz: 46 dB (> 200:1) | 46 dB (> 200:1) |
| 15 to 20 GHz: 40 dB (> 100:1) | 40 dB (> 100:1) |

### Vertical Resolution

8 bits up to 11 bits with enhanced resolution (ERES)
### Vertical System (cont’d)

<table>
<thead>
<tr>
<th></th>
<th>WaveMaster 804Zi-B (SDA)</th>
<th>WaveMaster 806Zi-B (SDA/DDA)</th>
<th>WaveMaster 808Zi-B (SDA/DDA)</th>
<th>WaveMaster 813Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sensitivity</strong></td>
<td>50 Ω (ProLink): 2 mV–1 V/div, fully variable (2–9.9 mV/div via zoom)</td>
<td>50 Ω (ProBus): 2 mV–1 V/div, fully variable</td>
<td>1 MΩ (ProBus): 2 mV–10 V/div, fully variable</td>
<td>50 Ω (ProBus): 2 mV–1 V/div, fully variable</td>
</tr>
<tr>
<td><strong>DC Vertical Gain Accuracy</strong></td>
<td>±1% F.S. (typical), offset at 0 V; ±1.5% F.S. (test limit), offset at 0 V</td>
<td>±1% F.S. (typical), offset at 0 V; ±1.5% F.S. (test limit), offset at 0 V</td>
<td>±1% F.S. (typical), offset at 0 V; ±1.5% F.S. (test limit), offset at 0 V</td>
<td>±1% F.S. (typical), offset at 0 V; ±1.5% F.S. (test limit), offset at 0 V</td>
</tr>
<tr>
<td><strong>Vertical Noise Floor</strong></td>
<td>0.75 mV\text{rms} (typical)</td>
<td>0.93 mV\text{rms} (typical)</td>
<td>1.05 mV\text{rms} (typical)</td>
<td>1.21 mV\text{rms} (typical)</td>
</tr>
<tr>
<td><strong>Offset Range</strong></td>
<td>50 Ω (ProLink): ±500 mV @ 2–100 mV/div</td>
<td>±4 V @ &gt; 100 mV/div–1 V/div</td>
<td>±500 mV @ 2–100 mV/div</td>
<td>±4 V @ &gt; 100 mV/div–1 V/div</td>
</tr>
<tr>
<td></td>
<td>50 Ω (ProBus): ±750 mV @ 2–100 mV/div</td>
<td>±4 V @ &gt; 100 mV/div–1 V/div</td>
<td>1 MΩ: ±1 V @ 2–140 mV/div</td>
<td>±10 V @ 142 mV–1.40 V/div</td>
</tr>
<tr>
<td></td>
<td></td>
<td>±10 V @ 1.42 V–10 V/div</td>
<td></td>
<td>±100 V @ 1.42 V–10 V/div</td>
</tr>
<tr>
<td><strong>DC Vertical Offset Accuracy</strong></td>
<td>±(1.5% of offset setting + 1.5% F.S. + 1 mV) (test limit)</td>
<td>±(1.5% of offset setting + 1.5% F.S. + 1 mV) (test limit)</td>
<td>±(1.5% of offset setting + 1.5% F.S. + 1 mV) (test limit)</td>
<td>±(1.5% of offset setting + 1.5% F.S. + 1 mV) (test limit)</td>
</tr>
</tbody>
</table>

### Horizontal System

<table>
<thead>
<tr>
<th><strong>Timebases</strong></th>
<th>Internal time base common to 4 input channels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time/Division Range</strong></td>
<td>20 ps/div–128 s/div, depending on memory length</td>
</tr>
<tr>
<td><strong>Real-time Mode</strong></td>
<td>20 ps/div–64 s/div;</td>
</tr>
<tr>
<td><strong>RIS Mode</strong></td>
<td>20 ps/div–10 ns/div; user selectable at ≤ 10 ns/div;</td>
</tr>
<tr>
<td><strong>Roll Mode</strong></td>
<td>100 ms/div up to 128 s/div, user selectable at ≥ 100 ms/div and ≤ 5 MS/s</td>
</tr>
</tbody>
</table>

| **Clock Accuracy** | < 1 ppm + (aging of 0.5 ppm/yr from last calibration) |
| **Sample Clock Jitter** | Up to 10μs Acquired Time Range: 100 fsrms (Internal Timebase Reference) |
|                       | Up to 6.4μs Acquired Time Range: 150 fsrms (Internal Timebase Reference) |

### Delta Time Measurement Accuracy

\[
\Delta T = \left( \frac{\text{Noise}}{\text{SlewRate}} \right)^2 + (\text{Sample Clock Jitter}_{\text{rms}})^2 + (\text{clock accuracy} \times \text{reading})^2
\]

### Jitter Measurement Floor

\[
\text{Jitter}_{\text{rms}}\text{rms} = \sqrt{2 + \left( \frac{\text{Noise}}{\text{SlewRate}} \right)^2 + (\text{Sample Clock Jitter}_{\text{rms}})^2}
\]

### Jitter Between Channels (TIE, typical, measured at maximum bandwidth)

<table>
<thead>
<tr>
<th></th>
<th>WaveMaster 804Zi-B (SDA)</th>
<th>WaveMaster 806Zi-B (SDA/DDA)</th>
<th>WaveMaster 808Zi-B (SDA/DDA)</th>
<th>WaveMaster 813Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt;500 fs_{\text{rms}}</strong></td>
<td>&gt;500 fs_{\text{rms}}</td>
<td>&gt;450 fs_{\text{rms}}</td>
<td>&gt;425 fs_{\text{rms}}</td>
<td>&gt;325 fs_{\text{rms}}</td>
</tr>
</tbody>
</table>

### Trigger and Interpolator Jitter

<0.1 ps_{\text{rms}} (typical, software assisted), 2 ps_{\text{rms}} (typical, hardware)

### Channel-Channel Deskew Range

±9 x time/div. setting or 25 ns max. (whichever is larger), each channel

### External Time base Reference (Input)

10 MHz; 50 Ω impedance, applied at the rear input

### External Time base Reference (Output)

10 MHz; 50 Ω impedance, output at the rear
### Vertical System (cont’d)

<table>
<thead>
<tr>
<th>WaveMaster 816Zi-B (SDA)</th>
<th>WaveMaster 820Zi-B (SDA, DDA)</th>
<th>WaveMaster 825Zi-B (SDA)</th>
<th>WaveMaster 830Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sensitivity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 Ω (ProLink) at 40 GS/s:</td>
<td>2 mV–1 V/div, fully variable</td>
<td>50 Ω (ProLink):</td>
<td>10 mV–500 mV/div, fully variable</td>
</tr>
<tr>
<td></td>
<td>(2-9.9 mV/div via zoom)</td>
<td>2 mV–1 V/div, fully variable (2-9.9 mV/div via zoom)</td>
<td></td>
</tr>
<tr>
<td>50 Ω (ProLink) at 80 GS/s:</td>
<td>2 mV–1 V/div, fully variable</td>
<td>50 Ω (ProBus):</td>
<td>2 mV–1 V/div, fully variable</td>
</tr>
<tr>
<td></td>
<td>(2-19.9 mV/div via zoom)</td>
<td>2 mV–10 V/div, fully variable</td>
<td></td>
</tr>
<tr>
<td>50 Ω (ProBus):</td>
<td>2 mV–9.9 mV/div via zoom</td>
<td>1 MΩ (ProBus):</td>
<td>2 mV–10 V/div, fully variable</td>
</tr>
<tr>
<td>1 MΩ (ProBus):</td>
<td>2 mV–10 V/div, fully variable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DC Vertical Gain Accuracy

(Gain Component of DC Accuracy)

<table>
<thead>
<tr>
<th>Vertical Noise Floor (50 mV/div)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.28 mVrms (typical)</td>
</tr>
</tbody>
</table>

### Offset Range

<table>
<thead>
<tr>
<th>Offset Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Ω (ProLink):</td>
</tr>
<tr>
<td>±500 mV @ 2–100 mV/div</td>
</tr>
<tr>
<td>±4 V @ &gt; 100 mV/div–1 V/div</td>
</tr>
<tr>
<td>50 Ω (ProBus):</td>
</tr>
<tr>
<td>±750 mV @ 2–100 mV/div</td>
</tr>
<tr>
<td>±4 V @ &gt; 100 mV/div–1 V/div</td>
</tr>
<tr>
<td>1 MΩ:</td>
</tr>
<tr>
<td>±1 V @ 2–140 mV/div</td>
</tr>
<tr>
<td>±10 V @ 142 mV–1.40 V/div</td>
</tr>
<tr>
<td>±100 V @ 1.42 V–10 V/div</td>
</tr>
</tbody>
</table>

### DC Vertical Offset Accuracy

±(1.5% of offset setting + 1.5% F.S. + 1 mV) (test limit)

### Horizontal System

<table>
<thead>
<tr>
<th>Timebases Internal time base common to 4 input channels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time/Division Range</strong></td>
</tr>
<tr>
<td>Real-time Mode at 80 GS/s:</td>
</tr>
<tr>
<td>20 ps/div–640 μs/div, depending on memory length</td>
</tr>
<tr>
<td>Real-time Mode at other sample rates:</td>
</tr>
<tr>
<td>20 ps/div–128 s/div, depending on memory length</td>
</tr>
<tr>
<td>RIS Mode: 20 ps/div–10 ns/div; user selectable at ≤ 10 ns/div; Roll Mode: 100 ms/div up to 128 s/div, user selectable at ≤ 100 ms/div and ≤ 5 MS/s</td>
</tr>
</tbody>
</table>

### Clock Accuracy

< 1 ppm + (aging of 0.5 ppm/yr from last calibration)

### Sample Clock Jitter

Up to 10μs Acquired Time Range: 100 fsrms (Internal Timebase Reference)
Up to 6.4μs Acquired Time Range: 150 fsrms (Internal Timebase Reference)

### Delta Time Measurement Accuracy

\[
\sqrt{2} \cdot \left( \frac{\text{Noise}}{\text{SlewRate}} \right)^2 + (\text{Sample Clock Jitter}_{\text{rms}})^2 + \text{(clock accuracy} \cdot \text{reading})
\]

### Jitter Measurement Floor

\[
\sqrt{\left( \frac{\text{Noise}}{\text{SlewRate}} \right)^2 + (\text{Sample Clock Jitter}_{\text{rms}})^2}
\]

### Jitter Between Channels (TIE, typical, measured at maximum bandwidth)

<300 fsrms

### Trigger and Interpolator Jitter

< 0.1 psrms (typical, software assisted), 2 psrms (typical, hardware)

### Channel-Channel Deskew Range

±9 x time/div; setting or 25 ns max. (whichever is larger), each channel

### External Time base Reference (Input)

10 MHz; 50 Ω impedance, applied at the rear input

### External Time base Reference (Output)

10 MHz; 50 Ω impedance, output at the rear
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Acquisition System</th>
<th>WaveMaster 804Zi-B (SDA)</th>
<th>WaveMaster 806Zi-B (SDA/DDA)</th>
<th>WaveMaster 808Zi-B (SDA/DDA)</th>
<th>WaveMaster 813Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Shot Sample Rate/Ch</td>
<td>40 GS/s on 4 Ch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(80 GS/s on 2 Ch using optional WM8Zi-2X80GS External Interleaving Device)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Random Interleaved Sampling (RIS)</td>
<td>200 GS/s for repetitive signals (20 ps/div to 10 ns/div)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Trigger Rate</td>
<td>1,000,000 waveforms/second (in Sequence Mode, up to 4 channels)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersegment Time</td>
<td>1 µs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Acquisition Memory</td>
<td>256 Mpts/Ch</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Standard Memory**
- WaveMaster: 32 Mpts, 5,000 segments max
- SDA models: 64 Mpts, 15,000 segments max
- DDA models: 128 Mpts, 15,000 segments max

(Memory and Sample Rate can be doubled in 1 or 2 Ch mode with use of WM8Zi-2X80GS External Interleaving Device)

<table>
<thead>
<tr>
<th>Memory Options</th>
<th>Option</th>
<th>Mem/Ch</th>
<th>Max Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-64</td>
<td>64 Mpts</td>
<td>15,000</td>
<td></td>
</tr>
<tr>
<td>L-128</td>
<td>128 Mpts</td>
<td>15,000</td>
<td></td>
</tr>
<tr>
<td>VL-256</td>
<td>256 Mpts</td>
<td>15,000</td>
<td></td>
</tr>
</tbody>
</table>

(Memory and Sample Rate can be doubled in 1 or 2 Ch mode with use of WM8Zi-2X80GS External Interleaving Device)

### Acquisition Processing

- Averaging: Summed averaging to 1 million sweeps continuous averaging to 1 million sweeps
- Enhanced Resolution (ERES): From 8.5 to 11 bits vertical resolution
- Envelope (Extrema): Envelope, floor, or roof for up to 1 million sweeps
- Interpolation: Linear or Sin x/x

### Triggering System

- **Modes**: Normal, Auto, Single, and Stop
- **Sources**: Any input channel, Aux, Aux/10, Line, or Fast Edge. Slope and level unique to each source (except line trigger)
- **Coupling Mode**: DC, AC, HFRej, LFRej
- **Pre-trigger Delay**: 0–100% of memory size (adjustable in 1% increments of 100 ns)
- **Post-trigger Delay**: 0–10,000 divisions in real time mode, limited at slower time/div settings or in roll mode
- **Hold-off by Time or Events**: From 2 ns up to 20 s or from 1 to 99,999,999 events
- **Internal Trigger Range**: ±4.1 div from center
- **Trigger Sensitivity with Edge Trigger 2.92mm Inputs**: Not Applicable

### Triggering System (Ch 1–4) ProBus Inputs

<table>
<thead>
<tr>
<th>Trigger Sensitivity</th>
<th>2 div @ &lt; 3.5 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5 div @ &lt; 1.75 GHz</td>
</tr>
<tr>
<td></td>
<td>1.0 div @ &lt; 200 MHz</td>
</tr>
<tr>
<td>(for DC coupling, ≥ 10 mV/div, 50 Ω)</td>
<td></td>
</tr>
</tbody>
</table>

### Triggering System (Ch 1–4) ProLink Inputs

<table>
<thead>
<tr>
<th>Trigger Sensitivity</th>
<th>2 div @ &lt; 6 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5 div @ &lt; 3 GHz</td>
</tr>
<tr>
<td></td>
<td>1.0 div @ &lt; 200 MHz</td>
</tr>
<tr>
<td>(for DC, AC, LFRej coupling, ≥ 10 mV/div, 50 Ω)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trigger Sensitivity</th>
<th>2 div @ &lt; 8 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5 div @ &lt; 3 GHz</td>
</tr>
<tr>
<td></td>
<td>1.0 div @ &lt; 200 MHz</td>
</tr>
<tr>
<td>(for DC, AC, LFRej coupling, ≥ 10 mV/div, 50 Ω)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trigger Sensitivity</th>
<th>3 div @ &lt; 13 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5 div @ &lt; 3 GHz</td>
</tr>
<tr>
<td></td>
<td>1.0 div @ &lt; 200 MHz</td>
</tr>
<tr>
<td>(for DC, AC, LFRej coupling, ≥ 10 mV/div, 50 Ω)</td>
<td></td>
</tr>
</tbody>
</table>
## SPECIFICATIONS

### Acquisition System

<table>
<thead>
<tr>
<th>WaveMaster 8162i-B (SDA)</th>
<th>WaveMaster 8202i-B (SDA, DDA)</th>
<th>WaveMaster 8252i-B (SDA)</th>
<th>WaveMaster 8302i-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Shot Sample Rate/Ch</td>
<td>40 GS/s on 4 Ch</td>
<td>80 GS/s on 2 Ch</td>
<td>40 GS/s on 4 Ch</td>
</tr>
<tr>
<td>Random Interleaved Sampling (RIS)</td>
<td>200 GS/s for repetitive signals (20 ps/div to 10 ns/div)</td>
<td></td>
<td>For ≥ 25 GHz Mode: Not applicable</td>
</tr>
<tr>
<td>For &lt; 25 GHz Mode: 200 GS/s for repetitive signals (20 ps/div to 10 ns/div)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Maximum Trigger Rate
1,000,000 waveforms/second (in Sequence Mode, up to 4 channels)

### Intersegment Time
1 μs

### Maximum Acquisition Memory
- 512 Mpts/Ch (2 Ch operation)

### Standard Memory
- 4 channels: 32 Mpts, 5,000 segments max (SDA: 64 Mpts, 15,000 segments max) (DDA: 128 Mpts, 15,000 segments max)
- 2 channels: (SDA: 128 Mpts, 15,000 segments max) (DDA: 256 Mpts, 15,000 segments max)

### Memory Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Mem/Ch</th>
<th>Max Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-64</td>
<td>64 Mpts</td>
<td>15,000</td>
</tr>
<tr>
<td>L-128</td>
<td>128 Mpts</td>
<td>15,000</td>
</tr>
<tr>
<td>VL-256</td>
<td>256 Mpts</td>
<td>15,000</td>
</tr>
</tbody>
</table>

### Acquisition Processing

- **Averaging**: Summed averaging to 1 million sweeps continuous averaging to 1 million sweeps
- **Enhanced Resolution (ERES)**: From 8.5 to 11 bits vertical resolution
- **Envelope (Extrema)**: Envelope, floor, or roof for up to 1 million sweeps
- **Interpolation**: Linear or \( \sin x/x \)

### Triggering System

- **Modes**: Normal, Auto, Single, and Stop
- **Sources**: Any input channel, Aux, Aux/10, Line, or Fast Edge. Slope and level unique to each source (except line trigger)
- **Coupling Mode**: DC, AC, HFRej, LFRej
- **Pre-trigger Delay**: 0–100% of memory size (adjustable in 1% increments of 100 ns)
- **Post-trigger Delay**: 0–10,000 divisions in real time mode, limited at slower time/div settings or in roll mode
- **Hold-off by Time or Events**: From 2 ns up to 20 s or from 1 to 99,999,999 events
- **Internal Trigger Range**: ±4.1 div from center

#### Trigger Sensitivity with Edge Trigger

- **2.92mm Inputs**: Not Applicable
- **3 div @ < 15 GHz**
- **1.0 div @ < 200 MHz (for DC coupling, ≥ 10 mV/div, 50 Ω)**
- **2 div @ < 3.5 GHz**
- **1.5 div @ < 1.75 GHz**
- **1.0 div @ < 200 MHz**

#### Trigger Sensitivity with Edge Trigger (Ch 1–4) ProBus Inputs

<table>
<thead>
<tr>
<th>Option</th>
<th>Mem/Ch</th>
<th>Max Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-64</td>
<td>64 Mpts</td>
<td>15,000</td>
</tr>
<tr>
<td>L-128</td>
<td>128 Mpts</td>
<td>15,000</td>
</tr>
<tr>
<td>VL-256</td>
<td>256 Mpts</td>
<td>15,000</td>
</tr>
</tbody>
</table>

#### Trigger Sensitivity with Edge Trigger (Ch 1–4) ProLink Inputs

<table>
<thead>
<tr>
<th>Option</th>
<th>Mem/Ch</th>
<th>Max Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-64</td>
<td>64 Mpts</td>
<td>10,000</td>
</tr>
<tr>
<td>L-128</td>
<td>128 Mpts</td>
<td>15,000</td>
</tr>
<tr>
<td>VL-256</td>
<td>256 Mpts</td>
<td>512 Mpts</td>
</tr>
</tbody>
</table>
# SPECIFICATIONS

<table>
<thead>
<tr>
<th>Triggering System (cont’d)</th>
<th>WaveMaster 804Zi-B (SDA)</th>
<th>WaveMaster 806Zi-B (SDA/DDA)</th>
<th>WaveMaster 808Zi-B (SDA/DDA)</th>
<th>WaveMaster 813Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Trigger</td>
<td>2 div @ &lt; 1 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity (Edge Trigger)</td>
<td>1.5 div @ &lt; 500 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0 div @ &lt; 200 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(for DC, coupling)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Trigger Frequency,</td>
<td>2.0 GHz @ ≥ 10 mV/div (minimum triggerable width 200 ps)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMART Trigger</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External Trigger</td>
<td>Aux (±0.4 V); Aux/10 (±4 V)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Basic Triggers

- **Edge**
  - Triggers when signal meets slope (positive, negative, or either) and level condition
- **Window**
  - Triggers when signal exits a window defined by adjustable thresholds

## TV-Composite Video

- Triggers NTSC or PAL with selectable line and field HDTV (720p, 1080i, 1080p) with selectable frame rate (50 or 60 Hz) and Line or CUSTOM with selectable Fields (1–8), Lines (up to 2000), Frame Rates (25, 30, 50, or 60 Hz), Interlacing (1:1, 2:1, 4:1, 8:1), or Synch Pulse Slope (Positive or Negative)

## SMART Triggers™

- **State or Edge Qualified**
  - Triggers on any input source only if a defined state or edge occurred on another input source. Holdoff between sources is selectable by time or events
- **Qualified First**
  - In Sequence acquisition mode, triggers repeatably on event B only if a defined pattern, state, or edge (event A) is satisfied in the first segment of the acquisition. Holdoff between sources is selectable by time or events
- **Dropout**
  - Triggers if signal drops out for longer than selected time between 1 ns and 20 s
- **Pattern**
  - Logic combination (AND, NAND, OR, NOR) of 5 inputs (4 channels and external trigger input). Each source can be high, low, or don't care. The High and Low level can be selected independently. Triggers at start or end of the pattern

## SMART Triggers with Exclusion Technology

- **Glitch**
  - Triggers on positive or negative glitches with widths selectable as low as 200 ps to 20 s, or on intermittent faults
- **Width (Signal or Pattern)**
  - Triggers on positive, negative, or both widths with widths selectable as low as 200 ps to 20 s, or on intermittent faults
- **Interval (Signal or Pattern)**
  - Triggers on intervals selectable between 1 ns and 20 s
- **Timeout**
  - State/Edge Qualified
  - Triggers on any source if a given state (or transition edge) has occurred on another source. Holdoff between sources is 1 ns to 20 s, or 1 to 99,999,999 events
- **Runt**
  - Trigger on positive or negative runts defined by two voltage limits and two time limits. Select between 1 ns and 20 ns
- **Slew Rate**
  - Trigger on edge rates. Select limits for dV, dt, and slope. Select edge limits between 1 ns and 20 ns
- **Exclusion Triggering**
  - Trigger on intermittent faults by specifying the expected behavior and triggering when that condition is not met

## Cascade (Sequence) Triggering

- **Capability**
  - Arm on “A” event, then Trigger on “B” event. Or Arm on “A” event, then Qualify on “B” event, and Trigger on “C” event. Or Arm on “A” event, then Qualify on “B” then “C” event, and Trigger on “D” event
- **Types**
  - Cascade A then B: Edge, Window, Pattern (Logic) Width, Glitch, Interval, Dropout, or Measurement. Measurement can be on Stage B only.
  - Cascade A then B then C (Measurement): Edge, Window, Pattern (Logic), Width, Glitch, Interval, Dropout, or Measurement. Measurement can be on Stage C only.
  - Cascade A then B then C then D: Edge, Window, Pattern (Logic), Measurement. Measurement can be on Stage D only.
  - Holdoff
  - Holdoff between A and B, B and C, C and D is selectable by time (Tns to 20s) or number of events. Measurement trigger selection as the last stage in a Cascade precludes a holdoff setting between the prior stage and the last stage.

## High-speed Serial Protocol Triggering

- **Data Rates**
  - Option WMB2Z-6GBIT-80b-SYMBOL-TD: 600 Mb/s to 6.5 Gb/s, Channel 4 input only
  - Option WMB2Z-14GBIT-80b-SYMBOL-TD: 600 Mb/s to 14.1 Gb/s, Channel 4 input only
  - (Standard on SDA models: 600 Mb/s to 6.5 Gb/s, Channel 4 input only.
  - Option SDA8Zi-UPG-14GBIT-80b-SYMBOL-TD: 600 Mb/s to 14.1 Gb/s, Channel 4 input only)

- **Pattern Length**
  - 80 bits NRZ, eight 8b/10b symbols, 64b/66b symbol

- **Clock and Data Outputs**
  - No Clock and Data Recovery outputs provided

## Low Speed Serial Protocol Triggering (Optional)

- **I2C, SPI (SPI, SSPI, SIOP), UART-RS232, CAN, LIN, FlexRay, MIL-STD-1553, AudioBus**

## Measurement Trigger

- Select from a large number of measurement parameters trigger on a measurement value with qualified limits. Can be used as only trigger or last event in a Cascade Trigger.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>External Trigger Sensitivity (Edge Trigger)</td>
<td>2 div @ ≤ 1 GHz</td>
<td>1.5 div @ ≤ 500 MHz</td>
<td>1.0 div @ ≤ 200 MHz</td>
<td>(for DC, coupling)</td>
</tr>
<tr>
<td>Max. Trigger Frequency, SMART Trigger</td>
<td>2.0 GHz @ ≥ 10 mV/div (minimum triggerable width 200 ps)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External Trigger Input Range</td>
<td>Aux (±0.4 V), Aux/10 (±4 V)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Basic Triggers

<table>
<thead>
<tr>
<th></th>
<th><strong>WaveMaster 816Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 820Zi-B (SDA, DDA)</strong></th>
<th><strong>WaveMaster 825Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 830Zi-B (SDA)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Triggering System (cont’d)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External Trigger Sensitivity (Edge Trigger)</strong></td>
<td>2 div @ ≤ 1 GHz</td>
<td>1.5 div @ ≤ 500 MHz</td>
<td>1.0 div @ ≤ 200 MHz</td>
<td>(for DC, coupling)</td>
</tr>
<tr>
<td><strong>Max. Trigger Frequency, SMART Trigger</strong></td>
<td>2.0 GHz @ ≥ 10 mV/div (minimum triggerable width 200 ps)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External Trigger Input Range</strong></td>
<td>Aux (±0.4 V), Aux/10 (±4 V)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SMART Triggers™

<table>
<thead>
<tr>
<th></th>
<th><strong>WaveMaster 816Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 820Zi-B (SDA, DDA)</strong></th>
<th><strong>WaveMaster 825Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 830Zi-B (SDA)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State or Edge Qualified</strong></td>
<td>Triggers on any input source only if a defined state or edge occurred on another input source. Holdoff between sources is selectable by time or events.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Qualified First</strong></td>
<td>In Sequence acquisition mode, triggers repeatably on event B only if a defined pattern, state, or edge (event A) is satisfied in the first segment of the acquisition. Holdoff between sources is selectable by time or events.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dropout</strong></td>
<td>Triggers if signal drops out for longer than selected time between 1 ns and 20 s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pattern</strong></td>
<td>Logic combination (AND, NAND, OR, NOR) of 5 inputs (4 channels and external trigger input). Each source can be high, low, or don’t care. The High and Low level can be selected independently. Triggers at start or end of the pattern</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SMART Triggers with Exclusion Technology

<table>
<thead>
<tr>
<th></th>
<th><strong>WaveMaster 816Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 820Zi-B (SDA, DDA)</strong></th>
<th><strong>WaveMaster 825Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 830Zi-B (SDA)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Glitch</strong></td>
<td>Triggers on positive or negative glitches with widths selectable as low as 200 ps to 20 s, or on intermittent faults</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Width (Signal or Pattern)</strong></td>
<td>Triggers on positive, negative, or both widths with widths selectable as low as 200 ps to 20 s or on intermittent faults</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interval (Signal or Pattern)</strong></td>
<td>Triggers on intervals selectable between 1 ns and 20 s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Timeout (State/Edge Qualified)</strong></td>
<td>Triggers on any source if a given state (or transition edge) has occurred on another source. Holdoff between sources is 1 ns to 20 s or 1 to 99,999,999 events.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Runt</strong></td>
<td>Triggers on positive or negative runts defined by two voltage limits and two time limits. Select between 1 ns and 20 ns.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Slew Rate</strong></td>
<td>Triggers on edge rates. Select limits for dV, dt, and slope. Select edge limits between 1 ns and 20 ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exclusion Triggering</strong></td>
<td>Triggers on intermittent faults by specifying the expected behavior and triggering when that condition is not met</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cascade (Sequence) Triggering

<table>
<thead>
<tr>
<th></th>
<th><strong>WaveMaster 816Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 820Zi-B (SDA, DDA)</strong></th>
<th><strong>WaveMaster 825Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 830Zi-B (SDA)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capability</strong></td>
<td>Arm on “A” event, then Trigger on “B” event. Or Arm on “A” event, then Qualify on “B” event, and Trigger on “C” event. Or Arm on “A” event, then Qualify on “B” then “C” event, and Trigger on “D” event.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Types</strong></td>
<td>Cascade A then B: Edge, Window, Pattern (Logic) Width, Glitch, Interval, Dropout, or Measurement. Measurement can be on Stage B only. Cascade A then B then C (Measurement): Edge, Window, Pattern (Logic), Width, Glitch, Interval, Dropout, or Measurement. Measurement can be on Stage C only. Cascade A then B then C then D: Edge, Window, Pattern (Logic), Measurement. Measurement can be on Stage D only.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Holdoff</strong></td>
<td>Holdoff between A and B, B and C, C and D is selectable by time (1 ns to 20 s) or number of events. Measurement trigger selection as the last stage in a Cascade precludes a holdoff setting between the prior stage and the last stage.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### High-speed Serial Protocol Triggering

<table>
<thead>
<tr>
<th></th>
<th><strong>WaveMaster 816Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 820Zi-B (SDA, DDA)</strong></th>
<th><strong>WaveMaster 825Zi-B (SDA)</strong></th>
<th><strong>WaveMaster 830Zi-B (SDA)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Rates</strong></td>
<td>Option WM8Zi-6GBIT-80b-SYMBOL-TD: 600 Mb/s to 6.5 Gb/s, Channel 4 input only</td>
<td>Option WM8Zi-14GBIT-80b-SYMBOL-TD: 600 Mb/s to 14.1 Gb/s, Channel 4 input only (Note: Channel 3 input will capture signal for triggering when oscilloscope is in ≥25 GHz mode)</td>
<td>Standard on SDA models: 600 Mb/s to 6.5 Gb/s, Channel 4 input only. Option SDA8Zi-UPG-14GBIT-80b-SYMBOL-TD: 600 Mb/s to 14.1 Gb/s, Channel 4 input only. (Note: Channel 3 input will capture signal for triggering when oscilloscope is in ≥25 GHz mode)</td>
<td></td>
</tr>
<tr>
<td><strong>Pattern Length</strong></td>
<td>80 bits NRZ, eight 8b/10b symbols, 64b/66b symbol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clock and Data Outputs</strong></td>
<td>No Clock and Data Recovery outputs provided</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Low Speed Serial Protocol Triggering (Optional)

- PC, SPI (SPI, SSPI, SIOP), UART-RS232, CAN, LIN, FlexRay, MIL-STD-1553, AudioBus

### Measurement Trigger

Select from a large number of measurement parameters trigger on a measurement value with qualified limits. Can be used as only trigger or last event in a Cascade Trigger.
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Color Waveform Display</th>
<th>WaveMaster 804 Zi-B (SDA)</th>
<th>WaveMaster 806 Zi-B (SDA/DDA)</th>
<th>WaveMaster 808 Zi-B (SDA/DDA)</th>
<th>WaveMaster 813 Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Color 15.3&quot; flat panel TFT-Active Matrix LCD with high resolution touch screen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>WXGA, 1280 x 768 pixels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Traces</td>
<td>Display a maximum of 16 traces (up to 40 with some software options). Simultaneously display channel, zoom, memory and math traces.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waveform Representation</td>
<td>Sample dots joined, or sample dots only</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Integrated Second Display

Supports touch screen integration of user-supplied second display with split-grid capability. 
(Note: touch screen driver for second display may not be a Fujitsu driver)

### Processor/CPU

<table>
<thead>
<tr>
<th>Type</th>
<th>Intel® CoreTM i7-4770S Quad, 3.1 GHz (up to 3.9 GHz in Turbo mode) (or better)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>8 GB standard for STD memory (32 Mpt), and M-64 memory options up to 32 GB optional</td>
</tr>
</tbody>
</table>

### Operating System

Microsoft Windows® 7 Professional Edition (64-bit)

### Real Time Clock

Date and time displayed with waveform and in hardcopy files. SNTP support to synchronize to precision internal clocks

### Interface

<table>
<thead>
<tr>
<th>Remote Control</th>
<th>Via Windows Automation, or via Teledyne LeCroy Remote Command Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Communication Standard</td>
<td>VXI-11 or VCP, LXI Class C (v1.2) Compliant</td>
</tr>
<tr>
<td>GPIB Port (Optional)</td>
<td>Supports IEEE - 488.2</td>
</tr>
<tr>
<td>LSIB Port (Optional)</td>
<td>Supports PCIe Gen1 x4 protocol with Teledyne LeCroy supplied API</td>
</tr>
<tr>
<td>Ethernet Port</td>
<td>Supports 10/100/1000BaseT Ethernet interface (RJ45 port)</td>
</tr>
<tr>
<td>USB Ports</td>
<td>4 USB 3.0 ports (rear), 3 USB 2.0 ports (front panel) support Windows compatible devices</td>
</tr>
<tr>
<td>External Monitor Port</td>
<td>Full-size DisplayPort connector to support customer-supplied external monitor, includes support for extended desktop operation with second monitor.</td>
</tr>
<tr>
<td>Serial Port</td>
<td>Not Available</td>
</tr>
<tr>
<td>Peripheral Bus</td>
<td>Teledyne LeCroy LBUS standard</td>
</tr>
</tbody>
</table>

### Power Requirements

| Voltage | 100–240 VAC ±10% at 45–66 Hz, 100–120 VAC ±10% at 380–420 Hz, Automatic AC Voltage Selection, Installation Category II |
| Max. Power Consumption | 975 W / 975 VA |

### Environmental

| Temperature (Operating) | +5 °C to +40 °C |
| Temperature (Non-Operating) | −20 °C to +60 °C |
| Humidity (Operating) | 5% to 80% relative humidity (non-condensing) up to +31 °C. Upper limit derates to 50% relative humidity (non-condensing) at +40 °C |
| Humidity (Non-Operating) | 5% to 95% relative humidity (non-condensing) as tested per MIL-PRF-28800F |
| Altitude (Operating) | Up to 10,000 ft. (3048 m) at or below +25 °C |
| Random Vibration (Operating) | 0.5 g rms, 5 Hz to 500 Hz, 15 minutes in each of three orthogonal axes |
| Random Vibration (Non-Operating) | 2.4 g rms, 5 Hz to 500 Hz, 15 minutes in each of three orthogonal axes |
| Functional Shock | 20 g peak, half sine, 11 ms pulse, 3 shocks (positive and negative) in each of three orthogonal axes, 18 shocks total |

### Physical Dimensions

| Dimensions (HWD) | 14” H x 18.4” W x 16” D (355 x 467 x 406 mm) height excludes feet |
| Weight | 51.5 lbs. (23.4 kg) |
| Shipping Weight | 70 lbs. (31.8 kg) |

### Certifications

CE Compliant, UL and cUL listed; conforms to EN 61326, EN 61010-1, EN61010-2-030, UL 61010-1 3rd edition, and CSA C22.2 No. 61010-1-12

### Warranty and Service

3-year warranty calibration recommended annually. Optional service programs include extended warranty, upgrades, and calibration services
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Color Waveform Display</th>
<th>WaveMaster 816Zi-B (SDA)</th>
<th>WaveMaster 820Zi-B (SDA, DDA)</th>
<th>WaveMaster 825Zi-B (SDA)</th>
<th>WaveMaster 830Zi-B (SDA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Color 15.3” flat panel TFT-Active Matrix LCD with high resolution touch screen</td>
<td>WaveMaster 820Zi-B (SDA, DDA)</td>
<td>WaveMaster 825Zi-B (SDA)</td>
<td>WaveMaster 830Zi-B (SDA)</td>
</tr>
<tr>
<td>Resolution</td>
<td>WXGA; 1280 x 768 pixels</td>
<td>WaveMaster 820Zi-B (SDA, DDA)</td>
<td>WaveMaster 825Zi-B (SDA)</td>
<td>WaveMaster 830Zi-B (SDA)</td>
</tr>
<tr>
<td>Number of Traces</td>
<td>Display a maximum of 16 traces (up to 40 with some software options). Simultaneously display channel, zoom, memory and math traces.</td>
<td>WaveMaster 820Zi-B (SDA, DDA)</td>
<td>WaveMaster 825Zi-B (SDA)</td>
<td>WaveMaster 830Zi-B (SDA)</td>
</tr>
<tr>
<td>Waveform Representation</td>
<td>Sample dots joined, or sample dots only</td>
<td>WaveMaster 820Zi-B (SDA, DDA)</td>
<td>WaveMaster 825Zi-B (SDA)</td>
<td>WaveMaster 830Zi-B (SDA)</td>
</tr>
</tbody>
</table>

### Integrated Second Display

Supports touch screen integration of user-supplied second display with split-grid capability. (Note: touch screen driver for second display may not be a Fujitsu driver)

### Processor/CPU

<table>
<thead>
<tr>
<th>Type</th>
<th>Intel® Core™ i7-4770S Quad, 3.1 GHz (up to 3.9 GHz in Turbo mode) (or better)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Memory</td>
<td>8 GB standard for STD memory (32 Mpt), and M-64 memory options</td>
</tr>
<tr>
<td></td>
<td>16 GB standard for L-128 and VL-256 memory options</td>
</tr>
<tr>
<td>Operating System</td>
<td>Microsoft Windows® 7 Professional Edition (64-bit)</td>
</tr>
</tbody>
</table>

### Interface

| Remote Control        | Via Windows Automation, or via Teledyne LeCroy Remote Command Set        |
| Network Communication | VXI-11 or VCP, LXI Class C (v1.2) Compliant                              |
| GPIB Port (Optional)  | Supports IEEE – 488.2                                                    |
| LSIB Port (Optional)  | Supports PCIe Gen1 x4 protocol with Teledyne LeCroy supplied API         |
| Ethernet Port         | Supports 10/100/1000BaseT Ethernet interface (RJ45 port)                 |
| USB Ports             | 4 USB 3.0 ports (rear), 3 USB 2.0 ports (front panel) support Windows compatible devices |
| External Monitor Port | Full-size DisplayPort connector to support customer-supplied external monitor. Includes support for extended desktop operation with second monitor. |
| Serial Port           | Not Available                                                             |
| Peripheral Bus        | Teledyne LeCroy LBUS standard                                             |

### Power Requirements

| Voltage               | 100–240 VAC ±10% at 45–66 Hz, 100–120 VAC ±10% at 380–420 Hz, automatic AC voltage selection, installation category II |
| Max. Power Consumption| 975 W / 975 VA                                                            |
|                       | 1025 W / 1025 VA                                                          |

### Environmental

<table>
<thead>
<tr>
<th>Temperature (Operating)</th>
<th>+5 °C to +40 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (Non-Operating)</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>Humidity (Operating)</td>
<td>5% to 80% relative humidity (non-condensing) up to +31 °C.</td>
</tr>
<tr>
<td>Humidity (Non-Operating)</td>
<td>Upper limit derates to 50% relative humidity (non-condensing) at +40 °C.</td>
</tr>
<tr>
<td>Humidity (Operating)</td>
<td>5% to 95% relative humidity (non-condensing) as tested per MIL-PRF-2880F.</td>
</tr>
<tr>
<td>Altitude (Operating)</td>
<td>Up to 10,000 ft. (3048 m) at or below +25 °C</td>
</tr>
<tr>
<td>Random Vibration (Operating)</td>
<td>0.5 g&lt;sub&gt;rms&lt;/sub&gt; 5 Hz to 500 Hz, 15 minutes in each of three orthogonal axes</td>
</tr>
<tr>
<td>Random Vibration (Non-Operating)</td>
<td>2.4 g&lt;sub&gt;rms&lt;/sub&gt; 5 Hz to 500 Hz, 15 minutes in each of three orthogonal axes</td>
</tr>
<tr>
<td>Functional Shock</td>
<td>20 g&lt;sub&gt;peak&lt;/sub&gt;, half sine, 11 ms pulse, 3 shocks (positive and negative) in each of three orthogonal axes, 18 shocks total</td>
</tr>
</tbody>
</table>

### Physical Dimension

<table>
<thead>
<tr>
<th>Dimensions (HWD)</th>
<th>14” H x 18.4” W x 16” D (355 x 467 x 406 mm) height excludes feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>51.5 lbs. (23.4 kg)</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>70 lbs. (31.8 kg)</td>
</tr>
<tr>
<td></td>
<td>58 lbs. (26.4 kg)</td>
</tr>
</tbody>
</table>

### Certifications

CE Compliant, UL and cUL listed; conforms to EN 61326, EN 61010-1, EN61010-2-030, UL 61010-1 3rd edition, and CSA C22.2 No. 61010-1-12

### Warranty and Service

3-year warranty calibration recommended annually. Optional service programs include extended warranty, upgrades, and calibration services
**SPECIFICATIONS**

### Standard

**Math Tools**

Display up to 8 math function traces (F1 – F8). The easy-to-use graphical interface simplifies setup of up to two operations on each function trace, and function traces can be chained together to perform math-on-math.

- **absolute value**
- **average (summed)**
- **average (continuous)**
- **correlation**
- **derivative**
- **deskew (resample)**
- **difference (–)**
- **enhanced resolution**
- **envelope**
- **exp (base e)**
- **exp (base 10)**
- **floor**
- **integral**
- **interpolate (cubic, quadratic, sin(x)/x)**
- **invert (negative)**
- **log (base e)**
- **log (base 10)**
- **product (x)**
- **ratio (/)**
- **reciprocal**
- **rescale (with units)**
- **roof**
- **square**
- **square root**
- **sum (+)**
- **zoom (identity)**

**Measure Tools**

Display any 12 parameters together with statistics, including their average, high, low, and standard deviations. Histograms provide a fast, dynamic view of parameters and wave shape characteristics. Parameter Math allows addition, subtraction, multiplication, or division of two different parameters.

- **amplitude**
- **area**
- **base**
- **cycles**
- **data delay**
- **Δ delay**
- **duty cycle**
- **duration**
- **falltime (90–10%, 80–20%, @ level)**
- **frequency first**
- **frequency last**
- **level @ x**
- **maximum**
- **mean**
- **median**
- **minimum**
- **narrow band phase**
- **narrow band power**
- **number of points**
- **overshoot**
- **peak-to-peak**
- **period**
- **risetime (10–90%, 20–80%, @ level)**
- **rms**
- **std. deviation**
- **top**
- **width**
- **phase**
- **time @ minimum (min.)**
- **time @ maximum (max.)**
- **Δ time @ level**
- **Δ time @ level from trigger**
- **x @ max.**
- **x @ min.**

**Pass/Fail Testing**

Simultaneously test multiple parameters against selectable parameter limits or pre-defined masks. Pass or fail conditions can initiate actions including document to local or networked files, e-mail the image of the failure, save waveforms, send a pulse out at the front panel auxiliary BNC output, or (with the GPIB option) send a document.

**Basic Jitter and Timing Analysis Tools**

This package provides toolsets for displaying parameter values vs. time, statistical views of parameters using histograms, and persistence view math functions. These tools include:

- "Track" graphs of all parameters, no limitation of number
- Cycle-Cycle Jitter
- N-Cycle
- N-Cycle with start selection
- Frequency @ level
- Histograms expanded with 19 histogram parameters and up to 2 billion events
- Trend (datalog) of up to 1 million events
- Track graphs of all parameters
- Persistence histogram, persistence (range, sigma)

### Standard (cont’d)

**Advanced Customization**

Provides capability to create a math function or measurement parameter in MATLAB, Excel, C++, JavaScript, or Visual Basic Script (VBS) format and insert it into the oscilloscope's processing stream. All results are processed and displayed on the oscilloscope grid, and are available for further processing. Also permits the creation of customized plug-ins that can be inserted into the scope user interface, control of the scope via Visual Basic scripts embedded in customized functions, and use of Teledyne LeCroy's Custom DSO capabilities.

### Software Options

**SDAII Serial Data Analysis Software (WM8Zi-SDAIII)**

(Included in WM8Zi-SDAIII option, Standard on SDA 8 Zi-B and DDA 8 Zi-B Models)

**Total Jitter**

A complete jitter measurement and analysis toolset with the SDAIII CompleteLinQ user interface framework. The CompleteLinQ framework provides a single user interface for “LinQ,” “Crosstalk,” “EyeDrill” and “Virtual Probe” capabilities (purchased separately).

SDAIII provides complete serial data and clock jitter and eye diagram measurement and analysis capabilities. Eye Diagrams with millions of UI are quickly calculated from up to 512 Mpt records, and advanced tools may be used on the Eye Diagram to aid analysis. Complete TIE and Total Jitter (Tj) parameters and analysis functions are provided. Comparison of eye diagrams and jitter analysis between captured lanes and one "reference" location is provided.

- Time Interval Error (TIE) Measurement Parameter, Histogram, Spectrum and Jitter Track
- Total Jitter (Tj) Measurement Parameter, Histogram
- Spectrum
- Eye Diagram Display (sliced)
- Eye DiagramIsoBER (lines of constant Bit Error Rate)
- Eye Diagram Mask Violation Locator
- Eye Diagram Measurement Parameters
  - Eye Height
  - Eye Width
  - Mask hits
  - Zero Level
  - Avg. Power
  - Mask out
  - Eye Amplitude
  - Extinction Ratio
  - Bit Error Rate
  - Slice Width (setting)
- Q-Fit Tail Representation
- Bathtub Curve
- Cumulative Distribution Function (CDF)
- PLL Track

**Jitter Decomposition Models**

Three dual-dirac jitter decomposition methods are provided for maximum measurement flexibility: Q-Scale, CDF, Bathtub Curve, and all jitter decomposition measurement parameters can be displayed using any of the three methods.

- Spectral, Rj Direct
- Spectral, Rj+Dj CDF Fit
- NQ-Scale

**Random Jitter (Rj) and Non-Data Dependent Jitter (Rj+BUj) Analysis**

- Random Jitter (Rj) Meas Param
- Random Jitter (Rj) Spectrum
- Periodic Jitter (Pj) Meas Param
- Periodic Jitter (Pj) Spectrum
- Rj+BUj Histogram
- Pj Inverse FFT

**Deterministic Jitter (Dj) Analysis**

- Deterministic Jitter (Dj) Measurement Parameter
**Software Options (cont’d)**

**SDAII Serial Data Analysis Software (continued)**

**Data Dependent Jitter (DDj) Analysis**
- Data Dependent Jitter (DDj) Param
- Duty Cycle Distortion (DCD) Param
- InterSymbol Interference (ISI) Param
- Digital Pattern display

**Reference Lane**
- Compare current acquisition to Reference with a side-by-side or single (tabbed) display mode

**SDAII “LinQ” Capability**
(SDAII-LinQ, SDAII-CrossLinQ, and SDAII-CompleteLinQ Options)

In addition to all SDAII capabilities, “LinQ” options includes 4 lanes of simultaneous serial data analysis plus the reference lane. If EyeDrII or VirtualProbe are purchased with SDAII “LinQ” capability, then those capabilities are provided for all four lanes.

**Landscape Comparison Mode**
When multiple lanes are enabled for display, Landscape Comparison Modes is used. Selections for this mode are as follows:
- Single: One lane is displayed at a time.
- Dual: Two lanes are selected for display.
- Mosaic: All enabled lanes are displayed.

**SDAII “Crosstalk” Capability**
(Included in SDAII-Crosstalk and SDAII-CrossLinQ Options)

In addition to all SDAII capabilities, “Crosstalk” options add the following noise and crosstalk measurements and analysis tools:
- Total, Random and Deterministic noise (Tn, Rn, Dn) measurements
- InterSymbol Interference noise (ISIn) and Periodic noise (Pn)
- Noise-based eye height and width: EH(BER) and EW(BER)
- Random noise (Rn) + Bounded Uncorrelated noise (BUn) Noise Histogram
- Q-fit for Noise Histogram
- Rn+BUn Noise Spectrum and Peak threshold
- Pn Inverse FFT Plot
- Rn+BUn Noise Track
- Crosstalk Eye Contour Plot

**SDAII-CompleteLinQ**
The ultimate in serial data single or multi-lane link analysis. Provides all the capabilities mentioned above in SDAII, “LinQ”, and “Crosstalk”, and also includes EyeDrII and Virtual Probe capabilities.

**Eye Doctor II Advanced Signal Integrity Tools (WM8Zi-EYEDRII)**
Complete set of channel emulation, de-embedding and receiver equalization simulation tools. Provides capability to emulate a serial data link, de-embed or embed a fixture, cable or serial data channel, add or remove emphasis, and perform CTLE, FFE, or DFE equalization. If purchased with SDAII, then capabilities are accessed from within the SDAII-CompleteLinQ user interface framework.

**Virtual Probe Signal Integrity Tools**
(WM8Zi-VIRTUALPROBE)
Provides ability to define a complex serial data channel or topology with up to six circuit elements that may be embedded or de-embedded, allowing “probing” at a location different than the measured position. If purchased with SDAII and EyeDrII or with the EYEDRII-VP or CompleteLinQ options, then capabilities are accessed from within the single SDAII-CompleteLinQ user interface framework.

---

**Software Options (cont’d)**

**Clock and Clock-Data Timing Jitter Analysis Package**
(WM8Zi-JITKIT)
Provides convenient setup and four views of jitter (statistical, time, spectrum, and overlaid) for a variety of horizontal, amplitude, and timing parameters. Direct display of jitter measurement values. Supports multiple simultaneous views with fast selection of multiple parameter measurements for fast and easy validation.

**Cable De-embedding (WM8Zi-CBL-DE-EMBED)**
(Standard on SDA 8 Zi-B and DDA 8 Zi-B)
Removes cable effects from your measurements. Simply enter the S-parameters or attenuation data of the cable(s) then all of the functionality of the SDA 8 Zi can be utilized with cable effects de-embedded.

**8b/10b Decode (WM8Zi-8B10B D)**
(Standard on SDA 8 Zi-B and DDA 8 Zi-B)
Intuitive, color-coded serial decode with powerful search capability enables captured waveforms to be searched for user-defined sequences of symbols. Multi-lane analysis decodes up to four simultaneously captured lanes.

**Spectrum Analyzer Mode (WM8Zi-SPECTRUM)**
This package provides a new capability to navigate waveforms in the frequency domain using spectrum analyzer type controls. FFT capability added to include:
- Power averaging
- Power density
- Real and image components
- Freq domain parameters
- FFT on up to 128 Mpts

**Disk Drive Measurements Package (WM8Zi-DDM2)**
(Standard on DDA 8 Zi-B)
This package provides disk drive parameter measurements and related mathematical functions for performing disk drive WaveShape Analysis. Disk Drive Parameters are as follows:
- amplitude asymmetry
- local base
- local baseline separation
- local maximum
- local minimum
- local number
- local peak
- local time between events
- local time between peaks
- local time between troughs
- local time at minimum
- local time at maximum
- local time peak-trough
- local time over threshold
- local time trough-peak
- local time under threshold
- narrow band power
- overwrite
- pulse width 50
- pulse width 50 –
- pulse width 50 +
- resolution
- track average amplitude
- track average amplitude –
- track average amplitude +
- auto-correlation s/n
- non-linear transition shift
<table>
<thead>
<tr>
<th>Product Description</th>
<th>Product Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>WaveMaster 8 Zi-B Series Oscilloscopes</td>
<td></td>
</tr>
<tr>
<td>4 GHz, 40 GS/s, 4ch, 32 Mpts/Ch WaveMaster with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs</td>
<td>WaveMaster 804Zi-B</td>
</tr>
<tr>
<td>6 GHz, 40 GS/s, 4ch, 32 Mpts/Ch WaveMaster with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs</td>
<td>WaveMaster 806Zi-B</td>
</tr>
<tr>
<td>8 GHz, 40 GS/s, 4ch, 32 Mpts/Ch WaveMaster with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs</td>
<td>WaveMaster 808Zi-B</td>
</tr>
<tr>
<td>13 GHz, 40 GS/s, 4ch, 32 Mpts/Ch WaveMaster with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs</td>
<td>WaveMaster 813Zi-B</td>
</tr>
<tr>
<td>16 GHz, 80 GS/s, 64 Mpts/Ch DSO with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs also operates in 4ch, 40 GS/s, 32 Mpts/Ch mode.</td>
<td>WaveMaster 816Zi-B</td>
</tr>
<tr>
<td>20 GHz, 80 GS/s, 64 Mpts/Ch DSO with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs also operates in 4ch, 40 GS/s, 32 Mpts/Ch mode.</td>
<td>WaveMaster 820Zi-B</td>
</tr>
<tr>
<td>25 GHz, 80 GS/s, 64 Mpts/Ch Digital Bandwidth Interleaved (DBI) Oscilloscope with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs also operates in 20 GHz, 40 GS/s, 4ch, 32 Mpts/Ch mode.</td>
<td>WaveMaster 825Zi-B</td>
</tr>
<tr>
<td>30 GHz, 80 GS/s, 64 Mpts/Ch Digital Bandwidth Interleaved (DBI) Oscilloscope with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs also operates in 20 GHz, 40 GS/s, 4ch, 32 Mpts/Ch mode.</td>
<td>WaveMaster 830Zi-B</td>
</tr>
<tr>
<td>SDA 8 Zi-B Series Serial Data Analyzers</td>
<td>SDA 804Zi-B</td>
</tr>
<tr>
<td>4 GHz, 40 GS/s, 4ch, 64 Mpts/Ch Serial Data Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs, 6.5 Gb/s Serial Trigger, 8b/10b and 64b/66b decode.</td>
<td>SDA 806Zi-B</td>
</tr>
<tr>
<td>6 GHz, 40 GS/s, 4ch, 64 Mpts/Ch Serial Data Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs, 6.5 Gb/s Serial Trigger, 8b/10b and 64b/66b decode.</td>
<td>SDA 808Zi-B</td>
</tr>
<tr>
<td>8 GHz, 40 GS/s, 4ch, 64 Mpts/Ch Serial Data Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs, 6.5 Gb/s Serial Trigger, 8b/10b and 64b/66b decode.</td>
<td>SDA 813Zi-B</td>
</tr>
<tr>
<td>13 GHz, 40 GS/s, 4ch, 64 Mpts/Ch Serial Data Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs, 6.5 Gb/s Serial Trigger, 8b/10b and 64b/66b decode. Also operates in 4ch, 40 GS/s, 4ch, 32 Mpts/Ch mode.</td>
<td>SDA 816Zi-B</td>
</tr>
<tr>
<td>20 GHz, 80 GS/s, 128 Mpts/Ch Serial Data Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs, 6.5 Gb/s Serial Trigger, 8b/10b and 64b/66b decode. Also operates in 4ch, 40 GS/s, 4ch, 32 Mpts/Ch mode.</td>
<td>SDA 820Zi-B</td>
</tr>
<tr>
<td>25 GHz, 80 GS/s, 128 Mpts/Ch Digital Bandwidth Interleaved (DBI) Serial Data Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs, 6.5 Gb/s Serial Trigger, 8b/10b and 64b/66b decode. Also operates in 4ch, 40 GS/s, 4ch, 32 Mpts/Ch mode.</td>
<td>SDA 825Zi-B</td>
</tr>
<tr>
<td>30 GHz, 80 GS/s, 128 Mpts/Ch Digital Bandwidth Interleaved (DBI) Serial Data Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs, 6.5 Gb/s Serial Trigger, 8b/10b and 64b/66b decode. Also operates in 20 GHz, 40 GS/s, 4ch, 64 Mpts/Ch mode.</td>
<td>SDA 830Zi-B</td>
</tr>
<tr>
<td>DDA 8 Zi-B Series Oscilloscopes</td>
<td>DDA 806Zi-B</td>
</tr>
<tr>
<td>6 GHz, 40 GS/s, 4ch, 64 Mpts/Ch Disk Drive Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs</td>
<td>DDA 806Zi-B</td>
</tr>
<tr>
<td>8 GHz, 40 GS/s, 4ch, 64 Mpts/Ch Disk Drive Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs</td>
<td>DDA 808Zi-B</td>
</tr>
<tr>
<td>20 GHz, 80 GS/s, 128 Mpts/Ch Disk Drive Analyzer with 15.3&quot; WXGA Color Display, 50 Ω and 1 MΩ Inputs also operates in 4ch, 40 GS/s, 64 Mpts/Ch mode.</td>
<td>DDA 820Zi-B</td>
</tr>
</tbody>
</table>

### Included with Standard Configuration

- +10, 500 MHz Passive Probe (Qty. 4 on 4 – 20 GHz units, Qty. 2 on 25 – 45 GHz units)

### Product Description

- SMA Adapter: 4 each (for 4 – 8 GHz units)
- LPA-SMA-A
- Prolink to K/2.92 mm Adapter: 4 each (for 13 – 45 GHz units)
- LPA-K-A
- Optical 3-button Wheel Mouse, USB 2.0
- Protective Front Cover
- Printed Getting Started Manual
- Anti-virus Software (Trial Version)
- Microsoft Windows 7 License
- Commercial NIST Traceable Calibration with Certificate
- Power Cable for the Destination Country
- 3-year Warranty

### Memory and Sample Rate Options

- Upgrade from 160 GB Hard Drive to 500 GB Hard Drive
  - WM8Zi-500GB-HD
- GPS Option for Tekeleyn LeCroy Oscilloscope.
  - GPIB-4
- Half-height Card
- 8 GB to 16 GB CPU RAM Option
  - WM8Zi-8-UPG-16GBRAM
- 8 GB to 32 GB CPU RAM Option
  - WM8Zi-8-UPG-32GBRAM

### Serial Data and CrossTalk Analysis

- Complete Multi-Lane SDA LinQ Framework, including Eye, Jitter, Noise, Crosstalk Measurements, with EyeDrill and VirtualProbe
  - WM8Zi-SDAIII-CompleteLinQ
  - SDA8Zi-CompleteLinQ
  - DDA8Zi-CompleteLinQ
- Multi-Lane Serial Data Analysis LinQ Framework, Eye, Jitter, Noise, and Crosstalk Measurements
  - WM8Zi-SDAIII-CrossTalkLinQ
  - SDA8Zi-CrossTalkLinQ
  - DDA8Zi-CrossTalkLinQ
- Multi-Lane Serial Data Analysis LinQ Framework, Eye and Jitter Measurements
  - WM8Zi-SDAIII-LinQ
  - SDA8Zi-LinQ
  - DDA8Zi-LinQ
- Single-Lane Serial Data Analysis Framework, Eye, Jitter, Noise and Crosstalk Measurements
  - WM8Zi-SDAIII-CrossTalk
  - SDA8Zi-CrossTalk
  - DDA8Zi-CrossTalk
- Single-Lane Serial Data Analysis Framework, Eye and Jitter Measurements
  - WM8Zi-SDAIII
- PAM4 Signal Analysis
  - WM8Zi-PAM4

### Signal Integrity Toolkits

- Advanced De-embedding, Emulation and Virtual Probing Toolkit
  - WM8Zi-VIRTUALPROBE
- Signal Integrity Toolkit - Channel & Fixture De-embedding/Emulation, Tx/Rx Equalization
  - WM8Zi-EYEDRII
- Bundle - EyeDrill and VirtualProbe Toolkits
  - WM8Zi-EYEDRII-VP
- Cable De-embed Option
  - WM8Zi-CBL-DE-EMBED

### Modulated Signal Analysis

- VectorLinQ – Flexible vector signal analysis for electrical signals (RF and baseband I/Q)
  - WM8Zi-VECTORLINQ
- OpticalLinQ – Coherent optical modulation analysis
  - WM8Zi-OPTICAL-LINQ
### Product Description | Product Code
---|---
**High-speed Digital Analyzer Systems**
- 12.5 GS/s High-speed Digital Analyzer with 18ch QuickLink leadset and LBUS connection | HDA125-18-LBUS
- 12.5 GS/s High-speed Digital Analyzer with 9ch QuickLink leadset and LBUS connection | HDA125-9-LBUS

**DDR Debug Toolkits**
- DDR2 and LPDDR2 Debug Toolkit | WMBZI-DDR2-TOOLKIT
- DDR3, DDR3L, LPDDR3, DDR2, and LPDDR2 Debug Toolkit | WMBZI-DDR3-TOOLKIT
- DDR4, DDR3, DDR3L, LPDDR3, DDR2, and LPDDR2 Debug Toolkit | WMBZI-DDR4-TOOLKIT
- DDR3, DDR3L, LPDDR3, DDR2, and LPDDR2 Debug Toolkit Upgrade | WMBZI-UPG-DDR3-TOOLKIT
- DDR4, DDR3, DDR3L, LPDDR3, DDR2, and LPDDR2 Debug Toolkit Upgrade | WMBZI-UPG-DDR4-TOOLKIT

### Serial Data Compliance
- QualiPHY Enabled 10GBase-KR Software Option | QPHY-10GBase-KR
- QualiPHY Enabled 10GBase-T Software Option | QPHY-10GBase-T
- QualiPHY Enabled BroadR-Reach Software Option | QPHY-BroadR-Reach
- QualiPHY Enabled DDR2 Software Option | QPHY-DDR2
- QualiPHY Enabled DDR3 Software Option | QPHY-DDR3
- QualiPHY Enabled DDR4 Software Option | QPHY-DDR4
- QualiPHY Enabled HDMI 1.4 and HDMI 2.0 Software Option | QPHY-HDMI2
- QualiPHY Enabled LPDDR2 Software Option | QPHY-LPDDR2
- QualiPHY Enabled MIPI D-PHY Software Option | QPHY-MIPI-DPHY
- QualiPHY Enabled MIPI M-PHY Software Option | QPHY-MIPI-MPHY
- QualiPHY Enabled MOST50 ePHY Software Option | QPHY-MOST50
- QualiPHY Enabled MOST150 oPHY Software Option | QPHY-MOST150
- QualiPHY Enabled PCIe 3.0 Software Option | QPHY-PCIe3
- QualiPHY Enabled PCIe Gen1 Software Option | QPHY-PCIe
- QualiPHY Enabled SATA Software Option | QPHY-SATA-TSG-RSG
- QualiPHY Enabled SAS-2 Software Option | QPHY-SAS2
- QualiPHY Enabled SAS-3 Software Option | QPHY-SAS3
- QualiPHY Enabled SFI Software Option | QPHY-SFI
- QualiPHY Enabled USB 2.0 Software Option | QPHY-USB2
- QualiPHY Enabled USB 3.0 Transmitter / Receiver Compliance Software Option | QPHY-USB3-Tx-Rx
- QualiPHY Enabled USB 3.1 Transmitter / Receiver Compliance Software Option | QPHY-USB3-1-Tx-Rx
* TF-ENET-B required. † TF-HDMI-3.3V-QUADPAK required. ‡ TF-USB-B required. 

### Serial Data Test Fixtures
- Test Fixture for 10GBase-T | TF-10GBase-T
- 10/100/1000Base-T Ethernet Test Fixture | TF-ENET-B
- Telecom Adapter Kit 100 Ω Bal., 120 Ω Bal., 75 Ω Unbal. | TF-ET
- HDMI 50Ω Pull-Up Terminator | TF-HDMI-50Ω
- HDMI Pull-Up Terminator Quad Pack | TF-HDMI-3.3V-QUADPAK
- SATA 1.5 Gb/s, 3.0 Gb/s and 6.0 Gb/s Compliance Test Fixture | TF-SATA-C
- SATA 1.5 Gb/s, 3.0 Gb/s and 6.0 Gb/s Compliance Test Fixture Measure Kit | TF-SATA-C-KIT
- USB 2.0 Compliance Test Fixture | TF-USB-B
- USB 3.0 and 3.1 Compliance Test Fixture | TF-USB3
- 2 x BNC to SMA Adapter | ENET-2ADA-BNC-2B
- 2 x 18 inch SMA to SMA Cable | ENET-2CAB-SMA018
- 2 x 36 inch SMA to SMA Cable | ENET-2CAB-SMA036
- 100 ps Rise Time Filter | RISE-TIME-FILTER-100PS
- 150 ps Rise Time Filter | RISE-TIME-FILTER-150PS
- 20 dB SMA Attenuators | 20DB-SMA-ATTENUATOR

*Includes ENET-2CAB-SMA018 and ENET-2ADA-BNC-2B.
ORDERING INFORMATION

Product Description | Product Code  
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Serial Data Triggers and Decoders  
SPMI Decode Option | WM8Zi-SPMIbus D  
UART and RS-232 Trigger and Decode Option | WM8Zi-UART-RTS232bus TD  
UART/RS-232 Trigger, Decode, Measure/Graph, and Eye Diagram Option | WM8Zi-UART-RTS232bus TDME  
MIPI UniPro Protocol Decoder | WM8Zi-UNIPRObus D  
USB2-HSIC Decode Option | WM8Zi-USB2-HSICbus D  
USB 2.0 Decode Option | WM8Zi-USB2bus D  
USB 2.0 Decode, Measure/Graph, and Eye Diagram Option | WM8Zi-USB2BUS DME  
USB 3.0 Decode Annotation Option | WM8Zi-USB3bus D  
High-speed Digitizer Output  
High-speed PCIe Gen1 x4 Digitizer Output | LSIB-1  
PCI Express x1 Host Interface Board for Desktop PC | LSIB-HOSTBOARD  
PCI Express x1 Express Card Host Interface for Laptop Express Card Slot | LSIB-HOSTCARD  
PCI Express x4 3-meter Cable with x4 Cable Connectors Included | LSIB-CABLE-3M  
PCI Express x4 7-meter Cable with x4 Cable Connectors Included | LSIB-CABLE-7M  
Mixed Signal Testing Options  
500 MHz, 2 GS/s, 18 Ch, 50 Mpts/Ch | MS-500  
250 MHz, 1 GS/s, 36 Ch, 25 Mpts/Ch | MS-500-36  
250 MHz, 1 GS/s, 18 Ch, 10 Mpts/Ch | MS-250  
General Purpose and Application Specific Software Options  
Spectrum Analysis Option | WM8Zi-SPECTRUM  
Coherent Optical Analysis Software | WM8Zi-OPTICAL-LINO  
Digital Filter Software Package | WM8Zi-DFP2  
Serial Data Mask Software Package | WM8Zi-SDM  
Disk Drive Measurements Software Package | WM8Zi-DDM2  
Advanced Optical Recording Measurement Package | WM8Zi-BORM  
Electrical Telecom Mask Test Software Package | WM8Zi-ETPMT  
EMC Pulse Parameter Software Package | WM8Zi-EMC  
Power Analysis Option | WM8Zi-PWR  
Clock Jitter Analysis with Four Views Software Package | WM8Zi-JITKIT  
General Accessories  
Keyboard, USB | KYBD-1  
Probe Deskew and Calibration Test Fixture | TF-DSQ  
Hard Carrying Case | WM8Zi-HARDCASE  
Soft Carrying Case | WM8Zi-SOFTCASE  
Rackmount Accessory for WM8Zi | WM8Zi-RACKMOUNT  
ProLink to SMA Adapter | LPA-SMA-A  
Kit of ProLink to SMA Adapters | LPA-SMA-KIT-A  
ProLink to K/2.92 mm Adapter | LPA-K-A  
Kit of ProLink to K/2.92 mm Adapters | LPA-K-KIT-A  
Oscilloscope Cart with Additional Shelf and Drawer | OCC1024-A  
Oscilloscope Cart | OCC1021-A  
Probes and Probe Accessories  
High Voltage Fiber Optic Probe, 60 MHz Bandwidth | HVFO103  
Power/Voltage Rail Probe, 4 GHz bandwidth, 1/2x attenuation, +/-30V offset, +/-800mV | RPF430  
1.0 GHz, 0.9 pF, 1 MΩ High Impedance Active Probe | ZS1000  
1.5 GHz, 0.9 pF, 1 MΩ High Impedance Active Probe | ZS1500  
2.5 GHz, 0.9 pF, 1 MΩ High Impedance Active Probe | ZS2500  
4.0 GHz, 0.6 pF, 1 MΩ High Impedance Active Probe | ZS4000  
200 MHz, 3.5 pF, 1 MΩ Active Differential Probe | ZD2000  
25 MHz High Voltage Differential Probe | HVSD102  
1kV, 25 MHz High Voltage Differential Probe without tip Accessories | HVSD102-NOACC  
120 MHz High Voltage Differential Probe | HVSD106  
1kV, 120 MHz High Voltage Differential Probe without tip Accessories | HVSD106-NOACC  
90 MHz, High Voltage Differential Probe with 6m cable | HVSD3106-6M  
2kV, 120 MHz High Voltage Differential Probe | HVSD3206  
2kV, 80 MHz High Voltage Differential Probe with 6m cable | HVSD3206-6M  
6kV, 100 MHz High Voltage Differential Probe | HVSD3605  
500 MHz, 1.0 pF Active Differential Probe, ±8 V | ZD500  
1 GHz, 1.0 pF Active Differential Probe, ±8 V | ZD1000  
1.5 GHz, 1.0 pF Active Differential Probe, ±8 V | ZD1500  
WaveLink 4 GHz 2.5 Vp-p Differential Probe System | D410-A-PS  
WaveLink 4 GHz 5 Vp-p Differential Probe System | D420-A-PS  
WaveLink 6 GHz 2.5 Vp-p Differential Probe System | D610-A-PS  
WaveLink 6 GHz 5 Vp-p Differential Probe System | D620-A-PS  
WaveLink 8 GHz 3.5 Vp-p Differential Probe System | D830-PS  
WaveLink 10 GHz 3.5 Vp-p Differential Probe System | D1030-PS  
WaveLink 13 GHz 3.5 Vp-p Differential Probe System | D1330-PS  
WaveLink 13 GHz, 2.0 Vp-p Differential Probe System | D1305-PS  
WaveLink 16 GHz, 2.0 Vp-p Differential Probe System | D1605-PS  
WaveLink 20 GHz, 2.0 Vp-p Differential Probe System | D2005-PS  
WaveLink 25 GHz, 2.0 Vp-p Differential Probe System | D2505-PS  
WaveLink 4 GHz Differential Amplifier Module with Adjustable Tip | D400A-ATT†  
WaveLink 6 GHz Differential Amplifier Module with Adjustable Tip | D600A-ATT†  
WaveLink ProLink Platform/Cable Assembly (4 – 6 GHz) | WLP-Link-CASE  
WaveLink ProBus Platform/Cable Assembly (4 GHz) | WLP-Bus-CASE  
SMA/SMP Lead Set for Dxx30 Probes | Dxx30-SMA-SMP Leads  
Optical-to-Electrical Converter, DC to 9.5 GHz, 785 to 1550 nm | OE695G  
Optical-to-Electrical Converter, DC to 9.5 GHz, 830 to 1600 nm | OE6250G-M  
7.5 GHz Low Capacitance Passive Probe (+10, 1 kΩ, +20, 50 Ω) | PP066  
TekProbe to ProBus Probe Adapter | TPA10  
* For a complete probe, order a WL-Link-CASE Platform/Cable Assembly with the Adjustable Tip Module.  
† For a complete probe, order a WL-Bus-CASE Platform/Cable Assembly with the Adjustable Tip Module.  
A variety of other active voltage and current probes are also available. Consult Teledyne LeCroy for more information.

Customer Service
Teledyne LeCroy oscilloscopes and probes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years and our probes are warranted for one year.

This warranty includes:
- No charge for return shipping
- Long-term 7-year support
- Upgrade to latest software at no charge

Local sales offices are located throughout the world. Visit our website to find the most convenient location.

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