# WaveMaster
# 8620A
# 8600A
# 8500A
# 8300A

*Oscilloscopes*

## Leading Features

- **6, 5, or 3 GHz bandwidth**
- **20 GS/s on all four channels (8620A only)**
- **10 GS/s sampling rate (20 GS/s dual channel mode)**
- **All-SiGe front end (up to 75 ps rise time)**
- **1 ps rms jitter noise floor**
- **1 ppm internal sample clock**
- **X-Stream Technology data transfer is 10–100X faster than other DSOs**
- **Customizable – add your own measurements or functions (VBScript, MATLAB, Mathcad, or Excel) using the optional XMAP software package**
- **< 2.5 ps rms trigger jitter**
- **SiGe trigger circuit**
- **10.4" TFT SVGA color display**
- **100Base-T Ethernet**
- **Intuitive GUI**
- **Win2000 O/S**



*WaveMaster oscilloscopes include an all-SiGe front-end, X-Stream Technology, and extensive customization features. The 8620A model, shown here, has a 20 GS/s per channel sampling rate.*

## Maximum Performance

The WaveMaster® oscilloscope is designed to meet next-generation research and development needs. It is the only high bandwidth scope to include an all-SiGe front end for highest signal fidelity, to use unique X-Stream Technology, to provide fast display updates (up to 100X faster) of your analysis, and to provide the ability to customize the scope with your own measurements or functions. Imagine the power this provides to solve your unique problems and to speed product development. In addition, the WaveMaster DSO contains a SiGe trigger circuit for maximum trigger sensitivity at high bandwidths, and extremely low (< 2.5 ps) trigger jitter. A high stability (1 ppm) internal sample clock ensures the most precise timing measurements. Capture up to 2 Mpts with standard memory, or upgrade to longer memory (up to 48 Mpts) to enable debug and design characterization of complex or rare occurrences in long-duration signals. The 8620A offers a real-time sampling rate of 20 GS/s per channel for unmatched DSO performance. LeCroy's extensive measurement and analysis tool sets, combined with innovative and intuitive displays, make complex WaveShape Analysis simple.

## Maximum Benefits

The high fidelity all-SiGe front end is ideal for use with the fastest, highest bandwidth requirements. Users making timing measurements will appreciate the low trigger jitter and superior timebase stability. The high resolution (800x600 pixel) display, and 20% larger viewing area allow for crisp, clear display of signals. Our unique "Histicons" (small images showing live statistical variations in measurements) enable you to find signal problems you weren't even aware of.

## Probing Solutions

The WaveMaster line is fully compatible with LeCroy's wide assortment of passive and active, single-ended and differential probing solutions, including the new WaveLink family of probes. When used in conjunction with the 7.5 GHz D600 active differential probe, for instance, the 8620A offers 6 GHz system bandwidth at the probe tip. The WaveLink probes also provide the lowest circuit loading and smallest attenuation of any high bandwidth differential probe. Together, WaveMaster and WaveLink provide the highest performance scope/probe combination available.

# WaveMaster 8620A/8600A/8500A/8300A
## Oscilloscopes

## Unprecedented

The precision and fidelity of the WaveMaster front end is unprecedented in a real-time oscilloscope. LeCroy has delivered the first product to truly meet the needs of high-speed digital designers with a combination of exceptional front end, trigger, and timebase performance, together with long memory, X-Stream Technology, and the first true ability to customize your scope to your exact needs.

## Measurement Accuracy – Stable and Precise

The WaveMaster oscilloscope delivers superior timebase performance and the lowest jitter noise floor of any DSO. The most advanced jitter characterization and analysis is possible with the WaveMaster scope's 1 ps rms jitter noise floor and exceptional timebase stability (+/-1 ppm clock accuracy) for short and long record lengths. In addition, very low trigger jitter (< 2.5 ps) contributes to the ease and accuracy of acquiring high-speed signals. A front end that supports a rise time as fast as 75 ps, enables measurement of the fastest signal edges, with high signal fidelity.

## Exceptional Trigger Performance

The WaveMaster SiGe trigger circuit delivers the fastest trigger capability on the market, with a 5 GHz edge trigger bandwidth for capturing fast signals, and superior trigger sensitivity at high bandwidths. The versatile SMART Trigger® captures a variety of signals, including glitches and pulse widths down to 600 ps. The logic trigger makes it easy to trigger on a pattern of up to 5 inputs, or to qualify on 4 signal inputs and trigger on the 5th.
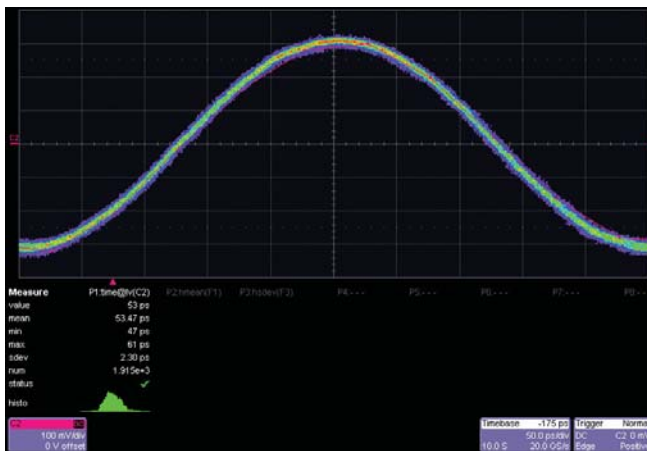


*A 2 GHz sine wave input with persistence "on" demonstrates the exceptionally low trigger jitter on WaveMaster scopes.*

## X-Stream Technology

X-Stream should be a standard feature in every DSO, but it is only available in WaveMaster. X-Stream makes processing of waveform records up to 100X faster than other scopes. Imagine having the ability to see deep memory calculations updated quickly on the screen, and getting fast insight into the source of problems. Innovative views like "Histicons" help you identify signal problems without slowing down your display update. Why would you accept anything less? Leave outdated "viewing" technologies behind and upgrade to X-Stream.

## True Customization

Only the WaveMaster DSO provides the ability to create your own parameter measurements or math functions in the scope's user interface. Unique or proprietary MATLAB, Mathcad, VBScript, or even Excel calculations can be simply selected like any other LeCroy-installed parameter or math function, and the results displayed on the scope screen. It's that easy! Since the resulting waveform is inserted back into the X-Stream processing flow, cursors, measurements, and math can be performed on it, giving much more power and flexibility than a simple export of data to a third party program. LeCroy's advanced features also provide the ability to program the scope using ActiveX Automation language, embedded scripts, and other open Windows features, to create a scope that meets your specific needs. Why accept only connectivity when you can have true customization?



*A user-created MATLAB low-pass filter is easily inserted as function F1 in the WaveMaster user interface.*

## Cursors

LeCroy has responded to demand from oscilloscope users for dedicated cursor knobs and a very flexible selection of cursors. Different cursor modes are easily recalled and set. You can access them from the front panel or the graphical user interface.

## User Interface

The familiar scope controls on the front panel, coupled with a natural, context-sensitive graphical user interface, react quickly to your commands. Functionality is exactly where you expect it to be. If you have questions, the context-sensitive on-line help gives immediate assistance.

# WaveMaster 8620A/8600A/8500A/8300A
## Oscilloscope Specifications (continued)

| Vertical System* | WaveMaster 8620A | WaveMaster 8600A | WaveMaster 8500A | WaveMaster 8300A |
|---|---|---|---|---|
| Analog Bandwidth @ 50 Ω (-3 dB) | 6 GHz | 6 GHz | 5 GHz | 3 GHz |
| Rise Time (typical) | 75 ps | 75 ps | 90 ps | 150 ps |
| Input Channels | | 4 | | |
| Bandwidth Limiters | | 25 MHz; 250 MHz; 1 GHz 3 GHz; 4 GHz | | 25 MHz; 250 MHz; 1 GHz |
| Input Impedance | | 50 Ω ±2.0% | | |
| Input Coupling | | DC, GND | | |
| Maximum Input Voltage | | ±4 Vpeak | | |
| Channel-Channel Isolation | | ≥ 100:1 at 2 GHz; ≥ 40:1 at 3 GHz; ≥ 20:1 at 4 GHz; | | |
| Vertical Resolution | | 8 bits; up to 11 bits with enhanced resolution (ERES) | | |
| Sensitivity | | 2 mV – 1 V/div fully variable | | |
| DC Gain Accuracy | | ±1.5% of Full Scale | | |
| Offset Range | | 2 mV – 194 mV/div: ±750 mV; 195 mV – 1 V/div: ±4 V | | |
| Offset Accuracy | | ±(1.5% of full scale + 1.5% of offset value + 2 mV) | | |

## Horizontal System

| | |
|---|---|
| Timebases | Internal timebase common to 4 input channels; an external clock may be applied at the auxiliary input |
| Time/Division Range | 20 ps/div – 10 s/div |
| Math & Zoom Traces | 4 independent zoom and 4 math/zoom traces standard; 8 math/zoom traces available with XMAP (Master Analysis package) or XMATH (Advanced Math package) |
| Clock Accuracy | ≤ 1 ppm @ 0–40 degrees C |
| Time Interval Accuracy | ≤ 0.06 / SR + (1 ppm * Reading) (rms) |
| Sample Rate & Delay Time Accuracy | ±1 ppm ≤ 10s interval |
| Jitter Noise Floor | 1 ps rms (typical) |
| Trigger & Interpolator Jitter | ≤ 2.5 ps (typical) |
| Channel-Channel Deskew Range | ±4.5 ns |
| External Timebase Reference | 100 MHz; 50 Ω impedance; applied at the rear input |
| External Clock | 30 MHz – 2 GHz; 50 Ω impedance; applied at the auxiliary input |

## Acquisition System

| | |
|---|---|
| Single-Shot Sample Rate/Ch | 20 GS/s / 10 GS/s |
| 2 Channel Max | 20 GS/s |
| Random Interleaved Sampling (RIS) | 200 GS/s for repetitive signals: 20 ps/div – 1 μs/div |
| Maximum Trigger Rate | 150,000 waveforms/second (in Sequence Mode, up to 4 channels) |
| Intersegment Time | ≤ 6 μs |

| Maximum Acquisition Points/Ch Mode) | 4 Ch | ( 2 Ch) / (4 Ch) | Duration @ 20 GS/s | Segments (Sequenc |
|---|---|---|---|---|
| Standard | 2M | 2M / 1M | 0.1 ms | 500 Segments |
| M – Memory Option | 8M | 8M / 4M | 0.4 ms | 1,000 Segments |
| L – Memory Option | 16M | 16M / 8M | 0.8 ms | 5,000 Segments |
| VL – Memory Option | 32M | 32M / 16M | 1.6 ms | 10,000 Segments |
| XL – Memory Option | 48M | 48M / 24M | 2.4 ms | 20,000 Segments |
| XXL – Memory Option | N/A | 100M / 50M | 5.0 ms | 25,000 Segments |

* 8620A and 8600A bandwidth and rise time specifications are for sample speeds ≥ 20 GS/s

## 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, roof for up to 1 million sweeps |

## Triggering System

| | |
|---|---|
| Modes | Normal, Auto, Single, and Stop |
| Sources | Any input channel, External, Ext X10, Ext/10, or line; slope and level unique to each source (except line trigger) |
| Coupling Mode | DC |
| Pre-trigger Delay | 0 – 100% of horizontal time scale |
| Post-trigger Delay | 0 – 10,000 divisions |
| Hold-off by Time or Events | Up to 20 s or from 1 to 99 999 999 events |
| Internal Trigger Range | ±5 div from center |
| Max Trigger Frequency | 5 GHz w/Edge Trigger;  750 MHz w/SMART Trigger (8300A = 3 GHz w/Edge Trigger, 750 MHz w/SMART Trigger) |
| External Trigger Input Range | Aux (±0.4 V); Aux X10 (±0.04 V); Aux / 10 (±4 V) |
| Trigger Sensitivity (Edge) | 3 Divisions @ 5 GHz, 2 Divisions @ 4 GHz, 1.2 Divisions @ 3 GHz (Typical) |

## Basic Triggers

| | |
|---|---|
| Edge/Slope/Line | Triggers when signal meets slope and level condition. |

## SMART Triggers

| | |
|---|---|
| State or Edge Qualified | Triggers on any input source only if a defined state or edge occurred on another input source. Delay between sources is selectable by time or events. |
| Dropout | Triggers if signal drops out for longer than selected time between 2 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 from 600 ps to 20 s or on intermittent faults. |
| Signal or Pattern Width | Triggers on positive or negative pulse widths selectable from 600 ps to 20 s or on intermittent faults. |
| Signal or Pattern Interval | Triggers on intervals selectable between 2 ns and 20 s. |

## Automatic Setup

| | |
|---|---|
| Auto Setup | Automatically sets timebase, trigger, and sensitivity to display a wide range of repetitive signals. |
| Vertical Find Scale | Automatically sets the vertical sensitivity and offset for the selected channels to display a waveform with maximum dynamic range |

# WaveMaster 8620A/8600A/8500A/8300A
## Oscilloscope Specifications (continued)

### Probes

| | |
|---|---|
| Probes | A variety of optional passive and active probes is available. |
| Probe System: ProLink with ProBbus® | Automatically detects and supports a variety of compatible probes; Supports ProLink-SMA and ProLink-BNC input adapters. |
| Scale Factors | Automatically or manually selected depending on probe used. |

### Color Waveform Display

| | |
|---|---|
| Type | Color 10.4" flat-panel TFT-LCD with high resolution touch screen |
| Resolution | SVGA; 800 x 600 pixels |
| Realtime Clock | Dates, hours, minutes, seconds displayed with waveform. SNTP support to synchronize to precision internet clocks |
| Number of Traces | Display a maximum of 8 traces. Simultaneously display channel, zoom, memory, and math traces. |
| Grid Styles | Auto, Single, Dual, Quad, Octal, XY, Single + XY, Dual + XY |
| Waveform Styles | Sample dots joined or dots only |

### Analog Persistence Display

| | |
|---|---|
| Analog & Color-Graded Persistence | Variable saturation levels; stores each trace's persistence data in memory |
| Persistence Selections | Select analog, color, or three-dimensional. |
| Trace Selection | Activate persistence on all or any combination of traces. |
| Persistence Aging Time | Select from 500 ms to infinity. |
| Sweeps Displayed | All accumulated, or all accumulated with last trace highlighted |

### Zoom Expansion Traces

| | |
|---|---|
| | Display up to 4 Zoom and 4 Math/Zoom traces; 8 Math/Zoom traces available with XMAP (Master Analysis package) or XMATH (Advanced Math package). |

### CPU

| | |
|---|---|
| Processor | Intel Pentium 4 @ 2.53 GHz or better with MS Windows 2000 |
| Processing Memory | Up to 2 Gbytes |

### Internal Waveform Memory

| | |
|---|---|
| | M1, M2, M3, M4 Internal Waveform Memory (Store full-length waveforms with 16 bits/data point) Or store to any number of files limited only by data storage media. |

### Setup Storage

| | |
|---|---|
| Front Panel and Instrument Status | Store to the internal hard drive, floppy drive or to a USB-connected peripheral device |

# WaveMaster 8620A/8600A/8500A/8300A
## Oscilloscope Specifications (continued)

### Interface

| | |
|---|---|
| Remote Control | Via Windows Automation, or via LeCroy Remote Command Set |
| GPIB Port (Optional) | Supports IEEE – 488.2 |
| Ethernet Port | 10/100Base-T Ethernet interface |
| Floppy Drive | Internal, DOS-format, 3.5" high-density |
| USB Ports | 4 USB ports support Windows compatible devices |
| External Monitor Port Standard | 15-pin D-Type SVGA-compatible |
| Parallel Port | 1 standard |

### Auxiliary Output

| | |
|---|---|
| Signal Types | Select from calibrator or control signals output on front panel. |
| Calibrator Signal | 5 Hz – 5 MHz square wave or DC Level; 0.0 to 0.5 V into 50 Ω (0–1 V into 1 MΩ), or TTL Volts (selectable) |
| Control Signals | Trigger enabled, trigger out, pass/fail status |

### Auxiliary Input

| | |
|---|---|
| Signal Types | Select from External Trigger or External Clock input on front panel. |

### General

| | |
|---|---|
| Auto Calibration | Ensures specified DC and timing accuracy is maintained for 1 year minimum. |
| Power Requirements | 100–120 VAC at 50/60/400 Hz; 200–240 VAC at 50/60 Hz; automatic AC voltage selection. Power consumption: < 800 VA |

### Environmental

| | |
|---|---|
| Temperature (Operating) | +5 ˚C to +40 ˚C including floppy disk and CD-ROM drives |
| Temperature (Non-Operating) | –20 ˚C to +60 ˚C |
| Humidity (Operating) | 5% to 80% relative humidity (non-condensing) up to +30 ˚C. Upper limit derates to 25% 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 |
| Altitude (Non-Operating) | up to 40,000 ft (12,192 m) |
| Random Vibration (Operating) | 0.31 grms 5 Hz to 500 Hz, 15 minutes in each of three orthogonal axes |
| Random Vibration (Non-Operating) | 2.4 grms 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) | 264 mm x 397 mm x 491 mm; 10.4" x 15.6" x 19.3" (height excludes feet) | |
| | **8620A** | **8300A, 8500A, 8600A** |
| Weight | 23 kg; 49 lbs. | 18 kg; 39 lbs. |
| Shipping Weight | 29 kg; 63 lbs. | 24 kg; 53 lbs. |

### Certifications

| | |
|---|---|
| | CE Approved, UL and cUL listed; |
| | Conforms to EN 61326-1; EN 61010-1; UL 3111-1; and CSA C22.2 No. 1010.1 |

### Warranty and Service

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

# Standard

## Math Tools

Display up to four math function traces (F1 – F4). 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 | invert (negate) |
| average (summed) | log (base e) |
| average (continuous) | log (base 10) |
| derivative | product (x) |
| deskew (resample) | ratio (/) |
| difference (–) | reciprocal |
| enhanced resolution (to 11 bits vertical) | rescale (with units) |
| envelope | roof |
| exp (base e) | (sinx)/x |
| exp (base 10) | square |
| fft (power spectrum, magnitude, phase, up to 25 kpts) | square root |
| | sum (+) |
| floor | trend (datalog) of 1000 events |
| histogram of 1000 events | zoom (identity) |
| integral | |

## 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 GPIB SRQ.

# Optional

## Master Analysis Package (XMAP)

This package provides maximum capability and flexibility, and includes all the functionality present in XMATH, XDEV, and JTA2.

## Advanced Math Package (XMATH)

This package provides a comprehensive set of signal WaveShape Analysis Tools providing insight into the waveshape of complex signals. Additional capability provided by XMATH includes:

• 8 math traces total (4 additional)
• Parameter math – add, subtract, multiply, or divide two different parameters
• Histograms expanded with 19 histogram parameters and up to 2 billion events
• Trend (datalog) of up to 1 million events
• Track graphs of any measurement parameter
• FFT capability added to include: power averaging, power density, real and imaginary components, frequency domain parameters, and FFT on up to 25 Mpts
• Narrow-band power measurements
• Auto-correlation function
• Sparse function
• Cubic and Quadratic Interpolation function

## Web Editor (XWEB)

The Processing Web provides a graphical way to quickly and easily set up math functions and parameter measurements. Practically unlimited math-on-math functions can be chained together, and parameter measurements for any math output waveform anywhere on the web can be inserted.

## Advanced Customization Package (XDEV)

This package provides a set of tools to modify the scope and customize it to meet your unique needs. Additional capability provided by XDEV includes

• Creation of your own measurement parameter or math function, using third party software packages, and display of the result in the scope. Supported third party software packages include:

| | |
|---|---|
| - VBScript | - MATLAB |
| - Excel | - Mathcad |

• CustomDSO – create your own user interface in a scope dialog box.
• Adding macro of keys to run VBScript files
• Support of plug-ins

## Measure Tools

Displays any 8 parameters together with statistics, including their average, high, low, and standard deviations. Histicons provide a fast, dynamic view of parameters and wave shape characteristics.

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

## Timing Tools

LeCroy M1 Timing Tool runs inside your WaveMaster oscilloscope; acquires data; and calculates, displays, and analyzes jitter in clock and serial data. A wide variety of measurement tools are available, including differential crossing point measurements. Jitter viewing tools include line graph, histogram, jitter spectrum, text, and eye diagram. Available in an advanced or basic version.

| | |
|---|---|
| LeCroy M1 Timing Tool (Advanced, 1 scope) | LeCROY M1 / ADV-1 |
| LeCroy M1 Timing Tool (Advanced, 4 scopes) | LeCROY M1 / ADV-4 |
| LeCroy M1 Timing Tool (Basic) | LeCROY M1 / BASIC |

## Jitter and Timing Analysis Package (JTA2)

This package provides jitter timing and analysis using time, frequency, and statistical views for common timing parameters, and also includes other useful tools.
JTA2 includes:

• Jitter and timing parameters, with "Track" graphs of

| | | |
|---|---|---|
| - Cycle-Cycle Jitter | - Half Period | - Duty Cycle |
| - N-Cycle | - Width | - Duty Cycle Error |
| - N-Cycle with start selection | - Time Interval Error | |
| | - Setup | |
| - Frequency | - Hold | |
| - Period | - Skew | |

• Edge@lv parameter (counts edges)
• 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 trace (mean, range, sigma)

## Disk Drive Measurements Package (DDM2)

This package provides disk drive parameter measurements and related mathematical functions for performing disk drive WaveShape Analysis.

• Disk Drive Parameters are as follows:

| | |
|---|---|
| amplitude assymetry | local time trough-peak |
| local base | local time under threshold |
| local baseline separation | narrow band phase |
| local maximum | narrow band power |
| local minimum | overwrite |
| local number | pulse width 50 |
| local peak-peak | pulse width 50– |
| local time between events | pulse width 50+ |
| local time between peaks | resolution |
| local time between troughs | track average amplitude |
| local time at minimum | track average amplitude– |
| local time at maximum | track average amplitude+ |
| local time peak-trough | auto-correlation s/n |
| local time over threshold | non-linear transition shift |

• Correlation function
• Trend (datalog) of up to 1 million events
• Histograms expanded with 18 histogram parameters and up to 2 billion events

## Ordering Information — Product Code

### WaveMaster 8620A Four Channel Digital Oscilloscope
| | |
|---|---|
| 6 GHz, 20 GS/s 4 Ch, 2 Mpts/Ch Standard | WAVEMASTER 8620A |

### WaveMaster 8600A Four Channel Digital Oscilloscope
| | |
|---|---|
| 6 GHz, 20 GS/s 2 Ch (10 GS/s, 4 ch), 2 Mpts/2 Ch; 1 Mpt/Ch Standard | WAVEMASTER 8600A |

### WaveMaster 8500A Four Channel Digital Oscilloscope
| | |
|---|---|
| 5 GHz, 20 GS/s 2 Ch (10 GS/s, 4 ch), 2 Mpts/2 Ch; 1 Mpt/Ch Standard | WAVEMASTER 8500A |

### WaveMaster 8300A Four Channel Digital Oscilloscope
| | |
|---|---|
| 3 GHz, 20 GS/s 2 Ch (10 GS/s, 4 ch), 2 Mpts/2 Ch; 1 Mpt/Ch Standard | WAVEMASTER 8300A |

### Included with Standard 8620A, 8600A and 8500A Configurations
ProLink Adapter SMA; 4 each
ProLink Adapter BNC; 2 each
Operator's Manual; Quick Reference Guide; CD-ROM with OM/ RCM, Utility Software  and Recovery Software
Remote Control Manual
Floppy Disk Drive
CD-ROM Drive
Optical 3-button Wheel Mouse-USB
Standard Ports; 10/100Base-T Ethernet, Parallel, SVGA Video Output, USB
Protective Front Cover
Standard Commercial Calibration and Performance Certificate
3-Year Warranty

### Included with Standard 8300A Configuration
ProLink Adapter BNC; 5 each
Operator's Manual; Quick Reference Guide; CD-ROM with OM/ RCM, Utility Software and Recovery Software
Remote Control Manual
Floppy Disk Drive
CD ROM Drive
Optical 3 button Wheel Mouse-USB
Standard Ports; 10/100Base-T Ethernet, Parallel, SVGA Video Output, USB
Protective Front Cover
Standard Commercial Calibration and Performance Certificate
3-Year Warranty

### Memory Options
| | 8620A | 8600A    8500A    8300A | |
|---|---|---|---|
| | 8 Mpts/Ch | 8 Mpts/2 Ch, 4 Mpts/Ch | M |
| | 16 Mpts/Ch | 16 Mpts/2 Ch, 8 Mpts/Ch | L |
| | 32 Mpts/Ch | 32 Mp 2 Ch, 16 Mpts/Ch | VL |
| | 48 Mpts/Ch | 48 Mpts/2 Ch, 24 Mpts/Ch | XL |

### Long Memory Models
| | | |
|---|---|---|
| 6 GHz, 20 GS/s, 2 Ch (10 GS/s, 4 Ch), 100 Mpts/2 Ch; 50 Mpts/Ch | WaveMaster 8600A | XXL |
| 5 GHz, 20 GS/s, 2 Ch (10 GS/s, 4 Ch), 100 Mpts/2 Ch; 50 Mpts/Ch | WaveMaster 8500A | XXL |
| 3 GHz, 20 GS/s, 2 Ch (10 GS/s, 4 Ch), 100 Mpts/2 Ch; 50 Mpts/Ch | WaveMaster 8300A | XXL |

### Software Options
| | |
|---|---|
| Master Analysis Package | XMAP |
| Jitter and Timing  Analysis | JTA2 |
| Disk Drive Measurement Package | DDM2 |
| LeCroy M1 Timing Tool (Advanced, 1 scope) | LeCROY M1 / ADV-1 |
| LeCroy M1 Timing Tool (Advanced, 4 scopes) | LeCROY M1 / ADV-4 |
| LeCroy M1 Timing Tool (Basic) | LeCROY M1 / BASIC |

### Selected Accessories
| | |
|---|---|
| ProLink Adapter BNC; 1 each | LPA-BNC |
| ProLink Adapter BNC kit of 4 | LPA-BNC-Kit |
| Keyboard | KYBD-1 |
| 7.5 GHz Differential WaveLink Probe | D600 |
| 7.5 GHz Low Capacitance Passive Probe | PP066 |
| 3.5 GHz Active Voltage Probe | HFP3500 |
| 1.0 GHz Differential Probe | AP034 |
| 1 MΩ Adapter | AP-1M |
| Norton Anti-Virus | WM-AV |
| Oscilloscope Cart | OC1021 |
| Oscilloscope Cart with additional shelf and drawer | OC1024 |
| Rackmount Kit - 25" Slide | RMA-25 |
| Rackmount Kit - 30" Slide | RMA-30 |
| WaveMaster Soft Carrying Case | WMSCC |
| WaveMaster Hard Shell Transit Case | WMTC1 |

### Warranty & Calibration
A variety of extended warranty, certification, and calibration services are available.
Contact LeCroy Sales and Service for details

**LeCroy**