M1/ADV-1
*Advanced
1 scope license*

M1/ADV-4
*Advanced
4 scope license*

M1/BASIC
*Basic
1 scope license*

LECROY M1/ADV FEATURES

- **Unmatched repeatability (to 550 fs rms with WaveMaster family DSOs)**
- **Runs inside the WaveMaster oscilloscope for easy operation**
- **Complete JEDEC DDR jitter measurement requirements**
- **Differential crossing point measurements**
- **True differential thresholding**
- **Application-specific measurements**
- **Extensive data jitter functionality**
- **Bathtub curve and RJ/DJ extraction**
- **Backed by 20+ years of direct clock and timing experience**
- **Update subscription service**

Clock Analysis with LeCroy M1 Advanced

LeCroy M1 Advanced Timing Tools turn your real-time digital oscilloscope into the most repeatable, most fully-featured jitter analysis tool available for the measurement of jitter in clocks, PLLs, and high speed serial data streams. When used with WaveMaster oscilloscopes, it provides industry-leading jitter noise floor and measurement capability. Display numerical, statistical, time vs. time, and other views of jitter in separate windows.

Clock & Timing/PLL: Acquire long waveform records with your LeCroy oscilloscope and upload to LeCroy M1 for powerful and accurate jitter calculation and analysis. Analyze clock/phase noise with Jitter Spectrum. Acquire and analyze data over long time periods with Multi-Acquisition (MAQ) mode*. Powerful tools allow you to find repetitive behaviors in certain types of signals, particularly in PLLs. Includes features not found in any other jitter measurement product, such as differential crossing point measurements*, differential thresholding for measuring a differential signal more accurately than using a differential probe*, and various instantaneous and accumulated views of period measurements.

Serial Data*: Measure pulse width or edge jitter on serial data streams. Analyze and view data statistically by bit cell subpopulation or edge number within a repeating pattern. Display data in an eye diagram with mask testing capability.

Application Specific Measurements*: Allow for easy specification testing of many common signal types, such as DDR, DRCG, Gigabit Ethernet, Fibre Channel, and InfiniBand. ASMs also provide more generic analysis capabilities, such as RJ/DJ extraction and BER estimation from a bathtub curve.
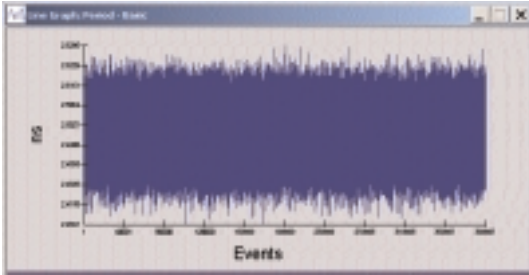
* LeCroy M1 ADV only

In cooperation with
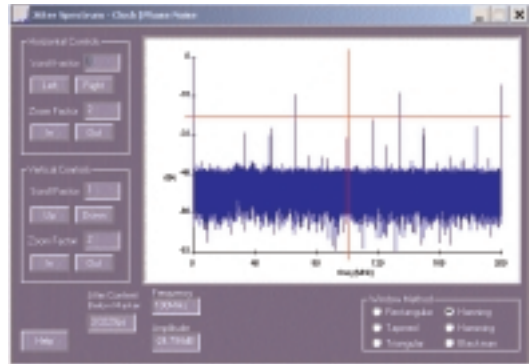
ASA
AMHERST SYSTEMS ASSOCIATES INC.

LeCroy

Jitter Views

Line Graph

Provides a time vs. time view of jitter that makes finding and measuring many different types of waveform phenomena easy.

Jitter Spectrum Measurements (FFT)

Provides a spectral view of jitter on either a clock or data signal. Automatically scales and displays, and allows placement of markers to measure jitter at specific frequencies, jitter content below specific frequencies or between frequencies.
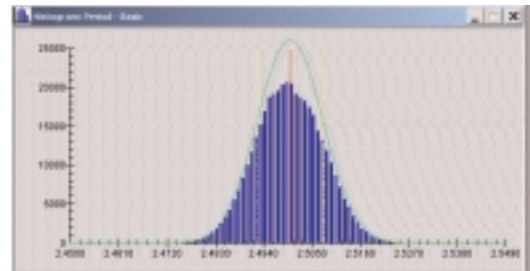
Histogram (Statistical)

Provides a statistical distribution view of the signal, which is useful for quickly determining whether a signal is Gaussian or has multimodal behavior.

Text

For clock and timing measurements, provides a textual display of the same data shown in a Line Graph. For data measurements, provides summary statistics for all subpopulations of a data measurement at once.

Application Specific Measurements (only available with LeCroy M1/ADV)

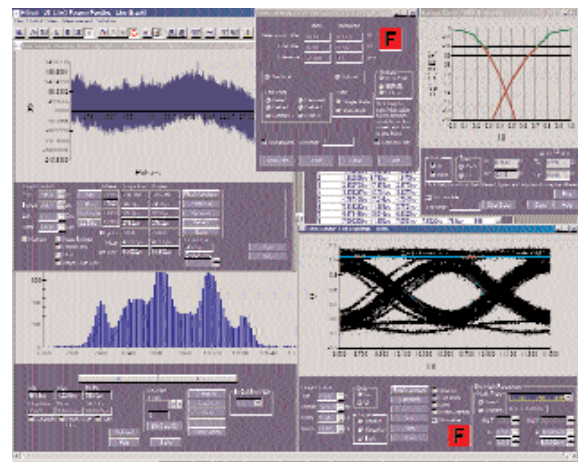## Clock and Timing Test Modules

- DDR RAM
- DRCG

DDR RAM specification checking with LeCroy M1 Advanced

Serial Data Measurements

- RJ/DJ Extraction — extract DJ, RJ and TJ values
- Bathtub Curve/BER Estimation

Serial Data Test Modules

- Fibre Channel
- Gigabit Ethernet
- InfiniBand

Fibre Channel analysis with LeCroy M1 Advanced

Viewing Tools

Jitter Viewing Tool	Description	LeCroy M1/ADV	LeCroy M1/BASIC
Line Graph	Time vs. time, instant by instant view of device behavior. Includes marker capability for measuring signal behaviors	•	•
Histogram	Statistical distribution view	•	•
Text	Numerical summary of all data	•	•
Jitter Spectrum	Frequency domain view of jitter with marker capability and readout of amplitude, frequency, and jitter value	•	•
Multi-Acquisition	Summary statistics for multiple acquisitions of data to track long-term behavior	•	
Eye Diagram	Pseudo-equivalent time view. Includes marker capability for measuring signal behaviors and eye mask testing capability	•	

Measuring Tools

Clock Measurements	LeCroy M1/ADV	LeCroy M1/BASIC
Period	•	•
Pulse Width (+, - , Both)	•	•
Frequency	•	•
Duty Cycle (+,-)	•	•
Differential Crossing Voltage (+, - , Both)	•	
Data Measurements		
By Event#	•	
By Size	•	
Pulse Width Jitter	•	
Edge Jitter	•	•
Delay Measurements		
Complete flexibility to choose the measurement from one edge to another on any slope (or both slopes) with choice of next, previous or closest edge	•	
Measurements for pin-pin skew and standard setup and hold	•	•
Rise Time / Fall Time		
Rise times	•	•
Fall times	•	•
Both	•	
Differential rise time analysis	•	

Extended Measuring Tools

Extended Measurements	Description	LeCroy M1/ADV	LeCroy M1/BASIC
Deviations	Instantaneous or Accumulated deviations of basic measurements, such as cycle-cycle jitter or edge jitter	•	Limited
Repetition Interval Analysis	N-cycle and other analysis tools for finding repetitive behaviors in a signal	•	
Averaging	Eliminates the high frequency noise to make modulations in a signal more visible	•	

SYSTEM REQUIREMENTS

Oscilloscope: One of the LeCroy oscilloscopes listed in the supported oscilloscopes section below, as well as other selected oscilloscopes

Internal Operation: Can run inside any WaveMaster Family oscilloscope; requires mouse and keyboard (not included)

External PC Operation: (WavePro, Waverunner2 and LC Family)

GPIB: For external PC operation, oscilloscope must have GPIB option and PC must have National Instruments GPIB card and VISA software installed (not included)

Recommended: 512+ MB RAM for deep-memory operation; 1024x768 or higher video resolution

Other: 32MB RAM; CD-ROM drive; one open USB port; Windows 98/2000+

SUPPORTED OSCILLOSCOPES:

WaveMaster Family

(LeCroy M1 will run <u>inside</u> these Windows®-based oscilloscopes)

8000 Series

8000A Series

SDA Series

DDA Series

WavePro Family

WP960

WP950

WP954

WP940

Waverunner2 Family

LT584

LT374

LT372

LT354

LT264

LT262

LC Family

LC584

Disk Drive Analyzers

DDA-260

DDA-120

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