



Breakthrough
WaveShape
Analysis without
breaking
the bank.

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WAVEPRO OSCILLOSCOPES

1 GHz – 3 GHz Bandwidth
Up to 48 Mpts Memory and
20 GS/s Sample Rate

X-STREAM
Technology

LeCroy

LeCroy has now integrated its industry leading SiGe ADC/amplifiers and groundbreaking X-Stream Technology into the WavePro DSO line. The WavePro 7000 Series brings fast and accurate measurement capability from 1 GHz to 3 GHz bandwidth applications. And it does it at an extremely attractive price.

Viewing a signal on a high-resolution screen is good start, but today's engineering requires the ability to go inside the signal and conduct next-generation waveform measurement and analysis to get to the source of a problem. Such ability gives you far greater confidence in your measurements.

You can make faster, more accurate, more confident measurements with the WavePro 7000 Series through:

- Excellent signal integrity from SiGe amplifiers and ADCs
- 10 GS/s single-shot sample rate on all channels (20 GS/s maximum) to capture signal details
- Acquisition of up to 48 million data points to maintain high sampling rates and complex signals
- Built-in 1 M Ω and 50 Ω selectable inputs
- 2 ps jitter noise floor
- Unique processing chain that gives you the ability to add customized measurements inside
- Fast WaveShape Analysis

LeCroy's proprietary **X-Stream Technology** is an extremely fast streaming architecture that eliminates the trade-offs between long record lengths and quick processing. The WavePro DSO, incorporating X-Stream Technology, can conduct WaveShape Analysis 10–100 times faster than any other oscilloscope in the 1 GHz–3 GHz bandwidth class. That makes them excellent tools for next-generation designs, such as:

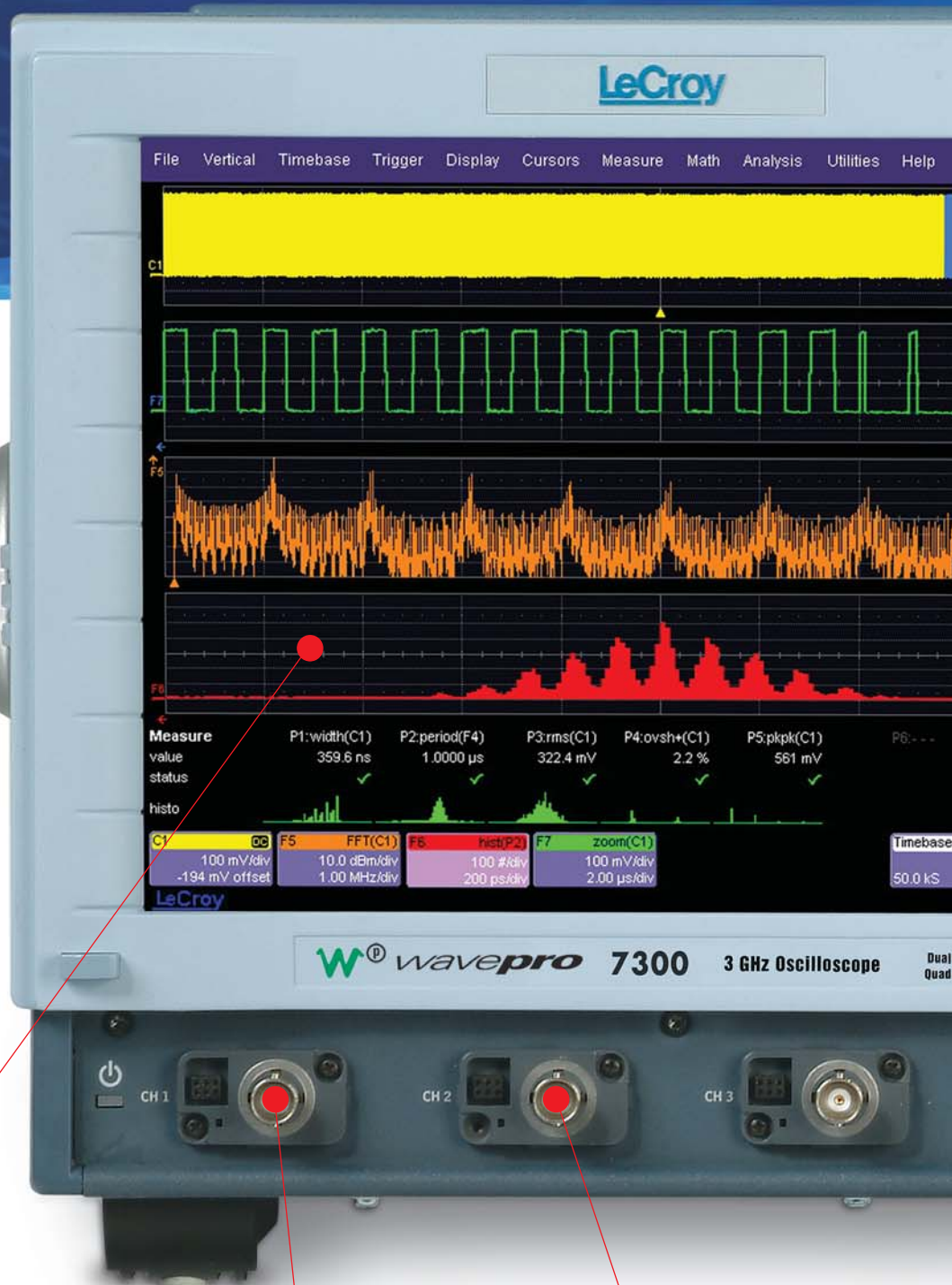
- Datacom/telecom standards development
- Gigabit Ethernet
- USB 2.0
- Advanced Military Designs
- Much, much, more

The WavePro oscilloscopes have a host of other features that simplify operation, such as a new processing web that makes it easy for you to set up measurements, a large color touch screen, and fast access to powerful capabilities. With our WavePro 7000 Series oscilloscopes, you'll never look at signal analysis the same way again.





Unleashing the Power of



Deep Memory—1 Mpt per channel standard memory. Options extend all the way to an industry-best 48 Mpts.

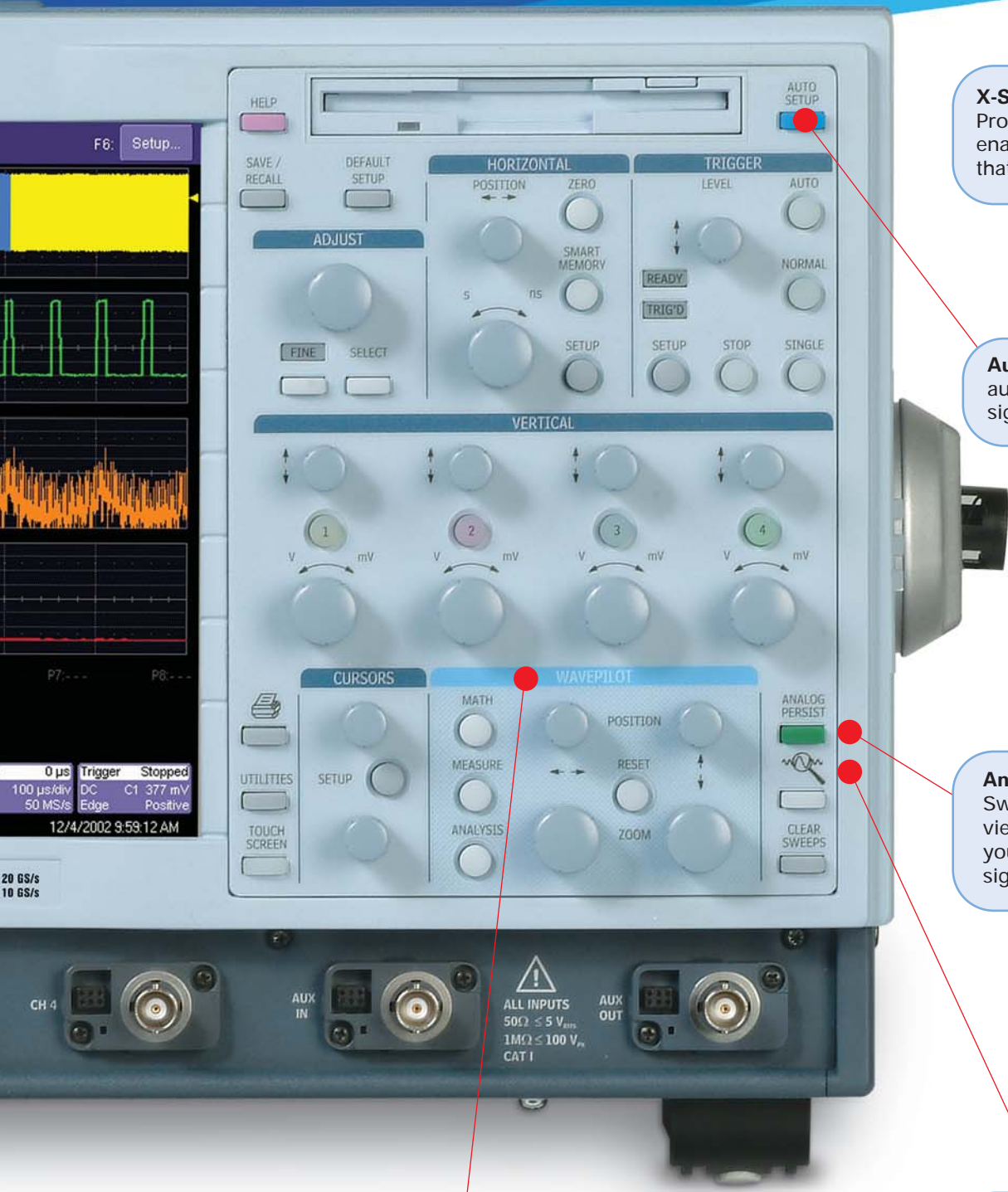
Advanced Windows®—based operating system offers robust system performance, with an intuitive and informative user interface.

Display—Large 10.4" SVGA touch screen has 20% larger waveform display area than comparable oscilloscopes.

Accessories—Passive, active, and differential probes, as well as an O/E converter can be connected to a WavePro DSO.

High Impedance Input—All WavePro DSO channels can be used at either 50 Ω or 1 M Ω , both selectable on the screen.

X-STREAM Technology



X-Stream Technology— Proprietary technology that enables data processing that is 10-100 times faster.

Auto Setup—One button automatically calls up a signal on the display.

Analog Persistence— Switches between analog view and digital view so you can fully explore the signal's modulation.

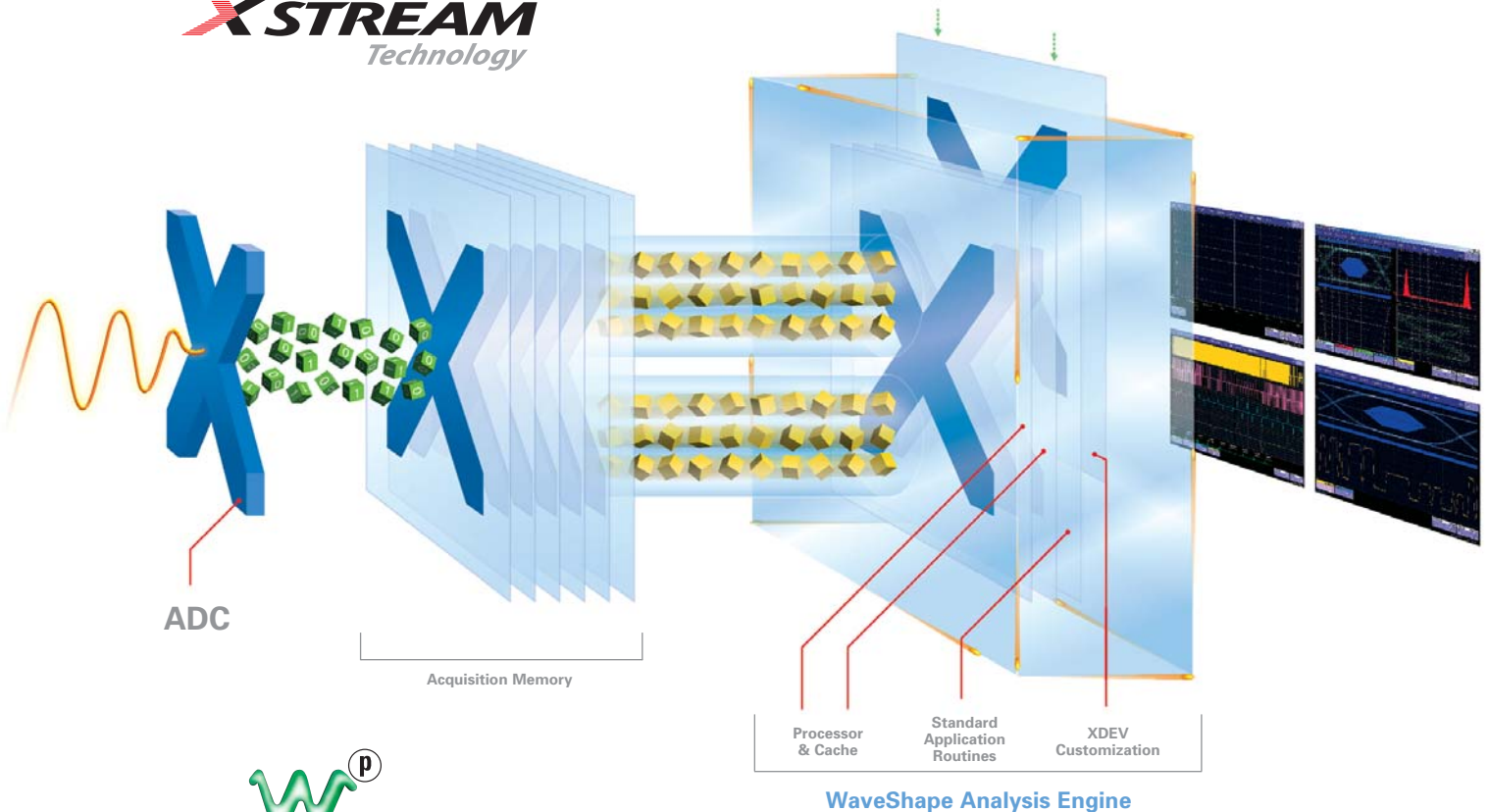
QuickZoom— Automatically displays 10x magnified traces of all signals on multi-grids.

Wavepilot—Controls give easy access to powerful signal analysis capabilities so you can gain insight and trace problems directly to their source.

ALL INPUTS
50Ω ≤ 5 V_{RMS}
1MΩ ≤ 100 V_{pk}
CAT I

LeCroy

XSTREAM
Technology



WavePro oscilloscopes are the only instruments in their bandwidth class that can accurately measure the long complex signals found in many of today's devices. That is because they fully incorporate LeCroy's proprietary X-Stream Technology. No other company can offer X-Stream Technology in any class. Only LeCroy can give you the measurement confidence you need to make sure your designs work.

What is X-Stream Technology? It's the foundation upon which LeCroy's WaveMaster and WavePro instruments rest. X-Stream Technology allows engineers to perform WaveShape Analysis at depths they could only dream about. X-Stream Technology makes those dreams come true by delivering extraordinary performance:

- Capture and analyze long records faster than ever before
- Utilize advanced tools for detailed analysis
- Customize your measurement capability
- Display your signal in 3D views and "Histicons" to see inside a signal

All of this is achieved because X-Stream Technology is an extremely fast streaming

architecture that enables high throughput of data—even when the WavePro oscilloscopes are conducting complex measurements.

LeCroy's proprietary CMOS memory accepts 10 Gbytes of data in real time from each SiGe ADC, packetizes it, and speeds the data through dual high-speed pipelines to the CPU. Once in the CPU, LeCroy's proprietary software algorithms "capture" each packet, and perform many of the required calculations in the CPU's L1 cache memory.

This process eliminates the "fetching" of data and math instructions from RAM to minimize calculation time. It also allows user-created functions and measurements to be inserted using our XDEV option.

World Class Signal Integrity and In-depth Analysis—Without Digging Deep into Your Pocket

Integrating the industry's only SiGe ADCs, large high resolution screen, advanced Windows operating system, and X-Stream Technology into the WavePro 7000 Series gives the new DSOs in-depth analysis capability that is friendly to your bottom line. Now, you don't have to make a choice between total measurement confidence and budgetary constraints. With the WavePro oscilloscopes you can have both.

It starts with the oscilloscope's SiGe amplifiers with very flat bandwidth response followed by a 10 GS/s ADC on each channel (5 GS/s for the model 7000). The model 7100 is the first 1 GHz oscilloscope in this class with 10 GS/s over-sampling. Standard memory is 1 Mpt per channel (500 kpts for the model 7000), with options extending all the way to an industry-best 24 Mpts per channel (48 Mpts when in dual channel mode). Such capability assures signal integrity when you analyze, so you don't have to worry about under-sampling the waveform.

Performance advantages continue with the oscilloscope's 2 ps jitter noise floor, which allows even small signal imperfections to be detected.

Plus, the WavePro 7300 is the first oscilloscope to offer both 1 M Ω and 50 Ω inputs in a 3 GHz instrument. This flexibility gives the WavePro 7300 the convenience of a high-impedance input for capturing lower bandwidth signals up to 500 MHz, combined with a very high performance SiGe 3 GHz, 50 Ω input.

Easy to Use, Simple to View Results

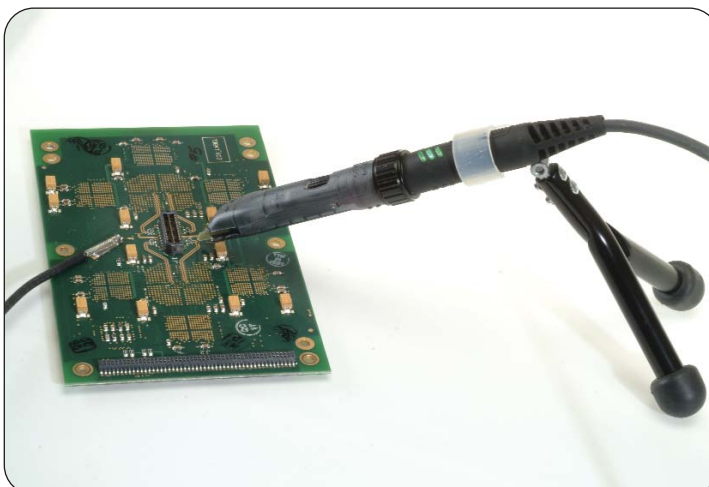
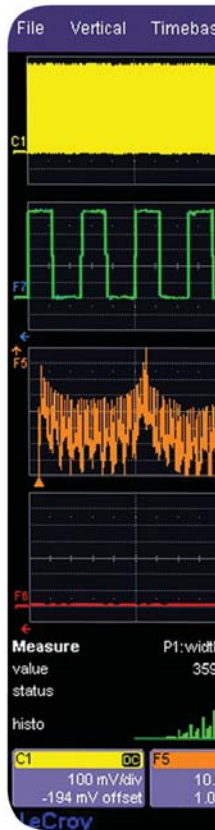
Operation of the WavePro DSO is easy and intuitive. Adjust the timebase, voltage and cursors from the front panel knobs or use the most advanced touch screen user interface in oscilloscopes today. Getting to parameter

measurements is fast and graphical. It's highly intuitive and adaptable to the way you like to work. An advanced Windows 2000-based operating system handles all the pull down menus and I/O to peripherals to add to the familiarity, and offers robust system performance.

Viewing the results is as easy as acquiring them. All WavePro oscilloscope models are designed with a 10.4-inch SVGA touch screen display with a waveform viewing area 20% larger than comparable oscilloscopes. Plus, LeCroy has designed features into the WavePro oscilloscopes that allow you to view your signal in the time, frequency, or statistical domains.

For example, the WavePro oscilloscopes have the ability to create up to eight unique zoom or math traces, each analyzing a different segment of the waveform. Calculations can be performed on the zoomed areas. A Multi-Zoom feature allows you to view time-correlated events, and AutoScroll is available to roll through the waveform.

Another unique viewing capability is Histicons—small histogram views that provide a visual indication of parameter distributions. Up to eight Histicons and their accompanying statistics can be displayed simultaneously, without adversely affecting the processing time.



The WaveLink series of high bandwidth probes combines with WavePro to complete the measurement system. Best in Class circuit loading characteristics and exceptional frequency response flatness maintain signal fidelity through the entire measurement system. Well thought out ergonomic features improve user efficiency and reduce chance of errors. The Adjustable Tip mechanism makes it easy for the user to set the tip spacing—even when probing the smallest SMD components. AutoColorID lights make the probe handle the same color as the channel trace to quickly identify which probe is driving which channel.



A Comprehensive Suite of Analysis Options

Now with the WavePro oscilloscopes there is a new level of WaveShape Analysis that allows engineers to troubleshoot circuits in ways that have never been possible. The XMAP suite of analysis options gives the oscilloscopes advanced capabilities that have previously been reserved for instruments operating at a higher bandwidth and price.

Imagine capturing large amounts of data and graphing it in intuitive, easily understandable ways to allow deep insight. Histogram, Track, and Trend capabilities allow you to use the long memory of the WavePro DSO to its best advantage. Expanded FFT algorithms provide unique spectral insights.

Simplify your use of an oscilloscope when you want to perform customized analysis or math operations.

Your own user-defined math, parameter measurement, or control routines can be quickly and easily inserted into the DSO processing stream. You can go way beyond basic "connectivity" or data export and make the oscilloscope your own measurement tool.

Jitter and timing analysis functions allow period, width, cycle-to-cycle, and other timing parameters to be measured. Results can be presented as statistics, histograms, or time domain tracks. Users can also view a Jitter FFT, which provides a spectral fingerprint of a signal's jitter sources.

The XMAP option gives you all this utility and insight, and is just one of the full line of analysis packages available for the WavePro 7000 Series.

Customized Measurements Expand Analysis Capability

WavePro DSOs provide the most powerful set of analysis you can get in an oscilloscope. That means you have a whole new way to analyze the pulse shape or perform special types of waveform math.

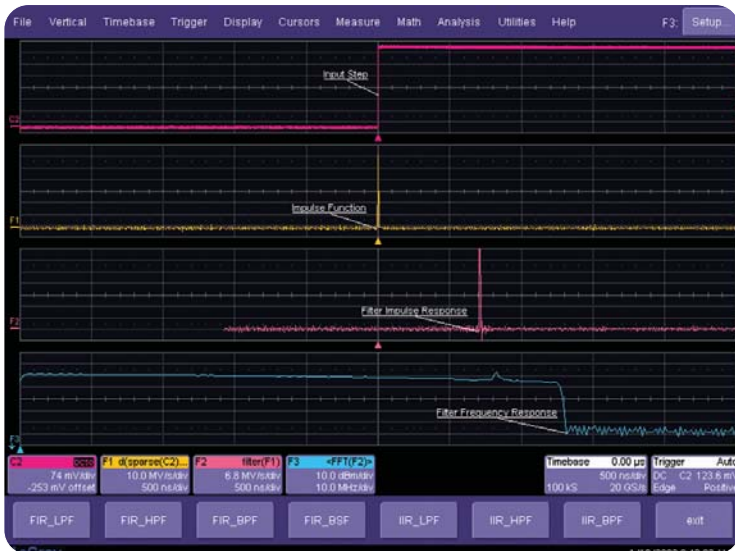
X-Stream Technology lets you insert new analysis directly into the processing chain of the WavePro oscilloscope. You can write your own Visual Basic script, MATLAB, Mathcad, or Excel function and seamlessly integrate it into your oscilloscope's processing chain without having to run a different program, establish remote communication between the oscilloscope and another program, create a new reference waveform, or transfer large data files between the DSO and another program.

The WavePro DSO's customization functions go beyond measurement techniques. LeCroy's CustomDSO package allows the user interface (UI) to be modified to accommodate your test process, starting from the panel setups.

Control of the WavePro oscilloscopes can be customized as well. Using LeCroy's standard remote command language, IVI, or LabView drivers, the WavePro oscilloscopes can interface with third party software. Microsoft-compliant Automation language can also be used for integration into most Windows-based programs. Connections can be made with the standard 10/100Base-T network connection or via optional GPIB.



With
WavePro
oscilloscopes powered by
X-Stream Technology,
the possibilities are only
limited by your requirements —
or your **imagination!**



- Port tools such as filters from your simulation environment into the scope to compare simulated signals with actual circuit performance. Validate if circuit performance matches the model and reduce characterization time.
- Build your own user interface. Add push buttons, frames, custom controls.

Insert proprietary calculations into the processing stream. See your parameter or math function updates live on every trigger. You can use all the oscilloscope tools on your custom measurement, including cursors, parameters, persistence display, FFT, or any other oscilloscope capability.

The 'Select Math Operator' dialog box has a 'Category' list on the left and a 'Choices' table on the right. The categories include All Functions, Basic Math, Custom, Filter, Frequency Analysis, and Functions. The 'Choices' table lists several operators with their names and descriptions.

Name	Description
ExcelMath	Perform Math in Excel. Transfers 1 or 2 waveforms to Excel and reads the resulting waveform.
MathcadMath	Produces a waveform using a user specified function.
MATLAB math	Produces a waveform using a user specified function.
Math script	Visual Basic or two input

First, source a customized algorithm.

The MATLAB Editor window shows the following code in the MATLAB Code window:

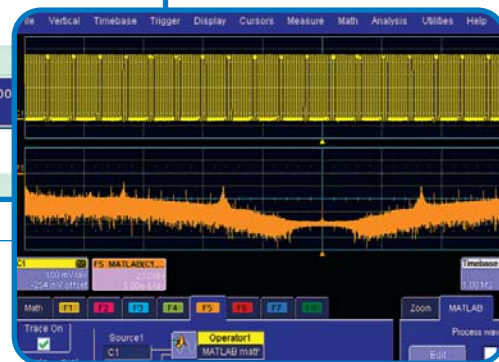
```
1 WformOut = xmapdemo(401, WformIn1);
```

The MATLAB Response window shows the following output:

```
1 Power spectral density.
```

Then load it.

Now display the calculated results.



Meet The **XSTREAM**



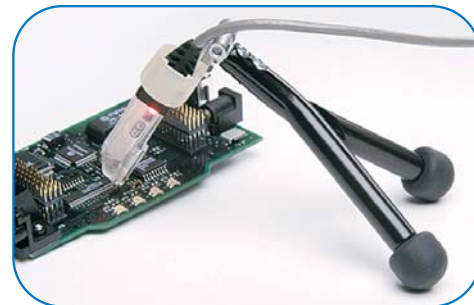

7300/7200

	WavePro 7300	WavePro 7200
Bandwidth	3 GHz	2 GHz
Sample Rate on 4 channels	10 GS/s (20 GS/s/2 Ch)	
Memory Standard	1 Mpts/Ch (2 Mpts/2 Ch)	
Optional Memory Maximum	24 Mpts/Ch (48 Mpts/2 Ch)	
1 MΩ and 50 Ω Selectable Inputs	Yes	
Triggering	SMART Trigger [®] , glitch, edge, pattern, interval	

Probes and Accessories

LeCroy offers a variety of probe solutions to maximize the performance of your WavePro oscilloscope. A full line of passive, active, and differential probes, as well as Optical-to-Electrical (O/E) converters are available to give you the tools necessary to connect to the signal under analysis.

The **HFP Series** active probes integrate advanced technologies and techniques to ensure the highest measurement accuracy.



– Enabled WavePro Oscilloscopes




wavepro®
7100/7000

	WavePro 7100	WavePro 7000
Bandwidth	1 GHz	1 GHz
Sample Rate on 4 channels (Maximum 2 Ch)	10 GS/s (20 GS/s/2 Ch)	5 GS/s (10 GS/s/2 Ch)
Memory Standard	1 Mpts/Ch (2 Mpts/2 Ch)	500 kpts/Ch (1 Mpts/2 Ch)
Optional Memory Maximum	24 Mpts/Ch (48 Mpts/2 Ch)	4 Mpts/Ch (8 Mpts/2 Ch)
Hi Z and 50 ohm selectable inputs	Yes	Yes
Triggering	SMART Trigger, glitch, edge, pattern, interval	

Circuit design engineers who need to probe a wide variety of IC pins, circuit vias, and surface mount components will discover that the **WaveLink Series** of differential probes is an ideal solution. The 4 GHz bandwidth D300 provides best in class loading for connectivity to high frequency signals in devices or board debug.

If you need to capture and analyze optical signals, the **OE425 and OE455 O/E Converters**

are available. Covering a wide range of wavelengths with up to 5 GHz optical bandwidth, the O/E converters feature a unique DSP-based reference receiver that eliminates the need for re-calibration when switching channels or instruments.



Vertical System	WavePro 7000	WavePro 7100	WavePro 7200	WavePro 7300
Analog Bandwidth @ 50 Ω (-3 dB)	1 GHz	1 GHz	2 GHz	3 GHz
Rise Time (Typical)	400 ps	400 ps	225 ps	150 ps
Input Channels	4			
Bandwidth Limiters	25 MHz; 200 MHz			
Input Impedance	50 Ω; 10 MΩ //11pF typical (using PP005A probe)			
Input Coupling	1 MΩ: AC, DC, GND; 50 Ω: DC			
Maximum Input Voltage	50 Ω: 5 Vrms, 1 MΩ: 100 Vmax (peak AC: ≤ 5 KHz + DC)			
Channel-Channel Isolation	250:1 at same V/div setting, 40:1 at 3 GHz			
Vertical Resolution	8 bits; up to 11 bits with enhanced resolution (ERES)			
Sensitivity	50 Ω: 2 mV – 1 V/div fully variable; 1 M Ω: 2 mV – 2 V/div fully variable			
DC Gain Accuracy	±1.5% of full scale; ±1% (typical)			
Offset Range	50 Ω: ±700 mV @ 2–4.99 mV/div ±1.5 V @ 5–100 mV/div ±10 V @ 0.102-1 V/div 1 MΩ: ±700 mV @ 2–4.99 mV/div ±1.5 V @ 5–100 mV/div ±20 V @ 0.102–2 V/div			
Offset Accuracy	±(1.5% of full scale + 0.5% 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 – 1000 s/div (normal and single-shot mode)
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	± ≤ 10 ppm @ 0–40 °C
Time Interval Accuracy	≤ 0.06 / SR + (5 ppm * Reading) (rms)
Sample Rate & Delay Time Accuracy	±5 ppm ≤ 10 s interval
Jitter Noise Floor	2 ps rms @ 100 mV/div (typical)
Trigger & Interpolator Jitter	≤ 2.5 ps (typical)
Channel-Channel Deskew Range	±4.5 ns
External Clock	30 MHz – 1 GHz; 50 Ω impedance; applied at the auxiliary input

Acquisition System

Single-Shot Sample Rate/Ch	5 GS/s	10 GS/s	10 GS/s	10 GS/s
2 Channel Max	10 GS/s	20 GS/s	20 GS/s	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	4 Ch / (2 Ch)	4 Ch / (2 Ch)		Sequence Mode
Standard	500k / 1M	1M / 2M		500 segments
M – Memory Option	4M / 8M	4M / 8M		1,000 segments
L – Memory Option	–	8M / 16M		5,000 segments
VL – Memory Option	–	16M / 32M		10,000 segments
XL – Memory Option	–	24M / 48M		20,000 segments

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
Interpolation	Linear, sinx/x

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	DC50Ω, GND, DC1MΩ, AC1MΩ			
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	1 GHz w/Edge Trigger; 750 MHz w/ SMART Trigger	1 GHz w/Edge Trigger; 750 MHz SMART Trigger	2 GHz w/Edge Trigger; 750 MHz SMART Trigger	3 GHz w/Edge Trigger; 750 MHz SMART Trigger

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.

Probes

Probes	(2) PP005A standard; Optional passive and active probes available
Probe System: Probus	Automatically detects and supports a variety of compatible probes
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 x600 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)
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CPU

Processor	Processor Intel Pentium 4 @ 2.53 GHz (or better) with MS Windows 2000 Platform
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
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Setup Storage

Front Panel and Instrument Status	Store to the internal hard drive, floppy drive or to a USB-connected peripheral device
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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 5.0 V into 50 Ω (0–1 V into 1 M Ω) or TTL volts (selectable)
Control Signals	Trigger enabled, trigger out, pass/fail status

Auxiliary Input

Signal Types	Selected from External Trigger or External Clock input on front panel
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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 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)	264 mm x 397 mm x 491 mm; 10.4" x 15.6" x 19.3" (height excludes feet)
Weight	18 kg; 39 lbs.
Shipping Weight	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 (l)
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
floor	sum (+)
histogram of 1000 events	trend (datalog) of 1000 events
integral	zoom (identity)

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, email the image of the failure, save waveforms, send a pulse out at the front panel auxiliary NC 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 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.
- Addition of macro keys to run VBScript files
- Support for plug-ins

Measure Tools

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

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

Timing Tools

LeCroy M1 Timing Tools software runs inside your WavePro 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 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
 - N-Cycle
 - N-Cycle with start selection
 - Frequency
 - Period
 - Half Period
 - Width
 - Time Interval Error
 - Setup
 - Hold
 - Skew
 - Duty Cycle
 - Duty Cycle Error
- 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 between troughs	overwrite
local base	local time at minimum	pulse width 50
local baseline separation	local time at maximum	pulse width 50+
local maximum	local time peak-trough	pulse width 50+ resolution
local minimum	local time over threshold	track average amplitude
local number	local time trough-peak	track average amplitude–
local peak-peak	local time under threshold	track average amplitude+ auto-correlation s/n
local time between events	narrow band phase	non-linear transition shift
local time between peaks	narrow band power	
- Correlation function
- Trend (datalog) of up to 1 million events
- Histograms expanded with 18 histogram parameters and up to 2 billion events



WavePro 4-Channel Digital Oscilloscopes

Product Code

4 Ch 3 GHz DSO; 10 GS/s; 1 Mpts/Ch; 2 Mpts/Ch 20 GS/s using 2 or 1 Ch; 50 Ω and 1 M Ω Input	WavePro 7300
4 Ch 2 GHz DSO; 10 GS/s; 1 Mpts/Ch; 2 Mpts/Ch 20 GS/s using 2 or 1 Ch; 50 Ω and 1 M Ω Input	WavePro 7200
4 Ch 1 GHz DSO; 10 GS/s; 1 Mpts/Ch; 2 Mpts/Ch 20 GS/s using 2 or 1 Ch; 50 Ω and 1 M Ω Input	WavePro 7100
4 Ch 1 GHz DSO; 5 GS/s; 500 kpts/Ch; 1 Mpts/Ch 10 GS/s using 2 or 1 Ch; 50 Ω and 1 M Ω Input	WavePro 7000

Included with Standard Configuration

10:1 10 M Ω Passive Probes (Qty 2)	PP005A
CD-ROM containing Operators Manual, Remote Command Manual, 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	
AntiVirus Software	AV
3-Year Warranty	

Memory Options

8 Mpts/2 Ch, 4 Mpts/Ch	-M
16 Mpts/2 Ch, 8 Mpts/Ch	-L
32 Mpts/2 Ch, 16 Mpts/Ch	-VL
48 Mpts/2 Ch, 24 Mpts/Ch	-XL

Note: WavePro 7000 unit's maximum memory is "M" option

Hardware Options

IEEE-488 Remote Control Interface	GPB-1
Removable Hard Drive Option	WM-RHD
CD-RW Upgrade	WM-CDRW

WaveShape Analysis Packages

CAN Bus Trigger and Decode Test Package	CANbus TD
Disk Drive Measurement Package	DDM2
Digital Filter Package	DFP2
Ethernet Test Software Package	ENET
Jitter and Timing Analysis Package	JTA2
Advanced M1 Software Package for Jitter and Timing Measurements (1 seat)	LECROYM1/ADV-1
Basic M1 Software Package for Jitter and Timing Measurements	LECROYM1/BASIC
Power Measure and Analysis Package	PMA2
Serial Mask Package	SDM
USB 2.0 Pre-Compliance Test Software Package	USB2
Advanced Customization Package	XDEV
Master Analysis Package (includes JTA2, XMATH, XDEV)	XMAP
Advanced Math Software Package	XMATH

Selected Accessories

10:1 10 M Ω Passive Probes	PP005A
3.5 GHz Active Voltage Probe	HFP3500
2.5 GHz Active Voltage Probe	HFP2500
1.5 GHz Active Voltage Probe	HFP1500
WaveLink - 3 GHz Differential Probe and Adjustable Twin Tips	D300
Current Probe	CP and AP Series
O/E Converters 500–1630 nm	OE 425/455
Keyboard	KYBD-1
Graphic Printer Paper (10 Rolls)	GRP10
Oscilloscope Cart	OC1021
Oscilloscope Cart with additional shelf and drawer	OC1024
Rackmount - 25" Slide	RMA-25
Rackmount - 30" Slide	RMA-30



Breakthrough WaveShape Analysis from LeCroy's Family of X-Stream-based Instruments

The WavePro 7000 Series of digital oscilloscopes is part of a growing family of instruments that has LeCroy's proprietary X-Stream Technology as its genetic thread, creating a unique DSO "DNA" that delivers breakthrough WaveShape Analysis.

In addition to the WavePro 7000 Series, LeCroy's family of X-Stream-based instruments includes:



WaveMaster, SDA, DDA

The "big brother" to the WavePro 7000 Series, the WaveMaster series is for engineers who need bandwidth between 3 GHz and 6 GHz. The WaveMaster 8620A, 8600A, 8500A, and 8300A offer the longest memory in the industry—50 Mpoints per channel (100 Mpoints when using one or two channels). The 8620 can perform real time sampling at 20 GS/s on each channel with 1 ppm clock accuracy, and a jitter noise floor of 1 ps.

With unrivaled performance, the SDA brings unprecedented analysis capabilities for verifying and testing serial data according to a wide range of formats and standards, such as serial ATA, PCI-Express, Fibre Channel, Gigabit Ethernet, and IEEE 1394b.

A unique combination of sophisticated measurement capability and informative UI makes the DDA-5005A and DDA 3000 are the solutions for disk drive analysis. View SAM histograms of head signal quality, rapidly locate PRML signal problems, create head signal quality line graphs, characterize media noise, and measure drive performance parameters.

WaveRunner 6000 Series

The engineer's dream come true—simple, affordable and uncommonly capable with an intuitive two-tiered user interface that puts common tasks at your fingertips. Plus with uncompromising 5 GS/s acquisition technology and limitless analysis capabilities the WaveRunner 6000 Series is the trade-off scope from 350 MHz–2 GHz.



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