LECROY (TELEDYNE LECROY)

WaveRunner 44Xi-A

The Teledyne LeCroy WaveRunner 44Xi-A is a 400 MHz, 4-channel digital storage oscilloscope featuring a 10.4-inch SVGA touch screen and high-performance debugging tools. Equipped with a 5 GS/s sample rate (up to 10 GS/s interleaved) and a standard 12.5 Mpts/ch memory, it provides robust waveform analysis capabilities, a wide range of SMART triggers, and extensive serial decoding options within a compact 15 cm deep form factor.

SPECIFICATIONS

General

Interfaces	6 x USB 2.0 Host (2 front, 4 rear), 1 x 10/100/1000Base-T RJ-45 Ethernet, 1 x DB-15 SVGA output, 1 x DB-9 RS-232 serial port, 3.5 mm Audio (Line In, Line Out, Mic), GPIB (optional)
Display	10.4-inch SVGA TFT-LCD color resistive touch screen, 800 x 600 resolution, built-in stylus

Physical

Power Supply	100 - 240 VAC (±10%) at 50/60 Hz (±10%) or 100 - 120 VAC at 400 Hz (±10%), automatic voltage selection, max 340 VA
Operating Temperature	5 to 40 °C °C
Dimensions (W×H×D)	332 mm × 260 mm × 152 mm mm
Weight	7.26 kg
Acoustic Noise	< 40 dBA

Vertical System

Analog Channels	4
Analog Bandwidth (-3 dB)	400 MHz
Hardware Bandwidth Limits	20 MHz, 200 MHz
Rise Time (Calculated)	875 ps (typical)
Input Impedance	1 MΩ ±1% || 16 pF or 50 Ω ±1%
Input Coupling	AC, DC, GND (1 MΩ); DC, GND (50 Ω)
Vertical Resolution	8 bits (up to 11 bits with Enhanced Resolution (ERES))
Sensitivity Range (1 MΩ)	2 mV/div - 10 V/div
Sensitivity Range (50 Ω)	2 mV/div - 1 V/div
DC Vertical Gain Accuracy	±1.5% of full scale
Maximum Input Voltage (1 MΩ)	400 V max (DC + Peak AC <= 10 kHz)
Maximum Input Voltage (50 Ω)	5 Vrms
Offset Range	±1 V to ±100 V (coupling and V/div dependent)
Probe Interface	LeCroy ProBus
Enhanced Resolution (ERES)	0.5 to 3 bits additional resolution (up to 11 bits)

Horizontal System & Timebase

Timebase Range	200 ps/div - 1000 s/div
Timebase Accuracy	±5 ppm (typical)
Real-Time Sample Rate (4 Channels)	5 GS/s
Real-Time Sample Rate (2 Channels)	5 GS/s
Equivalent-Time (RIS) Sample Rate	200 GS/s
Standard Memory Length	12.5 Mpts/ch

Trigger System

Trigger Modes	Auto, Normal, Single, Stop
Trigger Types	Edge, Width, Glitch, Period, Interval, Dropout, Runt, Slew Rate, Pattern, TV, State, Serial
Trigger Sources	Ch 1 - 4, External, Line
Trigger Coupling	AC, DC, LFRej, HFRej
Trigger Level Range (Internal)	±4.1 divisions from center
Trigger Holdoff Range	2 ns to 20 s or 1 to 99,999,999 events
Trigger Jitter	< 2.5 ps RMS (typical)
Trigger Sensitivity (Internal)	0.3 divisions (< 10 MHz), 1.0 division (< 400 MHz)
External Trigger Input Impedance	1 MΩ || 16 pF or 50 Ω
External Trigger Max Input Voltage (1 MΩ)	400 V max (DC + Peak AC <= 10 kHz)
External Trigger Max Input Voltage (50 Ω)	5 V RMS

Acquisition System

Acquisition Modes	Real-time, RIS (Random Interleaved Sampling), Roll, WaveStream (Fast Viewing Mode)
Sequence Mode Max Segments	Up to 10,000 segments
Sequence Mode Intersegment Time	< 8 µs
Sampling Clock Jitter	≤ 3 ps rms (typical)
Optional Memory Configurations	M-Option: 12.5 Mpts/ch (25 Mpts interleaved), L-Option: 25 Mpts/ch (50 Mpts interleaved)
Roll Mode Timebase Range	≥ 500 ms/div up to 1000 s/div

Digital Channels (MSO Option)

Digital Channels (Option)	18 channels (with MS-250) or 36 channels (with MS-500)

Display & User Interface

Display Size	10.4-inch diagonal
Display Resolution	800 x 600 pixels (SVGA)
Touch Screen Capability	Resistive touch screen
Grid Styles	Single, Dual, Quad, Octal, XY, Single+XY, Dual+XY

Measurement, Math & Analysis

Automated Measurements	Up to 8 parameters displayed simultaneously with statistics
Math Operators	Dual math operators supporting Sum, Difference, Product, Ratio, FFT, Derivative, Integral, Rescale, Square, Square Root, Zoom
FFT Window Types	Von Hann (Hanning), Hamming, Flat Top, Blackman-Harris, Rectangular
Pass/Fail Testing	Mask testing or parameter limit testing with action on violation
WaveScan Advanced Search	Search based on measurement parameters, runts, glitches, or serial data
Customizable Analysis Support	Fully integrated script processing using Excel, MATLAB, or VBScript

Hardware Interfaces & Connectivity

External Trigger Input	BNC (front panel)
Auxiliary Output	BNC (front panel); calibrator signal or trigger out

General / Computer System

Operating System	Windows XP Professional
Internal Storage Capacity	Internal Hard Disk Drive (HDD)
Real-Time Clock	Built-in, date and time displayed

Environmental & Compliance

Storage Temperature Range	-20 °C to 60 °C
Operating Humidity Range	5% to 80% RH (non-condensing) up to 30 °C, derating to 50% RH at 40 °C
Operating Altitude	Up to 3048 m (10,000 ft) at <= 25 °C
Recommended Calibration Interval	1 year

Processor & System

System Processor	Intel Celeron M 1.5 GHz
System RAM	1 GB standard

Interfaces & Connectivity

USB Ports	6 x USB 2.0 (2 front, 4 side)
Ethernet Port	10/100/1000Base-T (RJ-45)
External Display Output	15-pin D-sub (VGA)
GPIB Port	IEEE-488 (optional)

Horizontal System

Channel-to-Channel Deskew Range	±4.5 ns
Interpolation	Linear, Sin(x)/x

Power & Mechanical

Max Power Consumption	340 VA

Standard Accessories

Standard Passive Probes	PP008 (one per channel)

Triggering

Trigger Level Accuracy	±(0.5 div ± 1.5 mV) for internal triggers
Trigger Level Range (External)	EXT: ±400 mV, EXT/10: ±4 V

Power

AC Power Requirements	100 - 240 VAC (±10%) at 50/60 Hz (±10%), or 100 - 120 VAC (±10%) at 400 Hz (±10%)

Environmental

Vibration (Operating)	5 Hz to 500 Hz, 0.31 g rms, 15 minutes in each of three orthogonal axes
Vibration (Non-Operating)	5 Hz to 500 Hz, 2.4 g rms, 15 minutes in each of three orthogonal axes
Shock (Operating)	30 g peak, half-sine, 11 ms pulse duration, 3 shocks in each direction of three orthogonal axes

Compliance

Safety Compliance	UL 61010-1 (2nd Edition), CAN/CSA-C22.2 No. 61010-1-04, EN 61010-1:2001
EMC Compliance	EN 61326-1, EN 61000-3-2, EN 61000-3-3

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

Electronic circuit debug, serial data validation, timing characterization, and high-voltage power measurements