

LECROY (TELEDYNE LECROY)

WaveRunner 204MXi-A

The Teledyne LeCroy WaveRunner 204MXi-A is a highly capable 2 GHz, 4-channel digital storage oscilloscope within the WaveRunner MXi-A Series. Engineered for advanced troubleshooting, signal validation, and serial data debug, the 204MXi-A builds upon the powerful feature set of the Xi-A series with built-in advanced math capabilities, comprehensive jitter and timing analysis, and deep custom analysis tools. Featuring a compact 15 cm footprint, a bright 10.4-inch touchscreen display, and a real-time sampling rate of up to 10 GS/s, this model provides precision analysis for both high-speed and complex mixed-signal environments.

SPECIFICATIONS

General

Interfaces	LAN (10/100/1000Base-T), 6 x USB 2.0 Host (2 front, 4 rear), 1 x USB 2.0 Device, VGA Out, GPIB (Optional via external adapter)
Display	10.4-inch Color TFT-LCD Touchscreen, SVGA (800 x 600 resolution)

Physical

Power Supply	100 - 240 VAC ($\pm 10\%$) at 50/60 Hz ($\pm 5\%$), 90 - 132 VAC at 400 Hz ($\pm 5\%$); Max power consumption 340 VA
Operating Temperature	5 °C to 40 °C °C
Dimensions (W×H×D)	340 mm x 260 mm x 152 mm mm
Weight	7.26 kg kg

Vertical System

Input Channels	4
Analog Bandwidth (-3 dB)	2 GHz
Rise Time (Typical)	175 ps
Vertical Resolution (A/D Converter)	8-bit (up to 11-bit with Enhanced Resolution)
Input Impedance	50 Ω or 1 M Ω (selectable)
Input Coupling	AC, DC, GND (50 Ω DC only)
Maximum Input Voltage (50 Ω)	5 Vrms
Maximum Input Voltage (1 M Ω)	400 V max (DC + Peak AC $\leq$ 10 kHz)
DC Vertical Gain Accuracy	$\pm 1.5\%$ of full scale (typical)
Hardware Bandwidth Limits	20 MHz, 200 MHz
Sensitivity Range (50 Ω)	2 mV/div - 1 V/div
Sensitivity Range (1 M Ω)	2 mV/div - 10 V/div
Offset Range (50 Ω)	± 1 V (2 mV - 19.4 mV/div), ± 10 V (19.6 mV - 1 V/div)
Offset Range (1 M Ω)	± 1 V (2 mV - 19.4 mV/div), ± 100 V (19.6 mV - 1.94 V/div), ± 400 V (1.96 V - 10 V/div)
Channel-to-Channel Isolation	≥ 40 dB (up to 2 GHz)
Enhanced Resolution (ERES)	Up to 11 bits
Probing Interface	Teledyne LeCroy ProBus

Horizontal System & Acquisition

Real-Time Sampling Rate (4 Channels)	5 GS/s
Real-Time Sampling Rate (Interleaved, 2 Channels)	10 GS/s
Standard Memory Depth (4 Channels)	12.5 Mpts/ch
Standard Memory Depth (Interleaved, 2 Channels)	25 Mpts/ch
Timebase Range	100 ps/div - 1000 s/div
Timebase Accuracy	± 5 ppm (typical)
Channel-to-Channel Deskew Range	± 4.5 ns
Acquisition Modes	Real-time, Roll, Sequence (Segmented Memory), RIS (Random Interleaved Sampling)
Segmented Memory (Sequence Mode)	Up to 10,000 segments

Trigger System

Trigger Modes	Auto, Normal, Single, Stop
Trigger Sources	CH1, CH2, CH3, CH4, EXT, EXT/10, Line
Trigger Coupling	AC, DC, LFREJ, HFREJ
Trigger Holdoff Range	2 ns to 20 s or 1 to 99,999,999 events
Edge Triggering	Triggers on rising or falling edge on any input channel or external trigger source
Width / Glitch Triggering	Triggers on positive or negative glitch down to 1 ns or pulse width 1 ns - 20 s
Runt Triggering	Triggers on positive or negative runt pulse down to 1 ns
Slew Rate Triggering	Triggers on transition rate (slew rate) from 1 ns to 20 s
Pattern Triggering	Logic combination of CH1, CH2, CH3, and CH4
Dropout Triggering	Triggers if signal disappears for 2 ns - 20 s
Interval Triggering	Triggers on intervals between 2 ns and 20 s
Qualified Triggering	Triggers on a state or edge after a defined event occurs
External Trigger Input Level Range	± 0.5 V (± 5 V with EXT/10)

Waveform Analysis & Measurement

Automatic Measurements	Up to 8 parameters displayed simultaneously with statistics
Measurement Statistics	Min, Max, Mean, Standard Deviation, Count
Math Operators (Standard)	Addition, subtraction, multiplication, division, FFT, absolute value, derivative, integral, average, envelope, rescale
Advanced Math (MXi-A Standard)	Custom math and measurements using Excel, MATLAB, or VBScripts; Jitter and Timing Analysis; enhanced FFT
FFT Window Types	von Hann (Hanning), Hamming, Flat-top, Blackman-Harris, Rectangular
WaveScan Advanced Search	Search and scan waveforms for specific events, anomalies, or pulse characteristics
Pass/Fail Mask Testing	Standard with multi-segment tolerance masks
WaveStream Fast Viewing Mode	Provides high-update-rate display resembling analog oscilloscope persistence

Connectivity & I/O Interfaces

External Trigger Input	Front panel BNC connector
Auxiliary Output	Front panel BNC (trigger out, pass/fail out, or calibrator out)
Reference Clock Input	Rear panel BNC connector (10 MHz)

Processor, Memory & OS

Internal Storage	Internal Hard Disk Drive (HDD)
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Physical & Environmental Specifications

Operating Altitude	Up to 3,048 m (10,000 ft)
Storage Altitude	Up to 12,192 m (40,000 ft)
Operating Humidity	80% RH max up to 30 °C, derates to 45% RH at 40 °C (non-condensing)
Storage Temperature	-20 °C to +60 °C
Shipping Weight	Approx. 11.4 kg (25 lbs)

Standards, Compliance & Warranty

CE Compliant	Yes
Safety Standards	UL 61010-1, CAN/CSA-C22.2 No. 61010-1
EMC Directive	EN 61326-1
Calibration Interval	1 year

Triggering

Trigger Sensitivity (Internal, Edge)	1 div @ DC to 2 GHz, 0.6 div @ <= 1 GHz (typical)
TV/Video Trigger Types	NTSC, PAL, SECAM, HDTV (720p, 1080i, 1080p), Custom

Acquisition

Interpolator	Linear, Sin(x)/x
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Auxiliary Inputs/Outputs

Calibration Signal Output	1 kHz, 1 V square wave into >= 100 kΩ
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Power Requirements

Power Consumption (Maximum)	340 VA
AC Power Input Range	100 to 240 VAC (±10%) @ 50/60 Hz; 100 to 120 VAC (±10%) @ 400 Hz

Environmental

Vibration (Operating)	0.31 g rms (5 Hz to 500 Hz, 15 minutes in 3 orthogonal axes)
Vibration (Non-Operating)	2.4 g rms (5 Hz to 500 Hz, 15 minutes in 3 orthogonal axes)
Functional Shock	20 g peak (half-sine, 11 ms pulse, 3 shocks in each direction along 3 axes)

Probes & Accessories

Standard Probes	PP011 (one per channel)
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Connectivity

USB Interface	6 x USB 2.0 ports (1 front, 5 side)
LAN Interface	10/100/1000Base-T Ethernet, RJ-45 connector
External Monitor Interface	15-pin D-Sub (VGA) connector
Audio Ports	Line In, Mic In, Line Out
GPIB Interface Option	External GPIB Card (IEEE-488.2) via USB
LXI Compliance	LXI Class C Compliant

Display

Grid Styles	Auto, Single, Dual, Quad, Octal, XY, Single XY, Dual XY
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TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

High-Speed Signal Integrity, Serial Data Debugging, Power Analysis, and Jitter Analysis

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