TELEDYNE LECROY
Everywhereyoulook™

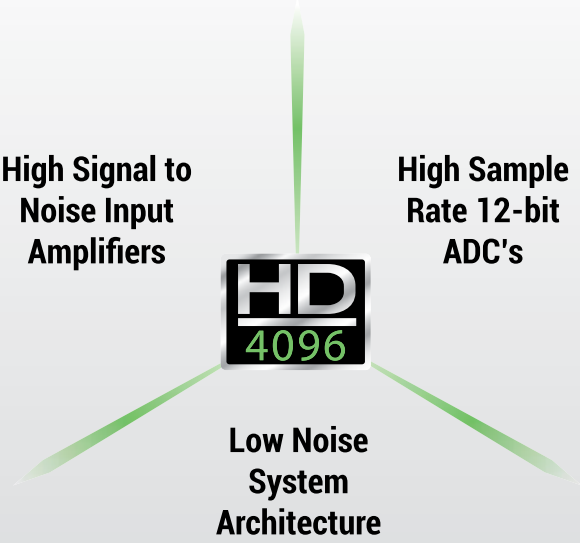
Test & Measurement Line Card

OSCILLOSCOPES

	 LabMaster 10 Zi-A (SDA/DDA Models)	 LabMaster 9 Zi-A (SDA/DDA Models)	 WaveMaster 8 Zi-A (SDA/DDA 8 Zi-A)	 WavePro 7 Zi-A (SDA/DDA 7 Zi-A)	 WaveRunner 6 Zi
Classification	Modular High End Analysis	Modular High End Analysis	High End Analysis	High End Analysis	Advanced Analysis
Bandwidth	20 GHz to 65 GHz	13 GHz to 30 GHz	4 GHz to 30 GHz	1.5 GHz to 6 GHz	400 MHz to 4 GHz
Resolution	8-bit ADC resolution, 11-bit with ERES	8-bit ADC resolution, 11-bit with ERES	8-bit ADC resolution, 11-bit with ERES	8-bit ADC resolution, 11-bit with ERES	8-bit ADC resolution, 11-bit with ERES
Channels	Up to 80	Up to 80	4	4	4
Display	15.3" WXGA Color Touch Screen	15.3" WXGA Color Touch Screen	15.3" WXGA Color Touch Screen	15.3" WXGA Color Touch Screen	12.1" Color WXGA Rotating Touch Screen
Memory	32 Mpts/Ch to 1024 Mpts/Ch	32 Mpts/Ch to 512 Mpts/Ch	32 Mpts to 512 Mpts/Ch	32 Mpts/Ch to 256 Mpts/Ch	32 Mpts/Ch to 128 Mpts/Ch
Sample Rate	Up to 160 GS/s	Up to 80 GS/s	Up to 80 GS/s	Up to 40 GS/s	Up to 40 GS/s
MSO Characteristics†	18 Ch or 36 Ch	18 Ch or 36 Ch	18 Ch or 36 Ch	18 Ch or 36 Ch	18 Ch or 36 Ch
Trigger Types	Basic, SMART, Sequence, High Speed Serial Protocol, Measurement	Basic, SMART, Sequence, High Speed Serial Protocol, Measurement	Basic, SMART, Sequence, High Speed Serial Protocol, Measurement	Basic, SMART, Sequence, High Speed Serial Protocol, Measurement	Basic, SMART, Sequence, Measurement
Serial Data TD Options	37	37	37	37	36
Application Solutions	Full range incl. Multi-Channel Applications	Full range incl. Multi-Channel Applications	Full range	Full range	Full range
Dimensions (HWD)	MCM-Zi: 277 x 462 x 396 mm LabMaster 10-xxZi Acq. Module: 202 x 462 x 660 mm	MCM-Zi: 277 x 462 x 396 mm LabMaster 9xxSZi-A Acq. Module: 177 x 462 x 527 mm	355 x 467 x 406 mm	355 x 467 x 289 mm	297 x 418 x 227 mm

† Optional

HD4096 HIGH DEFINITION TECHNOLOGY



HD4096 high definition technology consists of high sample rate 12-bit ADCs, high signal-to-noise ratio amplifiers and a low-noise system architecture. This technology enables high definition oscilloscopes to capture and display signals of up to 1 GHz with high sample rate and 16 times more resolution than other oscilloscopes.

Oscilloscopes with HD4096 have a variety of benefits:

Clean, Crisp Waveforms
Thin traces show the actual waveform with minimal noise interference

More Signal Details
Waveform details lost on an 8-bit oscilloscope can now be clearly seen

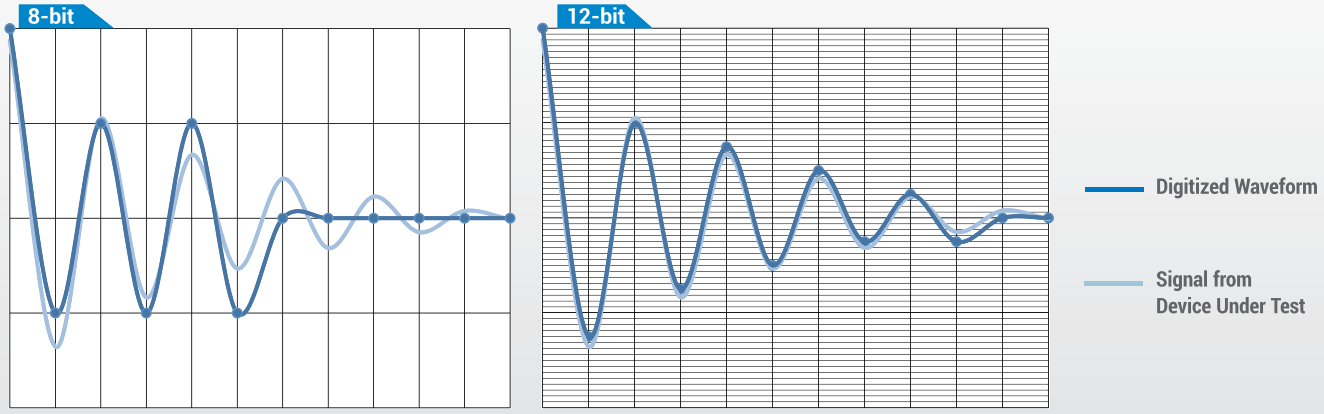
Unmatched Measurement Precision
Measurements are more precise and not affected by quantization noise

Learn More:
teledynelecroy.com/oscilloscope

	HDO6000/ HDO6000-MS	HDO4000/ HDO4000-MS	WaveSurfer MXs-B	WaveJet 300A	WaveAce 1000/2000
Classification	Advanced High Definition Analysis	High Definition Analysis	Bench	Bench	Economy
Bandwidth	350 MHz to 1 GHz	200 MHz to 1 GHz	200 MHz to 1 GHz	100 MHz to 500 MHz	40 MHz to 300 MHz
Resolution	12-bit ADC resolution, 15-bit with ERES	12-bit ADC resolution, 15-bit with ERES	8-bit ADC resolution, 11-bit with ERES	8-bit ADC resolution, 11-bit with ERES	8-bit ADC resolution, 11-bit with ERES
Channels	4 / 4 + 16	2 / 4 / 2 + 16 / 4 + 16	4	2 / 4	2 / 4
Display	12.1" Color WXGA Touch Screen	12.1" Color WXGA Touch Screen	10.4" Color SVGA Touch Screen	7.5" Color VGA	7" Color WQVGA
Memory	50 Mpts/Ch to 250 Mpts/Ch	25 Mpts/Ch to 50 Mpts/Ch	32 Mpts/Ch	500 kpts/Ch	24 kpts/Ch to 2 Mpts/Ch
Sample Rate	2.5 GS/s (12-bit)	2.5 GS/s (12-bit)	2.5 GS/s to 10 GS/s	1 GS/s to 2 GS/s	1 GS/s to 2 GS/s
MSO Characteristics†	16 Ch	16 Ch	18 Ch or 36 Ch	–	–
Trigger Types	Basic, SMART, Sequence, Measurement	Basic, SMART	Basic, SMART	Standard	Standard
Serial Data TD Options	24	20	20	–	–
Application Solutions	Full range	Standard, Advanced	Standard, Advanced	Standard	Standard
Dimensions (HWD)	291.7 x 399.4 x 131.31 mm	291.7 x 399.4 x 131.31 mm	260 x 340 x 152 mm	190 x 295 x 102 mm	163 x 360 x 124.1 mm

† Optional

16x More Resolution – 16x Closer to Perfect



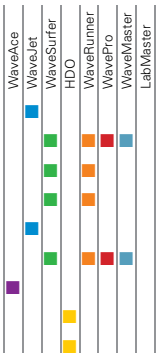
12-bits of vertical resolution provides sixteen times more resolution than 8-bits. The 4096 discrete levels reduce the quantization error. Signals captured with lower resolution oscilloscopes have a higher level of quantization error resulting in less accurate waveforms on the display. Signals captured on an oscilloscope with 12-bit HD4096 technology are accurately displayed with minimal quantization error.

OSCILLOSCOPE PROBES

The correct probe is an essential tool for accurate signal capture. Teledyne LeCroy offers an extensive range of probes to meet virtually every probing need.

Passive Probes

PP006A	500 MHz, 10:1, 10 MΩ, 600 V Passive Probe
PP007	500 MHz, 10:1, 10 MΩ, 400 V Passive Probe
PP008	500 MHz, 10:1, 10 MΩ, 400 V Passive Probe
PP009	500 MHz, 10:1, 10 MΩ, 400 V Passive Probe
PP010	200 MHz, 10:1, 10 MΩ, 600 V Passive Probe
PP011	500 MHz, 10:1, 10 MΩ, 400 V Passive Probe
PP016	300 MHz, 10:1, 10 MΩ, 600 V Passive Probe
PP017	250 MHz, 10:1, 10 MΩ, 600 V Passive Probe
PP018	500 MHz, 10:1, 10 MΩ, 600 V Passive Probe



Teledyne LeCroy passive probes automatically scale the oscilloscope waveforms without user input. Passive probes are the ideal tool for low frequency signals since circuit loading at these frequencies is minimized. Passive probes are designed to handle voltages of at least 400 V, some as high as 600 V.

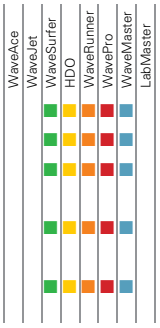
ZS Series High Impedance Active Probes

ZS1000	1 GHz, 0.9 pF, 1 MΩ Active Voltage Probe
ZS1500	1.5 GHz, 0.9 pF, 1 MΩ Active Voltage Probe
ZS2500	2.5 GHz, 0.9 pF, 1 MΩ Active Voltage Probe
ZS4000	4 GHz, 0.9 pF, 1 MΩ Active Voltage Probe

The ZS Series probes provide high impedance and an extensive set of probe tips and accessories to handle a wide range of probing scenarios. The high 1 MΩ input resistance and low 0.9 pF input capacitance make this probe the ideal choice for all frequencies.

Current Probes

CP030	30A, 50 MHz Current Probe
CP031	30A, 100 MHz Current Probe
AP015	30 A, 50 MHz Current Probe – AC/DC, 30 A rms, 50 A Peak Pulse
CP150	150 A, 10 MHz Current Probe – AC/DC, 150 A rms, 500 A Peak Pulse
CP500	500 A, 2 MHz Current Probe – AC/DC, 500 A rms, 700 A Peak Pulse



Available current probes reach bandwidths of 100 MHz, peak currents of 700 A and sensitivities of 10 mA/div. Use multiple current probes to make measurements on three phase systems or a single current probe together with a voltage probe to make instantaneous power measurements.

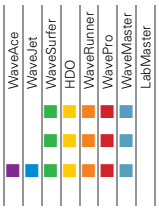
Differential Probes

ZD200	200 MHz, 3.5 pF, 1 MΩ Active Differential Probe, ±20 V
ZD500	500 MHz, 1.0 pF Active Differential Probe, ±8 V
ZD1000	1 GHz, 1.0 pF Active Differential Probe, ±8 V
ZD1500	1.5 GHz, 1.0 pF Active Differential Probe, ±8 V

High bandwidth, excellent common-mode rejection ratio (CMRR) and low noise make these active differential probes ideal for applications such as automotive development (e.g. FlexRay) and failure analysis, as well as wireless and data communication design.

High Voltage Differential Probes

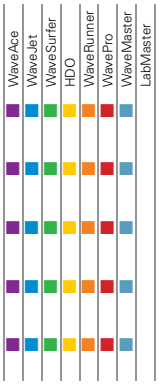
ADP305 1,400 V, 100 MHz High-Voltage Differential Probe
ADP300 1,400 V, 20 MHz High-Voltage Differential Probe
AP031 700 V, 15 MHz High-Voltage Differential Probe (÷10, ÷100)



Low cost active differential probes are intended for measuring higher voltages. The differential techniques employed permit measurements to be taken at two points in a circuit without reference to the ground, allowing the oscilloscope to be safely grounded without the use of opto-isolators or isolating transformers.

High Voltage Passive Probes

PPE1.2KV 200/300 MHz, 10:1/100:1, 50 MΩ High-Voltage Probe, 600V/1.2kV Max. Volt. DC
PPE2KV 400 MHz, 100:1, 50 MΩ High-Voltage Probe 2kV Max. Volt. DC
PPE4KV 400 MHz, 100:1, 50 MΩ High-Voltage Probe 4kV Max. Volt. DC
PPE5KV 400 MHz, 100:1, 50 MΩ High-Voltage Probe 5kV Max. Volt. DC
PPE6KV 400 MHz, 1000:1, 5 MΩ/50 MΩ High-Voltage Probe, 6kV Max. Volt. DC



The PPE Series includes five fixed-attenuation probes covering a range from 2 kV to 6 V, and one switchable probe providing ÷10/÷100 attenuation for voltage inputs up to 1.2 kV. All fixed-attenuation, standard probes automatically rescale compatible Teledyne LeCroy oscilloscopes for the appropriate attenuation of the probe.

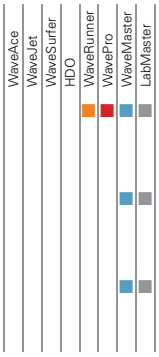
High Performance Differential Amplifier

DA1855A 1 Ch, 100 MHz Differential Amplifier with Precision Voltage Source
DA1855-PR2 2 Ch, 100 MHz, Differential Amplifier with Precision Voltage Source

The DA1855A is a stand-alone, high-performance differential amplifier providing the fastest overdrive recovery of any commercially available product. This unique capability enables the amplifier to make measurements that would normally be limited by oscilloscope overdrive recovery.

WaveLink® Differential Probes (4 GHz – 25 GHz)

D610/D620, D410/D420, D600A-AT, D400A-AT, D610-PS, D620-PS, D410-PS, D420-PS
4 GHz – 6 GHz
D830, D830-PS, D1030, D1030-PS, D1330, D1330-PS, D1305-A, D1305-A-PS,
8 GHz – 13 GHz
D1605-A, D1605-A-PS, D2005-A, D2005-APS, D2505-A, D2505-A-PS
16 GHz – 25 GHz



WaveLink® probes provide industry leading technology for wideband signal connection to test instruments. The first differential probes to employ SiGe technology, they deliver full system bandwidth of the connected oscilloscopes up to 25 GHz.

Learn More:
teledynelecroy.com/probes

PROTOCOL ANALYZERS

PCI Express®

Summit T3-8 Analyzer

2.5 GT/s ✓ 5 GT/s ✓ 8 GT/s ✓

The Summit T3-8 is a new protocol analyzer for the highest transfer speeds currently supported by the PCI Express specification, the PCI Express 3.0 protocol at data rates of 8 GT/s. The Summit T3-8 Protocol Analyzer provides the full, powerful feature set of the Summit T3-16 protocol analyzer but at close to half the physical size and at significantly lower cost. The Summit T3-8 protocol analyzer system can support lane widths up to x8 in a single configuration and also support up to x16 when combined together with another Summit T3-8 protocol analyzer.

Summit T24 Analyzer

2.5 GT/s ✓ 5 GT/s ✓

With advanced features such as support for PCI Express Spec 2.0, data rates of both 2.5 and 5 Gb/s, lane widths from x1 to x4, and a full 2 GB of trace memory, the Summit T24 provides unmatched capability and flexibility for developers and users of advanced PCI Express products. The Summit T24 is the most cost effective PCI Express Analyzer available in the market today.

Summit T28 Analyzer

2.5 GT/s ✓ 5 GT/s ✓

The Summit T28 is a new protocol analyzer that provides a powerful and extremely cost-effective solution for any applications requiring PCIe 2.0 speeds and functionality. The new compact Summit T28 Protocol Analyzer features a small chassis footprint while maintaining (for lane widths up to x8) the same data recording and analysis features found in the high-end Summit T2-16 protocol analyzer. The Summit T28 protocol analyzer supports PCIe® data transmission rates up to 5 GT/s and data lane widths up to x8 in a single compact unit.

Serial Attached SCSI (SAS) and Serial ATA (SATA)

Sierra M6-2 Protocol Verification System

1.5G ✓ 3G ✓ 6G ✓

The Sierra M6-2 system provides an economical alternative to the industry-leading Sierra M6-4 for customers that require only 1 or 2 SAS/SATA ports with the option to combine M6-2 Analyzers for up to 32 ports. While providing all of the traffic generation, emulation, error injection, and compliance test capabilities of the M6-4 the Sierra M6-2 delivers this in a more compact package with significant cost savings.

Universal Serial Bus (USB)

Voyager™ M3x Protocol Verification System

1.5M ✓ 12M ✓ 480M ✓ 5G ✓

The Voyager M3x is Teledyne LeCroy's 6th generation USB protocol verification system designed for the next evolution of universal serial bus known as SuperSpeed USB. Leveraging Teledyne LeCroy's extensive expertise in high-speed serial data analysis, the Voyager provides 100 % accurate protocol capture of both USB 2.0 and 3.0 at data rates up to 5 Gb/s.

Mercury T2

1.5M ✓ 12M ✓ 480M ✓

The Mercury T2 is the industry's smallest, most affordable hardware-based USB 2.0 protocol analyzer that combines the defacto standard CATC Trace display with powerful analysis features. The pocket-sized Mercury T2 is bus powered and is controlled using any Windows PC. With comprehensive triggering, the Mercury T2 provides much of the same lab quality protocol analysis capabilities offered in Teledyne LeCroy's top-of-the-line USB analyzers.

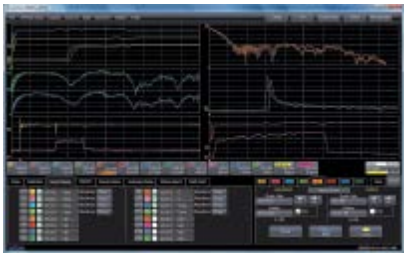
USB 3.0 Test Suites

1.5M ✓ 12M ✓ 480M ✓ 5G ✓

Teledyne LeCroy is the only company that offers a complete line of USB 3.0 test solutions covering transmitter test to protocol test, and every step in between for comprehensive verification, debug and compliance, through our complete line of oscilloscopes, receiver test and protocol test solutions. See teledynelecroy.com for more information on USB 3.0 bundles.

For additional products and other protocols supported, please visit: teledynelecroy.com/protocolanalyzer

Signal Integrity Network Analyzer



The SPARQ signal integrity network analyzer displays time and frequency domain measurement results simultaneously.

High-bandwidth, Multi-port S-parameter Measurements

The SPARQ Signal Integrity Network Analyzers are ideal for the engineer who wants to make S-parameter measurements quickly, easily, and at a fraction of the cost of a VNA. Fully calibrated measurements can be made in minutes, and without any need to connect or disconnect cables to calibration kit standards or electronic calibration modules.

SPARQs are available from 2 through 12 ports. The 8 and 12-port models are capable of characterizing crosstalk on multi-lane differential devices. For example, the 12-port SPARQ can simultaneously measure NEXT and FEXT crosstalk on up to 3 differential lanes, and is similar in price to a lesser-capable 4-port VNA.

Interested in eye diagrams and jitter, and in equalization requirements to compensate for channel effects? Order SPARQ-SISTUDIO along with your SPARQ analyzer to understand the complete picture.

It is ideal for:

- Development of measurement-based simulation models
- Design validation
- Compliance testing
- High-performance TDR
- PCB testing
- Portable measurement requirement

Learn More:
teledynelecroy.com/sparq

SParamViewer

SParamViewer is a free tool for plotting S-Parameters – download SParamViewer from our Software Download Section:

- Reads standard Touchstone format S-Parameter files
- Zoom in for more detail
- Copy and Paste S-Parameter data as images, text, or Microsoft Excel® format

Learn More:
teledynelecroy.com/support/softwaredownload

PeRT³ Test System

Protocol-enabled Receiver and Transmitter Tolerance Tester

The **PeRT³** (Protocol-enabled Receiver and Transmitter Tolerance Tester) fills the space between physical layer test and protocol test, providing a new and more intelligent capability for performance testing of receivers and transmitters. Designed to meet the test needs of engineers working with serial data transceivers and other high-speed serial data communication systems, the Teledyne LeCroy **PeRT³** Test System is not just a new instrument, it is an entirely new instrument class.

Learn More:
teledynelecroy.com/pert3

WaveExpert Sampling Oscilloscopes

Up to 20 GHz TDR with Full S-parameter Measurements

WaveExpert with Bandwidths up to 100 GHz is the ideal signal integrity analysis solution for high-speed links. Measurement complexity and the emergence of receiver equalization which allows high-speed serial data links to operate error-free even when the signal is severely distorted requires WaveExpert's high bandwidth and detailed analysis capability.

Learn More:
teledynelecroy.com/waveexpert

TEST & MEASUREMENT INSTRUMENTS

Arbitrary Waveform Generators

High Resolution 16-Bit Generators for Analog and Digital Waveform Generation

ArbStudio series of arbitrary waveform generators (AWG) generates signals up to 125 MHz with high sample rate, long memory and high resolution as well as a variety of operating modes, modulation capabilities and a digital pattern generator. The software interface that controls the hardware is designed to simplify waveform creation with an intuitive navigation tree which allows easy access to all channels along with special views for controlling basic function generator outputs as well as pulse width modulation (PWM) capabilities.

Learn More:
teledynelecroy.com/arbstudio

WaveStation Waveform Generators

Powerful Combination of Performance and Flexibility

With 5 basic signal types, and over 40 built-in arbitrary waveforms the **WaveStation** is a versatile waveform generator with Bandwidth up to 160 MHz. A variety of modulation schemes, intuitive waveform editing software and remote control capabilities enable versatile waveform generation. The large color display and simple user interface make it easy to generate a wide range of waveforms.

Learn More:
teledynelecroy.com/wavestation

Logic Analyzer

16 Channels, 1 GS/s, 100 MHz Input plus I²C, SPI and UART Analysis

LogicStudio 16 provides 16 channels with a high sample rate of 1 GS/s and maximum input of up to 100 MHz. The software provides a lively, dynamic waveform display with a smart, intuitive user-interface that is easily navigated by a few basic mouse clicks. **LogicStudio** provides a lot of tools for digital debug including timing cursors, unique zooming and panning of waveforms, a persistence display and a history mode which can replay previously captured data. Additionally, protocol analysis for I²C, SPI and UART is included to decode waveforms as they are captured and provide the ability to trigger on specific address or data packets on the bus.

Try it Free – Download software here
teledynelecroy.com/logicstudio

DISTRIBUTOR TELEDYNE LECROY Everywhereyoulook™ PARTNER

Products marked with this symbol are sold through Teledyne LeCroy Distributor Partners.

TELEDYNE LECROY Everywhereyoulook™

teledynelecroy.com

Local sales offices are located throughout the world.
Visit our website to find the most convenient location.