TELEDYNE LECROY
Everywhereyoulook™

# WaveSurfer® MXs-B and MSO MXs-B Oscilloscopes

## 200 MHz – 1 GHz

## Key Features

### WaveSurfer® MXs-B

- 200 MHz, 400 MHz, 600 MHz and 1 GHz Bandwidths
- Up to 10 GS/s Sample Rate
- 16 Mpts/Ch Memory, 32 Mpts Interleaved
- Fast Processing of Long Memory and Math
- Responsive User Interface
- WaveStream™ Fast Viewing Mode
- WaveScan™ – Advanced Search and Find
- LabNotebook Documentation and Report Generation
- 10.4" Touch Screen Display
- LXI Compliant

### MSO MXs-B

**All the great features of the WaveSurfer MXs-B plus:**

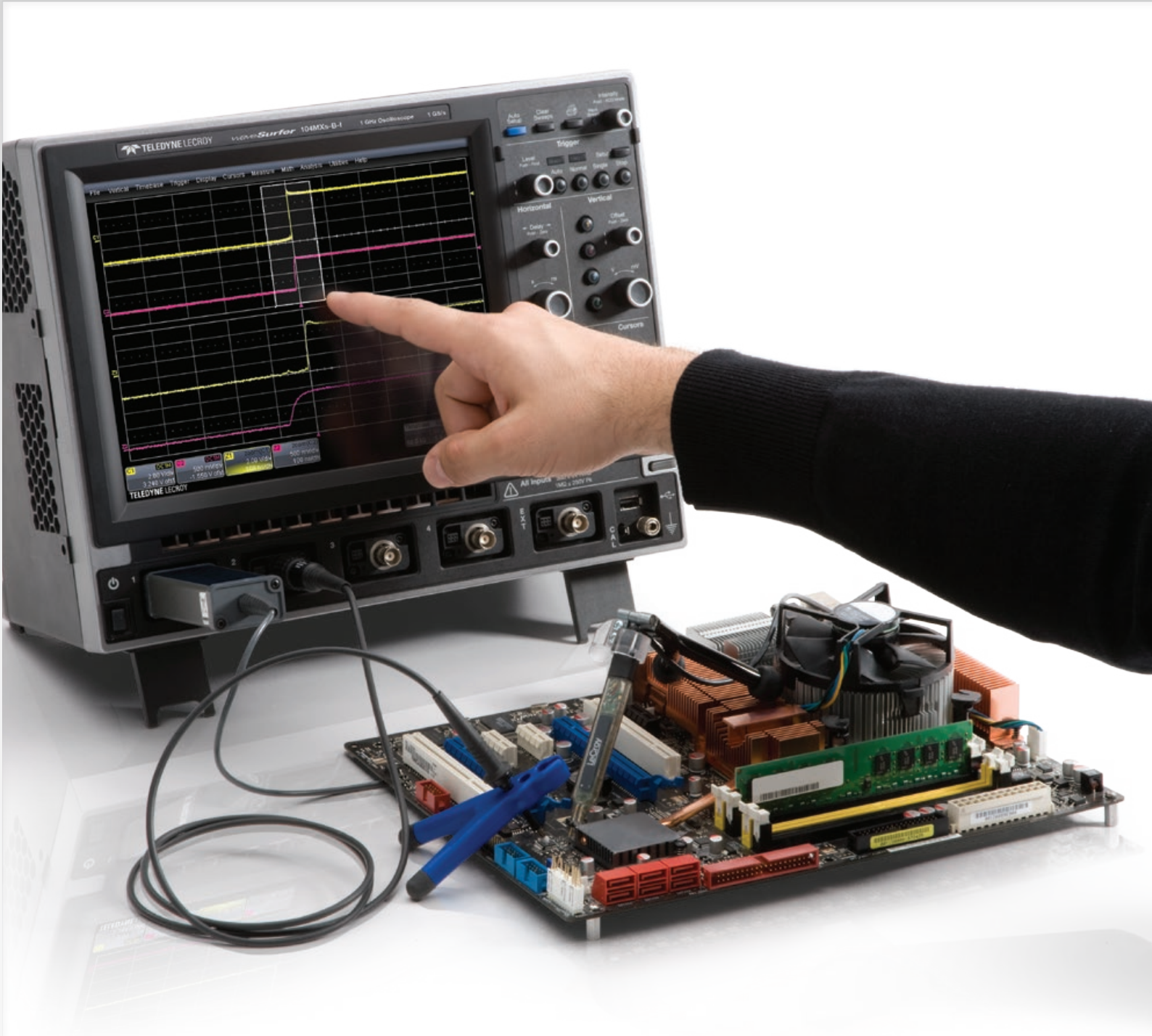
- 18 Digital Channels
- Max. Digital Signal Speed of 250 MHz
- Analog and Digital Cross Pattern Triggering

**The WaveSurfer® MXs-B and MSO MXs-B oscilloscopes pack high performance hardware, powerful waveform processing and advanced math, measurement and debug tools into a compact form factor with a large touch screen display and intuitive user interface.**

With up to 10 GS/s sample rate and 32 Mpts of memory WaveSurfer can capture large amounts of data at very high sample rates. Other oscilloscopes offer long memory but they bog down trying to process or display it. WaveSurfer handles large amounts of data quickly providing fast processing of long memory even when using math and measurement functions. The software responds immediately to the user inputs even while processing data.

System debug often requires more than analog channels. The MSO MXs-B delivers 18 digital channels which can capture digital signals of up to 250 MHz. The MSO MXs-B offer analog and digital cross-triggering plus measurement tools to help debug digital busses. Teledyne LeCroy's WaveScan™ search and find tool will scan both analog and digital channels for anamolies plus scan multiple digital lines for a parallel bus pattern.

# TOUCH SCREEN SIMPLICITY




Don't waste time searching through a complex menu structure to find the proper setting. Configuring the WaveSurfer is simple thanks to the intuitive touch screen user interface. Everything on the screen is interactive. To adjust channel, timebase, or trigger settings, simply touch the associated descriptor box and the appropriate menu is opened. Measurements can be touched to adjust their settings and cursors can be positioned precisely by touching and dragging them to the proper location. A box can be drawn around a portion of a waveform to create a zoom of that waveform. Even waveform offset and delay can be adjusted simply by touching and dragging the waveform.

# ADVANCED TOOLS FOR WAVEFORM ANALYSIS

## Embedded Controller Design and Debug

Save time when working with embedded controllers by adding high-performance mixed signal capability with the MSO MXs-B. Capture digital signals up to 250 MHz with up to 10 Mpts/Ch memory, 1 GS/s and 18 channels. Quickly and easily isolate specific serial data events with optional $I^2C$, SPI, UART, RS-232, USB 1.0/1.1/2.0, USB2-HSIC, 10/100Base T ENET, Audio (I2S, LJ, RJ, TDM), MIL-STD-1553, ARINC 429, MIPI D-PHY, DigRF, CAN, LIN, FlexRay™, SENT, Manchester, and NRZ trigger and decode options.

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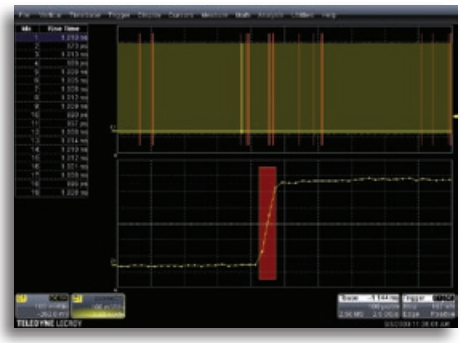
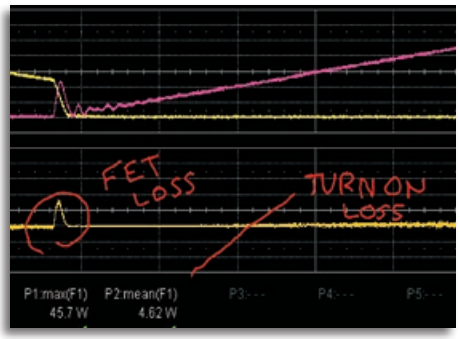


## WaveScan Advanced Search and Find Tool

Quickly search waveforms for runts, glitches or other anomalies with WaveScan.




## LabNotebook Documentation and Report Generation Tool

Save all results and data with a single button press and create custom reports with LabNotebook.

## Simple Power Measurements

Measure and analyze operating characteristics of power conversion devices and circuits.

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## Sequence Mode Acquisition

Capture many fast pulses in quick succession or events separated by long periods of time.

## Advanced Math and Measure

Use automatic measurement parameters with statistics and histicons as well as math functions to understand every waveform detail.

## WaveStream Fast Viewing Mode

WaveStream provides a vibrant, intensity graded (256 levels) display with a fast update to closely simulate the look and feel of an analog oscilloscope.

# INTUITIVE USER INTERFACE TO FIND PROBLEMS FASTER

**The WaveSurfer MXs-B and MSO MXs-B oscilloscopes makes everyday testing simpler and easier. The intuitive user interface and streamlined front panel make it easy to turn on the oscilloscope and start making measurements. The interface is designed so that all the common measurements and functions are just one touch away.**

### 1. Only 15 cm (6”) Deep

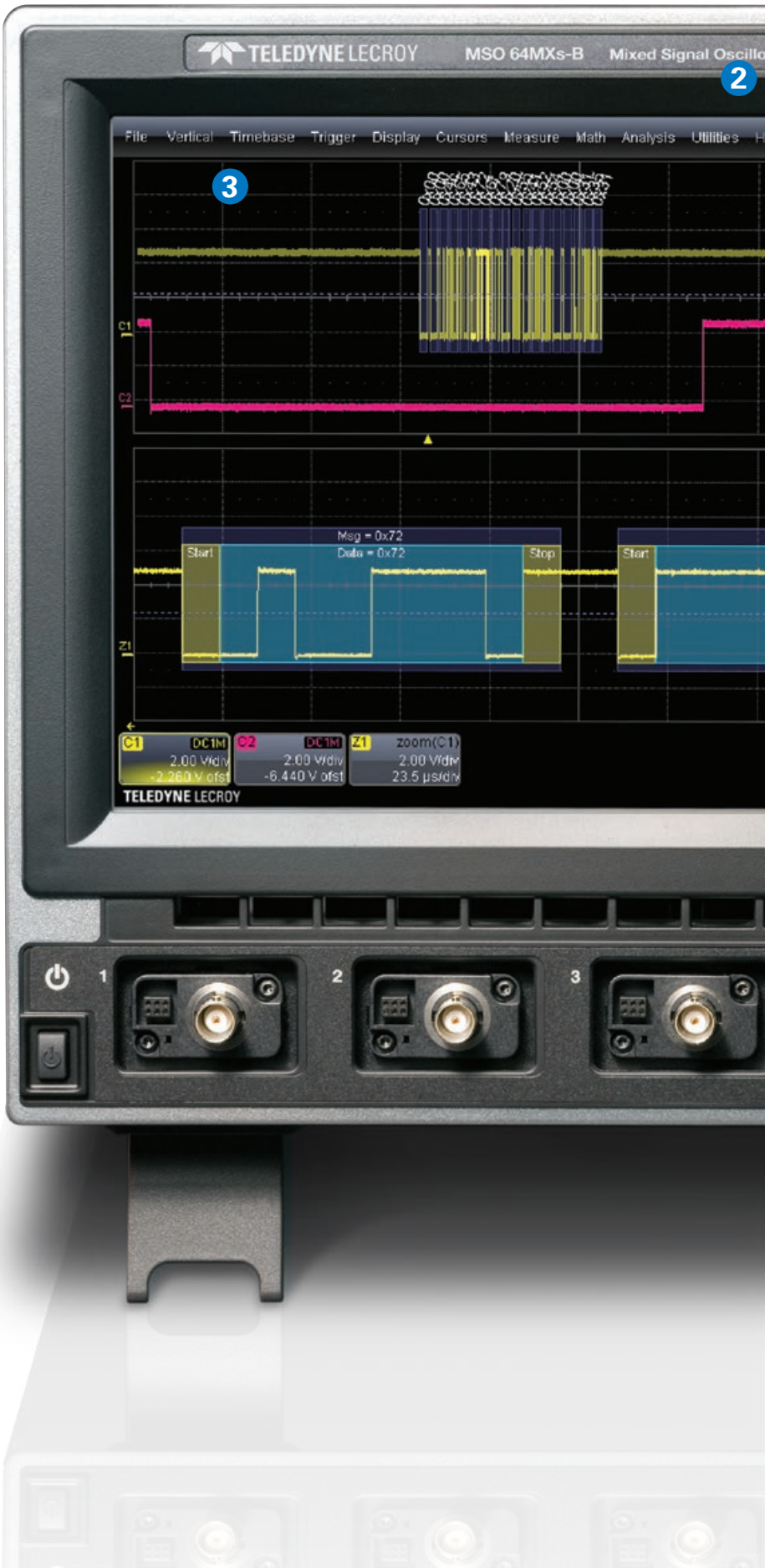
The most space-efficient oscilloscope for your bench from 200 MHz to 1 GHz.

### 2. Local Language User Interface

Select from 10 language preferences. Add a front panel overlay with your local language.

### 3. Bright 10.4” Display

You’ll never use a small display oscilloscope again. A fantastic viewing angle makes it easy to view.



### 4. "Push" Knobs

Trigger level, delay, and offset knobs all provide shortcuts to common actions when pushed.

### 5. Zoom Control Knobs

Navigate zoom or math traces with the multiplexed horizontal knobs.

### 6. WaveStream Fast Viewing Mode

Provides a lively, analog-like feel similar to a phosphor trace. Adjust "trace" intensity with the front panel control, or toggle between WaveStream and real-time modes.

### 7. Dedicated Cursor Knobs

Select type of cursor, position them on your signal, and read values without ever opening a menu.

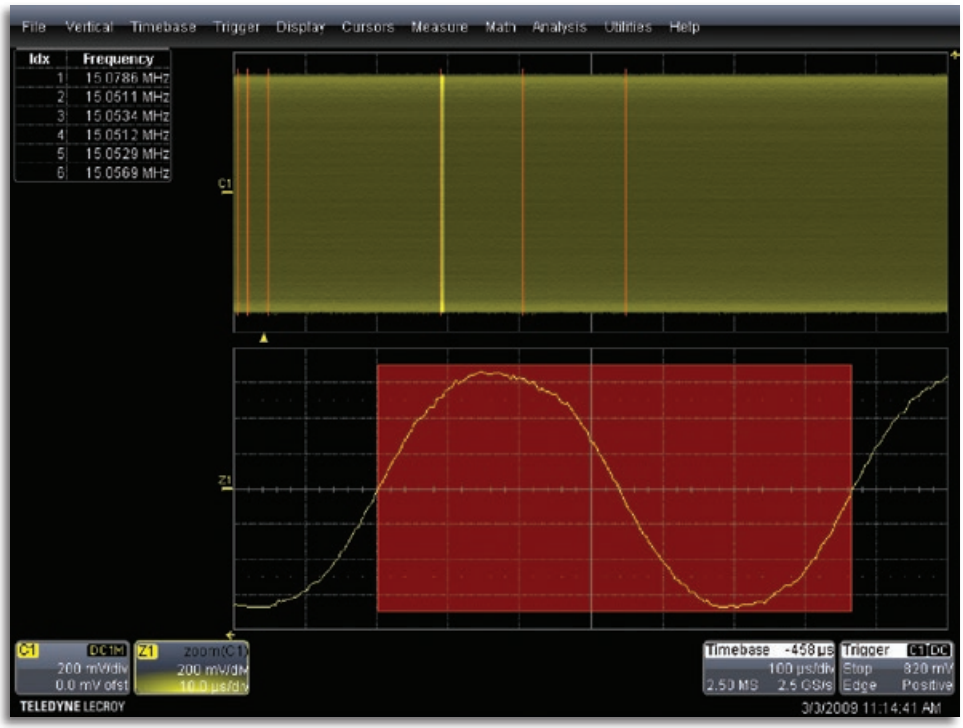
### 8. Touch Screen with Built-in Stylus

The most time-efficient user interface is even easier to use with a built-in stylus.

**Document and Share:**

- Quickly save all files with LabNotebook
- Create custom reports with LabNotebook
- Save to internal hard drive or network drive
- Print to a USB printer
- Save to USB memory stick
- Connect with LAN or GPIB
- View data on a PC with free WaveStudio utility

# IDENTIFY AND ISOLATE PROBLEMS FASTER




## WaveScan Advanced Search

**WaveScan provides powerful isolation capabilities that hardware triggers can't provide. WaveScan provides the ability to locate unusual events in a single capture (i.e., capture and search), or "scan" for an event in many acquisitions over a long period of time. Select from more than 20 search modes to find events on any analog or digital channel or search for a pattern across multiple digital channels.**

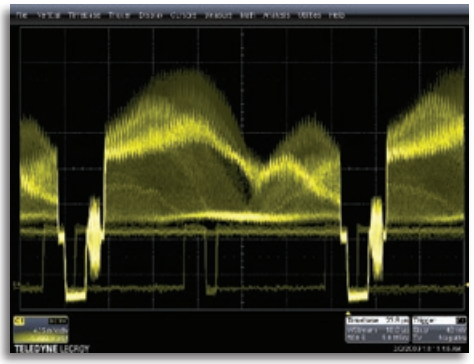
Since the scanning "modes" are not simply copies of the hardware triggers, the utility and capability is much higher. For instance, there is no "frequency" trigger in any oscilloscope, yet WaveScan allows for "frequency" to be quickly "scanned." This allows the user to accumulate a data set of unusual events that are separated by hours or days, enabling faster debugging. When used in multiple acquisitions, WaveScan builds on the traditional Teledyne LeCroy strength of fast processing of data. A Teledyne LeCroy X-Stream oscilloscope will quickly scan millions of events looking for unusual occurrences, and do it much faster and more efficiently than other oscilloscopes can.

## Advanced Waveform Capture with Sequence Mode

Use Sequence mode to store up to 5,000 triggered events as "segments" into memory. This can be ideal when capturing many fast pulses in quick succession or when capturing events separated by long time periods. Sequence mode provides timestamps for each acquisition and minimizes dead-time between triggers to less than 1 µs. Combine Sequence mode with advanced triggers to isolate rare events over time and analyze afterwards.

## WaveStream Fast Viewing Mode

WaveStream provides a vibrant, intensity graded (256 levels) display with fast update rate to simulate the look and feel of an analog oscilloscope. WaveStream is helpful for seeing jitter or identifying unusual events. With sampling rate as high as 10 GS/s WaveStream is an excellent runt or glitch finder.



# LABNOTEBOOK™
## *A UNIQUE TOOL FOR DOCUMENTATION AND REPORT GENERATION*

**The LabNotebook feature of WaveSurfer MXs-B and MSO MXs-B provides a report generation tool to save and document all your work. Saving all displayed waveforms, relevant settings, and screen images is all done through LabNotebook, eliminating the need to navigate multiple menus to save all these files independently.**

*Easy report generation helps you share your findings and communicate important results.*

*LabNotebook adds a simple way to report your work and save all essential waveforms, settings, and screen images.*

*Quickly save all the necessary files with LabNotebook in a single button press.*

*Recall your settings from any report by using the Flashback capability.*

*The touch screen and stylus allow for easy annotation of the screen. LabNotebook allows you to add freehand text and graphics in multiple colors along with printed text and arrows to help identify important parts of your waveforms and measurements. Annotated screen captures can be included in custom reports.*

# EMBEDDED CONTROLLER DESIGN AND DEBUG

**Teledyne LeCroy's versatile MSO MXs-B mixed signal oscilloscope combines the powerful WaveSurfer MXs-B with the flexibility of digital inputs using the MS-250. In addition, the many triggering and decoding options turn the MSO MXs-B into an all-in-one analog, digital, and serial data trigger, acquisition, and debug machine.**

## High-performance Mixed Signal Capabilities

Embedded controller design and debug involves capturing and viewing a number of different types of signals. These signals are typically a mix of analog, digital, and serial data waveforms from a combination of analog sensors, microcontrollers and peripheral devices. With the ability to capture digital signals with speeds up to 250 MHz and long memory of 10 Mpts/Ch the MSO MXs-B provides unmatched mixed signal performance. The MSO MXs-B is the ideal tool for testing embedded systems with 8-bit microcontrollers or slower digital signals. With 18 digital inputs each with 250 MHz max. input frequency and 10 Mpts/Ch memory, the MSO MXs-B is an outstanding value and provides a complete set of tools for embedded system testing.

## Extensive Triggering

The MSO MXs-B has extensive digital trigger capabilities. Normal oscilloscope triggers will operate on digital inputs. Cross-pattern triggering allows for simple or complex trigger patterns to be setup with any combination of analog and digital channels. Event triggering can be configured to arm on an analog signal and trigger on a digital pattern.

## Quick Mixed Signal Setup, Easy-to-use

Unlike a traditional Logic Analyzer, the MSO MXs-B is easy to use. A simple connection links the oscilloscope with the digital inputs so users can start viewing signals and begin debugging quickly. In addition, all standard oscilloscope tools are readily accessible. Signal debug is simple, using standard oscilloscope tools, such as cursors, measurement parameters, and zooming.

# SERIAL TRIGGER AND DECODE OPTIONS

*View decoded protocol information on top of physical layer waveforms and trigger on protocol specific messages.*

## Supported Serial Data Protocols

- $I^2C$, SPI, UART
- CAN, LIN, FlexRay™, SENT
- Ethernet 10/100BaseT, USB 1.0/1.1/2.0, USB 2.0-HSIC
- Audio ($I^2S$, LJ, RJ, TDM)
- MIL-STD-1553, ARINC 429
- MIPI D-PHY, DigRF 3G, DigRF v4
- Manchester, NRZ

**Debugging serial data busses can be confusing and time consuming. The serial data and decode options for MSO MXs-B provide time saving tools for serial bus debug and validation.**

## Powerful Serial Data Triggers

The serial data trigger will quickly isolate events on a bus eliminating the need to set manual triggers and hoping to catch the right information. Trigger conditions can be entered in binary or hexadecimal formats and conditional trigger capabilities even allow triggering on a range of different events.

## Intuitive, Color-Coded Decode Overlay

Protocol decoding is shown directly on the waveform with an intuitive, color-coded overlay and presented in binary, hex or ASCII. Decoding on the MSO MXs-B is fast even with long memory and zooming in to the waveform shows precise byte by byte decoding.

## Table Summary and Search/Zoom

To further simplify the debug process all decoded data can be displayed in a table below the waveform grid. Selecting an entry in the table with the touch screen will display just that event. Additionally, built-in search functionality will find specific decoded values.

## Key Features

- **Automatic switching device measurements**
- **Color coded overlay to identify power losses**
- **Control loop and time domain response analysis**
- **Line power and harmonics tests to IEC 61000-3-2**
- **Total harmonic distortion table shows frequency contribution**
- **B-H Curve shows magnetic device saturation**

### Power Analyzer Automates Switching Device Loss Measurements

Quickly measure and analyze the operating characteristics of power conversion devices and circuits with the Power Analyzer option. Critical power switching device measurements, control loop modulation analysis, and line power harmonic testing are all simplified with a dedicated user interface and automatic measurements. Areas of turn-on, turn-off, and conduction loss are all identified with color-coded waveform overlays for faster analysis.

Power Analyzer provides quick and easy setup of voltage and current inputs and makes measurements as simple as the push of a button. Tools are provided to help reduce sources of measurement errors and the measurement parameters provide details of single cycle or average device power losses.

Beyond the advanced power loss measurement capabilities, the Power Analyzer modulation analysis capabilities provide insight to understand control loop response to critical events such as a power supply's soft start performance or step response to line and load changes. The Line Power Analysis tool allows simple and quick pre-compliance testing to EN 61000-3-2.

# BROAD RANGE OF PROBING SOLUTIONS

## WaveSurfer MXs-B and MSO MXs-B support a broad range of probes for a variety of applications.

**ZS Series High Impedance Active Probes**
ZS2500, ZS1500, ZS1000, ZS2500-QUADPAK, ZS1500-QUADPAK, ZS1000-QUADPAK

The ZS Series probes provide high impedance and an extensive set of probe tips and ground accessories to handle a wide range of probing scenarios. The high 1 MΩ input resistance and low 0.9 pF input capacitance mean this probe is ideal for all frequencies. The ZS Series probes provide full system bandwidth for all Teledyne LeCroy oscilloscopes having bandwidths of 1 GHz and lower.

**Differential Probes (200 MHz – 1.5 GHz)**
ZD1500, ZD1000, ZD500, ZD200

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. The ProBus interface allows sensitivity, offset and common-mode range to be displayed on the oscilloscope screen.

**High Voltage Differential Probes**
ADP305, ADP300, AP031

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, PPE20KV, PPE2KV, PPE4KV, PPE5KV, PPE6KV

The PPE Series includes five fixed-attenuation probes covering a range from 2 kV to 20 kV, 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.

**Current Probes**
CP031, CP030, AP015, CP150, CP500, DCS015

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 with a voltage probe to make instantaneous power measurements. Teledyne LeCroy current probes enable the design and testing of switching power supplies, motor drives, electric vehicles, and uninterruptible power supplies.

# SPECIFICATIONS

| Analog Channels – Vertical | WaveSurfer 24MXs-B | WaveSurfer 44MXs-B MSO 44MXs-B | WaveSurfer 42MXs-B | WaveSurfer 64MXs-B MSO 64MXs-B | WaveSurfer 62MXs-B | WaveSurfer 104MXs-B MSO 104MXs-B |
|---|---|---|---|---|---|---|
| Bandwidth (@ 50 Ω) | 200 MHz | 400 MHz | 400 MHz | 600 MHz | 600 MHz | 1 GHz |
| Rise Time | 1.75 ns | 875 ps | 875 ps | 525 ps | 525 ps | 350 ps |
| Input Channels | 4 | 4 | 2 | 4 | 2 | 4 |
| Vertical Resolution | 8 bits | | | | | |
| Vertical Sensitivity (V/div) | 2 mV/div–10 V/div (1 MΩ); 2 mV/div–1 V/div (50 Ω) | | | | | |
| Vertical (DC Gain) Accuracy | ±1.0% of full scale (typical); ±1.5% of full scale ≥ 10 mV/div (warranted) | | | | | |
| BW Limit | 20 MHz | 20 MHz, 200 MHz | | | | |
| Maximum Input Voltage | 50 Ω: 5 $V_{rms}$, 1 MΩ: 400 V max. (DC + Peak AC ≤ 5 kHz) | | | | | 50 Ω: 5 Vrms<br>1 MΩ: 250 V max.<br>(DC + Peak AC ≤10 kHz) |
| Input Coupling | AC, DC, GND (DC and GND for 50 Ω) | | | | | |
| Input Impedance | 1 MΩ \|\| 16 pF, or 50 Ω | | | | | |

| Analog Channels – Acquisition | | | |
|---|---|---|---|
| Sample Rate (Single-shot) | 2.5 GS/s | 5 GS/s | 5 GS/s<br>(10 GS/s Interleaved) |
| Sample Rate (Repetitive) | 50 GS/s | | |
| Record Length | 16 Mpts/Ch (all channels), 32 Mpts (interleaved) | | |
| Capture Time | Up to 3.2 ms at full sample rate on all four channels | | |
| Acquisition Modes | Real Time, Roll, RIS (Random Interleaved Sampling), WaveStream (Fast Viewing Mode), Sequence (Segmented Memory up to 5,000 segments with 1µs intersegment time) | | |
| Time Base Range | 200 ps/div–1000 s/div (roll mode from 500 ms/div–1000 s/div) | | |
| Time Base Accuracy | ≤ 5 ppm @ 25 °C (typical) (≤ 10 ppm @ 5–40 °C) | | |

| Digital Channels – Vertical | | | |
|---|---|---|---|
| Input Channels | 18 (D0–D17) | 18 (D0–D17) | 18 (D0–D17) |
| Input Impedance | 100 kΩ \|\| 5.0 pF | 100 kΩ \|\| 5.0 pF | 100 kΩ \|\| 5.0 pF |
| Maximum Input Voltage | ±30 V non-destruct | ±30 V non-destruct | ±30 V non-destruct |
| Threshold Groupings | D0–D8, D9–D17 | D0–D8, D9–D17 | D0–D8, D9–D17 |
| Threshold Selections | TTL, ECL, CMOS, PECL, LVDS, User Defined | TTL, ECL, CMOS, PECL, LVDS, User Defined | TTL, ECL, CMOS, PECL, LVDS, User Defined |

| Digital Channels – Acquisition | | | |
|---|---|---|---|
| Sample Rate | 1 GS/s | 1 GS/s | 1 GS/s |
| Record Length | 10 Mpts/Ch | 10 Mpts/Ch | 10 Mpts/Ch |
| Minimum Detectable Pulse Width | 2 ns | 2 ns | 2 ns |
| Maximum Input Frequency | 250 MHz | 250 MHz | 250 MHz |

# SPECIFICATIONS

| Trigger System | WaveSurfer 24MXs-B | WaveSurfer 44MXs-B<br>MSO 44MXs-B | WaveSurfer 42MXs-B | WaveSurfer 64MXs-B<br>MSO 64MXs-B | WaveSurfer 62MXs-B | WaveSurfer 104MXs-B<br>MSO 104MXs-B |
|---|---|---|---|---|---|---|
| Trigger Modes | Normal, Auto, Single, and Stop | | | | | |
| Trigger Sources | Any input channel, External, Ext/10, or line; slope and level unique to each source (except for line trigger) | | | | | |
| Trigger Coupling | DC, AC, HFRej, LFRej | | | | | |
| Pre-trigger Delay | 0–100% of full scale | | | | | |
| Post-trigger Delay | 0–10,000 divisions | | | | | |
| Trigger Hold-off | 1 ns to 20 s or 1 to 1,000,000,000 events | | | | | |
| Internal Trigger Level Range | ±4.1 div from center | | | | | |
| External Trigger Range | EXT/10 ±4V; EXT ±400 mV | | | | | |
| Trigger Types | Edge, Glitch, Width, Logic (Pattern), TV (NTSC, PAL, SECAM, HDTV–720p, 1080i, 1080p), Runt, Slew Rate, Interval (signal or Pattern), Dropout, Qualified (State or Edge) | | | | | |

| Probes | | |
|---|---|---|
| Standard Probes | One PP009 (5 mm) per channel | One PP011 (5 mm) per channel |
| Probing System | BNC and Teledyne LeCroy ProBus for Active voltage, current and differential probes | |

| Measure, Zoom, and Math Tools | |
|---|---|
| Measurement Parameters | Up to 6 of the following parameters can be calculated at one time on any waveform: Amplitude, Area, Base (Low), Delay, Duty, Fall Time (90%–10%), Fall Time (80%–20%), Frequency, Maximum, Mean, Minimum, Overshoot+, Overshoot-, Period, Peak-Peak, Phase, Rise Time (10%–90%), Rise Time (20%–80%), RMS, Skew, Standard Deviation, Top (High), Width+, Width-. Measurements can be gated. |
| Zooming | Use front panel QuickZoom button, or use touch screen or mouse to draw a box around the zoom area. |
| Math Functions | Functions include Sum, Difference, Product, Ratio, Absolute Value, Averaging (summed and continuous), Derivative, Envelope, Enhanced Resolution (to 11-bits), Floor, Integral, Invert, Reciprocal, Rescale (change scale and units), Roof, Square, Square Root and FFT (up to 1 Mpts with power spectrum output and rectangular, VonHann, and FlatTop windows). 1 math function may be defined at a time, 2 functions may be chained together. |

| Display System | |
|---|---|
| Display Type | Color, 10.4" TFT-LCD Touch Screen |
| Display Resolution | SVGA: 800 x 600 pixels |

| Connectivity | |
|---|---|
| Ethernet Port | 10/100/1000Base-T Ethernet interface (RJ-45 connector) |
| USB Ports | (5) USB Ports |
| GPIB Port (Optional) | Supports IEEE – 488.2 (Optional External Adapter) |
| External Monitor Port | Standard 15-pin D-Type SVGA-compatible DB-15 connector |
| Remote Control | Via Windows Automation, or via Teledyne LeCroy Remote Command Set |
| Network Communication Standard | VXI-11 or VICP, LXI Class C Compliant |

| Physical | |
|---|---|
| Dimensions (HWD) | 260 mm x 340 mm x 152 mm Excluding accessories and projections (10.25" x 13.4" x 6") |
| Net Weight | 7.26 kg. (16.0 lbs.) |

# ORDERING INFORMATION

| Product Description | Product Code |
|---|---|
| **WaveSurfer MXs-B Oscilloscopes** | |
| 200 MHz, 2.5 GS/s, 4 Ch, 16 Mpts/Ch DSO with 10.4" Color Touch Screen Display. 32 Mpts Interleaved | WaveSurfer 24MXs-B |
| 400 MHz, 5 GS/s, 2 Ch, 16 Mpts/Ch DSO with 10.4" Color Touch Screen Display. 32 Mpts Interleaved | WaveSurfer 42MXs-B |
| 400 MHz, 5 GS/s, 4 Ch, 16 Mpts/Ch DSO with 10.4" Color Touch Screen Display. 32 Mpts Interleaved | WaveSurfer 44MXs-B |
| 600 MHz,5 GS/s, 2 Ch, 16 Mpts/Ch DSO with 10.4" Color Touch Screen Display. 10 GS/s, 32 Mpts Interleaved | WaveSurfer 62MXs-B |
| 600 MHz,5 GS/s, 4 Ch, 16 Mpts/Ch DSO with 10.4" Color Touch Screen Display. 10 GS/s, 32 Mpts Interleaved | WaveSurfer 64MXs-B |
| 1 GHz, 5 GS/s, 4 Ch, 16 Mpts/Ch DSO with 10.4" Color Touch Screen Display. 10 GS/s, 32 Mpts Interleaved | WaveSurfer 104MXs-B |
| **MSO MXs-B Mixed Signal Oscilloscopes** | |
| 400 MHz, 5 GS/s, 4+18 Ch, 16 Mpts/Ch MSO with 10.4" Color Touch Screen Display. 32 Mpts Interleaved | MSO 44MXs-B |
| 600 MHz, 5 GS/s, 4+18 Ch, 16 Mpts/Ch MSO with 10.4" Color Touch Screen Display. 10 GS/s, 32 Mpts Interleaved | MSO 64MXs-B |
| 1 GHz, 5 GS/s, 4+18 Ch, 16 Mpts/Ch MSO with 10.4" Color Touch Screen Display. 10 GS/s, 32 Mpts Interleaved | MSO 104MXs-B |

### Included with Standard Configuration (WaveSurfer MXs-B and MSO MXs-B)

÷10, 500 MHz, 10 MΩ Passive Probe (Total of 1 Per Channel), Getting Started Manual and Quick Reference Guide, Standard Ports: Ethernet, USB 2.0 (5), SVGA Video Out, Audio In/Out, Protective Front Cover, Anti-virus Software (Trial Version), Standard Commercial Calibration and Performance Certificate, 3-year Warranty

### Included with MSO MXs-B

MS-250 Mixed Signal Oscilloscope Module, 18 Channel Digital Lead Set, Teledyne LeCroy Bus and USB2.0 Cables (1.3 m), Ground Extenders (Qty. 20), Flexible Ground Leads (Qty. 5), Carrying Case, Operator's Manual and Quick Reference Guide

| Product Description | Product Code |
|---|---|
| **General Accessories** | |
| Keyboard Accessory | WSXs-KYBD |
| Optical Mouse Accessory | WSXs-MOUSE |
| External GPIB Accessory | USB2-GPIB |
| Hard Carrying Case | WSXs-HARDCASE |
| Soft Carrying Case | WSXs-SOFTCASE |
| Rack Mount Accessory | WSXs-RACK |
| Accessory Pouch | WSXs-POUCH |
| **Mounting Accessory** | |
| Clamp Mounting Stand | WSXs-MS-CLAMP |
| **Local Language Overlays** | |
| German Front Panel Overlay | WSXs-A-FP-GERMAN |
| French Front Panel Overlay | WSXs-A-FP-FRENCH |
| Italian Front Panel Overlay | WSXs-A-FP-ITALIAN |
| Spanish Front Panel Overlay | WSXs-A-FP-SPANISH |
| Japanese Front Panel Overlay | WSXs-A-FP-JAPANESE |
| Korean Front Panel Overlay | WSXs-A-FP-KOREAN |
| Chinese (Tr) Front Panel Overlay | WSXs-A-FP-CHNES-TR |
| Chinese (Simp) Front Panel Overlay | WSXs-A-FP-CHNES-SI |
| Russian Front Panel Overlay | WSXs-A-FP-RUSSIAN |
| **Serial Data Options** | |
| ARINC 429 Symbolic Decode Option | WSXs-ARINC429bus DSymbolic |
| Audiobus Trigger and Decode Option for I²S, LJ, RJ, and TDM | WSXs-Audiobus TD |
| CAN, LIN and FlexRay Trigger and Decode Option | WSXs-AUTO |
| CAN TD Trigger and Decode Option | WSXs-CANbus TD |
| D-PHY Decode Option | WSXs-DPHYbus D |
| DigRF 3G Decode Option | WSXs-DigRF3Gbus D |
| DigRF v4 Decode Option | WSXs-DigRFv4bus D |
| ENET Decode Option | WSXs-ENETbus D |
| FlexRay Trigger and Decode Option | WSXs-FlexRaybus TD |
| I²C, SPI and UART Trigger and Decode Option | WSXs-EMB |
| I²C Bus Trigger and Decode Option | WSXs-I2Cbus TD |
| LIN Trigger and Decode Option | WSXs-LINbus TD |
| Manchester Decode Option | WSXs-Manchesterbus D |
| MIL-STD-1553 Trigger and Decode Option | WSXs-1553 TD |
| NRZ Decode Option | WSXs-NRZbus D |
| SENT Decode Option | WSXs-SENTbus D |
| SPI Bus Trigger and Decode Option | WSXs-SPIbus TD |
| UART and RS-232 Trigger and Decode Option | WSXs-UART-RS232bus TD |
| USB 2.0 Decode Option | WSXs-USB2bus D |
| USB2-HSIC Decode Option | WSXs-USB2-HSICbus D |

# ORDERING INFORMATION

| Product Description | Product Code |
|---|---|
| **Mixed Signal Solutions** | |
| 500 MHz, 18 Channels, 2 GS/s, 50 Mpts/ch Mixed Signal Oscilloscope Option | MS-500 |
| 250 MHz,36 Ch,1 GS/s,25 Mpts/ch (500MHz,18 Ch,2 GS/s, 50 Mpts/ch Interleaved) Mixed Signal Option | MS-500-36 |
| 250 MHz, 18 Channels, 1 GS/s, 10 Mpts/ch Mixed Signal Oscilloscope Option | MS-250 |
| **MSO MXs-B Accessories** | |
| Large Gripper Probe Set for 0.10 Inch (2.54 mm) Pin Pitch. Includes 10 Probes with Color-coded Leads | PK400-1 |
| Medium Gripper Probe Set for 0.04 Inch (1.0 mm) Pin Pitch. Includes 10 Probes with Color-coded Leads | PK400-2 |
| Small Gripper Probe Set for 0.008 Inch (0.2 mm) Pin Pitch. Includes 10 Probes with Color-coded Leads | PK400-3 |
| 18-pin 3M Interface Cable MSO-3M (Mates with 3M Part Number 2520-6002) | MSO-3M |
| 36 Channel Mictor Connector (Includes 1 MSO-MICTOR-SHROUD) | MSO-Mictor |

| Product Description | Product Code |
|---|---|
| **Probes and Amplifiers*** | |
| Set of 4 ZS1500, 1.5 GHz, 0.9 pF, 1 MΩ High Impedance Active Probe | ZS1500-QUADPAK |
| Set of 4 ZS1000, 1 GHz, 0.9 pF, 1 MΩ High Impedance Active Probe | ZS1000-QUADPAK |
| 200 MHz, 3.5 pF, 1 MΩ Active Differential Probe | ZD200 |
| 500 MHz, 1.0 pF, 1 MΩ Active Differential Probe | ZD500 |
| 1 GHz, 1.0 pF, 1 MΩ Active Differential Probe | ZD1000 |
| 1.5 GHz, 1.0 pF, 1 MΩ Active Differential Probe | ZD1500 |
| 30 A; 100 MHz Current Probe – AC/DC; 30 $A_{rms}$; 50 $A_{peak}$ Pulse | CP031 |
| 30 A; 50 MHz Current Probe – AC/DC; 30 $A_{rms}$; 50 $A_{peak}$ Pulse | CP030 |
| 30 A; 50 MHz Current Probe – AC/DC; 30 $A_{rms}$; 50 $A_{peak}$ Pulse | AP015 |
| 150 A; 10 MHz Current Probe – AC/DC; 150 $A_{rms}$; 500 $A_{peak}$ Pulse | CP150 |
| 500 A; 2 MHz Current Probe – AC/DC; 500 $A_{rms}$; 700 $A_{peak}$ Pulse | CP500 |
| 1,400 V, 100 MHz High-Voltage Differential Probe | ADP305 |
| 1,400 V, 20 MHz High-Voltage Differential Probe | ADP300 |
| 1 Ch, 100 MHz Differential Amplifier with Precision Voltage Source | DA1855A |

*A wide variety of other passive, active, and differential probes are also available. Consult Teledyne LeCroy for more information.

## Customer Service

Teledyne LeCroy oscilloscopes and probes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years, and our probes are warranted for one year.

This warranty includes:

- No charge for return shipping
- Long-term 7-year support
- Upgrade to latest software at no charge

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