

# CAPTURE EVERY DETAIL



## HDO6000B



350 MHz - 1 GHz  
High Definition Oscilloscopes

- **Highest Resolution** HD4096 Technology, 12 bits all the time
- **Bigger Display**, small footprint, most bench space
- **More Capability**, increased productivity

# Highest Resolution



High Signal to Noise Input Amplifiers

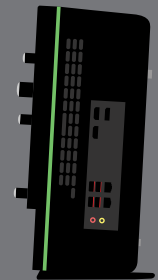
High Sample Rate 12-bit ADCs

**HD**  
4096

Low Noise System Architecture

12 bits **all the time.**

# Bigger Display



- Bigger display
- Small footprint
- Most bench space

6.7"

# More Capability

**MAUI**  
with **OneTouch**

Q-Scape  
**15.6"**  
Touch

Spectrum Analysis

IVN Tools MSO  
LabNotebook

**HD**  
4096

DVM  
AFG  
Pass/Fail Protocol Analysis

History Mode  
Power Conversion

**MAUI**  
Studio Pro

# Capture Every Detail



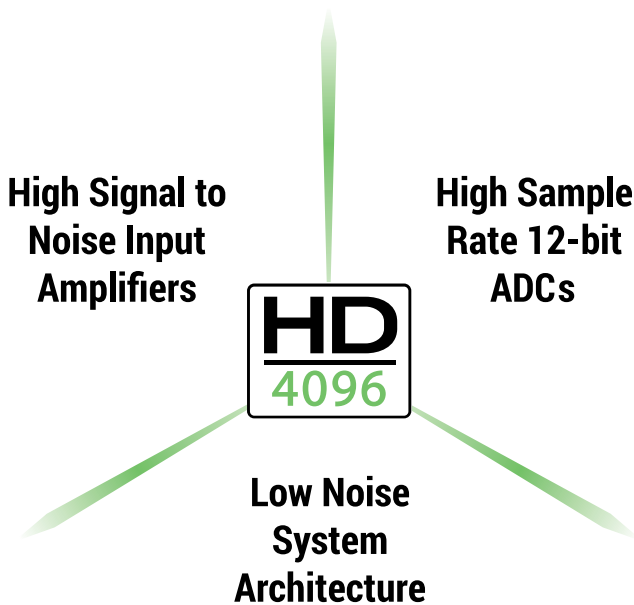
Providing **12 bits all the time**, a **bigger display**, **small footprint**, and **more capability**, the **HDO6000B** captures every detail.

## 12 bits all the time.



HDO6000B

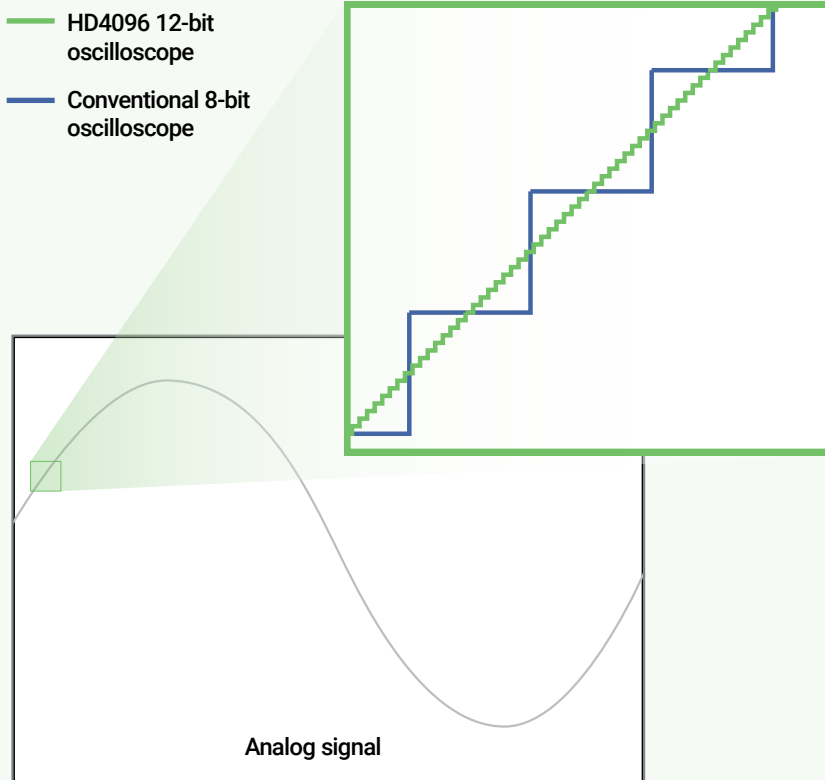
# HD4096 TECHNOLOGY - 16X CLOSER TO PERFECT



Teledyne LeCroy high definition 12-bit oscilloscopes use unique HD4096 technology to provide superior and uncompromised measurement performance:

- 12-bit ADCs with high sample rates
- High signal-to-noise amplifiers
- Low noise system architecture (to 1 GHz)

Oscilloscopes with HD4096 technology have higher resolution than conventional 8-bit oscilloscopes (4096 vs. 256 vertical levels) and low noise for uncompromised measurement performance. The 12-bit ADCs support capture of fast signals at oscilloscope bandwidth ratings up to 1 GHz, while Enhanced Sample Rate to 10 GS/s ensures the highest measurement accuracy and precision. The high performance input amplifiers deliver pristine signal fidelity, and the low-noise system architecture provides an ideal signal path to ensure that signal details are delivered accurately to the oscilloscope display – 16x closer to perfect.



## 16x Closer to Perfect

### 16x more resolution

HD4096 technology provides 12 bits of vertical resolution – 16x more resolution than conventional 8-bit oscilloscopes. The 4096 discrete vertical levels reduce the quantization error compared to 256 vertical levels. This improves the accuracy and precision of the signal capture and increases measurement confidence.

# EXPERIENCE THE DIFFERENCE



Experience HD4096 accuracy, detail and precision and never use an 8-bit oscilloscope again. Whether the application is general purpose design and debug, high precision analog sensors, power electronics, automotive electronics, mechatronics or other specialized applications, the HD4096 technology provides unsurpassed confidence and measurement capabilities.

## Clean, crisp waveforms

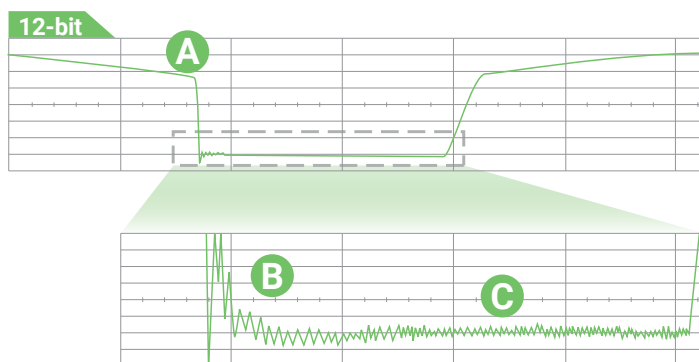
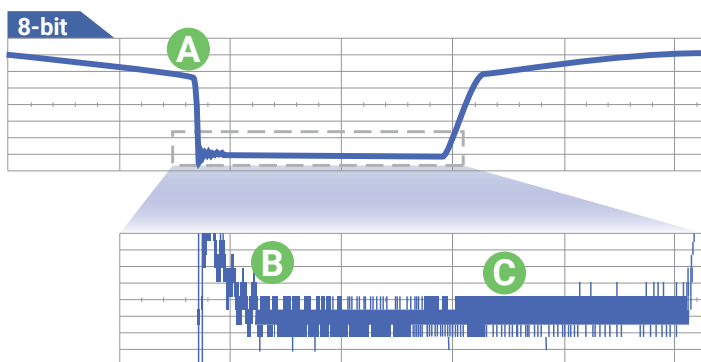
When compared to waveforms acquired and displayed using conventional 8-bit oscilloscopes, waveforms captured with HD4096 12-bit technology are dramatically crisper and cleaner, and are displayed more accurately. Once you see a waveform acquired with HD4096 technology, you will not want to go back to using a conventional 8-bit oscilloscope.

## More signal details

16x more resolution provides more signal detail. This is especially helpful for analyzing wide dynamic range signals where very small amplitude signal details must be viewed. 12-bit acquisitions combined with the oscilloscope's vertical and horizontal zoom capabilities provide unparalleled insight into system behaviors and problems.

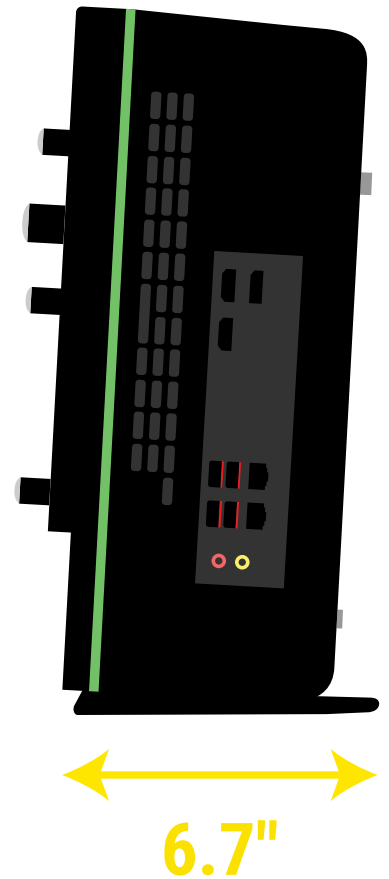
## Unmatched measurement precision

HD4096 technology delivers measurement precision several times better than conventional 8-bit oscilloscopes. Higher oscilloscope measurement precision results in better ability to assess corner cases and design margins, perform root cause analysis, and create the best possible solution for any discovered design issue.



- A Clean, crisp waveforms** | Thin traces show the actual waveform with minimal noise interference.
- B More signal details** | Waveform details can now be clearly seen on an HD4096 12-bit oscilloscope.
- C Unmatched measurement precision** | Measurements are more precise and not affected by quantization noise.

# BIGGER DISPLAY, SMALL FOOTPRINT, MORE BENCH SPACE



**Capture every detail with the HDO6000B's bigger 15.6" display.**

## **Bigger display**

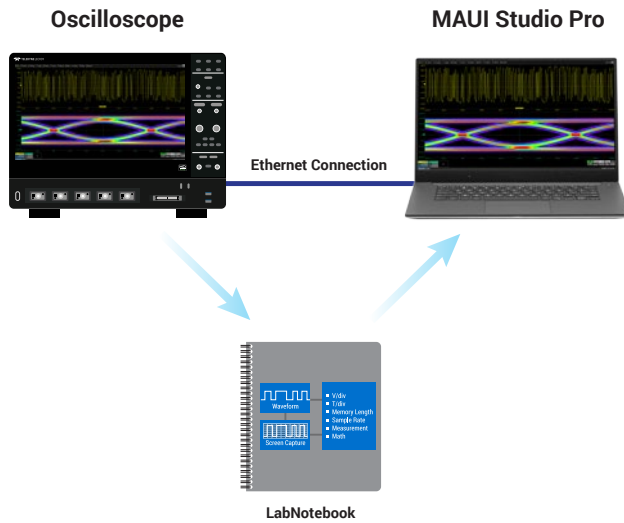
With a 15.6" display and 1920x1080 resolution, the HDO6000B allows you to capture more detail. Connect to a second monitor, and view the extended desktop in glorious 8K resolution.

## **Small footprint**

At only 6.7" deep and 25% thinner than competitive products, the HDO6000B is the sleekest instrument in the market.

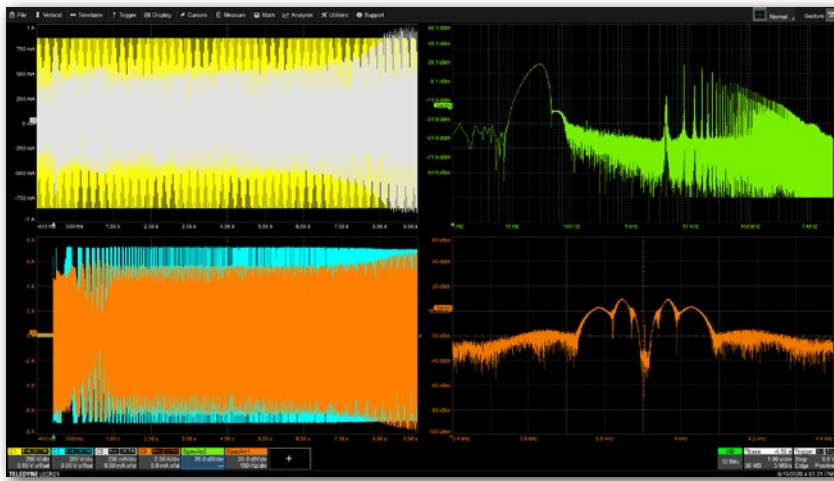
## **Most bench space**

The HDO6000B occupies less bench space than the competitive products, allowing you to spread out test circuits and probes to help focus on solving problems.



## MAUI Studio

Unleash the power of a Teledyne LeCroy oscilloscope anywhere, using a PC with MAUI Studio. Work from anywhere while having the full functionality of an oscilloscope at your fingertips. Collaborate with ease by giving everyone access to the same software options to use for offline analysis.



## Spectrum Analysis

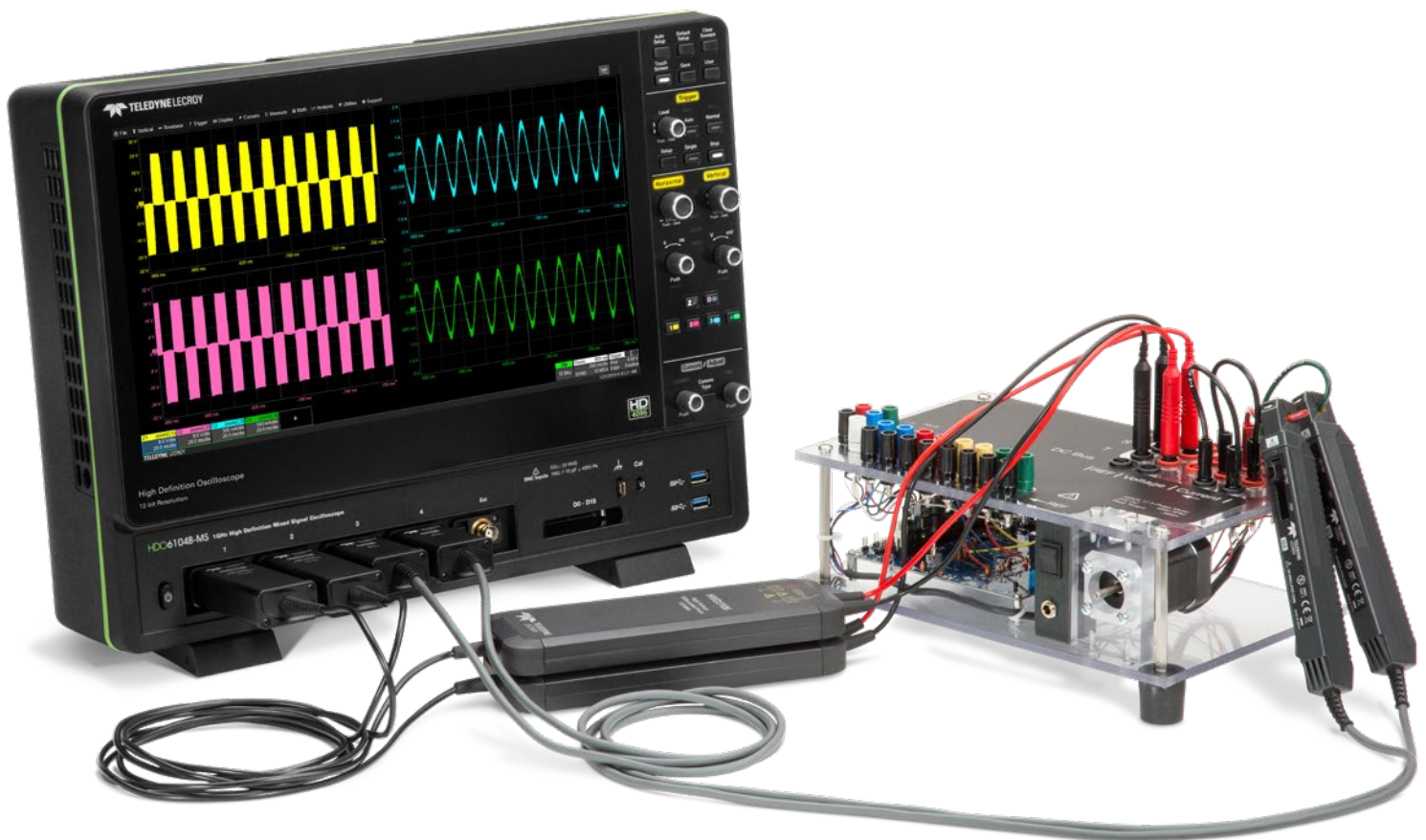
Spectrum-Pro-2R provides the most flexible spectral analysis with a logarithmic scale and drag-and-drop spectrum traces. Leverage long acquisition memory to perform analysis down to 1 Hz with resolution bandwidth up to 100 mHz.

The diagram shows a test setup on the left with a device under test connected to a test system. On the right, a screenshot of a 'MOST50 ePHY Test Report' is displayed. The report includes test parameters, results, and a summary table.

| Pass | Run # | Test | Measurement            | Current Value | Test Criteria      |
|------|-------|------|------------------------|---------------|--------------------|
| ✓    | 1     | 1.1  | SPD0_10 Eye Diagram    | 0 Hfs         | x = 0 Hfs          |
| ✓    | 1     | 1.2  | SPD0_10 Channel Error  | 0.0 ps        | x = 100.0 ps       |
| ✗    | 1     | 2.1  | SPD0_10 Bit Error Rate | 46.1000000000 | Informational Only |
| ✓    | 1     | 2.3  | SPD0_10 Bit Error Rate | 4871 ppm      | Informational Only |
| ✓    | 1     | 2.4  | SPD0_10 Eye Diagram    | 0 Hfs         | x = 0 Hfs          |
| ✓    | 1     | 2.5  | SPD0_10 Channel Error  | 27.9 ps       | x = 100.0 ps       |
| ✓    | 1     | 3.1  | SPD0_10 Eye Diagram    | 0 Hfs         | x = 0 Hfs          |
| ✓    | 1     | 4.1  | SPD0_10 Eye Diagram    | 0 Hfs         | x = 0 Hfs          |

## QualiPHY Compliance Testing

The QualiPHY framework provides an automated and easy-to-use compliance testing platform for a number of serial data standards. QualiPHY reduces time and effort by guiding you through each setup and fully document all results.



**HDO6000B 12-bit oscilloscopes deliver 4 analog channels, 3-phase power analysis software, and high performance probes for inverter subsection, power system and control testing.**

### Flexible Power Calculations

Analyze short or long acquisitions. The mean value Numerics table summarizes static performance, while per-cycle Waveforms help you understand dynamic behaviors. Use Zoom+Gate to isolate and correlate power system behaviors to control system activity during time periods as short as a single device switching cycle.

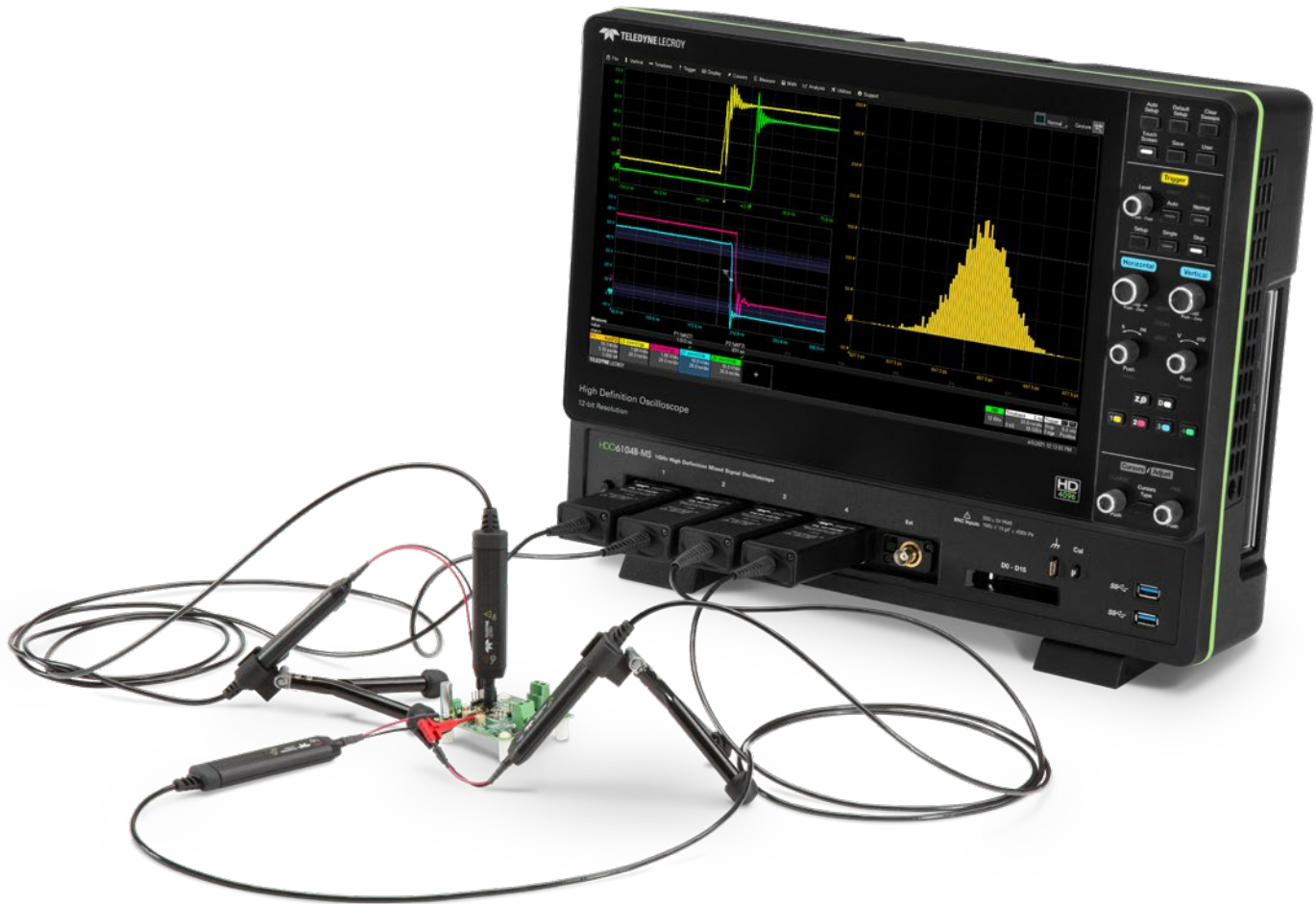
### Comprehensive probing

HVD series high voltage differential probes have 65 dB CMRR at 1 MHz with upto 0.35% gain accuracy, the widest voltage ranges, and up to 6 kV common-mode rating. Connect current probes or use your own transducers with the programmable CA10 current sensor adapter to create a customized "probe". HVFO and DL-HCM probes are ideal for gate drive probing.

### Two-wattmeter Support

Both 1-phase and 3-phase measurements are supported. The two-wattmeter measurement method allows 3-phase power measurements to be made using two voltage and two current signals; therefore, 3-phase measurements can be made using 4 channels instead of 6.

**Want 8 or 16 channels? The WaveRunner 8000HD has you covered.  
Learn more at [www.teledynelecroy.com/wr8000hd](http://www.teledynelecroy.com/wr8000hd)**



**HDO6000B 12-bit oscilloscopes provide a wide range of probing solutions, compliance testing, and debug software to best address the specific test needs of the automotive industry.**

### Ideal probe for 48 V systems

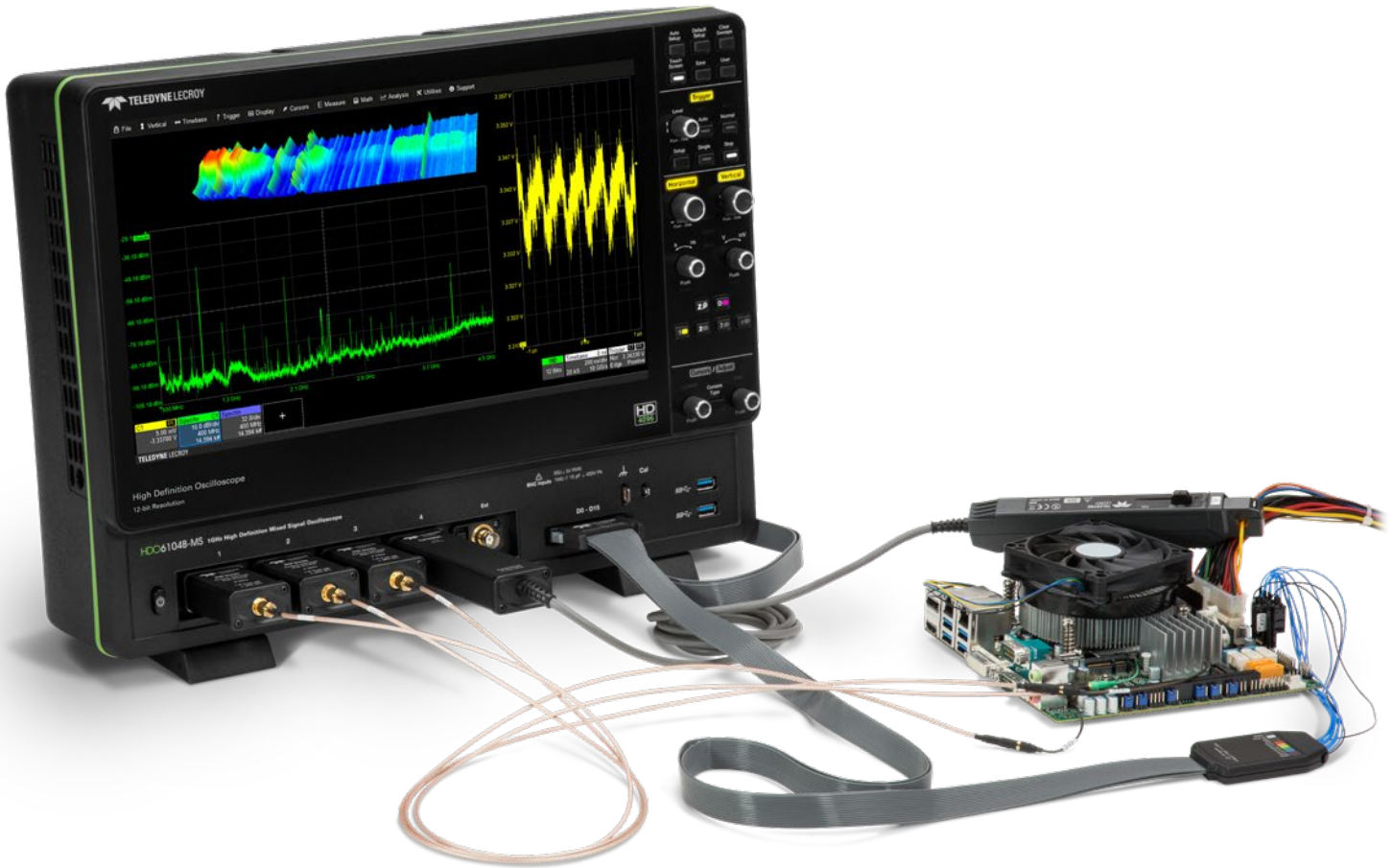
The DL-HCM, 60 V Common Mode Differential Probes are the ideal probes for 48 V battery-powered motor and drive systems. When combined with HDO6000B 12-bit oscilloscopes, the DL10-HCM provides 1 GHz bandwidth with the highest accuracy, the best CMRR, and lowest noise.

### Superior IVN tools

Unique capabilities that build on our legacy serial data trigger and decode provide the most complete in-vehicle networking (IVN) debug and validation. Cover all aspects of physical layer 10Base-T1S and 100Base-T1 Automotive Ethernet compliance testing and debug.

### EMI/EMC pre-compliance test

12-bit resolution for spectral analysis provides more insight. Specialized EMC/EMI pulse parameters provide measurement flexibility. Support for all relevant electrical and magnetic field units of measure. Capability to measure sub-1 Hz magnetic field strengths.



**HDO6000B 12-bit oscilloscopes' high resolution and long memory let you validate and debug all aspects of power supply, delivery and consumption – for complete confidence.**

### Accurate PDN measurements

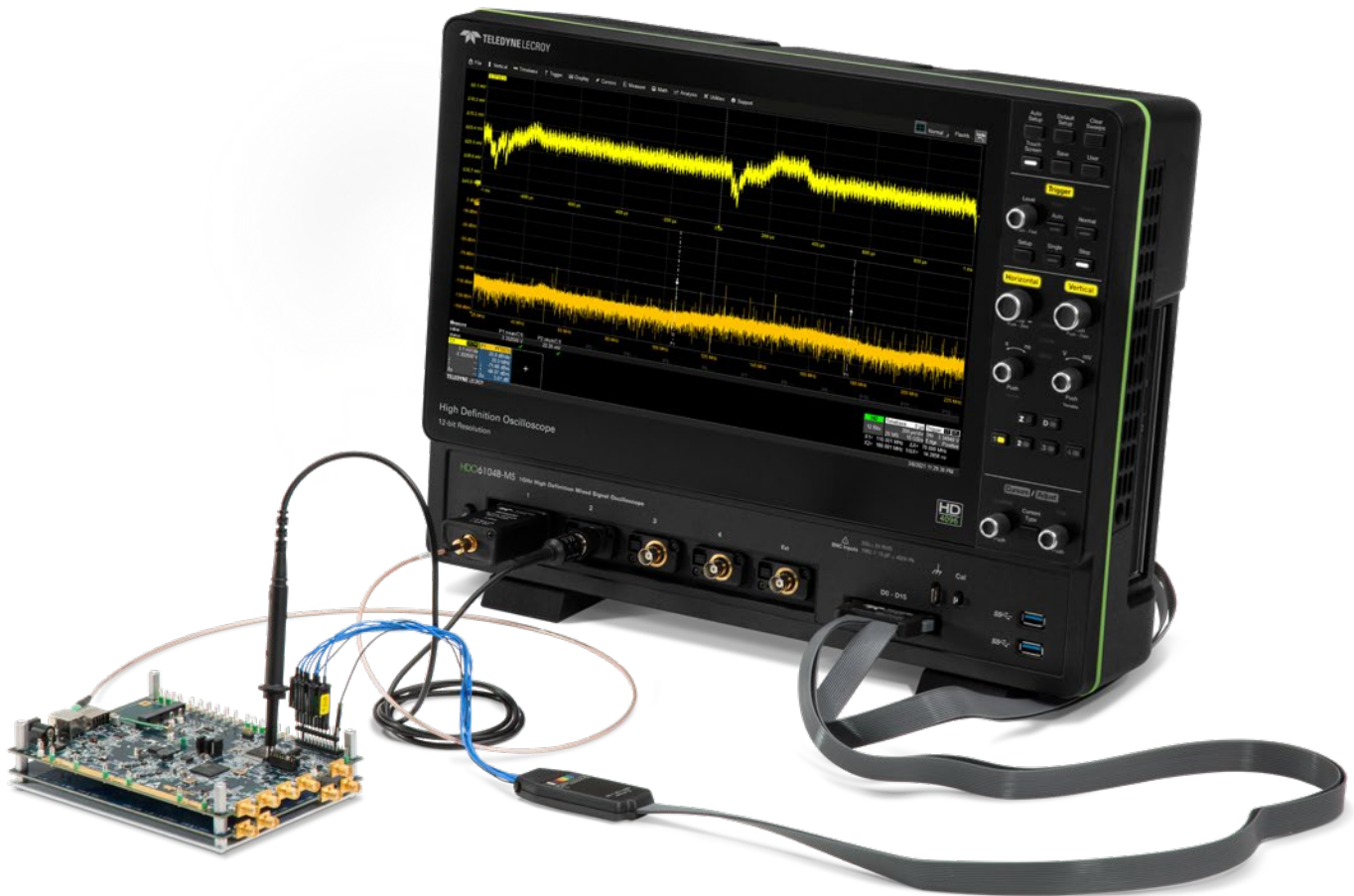
Make sensitive measurements like rail collapse characterization with total confidence thanks to HDO6000B's high dynamic range and 0.5% gain accuracy. Its HD4096 architecture means an exceptionally low noise floor, for easily pinpointing noise sources.

### Specialized power probes

Combine HDO6000B with the RP4030 Power Rail Probe for unsurpassed insight into PDN behavior. The variety of probe tips ensures easy connectivity, and its low loading characteristics minimize disruption to the device under test.

### Spectrum Analysis

Narrow in on interference causing problems in PDNs by enabling unique debug features such as spectral background removal on Spectrum-Pro-2R to eliminate spurious interference from environmental or other sources.



**HDO6000B 12-bit oscilloscopes acquire long records at the highest resolution for the most comprehensive deeply embedded computing system analysis (analog, digital, serial data, and sensor).**

### Clock Analysis

Enable better analysis of clock sources by combining HDO6000B's all-instance measurements, to measure every clock edge, with the ability to capture long records and build statistics faster. Then, trend values over time or build a statistical distribution.

### Protocol Analysis

HDO6000B uses powerful conditional DATA triggering to trigger on protocol elements or specific DATA patterns. Highly adaptable ERROR frame triggering helps isolate protocol errors while Search & Zoom helps correlate protocol events to embedded signals.

### Power Management Tools

HDO6000B supports decoding of I<sup>2</sup>C, SPMI, SMBus, and PMBus protocols to provide insight into dedicated power management serial protocols and speeding up test and debug of designs.



## Key Attributes

- 15.6" 1920 x 1080 capacitive touchscreen display
- 4 analog input channels
- ProBus input supports every Teledyne LeCroy probe
- MAUI with OneTouch user interface for intuitive and efficient operation
- Q-Scape multi-tab display architecture
- Up to 250 Mpts of acquisition memory
- HD4096 technology - 12 bits all the time
- Buttons/indicators color-coded to associated waveform on display
- Use cursors and adjust settings without opening a menu
- Mixed Signal capability with 16 integrated digital channels
- 4 USB 3.2 Gen2 ports (side) and 2 USB 3.1 Gen1 ports (front)
- 1 HDMI 2.0b Port, 1 HDMI 1.4a Port, 1 DisplayPort 1.4a Port - supports 8K (7680 x 4320) external monitor
- Removable SSD (standard)
- Reference Clock Input/Output for connecting to other equipment
- USB TMC over USB 2.0 for data offload
- WaveSource Arbitrary Function Generator



| Capture        |                            | View           |  |                | Measure             |                      | Math            |                    | Analyze        |                   |                   |                         |                       |                    |                      |                      |             |                | Document      |            |            |
|----------------|----------------------------|----------------|--|----------------|---------------------|----------------------|-----------------|--------------------|----------------|-------------------|-------------------|-------------------------|-----------------------|--------------------|----------------------|----------------------|-------------|----------------|---------------|------------|------------|
| Triggering     | Acquire                    | Display Grids  | Display Views  | Zooming        | Parameters          | Parameter Analysis   | Functions       | Advanced Functions | Pass/Fail      | Anomaly Detection | Serial Decode     | Serial Message Analysis | Clock & Timing Jitter | Serial Data Jitter | Serial Data Analysis | Application Packages | Document    |                |               |            |            |
| Exclusion      | Measurement                | 5 MS/s Roll    | <div data-bbox="527 367 852 567"> <p><b>Element Key:</b></p> <ul style="list-style-type: none"> <li>▲ Invented by LeCroy</li> <li>★ Unique to LeCroy</li> </ul> </div> |                |                     |                      |                 | Hardcopy           | Color Overlays | Measure Gate      | Eye Diagrams      | Multi-Lane              | EMC Pulse             | Email on Action    | Protocol Table       | Jitter Overlay       | Tj, Rj, Dj  | PAM-4 Analysis | Motor + Power | Compliance | WaveStudio |
| 80 ch          | 4 to 80 Channels           | Multi-Grid     | Segment  | Multi-Zoom     | All Instance        | Statistics           | Full Memory FFT | Digital Filters    | Mask Test      | TriggerScan       | Symbol            | Search & Zoom           | Jitter Track          | Bathtub Curve      | Rj + BUJ Views       | DDR Analysis         | WaveStudio  |                |               |            |            |
| Serial Data    | High Definition Technology | Drag and Drop  | Waveform Histogram   | Vertical Zoom  | Parameter Math      | Parameter Acceptance | Tracks / Trends | Processing Web     | Actions        | WaveScan          | Protocol Layer    | Bus Parameters          | Jitter Histogram      | IsoBER             | Dj Views             | LSB                  | LabNotebook |                |               |            |            |
| 100 GHz / DBI  | Q-Scape                    | 3D Persistence | Auto-Scroll  | Custom Measure | Histogram/Histogram | Demodulation         | Custom Math     | Boolean Compare    | History Mode   | Application Layer | Timing Parameters | Jitter Spectrum         | Jitter Simulation     | Noise + Crosstalk  | Automation           |                      |             |                |               |            |            |
| Device Loss    | Control Loop               | Harmonics      | 3-Phase  | Static/Dynamic | Zoom+Gate           |                      |                 |                    |                | Ethernet          | DDR               | Video                   | MPI                   |                    |                      |                      |             |                |               |            |            |
| R/W Separation | Multi-Eye View             | DDR Tj, Rj, Dj | Debug Toolkit  | Virtual Probe  |                     |                      |                 |                    |                | Automotive        | PCI EXPRESS       | USB                     | Storage               |                    |                      |                      |             |                |               |            |            |

## Our heritage

Teledyne LeCroy's 50+ year heritage is in processing long records to extract meaningful insight. We invented the digital oscilloscope and many of the additional waveshape analysis tools.

## Our obsession

Our tools and operating philosophy are standardized across much of our product line. This deep toolbox inspires insight; and your moment of insight is our reward.

## Our invitation

Our Periodic Table of Oscilloscope Tools explains the toolsets that Teledyne LeCroy has deployed in our oscilloscopes. Visit our interactive website to learn more about them.

[teledynelecroy.com/tools](http://teledynelecroy.com/tools)

Teledyne LeCroy offers an extensive range of probes to meet virtually every probing need.

## Differential Probes (500 MHz – 1.5 GHz)



Wide dynamic range, low loading, and excellent noise performance from 500 MHz to 1.5 GHz. Specialty AP033 provides 10x gain and high CMRR.

## 60 V Common Mode Differential Probes



The ideal probes for lower voltage GaN power conversion measurement with the highest accuracy, best CMRR and lowest noise. Up to 1 GHz.

## High Voltage Differential Probes



1 kV, 2 kV and 6 kV CAT safety rated models. Widest differential voltage ranges, exceptional CMRR, low noise, 1% gain accuracy.

## High Voltage Optically Isolated Probes



Ideal for GaN and SiC devices. Highest accuracy, most bandwidth, wide range of voltages, optical isolation.

## High Voltage Passive Probes



1 kV to 6 kV ratings. Provides ground-referenced high voltage measurements for a wide range of applications.

## Active Voltage Probes



1 to 4 GHz models. High signal fidelity and low circuit loading (<1 pF tip capacitance),  $\pm 8$  V dynamic range,  $\pm 12$  V offset.

## Active Voltage/Power Rail Probe



4 GHz bandwidth,  $\pm 60$  V offset,  $\pm 800$  mV dynamic range. High DC input impedance and low noise/attenuation for power rail probing.

## Current Probes



For AC, DC and impulse current measurements. Utilizes combination of Hall effect and transformer technology. Up to 500 A, up to 100 MHz.

## Probe and Current Sensor Adapters



Change between the different Teledyne LeCroy Oscilloscope input types or provide a simple interface to 3rd-party probes.

## Passive Probes



10x attenuating with 10 M $\Omega$  input resistance. Ideal for low-frequency signals.

## HDO6034B

## HDO6054B, HDO6054B-MS

## HDO6104B, HDO6014B-MS

### Vertical - Analog Channels

|                                  |  |          |          |
|----------------------------------|--|----------|----------|
| Analog Bandwidth @ 50 Ω (-3 dB)  | 350 MHz  | 500 MHz  | 1 GHz    |
| Analog Bandwidth @ 1 MΩ (-3 dB)  | 350 MHz  | 500 MHz  | 500 MHz  |
| Rise Time (10–90%, 50 Ω)         | 1 ns   | 700 ps   | 450 ps   |
| Rise Time (20–80%, 50 Ω)         | 700 ps   | 500 ps   | 300 ps   |
| Input Channels                   | 4  |          |          |
| Vertical Resolution              | 12 bits; up to 15 bits with enhanced resolution (ERES) |          |          |
| Effective Number of Bits (ENOB)  | 8.7 bits   | 8.6 bits | 8.4 bits |
| Vertical Noise Floor (rms, 50 Ω) |  |          |          |
| 1 mV/div                         | 85 μV  | 100 μV   | 145 μV   |
| 2 mV/div                         | 85 μV  | 100 μV   | 145 μV   |
| 5 mV/div                         | 90 μV  | 105 μV   | 150 μV   |
| 10 mV/div                        | 95 μV  | 110 μV   | 155 μV   |
| 20 mV/div                        | 110 μV   | 130 μV   | 185 μV   |
| 50 mV/div                        | 210 μV   | 265 μV   | 275 μV   |
| 100 mV/div                       | 360 μV   | 450 μV   | 500 μV   |
| 200 mV/div                       | 1.10 mV  | 1.25 mV  | 1.75 mV  |
| 500 mV/div                       | 2.10 mV  | 2.60 mV  | 2.75 mV  |
| 1 V/div                          | 3.70 mV  | 4.50 mV  | 4.90 mV  |

Sensitivity **50 Ω:** 1 mV–1 V/div, fully variable; **1 MΩ:** 1 mV–10 V/div, fully variable

DC Vertical Gain Accuracy (Gain Component of DC Accuracy) ±(0.5%) FS, offset at 0 V

|                           |  |  |   |
|---------------------------|--|--|---|
| Channel-Channel Isolation | 60 dB up to 200 MHz<br>50 dB up to 350 MHz | 60 dB up to 200 MHz<br>50 dB up to 500 MHz | 60 dB up to 200 MHz<br>50 dB up to 500 MHz<br>40 dB up to 1 GHz |
|---------------------------|--|--|---|

Offset Range

**50 Ω:**

1 mV to 4.95 mV: ±1.6 V, 5 mV to 9.9 mV: ±4 V  
10 mV to 19.8 mV: ±8 V, 20 mV to 1 V: ±10 V

**1 MΩ:**

1 mV to 4.95 mV: ±1.6 V, 5 mV to 9.9 mV: ±4 V  
10 mV to 19.8 mV: ±8 V, 20 mV to 100 mV: ±16 V  
102 mV to 198 mV: ±80 V, 200 mV to 1 V: ±160 V  
1.02 V to 10 V: ±400 V

DC Vertical Offset Accuracy ±(1.0% of offset setting + 0.5%FS + 0.02% of max offset + 1mV)

Maximum Input Voltage **50 Ω:** 5 Vrms, ± 10 V Peak  
**1 MΩ:** 400 V max. (DC + Peak AC ≤ 10 kHz)

Input Coupling 50 Ω: DC, GND; 1 MΩ: AC, DC, GND

Input Impedance 50 Ω ± 2.0%; 1 MΩ ± 2.0% || 15 pF

Bandwidth Limiters 20 MHz, 200 MHz

Rescaling

Length: meters, inches, feet, yards, miles; Mass: grams, slugs; Temperature: Celsius, Fahrenheit, Kelvin;  
Angle: radian, arcdegr, arcmin, arcsec, cycles, revolutions, turns; Velocity: m/s, in/s, ft/s, yd/s, miles/s;  
Acceleration: m/s<sup>2</sup>, in/s<sup>2</sup>, ft/s<sup>2</sup>, g<sub>0</sub>; Volume: liters, cubic meters, cubic inches, cubic feet, cubic yards;  
Force (Weight): Newton, grain, ounce, pound; Pressure: Pascal, bar, atmosphere (technical), atmosphere (standard), torr, psi; Electrical: Volts, Amps, Watts, Volt-Amperes, Volt-Amperes reactive, Farad, Coulomb, Ohm, Siemen, Volt/meter, Coulomb/m<sup>2</sup>, Farad/meter, Siemen/meter, power factor; Magnetic: Weber, Tesla, Henry, Amp/meter, Henry/meter; Energy: Joule, BTU, calorie; Rotating Machine: radian/second, frequency, revolution/second, revolution/minute, N·m, lb-ft, lb-in, oz-in, Watt, horsepower; Other: %

### Horizontal - Analog Channels

Timebases Internal timebase common to 4 input channels

Time/Division Range 20 ps/div - 5 ks/div with standard memory (up to 10 ks/div with -L memory, 25 ks/div with -XL memory); RIS available at ≤ 10 ns/div; Roll Mode available at ≥ 100 ms/div and ≤ 5 MS/s

Clock Accuracy ±2.5 ppm + 1.0ppm/year from calibration

Sample Clock Jitter Up to 10 ms acquired time range: 280 fsrms (internal timebase reference)

Delta Time Measurement Accuracy 
$$\sqrt{2} * \sqrt{\left(\frac{\text{Noise}}{\text{SlewRate}}\right)^2 + (\text{Sample Clock Jitter})^2 \text{ (RMS)} + (\text{clock accuracy} * \text{reading}) \text{ (seconds)}}$$

Jitter Measurement Floor 
$$\sqrt{\left(\frac{\text{Noise}}{\text{SlewRate}}\right)^2 + (\text{Sample Clock Jitter})^2 \text{ (RMS, seconds, TIE)}}$$

Jitter Between Channels Analog Channels: 2 psrms (TIE, typical)  
Digital Channels: 350 ps (maximum) between any two channels  
Analog-Digital Channels: <5ns (maximum) between any analog and any digital channel

Channel-Channel Deskew Range ±9 x time/div. setting, 100 ms max., each channel

External Timebase Reference (Input) 10 MHz ±25 ppm at 0 to 10 dBm into 50 Ohms

External Timebase Reference (Output) 10 MHz, 2.0 dBm ±1.5 dBm, sinewave synchronized to reference being used (internal or external reference)

## HDO6034B

## HDO6054B, HDO6054B-MS

## HDO6104B, HDO6014B-MS

### Acquisition - Analog Channels

|  |   |
|--|---|
| Sample Rate (Single-Shot)  | 10 GS/s on all 4 Channels with Enhanced Sample Rate   |
| Sample Rate (Repetitive)   | 125 GS/s, user selectable for repetitive signals (20 ps/div to 10 ns/div)   |
| Memory Length<br>(Number of Segments in Sequence Acquisition Mode) | <b>Standard:</b><br>50 Mpts/ch for all channels (30,000 segments)<br><b>Option - L:</b><br>100 Mpts/ch for all channels (60,000 segments)<br><b>Option -XL:</b><br>250 Mpts/ch for all channels (65,000 segments) |
| Intersegment Time  | 1.25 $\mu$ s  |
| Averaging  | Summed averaging to 1 million sweeps; continuous averaging to 1 million sweeps  |
| Interpolation  | Linear or Sin x/x (2 pt and 4 pt);<br>5 or 10 GS/s Enhanced Sample Rate defaults to 2 pt or 4 pt Sin x/x respectively   |

### Vertical, Horizontal, Acquisition - Digital Channels (-MS Models only)

|                                |   |
|--------------------------------|---|
| Maximum Input Frequency        | 250 MHz   |
| Minimum Detectable Pulse Width | 1 ns  |
| Input Dynamic Range            | $\pm$ 20 V  |
| Input Impedance (Flying Leads) | 100 k $\Omega$    5 pF  |
| Input Channels                 | 16 Digital Channels   |
| Maximum Input Voltage          | $\pm$ 30V Peak  |
| Minimum Input Voltage Swing    | 400 mV  |
| Threshold Groupings            | Pod 2: D15 to D8, Pod 1: D7 to D0   |
| Threshold Selections           | TTL, ECL, CMOS (2.5 V, 3.3 V, 5 V), PECL, LVDS or User Defined                      |
| Threshold Accuracy             | $\pm$ (3% of threshold setting + 100 mV)  |
| User Defined Threshold Range   | $\pm$ 10 V in 20 mV steps   |
| User Defined Hysteresis Range  | 100 mV to 1.4 V in 100 mV steps   |
| Sample Rate                    | 1.25 GS/s   |
| Record Length                  | <b>Standard:</b> 50 MS<br><b>Optional -L:</b> 100 MS<br><b>Optional -XL:</b> 125 MS |
| Channel-to-Channel Skew        | 350 ps  |

### Triggering System

|  |  |  |  |
|--|--|--|--|
| Modes  | Normal, Auto, Single, and Stop   |  |  |
| Sources  | Any input channel, Ext, Ext/10, or Line; slope and level unique to each source (except Line) |  |  |
| Coupling                                       | DC, AC, HFRej, LFRej   |  |  |
| Pre-trigger Delay                              | 0-100% of memory size  |  |  |
| Post-trigger Delay                             | 0-10,000 Divisions in real time mode, limited at slower time/div settings or in roll mode    |  |  |
| Hold-off                                       | From 2 ns up to 20 s or from 1 to 99,999,999 events  |  |  |
| Trigger and Interpolator Jitter                | $\leq$ 4.0 ps rms (typical)<br><0.1 ps rms (typical, software assisted)                      | $\leq$ 3.5 ps rms (typical)<br><0.1 ps rms (typical, software assisted)  | $\leq$ 3.5 ps rms (typical)<br><0.1 ps rms (typical, software assisted)                                      |
| Internal Trigger Level Range                   | $\pm$ 4.1 div from center (typical)  |  |  |
| External Trigger Level Range                   | Ext ( $\pm$ 400 mV); Ext/10 ( $\pm$ 4 V)   |  |  |
| Maximum Trigger Rate                           | 800,000 waveforms/sec (in Sequence Mode, up to 4 channels)                                   |  |  |
| Trigger Sensitivity with Edge Trigger (Ch 1-4) | 0.9 division @ < 10 MHz<br>1.0 divisions @ < 200 MHz<br>2.0 divisions @ < 350 MHz            | 0.9 division @ < 10 MHz<br>1.0 divisions @ < 200 MHz<br>1.5 divisions @ < 250 MHz<br>2.0 divisions @ < 500 MHz | 0.9 division @ < 10 MHz<br>1.0 divisions @ < 200 MHz<br>1.5 divisions @ < 500 MHz<br>2.0 divisions @ < 1 GHz |
| External Trigger Sensitivity, Edge Trigger     | 0.9 division @ < 10 MHz<br>1.0 divisions @ < 200 MHz<br>2.0 divisions @ < 350 MHz            | 0.9 division @ < 10 MHz<br>1.0 divisions @ < 200 MHz<br>1.5 divisions @ < 250 MHz<br>2.0 divisions @ < 500 MHz | 0.9 division @ < 10 MHz<br>1.0 divisions @ < 200 MHz<br>1.5 divisions @ < 500 MHz<br>2.0 divisions @ < 1 GHz |
| Max. Trigger Frequency, SMART Trigger          | 350 MHz  | 500 MHz  | 1 GHz  |

## HDO6034B

## HDO6054B, HDO6054B-MS

## HDO6104B, HDO6104B-MS

### Trigger Types

|   |  |
|---|--|
| Edge  | Triggers when signal meets slope (positive, negative, or either) and level condition.  |
| Width   | Triggers on positive or negative glitches with selectable widths.<br>Minimum width: 1.5 ns, maximum width: 20 s  |
| Glitch  | Triggers on positive or negative glitches with selectable widths.<br>Minimum width: 1.5 ns, maximum width: 20 s  |
| Window  | Triggers when signal exits a window defined by adjustable thresholds.  |
| 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 pattern.  |
| Runt  | Trigger on positive or negative runts defined by two voltage limits and two time limits. Select between 1 ns and 20 ns.  |
| Slew Rate   | Trigger on edge rates. Select limits for dV, dt, and slope. Select edge limits between 1 ns and 20 ns.   |
| Interval  | Triggers on intervals selectable between 1 ns and 20 s.  |
| Dropout   | Triggers if signal drops out for longer than selected time between 1 ns and 20 s.  |
| Measurement   | Select from a large number of measurement parameters to trigger on a measurement value with qualified limits.  |
| Multi-stage: 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 (Note: event B pattern trigger cannot include analog channels).   |
| Multi-stage: Qualified First                        | In Sequence acquisition mode, triggers repeatedly on event B only if a defined pattern, state or edge (event A) is satisfied in the first segment of the acquisition. Holdoff between sources is selectable by time or events (Note: event B pattern trigger cannot include analog channels).  |
| Multi-Stage: Cascade (Sequence) Trigger, Capability | Arm on "A" event, then Trigger on "B" event. Or Arm on "A" event, then Qualify on "B" event, and Trigger on "C" event  |
| Multi-Stage: Cascade (Sequence) Trigger, Types      | Cascade A then B: Edge, Window, Pattern (Logic) Width, Glitch, Interval, Dropout, or Measurement. Measurement can be on Stage B only. Cascade A then B then C (Measurement): Edge, Window, Pattern (Logic), Width, Glitch, Interval, Dropout, or Measurement. Measurement can be on Stage C only. Cascade A then B then C: Edge, Window, Pattern (Logic) |
| Multi-Stage: Cascade (Sequence) Trigger, Holdoff    | Holdoff between A and B or B and C is selectable by time or number of events. Measurement trigger selection as the last stage in a Cascade precludes a holdoff setting between the prior stage and the last stage.   |

### Zone Trigger (Optional)

|                          |   |
|--------------------------|---|
| Zone shapes              | Draw Rectangles and tap-and-draw custom shapes.   |
| Channels                 | Create zone areas on any analog channel simultaneously.   |
| Number of Areas          | Supports up to 50 unique zone areas and supporting Boolean logic.   |
| Zone Trigger Conditions  | Each Area condition is set as the waveform must be "In", "Out", or "Don't Care".  |
| Boolean Logic Equation   | Build special custom logic trigger equations ie. (A1 and not A2) or (A3 and A4)   |
| Visual Status indicators | Each created area and the descriptor have real-time status LED indicators. Know if the trigger is waiting, processed and failed to meet zone conditions or passed, meaning it met all conditions and was displayed. |
| Zone Troubleshooting     | A special Pass-Thru mode helps troubleshoot when triggers aren't occurring.   |
| Zone Save and Recall     | Save a special zone Area setup file and recall just the zone areas.   |

### Low Speed Serial Protocol Triggering (Optional)

Please refer to the Oscilloscope Features, Options, and Accessories Catalog for the latest offerings on all our instruments

### Measurement Tools

|  |  |
|--|--|
| Measurement Functionality                            | Display up to 8 measurement parameters together with statistics including mean, minimum, maximum, standard deviation, and total number. Each occurrence of each parameter is measured and added to the statistics table. Histicons provide a fast, dynamic view of parameters and waveshape characteristics. Parameter math allows addition, subtraction, multiplication, or division of two different parameters. Parameter gates define the location for measurement on the source waveform. Parameter accept criteria define allowable values based on range setting or waveform state. |
| Measurement Parameters - Horizontal and Jitter       | Cycles (number of), Delay (from trigger, 50%), $\Delta$ Delay (50%), Duty Cycle (50%, @level), Edges (number of, @level), Fall Time (90-10, @levels), Frequency (50%, @level), Half Period (@level), Hold Time (@level), N Cycle Jitter (peakpeak), Number of Points, Period (50%, @level), $\Delta$ Period (@level), Phase (@level), Rise Time (10-90, @levels), Setup (@levels), Skew (@levels), Slew Rate (@levels), Time Interval Error (@level), Time (@level), $\Delta$ Time (@level), Width (50%, @level), $\Delta$ Width (@level), X(value)@max, X(value)@min                      |
| Measurement Parameters - Vertical                    | Amplitude, Base, Level@X, Maximum, Mean, Median, Minimum, Peak-to-Peak, RMS, Std. Deviation, Top   |
| Measurement Parameters - Pulse                       | Area, Base, Fall Time (90-10, 80-20, @levels), Overshoot (positive, negative), Rise Time (10-90, 80-20, @levels), Top, Width (50%)   |
| Measurement Parameters - Statistical (on Histograms) | Full Width (@HalfMax, @%), Amplitude, Base, Peak@MaxPopulation, Maximum, Mean, Median, Minimum, Mode, Range, RMS, Std. Deviation, Top, X(value)@Peak, Peaks (number of), Percentile, Population (@bin, total)  |

### Math Tools

|  |   |
|--|---|
| Math Functionality                               | Display up to 8 math functions traces (F1-F8). 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.                |
| Math Operators - Basic Math                      | Average (summed), Average (continuous), Difference (-), Envelope, Floor, Invert (negate), Product (x), Ratio (/), Reciprocal, Rescale (with units), Roof, Sum (+)   |
| Math Operators - Digital (incl. with -MS Models) | Digital AND, Digital DFlipFlop, Digital NAND, Digital NOR, Digital NOT, Digital OR, Digital XOR   |
| Math Operators - Filters                         | Enhanced Resolution (ERes) to 15 bits vertical, Interpolate (cubic, quadratic, sinx/x)  |
| Math Operators - Frequency Analysis              | FFT (power spectrum, magnitude, phase, power density, real, imaginary, magnitude squared) up to full analysis memory length. Select from Rectangular, VonHann, Hamming, FlatTop and Blackman Harris windows.                            |
| Math Operators - Functions                       | Absolute value, Correlation (two waveforms), Derivative, Deskew (resample), Exp (base e), Exp (base 10), Integral, Invert (negate), Log (base e), Log (base 10), Reciprocal, Rescale (with units), Square, Square Root, Zoom (identity) |
| Math Operators - Other                           | Segment, Sparse   |

## HDO6034B

## HDO6054B, HDO6054B-MS

## HDO6104B, HDO6104B-MS

### Measurement and Math Integration

Histogram of statistical distributions of up to 2 billion measurements. Trend (datalog) of up to 1 million measurements. Track (measurement vs. time, time-correlated to acquisitions) of any parameter. Persistence histogram and persistence trace (mean, range, sigma).

### Pass/Fail Testing

Display up to 8 Pass/Fail queries using a Single or Dual Parameter Comparison (compare All values, or Any value  $<$ ,  $\leq$ ,  $=$ ,  $>$ ,  $\geq$ , within limit  $\pm\Delta$  value or %) or Mask Test (pre-defined or user-defined mask, waveform All In, All Out, Any In, or Any Out conditions). Combine queries into a boolean expression to Pass or Fail IF "All True", "All False", "Any True", "Any False", or groups of "All" or "Any", with following THEN Save (waveforms), Stop (test), (sound) Alarm, (send) Pulse, (save) LabNotebook or other User(-defined) Action.

### Display System

|                         |  |
|-------------------------|--|
| Size                    | Color 15.6" widescreen capacitive touch screen   |
| Resolution              | Full HD (1920 x 1080 pixels)   |
| Number of Traces        | Display a maximum of 16 traces. Simultaneously display channel, zoom, memory and math traces.                |
| Grid Styles             | Auto, Single, Dual, Triplex, Quad, Octal, Tandem, Triad, Quattro, Twelve, Sixteen, X-Y, Single+X-Y, Dual+X-Y |
| Waveform Representation | Sample dots joined, or sample dots only  |

### Processor/CPU

|                  |  |
|------------------|--|
| Type             | Intel® Core 3-201E Quad Core, 3.6 GHz (or better)  |
| Processor Memory | 16 GB standard   |
| Operating System | Microsoft Windows® 11  |
| Real Time Clock  | Date and time displayed with waveform in hardcopy files. SNTP support to synchronize to precision internal clocks. |

### Connectivity

|                                |   |
|--------------------------------|---|
| Ethernet Port                  | 1 x 2.5 Gbps and 1 x 1 Gbps Ethernet interface (RJ45 port)  |
| USB Host Ports                 | 4 side USB 3.2 Gen2 ports, 2 front USB 3.1 Gen1 ports   |
| USB Device Port                | 1 USBTMC over USB 2.0 port  |
| GPIO Port (Optional)           | Supports IEEE-488.2 (External)  |
| External Monitor Port          | 1 x DisplayPort 1.4a port, supports up to 7680x4320 @ 60 Hz<br>1 x HDMI 2.0b port, supports up to 5120x2880 @ 30 Hz<br>1 x HDMI 1.4a port, supports up to 3840x2160 @ 30 Hz |
| Remote Control                 | Microsoft COM Automation or LeCroy Remote Command Set   |
| Network Communication Standard | VICP or VXI-11, LXI Compatible  |

### Power Requirements

|                           |  |
|---------------------------|--|
| Voltage                   | 100-240 VAC ( $\pm 10\%$ ) at 50/60/400 Hz ( $\pm 5\%$ ) |
| Nominal Power Consumption | 220 W / 220 VA   |
| Max Power Consumption     | 320 W / 320 VA   |

### Environmental

|                                  |  |
|----------------------------------|--|
| Temperature (Operating)          | +5 °C to +40 °C  |
| Temperature (Non-Operating)      | -20 °C to +60 °C   |
| Humidity (Operating)             | 5% to 90% relative humidity (non-condensing) up to +31 °C<br>Upper limit derates to 50% 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 +30 °C  |
| Altitude (Non-Operating)         | Up to 40,000 ft (12,192 m)   |
| Random Vibration (Operating)     | 0.31 grms 5 Hz to 500 Hz, 20 minutes in each of three orthogonal axes  |
| Random Vibration (Non-Operating) | 2.4 grms 5 Hz to 500 Hz, 15 minutes in each of three orthogonal axes   |
| Functional Shock                 | 30 g peak, half sine, 11 ms pulse, 3 shocks (positive and negative) in each of three orthogonal axes, 18 shocks total                |

### Size and Weight

|                  |   |
|------------------|---|
| Dimensions (HWD) | 13.8" H x 17.5" W x 6.7" D (352 mm x 445 mm x 170 mm) |
| Weight           | 21 lbs (9.8 kg)                                       |

### Certifications

|                    |   |
|--------------------|---|
| CE Certification   | CE compliant, UL and cUL listed; conforms to UL 61010-1 (3rd Edition), UL 61010-2-030 (1st Edition) |
| UL and cUL Listing | CAN/CSA C22.2 No. 61010-1-12  |

### Warranty and Service

3-year warranty; calibration recommended annually. Optional service programs include extended warranty, upgrades, and calibration services.

### WaveSource Arbitrary Waveform Generator (all models)

| General                   |  | Frequency Specification |   |
|---------------------------|--|-------------------------|---|
| Max Frequency             | 25 MHz   | Sine                    | 1 $\mu$ Hz - 25 MHz                         |
| Sample Rate               | 125 MS/s   | Square/Pulse            | 1 $\mu$ Hz - 10 MHz                         |
| Arbitrary Waveform Length | 16 kpts  | Triangular              | 1 $\mu$ Hz - 300 KHz                        |
| Output Amplitude          | 4 mVpp - 6 Vpp ( HiZ); 2 mVpp - 3 Vpp (50 $\Omega$ )         | DC Output               | $\pm 3$ V (HiZ); $\pm 1.5$ V (50 $\Omega$ ) |
| Waveform Types            | Sine, Square, Pulse, Triangle, DC, Noise, Arbitrary Waveform | Noise                   | 25 MHz (-3 dB)                              |
|                           |  | Arbitrary Waveform      | 1 $\mu$ Hz - 3 MHz                          |

| Product Description  | Product Code |
|--|--------------|
| <b>HDO6000B Oscilloscopes</b>  |              |
| 350 MHz, 4 Ch, 12 Bits, 10 GS/s, 50 Mpts/Ch<br>High Definition Oscilloscope<br>with 15.6" 1920x1080 capacitive touch screen<br>and 4K extended desktop | HDO6034B     |
| 500 MHz, 4 Ch, 12 Bits, 10 GS/s, 50 Mpts/Ch<br>High Definition Oscilloscope<br>with 15.6" 1920x1080 capacitive touch screen<br>and 4K extended desktop | HDO6054B     |
| 1 GHz, 4 Ch, 12 Bits, 10 GS/s, 50 Mpts/Ch<br>High Definition Oscilloscope<br>with 15.6" 1920x1080 capacitive touch screen<br>and 4K extended desktop   | HDO6104B     |

|   |             |
|---|-------------|
| <b>HDO6000B-MS Mixed Signal Oscilloscopes</b>   |             |
| 500 MHz, 4 Ch, 12 Bits, 10 GS/s, 50 Mpts/Ch<br>High Definition Mixed Signal Oscilloscope<br>with 15.6" 1920x1080 capacitive touch screen<br>and 4K extended desktop | HDO6054B-MS |
| 1 GHz, 4 Ch, 12 Bits, 10 GS/s, 50 Mpts/Ch<br>High Definition Mixed Signal Oscilloscope<br>with 15.6" 1920x1080 capacitive touch screen<br>and 4K extended desktop   | HDO6104B-MS |

**Included with Standard Configurations (HDO6000B and HDO6000B-MS)**  
 ÷10 Passive Probe (Qty. 4), Getting Started Guide, Anti-virus Software (Trial Version), Microsoft Windows® 11, Removable Solid State Drive, Commercial NIST Traceable Calibration with Certificate, Power Cable for the Destination Country, Protective Front Cover, 3-year Warranty

**Included with HDO6000B-MS**  
 16 Channel Digital Leadset, Extra Large Gripper Probe Set (Qty. 22), Ground Extenders (Qty. 20), Flexible Ground Leads (Qty. 5)

| Memory Options            |           |
|---------------------------|-----------|
| 100 Mpts/ch memory Option | HDO6KB-L  |
| 250 Mpts/ch Memory Option | HDO6KB-XL |

| CPU, Computer, and Other Hardware Options |                     |
|---|---------------------|
| Additional Removable Solid State Drive    | HDO6KB-SSD-02       |
| 32 GB RAM Upgrade                         | HDO6KB-UPG-32GBRAM* |
| 64 GB RAM Upgrade                         | HDO6KB-UPG-64GBRAM  |
| WaveSource Arbitrary Function Generator   | HDO6KB-AFG          |

\* 32 GB RAM upgrade is included with all Memory Options

| Serial Trigger and Decode Options  |                                |
|--|--------------------------------|
| 100Base-T1 Trigger, Decode, Measure/Graph, and Physical Layer Option         | HDO6K-100BASE-T1 TDMP          |
| 100Base-T1 Trigger & Decode  | HDO6K-100Base-T1bus TD         |
| 10Base-T1S Trigger, Decode, Measure/Graph, and Eye Diagram Option            | HDO6K-10BASE-T1S TDME          |
| 10Base-T1S Trigger and Decode Option   | HDO6K-10BASE-T1S TD            |
| MIL-STD-1553 Trigger & Decode  | HDO6K-1553 TD                  |
| MIL-STD-1553 Trigger, Decode, Measure/Graph, and Eye Diagram                 | HDO6K-1553 TDME                |
| ARINC 429 Bus Symbolic Decode, Measure/Graph, and Eye Diagram                | HDO6K-ARINC429BUS DME SYMBOLIC |
| ARINC 429 Symbolic Decode  | HDO6K-ARINC429bus DSymbolic    |
| Audiobus Trigger and Decode  | HDO6K-Audiobus TD              |
| Audiobus Trigger, Decode, And Graph  | HDO6K-Audiobus TDG             |
| CAN FD Trigger & Decode  | HDO6K-CAN FDbus TD             |
| CAN FD Symbolic Trigger, Decode, and Measure/Graph, and Eye Diagram          | HDO6K-CAN FDBUS TDME SYMBOLIC  |
| CAN and CAN FD Trigger and Decode Option                                     | HDO6K-CAN FDbus TD             |
| CAN Symbolic Trigger, Decode, and Measure/Graph, and Eye Diagram             | HDO6K-CANBUS TDME SYMBOLIC     |
| CAN/ CAN FD/ CAN XL Trigger and Decode                                       | HDO6K-CAN XL TD                |
| CAN /CAN FD/ CAN XL Symbolic Trigger, Decode, Measure/Graph, and Eye Diagram | HDO6K-CAN XL TDME SYMBOLIC     |

| Product Description   | Product Code             |
|---|--------------------------|
| <b>Serial Trigger and Decode Options (cont'd)</b>                         |                          |
| DigRF 3G Decode   | HDO6K-DigRF3Gbus D       |
| DigRF v4 Decode   | HDO6K-DigRFv4bus D       |
| D-PHY Decode  | HDO6K-DPHYbus D          |
| DisplayPort AUX Trigger and Decode  | HDO6K-DPAUX TD           |
| DisplayPort AUX Trigger, Decode, Measure/Graph, and Physical Layer Option | HDO6K-DPAUX TDMP         |
| I2C, SPI and UART-RS232 Trigger & Decode                                  | HDO6K-EMB TD             |
| I2C, SPI, UART-RS232 Trigger, Decode, Measure/Graph, and Eye Diagram      | HDO6K-EMB TDME           |
| ENET Decode   | HDO6K-ENETbus D          |
| FlexRay Trigger & Decode  | HDO6K-FlexRaybus TD      |
| FlexRay Trigger, Decode, Measure/Graph and Physical Layer                 | HDO6K-FLEXRAYBUS TDMP    |
| I2C Bus Trigger & Decode  | HDO6K-I2Cbus TD          |
| I2C Trigger, Decode, Measure/Graph, and Eye Diagram                       | HDO6K-I2CBUS TDME        |
| I3C Bus Trigger & Decode  | HDO6K-I3Cbus TD          |
| I3C Trigger, Decode, Measure/Graph, and Eye Diagram                       | HDO6K-I3CBUS TDME        |
| LIN Trigger & Decode  | HDO6K-LINbus TD          |
| LIN Trigger, Decode, Measure/Graph, and Eye Diagram                       | HDO6K-LINBUS TDME        |
| MDIO Decode   | HDO6K-MDIObus D          |
| NRZ and Manchester Trigger and Decode                                     | HDO6K-NRZ-Manchester TD  |
| PMBus Trigger & Decode  | HDO6K-PMBUS TD           |
| PMBus Trigger, Decode, Measure/Graph, and Eye Diagram                     | HDO6K-PMBUS TDME         |
| QSPI (Simple Data, Dual-, Quad-SPI) Trigger and Decode                    | HDO6K-QSPI TD            |
| SENT Trigger & Decode   | HDO6K-SENTbus TD         |
| SENT Trigger, Decode, Measure/Graph, and Eye Diagram                      | HDO6K-SENTbus TDME       |
| SpaceWire Decode  | HDO6K-SpaceWirebus D     |
| SPI Bus Trigger and Decode  | HDO6K-SPIbus TD          |
| SPI Trigger, Decode, Measure/Graph, and Eye Diagram                       | HDO6K-SPIBUS TDME        |
| SPMI Trigger and Decode   | HDO6K-SPMIBUS TD         |
| SPMI Trigger, Decode, Measure/Graph & Eye Diagram                         | HDO6K-SPMIBUS TDME       |
| SMBus Trigger & Decode  | HDO6K-SMBUS TD           |
| SMBus Trigger, Decode, Measure/Graph, and Eye Diagram                     | HDO6K-SMBUS TDME         |
| UART and RS-232 Trigger & Decode  | HDO6K-UART-RS232bus TD   |
| UART-RS232 Trigger, Decode, Measure/Graph, and Eye Diagram                | HDO6K-UART-RS232BUS TDME |
| USB2-HSIC Decode  | HDO6K-USB2-HSICbus D     |
| USB 2.0 Trigger and Decode  | HDO6K-USB2bus TD         |
| USB 2.0 Trigger, Decode, Measure/Graph, and Eye Diagram                   | HDO6K-USB2BUS TDME       |
| USB Power Delivery Trigger & Decode                                       | HDO6K-USBPD TD           |
| USB Power Delivery Trigger, Decode, Measure/Graph, and Physical Layer     | HDO6K-USBPD TDMP         |
| USB4-SB Trigger and Decode  | HDO6K-USB4SB TD          |
| USB4-SB Trigger, Decode, Measure/Graph, and PHY Measurement               | HDO6K-USB4SB TDMP        |

| Serial Data Analysis Options  |                |
|---|----------------|
| NRZ Serial Data Analysis Framework, Eye, Jitter, Noise and Crosstalk Measurements | HDO6K-SDAX-NRZ |
| PAM Serial Data Expert Analysis Framework, Eye, Jitter and Noise Measurements     | HDO6K-SDAX-PAM |
| Serial Data Mask Option   | HDO6K-SDM      |

| Serial Data Compliance Test Software   |                 |
|--|-----------------|
| QualiPHY 10Base-T1L Compliance Software                                      | QPHY-10Base-T1L |
| QualiPHY 10Base-T1S Compliance Software                                      | QPHY-10Base-T1S |
| QualiPHY 100Base-T1 Compliance Software                                      | QPHY-100Base-T1 |
| QualiPHY Ethernet 10/100/1000BT Software                                     | QPHY-ENET       |
| QualiPHY MOST50 ePHY Compliance Software                                     | QPHY-MOST50     |
| QualiPHY USB 2.0 Compliance Software for Low Speed and Full Speed data rates | QPHY-USB        |

# ORDERING INFORMATION

| Product Description  | Product Code     |
|--|------------------|
| <b>Serial Data Test Fixtures</b>   |                  |
| USB4 Sideband Test Coupon Fixtures   | TF-USB-C-SB      |
| USB4 High-speed and Sideband Test Coupon Fixture                               | TF-USB-C-HS      |
| Test Fixture HMTD-Connector (m) to SMA (f)                                     | TF-AUTO-HMTD     |
| Automotive Ethernet Breakout Test Fixture for 100Base-T1 and 1000Base-T1 Debug | TF-AUTO-ENET     |
| Test Fixture MATenet-Connector(m) to SMA(f)                                    | TF-AUTO-MATENET  |
| 4 pack of SMA Connector boards for TF-AUTO-ENET                                | TF-AUTO-ENET-SMA |
| Test Fixture Mini-50-Connector(m) to SMA(f)                                    | TF-AUTO-MINI50   |

| Product Description   | Product Code              |
|---|---------------------------|
| <b>Power Analysis Software</b>  |                           |
| Power Device Analysis Option  | HDO6K-POWER-DEVICE        |
| Power Analyzer Software   | HDO6K-PWR                 |
| Digital Power Management Analysis Software                                    | HDO6K-DIG-PWR-MGMT        |
| 3-Phase Power Analysis Software   | HDO6K-THREEPHASEPOWER     |
| 3-Phase Power Harmonics Calculation Software (requires HDO6K-THREEPHASEPOWER) | HDO6K-THREEPHASEHARMONICS |
| 3-Phase Power Vector Display  | HDO6K-THREEPHASEVECTOR    |
| 3-Phase dq0 Transform Option  | HDO6K-THREEPHASEDQ0       |

| Product Description   | Product Code      |
|---|-------------------|
| <b>Jitter Analysis Software</b>   |                   |
| Clock Expert Jitter Analysis Framework with SSC, Phase Noise, and Accumulated Jitter Analysis | HDO6K-CLOCK-X-PRO |
| Clock Expert Jitter Analysis Framework  | HDO6K-CLOCK-X     |
| Clock and Clock-Data Timing Jitter Analysis Package   | HDO6K-JITKIT      |

| Product Description               | Product Code |
|-----------------------------------|--------------|
| <b>Digital Filtering Software</b> |              |
| DFF2 Digital Filter Option        | HDO6K-DFF2   |

| Product Description   | Product Code          |
|---|-----------------------|
| <b>Other Software Options</b>                                   |                       |
| MAUI Studio Pro Offline Remote and PC Analysis Software License | MAUI Studio Pro       |
| Spectrum Analysis Option (1 Trace)                              | HDO6K-SPECTRUM-1      |
| Spectrum Analysis Option (2 Traces + Reference)                 | HDO6K-SPECTRUM-PRO-2R |
| Advanced Customization Option                                   | HDO6K-XDEV            |
| EMC Pulse Parameter Software Package                            | HDO6K-EMC             |
| Zone Trigger  | HDO6K-ZONETRIGGER     |

| Product Description                   | Product Code |
|---------------------------------------|--------------|
| <b>Remote Control/Network Options</b> |              |
| External GPIB Accessory               | USB2-GPIB    |

| Product Description        | Product Code     |
|----------------------------|------------------|
| <b>General Accessories</b> |                  |
| Soft Carrying Case         | WPHD-CARRYCASE   |
| HDO6000B Rackmount Kit     | HDO6KB-RACKMOUNT |

**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

 **TELEDYNE | LECROY**

**1-800-5-LeCroy**  
teledynelecroy.com

| Product Description  | Product Code   |
|--|----------------|
| <b>Probes</b>  |                |
| High Voltage Optically Isolated Probe, 350 MHz Bandwidth.  | DL03-ISO       |
| High Voltage Optically Isolated Probe, 700 MHz Bandwidth.  | DL07-ISO       |
| High Voltage Optically Isolated Probe, 1 GHz Bandwidth.  | DL10-ISO       |
| 500 MHz Passive Probe, 2.5mm, 10:1, 10 M $\Omega$  | PP023-1        |
| 500 MHz Passive Probe, 5mm, 10:1, 10 M $\Omega$  | PP026-1        |
| High Voltage Fiber Optic Probe, 150 MHz  | HVFO108        |
| TekProbe to ProBus Probe Adapter   | TPA10          |
| Power/Voltage Rail Probe. 2 GHz bandwidth, 1.2x attenuation, +/-60V offset, +/-800mV                                   | RP2060         |
| Power/Voltage Rail Probe. 4 GHz bandwidth, 1.2x attenuation, +/-60V offset, +/-800mV                                   | RP4060         |
| 1 GHz, 0.9 pF, 1 M $\Omega$ High Impedance Active Probe  | ZS1000         |
| 1.5 GHz, 0.9 pF, 1 M $\Omega$ High Impedance Active Probe  | ZS1500         |
| 30 A, 10 MHz Current Probe - AC/DC, 30 A rms, 50 A Peak Pulse, 3 meter cable   | CP030B-3M      |
| 30A, 50 MHz High Sensitivity Current Probe - AC/DC, 30 A <sub>rms</sub> , 50 A <sub>peak</sub> Pulse, 1.5 meter cable  | CP030B         |
| 30 A, 100 MHz Current Probe - AC/DC; 30 A <sub>rms</sub> ; 50 A <sub>peak</sub> Pulse                                  | CP031          |
| 30A, 100 MHz High Sensitivity Current Probe - AC/DC, 30 A <sub>rms</sub> , 50 A <sub>peak</sub> Pulse, 1.5 meter cable | CP031A         |
| 150 A; 10 MHz Current Probe - AC/DC; 150 A <sub>rms</sub> ; 500 A <sub>peak</sub> Pulse                                | CP150B         |
| 150 A, 5 MHz Current Probe - AC/DC, 150 A rms, 500 A Peak Pulse, 6 meter cable   | CP150B-6M      |
| 500 A; 2 MHz Current Probe - AC/DC; 500 A <sub>rms</sub> ; 700 A <sub>peak</sub> Pulse                                 | CP500          |
| Deskew Calibration Source  | DCS025         |
| Programmable Current Sensor to ProBus Adapter (for third-party current sensors)  | CA10           |
| 500 MHz, Active Differential Probe ( $\pm 1$ , $\pm 10$ , $\pm 100$ )  | AP033          |
| 250 MHz 60 V Common Mode Differential Probe  | DL02-HCM       |
| 500 MHz 60 V Common Mode Differential Probe  | DL05-HCM       |
| 1 GHz 60 V Common Mode Differential Probe  | DL10-HCM       |
| 500 MHz, 1.0 pF Active Differential Probe, $\pm 8$ V   | ZD500          |
| 1 GHz, 1.0 pF, 1 M $\Omega$ Active Differential Probe, $\pm 8$ V   | ZD1000         |
| 1.5 GHz, 1.0 pF Active Differential Probe, $\pm 8$ V   | ZD1500         |
| 1,500 V, 25 MHz High-Voltage Differential Probe  | HVD3102A       |
| 1kV, 25 MHz High Voltage Differential Probe without tip Accessories)   | HVD3102A-NOACC |
| 1,500 V, 120 MHz High-Voltage Differential Probe   | HVD3106A       |
| 1kV, 120 MHz High Voltage Differential Probe without tip Accessories   | HVD3106A-NOACC |
| 1kV, 80 MHz High Voltage Differential Probe with 6m cable  | HVD3106A-6M    |
| 2kV, 120 MHz High Voltage Differential Probe   | HVD3206A       |
| 2kV, 80 MHz High Voltage Differential Probe with 6m cable  | HVD3206A-6M    |
| 6kV, 100 MHz High Voltage Differential Probe   | HVD3605A       |
| 2kV, 400 MHz High Voltage Differential Probe   | HVD3220        |
| 400 MHz, 1kV Vrms High-Voltage Passive Probe   | HVP120         |
| 6kV High Voltage Passive Probe, 500 MHz  | PPE6KV-A       |