MSO/DS4000 Series
Digital Oscilloscope

- Bandwidth 500MHz, 350MHz, 200MHz, 100MHz
- Sample Rate: Analog channel up to 4 GSa/s, Digital channel up to 1 GSa/s (MSO)
- Standard Memory depth: Analog channel up to 140 Mpts, Digital channel up to 28 Mpts (MSO)
- 2 or 4 Analog channels, 16 Digital channels (MSO)
- Waveform capture rate Up to 110,000 waveforms per second,
- Real Time Waveform Record, Replay & Analysis (Std. up to 200,000 frames)
- Lower noise floor, the Min. vertical sensitivity is 1mV/div
- Innovative “UltraVision” technology
- A variety of Trigger functions
- Support serial bus trigger (Std.) and decoding (Opt.) for both analog and digital channels
- Support bandwidth update for 200MHz and 350MHz bandwidth models
- Complete Connectivity: USB Host & Device, LAN (LXI-C), VGA, AUX, USB-GPIB (Opt.)
- 9 inch WVGA (800X480), 256 level intensity grading display

MSO/DS4000 Series is the new mainstream digital scope to meet the customer’s applications with its innovative technology, industry leading specifications, powerful trigger functions and broad analysis capabilities.
MSO/DS4000 Series Digital Oscilloscope

Intuitive Icons and Soft Keys for easy test
- Digital channel control (MSO)
- Waveform record & replay
- AUTO/RUN/STOP/SINGLE
- Default key
- Quick Print key

9 inch WVGA
256 levels grading display

16 digital channels (MSO)
Indepent control for each channel

Product Dimensions: Width X Height X Depth = 440.0mm X 218.0 mm X 130.0 mm Weight: 4.8 kg ± 0.2 kg (Without Package)

Innovative UltraVision technology (Analog Channel)

- Deeper Memory Depth (Std. 140M pts)
- Higher Waveform capture rate (Up to 110,000 wfms/s)
- Real Time waveform record & replay (Up to 200,000 frames)
- Multi-level intensity grading display (Up to 256 levels)

Models and key Specs

<table>
<thead>
<tr>
<th>Model Number</th>
<th>DS4054</th>
<th>DS4052</th>
<th>DS4034</th>
<th>DS4032</th>
<th>DS4024</th>
<th>DS4022</th>
<th>DS4014</th>
<th>DS4012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog BW</td>
<td>500 MHz</td>
<td>350 MHz</td>
<td>200 MHz</td>
<td>100 MHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog Channels</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Digital Channels (MSO)</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Sample rate</td>
<td>Analog Channel: Max. 4 GSa/s single channel, 2GSa/s dual channel</td>
<td>Digital Channel: Max. 1 GSa/s per channel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Memory Depth</td>
<td>Analog Channel: Std. up to 140 Mpts single channel, 70 Mpts dual channel</td>
<td>Digital Channel: Std. up to 28 Mpts per channel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waveform Capture rate</td>
<td>Up to 110,000 wfms/s (Digital channel Closed); 85,000 wfms/s (Digital channel Opened)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Time waveform Record, Replay and Analysis function</td>
<td>Analog channel: Up to 200,000 frames (Std.)</td>
<td>Digital channel: Up to 64,000 frames (Std.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std. Probes</td>
<td>2 or 4 sets RP3500A 500MHz BW Passive Probe; 1 set RPL2316 LA Probe (MSO only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Features and Benefits

UltraVision: Up to 110K Waveforms/s Waveform capture rate

Find the infrequent problem easily

UltraVision: Realtime waveform record, replay, analysis function (std.)

- Up to 200,000 frames could be recorded
- "WaveFinder"-Dedicated data search knob
- Replay and analyze the recorded waveforms

UltraVision: Deeper Memory with up to 256-Level intensity grading display

Provide the capability to see both the panorama and detail simultaneously

Advanced math function (user defined)

Serial bus Triggering and Decoding (Support both Analog and Digital channels)

Mask test functions

User defined Mask, Pass/Fail counts, Stop on Fail, Fail Alarm
Besides the powerful functions of DS4000, you could get more from MSO4000 with:

- 16 Digital channels
- Sample rate of Digital channel up to 1 GSa/s
- Memory depth of Digital channel up to 28Mpts per channel
- Waveform capture rate of Digital channel up to 85,000wfms/s
- Real Time Waveform Record, Replay and analysis functions, up to 64,000 frames
- Triggering and Decoding across Analog and Digital channels
- Easy to be grouped for digital channels
- Support a variety of logic levels
- Time correlation display for both analog and digital signals

Innovative UltraVision technology (Digital Channel)

- Deeper Memory Depth (Std. 28M pts per channel)
- Higher Waveform capture rate (Up to 85,000wfms/s)
- Real Time waveform record & replay (Up to 64,000 frames)
- Multi-level intensity grading display
### RIGOL Passive Probes

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP2200</td>
<td>High Z</td>
<td>Probe 1X: DC<del>7MHz, 10X: DC</del>150MHz Compatibility: All RIGOL Scopes.</td>
</tr>
<tr>
<td>RP3300A</td>
<td>High Z</td>
<td>Probe 10X: DC~360MHz Compatibility: All RIGOL Scopes.</td>
</tr>
<tr>
<td>RP3500A</td>
<td>High Z</td>
<td>Probe DC~500MHz Compatibility: All RIGOL Scopes.</td>
</tr>
<tr>
<td>RP5600A</td>
<td>High Z</td>
<td>Probe DC~600MHz Compatibility: DS4000, 6000 Series.</td>
</tr>
<tr>
<td>RP6150A</td>
<td>Low Z</td>
<td>Probe DC~1.5GHz Compatibility: DS4000, 6000 Series.</td>
</tr>
<tr>
<td>RP1300H</td>
<td>High Volt</td>
<td>High Voltage Probe DC~300MHz CATI 2000V(DC+AC), CATII 1500 V(DC+AC) Compatibility: All RIGOL Scopes.</td>
</tr>
<tr>
<td>RP1010H</td>
<td>High Volt</td>
<td>High Voltage Probe DC<del>40MHz DC: 0</del>10kV DC AC: Pulse ≤ 20kVpp AC: Sine ≤ 7kVrms Compatibility: All RIGOL Scopes</td>
</tr>
<tr>
<td>RP1018H</td>
<td>High Volt</td>
<td>High Voltage Probe DC~150MHz DC+AC peak 18kV AC RMS 12kV Compatibility: All RIGOL scopes</td>
</tr>
<tr>
<td>RPL2316</td>
<td>Logic</td>
<td>Analysis Probe (For MSO2000A and MSO4000)</td>
</tr>
</tbody>
</table>

### RIGOL Active & Current Probes

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP7150</td>
<td>Differential</td>
<td>Probe BW: DC~1.5GHz, 30V Peak, CAT I Compatibility: All RIGOL Scopes.</td>
</tr>
<tr>
<td>RP1004C</td>
<td>Current</td>
<td>Probe BW: DC~10MHz, Max 150 A rms, 300 A peak (Noncontinuous), 500 A peak (pulse width ≤ 30 ms) Compatibility: All RIGOL Scopes. Must order RP1000P Power supply.</td>
</tr>
<tr>
<td>RP1025D</td>
<td>High Volt</td>
<td>Voltage Differential Probe BW: 50MHz, Max Voltage ≤ 7000Vpp Compatibility: All RIGOL Scopes.</td>
</tr>
<tr>
<td>RP1050D</td>
<td>High Volt</td>
<td>Voltage Differential Probe BW: 100MHz, Max Voltage ≤ 7000Vpp Compatibility: All RIGOL Scopes.</td>
</tr>
<tr>
<td>RPL2316</td>
<td>High Volt</td>
<td>Voltage Differential Probe BW: 250MHz, Max Voltage ≤ 1400Vpp Compatibility: All RIGOL Scopes.</td>
</tr>
</tbody>
</table>
Specifications

All the specifications are guaranteed except parameters marked with “Typical” and the oscilloscope needs to operate for more than 30 minutes under the specified operation temperature.

Sample

<table>
<thead>
<tr>
<th>Sample Mode</th>
<th>Real-time sample</th>
</tr>
</thead>
</table>
| Real-time Sample Rate | Analog channel: 4.0 GSa/s (single-channel); 2.0 Gsa/s (dual-channel)  
Digital channel: 1.0 Gsa/s |
| Peak Detect | Analog channel: 250 ps (single-channel); 500 ps (dual-channel)  
Digital channel: 1 ns |
| Averaging | After all the channels finish N samples at the same time, N can be 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096 or 8192. |
| High Resolution | 12 bit of resolution When ≥5 μs/div @ 4 GSa/s (or ≥10 μs/div @ 2 GSa/s). |

Memory Depth

| Analog channel: | Single-channel: Auto, 14k pts, 140k pts, 1.4M pts, 14M pts and 140M pts are available  
Dual-channel: Auto, 7k pts, 70k pts, 700k pts, 7M pts and 70M pts are available  
Digital channel: maximum 28 M pts |

Input

| Number of Channels | MSO40X4: four-analog-channel + 16-digital-channel  
MSO40X2: dual-analog-channel + 16-digital-channel  
DS40X4: four-channel  
DS40x2: dual-channel |
| Input Coupling | DC, AC or GND |
| Input Impedance | Analog channel: (1MΩ±1%) || (14 pF±3 pF) or 50 Ω±1.5%  
Digital channel: (101 kΩ±1%) || (9 pF ± 1 pF) |
| Probe Attenuation Coefficient | Analog channel: 0.01X-10000X 1-2-5 step |
| Max Input Voltage (1MΩ) | Maximum input voltage of the analog channel  
CAT I 300 Vrms, CAT II 100 Vrms, transient overvoltage 1000 Vpk  
With RP2200 10:1 probe: CAT II 300 Vrms  
With RP3300 10:1 probe: CAT II 300 Vrms  
With RP3500 10:1 probe: CAT II 300 Vrms  
With RP5600 10:1 probe: CAT II 300 Vrms  
Digital channel: CAT I 40Vrms, transient overvoltage 800 Vpk |

Horizontal

| Time Base Scale | MSO405X/DS405X: 1 ns/div to 1000 s/div  
MSO403X/DS403X: 2 ns/div to 1000 s/div  
MSO402X/DS402X: 2 ns/div to 1000 s/div  
MSO401X/DS401X: 5 ns/div to 1000 s/div |
| Time Base Accuracy | ≤ ± 4 ppm |
| Time Base Drift | ≤ ±2 ppm/Year |
| Delay Range | Pre-trigger (negative delay): ≥1 screen width  
Post-trigger (positive delay): 1 s to 1000 s |
| Time Base Mode | Y-T, X-Y, Roll, Delayed |
| Number of X-Ys | 2 paths at the same time (four-channel model) |
| Waveform Capture Rate¹ | 110,000 wfms/s(Dots display, Digital channel Closed); 85,000 wfms/s(Digital channel Opened) |

Vertical (Analog Channel)

| Bandwidth (-3dB) | MSO405X/DS405X: DC to 500 MHz  
MSO403X/DS403X: DC to 350 MHz  
MSO402X/DS402X: DC to 200 MHz  
MSO401X/DS401X: DC to 100 MHz |
| Single Bandwidth | MSO405X/DS405X: DC to 500 MHz  
MSO403X/DS403X: DC to 350 MHz  
MSO402X/DS402X: DC to 200 MHz  
MSO401X/DS401X: DC to 100 MHz |
| Vertical Resolution | Analog channel: 8 bit, two channels sample at the same time  
Digital channel: 1bit |
### Vertical Scale
- 1 mV/div to 5 V/div (1 MΩ)
- 1 mV/div to 1 V/div (50 Ω)

### Offset Range
- 1 mV/div to 124 mV/div: ± 1.2 V (50 Ω)
- 126 mV/div to 1 V/div: ± 12 V (50 Ω)
- 1 mV/div to 225 mV/div: ± 2 V (1 MΩ)
- 230 mV/div to 5 V/div: ± 40 V (1 MΩ)

### Bandwidth Limit
- MSO405X/DS405X: 20 MHz/100 MHz/200 MHz
- MSO402X/DS402X: 20 MHz/100 MHz
- MSO401X/DS401X: 20 MHz

### Low Frequency Response (AC coupling, -3dB)
- ≤5 Hz (on BNC)

### Rise Time
- MSO405X/DS405X: 700 ps
- MSO403X/DS403X: 1 ns
- MSO402X/DS402X: 1.8 ns
- MSO401X/DS401X: 3.5 ns

### DC Gain Accuracy
±2% full scale

### DC Offset Accuracy
- 200 mV/div to 5 V/div: 0.1 div ± 2 mV ± 0.5% offset
- 1 mV/div to 195 mV/div: 0.1 div ± 2 mV ±1.5% offset

### ESD Tolerance
- ±2 kV

### Channel to Channel Isolation
- DC to maximum bandwidth: >40 dB

### Vertical (Digital Channel)
- Threshold: 1 group with 8 channels adjustable threshold
- Threshold selected:
  - TTL (1.4 V)
  - 5.0 V CMOS (+2.5 V), 3.3 V CMOS (+1.65 V)
  - 2.5 V CMOS (+1.25 V), 1.8 V CMOS (+0.9 V)
  - ECL (-1.3 V)
  - PECL (+3.7 V)
  - LVDS (+1.2 V)
  - 0 V
  - User
- Threshold range: ±20.0V, with 10 mV step
- Threshold accuracy: ± 100mV+3% of threshold setting
- Dynamic range: ±10 V + threshold
- Min Voltage Swing: 500 mVpp
- Vertical resolution: 1 bit

### Trigger
- Trigger Level Range: ±6 div from the center of the screen
- EXT: ± 0.8 V
- Trigger Mode: Auto, Normal, Single
- Holdoff Range: 100 ns to 10 s
- High Frequency Rejection: 50 kHz
- Low Frequency Rejection: 5 kHz
- Edge Trigger:
  - Edge Type: Rising, Falling, Rising&Falling
  - Pulse Condition:
    - Positive Pulse Width (greater than, lower than, within specified interval)
    - Negative Pulse Width (greater than, lower than, within specified interval)
  - Pulse Width Range: 4 ns to 4 s
  - Runt Trigger:
    - Pulse Condition: None, > (greater than), < (lower than), <> (within the specified interval)
    - Polarity: Positive, Negative
  - Pulse Width Range: 4 ns to 4 s
- Nth Edge Trigger:
  - Edge Type: Rising, Falling
  - Idle Time: 40 ns to 1 s
  - Number of Edges: 1 to 65535
- Slope Trigger:
  - Slope Condition:
    - Positive Slope (greater than, lower than, within specified interval)
    - Negative Slope (greater than, lower than, within specified interval)
  - Time Setting: 10 ns to 1 s
### Video Trigger
- **Signal Standard**: Support standard NTSC, PAL and SECAM broadcasting standards

### Pattern Trigger
- **Pattern Setting**: H, L, X, Rising Edge, Falling Edge
- **Trigger Condition**: Start, Error, Check Error, Data

### RS232/UART Trigger
- **Trigger Condition**: Start, Error, Check Error, Data
- **Polarity**: Normal, Invert
- **Baud**: 2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps, User
- **Data Bits**: 5 bit, 6 bit, 7 bit, 8 bit

### I2C Trigger
- **Trigger Condition**: Start, Restart, Stop, Missing Ack, Address, Data, A&D
- **Address Bits**: 7 bit, 8 bit, 10 bit
- **Address Range**: 0 to 127, 0 to 255, 0 to 1023
- **Byte Length**: 1 to 5

### SPI Trigger
- **Trigger Condition**: CS, TimeOut
- **Timeout Value**: 100 ns to 1 s
- **Data Bits**: 4 bit to 32 bit
- **Data Line Setting**: H, L, X
- **Clock Edge**: Rising edge, Falling edge

### CAN Trigger
- **Signal Type**: Rx, Tx, CAN_H, CAN_L, Differential
- **Trigger Condition**: SOF, EOF, Frame Type, Frame Error
- **Baud**: 10 kbps, 20 kbps, 33.3 kbps, 50 kbps, 62.5 kbps, 83.3 kbps, 100 kbps, 125 kbps, 250 kbps, 500 kbps, 800 kbps, 1 Mbps, User
- **Sample Point**: 5% to 95%
- **Frame Type**: Data, Remote, Error, OverLoad
- **Error Type**: Bit Fill, Answer Error, Check Error, Format Error, Random Error

### FlexRay Trigger
- **Baud**: 2.5 Mb/s, 5 Mb/s, 10 Mb/s

### USB Trigger
- **Signal Speed**: Low Speed, Full Speed
- **Trigger Condition**: SOP, EOP, RC, Suspend, ExitSuspend

### Measure
- **Cursor**
  - **Manual mode**: Voltage deviation between cursors ($\Delta V$)
  - **Time deviation between cursors ($\Delta T$)**
  - **Reciprocal of $\Delta T$ (Hz) (1/$\Delta T$)**
  - **Track mode**: Voltage and time values of the waveform point
  - **Auto mode**: Allow to display cursors during auto measurement

- **Auto Measurement**: Measurements of Maximum, Minimum, Peak-Peak Value, Top Value, Bottom Value, Amplitude, Average, Mean Square Root, Overshoot, Pre-shoot, Area, Period Area, Frequency, Period, Rise Time, Fall Time, Positive Pulse Width, Negative Pulse Width, Positive Duty Cycle, Negative Duty Cycle, Delay A$\rightarrow$B, Delay A$\rightarrow$B, Phase A$\rightarrow$B, Phase A$\rightarrow$B

- **Number of Measurements**: Display 5 measurements at the same time

- **Measurement Range**: Screen Region or Cursor Region

- **Measurement Statistic**: Average, Max, Min, Standard Deviation, Number of Measurements

- **Counter**: Hardware 6 bits counter (channels are selectable)

### Math
- **Waveform Operation**: A$+$B, A$-$B, A$\times$B, A/B, FFT, Editable Advanced Operation, Logic Operation
- **FFT Window**: Rectangle, Hanning, Blackman, Hamming
- **FFT Display**: Split, Full Screen
- **FFT Vertical Scale**: dB, Vrms
- **Logic Operation**: AND, OR, NOT, XOR
- **Math Function**: Intg, Diff, Log, Exp, Sqrt, Sine, Cosine, Tangent
- **Number of Buses for Decoding**: 2
- **Decoding Type**: Parallel (standard), RS232 /UART (option), I2C (option), SPI (MSO4XX4/DS4XX4 option), CAN (option), FlexRay (option)
Display

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Type</td>
<td>9 inches (229 mm) TFT LCD display</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>800 horizontal×RGB×480 vertical pixel</td>
</tr>
<tr>
<td>Display Color</td>
<td>160,000 color</td>
</tr>
<tr>
<td>Persistence Time</td>
<td>Min, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s, 20 s, Infinite</td>
</tr>
<tr>
<td>Display Type</td>
<td>Dots, Vectors</td>
</tr>
<tr>
<td>Real-time Clock</td>
<td>Time and Date (user adjustable)</td>
</tr>
</tbody>
</table>

I/O

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Ports</td>
<td>Dual USB HOST, USB DEVICE, LAN, VGA output, 10MHz input/output, Aux output (TrigOut, Fast, GND, PassFail, Calibration)</td>
</tr>
</tbody>
</table>

General Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Compensation Output</td>
<td>About 3 V, peak-peak</td>
</tr>
<tr>
<td>Frequency</td>
<td>1 kHz</td>
</tr>
<tr>
<td>Power Voltage</td>
<td>100-120 V/50Hz/60Hz/400Hz</td>
</tr>
<tr>
<td>Power</td>
<td>Maximum 120 W</td>
</tr>
<tr>
<td>Fuse</td>
<td>3 A, T degree, 250 V</td>
</tr>
<tr>
<td>Environment</td>
<td>In operation: 0°C to +50°C</td>
</tr>
<tr>
<td></td>
<td>Out of operation: -40°C to +70°C</td>
</tr>
<tr>
<td>Cooling Method</td>
<td>Fan</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>0°C to 30°C : ≤95% relative humidity</td>
</tr>
<tr>
<td></td>
<td>+30°C to +40°C : ≤75% relative humidity</td>
</tr>
<tr>
<td></td>
<td>+40°C to +50°C : ≤45% relative humidity</td>
</tr>
<tr>
<td>Altitude</td>
<td>In operation: under 3,000 meters</td>
</tr>
<tr>
<td></td>
<td>Out of operation: under 15,000 meters</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Width×Height×Depth = 440.0 mm×218.0 mm×130.0 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Without package 4.8 kg ± 0.2 kg</td>
</tr>
<tr>
<td></td>
<td>With package 7.1 kg ± 1.0 kg</td>
</tr>
<tr>
<td>Adjustment Interval</td>
<td>The recommended calibration interval is one year.</td>
</tr>
</tbody>
</table>

Regulation Standards

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromagnetic Safety</td>
<td>2004/108/EC</td>
</tr>
<tr>
<td></td>
<td>Execution standard EN 61326-1:2006 EN 61326-2-1:2006</td>
</tr>
</tbody>
</table>

1. Maximum value. In single-channel mode, sine signal with 10 ns horizontal scale, 4 div input amplitude and 10 MHz frequency, edge trigger.
2. Typical.
3. Tilt tabs and handle folded, knob height included, front panel cover excluded.
4. Standard configuration.
Ordering Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS4012 (100 MHz, 4 GSa/s, 140Mpts, 2-channel Digital Oscilloscope)</td>
<td>DS4012</td>
</tr>
<tr>
<td>DS4014 (100 MHz, 4 GSa/s, 140Mpts, 4-channel Digital Oscilloscope)</td>
<td>DS4014</td>
</tr>
<tr>
<td>DS4022 (200 MHz, 4 GSa/s, 140Mpts, 2-channel Digital Oscilloscope)</td>
<td>DS4022</td>
</tr>
<tr>
<td>DS4024 (200 MHz, 4 GSa/s, 140Mpts, 4-channel Digital Oscilloscope)</td>
<td>DS4024</td>
</tr>
<tr>
<td>DS4032 (350 MHz, 4 GSa/s, 140Mpts, 2-channel Digital Oscilloscope)</td>
<td>DS4032</td>
</tr>
<tr>
<td>DS4034 (350 MHz, 4 GSa/s, 140Mpts, 4-channel Digital Oscilloscope)</td>
<td>DS4034</td>
</tr>
<tr>
<td>DS4052 (500 MHz, 4 GSa/s, 140Mpts, 2-channel Digital Oscilloscope)</td>
<td>DS4052</td>
</tr>
<tr>
<td>DS4054 (500 MHz, 4 GSa/s, 140Mpts, 4-channel Digital Oscilloscope)</td>
<td>DS4054</td>
</tr>
<tr>
<td>MSO4012 (100 MHz, 4 GSa/s, 140Mpts, 2+16 channel Digital Oscilloscope)</td>
<td>MSO4012</td>
</tr>
<tr>
<td>MSO4014 (100 MHz, 4 GSa/s, 140Mpts, 4+16 channel Digital Oscilloscope)</td>
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<tr>
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<td>MSO4052</td>
</tr>
<tr>
<td>MSO4054 (500 MHz, 4 GSa/s, 140Mpts, 4+16 channel Digital Oscilloscope)</td>
<td>MSO4054</td>
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Standard Accessories

- Power Cord conforming to the standard of the country
- Front Panel Cover
- USB Data Cable
- 2 or 4 Passive Probes (500 MHz)
- 1 Set logic analysis probe
- Quick Guide
- Resource CD (User’s Guide and Application Software)

Optional Accessories

- Active Differential Probe (1.5 GHz)
- Rack Mount Kit

Decoding options

- RS232/UART Decoding Kit
- I2C/SPI Decoding Kit
- CAN Decoding Kit
- FlexRay Decoding Kit

Bandwidth update option

- Bandwidth upgrade form 200MHz to 350MHz for MSO/DS402x
- Bandwidth upgrade form 200MHz to 500MHz for MSO/DS402x
- Bandwidth upgrade form 350MHz to 500MHz for MSO/DS403x

Warranty

Three-year warranty, excluding probes and accessories.