


# MSO/DS1000Z Series

## Digital Oscilloscope



- Analog channel bandwidth: 100 MHz, 70 MHz, 50 MHz
- 4 analog channels, 16 digital channels (for MSO1000Z and MSO upgradable for DS1000Z Plus)
- Real-time sample rate up to 1 GSa/s
- Memory depth up to 12 Mpts (standard)/24 Mpts (optional)
- Up to 30,000 wfms/s waveform capture rate
- Up to 60,000 frames hardware real-time waveform recording and playback functions (optional)
- Innovative "UltraVision" technology
- MSO field upgradable with MSO1000Z upgrade package (MSO upgrade option, only for DS1000Z Plus)
- Various trigger and bus decoding functions
- Low noise floor, vertical scale range: 1 mV/div to 10 V/div
- Built-in dual-channel 25 MHz function/arbitrary waveform generator (only for digital oscilloscope with source channels)
- Various interfaces: USB Host&Device, LAN (LXI), AUX, USB-GPIB (optional)
- Compact size, light weight, easy to use
- 7 inch WVGA (800x480) TFT LCD, intensity graded color display

MSO/DS1000Z series is a high-performance and economic digital oscilloscope designed for the designing, debugging and educational requirements of the mainstream digital oscilloscope market. Wherein, the mixed signal digital oscilloscope aimed at the embedded design and test fields is equipped with 16 digital channels and allows users to measure analog and digital signals at the same time.

### MSO/DS1000Z Series Digital Oscilloscope

7 inch WVGA (800X480) TFT display, intensity graded color display



Built-in source control key  
(digital oscilloscope with source channels)

16 digital channels (for MSO1000Z and MSO upgradable for DS1000Z Plus)

4 analog channels



Product Dimensions: Width × Height × Depth=313.1 mm × 160.8 mm × 122.4 mm  
Weight: 3.2 kg ± 0.2 kg(Without Package)

#### ► Innovative UltraVision Technology(Analog Channel)



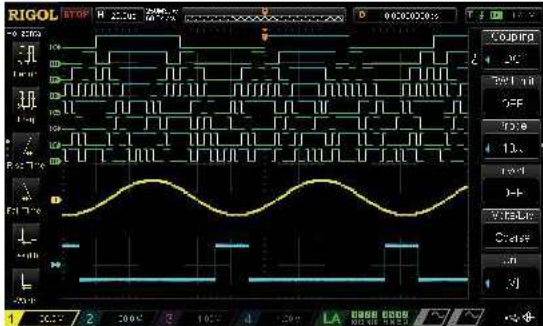
- Deeper Memory Depth (standard 12 Mpts, optional 24 Mpts)
- Higher Waveform Capture Rate (up to 30,000 wfms/s)
- Real-time Waveform Recording&Playback (up to 60,000 frames, optional)
- Intensity Graded Color Display

#### ► Models and Key Specifications

Model	DS1054Z	DS1074Z Plus	DS1074Z-S Plus	DS1104Z Plus	DS1104Z-S Plus
		MSO1074Z	MSO1074Z-S	MSO1104Z	MSO1104Z-S
Analog BW	50 MHz	70 MHz		100MHz	
Number of Analog Channels		4			
Number of Digital Channels	None	16 digital channels for MSO1000Z; MSO upgradable for DS1000Z Plus			
Max. Sample Rate		Analog channel: 1 GSa/s (single-channel), 500 MSa/s (dual-channel), 250 MSa/s (three/four-channel) Digital channel: 1 GSa/s (8-channel), 500 MSa/s (16-channel)			
Max. Memory Depth		Analog channel: standard 12 Mpts (single-channel), 6 Mpts (dual-channel), 3 Mpts (3/4-channel); optional 24 Mpts (single-channel), 12 Mpts (dual-channel), 6 Mpts (3/4-channel) Digital channel: standard 12 Mpts (8-channel), 6 Mpts (16-channel); optional 24 Mpts (8-channel), 12 Mpts (16-channel)			
Max. Waveform Capture Rate		30,000 wfms/s			
Hardware Real-time Waveform Recording, Playback and Analysis Functions		Up to 60,000 frames (optional)			
Standard Probes		RP2200 150 MHz Passive HighZ Probe: 4 sets; 1 set RPL1116 LA Probe for MSO1000Z			
Built-in Dual-channel 25 MHz Source	No	Yes	No	No	Yes

► Features and Benefits

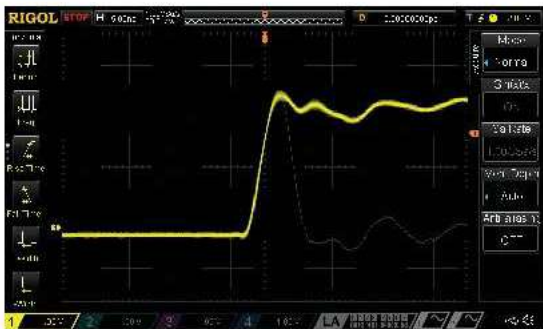
4 analog channels, 16 digital channels (for MSO1000Z and MSO upgradable for DS1000Z Plus)



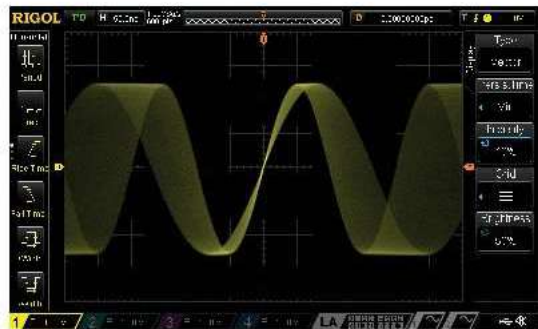
UltraVision: deeper memory (standard 12 Mpts, optional 24 Mpts)



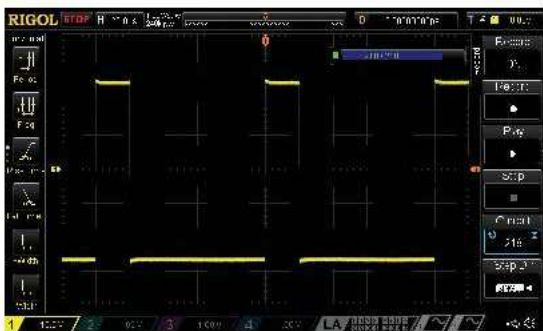
UltraVision: up to 30,000 wfms/s waveform capture rate



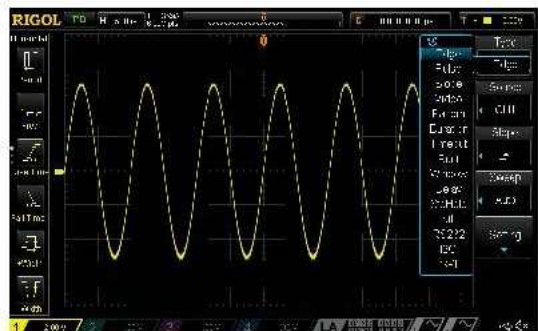
UltraVision: intensity graded color display



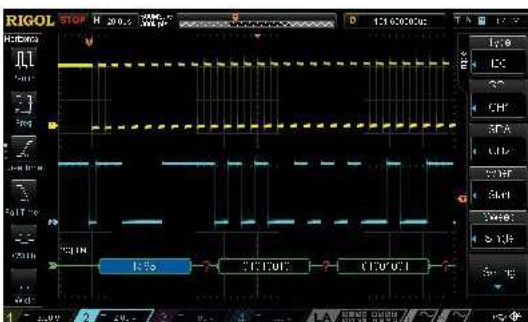
UltraVision: waveform recording and playback functions (optional)



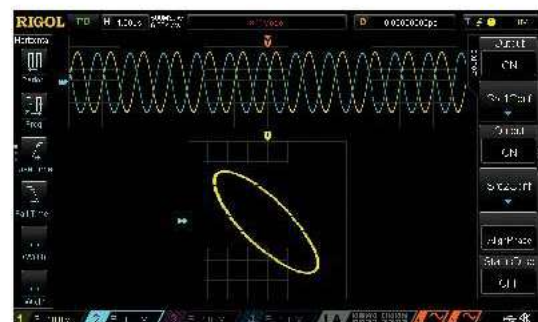
A variety of trigger functions



Built-in dual-channel 25 MHz source (MSO1XX4Z-S and DS1XX4Z-S Plus)

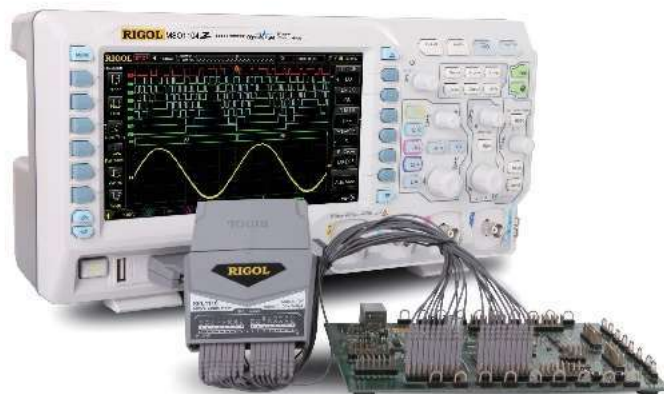


Optional serial bus trigger and decoding functions (RS232/UART, I2C, SPI)



\*Do not include the 50 MHz bandwidth model

► **Mixed Signal Digital Oscilloscope**



\*Do not include the 50 MHz bandwidth model

The mixed signal digital oscilloscope also provides the following functions:

- 16 digital channels for MSO1000Z and MSO upgradable for DS1000Z Plus
- Sample rate of digital channel up to 1 GSa/s
- Memory depth of digital channel up to 24 Mpts
- Waveform capture rate of digital channel up to 30,000 wfms/s
- Hardware real-time waveform recording and playback functions, up to 60,000 frames can be recorded
- Trigger and decoding of the analog and digital channels at the same time
- Easy grouping and group operation of the digital channels
- Supports a variety of logic levels
- Trigger across the analog and digital channels
- Time correlated display and analysis for both the analog and digital channel waveforms

**Innovative UltraVision technology (digital channel)**



- Deeper memory depth (up to 24 Mpts)
- Higher waveform capture rate (up to 30,000 wfms/s)
- Real-time waveform recording, playback and analysis functions (up to 60,000 frames)
- Intensity graded color display

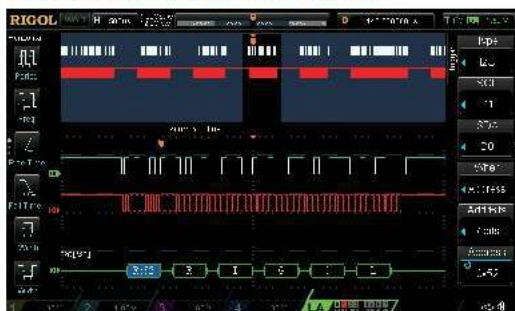
Mixed signal analysis with analog and digital channels



Easy to be grouped and labeled for digital channels



Same memory depth for the digital channels, serial bus trigger and decoding on digital channels



Supports a variety of logic levels










### RIGOL Probes and Accessories Supported by MSO/DS100Z Series

#### ► RIGOL Passive Probes

Model Number	Type	Description
 RP2200	High Z Probe	1X: DC to 7 MHz 10X: DC to 150 MHz Compatibility: all RIGOL scopes.
 RP3300A	High Z Probe	10X: DC to 350 MHz Compatibility: all RIGOL scopes.
 RP3500A	High Z Probe	DC to 500 MHz Compatibility: all RIGOL scopes.
 RP1300H	High Voltage Probe	DC to 300 MHz CAT I 2000 V (DC+AC), CAT II 1500 V (DC+AC) Compatibility: all RIGOL scopes.
 RP1010H	High Voltage Probe	DC to 40 MHz DC: 0 to 10 kV DC, AC: pulse $\leq 20$ kVp-p, AC: sine wave $\leq 7$ kVrms Compatibility: all RIGOL scopes.
 RP1018H	High Voltage Probe	DC to 150 MHz DC+AC Peak: 18 kV CAT II AC RMS: 12 kV CAT II Compatibility: all RIGOL scopes.
 RPL1116	Logic Analysis Probe	Logic analysis probe (for mixed signal digital oscilloscope)
 RT50J	Adapter	50 $\Omega$ impedance adapter (2 W, 1 GHz)

#### ► RIGOL Active & Current Probes

Model Number	Type	Description
 RP1001C	Current Probe	BW: DC to 300 kHz Max. Input DC: $\pm 100$ A, AC P-P: 200 A, AC RMS: 70 A Compatibility: all RIGOL scopes.
 RP1002C	Current Probe	BW: DC to 1 MHz Max. input DC: $\pm 70$ A, AC P-P: 140 A, AC RMS: 50 A Compatibility: all RIGOL scopes.
 RP1003C	Current Probe	BW: DC to 50 MHz Max. input AC P-P: 50 A (Noncontinuous) AC RMS: 30 A Compatibility: all RIGOL scopes. Must order RP1000P power supply.
 RP1004C	Current Probe	BW: DC to 100 MHz Max. input AC P-P: 50 A (Noncontinuous) AC RMS: 30 A, Compatibility: all RIGOL scopes. Must order RP1000P power supply.
 RP1005C	Current Probe	BW: DC to 10 MHz, Max. input AC P-P: 300 A (Noncontinuous), 500 A (@ pulse width $\leq 30$ us), AC RMS: 150 A Compatibility: all RIGOL scopes. Must order RP1000P power supply.
 RP1000P	Power Supply	Power supply for RP1003C, RP1004C, RP1005C, support 4 channels.
 RP1025D	High Voltage Differential Probe	BW: 25 MHz Max. Voltage $\leq 1400$ Vpp Compatibility: all RIGOL scopes.
 RP1050D	High Voltage Differential Probe	BW: 50 MHz Max. Voltage $\leq 7000$ Vpp Compatibility: all RIGOL scopes.
 RP1100D	High Voltage Differential Probe	BW: 100 MHz Max. Voltage $\leq 7000$ Vpp Compatibility: all RIGOL scopes.

### ► 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

Sample Mode	Real-time sample
Real-time Sample Rate	<b>Analog channel:</b> 1 GSa/s (single-channel), 500 MSa/s (dual-channel), 250 MSa/s (three/four-channel) <b>Digital channel:</b> 1 GSa/s (8-channel), 500 MSa/s (16-channel)
Peak Detect	<b>Analog channel:</b> 4 ns <b>Digital channel:</b> 4 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 or 1024.
High Resolution	12 bit (max)
Interpolation	Sin(x)/x (optional)
Min Detect Pulse Width	<b>Digital channel:</b> 10 ns
Memory Depth	<b>Analog channel:</b> standard 12 Mpts (single-channel), 6 Mpts (dual-channel), 3 Mpts (three/four-channel); optional 24 Mpts (single-channel), 12 Mpts (dual-channel), 6 Mpts (three/four-channel) <b>Digital channel:</b> standard 12 Mpts (8-channel), 6 Mpts (16-channel); optional 24 Mpts (8-channel), 12 Mpts (16-channel)

#### Input

Number of Channels	MSO1XX4Z/1XX4Z-S: 4 analog channels, 16 digital channels DS1XX4Z Plus/1XX4Z-S Plus: 4 analog channels, MSO upgradable DS1054Z: 4 analog channels
Input Coupling	DC, AC or GND
Input Impedance	<b>Analog channel:</b> (1 MΩ±1%)    (15 pF±3 pF) <b>Digital channel:</b> (100 kΩ±1%)    8 pF±3 pF
Probe Attenuation Coefficient	<b>Analog channel:</b> 0.01X to 1000X, in 1-2-5 step
Max Input Voltage (1MΩ)	<b>Analog channel:</b> CAT I 300 Vrms, CAT II 100 Vrms, transient overvoltage 1000 Vpk With RP2200 10:1 probe: CAT II 300 Vrms <b>Digital channel:</b> CAT I 40 Vrms, transient overvoltage 800 Vpk

#### Horizontal

Timebase Scale	5 ns/div to 50 s/div
Max Record Length	24 Mpts (optional)
Timebase Accuracy <sup>[1]</sup>	≤ ± 25 ppm
Clock Drift	≤ ± 5 ppm/year
Max Delay Range	Negative delay: ≥1/2 screen width Positive delay: 1 s to 500 s
Timebase Mode	YT, XY, Roll
Number of X-Ys	1
Waveform Capture Rate <sup>[2]</sup>	30,000 wfms/s (dots display)
Zero Offset	±0.5div*minimum time base scale

#### Vertical

Bandwidth (-3dB)	MSO1104Z/1104Z-S and DS1104Z Plus/1104Z-S Plus: DC to 100 MHz MSO1074Z/1074Z-S and DS1074Z Plus/1074Z-S Plus: DC to 70 MHz DS1054Z: DC to 50 MHz
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Single-shot Bandwidth	MSO1104Z/1104Z-S and DS1104Z Plus/1104Z-S Plus: DC to 100 MHz MSO1074Z/1074Z-S and DS1074Z Plus/1074Z-S Plus: DC to 70 MHz DS1054Z: DC to 50 MHz
Vertical Resolution	<b>Analog channel:</b> 8 bits <b>Digital channel:</b> 1 bit
Vertical Scale (Probe ratio is 1X)	1 mV/div to 10 V/div
Offset Range (Probe ratio is 1X)	1 mV/div to 499 mV/div: $\pm 2$ V 500 mV/div to 10 V/div: $\pm 100$ V
Bandwidth Limit <sup>[1]</sup>	20 MHz
Low Frequency Response (AC coupling, -3dB)	$\leq 5$ Hz (on BNC)
Calculated Rise Time <sup>[1]</sup>	MSO1104Z/1104Z-S and DS1104Z Plus/1104Z-S Plus: 3.5 ns MSO1074Z/1074Z-S and DS1074Z Plus/1074Z-S Plus: 5 ns DS1054Z: 7 ns
DC Gain Accuracy	$< 10$ mV: $\pm 4\%$ full scale $\geq 10$ mV: $\pm 3\%$ full scale
DC Offset Accuracy	$\pm 0.1$ div $\pm 2$ mV $\pm 1\%$ offset
Channel to Channel Isolation	DC to maximum bandwidth: $> 40$ dB

### Vertical (Digital Channel) (Applicable to MSO1000Z and DS1000Z Plus with MSO Upgrade Option)

Threshold	Adjustable threshold of 8 channels per group
Threshold Selection	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	$\pm 15.0$ V, in 10 mV step
Threshold Accuracy	$\pm (100$ mV + 3% of threshold setting)
Dynamic Range	$\pm 10.0$ V + threshold
Min Voltage Swing	500 mVpp
Vertical Resolution	1 bit

### Trigger

Trigger Level Range	$\pm 5$ div from the center of the screen
Trigger Mode	Auto, Normal, Single
Holdoff Range	16 ns to 10 s
High Frequency Rejection <sup>[1]</sup>	75 kHz
Low Frequency Rejection <sup>[1]</sup>	75 kHz
Trigger Sensitivity <sup>[1]</sup>	1.0 div (below 5 mV or noise rejection is enabled) 0.3 div (above 5 mV and noise rejection is disabled)
<b>Edge Trigger</b>	
Edge Type	Rising, Falling, Rising/Falling
<b>Pulse Trigger</b>	
Pulse Condition	Positive Pulse Width (greater than, lower than, within specified interval) Negative Pulse Width (greater than, lower than, within specified interval)
Pulse Width	8 ns to 10 s
<b>Runt Trigger (Optional)</b>	
Pulse Width Condition	None, >, <, <>
Polarity	Positive, Negative
Pulse Width Range	8 ns to 10 s
<b>Window Trigger (Optional)</b>	
Windows Type	Rising, Falling, Rising/Falling

Trigger Position	Enter, Exit, Time
Windows Time	8 ns to 10 s
<b>Nth Edge Trigger (Optional)</b>	
Edge Type	Rising, Falling
Idle Time	16 ns to 10 s
Edge Number	1 to 65535
<b>Slope Trigger</b>	
Slope Condition	Positive Slope (greater than, lower than, within specified interval) Negative Slope (greater than, lower than, within specified interval)
Time Setting	8 ns to 10 s
<b>Video Trigger</b>	
Signal Standard	NTSC, PAL/SECAM, 480P, 576P
<b>Pattern Trigger</b>	
Pattern Setting	H, L, X, Rising, Falling
<b>Delay Trigger (Optional)</b>	
Edge Type	Rising, Falling
Delay Type	>, <, <>, ><
Delay Time	8 ns to 10 s
<b>TimeOut Trigger (Optional)</b>	
Edge Type	Rising, Falling, Rising/Falling
TimeOut Value	16 ns to 10 s
<b>Duration Trigger</b>	
Pattern	H, L, X
Trigger Condition	>, <, <>
Duration Time	8 ns to 10 s
<b>Setup/Hold Trigger (Optional)</b>	
Edge Type	Rising, Falling
Data Pattern	H, L, X
Setup Time	8 ns to 1 s
Hold Time	8 ns to 1 s
<b>RS232/UART Trigger (Optional)</b>	
Polarity	Normal, Invert
Trigger Condition	Start, Error, Check Error, Data
Baud Rate	2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps, 230400 bps, 460800 bps, 921600 bps, 1 Mbps and User
Data Bits	5 bits, 6 bits, 7 bits, 8 bits
<b>I2C Trigger (Optional)</b>	
Trigger Condition	Start, Restart, Stop, Missing Ack, Address, Data, A&D
Address Bits	7 bits, 8 bits, 10 bits
Address Range	0 to 127, 0 to 255, 0 to 1023
Byte Length	1 to 5
<b>SPI Trigger (Optional)</b>	
Trigger Condition	Timeout, CS
Timeout Value	16 ns to 10 s
Data Bits	4 bit to 32 bit
Data Line Setting	H, L, X



### 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	Analog channel: Period, Frequency, Rise Time, Fall Time, Positive Pulse Width, Negative Pulse Width, Positive Duty Cycle, Negative Duty Cycle, $tV_{max}$ , $tV_{min}$ , Positive Rate, Negative Rate, Delay 1 $\rightarrow$ 2 $f$ , Delay 1 $\rightarrow$ 2 $\bar{f}$ , Phase 1 $\rightarrow$ 2 $f$ , Phase 1 $\rightarrow$ 2 $\bar{f}$ , Maximum, Minimum, Peak-Peak Value, Top Value, Bottom Value, Amplitude, Upper Value, Middle Value, Lower Value, Average, Vrms, Overshoot, Pre-shoot, Area, Period Area, Period Vrms, Variance Digital channel: Period, Frequency, Positive Pulse Width, Negative Pulse Width, Positive Duty Cycle, Negative Duty Cycle, Delay 1 $\rightarrow$ 2 $f$ , Delay 1 $\rightarrow$ 2 $\bar{f}$ , Phase 1 $\rightarrow$ 2 $f$ , Phase 1 $\rightarrow$ 2 $\bar{f}$	
Number of Measurements	Display 5 measurements at the same time	
Measurement Range	Screen or cursor	
Measurement Statistic	Average, Max, Min, Standard Deviation, Number of Measurements	
Counter	Hardware 6 bit counter (channels are selectable)	

### Math Operation

Waveform Operation	A+B, A-B, A×B, A/B, FFT, A&&B, A  B, A^B, !A, Intg, Diff, Sqrt, Lg, Ln, Exp, Abs
FFT Window	Rectangle, Hanning, Blackman, Hamming, Flat Top, Triangle
FFT Display	Half, Full
FFT Vertical Scale	dB/dBm, Vrms
Number of Buses for Decoding	2
Decoding Type	Parallel (standard), RS232/UART (option), I2C (option), SPI (option)

### Display

Display Type	7.0 inch TFT LCD display
Display Resolution	800 horizontal × RGB × 480 vertical pixel
Display Color	16 million color (24 bit true color)
Persistence Time	Min, 100 ms, 200 ms, 500 ms, 1 s, 5 s, 10 s, Infinite
Display Type	Dots, Vectors

### I/O

Standard Ports	USB Host, USB Device, LAN, Aux Output (TrigOut/PassFail), GPIB (extended via the USB Host interface)
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### Signal Source ( (Applicable to Digital Oscilloscopes with Source Channels))

Number of Channels	2	
Sample Rate	200 MSa/s	
Vertical Resolution	14 bits	
Max. Frequency	25 MHz	
Standard Waveform	Sine, Square, Pulse, Ramp, Noise, DC	
Arbitrary Waveform	Since, Exp.Rise, EXP.Fall, ECG, Gauss, Lorentz, Haversine	
Sine	Frequency Range	0.1 Hz to 25 MHz
	Flatness	±0.5 dB (relative to 1 kHz)
	Harmonic Distortion	-40 dBc
	Stray (Non-harmonic)	-40 dBc
	Total Harmonic Distortion	1%
	S/N Ratio	40 dB

Square /Pulse	Frequency Range	Square: 0.1 Hz to 15 MHz Pulse: 0.1 Hz to 1 MHz
	Rise/Fall time	<15 ns
	Overshoot	<5%
	Duty Cycle	Square: always be 50% Pulse: 10% to 90% adjustable
	Duty Cycle Resolution	1% or 10 ns (the larger of the two)
	Min. Pulse Width	20 ns
	Pulse Width Resolution	10 ns or 5 bits (the larger of the two)
	Jitter	500 ps
Ramp	Frequency Range	0.1 Hz to 100 kHz
	Linearity	1%
	Symmetry	0 to 100%
Noise <sup>[1]</sup>	Bandwidth	25 MHz
Built-in Waveform	Frequency Range	0.1 Hz to 1 MHz
Arbitrary Waveform	Frequency Range	0.1 Hz to 10 MHz
	Waveform Length	2 to 16k pts
Frequency	Accuracy	100 ppm (lower than 10 kHz) 50 ppm (greater than 10 kHz)
	Resolution	0.1 Hz or 4 bit, the larger of the two
Amplitude	Output Range	20 mVpp to 5 Vpp, High-resistance 10 mVpp to 2.5 Vpp, 50 Ω
	Resolution	100 μV or 3 bit, the greater of the two
	Accuracy	2% (1 kHz)
DC Offset	Range	±2.5 V, HighZ ±1.25 V, 50 Ω
	Resolution	100 μV or 3 bit, the larger of the two
	Accuracy	2% (1 kHz)
Modulation	AM, FM	

### General Specifications

Probe Compensation Output		
Output Voltage <sup>[1]</sup>	About 3 V, peak-peak	
Frequency <sup>[1]</sup>	1 kHz	
Power		
Power Voltage	100 V to 240 V, 45 Hz to 440 Hz	
Power	Maximum 50 W	
Fuse	2 A, T degree, 250 V	
Environment		
Temperature Range	Operating: 0°C to +50°C	
	Non-operating: -40°C to +70°C	
Cooling Method	Fan cooled	
Humidity Range	0°C to +30°C : ≤95% relative humidity	
	+35°C to +40°C : ≤75% relative humidity	
	+40°C to +50°C : ≤45% relative humidity	
Altitude	Operating: under 3,000 meters	
	Non-operating: under 15,000 meters	
Mechanical		
Dimensions <sup>[3]</sup>	Width × Height × Depth = 313.1 mm × 160.8 mm × 122.4 mm	
Weight <sup>[4]</sup>	Without package	3.2 kg ± 0.2 kg
	With package	3.8 kg ± 0.5 kg

<b>Calibration Interval</b>	
The recommended calibration interval is one year.	
<b>Regulation Standards</b>	
Electromagnetic Compatibility	2004/108/EC Execution standard EN 61326-1:2006 EN 61326-2-1:2006
Safety	UL 61010-1:2004; CAN/CSA-C22.2 NO. 61010-1-2004; EN 61010-1:2001; IEC 61010-1:2001

Note<sup>[1]</sup>: Typical.

Note<sup>[2]</sup>: Maximum value. 50 ns, single-channel mode, dots display, auto memory depth.

Note<sup>[3]</sup>: Supporting legs and handle folded, knob height included.

Note<sup>[4]</sup>: Standard configuration.

### ► Ordering Information

	Description	Order Number
<b>Models</b>	DS1104Z Plus (100 MHz, 4 analog channels, MSO ready)	DS1104Z Plus
	DS1104Z-S Plus (100 MHz, 4 analog channels, 2-channel 25 MHz signal source, MSO ready)	DS1104Z-S Plus
	DS1074Z Plus (70 MHz, 4 analog channels, MSO ready)	DS1074Z Plus
	DS1074Z-S Plus (70 MHz, 4 analog channels, 2-channel 25 MHz signal source, MSO ready)	DS1074Z-S Plus
	MSO1104Z (100 MHz, 4 analog channels, 16 digital channels)	MSO1104Z
	MSO1104Z-S (100 MHz, 4 analog channels, 16 digital channels, 2-channel 25 MHz signal source)	MSO1104Z-S
	MSO1074Z (70 MHz, 4 analog channels, 16 digital channels)	MSO1074Z
	MSO1074Z-S (70 MHz, 4 analog channels, 16 digital channels, 2-channel 25 MHz signal source)	MSO1074Z-S
	DS1054Z (50 MHz, 4 analog channels)	DS1054Z
<b>Standard Accessories</b>	Power Cord conforming to the standard of the country	-
	USB Cable	CB-USBA-USBB-FF-150
	4 Passive Probes (150 MHz)	RP2200
	1 Logic Analyzer Probe (only for MSO1000Z)	RPL1116
	Quick Guide	-
	Resource CD (include User's Guide and application software)	-
<b>MSO Upgrade Option</b>	MSO upgrade package for DS1000Z Plus only, including logic analyzer probe (RPL1116) and model label	MSO1000Z Upgrade Package
<b>Optional Accessory</b>	Rack Mount Kit	RM-DS1000Z
<b>Memory Depth Option</b>	Analog channel: 24 Mpts (single channel)/12 Mpts (dual-channel)/6 Mpts (three/four channel) Digital channel: 24 Mpts (8-channel)/12 Mpts (16-channel)	MEM-DS1000Z
<b>Waveform Record Option</b>	This option provides the waveform recording and playback function.	REC-DS1000Z
<b>Advanced Trigger Option</b>	RS232/UART trigger, I2C trigger, SPI trigger, Runt trigger, Window trigger, Nth edge trigger, delay trigger, timeout trigger, Setup/Hold trigger	AT-DS1000Z
<b>Serial Protocol Analysis Option</b>	RS232/UART, I2C and SPI trigger and decoding functions	SA-DS1000Z