## DS1000D/E Series Oscilloscope Specifications

All specifications apply to DS1000E, DS1000D Series Oscilloscopes and a probe with the Attenuation switch set to 10X unless noted otherwise. To meet these specifications, two conditions must first be met:

- The instrument must have been operating continuously for thirty minutes within the specified operating temperature.
- Do perform the Self Cal operation, accessible through the Utility menu, if the operating temperature changes by more than 5°C.
- All specifications are guaranteed unless noted "typical".

## Specifications

Acquisition				
Sampling Modes	Real-Time	Equivalent		
Sampling Rate	1GSa/s, 200MSa/s <sup>[1]</sup>	DS1102X	DS1052X	
	165d/S, 200M5d/S <sup>2</sup>	25GSa/s	10GSa/s	
Averages	N time acquisitions, all channels simultaneously, N is			
	Selectable ITOITI 2, 4, 6, 16, 3	52, 0 <del>4</del> , 128 anu 2	selectable from 2, 4, 8, 16, 32, 64, 128 and 256.	

Inputs	
Input Coupling	DC, AC, GND
Input Impedance	1M $\Omega$ ±2%, in parallel with 15pF±3pF
Probe Attenuation Factors	1X, 5X, 10X, 50X, 100X, 500X,1000X
Maximum Input Voltage	400V (DC+AC Peak, 1M $\Omega$ input impedance)
Maximum Input Voltage	40V (DC+AC Peak) <sup>[1]</sup>
Time delay between channel	500ps
(typical)	

Horizontal				
Sample Rate	Real-Time: 13.65Sa/s-1GSa/s			
Range	Equivalent: 13.659	a/s-25GSa/s		
Waveform	Sin(v)/v			
interpolation	Sin(x)/x			
	Channel Mode	Sample rate	Record	Record
			Length	Length
			(normal)	(long record)
Decord Longth	Single channel	1GSa/s	16Kpts	N.A.
Record Length	Single channel	500MSa/s	16 Kpts	1Mpts
		Or lower		
	Double channel	500MSa/s	8 Kpts	512Kpts
		Or lower		
Scan speed Range	2ns/div~50s/div, DS1102X			
(Sec/div)	5ns/div~50s/div, DS1052X			
	1-2-5 Sequence			
Sample Rate and Delay Time	±50ppm (over any 1ms time interval)			

Accuracy	
Delta Time	Single-shot: $\pm(1 \text{ sample interval} + 50 \text{ppm} \times \text{reading} + 0.6$
Measurement	ns)
Accuracy	>16 averages: $\pm$ (1sample interval + 50ppm × reading + 0.4
(Full Bandwidth)	ns)

Vertical		
A/D converter	8-bit resolution, each channel samples simultaneously <sup>[2]</sup>	
Volts/div Range	2mV/div~10V/div at input BNC	
Maximum Input	Analog channel maximum input voltage	
	CAT I 300Vrms, 1000Vpk; instantaneous voltage 1000Vpk	
	CAT II 100Vrms, 1000Vpk	
	RP2200 10:1: CAT II 300Vrms	
	RP3200 10:1: CAT II 300Vrms	
	RP3300 10:1: CAT II 300Vrms	
Offset Range	±40V(200mV-10V), ±2V(2mV-100mV)	
Analog Bandwidth	100MHz (DS1102D,DS1102E)	
	50MHz (DS1052D, DS1052E)	
Single-shot	80MHz (DS1102D, DS1102E)	
Bandwidth	50MHz (DS1052D, DS1052E)	
Selectable Analog		
Bandwidth Limit	20MHz	
(typical)		
Lower Frequency Limit (AC –3dB)	≤5Hz (at input BNC)	
Rise Time at BNC,	<3.5ns, <7ns,	
typical	On (100M, 50M) respectively	
DC Gain Accuracy	2mV/div-5mV/div:	
	±4% (Sample or Average acquisition mode)	
	10mV/div-10V/div:	
	±3% (Sample or Average acquisition mode)	
DC Measurement	Average of $\geq$ 16 Waveforms with vertical position at zero:	
Accuracy, Average	±(DC Gain Accuracy×reading+0.1div+1mV)	
Acquisition Mode	Average of $\geq$ 16 Waveforms with vertical position not at zero:	
	±[DC Gain Accuracy×(reading+vertical position)+(1% of	
	vertical position) + 0.2div]	
	Add 2mV for settings from 2mV/div to 200 mV/div	

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	Add 50mV for settings from >200mV/div to 10V/div
Delta Volts	Delta Volts between any two averages of 16 waveforms
Measurement	acquired under same setup and ambient
Accuracy (Average	conditions: ±(DC Gain Accuracy×reading + 0.05 div)
Acquisition Mode)	

Trigger			
		Odiv (adjustable)	
Trigger Level Range		±5 divisions from center of screen	
	EXT	±1.2V	
Trigger Lev	el Internal	$\pm$ (0.3div × V/div)( $\pm$ 4 divisions from center of	
Accuracy (typica	al)	screen)	
applicable for th	ne EXT	±(6% of setting + 200 mV)	
signal of rising ar	nd		
falling time ≥20ns			
		ode: pre-trigger (262144/ sampling rate),	
Trigger Offset	delayed tri		
		mode: pre-trigger 6div, delayed trigger 6div	
Trigger Holdoff rang	e 100ns~1.5	ōs	
Set Level to 50%	Input sign	Input signal frequency ≥50Hz	
(Typical)			
Edge Trigger			
	Rising, Falling,	Rising + Falling	
slope			
Pulse Trigger			
	(>, <, =) Positive pulse, $(>, <, =)$ negative pulse		
	20ns ~10s		
Video Trigger			
	Support standard NTSC, PAL and SECAM broadcast systems.		
line frequency Line number range: 1~525 (NTSC) and 1~625 (PAL/SECAM)			
Slope Trigger			
	(>, <, =) Positive slope, $(>, <, =)$ negative slope		
Time setting 20ns~10s			
	Alternate Trigger		
	Edge, Pulse, V		
	Trigger on CH2 Edge, Pulse, Video, Slope		
Pattern Trigger <sup>[1]</sup>			

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Trigger mode	D0~D15 select H, L, X, 手, ₹
<b>Duration Trigger</b>	[1]
Trigger Type	D0~D15 select H, L, X
Qualifier	>, <, =
Time setup	20ns~10s

Measurements		
	Manual	Voltage difference between cursors ( $\Delta V$ )
Cursor		Time difference between cursors ( $\Delta T$ )
		Reciprocal of $\Delta T$ in Hertz (1/ $\Delta T$ )
	Track	Voltage value for Y-axis waveform
		Time value for X-axis waveform
	Auto	Cursors are visible for Automatic Measurement
Auto Measure	Vpp, Vamp, Vmax, Vmin, Vtop, Vbase, Vavg, Vrms, Overshoot,	
	Preshoot, Freq, Period, Rise Time, Fall Time, +Width, -Width,	
	+Duty, -Duty, Delay1→2 <b>f</b> , Delay1→2 <b>f</b>	

[1] For DS1000D Series;

[2] When sampling is 1GSa/s, only single channel can be used.

## **General Specifications**

Display	
Display Type	5.7 in. (145 mm) diagonal TFT Liquid Crystal Display
Display Resolution	320 horizontal ×RGB×234 vertical pixels
Display Color	64K color
Display Contrast (typical)	150:1
Backlight	300 nit
Brightness(typical)	

Probe Compensator Output		
Output Voltage(typical)	Amplitude ~3Vp-p	
Frequency(typical)	1kHz	

Power	
Supply Voltage	100 ~ 240 VAC <sub>RMS</sub> , 45~440Hz, CAT II
Power Consumption	Less than 50W
Fuse	2A, T rating, 250 V

Environmental		
Ambient Temperature	Operating 10℃~ 40℃	
	Non-operating -20°C~ +60°C	
Cooling Method	Fan force air flow	
Humidity	+35°°C or below: $\leq$ 90% relative humidity	
	+35°C~ +40°C: ≤60% relative humidity	
Altitude	Operating 3,000 m or below	
	Non-operating 15,000 m or below	

Mechanical		
Size	Width	303mm
	Height	154mm
	Depth	133 mm
Heavy	Without package	2.4 kg
	Packaged	3.8 kg

IP Degree	
IP2X	

## **Calibration Interval**

The recommended calibration interval is one year