

Rigol DS2000 Series Oscilloscope Specifications

All the specifications are guaranteed except the 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	2 GSa/s (single-channel) 1 Gsa/s (dual-channel)
Peak Detect	500 ps (single-channel) 1 ns (dual-channel)
Averaging	After both 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 bits of resolution when $\geq 5 \mu\text{s}/\text{div}$ @ 1 GSa/s (or $\geq 10 \mu\text{s}/\text{div}$ @ 500 MSa/s).
Memory Depth	single-channel: Auto, 14k pts, 140k pts, 1.4M pts, 14M pts and 56M pts (option) are available dual-channel: Auto, 7k pts, 70k pts, 700k pts, 7M pts and 28M pts (option) are available

Input

Number of Channels	Two channels
Input Coupling	DC, AC or GND
Input Impedance	$(1 \text{ M}\Omega \pm 1\%) \parallel (16 \text{ pF} \pm 3 \text{ pF})$
Probe Attenuation Coefficient	0.01X to 1000X, in 1-2-5 step
Maximum Input Voltage (1M Ω)	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
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Horizontal

Timebase Scale	DS2202: 2.000 ns/div to 1.000 ks/div DS2102/DS2072: 5.000 ns/div to 1.000 ks/div
Timebase Accuracy ¹	≤ ± 25 ppm
Clock Drift	≤ ± 5 ppm/year
Max Delay Range	Pre-trigger (negative delay): ≥1 screen width Post-trigger (positive delay): 1 s to 100,000 s
Timebase Mode	Y-T, X-Y, Roll, Delayed Sweep
Number of XYs	1
Waveform Capture Rate ²	50,000 wfms/s (dots display)

Vertical

Bandwidth (-3dB)	DS2202: DC to 200 MHz DS2102: DC to 100 MHz DS2072: DC to 70 MHz
Single-shot Bandwidth	DS2202: DC to 200 MHz DS2102: DC to 100 MHz DS2072: DC to 70 MHz
Vertical Resolution	8bit
Vertical Scale	500 μV/div to 10 V/div
Offset Range	500 μV /div to 50 mV/div: ± 2 V 51 mV/div to 200 mV/div: ± 10 V 205 mV/div to 2 V/div: ± 50 V 2.05 V/div to 10 V/div: ± 100 V
Bandwidth Limit ¹	DS2202: 20 MHz/100 MHz

	DS2102: 20 MHz DS2072: 20 MHz
Low Frequency Response (AC Coupling, -3dB)	≤5 Hz (on BNC)
Calculated Rise Time ¹	DS2202: 1.8 ns DS2102: 3.5 ns DS2072: 5 ns
DC Gain Accuracy	±2% full scale
DC Offset Accuracy	±0.1 div ± 2 mV ± 1% offset value
Channel to Channel Isolation	DC to maximum bandwidth: >40 dB

Trigger

Trigger Level Range	Internal	± 5 div from center of the screen
	EXT	± 4 V
Trigger Mode	Auto, Normal, Single	
Holdoff Range	100 ns to 10 s	
High Frequency Rejection ¹	75 kHz	
Low Frequency Rejection ¹	75 kHz	
Trigger Sensitivity	1 div (below 10 mV or noise rejection is enabled) 0.3 div (above 10 mV and noise rejection is disabled)	

Edge Trigger

Edge Type	Rising, Falling, Rising&Falling
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Pulse Trigger

Pulse Condition	Positive Pulse Width (greater than, lower than, within specific interval) Negative Pulse Width (greater than, lower than, within specific interval)
Pulse Width Range	2 ns to 4 s

Runt Trigger

Pulse Width	None, >, <, <>
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Condition	
Pulse Polarity	Positive, Negative
Pulse Width Range	2 ns to 4 s
Windows Trigger	
Windows Type	Rising, Falling, Rising&Falling
Trigger Position	Enter, Exit, Time
Windows Time	16 ns to 4 s
Nth Edge Trigger	
Edge Type	Rising, Falling
Idle Time	16 ns to 10 s
Edge Number	1 to 65535
Slope Trigger	
Slope Condition	Positive Slope (greater than, lower than, within specific interval) Negative Slope (greater than, lower than, within specific interval)
Time Setting	2 ns to 4 s
Video Trigger	
Signal Standard	Support standard NTSC, PAL and SECAM broadcasting standards; support 480P, 576P, 720P, 1080P and 1080I HDTV standards
Pattern Trigger	
Pattern Setting	H, L, X, Rising, Falling
Delay Trigger	
Edge Type	Rising, Falling
Delay Type	>, <, <>, ><
Delay Time	2 ns to 4 s
TimeOut Trigger	
Edge Type	Rising, Falling, Rising&Falling
Timeout time	16 ns to 4 s
Duration Trigger	
Pattern	H, L, X
Trigger Condition	>, <, <>
Duration Time	2 ns to 4 s
Setup/Hold Trigger	
Edge Type	Rising, Falling

Data Type	H, L
Setup Time	2 ns to 1 s
Hold Time	2 ns to 1 s
RS232/UART Trigger	
Polarity	Negative, Positive
Trigger Condition	Start, Error, Check Error, Data
Baud Rate	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, 10 bit
Address Range	0 to 127, 0 to 1023
Byte Length	1 to 5
SPI Trigger	
Trigger Condition	Timeout
Timeout Value	100 ns to 1 s
Data Bits	4 bit to 32 bit
Data Line Setting	H, L, X
USB Trigger	
Signal Speed	Low Speed, Full Speed
Trigger condition	SOP, EOP, RC, Suspend, Exit Suspend

Measure

Cursor	Manual Mode	Voltage Deviation between Cursors (ΔV) Time Deviation between Cursors (ΔT) Reciprocal of ΔT (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, Frequency, Period, Rise Time,	

	Fall Time, Positive Pulse Width, Negative Pulse Width, Positive Duty Cycle, Negative Duty Cycle, Delay A→B \uparrow , Delay A→B \downarrow , Phase A→B \uparrow , Phase A→B \downarrow , Area, Period Area
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
Frequency Counter	Hardware 6 bits frequency counter (channels are selectable)

Math Operation

Waveform Operation	A+B, A-B, A×B, A/B, FFT, Editable Advanced Operation, Logic Operation
FFT Window Function	Rectangle, Hanning, Blackman, Hamming
FFT Display	Split, Full Screen
FFT Vertical Scale	Linear Vrms, dBV rms
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 (option)

Display

Display Type	8.0 inches (203 mm) TFT LCD display
Display Resolution	800 Horizontal ×RGB×480 Vertical Pixel

Display Color	160,000 Color (TFT)
Persistence Time	Min, 50ms, 100ms, 200ms, 500ms, 1 s, 2 s, 5 s, 10 s, 20 s, Infinite
Display Type	Dots, Vectors
Real-time Clock	Time and Date (user adjustable)

I/O

Standard Ports	USB HOST (support USB-GPIB), USB DEVICE, LAN, Aux Output (TrigOut/PassFail)
Printer Compatibility	PictBridge

General Specifications

Probe Compensation Output		
Output Voltage ¹	About 3 V, peak-peak	
Frequency ¹	1 kHz	
Power		
Power Voltage	100 to 240 V, 45 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: -20 °C to +70 °C	
Cooling Method	fan cooling	
Humidity Range	Under +35 °C: ≤90% Relative Humidity	
	+35 °C to +50 °C: ≤60% Relative Humidity	
Altitude	Operating: under 3,000 meters	
	Non-operating: under 15,000 meters	
Physical Characteristics		
Size ³	Width×Height×Depth = 361.6 mm× 179.6 mm×130.8 mm	
Weight ⁴	Package Excluded	3.9 kg ± 0.2 kg
	Package Included	4.5 kg ± 0.5 kg

Calibration Interval

The recommended calibration interval is one year.

Regulatory Information

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

- 1** Typical.
- 2** Maximum value. 20ns, single-channel mode, dots display, auto memory depth.
- 3** Supporting legs and handle folded, knob height included.
- 4** Standard configuration.