

Pulse Width Range	8 ns to 10 s <input type="checkbox"/> 4ns - 10s, B,E <input type="checkbox"/>
Window Trigger (Option)	2 level threshold trigger <input type="checkbox"/>
Window Type	Rising, Falling, Rising/Falling <input type="checkbox"/>
Trigger Position	Enter, Exit, Time <input type="checkbox"/>
Window Time	8 ns to 10 s <input type="checkbox"/> 4ns - 10s, B, <input type="checkbox"/>
Nth Edge Trigger (Option)	in-between trigger, B, <input type="checkbox"/>
Edge Type	Rising, Falling <input type="checkbox"/>
Idle Time	16 ns to 10 s <input type="checkbox"/> 4ns - 10s, B,E <input type="checkbox"/>
Edge Number	1 to 65535 <input type="checkbox"/>
Slope Trigger	
Slope Condition	Positive Slope (greater than, lower than, within specific interval) ✓ Negative Slope (greater than, lower than, within specific interval) ✓
Time Setting	8 ns to 10 s <input type="checkbox"/> 4ns - 10s, B,E <input type="checkbox"/>
Video Trigger	HDTV 720p, 1080i, 1080p on B,E ●
Signal Standard	NTSC, PAL/SECAM, 480P, 576P <input type="checkbox"/>
Pattern Trigger	logic trigger <input type="checkbox"/>
Pattern Setting	H, L, X, Rising, Falling no 'timer' trigger, B, <input type="checkbox"/>
Delay Trigger (Option)	between 2 channels, B,E <input type="checkbox"/>
Edge Type	Rising, Falling <input type="checkbox"/>
Delay Type	>, <, <>, >< <input type="checkbox"/>
Delay Time	8 ns to 10 s <input type="checkbox"/> 4ns - 10s, B,E <input type="checkbox"/>
TimeOut Trigger (Option)	logic ✗
Edge Type	Rising, Falling, Rising/Falling ✗
Timeout time	16 ns to 10 s ✗
Duration Trigger (Option)	4 ch logic ✗
Pattern	H, L, X ✗
Trigger Condition	>, <, <> ✗
Duration Time	8 ns to 10 s ✗
Setup/Hold Trigger (Option)	✗ logic transition
Edge Type	Rising, Falling ✗
Data Type	H, L, X
Setup Time	8 ns to 1 s ✗
Hold Time	8 ns to 1 s ✗
RS232/UART Trigger (Option)	
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, 230400bps, 460800bps, 921600bps, 1Mbps and User ✗

Data Bits	5 bit, 6 bit, 7 bit, 8 bit ✗
I2C Trigger (Option)	✗
Trigger Condition	Start, Restart, Stop, Missing ACK, Address, Data, A&D ✗
Address Bits	7 bits, 8 bits, 10 bits
Address Range	0x0 to 0x7F, 0x0 to 0xFF, 0x0 to 1023 ✗
Byte Length	1 to 5 ✗
SPI Trigger (Option)	✗
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→2 $f$ , Delay ✓ 1→2 $t$ , Phase 1→2 $f$ , Phase 1→2 $t$ , Maximum, Minimum, ✓ Peak-Peak Value, Top Value, Bottom Value, Amplitude, Upper ✓ Value, Middle Value, Lower Value, Average, Mean Square Root, ✓ Overshoot, Pre-shoot, Area, Period Area, Variance ✓ Digital channel: Frequency, Period, Positive Pulse Width, Negative Pulse Width, Positive Duty Cycle, Negative Duty Cycle, Delay 1→2 $f$ , Delay 1→2 $t$ , Phase 1→2 $f$ , Phase 1→2 $t$ B,E does auto also on static buffer ●	
Number of Measurements	Display 5 measurements at the same time. <input type="checkbox"/> 8 at time, B,E <input type="checkbox"/>	
Measurement Range	Screen or cursor <input type="checkbox"/> buffer, B,E <input type="checkbox"/>	
Measurement Statistic	Average, Max, Min, Standard Deviation, Number of ✓ Measurements ✓	
Frequency Counter	Hardware 6 bit frequency counter ✓ (channels are selectable) ✓	

Math Operation ✓

Waveform Operation	A+B, A-B, A×B, A/B, FFT, A&&B, A  B, A^B, IA, intg, Diff, Sqrt, Lg, Ln, Exp, Abs B,E user defined same functions but with variables
FFT Window Function	Rectangle, Hanning, Blackman, Hamming, Flat Top, Triangle ✓
FFT Display	Half, Full ✓ X
FFT Vertical Scale	dB/dBm, Vrms X
Number of Buses for Decoding	2 X
Decoding Type	Parallel (standard), RS232/UART (option), I2C (option), SPI (option) X

Display

Screen Type	7.0 inch (203 mm) TFT LCD display 7, B, 8 E
Display Resolution	800 Horizontal ×RGB×480 Vertical Pixel ✓
Display Color	160,000 Color (TBD) not specified in B,E
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 (use USB HOST interface to expand) ✓ X
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E: real time clock ●

Singnal Source (MSO1000Z-S/DS1000Z-S) not applicable

Channels	2	
Sample Rate	200 MSa/s	
Vertical Resolution	14 bits	
Max. Frequency	25 MHz	
Standard Waveform	Sine, Square, Pulse, Ramp, Noise, DC	
Built-in Waveform	Sinc, Exponential Rise, Exponential 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	-40 dBc

not applicable		
	(Non-harmonic)	
	Total Harmonic Distortion	1%
	S/N Ratio	40 dB
Square/Pulse	Frequency Range	0.1 Hz to 15 MHz
	Rise/Fall Time	<15 ns
	Overshoot	<5%
	Duty Cycle	10% to 90%
	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 points
Frequency	Accuracy	100 ppm (lower than 10 kHz) 50 ppm (higher than 10 kHz)
	Resolution	0.1 Hz or 4 bits, the larger of the two
Amplitude	Output Range	20 mVpp to 5 Vpp, HighZ 10 mVpp to 2.5 Vpp, 50 $\Omega$
	Resolution	100 $\mu$ V or 3 bits, the larger of the two
	Accuracy	2% (1 kHz)
DC Offset	Range	$\pm$ 2.5 V, HighZ $\pm$ 1.25 V, 50 $\Omega$
	Resolution	100 $\mu$ V or 3 bits, the larger of the two
	Accuracy	2% (1 kHz)

General Specifications

Probe Compensation Output

Output Voltage<sup>[1]</sup> About 3 V, peak-peak  B,E: 2Vpp, variable square wave at 1kHz-200kHz

Frequency<sup>[1]</sup> 1 kHz

Power

Power Voltage 100 V-240 V, 45 Hz-440 Hz B,E: 100 - 240VAC, 50 - 60Hz, auto selection. 30 Watts.

Power Maximum 50 W

Fuse 2 A, T degree, 250 V  not specified, B,E

Environment B,E: Temperature: 0°C to 50°C. Relative Humidity ≤ 80% at 40°C or below; ≤ 45% at 41°C

Temperature Operating: 0 °C to +50 °C

Range Non-operating: -40 °C to +70 °C

Cooling Method Fan cooling

Humidity Range 0 °C to +30 °C: ≤95% Relative Humidity

+30 °C to +40 °C: ≤75% Relative Humidity

+40 °C to +50 °C: ≤45% Relative Humidity

Altitude Operating: under 3,000 meters  B,E: Altitude: < 2000m

Non-operating: under 15,000 meters  not specified

Physical Characteristics

Size<sup>[4]</sup> Width×Height×Depth = 313.1 mm× 160.8 mm×122.4 mm

Weight<sup>[4]</sup> Package Excluded 3.2 kg±0.2 kg

Package Included 3.8 kg±0.5 kg

Calibration Interval

The recommended calibration interval is one year.

Regulatory Information  B,E: not NRTL agency certified, CE ONLY

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. 50ns, 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.