Data Sheet

Handheld Oscilloscope
DSO1000E Series

DSO1202E DSO1152E DSO1102E
DSO1072E

Oscilloscope/Generator/DMM/Record

Anti-theft lock/FLASH lighting/Tripod mounts/Replaceable Battery.

IP-51 rated for dust and drip proof to withstand harsh.

Features & Benefits

- Oscilloscope /DMM /Record
- Anti-theft lock / FLASH lighting /Tripod mounts / Replaceable Battery
- IP-51 rated for dust and drip proof to withstand harsh
- With European Safety Standard Big Fuse
- High Bandwidth 70MHz-200MHz Oscilloscope with 1.2M Point Scope Trendplot
- 1GS/s sample rate, 2M Memory Depth
- 8M Point Data logger
- 6000 Counts DMM with 1.2M Point DMM TrendPlot
- Advanced automatic measurements

Ease-of-Use Feature

- Large 5.6 inch TFT Color LCD Display; High Resolution(640*480);
- Dual-Window Design --More clear, More Detailed
- Easy-to-use pop-up menu with built-in multi-language help system.
- Advanced 32 Automatic Measurements.
- Waveform Math: Add, Subtract, Multiply, and Divide.
- Store and recall over.
- Automatic cursor tracking measurements.
- XY Mode.
- Waveform Recorder to capture/replay a maximum record length of 1000 frames.
- Pass/Fail function compares a stored waveform to an unknown input.
- Average Mode for smoothing waveforms.
- USB Host/Device 2.0 full-speed interface; support removeable disk;
- LAN Option, easy to control by PC or long-distance.

Applications

- Design and Debug
- Education and training
- Manufacturing Test and Quality Control
- Service and Repair
- Electronic Circuit Designing and Testing

Characteristics

Acquisition	
Sample Modes	Real-Time Sample
Acquisition Modes	
Normal	Normal data only
Peak Detect	High-frequency and randon glith capture
Average	Wavefom Average, selectable 4,8,16,32,64,128
Inputs	
Inputs Coupling	AC, DC, GND
Inpits Impendance	1MΩ±2% ‖20pF±3pF
Probe Attenuation	1X, 10X
Supported Probe Attenuation Factor	1X, 10X, 100X, 1000X
Maximum Input Voltage	CAT I and CAT II: 300VRMS (10×); Installation Category III: 150VRMS (1×); Installation Category II: derate at 20dB/decade above 100kHz to 13V peak AC at 3MHz and above. For non-sinusoidal waveforms, peak value must be less than 450V. Excursion above 300V should be of less than 100ms duration. RMS signal level including all DC components removed through AC coupling must be limited to 300V. If these values are exceeded, damage to the oscilloscope may occur.
Horizontal	
Sample Rate Range	1GS/s
Waveform Interpolation	(sin x)/x
Record Length	2M
SEC/DIV Range	DSO1072E: 4ns/div~2Ks/div DSO1102E: 4ns/div~2Ks/div DSO1152E: 2ns/div~2Ks/div DSO1202E: 2ns/div~2Ks/div
Sample Rate and Delay Time Accuracy	±50ppm over any ≥1ms time interval
Scanning Speed Range	DSO1072E/DSO1102E: 4ns/div to 8ns/div; (-8div x s/div) to 40ms; 20ns/div to 80μs/div;(-8div×s/div) to 40ms; 200μs/div to 40s/div; (-8div×s/div) to 400s; DSO1152E/DSO1202E: 2ns/div to10ns/div; (-4div×s/div) to 20ms;
Delta Time Measurement Accuracy (Full Bandwidth)	Single-shot, Normal mode:± (1 sample interval +100ppm × reading + 0.6ns); >16 averages:± (1 sample interval + 100ppm × reading + 0.4ns); Sample interval = s/div ÷ 200
Vertical	
Vertical Resolution	8-bit resolution, all channel sampled simultaneously
Volts Range	2mV/div to 10V/div at input BNC
Bandwidth	DSO1072E: 70MHz DSO1102E: 100MHz DSO1152E: 150MHz DSO1202E: 200MHz
Rise Time at BNC(typical)	DSO1072E: 5ns DSO1102E: 3.5ns DSO1152E: 2.3ns DSO1202E: 1.8ns
Analog Bandwidth in Normal and Average modes at BNC or with probe, DC Coupled	±400V(100V/div-20V/div); ±50V(10V/div-5V/div) ±40V(2V/div-500mV/div); ±2V(200mV/div-50mV/div) ±400mV(20mV/div-2mV/div)

Math	+, -, *, /, FFT
FFT	Windows: Hanning, Flatop, Rectamgular, Bartlett, Blackman; 1024 sample point
Bandwidth Limit	20MHz
Low Frequency Response(-3db)	≤10Hz at BNC
DC Gain Accuracy	±3% for Normal or Average acquisition mode, 100V/div to 10mV/div.
	±4% for Normal or Average acquisition mode, 5mV/div to 2mV/div.
DC Measurement Accuracy, Average Acquisition Mode	Measurement Type: Average of ≥16 waveforms with vertical position at zero
	Accuracy: ± (3% × reading + 0.1div + 1mV) when 10mV/div or greater is selected.
	Measurement Type: Average of ≥16 waveforms with vertical position not at zero
	Accuracy: ± [3% × (reading + vertical position) + 1% of vertical position + 0.2div]
Volts Measurement Repeatability, Average Acquisition Mode	Delta volts between any two averages of ≥16 waveforms acquired under same setup and ambient conditions
Trigger	
Trigger Types	Edge, Video, Pulse, Slope, Over time, Alternative
Trigger Source	CH1, CH2, AC Line
Trigger Modes	Auto, Normal, Single
Coupling Type	DC, AC, HF Reject, LF Reject, Noise Reject
Trigger Sensitivity (Edge Trigger Type)	**DC(CH1,CH2):**
	1div from DC to 10MHz; 1.5div from 10MHz to 100MHz; 2div from 100MHz to Full;
	AC: Attenuates signals below 10Hz ;
	HF Reject: Attenuates signals above 80kHz;
	LF Reject: Same as the DC-coupled limits for frequencies above 150KHz;
	attenuates signals below 150KHz
Trigger Level Range	CH1/CH2: ±8 divisions from center of screen;
Trigger Level Accuracy(typical)	CH1/CH2: 0.2div × volts/div within ±4 divisions from center of screen;
Set Level to 50%(typical)	Operates with input signals ≥50Hz
Video Trigger	
Video Trigger Type	CH1, CH2: Peak-to-peak amplitude of 2 divisions;
	Supports NTSC, PAL and SECAM broadcast systems for any field or any line;
Signal Formats and Field Rates	Line range: 1-525(NTSC), 1-625(PAL/SECAM)
Holdoff Range	100ns ~ 10s
Pulse Width Trigger	
Pulse Width Trigger Mode	Trigger when (< , >, = , or ≠); Positive pulse or Negative pulse.
Pulse Width Trigger Point	**Equal:** The oscilloscope triggers when the trailing edge of the pulse crosses the trigger level.
	Not Equal: If the pulse is narrower than the specified width, the trigger point is the trailing edge.
	Otherwise, the triggers when a pulse continues longer than the time specified as the Pulse Width.
	Less than: The trigger point is the trailing edge.
	Greater than (also called overtime trigger): The oscilloscope triggers when a pulse continues longer than the time specified as the Pulse Width.
Pulse Width Range	20ns ~ 10s
Slope Trigger	
Slope Trigger Mode	Trigger when (< , > , = , or ≠); Positive slope or Negative slope.
Slope Trigger Point	**Equal:** The oscilloscope triggers when the waveform slope is equal to the set slope.
	Not Equal: The oscilloscope triggers when the waveform slope is not equal to the set slope.
	Less than: The oscilloscope triggers when the waveform slope is less than the set slope.
	Greater than: The oscilloscope triggers when the waveform slope is greater than the set slope.
Time Range	20ns ~ 10s
Overtime Trigger	
Over Time Mode	Rising edge or Falling edge
Time Range	20ns ~ 10s
Alternative Trigger	
Trigger on CH1	Internal Trigger: Edge, Pulse Width, Video, Slope
Trigger on CH2	Internal Trigger: Edge, Pulse Width, Video, Slope

Trigger Frequency Counter	
Readout Resolution	6 digits
Accuracy (typical)	±30ppm (including all frequency reference errors and ±1 count errors)
Frequency Range	AC coupled, from 4Hz minimum to rated bandwidth
Signal Source	Pulse Width or Edge Trigger modes: all available trigger sources The Frequency Counter measures trigger source at all times, including when the oscilloscope acquisition pauses due to changes in the run status, or acquisition of a single shot event has completed. Pulse Width Trigger mode: The oscilloscope counts pulses of significant magnitude inside the 1s measurement window that qualify as triggerable events, such as narrow pulses in a PWM pulse train if set to < mode and the width is set to a relatively small time. Edge Trigger mode: The oscilloscope counts all edges of sufficient magnitude and correct polarity. Video Trigger mode: The Frequency Counter does not work.
Measurement	
Cursor Measurement	Manual: Voltage difference between cursors: △V; Time difference between cursors: △T; Reciprocal of △T in Hertz (1/ΔT); Tracing: The voltage and time at a waveform point
Auto Measuerment	Frequency, Period, Mean, Pk-Pk, Cycli RMS, Minimum, Maximum, Rise time, Fall Time, +Pulse Width, -Pulse Width, Delay1-2Rise, Delay1-2Fall, +Duty, -Duty, Vbase, Vtop, Vmid, Vamp, Overshoot, Preshoot, Preiod Mean, Preiod RMS, FOVShoot, RPREShoot, BWIDTH, FRF, FFR, LRR, LRF, LFR, LFF
Display	
Display Type	5.7" inch 64K color TFT (diagonal liquid crystal)
Display Resolution	640 horizontal by 480 vertical pixels
Display Contrast	Adjustable (16 gears) with the progress bar
Probe Compensator Output	
Output Voltage *(typical)*	About 5Vpp into≥1MΩ load
Frequency*(typical)*	1KHz
Power Supply	
Supply Voltage	100-120VACRMS(±10%), 45Hz to 440Hz, CAT Ⅱ 120-240VACRMS(±10%), 45Hz to 66Hz, CAT Ⅱ
Power Consumption	<30W
Fuse	2A, T rating, 250V
Environmental	
Temperature	Operating: 32℉ to 122℉ (0℃ to 50℃); Nonoperating: -40℉ to 159.8℉ (-40℃ to +71℃)
Cooling Method	Convection
Humidity	+104℉ or below (+40℃ or below): ≤90% relative humidity; 106℉ to 122℉ (+41℃ to 50℃): ≤60% relative humidity
Altitude	Operating: Below 3,000m (10,000 feet); Notoperaring: Below 15,000m(50,000 feet)
Mechanical	
Size	260mmmm; 220mm; 75mm
Weight	2.5KG(without Packing)

DMM Modes			
Max. Resolution	6000 Counts		
DMM Testing Modes	Voltage, Current, Resistance, Capacitance, Diode & Continuity		
Max. Input Voltage	AC:600V, DC: 800V		
Max. Input Current	AC: 10A, DC:10A		
Input Impendance	10MΩ		
DMM Specifications			
Range			**Resolution**
DC Voltage	60.00mV	±1%±1 digit	10uV
	600.0mV		100uV
	6.000V		1mV
	60.00V		10mV
	600.0V		100mV
	800V		1V
AC Voltage	60.00mV	±1%±3 digit	10uV
	600.0mV		100uV
	6.000V		1mV
	60.00V		10mV
	600.0V		100mV
DC Current	60.00mA	±1.5%±1 digit	10uA
	600.0mA	±1.5%±1 digit	100uA
	6.000A	±2%±3 digit	1mA
	10.00A		10mA
AC Current	60.00mA	±1.5%±3 digit	10uA
	600.0mA	±1%±1 digit	100uA
	6.000A	±1.5%±3 digit	1mA
	10.00A		10mA
Resistance	600	±1%±3 digit	0.1Ω
	6.000K	±1%±1 digit	1Ω
	60.00K		10Ω
	600.0K		1KΩ
	6.000M		10KΩ
	60.00M	±1.5%±3 digit	100KΩ
Range		**Accuracy**	**Resolution**
Capacitance	40.00nF	±1%±1 digit	10pF
	400.0nF		100pF
	4.000uF		1nF
	40.00uF		10nF
	400.0uF		100nF
	Attention: the smallest capacitance value that can be measured in 5nF		
Diode	0V~2.0V		

Standard Accessories

- Probex2, 1:1, 10:1, Passive Probes
- A Power Cord that fits the standard of destination country
- An USB Cable
- A CD-ROM (including User's Manual ans application software)
- A couple of mutimeter probes.
- A Handheld special convenient soft bag

Hantek®