# Acute
DS-1000 series
Digital Storage Oscilloscope

The DS-1000 is a PC-based digital storage oscilloscope (DSO) with various functions, in pocket size. It is designed to support analog signals measurement and to store the data easily. Its portability allows engineers to enjoy their presentation with great convenience and confidence.

The DS-1000 has 200MHz bandwidth, TV and External Trigger, RUN/STOP button and 20MHz bandwidth limitation functions. It is a tiny but very powerful oscilloscope. With deep memory size (64k or 512k points) to save more sampling data in Single-Shot, it helps engineers find an erroneous signal much easier. The ROLL mode function allows the user to see low speed and long time signals. With a precision vertical resolution, 8bits/point in 2mV/DIV and 9bits/point from 5mV/DIV to 10V/DIV, the DS-1000 provides wide vertical range and detail signal curve. The best feature of the STACK function expands the DSO from 2 channels to 4 or 6 channels. Engineers may use the DSOs separately, or can combine them to be 4 or 6 channels, for measuring more signals in synchronous time, such as some audio signals.
(Note: Some specification limitations in STACK mode.)

The user-friendly interface provides easy-to-use and easy-to-learn features. You will find the high end DSO's valuable functions such as FFT, Internet Control, Math and Export data to WORD/EXCEL in the DS-1000. If the user wants to integrate the DSO with their system, it is possible to use ACUTE DSO-AP's object to program their AP.
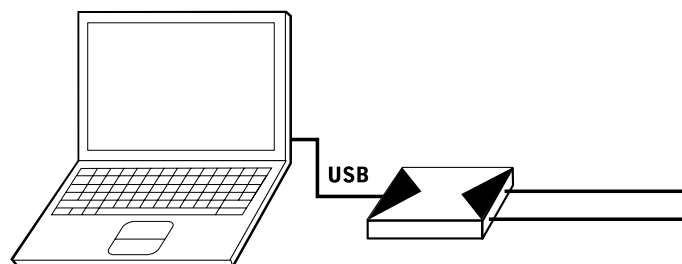
DS-1000 series Application Screen

Model:
DS-1002
DS-1102
DS-1202

Features

- PC-based **DSO** with **200MHz** bandwidth
- **200MS/s** Real-time & **5GS/s** Equivalent sampling
- **9 bits/CH** vertical resolution, **2mV/DIV to 10V/DIV**
- **20MHz** bandwidth limitation
- TV-trigger & External-trigger
- Hardware button for **RUN/STOP** on the **DSO** device
- 2 channels, may stack up to **6** channels
- **64k/512k** points in Single-Shot
- FFT, Math, Save/Recall, Internet Control, etc.
- Export data to **WORD, EXCEL, TEXT, HTML**, etc.
- **USB2.0** interface (no power adapter needed)
- Pocket-sized **DSO** with all accessories in soft case
- Autoset, Monitor from Internet (TCP/IP), Logger
- Scan line number (**DS-1202** only)
- Pass/Fail, Hot Key Setting

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Acquisition	
Mode	Real-time sampling, Equivalent sampling, Roll mode, Average, Envelope

Input	
Input Coupling	AC, DC, GND
Input Impedance	1MΩ±1% // 21pF±5%
Max. Input Voltage	42Vpk (DC + AC peak)

Vertical	
Channel	2 (stack up to 4, max. 6 channels)
Vertical Resolution	9 bits/channel @ 5mV/DIV- 10V/DIV (8 bits @ 2mV/DIV)
Sensitivity	2mV/DIV to 10V/DIV (as 1-2-5 step)
Bandwidth	DS-1102, DS-1202: DC to 200MHz DS-1002: DC to 100MHz
BW Limit	Approx. 20MHz
Range	8 divisions
Offset Level	±4 divisions
Offset Increments	0.1 division
DC accuracy	±3%

Time Base	
Sampling Rate	**DS-1102, DS-1202:** Real-time sampling: 200MS/s @ 1Ch, 100MS/s @ 2Ch (Single Shot) Equivalent sampling: 5GS/s (Repetitive) **DS-1002:** Real-time sampling: 100MS/s @ 1Ch, 50MS/s @ 2Ch (Single Shot) Equivalent sampling: 2.5GS/s (Repetitive)
Time Base Range	5ns/DIV to 10s/DIV (as 1-2-5 step)
Accuracy	100ppm
Range	10 Divisions
Delay Trigger	320 Divisions (DS-1002, DS-1102) 2560 Divisions (DS-1202)
Time Resolution	200ps
Buffer Length	**DS-1002, DS-1102:** 2k points to 64k points **DS-1202:** 2k points to 512k points

Trigger	
Type	Rising, Falling, Delay-Trigger, TV-Trigger (DS-1002 no TV Trigger), Scan line number (DS-1202 only)
Mode	Auto, Normal and Single (with RUN/STOP hardware button on the DSO device)

Source	CH1, CH2, Ext-Trig
Coupling	DC
Sensitivity	DC to 25MHz = 0.35div or 3.5mV; 25MHz to Max. = 1.5div or 15mV
Trigger Level	±4 divisions
Trigger Increments	0.1 division

Measurement and Processing	
Special function	Autoset, Monitor from Internet (TCP/IP), Logger
Measurement	Vp-p, Vmax, Vmin, Vamp, Vmean, Vrms, Period, Frequency, ±Duty, ±Pulse Width
Cursor	Time difference, Voltage difference
Math	Add, Sub, Multiplication, Division, XY
FFT	Rectangular (Vertical scale: dbV RMS, Linear RMS)
Export Data	WORD, EXCEL, CSV, TEXT, HTML, Clipboard, Hardcopy, Preview

Trigger Input/Output	
EXT-TRIG Input Limitation	TTL Level
EXT-TRIG Input Acknowledge Level	1.6V to 5V, rising/falling edge
EXT-TRIG Input Acknowledge Time	">10ns" and ">0.1 TIME/DIV"
TRIG-OUT	3.3v pulse, 20ns delay after trigger occurring

Compensation Output	
Level	Approx. 3.3V
Frequency	1kHz ±5%

Environment	
Operation	0°C to +50°C
Storage	-10°C to +60°C

Physical	
Interface	USB2.0 (USB1.1 compatible)
Power	USB bus power
Dimension	135/80/26 mm³ (device only)
Weight	230 g (device only)

Accessories	
Probes	DS-1102, DS-1202: 250MHz probe (1x/10x) x2 DS-1002: 100MHz probe (1x/10x) x2
Others	Installation CD, USB2.0 cable, User manual, Soft case, Stack cable

Limitations in Stack Mode

Acquisition	
Mode	Equivalent sampling and Roll mode only available in Master-DSO

Time Base	
Sampling Rate	Real-time sampling: the same as individual unit Equivalent sampling: the same as individual unit, only for Master-DSO

Time Base Range	5ns/DIV to 100ms/DIV (as 1-2-5 step) for Master and Slave DSOs; 200ms/DIV to 10s/DIV (Roll mode) only for Master-DSO

Trigger	
Source	CH1, CH2, Ext-Trig in Master-DSO (NA for Slave-DSO)
Jitter	+/- 200ps in Master-DSO; +/- 10ns in Slave-DSO

System Requirement

- INTEL Pentium 1.2G CPU or compatible PC (2G recommended)
- One USB port (USB2.0 recommended)
- Windows 98SE/ME/2000/XP/2003 operating system
- 128M bytes memory (512M recommended)
- Disk space more than 10M bytes
- One CD-ROM drive for installation
- 800X600 VGA or higher (1280x1024 recommended)
- 101-Keys keyboard
- Mouse (with wheel recommended)

Packing List of DS-1000 series

ITEM	Quantity
1. DS-1000 device	1
2. Stack function cable	1
3. Probe accessories pack	2
4. USB2.0 cable (1.8m)	1
5. 250MHz probe (1x/10x)	2*
6. Installation CD	1
7. User manual	1
8. Soft case	1

*DS-1002 provides 2 pieces of 100MHz probes (1x/10x)

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