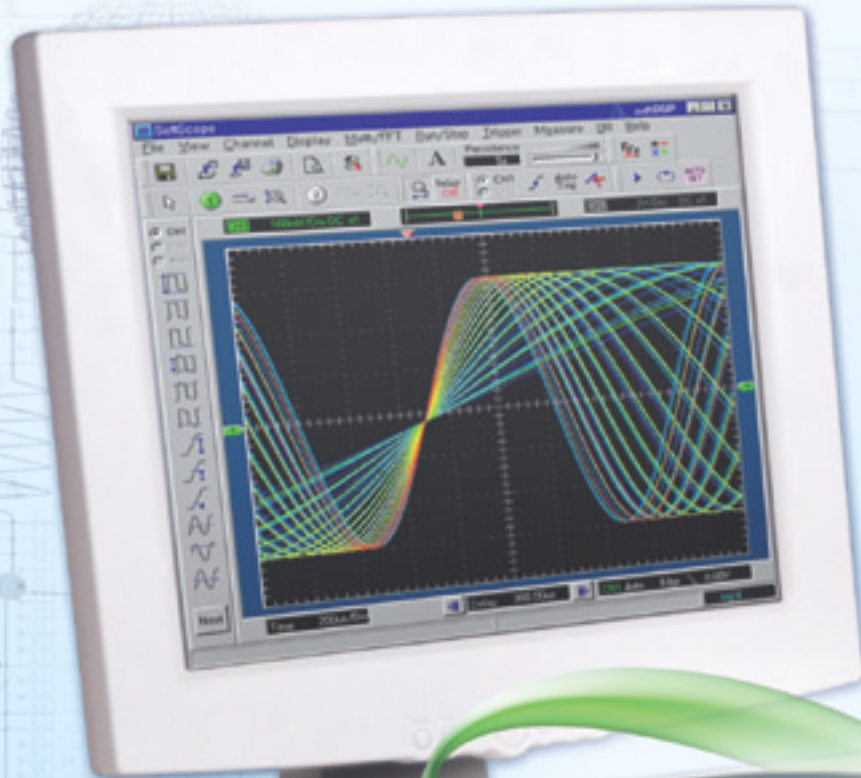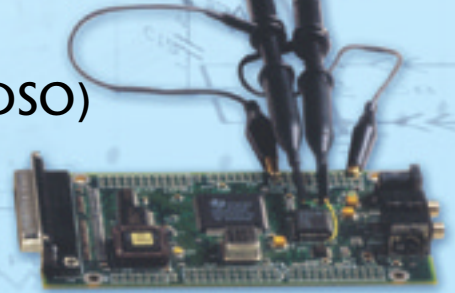# SDS 200

2CH, 200MHz, 5GS/s equiv. sampling PC based DSO

SDS200 is a portable
PC-based Digital Storage Oscilloscope(DSO)

*soft*DSP

SDS 200   2CH, 200MHz, 5GS/s equiv. sampling PC based DSO

Digital Oscilloscope is an indispensable instrument for research, development and production. However, a stand-alone high bandwidth digital oscilloscope is expensive whereas an inexpensive low bandwidth PC based oscilloscope is not suitable for professional engineering.

With accumulated technology and know-how of high speed digital signal processing and software development, softDSP Co., Ltd. designed SDS 200/SoftScope to solve this problem - an inexpensive PC based oscilloscope with the power of middle/high end stand-alone digital oscilloscope.

SDS 200 Technical Features

Overview

With softDSP's expertise in high speed analog/digital signal processing and computer applications, SDS 200 combines all the traditional benefits of the DSO from 200MHz bandwidth, 5 GS/s equivalent sampling to advanced triggering options (Logic, Pulse and Delay) with characteristics such as higher true color (32bits) waveform grading, and automated data transfer to Microsoft Excel and Word.

Unlike conventional card or parallel port connection, there is no need to open up your PC nor is there a need to carry bulky external power adapters for portability. Using 12Mbps, Universal Serial Bus (USB)-powered interface, SDS 200, about the size of your palm, is a true plug-and-play solution. Simply plug it to USB port and it is ready to work any time, anywhere.

Wide bandwidth, blazing sampling rate

softDSP's proprietary variable gain amplification architecture boosts SDS 200's analog bandwidth up to 200MHz, with only 2.5 Watts supplied from USB. According to Nyquist Sampling Theorem, one of the most important rules of sampling, the highest frequency which can be accurately represented, is one-half of the sampling rates. In practice, however, given errors in digital signal processing, the range of frequencies needed to faithfully record an analog signal is one-fifth the sampling rate. So reconstructing a 200MHz signal demand more than 1GS/s sampling rate. Overcoming these physical restrictions, our 200 ps-resolution Time-to-Digital Converter (TDC) technology implements on the 5GS/s equivalent sampling rate, using real time rate of 100MS/s.

Take SDS 200 wherever you go

USB offers several advantages over conventional serial and parallel connections, including higher bandwidth (up to 12Mbps), no tedious configuration processes, reliable friction-fit connection and the ability to provide power to peripheral devices. Simply plug the USB cable into your PC and SDS 200, execute the software and you are ready to test it wherever you are. Use SDS 200 on the field, bring it back to your office and hot plug it to a desktop computer without additional PC hardware. USB's portability provides increased versatility, allowing the instruments to be easily moved or safely stored away when not in use.

Powerful software provided - SoftScope

Every purchase of SDS 200 includes SoftScope. SoftScope is a compact, easy-to-use analysis tool that will improve productivity and measurement quality. Affordable and powerful, its ability to display, store and analyze complex signals in real time, combined with its advanced triggering and analysis capabilities clearly define it as the oscilloscope's newer choice of today. SDS 200 will provide you with: XY cursor function, 23 measurement functions, arithmetic function, FFT with windows options (Rectangular, Hanning, Hamming, and Blackman), persistence/intensity control, dots line on/off function for versatility in waveform display, and much more.
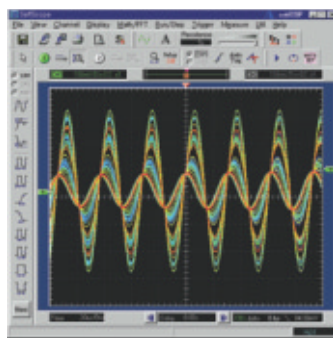
SoftScope

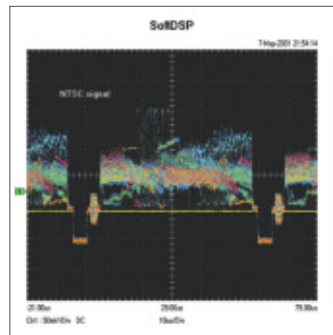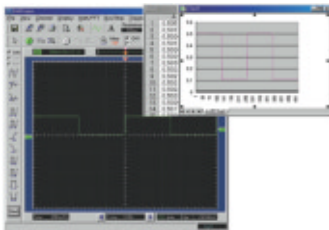SoftScope is a powerful software to analyze, visualize and transform the waveforms from SDS 200.

Easy to use

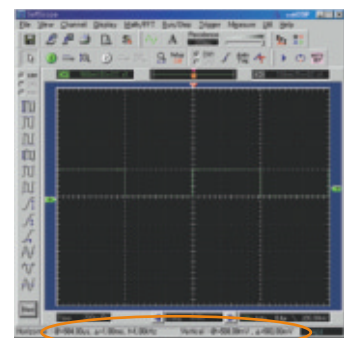SoftScope is easy to use.
It is intuitive and easy to understand.

Simple measurement using mouse drag

SoftScope provides simple time/voltage measurement using mouse drag.

Various data format processing

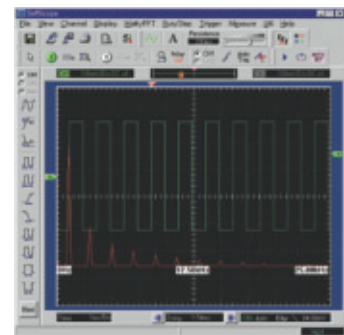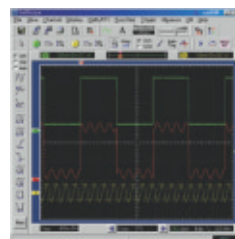SoftScope can save in the following formats: text file, jpg/bmp graphic file, Excel/Word file.

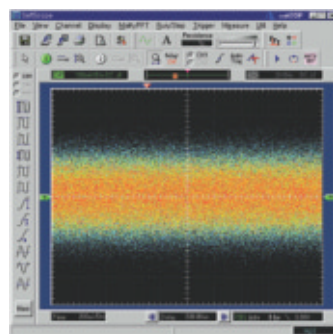## FFT/Math function

SoftScope provides FFT and math function to analyze the waveforms.

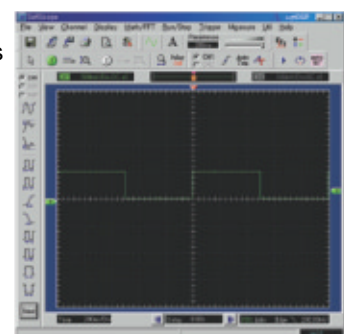

The analog oscilloscope effect.

SoftScope uses persistence effect so that it resembles an analog oscilloscope screen.

Many kinds of measurements

SoftScope provides 23 measurement functions in both time and voltage.
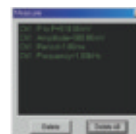
Fast screen update rate with high resolution

SoftScope uses MS DirectX technology so that it has 20 screens per second update rate.
(under Windows98, Pentium II environment)

Advanced trigger

SDS 200 has an advanced trigger function, enabling it to capture complex signals.

softDSP

www.softdsp.com   info@softdsp.com

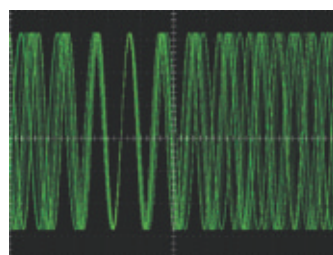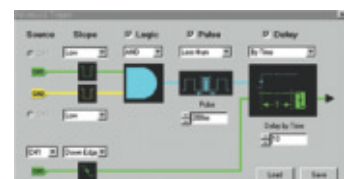# SDS 200 — 2CH, 200MHz, 5GS/s equiv. sampling PC based DSO

SDS 200 Spec.

Input

Max. sample rate	Realtime sampling: 100MS/s using one channel, 50MS/s using two channels Equivalent sampling: 5GS/s
Channels	2
Bandwidth	200 MHz (-3dB) Single slot bandwidth: 20MHz
Vertical resolution	9 bits/channel
Gain range	10mV ~ 10V/div @ x1 probe (10mV, 20mV, 50mV, 100mV, 200mV, 500mV, 1V, 2V, 5V, 10V/div1,2,5 sequence) 100mV ~ 100V/div @ x10 probe 1V ~ 1000V/div @ x100 probe
Range	8 divisions
Offset level	+/-4 divisions
Coupling	AC, DC
Offset increments	0.02 div
Impedance	1M ohm
DC accuracy	+/-3%
Input protection	42Vpk (DC + peak AC < 10 kHz, without external attenuation)

Timebase

Timebase range	2ns/div ~ 10s/div (2ns, 4ns, 10ns, 20ns, 40ns, 100ns, 200ns, 400ns, 1us, 2us, 4us, 10us, 20us, 40us, 100us, 200us, 400us, 1ms, 2ms, 4ms, 10ms, 20ms, 40ms, 100ms, 200ms, 400ms, 1s, 2s, 4s, 10s /div 1-2-4 sequence)
Acquisition mode	Equivalent sampling: 2ns/div ~ 4us/div Realtime sampling: 10us/div ~ 400ms/div Roll mode: 1s/div ~ 10s/div
Range	10 divisions
Pre/Post trigger	0% ~ 1000%
Time resolution	200ps
Buffer size	10K samples

Trigger

Type	Edge trigger:Rising edge, falling edge Logic trigger: AND, NAND, OR, NOR, XOR, XNOR Pulse trigger: Less than width, more than width (10ns ~ 167ms) Delay trigger: By event (1~16,777,215), by time (10ns ~ 167ms)
Mode	Auto, Normal and Single
Autoset	Yes
Range	10 divisions
Trigger level	+/-4 divisions
Settabillity	0.02 div increments

Math

Measurements	Vp-p, Vmax, Vmin, Vmean, Vrms, Vamp, Vhigh, Vlow, positive overshoot, negative overshoot, cycle mean, cycle rms, period, frequency, positive pulse width, negative pulse width, rise time (10%~90%), fall time (10%~90%), positive duty cycle, negative duty cycle

Cursor	Time/frequency difference, voltage difference Frequency only in FFT mode
Math	Addition, subtraction, multiplication, division
FFT	Rectangular, Hanning, Hamming, Blackman Window

Physical

Interface	Universal Serial Bus (USB)
Power	No external power source required. Bus-powered from USB
Dimensions	5.1" x 4.4" x 1.5"

Software

Interface	User-friendly Graphic User Interface(GUI) Microsoft Windows standard interface
Display	Graphic engine: Microsoft DirectX Screen size: 500x400 Intensity level: 128 (Color and monochrome) Persistence control: 100ms ~ 10s Labeling function
File management	Image save: BMP, JPG (color /black & white) Data save: DAT OLE(Object Linking and Embedding) automation: Data generation for Microsoft Excel / Word Setting save/load
Print	Print in color / black & white Preview function

SDS 200

SoftScope

Carrier Bag

User's Guide

USB cable