

Oscilloscope/ Spectrum Analyzer

1 GHz analog input bandwidth

Frequency & Phase Meter

Frequency Range: 10 Hz to 1 GHz

Data Recorder

1 nS to 365 days/division



Introduction

SA Series is a 4-in-1 USB-powered oscilloscope. It includes an oscilloscope, a spectrum analyzer, a data recorder, and a frequency and phase meter. This compact device has been developed for professionals with a limited budget. Hobbyists can also benefit from the many features of the instruments. The oscilloscope offers a bandwidth of 1 GHz, and a real sampling rate of up to 250 MHz (125 MHz/channel) with an effective sampling rate of 100 GHz. **SA Series** is an ideal oscilloscope for any user.

Features

- 2 channels
- 1 GHz analog input bandwidth
- 100 GS/s effective sampling rate, 250 MHz real sampling rate (125 MHz/channel)
- Rise time: 500 pS
- 1 nS to 365 days/division (data logger)
- Horizontal Division: ± 20 mV to ± 20 V (10x probe), ± 2 mV to ± 2 V (1x probe)
- Input Range: ± 80 mV to ± 80 V (10x probe), ± 2 mV to ± 2 V (1x probe)
- 10-bit ADC
- 1 Megabyte data record length
- Custom API to control all features
- No external power supply required
- Intuitive application software with an assortment of features
- Size: 3X5 inches, 7.5X12.5 cm - Weight: 8.5 oz, 240 g
- Upgrade options: AW Function Generator, Logic Analyzer & Pattern Generator

Applications

- Scientific Research
- Project Lab
- Electronic & Electrical testing
- Communication Industry
- Audio Industry
- Automation Industry
- Vibration Analysis
- Education and Training
- Medical and Academic research

Technical Specifications

Oscilloscope/ Spectrum Analyzer/ Data Recorder

Model	SA985	SA975	SA935	SA915
Oscilloscope				
Bandwidth	1 GHz	500 MHz	300 MHz	100 MHz
Rise time	0.5 nS	1.0 nS	2.5 nS	5.0 nS
Input channels	2			
Vertical resolution	8 bits			
DC accuracy	< $\pm 3\%$			
Input characteristics	1 M Ω in parallel with 5 pF			
Common Mode Rejection Ratio	> 70 dB (@ 100 MHz)			
Input type	Single-ended, BNC connector			
Input coupling	Software selectable AC/DC			
Input Ranges (full scale)				
10X probe	± 80 mV to ± 80 V in 10 ranges			
1X probe	± 8 mV to ± 8 V in 10 ranges			
Overload protection	± 150 V (DC+AC peak)			
Sampling rate (each channel)				
Real / per channel	125 MHz			100 MHz
Effective / per channel	100 GHz			25 GHz
Vertical Sensitivity				
1X probe	2 mV - 2 V / DIV			
10X probe	20 mV - 20 V / DIV			
Buffer memory size				
One channel in use	1024 KB			
Two channels in use	512 KB			
Time Base	1 ns/div to 100 ms/div			5 ns/div to 100 ms/div
Time base (Data Recorder)	500 nS to 365 days with data recorder			
Timing accuracy	50 ppm	100 ppm		200 ppm
Trigger modes	Normal, auto, one shot, single, CH1, CH2			
Trigger threshold				
Internal	Adjustable, \pm range setting (variable) 8 bits			
External	1.2 Volts			
Basic triggers	External/ CH1/ CH2/ Alternative/Rising edge/ Falling edge/ Auto/ Normal/ Single			
External trigger bandwidth	1 GHz	500 MHz	300 MHz	100 MHz

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Spectrum Analyzer (Typical)				
Common features between the Oscilloscope and the spectrum analyzer have the same specifications.				
Frequency Bandwidth	1 GHz	500 MHz	300 MHz	100 MHz
Display Span	204.8 KHz to 60 MHz			
Minimum Span (at selected Display Bandwidth)	100 KHz (display bandwidth of 51.2 MHz) 5 KHz (display bandwidth of 2.56 MHz) 400 Hz (display bandwidth of 204.8 MHz)			
Resolution	$(\text{Span}/2^{18})$ 0.78 Hz to 195 Hz			
Spectrum Flatness	1dB			
Frequency Error [6]	50 ppm		100 ppm	200 ppm
Relative Frequency Accuracy	> 1 ppm			
Maximum number of bins	1M			
Dynamic Range	8 bits (< 65 dB)			
Spurious Free Range	< 70 dB (@ 10 MHz, 2 V range)			
Frequency Response	± 0.5 dB			
Reference Levels (10 ranges)				
1X probe	- 35 dBV to 25 dBV (0.6 to 5.623 VRMS)			
10X probe	- 25 dBV to 35 dBV (0.06 to 56.23 VRMS)			
Display modes	Sampling, peak hold, average, history			
Windowing types	Rectangular, Bartlett, Gaussian (2.5, 3.5, 4.5), Triangular, Blackman, Blackman–Harris, Hamming, Hanning, Welch, Kaiser Bessel, Flat Top,			
Frequency Analyzer (Typical)				
The same specifications apply to the common features of the oscilloscope and the frequency and phase analyzer in the model.				
Frequency Range	1 GHz	500 MHz	300 MHz	100 MHz
Resolution	0.1Hz			
Tolerance [6]	50 ppm		100 ppm	200 ppm
Relative Tolerance	0.01 ppm		0.1 ppm	1 ppm
Data Recorder (Typical)				
The same specifications apply to the common features of the oscilloscope and the data recorder in the model.				
Sampling Interval	102 MHz to 10 pHz			
Time Base	500 nS to 365 days			
Timing Accuracy	50 ppm		100 ppm	200 ppm

Model	SA985	SA975	SA935	SA915
Physical Properties				
Dimensions	128.0 x 77.0 x 31.6 (mm), 5.0 x 3.0 x 1.2 (inches)			
Weight	340 grams, 12 Ounces			
Other				
PC Requirements Recommended	Operating system: 32/ 64-bit edition of Microsoft Windows XP (SP3), Vista, Windows 7/ Windows 8/ Windows 10 Ports: USB 2.0/ 3.0 compliant port			
Environmental				
Operating environment	0 °C to 40 °C for normal operation			
Temperature range	15 °C to 32 °C for quoted accuracy			
Humidity	5% to 80% RH, non-condensing			
Storage environment				
Temperature range	-20 °C to +60 °C			
Humidity	5% to 95% RH, non-condensing			
Software	Save setting, recall setting, save plot, recall/print plot, zoom in vertical, zoom in horizontal, pen editor, line editor, DSP, variable sampling rate			