

STANFORD RESEARCH SYSTEMS

SR785

The Stanford Research Systems SR785 is a two-channel, dynamic signal analyzer designed for advanced signal processing, acoustics, vibration testing, and electronic design. It features a high real-time bandwidth of 102.4 kHz on both channels simultaneously and supports multiple measurement modes including FFT, octave analysis, swept-sine, and order tracking.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488.2), RS-232, Centronics Parallel Printer Port
Display	7-inch monochrome CRT, 640 × 480 pixels

Physical

Power Supply	90 to 132 VAC or 198 to 264 VAC, 47 to 63 Hz, 150 W
Operating Temperature	0 to 40 °C
Dimensions (W×H×D)	432 × 210 × 565 mm
Weight	25.4 kg

Frequency Specifications

Frequency Range (Single/Dual Channel)	DC to 102.4 kHz
Frequency Resolution	100, 200, 400, 800 lines
Frequency Accuracy	±25 ppm (0 °C to 40 °C)
Real-Time Bandwidth (Single Channel)	102.4 kHz
Real-Time Bandwidth (Dual Channel)	102.4 kHz
Dynamic Range	90 dB (typical)

Measurement Modes & Functions

FFT Analyzer Mode	Yes
Octave Analysis Mode	1/1, 1/3, 1/12 octave (ANSI S1.11-1983 Class 3)
Swept-Sine Mode	Yes
Order Tracking Mode	Yes
Time Capture Mode	Yes (up to 8 MSamples RAM)
Correlation Mode	Yes
Histogram / Probability Density Mode	Yes
Measurement Types	FFT, Time Record, Windowed Time, Orbit, Cross Spectrum, FRF, Coherence, Coherent Output Power, Auto Correlation, Cross Correlation, Histogram, PDF, CDF

Analog Input Channels

Number of Inputs	2
Input Coupling	AC, DC, ICP (4 mA, 24 V source)
Input Configuration	Single-ended, Differential
Input Impedance	1 M Ω + 50 pF
Full-Scale Input Range	-50 dBV (3.16 mVp) to +34 dBV (50 Vp) in 2 dB steps
A/D Converter Resolution	16-bit (256 kHz sigma-delta)
Common Mode Rejection Ratio (CMRR)	>90 dB (at 1 kHz, -50 dBV to -14 dBV range)
Crosstalk (Ch-to-Ch Isolation)	<-145 dBFS (100 kHz)
Input Noise Floor	<-160 dBVrms/Hz (typical, above 1 kHz, -50 dBV range)
Amplitude Accuracy	± 0.2 dB or $\pm 2\%$ of reading

Signal Source (Generator)

Signal Source Types	Sine, Two-Tone, Swept-Sine, Chirp, White Noise, Pink Noise, Arbitrary
Source Frequency Range	DC to 102.4 kHz
Source Amplitude Range	0.1 mVp to 5 Vp
Source Amplitude Resolution	0.1 mVp
Output Impedance	<5 Ω (50 mA max current)
Harmonic Distortion	<-80 dB (at <10 kHz), <-70 dB (at <100 kHz)
DC Offset Range	0 to 5 V

FFT and Signal Processing

FFT Resolution (Lines)	100, 200, 400, 800 lines
Averaging Modes	RMS, Vector, Peak Hold
Averaging Types	Linear, Exponential, Equal Confidence
Waveform Math	Add, Subtract, Multiply, Divide, Integrate, Differentiate, Conjugate, Square Root, Log, Exp, FFT, dFFT

Triggering

Trigger Sources	Free Run, Internal (Ch 1/Ch 2), External, External TTL
Trigger Modes	Continuous, Single, Arm, Armed, Triggered
Trigger Level Range	$\pm 100\%$ of full scale (Internal), ± 5 V (External)
Trigger Slope	Positive, Negative
Pre-Trigger Delay Range	Up to 8192 samples
Post-Trigger Delay Range	Up to 131,072 samples

Display & User Interface

Display Formats	Single, Dual (Split-screen), Waterfall
Vertical Scale Formats	Linear, Log (dBV, dBm, dBre, dBV/√Hz, dBm/√Hz, dBre/√Hz, V, V ² , V/√Hz, V ² /Hz)
Horizontal Scale Formats	Linear, Log

Connectivity & I/O Interfaces

External Trigger Input	TTL levels or analog (±5 V, BNC)
Analog Monitor Outputs	Yes (Ch 1 and Ch 2, BNC)

Storage & Memory

Internal Memory Capacity	8 MB standard (expandable to 32 MB)
Removable Storage Type	3.5-inch 1.44 MB floppy disk drive (DOS format)

Physical & Environmental

Enclosure Form Factor	Benchtop with rackmount option
Cooling Mechanism	Internal fan

Input Channels

ICP Transducer Power	4 mA source current, 24 V compliance, selectable on/off
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Analysis Features

Curve Fitting & Synthesis Capacity	Up to 20 poles and 20 zeros
Waterfall Memory Capacity	Up to 3450 traces

Octave Analysis

Octave Analysis Standards	Conforms to ANSI S1.11-1986 Order 3 Type 1-D and IEC 225-1966
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Signal Source

Arbitrary Source Memory	2 MSamples (8 MSamples with Option 01)
Source D/A Converter Resolution	16-bit
Source D/A Converter Sampling Rate	262.144 kHz
Sine Source Distortion (<10 kHz)	< -90 dBc
Sine Source Distortion (<100 kHz)	< -80 dBc
White Noise Source Flatness	< 1.0 dB (50 mHz to 102.4 kHz)
Pink Noise Source Flatness	< 2.0 dB (20 Hz to 20 kHz)
Chirp Source Flatness	< 1.0 dB (50 mHz to 102.4 kHz)
Source Phase Noise	< -80 dBc/Hz at 1 kHz offset

Data Capture

Standard Capture Buffer Size	2 MSamples (8 MSamples with Option 01)
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Interfaces

Printer Port	Centronics parallel
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Input & Acquisition

A/D Converter Sampling Rate	262.144 kHz
Anti-Aliasing Filter Stopband Attenuation	115 dB
Anti-Aliasing Filter Type	Multi-stage elliptic

Connectivity & Interface

GPIO Transfer Rate	Up to 100 kB/s
RS-232 Baud Rates	Up to 115.2 kbps
External Clock Input Frequency	2.048 MHz or 256 × Fs (TTL level)
Preamp Power Output	±15 VDC at up to 100 mA

TECHNOLOGY

DSP-based Dynamic Signal Analysis

APPLICATIONS

Vibration, Acoustics, Noise, and Electronic Signal Analysis

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