

STANFORD RESEARCH SYSTEMS

DS340

The Stanford Research Systems DS340 is a 15 MHz function and arbitrary waveform generator utilizing Direct Digital Synthesis (DDS). Designed for versatile test and measurement applications, it delivers high frequency resolution, low distortion sine and square waves up to 15.1 MHz, ramps up to 100 kHz, and Gaussian white noise up to 10 MHz. It also features up to 16,300 point arbitrary waveforms with a 40 MSamples/s playback rate, phase-continuous sweeps, and FSK modulation.

SPECIFICATIONS

General

Interfaces	Optional RS-232 and GPIB (IEEE-488)
Display	12-digit LED display
Power Consumption	35 W

Physical

Power Supply	100 / 120 / 220 / 240 V AC, 50/60 Hz, 35 W
Operating Temperature	0 °C to 50 °C °C
Dimensions (W×H×D)	216 mm × 89 mm × 330 mm mm
Weight	3.6 kg kg

Channel Characteristics

Number of Channels	1
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Waveform Generation

Standard Waveforms	Sine, Square, Triangle, Ramp, Gaussian Noise
Arbitrary Waveform Types	User-defined via GPIB / RS-232
Sampling Rate	Up to 40 MSamples/s (arbitrary playback rate)
Vertical Resolution	12 bits
Maximum Waveform Length	16,300 points

Frequency Specifications

Sine Frequency Range	1 µHz to 15.1 MHz
Square Frequency Range	1 µHz to 15.1 MHz
Ramp/Triangle Frequency Range	1 µHz to 100 kHz
Noise Bandwidth	10 MHz
Frequency Resolution	1 µHz
Frequency Accuracy	±5 ppm (0 °C to 50 °C)
Aging Rate	< 5 ppm/year

Sine Wave Distortion and Purity

Harmonic Distortion (DC to 20 kHz)	<-55 dBc
Harmonic Distortion (20 kHz to 1 MHz)	<-45 dBc
Harmonic Distortion (1 MHz to 15 MHz)	<-35 dBc
Spurious Noise (DC to 1 MHz)	<-50 dBc
Spurious Noise (1 MHz to 15 MHz)	<-40 dBc

Pulse & Square Wave Characteristics

Rise/Fall Time	< 15 ns (10% to 90%)
Overshoot	< 5% (at full output)

Amplitude and Output Characteristics

Amplitude Range (into 50 Ω)	50 mVpp to 10 Vpp
Amplitude Range (into Open Circuit)	100 mVpp to 20 Vpp
Amplitude Resolution	3 digits
Amplitude Accuracy	± 0.2 dB (0.1 Hz to 1 MHz, 1 Vpp)
Amplitude Flatness (1 MHz to 15 MHz)	± 0.3 dB (1 Vpp)
DC Offset Range (into 50 Ω)	± 5 V
DC Offset Range (into Open Circuit)	± 10 V
Output Impedance	50 Ω $\pm 1\%$
Output Protection	Short-circuit protected, ± 15 V overvoltage protection

Modulation, Sweep, and Burst

Modulation Types	FSK
Internal FSK Rate	0.01 Hz to 50 kHz
External FSK Rate	Up to 50 kHz
Sweep Type	Linear or Logarithmic
Sweep Time Range	1 ms to 1000 s
Sweep Direction	Up or down

Clock, Trigger, and Synchronization

Internal Reference Frequency	10 MHz
External Reference Input	10 MHz (TTL level)
Sweep Output	0 to 10 V sweep ramp

Phase

Phase Range	-360° to +360°
Phase Resolution	0.001°

Performance

Phase Noise	<-55 dBc (in a 30 kHz band centered on carrier, excluding a 1 Hz band around carrier)
Subharmonic Spurious	<-50 dBc

Output

Amplitude Flatness (0.1 Hz to 1 MHz)	±0.1 dB
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Inputs & Outputs

Sync Output Level	TTL
Sync Output Impedance	50 Ω
Trigger Input Impedance	10 kΩ
Trigger Input Level	TTL
External Reference Input Frequencies	10 MHz
External Reference Input Minimum Level	TTL level
Reference Output Frequency	10 MHz
Reference Output Level	TTL
Reference Output Impedance	50 Ω
Sweep Output Voltage Range	0 V to 10 V
Sweep Output Impedance	600 Ω
Trigger/FSK Input Minimum Pulse Width	1 μs

Timebase

Standard Timebase Temperature Stability	< 5 ppm (0 °C to 50 °C)
Optional Ovenized Timebase Temperature Stability (Opt 01)	< 2 × 10 ⁻⁸ (0 °C to 50 °C)

Arbitrary Waveform

Minimum Waveform Length	8 points
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Modulation

FSK Shift Range	1 μHz to 15.1 MHz
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Waveform Characteristics

Square Wave Symmetry	50 % ± 1 % of period
Ramp Linearity	< 0.1 % of full scale (to 10 kHz)
Arbitrary Waveform Rise/Fall Time	< 35 ns
Arbitrary Waveform Sampling Rate Divider	1 to 2 ³⁴ - 1

Amplitude & Offset

DC Offset Resolution	3 digits
DC Offset Accuracy	±(1.5 % of setting + 2 mV)

Sweep

Sweep Span	1 μ Hz to 15.1 MHz
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Interfaces

Interface Options	GPIB (IEEE-488.2) and RS-232 (Option 02)
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TECHNOLOGY

Direct Digital Synthesis (DDS)

APPLICATIONS

Test and measurement

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.