Synthesized Function Generators

DS340 — 15 MHz function and arbitrary waveform generator

DS340 Function/Arb Generator

- 1 µHz to 15.1 MHz frequency range
- 1 µHz frequency resolution
- Sine, square, ramp, triangle & noise
- Phase-continuous frequency sweeps
- 16,300 point arbitrary waveforms
- FSK modulation
- RS-232 and GPIB interfaces (opt.)

- DS340 ... $1495 (U.S. list)

The DS340 is a 15 MHz function and arbitrary waveform generator based on Direct Digital Synthesis (DDS). A combination of features, performance and low cost make the DS340 ideal for a variety of test and measurement applications.

Sine waves and square waves can be generated at frequencies up to 15.1 MHz, and ramps and triangles up to 100 kHz. Frequency resolution is 1 µHz for all functions. The DS340 also includes a 10 MHz Gaussian white-noise generator.

All functions can be swept logarithmically or linearly in a phase-continuous fashion over the entire frequency range of the instrument. A rear-panel SWEEP output provides a trigger signal at the start of a sweep to allow synchronization of external devices. Both unidirectional and bidirectional sweeps can be selected.

Up to 16,300 arbitrary waveform points can be downloaded to the DS340's waveform memory via the optional GPIB or RS-232 interfaces. PC software is provided for composing, editing and downloading arbitrary waveforms. The waveform memory can be played back at rates up to 40 Msamples/s.

Both internal and external FSK modes allow the output frequency to be rapidly toggled between two preset values. FSK toggling can be done internally (at rates up to 50 kHz), or externally via a rear-panel input.

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DS340 Specifications

Frequency Range

	Max. Freq.	*Resolution*
Sine	15.1 MHz	1 µHz
Square	15.1 MHz	1 µHz
Ramp	100 kHz	1 µHz
Triangle	100 kHz	1 µHz
Noise	10 MHz	(Gaussian weighting)
Arbitrary	10 MHz	40 MHz/N (sample rate)

Output

Source impedance	50 Ω
Grounding	Output may float up to ±40 V (AC + DC)

Amplitude

Range	50 mVpp to 10 Vpp into 50 Ω, 100 mVpp to 20 Vpp into Hi-Z
Resolution	3 digits (DC offset = 0 V)
Offset	±5 VDC (50 Ω) ±10 VDC (Hi-Z)
Offset resolution	3 digits
Accuracy	0.1 dB (sine output)

Sine Wave

Spurious response	<–65 dBc to 1 MHz (increasing by 6 dB/oct above 1 MHz)
Harmonic distortion	
DC to 20 kHz	<–70 dBc
20 kHz to 100 kHz	<–60 dBc
100 kHz to 1 MHz	<–50 dBc
1 MHz to 15 MHz	<–40 dBc
Phase noise	<–55 dBc (30 kHz band centered on carrier)

Square Wave

Rise/fall time	<15 ns ± 5 ns (10 % to 90 %)
Asymmetry	<3 ns + 1 % of period
Overshoot	<2 % (full-scale output)

Ramps and Triangles

Rise/fall time	45 ns (10 MHz Bessel filter)
Linearity	±0.1 % of full scale
Settling time	200 ns (0.5 % of final value)

Arbitrary Waveforms

Sample rate	40 MHz or integer sub-multiples
Waveform length	8 to 16,300 points
Vertical resolution	12 bits
Rise/fall time	45 ns (10 MHz Bessel filter)

FSK Modulation

Modes	Internal, External
Max. rate	50 kHz, internal
External FSK	TTL input, 1 MHz (max.)

Sweeps

Type	Linear and logarithmic (phase continuous)
Span	Linear (full frequency range), log (6 decades)
Sweep rate	0.01 Hz to 1 kHz

Timebase Accuracy

Standard	±5 ppm (20 °C to 30 °C)
Optional	TCXO, 2 ppm stability, 2 ppm aging (20 °C to 50 °C)

General

Interfaces	Optional RS-232 and GPIB with DOS based arbitrary waveform software (AWC). All instrument functions can be controlled over interfaces.
Non-volatile memory	Up to nine sets of instrument settings can be stored and recalled.
Dimensions	8.5" × 3.5" × 13" (WHD)
Weight	8 lbs.
Power	35 W, 100/120/220/240 VAC, 50/60 Hz
Warranty	One year parts and labor on defects in materials and workmanship

DS340 rear panel (w/ Opt. 01)

Ordering Information

DS340	15 MHz function/arb. generator	$1495
Option 01	GPIB, RS-232 and arb. software	$495
Option 02	2 ppm TCXO timebase	$350
O345RMD	Double rack mount kit	$100
O345RMS	Single rack mount kit	$100