SCS16000 Series Preliminary Datasheet

16 Gb/s Stressed Clock Synthesizer

Model Numbers

SCS16000: 16 Gb/s Stressed Clock Synthesizer with sinusoidal jitter injection capability

SCS16000J: 16 Gb/s Stressed Clock Synthesizer with two tone sinusoidal jitter, true random jitter injection, and spread spectrum clock modulation capabilities.

Description

The Centellax SCS16000 is a 500 MHz-16 GHz signal generator with high-UI jitter injection capability capable of testing devices under a variety of jitter stress conditions. The SCS16000 includes sinusoidal jitter (SJ) and is GPIB or USB controlled.

Application

BERT clock source for Telecom/Datacom receiver testing. Provides stressed stimulus for jitter tolerance testing and general receiver characterization

Key Features of SCS16000 Series

- 0.5 – 16.0 GHz operation
- Internal sinusoidal jitter source
- Fully programmable clock output parameters
- Low intrinsic jitter
- Jittered and non-jittered outputs and divided outputs
- Single port remote control through USB or GPIB
- LabVIEW driver with SCPI command set for easy automation and test system integration

SCS16000J additionally includes:

- Two independent SJ Sources
- True Gaussian RJ Stress
- Spread Spectrum Clock - standard

CENTELLAX
SIGNAL INTEGRITY MEASUREMENT

Key Specifications

Synthesizer

Frequency Range	500 MHz – 16.0 GHz
Frequency Resolution	1 kHz
Outputs	Jitter, Delayed and Divided
Output Configuration (All Outputs)	Differential, with amplitude, offset and termination voltage adjustment
Amplitude Range	300 mV to 2.0 V p-p each side
Offset Range	-2.0 to +2.0 V (limited by termination voltage, see Fig. 1)
Termination Voltage Range	-2.0 to +2.0 V (limited by offset voltage, see Fig. 1)
Rise Time	<20 ps
Intrinsic Jitter	< 800 fs rms, integrated from 1 kHz – 100 MHz
Duty Factor	50% ±10%
Frequency Stability	0.1 ppm
Frequency Accuracy	±20 ppm
Reference Frequency	10.0 MHz, single ended output and input on rear panel
External Clock	Single ended input can be substituted for internal synthesizer
Spread Spectrum Clock (SCS16000J only)	Phase deviation appears on all outputs
Deviation Range	0 – 1.0 % (10,000 ppm)
Modulation Frequency Range	0 – 50 kHz
Modulation Waveshape	Triangle
Deviation Direction	Down Spread, Center Spread, or Up Spread
Divided Clock Divide Ratio	÷ 1,2,3… 999,999,999, with no missing integers
Delay Range	0 - ±99.999 UI with1 MUI step
Delay Resolution	1mUI

Stress

Sources	
SCS16000	Single tone sinusoidal jitter, low and high deviation plus external input
SCS16000J	Two internal sinusoidal jitter, true random jitter plus external input
SJ Configuration	Two modulator bands – Low and High Deviation, user selected Second SJ, RJ not available in high deviation mode
Low Deviation SJ Frequency Range	1 Hz to 200 MHz
Low Deviation Modulation Range	0.01 to 1.2 UI, or OFF
High Deviation SJ Frequency Range	1 Hz to 4 MHz
High Deviation Modulation Range	0.01 to 32 UI for Frequency ≤100 kHz 0.01 to 10 UI for Frequency 100 kHz – 400 kHz 0.01 to 1.2 UI for Frequency 400 kHz – 4 MHz

Key Specifications

Stress (continued)

RJ Modulation Range	0 to 150 mUI RMS, band limited to 500 MHz
RJ Crest factor (pp to RMS factor)	14 min
RJ Modulation Frequency Contour	User determined by inserting filters in RJ loop through on rear panel Loop through nominal impedance is 50Ω
External Input Modulation Range	Sum of both SJ, RJ and externally applied modulation limited to 1.2 UI total. External available in both low and high deviation mode.
External Input Frequency Range	0 to 330 MHz

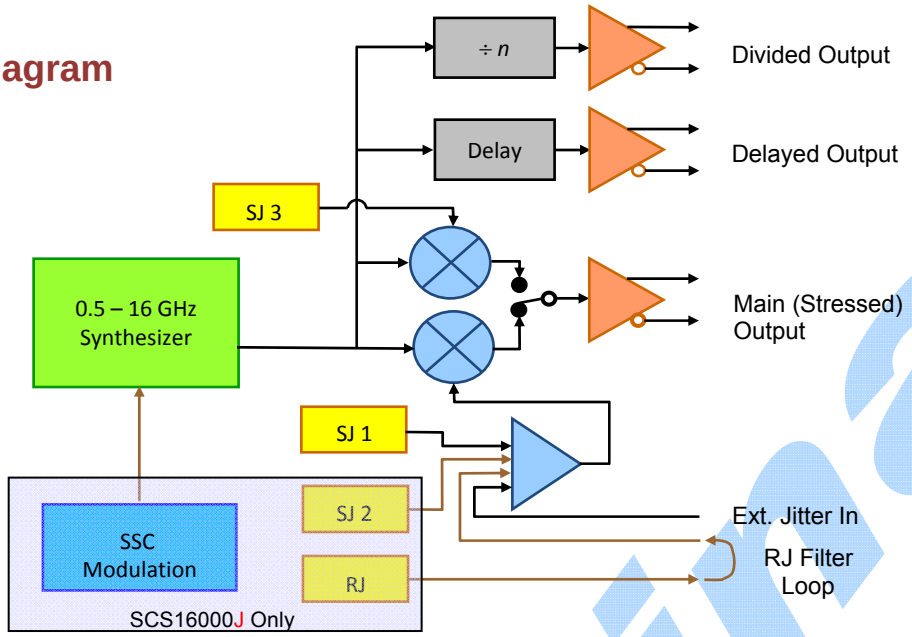
General

Connector Type	
All signals except 10 MHz Ref In/Out	SMA
10 MHz Ref In, Out	BNC
Remote Control Interface	USB2.0 and IEEE-488 (GPIB)
Power Requirements	
Voltage	100 – 240 VAC, autoranging
Frequency	50 – 60 Hz
Power Consumption	170 W maximum
Temperature, Operating	+10° to +40° C
Temperature, Non-Operating	- 40° to +70° C
Dimensions (*Height, Width, and Depth)*	100 mm (3.9 in) x 214 mm (8.4 in) x 425 mm (16.7 in)
Mass	3.2 kg (7.0 lbs)
EMC	Complies with: European EMC Directive 2004/108/EC, IEC/EN 61326 CISPR 11 Group 1 Class A AS/NZS CISPR 11 ICES/NMB-001
Safety	Complies with: European Low Voltage Directive 2006/95/EC, IEC/EN 61010-1 CSA C22.2 No. 61010-1 UL 61010-1 This product is designed to be used in an indoor environment to Pollution Degree 2 (IEC 61010) and Enclosure Protection level IP20 (IEC 60529)

Options

-OPT101	+ European Power Cord
-OPT102	+ UK Power Cord
-OPT103	+ Domestic Power Cord
-OPT109	+ China Power Cord
-OPT300	+ 1 Year Warranty Extended to 3 Years
-OPT301	+ 1 Year Warranty Extended to 5 Years
-OPT320	+ Centellax Calibration - Per Incident
-OPT321	+ Annual Centellax Calibration for 3 Years
-OPT322	+ Annual Centellax Calibration for 5 Years

Block Diagram



Offset Voltage vs Termination Voltage