

SG 5030
SG 502

SG 503
SG 504

Leveled Sinewave Generators, Oscillator Modular

Only Leveled

Sinewave
Generators

provide the
accuracy for
oscilloscope
bandwidth
testing.

SG 5030

- Oscilloscope Bandwidth Calibration
- 0.1 Hz to 550 MHz
- 4.5 mV to 5.5 V Amplitude Range
- Amplitude Flatness From $\pm 1.5\%$ to $\pm 4\%$ of 50 kHz Reference Frequency
- 20 Stored Front Panel Settings

SG 502

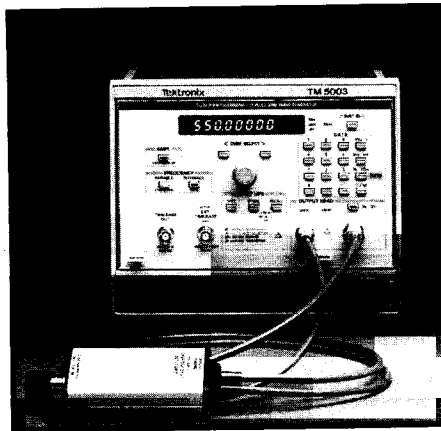
- 5 Hz to 500 kHz Sine Waves and Square Waves
- Low-Distortion Sine Wave
- 5 V RMS Open Circuit – 600 Ω Source
- 0 to 40 dB Output Variable Plus 0 to 70 dB in 10 dB Steps

SG 503

- 250 kHz to 250 MHz
- Leveled, Variable Output
- Digital Readout of Frequency

SG 504

- 245 MHz to 1050 MHz
- Leveled, Variable Output
- Frequency-Modulation Capability
- Internal Peak Detection



SG 5030 Leveled SineWave Generator

The SG 5030 is the only choice for anyone who needs leveled output amplitude to calibrate analog or digital scopes with bandwidth to 550 MHz – under either local or programmable control. That's because no other programmable leveled sine wave generator is built specifically to fill scope calibration requirements. The SG 5030's leveled output is variable from 0.1 Hz to 550 MHz with a reference frequency of 50 kHz. Crystal-controlled frequency accuracy eliminates drift so there's no second-guessing results.

Accurately calibrated output voltage is provided from 4.5 mV to 5.5 V peak-to-peak into 50 Ω . Absolute amplitude accuracy is $\pm 1.5\%$ from 0.1 Hz to 50 kHz, with flatness from ± 1.5 to $\pm 4\%$ over the remainder of the frequency range to 550 MHz.

A remote leveling head is standard and plugs directly into the oscilloscope to ensure that the output signal is level at all times. All other signal generators are specified at the front-panel BNC connector, not at the end of the cable going to the instrument under test.

Frequency and amplitude along with 20 front-panel store/recall settings are all fully programmable. Automating test procedures makes scope calibration some four times faster than manual test methods allow – and virtually eliminates the risk of operator error.

Configure the SG 5030 with a CG 5011 Programmable Calibration Generator. As three-wide TM 5000 Series modules, they conveniently fill a six-slot TM 5006A main-frame to form a complete, cost-effective benchtop or rackmount calibration system.

Characteristics

FREQUENCY

Range/Resolution –

0.1 Hz – 4.9999 kHz: 0.1 Hz steps;
5 kHz – 49.999 kHz: 1 Hz steps;
50 kHz – 550 MHz: 10 Hz steps.

Accuracy With Internal Timebase (within 1 year of adjustment) –

Range	ppm of Setting + Hz
0.1 Hz – 4.9999 kHz:	$\pm (3 + 0.06)$
5 kHz – 49.999 kHz:	$\pm (3 + 0.3)$
50 kHz – 550 MHz:	$\pm (3 + 3)$

Accuracy With External Timebase (10 MHz) –

0.1 Hz – 4.9999 kHz: \pm (ext. t.b. error + 0.06 Hz);
5 kHz – 49.999 kHz: \pm (ext. t.b. error + 0.3 Hz);
50 kHz – 550 MHz: \pm (ext. t.b. error + 3 Hz).

AMPLITUDE

Range/Resolution –

4.5 mV – 55 mV: 0.02 mV/step;
55.2 mV – 550 mV: 0.2 mV/step;
552 mV – 5.5 V: 2 mV/step;
–42.95 dBm – +18.75 dBm: 0.05 dBm/step.

Accuracy (within 1 year of adjustment) –

0.1 Hz – 50 kHz: $\pm 1.5\%$ of setting.
Flatness (within 1 year of adjustment) –
50 kHz – 100 MHz: $\pm 1.5\%$ of 50 kHz Ref. Frequency;
100 MHz – 250 MHz: $\pm 3\%$ of 50 kHz Ref. Frequency;
250 MHz – 550 MHz: $\pm 4\%$ of 50 kHz Ref. Frequency.

OUTPUT

Leveling Settling Time – Less than 20 ms.

Source Resistance – 50 Ω , $\pm 1\%$.

DC Offset – ± 20 mV.

VSWR – Less than 1.2:1 up to 550 MHz.

HARMONIC DISTORTION

0.1 Hz – 49.999 kHz – All Harmonics and Spurs < -50 dBc.

50 kHz – 550 MHz – 2nd Harmonic < -30 dBc. All others < -35 dBc. Nonharmonics < -40 dBc. Phase Noise < -85 dBc/Hz at 10 kHz offset.

INTERNAL TIMEBASE OUTPUT

Frequency – 10 MHz.

Accuracy – ± 3 ppm.

Amplitude – 400 mV p-p into 50 Ω .

Impedance – 50 Ω .

EXTERNAL TIMEBASE INPUT

Frequency – 10 MHz, ± 1.5 ppm.

Amplitude – -10 dBm to $+10$ dBm, (70 to 700 mV RMS).

Impedance – 50 Ω AC, 500 Ω DC.

GENERAL

Environmental – Operating 0°C to 40°C. Nonoperating: 40°C to +71°C.

Power Consumption – 65 VA.

To order, contact your local sales office (listed on the inside back cover) or call the National Marketing Center at 1-800-426-2200, Ext. 99.

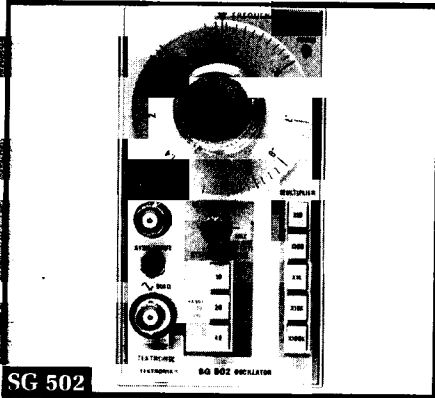


Leveled Sinewave Generators, Oscillator

Modular

SG 5030
SG 502

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SG 504



SG 502



SG 503



SG 504

SG 502 Oscillator

The SG 502 features a wide frequency range of 5 Hz to 500 kHz with low distortion (0.035% between 20 Hz and 50 kHz) and is desirable for general test purposes. Other features include 70 dB amplitude control plus a simultaneous fixed-amplitude square wave.

Characteristics

Frequency Range – 5 Hz to 500 kHz in 5-decade steps. Frequency accuracy within 5% of dial setting from 5 Hz to 50 kHz; within 10% of dial setting from 50 to 500 kHz.

Amplitude Response (1 kHz Reference) – Flatness: 0.3 dB over entire range.

Attenuation – Selectable from 0 to 70 dB in 10-dB steps with pushbuttons. Accurate within 0.2 dB for each step selected, additive. An uncalibrated control provides continuous variation from 0 to 40 dB.

Harmonic Distortion – <0.035% (70 dB) from 20 Hz to 50 kHz. <0.15% from 50 to 500 kHz RL \geq 600 Ω .

Maximum Output Voltage – 5 V RMS open circuit; 2.5 V RMS into 600 Ω .

Output Impedance – 600 Ω , grounded.

SQUARE WAVE

Freq. Range/Accuracy – Same as sine wave.

Rise Time and Fall Time – 50 ns or less.

Amplitude – +5 V, fixed, open circuit.

Output Impedance – 600 Ω , grounded.

SG 503 Leveled Sinewave Generator

The SG 503 provides a leveled output that is variable in frequency from 250 kHz to 250 MHz. The selected frequency is indicated by a built-in autoranging frequency counter with a three-digit LED readout on the front panel. Accurately calibrated output voltage is variable from 5 mV to 5.5 V peak-to-peak into 50 Ω .

Characteristics

Frequency Range – 250 kHz to 250 MHz, plus 50 kHz reference frequency.

Frequency Accuracy – Within ± 0.7 of one count of the least significant digit of indicated frequency.

Amplitude Range – 5 mV to 5.5 V p-p into 50 Ω termination in three decade ranges.

Amplitude Accuracy (50 kHz Reference) – Within 3% of indicated amplitude on (X1) range, 4% on (X.1) range, and 5% on (X.01) range.

Flatness (P-P) – From 250 kHz to 100 MHz, output amplitude will not vary more than 1% of the value at 50 kHz except that up to +1.5%, -1% variation may occur between 50 and 100 MHz on amplitude multiplier X.1 and X.01 ranges only. From 100 to 250 MHz, amplitude variation is within 3% of the value at 50 kHz.

Harmonic Content – Second Harmonic: At least 35 dB down. Third Harmonic and All Higher Harmonics: At least 40 dB down.

Rear Interface – Addresses the leveling circuit.

SG 504 Leveled Sinewave Generator

The SG 504 provides leveled output amplitude and is variable from 245 to 1050 MHz in two bands via its compact output leveling head. Frequency is indicated by a high-resolution tape dial that expands each band over 28 inches. The accurately calibrated output voltage is variable from 0.5 V to at least 4.0 V p-p into 50 Ω .

Characteristics

Frequency Range – Low Band: 245 to 550 MHz. High Band: 495 to 1050 MHz, plus 50 kHz or 6 MHz reference frequency (internally selected).

Frequency Accuracy – $\pm 2\%$ of dial indication.

Amplitude Range – 0.5 V to at least 4.0 V p-p.

Amplitude Accuracy (At Reference) – Within 3% of indicated amplitude.

Flatness – $\pm 4\%$ of amplitude at reference frequency.

Harmonic Content – Second Harmonic: At least 25 dB down. Third Harmonic and All Higher Harmonics: At least 40 dB down.

FM Input – Frequency Range: DC to 100 kHz. Deviation Sensitivity: ± 9 V produces from 0.05% to 0.5% deviation of carrier, depending on output frequency.

Frequency Monitor Output – ≥ 0.3 V p-p into a 50 Ω load from 245 to 1050 MHz.

Rear Interface – Address FM input, frequency-monitor output, and amplitude control.

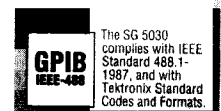
ORDERING INFORMATION

SG 5030 Programmable Leveled Sine Wave Generator	\$9,650
Includes: Operators Manual (070-7705-00), Instrument Interfacing Guide (070-7704-00), Reference Guide (070-7706-00), Leveling Head (015-2350-00).	
SG 502 Oscillator	\$1,800
Includes: Instruction manual (070-1430-01).	
SG 503 Leveled Sinewave Generator	\$3,895
Includes: Three-foot precision 50 Ω cable (012-0482-00) Instruction Manual (070-6770-00).	
SG 504 Leveled Sinewave Generator	\$5,395
Includes: Instruction Manual (070-1632-01); Leveling head (012-0282-01).	

WARRANTY-PLUS SERVICE OPTIONS

Opt. M7 – Calibration Service	
SG5030.....	+\$105
SG502.....	+\$70
SG503.....	+\$100
SG504.....	+\$170
Opt. M9 – Repair Protection	
SG5030.....	+\$145
SG502.....	+\$160
SG503.....	+\$235
SG504.....	+\$270

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OSCILLOSCOPE CALIBRATION