Function/Arbitrary Waveform Generator
SMG2042, SMG2082, SMG2122

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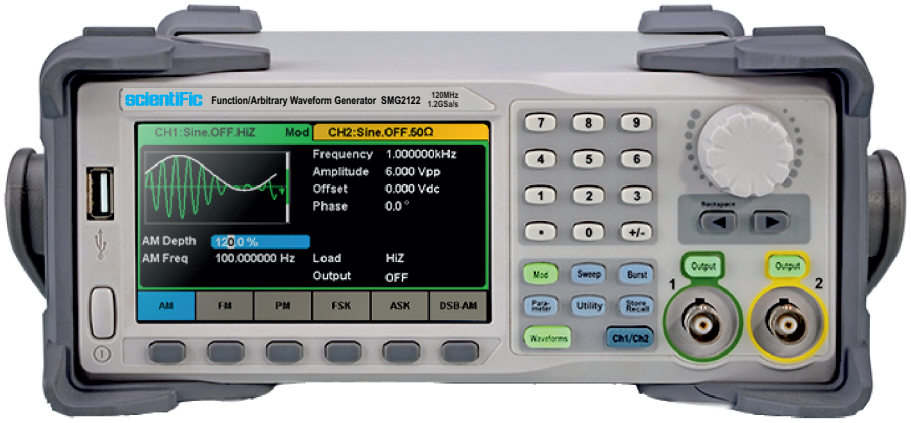
Since 1963



Advance Features

- Dual-channel, 120MHz maximum bandwidth, 20Vpp maximum output amplitude, high fidelity output with 80dB dynamic range
- High-performance sampling system with 1.2GSa/s sampling rate and 16-bit vertical resolution. No detail in your waveforms will be lost
- Innovative TrueArb technology, based on a point-by-point architecture, supports any 8pts~8Mpts Arb waveform with a sampling rate in range of 1μSa/s~75MSa/s
- Innovative EasyPulse technology, capable of generating lower jitter Square or Pulse waveforms, brings a wide range and extremely high precision in pulse width and rise/fall times adjustment
- Plenty of analog and digital modulation types: AM, DSB-AM, FM, PM, FSK, ASK and PWM
- Sweep and Burst function
- High precision Frequency Counter
- Standard interfaces: USB Host, USB Device, USBTMC), LAN (VXI-11)
- Optional interface: GPIB
- 4.3" touch screen display for easier operation

Technical Specifications	SMG2042	SMG2082	SMG2122
Maximum output frequency	40MHz	80MHz	120MHz
Output channels	2		
Sampling Rate	1.2GSa/s (4X Interpolation)		
Arbitrary Waveform Length	8 Mpts		
Frequency Resolution	1μHz		
Vertical Resolution	16bits		
Waveform	Sine, Square, Ramp, Pulse, Gaussian Noise, Arb Waveform		
Frequency Characteristics			
Resolution	1μHz		
Initial accuracy	± 1ppm		

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Sine Characteristics			
Frequency	1μHz–40MHz	1μHz–80MHz	1μHz–120MHz
Harmonic distortion at 0dBm	-65 dBc (0–10MHz), -60 dBc (10–20MHz), -55 dBc (20–40MHz),		
	-50 dBc (40–60MHz), -45 dBc (60–80MHz),		
	-40 dBc (80–100MHz), -38 dBc (100–120MHz),		
Total Harmonic distortion	0.075 % (10Hz–20KHz)		
Non Harmonic Spurious	- 70dBc ≤50 MHz , - 65dBc > 50 MHz		
Square Characteristics			
Frequency	1μHz–25 MHz		
Rise/fall times 10%–90%, 1 Vpp, 50Ω	9ns		
Overshoot 100 kHz, 1 Vpp, 50Ω	3 %		
Duty cycle	0.001–99.999 % (Limited by frequency setting)		
Jitter (rms), Cycle to cycle 1 Vpp, 50Ω	150ps		
Pulse Characteristics			
Frequency	1μHz–25MHz		
Pulse width	16.3 ns		
Pulse width accuracy	±(0.01%+0.3ns)		
Rise/fall times 10%–90%, 1 Vpp, 50Ω	8.4n–22.4s		
Overshoot 100 kHz, 1 Vpp	3 %		
Duty cycle	0.001–99.999 % (Limited by frequency setting)		
Duty cycle resolution	0.001%		
Jitter (rms) cycle to cycle 1 Vpp, 50Ω	150ps		
Noise Characteristics			
-3dB bandwidth	120MHz		
Ramp Characteristics			
Frequency	1μHz–1MHz		
Symmetry	100%		
Linearity (1kHz, 1Vpp, 100% symmetry)	1%		
Arbitary Wave Characteristics			
Frequency	1μHz–20MHz		
Waveform length	8pts–8Mpts		
Sampling rate	1μ–75M Sa/s TrueArb mode, 300 MSa/s DDS mode		
Vertical Resolution	16bit		
Jitter (rms) 1Vpp, 50Ω, TrueArb mode	150ps (Maximum)		
DC Characteristics			
Range	±10V Hiz, ±5V, 50Ω		
Accuracy	±(1%+2mV)		
Output Characteristics			
Range			
HiZ load	2mV–20 Vpp ≤20MHz, 2mV–10Vpp >20MHz,		
50Ω	1mV–10Vpp ≤20MHz, 1mV–5Vpp >20MHz,		
Accuracy (10kHz sine, 0V offset)	±(1%+1mVpp)		
Amplitude flatness (50Ω, 2.5Vpp, 10kHz Sine)	± 0.3dB : 0–100MHz, ± 0.4dB 100–120MHz		
Output impedance	50Ω		
Output current	± 200 mA		
Crosstalk (CH1–CH2 / CH2–CH1)	-60 dBc		
Modulation Characteristics			
AM			
Carrier	Sine, Square, Ramp, Arb		
Modulation Source	Internal/External		
Modulating wave	Sine, Square, Ramp, Noise, Arb		
Modulation depth	0–120%		
Modulation frequency	1mHz–1MHz		
FM			
Carrier	Sine, Square, Ramp, Arb		
Modulation Source	Internal/External		
Modulating wave	Sine, Square, Ramp, Noise, Arb		

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Frequency deviation	0–0.5 * max. output frequency		
Modulation frequency	1mHz–1MHz		
PM			
Carrier	Sine, Square, Ramp, Arb		
Modulation Source	Internal/External		
Modulating wave	Sine, Square, Ramp, Noise, Arb		
Phase deviation	$0–360^0$		
Modulation frequency	1mHz–1MHz		
ASK			
Carrier	Sine, Square, Ramp, Arb		
Modulation Source	Internal/External		
Modulating wave	Square with 50% duty cycle		
Keying frequency	1mHz–1MHz		
FSK			
Carrier	Sine, Square, Ramp, Arb		
Modulation Source	Internal/External		
Modulating wave	Square with 50% duty cycle		
Keying frequency	1mHz–1MHz		
PWM			
Carrier	Pulse		
Modulation Source	Internal/External		
Modulating wave	Sine, Square, Ramp, Arb		
Modulation frequency	1mHz–1MHz		
Pulse width deviation resolution	6.67ns		
Burst Characteristics			
Carrier	Sine, Square, Ramp, Pulse, Noise, Arb		
Type	Count(1–1000000cycles), Infinite, Gated		
Carrier frequency	2m–max. output frequency		
Start/Stop phase	$0–360^0$		
Internal period	1µ–1000s		
Trigger source	Internal, External, Manual		
Gated source	Internal/External		
Trigger delay	100s		
Sweep Characteristics			
Carrier	Sine, Square, Ramp, Arb		
Type	Linear, Log		
Direction	Up, Down		
Carrier Frequency	1µ–max. output frequency		
Sweep time	1m– 500s		
Trigger source	Internal, External, Manual		
Frequency Counter Characteristics			
Function	Frequency, Period, Positive/Negative pulse width, Duty cycle		
Coupling mode	AC, DC, HF REJ		
Frequency range	100m–200MHz : DC coupling, 10Hz–200MHz : AC coupling		
Input sensitivity			
DC coupling	100mVrms– ± 2.5V: < 100 MHz, 200mVrms – ± 2.5V: 100 MHz – 200MHz,		
AC coupling	100mVrms – 5 Vpp : < 100 MHz, 200mVrms – 5 Vpp : 100 MHz – 200MHz		
Input impedance	1MΩ		
Reference Clock Input/Output			
Reference Clock Input			
Frequency	10MHz		
Amplitude	1.4Vpp		
Input impendence	5 kΩ AC coupling		
Reference Clock Output			
Frequency	10MHz		
Amplitude	3.3Vpp (Hiz load)		
Output impendence	50Ω		

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Auxiliary In/Out Characteristics			
Trigger Input			
V_{IH}	2–5.5V		
V_{IL}	- 0.5V–0.8V		
Input Impedance	100kΩ		
Pulse width	100ns Sweep		
Response time	600ns Burst		
Trigger Output			
V_{OH}	3.8V		
V_{OL}	- 0.44v		
Input Impedance	100Ω		
Frequency	1MHz		
Sync Output			
V_{OH}	3.8V		
V_{OL}	0.44V		
Output Impedance	100Ω		
Pulse width	500ns		
Frequency	1MHz		
Modulation Intput			
Frequency	0–50kHz		
Input impedance	10kΩ		
Amplitude @ 100% Modulation depth	11–13Vpp		
General Characteristics			
Power			
Voltage	100–240Vrms (±10%) 50/60 Hz		
Power consumption	25.5 Typical, 50W Maximum		
Display			
Touch panel type	resistive		
Environmental condition			
Operating	0–50°C , 5 to 90%RH ≤ 30°C , 5 to 50%RH @ 50°C		
Storage	-20 to 60°C , 5 to 95%RH		
Calibration interval	1Year		
Dimensions	W : 260.3mm x H : 107.2 mm x D: 295.7mm		
Net Weight	3.43kg		
Gross Weight	4.42kg		
Compliance			
LVD	IEC 61010-1:2010		
EMC	EN61326-1:2013		
Standard Accessories	Power Cord, USB Cable, CD, BNC Coaxial Cable		
Optional Accessories	USB-GPIB adapter		

Subject to change

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