

Test & Measurement Product Catalog

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Generator

Spectrum Analyzer

Frequency Counter

Digital Multimeter

Power Supply

Power Quality Analyzer

Other Instruments



2016



About Suin

SUIN founded in 1966 is a high-tech company and concentrate on R&D, production, sales and service of test & measurement instruments.

SUIN developed the first DDS function generator in 1990. After decades of development, SUIN has extended its products to including function/arbitrary waveform generator, synthesized signal generators, spectrum analyzers, frequency counters, digital multimeters, power supplies, power quality analyzers, time-frequency instruments and other general purpose instrumentation.

To follow the technology development, SUIN will never stop the steps to promote more digital, intelligent and integrated modern instruments with higher performance and lower cost to market, to satisfy more customers.

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Selection Guide of Generators

	TFG3605/3610/3615	TFG3630	TFG1903B/05B/10B/20B	TFG3908A/3912A/3916A	TFG6910A/20A/30A/40A/60A	TFG1905A/10A/20A
Max Frequency	500/1000/1500MHz	3GHz	3/5/10/20MHz	80/120/160MHz	10/20/30/40/60MHz	5/10/20MHz
Channel	2	1	1	2	2	2
Frequency Resolution	1μHz	3Hz	10μHz	1μHz	1μHz	1μHz
Best Accuracy	1ppm	±5ppm	50ppm	2ppm	50ppm	20ppm
Sampling Rate	50MSa/s	○	100MSa/s	500MSa/s	120MSa/s	100MSa/s
Vertical Resolution	10bits	○	8bits	14 bits	14bits	10bits
Output level	-127dBm ~ +13dBm	-60dBm ~ +10dBm	○	○	○	○
Waveform	CHA: Sine, Square CHB: Sine, Square, Ramp, Pulse, and 4 built in waveforms	Sine	Sine, Square, Ramp, Pulse, Exponent, Logarithm, Noise, etc. totally 16 waveforms	150 kinds of waveforms including sine, Square, Ramp, Pulse, Noise, PRBS, Exponential, Logarithm, Tangent, Gaussian, Cardiac, Quake	Sine, Square, Ramp, Pulse, Noise + 50 built in arbitrary waveform + 5 user-defined	11 built in waveform + 5 user-defined
DC Offset	●	○	●	●	●	●
TTL	●	○	●	●	●	●
Sweep	●	●	●	●	●	●
Modulation	FM, AM, FSK, PSK	Pulse	FM, AM, PM, PWM, FSK	FM, AM, PM, PWM, SUM, FSK, 4FSK, QPSK, ASK, OSK	FM, AM, PM, PWM, SUM, FSK, BPSK	FM, AM, PM, PWM, FSK
Burst	●	○	●	●	●	●
Frequency Counter	○	○	○	0.1Hz ~ 350MHz	0.01Hz ~ 350MHz	1Hz ~ 100MHz
Display	4.3" TFT LCD	4.3" TFT LCD	VFD	4.3" TFT LCD	4.3" TFT LCD	VFD
Interface	USB Device, RS-232	USB Device, RS-232	USB Device	USB Device&Host, LAN	RS-232, USB Device&Host	USB Device&Host
Options	GPIO, Frequency Counter	GPIO	○	Amplifier	Amplifier, TCXO	○

*Notice: ● means the indicated function is available while ○ means not available

TFG3600 Series Synthesized Signal Generator



NEW

Features

- Perfect combination of DDS and PLL techniques
- Frequency upper limits to 1.5GHz
- Higher level of frequency accuracy, up to 1ppm
- Complete AM/FM/FSK/PSK modulation function
- Standard communication interface: USB Device and RS-232



Standard Accessories

Power Cord	1
BNC Testing cable	1
CD(Software+ User's Guide)	1

Options

Frequency Counter
(upper limits to 2.5GHz, only for TFG3605)

GPIB

Specification

CHA		TFG3605	TFG3610	TFG3615
Frequency				
Range	Sine	1μHz ~ 500MHz	1μHz ~ 1000MHz	1μHz ~ 1500MHz
	Square	1μHz ~ 80MHz		
Resolution		1μHz (carrier frequency≤80MHz) 1Hz (carrier frequency>80MHz)		
Accuracy		±1ppm, Frequency≥1.0kHz, 18°C to 28°C ±50ppm, Frequency<1.0kHz, Min. output 1μHz		
Sine Output Level				
Range	Freq≤500MHz	-127dBm ~ +13dBm(-127dBm ~ -117dBm typ.)		
	Freq≤1000MHz	-110dBm ~ +13dBm(-100dBm ~ -110dBm typ.)		
	Freq≤1500MHz	-105dBm ~ +10dBm(-100dBm ~ -105dBm typ.)		
Resolution		0.1dB		
Accuracy	Freq≤300MHz	setting value ±1dBm (output level +13dBm~-105dBm) setting value ±1.5dBm (output level +13dBm~-80dBm, setting value ±1.0dBm typ.)		
	Freq≤1500MHz	setting value ±2.5dBm (output level -80dBm~-100dBm, setting value ±1.5dBm typ.)		
Stationary Wave Ratio (SWR)		<1.8 (output levels≤0dBm)		
Spectral Purity				
Harmonic		< -33dBc (output levels≤4dBm, typ.)		
Non-Harmonic		< -40dBc (output levels≤4dBm, deviation CF≥5kHz)		
Sub-Harmonic		< -40dBc (output levels≤4dBm)		
Residual FM		< 100Hz (BW: 0.3 ~ 3kHz, RMS < 120MHz)		
Square				
Rise/Fall Time		≤15ns		
Overshoot		≤5%		
Modulation				
Type		AM, FM, FSK, PSK		
External Modulation Input		Voltage Range: 5V full scale, Input impedance: 10kΩ, Frequency: DC to 10kHz		
Frequency Sweep				
Sweep Rate		1ms ~ 800s Linear (carrier ≤80MHz) 100ms ~ 800s Logarithm(carrier ≤80MHz)		
Step Time		50ms ~ 10s Linear (carrier>80MHz)		
Burst				
Burst Count		1 ~ 10000 cycles		
Interval		0.1ms ~ 800s		
CHB				
Frequency				
Range		1μHz ~ 10MHz		
Resolution		1μHz		
Accuracy		±1ppm, Frequency≥1.0kHz, 18°C to 28°C ±50ppm, Frequency<1.0kHz, Min. output 1μHz		
Waveform				
Type		Sine, Square, Ramp, Pulse, Sinc, Exp, Noise, DC		
Square	Rise/Fall Time	≤50ns		
	Duty Cycle	0.01% ~ 99.99%		
Pulse	Rise/Fall Time	≤50ns		
	Pulse Width	20ns ~ 20s		
Ramp	Symmetry	0.0% ~ 100.0%		
Output				
Amplitude		1mVpp ~ 10Vpp(50Ω), 2mVpp ~ 20Vpp(High Z)		
Offset		±5Vpk ac+dc(50Ω), ±10Vpk ac+dc(High Z)		
Resolution		5mVpp		
Accuracy		±(1% of setting + 10mVpp) (1kHz Sine)		
Flatness		±0.5dB(1MHz Sine, 1Vpp)		
General Characteristics				
Power		AC100V~240V, 50(1±10%)Hz, <40VA		
Dimension & Weight		254×103×374 mm, 4.2 kg		

TFG3630 3GHz Synthesized Signal Generator



Features

- Simple and easy to operate
- Up to -115dBc phase noise
- Up to +10dBm output power
- Flexible frequency and amplitude sweep function
- Pulse modulation function
- Standard interface of USB Device and RS-232

Specification

Frequency		
Range	Sine	25MHz ~ 3GHz
Resolution		3Hz
Reference Frequency	Reference Output	Frequency: 10MHz Level: >0dBm Port: BNC connector
	Reference Input	Frequency: 10MHz Power: -3~ +7dBm Input Port: BNC connector Impedance(nominal): 50Ω
Phase Noise		-90dBc~ -115dBc, offset: 20kHz
Spurious	Harmonic	<-35dBc (Power ≤ 5dBm)
	Non-harmonic	<-60dBc
Power		
Range		-60dBm ~ +10dBm
Resolution		0.25dB
Accuracy	Output Frequency: 25MHz~2250MHz	±(1.0+2% absolute of setting value) dB
	Output Frequency: 2200MHz~3000MHz	±(1.0+4% absolute of setting value) dB
Input SWR		<1.5 typical
RF Output	Terminal	N type
	Output Impedance	50Ω
Pulse Modulation		
Break-make Ratio		>80dB
Rise/Fall Time		<100ns
Pulse Width		0.25s Min.
Pulse Period		0.5s Min.
Sweep		
Frequency Sweep	Sweep Mode	Linear
	Min. Step	3Hz
Power Sweep	Sweep Mode	Linear
	Min. Step	0.25dBm
General Characteristics		
Power		Voltage: 220(1±10%)V, Frequency: 50(1±10%) Hz
		Power Consumption: <20W, Warm-up: 30 minutes
Dimension&Weight		386×256×123mm, <5kg



Standard Accessories

Power Cord	1
CD(Software+ User's Guide)	1



Power Cord

CD

Options

GPIB	1
N-N cable	1
N-SMA adapter	1

TFG1900B Series Function Generator



Features

- Simple structure and highly cost-effective
- Output 16 waveforms
- FM, AM, PM, PWM and FSK modulation
- Provide frequency sweep and burst
- Standard configuration interface: USB device



Options

Power Amplifier (output power: 10W)

Specification

		TFG1903B	TFG1905B	TFG1910B	TFG1920B
Frequency					
Range	Sine	10μHz ~ 3MHz	10μHz ~ 5MHz	10μHz ~ 10MHz	10μHz ~ 20MHz
	Square	10μHz ~ 5MHz			
	others	10μHz ~ 1MHz			
Resolution		10μHz			
Accuracy		±50ppm			
Waveform					
Type		16 waveform, Sine, Square, Ramp, Exp, Log, Noise, etc.			
Length		1024 points			
Sampling Rate		100 MSa/s			
Vertical Resolution		8 bits			
Sine	Harmonic Distortion	≤-40dBc(≤5MHz); ≤-35dBc(>5MHz)			
	Total Distortion	≤0.5% (20Hz ~ 20kHz, 20Vpp)			
Square	Rise/Fall Time	≤35ns Overshoot: ≤10 %			
	Duty Cycle	0.1% ~ 99.9%			
Ramp	Symmetry	0.0% ~ 100.0%			
Amplitude					
Range	Frequency≤8MHz	0 ~ 10Vpp(50Ω), 0 ~ 20Vpp(Open circuit)			
	Frequency>8MHz	0 ~ 9Vpp (50Ω), 0 ~ 18Vpp(Open circuit)			
Resolution		5mVpp(Amplitude>2Vpp)			
		0.5mVpp(Amplitudes≤2Vpp)			
DC Offset (Ampl. 0Vpp)					
Range		±5Vdc (50Ω), ±10Vdc (Open circuit)			
Resolution		5mVdc			
Modulation					
FM,AM,	Carrier Waveform	16 waveforms, Sine, Square, Ramp, etc. (only Pulse for PWM)			
PM,PWM	Modulating Waveform	16 waveforms, Sine, Square, Ramp, etc.			
	Modulating Frequency	40mHz ~ 20kHz			
FSK	Carrier Waveform	16 waveforms, Sine, Square, Ramp, etc.			
	Modulating Waveform	Square			
	FSK Rate	40mHz ~ 100kHz			
Sweep					
Type		Linear or Logarithmic			
Sweep Time		50ms ~ 500s			
Trigger Source		Internal/External/Manual			
Burst					
Waveform		16 waveforms, Sine, Square, Ramp, etc.			
Burst Count		1 ~ 1000000			
Internal Period		1μs ~ 20s			
Start Phase		0° ~ 360°			
Trigger Source		Internal/External/Manual			
Sync Output					
Electrical Level		TTL compatible			
Waveform Characteristic		Square, edge time ≤ 20ns			
Output Level		low level<0.3V, high level>4V			
General Characteristics					
Power		AC 100 ~ 240V, 45 ~ 65Hz, <20VA			
Display		VFD display			
Dimension & Weight		322×256×102mm, Approx.1.5 kg			

TFG6900A Series Function/Arbitrary Waveform Generator



Features

- Dual channel outputs
- 50ppm frequency accuracy and 1μHz resolution
- 5 standard waveforms, 50 built-in and 5 user-defined arbitrary waveforms
- Abundant modulation function FM, AM, PM, PWM, Sum, FSK, BPSK
- Channel coupling and combine features on CHB
- 6digits/s, 350MHz built-in frequency counter
- Standard interface: USB Host & Device, RS-232

Specification

		TFG6910A	TFG6920A	TFG6930A	TFG6940A	TFG6960A
Frequency						
Range	Sine	1μHz ~ 10MHz	1μHz ~ 20MHz	1μHz ~ 30MHz	1μHz ~ 40MHz	1μHz ~ 60MHz
	Square, Pulse	1μHz ~ 10MHz				
	others	1μHz ~ 5MHz				
Resolution		1μHz				
Accuracy		±(50ppm+1μHz)				
Waveform						
Type		Sine, Square, Ramp, Pulse, Noise, 50 built-in waveforms + 5 user-defined waveforms				
Length		4096 points				
Sample Rate		120 MSa/s				
Vertical Resolution		14 bits (CHA); 10bits (CHB)				
Amplitude Characteristics						
Range	Frequency ≤20MHz	0.1mVpp ~ 10Vpp(50Ω) 0.2mVpp ~ 20Vpp (open circuit)				
	Frequency >20MHz	0.1mVpp ~ 7.5Vpp(50Ω) 0.2mVpp ~ 15Vpp (open circuit)				
Resolution		1mVpp (Amplitude ≥1Vpp, load 50Ω) 0.1mVpp (Amplitude <1Vpp, load 50Ω),				
		2mVpp (Amplitude ≥2Vpp, open circuit) 0.2mVpp (Amplitude <2Vpp, open circuit)				
Accuracy		±(1% of setting +1mVpp)(1kHz Sine, 0V offset, auto range)				
Offset Characteristics						
Range		±5Vdc (50Ω), ±10Vdc (open circuit)				
Accuracy		±(1% of setting +1mVdc)				
Modulation Characteristics (CHA)						
FM, AM, PM, PWM, SUM		Carrier Waveform: Sine, Square, Ramp, etc. (only Pulse for PWM)				
		Modulating Waveform: Sine, Square, Ramp, etc.				
FSK, BPSK	Carrier Waveform	Modulating Frequency: 1μHz ~ 100kHz				
	Source	Sine, Square, Ramp, etc.				
Sweep Characteristics (CHA)						
Carrier Waveform		Sine, Square, Ramp and etc.				
Type		Linear, Log				
Sweep Time		5ms to 500s				
Hold/Return Time		0s to 500s				
Trigger Source		Internal, External or Manual				
List Sweep		List Length: 600 pcs				
Burst Characteristics (CHA)						
Carrier Waveform		Sine, Square, Ramp, etc.				
Period		1μs ~ 500s				
Burst Count		1 ~ 1000000				
Trigger Source		Internal, External or Manual				
Counter						
Frequency Range		10mHz ~ 350MHz, resolution: 6 digits/s				
Period, Pulse Width		100ns ~ 20s				
Duty Cycle		1% ~ 99%				
General Characteristics						
Power		AC 100 ~ 240V, 45 ~ 65Hz, < 30VA				
Dimension & Weight		334×256×106 mm, Approx. 3 kg				

Standard Accessories

Power Cord	1
BNC cable	1
CD (Software + User's Guide)	1

Options

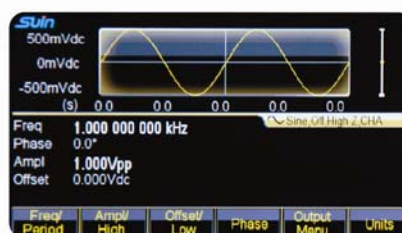
Power Amplifier	Power: 8W (load 8Ω)
TCXO	Frequency Stability: ±2ppm

TFG3900A Series Function/Arbitrary Waveform Generator



Features

- Dual channel outputs with identical performance
- 500MSa/s sample rate, 14 bits vertical resolution
- 2ppm high accuracy to ensure the high quality waveform
- 150 built-in waveforms
- Full and complete modulation functions
- 7digits/s, 350MHz built-in counter
- Standard interface: USB Host & Device, LAN



Specification

		TFG3908A	TFG3912A	TFG3916A
Frequency				
Range	Sine	1μHz ~ 80MHz	1μHz ~ 120MHz	1μHz ~ 160MHz
	Square, Pulse	1μHz ~ 30MHz	1μHz ~ 40MHz	1μHz ~ 50MHz
	Arbitrary	1μHz ~ 30MHz		
	Ramp	1μHz ~ 5MHz		
		1μHz		
Resolution		±(2ppm+1μHz)		
Accuracy				
Waveform				
Standard Waveforms		Sine, Square, Ramp, Pulse, Noise		
Arbitrary Waveforms		137 kinds, including PRBS, Exponential, Logarithm, Tangent, Gaussian, Cardiac, Quake and so on		
Length		16384 points		
Sample Rate		500MSa/s		
Vertical Resolution		14bits		
Spectral Purity				
Harmonic Distortion		$\leq -60\text{dBc}(<10\text{MHz})$ $\leq -55\text{dBc}(<80\text{MHz})$ $\leq -50\text{dBc}(<100\text{MHz})$ $\leq -45\text{dBc}(\geq 100\text{MHz})$		
Total Distortion		$\leq 0.1\%$ (20Hz ~ 20kHz, 20Vpp)		
Square, Pulse and Ramp				
Square	Rise/Fall Time	$\leq 8\text{ns}(1\text{Vpp})$		
	Overshoot	$\leq 5\%$ (Typical)		
	Duty Cycle	0.1% ~ 99.9%(mini. pos/neg pulsewidth 10ns)		
Pulse	Rise/Fall Time	4ns ~ 100us		
	Pulse Width	10ns ~ 1000s		
Ramp	Symmetry	0% ~ 100%		
Arbitrary Waveforms				
Arbitrary	Length	6 ~ 1M points		
	Sample Rate	1uSa/s ~ 125MSa/s		
	Vertical Resolution	14 bits		

TFG3908A

TFG3912A

TFG3916A

Amplitude		
Range	Frequency≤40MHz	2mVpp ~ 20Vpp(open circuit) 1mVpp ~ 10Vpp (50Ω load)
	Frequency≤80MHz	2mVpp ~ 10Vpp(open circuit) 1mVpp ~ 5Vpp (50Ω load)
	Frequency≤120MHz	2mVpp ~ 5Vpp(open circuit) 1mVpp ~ 2.5Vpp (50Ω load)
	Frequency>120MHz	2mVpp ~ 4Vpp(open circuit) 1mVpp ~ 2Vpp (50Ω load)
Resolution		0.1mVpp to 2mVpp
Accuracy		±(1% of setting+2mVpp)
Flatness		±0.2dBm, frequency<80MHz
(relative to 1MHz Sine)		±0.3dBm, frequency≥80MHz
Offset		
Range		±10Vpk (ac+dc, open circuit) ±5Vpk (50Ω load)
Accuracy		±(1% of setting+2mV+0.5% of amplitude)
Modulation Characteristics		
FM, AM, PM, PWM, Sum Modulation	Modulating Frequency	1mHz ~ 100kHz (FM, AM, PM,PWM) 1mHz ~ 1MHz(Sum)
	AM Modulating Depth	0% ~ 120%
	Phase Deviation	0° ~ 360°
	Pulse Width Deviation	0% ~ 99%
	Sum Amplitude	0% ~ 100%
FSK,4FSK,QFSK,PSK,4PSK, QPSK,ASK,OSK	Source	Internal/External
	Hop Frequency	1μHz ~ maximum frequency
	Rate	1mHz ~ 1MHz
	Source	Internal/External
Sweep Characteristics		
Waveform		Sine, Square, Ramp, etc.
Type		Linear, Log, List
Sweep Time		1ms to 500s
Return/Hold/Interval Time		0s to 500s
Trigger Source		Internal, External or Manual
Burst Characteristics		
Waveform		Sine, Square, Ramp, etc.
Period		1μs ~ 500s
Burst Count		1 ~ 100000000
Start/Stop Phase		0° ~ 360°
Trigger Source		Internal, External or Manual
Channel Coupling		
Frequency Coupling		Frequency Ratio, Frequency Difference
Amplitude Offset Coupling		Amplitude Difference, Offset Difference
Waveform Coupling		Combination Amplitude, 0% ~ 100%
Sync Output		
Level		TTL compatible, rise/fall times≤10ns
Impedance		50Ω (typical)
Modulation Input and Trigger Characteristics		
Modulation Input	Voltage	±2.5Vpp full scale
	Input Impedance	10kΩ
Trigger Input	Level	TTL Compatible
	Input Impedance	1kΩ
Trigger Output	Output Level	TTL Compatible
	Output Impedance	1kΩ
Counter		
Frequency Range	0.01Hz ~ 350MHz	Resolution: 7 digits/s
Period and Pulse Width Measurement	100ns ~ 20s	
Duty Cycle Measurement	0.1% ~ 99.9%	
General Characteristics		
Power	AC 100 ~ 240V, 45 ~ 65Hz, <30VA	
Dimension & Weight	367×256×106 mm, Approx.3.7 kg	

Standard Accessories

Power Cord	1
BNC Testing cable	1
CD(Software+ User's Guide)	1

Options

Power Amplifier

TFG1900A Series Function/Arbitrary Waveform Generator



USB

CE

2CH

PC Software

Features

- Dual channel outputs
- Frequency accuracy 20ppm and 1μHz resolution
- Abundant modulation function AM, FM, PM, PWM and FSK
- Provide sweep and burst
- 100MHz built-in counter
- Standard interface : USB Device & Host



Standard Accessories

- | | |
|----------------------------|---|
| Power Cord | 1 |
| CD(Software+ User's Guide) | 1 |

Options

Power Amplifier: 10W, load 8Ω

Specification

		TFG1905A	TFG1910A	TFG1920A
Frequency				
Range	Sine	1μHz ~ 5MHz	1μHz ~ 10MHz	1μHz ~ 20MHz
	Square, Pulse	1μHz ~ 5MHz		
	others	1μHz ~ 1MHz		
Resolution		1μHz, 6digits		
Accuracy		±20ppm		
Waveform				
Type		11 build-in waveform (Sine, Square, Ramp, Pulse, etc.) + 5 user-defined arbitrary waveforms		
Length		4096 points		
Sample Rate		100 MSa/s		
Vertical Resolution		10 bits		
Amplitude Characteristics				
Range	Frequency≤8MHz	0 ~ 10Vpp(50Ω), 0 ~ 20Vpp(Open circuit)		
	Frequency>8MHz	0 ~ 9Vpp (50Ω), 0 ~ 18Vpp(Open circuit)		
Resolution		2mVpp(Amplitude>2Vpp) 0.2mVpp(Amplitude≤2Vpp)		
Offset Characteristics (Ampl. 0Vpp)				
Range		±5Vdc (50Ω), ±10Vdc (Open circuit)		
Resolution		2mVdc		
Modulation Characteristics (CHA)				
FM,AM,PM, PWM	Carrier Waveform	16 waveforms, Sine, Square, Ramp, etc. (PWM is only for Pulse)		
	Modulating Waveform	16 waveforms, Sine, Square, Ramp, etc.		
	Modulating Frequency	2mHz ~ 20kHz		
FSK	Carrier Waveform	16 waveforms, Sine, Square, Ramp, etc.		
	Hop Frequency	1μHz ~ 5MHz	1μHz ~ 10MHz	1μHz ~ 20MHz
	Rate	1mHz ~ 100kHz		
Sweep Characteristics (CHA)				
Carrier Waveform		16 waveforms, Sine, Square, Ramp, etc.		
Type		Linear or Log		
Sweep Time		50ms ~ 500s		
Burst Characteristics (CHA)				
Carrier Waveform		16 waveforms, Sine, Square, Ramp, etc.		
Burst Count		1 ~ 1000000		
Internal Period		1μs ~ 500s		
Start/Stop Phase		0° ~ 360°		
Sync Output				
Waveform Characteristic		Square, rise/fall time ≤ 20ns		
Output Level		TTL compatible		
Counter				
Frequency Range		1Hz ~ 100MHz		
Input Amplitude		100mVrms ~ 7Vrms		
Period		50ms ~ 5s		
General Characteristics				
Power		AC 100 ~ 240V, 45 ~ 65Hz, < 30VA		
Display		VFD display		
Dimension & Weight		322×256×102 mm, Approx.1.5 kg		

SU5000 Series Pulse/Pattern Generator



Features

- Direct Digital Synthesis Technology
- Crystal Oscillation Reference
- High Accurate Time and Frequency
- Count burst or single burst both can be selected
- Multiple output channels and EXT
- Trigger/Frequency Standard Input channels
- Data Storage And Recall
- Optional GPIB and USB interface

Specification

	SU5101/5102	SU5202G	SU5302	SU5303 NEW
Channel	1/2	2	2	1
Waveform				
Pulse	Single/Dobule, Logic Positive /Negative, Positive/Negative Polary	Single/Dobule, Logic Positive /Negative		Logic Positive /Negative
Edge Time	≤ 10ns	≤ 10ns	8ns ~ 1ms	8ns ~ 1ms
Overshoot	≤ 10%	≤ 10%	≤ 10%	≤ 10%
Time				
Pulse Period	20ns ~ 10000s (frequency range: 0.1MHz ~ 50MHz)			20ns ~ 10000s
Time Interval	5ns ~ 10000s			8ns ~ 9999.5s
Resolution	5ns (Low range), 10μs (High range)			0.1ns (typical)
Interval Error	± (T×5×10 ⁻⁵ + 5ns)(Low range), ± (T×5×10 ⁻⁵ + 10μs) (High range)			± (T×5×10 ⁻⁵ + 5ns)
Pattern		○	Length:4095bits Format:NRZ Rate:100mHz ~ 50MHz	Length:16384bits Format:NRZ, RZ
Amplitude Offset				
Amplitude Range	50mV ~ 10V(High Z)	50mV ~ 5V (50Ω)		
Offset Range	50mV ~ 10V(High Z)	±(50mV~5V) (50Ω)		
Output Impedance	50Ω			
TTL				
TTL/COMS Level	Low Level≤ 0.3V, High Level≥3.0V (high impedance load)			
Output Impedance	50Ω			
Burst				
Burst Count	2 ~ 65000 cycles			
Burst Mode	Continuous, Single			
EXT. STD Input				
Frequency	10M mutiple			
Amplitude	0.5-5Vpp, AC coupling			
Trigger				
Trigger Mode	Internal, External, Manual			
Ext. Trigger Input	Frequency: 1Hz ~ 10MHz (Square), Amplitude: TTL			
Input Impedance	≥100kΩ			≥1kΩ
General Characteristics				
Power	AC220V(1±10%), 50Hz(1±5%), <80VA			
Display	VFD	5.7" TFT LCD	5.7" TFT LCD	4.3" TFT LCD
Optional Interface	USB, GPIB	RS232(Standard), GPIB	RS-232(Standard)	RS232(Standard), GPIB
Dimension & Weight	254×103×384mm, Approx.3 kg	330×155×300mm, Approx.4.2kg		450×100×475mm, Approx.6.0 kg

Standard Accessories

Power Cord	1
Testing cable	1
CD (User's Guide)	1

Options

Power Amplifier

SA9100 Series Spectrum Analyzer

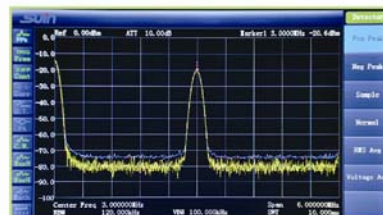


Features

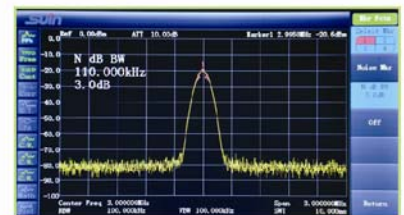
- All-digital IF technology
- Frequency Range: 9kHz to 1.5GHz/2.2GHz/3GHz
- DNAL: -140dBm Typ
- Phase Noise: -80dBc/Hz (10kHz offset)
- Amplitude Resolution: ± 1.0 dB
- RBW: 10Hz to 1MHz, step 1-3-10
- Standard EMI filter
- Quasi-Peak Detector
- Channel power/Adjacent Channel power/Occupied bandwidth measurement
- Tracking Generator optional
- 7" TFT LCD
- USB Host, USB Device, LAN, RS-232



Featuring a low DANL of typ. -145dBm, distinguish two nearby signals clearly with 10Hz RBW



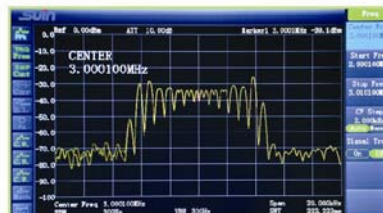
Display the spectrums when change the RBW settings with different color trace



Advanced function of N dB measurement



Measurement of AM signal



Measurement of FM signal



Advanced function of marker display

Specification

		SA9115	SA9122	SA9130
Frequency				
Range		9kHz ~ 1.5GHz	9kHz ~ 2.2GHz	9kHz ~ 3.0GHz
Resolution		1Hz		
Frequency Span				
Frequency Span Range		0Hz, 100Hz ~ 1.5GHz	0Hz, 100Hz ~ 2.2GHz	0Hz, 100Hz ~ 3.0GHz
Uncertainty		±span/(sweep points-1)		
SSB Phase Noise	Carrier offset	-80dBc/Hz (10 kHz offset, fc=1.0GHz)		
Bandwidth				
Resolution Bandwidth (-3dB)		10Hz ~ 1MHz, step 1-3-10		
RBW Uncertainty		10%, nominal (RBW>1kHz)		
		20%, nominal(RBW≥10Hz, sweep time≥5s)		
Video Bandwidth (-3dB)		1Hz to 1MHz, step 1-3-10		
Amplitude				
Range		DANL to +30dBm		
		DC Voltage: 50V		
Maximum Input Level		CW RF Power: +30dBm (1.0W)		
		Max.Damage Level: +40dBm (10W)		
Displayed Average Noise Level (DANL)				
DANL (Preamplifier Off)	100 kHz to 10 MHz	-90 dBm, typ. -110 dBm		
	10 MHz to 3.0 GHz	-120 dBm+6 x (f/1GHz) dB, typ. -125 dBm		
DANL (Preamplifier On)	100 kHz to 30 MHz	-90 dBm, typ. -110 dBm		
	30 MHz to 3.0 GHz	-135 dBm+6 x (f/1GHz) dB, typ. -135 dBm		
Reference Level Range		-100 dBm to +30 dBm, step 1 dB		
Spurious	Image Frequency	<-60 dBc		
	Intermediate Frequency	<-60 dBc		
Sweep				
Sweep Time Range	100Hz≤Span≤3GHz	10 ms to 3000 s		
	Span=0 Hz	20 μs to 3000 s		
Sweep Time Uncertainty	100Hz≤Span≤3GHz	5%, nominal		
	Span=0 Hz	0.5%, nominal		
Sweep Mode		Continuous, Single		
Trigger				
Trigger Source		Free, Video, External		
External Trigger Level		5 V TTL level		
Advanced Measurement				
Channel Power, Adjacent Channel Power, Occupied Bandwidth				
EMI		200Hz, 9kHz, 120kHz		
Input/Output				
RF Input Impedance		50 Ω		
Standard frequency	Frequency	10MHz		
	Amplitude	0dBm~10dBm (input) -3dBm to +3dBm (output)		
Interface				
Type		USB Host & Device, LAN, RS-232		
General Characteristic				
Power Supply	Input Voltage	AC100V to 240V		
	Frequency	45Hz to 440Hz		
	Power Consumption	< 35W		
Dimension & Weight		363×154×327mm, Approx. 6.0kg		

Standard Accessories

Standard	Power Cord	1
	CD(Software+ User's Guide)	1
Options	Tracking Gnerator (SA9115-TG,SA9122-TG,SA9130-TG)	
	N-BNC Adapter, N-SMA Adapter, N-SMA Cable, BNC-BNC Cable, Attenu	
	USB cable, RS-232 cable	

SS7000 Series Universal Frequency Counter/Timer/Analyzer



NEW

Features

- Minimum measuring resolution 11 digits/s
- Time resolution 25ps (typical)
- Maximum frequency's measurement can reach to 16GHz (options)
- Measures Frequency, Period, Duty Cycle, Frequency Ratio, Totalize, Phase Difference, Pulse Width, Time Interval and DCV.
- Utility statistics functions of multi-average, maximum, minimum, PPM, standard deviation and Allan Variance for frequency measurement
- Stores 15 group status
- High-stability crystal oscillator is optional



Specification

		SS7200A	SS7300	SS7400	SS7402
Measuring Functions					
Frequency Range	CH1	0.001Hz ~ 200MHz			
	CH2	0.001Hz ~ 200MHz			
	CH3	options 3GHz/6.5GHz/12.4GHz/16GHz			
Display Resolution		8 digits/s	10 digits/s	11 digits/s	11 digits/s
Period		5ns ~ 1000s			
Time Interval Range		10ns ~ 10000s		1ns ~ 10000s	
Time Resolution		2.5ns	500 ps	150ps	25ps
Pulse Width		30ns ~ 5000s		1ns ~ 10000s	
Duty Cycle		1% ~ 99%			
Totalize		0 ~ 1×10 ¹³			
Phase Difference		1° ~ 359°			
Input					
Dynamic Range		50mVrms ~ 1.0Vrms (Sine), 150mVpp ~ 4.5Vpp(Pulse)			
Input Impedance		1MΩ//35pF or 50Ω			
Input Attenuation		×1 or ×10			
Trigger Level		-5.000V ~ +5.000V			
Other Functions					
Frequency Ratio		●			
Up/Low Limit		"Limit" light on shows the result out of range, off shows within range			
Statistics Calculation		Multi-average, Max.,Min., PPM, SD, Allan Variance			
Standard Time Base					
Accuracy		5×10 ⁻⁸			
Daily Aging		1×10 ⁻⁸ /day			
Optional Time Base					
Accuracy		5×10 ⁻⁸			
Daily Aging		5×10 ⁻¹⁰ /day			
Channel Options					
	Frequency Range	Dynamic Range			
3.0GHz	100MHz ~ 3GHz	-27dBm ~+19dBm (100MHz~2.6GHz) -15dBm~+19dBm(2.6GHz~3.0GHz)			
6.5GHz	200MHz ~ 6.5GHz	-15dBm ~+13dBm			
12.4GHz	6.5GHz ~ 12.4GHz	-15dBm ~ +10dBm			
16.0GHz	6.5GHz ~ 16.0GHz	-15dBm ~ +10dBm			
General Characteristics					
Interface	Standard	USB	USB, RS-232	USB, RS-232	RS-232,GPIB
	Optional	RS-232, GPIB	GPIB	GPIB	○
Power		AC220V(10%) or AC110V(10%), 50Hz(5%) or 60Hz(5%) AC220V (1 ±10%), 50Hz (1 ±5%) <70VA (only for SS7402)			
Dimension & Weight		375×105×235mm 4.2kg			5.2kg

Standard Accessories

Power Cord	1
BNC Testing Cable	1
CD(Software+ User's Guide)	1



Power Cord



BNC Testing Cable



CD

SS7001 Series Frequency Counter



Features

- High accuracy with minimum measuring resolution 10 digits/s
- 16-bit microcontroller is used and the speed of data processing is fast
- Maximum frequency's measurement can reach to 16GHz (options)
- Utility statistics functions of multi-average, maximum, minimum, PPM, standard deviation and Allan Variance for frequency measurement
- High-stability crystal oscillator is optional



Specification

		SS7201	SS7301
Measuring Functions			
Frequency	CH 1	0.001Hz ~ 150MHz	0.001Hz ~ 200MHz
	CH 2	options: 3GHz/6.5GHz/12.4GHz/16GHz	
	CH 3	options: 3GHz/6.5GHz/12.4GHz/16GHz	
Display Resolution		8 digits/s	10 digits/s
Period		8ns ~ 1000s	5ns ~ 1000s
Pulse Width		50ns ~ 1000s	
Duty Cycle		5% ~ 95%	
Totalize		0 ~ 1×10 ¹³	
Input			
Dynamic Range		50mVrms ~ 1.0Vrms (Sine), 150mVpp ~ 4.5Vpp(Pulse)	
Input Impedance		1MΩ//35pF or 50Ω	
Coupling Mode		AC or DC	
Trigger Mode		Rising edge or Falling edge	
Input Attenuation		×1 or ×10	
Low-pass Filter		stop frequency approx.100kHz	
Trigger Level		-5.000V ~ +5.000V, step 5mV	
Other Functions			
Frequency Ratio		☐	☒
Frequency Self-test		☐	☒
Up/Low Limit		"Limit" light on shows the result out of range, off shows within range	
Statistics Calculation		Multi-average, Max.,Min., PPM, SD, Allan Variance	
Standard Time Base			
Accuracy		1×10 ⁻⁵	5×10 ⁻⁸
Daily Aging		☐	1×10 ⁻⁸ /day
Optional Time Base			
Accuracy		1×10 ⁻⁵	5×10 ⁻⁸
Daily Aging		☐	5×10 ⁻¹⁰ /day
Channel Options			
		Frequency Range	Dynamic Range
3.0GHz		100MHz ~ 3GHz	-27dBm~+19dBm (100MHz~2.6GHz); -15dBm~+19dBm (2.6GHz~3.0GHz)
6.5GHz		200MHz~6.5GHz	-15dBm ~+13dBm
12.4GHz		6.5GHz~12.4GHz	-15dBm~+10dBm
16.0GHz		6.5GHz~16.0GHz	-15dBm ~+10dBm
General Characteristics			
Interface	Standard	RS-232	USB, RS-232
	Optional	☐	GPIO
Power		AC220V(10%) or AC110V(10%), 50Hz(5%) or 60Hz(5%)	
Dimension & Weight		375×105×235mm, Approx. 3.7kg	

Standard Accessories

Power Cord	1
BNC Testing Cable	1
CD(Software+ User's Guide)	1



Power Cord



BNC Testing Cable



CD

SA5052/5061 Digital Multimeter



USB

RS-232

GPIB

CE

Features

- VFD display with high-brightness
- True 6½ digits
- Reading rates up to 1000 readings per second
- True RMS measurement of AC voltage and current
- Built-in math operations
- Full measuring functions to meet user's test need
- Standard interface RS-232 and USB Device, optional interface of GPIB

Specification

SA5052 5 ½ digits			SA5061 6 ½ digits	
Basic Function	Range	Best Accuracy ± (% reading + digits)	Range	Best Accuracy ± (% reading + % range)
DC Voltage	100mV/1V/10V/100V/1000V	± (0.01% + 4)	100mV/1V/10V/100V/1000V	± (0.0035% + 0.0005%)
AC Voltage	100mV/1V/10V/100V/750V	± (0.1% + 100)	100mV/1V/10V/100V/750V	± (0.06% + 0.04%)
DC Current	10mA/100mA/1A/10A	± (0.04%+8)	10mA/100mA/1A/3A	± (0.05%+0.005%)
AC Current	10mA/100mA/1A/10A	± (0.5%+100)	1A/3A	± (0.1%+0.09%)
Resistance	100Ω/1KΩ/10KΩ/100KΩ/ 1000KΩ/10MΩ/100MΩ	± (0.03%+6)	100Ω/1KΩ/10KΩ/100KΩ/ 1MΩ/10MΩ/100MΩ	± (0.01%+0.001%)
Capacitance	1nF/ 10nF/ 100nF/1uF/10uF	± (1%+10)	○	○
Frequency	3Hz-1MHz	± (0.0015%+8)	3Hz-300kHz	± 0.02%
Temperature	-200 ~ 800 °C		-200 ~ 800°C	
Features				
Reading Rate	800 reading/s		1000 reading/s	
Auto Range	●		●	
Diode	●		●	
Continuity	●		●	
Null	●		●	
Trigger	●		●	
Save/Read	●		●	
Math	MAX,MIN,Null,dB, dBm, MX+B,Limit Test		MAX,MIN, Null, dB, dBm, MX+B, Limit Test	
General Characteristics				
Safety	IEC61010-1: 2001, CAT I 1000V/CAT II 600V, Class of pollution: 2			
Interface	USB, RS-232, GBIP (optional)			
Power	110 V/220 V (1±10%), 50 Hz/60 Hz, 15 VA			
Dimension & Weight	260x106x375 mm, 3.0 kg			

Standard Accessories

Power Cord	1
Test Lead Kit	1
CD(User's Guide)	1



Power Cord



CD



Test Lead Kit

SA2100/2100E Power Quality Analyzer



Brief Introduction

SA2100/SA2100E Power Quality Analyzer are the professional portable device to measure and analyze the power system quality, supply the harmonics analysis and power quality data analysis, also provide big memory for the data storage, which is used to make the long term logger measuring to power system. The PC software can simply upload the data to PC for full analysis.

Selection Guide

Model	SA2100	SA2100E
Volts/Amps/Hertz	●	●
Dips&Swell	●	●
Power/Energy	●	●
Unbalance	●	●
Monitor	●	●
Scope	●	●
Harmonic	●	●
Inter-Harmoni	●	○
Transient Voltage	●	○
Inrush Current	●	○
Fliker	●	○
Interruption	●	●
400Hz	●	○
Memory card	8GB	8GB
Standard CT	Flexi. CT PY-3000A*4pcs	Flexi. CT PY-3000A*3pcs

USB High Speed Transfer



Isolated Interface to ensure safe operation



Specification

• Input

Voltage Input	
Input Channels	4 (3 phase + neutral) DC coupling
Max. Input Voltage	1000Vrms
Range of nominal voltage	50 to 500V
Max pulse peak voltage	6kV
Bandwidth	>3kHz
Input Impedance	4MΩ/5pF
Current Input	
Numbers of Input	4 (3 phase + neutral) DC coupling
Type	Clamp Current Sensor with mV output
Input Range	1 to 3000Arms with supplied current clamp
Input Impedance	50kΩ
Bandwidth	>3kHz
Sampling System	
Resolution	8 channels 16 bits AD
Sampling Rate	20kS/s for each channel, 8 channels sample synchronously
RMS Sampling	5000 points for 10/12 cycles (according to IEC 61000-4-30)
PLL Sync	4096 points for 10/12 cycles (according to IEC61000-4-7)

• Measurement

		Measurement Range	Resolution	Accuracy
Voltage/Current/Frequency				
Vrms(AC+DC)		1 ~ 1000Vrms	0.1Vrms	±0.5% of nominal voltage
Vpk		1 ~ 1400Vpk	0.1Vpk	±0.5% of nominal voltage
V(Crest Factor)		1.0 ~ >2.8	0.01	±5%
Arms (AC)	10mV/A	0 ~ 100A	0.1A	±0.5% ± 0.2A
	1mV/A	1 ~ 1000A	0.1A	±0.5% ± 0.2A
	50mV(65mV)/1000A	15 ~ 5000A	1A	±1% ± 2A
A(Crest Factor)		1 ~ 10	0.01	±5%
		42.5 ~ 57.5Hz (50Hz nominal)	0.01Hz	±0.01Hz
Frequency		51 ~ 69Hz (60Hz nominal)	0.01Hz	±0.01Hz
		340 ~ 460Hz (400Hz nominal)	0.01Hz	±0.1Hz
Dips & Swells				
Vrms1/2		0 ~ 200% of nominal voltage	0.1Vrms	±1%
Arms1/2		1 ~ 3000A	1A	±1% ± 2A
Threshold levels		Threshold is settable according to nominal voltage percentage		
		Detectable events type: Dips, Swells, Interruption, Voltage Rapid Change		
Duration		hour-minute-second-microsecond	0.5 cycle	1 cycle
Harmonic				
Harmonic Number		1 ~ 50		
Inter-Harmonic (SA2100)		1 ~ 49		
Harmonic Voltage		0.0 ~ 100.0%	0.1%	±0.1% ± nx0.1%
Harmonic Current		0.0 ~ 100.0%	0.1%	±0.1% ± nx0.1%
THD		0.0 ~ 100.0%	0.1%	±2.5%
DC Relative		0.0 ~ 100.0%	0.1%	±0.2%
Frequency		0 ~ 3500Hz	1Hz	1Hz
Phase		-360° ~ 0°	1°	± nx1.5°
Power and Energy				
Active Power/Apparent Power/Reactive Power		1.0 ~ 20.00MW	0.1kW	±1.5±10 counts
KWh		0.00kWh ~ 200GWh	10Wh	±1.5±10 counts
Power Factor		0 ~ 1	0.01	±0.03
Flicker (SA2100)				
Pst(1min),Pst,Plt,PF5		0.00 ~ 20.00	0.01	±5%
Unbalance				
Voltage		0.0 ~ 5.0%	0.1%	±0.5%
Current		0.0 ~ 20.0%	0.1%	±1%
Voltage Phase		-360° ~ 0°	1°	±2counts
Current Phase		-360° ~ 0°	1°	±5counts

• Measurement

	Measurement Range	Resolution	Accuracy
Voltage Transient (SA2100)			
Vpk	6000Vpk	1V	±15%
Vrms	10 ~ 1000Vrms	1V	±2.5%
Min. Test Time	50us	○	○
Sampling Rate	20kS/s	○	○
Inrush Current (SA2100)			
Arms(AC+DC)	0~3000Arms	0.1	±1% ± 5counts
Inrush Duration	6s ~ 32min selectable	10ms	±20ms
Logger			
Recording	user-defined parameters for 4 phases at the same time		
Memory	Data stored in TF card, 8GB		
Duration Time	2 hrs to 1 year		
Interval	1s to 1 hrs		

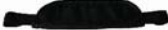
• Wire Combinations

1Ø+NEUTRAL	Single phase with neutral
1Ø SPLIT PHASE	Split phase
1Ø IT NO NEUTRAL	Single phase system with two phase voltages without neutral
3Ø WYE	3-phase 4-wire system, Y type
3Ø DELTA	3-phase 3-wire system delta (Delta)
3Ø IT	3-phase Y type without neutral
3Ø HIGH LEG	4-wire 3-phase delta system (Delta) with center tapped high leg
3Ø OPEN LEG	Open-delta (Delta) 3-wire system with two transformer windings
2-ELEMENT	3-phase 3-wire system without current sensor on phase L2/B (2 Watt meter method)
2 1/2-ELEMENT	3-phase 4-wire system without voltage sensor on phase L2/B

• General Characteristics

Display	
Screen	Color TFT LCD
Size	5.6 inch
Resolution	320×240
Brightness	Ajustable
Interface	
USB Host	Download file to PC by U disk for analyze with PC software
LAN	For remote control of the Analyzer and measurement data transmission.
Memory	
Flash Memory	128MB
TF Card	Standard 8G
Mechanical	
Dimension	262× 173 × 66mm
Weight	1.6kg
Enviroment	
Working temperature	0°C~ 40°C
Storage temperature	-20°C~ 60°C
Humidity	90% relative humidity
Power	
Adapter input	90~264V
Adapter output	12V 2A
Battery	Rechargeable NI-MH 7.2V 3.8Ah
Battery Working Time	> 7 hours
Battery Charge Time	6 hours
Standard	
Measurement Method	IEC61000-4-30 Class-S
Measurement Performance	IEC61000-4-30 Class-S
Power Quality Monitoring	EN50160
Flicker	IEC61000-4-15
Harmonic	IEC61000-4-7
Electrical Safety	
Comply with	IEC61010-1 ,Safety Degree: 600V CAT IV 1000V CAT III
Max. voltage at Voltage Input	600V CAT IV 1000V CAT III
Max. voltage at Current Input	42Vpk

Accessories

Voltage Test Leads Alligator Clips		(2m) × 5 pcs	Soft Carry Bag		1 pcs
Power Adapter		1 pcs	Hang Strap		1 pcs
Power Patch Cord		1 pcs	CD (Software, Manuals)		1 pcs

CT Clamps

Clamp Mode	KLC8C-5A	CTC0080	CTC0130	CTC1535
Appearance				
Measurement Range	5A	50A	100A	1A ~ 1000A
Output Voltage Ratio	10mV/A	10mV/A	1mV/A	1mv/A
Working Frequency	45Hz~55Hz	50Hz~400Hz	50Hz~400Hz	40Hz ~ 100KHz
Accuracy	0.2%	0.2%	0.2%	1%
Safety	○	○	○	CAT III 600V
Clamp Radius	8mm	8mm	13mm	52mm
Dimension(mm)	158 x 43 x 24	171 x 46 x 27	174 x 52 x 27	111 x 216 x 45

Flexible Probes Mode	PY-3000A	PY-5000A
Appearance		
Primary Current Rating	3000A	5000A
Output Voltage Ratio	65mV/1000A	50mV/1000A
Measurement Range	15A~3000A	20A~5000A
Accuracy	±1% + Position Error	±1% + Position Error
Maximum Allowable Input	100KA	100KA
Phase Error	<±1°	<±1°
Noise	<2mVrms (10Hz~10KHz)	<2mVrms (10Hz~10KHz)
Frequency Characteristic	10Hz~10KHz (-3dB)	10Hz~10KHz (-3dB)
Weight	130g	130g
Length	200cm	200cm
CT Perimeter	50cm	50cm
Measurement Position Error	±2%	±2%

ST2050 Series Frequency Standard Comparator



Features

- With dual-channel frequency difference measuring technique
- Measuring Channel: up to 8
- The sampling time could be set as user demand: 1s to 10⁸s
- Graphic interface, auto and real time measurement of Allan Deviation
- Measure Cesium/Hydrogen/Rubidium Atomic Clock, such as daily fluctuation, booting characteristic, aging rate, accuracy, drift, frequency deviation and difference of daily accuracy

Specification

Main Specification	ST2051	ST2052	ST2053	ST2054
Measuring Channel	1	2	3	4
Frequency	5MHz, 10MHz			
Input Amplitude	3dBm ~ 13dBm, Input Impedance: 50ohm			
Max. Frequency Deviation	1×10 ⁻⁸			
Comparison Uncertainty	5×10 ⁻¹³ /s			
	5×10 ⁻¹⁴ /10s			
	5×10 ⁻¹⁵ /100s			
	1×10 ⁻¹⁵ /1000s			
	5×10 ⁻¹⁶ /10000s			
Measuring Function	Allan standard deviation, Accuracy, Booting characteristic, Aging rate, Repeatability			
Built-in Frequency Counter	13digits/s			
Port	USB: connect USB-type mouse, keyboard and USB disk			
	LAN: remote control			
General Characteristics				
Voltage	220(1±10%)V			
Frequency	50(1±5%)Hz			
Power Consumption	65VA Max.			
Working Temperature	10 ~ 30 C			
Weight	10.5kg			
Dimension	365×154×467mm			

Standard Accessories

Power Cord	1
CD (User's Guide)	1
Network cable	1
BNC testing cable	5
Connector TNC/BNC-JK	5



Connector TNC/BNC-JK



Power Cord



CD



BNC testing cable



Network cable

SM2000A Series AC Millivolt Meter



RS-232

CE

2
Display

Features

- VFD Two Display, Dual Independent Channels
- Auto/Manual Ranging can be selected
- Multiple display result with different units
- High Frequency Range from 5Hz to 5MHz
- Standard Interface RS-232

Specification

	SM2030A	SM2050A
Frequency Range	5Hz ~ 3MHz	5Hz ~ 5MHz
Measurement Range		
AC Voltage	50 μ V ~ 300V	
Range	3mV, 30mV, 300mV, 3V, 30V, 300V	
dBV	-86dBV ~ 50dBV(0dBV=1V)	
dBm	-83dBm ~ 52dBm(0dBm=1mW 600 Ω)	
Vpp	140 μ V ~ 850V	
Voltage Measurement Error		
$\geq 5\text{Hz} \sim 100\text{Hz}$	$\pm 2.5\%$ reading $\pm 0.8\%$ range	
$> 100\text{Hz} \sim 500\text{kHz}$	$\pm 1.5\%$ reading $\pm 0.5\%$ range	
$> 500\text{kHz} \sim 2\text{MHz}$	$\pm 2.0\%$ reading $\pm 1.0\%$ range	
$> 2\text{MHz} \sim 3\text{MHz}$	$\pm 3.0\%$ reading $\pm 1.0\%$ range	
$> 3\text{MHz} \sim 5\text{MHz}$	$\pm 4.0\%$ reading $\pm 2.0\%$ range	
Resolution		
Range	3 $\frac{1}{2}$ digits Display	4 $\frac{1}{2}$ digits Display
3mV	0.001mV	0.0001mV
30mV	0.01mV	0.001mV
300mV	0.1mV	0.01mV
3V	0.001V	0.0001V
30V	0.01V	0.001V
300V	0.1V	0.01V
Damage Voltage		
3V ~ 300V	350Vrms (5Hz ~ 5MHz)	
3mV ~ 300mV	350Vrms (5Hz ~ 1kHz)	
	35Vrms (1kHz ~ 10kHz)	
	10Vrms (10kHz ~ 5MHz)	
General Characteristics		
Power	AC220(1 $\pm$ 10%)V, 50 (1 $\pm$ 5%)Hz, < 20VA	
Interface	RS-232	
Display	VFD display	
Dimension & Weight	260 $\times$ 106 $\times$ 375mm , Approx.3.0 kg	

Standard Accessories

Power Cord	1
BNC Testing Cable	1
CD(Software+ User's Guide)	1



Power Cord



CD



BNC Testing Cable

SA1000 Series Frequency Characteristic Analyzer



Features

- Built-in detector, dispensing with detection radiometer
- Measure amplitude-frequency, phase-frequency, frequency discrimination and S parameters
- Available to set sweep mode arbitrarily, such as linear, logarithmic or single tone
- Display the frequency, gain and phase value at cursor position
- Four cursors could be displayed at same time within the sweep range
- 7" TFT color LCD with clear graph interface and convenient operation
- USB Device and RS-232 interface

Specification

	SA1030C/D	SA1050C/D	SA1080C/D	SA1140C/D
Sweep Range	20Hz ~ 30MHz	20Hz ~ 50MHz	20Hz ~ 80MHz	20Hz ~ 140MHz
Function	SA1000C: amplitude-frequency, phase-frequency, frequency discrimination and S Parameters can be measured SA1000D: amplitude-frequency, phase-frequency and frequency discrimination can be measured			
Sweep Mode	Linear, Log or Tone			
Output Amplitude	>0.5Vrms			
Input Impedance	50Ω/High Impedance			
Output Impedance	50Ω			
Output Attenuation	0 ~ 80dB, 1dB step			
Input Gain	10 ~ -30dB, 10dB step			
Phase Range	-180° ~ +180°			
Phase Resolution	1°			
Amplitude range of Input	0.1V≤A≤10V			
DC Offset	±4V			
General Characteristics				
Display	7" TFT LCD, 800×480			
Interface	RS-232, USB Device			
Power	AC 220V (1±10%)V, 50(1±5%)Hz, <60VA			
Dimension & Weight	363×154×327mm, Approx.4.8 kg			

Standard Accessories

Power Cord	1
BNC Testing Cable	2
Test clip leads	2
CD(User's Guide)	1



Power Cord



CD



BNC Testing Cable



Test clip leads

Options

TCXO	Stability: $\pm 5 \times 10^{-7}$ /day
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SA8320 Logic Analyzer



Features

- Large scale integrated circuit, FPGA, SOPC, high speed and large memory
- Perfect function of start, trigger and delay to track and take the concerned data effectively
- 32 data sampling channels, 2 external clock channels
- A fast and effective debugging tool for hardware and software of MCU
- 5.7' color LCD display, the resolution 320×240 points
- USB Device and RS-232

Specification

Input		
Input Channel		32 data sampling channels, 2 external clock channels
Threshold Voltage		6 independent and adjustable threshold voltages Adjustable Range: -6V ~ +6V Resolution: 0.1V
Input Impedance		Resistance >100 kΩ, Capacitance <8 pF
Sample/Storage		
Sample Rate	Timing Rate	1Hz ~ 100MHz (Period 10ns ~ 1s), Resolution: 10ns
	State Rate	1Hz ~ 35MHz
Sample Phase		rise edge, fall edge
Storage Depth		256k bytes / channel
Trigger		
Trigger Condition		32 bits trigger level, 32 bits trigger comparand
Event Count		1 ~ 999
Store Delay		1 to 256K sample cycles
Pattern Generator		
Pattern Type		CH00 to CH15 are counters with adding 1 CH16 to CH29 are shift pulses CH30 to CH31 monitor external clk1 and clk2
Pattern Rate		Frequency: 1Hz ~ 50MHz(period 20ns ~ 1s) resolution:10ns
General Characteristics		
Power		AC 100~240V, 45Hz ~65Hz, <30VA
Display		5.7' TFT LCD
Dimension & Weight		329×283×155mm, Approx.5kg

Standard Accessories

Power Cord	1
Test Hook	40
Test Hook Cable	40
50-wire Cable	2
Input Box	2
CD(Software+User's Guide)	1

SU43 Series Noise Source



Features

- Simulate the signal noise in the satellite communication
- Simulate the signal noise in microwave communication and scattering communication
- Gauss white noise generated by thermal noise of amplifier

Specification

Output	SU4300	SU4301	SU4302	SU4303	SU4304
Max. Output Noise	≥ 0 dBm	≥ -2.0 dBm	≥ -1.0dBm	≥ 4.0dBm (10MHz~95MHz) ≥10.0dBm (90MHz~1.8GHz)	≥10.0dBm
Noise Bandwidth	15MHz~415MHz	800MHz~1.5GHz	300MHz~1.8GHz	10MHz~95MHz (low frequency) 90MHz~1.8GHz (high frequency)	10MHz~2.4GHz
Output Step	0.1 dB	1.0 dB	0.5 dB	0.5 dB	0.5 dB
Flatness	≤2.0dB (20MHz~400MHz per 40MHz bandwidth)	≤2.0dB (per 40MHz bandwidth)	<3 dB (300MHz~500MHz) <3 dB (500MHz~1.0GHz) <4.5dB (300MHz~1.7GHz)	<3.5 dB (20MHz~95MHz per 40MHz bandwidth<1.5 dB @Attenuator0.0dB) <5.5 dB (95MHz~1.6GHz per 40MHz bandwidth<2.0 dB)	±2.0 dB (20MHz~200MHz per 40MHz bandwidth<1.5 dB @Attenuator 0.0dB) ±2.5dB 200MHz~2.4GHz per 40MHz bandwidth<1.5 dB)
Output Impedance	50Ω				
Dimension & Weight	254×103×374mm, Approx2.5kg			254×103×374mm ,Approx3.5kg	

Output	SU4305	SU4306	SU4318
Max. Output Noise	≥7.0dBm (10MHz~2.4GHz)	≥3.0dBm	≥7.0dBm
Noise Bandwidth	10MHz~2.4GHz	20MHz~6GHz	500MHz~18.5GHz
Output Step	0.25 dB	0.1 dB	1 dB
Flatness	±2.5 dB (10MHz~20MHz @Attenuator 0.0dB) ±2.0 dB (20MHz~1.2GHz per 40MHz bandwidth<1.5 dB) ±2.5 dB (1.2GHz~2.1GHz per 40MHz bandwidth<1.8 dB) ±2.5 dB (2.1GHz~2.4GHz per 40MHz bandwidth<1.8 dB	±2.0 dB (0.5GHz~1.5GHz) ±2.0 dB (1.5GHz~3.0GHz) ±2.0 dB (3.0GHz~4.0GHz) ±2.0 dB (4.0GHz~5.0GHz) ±2.0 dB (5.0GHz~6.0GHz)	±2.0 dB (0.5GHz~3.5GHz @Attenuator 0.0dB) ±2.0 dB (3.5GHz~6.5GHz) ±2.0 dB (6.5GHz~9.5GHz) ±2.0 dB (9.5GHz~12.5GHz) ±2.0 dB (12.5GHz~14.5GHz) ±2.0 dB (14.5GHz~16.5GHz) ±2.0 dB (16.5GHz~18.5GHz)
Output Impedance	50Ω		
Dimension & Weight	254×103×374mm ,Approx4.2kg	420×245×520mm ,Approx7.2kg	420×245×520mm ,Approx7.5kg

Standard Accessories

Power Cord	1
CD(User's Guide)	1



Power Cord



CD

SK3323/3325 Series Programmable Power Supply



COMING SOON

Features

- LED display
- All digital controlled and low drift
- Three types of output models: independent, serial and parallel
- Intelligent temperature-controlled fan, effectively reduce the noise
- Save/recall function

Specification

Model		SK3323J	SK3325J	SK3323M	SK3325M
Channel					
	CH1	0~32V/0~3A	0~32V/0~5A	0~32V/0~3A	0~32V/0~5A
	CH2	0~32V/0~3A	0~32V/0~5A	0~32V/0~3A	0~32V/0~5A
	CH3	0~6V/0~3A		1.8V/2.5V/3.3V/5V switchable 3A (Max. output)	
Source Effect					
CV	CH1			$\leq 1 \times 10^{-4} + 3\text{mV}$	
	CH2	$\leq 1 \times 10^{-4} + 3\text{mV}$			
	CH3			$\leq 3\text{mV}$	
CC	CH1			$\leq 1 \times 10^{-3} + 3\text{mA}$	
	CH2	$\leq 1 \times 10^{-3} + 3\text{mA}$			
	CH3			○	
Load Effect					
CV	CH1			$\leq 1 \times 10^{-4} + 3\text{mV}$	$\leq 1 \times 10^{-4} + 5\text{mV}$
	CH2	$\leq 1 \times 10^{-4} + 3\text{mV}$	$\leq 1 \times 10^{-4} + 5\text{mV}$		
	CH3			$\leq 5\text{mV}$	
CC	CH1			$\leq 1 \times 10^{-3} + 5\text{mA}$	
	CH2	$\leq 1 \times 10^{-3} + 3\text{mA}$			
	CH3			○	
Accuracy					
Voltage	CH1	$\leq \pm(0.03\% + 10\text{mV})$		$\leq \pm(0.2\% + 30\text{mV})$	
	CH2				
	CH3	$\leq \pm(0.2\% + 20\text{mV})$		$\leq \pm(5\% + 50\text{mV})$	
Current	CH1	$\leq \pm(0.2\% + 5\text{mA})$	$\leq \pm(0.2\% + 10\text{mA})$	$\leq \pm(0.5\% + 5\text{mA})$	$\leq \pm(0.5\% + 10\text{mA})$
	CH2				
	CH3	$\leq \pm(0.5\% + 10\text{mA})$	$\leq \pm(0.5\% + 10\text{mA})$	$\leq \pm(5\% + 100\text{mA})$	$\leq \pm(5\% + 100\text{mA})$
PARD (Period and Random Deviation)					
CV		$\leq 1\text{mV}$		$\leq 1\text{mV}$	
CC		$\leq 3\text{mA}$		$\leq 3\text{mA}$	
Display resolution					
Voltage		1mV		10mV	10mV
Current		1mA		1mA	2mA
Display Digits					
Voltage		5 digits		4 digits	
Current		4 digits		4 digits	
Double Group Synchronism Deviation					
CV		○		$\leq \pm(0.4\% + 60\text{mV})$	$\leq \pm(0.4\% + 60\text{mV})$
CC		○		$\leq \pm(1\% + 10\text{mA})$	$\leq \pm(1\% + 20\text{mA})$
Other function					
Auto switch of serial and parallel		○		●	
Timing Output		●		○	
OVP (Over voltage Protection)		●		○	
General Characteristics					
Rated Voltage		220-230 (198-242)V		220-230 (198-242)V	
Rated Power		0.6kW 0.8kVA	0.9kW 1.2kVA	0.6kW 0.8kVA	0.9kW 1.2kVA
Rated Frequency		50 (45-60) Hz		50 (45-60) Hz	
USB charging Interface		5V 2A		5V 2A	
Remote		Standard		USB	
Interface		Optional	USB, RS-232	RS-232	

SK10000 Series Programmable DC Power Supply



Features

- All digital controlled, output 1mV/1mA step
- High stability, Low drift
- LED display the voltage/current and working status visually
- Intelligent temperature controlled fan with low noise
- Storage and recall function
- OVP (Over Voltage Protection) function
- Keypad locked function to avoid the misoperation
- Standard RS-232 interface, optional USB

Specification

Model	SK11204	SK16008	SK13515	SK12025	SK11206	SK16012	SK13520	SK12035	SK11208	SK16016	SK13530	SK12050
											SK13530K	
Output Range	120V/4A	60V/8A	35V/15A	20V/25A	120V/6A	60V/12A	35V/20A	20V/35A	120V/8A	60V/16A	35V/30A	20V/50A
Output Power	500W				750W				1000W			
Resolution	1mV/1mA											
Source Effect												
CV	≤1×10 ⁻⁵ +1mV											
CC	≤1×10 ⁻⁵ +3mA											
Load Effect												
CV	≤1×10 ⁻⁴ +3mV											
CC	≤1×10 ⁻⁴ +3mA											
Period and Random Deviation (PARD)												
CV	≤1mV											
CC	≤6mA								≤20mA (applied to SK13530K)			
Accuracy												
Voltage	± (0.05%+10mV)								±(0.1%+10mV) (applied to SK13530K)			
Current	± (0.2%+50mA)								±(0.2%+50mA) (applied to SK13530K)			
OVP	± (0.5%+0.5V)								±(0.5%+0.8V) (applied to SK13530K)			
General Characteristics												
Power	AC220V(1±10%)V,50(1±5%)Hz								AC220~230(198~242)V,50(47~63)Hz (applied to SK13530K)			
Interface	RS-232 (standard) USB (option)											
Dimension & Weight	225×153×650 mm, Approx 25kg				325×153×650 mm, Approx 30kg				425×150×665 mm, 34kg 325×150×450 mm, 13kg (applied to SK13530K)			

Standard Accessories

Power Cord	1
RS-232 cable	1
CD(Software+User's Guide)	1



Power Cord



RS-232 cable



CD



* Our company reserves the right to change the specification of the catalogue without notice

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