

Features

- DDS(Direct Digital Synthesis) Technology**
- Main Waveform Frequency Range (1Hz ~ 120MHz)**
- Amplitude Range (1mV ~ 10Vp-p(50Ω))**
- Over 30 Kinds of Output Waveforms Support (Including Arbitrary Waveform)**
- Signal Save and Recall (10 Channels)**
- Frequency Counter Measurement Range (1Hz ~ 100MHz)**
- Built-in RS232C**
- GPBIB(option)**



Generator

TEST & MEASURING INSTRUMENTS

Digital Synthesis Arbitrary Function Generator

Protek 9300 Series

The Protek 9300 series are six digital synthesis arbitrary function generators based on DDS (Direct Digital Synthesis); 9305, 9310, 9320, 9340, 9380, 93120, which can output not only basic waveforms but arbitrary waveforms and modulated waveforms with high resolution such as AM, FM, FSK, PSK, sweep, burst. Protek 9300 series are widely used by electronic engineers in laboratories, production lines, education industries.

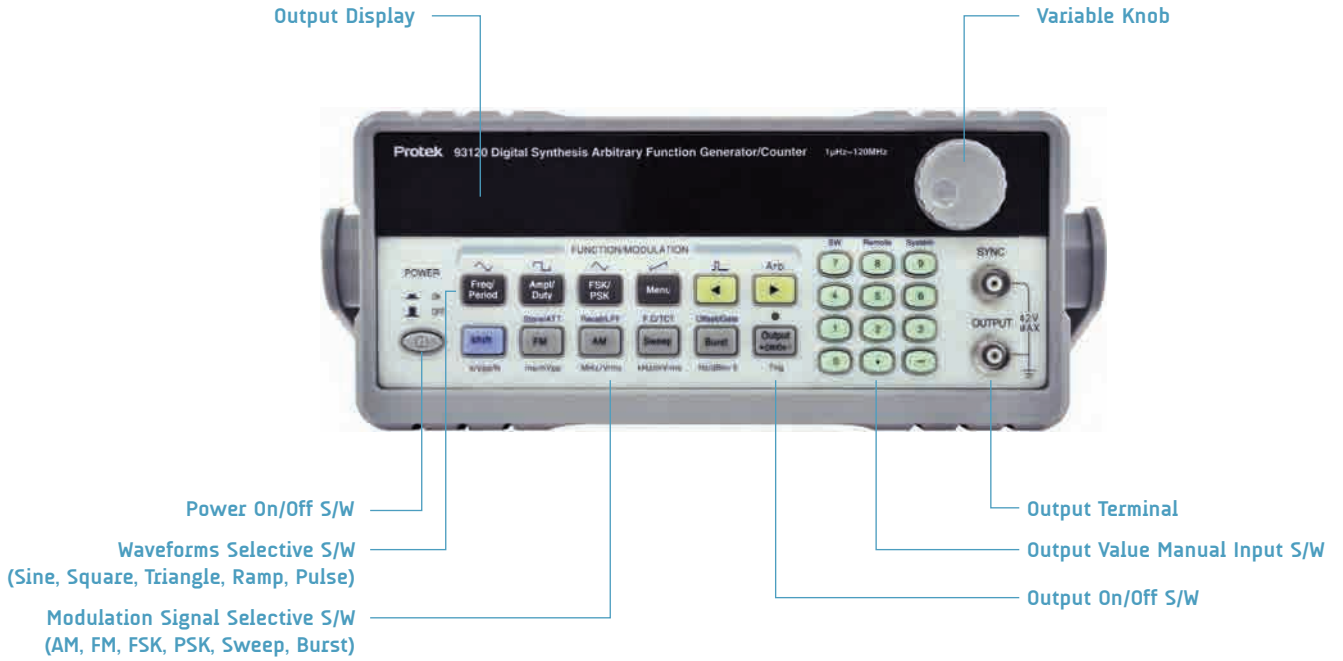
Specification (Counter)

Frequency Measurement	
1	Frequency Range 1Hz ~ 100MHz
2	Min. Input Voltage ATT Opened 50mV (Freq 10Hz ~ 50MHz), 100mV (Freq 1Hz ~ 100MHz)
	ATT Closed 0.5V (Freq 10Hz ~ 50MHz), 1V (Freq 1Hz ~ 100MHz)
3	Max. Input Voltage 100Vpp (Freq≤100KHz), 20Vpp (1Hz ~ 100MHz)
4	Low Pass Filter Cut Off Frequency About 100kHz
	With Internal Attenuation ≤-3dB
	With External Attenuation ≥-30dB (Freq>1MHz)
5	Gate Time 10 ms ~ 10s

Specification

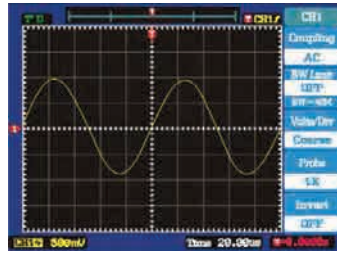
Function Generation

Operation Characteristics										
1	Power	220V ±10%, 50 ~ 60Hz, Max. 35W								
2	Temperature / Humidity	0°C ~ 40°C, 35% ~ 80%								
3	Dimension	255 mm x 370 mm x 100 mm								
	Subject	9305	9310							
		9320	9340							
		9380	93120							
1	Waveform	Frequency Range	Main Waveform	1μHz to 5MHz	1μHz to 10MHz	1μHz to 20MHz	1μHz to 40MHz	1μHz to 80MHz	1μHz to 120MHz	
			Stored Waveform	1 μHz ~ 100 kHz						
		Resolution	1 μHz							
		Accuracy	±5X0.000001							
		Stability	±1X0.000001							
2	Frequency	Main Waveform	Sine, Square, TTL							
		Level Resolution	12 Bits							
		Sampling Rate	200Msa/s							
		Sine Waveform Distortion Harmonic	-50dBc(Freq≤5MHz), -45dBc(Freq≤10MHz), -40dBc (Freq≤20MHz), -35dBc(Freq≤40MHz)							
		Sine Waveform Distortion	0.1%(20MHz ~ 100kHz)							
		Square Waveform Rising/Falling Time	Less Than 25ns			Less Than 15ns				
		Stored Waveform	Waveforms	27 Waveforms(Sine, Square, Triangle, Up-Lamp, Noise, Pulse, P-Pulse, N-Pulse, P-dc, Stair, C-Pulse, Commut-fu, Commut-hr, Sine-tra, Sine-ver, Sine-pm, Log, Exp, Round-har, Sin%, Squ-root, Tangent, Cardio, Quake,Combination						
			Waveform Length	4096 Dots						
Amplitude Resolution	10 Bits									
Duty Factor Of Pulse Wave	0.1% ~ 99.9% (Less Than 10kHz), 1% ~ 99% (10kHz ~ 100kHz)									
3	Amplitude	Amplitude Range	2mV ~ 20Vp-p(High Impedance), 1mV ~ 10Vp-p(50Ω)							
		Max. Resolution	2μVp-p(High Impedance), 1μVp-p(50Ω)							
		Amplitude Accuracy(at 1KHz)	±(1%+0.2mV)							
		Amplitude Stability	±0.5% / 3Hours							
		Flatness	Amplitude ≤ 2V	±3% (Freq≤5MHz), ±10% (5MHz< Freq≤40MHz)						
			Amplitude > 2V	±5% (Freq≤5MHz), ±10% (5MHz< Freq≤20MHz), ±20% (20MHz< Freq≤40MHz)						
		Output Impedance	50Ω							
4	Offset	Offset Range	±10V (High Impedance Freq ≤40MHz), ±2V(High Impedance Freq ≥40MHz)							
		Resolution	2μV(High Impedance), 1μV(50Ω)							
		Error	±5% + 10mV / ±5% + 20mV							
5	AM	Carrier Waveform	Sine, Square							
		Modulation Mode	INT, EXT							
		Modulation Signal	Waveform	Sine, Square, Triangle, Up-Lamp, Down-Lamp						
			Frequency	10MHz ~ 20kHz						
		Relative Modulation Error	±(5%+0.2)(100μHz < Freq≤10kHz), ±(10%+0.5)(10kHz < Freq≤20kHz)							
		Modulation Depth	1% ~ 120%							
		Amplitude External Input Signal	3Vpp(-1.5V ~ +1.5V)							
6	FM	Carrier Waveform	Sine, Square							
		Modulation Mode	INT, EXT							
		Modulation Signal	Waveform	Sine, Square, Triangle, Up-Lamp, Down-Lamp						
			Frequency	100μHz ~ 10kHz						
		Peak Frequency Deviation	Max. 50% Of Carrier Frequency For Internal FM; Max. 10% Of Carrier Frequency For External FM; Input Signal Voltage 3Vp-p(+1.5V ~ -1.5V)							
		FSK Modulation	Input Signal	Either Frequency 1 or Frequency 2						
Control Mode	INT, EXT (TTL Level, Low Level F1, High Level F2)									
7	PM	Alternation Rate	0.1 ms ~ 800s							
		Waveform	Sine, Square							
		PSK Modulation	PSK	Phase 1(P1), Phase 2(p2)						
			Range	0.1° ~ 360.0°						
			Resolution	0.1°						
Alternation Time Interval	0.1 ms ~ 800s									
8	Burst	Control Mode	INT, EXT (TTL Level, Low Level F1, High Level F2)							
		Waveform	Sine, Square							
		Burst Counting	1 ~ 10000 Period							
		Alternation Time Interval	0.1 ms ~ 800s							
9	Sweep	Control Mode	INT, EXT							
		Waveform	Sine, Square							
		Time	1 ms ~ 800s(Linear), 100ms ~ 800s(Log)							
		Mode	Linear, Log							
		External Trigger Signal Frequency	DC ~ 1kHz(Linear), DC ~ 10kHz(Log)							
10	Output of Modulation Signal	Control Mode	INT, EXT							
		Waveform	Sine, Square, Triangle, Up-Lamp, Down-Lamp							
		Frequency	100μHz ~ 20kHz							
		Amplitude	5Vpp±2%							
11	Storage	Output Impedance	620Ω							
		Storage Parameter	Single Frequency, Amplitude, Waveform, DC Offset Values and Function State							
		Storage Capacity	10 Signal							



Various Waveforms

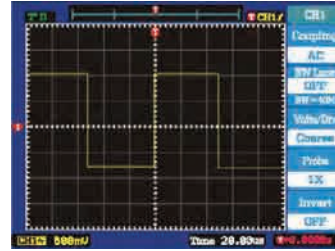
Output Waveform 1 (Sine)



>> Sine Wave: 2V, 10kHz

- 1 Set the sine wave output of 9300
Power Voltage : Min 1mV ~ Max 20V
Frequency : Min 100µHz ~ Max 120MHz
- 2 Input the signal on DSO and Process the auto key a time
- 3 Check the output signal of 9300

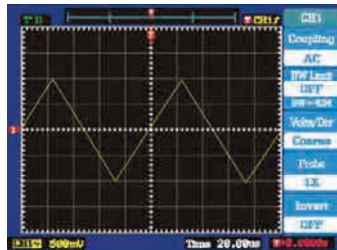
Output Waveform 2 (Square)



>> Square Wave: 2V, 10kHz

- 1 Set the sine wave output of 9300
Power Voltage : Min 1mV ~ Max 20V
Frequency : Min 100µHz ~ Max 120MHz
- 2 Input the signal on DSO and Process the auto key a time
- 3 Check the output signal of 9300

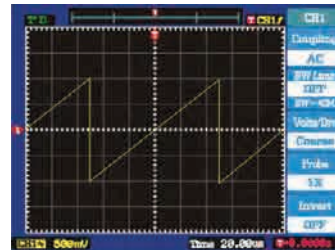
Output Waveform 3 (Triangle)



>> Triangle Wave: 2V, 10kHz

- 1 Set the sine wave output of 9300
Power Voltage : Min 1mV ~ Max 20V
Frequency : Min 100µHz ~ Max 120MHz
- 2 Input the signal on DSO and Process the auto key a time
- 3 Check the output signal of 9300

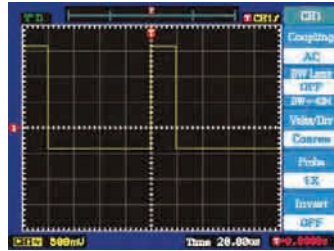
Output Waveform 4 (Ramp)



>> Ramp Wave: 2V, 10kHz

- 1 Set the sine wave output of 9300
Power Voltage : Min 1mV ~ Max 20V
Frequency : Min 100µHz ~ Max 120MHz
- 2 Input the signal on DSO and Process the auto key a time
- 3 Check the output signal of 9300

Output Waveform 5 (Pulse)



>> Pulse Wave: 2V, 10kHz

- 1 Set the sine wave output of 9300
Power Voltage : Min 1mV ~ Max 20V
Frequency : Min 100μHz ~ Max 120MHz
- 2 Input the signal on DSO and Process the auto key a time
- 3 Check the output signal of 9300

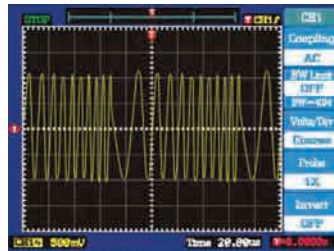
Output Waveform 6 (Arbitrary)



>> Arbitrary Wave: 27, Stair

- 1 Set the arbitrary wave output of 9300 (1 ~ 27)
- 2 Input the signal on DSO and Process the auto key a time
- 3 Check the output signal of 9300

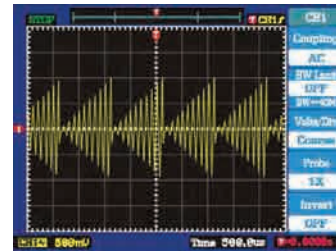
Waveform Modulation 7 (FM)



>> FM Modulation Used By Sine Wave

- 1 Set the sine wave output of 9300
- 2 Set the FM modulation function (DEVIR, FREQ, WAVE, SOURCE)
- 3 Check the output signal of 9300 through DSO display

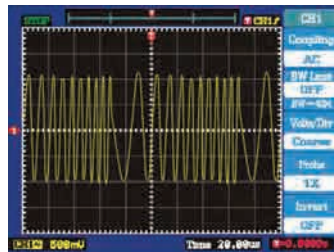
Waveform Modulation 8 (AM)



>> AM Modulation Used By Sine Wave

- 1 Set the sine wave output of 9300
- 2 Set the AM modulation function (LEVEL, FREQ, WAVE, SOURCE)
- 3 Check the output signal of 9300 through DSO display

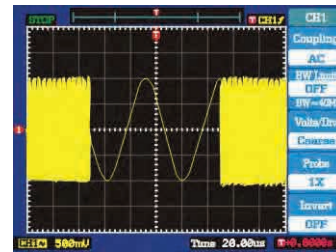
Waveform Modulation 9 (Sweep)



>> Sweep Modulation Used By Sine Wave

- 1 Set the sine wave output of 9300
- 2 Set the Sweep modulation function (MODE, START-F, STOP-F, TIME, TRIG)
- 3 Check the output signal of 9300 through DSO display

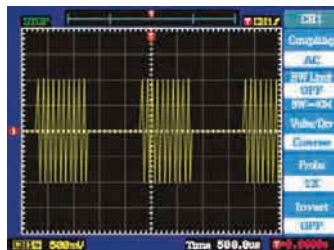
Waveform Modulation 10 (Burst)



>> Burst Modulation Used By Sine Wave

- 1 Set the sine wave output of 9300
- 2 Set the Burst modulation function (TRIG, COUNT, SPACE-T, PHASE)
- 3 Check the output signal of 9300 through DSO display

Waveform Modulation 11 (FSK)



>> FSK Modulation Used By Sine Wave

- 1 Set the sine wave output of 9300
- 2 Set the FSK modulation function (START-F, STOP-F, SPACE-T, TRIG)
- 3 Check the output signal of 9300 through DSO display

Waveform Modulation 12 (PSK)



>> PSK Modulation Used By Sine Wave

- 1 Set the sine wave output of 9300
- 2 Set the PSK modulation function (P1, P2, SPACE-T, TRIG)
- 3 Check the output signal of 9300 through DSO display