

HDG3000B Series

HDG3000B sets arbitrary waveform generator, pulse generator, function generator, harmonic generator, frequency meter 5 functions in one. It uses the DDS (Direct Digital Synthesizer) technology, and can generate stable, pure, and low-distortion output signal. Humanized interface design and keyboard layout give users extraordinary experience. Rich configuration interfaces can easily achieve computer control of the instrument, which provides users with more solutions for measurement.



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Pulse wave	1 μ Hz ~ 15 MHz	1 μ Hz ~ 15 MHz	1 μ Hz ~ 15 MHz	1 μ Hz ~ 15 MHz	1 μ Hz ~ 15 MHz	1 μ Hz ~ 15 MHz
Triangle wave	1 μ Hz ~ 2 MHz	1 μ Hz ~ 2 MHz	1 μ Hz ~ 2 MHz	1 μ Hz ~ 2 MHz	1 μ Hz ~ 2 MHz	1 μ Hz ~ 2 MHz
Harmonic	1 μ Hz ~ 50 MHz	1 μ Hz ~ 40 MHz	1 μ Hz ~ 30 MHz	1 μ Hz ~ 20 MHz	1 μ Hz ~ 10 MHz	1 μ Hz ~ 5 MHz
Noise (3 db)	100 MHz bandwidth					
Arbitrary wave	1 μ Hz ~ 20 MHz	1 μ Hz ~ 20 MHz	1 μ Hz ~ 20 MHz	1 μ Hz ~ 15 MHz	1 μ Hz ~ 15 MHz	1 μ Hz ~ 15 MHz
Resolution	1 μ Hz					
Precision	\pm 1ppm, 18~28°C					
Square wave property						
Rise/Fall time	Typical (1kHz, 1Vpp)					
	\leq 9ns					
Overshoot	Typical (100kHz, 1Vpp)					
	\leq 5%					
Duty cycle	0.001% ~ 99.999%;					
	The range varies with the frequency					
Asymmetry	1% of the period plus 4ns					
Triangular wave property						
Linear	\leq 1% of peak output (typical, 1kHz, 1Vpp, symmetry 100%)					
Symmetry	0% ~ 100%					
Impulse wave property						
Cycle	67ns~1Ms	67ns~1Ms	67ns~1Ms	67ns~1Ms	67ns~1Ms	67ns~1Ms
Pulse	\geq 16ns	\geq 16ns	\geq 16ns	\geq 16ns	\geq 16ns	\geq 16ns
Rise/Fall time	\geq 9ns (limited by current frequency setting and pulse width setting)					
Overshoot	Typical (1kHz, 1Vpp)					
	\leq 5%					
Arbitrary wave property						
Wavelength	2M					
Vertical resolution	16 Bits					
Sampling rate	1 μ Sa/s~62.5 MSa /s, 1 μ Sa/s resolution					
Time of rise/fall	Ns of 9 or higher					
Overshoot	Typical (1Vpp)					
	\leq 5%					
Harmonic property						
Harmonic frequency	\leq 16					
Harmonic type	Even harmonics, odd harmonics, all harmonics					
Harmonic amplitude	All harmonic amplitude can be set.					
Harmonic phase	All harmonic amplitude can be set.					
Amplitude property (50 Ω terminal)						
Amplitude range	\leq 10MHz: 1mVpp ~ 10Vpp;					
	\leq 55MHz: 1mVpp ~ 5.5Vpp;					
	\leq 80MHz: 1mVpp ~ 3.5Vpp;					
	\leq 100MHz: 1mVpp ~ 2Vpp;					
Precision	Typical (1kHz sine wave, 0V offset, > 10mVPP)					
	\pm 1% setting value \pm 5mVpp					

Amplitude flatness (relative to 1kHz sine wave, 1Vpp, 50Ω)	≤5MHz: ±0.1dB;
	≤15MHz: ±0.2dB;
	≤25MHz: ±0.3dB
	≤40MHz: ±0.5dB
	40MHz: ±1.0dB
Unit	Vpp, mVpp, Vrms, dBm(50Ω impedance)
Resolution	1mVpp
Offset property (50Ω terminal)	
Scope	±5Vpkac+dc
Precision	±(1% of the setting value + 5mV + 1% of the amplitude)
Waveform output	
Impedance	50 Ω
Modulation property	
Modulation type	AM, DSB-AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, 3FSK, 4FSK, OSK, PWM
AM	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	Internal, external and other channels
Modulation wave	Sine wave, square wave, triangle wave, noise, sampling wave, exp drop, half vector, Lorentz, dual audio, gaussian, ecg
Modulation frequency	2mHz~1MHz
Modulation depth	0% ~ 120%
DSB-AM	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	Internal, external and other channels
Modulation wave	Sine wave, square wave, triangle wave, noise, sampling wave, exp drop, half vector, lorentz, dual audio, gaussian, ecg
Modulation frequency	2mHz~1MHz
Modulation depth	0% ~ 120%
FM	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	Internal, external and other channels
Modulation wave	Sine wave, square wave, triangle wave, noise, sampling wave, exp drop, half vector, lorentz, dual audio, gaussian, ecg
Modulation frequency	2mHz~1MHz
PM	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	Internal, external and other channels
Modulation wave	Sine wave, square wave, triangle wave, noise, sampling wave, exp drop, half vector, lorentz, dual audio, gaussian, ecg
Modulation frequency	2mHz~1MHz
Phase deviation	0 ° ~ 360 °
ASK	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	Internal and external
Modulation wave	50% duty cycle square wave
Modulation frequency	2mHz~1MHz
FSK	

Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	Internal and external
Modulation wave	50% duty cycle square wave
Modulation frequency	2mHz~1MHz
PSK	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	Internal and external
Modulation wave	50% duty cycle square wave
Modulation frequency	2mHz~1MHz
BPSK	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	internal
Data source	PN15, PN21, 01, 10
Modulation frequency	2mHz~1MHz
QPSK	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	internal
Data source	PN15, PN21
Modulation frequency	2mHz~1MHz
3FSK	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	internal
Modulation wave	50% duty cycle square wave
Modulation frequency	2mHz~1MHz
4FSK	
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)
Modulation source	internal
Modulation wave	50% duty cycle square wave
Modulation frequency	2mHz~1MHz
OSK	
Carrier	Sine wave
Modulation source	Internal, external
Shock time	8 ns - 4.99975 ms
Modulation frequency	2mHz~1MHz
PWM	
Carrier	Square wave
Modulation source	Internal, external and other channels
Modulation wave	Sine wave, square wave, triangle wave, noise, sampling wave, exp drop, half vector, Lorentz, dual audio, gaussian, ecg
Modulation frequency	2mHz~50KHz
Duty cycle deviation	0% ~ 50%
External modulation input	
Input range	AM, DSB-AM, FM, PM, OSK, PWM: 75mVRMS ~ ± 5Vac + dc ASK, FSK, PSK: TTL level

Input bandwidth	50KHz					
Input impedance	10 K Ω					
Sweep frequency property						
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)					
Type	Linear					
Direction	Upward					
Frequency sweep time	1ms ~ 50Ks					
Hold/return time	0ms ~ 50Ks					
Trigger source	Internal, external, manual					
Tag	Synchronize the model's falling edge					
Burst property						
Carrier	Sine wave, square wave, triangular wave, pulse wave, harmonic wave, arbitrary wave (except DC)					
Carrier frequency	1 μ Hz ~ 100 MHz	1 μ Hz ~ 80 MHz	1 μ Hz ~ 60 MHz	1 μ Hz ~ 40 MHz	1 μ Hz ~ 25 MHz	1 μ Hz ~ 15 MHz
Burst counting	1 ~ 2000 000 000					
Start/stop phase	0 ° ~ 360 °					
Internal cycle	2 μ s ~ 500 s					
Door control source	External trigger					
Trigger source	Internal, external, manual					
Frequency meter						
Measurement functions	Frequency, period, positive/negative pulse width, duty cycle					
Frequency	1 μ Hz ~ 80 MHz					
Gate time	10ms~16s					
Input signal range	0 ~ 3.3 V					
Trigger property						
Trigger input						
Level	TTL - compatible					
Slope	Up or down (optional)					
Pulse width	>100ns					
Trigger output						
Level	TTL - compatible					
The pulse width	>60ns					
Maximum frequency	1MHz					
Reference clock						
External reference input						
Lock range	10 MHz \pm 50 Hz					
Level	Low level: 0~400mV, high level: 2.5V~5V					
Locking time	< 2 s					
Input impedance	50 Ω , DC coupling					
Internal reference output						
Frequency	10 MHz + 50 Hz					
Level	3.3 V _{pp}					
Output impedance (typical value)	50 Ω , DC coupling					
Synchronous output						

Level	TTL - compatible
Impedance	50Ω, nominal value
General features	
Interface	USB Host, USB Device
Display	4.3-inch color TFT LCD screen
Voltage	100-120VAC _{RMS} (±10%),45Hz to 440Hz, CAT II
	120-240VAC _{RMS} (±10%),45Hz to 66Hz, CAT II
Power	<30W
Fuse	T, 0.5 A, 250 v, 5 x20mm
Environment	
Temperature range	Operation: 10°C ~ 40°C
	Non-operation: -20°C ~ 60°C
Humidity range	≤+104°F(≤+40°C): Relative humidity ≤90%
	106°F~122°F (+41°C ~50°C): Relative humidity ≤60%
Altitude	Operation: below 3000 meters
	Non-operation: below 15000 meters
Mechanical specifications	
Dimensions (W × H × D)	308mm x 232mm x 110mm
Weight	3.09 KG