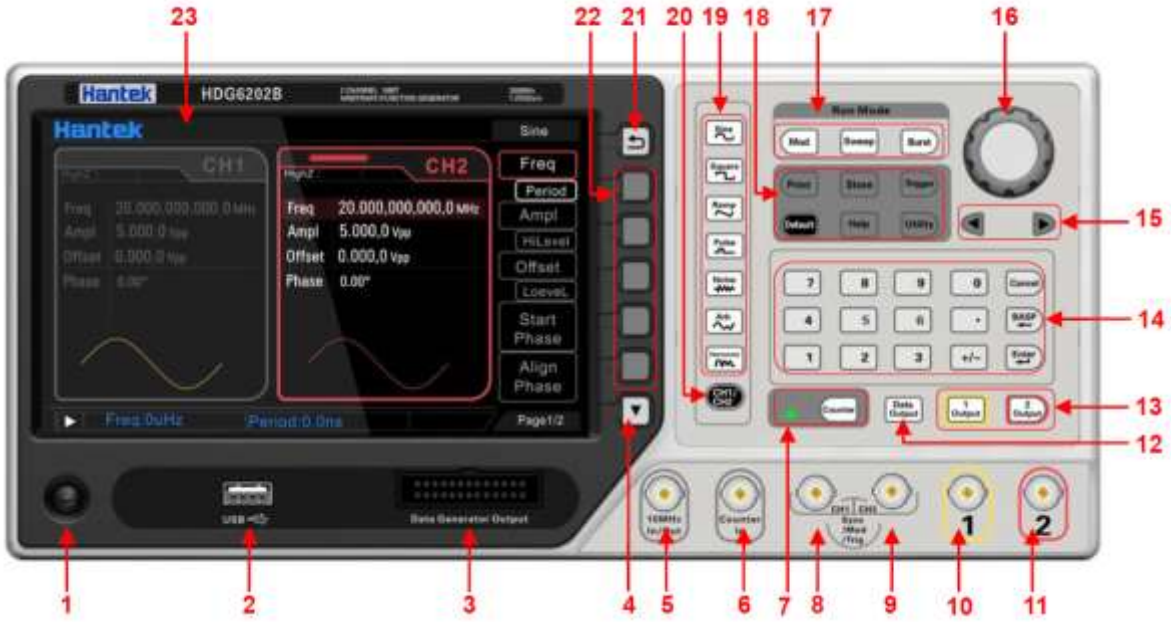
HDG6000B(C) series Functions and Arbitrary Waveform Generator

User manual

(V1.2)



Specification

Model	HDG6202B	HDG6162B	HDG6112B	HDG6082B
Main Feature				
Channel	2	2	2	2
Waveform Length	64M			
Frequency Range	200MHz	160MHz	110MHz	80MHz
Sampling Rate	1.25GSa/s			
Voltage Resolution	16 Bit			
Digit Output Mode	16 channels output			

Waveform				
Standard Waveform	sine, square, triangle, pulse, noise, harmonic			
Arb. Waveform	More than 40 kinds: index rise, exponential decline, ECG signal, Gaussian, semi-positive, Lorentz, dual-tone multi-frequency, DC voltage, etc.			
Frequency Characteristics				
Sine	1uHz~200MHz	1uHz~160MHz	1uHz~110MHz	1uHz~80MHz
Square	1uHz~60MHz	1uHz~50MHz	1uHz~40MHz	1uHz~35MHz
Pulse	1uHz~50MHz	1uHz~40MHz	1uHz~25MHz	1uHz~20MHz
Triangle	1uHz~5MHz	1uHz~4MHz	1uHz~3MHz	1uHz~2MHz
White Noise	120MHz	120MHz	110MHz	80MHz
Harmonic	1uHz~100MHz	1uHz~80MHz	1uHz~55MHz	1uHz~40MHz
Arbitrary	1uHz~50MHz	1uHz~40MHz	1uHz~25MHz	1uHz~15MHz
Resolution	1uHz			
Accuracy	±2ppm, 18~28℃			
Sine Spectrum Purity				
Harmonic Distortion	Typical (0dBm) DC-1MHz: <-60dBc 1MHz-10MHz: <-55dBc 10MHz-100MHz: <-50dBc 100MHz-160MHz: <-40dBc			
THD (Total Harmonic Distortion)	<0.1% (10Hz-20kHz, 0dBm)			
Spurious Signal (Non-harmonic)	Typical (0dBm) ≤10MHz: <-65dBc >10MHz: <-65dBc+6dB/octave			
Phase Noise	Typical (0dBm,10KHz offset) 0MHz: ≤-115dBc/Hz			
Square Characteristics				
Rising/Falling Time	Typical (1Vpp) <8ns		Typical (1Vpp) <10ns	Typical (1Vpp) <12ns
Overshoot	Typical (100KHz, 1Vpp) <3%			
Duty Cycle	≤10MHz: 20.0%~80.0% 10MHz~40MHz: 40.0%~60.0% >40MHz: 50.0% (fixed)			
Asymmetry	1% +5ns of Period			
Jitter	Typical (1MHz,1Vpp, 50Ω) ≤ 5MHz: 2ppm+500ps > 5MHz: 500ps			
Triangle Characteristics				
Linear	≤1% (1KHz, 1Vpp) of Peak Output			
Symmetry	0%~100%			
Pulse Characteristics				
Period	25ns~1Ms	25ns~1Ms	40ns~1Ms	50ns~1Ms
Pulse	≥10ns	≥10ns	≥12ns	≥15ns
Rising/Falling Time	≥5ns	≥6ns	≥8ns	≥10ns
Overshoot	<3% (1Vpp)			
Jitter	Typical (1MHz, 1Vpp, 50Ω) ≤ 5MHz 2ppm+500ps > 5MHz 500ps			

Arbitrary Characteristics				
Waveform Length	64M			
Vertical Resolution	16 Bit			
Sampling Rate	1.25GSa/s			
Rising/Falling Time	Typical (1Vpp): <6ns Typical (1MHz, 1Vpp, 50Ω)			
Jitter	≤ 5MHz 2ppm+500ps > 5MHz 500ps			
Harmonic Output Characteristics				
Harmonic Times	≤16 times			
Harmonic Type	Even harmonics, odd harmonics, sequential harmonics			
Harmonic Amplitude	Each harmonic amplitude can be set			
Harmonic Phase	Each harmonic phase can be set			
Amplitude Characteristics (50ΩTermination)				
Range	≤20MHz: 1mVpp ~ 10Vpp ≤80MHz: 1mVpp ~ 5Vpp ≤110MHz:1mVpp ~ 2.5Vpp ≤160MHz:1mVpp ~ 1Vpp ≤200MHz:1mVpp ~ 0.5Vpp			
Accuracy	1KHz Sine, 0V offset (±|1%±2mVpp| of setting value)			
Amplitude flatness (relative to 1 kHz sine wave, 500 mVpp, 50 Ω)	≤1MHz: ±0.1dB ≤60MHz: ±0.2dB ≤100MHz: ±0.4dB ≤160MHz: ±0.8dB ≤200MHz: ±1.2dB	≤1MHz: ±0.1dB ≤60MHz: ±0.2dB ≤100MHz: ±0.4dB ≤160MHz: ±0.8dB	≤1MHz: ±0.1dB ≤60MHz: ±0.2dB ≤100MHz: ±0.4dB	≤1MHz: ±0.1dB ≤60MHz: ±0.2dB
Unit	Vpp, mVpp, Vrms			
Resolution	1mV			
Impedance	50Ω			
Offset Characteristics (50Ω termination)				
Range	|Voltset| < Vmax – Vpp/2			
Accuracy	± (1% of setting + 5mV + 0.5% of amplitude) ± (|1% + 5mV| of setting value + 0.5% of amplitude)			
Modulation Characteristics				
Modulation Type	AM, FM, PM, 2ASK, 2FSK, 2PSK, BPSK, PWM			
AM				
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)			
Modulation Source	Internal, external, other channels			
Modulation Wave	Sine, Square, Triangle, White Noise, Arbitrary			
Modulation Frequency	2mHz~50KHz			
Modulation Depth	0%~120%			
FM				
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)			
Modulation Source	Internal, external, other channels			
Modulation Wave	Sine, Square, Triangle, White Noise, Arbitrary			
Modulation Frequency	2mHz~50KHz			
PM				
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)			
Modulation Source	Internal, external, other channels			

Modulation Wave	Sine, Square, Triangle, White Noise, Arbitrary
Modulation Frequency	2mHz~50KHz
Phase Deviation	0° to 360°
2ASK	
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)
Modulation Source	Internal, external
Modulation Wave	50% duty cycle square wave
Modulation Frequency	2mHz~1MHz
2FSK	
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)
Modulation Source	Internal, external
Modulation Wave	50% duty cycle square wave
Modulation Frequency	2mHz~1MHz
2PSK	
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)
Modulation Source	Internal, external
Modulation Wave	50% duty cycle square wave
Modulation Frequency	2mHz~1MHz
BPSK	
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)
Modulation Source	Internal
Modulation Wave	01 yard
Modulation Frequency	2mHz~1MHz
PWM	
Carrier Wave	Square
Modulation Source	Internal, external, other channels
Modulation Wave	Sine, square, sawtooth, noise, arbitrary
Modulation Frequency	2mHz~50KHz
Width Deviation	0% to 100% of Pulse Width 0% to 100% of the pulse width
External Modulation Input	
Max. Input Range	75mVRMS to ±2.5Vac+dc
Input Bandwidth	10MHz
Input Impedance	1KΩ
Sweep Characteristics	
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)
Type	Linear
Direction	Top
Sweep	1ms to 50Ks
Hold/return Time	1ms to 50Ks
Trigger Source	Internal, external, manual
Mark	Falling edge of the sync signal (programmable)
Burst Characteristics	
Carrier Wave	Sine, Square, Triangle, Pulse, Harmonic, Arbitrary (except DC)

Carrier Frequency	2mHz to 100MHz		2mHz to 100MHz	2mHz to 80MHz
Pulse Count	1 to 2000 000 000			
Start/Stop Phase	0° to 360°			
Internal Cycle	2μs to 500s			
Gating Source	External Trigger			
Trigger Source	Internal, external, manual			
Cymometer Measurement Function	Frequency, period, positive/negative pulse width, duty cycle			
Frequency Resolution	7 bits/s			
Frequency Range	1uHz~200MHz			
Input Level	TTL level			
Gate Time	10ms~16s			
Voltage Range and Sensitivity (Non-modulated Signal)				
DC Coupling	DC Offset Range	±1.5VDC		
	1μHz to 100MHz	50mVRMS to ±2.5Vac+dc		
	100MHz to 200MHz	100mVRMS to ±2.5Vac+dc		
Pulse Width and Duty Cycle Measurement				
Frequency and Amplitude Range	1μHz to 25MHz	50mVRMS to ±2.5Vac+dc		
Pulse Width	Min. Pulse Width	≥100ns		
	Pulse Width Resolution	8ns		
Duty Cycle	Measuring range (display)	0% to 100%		
Input Characteristic				
Input Signal Range	Destruction Voltage	±5Vac+dc	Input Impedance =500Ω	
Input Trigger	Trigger Level Range	-2.5V to +2.5V		
	Trigger Sensitivity Range	0% (140mV hysteresis voltage) to 100% (2mV hysteresis voltage)		
	Trigger characteristics			
Trigger Input				
Level	TTL-compatible			
Slope	Rise or fall (optional)			
Pulse Width	>50ns			
Reference Clock				
External Reference Input				
Lock Range	10MHz±50Hz			
Level	2.5Vpp to 5Vpp			
Lock Time	<2s			
Input Impedance	5kΩ, AC Coupling			
Internal Reference Input				
Frequency	10MHz ± 50Hz			
Level	3.3Vpp			
Output Impedance	5kΩ, AC Coupling			
Synchronous Output				
Level	TTL-compatible			
Impedance	50Ω, nominal value			
General Characteristics				
Interface	HDG6000B: USB Host, USB Device, Optional RS232 port			

	HDG6000C: USB Host, USB Device, LAN port, Wi-Fi, Touch Screen, Optional RS23 port
Display	7 inch, 64K color, TFT LCD Screen, 800*640
Voltage	100-240V, 45Hz - 440Hz
Power	<50W
Environment	
Temperature Range	Operation: 10 ° C to 40 ° C Non-operation: -20 ° C to 60 ° C
Cooling Method	Fan forced cooling
Humidity Range	Less than 35 ° C: ≤ 90% relative humidity 35 ° C to 40 ° C: ≤ 60% relative humidity
Altitude	Operation: 3000 meters or less; Non-operation: 15000 meters or less
Mechanical Specifications	
Dimension	318 x 110 x 150mm (L x W x H)
Weight	3KG