

Function/Arbitrary Waveform Generator

2 Channels, 30MHz Bandwidth, 250MSa/s Sample Rate

HDG2032B



Accessories



Features

- 30MHz maximum sine output frequency.
- 16 bits resolution, 250MSa/s sample rate, 2 channels.
- 16 channels digital output, together with the analog channel can rebuild the more mixed signals.
- 64M maximum arbitrary waveform memory depth, 80M frequency counter.
- Support AM, FM, PM, ASK, FSK, PSK and PWM modulations.

Specification

Model	HDG2032B
Main Features	
Channel	2
Memory Depth	64M
Frequency	30MHz
Sample Rate	250MSa/s
Voltage Resolution	16Bit
Digital Output	16 Channels output
Waveform	
Standard Waveforms	Sine, Square, Triangle, Pulse, Noise, Harmonic
Arb. Waveforms	More than 40 kinds: Index rise, Exponential decline, ECG signal, Gaussian, Semi-positive, Lorentz, Dual-tone, Multi-frequency, DC voltage, etc.
Frequency Characteristic	
Sine	1uHz~30MHz
Square	1uHz~30MHz
Pluse	1uHz~15MHz
Triangle	1uHz~4MHz
White Noise	1uHz~ 30MHz
Harmonic	1uHz~30MHz
Arb.	1uHz~20MHz
Resolution	1uHz
Accuracy	±50ppm, 18~28°C
Sine Wave Spectrum Purity	
Harmonic Distortion	Typical (0dBm) DC-1MHz: <-60dBc; 1MHz-10MHz: <-55dBc; 10MHz-100MHz: <-50dBc
Total Harmonic Distortion	<0.1% (10Hz-20kHz, 0dBm)
Spurious signal	Typical(0dBm):≤10MHz: <-65dBc;
(Non-harmonic)	>10MHz <-65dBc+6dB/spectrum phase

Phase Noise	Typical (0dBm, 10kHz offset) 10MHz: ≤ -115 dBc/Hz
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Square

Rise/Down time	<14ns
Overshoot	<3%(100KHz, 1Vpp)
Duty Cycle	8.0%~92.0%
Non-symmetry	1% of period+5ns
Jitter (rms)	Typical (1MHz, 1Vpp, 50 Ω) ≤ 5 MHz: 2ppm+500ps; > 5MHz: 500ps

Triangle

Linearity	$\leq 1\%$ (1KHz, 1Vpp) of Peak Output
Symmetry	0%~100%

Pluse

Period	50ns~1Ms
Pulse	≥ 16 ns
Leading Edge Time	≥ 10 ns
Overshoot	<3% (1VPP)
Jitter (rms)	Typical (1MHz, 1Vpp, 50 Ω)
	≤ 5 MHz 2ppm+500ps
	> 5MHz 500ps

Arb. Wavefrom Generator

Waveform Length	64M Point
Vertical Resolution	16 Bit
Sample Rate	250MSa/s
Rise/Fall time	Typical (1Vpp):<6ns
Jitter	Typical (1MHz, 1Vpp, 50 Ω)
	≤ 5 MHz 2ppm+500ps;
	> 5MHz 500ps

Harmonic Output characteristic

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 characteristic

Amplitude Range	≤ 20 MHz:2mVpp - 20Vpp; ≤ 60 MHz:2mVpp - 15Vpp; ≤ 80 MHz:2mVpp - 10Vpp;
	≤ 90 MHz:2mVpp - 5Vpp; ≤ 100 MHz:2mVpp - 2Vpp
Accuracy	Typical (1kHz Sine, 0V deviation, >10mVpp, Auto); $\pm 1\%$ of setting ± 2 mVpp
Amplitude Flatness	≤ 10 MHz: ± 0.1 dB; ≤ 60 MHz: ± 0.2 dB; ≤ 100 MHz: ± 0.4 dB
Resolution	1mv or 4 digits
Impedance	50 Ω

Offset Characteristic

Range	$ \text{Voffset} < V_{\text{max}} - V_{\text{pp}}/2$
Accuracy	$\pm (1\% \text{ of setting} + 5\text{mV} + 0.5\% \text{ of amplitude})$
Modulation Characteristic	
Modulation Type	AM, FM, PM, 2ASK, 2FSK, 2PSK, PWM
AM	
Carrier Waveforms	Sine, Square, Triangle, Harmonic, Arb. (except DC)
Source	Internal/External
Modulating Waveforms	Sine, Square, Triangle, Noise, Arbitrary
Frequency	1Hz~500KHz
Depth	0%~120%
FM	
Carrier Waveforms	Sine, Square, Triangle, Harmonic, Arb. (except DC)
Source	Internal/External
Modulating Waveforms	Sine, Square, Triangle, Noise, Arbitrary
Frequency	1Hz~500KHz
Frequency Deviation	0~360
PM	
Carrier Waveforms	Sine, Square, Triangle, Harmonic, Arb. (except DC)
Source	Internal/External
Modulating Waveforms	Sine, Square, Triangle, Noise, Arbitrary
Frequency	1Hz~500KHz
Frequency Deviation	0%~120%
2ASK	
Carrier Waveforms	Sine, Square, Triangle, Harmonic, Arb. (except DC)
Source	Internal/External
Modulating Waveforms	Square of 50% duty cycle
Code Rate	1Hz~500KHz
2FSK	
Carrier Waveforms	Sine, Square, Triangle, Harmonic, Arb. (except DC)
Source	Internal/External
Modulating Waveforms	Square of 50% duty cycle
Code Rate	1Hz~500KHz
2PSK	
Carrier Waveforms	Sine, Square, Triangle, Harmonic, Arb. (except DC)
Source	Internal/External
Modulating Waveforms	Square of 50% duty cycle
Code Rate	1Hz~500KHz
BPSK	

Carrier Wave	Sine, Square, Triangle, Harmonic, Arbitrary (except DC)
Source	Internal
Modulating Waveforms	01 yard
Code Rate	1Hz~500KHz

PWM

Carrier Waveforms	Square
Source	Internal/External, other channels
Modulating Waveforms	Sine, Square, Triangle, Noise, Arb.
Code Rate	1Hz~500KHz
Width Deviation	0% to 100% of Pulse Width

External Modulation Input

Max. Input Range	75mVRMS to $\pm 2.5V_{ac+dc}$
Input Bandwidth	10MHz
Input Impedance	1K Ω

Burst Characteristic

Burst Count	1~2000 000 000
Gated Source	External trigger
Trigger Source	Internal, External or Manual

Sweep Characteristics

Type	Linear
Type Direction	Up
Sweep Time	280 000s
Hold/Return time	280 000s
Trigger Source	Internal, External, Manual
Mark	Falling Edge of Sync signal (programmable)

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	$\pm 1.5V_{DC}$
	1 μ Hz to 100MHz	50mVRMS to $\pm 2.5V_{ac+dc}$
	100MHz to 200MHz	100mVRMS to $\pm 2.5V_{ac+dc}$

Pulse Width and Duty Cycle Measurement

Frequency and Amplitude Range	1 μ Hz to 25MHz	50mVRMS to $\pm 2.5V_{ac+dc}$
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Pulse Width	Min. Pulse Width	≥100ns
	Pulse Width Resolution	8ns
Duty Cycle (Variable)	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 Specifications

Interface	USB host, USB Device, LAN
Display	7", 64K Color, TFT Display, 800*480
Power Voltage	100-120VACRMS(±10%), 45Hz to 440Hz, CAT II ; 120-240VACRMS(±10%), 45Hz to 66Hz, CAT II
Device Protection	Over-voltage, over-current
Output Current	0.15A

Mechanical Specifications

Size	318 x 110 x 150mm (L x W x H)
Weight	3KG