

## XDG2060 Waveform Generator



- + Max 60MHz frequency output
- + 500MSa/s Sample rate , Vertical resolution 1 $\mu$ Hz
- + 14 bits Vertical Resolution , 10Marb waveform length
- + Comprehensive waveform output : 6 basic waveforms, and 150 built-in arbitrary waveforms
- + Comprehensive modulation functions : AM, FM, PM, FSK, 3FSK, 4FSK, PSK, OSK, ASK, BPSK, PWM, Sweep, and Burst
- + High-accuracy frequency counter integrated, supported range 100mHz - 200MHz
- + SCPI, and LabVIEW supported
- + 7 inch (800 × 480 pixels) multi-touch screen, support

## + Performance Specifications

Model	XGG2060
Channel	2
Frequency Output	60MHz
Sample Rate	500MSa/s
Vertical Resolution	14 bits

## Waveform

Standard Waveform	sine, square, pulse, ramp, noise, and harmonic
Arbitrary Waveform	exponential rise, exponential fall, sin(x)/x, step wave, and others, total 150 built-in waveforms, and user-defined arbitrary waveform

Frequency (resolution 1 $\mu$ Hz)

Sine	1 $\mu$ Hz-60MHz
Square	1 $\mu$ Hz ~ 30MHz
Pulse	1 $\mu$ Hz ~ 25MHz
Ramp	1 $\mu$ Hz ~ 3MHz
Noise	60MHz (-3dB , typical)
Arbitrary Waveform	1 $\mu$ Hz ~15MHz
Harmonic	1 $\mu$ Hz ~30MHz
Accuracy	$\pm$ 2ppm, 25°C $\pm$ 5°C

## Sine Wave Spectrum Purity

Harmonic Distortion (typical (0dB))	DC ~ 1MHz : <-65dBc 1MHz ~ 10MHz : <-60dBc 10MHz ~ 60MHz : <-55dBc 60MHz ~ 120MHz : <-50dBc
Total Harmonic Distortion	< 0.05 % , 10 Hz to 20 kHz, 1 Vpp
Spurious (non-harmonic) (typical (0dB))	$\leq$ 10MHz : <-70dBc >10MHz : <-70dBc + 6dB/ octave band
Phase Noise (typical (0 dBm, 10 kHz deviation))	typical ( 0dBm , 10kHz offset ) 1MHz : -110dBc/Hz

+982165565901

+982144584619

+989034119385

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FGJ-NDT.IR

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## Square

Rise / Fall Time	<8ns
Overshoot	< 3%
Duty Cycle	50.0% ( fixed )
Jitter (rms)	$\leq 5\text{MHz}: <300\text{ps} + 2\text{ppm}; >5\text{MHz} 300\text{ps}$

## Pulse

Period	40ns ~ 1000000s
Pulse Width	$\geq 12\text{ns}$
Rise / Fall Time	$\geq 8\text{ns}$
Overshoot	< 3%
Jitter (rms)	$\leq 5\text{MHz}: <300\text{ps} + 2\text{ppm}; >5\text{MHz} 300\text{ps}$
Duty cycle	0.1%~99.9%

## Ramp

Linearity	$\leq 0.5\%$ of peak output (typical, 1kHz, 1 Vpp, 50% symmetry)
Symmetry	0% ~ 100%

## Arbitrary

Waveform Length	2 points - 10M points
Minimum Rise/Fall Time	<8ns
Jitter (rms) ( 1MHz,1Vpp,50Ω )	$\leq 5\text{MHz}: <300\text{ps} + 2\text{ppm}; >5\text{MHz} 300\text{ps}$

## Amplitude

into 50Ω load	1mVpp ~ 10Vpp ( $\leq 25\text{MHz}$ ) ; 1mVpp ~ 5Vpp ( $\leq 60\text{MHz}$ ) ;
Resolution	0.1mVpp or 4digits , (amplitude > 1Vpp : 1mVpp)
DC Offset Range ( AD+DC )	$\pm 5\text{V}(50\Omega)$ , $\pm 10\text{V}(\text{high resistance})$
DC offset resolution	0.1mV or 4digits
Load Impedance	50Ω (typical)
DC offset Accuracy	$\pm(1\%$ of setting + 1 mVpp+ amplitude Vpp * 0.5%) ( typical 1kHz sine, 0V offset )
Unit	mVpp , Vpp , Vrms , mVrms , dBm

## Modulation

Type	AM, DSB- AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, 3FSK, 4FSK, OSK, PWM, SUM
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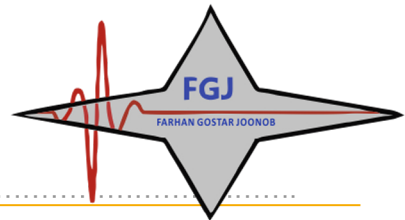
## DSB-AM

Carrier Waveform	sine, square, ramp
Source	internal / external
Internal Modulation Waveform	sine, square, ramp

## AM

Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal / external
Modulating Waveform	sine, square, ramp, noise, and arbitrary
Depth	0.0%~120.0%

Modulating Frequency	2 mHz ~1MHz
<b>FM</b>	
Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal / external
Modulating Waveform	sine, square, ramp, noise, and arbitrary
Modulating Frequency	2 mHz ~1MHz
<b>PM</b>	
Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal / external
Modulating Waveform	sine, square, ramp, noise, and arbitrary
Phase Deviation	0° - 180°
Modulating Frequency	2 mHz - 100 kHz
<b>ASK</b>	
Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal / external
Modulating Waveform	square with 50% duty cycle
Key Frequency	2 mHz - 1MHz
<b>FSK/3FSK/4FSK</b>	
Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal
Modulating Waveform	square with 50% duty cycle
Key Frequency	2 mHz - 1MHz
<b>PSK</b>	
Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal / external
Modulating Waveform	square with 50% duty cycle
Key Frequency	2 mHz - 1MHz
<b>BPSK</b>	
Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal
Modulating Waveform	square with 50% duty cycle
Key Frequency	2 mHz - 1MHz
<b>OSK</b>	
Carrier Waveform	sine, square, ramp, and arbitrary (except DC)
Source	internal
Oscillation Time	square with 50% duty cycle
Key Frequency	2 mHz - 1MHz
Concussion time	8ns - 249.75s
<b>SUM ( Dual tone )</b>	
Carrier Waveform	sine, square, ramp
Source	internal / external
Internal Modulation Waveform	sine, square, ramp , white noise, arbitrary waveform
Internal am frequency	2mHz~1MHz
Depth	0.0%~100.0%

**PWM**

Carrier Waveform	pulse
Source	internal / external
Modulating Waveform	sine, square, ramp, noise, and arbitrary
Width Deviation	0~99%
Modulating Frequency	2 mHz ~ 1MHz
Deviation	0~min

**Pulse train responses**

Carrier	Sine , Square , Harmonic , Pulse,Noise and Arbitrary Waveform
Carrier frequency	2mHz ~ BW/2
Type	count (1 to 1000000 cycles), unlimited, gated
Internal cycle	20 ns ~ 500 s
Gated Source	external trigger

**Sweep characteristic**

carrier	sine, square, ramp, and arbitrary (except DC)
Minimum / maximum starting frequency	1μHz
Maximum / termination frequency	sine: 60MHz square: 30MHz ramp: 3MHz arbitrary:15MHz ( Built-in ) or 25MHz ( User defined )
Type	linear, logarithmic, step
Direction	up / down
Scanning time	1 ms to 500 s ± 0.1%
Trigger source	Internal, external, manual

**Frequency Counter**

Function	Frequency , period, +width, -width, +duty, and -duty
Frequency Range	100mHz ~ 200MHz
Frequency Resolution	7 digits
Coupling mode	AC,DC

**Input / Output**

Display	7" 800 x 480 pixels touch screen LCD
Input mode	frequency counter, external modulation input, external trigger input, Internal clock output, external reference clock input / output
Communication Interface	USB Host, USB Device,LAN , COM

**Mechanical specifications**

Size	340mm x 177mm x 90mm
Weight	2.3kg