

## XDG3000 Series Waveform Generator

- + Max 250MHz frequency output
- + Max 1.25GS/s sample rate, and 1 $\mu$ Hz frequency resolution
- + Vertical Resolution :14 bits, max 1M arb waveform length
- + Comprehensive waveform output : 6 basic waveforms, and 152 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
- + 8 inch (800 × 600 pixels) multi-touch screen

### + Performance Specifications

| Model               | XDG3252   | XDG3202 | XDG3162 | XDG3102 | XDG3082 |
|---------------------|-----------|---------|---------|---------|---------|
| Channel             | 2         |         |         |         |         |
| Frequency Output    | 250MHz    | 200MHz  | 160MHz  | 100MHz  | 80MHz   |
| Sample Rate         | 1.25GSa/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 - 250MHz  | 1 $\mu$ Hz - 200MHz | 1 $\mu$ Hz - 160MHz | 1 $\mu$ Hz - 100MHz | 1 $\mu$ Hz - 80MHz |
| Square             | 1 $\mu$ Hz - 50MHz   |                     |                     | 1 $\mu$ Hz - 40MHz  | 1 $\mu$ Hz - 30MHz |
| Pulse              | 1 $\mu$ Hz - 25MHz   |                     |                     |                     |                    |
| Ramp               | 1 $\mu$ Hz - 5MHz  |                     |                     |                     |                    |
| Harmonic           | 1 $\mu$ Hz - 125MHz  | 1 $\mu$ Hz - 100MHz | 1 $\mu$ Hz - 80MHz  | 1 $\mu$ Hz - 50MHz  | 1 $\mu$ Hz - 40MHz |
| Noise              | 120MHz (-3dB, typical)   |                     |                     |                     |                    |
| Arbitrary Waveform | built-in waveform: 1uHz - 15MHz<br>user-defined waveform: 1uHz - 50MHz |                     |                     |                     |                    |
| Accuracy           | $\pm$ 1ppm, 0°C - 40°C   |                     |                     |                     |                    |

### Amplitude

|                              |                              |   |
|------------------------------|------------------------------|---|
| into 50 $\Omega$ load        |                              | 1mVpp - 10Vpp ( $\leq$ 40MHz); 1mVpp - 5Vpp ( $\leq$ 80MHz)<br>1mVpp - 2.5Vpp ( $\leq$ 120MHz); 1mVpp - 1Vpp ( $\leq$ 250MHz) |
| into open circuit, or high-Z |                              | 2mVpp - 20Vpp ( $\leq$ 40MHz); 2mVpp - 10Vpp ( $\leq$ 80MHz);<br>2mVpp - 5Vpp ( $\leq$ 120MHz); 2mVpp - 2Vpp ( $\leq$ 250MHz) |
| Accuracy                     |                              | $\pm$ (1% of  setting  + 1mVpp) (typical, 1kHz sine, 0V offset)   |
| Resolution                   |                              | 1mV or 4 digits   |
| Load Impedance               |                              | 50 $\Omega$ (typical)   |
| DC Offset                    | Range (50 $\Omega$ )         | $\pm$ (5 Vpk - Amplitude Vpp/2)   |
|                              | Range (open circuit, high-Z) | $\pm$ (10 Vpk - Amplitude Vpp/2)  |
|                              | Accuracy                     | $\pm$ (1% of  setting  + 1mV + Amplitude Vpp x 0.5%)  |
|                              | Resolution                   | 1mV or 4 digits   |

## Sine Wave Spectrum Purity

|  |  |
|--|--|
| Harmonic Distortion<br>(typical (0dB))             | DC - 1MHz: <-65dBc<br>1MHz - 10MHz: <-60dBc<br>10MHz - 120MHz: <-50dBc<br>120MHz - 250MHz: <-45dBc |
| Total Harmonic Distortion                          | < 0.05 %, 10 Hz to 20 kHz, 1 Vpp   |
| Spurious (non-harmonic)<br>(typical (0dB))         | ≤10MHz: <-70dBc<br>>10MHz: <-70dBc + 6dB/ octave   |
| Phase Noise<br>(typical (0 dBm, 10 kHz deviation)) | 10MHz: ≤-110dBc/Hz   |

## Square

|                  |                |
|------------------|----------------|
| Rise / Fall Time | <5ns           |
| Overshoot        | <3%            |
| Duty Cycle       | 50.0% (fixed)  |
| Jitter (rms)     | 300ps + 100ppm |

## Pulse

|                            |                |
|----------------------------|----------------|
| Pulse Width                | 12ns - 996875s |
| Leading/Trailing Edge Time | ≥7ns           |
| Overshoot                  | <3%            |
| Jitter (rms)               | 300ps + 100ppm |

## Ramp

|           |   |
|-----------|---|
| Linearity | ≤1% of peak output (typical, 1kHz, 1 Vpp, 50% symmetry) |
| Symmetry  | 0% to 100%  |

## Harmonic

|                    |                                    |
|--------------------|------------------------------------|
| Harmonic Order     | ≤16                                |
| Harmonic Type      | even, odd, all, user               |
| Harmonic Amplitude | could be set for all the harmonics |
| Harmonic Phase     |                                    |

## Arbitrary

|                        |                      |
|------------------------|----------------------|
| Waveform Length        | 2 points - 1M points |
| Vertical Resolution    | 14 bits              |
| Minimum Rise/Fall Time | <7ns                 |
| Jitter (rms)           | 3ns                  |

## Modulation

|      |   |
|------|---|
| Type | AM, FM, PM, PWM, FSK, 3FSK, 4FSK, PSK, OSK, ASK, BPSK, sweep, and burst |
|------|---|

## AM

|                      |   |
|----------------------|---|
| Carrier Waveform     | sine, square, ramp, and arbitrary (except DC) |
| Source               | internal / external                           |
| Modulating Waveform  | sine, square, ramp, noise, and arbitrary      |
| Depth                | 0.0% - 100.0%                                 |
| Modulating Frequency | 2 mHz - 100 kHz                               |

## FM

|                  |   |
|------------------|---|
| Carrier Waveform | sine, square, ramp, and arbitrary (except DC) |
| Source           | internal / external                           |

|                          |   |
|--------------------------|---|
| Modulating Waveform      | sine, square, ramp, noise, and arbitrary                |
| Modulating Frequency     | 2 mHz - 100 kHz   |
| <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>PWM</b>               |   |
| Carrier Waveform         | pulse   |
| Source                   | internal / external                                     |
| Modulating Waveform      | sine, square, ramp, noise, and arbitrary                |
| Width Deviation          | 0 ~ minimum (pulse duty ratio, 100% - pulse duty ratio) |
| Modulating Frequency     | 2 mHz - 100 kHz   |
| <b>FSK / 3FSK / 4FSK</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>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>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  |
| <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>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>Sweep</b>             |   |
| Carrier Waveform         | sine, square, ramp, and arbitrary (except DC)           |
| Type                     | linear, and log   |
| Sweep Time               | 1 ms to 500s, ± 0.1%                                    |
| Trigger Source           | internal, external, and manual                          |
| <b>Burst</b>             |   |

|                  |  |
|------------------|--|
| Carrier Waveform | sine, square, ramp, pulse, and arbitrary (except DC) |
| Burst Count      | 1 to 50,000 period, infinite, gating                 |
| Internal Period  | 10 ns - 500 s  |
| Gated Source     | external trigger                                     |

#### Frequency Counter

|                      |  |
|----------------------|--|
| Function             | frequency period, +width, -width, +duty, and -duty |
| Frequency Range      | 100mHz - 200MHz                                    |
| Frequency Resolution | 7 digits   |

#### Input / Output

|                         |   |
|-------------------------|---|
| Display                 | 8" 800 x 600 pixels touch screen LCD  |
| Type                    | frequency counter, external modulation input,<br>external trigger input,<br>external reference clock input / output |
| Communication Interface | USB Host, USB Device, and LAN   |

Specifications subject to change without prior notice.

#### + Accessories

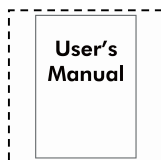
The accessories subject to final delivery.



Power Cord



CD Rom



Manual



USB Cable



Q9 Cable