

MODELS WS8101/2

100MHz Single/Dual Channel Arbitrary Function Generators

Specification

CONFIGURATION

Output Channels 1 or 2, semi-independent

STANDARD WAVEFORMS

Waveforms: Sine, Triangle, Square, Pulse, Ramp, Sine(x)/x, Gaussian, Exponential, Repetitive Noise, DC.

Frequency Range:

Sine 1μHz to 100MHz
Square 1μHz to 62.5MHz
All Others 1μHz to 31.25MHz

SINE

Start Phase: 0-360°

Phase Resolution: 0.01°

Harmonics Distortion (1Vp-p):

1MHz to 5MHz <-60dBc
5MHz to 10MHz <-57dBc
10MHz to 25MHz <-55dBc
25MHz to 50MHz <-50dBc
50MHz to 100MHz <-45dBc

Non-Harmonic Distortion (1Vp-p):

1MHz to 25MHz <-70dBc
25MHz to 50MHz <-65dBc
50MHz to 100MHz <-60dBc

Total Harmonic Distortion:

DC to 100kHz 0.1%

Flatness (1MHz, 1Vp-p):

1MHz to 25MHz <0.5dBc
25MHz to 50MHz <1dB
50MHz to 100MHz <2dB

SSB Phase Noise (10kHz offset):

1MHz <-115dBc
10MHz <-100dBc
100MHz <-80dBc

TRIANGLE

Start Phase: 0-360°

Phase Resolution: 0.01°

SQUARE

Duty Cycle Range: 0% to 99.9%

Resolution: 0.1%

Rise/Fall Time: <5ns (<4ns typ.)

Overshoot (typ.): <5%

Jitter (rms): <100ps

RAMP

Timing Ranges: 0%-99.9% of period

SINC (Sine(x)/x)

"0 Crossings": 4-100

GAUSSIAN

Time Constant: 10-200

EXPONENTIAL PULSE

Type: Rise or Decay, selectable

Time Constant: -100 to 100

REPETITIVE NOISE

Type: Repetitive

Bandwidth: 31.25MHz

DC

Range: -8V to 8V

PULSE

Pulse Mode: Single or double, programmable

Polarity: Normal, inverted or complement

Period: 16ns to 1000s

Resolution: 4ns

Pulse Width: 8ns to 1000s

Resolution 4ns

Accuracy <2% (typ.)

Rise/Fall Time:

Fast <4ns (typ.)

Linear 4ns to 1000s

High Time, Delay &

Double Pulse Delay: 4ns to 1000s

Impedance: 50Ω

Amplitude Window: 16mVp-p to 16Vp-p(1)

Low Level -8V to +7.992V (1)

High Level -7.992V to +8V (1)

⁽¹⁾ Double into high impedance

NOTES:

1. All pulse parameters, except rise and fall times, may be freely programmed within the selected pulse period provided that the ratio between the period and the smallest incremental unit does not exceed the ratio of 512,000 to 1, hence the specifications above do not show maximum limit as each must be computed from the above relationship.

2. Rise and fall times, may be freely programmed provided that the ratio between the rise/fall time and the smallest incremental unit does not exceed the ratio of 100,000 to 1.

3. The sum of all pulse parameters must not exceed the pulse period setting.

ARBITRARY WAVEFORMS

Sample Rate: 1.5S/s to 250MS/s

Vertical Resolution: 16 bits

Waveform Memory: 512k points

Min. Segment Size: 16 points

Resolution: 4 points

No. of Segments: 1 to 1k

Waveform Granularity: 1 point

MODULATION

Carrier Waveform: Sine wave

Carrier Frequency: 1μHz to 100MHz

Source: Internal

AM

Envelope Waveform: Sine, square, triangle, ramp

Envelope Freq.: 1mHz to 100kHz

Modulation Depth: 0% to 100%

FM

Modulating Shape: Sine, square, triangle, ramp

Modulating Freq.: 1μHz to 100kHz

Peak Deviation: Up to 100MHz

ASK / FSK / PSK

Baud Rate: 1bits/sec to 10Mbits/sec

Data Bits Length: 2 to 4,000

SWEEP

Sweep Step: Linear or log

Sweep Direction: Up or Down

Sweep Time: 1μs to 500s

COMMON CHARACTERISTICS

FREQUENCY

Resolution:

Display 11 digits (limited by 1μHz)

Remote 14 digits (limited by 1μHz)

Accuracy/Stability: Same as reference

ACCURACY REFERENCE CLOCK

Internal 0.0001% (1 ppm TCXO)

1ppm/year aging rate

External 10MHz TTL, 50% ±2% or

50Ω ±5% 0dBm

AMPLITUDE

Range: 10mV to 16Vp-p into 50Ω;
Double into open circuit

Resolution: 4 digits

Accuracy (1kHz): ±(1% + 50mV)

Rise/Fall Time: <4ns, typ.

Overshoot: 5%, typ.

OFFSET

Range: 0 to ±7.992V, into 50Ω

Resolution: 1mV

Accuracy: ±(1%+1% of Amplitude +5mV)

OUTPUTS

MAIN OUTPUT

Connector: Front panel BNC

Type: Single-ended

Impedance: 50Ω ±1%

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Specification

Protection: Short Circuit to Ground, 10s max

SYNC OUTPUT

Connector: Front panel BNC
Source: Common
Type: Single ended
Waveform Type: BIT (4 points wide)
Impedance: 50Ω
Amplitude: TTL
Variable Position Control:
 Range 0 to segment length
 Resolution 4 points

INPUTS

TRIGGER INPUT

Connector: Rear panel BNC
Impedance: 10kΩ
Slope: Positive / Negative (selectable)

Damage Level: ±12V
Input Frequency: DC to 2.5MHz
Level: -5V to 5V
Sensitivity: 100mV
Min. Pulse Width: 10ns

EXTERNAL REFERENCE INPUT

Connector: Rear panel SMB
Input Frequency: 10MHz
Impedance & Level:
 Default 10kΩ ±2%, TTL, 50% ±2%
 Option 50Ω ±5%, 0dBm Sinewave

FILTERS

Type: 25MHz, 50MHz, 60MHz, 120MHz

RUN MODES

Continuous: Free-run output of a waveform.
Triggered: Upon trigger, outputs one waveform cycle. Last cycle always completed.
Gated: External signal transition enables or disables generator output. Last cycle always completed
Burst: Upon trigger, outputs a Dual or multiple pre-programmed number of waveform cycles from 1 through 1M.

TRIGGER CHARACTERISTICS

Trigger Delay: [(0; 200ns to 20s)+system delay]
Delay Resolution: 20ns
Delay Error: 6 SCLK + 150ns

EXTERNAL

Source: Common
Source: Rear panel BNC
Slope: Positive/Negative, selectable
Damage Level: ±12V
Input Frequency: DC to 2.5MHz
Trigger Level: -5V to 5V
Resolution: 1mV
Sensitivity: 100mV
Min. Pulse Width: 10ns
System Delay: 6 SCLK + 150ns
Trigger Jitter: ±1 SCLK period

INTERNAL / TIMER

Range: 200ns to 20s
Resolution: 20ns
Error: 3 SCLK + 20ns

MANUAL

Source: Soft trigger command from the front panel or remote

INTER-CHANNEL DEPENDENCY (WS8102)

Separate controls: Output on/off, amplitude, offset, standard waveforms, user waveforms, user waveform size
Common Controls: Sample clock (Arb), frequency (Std), period (Pulse) reference source, trigger modes, trigger advance source, SYNC OUT

LEADING EDGE OFFSET

Range: 0 to 512k
Resolution: 1 point
Initial Skew: <1ns
Error: 1 SCLK

GENERAL

Voltage Range: 85 to 265VAC, 48-63 Hz
Power Consumption: 60W
Display Type: Reflective Color LCD, back-lit
Size: 3.8"
Resolution: 320 x 240 pixels
Interfaces:
 USB 1 x rear, USB device, (A type)
 LAN 100/10 BASE-T
 GPIB IEEE-488.2 - SCPI - 1993.0
Dimensions:
 With Feet 212 x 102 x 415 mm (WxHxD)
 Without Feet 212 x 88 x 415 mm (WxHxD)
Weight:
 Without Package 3.5 kg
 Shipping Weight 4 kg
Temperature:
 Operating 0°C - 50°C
 Storage -40°C to + 70°C.

Humidity:

11°C - 30°C 85%
 31°C - 40°C 75%
 41°C - 50°C 45%

Safety:

CE Marked, IEC61010-1

Calibration:

1 year

Warranty ⁽¹⁾:

3 years standard

ORDERING INFORMATION

MODEL	DESCRIPTION
WS8101	100MHz Single Channel Arbitrary Function Generator
WS8102	100MHz Dual Channel Arbitrary Function Generator

ACCESSORIES

S-Rack Mount: 19" Single Rack Mounting Kit
D-Rack Mount: 19" Dual Rack Mounting Kit
Case Kit: Professional Carrying Bag

Note:

Options and Accessories must be specified at the time of your purchase.

⁽¹⁾ Standard warranty in India is 1 year.