MODELS 5201/5300

125MS/s PXIBus / PCIBus Arbitrary Waveform / Function Generators

Specification

CONFIGURATION

No. of Channels:	1
Interface:	
5201	PXIBus
5300	PCIBus

STANDARD WAVEFORMS

Waveforms:	Sine, Triangle, Square, Pulse, Ramp, Sine(x)/x, Gaussian, Exponential, Repetitive Noise, DC.
Frequency Range:	
Sine	100µHz to 50MHz
Square, Pulse	100µHz to 30MHz
All others	100µHz to 15MHz

SINE

Start Phase:	0 to 360°
Phase Resolution:	0.1°
Harmonics Distortion, 3Vp-p (typ.):	
DC to 2.5MHz	<-55dBc
2.5MHz to 25MHz	<-40dBc
25MHz to 40MHz	<-35dBc
40MHz to 50MHz	<-22dBc
Non-Harmonic Distortion (typ.):	
DC to 15MHz	<-70dBc
15MHz to 50MHz	<-60dBc
Total Harmonic Distortion:	
DC to 100kHz	0.1%
Flatness (1kHz):	
DC to 1MHz	1%
1MHz to 25MHz	5%
25MHz to 50MHz	20%

TRIANGLE, RAMP

Phase Range:	0 to 360°
Phase Resolution:	0.1°
Timing Ranges:	0%-99.9% of period

SQUARE, PULSE

Duty cycle:	1% to 99%
Timing Ranges:	0%-99.9% of period
Rise/Fall Time:	<8ns, typ.
Aberration:	<5%

SINC (SINE(x)/x)

"0" Crossing:	4 to 100 cycles

GAUSSIAN PULSE

Time Constant:	1 to 200

EXPONENTIAL FALL/RISING PULSE

Time Constant:	-100 to 100

DC

Range:	
5201	-4V to 4V
5300	-5V to 5V

ARBITRARY WAVEFORMS

Sample Rate:	100mS/s to 125MS/s
Vertical Resolution:	14 Bits
Waveform Memory:	2M points standard
Min. Segment Size:	16 points
Resolution:	4 points
No. of Segments:	1 to 4k
Download Rate:	5Mpoint per second

SEQUENCED ARBITRARY WAVEFORMS

Operation:	Permits division of the memory bank into smaller segments. Segments may be linked, and repeated in user-selectable fashion to generate extremely long waveforms.
Sequencer steps:	1 to 4k
Min. Seg. Duration:	1µs
Segment loops:	1 to 1M

ADVANCE MODES

Automatic:	No triggers required to step from one segment to the next. Sequence is repeated continuously through a pre-programmed sequence table.
Stepped:	Current segment is sampled continuously, external trigger advances to next programmed segment.
Single:	Current segment is sampled to the end of the segment including repeats and idles there. Next trigger advances to next segment.
Mixed:	Each step of a sequence can be programmed to advance either: a) automatic (Automatic mode), or b) with a trigger (Stepped mode)
Advance Source:	External (TRIG IN), Internal or software

MODULATION

COMMON CHARACTERISTICS

Carrier Waveform:	Sine, Triangle, Square, Pulse, Ramp, Sine(x)/x, Gaussian, Exponential, Repetitive Noise, DC and Arb
Carrier SCLK:	100mS/s to 125MS/s
Carrier Frequency:	Waveform dependent
Resolution:	14 digits, limited by 1µHz
Accuracy:	0.1%
Freq. Distortion:	<0.1%
Modulation Source:	
Internal	AM, FM, Arbitrary FM, Sweep
External	FSK (Through TRIG IN)

FM

Modulating Shape:	Sine, Square, Triangle / Ramp
Modulation Freq.:	1mHz to 100kHz
Deviation Range:	100mS/s to 50MS/s

ARBITRARY FM

Modulating Shape:	Arbitrary waveform, 10 to 20000 waveform points
Modulating SCLK:	1mS/s to 2MS/s
Deviation Range:	100mS/s to 50MS/s

AM

Envelope Freq.:	1µHz to 500kHz
Modulation Depth:	0% to 100%

FSK

Type:	Hop or Ramp
Low level:	Carrier sample clock
High level:	Hop frequency
Baud Rate Range:	1bits/sec to 10Mbits/sec
Min. FSK Delay:	1 waveform cycle + 50ns
Ramp FSK:	
Time	10µs to 1s
Resolution	3 digits

SWEEP

Sweep Time:	1ms to 1000s
Sweep Step:	Linear, Logarithmic or Arb
Sweep Direction:	Up or down

COMMON CHARACTERISTICS

FREQUENCY

Resolution:	14 digits limited by 1µS/s
Accuracy/Stability:	Same as reference

ACCURACY REFERENCE CLOCK

Internal	0.0001% (1ppm TCXO) initial tolerance over a 19°C to 29°C temperature range; 1ppm/°C below 19°C and above 29°C; 1ppm/year aging rate
External	10MHz TTL, 50% duty cycle

AMPLITUDE

Range:	
5201	80mV to 8Vp-p, into 50Ω
5300	100mV to 10Vp-p, into 50Ω

* Double into open circuit

Resolution:	4 digits
Accuracy (1kHz):	
100mV to 1Vp-p	±(1% + 1mV)
1Vp-p to 10Vp-p	±(1% + 10mV)

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Specification

OFFSET

Range:	
5201	0 to ±3.6V
5300	0 to ±4.5V
Resolution:	2.2 mV
Accuracy:	
500mV Window	±(1% of reading + 1% of amplitude + 2mV)
5V Window	±(1% of reading + 1% of amplitude + 20mV)

FILTERS

Type:	25MHz / 50MHz Elliptic

OUTPUTS

MAIN OUTPUT

Coupling:	DC coupled
Connector:	Front panel BNC
Impedance:	50Ω, ±1%
Protection:	Protected against temporary short to case ground

SYNC/MARKER OUTPUT

Connector:	Front panel BNC
Impedance:	50Ω, ±1%
Level:	>2V into 50Ω, 4V into 10kΩ
Validators:	BIT, LCOM
Protection:	Protected against temporary short to case ground
Position:	Point 0 to n
Width:	4 to 100000 points
Resolution:	4 points
Source:	Main output

SINEWAVE OUTPUT

Connector:	Front panel SMB
Impedance:	50Ω, ±1%
Level:	1V into 50Ω
Protection:	Protected against temporary short to case ground
Source:	Sample clock frequency
Frequency Range:	100mHz to 125MHz
Resolution:	Same as Sample clock
THD:	0.25% to 100kHz
SFDR:	<-30dBc to 125MHz

INPUTS

TRIGGER INPUT

Connector:	Front panel BNC
Input Impedance:	10kΩ, ±5%
Polarity:	Positive or negative
Threshold Level:	TTL
Min. Pulse Width:	20ns

[1] Standard warranty in India is 1 year.

EXTERNAL REFERENCE INPUT

Connector:	Front panel SMB
Frequency:	10MHz
Impedance & Level:	10kΩ ±5%, TTL, 50% ±5%

RUN MODES

Continuous:	Free-run output of a waveform
Triggered:	Upon trigger, outputs one waveform cycle. Last cycle always completed
Gated:	External signal enables generator. First output cycle synchronous with the active slope of the triggering signal. Last cycle of output waveform always completed
Burst:	Upon trigger, outputs a single or multiple pre-programmed number of waveform cycles from 1 through 1M

TRIGGER CHARACTERISTICS

System Delay:	1 Sample Clock+150ns
Trigger Start, Stop & Phase Control:	0 to 2M
Resolution:	4 points
Breakpoint Error:	±4 points
Breakpoint Source:	External, Manual, or command

EXTERNAL

Connector:	Front panel BNC
Level:	TTL
Slope:	Positive or negative
Frequency:	DC to 2MHz
Impedance:	10kΩ, DC coupled

INTERNAL

Range:	100mHz to 2MHz
Resolution:	14 digits, limited by 1µHz
Accuracy:	0.1%

MANUAL

Source:	Soft trigger command from the front panel or remote

MULTI-INSTRUMENT SYNCHRONIZATION

PHASE OFFSET (LEADING EDGE)

Range:	0 to 2M
Resolution:	4 point
Initial Skew:	<20ns, to the first master; 20ns cumulative to additional slaves

GENERAL

Power Consumption:	10W max
Current Consumption:	
+3.3V	1.4A max.
+5V	30mA max.
+12V	200mA max.
-12V	200mA max.
Interfaces:	
5201	PXIBus
5300	PCIBus
Dimensions:	Single Slot
Weight:	
Without Package	0.5Kg
Shipping Weight	1Kg
Temperature:	
Operating	0 - 50°C
Storage	-40°C to + 70°C.
Humidity:	
11°C to 30°C:	85%;
31°C to 50°C:	75%
Safety:	EN61010-1, 2nd revision
Calibration:	1 year
Warranty (1):	3 years standard

ORDERING INFORMATION

MODEL	DESCRIPTION
5201	125MS/s Single Channel PXIBus Arbitrary Waveform Generator
5300	125MS/s Single Channel PCIBus Arbitrary Waveform Generator