

250MHz Single-Channel Arbitrary / Function Generator



WAVE STANDARD SERIES



MODEL WS8251

- Single-channel Function Generator
- 250MHz sine and 150MHz square waves
- Triangle, ramp, sinc, Gaussian, exponential, noise, pulse generation with variable edge, and DC waveforms
- 4 Vp-p into 50Ω, 8Vp-p into open circuit
- 12 Bit, 625 MS/s, 512 Kpoint arbitrary waveforms
- Linear & logarithmic sweeps, triggered, gate and burst
- FM, FSK, and PSK modulation
- High resolution 3.8" LCD, color display
- Ethernet, USB and GPIB interfaces
- ArbConnection software for easy waveform creation&control

The Tabor Wave Standard 8251 is a Single Channel Arbitrary / Function Generator with a 250MHz bandwidth and the functionality of a Function generator, arbitrary generator and Pulse generator all in one easy to use high performance unit. It is a compact stand alone bench top unit that will satisfy all of the industry and education standard testing needs for years to come.

Standard Waveforms

The 8251 has 10 built in functions for quick and easy wave generation. Front panel operations allows for easy selection of wave form and editing of all wave parameters. All of the standard waves can reach up to 50MHz with Sine and Square going as high as 250MHz.

User Defined Waveforms

For more advanced users the 8251 with its 12 bit vertical resolution offers a standard 512Kb memory depth and a 625MS/s sample clock for designing waveforms. With the ability to control and edit the value of each and every point any wave is possible. The Memory can be divided into segments for storing all of the user defined waveforms.

Modulated Waveforms

Agility and modulation capabilities open the door to diverse applications. In addition to the capability of generating any shape and style of waveform with the arbitrary waveform generation power, the products can also do standard modulation schemes such as FM, FSK, sweep and PSK without sacrificing the power of the instrument control and output run modes.

Accuracy and Stability

As standard, the instrument is equipped with an internal frequency reference that has 1ppm accuracy and stability over a period of 1 year. An external frequency reference is provided on the rear panel for applications requiring greater accuracy or stability, supported by the instrument's 14 digits resolution.

Easy to Use

Large and user-friendly 3.8" back-lit color LCD display facilitates browsing through menus, updating parameters and displaying detailed and critical information for your waveform output. Combined with numeric keypad, cursor position control and a dial, the front panel controls simplifies the often complex operation of an arbitrary function generator.

Remote Control

Model 8251 comes standard with a variety of interfaces: Ethernet, USB and GPIB allowing the user to freely select the interface best suited to his individual requirements. The included ArbConnection software is a powerful editorial tool for designing waveforms and provides the user with full control of instrument functions, modes and features.

Multiple Environments to Write Your Code

Model 8251 comes with a complete set of drivers, allowing you to write your application in various environments such as: Labview, CVI, C++, VB, MATLAB. You may also link the supplied dll to other Windows based API's or, use low level SCPI commands (Standard Commands for Programmable Instruments) to program the instrument, regardless if your application is written for Windows, Linux or Macintosh operating systems.

Automated External Self-Calibration

Leading-edge technology is implemented to allow calibration from any interface, USB, GPIB or LAN and calibration factors are stored in a flash memory thus eliminating the need to open instrument covers.

Visit our website at www.taborelec.com


TABOR ELECTRONICS Inc.
Since 1971

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Service and Support

Beyond providing precision Test & Measurement instruments, Tabor Electronics provides unparalleled service and support, and is continuously finding new ways to bring added value to its customers.

Our after-sales services are comprehensive. They include all types of repair and calibration, and a single point of contact that you can turn to whenever you need assistance. As part of our extensive support, we offer individualized, personal attention Help Desk, both online and offline, via e-mail, phone or fax.

Tabor Electronics maintains a complete repair and calibration lab as well as a standards laboratory in Israel and USA. Service is also available at regional authorized repair/calibration facilities.

Contact Tabor Electronics for the address of service facilities nearest you.

Applications

For expert technical assistance with your specific needs and objectives, contact your local sales representative or our in-house applications engineers.

Manuals, Drivers, and Software Support

Every instrument comes equipped with a dedicated manual, developer libraries, I/O drivers, and software. However, if your specific manual is lost or outdated, Tabor Electronics makes it possible to log-on to its Download Center and get the latest data "in a click".

Product Demonstrations

If your application requires that you evaluate an instrument before you purchase it, a hands-on demonstration can be arranged by contacting your local Tabor Electronics representative or the Sales Department at our Corporate Headquarters.

Three-year Warranty

Every instrument from the Wave Standard series comes with a Three-year warranty. Each one has full test results, calibration certificate, and CD containing product's manual and complete software package. Our obligation under this warranty is to repair or replace any instrument or part thereof which, within Three years after shipment, proves defective upon examination. To exercise this warranty, write or call your local Tabor representative, or contact Tabor Headquarters and you will be given prompt assistance and shipping instructions.

Specification 250MHz Single-Channel Arbitrary / Function Generator

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STANDARD WAVEFORMS

SINE

Frequency Range: 50Hz to 250MHz, continuous;
50Hz to 125MHz, triggerable.

Start Phase Range: 0 to 360°

Harmonics Distortion (1Vp-p):

1MHz to 5MHz	<-50dBc
5MHz to 25MHz	<-47dBc
25MHz to 100MHz	<-45dBc
100MHz to 250MHz	<-35dBc

Non-Harmonics Distortion (1Vp-p):

1MHz to 50MHz	<-65dBc
50MHz to 150MHz	<-60dBc
150MHz to 200MHz	<-50dBc
200MHz to 250MHz	<-45dBc

Total Harmonic Distortion:

DC to 100kHz	0.3%
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Flatness (1MHz, 1Vp-p):

1 MHz to 25 MHz	< 0.3dBc
25 MHz to 100 MHz	< 0.5dBc
100 MHz to 250 MHz	< 1dBc

Phase Noise

100Hz Offset	<-83dBc/Hz
1kHz Offset	<-85dBc/Hz
10kHz Offset	<-85dBc/Hz
100kHz Offset	<-112dBc/Hz
1MHz Offset	<-132dBc/Hz

TRIANGLE

Frequency Range: 50Hz to 50MHz

Start Phase Range: 0 to 360°

SQUARE

Frequency Range: 50Hz to 150MHz

Duty cycle Range: 1.0% to 99.9%

Rise/Fall time: <1ns (typically <900ps)

Overshoot, typical: <5%

Jitter (rms): 10 ps

PULSE

Frequency Range: 50Hz to 125MHz

Delay, Rise/Fall Time,

High Time Ranges: 0%-99.9% of period (each independently)

Rise/Fall Time: < 1ns (typically < 900ps)

Overshoot, typical: < 5%

Jitter (rms): < 10 ps

RAMP

Frequency Range: 50Hz to 50MHz

Delay, Rise/Fall

Time: Adjustable with resolution of 0.01% of the period interval

SINC (Sine(x)/x)

Frequency Range: 50Hz to 50MHz

"0 Crossings" 4 to 100 cycles

GAUSSIAN

Frequency Range: 50Hz to 50MHz

Time Constant 10 to 200

EXPONENTIAL PULSE

Frequency Range: 50Hz to 50MHz

Time Constant: -100 to 100

NOISE

Bandwidth: 150MHz

DC

Range: -3V to +3V

DIGITAL PULSE GENERATOR

Period: 4 ns minimum, programmed with 2 ns increments

Pulse Mode: Single or double, programmable

Polarity: Normal, inverted or complemented

Delay, Rise/Fall Time, Double Pulse Delay

High Time: Adjustable with resolution of 0.01% of the period interval

<1 ns (typically <900 ps)

Rise/Fall time: <5%

Overshoot, typical: <5%

Jitter (rms): 10 ps

Amplitude Window: 50mVp-p to 4Vp-p

Low Level -3.0V to +2.9V

High Level -2.9V to +3.0V

NOTES:

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

ARBITRARY WAVEFORMS

Sample Rate: 50kS/s to 625MS/s

Vertical Resolution: 12 bits

Waveform Memory: 512k

No. of Segments: 1 to 1k

Min. Segment Size: 64 points

Resolution: 16 points

COMMON CHARACTERISTICS

FREQUENCY

Resolution: 9 digits

Accuracy and Stability: Same as reference

10MHz REFERENCE CLOCK

Internal	0.0001% (1 ppm TCXO)	1ppm/year
External	10 MHz TTL, 50% 2%, duty cycle	

AMPLITUDE

Range: 50 mV to 4Vp-p into 50Ω;
Double into open circuit

Resolution: 4 digits

Accuracy (1kHz): ±(3% + 5 mV)

OFFSET

Range: 0 to ±1V

Resolution: 4 digits

Accuracy: ±(3% + 50 mV)

FILTERS

Type: 50MHz, 125MHz,

MAIN OUTPUT

Coupling: DC coupled

Connector: Front panel SMA

Impedance: 50Ω nominal

Protection: Protected against temporary short to case ground

SYNC / MARKER OUTPUT

Connector: Front panel SMA

Level: >2 V into 50Ω, 3V nominal into high impedance
Protection: Protected against temporary short to case ground

Type:

BIT

SCOM

Pulse width is 16-points wide;
Pulse width is less than 16 points wide;

Position: Point 0 to n, Programmable with 16-point resolution

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TRIGGER INPUT

Connector:	Front panel SMA
Impedance:	50Ω, ±2%
Threshold Level:	From 0V to ±5V, programmable
Damage Level:	±8V
Sensitivity:	250mV
Min Pulse Width:	20 ns
Slope:	Positive or negative, selectable

EXTERNAL REFERENCE INPUT

Connector:	Rear panel BNC
Level&Impedance:	TTL, 10 kΩ ±2%; 0dBm, 50Ω ±5%
Duty Cycle:	50%, ±2%

MODULATION

FM

Carrier Waveform:	Sine wave
Carrier Frequency:	1Hz to 250MHz
Modulating Waveforms:	Sine, square, triangle and ramp
Modulation Source:	Internal
Modulating Frequency:	1mHz to 100kHz
Modulating Frequency Resolution:	9 digits
Accuracy:	10 ppm
Deviation Range:	100mHz to 248MHz
Marker:	
Output and Level Position	Same as SYNC output. Programmable per frequency

FSK

Carrier Waveform:	Sine wave
Carrier Frequency:	1 Hz to 250 MHz
Modulation Source:	External
Baud Rate Range:	DC to 10Mbits/sec

PSK

Carrier Waveform:	Sine wave
Carrier Frequency:	1 Hz to 250 MHz
Modulation Source:	External
Resolution:	Frequency dependent.
Carrier phase:	0 to 360° (Up to 125MHz)
Baud Rate Range:	DC to 10Mbits/sec

SWEEP

Carrier Waveform:	Sine wave
Sweep Type:	Linear, log or Arb
Sweep Direction:	Up or down
Sweep Range:	1Hz to 250MHz
Sweep Time:	1 ms to 1000 s,
Resolution:	7 digits, ±0.1%
Flatness:	±3dB, throughout the frequency range

TRIGGER CHARACTERISTICS

System Delay:	1 Sample Clock+ (100 ns)
Trigger Delay:	0 to 512k sample clocks
Trigger Delay Resolution:	1 sample clock
Trigger Jitter:	±1 sample clock

EXTERNAL

Input:	Front panel SMA
Frequency:	DC to 10 MHz
Threshold Level:	From 0V to ±5V, programmable
Damage Level:	±8V
Sensitivity:	250mV
Min Pulse Width:	10 ns
Slope:	Positive or negative going edge.

INTERNAL

Range:	0.1μs to 100s
Resolution:	4 digits, limited by 0.1μs
Accuracy:	0.1%
Software:	Soft trigger

MANUAL

Source:	Soft trigger command through the front panel or external interface
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GATED MODE

External signal enables generator. First output cyclesynchronous with the active slope of the triggering signal. Last cycle of output waveform always completed

BURST

Waveforms:	Sine, Triangle, Square, Pulse, Ramp, Sinc (Sine(x)/x), Gaussian Pulse, Exponential Fall, Rising Pulse, Noise, DC.
Counted Burst Cycles:	1 to 1M, programmable
Source:	Manual, Internal or External

GENERAL

Power Supply:	85 to 265Vac, 47-63 Hz
Power Consumption:	60W
Front Panel Display:	Color LCD, 3.8" reflective, 320 x 240 pixels, back-lit
Operating temperature:	0°C - 50°C
Humidity (non-condensing):	11°C - 30°C 85% 31°C - 40°C 75% 41°C - 50°C 45%
Storage temperature:	-40°C to + 70°C.
Interface:	Ethernet 10/100, USB 2.0 and GPIB standard
Language:	IEEE-488.2 - SCPI - 1993.0
Dimensions:	212 x 88 x 415 mm (WxHxD)
Weight:	Approximately 7 lb
Safety:	EN61010-1, 2nd revision
EMC:	CE marked. Designed to meet VDE 0411/03.81 and UL 1244
Reliability:	MTBF per MIL-HDBK-217E, 25°C, Ground Benign
Workmanship Standards:	Conform to IPC-A-610D
Supplied Accessories:	Power Cord, USB cable, CD containing Operating Manual, ArbConnection software and developer libraries.
Warranty:	3 years standard

ORDERING INFORMATION

MODEL	WS8251
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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.