



# 50MHz Pulse/Function Generator

## Model 8551



### 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 However, if your specific manual is lost or outdated, Tabor Electronics makes it possible to log-on to its Download Center and get the latest data "in a click".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 Tabor Electronics instrument comes with a three-year warrantee. 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 50MHz Pulse/Function Generator

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### WAVEFORMS

Sine, Haversine, Haver cosine, Triangle, Square, Positive Pulse, Negative Pulse, Ramp.

### FREQUENCY CHARACTERISTICS

**Range:** 10mHz to 50MHz.  
**Resolution:** 4 digits.

### ACCURACY

**Continuous:**  $\pm 3\%$  of reading, from 10mHz to 999.9mHz;  $\pm 0.1\%$  of reading, from 1Hz to 50MHz.

### VCO and Interrupted Modes:

$\pm 3\%$  of reading, to 50MHz.  
**Jitter:**  $< 0.1\% \pm 50\text{ps}$ .

### WAVEFORM CHARACTERISTICS

#### SINEWAVE

**Total harmonic distortion:**  $< 1\%$  from 10mHz to 1MHz.  
**Harmonic signals below the carrier level:**  
> 40dB, 1MHz – 5MHz;  
> 30dB, 5MHz – 50MHz,  
< 12.0Vp-p;  
> 23dB, 5MHz – 50MHz,  
> 12.0Vp-p.

**Flatness:**  $\pm 1\%$ , 10mHz to 999.9kHz;  
 $\pm 2\%$ , 1MHz to 9.999MHz;  
 $-10\%$ , 10MHz to 50MHz.

#### TRIANGLE, RAMP

**Linearity:** Better than 99%, up to 5MHz (10% to 90% of amplitude).

#### SQUARE WAVE, PULSE

**Rise/Fall time:**  $< 6\text{ns}$ , 10% to 90% of amplitude (5ns typical).  
**Aberration:** less than 5%.

#### SYNC PULSE

**Output level:** 0 to 1V, into 50 $\Omega$ ;  
0 to 2V, open circuit.  
**Rise/Fall time:**  $< 2\text{ns}$ , into 50 $\Omega$ .  
**Aberrations:** less than 5%.

### OUTPUT CHARACTERISTICS

**Stand-By Mode:** Output Normal or Disabled, selectable.  
**Impedance:** 50 $\Omega$ ,  $\pm 1\%$ .

**Output Level:** 20.0mV to 32.0Vp-p, into open circuit;  
10.0mV to 16.0Vp-p, into 50 $\Omega$ .

**Resolution:** 3 digits.  
**Accuracy (1 KHz):**  $\pm 2\%$  of reading, from 10.0mV to 16.0V.

**Output Protection:** Protected against continuous short to case ground.

### OFFSET

**Resolution:** 3 digits.  
**Range:** Offset and amplitude are independently selectable within widow levels of  $\pm 800\text{mV}$  and  $\pm 8\text{V}$ .

**Accuracy:**  $\pm (0.5\%$  of setting + 1% of amplitude + .2mV),  $\pm 800\text{mV}$ ;  
 $\pm (1\%$  of setting + 1% of amplitude + 2mV)  $\pm 8\text{V}$ .

### TRIGGERING CHARACTERISTICS

#### TRIGGER INPUT

**Connector:** Via TRIG/REF BNC.  
**Impedance:** 10k $\Omega$ ,  $\pm 5\%$ .  
**Sensitivity:** 500mVp-p.  
**Maximum Input Voltage:**  $\pm 20\text{V}$   
**Minimum Pulse Width:** 20ns.  
**Slope:** Positive-going leading edge.  
**Source:** Manual (front panel push-button), internal or external stimulate.

### MODES

**Normal:** Continuous wave form is generated.  
**Triggered:** Each input cycle generates a single output cycle.  
**Gated:** External signal enables generator. First output cycle synchronous with active slope of triggering signal. Last cycle of output wave form always completed.  
**Burst:** Preset number of cycles (1-4000) stimulated by an internal, external, or manual trigger.

### TRIGGER STIMULATION FREQUENCY

**External:** To 50MHz;  
**Internal:** from 20 $\mu\text{s}$  to 999s;  
**Manual:** Simulates an external trigger signal.  
**Start Phase offset:** Adjustable, from  $-90^\circ$  to  $+90^\circ$ , to 500.0kHz; proportionally reduced from 500.1 kHz to 50.00MHz.  
**Accuracy:**  $\pm 3^\circ$ , to 500.0kHz  
**Trigger level:** variable, -10.0V to +10.0V.

### PULSE/RAMP CHARACTERISTICS

**Pulse Modes:** Symmetrical Pulse, Positive Pulse, Negative Pulse and Complements.

### PULSE PERIOD

**Range:** 20.00ns to 99.99s.  
**Resolution:** 4 digits.  
**Accuracy and Jitter:** Same as for frequency.

### PULSE WIDTH

**Range:** 10.0ns to 999ms.  
**Setting Accuracy:** 5%  $\pm 2\text{ns}$ , 10.0ns to 99.9ns; 3%, 100ns to 999ms.  
**Resolution:** 3 digits.  
**Duty Cycle Range:** 1% to 80%; up to 99% using the complement mode.  
**Ramp Modes:** Positive or Negative going ramp.

### RAMP PERIOD

**Range:** 7.000 $\mu\text{s}$  to 99.99s.  
**Resolution:** 4 digits.

### RAMP WIDTH

**Range:** 5.00 $\mu\text{s}$  to 999ms.  
**Setting Accuracy:** 3%, 5.00ms to 999ms.  
**Resolution:** 3 digits.  
**Duty Cycle Range:** 1% to 80%.

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### LEAD/TRAIL TIME CONTROL

<b>Range:</b>	8.0ns to 99.9ns, in 6 overlapping ranges. Rise and fall times may independently be programmed within a common range.
<b>In-Range Span:</b>	100:1.
<b>Resolution:</b>	3 digits of programmed value when both transitions are in the first 10:1 portion of their transition time ranges, decreasing to 2 digits at 100:1.
<b>Accuracy:</b>	±(5% + 2ns), to 99.9ns; ±3%, above 99.9ns.
<b>Linearity:</b>	3% for transitions > 100ns.

### CONTROL CHARACTERISTICS

<b>Modes:</b>	VCO, FM, AM, PMW.
<b>Input:</b>	Via front panel CONTROL INPUT BNC connector.
<b>Input Impedance:</b>	10kΩ, ±5%.
<b>Maximum Input Voltage:</b>	±10V.

### VCO (FM) CHARACTERISTICS

<b>Sensitivity:</b>	0V to -4.7V, ±20% produces 1/1000 frequency change from main frequency, when main frequency is set to 9999 counts.
<b>FM Sensitivity:</b>	0V to 0.5V ±70mV, modulates to 1% deviation from center frequency.
<b>Modulation Bandwidth:</b>	DC to 50kHz.

### AM CHARACTERISTICS

<b>Modulation Input:</b>	DC coupled.
<b>Modulation Bandwidth:</b>	DC to 1MHz.
<b>Modulation Range:</b>	200%, at 100MHz; reduced to 70% at 1MHz.
<b>Sensitivity:</b>	0V to 5Vp-p produces 100% modulations; 0V to 10Vp-p produces suppressed carrier amplitude modulation (SCAM).
<b>Envelop Distortion:</b>	< 1% for modulation depth < 90%, carrier frequency < 1MHz, and modulation frequency < 50kHz.

### PWM CHARACTERISTICS

<b>Sensitivity:</b>	0 to 5V, ±20% produces > 10% pulse width change from pulse width setting.
<b>Band Width:</b>	DC to 70kHz.

### PHASE LOCK CHARACTERISTICS

<b>Reference Input:</b>	Via TRIG/REF BNC terminal.
<b>Impedance:</b>	10KΩ, ±5%.
<b>Sensitivity:</b>	500mVp-p.
<b>Max Input Voltage:</b>	±20V (dc + Peak ac).
<b>Minimum Pulse Width:</b>	10ns.
<b>Operation:</b>	Output locks automatically to the frequency and phase of the external signal.
<b>Locking Range:</b>	10Hz to over 60MHz.

### PHASE OFFSET

<b>Range:</b>	Continuously adjustable from -180° to +180°, 10Hz to 19.99MHz.
<b>Resolution:</b>	1°
<b>Accuracy:</b>	±3°, 10Hz to 100kHz.

### GPIB INTERFACE

<b>Interface Functions:</b>	Complies with IEEE488.2, including common commands and queries.
<b>Programmable controls:</b>	All front panel controls except POWER switch.
<b>Subsets:</b>	SH1, AH1, T6, TE0, I4, LE0, SR1, RL1, PP2, DC1, DT1, CO.
<b>Program Message Format:</b>	Program Message Header, Program Data (floating point and / or suffix program data), Program Message Terminator. Characters lower or uppercase.

<b>Response Message Format:</b>	Variable length response format consisting of Response Header, Response Data (NR1, NR2, or NR3 format), and Response Message Terminator.
<b>Status Reporting:</b>	*ESR?, *STB?, and RQS read by Serial Poll.
<b>String Termination:</b>	Selectable NL, END (EOI) or combination of both.
<b>Address Selection:</b>	Front panel programming. Address stored in a non-volatile memory.

### Common Commands and Queries:

\*CAL?, \*CLS, \*ESE, \*ESE?, \*ESR, \*IDN?, \*OPC, \*OPC?, \*RCL, \*RST, \*SAV, \*SRE, \*SRE?, \*STB, \*TRG, \*TST?, \*WAI.

### GENERAL

<b>Display:</b>	4 digits, 7 segment LED's 0.5"
<b>Power:</b>	115/230Vac, 50 or 60Hz, 60W max.
<b>Stored Set-ups:</b>	30 complete sets of front panel set-ups. Storage guaranteed for 3 years.
<b>Operating Temperature:</b>	0 to 50°C, ambient.
<b>Specified Accuracy:</b>	+ 25°C, ±5°C.
<b>Storage Temperature:</b>	-40°C to + 70°C.
<b>Humidity:</b>	80% R.H.
<b>Dimensions:</b>	3.5" x 8.3" x 15.4" (HxWxL).
<b>Rack Mount Dimensions:</b>	3.5" x 19" (HxW).
<b>Weight:</b>	Approximately 12Lbs
<b>EMC:</b>	CE marked
<b>Reliability:</b>	MTBF per MIL-HDBK-217E, 25°C, Ground Benign
<b>Safety:</b>	Designed to meet IEC 1010-1, UL 3111-1, CSA 22.2 #1010
<b>Workmanship Standards:</b>	Conform to IPC-A-610D
<b>Supplied Accessories:</b>	Power Cord, CD containing Operating Manual and developer libraries.
<b>Warranty:</b>	3 years standard

### ORDERING INFORMATION

<b>MODEL</b>	<b>8551</b>
50MHz Pulse / Function Generator	

### ACCESSORIES

<b>S-Rack mount</b>	19" Single Rack Mounting Kit
<b>D-Rack mount</b>	19" Dual Rack Mounting Kit
<b>Case Kit:</b>	Professional Carrying Bag

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



**TABOR ELECTRONICS Ltd.**

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