50MHz Pulse/Function Generator

MODEL 8551

- **Improved and only replacement to HP 8116A.**
- **Three instruments in one: Function Generator, Pulse Generator, and Phase Generator**
- **Popular output waveforms including Sine, Triangle, Square, Pulse, and Ramp**
- **Pulse output waveforms include: normal pulse, fixed duty cycle pulse, and pulse complement**
- **Control input is available for pulse width modulation (PWM), AM, VCO, and FM**
- **Changing pulse levels in less than 6ns**
- **Linear transition times are independently programmable for trailing and leading edges**
- **Auto calibration and Built-in self diagnostics**
- **30 storable, non-volatile, front panel set-ups**
- **Standard GPIB interface**

Model 8551 is a pulse/function generator, which has performance characteristics similar to the Model 8550. In addition, this instrument offers pulse and ramp waveforms as well as their complements. Model 8551 also provides an accurate control over pulse parameters and pulse transition times. The variable rise and fall times may be independently adjusted within common ranges. Linear and logarithmic sweep functions are not available on this model. Output waveforms may be gated, triggered, or may generate a burst of pre-selected number of cycles. The generator also provides a number of externally controlled modes, including VCO, FM, AM, and PLL.

Versatility

Tabor generators are reliable and easy to operate. Rapid, repeatable testing is assured by the user programmed non-volatile memory. Extremely broad frequency and amplitude limits permit usefulness in a variety of complex applications. Parameters are digitally set over exceptionally wide ranges:

- **Frequency** - from 10mHz to 50MHz
- **Amplitude** - from 10mV to 32V
- **Pulse Width** - from 10 ns to 999ms
- **Pulse Transitions** - from 5ns to 99.9ms
- **Phase Lock Offset** - 180°

Self-Calibration

Front panel calibration, even by inexperienced persons, has made maintenance and troubleshooting extremely easy. Output waveform parameters are compared to internal references and are stored together with correcting factors in special tables for later use. If the self-calibration routine fails to successfully complete, the generator produces a failure list that can be evaluated, anytime, either from the front panel or through GPIB reporting query. The self-calibration capability restores full accuracy potential - even at extreme temperatures (0-50 C).

IEEE-488.2 Compatibility

The IEEE-488 standard greatly simplifies interconnection of programmable instrumentation. It clearly defines mechanical, electrical and protocol specifications. The IEEE-488.2 standard, has significantly improved definition of data formats, status reporting, and error handling. This new stand and goes further and defines a set of common commands and common queries for easy and goes further and defines a set of common commands and common queries for easy instrument interchangeability between instruments made by different manufacturers. Models 8550 and 8551 fully comply with IEEE-488.2.

TABOR ELECTRONICS Ltd.

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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, IVI 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.

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TABOR ELECTRONICS Ltd.

The measure of perfection

Specification 50MHz Pulse/Function Generator

Model 8551

WAVEFORMS

Sine, Haversine, Havercosine, Triangle, Square, Positive Pulse, Negative Pulse, Ramp.

FREQUENCY CHARACTERISTICS

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

ACCURACY

Continuous: ±3% of reading, from 10mHz to 999.9mHz; ±0.1% of reading, from 1Hz to 50MHz.
VCO and Interrupted Modes: ±3% of reading, to 50MHz.
Jitter: < 0.1% ± 50ps.

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: ±1%, 10mHz to 999.9KHz; ±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: < 6ns, 10% to 90% of amplitude (5ns typical).
Aberration: less than 3%.

SYNC PULSE

Output level: 0 to 1V, into 50Ω; 0 to 2V, open circuit.
Rise/Fall time: < 2ns, into 50Ω.
Aberrations: less than 5%.

OUTPUT CHARACTERISTICS

Stand-By Mode: Output Normal or Disabled, selectable.
Impedance: 50Ω, ±1%.
Output Level: 20.0mV to 32.0Vp-p, into open circuit; 10.0mV to 16.0Vp-p, into 50Ω.
Resolution: 3 digits.
Accuracy (1 KHz): ±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 ±800mV and ±8V.
Accuracy: ±(.5% of setting + 1% of amplitude + .2mv), ±800mV; ± (1% of setting + 1% of amplitude + 2mv) ±8V.

TRIGGERING CHARACTERISTICS

TRIGGER INPUT

Connector: Via TRIG/REF BNC.
Impedance: 10KΩ, ±5%.
Sensitivity: 500mVp-p.
Maximum Input Voltage: ±20V
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 synchronou swith 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 20µS to 999s;
Manual: Simulates an external trigger signal.
Start Phase offset: Adjustable, from -90° to +90°, to 500.0KHz; proportionally reduced from 500.1 KHz to 50.00MHz.
Accuracy: ±3°, 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% ±2ns, 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: 7.000µs to 99.99s.
Resolution: 4 digits.

RAMP WIDTH

Range: 5.00µs 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

Range: 8.0ns to 99.9ms, in 6 overlapping ranges. Rise and fall times may independently be programmed within a common range.
In-Range Span: 100:1.
Resolution: 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.
Accuracy: ±(5% + 2ns), to 99.9ns; ±3%, above 99.9ms.
Linearity: 3% for transitions > 100ns.

CONTROL CHARACTERISTICS

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

VCO (FM) CHARACTERISTICS

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

AM CHARACTERISTICS

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

PWM CHARACTERISTICS

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

PHASE LOCK CHARACTERISTICS

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

PHASE OFFSET

Range: Continuously adjustable from -180° to +180°, 10Hz to 19.99MHz.
Resolution: 1°
Accuracy: ±3°, 10Hz to 100KHz.

GPIB INTERFACE

Interface Functions: Complies with IEEE488.2, including common commands and queries.
Programmable controls: All front panel controls except POWER switch.
Subsets: SH1 , AH1, T6, TE0, l4, LE0, SR1, RL1, PP2, DC1,DT1, C0.
Program Message Format: Program Message Header, Program Data (floating point and / or suffix program data), Program Message Terminator. Characters lower or uppercase.
Response Message Format: Variable length response format consisting of Response Header, Response Data (NR1, NR2, or NR3 format), and Response Message Terminator.
Status Reporting: *ESR?, *STB?, and RQS read by Serial Poll.
String Termination: Selectable NL, END (EOI) or combination of both.
Address Selection: 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

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

ORDERING INFORMATION

MODEL	8551

50MHz Pulse / 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.

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