45 YEARS OF INNOVATION

MODELS 8550/1

50MHz Single Channel Pulse Function Generators

- Improved replacement to HP 8116A.
- Four instruments in one: Function, Pulse, Phase and Sweep (8550) Generators
- Popular output waveforms including sine, triangle, square, pulse and DC (8550) or ramp (8551)
- 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
- Control inputs for FM, VCO, and AM modulation
- Auto calibration and built-in self diagnostics
- 30 storable, non-volatile, front panel set-ups
- Standard GPIB interface

Model 8550 is an extremely high performance programmable function generator. It provides a variety of signal waveforms to be used as test stimuli for a diversity of electronic devices. For improved immunity to RFI and EMI noise, the instrument is housed in an all-round metal case. The Model 8550 offers many features and functions. such as enhanced accuracy, eight different linear and logarithmic sweep modes, automatic phase lock loop, counted burst, and internal trigger generator. Besides its normal-continuous mode, Model 8550 offers a variety of interrupted and controlled modes.

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 - 10mHz to 50MHz
- Amplitude - 10mVp-p to 32Vp-p
- Pulse Width - 10ns to 999ms
- Pulse Transitions - 5ns to 99.9ms
- Sweep - 10mHz to 50MHz (8550)
- 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 standard 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.

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Specification

CONFIGURATION

Output Channels 1

STANDARD WAVEFORMS

Waveforms:

8550	Sine, Haversine, Havercosine, Triangle, Square, Positive Square, Negative Square, DC
8551	Sine, Haversine, Havercosine, Triangle, Square, Positive Pulse, Negative Pulse, Ramp

Frequency Range: 10mHz to 50MHz.

SINE

Total Harmonic Distortion:
10mHz to 1MHz <1%

Harmonic & Non-Harmonic Distortion:

	<12Vp-p	>12Vp-p
1MHz to 5MHz	<-40dB	<-30dB
5MHz to 50MHz	<-30dB	<-23dB

Flatness:

10mHz to 1MHz	1%
1MHz to 10MHz	2%
10MHz to 50MHz	10%

TRIANGLE

Linearity: Better than 99%, <5MHz

SQUARE

Duty Cycle Range: 1% to 80%
Rise/Fall time: <8ns, (<6ns typ.)
Aberration: <5%

DC (8550 Only)

Range: -8V to +8V, into 50Ω
-16V to + 16V, into open Z
Resolution: 3 digits
Accuracy: ± (1% of reading +100µV)

RAMP (8551 Only)

Period:

Range	7.000µs to 99.99s
Resolution	4 digits

Width:

Range	5.00µs to 999ms
Accuracy	3%
Resolution	3 digits

Duty Cycle Range: 1% to 80%.
Ramp Modes: Positive or Negative

PULSE (8551 Only)

Type: Symmetrical Pulse, Positive Pulse, Negative Pulse and Complements
Modes: Single, Delayed, Double, Fixed duty cycle

PERIOD PARAMETERS

Range: 20.00ns to 99.99s
Resolution: 4 digits
Accuracy / Jitter: Same as for reference

PULSE WIDTH

Range: 10.0ns to 999ms.
Accuracy:

10.0ns to 99.9ns	5% ±2ns
100ns to 999ms	3%

Resolution: 3 digits
Duty Cycle Range: 1% to 80%; up to 99% using the complement mode
Ramp Modes: Positive or Negative

LINEAR TRANSITION TIMES

Range: 8.0ns to 99.9ms, in 6 overlapping ranges.
In-Range Span: 100:1
Resolution:

10:1	3 digits
100:1	2 digits

Accuracy: ±(5% + 2ns), to 99.9ns; ±3%, above 99.9ms
Linearity: 3% for transitions >100ns

MODULATION

VCO / FM

VCO 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.
Bandwidth: DC to 50kHz.

AM

Modulation Input: DC coupled
Bandwidth: DC to 1MHz
Modulation Depth:

100mHz to 1MHz	200%
Above 1MHz	70%

Sensitivity:

0V to 5Vp-p	Produces 100% modulations
0V to 10Vp-p	Produces suppressed carrier amplitude modulation (SCAM)

Envelope Distortion: <1% (Depth < 90%, carrier frequency <1MHz, and modulation frequency <50kHz)

PWM (8551 Only)

Sensitivity: 0 to 5V, ±20% produces >10% pulse width change from pulse width setting
Bandwidth: DC to 70kHz

SWEEP (8550 Only)

Type: Linear or logarithmic
Time: 10ms to 999s, NOMINAL
Direction: Up or down
Modes: Auto, Manual, Triggered, Gated and Burst
Width:

Logarithmic	10 decades max.
Linear	3 decades max.

Sweep Steps:

Logarithmic	50 to 200 steps per decade
Linear	2 to 1000 steps per sweep

Sweep Output:

Logarithmic	
<5 decades	1V/decade
>5 decades	0.5V/decade
Linear	0 to +5V, ±5%

Marker Output: +5V with no marker; drops to 0V, NOMINAL, when marker frequency is reached and remains at this level until end of sweep.
Resolution: Same as reference

PHASE LOCK LOOP (PLL)

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

PHASE OFFSET

Range: -180° to +180°, 10Hz to 20MHz
Resolution: 1°
Accuracy: ±3°, 10Hz to 100kHz

COMMON CHARACTERISTICS

FREQUENCY

Range: 10mHz to 50MHz
Resolution: 4 digits

ACCURACY

Continuous:

10mHz to 1Hz	3% of reading
1Hz to 50MHz	0.1% of reading

VCO/Interrupted: 3% of reading, to 50MHz
Jitter: <0.1% ± 50ps

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Specification

AMPLITUDE

Output Level:	10mV to 16Vp-p into 50Ω 20mV to 32Vp-p, into open Z
Resolution:	3 digits
Accuracy (1 KHz):	±2% of reading

OFFSET

Range:	o to ±800mV or 0 to ±8V
Resolution:	3 digits
Accuracy:	
±800mV	±(.5% of setting + 1% of amplitude + .2mv);
±8V	± (1% of setting + 1% of amplitude + 2mv)

OUTPUTS

MAIN OUTPUT

Connector:	Front panel BNC
Stand-By Mode:	Output Normal or Disabled
Impedance:	50Ω, ±1%
Protection:	Protected against continuous short to case ground

SYNC OUTPUT

Connector:	Front panel BNC
Output level:	0 to 1V, into 50Ω; 0 to 2V, open circuit
Rise/Fall time:	<4ns, into 50Ω
Aberrations:	<5%

INPUTS

CONTROL INPUT

Connector:	Front panel BNC
Modes:	VCO, FM, AM, PMW (8551)
Input Impedance:	10kΩ, ±5%.
Input Level:	±10V

TRIGGER INPUT

Connector:	Via TRIG/REF BNC
Impedance:	10kΩ, ±5%
Sensitivity:	500mVp-p
Input Level:	±20V
Min. Pulse Width:	20ns
Slope:	Positive-going leading edge.

RUN 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.

TRIGGERING CHARACTERISTICS

Frequency:	
External	Up to 50MHz
Internal	20µS to 999s
Start Phase offset:	-90° to +90°, to 500kHz; proportionally reduced from 500.1kHz to 50MHz
Accuracy:	±3°, to 500kHz
Trigger level:	-10.0V to +10.0V
Source:	Manual (front panel push-button), internal or external stimulate.

GENERAL

Voltage Range:	115/230VAC
Frequency Range:	50Hz or 60Hz
Power Consumption:	60W max.
Display Type:	
Size	7 segment LED's 0.5"
Resolution	4 digits
Interfaces:	
GPIB	IEEE 488.2 standard interface
Stored Set-ups:	30 complete sets of front panel set-ups. Storage guaranteed for 3 years
Dimensions:	
With Feet	315 x 102 x 395 mm (WxHxD)
Without Feet	315 x 88 x 395 mm (WxHxD)
Weight:	
Without Package	5.5kg
Shipping Weight	7kg
Temperature:	
Operating	0°C to 50°C
Storage	-40°C to 70°C
Specified Accuracy:	+25°C, ±5°C
Humidity:	80% RH, non condensing
Safety:	CE Marked, IEC61010-1
Calibration:	1 year
Warranty [1]:	3 years standard

ORDERING INFORMATION

MODEL	DESCRIPTION
8550	50MHz Single Channel Function Generator
8551	50MHz Single Channel 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.

[1] Standard warranty in India is 1 year.