50 MHz Modulated Function/Pulse Generators

- *Model 81 Pulse/Function Generator*
- *Model 80 Function Generator*
- *Powerful Performance Affordably Priced*
- *Triggered, Gated, and Burst Modes*
- *AM, FM, VCO and Phaselock/Offset Control Modes*
- *Autocalibration*
- *Ideal for Both Benchtop and ATE Applications*
- *HP 8116A Emulation Mode (Model 81 only)*

Wavetek's family of versatile 50 MHz waveform generators provides an unmatched combination of powerful operating features and affordable pricing. Each model generates sine, triangle, square, positive pulse, and negative pulse waveforms from 10 mHz to 50 MHz with up to 16 Vp-p amplitude into 50Ω. With numerous continuous and non-continuous operating modes — including triggered, gated, and triggered burst, as well as externally controlled AM, VCO and phaselock/offset — Models 80 and 81 are ideal for a wide range of applications.

Model 80 Provides Sweep and FM. In addition to the functions listed above, Model 80 offers linear and logarithmic sweep functions and external FM. This makes the Model 80 an extremely versatile low-cost function generator.

Model 81 Pulse/Function Generator. With programmable pulse period, width, and transition times combined with the function generator features common to the 80 family, the Model 81 provides an impressive set of capabilities for both analog and digital applications.

Store Common Set-ups. Each model stores 30 complete front panel set-ups, allowing easy recall of test set-ups.

Remote Operation. Model 80 and 81 include an IEEE-488.2 (GPIB) interface as standard.

Autocalibration Optimizes Performance. Each Model has an autocalibration feature that allows the user to ensure maximum accuracy each time the unit is used.

Specifications

Except as noted, specifications apply to Models 80 and 81.
NOTE: Specifications apply after a 20 minute warmup.

Standard Waveforms

Sine, triangle, square, positive and negative pulses, and (Model 80 only) DC.

Frequency

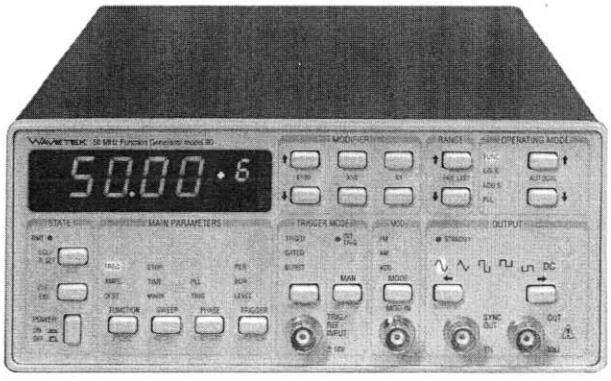
Range: 10 mHz to 50 MHz.
Resolution: 4 digits.
Accuracy (Continuous Mode):
10 mHz to 999.9 mHz: ±3%.
1 Hz to 50 MHz: ±0.1%.
Jitter: ≤ 0.1% ±50 ps.

Waveform Quality

Harmonic Distortion (Sine):
100 mHz to 1 MHz: < 1% THD.
1 MHz to 5 MHz: Max harmonic < -40 dB.
5 MHz to 50 MHz: Max harmonic < -21 dB.
Flatness:
10 mHz to 999.9 kHz: ±1%.
1 MHz to 9.999 MHz: ±2%.
10 MHz to 50 MHz: -15%.
Triangle and Ramp Linearity ≤5 MHz (10% to 90% of Amplitude): > 99%.
Square Rise/Fall Time (10% to 90% of Amplitude): < 6ns.
Square Aberrations: < 5%.

Pulse & Ramp (Model 81 Only)

Pulse Modes: Symmetrical pulse, positive pulse, negative pulse, and the complement to all pulse waveforms.
Pulse Period:
Range: 20ns to 99.99 s.
Resolution: 4 digits.
Accuracy and Jitter: As for frequency.



Pulse Width:
Range: 10ns to 999ms.
Setting Accuracy:
10ns to 99.9ns: ±(5% + 2ns).
100ns to 999ms: 3% ±(4% + 2ns).
Resolution: 3 digits.
Duty Cycle Range: 1% to 80%. Up to 99% using the complement mode.
PWM Range: 0 to 5V ±20% produces > 10% pulse width change from pulse width setting.
PWM Bandwidth: DC to 70 kHz.
Ramp Modes: Positive or negative going ramp.
Ramp Period:
Range: 7µs to 99.99 s.
Resolution: 4 digits.
Ramp Width:
Range: 5µs to 999ms.
Setting Accuracy (5µs to 999ms): 3%.
Resolution: 3 digits.
Duty Cycle Range: 1% to 80%.
Transition Times:
Range: 8ns to 99.9ms in six overlapping ranges. Leading and trailing edges are independently programmable.
Max Ratio between Ranges: 100 to 1.
Accuracy:
8ns to 99ns: ±(5% + 2ns).
100ns to 99.9ms: ±(4% + 2ns).

Modulation

AM and SCM: External 0 to 10V produces 0 to 200%.
Range: 0 to 200%, reduced to 70% at 1 MHz.
Bandwidth: DC to 1 MHz.
VCO:
Range: 4.7V change produces approx 1000:1 frequency change.
Bandwidth: DC to 50 kHz.
FM (Model 80 only):
Range: 0 to 0.5V change produces 1% deviation.
Bandwidth: DC to 50 kHz.

Amplitude

Range:
Into 50Ω: 10 mV to 16Vp-p.
Into Open Circuit: 20 mV to 32Vp-p.
Resolution: 3 digits.
Accuracy (at 1 kHz): ±4 % reading.

DC Offset

Offset and amplitude are independently adjustable within two windows:
-800 mV to +800 mV.
-8V to +8V.
Range:
±800 mV Window: ±795 mV.
±8V Window: ±7.95V.
Resolution: 3 digits.
Accuracy (At 1 kHz):
±800 mV Window: ±(1% of setting + 1% of amplitude + 0.2 mV).
±8V Window: ±(1% of setting + 1% of amplitude + 2 mV).

Main Output

Modes: Normal (on) or disabled (off).
Impedance: 50Ω ±1%.
Output Protection: Protected against continuous short to chassis ground.

Sync Output

Level (Into 50Ω): 0 to 1V
Rise/Fall Time: < 3ns

Operating Modes

Continuous, triggered, phaselock, start phase, and (Model 80 only) sweep.

Sweep Operation (80 Only)

Modes: Sweep may be continuous or triggered by any trigger mode.
Sweep Spacing: Linear and logarithmic.
Sweep Directions: Up, down, up-down, and down-up.
Sweep Range:
Log: 10 decades max.
Linear: 3 decades max.
Sweep Rate:
Log: 10ms to 999 s per decade.
Linear: 10ms to 999 s.
Sweep Out: 0 to 5V ramp proportional to frequency at rear panel BNC.
Marker Output: Output signals when marker frequency is reached.

Triggered Operation

Modes: Single shot, gated, and burst.
Sources: Manual (front panel key), internal trigger rate generator, and external signal input.
Triggered: For each trigger, one output cycle is generated.
Gated: Continuous waveform cycles are generated for the duration of the active portion of the trigger signal. Last cycle is always completed.
Burst: Preset number of waveform cycles are generated by a trigger: 1 to 4,000.
Manual Trigger: Key provides trigger signal.
Internal Trigger Rate Generator: 1 mHz to 50 kHz.
External Input: Via Trig Input BNC.
Impedance: 10 kΩ ±5%.
Sensitivity: 500 mVp-p
Max Input Voltage: ±20V.
Min Pulse Width: 20ns.
Max Frequency: 50 MHz.
Slope: Positive or negative going leading edges.
Trigger Level: Variable -10V to +10V.
Start Phase of Triggered Waveform:
To 500 kHz: Adjustable from -90° to +90°.
From 500.1 kHz to 50 MHz: Adjustable range proportionally reduced as frequency increases.
Accuracy (to 500 kHz): ±3°.

Phaselock Operation

Output waveform locks to frequency and phase of external signal. Phase may be offset.
Impedance: 10 kΩ ±5%.
Min Pulse Width: 10ns.
Locking Range: 10 Hz to 60 MHz.
Phase Offset (10 Hz to 19.99 MHz):
Continuously adjustable from -180° to +180°.
Resolution: 1°.
Accuracy (10 Hz to 100 kHz.): 3° + 3% of reading.

General

Remote Operation: GPIB interface is standard on Models 80 and 81. HP8116A emulation mode (Model 81 only).
Environment:
Operating Temperature: 0° to 50° C, ambient.
For Specified Accuracy: Within ±5° C and 24 hours of last internal calibration.
Storage Temperature: -40° to +70° C.
Humidity: 80% R.H.
Power: 115/230Vac, optional 100V, 50 or 60 Hz, 60 W max.
Stored Set-ups: Complete sets of front-panel set-ups stored: 30
Dimensions: 8.9 cm (3.5 in) high x 21.1 cm (8.3 in) wide x 39.1 cm (15.4 in) deep.
Rack Mount Dimensions:
Single: 8.9 cm (3.5 in.) H x 48.3 cm (19 in.) W.
Dual: 13.3 cm (5.25 in) H x 48.3 cm (19 in) W.
Weight: 6 kg (12 lb).

Ordering Information

Model 80: 50 MHz Function Generator
Model 81: 50 MHz Pulse/Function Generator

Options for Models 80 and 81

Option 001: Single Rack Mount Kit
Option 002: Dual Rack Mount Kit