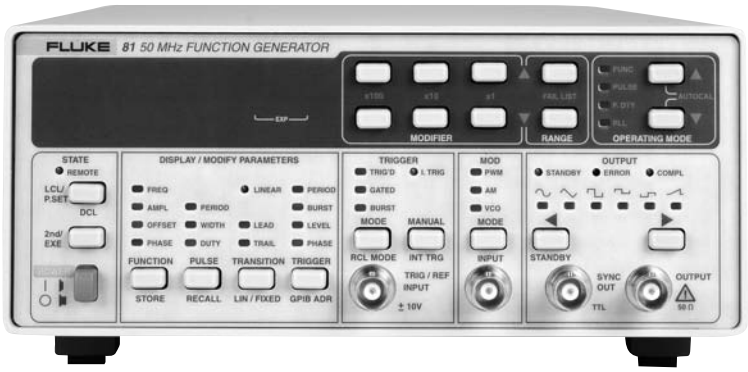
FLUKE®

80/81 Function Pulse Generators

50 MHz function/pulse generators

Technical Data

Ideal for both benchtop and ATE applications, the 80/81 family of 50 MHz waveform generators provides an unmatched combination of powerful operating features and great value. 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 50 Ω. With many continuous and non-continuous modes from which to choose, Models 80/81 are ideal for a wide range of test applications.



Key features:

- Powerful performance
- AM, FM, VCO, and phaselock/offset control modes
- Automated calibration
- Ideal for both benchtop and ATE applications
- HP 8116A emulation mode (81 only)

80 Function Generator

Model 80 provides linear and logarithmic sweep functions and external FM. This makes the 80 an extremely versatile low-cost function generator.

81 Pulse/Function Generator

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

Store common setups

Both the 80 and 81 stores 30 complete front panel setups, 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 auto calibration feature that allows the user to ensure maximum accuracy each time the unit is used.

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80/81 Specifications

Standard waveforms

Standard waveforms	Sine, triangle, square, positive and negative pulses (Model 81 only) and dc (Model 80 only)

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

Sine wave	
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, Ramp	
Linearity	≤ 5 MHz (10 % to 90 % of Amplitude): > 99 %
Square wave	
Rise/fall time	(10 % to 90 % of Amplitude): < 6 ns
Aberrations	< 5 %

Pulse and ramp (Model 81 only)

Pulse modes	Symmetrical pulse, positive pulse, negative pulse, and the complement to all pulse waveforms
Pulse period	Range: 20 ns to 99.99 s Resolution: 4 digits Accuracy and Jitter: As for frequency
Pulse width	Range: 10 ns to 999 ms Setting Accuracy: 10 ns to 99.9 ns: ± (5 % + 2 ns) 100 ns to 999 ms: 3 % ± (4 % + 2 ns) Resolution: 3 digits Duty Cycle Range: 1 % to 80 %. Up to 99 % using the complement mode PWM Range: 0 to 5 V ± 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: 7 µs to 99.99 s Resolution: 4 digits
Ramp width	Range: 5 µs to 999 ms Setting Accuracy (5µs to 999 ms): 3 % Resolution: 3 digits Duty Cycle Range: 1 % to 80 %
Transition times	Range: 8 ns to 99.9 ms in six overlapping ranges. Leading and trailing edges are independently programmable. Max Ratio between Ranges: 100 to 1 Accuracy: 8 ns to 99 ns: ± (5 % + 2 ns) 100 ns to 99.9 ms: ± (4 % + 2 ns)

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80/81 Specifications cont.

Modulation

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

Amplitude

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

DC Offset

DC offset	Offset and amplitude are independently adjustable within two windows: -800 mV to +800 mV -8 V to +8 V
Range	± 800 mV window: ±795 mV ± 8 V window: ± 7.95 V
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	50 Ω ± 1 %
Output protection	Protected against continuous short to chassis ground
Output level	20.0 mV to 32.0 V_{p-p} into open circuit, 10.0 mV to 16.0 V_{p-p} into 50 Ω
Resolution	3 digits
Accuracy	± 4 % of reading

Sync output

Level (Into 50 Ω)	0 to 1 V
Rise/fall time	< 3 ns

Operating Modes

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

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: 10 ms to 999 s per decade Linear: 10 ms to 999 s
Sweep Out	0 to 5 V ramp proportional to frequency at rear panel BNC Marker Output: Output signals when marker frequency is reached

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80/81 Specifications cont.

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: ± 20 V Min Pulse Width: 20 ns Max Frequency: 50 MHz Slope: Positive or negative going leading edges Trigger Level: Variable -10 V to +10 V
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

Phaselock operation	Output waveform locks to frequency and phase of external signal. Phase may be offset.
Impedance	10 kΩ ± 5 %
Min pulse width	10 ns
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 Specifications

General

Remote operation: GPIB interface is standard on Models 80 and 81. HP8116A emulation mode (Model 81 only)

Environment

Operating temperature: 0 °C to 50 °C, ambient
For specified accuracy: Within ± 5 °C and 24 hours of last internal calibration
Storage temperature: -40 °C to +70 °C
Humidity: 80 % R.H.
Power: 115/230 V ac, optional 100 V, 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

Models

Model 80 50 MHz Function Generator

Model 81 50 MHz Function/ Pulse Generator

Fluke. *Keeping your world up and running.*

Fluke Corporation
PO Box 9090, Everett, WA USA 98206

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

For more information call:
In the U.S.A. (800) 443-5853 or
Fax (425) 446-5116
In Europe/M-East/Africa (31 40) 2 675 200 or
Fax (31 40) 2 675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-5500 or
Fax +1 (425) 446-5116
Web access: http://www.fluke.com/

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