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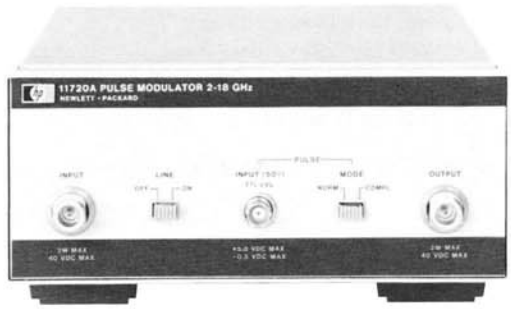
SIGNAL GENERATORS

Portable Cavity-Tuned Sources, Pulse Modulator

HP 8683/8684B,D, 11720A

- Portable signal generators with high performance modulation
- Internal pulse modulation source
- Wide FM deviation for satellite video ±10 MHz peak
- dc coupled FM with rates to 10 MHz
- 2 to 18 GHz Pulse Modulator
- <10 ns rise and fall times
- >80 dB ON/OFF ratio

HP 8684D



HP 11720A

HP 8683/8684 Microwave Signal Generators

The HP 8683 and 8684 are rugged portable signal generators designed for demanding benchtop and field maintenance environments.

With high performance AM, FM and pulse modulation, including a built in pulse generator, the HP 8683/84 provides the capability to test modern communications, radar and EW systems.

Frequency

Range

HP 8683B: 2.3–6.5 GHz.
HP 8683D: 2.3–13.0 GHz.
HP 8684B: 5.4–12.5 GHz.
HP 8684D: 5.4–18.0 GHz.

Resolution: HP 8683, 5 MHz using a 4 digit LED display; HP 8684, 10 MHz using a 3 ½ digit LED display.

Stability (typical)

vs. time (20 min. after turn-on): <30 kHz/min.
vs. time (60 min. after turn-on): <100 kHz/hr.
vs. temperature (0°C to 55°C): HP 8683, <15 MHz; HP 8684, <30 MHz.
vs. line voltage (transients of +5%/−10%): <20 ppm.

Spectral Purity

Harmonics (<18GHz, at specified max output): <−25 dBc. HP 8683/84D harmonics are unspecified in x2 frequency band.
Spurious (non-harmonically related): <−80 dBc; typ, <−90 dBc.
Single-sideband phase noise (avg. rms, 1 Hz BW, 10 kHz offset from carrier, typical): HP 8683B, <−72 dBc; HP 8683D, <−66 dBc; HP 8684B, <−65 dBc; HP 8684D, <−59 dBc.

Output

Range (leveled into 50Ω): HP 8683/84B, +10 to −130 dBm; HP 8683/84D, +10 to −130 dBm (main band), −3 to −130 dBm (x2 band), +10 dBm in x2 bands available with Option 001.
Resolution: 0.1 dB using a 3 ½ digit LED display.
Accuracy: ±2.5 dB from maximum specified output power to −110 dBm (to −100 dBm in x2 bands); ±3.5 dB to −120 dBm and 0 to +10 dBm for Opt 001. *Typ. <±0.9 dB at −100 dBm.* Option 002 affects level accuracy <±0.5 dB.
Flatness (power level >−10 dBm): ±1.0 dB. (Not for Opt. 001)

Amplitude Modulation

Depth (1 kHz rate): 0-70%.
Rates (3 dB BW at 40% depth): dc to 10 kHz (dc coupled); 50 Hz to 10 kHz (ac coupled).
Internal AM: fixed 1 kHz nom. square wave with 50 ±5% duty cycle.

Frequency Modulation

Peak deviation: HP 8683/84 B, ±5 MHz; HP 8683/84D, ±5 MHz (main); ±10 MHz (x2 band).
Rates (3 dB BW): dc to 10 MHz, 100 Hz to 10 MHz (ac coupled).
Internal FM: FM sawtooth with a fixed sweep rate of 1 kHz nom. and variable deviation up to ±5 MHz (±10 MHz for D models, x2 bands).

Pulse Modulation

HP 8683/84 B/D internal pulse generator

Rate: 10 Hz to 1 MHz continuously adjustable in 5 ranges.
Width: 50 ns to 100 ms continuously adjustable in 7 ranges.
Delay (time between sync out and video out): <50 ns to 100 ms in 7 ranges with continuous adjustment within ranges.

HP 8683/84 B/D external pulse input requirements

Rate: 0 to 1 MHz.
Width: >100 ns.
Level: on >+1.0 V peak; off <+0.4 V peak.

HP 8683/84 B/D RF pulse specifications

Rise/fall time: <10 ns.
On/off ratio: >80 dB.
Minimum pulse width: <100 ns.
Maximum pulse repetition frequency: >1 MHz.
Peak pulse power: ±0.5 dB of level set in CW mode.

General

Operating temperature range: 0°C to 55°C.
EMI: MIL-STD-461, VDE0871, CISPR Pub. 11.
Power: 100, 120, 220 or 240V, +5%, −10%; 48 to 66 Hz; <200 VA max.
Size: 145 H x 457 W x 472 mm D (5.7″ x 18″ x 18.6″).
Weight: HP 8683: net, 17.9kg (39 lb); shipping, 23.4 kg (51 lb). HP 8684: net, 16.5 kg (36 lb); shipping, 22.0 kg (48 lb).

HP 11720A Pulse Modulator

The HP 11720A Pulse Modulator is a high-performance microwave pulse modulator covering the range of 2 to 18 GHz.

In addition to wide frequency coverage, the HP 11720A features extremely short rise and fall times (<10 ns) and a high on/off ratio (>80 dB), making it suitable for almost any pulsed RF application.

Frequency range: 2 to 18 GHz.
ON/OFF ratio: >80 dB.
Rise and fall times: <10 ns.
Insertion loss: <6 dB, 2 to 12.4 GHz; <10 dB, 2 to 18 GHz.
Maximum RF input power: +20 dBm.
Maximum repetition rate: >5 MHz.
Minimum RF pulse width: <50 ns.
Video feedthrough: <60 mV peak-to-peak.
Operating temperature: 0°C to 55°C
Power: 100, 120, 220, 240 V, +5%,-10%; 48-400 Hz; 25VA max
Weight: net, 2.6 kg (5 lb 12 oz); shipping, 3.6 kg (8 lb.).
Size: 101 H x 212 W x 290 mm D (4.0″ x 8.4″ x 11.4″)

Ordering Information	Price
HP 8683/84B Microwave Signal Generator	$21,000
Opt W30: Extended repair service. See page 723.	+$410
HP 8683/84D Microwave Signal Generator	$25,000
Opt 001 +10 dBm in x2 band, HP 8683D	+$3,000
Opt 001 +10 dBm in x2 band, HP 8684D	+$5,000
Opt W30 Extended repair service. See page 723.	+$530
Opt 002 Reverse power protection (except D models)	+$725
Opt 910 Extra operating and service manual	+$50
Opt 913 Rack mounting flange kit	+$35
HP 11720A Pulse Modulator	$4,200
Opt W30 Extended repair service. See page 723	+$95

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