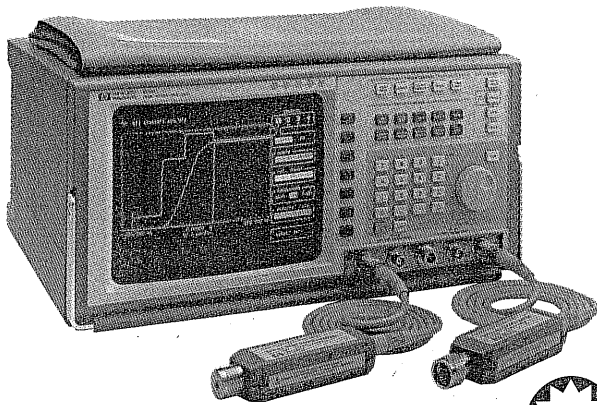


# POWER METERS

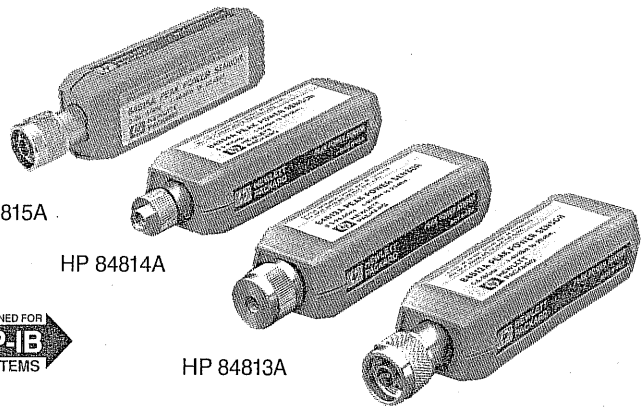
## Peak Power Analyzer, Peak Power Sensors

HP 8990A, 8991A, 84812A, 84813A, 84814A, 84815A

173



HP 8991A



HP 84815A

HP 84814A

HP 84813A

HP 84812A



### HP 8990A and HP 8991A Peak Power Analyzers Complete Pulse Power Characterization

The HP 8990A and new HP 8991A Peak Power Analyzers provide complete and accurate characterization of today's complex pulsed signals. They are capable of performing seven automatic timing measurements (rise time, fall time, pulse width, PRI, PRF, duty cycle, and delay) and five automatic power measurements (peak power, average power, pulse top/base amplitude, and overshoot) with pushbutton ease. Front panel operation is intuitive and straightforward. Data entries can be typed in or made with the front panel knob; automatic measurements are made with simple keystrokes.

The HP 8990A and 8991A offer two sensor channels plus two external triggering/oscilloscope channels, allowing the simultaneous measurement of modulating signals and detected power envelopes. Powerful measurement and display routines put you in control of your most demanding pulse applications. Measurement statistics, high speed/high sensitivity triggering, amplitude and time markers, dual-timebase windowing, measurement limit test, waveform storage, and waveform math are some of the new capabilities featured in the HP 8990A and 8991A.

The peak power analyzer is compatible with the HP 84812/3/4/5A peak power sensors. These sensors give you outstanding measurement accuracy in demanding situations and include automatic temperature sensing and correction.

#### New Lower-Cost Peak Power Analyzer

- <10 ns rise/fall time
- >40 dB dynamic range
- Contact HP for information.

### HP 8990A and 8991A Specifications

#### Sensor inputs (Channels 1 & 4)

**Frequency Range:** 50 MHz to 40 GHz, sensor dependent

**Power Range:** -33 to +20 dBm (usable to -40 dBm)

#### Rise/Fall Time:

Input signal range (dBm)	Rise time/fall time
0 to +20	< 5 ns
-16 to 0	(<45 ns with HP 84815A)
-26 to -16	<6 ns
-32 to -26	(<45 ns with HP 84815A)
	<1 μs
	<80 μs

#### Instrumentation Uncertainty, Including Noise and Offset:

$$\pm \left( 3.5\% + \frac{0.07 \mu W}{\text{signal power}} \times 100\% \right)$$

**Max Pulse Repetition Rate:** 100 MHz externally triggered, 1 MHz internally triggered

**Linear Vertical Scale:** 50 nW/div to 20 mW/div in 1-2-5 sequence

**Log Vertical Scale:** 0.1 to 10 dB/div in 1-2-5 sequence

#### Video Inputs (Channels 2 & 3)

**Bandwidth:** dc coupled: dc to 100 MHz (repetitive); dc to 1 MHz (single shot). ac coupled: 10 Hz to 100 MHz (repetitive); 10 Hz to 1 MHz (single shot).

**Rise time:** <5 ns

**Vertical sensitivity:** 100 mV/div to 500 mV/div

**Vertical gain accuracy:** ±1.5%

**Available offset range:** ±20 Vdc, ±10 Vac

#### Time Base

**Range:** 2 ns/div to 5 s/div in 1-2-5 sequence

**Resolution:** 100 ps

**Accuracy:** 0.005%

#### General Characteristics

**Power requirements:** Voltage: 90 to 132 or 198 to 264 Vac; 48 to 66 Hz. Power: 250 VA max

**HP-IB codes:** SH1, AH1, T5, L4, SR1, RL1, PP1, DC1, DT1, C0, E2  
**Size:** 422 mm W × 194 mm H × 366 mm D (16.62 in × 7.65 in × 14.4 in)

**Weight:** Net, 12.8 kg (28 lb); shipping, 20.1 kg (44 lb)

#### HP 84812A/13A/14A/15A Specifications:

**Frequency Range:** HP 84812A: 500 MHz to 18 GHz

HP 84813A: 500 MHz to 26.5 GHz

HP 84814A: 500 MHz to 40 GHz

HP 84815A: 50 MHz to 18 GHz

**Power Range:** -32 to +20 dBm (usable to -40 dBm)

**Sensor Input SWR** (reflection coefficient):

50 MHz to 18 GHz: 1.25 (0.11)

6 to 18 GHz: 1.30 (0.13) (HP 84815A only)

18 GHz to 26.5 GHz: 1.35 (0.15)

26.5 GHz to 40 GHz: 1.60 (0.23)

#### Sensor Calibration Uncertainty:

Frequency	RSS uncertainty
< 4 GHz	± 3.6%
< 12 GHz	± 3.8%
< 18 GHz	± 4.3%
< 26.5 GHz	± 5.5%
< 40 GHz	± 6.5%

**Connector Type:** HP 84812A, HP 84815A: Type-N (m)

HP 84813A: APC-3.5 mm (m)

HP 84814A: 2.4 mm (m)

#### General Characteristics

**Size:** HP 84812A, HP 84815A: 37 mm W × 27 mm H × 137 mm D (1.45 in × 1.05 in × 5.4 in)

HP 84813A, HP 84814A: 37 mm W × 27 mm H × 127 mm D (1.45 in × 1.05 in × 5.0 in)

**Weight:** Net, 0.29 kg (0.64 lb); shipping, 0.64 kg (1.4 lb)

#### Ordering Information

**HP 8990A** Peak Power Analyzer

**Opt 001** Deletes Channel 4

**Opt W30** Extended Repair Service (see page 624)

**HP 8991A** Peak Power Analyzer

**Opt W30** Extended Repair Service

**HP 84812A** Peak Power Sensor

**Opt W30** Extended Repair Service (see page 624)

**HP 84813A** Peak Power Sensor

**Opt W30** Extended Repair Service (see page 624)

**HP 84814A** Peak Power Sensor

**Opt W30** Extended Repair Service (see page 624)

**HP 84815A** Peak Power Sensor

**Opt W30** Extended Repair service (see page 624)