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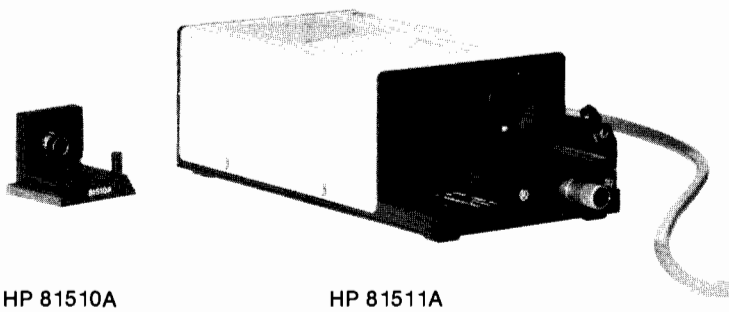
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FIBER OPTIC TEST EQUIPMENT

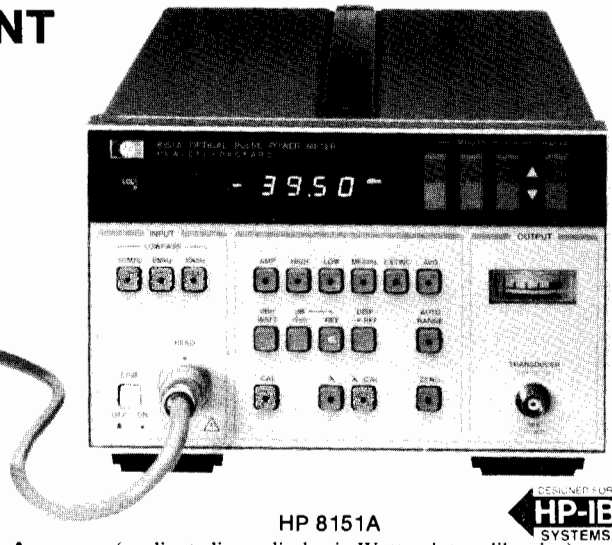
Optical Pulse Power Meter

Model 8151A with 81511A/81512A

- Peak and average power measurements
- Accuracy ± 2.5%
- O/E transducer capability



HP 81510A HP 81511A



HP 8151A

The HP 8151A, in combination with the HP 81511A/81512A Optical Heads, is a response measuring instrument for the level characterization of fiber optic components, modules and systems. In addition to performing average power measurements, the HP 8151A enables the user to accurately determine upper and lower peak power levels - important in digital applications. This feature is also useful for applications where non-repetitive signals need to be evaluated, or where threshold levels are to be determined. The instrument's versatility is further enhanced by capabilities which allow the user to measure the amplitude, mesial power and extinction ratio of a signal.

The instrument's transducer has a frequency range of 250MHz, and outputs an electrical signal which corresponds directly to the optical input waveform. The transducer output can be applied to other instruments for further processing, or displayed on an oscilloscope. By using the transducer, timing related measurements as functions of optical power (e.g. propagation delay versus power) are possible.

HP-IB programmability is a standard feature of this instrument, thereby giving the user total remote control of all power meter functions.

HP 81511A and HP 81512A Optical Heads

These products complement the operation of the HP 8151A Optical Pulse Power Meter. The HP 81511A Optical Head is for use at operating wavelengths between 550 and 950nm (calibrated for 850nm), and the HP 81512A for use between 900 and 1725nm (calibrated for 1300nm). The HP 8151A cannot be operated without an optical head. All heads carry interface adapters for fiber connectors (Standard 'Diamond HMS-10', optional NEC/D3 (FC), and others) and bare fibers. The manual z-microdrive facilitates the optimum coupling of the fiber end to the PIN diode in the head. The HP 8151A's frontpanel trend meter assists in determining the coupling efficiency.

A calibration grid on top of each optical head indicates typ. correction factors to be entered into the HP 8151A for operating wavelengths other than that for which the head is calibrated. Thus, the HP 8151A can be adapted to operate at any wavelength in the 550 to 1725nm range.

HP 8151A Specifications

Optical characteristics of HP 81511A/81512A Optical Heads

Wavelength range HP 81511A: 550 to 950nm, cal for 850nm
HP 81512A: 900 to 1725nm, cal for 1300nm
Maximum core diameter: HP 81511A: 200μm
HP 81512A: 100μm

Optical power measurements

Parameters measured: high, low, and mesial power levels, amplitude, extinction ratio, average power
Measurement range: HP 81511A: +10dBm to - 60dBm
HP 81512A: 0dBm to - 50dBm
Resolution: 3 digits (Watts), 1pW min.
4 digits (dB), 0.01dB min.

Accuracy: (applies to linear display in Watt, rel. to calibration):

Range		Hi/Low Peak Power	Average Power
[dBm]	± (of read + counts)	Flatness	± (of read + counts)
+10 [1]	0.3dB + 5	200Hz - 9.99MHz: ±0.4dB of ampl.[2]	0.1dB + 5
0	0.3dB + 30[2]	10MHz - 99.9MHz: ±0.6dB of ampl.[2]	0.1dB + 5
–10	0.35dB + 50		0.1dB + 5
		Bandwidth	
–20	0.2dB + 10	10kHz	0.1dB + 5
–30	0.2dB + 10	6kHz	0.1dB + 5
–40	0.2dB + 20[2]	1kHz [2]	0.15dB + 10[2]
–50	0.2dB + 50[2]	1kHz[2]	0.2dB + 50[2]
–60[1]	0.3dB + 80[1]	4kHz[1]	0.2dB + 50[1]

1) not valid for HP 81512A 2) better specifications for HP 81511A

Transducer (opto-electric conversion)

Actual waveform depends on measurement range. Calibrated for 850nm (HP 81511A)/1300nm (HP 81512A).

Conversion Accuracy (for 30Hz squarewave):

Range [dBm]	Conversion Factor DC	Accuracy of Conversion	Bandwidth w/o Lowpass	rms Noise [dBm]
+10 [1]	1V/10mW[1]	±0.3dB ±10mV[1]	DC-250MHz[1]	–20[1]
0	1V/1mW	±0.3dB±10mV	DC-250MHz[2]	–20[3]
–10	1V/.1mW	±0.35dB ±20mV	DC-250MHz[2]	–30
–20	1V/10μW	±0.3dB ±20mV	DC-10kHz	–40[3]
–30	1V/1μW	±0.3dB±20mV	DC-6kHz	–50[3]
–40	1V/.1μW	±0.3dB ±20mV	DC-1kHz[3]	–60[3]
–50	1V/10nW	±0.3dB ±50mV[3]	DC-1kHz[3]	–60[3]
–60[1]	1V/1nW[1]	±0.3dB ±20mV[1]	DC-4kHz[1]	–70[1]

1) for HP 81511A only 2)150MHz for HP 81512A 3)better specifications for HP 81511A

Pulse response

Transition time: ≤ 2ns full b/w (≤3ns for HP 81512A)
Perturbations: ≤ 10% of amplitude

General

HP-IB capability
Interface functions: SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0
Recalibration period: 1 year
Environmental
Storage temperature: – 40°C to + 70°C
Operating temperature: 0°C to +55°C.
Humidity: 95% R.H. from 0°C to + 40°C
Power: 100/120/220/240 Vrms; +5%, –10%, 48 to 66Hz, 100VA max.
Weight: HP 8151A: net 8kg (17.5lbs), shipping 10kg (22lbs)
HP 81511A: net 1.3kg (2.9lbs), shipping 2kg (4.4lbs)
HP 81512A: same as for HP 81511A
Size: HP 8151A: 140mm(H) x 220mm(W) x 530mm(D) (5.7″ x 9″ x 21.6″)
HP 81511A: 60mm(H) x 96mm(W) x 200mm(D) (2.5″ x 3.9″ x 8.2″)
HP 81512A: same as for HP 81511A

Ordering information

	Price
HP 8151A Optical Pulse Power Meter	$7500
Opt 907: Front handle kit HP P/N 5061-0089	$ 55☎
Opt 908: Rack mount kit HP P/N 5061-0057	$32.50☎
Opt 910: Extra operating and service manual HP P/N 08151-90001	$ 60
HP 81511A Optical Head 550 to 950nm	$3500
HP 81512A Optical Head 900 to 1725 nm	$4800

Note: The HP 8151A cannot be used without an optical head and connector adapter. For connector adapters and cleaning kit, see 'Fiber Optic Test Accessories' on page 581

☎Fast-Ship product—see page 766.

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