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

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 lightwave 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 (150MHz) 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.

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).

All heads carry interface adapters for fiber connectors and bare fibers.

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, HP 81511A, HP 81512A Specifications

Wavelength range HP 81511A: 550 to 950nm, cal at 850nm
HP 81512A: 900 to 1725nm, cal at 1300nm
Maximum core diameter: HP 81511A: 200μm **HP 81512A:** 100μm
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), 4 digits (dB)
Calibration Accuracy: HP 81511A ±3%
HP 81512A ±8%

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]	0.3 dB + 5	200 Hz - 9.99MHz: ±0.4dB of ampl.[2]	0.1 dB + 5
0	0.3 dB + 30[2]	10 MHz - 99.9 MHz: ±0.6dB of ampl.[2]	0.1 dB + 5
–10	0.35 dB + 50		0.1 dB + 5
		Bandwidth	
–20	0.2 dB + 10	10kHz	0.1 dB + 5
–30	0.2 dB + 10	6kHz	0.1 dB + 5
–40	0.2 dB + 20[2]	1kHz[2]	0.15 dB + 10[2]
–50	0.2 dB + 50[2]	1kHz[2]	0.2 dB + 50[2]
–60[1]	0.3 dB + 80[1]	4kHz[1]	0.2 dB + 50[1]

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

Transducer
Conversion Accuracy[4] (for 30Hz squarewave):

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

1) for HP 81511A only 2)150MHz for HP 81512A 3)better specifications for HP 81511A
4) HP 81511A calibrated at 850nm, HP 81512A calibrated at 1300nm

Pulse Response

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

General

HP-IB capability
Interface function: 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	$9500
Opt. W30 3 years of customer return repair service	$190
Opt. 907: Front handle kit	$56
Opt. 908: Rack mount kit	$33
Opt. 910: Extra operating and service manual	$61
HP 81511A Optical Head 550 to 950nm	$4750
Opt. W30 3 years of customer return repair service (see page 723)	$100
HP 81512A Optical Head 900 to 1725 nm	$6750
Opt. W30 3 years of customer return repair service (page 723)	$150

Note: The HP 8151A cannot be used without an optical head and connector adapter. For connector adapters, see 'Lightwave Test Accessories' below.

☎ For same-day shipment, call HP DIRECT at 800-538-8787.

Accessories

Lightwave test accessories for HP 8151A and HP 81511A/81512A

Customer Connector	Adapter for Optical Head	Price
Diamond HFS1/KV	HP 81510A	$350
NEC D4	HP 81510B	$350
Bare Fiber, 50/125μm	HP 81510C	$350
Bare Fiber, 200/250μm	HP 81510D	$350
Amphenol 906 SMA	HP 81510E	$350
FC	HP 81510G	$350
Biconic	HP 81510H	$350
F&G 3702	HP 81510J	$350
Stratos 430	HP 81510K	$350
AMP-SMA	HP 81510N	$350
Optical Base Plate	HP 81510Q	$220
Parallel Beam Adapter	HP 81510R	$550
Blank Adapter	HP 81510Z	$200