

OPTICAL COMPONENT TEST

High-Performance Optical Attenuator/Lightwave Multimeter

HP 8156A, 8153A

- 0.05 dB attenuation accuracy, 0.001 dB resolution
- 0.02 dB p-p polarization sensitivity
- Optional monitor output
- Back-reflector mode

- User-exchangeable plug-in modules for tailor-made measurements



HP 8156A Attenuator

The HP 8156A is a high-performance attenuator for single-mode and multimode applications.

Options are available to select the desired return loss performance up to 60 dB. An optional 13 dB monitor output allows you to measure the signal power at the output of the attenuator. Using the built-in back-reflector mode and an external reference reflector (HP 81000BR), the HP 8156A can be used as a programmable back-reflector to measure component and system sensitivity against reflections.

The attenuation range is 60 dB with 0.001 dB resolution between 1250 nm and 1650 nm. Due to a novel single filter design no ranging occurs. This eliminates dark spots or potential attenuation over- or undershoots completely. Attenuation accuracy is typically better than ± 0.05 dB with a polarization sensitivity of less than 0.02 dB peak-to-peak.

For more detailed information see the *Lightwave Test and Measurement Catalog*.

Specifications

	HP 8156A Opt 100	HP 8156A Opt 101/201	HP 8156A Opt 121/221	HP 8156A Opt 350
Wavelength range	1200 to 1650 nm			
Fiber type	single-mode			50 μ m multimode
Attenuation range	60 dB			
Resolution	0.001 dB			
Return loss	>35 dB	>45 dB/>60 dB	>45 dB/>60 dB	>22 dB
Insertion loss (typical)*	4.5 dB	2.5 dB	3.3 dB	3.0 dB
Attenuation accuracy (typical)	± 0.1 dB	± 0.05 dB	± 0.05 dB	± 0.08 dB
Polarization sensitivity (typical)	<0.075 dB p-p	<0.02 dB p-p	<0.03 dB p-p	—
Repeatability (typical)	± 0.005 dB			
Switching time	20-400 ms			
Maximum input power	+23 dBm			

*Includes insertion loss of two HMS-10 connectors.

Size: 212.3 mm W \times 89 mm H \times 345 mm D (8.36 in \times 3.5 in \times 13.6 in)

Weight: Net, 5.3 kg (11.7 lb); shipping, 9.6 kg (21.2 lb)

Ordering Information

Two connector interfaces (three for Opt 121/221) are required for each HP 8156A.

	Price
HP 8156A Optical Attenuator Mainframe	\$2,550
Opt 100 Standard Performance Version	\$3,775
Opt 101 High Performance Version	\$5,810
Opt 201 High Performance, High Return Loss Version	\$6,890
Opt 121 Monitor Output, 45 dB Return Loss	\$7,960
Opt 203 Back Reflector Kit for Opt 201*	\$1,430
Opt 221 Monitor Output, 60 dB Return Loss	\$8,470
Opt 350 50/125 μ m Multimode	\$4,895
HP 81000AI/FI/GI/KI/SI/VI/WI* Connector Interface	\$173

*Kit consists of 1 ea 81000SI, 1 ea 81000FI, 1 ea 81113PC, 1 ea 81000UM, and 1 ea 81000BR.



HP 8153A

HP 8153A Lightwave Multimeter

High Flexibility through Modular Design

The HP 8153A lightwave multimeter mainframe offers two slots for plug-in modules. Since modules can be combined in any configuration, the instrument can be used as a 1/2-channel power meter, as a 1/2-channel light source, as a loss test set, or even as a return-loss test set.

Four different power sensor modules, with different sensitivities from -70 dBm down to -110 dBm, cover the 450 nm to 1700 nm wavelength range. Each is individually calibrated over its entire wavelength range and is traceable to NIST and PTB for precise optical power measurements. Their excellent linearity and the high stability of the source modules provide the basis for precise determination of optical insertion loss for both single-mode and multimode components.

The source modules offer very good short-term and long-term stability. The high output power can be internally attenuated by up to 6 dB. All sources output CW or pulse-modulated light (internal modulation at 270 Hz, 1 kHz, or 2 kHz).

Ordering Information

HP 8153A Lightwave Multimeter Mainframe Price \$3,160

HP 81530A Si, +3 to -100 dBm, 450 to 1020 nm	\$3,315
HP 81531A InGaAs, +3 to -90 dBm, 800 to 1700 nm	\$3,620
HP 81532A InGaAs, +3 to -110 dBm, 800 to 1700 nm	\$5,460
HP 81536A InGaAs, +3 to -70 dBm, 800 to 1700 nm	\$2,960

HP 81533B Optical Head Interface Module¹ \$1,375

HP 81520A Optical Head, Si, +10 to -100 dBm, 450 to 1020 nm \$2,805

HP 81521B Optical Head, Ge, +3 to -80 dBm, 900 to 1700 nm \$3,060

Opt 001 0.003dBpp polarization sensitivity, +3 to -64 dBm

HP 81524A Optical Head, InGaAs, +3 to -90 dBm, 800 to 1650 nm \$5,920

HP 81525A Optical Head, InGaAs, +27 to -70 dBm, 800 to 1650 nm \$6,430

HP 81551MM 850 nm, Multimode \$6,530

HP 81552SM 1310 nm, Single-Mode \$6,680

HP 81553SM 1550 nm, Single-Mode \$10,100

HP 81554SM 1310/1550 nm, Single-Mode \$13,450

HP 81541MM 850 nm, 50 μ m Multimode Fiber Output \$3,620

HP 81542MM 1300 nm, 50 μ m Multimode Fiber Output \$4,945