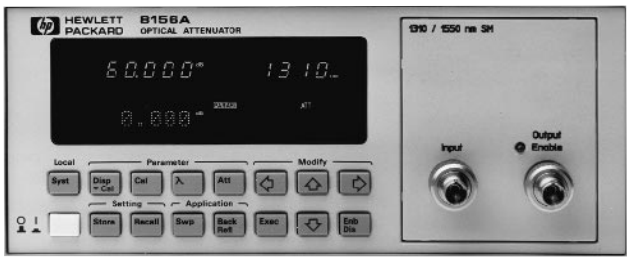
HP 8156A
HP 11896A
HP 8169A

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



HP 8156A

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 1200 nm and 1650 nm. Due to a novel single filter design, no ranging occurs. This completely eliminates dark spots or potential attenuation overshoots or undershoots. 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 µm 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 dBp-p	<0.02 dBp-p	<0.03 dBp-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 x 89 mm H x 345 mm D (8.36 in x 3.5 in x 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 Option 121/221) are required for each HP 8156A
HP 8156A Optical Attenuator Mainframe
- **Opt 100** Standard Performance Version
- **Opt 101** High Performance Version
- **Opt 121** Monitor Output, 45 dB Return Loss
- **Opt 201** High Performance, High Return Loss Version
- **Opt 203** Back Reflector Kit for Option 201*
- **Opt 221** Monitor Output, 60 dB Return Loss
- **Opt 350** 50/125 µm Multimode

HP 81000AI/FI/GI/KI/NI/PI/SI/VI/WI Connector Interfaces

* Kit consists of one each: 81000SI, 81000FI, 81113PC, 81000UM, and 81000BR.

- ±0.002 dB insertion loss variation with adjustment (HP 11896A)
- 1250 nm to 1600 nm coverage (HP 11896A)
- Synthesis of states of polarization (HP 8169A)

HP 11896A and 8169A

HP 11896A Polarization Controller

The HP 11896A adjusts polarization and not power. Its optical fiber loop design provides all states of polarization with extremely small optical insertion-loss variations (±0.002 dB) over a wide spectral range (1250 to 1600 nm). This performance combination maximizes measurement accuracy for power-sensitive applications like polarization-dependent loss and gain. This is because the measurement uncertainty contributed by the polarization controller is minimized.

HP 8169A Polarization Controller

The HP 8169A provides polarization synthesis relative to a built-in linear polarizer. The internal quarter-wave plate and half-wave plate are individually adjusted to create all possible states of polarization. Predeterministic algorithms within the HP 8169A enable the transition path from one state of polarization on the Poincare sphere to another to be specified along orthogonal great circles. These features are important because device response data can be correlated to specific states of polarization input to the test device.

Specifications

	HP 11896A	HP 8169A
Operating Wavelength Range (nm):	1250 to 1600	1470 to 1570
Insertion Loss:	<1.5 dB	<1.5 dB
Variation with Adjustment:	<±0.002 dB	<±0.03 dB
Variation with Wavelength:	<±0.1 dB	<±0.1 dB

Note: Fiber pigtail interface assumed in all cases.

Key Literature

HP 11896A and HP 8169A Technical Specifications, p/n 5962-0017E

Ordering Information

HP 11896A Lightwave Polarization Controller
Standard instrument includes FC/PC connector interfaces
- **Opt 025** One Meter Pigtail Fiber w/ FC/PC Connector Interfaces

HP 8169A Lightwave Polarization Controller
(Polarization controller must be ordered with connector option)
- **Opt 020** Pigtailed Fiber Ports
- **Opt 021** Straight Contact Connector Output
- **Opt 022** Angled Contact Connector Output

HP 81000AI/FI/GI/KI/NI/PI/SI/VI/WI Connector Interfaces