Optical Attenuators

▶ OA5002 • OA5012 • OA5022

OA5000 Series Attenuators.

▶ **Features & Benefits**

Broad Wavelength Range
– 750 to 1600 nm

Supports Multiple Fiber Sizes
– OA5002 10 µm (Single-mode)
– OA5012 50 µm (Multimode)
– OA5022 62.5 µm (Multimode)

Support Multiple Connector Styles
– (FC, ST, SC and DIN)

GPIB, IEEE-488.2 Controllable

▶ **Applications**

Evaluate Receiver Sensitivity as a Function of Optical Power

General Development of Fiber Optic Equipment

SDH/SONET, Fibre Channel and Ethernet Standards Testing

OTDR Attenuation Measurement Calibration

Optical Power Meter Linearity Calibration

Manufacturing Test of Fiber Optic Equipment

A Vital Link in Optical Systems Analysis

Tektronix Programmable Optical Attenuators provide a convenient, accurate and cost-effective means of controlling optical power levels in fiber optic media. The OA5000 Series instruments provide variable attenuation of single and multimode fiber optic signals commonly used in communications equipment. Attenuation levels can be varied manually, using the front-panel controls or automatically via programmable, IEEE-488.2 interface.

The single filter design eliminates measurement dark spots caused by "range changes" and an internal mechanical motion algorithm provides outstanding repeatability.

Typical Applications

Communication standards using optical components typically require that the receiver operate over a given optical power range. This specification is tested by monitoring the bit error rate (BER) as a function of optical power.

Transmission System Design

Using the OA5000 Series Optical Attenuators with either the CSA803, 11800 or TDS700C/500C oscilloscopes, network equipment designers can characterize, with repeatable results, the system performance over the specified optical power range.

SDH/SONET Compliance Testing

SDH/SONET compliant signal levels may be as high as +2 dBm to as low as –34 dBm. To verify the performance of SONET equipment over these signal levels, it is necessary to have calibrated attenuators with at least this much range. The OA5002 is the attenuator of choice for SDH/SONET testing.

Manufacturing and Other Automated Test Applications

Because the OA5000 Series Optical Attenuators are GPIB Programmable, these units can be operated in a completely automated environment. With the step size of 0.01 dB and a calibrated attenuation range of 0 to 60 dB (continuous), measuring parameters, such as receiver linearity, is quickly and reliably accomplished. Also, with their storable attenuation levels, the OA5000 Series Optical Attenuators are very useful for repeat measurements in manufacturing environments.

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▶ Characteristics

	OA5002	OA5012/22
Wavelength Range	1100 to 1600 nm	750 to 1600 nm
Fiber Size	9 μm Single Mode fiber 62.5 μm Multimode fiber (OA5022)	50 μm Multimode fiber (OA5012)
Insertion Loss	≤2.0 dB (1100 to 1350 nm) ≤2.5 dB (1350 to 1600 nm)	≤4.0 dB (750 to 1100 nm) ≤2.0 dB (1100 to 1350 nm) ≤2.5 dB (1350 to 1600 nm)
Return Loss	≤-45 dB	≤-25 dB
Attenuation Range	≥60 dB (1100 to 1350 nm) ≥50 dB (1350 to 1600 nm)	≥60 dB (750 to 1350 nm) ≥50 dB (1350 to 1600 nm)
Disable	≥100 dB	
Accuracy	±0.15 dB (typ. 0.05 dB) at 1310 ±20 nm, 1550 ±20 nm ±0.25 dB at all other wavelengths	±0.15 dB (typ. 0.05 dB) at 850 ±20 nm, 1310 ±20 nm, 1550 ±20 nm
Repeatability	±0.05 dB (typ. 0.02 dB)	
Linearity	±0.05 dB (1100 to 1600 nm)	±0.05 dB (750 to 1600 nm)
Max. Input Power	+3 dBm (2 mW)	
Max. Nondestruct Power	+10 dBm (100 mW) Avg.	+20 dBm (200 mW) Peak

Note: [a]For further technical information request Product Data Sheet #3TW-8032-1.

[b]For information on OA5000 Series compatibility with other fiber sizes, contact your local Tektronix sales office.

▶ Ordering Information

OA5002

Optical Attenuator.

Includes: Single mode input and output.

OA5012

Optical Attenuator.

Includes: 50 Micron multimode input and output.

OA5022

Optical Attenuator.

Includes: 62.5 Micron multimode input and output.

All Include: OCP5502 Mainframe (PN 620-0057-00);
Two Blank Plug-in Panels (PN 016-0195-05); Universal
Optical Input and Output Connector Kit (020-1885-00);
Instruction Manual (070-7612-0).

Measurement Service Options

Opt. R3 – Repair warranty extended to cover three years.

Opt. R5 – Repair warranty extended to cover five years.

CE ISO 9001

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