

LAMDEK Adjustable Attenuator

R. Allen

LAMDEK Fiber Optics
Rochester, NY USA

LAMDEK
Adjustable Attenuator

New Product

Lamdek Fiber Optics, a Division of Eastman Kodak Company, announces their first new product that utilizes the 1.5 mm diameter beam of the LAMDEK Single-Mode Connector – the LAMDEK Adjustable Attenuator. This new product affords the customer the opportunity to purchase just one attenuator for all attenuation needs at a price that is competitive with fixed level attenuators.

Attenuator Design

Simplicity is the key to the adjustable attenuator. Figure 1 illustrates the attenuator design. A precision threaded screw intersects and partially blocks, or vignettes, the 1.5 mm diameter beam between the lenses of the connector plugs. Rotating the screw changes its position within the collimated beam varying the power level of the

signal. The portion of the beam that is not vignettted is not degraded in any way resulting in no additional power loss of the connection. Also, this attenuator design makes no contribution to back reflection, as measured by return loss, by not permitting the blocked light to return to the light source.

Because the attenuator is physically vignetting the collimated beam, the resulting performance is wavelength-independent. Thus the attenuator can be used with 1300 nm or 1550 nm wavelengths.

The collimated 1.5 mm diameter beam is the key to the attenuator design. This design would not be possible with mechanical style single-mode connectors that connect a light path only 8 to 10 microns in diameter.

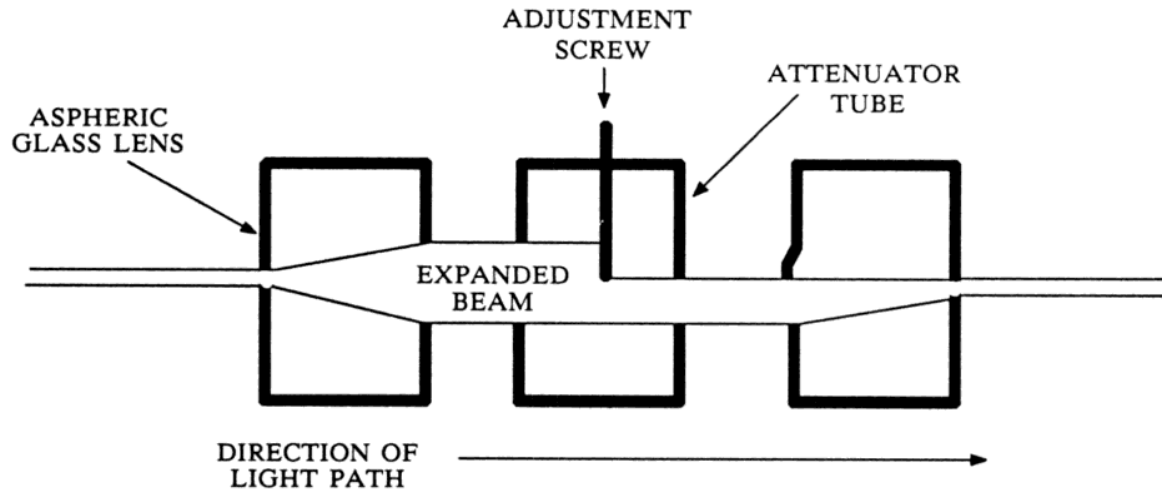


Figure 1. *LAMDEK* ADJUSTABLE ATTENUATOR

Papers presented at FOC/LAN 86, The Tenth Annual International Fiber Optic Communications and Local Area Networks Exposition, held 6-10 October, 1986 at the Orange County Convention/Civic Center, Orlando, Florida. Sponsored by Information Gatekeepers, Inc., 214 Harvard Avenue, Boston, MA 02134 USA. Telephone (617) 232-3111, Telex: 499-6088 fiber, FAX: 617-674-8562.

Attenuator Components

LAMDEK Adjustable Attenuator consists of two components as indicated in Figure 2: A hollow stainless steel attenuator tube and an attenuator adapter. The attenuator tube contains the adjustment screw and is placed in the connector adapter.

adapter provide angular alignment of the attenuator tube with respect to the lens of the connector plug. The attenuator tube and attenuator adapter are keyed for easy assembly. Illustrated instructions, adjustment wrench and attenuator removal tool are supplied with the attenuator.

Three stainless steel balls in the attenuator

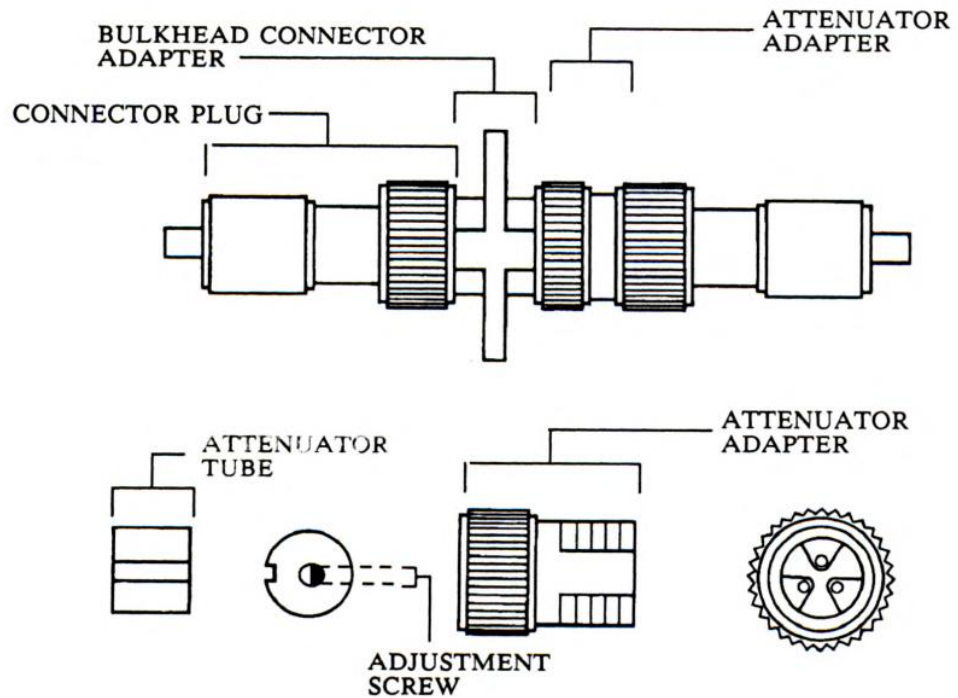


FIGURE 2. LAMDEK SINGLE-MODE CONNECTOR AND LAMDEK ADJUSTABLE ATTENUATOR

Product Specifications

Return Loss: The attenuator will not degrade the return loss characteristics of the LAMDEK Single-Mode Connector, which is specified for a mean return loss of -30 dB.

Vibration: Mean power loss will not be degraded by more than 0.5 dB at an adjusted attenuation level of 20 dB when tested per EIA FOTP-11, test condition 1.

Remating Loss: The distribution of the power loss of an attenuator with an adjusted attenuator level of 20 dB will have a standard deviation less than or equal to 2.0 dB for 200 connector plug matings.

Lamdek Fiber Optics
A Division of Eastman Kodak Company
901 Elmgrove Road