

SM Fiber-Coupled Electronic VOAs with FC/APC Connectors



Description

These MEMS-based, fiber-coupled Electronic Variable Optical Attenuators (VOAs) are designed to enable simple voltage control of optical power in single-mode fibers. A DC voltage will provide a constant attenuation, and AC modulation voltages up to 1 kHz are also accommodated. Protection diodes integrated into the design limit the input voltage to protect the VOA from electrostatic discharge (ESD), as well as from other over-voltage and under-voltage events. Six models cover wavelengths from 450 nm to 2300 nm.

Brief Operating Guide

To operate the electronic VOA, first unpack the unit carefully. Either of the unit's fiber leads can be used as the input or output, as performance is similar in both directions. However, you may find that one of the connectors provides a lower loss connection in your set-up due to the random nature of core alignment. Use a BNC cable to connect a power supply or other voltage source to the unit, and then apply 0 to 5 V to control the attenuation. Optical transmission decreases with applied voltage, as shown in the graph. Features of these units are shown in Figure 2. Please note that minimum attenuation is highly dependent on connector alignment, especially at shorter wavelengths. Best performance is achieved when the optical connection is made by fusion splicing to the VOA's fiber leads, which requires removing the connectors.

Specifications

Item #	V450A	V600A	V800A	V1000A	V1550A	V2000A
Wavelength Range	450 nm - 600 nm	600 nm - 780 nm	780 nm - 980 nm	980 nm - 1250 nm	1250 nm - 1650 nm	1700 nm - 2300 nm
Attenuation	Max ^a				>30 dB	
	Min ^b				2.5 dB	
Optical Input Power	100 mW (Max)					
Optical Return Loss	>30 dB					
Fiber Connectors ^c	FC/APC					
Device Fiber Type	460HP	630HP	780HP	HI1060	SMF-28 Type	SM2000
Fiber Length	50.0 cm ± 10.0 cm					

a. Not Including Coupling Loss

b. This specification assumes excellent core-to-core alignment at the connector, especially for the models operating at shorter wavelengths where the core is smaller.

c. 2.0 mm Narrow Key

Modulation Signal Input	
Input Voltage	0 to 5 V (Abs. Max: 10 V, 5 mA)
Input Impedance	High-Z
Bandwidth	DC to 1 kHz
Input Voltage Connector	Female BNC

Physical Specifications	
Operating Temperature	0 to 40 °C
Storage Temperature	-20 to +70 °C
Relative Humidity (Non-Condensing)	5% to 85%

Specifications

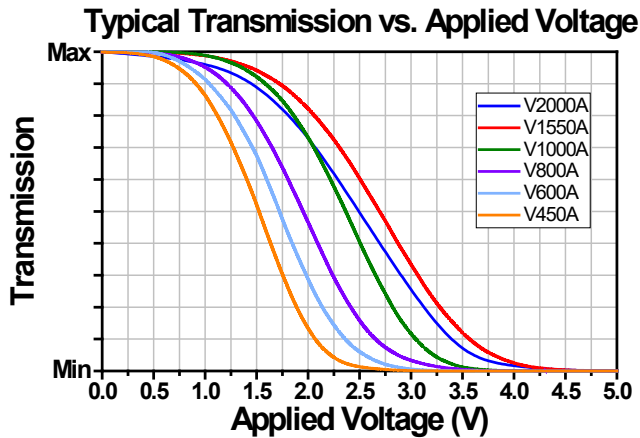


Figure 1: Typical Optical Transmission as a Function of Applied Voltage

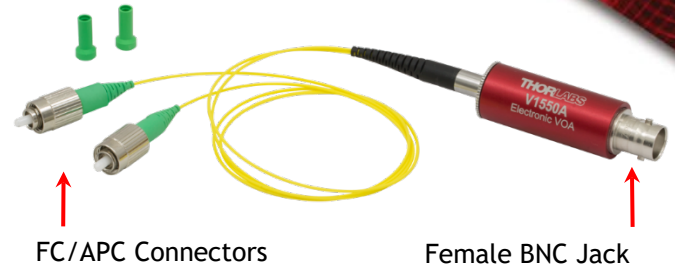


Figure 2: Features of the Electronic VOAs

Safety Information

General: All statements regarding safe operation and technical data in this user guide will only apply when the unit is operated correctly. Additional support documentation for this particular product is available at www.thorlabs.com.

Covers and Service: Do not remove the cover of the Electronic VOA. There are no user serviceable parts in these products. If service is required, please contact Thorlabs Tech Support at techsupport@thorlabs.com or one of the region-specific contact numbers given at the bottom of this page.

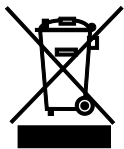
Explosive Environments: Do not operate this device in explosive environments.

Precautions

Shielded Connections: Connection cables attached to the input BNC port of the Electronic VOA must be properly shielded.

Fiber Cleaning: Fiber connector tips should be cleaned properly before making any connections.

External Cleaning: Use soft cloth moistened with mild glass cleaner. Do not spray directly onto unit.



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