

# Manual Fiber Attenuator Lossless

continuous fiber of lossless, up to 2W, ultra-broadband, up to 30dB



This All-Fiber Manual Lossless VOA (MVOL) uses a continuous fiber, offering near-lossless transmission in the open/transparent state. Attenuation is generated by applying stresses inside the fiber. The unique design is capable of maintaining high polarization extinction ratio under stress. The MVOL series of VOAs beneficially features high optical power handling, near-lossless in the open/transplant state, and ultra-broadband that preserves the fiber's intrinsic transmission characteristics. The design is compatible with all types of fibers.

## Features

- Lossless
- Broadband
- All Fiber Types

## Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	300		5000	nm
Insertion Loss <sup>[1]</sup>	0.00	0.01	0.1	dB
Attenuation Resolution	Continuous			dB
Attenuation Range <sup>[2]</sup>	10		30	dB
Polarization Dependent Loss		0.02	0.1	dB
Stability <sup>[3]</sup>			1	dB
Return Loss	60			dB
Power Handling			2	W
Operating Temperature	-10		70	°C
Storage Temperature	-40		85	°C

**Notes:**

- [1]. Excluding connectors. Each connector add 0.3dB loss and 2dB ER reduction for PM fiber
- [2]. 30dB is for SM 9/125 fiber. Other types of fiber may have low value but >10dB. Do not exceed 30dB, otherwise the fiber may be broken.
- [3]. Measured at 10dB attenuation, low attenuation is more stable

## Applications

- Instrument
- Laboratory
- Lasers
- System

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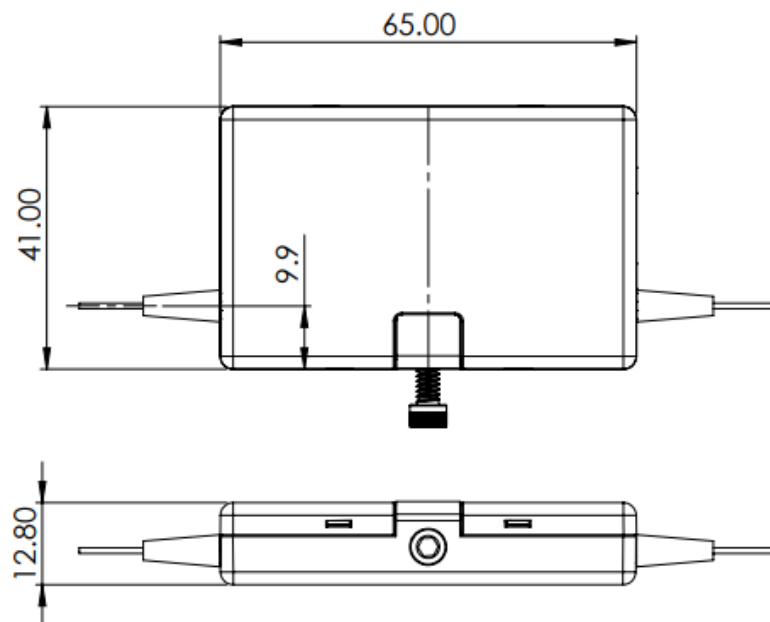
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### Mechanical Dimensions (mm)



\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

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### Ordering Information

Prefix	Configuration	Type	Test Wavelength*	Fiber Type	Fiber Cover	Fiber Length	Connector
MVOL-		Normally Open = 1	450 = 4 532 = 5 630 = 6 780 = 7 850 = 8 980 = 9 1060 = 1 1310 = 3 1550 = C 2000 = 2 Special = 0	Select from the table below	Bare fiber = 1 900um tube = 3 3mm tube = 4 Special = 0	0.25m = 1 0.5m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0

\* The device is ultra-broadband limited by the fiber transmission. Tests of multiple wavelengths are available at extra cost.

**Fiber Type Selection Table:**

01	SMF-28	34	PM1550	71	GIF 50/125 μm
02		35	PM1950	72	
03		36		73	
04		37		74	FG105LCA
05	SM1950	38		75	FG50LGA
06	SM600	39	PM630	76	STP 50/125
07	780HP	40	PM850		
08	SM800	41	PM980		
09	SM980	42	PM780		
10	SM1060	43			
11		44	PM405		
12		45	PM460		
13		46			

### Application Notes

#### Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

#### Fiber Cleanliness

Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

#### Maximum Optical Input Power

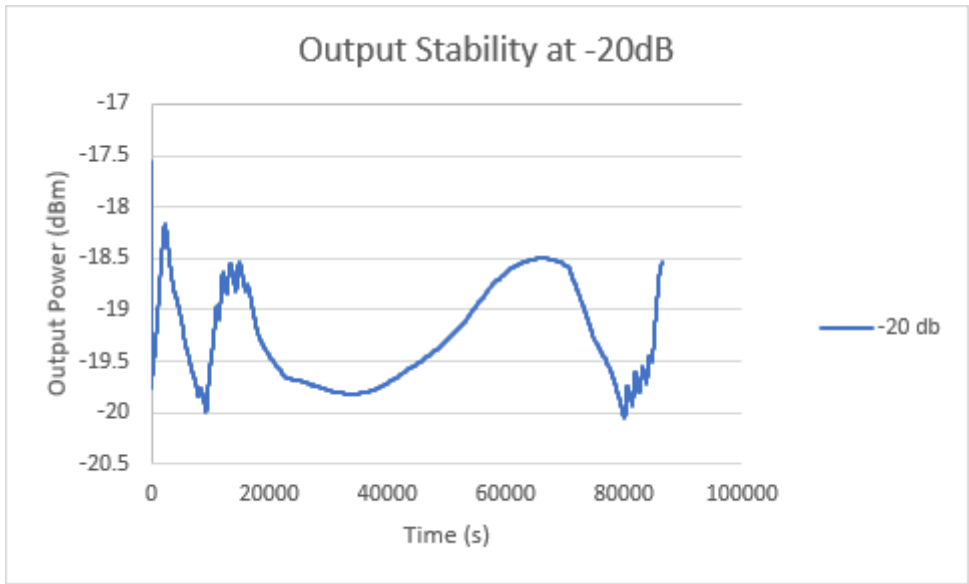
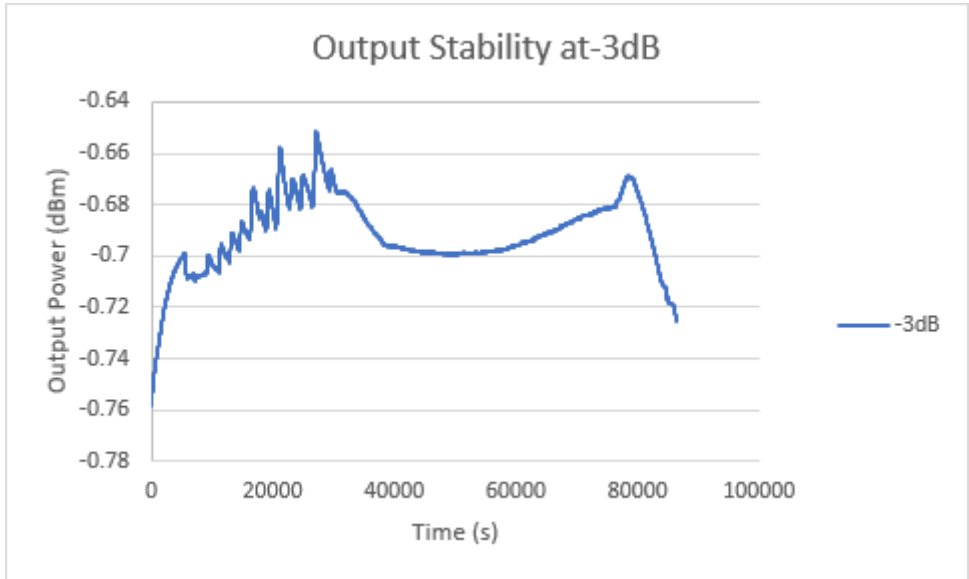
Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

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### Lossless Manual VOA Stability of 24 Hours



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### Typical Wavelength Dependence @20dB Attenuation

