

Manual Fiber Optical Variable Attenuator

(patent pending)



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Features

- Low Insertion Loss
- High Reliability
- Low Cost
- Low power consumption
- Super compact

Applications

- Dynamic gain equalization
- Variable MUX/DeMUX
- Instrumentation

This Manual VOA is based on a pair of fiber collimator coupling between a movable blocker, featuring low cost. It has a broadband AR coating.

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	1250		1640	nm
Insertion Loss ^[1]	0.4	0.5	0.9	dB
Attenuation Resolution		Continuous		dB
Attenuation Range		50	60	dB
Polarization Dependent Loss ^[2]		0.02	0.1	
Polarization Extinction Ratio ^[3]	20	23	28	
Return Loss ^[4]		50	60 ^[3]	dB
Power Handling			500	mW
Operating Temperature		-10 ~ 70		°C
Storage Temperature		-40 ~ 85		°C

Notes:

- [1]. Measure with CPR<14 laser source and excluding connectors
- [2]. Measured at 10dB attenuation
- [3]. For PM fiber version only
- [4]. Single Mode, For Multimode, return loss relates to laser condition

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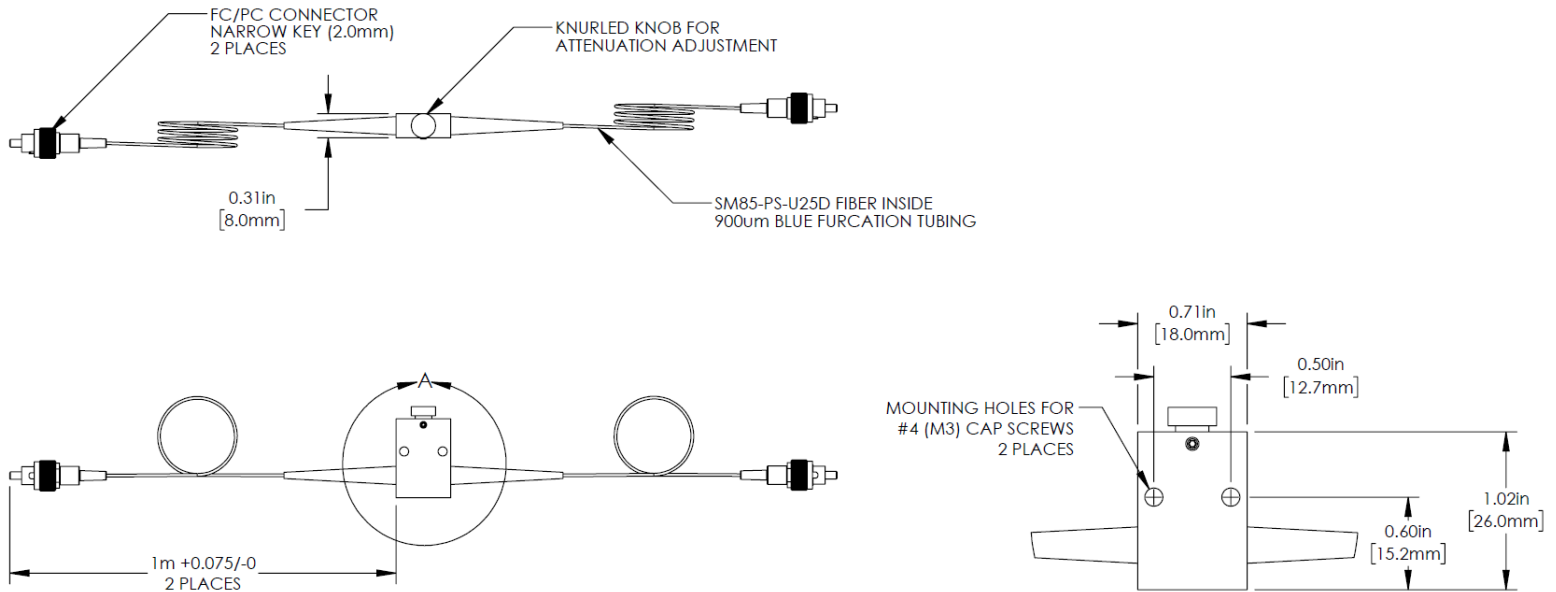
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Mechanical Dimensions-Package (mm)



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

Ordering Information

Prefix	Configuration	Type	Wavelength	Fiber Type	Fiber Cover	Fiber Length	Connector ^[1]
MVOA-		Normally Open = 1	1250-1640 = 1 1310nm = 3 850nm = 8 850-1310nm = 9 Special = 0	SM28 = 01 PM 1550 = 02 PM 1310 = 03 50 μm = 05 60 μm = 06	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/APC = A LC/UPC = U Special = 0

[1]. Regular fiber connector has PER ~22dB. Connector with PER >27 dB is available using special process

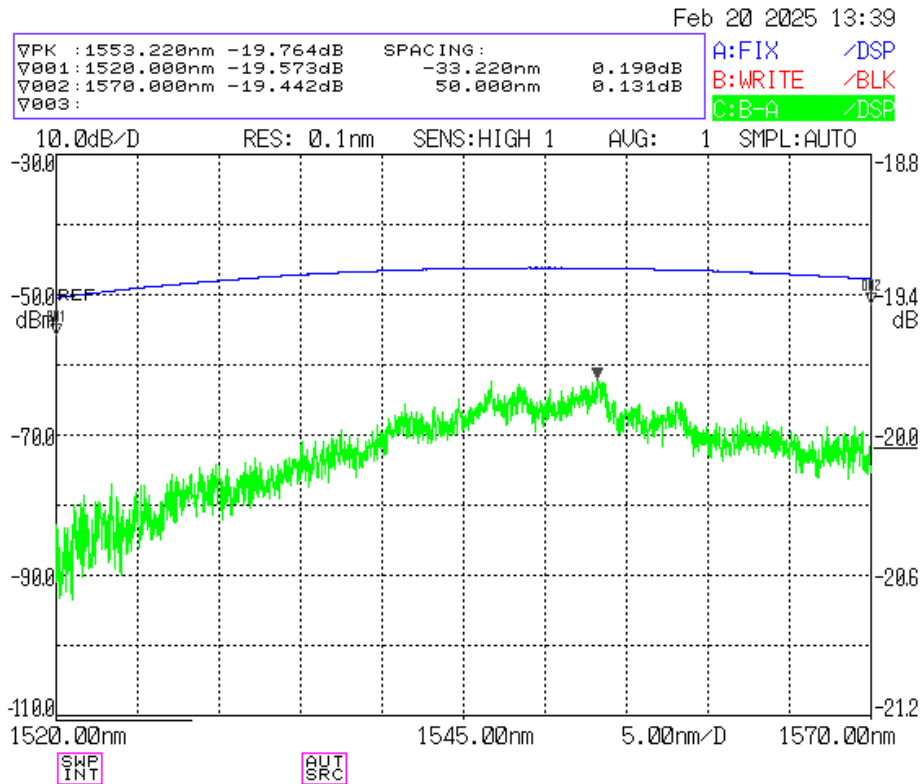
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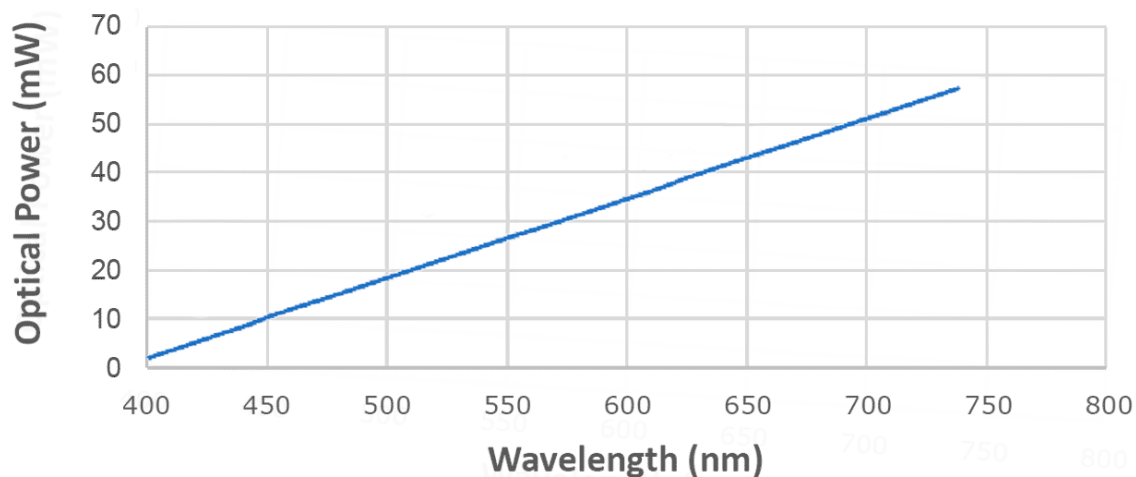
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Typical Wavelength Dependence @20dB Attenuation



Optical Power Handling vs Wavelength for Standard SM Fibers



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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 ($<5\text{ }\mu\text{m}$) 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 handling by expanding the core side at the fiber ends.