Fiber-Fiber™
Manual Fiber Optical Variable Attenuator

(Patent pending)

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The Fiber-Fiber™ series Manal VOA is based on fiber to fiber coupling with a micro self align technology, featuring ultra-low loss, broadband, high power, compact size, and low cost. It can accommodate to all type of fibers.

Features

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

Applications

- Dynamic gain equalization
- Variable MUX/DeMUX
- Instrumentation

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	180[1]		2000	nm
Band Width		Broad band without coating		
Insertion Loss [1]		0.1	0.4	dB
Attenuation Resolution		Continuous		dB
Attenuation Range		60	70	dB
Return Loss		50	60 [2]	dB
Power Handling		500	1000	mW
Operating Temperature		-40 ~ 70		°C
Storage Temperature		-40 ~ 85		°C

Notes:

[1]. Measure with CPR<14 laser source and excluding connectors

[2]. Single Mode, For Multimode, return loss relates to laser condition

Rev 02/26/25

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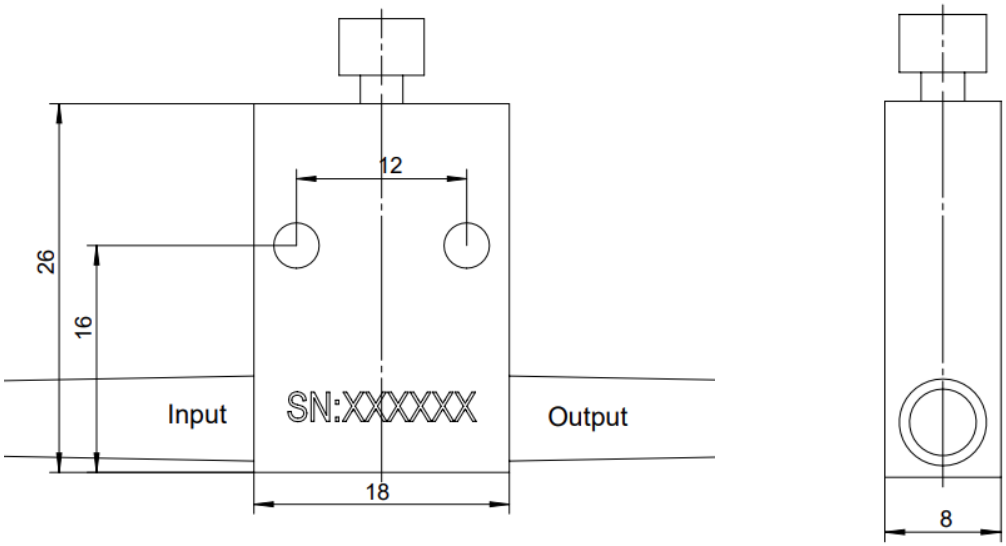
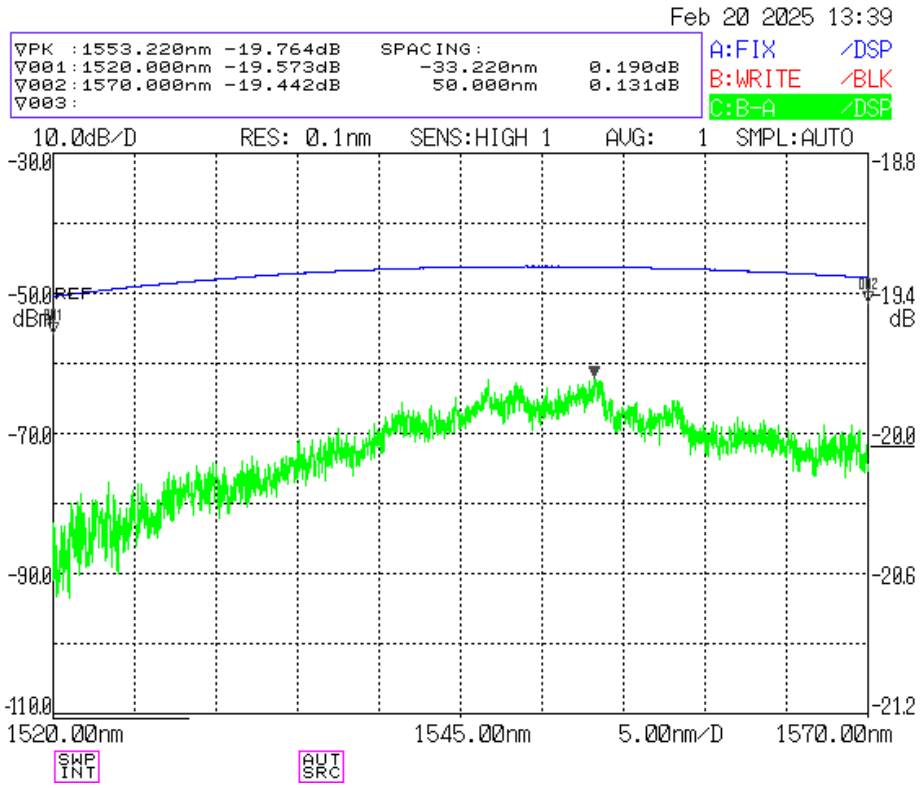
Mechanical Dimensions-Package



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

Typical Wavelength Dependence @20dB Attenuation



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Ordering Information

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Prefix	**Configuration**	**Type**	**Test Wavelength***	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector**
MVOA-	Special = 00	Transparent = 1	350 = A 488 = 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	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/UPC = U Special = 0

* Without adjustment, this device is transparent to the passing light in the normal state.

** The device is ultra-broadband limited by the fiber transmission. However, we only test at one selected wavelength to save cost. If customer needs to test at several wavelengths, the selection is special =0 with added cost.

Note:

"**transparent**" means no attenuation without applying a controlling voltage, the "**opaque**" means the highest attenuation without applying a controlling voltage.

Fiber Type Selection Table:

01	**SMF-28**	34	**PM1550**	71	**GIF 50/125 µm**
02	**SMF-28e**	35	**PM1950**	72	**GIF 62.5 µm**
03	**Corning XB**	36	**PM1310**	73	**105/125 µm**
04	**SM450**	37	**PM400**	74	**FG105LCA**
05	**SM1950**	38	**PM480**	75	**FG50LGA**
06	**SM600**	39	**PM630**	76	**FG10LDA**
07	**Hi780**	40	**PM850**		
08	**SM800**	41	**PM980**		
09	**Hi980**	42	**PM780**		
10	**Hi1060**	43	**PM350**		
11		44	**PM405**		
12	**SM400**	45	**PM460**		

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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 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.

P +1 781-935-1200 E sales@photonwares.com W www.agiltron.com