

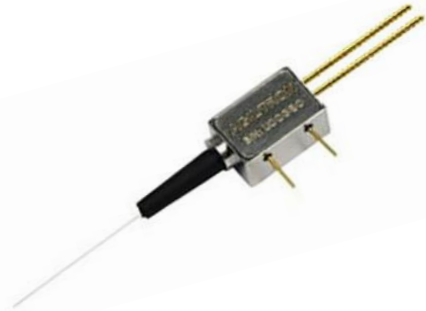
MEMS Reflective Fiber Optical Variable Attenuator With Power Monitor



Protected by US Patent 20170184840A1 and World Wide Patent PCT/US2015/022117

DATASHEET

BUY NOW



Features

- High Reliability
- Up to 70dB Attenuation
- Direct DC drive
- Ultra Small
- Integrated Tap

This device offers desirable features in a VOA, including low cost, compact size, high reliability, direct low voltage driver, and integrated power monitor. The tap monitor output power, which can be utilized in a feedback auto power control device for laser or detector. The MEMS Series Fiber Optical Variable Attenuator uses a patented thermal activated micro-mirror, moving-in and -out optical paths, uniquely offering large extinction ratio, and very long life cycle. The thermal MEMS is insensitive to moisture and ESD without drift issues, providing a high reliability platform for over 25 years continuous operation. The VOAs are bidirectional and are Telcordia standards GR1221 qualified.

Agiltron provides customized design and modular assemblies to meet control and integration applications.

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	1260		1620	nm
Insertion Loss ^[1]		0.6	1.2	dB
Polarization Dependent Loss ^[2] (SM version only)		0.15	0.5	dB
Wavelength Dependence Loss ^{[3], [4]}		0.2	0.6	dB
Attenuation Range	30	40	70	dB
Attenuation Resolution	Continuous			
Extinction Ratio (PM version only)	18	23	25	dB
Polarization Mode Dispersion (SM version only)		0.01	0.05	ps
Return Loss	45			dB
Response Time		3	6	ms
Driving Voltage ^[5]		4.5	5	V
Device Resistance	80	100	120	Ω
Optical Power handling		300	500	mW
Tap Response @ 1550nm ^[6]	12	15	40	mA/W
Tap directivity		N/A or 25		dB
Tap Wavelength Dependence Response ^[6]	0.010	0.013	0.02	dB/nm
Tap Polarization Dependence Response	0.02	0.10	0.25	dB
Tap Temperature Dependence Response			0.01	dB/°C
Tap Dark Current at 5V bias @ 23°C		0.2	1	nA
Tap Dark Current at 5V bias @ 70°C		30	70	nA
Tap 3dB Bandwidth (cutoff frequency)	10			MHz
Tap Capacitance		12		pF
Operating Temperature	-5		75	°C
Storage Temperature	-40		85	°C

Notes:

- [1]. Without connector and at room temperature
- [2]. At attenuation equal or less than 20 dB
- [3]. At 0dB attenuation and at whole temperature range
- [4]. Within 40nm Bandwidth
- [5]. At 0.8dB attenuation for opaque version.
- [6]. This is related to tap ratio. The spec data is regarding 3% tap.

Legal notices: All product information is believed to be accurate and is subject to change without notice. Information contained herein shall legally bind Agiltron only if it is specifically incorporated into the terms and conditions of a sales agreement. Some specific combinations of options may not be available. The user assumes all risks and liability whatsoever in connection with the use of a product or its application.

Rev 01/09/24

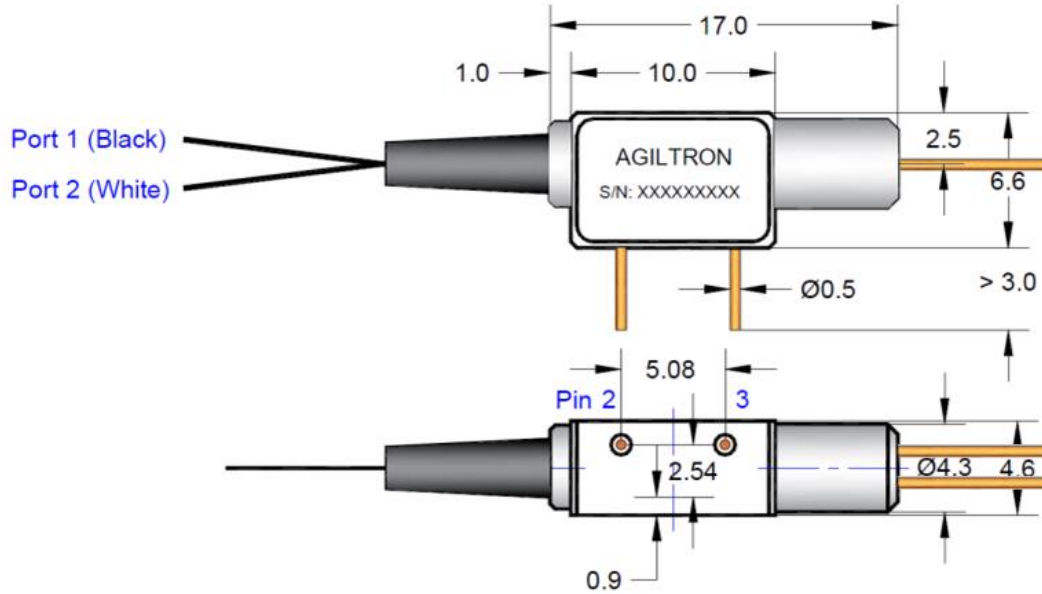
MEMS Reflective Fiber Optical Variable Attenuator With Power Monitor



Protected by US Patent 20170184840A1 and World Wide Patent PCT/US2015/022117

DATASHEET

Mechanical Dimensions (mm)



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

Electrical Driving Requirements

Resistance load device, no polarity, insensitive to ESD.

Warning: Damaged if applying voltage over the maximum (even for a short time)

Pin 2 = 0V

Pin 3 = 4.5V (maximum)

Response Curve

MEMS Reflective Fiber Optical Variable Attenuator With Power Monitor



Protected by US Patent 20170184840A1 and World Wide Patent PCT/US2015/022117

DATASHEET

Typical Compensated Temperature Dependence

Ordering Information

	0 2	□	2	3	□	□	□	□
Prefix	Non-Power State	Wavelength	Tap Type	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
MRAP-	Opaque = 02	1260~1620 = B 1060 = 1 1310 = 3 1550 = 5 850 = 8 Special = 0	Output = 2	Standard Reflection = 3 Special = 0	SMF-28 = 1 PM1550 = B MM 50/125 = 5 MM 62.5/125 = 6 Hi1060 = C PM980 = D Special = 0	Bare fiber = 1 900µm tube = 3 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 LC/PC = 7 LC/UPC = U Special = 0

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 handling by expanding the core side at the fiber ends.