High Precision MEMS Fiber VOA

(build-in position sensor, high setting precision, little drift)

(US patent 8,666,218 and other patents pending)

DATASHEET

BUY NOW

The High Precision Series VOA (PVOA) offers the ideal variable optical attenuator performances of ultra-low insertion loss of 0.2dB, ultra-broadband from 300 to 2100nm, ultra-high setting/stability of 0.1dB, linear response, and independent of input optical power. It is based on a novel micro-electro-mechanical system (MEMS) device platform with a fast piezo actuator and integrates a built-in laser coupled with an optical position sensor. The PVOA provides an absolute attenuation settable by applying an electrical control signal. Once the VOA attenuation value is set, it will remain at the value regardless of the variations of environmental conditions. Unlike common feedback control VOAs, the PVOA maintains precision attenuation even at faint optical power levels. Furthermore, light continuously passes through the device without interruption by AR coating or gap spacing, thus ideally suited for applications that involve interferometric sensors, ultra-high speed data transmissions up to 200GB/s, and ultra-broad wavelength coverage. It is available with all types of fibers having a 125-micron outer diameter. Other diameter fibers can be accommodated with special order. At the lowest attenuation setting, the optical transmission characters of PVOA is the same as the fiber. Although the VOA can be precisely controlled up to 30dB, it can reach up to 65dB without precision.

Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation

Features

- 0.2dB Low Loss
- 0.1dB Repeatable
- 200-2100 Broadband
- 65dB Attenuation
- SM,PM,MM,106um
- 1W Optical Power
- Linear Response

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	350		2500	nm
Insertion Loss [1]	0.1	0.2	0.5	dB
Polarization Dependent Loss		0.1	0.3	dB
Wavelength Dependence Loss		0.01	0.1	dB
Attenuation Accuracy/Repeatability 0.5-30dB		0.1	0.2	dB
Attenuation Setting Repeatability			0.1	dB
Extinction Ratio (PM version only)	19	25	28	dB
Polarization Mode Dispersion (SM version only)		0.01	0.05	ps
Return Loss [2]		55		dB
Response Time [3]		50	700	ms
Power Consumption			1	W
Optical Power Handling [4]		0.3	0.5	W
Operating Temperature	-5		75	°C
Storage Temperature	-40		85	°C

Notes:

[1]. Without connector and at room temperature. For fiber core > 8μm, smaller fiber core loss is higher. Short wavelength smaller core, loss increases

[2]. For SM fiber

[3]. For core < 8μm. For small range, it is about 50ms, for full range is about 500ms

[4]. For fiber with core size > 8μm. For smaller fiber core, the power handling is significantly reduced. At 650nm it is about 20mW

Rev 11/16/23

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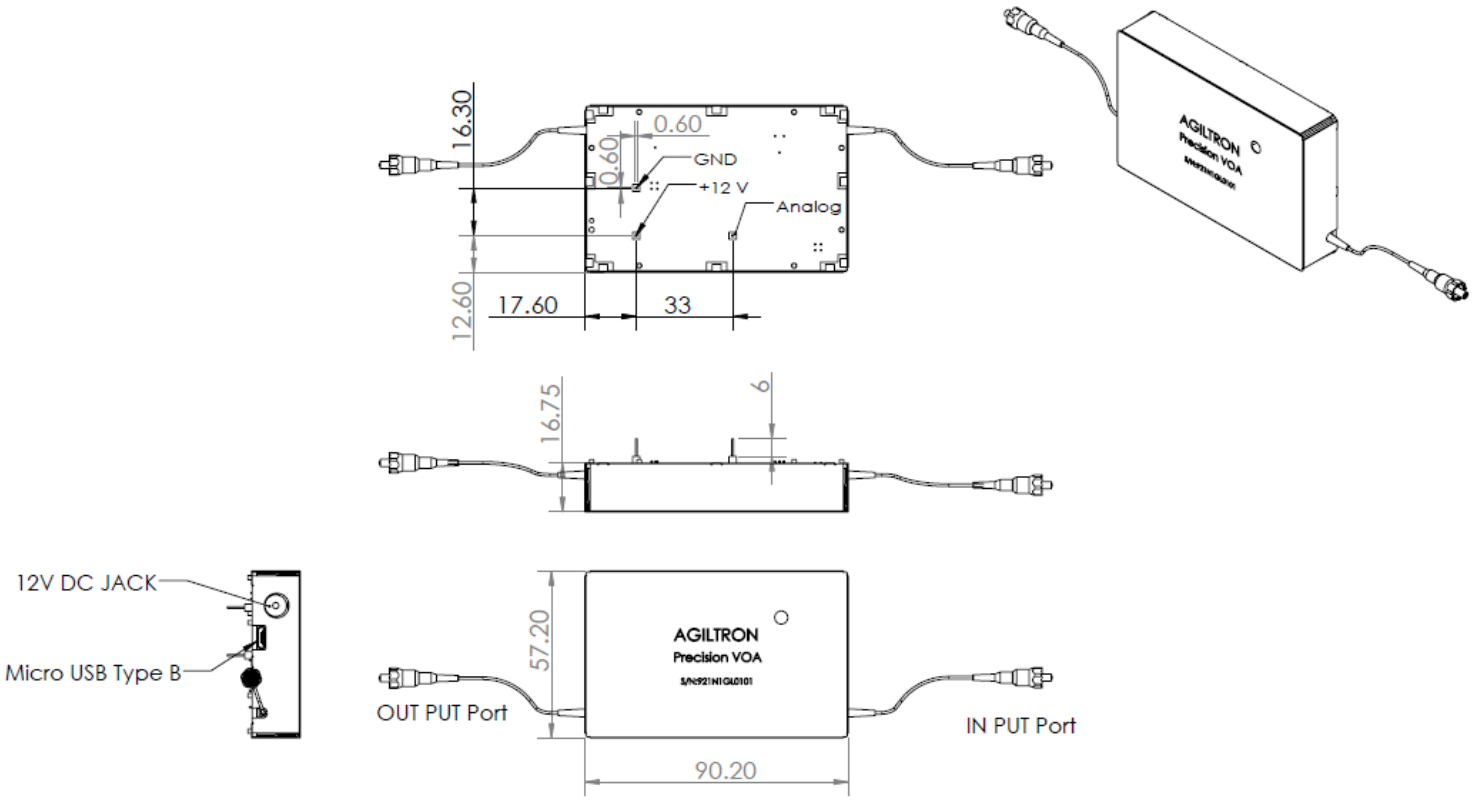
Mechanical Footprint Dimensions (Unit:mm)



Electrical Control Interface

The VOA can be controlled via USB or RS232 interfaces

USB control – Using a USB type A - Micro USB type B cable to control the device an supply power to the device. The device accept UART command and recognized as a serial device by the PC.

RS232 control – Using a RS232 - Micro USB type B cable to control the device. An extra 5-12V power supply by Agiltron needs to connect to the device via a connector on the board.

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

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Ordering Information

	☐	☐	☐	☐	☐☐	☐	☐	☐
Prefix	**Type**	**Controller**	**Optical Power**	**Test Wavelength**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector**
PVOA-	Piezo = 2 Special = 0	USB = 1 RS232 = 2 Special = 0	Regular = 1 High Power = 3	350 = U 488 = 4 532 = 5 630 = 6 780 = 7 850 = 8 980 = 9 1060 = 1 1310 = 3 1550 = C 2000 = 2	Pick from below table	Bare fiber = 1 900um 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 ST/PC = 6 LC/PC = 7 LC/UPC = U Special = 0

NOTE:

- **PM1550** fiber works well for **1310nm**

Fiber Type Selection Table:

01	**SMF-28**	34	**PM1550**	67	**OM1 (MMF 62.5/125µm)**
02	**SMF-28e**	35	**PM1950**	68	**OM2 (MMF 50/125µm)**
03	**Corning XB**	36	**PM1310**	69	**OM3 (MMF 50/125µm)**
04	**SM450**	37	**PM400**	70	**OM4 (MMF 50/125µm)**
05	**SM1950**	38	**PM480**	71	**GIF50 (GIF 50/125µm)**
06	**SM600**	39	**PM630**	72	**GIF625 (GIF 62.5/125µm)**
07	**Hi780**	40	**PM850**	73	**105/125µm**
08	**SM800**	41	**PM980**	74	**FG105LCA**
09	**Hi980**	42	**PM780**	75	**FG50LGA**
10	**Hi1060**	43		76	**FG10LDA**
11		44	**PM405**	77	
12	**SM400**	45	**PM460**	78	
13		46		79	

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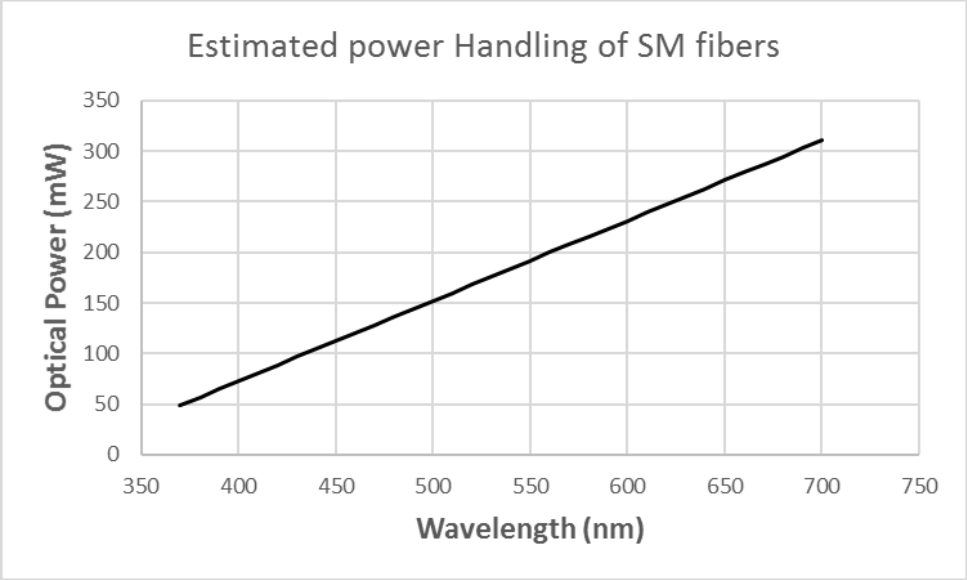
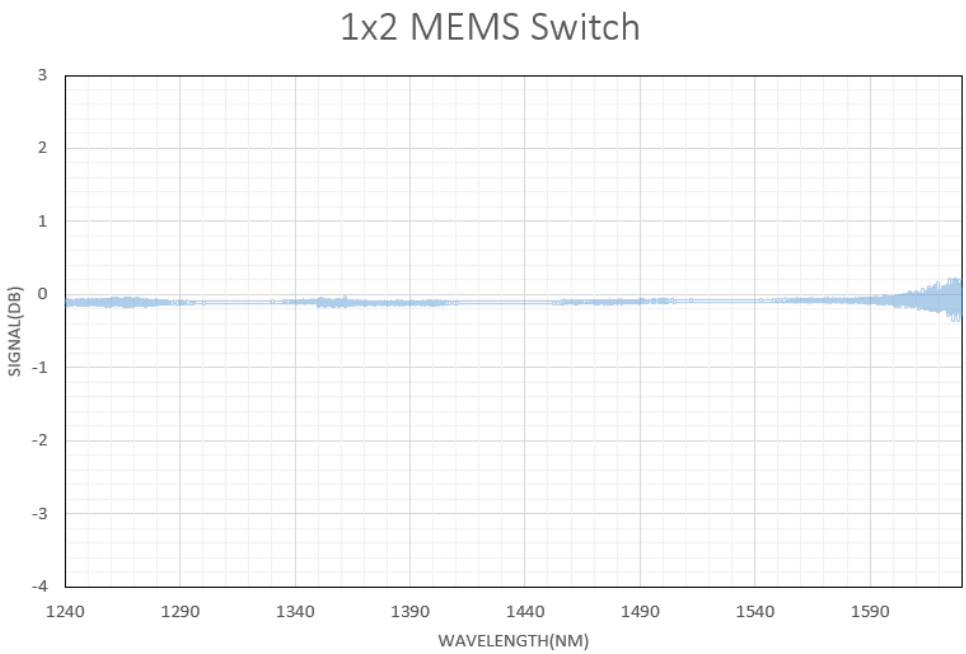
Optical Power Handling vs Wavelength For Single-Mode Fibers



Typical Insertion Loss vs Wavelength (1240-1630nm)



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