

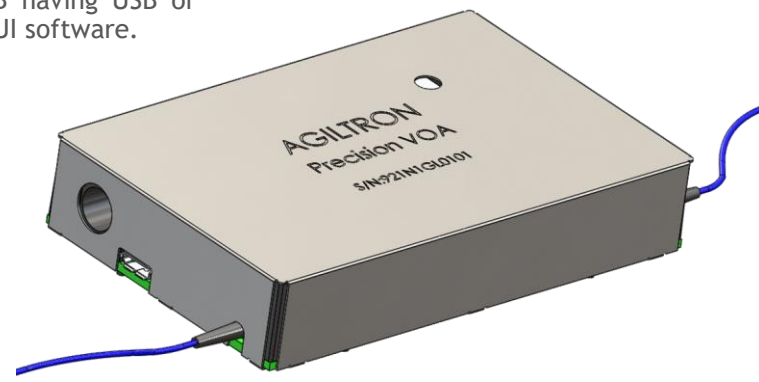
# High Precision MEMS Fiber VOA

(build-in position sensor, high setting precision, little drift)  
 (US patent 8,666,218 and other patents pending)

## Product Description

The High Precision Series VOA provides an absolute attenuation settable by applying an electrical control signal. It is based on a novel micro-electro-mechanical system (MEMS) device platform that is feedback controlled by a fast piezo actuator. It uniquely offers salient advantageous VOA performances, including ultra-low insertion loss of 0.2dB, ultra-broadband from 200 to 2100nm, ultra-high setting/repeating precision of 0.1dB, linear response, and independent of input optical power. Once the VOA attenuation value is set, it will remain at the value regardless of the variations of environmental conditions. Unlike common feedback control VOA, our VOA setting is based on a built-in laser coupled with an optical position sensor, consequently working 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 200GBts, 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.

The VOA is packaged with a PCB having USB or RS232 computer interfaces with GUI software.



## Performance Specifications

<b>Precision Series VOA</b>	Min	Typical	Max	Unit
Operation Wavelength	300		2500	nm
Insertion Loss <sup>[1]</sup>	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 <sup>[2]</sup>		55		dB
Response Time		5	50	ms
Power Consumption			4	W
Optical Power handling <sup>[3]</sup>		600		mW
Operating Temperature	-5		75	°C
Storage Temperature	-40		85	°C
Package		40x25x10		mm

Notes:  
 [1]. Without connector and at room temperature  
 [2]. For SM fiber  
 [3] For fiber with core size >8 μm. For small core see the curve at the end

## Features

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

## Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation



Revised on 03/13/23

## Electrical Control Interface

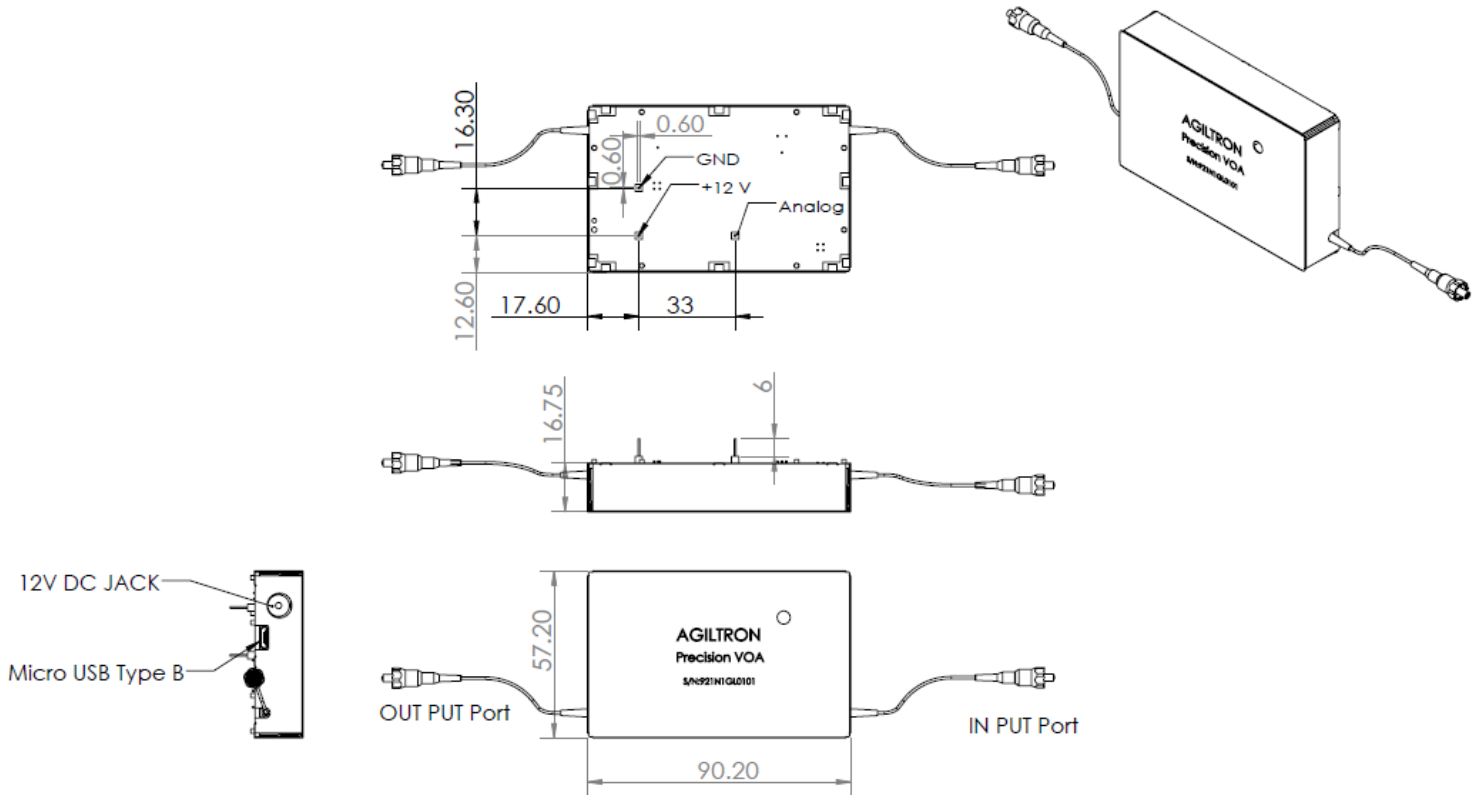


The VOA can be controlled via USB or RS232 interfaces

USB control - Using a USB type A - Micro USB type B cable to control the device and 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.

## Mechanical Footprint Dimensions (Unit:mm)



\*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/I2C = 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 = 7 Special = 0

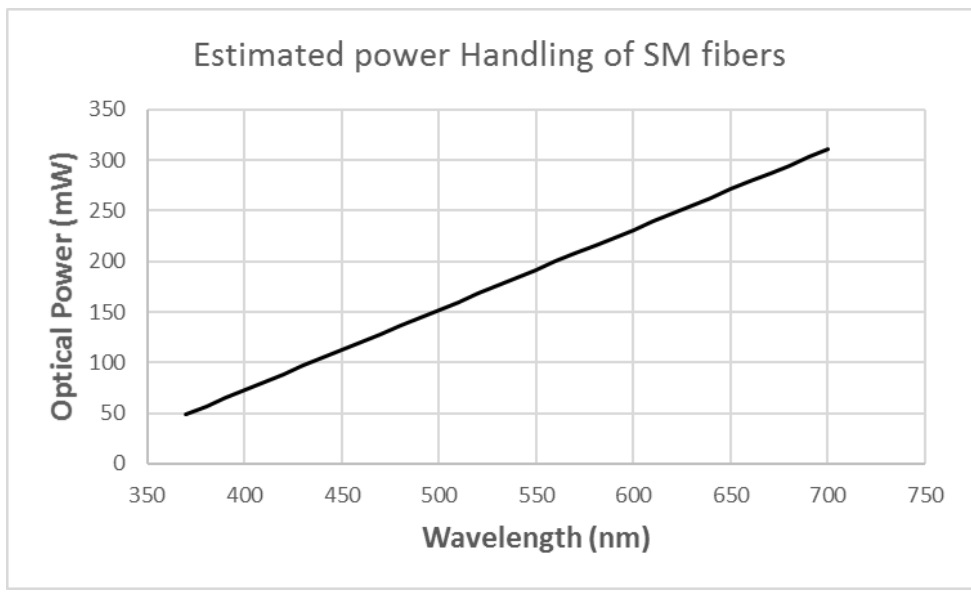
**NOTE:**

PM1550 fiber works well for 1310nm

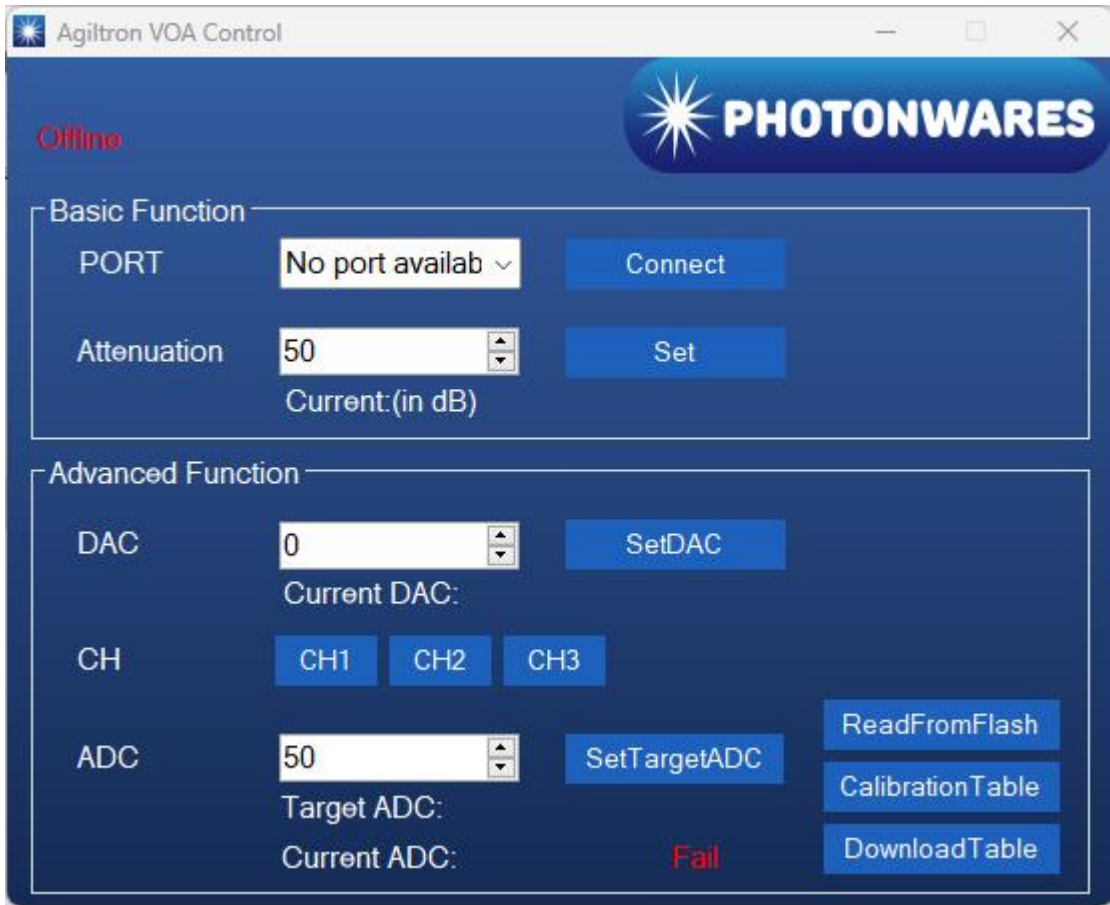
*Fiber Type Selection Table:*

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	PM350	76	FG10LDA
11	SM300	44	PM405	77	
12	SM400	45	PM460	78	
13		46		79	

## Optical Power Handling vs Wavelength For Single-Mode Fibers



## GUI



## Typical Insertion Loss vs Wavelength (1240-1630nm)

1x2 MEMS Switch

