Broadband Fast Fiber Optical Shutter

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

Features

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

Product Description

The Ultra-Broadband Fast Fiber Optical Shutter is based on a micro-electro-mechanical system (MEMS) fiber-to-fiber direct coupling platform driven by a fast piezo actuator. It uniquely offers near-perfect performances that are unmatched in the industry, including ultra-low insertion loss of 0.2dB, ultra-broadband from 200 to 2100nm, high blocking kevel >65dB, high optical power handling up to 1W (for small core fiber this is an option). Light passes through the device with a thin index matched gap without any optical coatings. It is available with all types of fibers having a 125 micron outer diameter. Other diameter fibers can be accommodated with special order.

The Shutter is integrated with a PCB having USB with GUI software and four sub-mount pins: two for 0-5V DC power input and two for 0-5V control input.

Performance Specifications

Broadband Fast Fiber Shuter	Min	Typical	Max	Unit
Operation Wavelength	300		2500	nm
Insertion Loss [1]	0.01	0.4	0.5	dB
Response Time	0.5		15	ms
Repetition Rate			40	Hz
Polarization Dependent Loss[2]		0.15	0.5	dB
Wavelength Dependence Loss [2]		0.1	0.2	dB
Attenuation Range		60	80	dB
Extinction Ratio (PM version only)	18	23	25	dB
Polarization Mode Dispersion (SM version only)		0.01	0.05	ps
Return Loss	50			dB
Response Time		0.5	1	ms
Optical Power handling (CW) [3]		500	600	mW
Operating Temperature	-10		75	°C
Storage Temperature	-40		85	°C

Notes:
[1].Without connector and at room temperature
[2].At attenuation less than 20 dB
[3].For SM 28 fiber, small core power handling reduced, an beam expanding option is available for higher power

Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation

RoHS Compliant

Revised on 02/21/23

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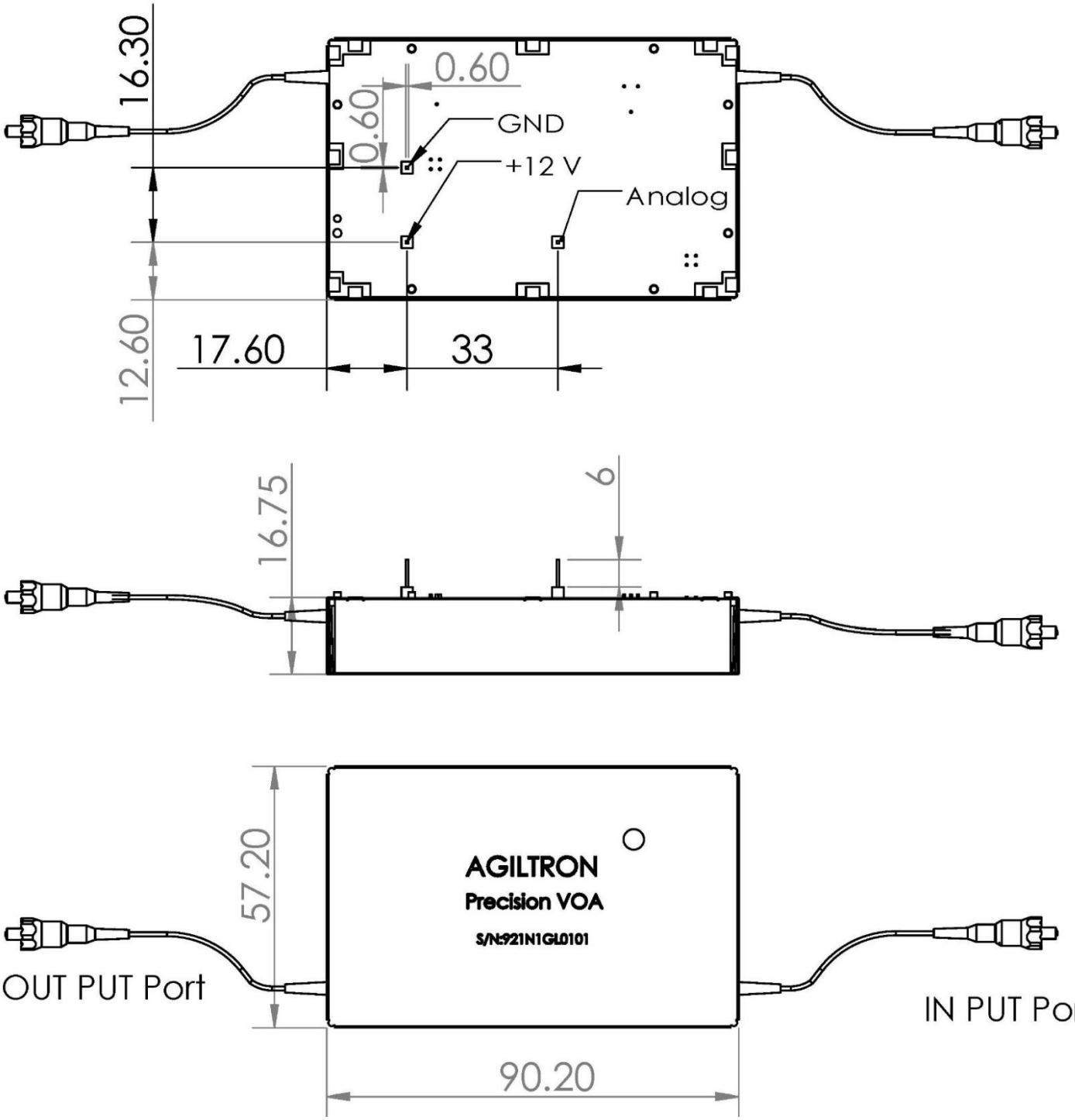
www.agiltron.com

Electrical Control Interface

The shutter is powered by a 12VDC through side plug or the underneath pins. A wall pluggable power suppler is shipped with the product. Please find it inside the package

The shutter is controlled by a 0-5 input signal though the underneath pins, or USB, or RS232

Mechanical Footprint Dimensions (Unit:mm)



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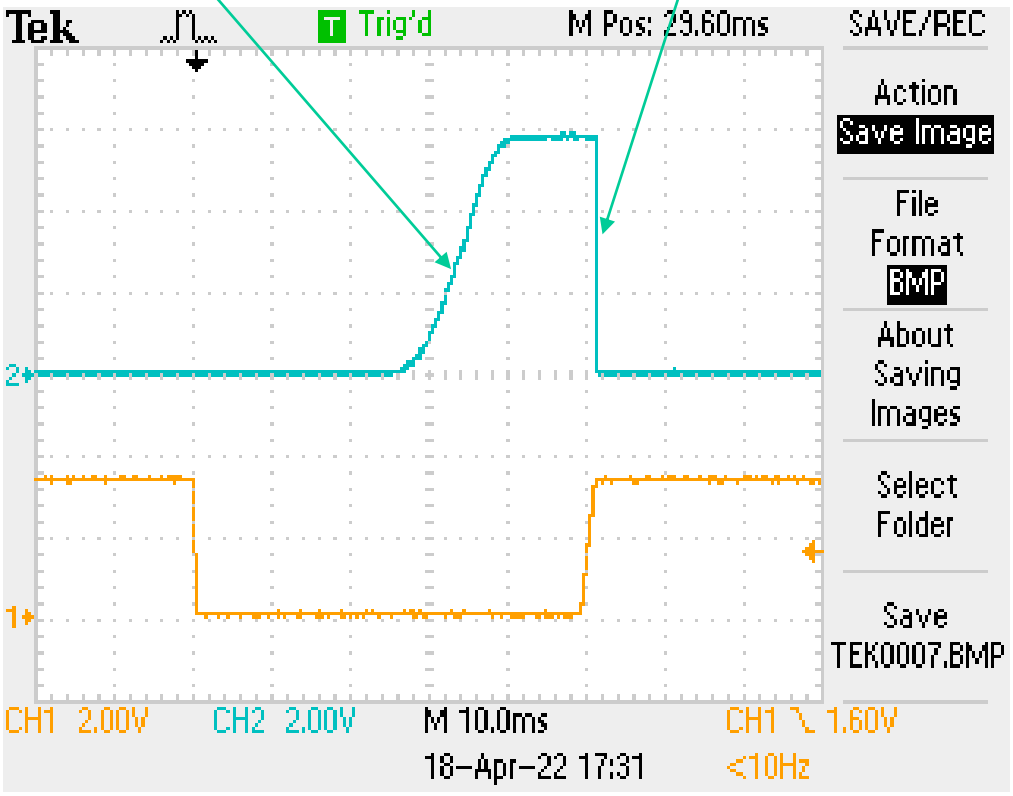
Typical Response

SMF28 fiber

optical rising time: 13ms

optical falling time: <0.5ms



Top blue curve is optical response, bottom orange curve is electrical signal
This device is normally transparent, the fall off can be used as shutter function.

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

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Ordering Information

	2	☐	☐	☐	☐☐	☐	☐	☐
Prefix	**Type**	**Controller**	**Optical Power**	**Test Wavelength**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector ***
FFST-	Piezo=2 Special=0	0-5V=5 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	Select from the table below	900um tube=3 Bare fiber=1 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

Fiber Type Selection Table:

01	**SMF-28**	34	**PM1550**	67	**OM1 (MMF 62.5/125um)**
02	**SMF-28e**	35	**PM1950**	68	**OM2 (MMF 50/125um)**
03	**Corning XB**	36	**PM1310**	69	**OM3 (MMF 50/125um)**
04	**SM450**	37	**PM400**	70	**OM4 (MMF 50/125um)**
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	
11		44		77	
12		45		78	

Operation Manual

1. Connect a control signal to the SMA connector on the PCB.
2. Attach the accompanied power supply (typically a wall-pluggable unit).
3. The device should then function properly.

Note: Do not alter device factory settings.