MEMS 1x8 Mini Latching Series Fiber Optic Switch
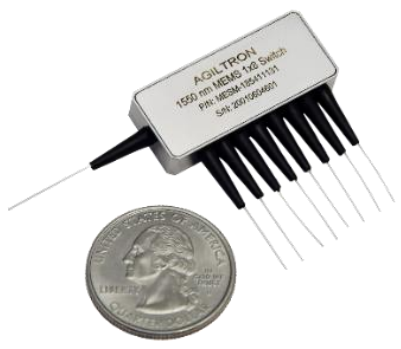
(Bidirectional, SM, PM)

(Protected by U.S. pending patents)

BUY NOW

The MEMS 1x8 Latching Type Series Fiber Optic Switch connects optical channels by redirecting incoming optical signals into selected output fibers. This is achieved using a patent pending MEMS configuration and activated via an electrical control signal. It uniquely features rugged thermal activated micro-mirror movement instead of rotation.

This novel design significantly reduces packaging requirement and simplifies driving electronics, offering unprecedented high stability as well as an unmatched low cost.

Applications

- Channel Routing
- Configurable Add/Drop
- System Monitoring
- Instrumentation

Features

- High reliability
- Intrinsic tolerance to ESD

Specifications

Parameter		Min	Typical	Max	Unit
Operation Wavelength	Single Band		850±40, 1310±40 or 1510±40		nm
	Dual Band		850±40 and 1310±40 1310±40 and 1510±40		
	Broad Band		1260~1620		
Insertion Loss [1]			0.7	1.2 (1.4 [2])	dB
Wavelength Dependent Loss			0.15	0.3 [2]	
PDL (SM)				0.1	dB
Extinction Ratio (PM)		18		0.1	dB
Cross Talk [1]		50			dB
Return Loss [1]		50			dB
Switching Time			5	10	ms
Repeatability				± 0.05	dB
Repetition Rate			5		Hz
Durability		10^9			cycle
Switching Type			Latching		
Operating Temperature		-5		70	°C
Storage Temperature		-40		85	°C
Optical Power Handling (CW)			300	500	mW
Fiber Type	SM		SMF-28, or equivalent		
	PM		Panda 250, or equivalent		

Notes:

[1]. Excluding connectors

[2]. Dual band and Broad band

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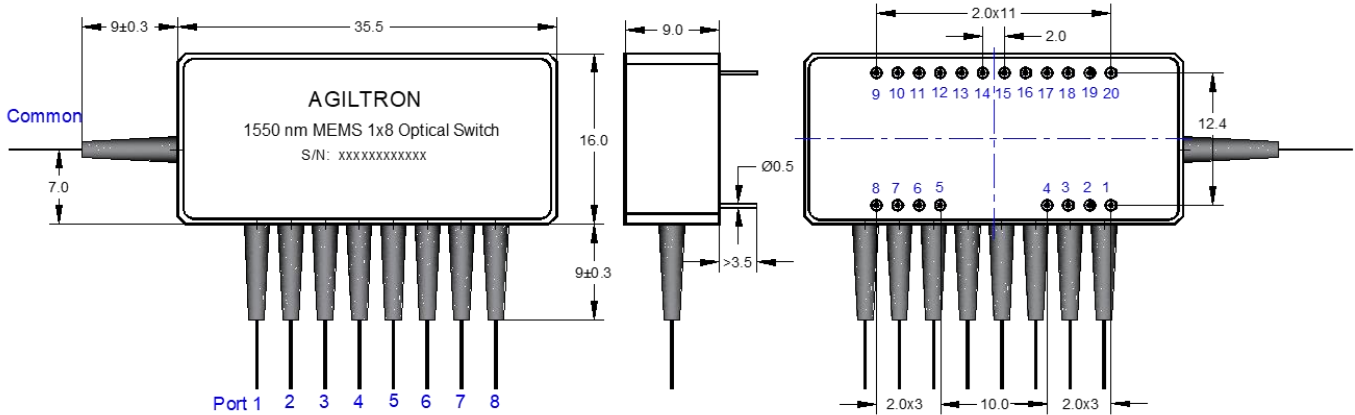# MEMS 1x8 Mini Latching Series Fiber Optic Switch

(Bidirectional, SM, PM)

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DATASHEET

Mechanical Footprint Dimensions (mm)

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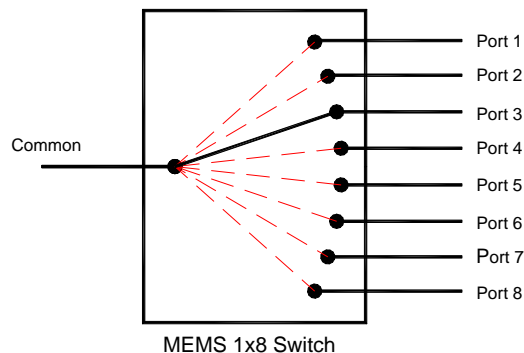
Electronic Control Requirements

Optical Path	Pin Number																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C ↔ P 1 [1]	5 VDC [2]		0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	H [3]	0
C ↔ P 2	5 VDC [2]		0		0	0	0	0	0	0	0	0	0	0	0	0	H	0	0	H
C ↔ P 3	5 VDC [2]		0		0	0	0	0	0	0	0	0	0	0	H	0	0	H	0	H
C ↔ P 4	5 VDC [2]		0		0	0	0	0	0	0	0	0	H	0	0	H	0	H	0	H
C ↔ P 5	5 VDC [2]		0		0	0	0	0	0	0	H	0	0	H	0	H	0	H	0	H
C ↔ P 6	5 VDC [2]		0		0	0	0	0	H	0	0	H	0	H	0	H	0	H	0	H
C ↔ P 7	5 VDC [2]		0		0	0	H	0	0	H	0	H	0	H	0	H	0	H	0	H
C ↔ P 8	5 VDC [2]		0		H [3]	0	0	H	0	H	0	H	0	H	0	H	0	H	0	H

[1]. C: Common Port; P1: Port 1.

[2]. 5VDC: 5.0±02 V. Static 3mA; During Pulse Current is 100 mA.   The switch will remain in its previous light path state, if this voltage is removed (latching) .

[3]. 5V Pulse: 5.0±02 V. Pulse width is 40±5 ms. .
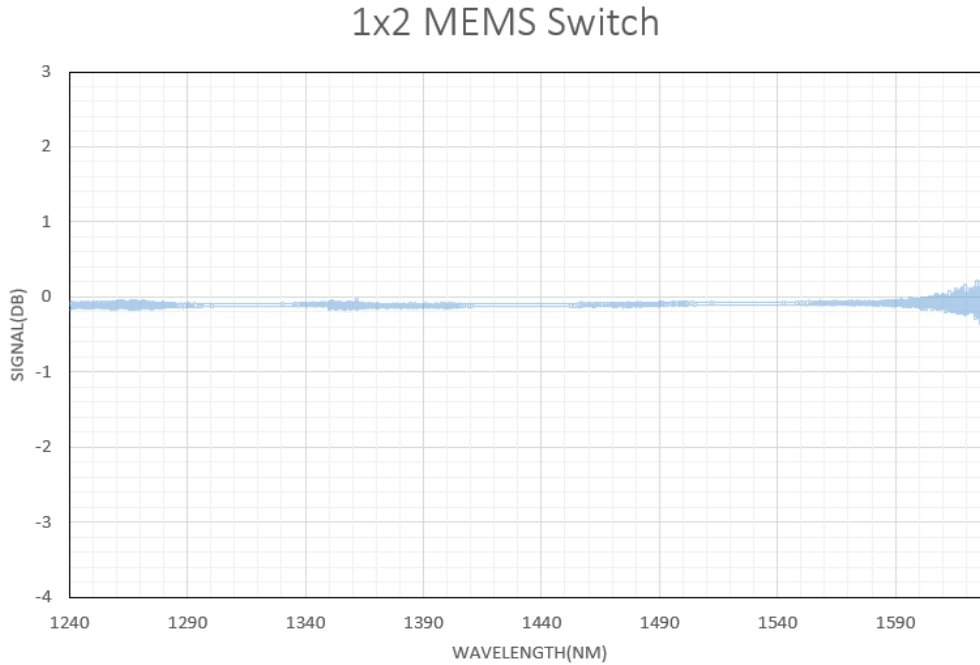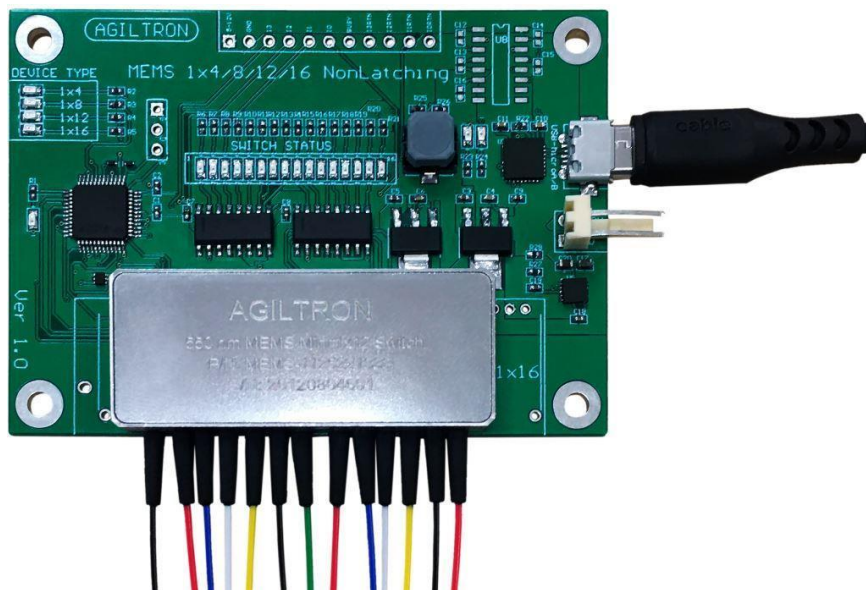
Functional Diagram

MEMS 1x8 Switch

Typical Insertion Loss vs Wavelength (1240-1630nm)

Demo Driver

USB RS232/GUI, Pushbutton/LED Channel Indicators ($255)

10^9 Switching Cycle Test

We have tested MEMS 1x2 switch at the resonant frequency ~300Hz for more than 40 days, as shown in the attachment, which corresponding over 10^9 switching cycles. The measurements show little changes in Insertion loss, Cross Talk, Return loss etc, all parameters are within our specs.
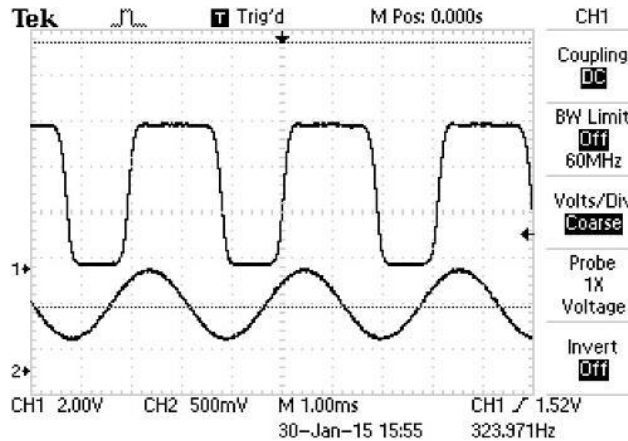
Ordering Information

			1	1				
Prefix	**Type**	**Wavelength**	**Switch**	**Package**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector**
MESM- [1] **MEMP-** [2]	1x5 = 15 1x6 = 16 1x7 = 17 1x8 = 18 Special = 00	1260~1620 = B 1060 = 1 C+L = 2 1310 = 3 1550 = 5 780 = 7 850 = 8 1310/1550 = 9 Special = 0	Latching = 1	Standard = 1	SMF-28 = 1 PM 1550 = B PM 1310 = D Special = 0	Bare fiber = 1 900 um 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 Duplex LC/PC = 8 LC/UPC = U Special = 0

[1]. **MESM**: **ME**MS 1x8 **S**ingle mode **M**ini Switch

[2]. **MEMP**: **ME**MS 1x8 **M**ini **P**M fiber Switch

NOTE:
- ❑ **PM1550** fiber works well for **1310nm**

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.