PHOTONWARES

MEMS 4x4 and Dual 4x4 Fiber Optical Switch
(Latching and Non-latching Series, SM, PM)

(Protected by U.S. patent 8,203,775, 20170184840A1, and other patents pending)

Features

- Reliable
- Compact
- No Drift
- Latching

Product Description

The MEMS 4x4 Series Fiber Optic switch redirects incoming optical signals into 4 selected output fibers with blocking. This is achieved using a patented MEMS configuration and activated via an electrical control signal. It uniquely features highly reliable thermally activated micro-mirror, latches to preserve the selected optical path after the drive signal has been removed, and no drift over time. Light path is bidirectional and non-blocking.   Is has a dual 4x4 and ad/drop optional configurations.

This novel design offers unprecedented   long term high stability as well as fault-safe latching reliability. The switch is available in both device format and integrated with driving electronics.

Performance Specifications

MEMS 4x4 Switch		Min	Typical	Max	Unit
Operation Wavelength		Singe Band: 780, 850, 980, 1060, 1310, 1550			nm
		Broad Band: 1260~1620			
Insertion Loss [1], [2]			1.2	1.7	dB
Polarization Dependent Loss (SM)				0.2	dB
Extinction Ratio (PM)		18	25		dB
Return Loss [1], [2]		50			dB
Cross Talk [1], [2]		50			dB
Wavelength Dependent Loss			0.2	0.3	dB
Response Time			5	10	ms
Repetition Rate			5		Hz
Repeatability				±0.05	dB
Durability		10^9			Cycle
Operating Temperature [3]		-5		70	ºC
Storage Temperature		-40		85	ºC
Optical Power Handling (CW)			300	500	mW
Fiber Type	SM	SMF-28, HI 780, HI 1060, or equivalent			
	PM	PM1550/250, PM1310/250, PM980/250, PM850/250 or equivalent			
Package Dimension		54.0 x 38.0 x14.1			mm

1. IL could be 0.2dB higher at the wavelength close to the edge of broad waveband.
2. Excluding connectors.
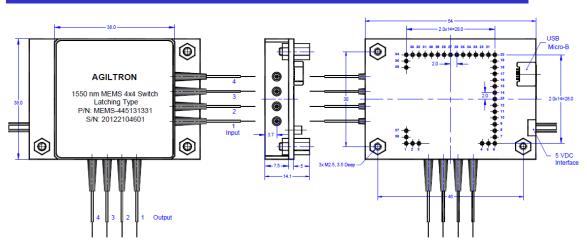3. -40ºC Operating Temperature version is available.

RoHS Compliant

Revised on 01/27/22
(Click here for latest revision)

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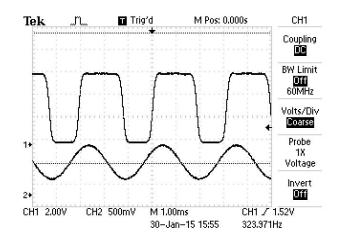
Mechanical Dimensions (Unit: mm)

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

Control Interface Information

1. The control interface is Micro-USB with GUI and/or command list. RS232 can be an alternative option with the adaption cable of converter, but USB and RS232 can't be implement on same driver.
2. The electric power consumption in No-latching version is much more than Latching version.

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.
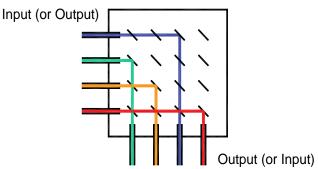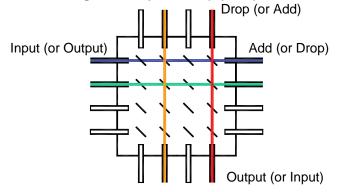
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Functional Diagram

MEMS 4x4 Switch

Input (or Output)

Output (or Input)

MEMS 4x4 2-Wing Add-Drop Switch (Option)

Drop (or Add)

Input (or Output)

Add (or Drop)

Output (or Input)

Ordering Information

MEMS-	☐☐	☐	☐	3	☐	☐	☐	☐
	Type	**Wavelength**	**Switch**	**Package**	**Fiber Type**		**Fiber Length**	**Connector**
	2x4=24 3x4=34 4x4=44 Dual 4x4=D4 Add-Drop 4x4=A4 Special=00	1260~1620=B C+L=2 1310=3 1550=5 780=7 850=8 Special=0	Latching=1 Non-Latching=2	With Driver [1] =3	SMF-28=1 HI 1060=2 HI 780=3 PM 1550/250=B PM 1310/250=D PM 980/250=E PM 850/250=F Special=0	900 um loose 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 Duplex LC=8 Special=0

[1]. The driving electronics has USB Micro-B interface and 5 VDC power supply interfaces. The more detail is available upon purchase.