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MEMS Dual 1x2, Dual 2x2 Non-Latching Fiber Optical Switch

(Single Mode, Multimode)

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

Product Description

The MEMS Non-Latching type Series Fiber Optical Switches provide industrial leading performance of fast switching speed, latching, low insertion loss, and high reliability, as well as low cost. The switch connects optical channels using a proprietary thermal activated micro-mirror, moving-in and -out optical paths, uniquely featuring high stability without long-term drift, fail safe latching, fast setting time, and direct 5V drive convenience. The same format can accommodate configurations of 1x1, Dual 1x1, Quad 1x1, 1x2, Dual 1x2, Full 2x2, and Dual Full 2x2 for both single mode and Multimode fibers. The switches are also available with configurations of 1x1, 1x2 PM.



Performance Specifications

MEMS Dual 1x2, Dual 2x2 Switch		Min	Typical	Max	Unit
Operation Wavelength	Single Mode	1260~1610			nm
	Multimode	810~890 and / or 1260/1360			
Insertion Loss ^{[1], [2]}	Single band	0.6			dB
	Dual band	1.2 ^[3]			
Return Loss ^[1]	Single mode	50			dB
	Multimode	35			
Cross Talk ^[1]	Single mode	50			dB
	Multimode	35			
PDL				0.2	dB
WDL				0.3	dB
TDL				0.3	dB
Switching Time	10				ms
Repeatability				±0.05	dB
Repetition Rate	10				Hz
Durability	10 ⁹				Cycle
Switching Type	Non-Latching				
Operating Temperature	-5		70		°C
Storage Temperature	-40		85		°C
Optical Power Handling (CW)	300		500		mW
Package Dimension	13L x 9W x 6H				mm
Fiber Type	Single Mode	SMF-28 or equivalent			
	Multimode	MM 50/125, MM 62.5/125 or equivalent			

[1]. Excluding connectors.

[2]. Multimode IL measure @ Light Source CPR<14 dB.

[3]. Dual band, and Dual 1x2, Dual Full 2x2.

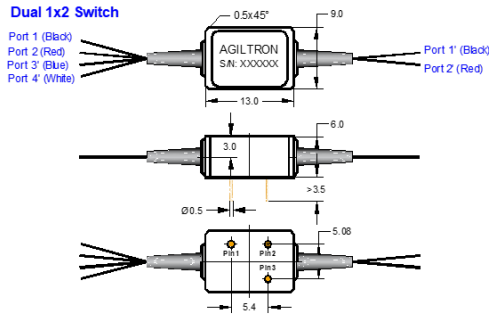


MEMS Dual 1x2, Dual 2x2 Non-Latching Fiber Optical Switch

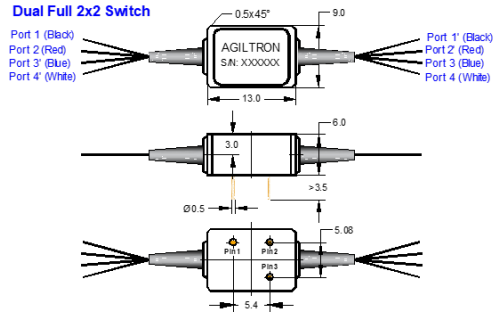
Mechanical Dimensions (Unit: mm)

Package with 900 μm loose tube

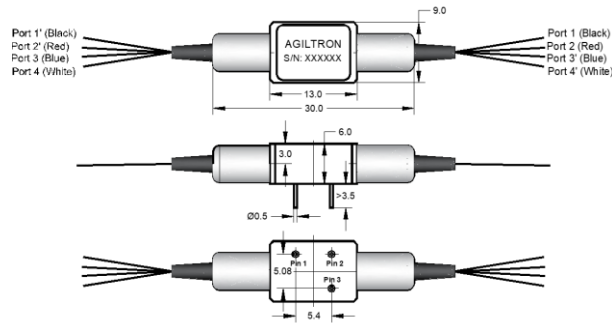
Dual 1x2 Switch



Dual Full 2x2 Switch



Package with 900 μm loose tube



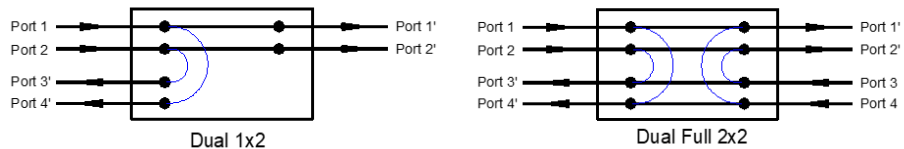
*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Electrical Driving Requirements

Status	Optical Path		Pin No.		
	Dual 1X2	Dual Full 2x2	Pin 1	Pin 2	Pin 3
Status I	Port 1→1' Port 2→2'	Port 1→1', Port 2→2' Port 3→3', Port 4→4'	NC	0V	+V
Status II	Port 1→4' Port 2→3'	Port 1→4', Port 2→3' Port 3→2', Port 4→1'	NC	0V	0 V

[1]. NC: No electronic connection. [2]. +V: 3.8~4.5 VDC, Typical is 4.0 VDC. [3]. Power Consumption is about 170 mW.

Functional Diagram



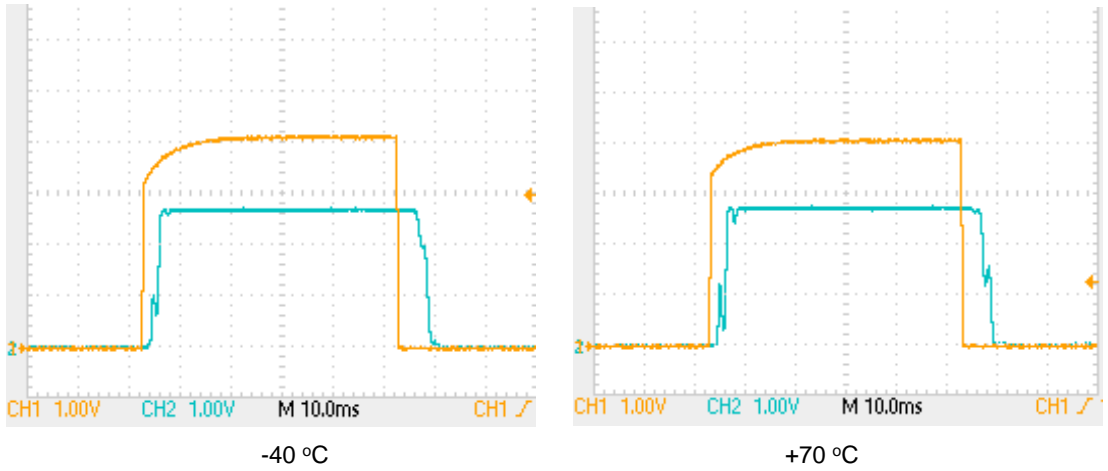
MEMS Dual 1x2, Dual 2x2 Non-Latching Fiber Optical Switch

Ordering Information

Prefix	Type	Wavelength	Switch	Package	Fiber Type		Fiber Length	Connector
MEDU- ^[1]	1x2=12 Full 2x2=22 Special=00	1260-1620=B 1060=1 1310=3 1550=5 780=7 850=8 1310/1550=9 850/1310=A Special=0	NL ^[2] =2	Standard=2 WIP ^[3] =6 Special=0	SMF-28=1 MM 50/125=5 MM 62.5/125=6 Special=0	Bare fiber=1 900um 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]. MEDU: MEMS DUAL 1x2, 2x2 Switch.
- [2]. Non-latching.
- [3]. WIP: With Insulating PCB.

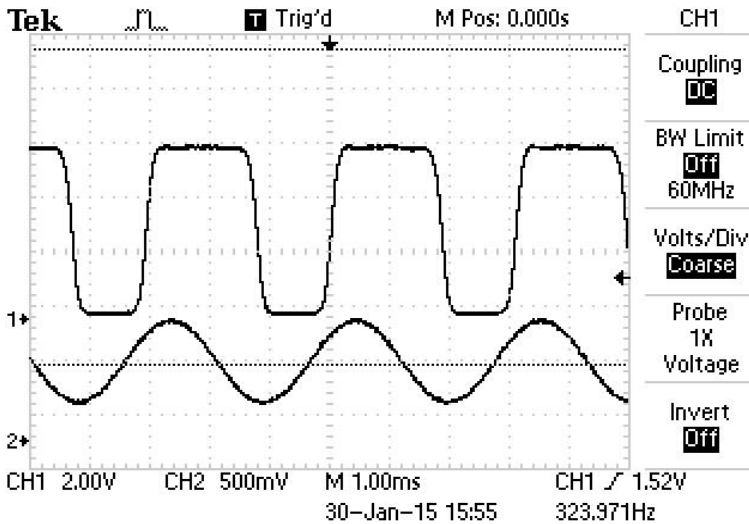
Typical Switching Rise/Fall at -40°C and 70°C



MEMS Dual 1x2, Dual 2x2 Non-Latching Fiber Optical Switch

10⁹ 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 10⁹ switching cycles. The measurements show little changes in Insertion loss, Cross Talk, Return loss ect, all parameters are within our specs.



Typical Insertion Loss vs Wavelength (1240-1630nm)

