



MEMS Full/Dual 2x2 PM Fiber Optical Switch

(Protected by US Patent 10752492B2)

Product Description

The MEMS Series Full and Dual Full 2x2 PM Fiberoptic 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.

Features

- High reliability
- Intrinsic tolerance to ESD

Performance Specifications

MEMS Full & Dual Full 2x2 PM Switch	Min	Typical	Max	Unit
Operation Wavelength	850, 980, 1060, 1260 - 1620			nm
Insertion Loss ^[1]		0.6	1.0	dB
Extinction Ratio	18	23		dB
Return Loss ^[1]	50			dB
Cross Talk ^[1]	50			dB
PDL			0.2	dB
WDL			0.3	dB
TDL			0.3	dB
Switching Time		5	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

[1]. Exclude connectors.
 [2]. Please contact us for other fiber type.

Applications

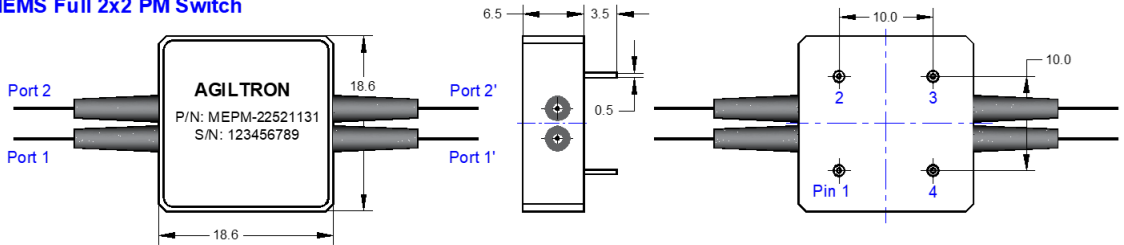
- Channel Blocking
- Configurable Add/Drop
- System Monitoring
- Instrumentation



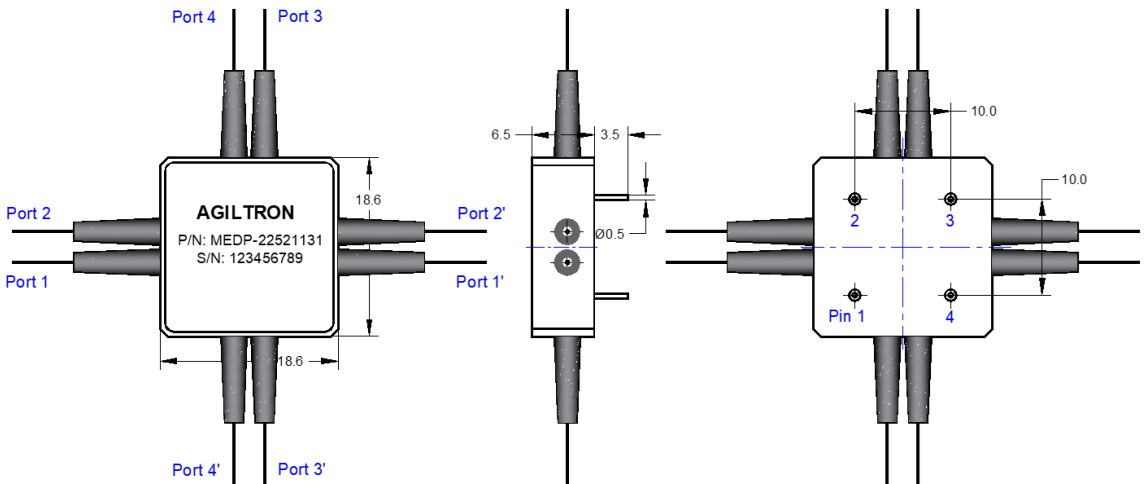
MEMS Full/Dual 2x2 PM Fiber Optical Switch

Mechanical Dimensions (Unit: mm)

MEMS Full 2x2 PM Switch



MEMS Dual Full 2x2 PM Switch



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

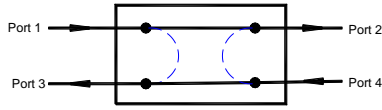
Electronic Control Requirements

Optical Path			Pin 1	Pin 2	Pin 3	Pin 4
Full 2x2 PM	Dual 2x2 PM (Function I)	Dual 2x2 PM (Function II)				
1 → 1', 4 → 4'	1 → 1', 2 → 2' 3 → 3', 4 → 4'		0	0	0	NC [2]
1 → 4', 4 → 1'		1 → 4', 4 → 1' 2 → 2', 3 → 3'	+V [1]	0	0	NC
		1 → 1', 2 → 2' 3 → 2', 4 → 3'	0	+V	0	NC
	1 → 4', 2 → 3' 3 → 2', 4 → 1'		+V	+V	0	NC

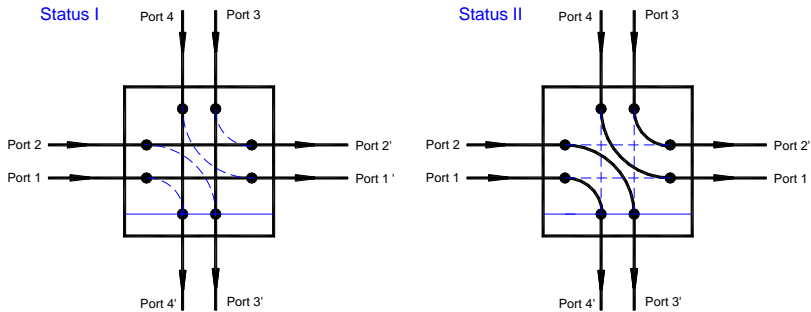
[1]. 4.0 ~ 4.2V [2]. NC: No electronic connection. [3]. Power Consumption in max is about 170 mW for Full-2x2, and 340 mW for Dual 2x2.

MEMS Full/Dual 2x2 PM Fiber Optical Switch

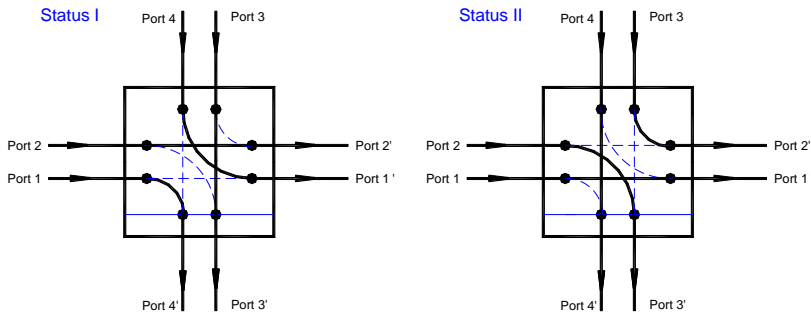
Functional Diagram



MEMS Full 2x2 PM Switch



MEMS Dual Full 2x2 PM Switch_Function I



MEMS Dual Full 2x2 PM Switch_Function II

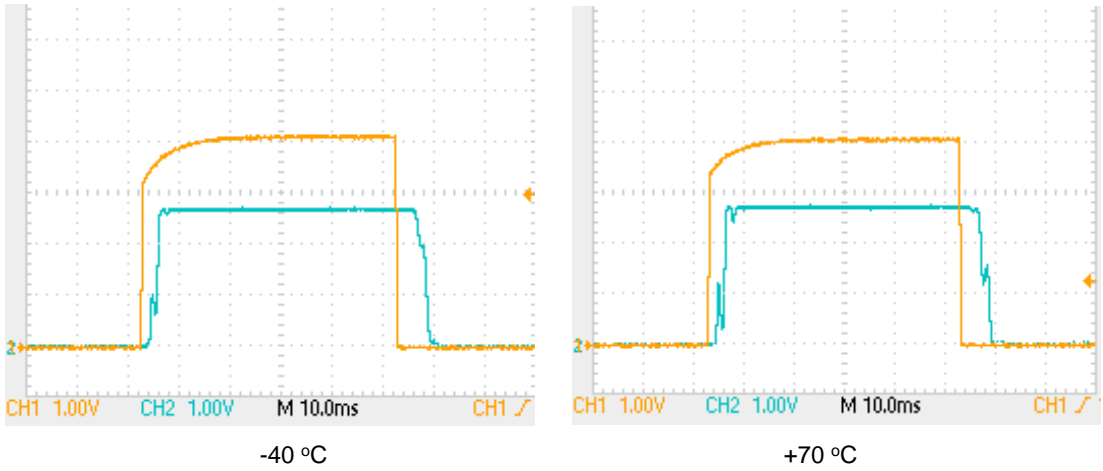
Ordering Information

Prefix	Type	Wavelength	Switch Type	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
MEPM- ^[1] MEDP- ^[2]	2x2 = 22 Special = 00	1260-1620 = 2 1060 = 1 1410 = 4 780 = 7 850 = 8 980 = 9 Special = 0	2 Non-Latching=2	□ Standard=1 Special=0	□ PM1550=B PM1310=C PM1400=D PM1310=E PM980=F PM850=G Special=0	□ 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 Duplex LC=8 Special=0

[1]. **MEPM**: MEMS Full 2x2 PM Switch.
 [2]. **MEDP**: MEMS Dual Full 2x2 PM Switch.

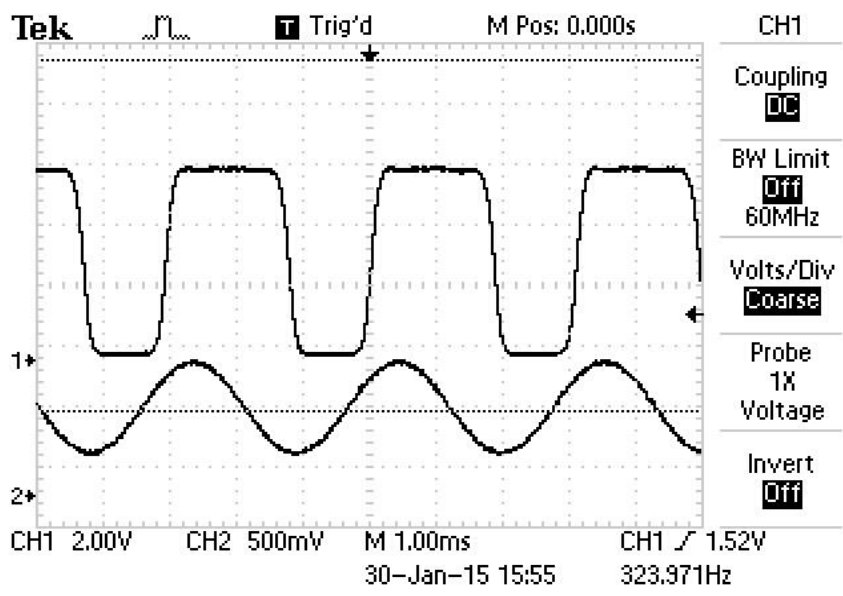
MEMS Full/Dual 2x2 PM Fiber Optical Switch

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



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, etc., all parameters are within our specs.



MEMS Full/Dual 2x2 PM Fiber Optical Switch

Typical Insertion Loss vs Wavelength (1240-1630nm)

1x2 MEMS Switch

