

Features

- High reliability
- High ER
- Intrinsic tolerance to ESD

Applications

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

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.

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	820		2600	nm
Insertion Loss ^[1]		0.6	1.0	dB
Polarization Extinction Ratio	18	23	32	dB
Return Loss ^[1]	50			dB
Cross Talk, On/Off	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) ^[1]		300	400	mW

Notes:

- [1]. Exclude connectors. Connector adds 0.3dB each and reduce Return loss 0.3dB. @1550nm, shorter wavelength increase loss and reduce power handling

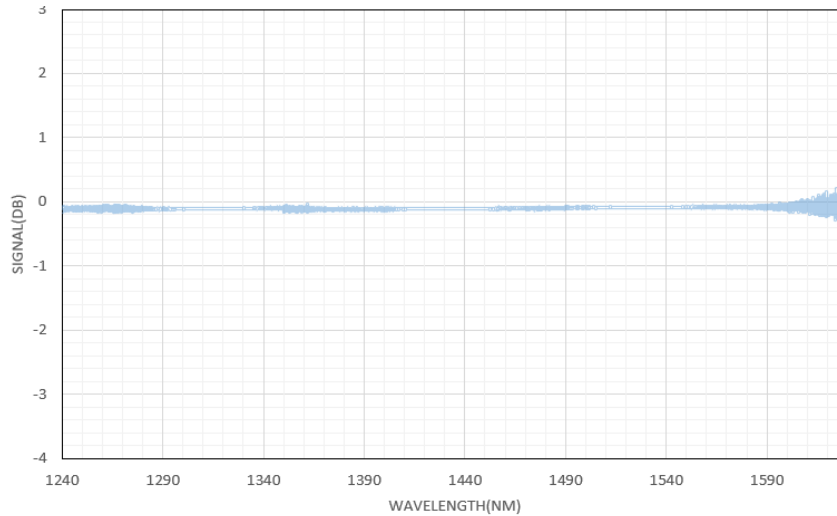
Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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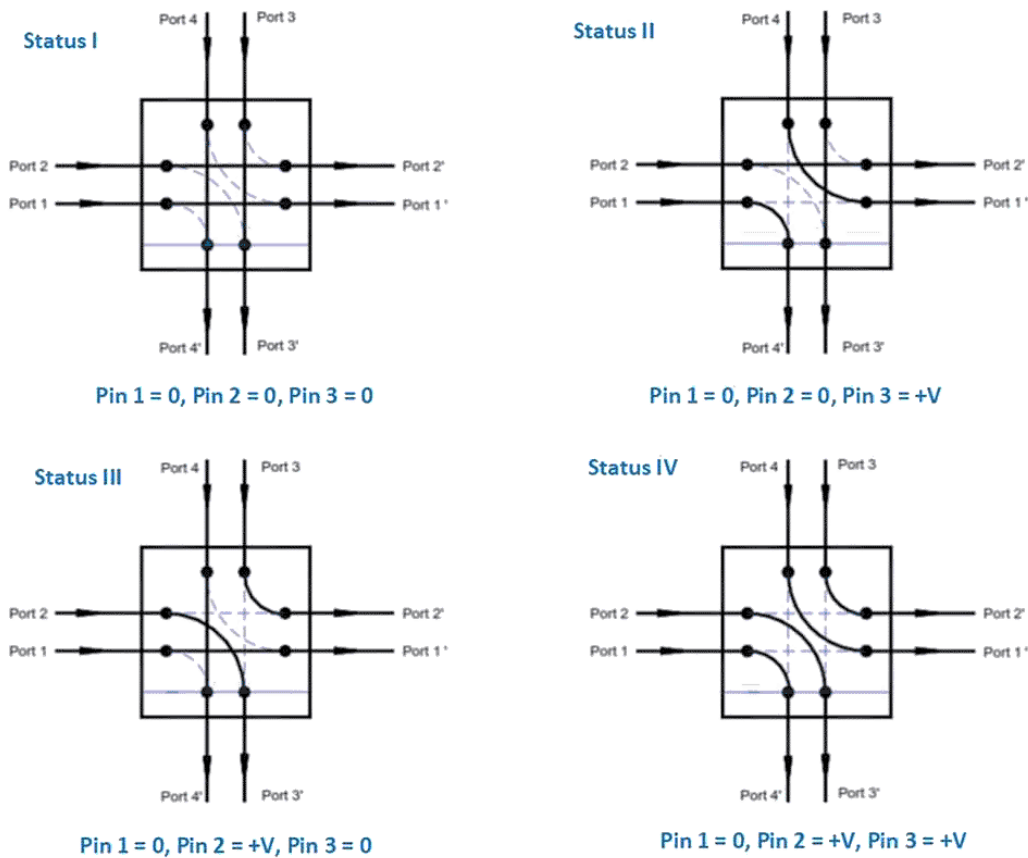
(up to 30dB Polarization Extinctions Ratio)

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Typical Insertion Loss vs Wavelength (1240-1630nm)



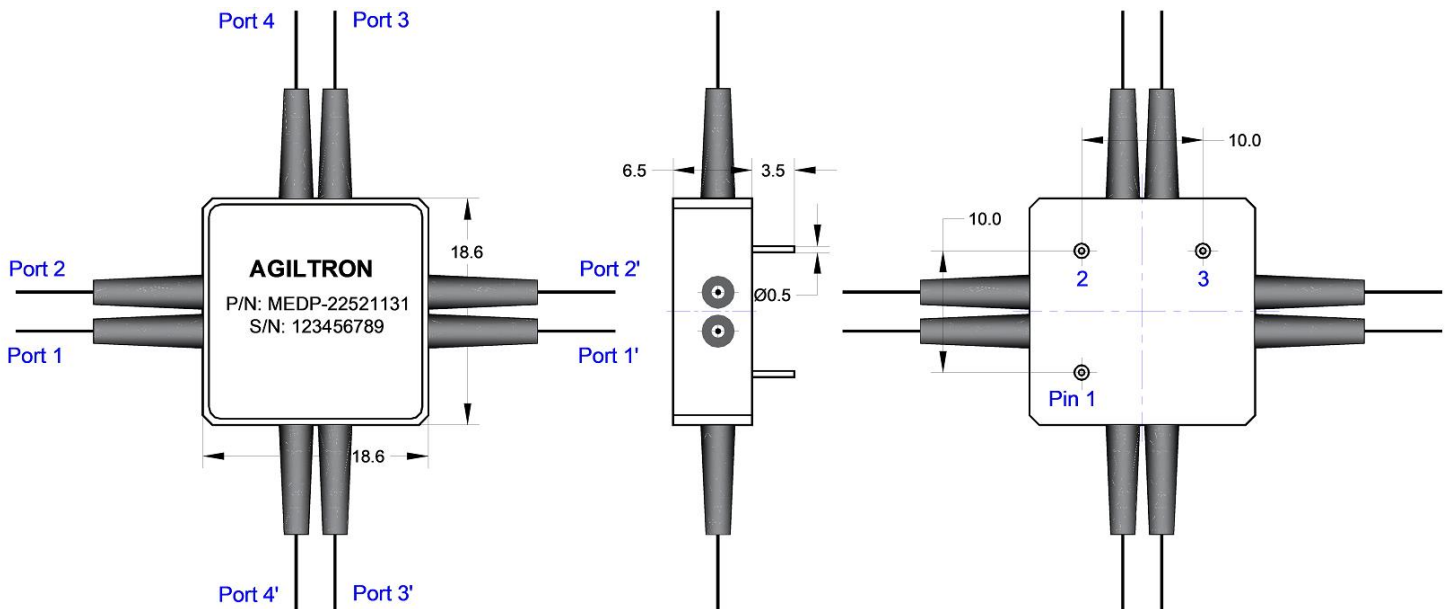
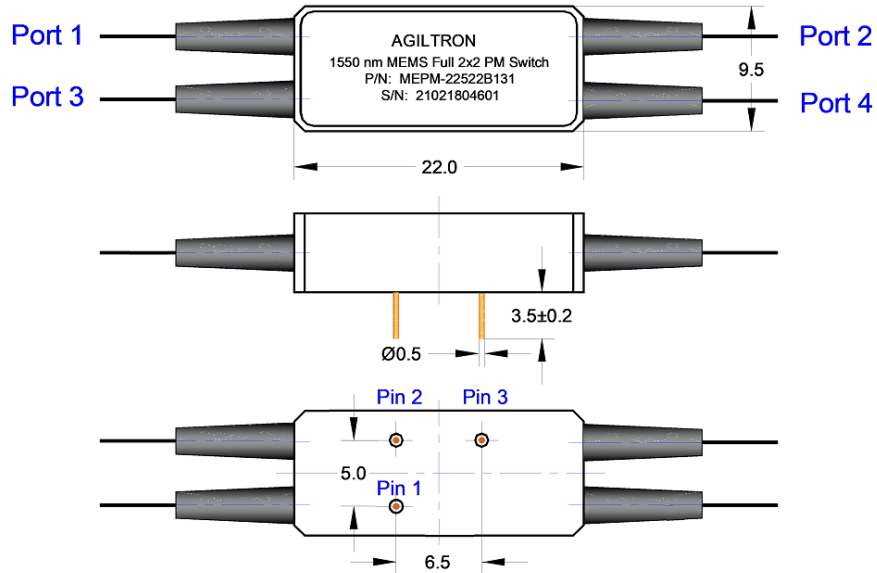
Functional Diagram



(up to 30dB Polarization Extinctions Ratio)

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Mechanical Dimensions (mm)



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

(up to 30dB Polarization Extinctions Ratio)

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Electronic Control Requirements

Status	Optical Path		Pin 1	Pin 2	Pin 3
	Full 2x2 PM	Dual 2x2 PM			
Status I	1 → 4, 2 → 3	1 → 1', 2 → 2' 3 → 3', 4 → 4'	0	0	0
Status II	1 → 3, 2 → 4	1 → 4', 4 → 1' 2 → 2', 3 → 3'	0	0	+V [1]
Status III		1 → 1', 4 → 4' 2 → 3', 3 → 2'	0	+V	0
Status IV		1 → 4', 2 → 3' 3 → 2', 4 → 1'	0	+V	+V

[1]. +V: 4 ~ 4.2VDC.

[2]. Power Consumption in max is about 170 mW for Full-2x2, and 340 mW for Dual 2x2.

Ordering Information

Prefix	Type	Wavelength	Switch Type	ER	Fiber Type	Fiber Cover	Fiber Length	Connector
MEPM-	Full 2x2 = 22 1x2 = 12 Dual 1x2 = D2 Dual Full 2x2 = F2 Dual Bypass 2x2 = B2	1260-1620 = 2 1060 = 1 1310 = 3 1410 = 4 780 = 7 850 = 8 980 = 9 Special = 0	Non-Latching = 2	18dB = 1 22dB = 2 26dB = 3 30dB = 4 32dB = 5	PM1550 = B PM1400 = C PM1310 = D PM980 = E PM850 = F 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/PC = 7 Duplex LC/PC = 8 LC/APC = A LC/U/PC = U Special=0

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

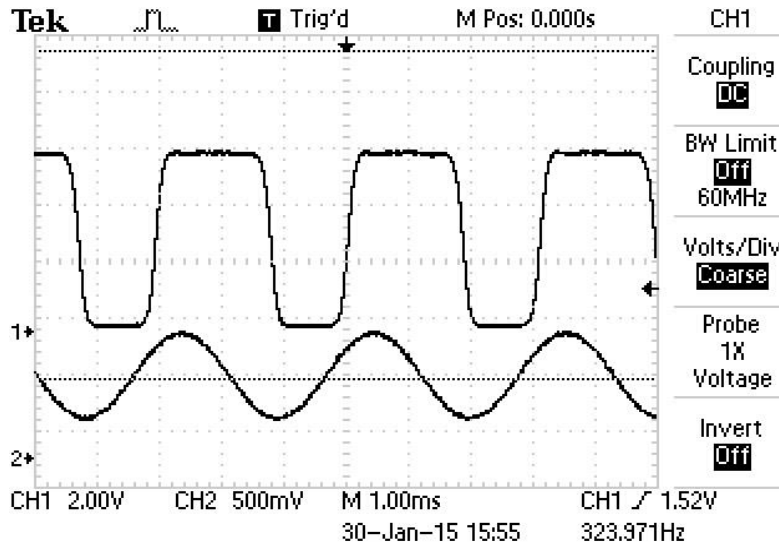
Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

(up to 30dB Polarization Extinctions Ratio)

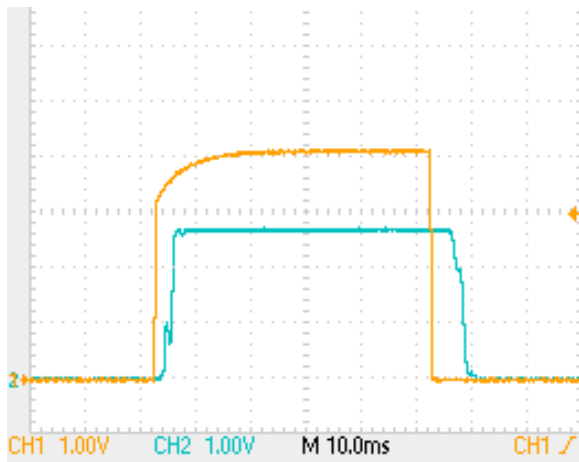
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10⁹ Switching Cycle Test

We have tested MEMS 1x2 switch at the resonant frequency ~300Hz for more than 40 days, as shown in the attachment, which corresponds over 10⁹ switching cycles. The measurements show little changes in Insertion loss, Cross Talk, Return loss, etc, all parameters are within our specs.



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



-40 °C



+70 °C