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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] | | | |
| PDL | Single mode | 0.1 | | | dB |
| Return Loss ^[1] | Single mode | 50 | | | dB |
| | Multimode | 35 | | | |
| Cross Talk ^[1] | Single mode | 50 | | | dB |
| | Multimode | 35 | | | |
| 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 | 300 | | | 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.



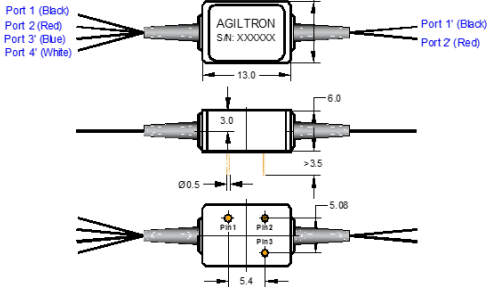
MEMS Dual 1x2, Dual 2x2 Non-Latching Fiber Optical Switch

Mechanical Dimensions (Unit: mm)

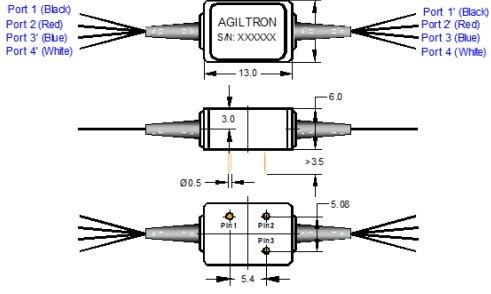
*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Package with 900 μm loose tube

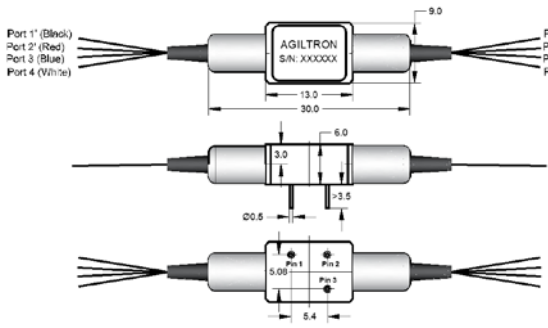
Dual 1x2 Switch



Dual Full 2x2 Switch



Package with 900 μm loose tube

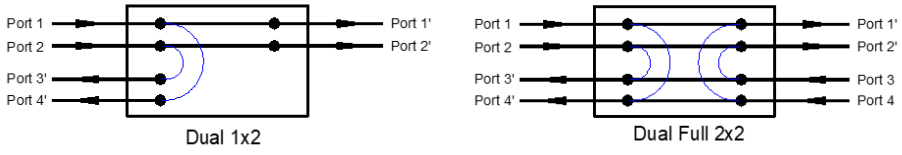


Electrical Driving Requirements

| 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

| MEDU - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--------|-------------------------------------|---|--------------------------|--------------------------------------|---|--------------------------|---|--|---|
| | Type | Wavelength | Switch | Package | Fiber Type | | Fiber Length | Connector | |
| | 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 | Non-latching=2 | Standard=2 WIP [2]=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]. WIP: With Insulating PCB.

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.

