

etMEMS™ Latching Type Fiber Optical Switch

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

Product Description

The etMEMS™ Series Fiber Optical Switch connects optical channels by redirecting incoming optical signals into selected output fibers. This is achieved using a proprietary thermal activated micro-mirror, moving-in and -out optical paths, uniquely featuring ultra small size, rugged. The MEMS Latching type with Build-in driver switches can be directly mounted on printed circuit board with configurations of 1x1, Dual 1x1, Quad 1x1, 1x2, Dual 1x2, Full 2x2, and Dual Full 2x2 Single mode and Multimode.

This advanced design offers unprecedented high stability and high reliability as well as low cost advantage.



Performance Specifications

| etMEMS™ Latching with Build-in Driver Switch | | Min | Typical | Max | Unit |
|--|-------------|------------------------------------|--------------------|---------------------------|-------|
| Operation Wavelength | Single Mode | 1260~1360 and/or 1510~1610 | | | nm |
| | Multimode | 810~890 and/or 1260/1360 | | | |
| Insertion Loss ^{[1], [2]} | | | 0.6 | 1.0 (1.2 ^[3]) | dB |
| 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 | | | | 20 | Hz |
| Durability | | 10 ⁹ | | | Cycle |
| Switching Type | | Latching type with Build-in Driver | | | |
| Operating Temperature | | -5 | | 70 | °C |
| Storage Temperature | | -40 | | 85 | °C |
| Optical Power Handling | | | 300 | 500 | mW |
| Package Dimension | | | 18.5L x 12W x 8.6H | | mm |
| Fiber Type | Single Mode | SMF-28, or equivalent | | | |
| | Multimode | MM50/125, or equivalent | | | |

[1]. Excluding connectors.

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

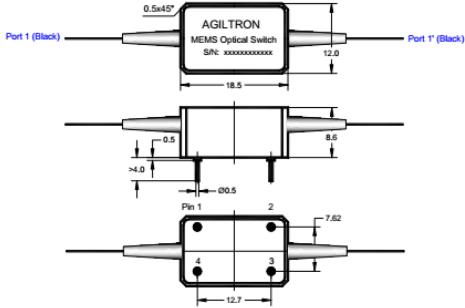
[3]. Dual band, and Dual 1x2, Full 2x2, Dual Full 2x2.



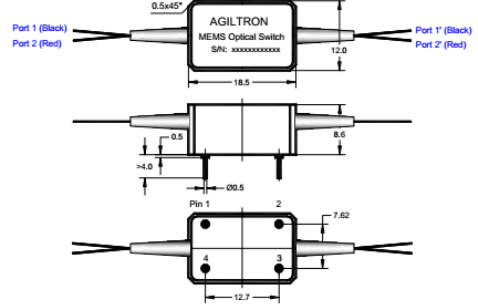
etMEMS™ Latching Type Fiber Optical Switch (With Build-in Driver)

Mechanical Dimensions with Build-in Driver (Unit: mm)

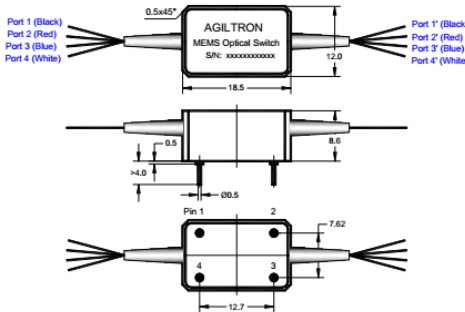
MEMS 1x1 Latching Switch



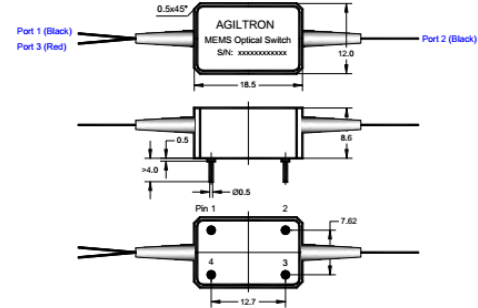
MEMS Dual 1x1 Latching Switch



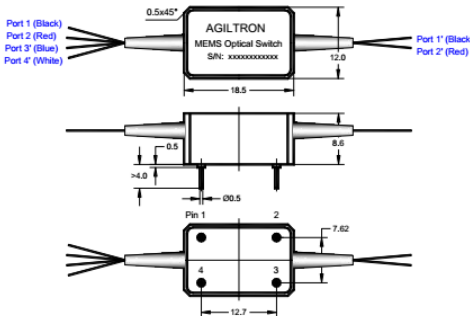
MEMS Quad 1x1 Latching Switch



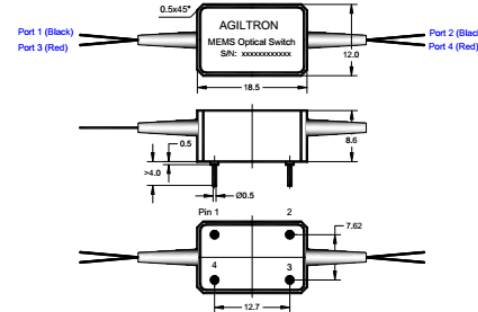
MEMS 1x2 Latching Switch



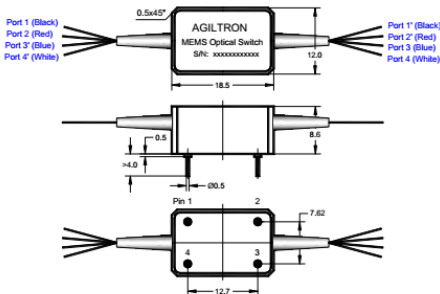
MEMS Dual 1x2 Latching Switch



MEMS Full 2x2 Latching Switch



MEMS Dull 2x2 Latching Switch



etMEMS™ Latching Type Fiber Optical Switch (With Build-in Driver)

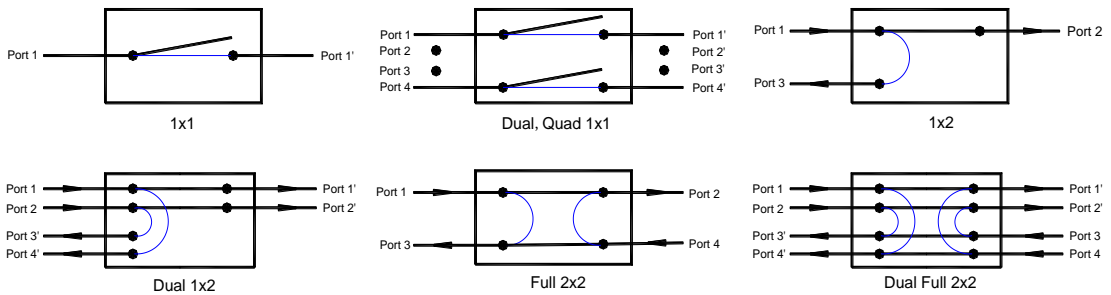
Electrical Driving Requirements

| Status | Optical Path | | | | | | | Pin No. | | | |
|-----------|--------------|------------------------|--|----------|------------------------|----------------------|--|---------|---------|---------|-------|
| | 1X1 | Dual 1X1 | Quad 1x1 | 1X2 | Dual 1x2 | Full 2x2 | Dual Full 2x2 | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
| Status I | Port 1→1' | Port 1→1' Port 1→1' | Port 1→1' Port 2→2' Port 3→3' Port 4→4' | Port 1→2 | Port 1→1' Port 2→2' | Port 1→2 Port 4→3 | Port 1→1' Port 2→2' Port 3→3' Port 4→4' | 12 VDC | L | H Pulse | GND |
| Status II | Dark | Dark | Dark | Port 1→3 | Port 1→3' Port 2→4' | Port 1→3 Port 4→2 | Port 1→4' Port 2→3' Port 3→2' Port 4→1' | 12 VDC | H Pulse | L | GND |

| Pin No. | Symbol | Type | Description |
|---------|--------|------|--|
| 1 | 1 | I | DC power supply, Voltage range is 11.5~12.5 V. |
| 2 | TTL A | I | TTL input port, |
| 3 | TTL B | I | TTL input port, |
| 4 | GND | | Ground |

- [1]. H: high level (3.5~5.5V), L: low level (0~1.5V).
 [2]. H pulse: (3.5~5.5V) high level pulse, minimum width 10 um is required. It should return to L to prevent repetitively switching action.
 [3]. Please call sales for user manual if position sensing is needed.

Functional Diagram



Ordering Information

| MEMS ⁽¹⁾ | Type | Wavelength | Switch | Package | Fiber Type | Fiber Length | Connector | |
|---|---|--|-----------------|--|--|---|---|---|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | 1x1 =0011 Dual 1x1 =DU11 Quad 1x1 =QU11 1x2=0012 Dual 1x2=DU12 Full 2x2=0022 Dual Full 2x2=DU22 Special=0000 | 1060=1 1310=3 1550=5 780=7 850 =8 1310/1550=9 850/1310=A 1260~1620=B Special=0 | 1 Latching=1 | 1 With Build-in Driver=1 Special=0 | <input type="checkbox"/> SMF-28=1 MM 50/125=5 Special=0 | <input type="checkbox"/> Bare fiber=1 900um loose tube=3 Special=0 | <input type="checkbox"/> <input type="checkbox"/> 0.25m=1 0.5m=2 1.0m=3 Special=0 | <input type="checkbox"/> 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]. MEMS: MEMS Switch.

