

Fiber-Fiber™ 1X4 PM Fiber Optical Switch (Bidirectional, High Power)

(Protected by pending patents in both US and China)

Product Description

The FF Series fiber optic switch connects optical channels by a MEMS platform and activated via an electrical relay. The advanced design significantly increase the performance, offering unprecedented low optical loss, broad wavelength operation with no coatings, extremely high extinction, high power handling, as well as an unmatched low cost.

Latching operation preserves the selected optical path after the driver signal has been removed. The switch is bidirectional and conveniently controllable by 5V TTL.



Performance Specifications

| FF PM 1x4 Switch | Min | Typical | Max | Unit |
|---|-----------------|-------------------------|--------|--------|
| Wavelength | 200 | | 2500 | nm |
| Insertion Loss ¹ | | 0.6 | 1 | dB |
| Cross Talk | | 60 | 70 | dB |
| Wavelength Dependent Loss | | 0.05 | 0.1 | dB |
| Polarization Extinction Ratio | 23 | 25 | 28 | |
| Switching Speed | | 10 | 15 | ms |
| Return Loss | | 55 | 60 | dB |
| Repeatability | | | ± 0.02 | dB |
| Durability | 10 ⁸ | | | Cycles |
| Operating Optical Power ² | | 1 | 1.2 | W |
| Operating Voltage | 4 | 5 | 7 | VDC |
| Operating Current (Latching/Non-Latching) | | 30 | 70 | mA |
| Switching Type | | Latching / Non-Latching | | |
| Operating Temperature | | -20 ~ 80 | | °C |
| Storage Temperature | | -40 ~ 85 | | °C |

Notes:

1. SM 28 fiber, Excluding Connectors. For MM fiber with laser CPR<14.
2. CW laser power, pulse operation power handling is high than 2W

Features

- Low Optical Distortions
- High Isolation
- High Reliability
- High Extinction
- Low Cost

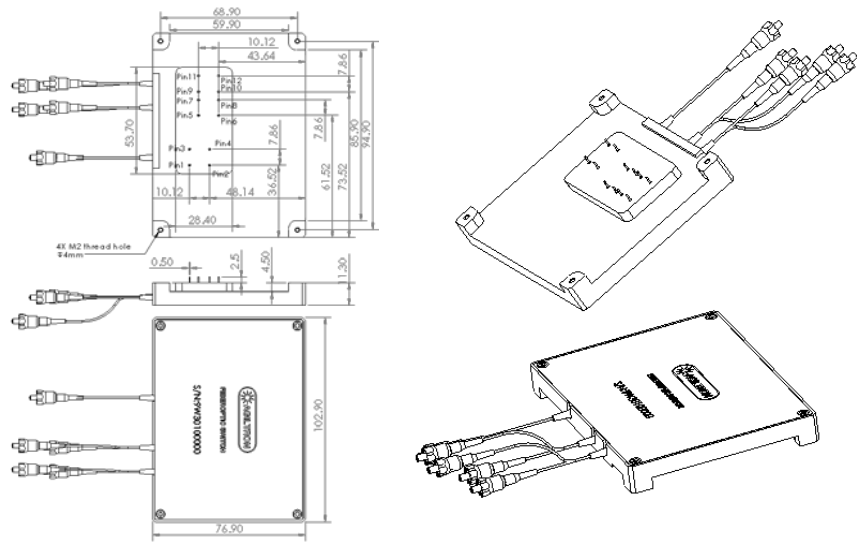
Applications

- Protection
- Instrumentation



Fiber-Fiber™ 1x4 Fiber Optical Switch(SM, PM, MM)

Mechanical Dimensions (Unit: mm)



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

Electrical Connector Configurations

The load is a resistive coil which is activated by applying 5V (draw ~ 40mA). Applying a constant driving voltage increases stability. The switches can also be driven by a pulse mode using Agiltron recommended circuit for energy saving.

Agiltron offers a computer control kit with TTL and USB interfaces and Windows™ GUI. We also offer RS232 interface as an option – please contact Agiltron sales.

Latching Type – Single Coil

| Optical Path | Relay | Electric Drive | | Status Sensor | | | | | |
|----------------|--------------|----------------|----------|---------------|-------|---------|---------|---------|---------|
| | | Pin 1 | Pin 10 | Pin 5 | Pin 6 | Pin 2-3 | Pin 3-4 | Pin 7-8 | Pin 8-9 |
| Input → Port 1 | Relay1 | GND | 5V Pulse | N/A | N/A | Close | Open | Open | Close |
| | Relay 2, 3 | N/A | N/A | N/A | N/A | | | | |
| Input → Port 2 | Relay1 | 5V Pulse | GND | N/A | N/A | Open | Close | Close | Open |
| | Relay 2 | GND | 5V Pulse | N/A | N/A | Close | Open | Open | Close |
| | Relay 3 | N/A | N/A | N/A | N/A | | | | |
| Input → Port 3 | Relay1, 2 | 5V Pulse | GND | N/A | N/A | Open | Close | Close | Open |
| | Relay 3 | GND | 5V Pulse | N/A | N/A | Close | Open | Open | Close |
| Input → Port 4 | Relay1, 2, 3 | 5V Pulse | GND | N/A | N/A | Open | Close | Close | Open |

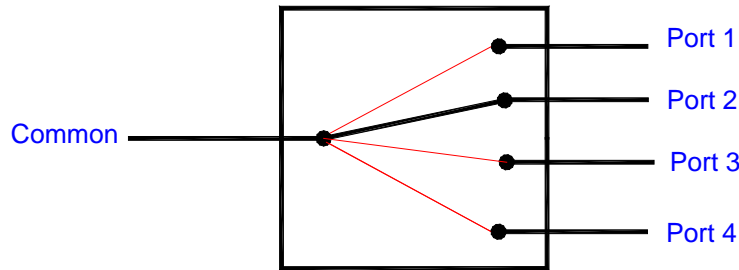
Non-Latching Type

| Optical Path | Relay | Electric Drive | | Status Sensor | | | | | |
|----------------|--------------|----------------|----------|---------------|-------|---------|---------|---------|---------|
| | | Pin 1 | Pin 10 | Pin 5 | Pin 6 | Pin 2-3 | Pin 3-4 | Pin 7-8 | Pin 8-9 |
| Input → Port 1 | Relay1 | GND | 5V Pulse | N/A | N/A | Close | Open | Open | Close |
| | Relay 2, 3 | N/A | N/A | N/A | N/A | | | | |
| Input → Port 2 | Relay1 | 5V Pulse | GND | N/A | N/A | Open | Close | Close | Open |
| | Relay 2 | GND | 5V Pulse | N/A | N/A | Close | Open | Open | Close |
| | Relay 3 | N/A | N/A | N/A | N/A | | | | |
| Input → Port 3 | Relay1, 2 | 5V Pulse | GND | N/A | N/A | Open | Close | Close | Open |
| | Relay 3 | GND | 5V Pulse | N/A | N/A | Close | Open | Open | Close |
| Input → Port 4 | Relay1, 2, 3 | 5V Pulse | GND | N/A | N/A | Open | Close | Close | Open |



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Functional Diagram



Ordering Information

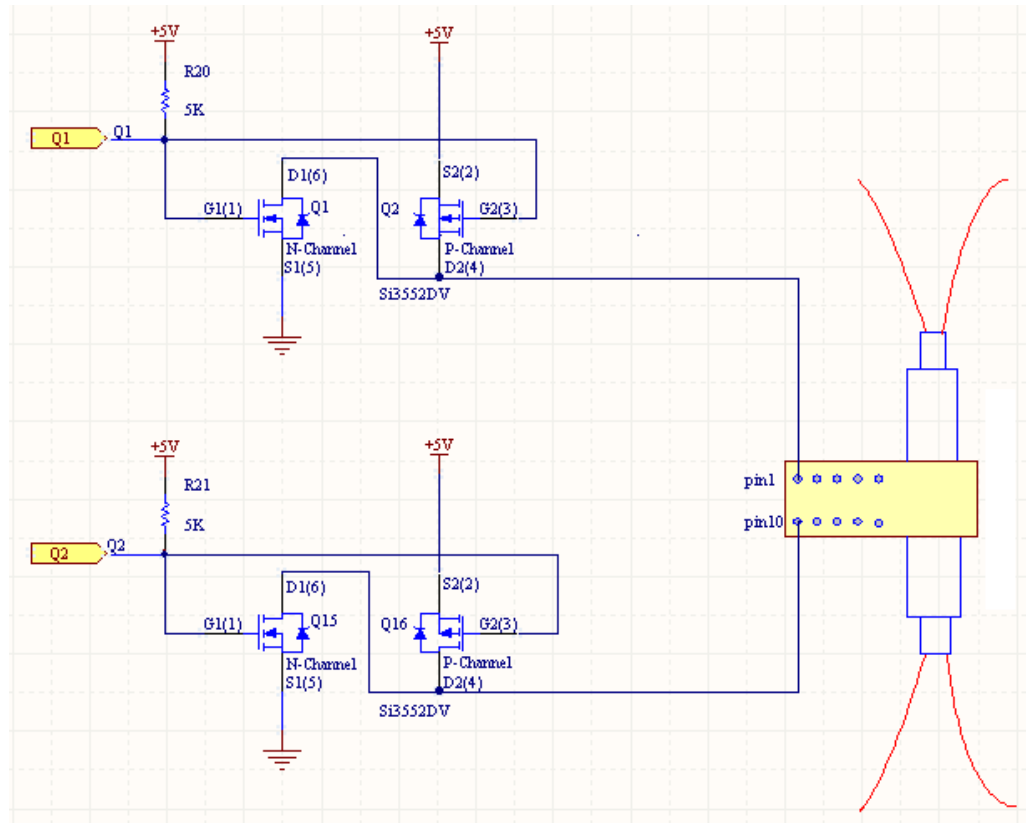
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|-------|--------------------------|----------------------------|---|--------------------------|---|--|--|
| | Type | Switch | Test Wavelength | Fiber type | Fiber Length | Connector | |
| FFSW | 1x4 =14 1x3 =13 | Latching =2 Non-latch=3 | 488 = 4 532 = 5 630 = 6 780 = 7 850 = 8 980 = 9 1060 = 1 1310 = 3 1550 = C 2000 = 2 Special = 0 | Pick from below table | Bare fiber=1 900um tube=3 Special=0 | 0.25m=1 0.5m=2 1.0m=3 Special=0 | None=1 FC/PC=2 SC/PC=4 SC/APC=5 ST/PC=6 LC=7 Duplex LC=8 MTP = 9 Special=0 |

| | | | | | |
|----|------------|----|--------|----|-------------------------|
| 01 | SMF-28 | 34 | PM1550 | 67 | OM1 (MMF 62.5/125um) |
| 02 | SMF-28e | 35 | PM1950 | 68 | OM2 (MMF 50/125um) |
| 03 | Corning XB | 36 | PM1310 | 69 | OM3 (MMF 50/125um) |
| 04 | SM450 | 37 | PM405 | 70 | OM4 (MMF 50/125um) |
| 05 | SM2000 | 38 | PM480 | 71 | GIF50 (GIF 50/125um) |
| 06 | SM600 | 39 | PM630 | 72 | GIF625 (GIF 62.5/125um) |
| 07 | Hi780 | 40 | PM850 | 73 | 106/125um |
| 08 | SM800 | 41 | PM980 | 74 | FG105LCA |
| 09 | Hi980 | 42 | PM350 | 75 | FG50LGA |
| 10 | Hi1060 | 43 | PM780 | 76 | |
| 11 | Draka BBE | 44 | | 77 | |
| 12 | | 45 | | 78 | |

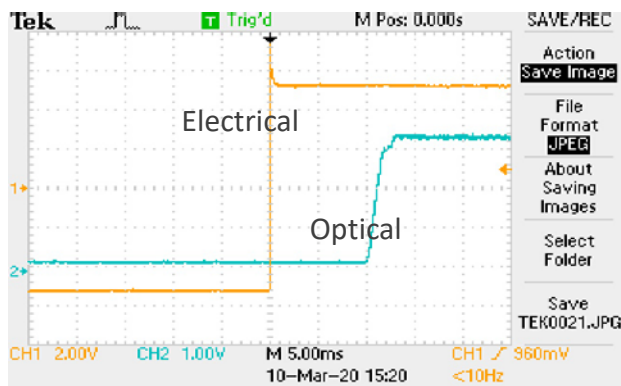


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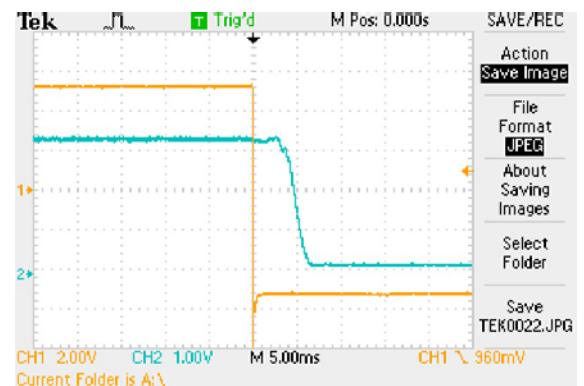
Driver Reference Design



Response Speed



Rise



Fall

