

Fiber-Fiber™ LIDAR Optical Switch

1x4 PM

(Protected by pending patents)

Product Description

The FF Series fiber optic switch connects optical channels by a MEMS fiber to fiber direct coupling platform and activated via an electrical relay. The advanced design offers unprecedented low optical loss, little wavelength dependence with no coatings, high power handling, high reliability/longevity, high polarization extinction ratio, as well as unmatched low cost. Since, there is no optical coated interfaces, no reflections and nor etalon effects from these switches. Latching operation preserves the selected optical path after the driver signal has been removed. The switch has integrated electrical position sensors. The switch is bidirectional and conveniently controllable by 5V TTL.

Using no lens, the FF Series switch can accommodate all type of fibers, including SM, MM, PM, double cladding, bendable, large core, small core.



Performance Specifications

| FF 1x4 LIDAR Switch | Min | Typical | Max | Unit |
|--|-------------------------|----------|----------------|--------|
| Wavelength | | 1550 | | nm |
| Insertion Loss ¹ | | 0.8 | 1.3 | dB |
| Wavelength Dependent Loss | | 0.01 | 0.01 | dB |
| Return Loss ² | 70 | | | dB |
| Polarization Extinction Ratio ² | 22 | 24 | 33 | dB |
| Cross Talk | 60 | 65 | 70 | dB |
| Switching Time | | 5 | 7 | ms |
| Repetition | | 5 | 10 | Hz |
| Repeatability | | | ± 0.1 | dB |
| Durability | 10 ⁸ | | | Cycles |
| Operating Optical Power (CW) | | | 1 ³ | W |
| Operating Voltage | 4 | 4.5 | 5 | VDC |
| Actuation Current (Latching/Non-Latching) | | 30 | 60 | mA |
| Switching Type | Latching / Non-Latching | | | |
| Operating Temperature | | -40 ~ 80 | | °C |
| Storage Temperature | | -50 ~ 90 | | °C |

Notes:

1. Excluding Connectors
2. Measured with nothing connected to output FC/APC connectors
3. Higher power is feasible with special order

Features

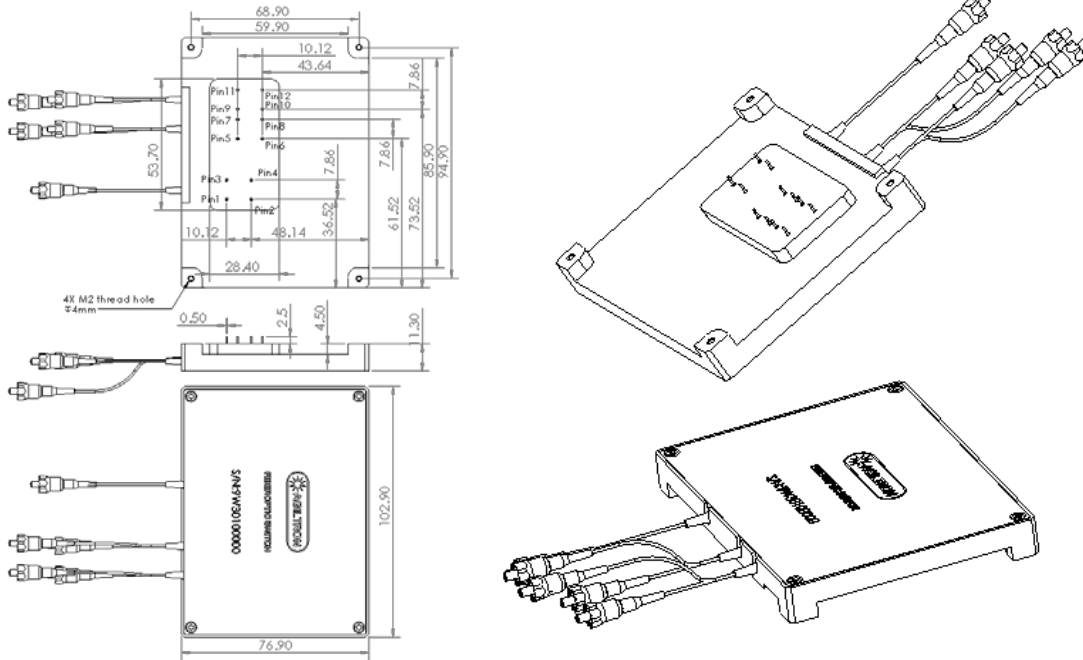
- Low Loss
- High Isolation
- High Power
- High Return Loss
- No Etalon Effects
- Low Cost

Applications

- LIDAR
- Reflective Sensor



Mechanical Dimensions (Unit: mm)



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

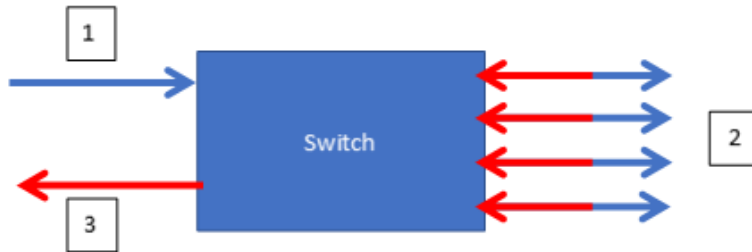
Electrical Connector Configurations

The load is a resistive coil which is activated by applying 5V (draw ~ 40mA). 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.

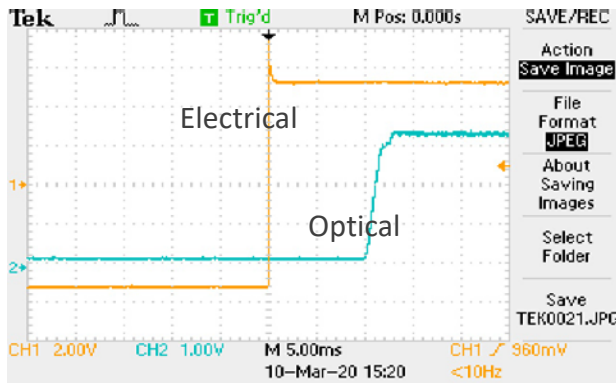
Application Note: Applying a constant driving voltage increases stability. The switches can also be driven by a pulse mode using Agiltron recommended circuit for energy saving.

| Optic Path | Electric Drive | |
|-----------------|----------------|-------|
| | Pin 2 | Pin 3 |
| Port 1 → Port 2 | 5V | 0V |
| Port 1—Port 3 | 0V | 5V |

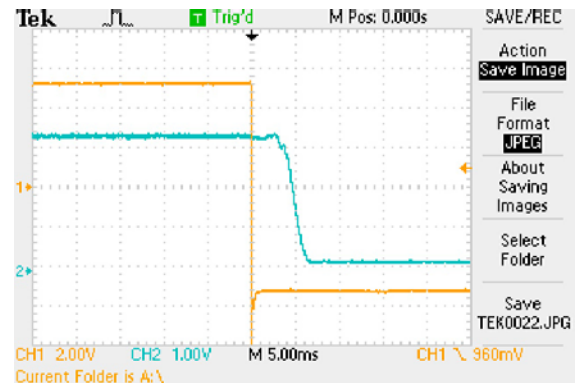
Optical Functional



Response Speed



Rise



Fall

Ordering Information

| FFSW- | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------|---|----------------------------|---|--------------------------|--|---|--|--|
| | Configuration | Switch | Tested Wavelength | Optical Power | Fiber Type | Fiber Length | Connector | |
| FFLW | 2x4 = 24 2x5 = 25 2x6 = 26 2x8 = 28 2x12=22 | 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 | 1W =1 Higher power=0 | SM28 =1 PM 1550 =2 PM 1310 =3 PM 780 = 7 PM 350 = 6 PM 405 = 5 PM 980 =9 | 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 MTP = 9 Special=0 |

Driver Reference Design

