

Fiber-Fiber™ 1X4 Fiber Optical Switch

(SM, PM, MM, Bidirectional)

(Protected by pending patents)

Product Description

The FF Series fiber optic switch connects optical channels by a micro-mechanical fiber to fiber auto-alignment 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, 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 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 1x2, dual 1x2 Switch	Min	Typical	Max	Unit
Wavelength	200		2500	nm
Insertion Loss ¹		0.6	1	dB
Wavelength Dependent Loss		0.05	0.1	dB
Polarization Dependent Loss			0.1	dB
Polarization Extinction Ratio ²	22	25	27	
Return Loss		55		dB
		35 ³		
Cross Talk		50		dB
Switching Time		15	20	ms
Repeatability			± 0.02	dB
Durability	10 ⁷			Cycles
Operating Optical Power ²		0.5	1	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. For PM fiber only
3. For MM fiber with laser CPR<14

Features

- Low Optical Distortions
- High Isolation
- High Reliability
- Fail-Safe Latching
- Epoxy-Free Optical Path
- Low Cost

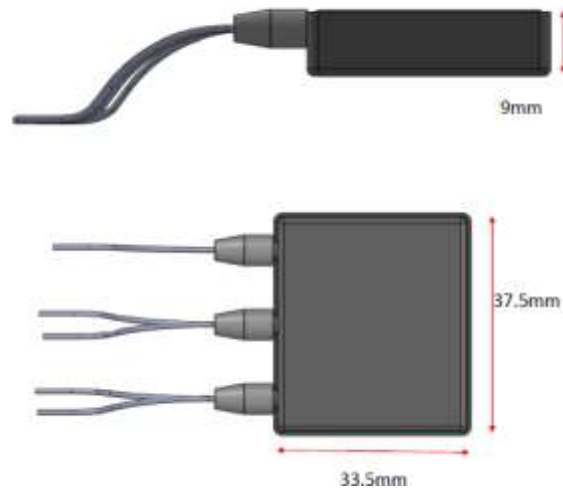
Applications

- Protection
- Instrumentation



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Mechanical Dimensions (Unit: mm)



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

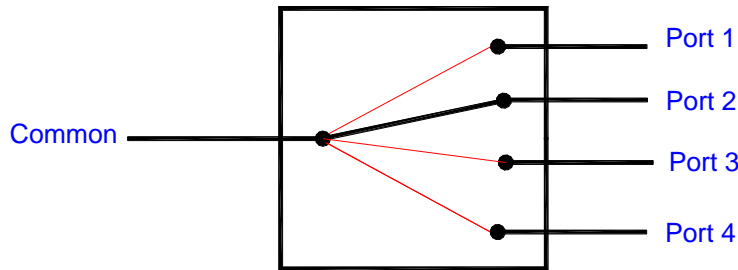
Optical Path	Relay	Electric Drive		Status Sensor					
		Pin 1	Pin 10	Pin 5	Pin 6	Pin 2-3	Pin 3-4	Pin 7-8	Pin 8-9
Input → Port 1	Relay1	GND	5V Pulse	N/A	N/A	Close	Open	Open	Close
	Relay 2, 3	N/A	N/A	N/A	N/A				
Input → Port 2	Relay1	5V Pulse	GND	N/A	N/A	Open	Close	Close	Open
	Relay 2	GND	5V Pulse	N/A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

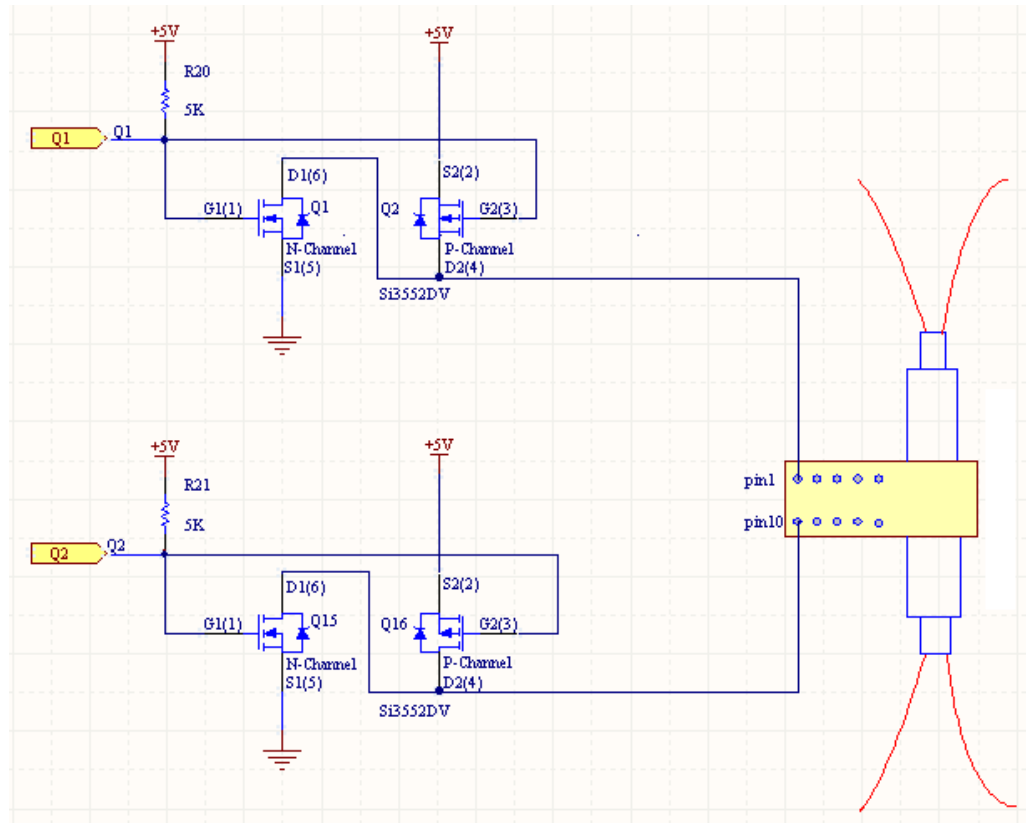
FFSW-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Type	Switch	Test Wavelength	Fiber type	Fiber Length	Connector	
FFSW	1x4 =14 1x3 =13	Latching =2 Non-latch=3	488 = 4 532 = 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	PM400	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		75	FG50LGA
10	Hi1060	43		76	
11	Draka BBE	44		77	
12		45		78	

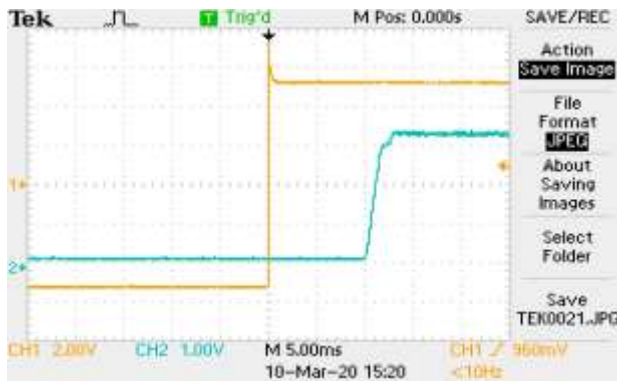


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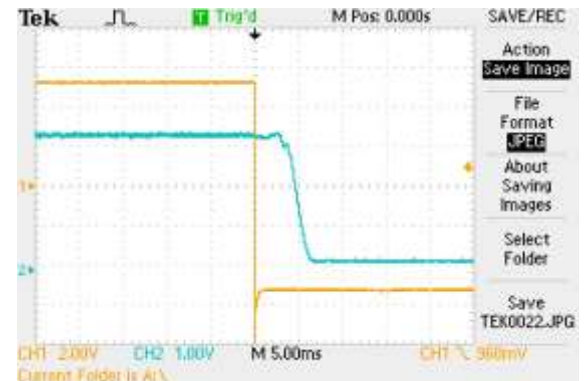
Recommended driving circuit



Response Speed



Rise



Fall

