

Fiber-Fiber™ Optical Switch

1x1, 1x2, Dual 1x1, Dual 1x2, Dual 2x2 Bypass
(SM, PM, MM,) (Broadband, 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, little wavelength dependence with no coatings, high power handling, as well as 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		0.2	0.4	dB
Wavelength Dependent Loss			0.01	dB
Polarization Dependent Loss			0.05	dB
Polarization Extinction Ratio ²	20			dB
Return Loss	50			dB
	35 ³			
Cross Talk	50 ³ /65 ⁵			dB
Switching Time		3		ms
Repeatability			± 0.02	dB
Durability	10 ⁷			Cycles
Operating Optical Power		0.5 ⁴	1 ³	W
Operating Voltage	4.5	5	5.5	VDC
Operating Current (Latching/Non-Latching)		30	60	mA
Switching Type		Latching / Non-Latching		
Operating Temperature		-40 ~ 80		°C
Storage Temperature		-50 ~ 90		°C
Package Dimension		23.5L x 11.5W X 10H		mm ^{^3}

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
4. For MFD >= 6um core fiber
5. For SM or PM fiber

Features

- Low Optical Distortions
- High Isolation
- High Reliability
- Fail-Safe Latching
- Vibration Resistant
- Unmatched Low Cost

Applications

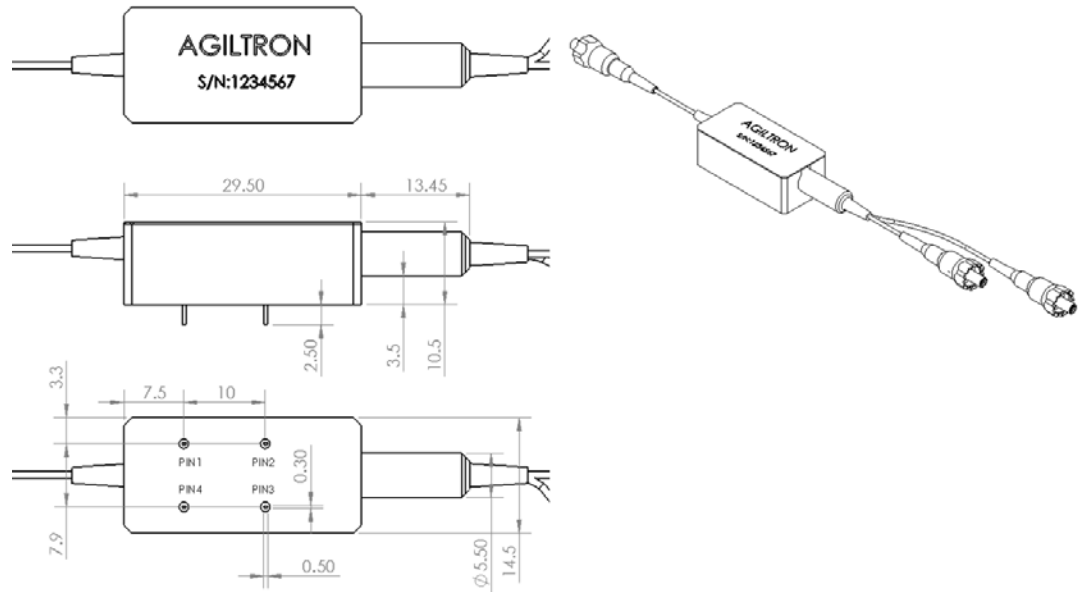
- Protection
- Instrumentation



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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). 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

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.

FF 1x2 Switch

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

Non-Latching Type

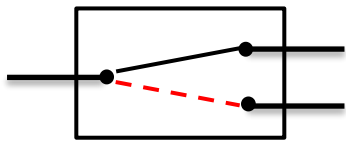
FF 1x2 Switch

Optic Path	Electric Drive	
	Pin 2	Pin 3
Port 1 → Port 2	No Power	No Power
Port 1—Port 3	5V	0V

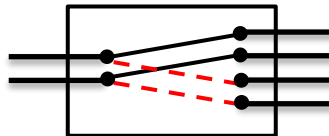
Fiber-Fiber™ Optical Switch

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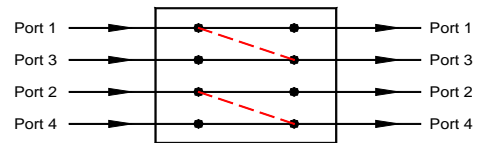
Functional Diagram



1x2 switch



Dual 1x2 switch



Dual 2x2 bypass switch

Ordering Information

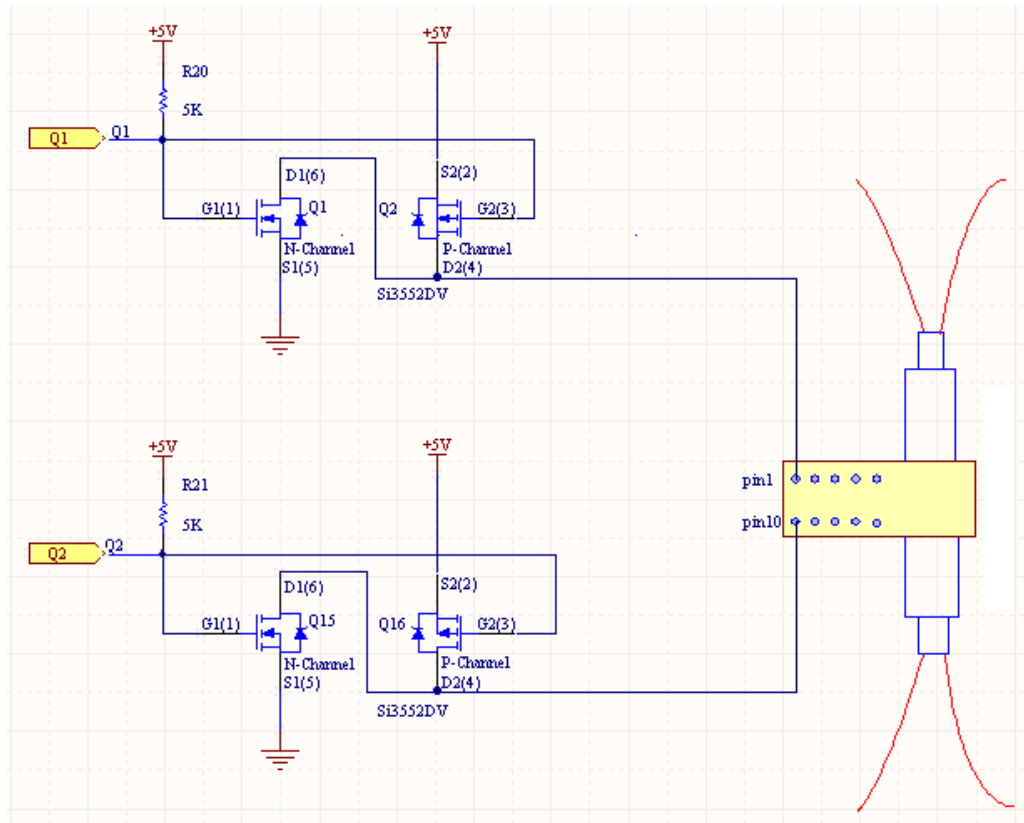
FFSW-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Type	Switch	Tested Wavelength	Fiber type	Fiber Length	Connector	
FFSW	1x1 = 11 1x2 = 12 Dual 1x2 = 26 Dual 2x2bypass= 28 Special=00	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 FC/APC=3 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	

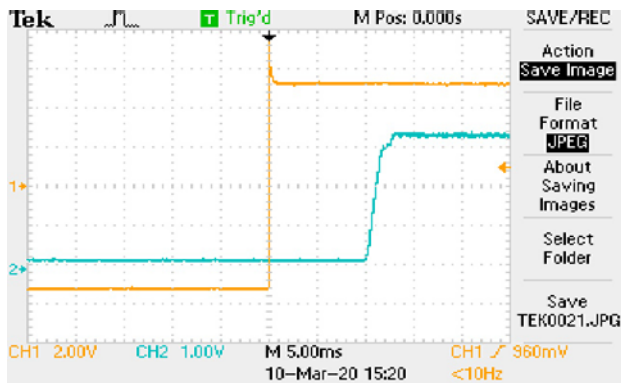
Fiber-Fiber™ Optical Switch

1x1, 1x2, Dual 1x1, Dual 1x2, Dual 2x2
Bypass (SM, PM, MM,)

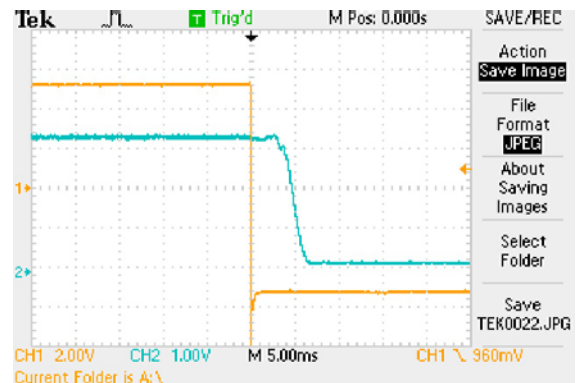
Recommended driving circuit



Response Speed



Rise



Fall