

BUY NOW



Fiber-Fiber™ Optical Switch

1x1, Dual 1x1, 1x2 (SM, PM, MM,) (Broadband, Bidirectional)

(Protected by pending patents)

Product Description

The FF Series fiber optic switch connects optical channels by direct fiber to fiber connection via a micro-mechanical 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 low cost. Latching operation preserves the selected optical path after the electrical power has been removed. The switch is bidirectional and conveniently controllable by 4.5V.

Using no lens, the FF Series switch can accommodate all type of fibers, including SM, MM, PM, double cladding, bendable, large core, small core. The FF switches provide performance for special fiber no other technology can match.



Features

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

Performance Specifications

FF 1x1, 1x2 Switch	Min	Typical	Max	Unit
Wavelength	350		2500	nm
Insertion Loss ¹	0.01	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 (SM)			dB
	35 (MM) ³			
Cross Talk	50		75	dB
Rise/Fall Time (low speed version)	5		40 ⁴	ms
Rise/Fall Time (high speed version)	1	2	15 ⁵	ms
Repetition Rate			1	Hz
Repeatability			± 0.02	dB
Durability	10 ⁸			Cycles
Operating Optical Power ⁶		0.5	0.7	W
Operating Voltage	4.3		4.5	VDC
Operating Current		30	60	mA
Switching Type	Latching / Non-Latching			
Operating Temperature		-40 ~ 80		°C
Storage Temperature		-50 ~ 90		°C

Notes:

1. SM 28 Fiber, Typical loss is 0.3dB. Ultra-low loss version is special order. Excluding Connectors. For small core fibers the specs are reduced.
2. For PM fiber only
3. For MM fiber with laser CPR<14
4. For PM type mainly
5. For SM, MM type, 15ms including the electrical delay as shown in the testing data
6. For SM 28 and MM fibers, other wavelength SM fiber see the chart at the end.

Applications

- Protection
- Instrumentation

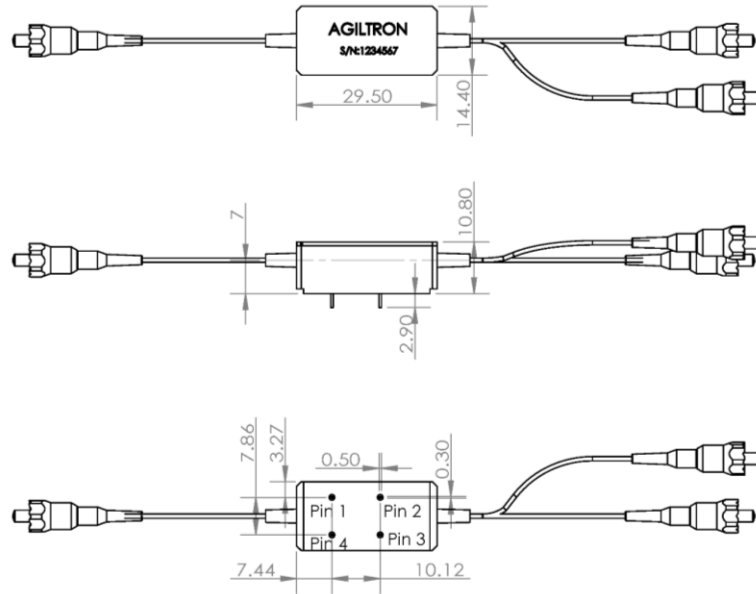


Revised on 02/01/23
(Click here for latest revision)

Fiber-Fiber™ Optical Switch

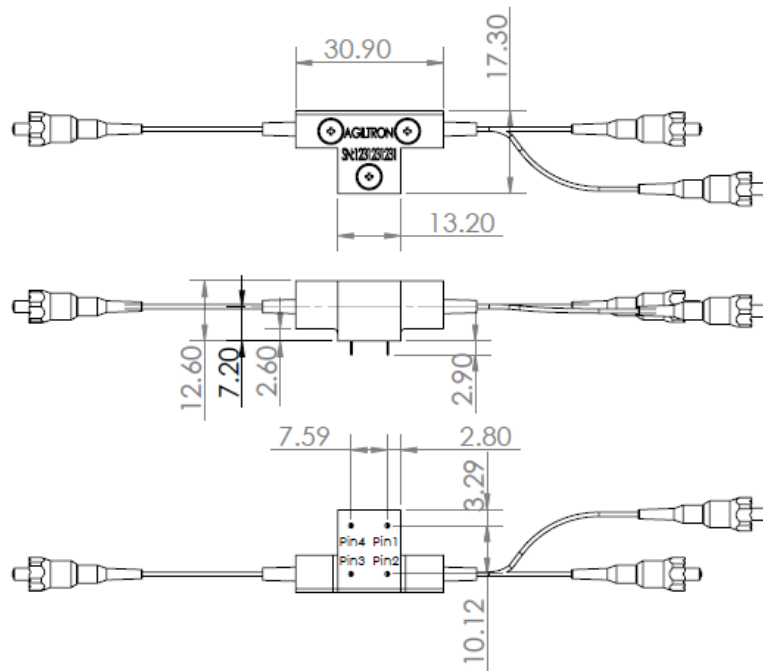
1x1, Dual 1x1, 1x2
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Mechanical Dimensions For Low-Speed PM (Unit: mm)



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

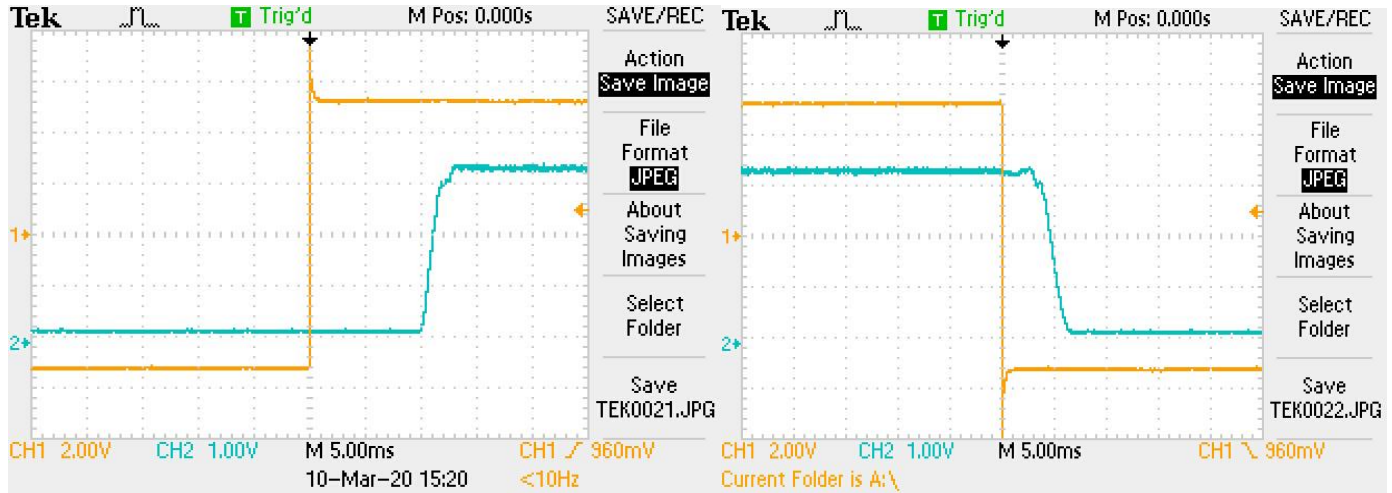
Mechanical Dimensions For High-Speed SM/MM (Unit:mm)



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Response Speed (High Speed Version)



Rise

Fall

Electrical Connector Configurations

Important Note: The device must be driven by the reference circuit. Otherwise, it is not stable. This is because the device contains a permanent magnet inside; thus current must flow in the correct direction to counter the magnet field.

The load is a resistive coil which is activated by applying 4.5V (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. The switch can withstand 5V which may reduce its durability.

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	4.5V	0V
Port 1—Port 3	0V	4.5V

Non-Latching Type

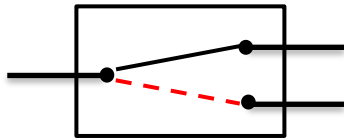
FF 1x2 Switch

Optic Path	Electric Drive	
	Pin 2	Pin 3
Port 1 → Port 2	0V	0V
Port 1—Port 3	0V	4.5V

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Functional Diagram



Ordering Information

Prefix	Type	Switch	Test Wavelength**	Fiber type	Fiber Cover	Fiber Length	Connector
FFSW-	1x1 (Transparent) * = 11 1x1 (Opaque) = 1D 1x1 (Ultralow Loss) = U1 1x2 = 12 1x2 (Ultralow Loss) = U2 Special = 00	Latching = 6 Non-latching = 7	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

* Transparent means light passes without activation. Opaque means light is blocked at the nonactivation state.

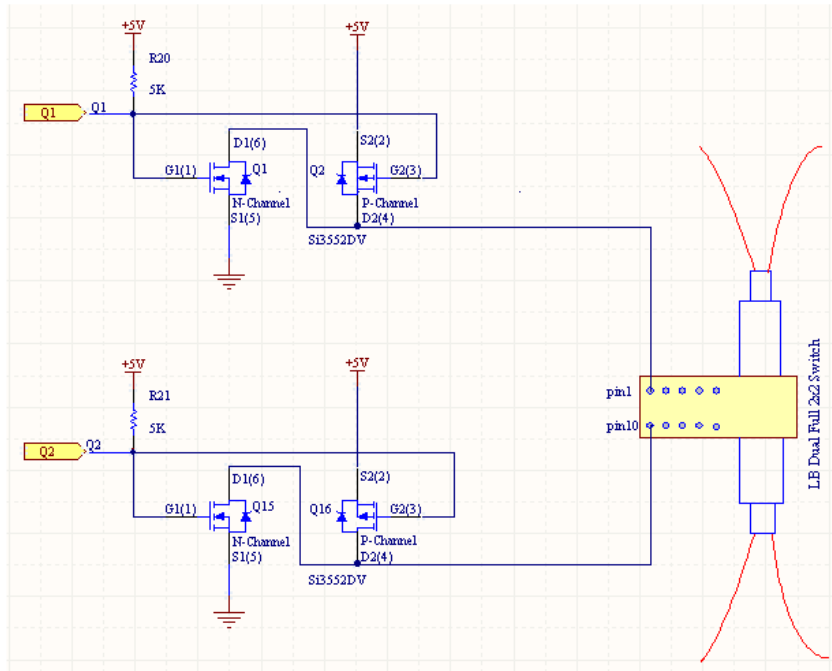
** The device is ultra-broadband limited by fiber transmission. However, we only test at one selected wavelength to save cost. If a customer needs to test at several wavelengths, the selection is special =0 with added cost.

01	SMF-28	34	PM1550	71	GIF 50/125µm
02	SMF-28e	35	PM1950	72	GIF 62.5µm
03	Corning XB	36	PM1310	73	105/125µm
04	SM450	37	PM400	74	FG105LCA
05	SM1950	38	PM480	75	FG50LGA
06	SM600	39	PM630	76	STP 50/125
07	Hi780	40	PM850		
08	SM800	41	PM980		
09	Hi980	42	PM780		
10	Hi1060	43	PM350		
11		44	PM405		
12					

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Driver Reference Design



Optical Power Handling vs Wavelength For Single-Mode Fibers

