

Fiber-Fiber™ No-Gap 1xN/2xN Fiber Optic Switch

(continuous light transmission, ultra-low loss, ultra-broadband, Bidirectional)

(Protected by U.S. patents 6823102 pending patents)



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The Ultra-Low Loss Fiber-Fiber™ 1xN series Broadband Fiber Optical Switch mates fiber to fiber using a patent-pending v-groove technology activated via a motor. The switch is immersed inside an index-matching liquid, providing ultra-low loss and little reflection between interfaces. The unique design eliminates optical coating and air gaps, offering broad spectral band operation from 200 to 2500 nm with high power handling capability. MWIR and LWIR versions are also available. It accommodates all types of fibers, including single mode and multimode, with fiber core sizes from 50 to 1000 μm . The switch is bidirectional and accommodates a large number of ports, up to 300 fibers. We have verified the switch's high reliability with continuous operation for several years.

The switch is controlled by an RS232 or USB computer interface with graphic Software. A Labview version is also available. A fully packaged box module is available. A latch version is also available.

Lightpath in the device is bidirectional.

This switch uses a specially formulated index-matching liquid that does not generate fluorescent. The liquid fills a gap of less than 5 μm .

Switches with PM fibers transmit both polarizations the same way as the fiber.

Specifications

Parameter	Min	Typical	Max	Unit
Operatio Wavelength ^[1]	UV-NIR	300	2500	nm
	MWIR	2000	5000	
	LWIR	7000	12000	
Insertion Loss ^[2]	0.1	0.3	1	dB
Port Uniformity		0.3	0.6	dB
Wavelength Dependence Loss		0.15	0.2	dB
Polarization Dependent Loss		0.05	0.1	dB
Cross Talk On/Off Ratio	50	60		dB
Return Loss ^[2]	45		60	dB
Switch Time	60		200	ms
Switch type (power on)		Latching		
Durability	10 ⁷			cycle
Optical Power Handling		0.3	1 ^[2]	W
Operating Temperature	-5		60	°C
Storage Temperature	-40		85	°C
Fiber Type	Single Mode	Corning SMF-28 or equivalent		
	Multimode	50		1000

Notes:

- [1]. The transmission is ultra-broad solely limited by the fiber property
- [2]. Measured without connectors

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

Features

- Low Cost
- High Reliability
- Low Insertion Loss
- Broad Band
- Compact Design
- High Optical Power

Applications

- Spectroscopy
- Sensor
- Signal Monitoring
- Instrumentation

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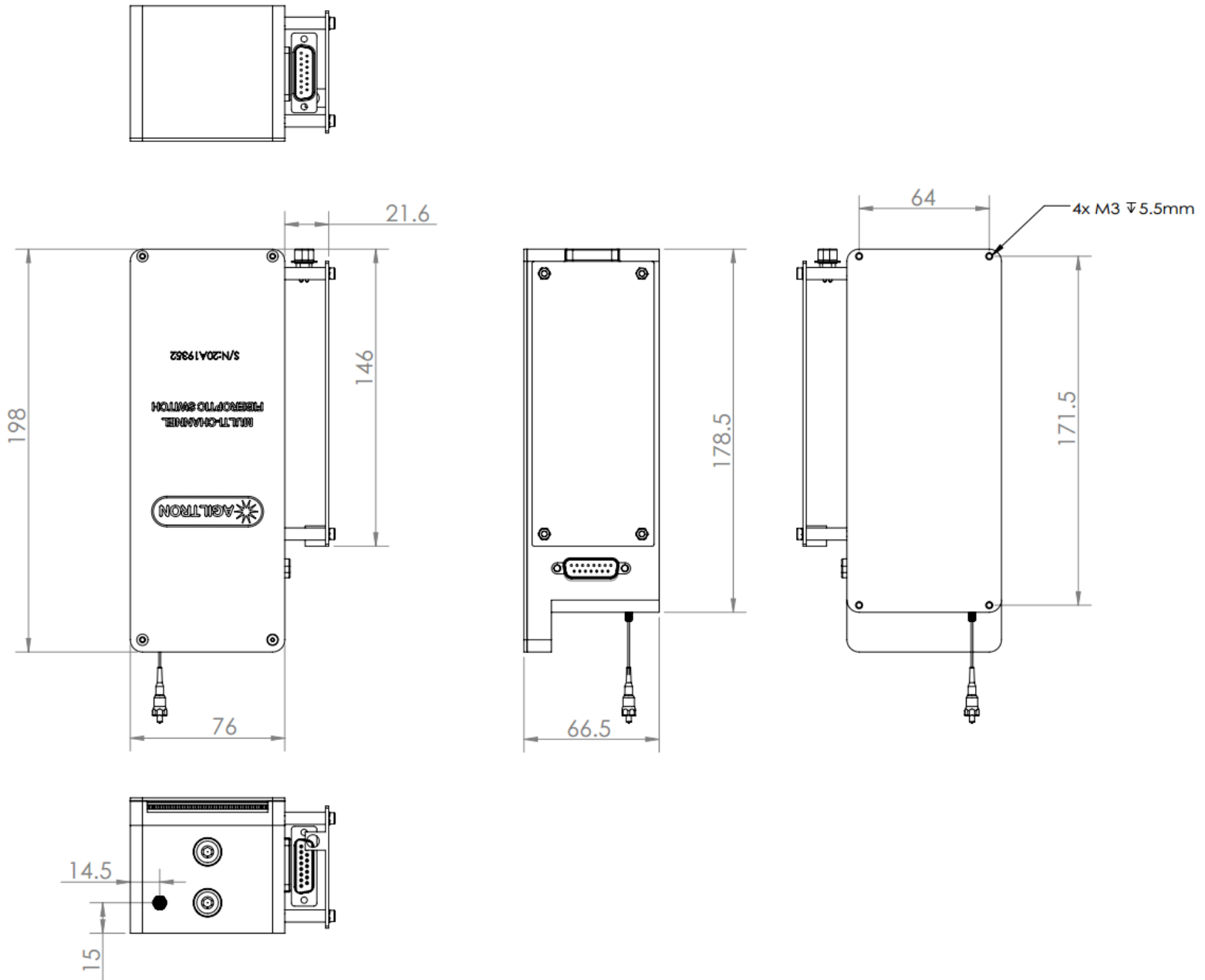
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Mechanical Dimensions (mm)



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

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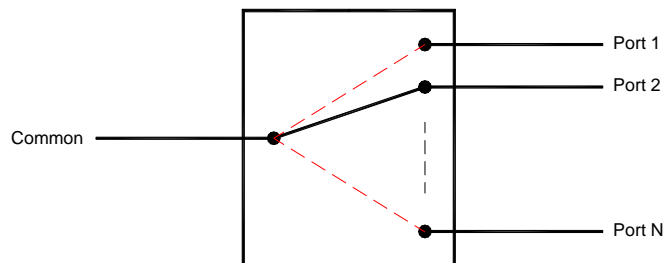
Electronic Control Requirements

The sub-module comes with a computer control kit with USB interfaces and Windows™ GUI. It has a wall plug-in power supplier

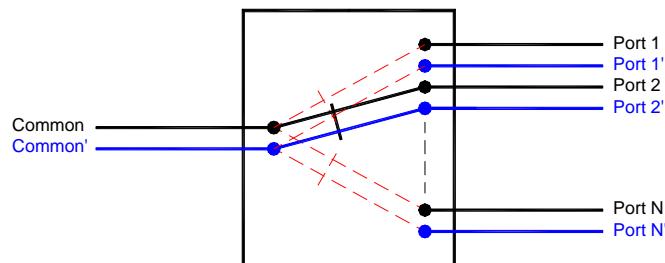
Parameter	Min	Typical	Max	Unit
Operating Voltage		12	13	VDC
Operating Current	100		200	mA
Power Consumption		3.6	5	W

Function Diagram

SelfAlign 1xN Series Switch



SelfAlign Dual 1xN Series Switch



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Ordering Information

Prefix	Type	Test Wavelength ^[1]	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
LBSA-	1x8 Switch = S008 1x9 Switch = S009 1x10 Switch = S010 ... 1x128 Switch = S128 2x8 Switch = D008 2x9 Switch = D009 2x10 Switch = D010 ... 2x128 Switch = D128	1060 = 1 2000 = 2 1310 = 3 1550 = 5 410 = 4 650 = 6 780 = 7 850 = 8 950 = 9 Special = 0	Index Match = 2 Special = 0	50/125 = 5 62.5/125 = 6 105/125 = E 200/NA.22 = F 300/NA.22 = G 400/NA.22 = H 600/NA.22 = J 800/NA.22 = H UV180nm = U Special = 0	Bare fiber = 1 2 mm Jacket = 2 900µm 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/PC = 7 Duplex LC/PC = 8 LC/APC = A LC/UPC = U Special = 0

[1]. The transmission is solely the property of the fiber

RED is Special Order

Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters (<5 µm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

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Typical Fiber Transmissions

