



Features

- Unmatched Low Cost
- Very Broad Spectral Range
- High Isolation
- High Reliability
- Epoxy-Free Optical Path

Applications

- Sensor
- Spectroscopy
- High Power Laser
- Instrumentation



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The FFLC Series 1xN Optical Switch enables reliable optical channel selection by directly aligning fiber cores using a high-precision miniature motor — without lenses or AR coatings — achieving typical insertion loss around 0.3 dB. Optional index-matching liquid can be used to fill the fiber gap and an option, reducing loss by 0.2 dB and eliminating reflections, which is desirable for interferometry applications. The switch features a latching mechanism that maintains the selected path without electrical power and can function as a high-resolution attenuator for large-core fibers. Agiltron's innovative design supports an ultra-broad spectral range from 200 nm to 3000 nm, limited only by fiber transmission. With compatibility for fiber core sizes from 3 μm to 400 μm, the FFLC includes a built-in USB/RS232 interface, integrated driver, intuitive GUI, and wall-pluggable power supply for turnkey operation. Command list is provided for interface with customer controller. Bidirectional and highly versatile, it is ideal for sensor, test, and spectroscopy applications.

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	200		5000	nm
Insertion Loss ^[1]	0.3	0.4	0.8	dB
Wavelength Dependent Loss ^[2]		0.05	0.3	dB
Polarization Dependent Loss		0.03	0.10	dB
Return Loss	35			dB
Cross Talk On/Off Ratio	60		70	dB
VOA Resolution	0.3	0.5	1	dB
Operating Voltage		5	5.5	VDC
Power Consumption			2	W
Switching Type	Latching			
Switching Time ^[3]		0.8		s
Durability	10 ⁷			cycle
Operating Temperature	0		70	°C
Optical Power Handling ^[4]		1	2	W
Storage Temperature	-40		85	°C
Package Dimension	See Mechanical Dimensions			

Notes:

[1]. Measured without connectors for 1xN. For multimode fiber, use a laser source with CPR<15

[2]. Within 200 nm bandwidth

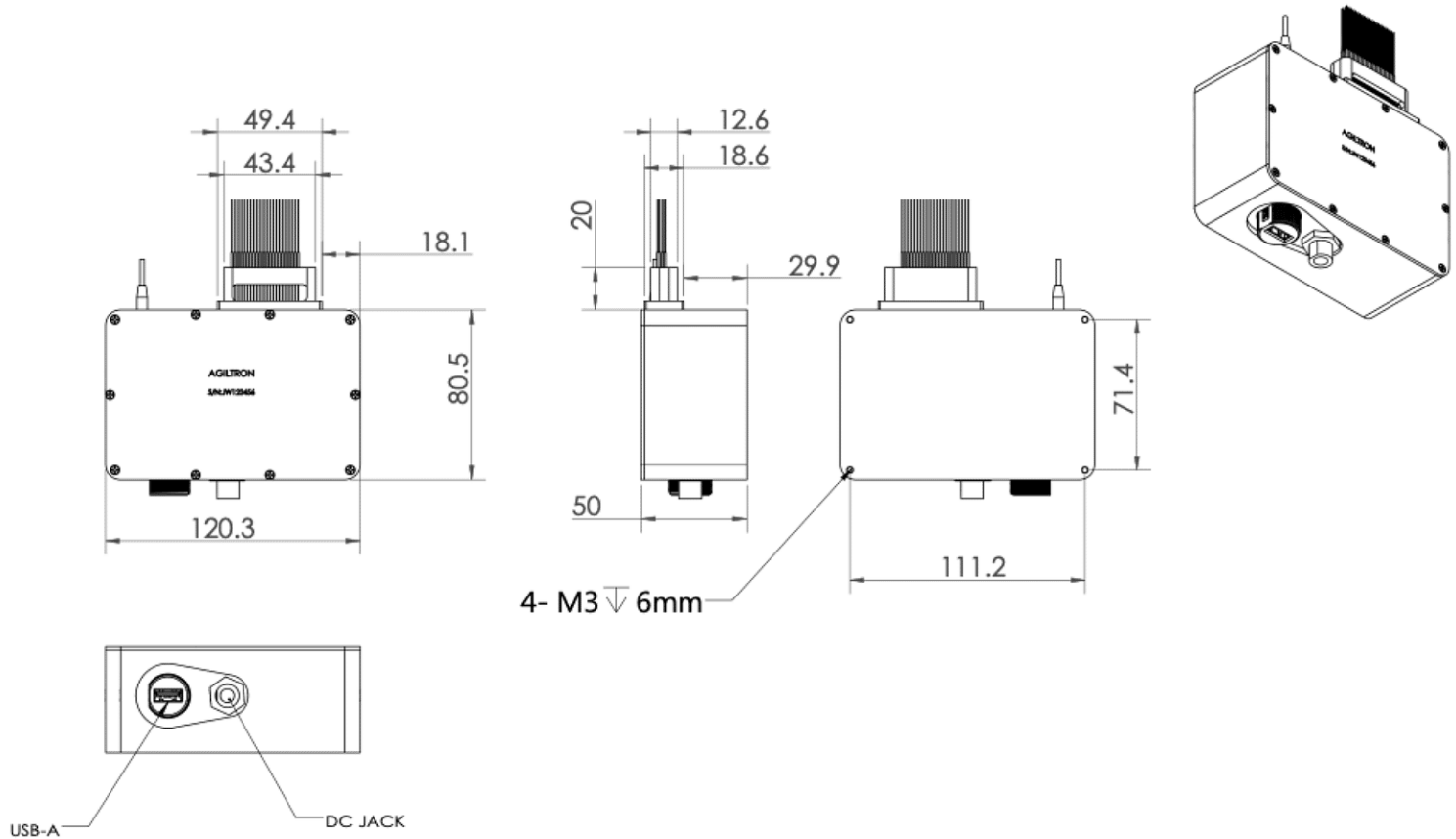
[3]. Defined for speed between the adjacent channels

[4]. High power version available

* The switch covers an ultra-broad spectral band that is only limited by the fiber intrinsic transmission properties.

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](#):

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Mechanical Dimensions (Unit: mm)

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

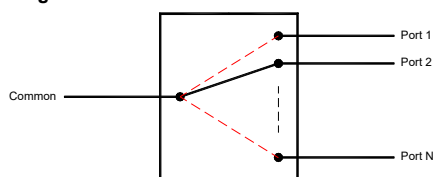
Computer Interface

Computer controlling kit with Micro USB interfaces and Windows™ GUI.

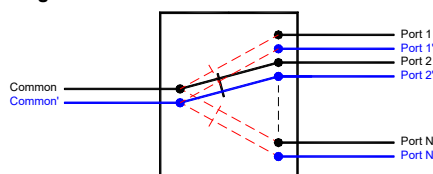
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Function Diagram

SelfAlign 1xN Series Switch



SelfAlign Dual 1xN Series Switch



Ordering Information (Part Number)

Prefix	Type	Channel	Wavelength ^[1]	Gap ^[2]	VOA ^[3]	Fiber Type	Fiber Cover	Fiber Length	Connector ^[4]
FFLC-	1x4 Switch = 004 1x8 Switch = 008 1x9 Switch = 009 1x10 Switch = 010 1x16 Switch = 016 1x24 Switch = 024 ... 1x128 Switch = 128	Single = S Dual = D Special = 0	1550 = 5 1060 = 1 1310 = 3 2000 = 2 650 = 6 780 = 7 850 = 8 1310/1550 = 9 350 = B 450 = C 520 = D Special = 0	Yes = 1 No = 2	Non = 1 Yes = 2	50/125 = 71 62.5/125 = 72 105/125 = 73 100/140 = 74 200/NA.22 = L2 300/NA.22 = L3 400/NA.22 = L4 600/NA.22 = L6 800/NA.22 = L8 1000/NA.22 = L1 2000/NA.22 = K2 <i>Select below</i>	Bare fiber = 1 2 mm Jacket = 2 0.9mm 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 ST/PC = 6 SMA = S Special = 0

[1]. The switch is broadband, the list wavelength is for testing only

[2]. The standard configuration includes an air gap between the two mating fibers. This gap can be eliminated by filling it with a special index-matching liquid that is non-fluorescent and exhibits little light absorption.

[3]. VOA only effective for large core fiber, the larger the core, the higher the resolution

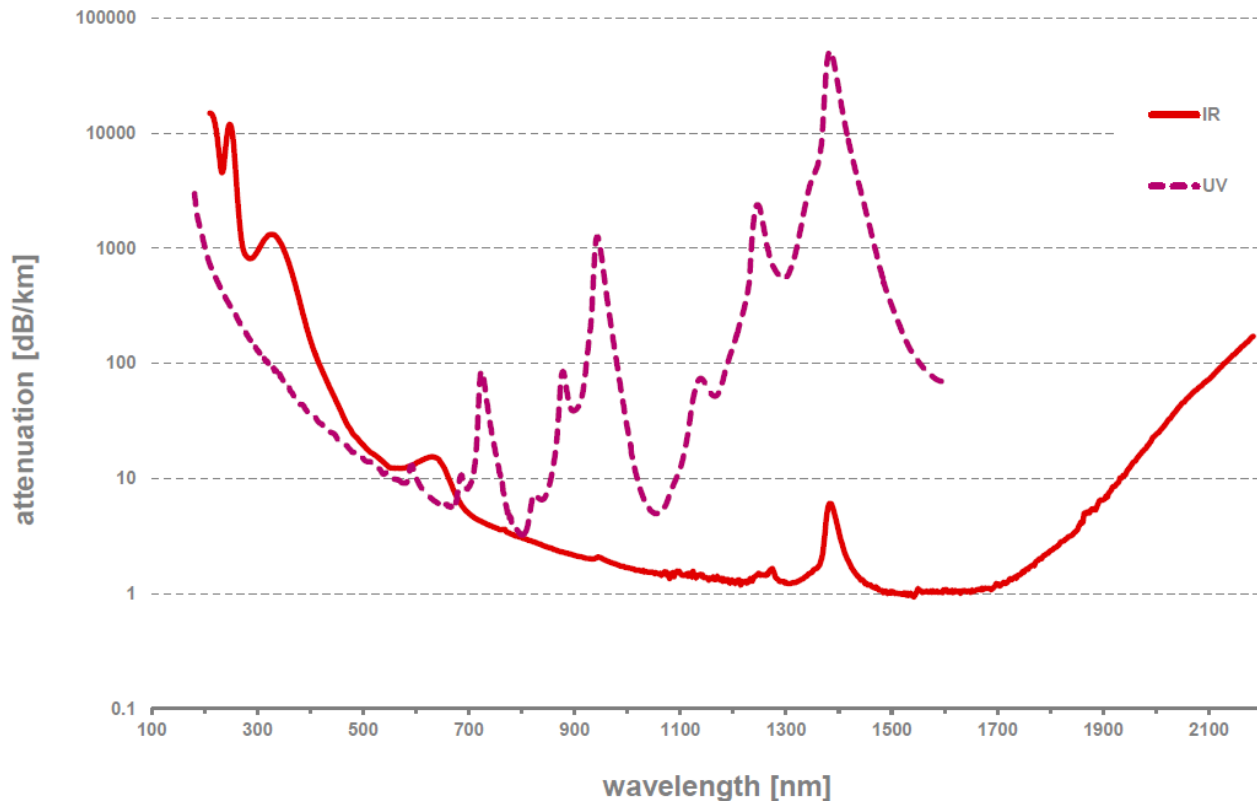
[4]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Fiber Type Selection Table:

01	SMF-28	34	PM1550	71	MM 50/125μm
02	SMF-28e	35	PM1950	72	MM 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	780HP	40	PM850	77	IRZS23
08	SM800	41	PM980	78	IRZS32
09	Hi980	42	PM780	79	
10	Hi1060	43		80	ZBLAN
11	SM400	44	PM405	81	UV180nm
12	Hi980	45	PM460	82	LMA-PM-10
13		46		83	Photonic Crystal

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Typical Fiber Transmissions



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.

Fiber-Fiber™

No Gap Ultrabroadband 1xN Fiber Optical Switch/VOA



0.3dB low loss, all fiber types core size 3 μm to 1mm, broadband 200-3000nm, bidirectional



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Command List

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