LightBend™ 1xN High Power Fiber Optic Switch

(Bidirectional, 5 ms, High Power up to 100W CW)

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



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The LBHS Series 1×N Fiber Optic Switch enables high-power optical routing by directing an input signal to a selected output fiber through a precision motor-driven mechanism. The switch achieves fast switching times of less than 5 ms and low insertion loss ~0.3dB. The LBHS is broadband and uncoated, with transmission characteristics equivalent to bare optical fiber. It supports all fiber types and can handle up to 100 W CW optical power when paired with large-core fibers. The switch is bidirectional and offers multiple control interfaces, including TTL, USB, RS232, GPIB, and Ethernet. Note: GPIB and Ethernet interfaces are available only in the 1U rack-mounted configuration.

Features

- Low Cost
- Broad Spectral Range
- High Isolation
- High Power
- Epoxy-Free Optical Path
- High Optical Power up to 100W CW

Applications

- Signal management
- Sensor
- Spectroscopy
- High Power Laser
- Instrumentation

Specifications

Parameter		Min	Typical	Max	Unit	
Operation Wavelength		350		2650	nm	
Insertion Loss ^[1]		0.5	1.0	dB		
Wavelength Dependent Loss ^[2]		0.1	0.5	dB		
Polarization Dependent Loss (SN		0.03	0.10	dB		
Extinction Ratio (PM)	18			dB		
Deturn Loss (ADC (UDC)	(SM, PM)	50			dB	
Return Loss (APC/OPC)	(MM)	35			dB	
Cross Talk	50			dB		
Operating Voltage		12		VDC		
Switching Time ^[3]		0.05		0.5	S	
Durability		10 ⁷			cycle	
Operating Temperature		0		70	°C	
Storage Temperature		-40		85	°C	
Ontical Dower Llandling	Standard			0.5	w	
Optical Power Handling	High Power		2	80		

Notes:

[1]. Exclude connectors.

[2]. Within 100 nm bandwidth.

[3]. Defined for speed between the adjacent channels.

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Mechanical Dimensions (mm)

Package A



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

Electrical Driving Requirement

Computer controlling kit with USB or RS232 or GBIB interfaces and Windows™ GUI

Ordering Information

Prefix	Туре	Test Wavelength*	Control	Optical Power	Fiber Type	Fiber Cover	Fiber Length	Connector	Package **
LBHS-	1x2 = 02 1x3 = 03 1x99 = 99 Special = 00 Dual 1x2 = D2 Dual 1x4 = D4	1060 = 1 450 = 2 1310 = 3 1410 = 4 1550 = 5 650 = 6 780 = 7 850 = 8 1310/1550 = 9 1260~1620 = B Special = 0	TTL= 1 RS232 = 2 USB = 3 Ethernet = 4 GPIB = 5 Special = 0	0.5 W = 1 2 W = 2 5 W = 3 10W = 5 30W = 6 50W = 7 70W = 8 80W = 9 Special = 0	MM 50/125 = 5 MM 62.5/125 = 6 105 μ m = G 200 μ m = H 400 μ m = J Special = 0	Bare fiber = 1 0.9mm tube = 3 3mm tube = 4 Special = 0	0.25 m = 1 0.5 m = 2 1.0 m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 5W FC= A 10W FC= B ST/PC = 6 LC/PC = 7 SMA905 = 9 LC/UPC = U Special = 0	Component = 1 Benchtop = 2 1U Rack = 3 2U Rack = 4 Special = 0

* The switch is intrinsically broadband. Test wavelength can be selected for qualification. Multiple wavelengths can also be tested at extra cost. **The component is intended for OEM integration only and is not suitable for laboratory use, as it includes an exposed PCB that is vulnerable to damage from electrostatic discharge (ESD) when handled. For laboratory or standalone operation, benchtop and rack-mounted packages are available as turnkey units with integrated power supplies and full ESD protection.

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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.