

# LightBend™

## 1x1, 1x2 Series Fiber Optic Switch

(Bidirectional, PM, High Power, PM High Power)

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

### Product Description

The LB series 1x2 PM, High power, PM High power fiber optic switch has a polarization-maintaining fiber switch, which connects optical channels by directing or blocking an incoming optical signal into the output fiber. This is achieved using a patent pending opto-machnical configuration and achieved via an electrical control signal. A latching version preserves the selected optical path after the drive signal has been removed, while the non-latching version defaults to either the open or close state when power is removed. The switches integrated electrical position sensors. The new material-based advanced design significantly reduces moving part position sensitivity, offering unprecedented high stability as well as an unmatched low cost. Electronic driver is available for this series of switches. The switch is bidirectional.



### Features

- Low Optical Distortions
- High Isolation
- High Reliability
- Fail-Safe Latching
- Epoxy-Free Optical Path

### Performance Specification

LB Series 1x1, 1x2 Switch	Min	Typical	Max	Unit
Operation Wavelength		850, 1310, 1550		nm
Insertion Loss <sup>[1], [2]</sup>		0.6	1.0	dB
Wavelength Dependent Loss			0.25	dB
PDL <sup>[1], [2]</sup> (SM Series Switch Only)			0.1	dB
Extinction Ratio <sup>[1], [2]</sup> (PM Series Switch)	18	23		dB
Return Loss <sup>[1], [2]</sup>	50			dB
Cross Talk <sup>[1], [2]</sup>	50			dB
Switching Time		3	10	ms
Repeatability			±0.05	dB
Durability	10 <sup>7</sup>			Cycle
Operating Voltage	4.5	5	6	VDC
Operating Current		30	60	mA
Switching Type	Latching / Non-Latching			
Operating Temperature	-5		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling	Standard	300	500	mW
	High Power Series	3	5	W
Package Dimension	36.0L x 26.0W x 8.2H			mm

Note:  
 [1]. Exclude connectors.  
 [2]. Within operating temperature and SOP.

### Applications

- Fault Protection
- Channel Add/Drop
- Channel Switching
- Instrumentation

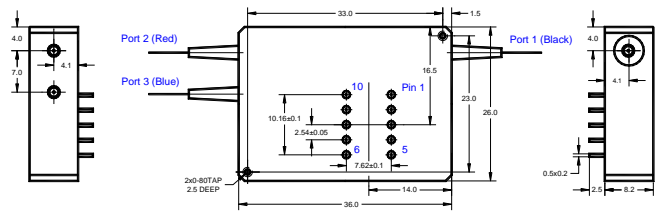


Revision: 9-24-18

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### Mechanical Dimensions (Unit: mm)



### Electrical Driving Requirements

The load is a resistive coil which is activated by applying 5V (draw ~ 40mA). Applying too long pulse for the latching version will heat up the device. 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

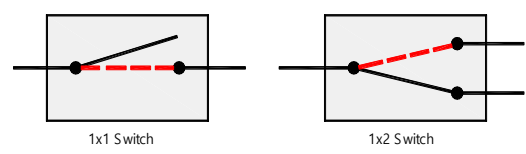
Application Note: Applying a constant driving voltage increases stability. The switches can also be driven by a pulse mode using Agiltron recommended circuit for energy saving.

Optical Path	Electrical Drive				Status Sensor			
	Pin 1	Pin 10	Pin 5	Pin 6	Pin2-3	Pin3-4	Pin7-8	Pin 8-9
Port 1 → Port 2	5V	GND	N/A	N/A	Close	Open	Open	Close
Port 1 → Port 3	GND	5V	N/A	N/A	Open	Close	Close	Open

#### Non-Latching Type

Optical Path	Electrical Drive				Status Sensor			
	Pin 1	Pin 10	Pin 5	Pin 6	Pin2-3	Pin3-4	Pin7-8	Pin 8-9
Port 1 → Port 2	5 V	GND	N/A	N/A	Close	Open	Open	Close
Port 1 → Port 3	No Power		N/A	N/A	Open	Close	Close	Open

### Functional Diagram



### Ordering Information

Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector	
LBPM [1] LBHP [2] LBPH [3]	1310=3 1410=4 1550=5 850 =8 C+L= 2 1310 & 1550=9 Special=0	Latching=1 Non-latching=2	Standard=4 Special=0	SMF-28=1 PM 400=A PM250=B Special=0	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 Special=0

[1]. LBPM: LightBend 1x1, 1x2 PM Switch.  
 [2]. LBHP: LightBend 1x1, 1x2 High Power Switch.  
 [3]. LBPH: LightBend 1x1, 1x2 PM High Power Switch.  
 [4]. N/T: LB 1x1 Switch, Non-Latching, Normally Transparency.  
 [5]. N/D: LB 1x1 PM Switch, Non-Latching, Normally Dark.

