

# LightBend™ 1x4 Multimode OptoMechanical Fiberoptic Switch

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

## Product Description

The LB Series 1x4 multimode fiber optic switch connects optical channels by redirecting an incoming optical signal into a selected output fiber. This is achieved by using a patent pending opto-mechanical configuration activated via an electrical control signal. Latching operation preserves the selected optical path after the drive signal has been removed. The switch has integrated electrical position sensors, and 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.

We offer tight-bend-fiber version, which reduces the minimum bending radius from normal 15 mm to 7 mm. This feature enables smaller overall foot print.



## Performance Specifications

LB Series 1x4 MM Switch	Min	Typical	Max	Unit
Operation Wavelength	850 ± 30,	1260~1360,	1510~1610	nm
Insertion Loss <sup>1,2</sup>		0.5	0.9	dB
Wavelength Dependent Loss		0.2	0.3	dB
Polarization Dependent Loss		0.1	0.2	dB
Return Loss	35			dB
Cross Talk <sup>1</sup>	50			dB
Switching Time		3	10	ms
Repeatability			±0.05	dB
Operating Voltage	5	5	7	VDC
Operating Current <sup>3</sup>	Latching		24	mA
	Non-Latching		34	
Voltage Pulse Width (Latching)		20		ms
Switching Type	Latching / Non-Latching			
Operating Temperature <sup>4</sup>	-5		70	°C
Optical Power Handling		300	500	mW
Storage Temperature	-40		85	°C
Fiber Type	MM50/125, or MM62.5/125			
Package Dimension	54L x 31 W x 12H			mm

Note:

1. Measured using laser with coupled power ratio of categories 5 (CPR). Laser with larger mode fill ratio needs special version.
2. Exclude connectors, higher loss for Dual and Broad Band.
3. Tested at 5V DC for each coil actuation.
4. -40 °C to 85 °C is also available.

## Features

- Unmatched Low Cost
- Low Optical Distortions
- High Isolation
- High Reliability
- Epoxy-Free Optical Path

## Applications

- Channel Blocking
- Configurable Add/Drop
- System Monitoring
- Instrumentation



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## 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.

### Latching Type

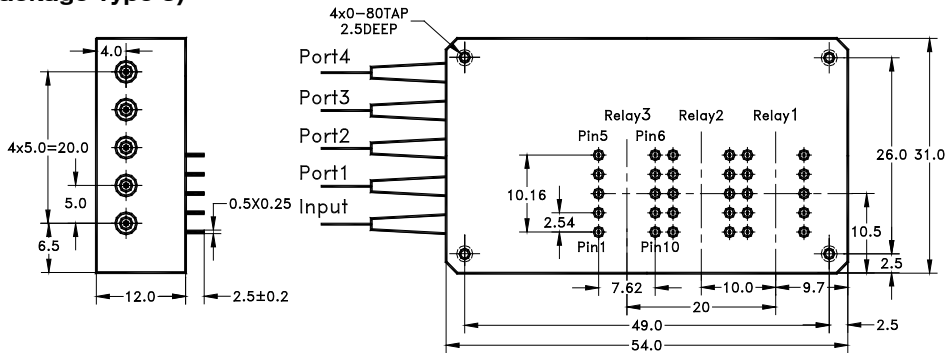
Optical Path	Relay	Electric Drive		Status Sensor					
		Pin 1	Pin 10	Pin 5	Pin 6	Pin 2-3	Pin 3-4	Pin 7-8	Pin 8-9
In → Port 1	Relay1	GND	5V Pulse	N/A	N/A	Close	Open	Open	Close
	Relay 2, 3	N/A	N/A	N/A	N/A				
In → Port 2	Relay1	5V Pulse	GND	N/A	N/A	Open	Close	Close	Open
	Relay 2	GND	5V Pulse	N/A	N/A	Close	Open	Open	Close
	Relay 3	N/A	N/A	N/A	N/A				
In → Port 3	Relay1, 2	5V Pulse	GND	N/A	N/A	Open	Close	Close	Open
	Relay 3	GND	5V Pulse	N/A	N/A	Close	Open	Open	Close
In → Port 4	Relay1, 2, 3	5V Pulse	GND	N/A	N/A	Open	Close	Close	Open

### Non-Latching Type

Optical Path	Relay	Electric Drive		Status Sensor					
		Pin 1	Pin 10	Pin 5	Pin 6	Pin 2-3	Pin 3-4	Pin 7-8	Pin 8-9
In → Port 1	Relay 1	5 V	GND	N/A	N/A	Open	Close	Close	Open
	Relay 2, 3	No Power		N/A	N/A	Close	Open	Open	Close
In → Port 2	Relay 2	5 V	GND	N/A	N/A	Open	Close	Close	Open
	Relay 1, 3	No Power		N/A	N/A	Close	Open	Open	Close
In → Port 3	Relay 3	5 V	GND	N/A	N/A	Open	Close	Close	Open
	Relay 1, 2	No Power		N/A	N/A	Close	Open	Open	Close
In → Port 4	Relay1, 2, 3	No Power		N/A	N/A	Close	Open	Open	Close

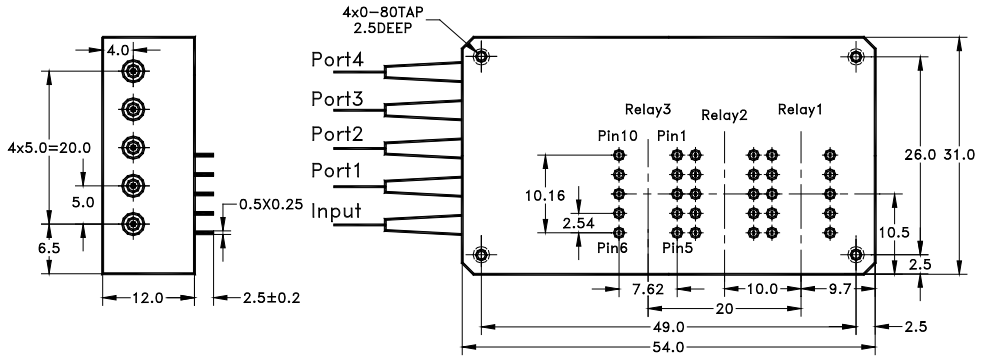
## Mechanical Dimensions (Unit: mm)

### Latching Type (Package Type 3)



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## Non-Latching Type (Package Type 4)



## Ordering Information

LBSW-	Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1x4=14 4x1=41 Special=00	1310=3 1410=4 1550=5 850 =8 Special=0	Latch=1 Non-latch=2	Latching=3 Non-Latching=4 Special=0	50/125=5 62.5/125=6 Tightbend=2 Special=0	Bare fiber=1 900m loose 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

