

# LightBend™ 1x1, 1x2, 2x2 Bypass Single-Mode Fiberoptic Switch

(Bidirectional)

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

## Product Description

The LB Series 1x1, 1x2, 2x2 Bypass fiber optic switch connects optical channels by redirecting an incoming optical signal into a selected output fiber. This is achieved using a patent pending opto-mechanical configuration and activated via an electrical control signal. Latching operation preserves the selected optical path after the driver signal has been removed. The switch has 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.

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 1X1, 1x2, 2x2 Bypass Switch	Min	Typical	Max	Unit
Wavelength	Dual Band 1260~1360 and 1510~1610			nm
	Single Band 1260~1360 or 1510~1610			
	Broad Band 1260~1610			
Insertion Loss <sup>1,2</sup>		0.5	0.9	dB
Wavelength Dependent Loss		0.15	0.35(DW <sup>3</sup> )	dB
Polarization Dependent Loss			0.1	dB
Return Loss <sup>1, 2</sup>	55			dB
Cross Talk <sup>1</sup>	55			dB
Switching Time		3	10	ms
Repeatability			± 0.02	dB
Durability	10 <sup>7</sup>			Cycles
Operating Optical Power <sup>4</sup>		300	500	mW
Operating Voltage	5	5	7	VDC
Operating Current (Latching/Non-Latching)		30	60	mA
Voltage Pulse Width (square)		20		ms
Switching Type	Latching / Non-Latching			
Operating Temperature		-5 ~ 70		°C
Storage Temperature		-40 ~ 85		°C
Fiber Type	SFM-28			
Package Dimension	30.0L x 27.0W X 8.2H			mm

Notes:

<sup>1</sup>: 23° over operating wavelength and all SOP.

<sup>2</sup>: Excluding Connectors.

<sup>3</sup>: DW: Dual band and Broad band.

<sup>4</sup>: Continuous operation, for pulse operation call.

## Features

- Low Optical Distortions
- 8 Ports Integration
- High Isolation
- High Reliability
- Fail-Safe Latching
- Epoxy-Free Optical Path
- Low Cost

## Applications

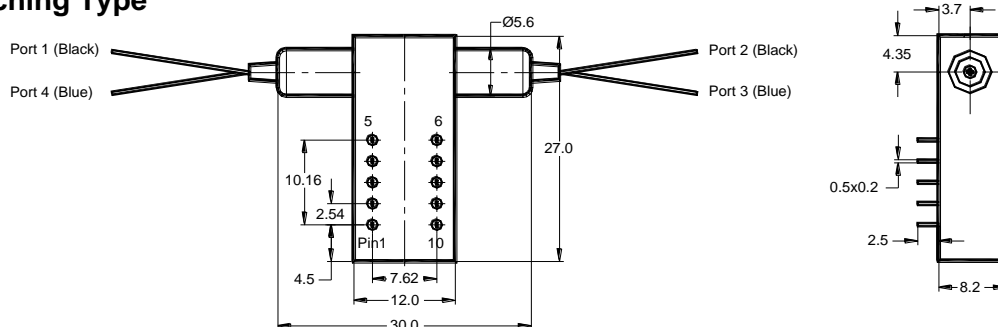
- Protection
- Instrumentation



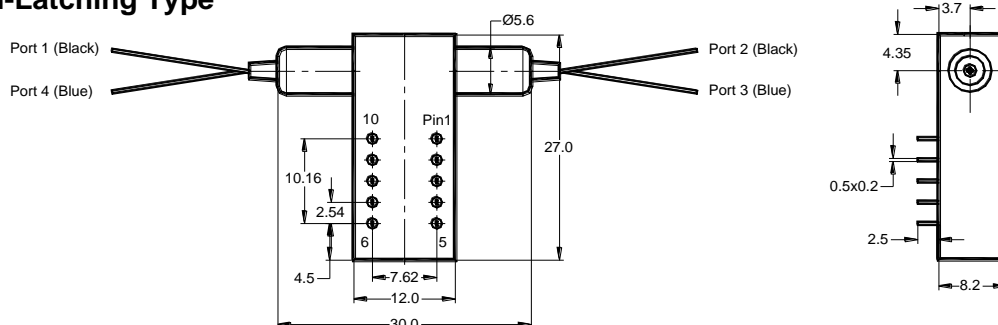
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## Mechanical Dimensions (Unit: mm)

### Latching Type



### Non-Latching Type



## Electrical Connector Configurations

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 – Single Coil

#### LB 1x2 Switch

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

#### LB 2x2 Bypass Switch

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

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## Non-Latching Type

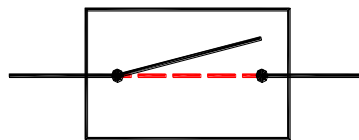
LB 1x2 Switch

Optic Path	Electric Drive				Status Sensor			
	Pin1	Pin10	Pin5	Pin6	Pin2-3	Pin 3-4	Pin 7-8	Pin 8-9
Port 1 → Port 2	5V	GND	N/A	N/A	Open	Close	Close	Open
Port 1 → Port 3	No Power		N/A	N/A	Close	Open	Open	Close

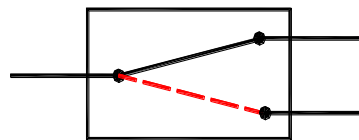
LB 2x2 Bypass Switch

Optic Path	Electric Drive				Status Sensor			
	Pin1	Pin10	Pin5	Pin6	Pin2-3	Pin 3-4	Pin 7-8	Pin 8-9
Port 1 → Port 2 Port 4 → Port 3	5V	GND	N/A	N/A	Open	Close	Close	Open
Port 1 → Port 3	No Power		N/A	N/A	Close	Open	Open	Close

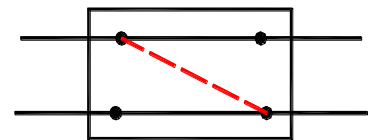
## Functional Diagram



LB 1x1 Switch



LB 1x2 Switch



LB 2x2 Bypass Switch

## Ordering Information

LBSW-	<div><div></div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
	Type	Wavelength	Switch	Package	Fiber Type		Fiber Length	Connector
	1x1 Latching=11 1x1 N/O *=10 1x1 N/C **=1C 1x2=12 2x1=21 2B=2x2 Bypass Special=00	1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550=9 Special=0	Latching Type Single Coil=2  Non-latch=3  Special=0	Standard=1 Special=0	SMF-28=1 Corning XB=2 Draka BBE=3 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

\* N/O: LB 1x1 Switch, Non-Latching type, normally open.

\*\* N/C: LB 1x1 Switch, Non-Latching type, normally close.