

# LightBend™ 1x1, 1x2, 2x2 Bypass Multimode Fiberoptic Switch (Bidirectional)

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

## Product Description

The LB 1x1, 1x2, 2x2 Bypass Multimode Fiberoptic switch is a highly integrated single device. Based on an Agiltron's pending patent, the switch is designed especially for protection and restoration applications. The switch is activated by a 5V pulse between two states and latching operation preserves the selected optical path after the drive signal has been removed. The switch has integrated electrical contact based position sensors. The proprietary simple design significantly reduces moving part position sensitivity, offering unprecedented high stability as well as 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 MM Switch <sup>1,2</sup>	Min	Typical	Max	Unit
Wavelength		850, 1310, 1410, 1550		nm
Insertion Loss <sup>2</sup>		0.6	0.9	dB
Wavelength Dependent Loss			0.25	dB
Cross Talk <sup>1</sup>	35			dB
Return Loss <sup>1,2</sup>	35			dB
Switching Time		10	20	ms
Repeatability			± 0.02	dB
Durability	10 <sup>7</sup>			Cycles
Operating Optical Power		300	500	mW
Operating Voltage	5	5	7	V
Operating Current		30	60	mA
Voltage Pulse Width (square)		20		ms
Switch Type		Latching / Non-Latching		
Operating Temperature		0 - 70		°C
Fiber Type		MM62.5/125 or MM50/125		
Storage Temperature		-40 - 85		°C
Package Dimension		30.0L x 30.0W X 8.5H		mm

Notes:

<sup>1</sup> Within operating temperature and with light source CPR <14 dB.

<sup>2</sup> Excluding Connectors.

## Features

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

## Applications

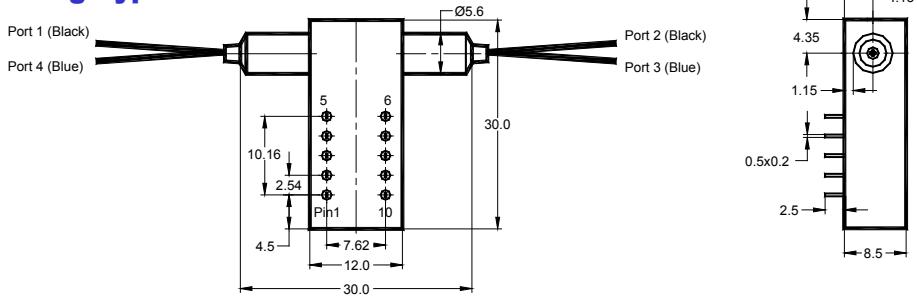
- Protection
- Instrumentation



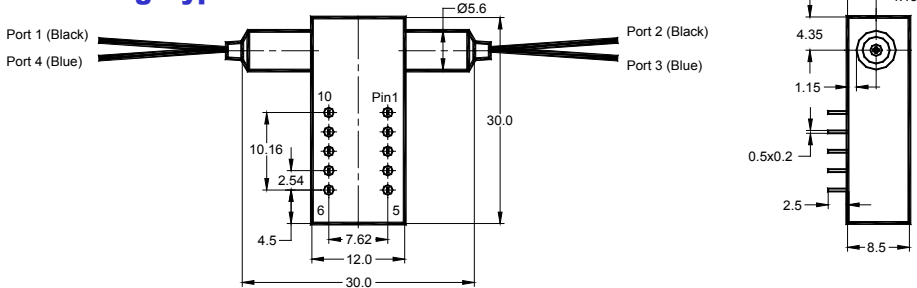
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## Mechanical Dimensions (Unit: mm)

### 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 RS232 interfaces and Windows™ GUI

### Latching Type - Single Coil

#### LB 1x2 MM Switch

Optic Path	Electric Drive				Status Sensor			
	Pin1	Pin10	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 MM Switch

Optic Path	Electric Drive				Status Sensor			
	Pin1	Pin10	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

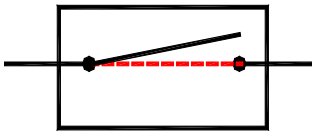
### LB 1x2 MM Switch

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	5V	GND	N/A	N/A	Open	Close	Close	Open
Port 1→Port 3	No Power		N/A	N/A	Close	Open	Open	Close

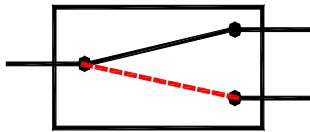
### LB 2x2 Bypass MM Switch

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	5V	GND	N/A	N/A	Open	Close	Close	Open
Port 1→Port 3	No Power		N/A	N/A	Close	Open	Open	Close

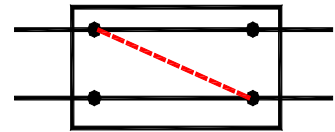
## Functional Diagram



LB 1x1 MM Switch



LB 1x2 MM Switch



LB 2x2 MM Bypass Switch

## Ordering Information

LBSW-	Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector
□ □ □ □ 1 □ □ □ □	1x1 Latching=11 1x1 N/O*=10 1x1 N/C**=1C 1x2=12 2x1=21 2x2 Bypass=2B Special=00	1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550=9 850 & 1310 =A Special=0	Latching Type Single Coil=2  Non-latch=3  Special=0	1	MM 50/125=5 MM62.5/125=6 Special=0	Bare fiber=1 900µm tube=3 Special=0  0.25m=1 0.5m=2 1.0=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 MM Non-Latching Switch, Normally open.

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

