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LightBend™ Mini 1x1, 1x2, 2x2 Bypass Fiber Optic Switch (Bidirectional)

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

Product Description

The LB Series miniature fiber optic switch connects optical channels by redirecting incoming optical signals into selected output fibers, in 1x1, 1x2 and 2x2 (bypass) configurations. 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 drive signal has been removed. The switch has integrated status contacts to provide an electrical readout of switch position. The new material based advanced design significantly reduces moving part position sensitivity, offering unprecedented high stability as well as an unmatched low cost. It is designed for use in reconfigurable OADM, optical cross-connect system and network switching for fault protection applications. 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.



Features

- Unmatched Low Cost
- Low Optical Distortions
- Low Cross Talk
- High Reliability
- Epoxy-Free Optical Path

Performance Specifications

LB 1x1, 1x2, 2x2 Bypass Switch	Min	Typical	Max	Unit
Operation Wavelength	850	1260-1360 and/or 1510-1620		nm
Insertion Loss ¹		0.5	1.0	dB
Wavelength Dependent Loss	SW ¹		0.15	dB
	DW ²		0.25	
Temperature Dependent Loss		0.15	0.4	dB
Polarization Dependent Loss			0.1	dB
Return Loss	55			dB
Cross Talk	55			dB
Switching Time		3	10	ms
Repeatability			±0.02	dB
Durability	10 ⁷			Cycle
Operating Voltage	4.5	5	6	VDC
Operating Current		30	60	mA
Switching Type	Latching or Non-Latching			
Operating Temperature	-5		+70	°C
	-40		+85	
Optical Power Handling		300	500*	mW
Storage Temperature	-40		+85	°C
Package Dimension	36.5L x 12.5W x 8.2H			mm

Note:

1. Exclude connectors.
 2. SW: Single window.
 3. DW: Dual window.
- * Continuous operation, for pulse operation call

Applications

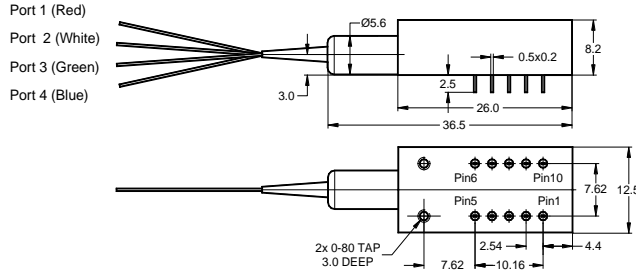
- Channel Blocking
- Configurable Add/Drop
- System Monitoring
- Instrumentation



Revised on 5/2/21
(Click here for latest revision)

LightBend™ Mini 1x1, 1x2, 2x2 Bypass Fiber Optic Switch

Mechanical Dimensions (Unit:mm)



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

Electrical Driving Requirements

The load is a resistive coil which is activated by applying 5V (draw ~ 40mA). 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.

LB Mini 1x2 Switch

Optical Path	Electrical Drive		Status Sensor					
	Pin1	Pin10	Pin5	Pin6	Pin2-3	Pin3-4	Pin7-8	Pin 8-9
Port 1 → Port 2	GND	5V	N/A	N/A	Close	Open	Open	Close
Port 1 → Port 3	5V	GND	N/A	N/A	Open	Close	Close	Open

LB Mini 2x2 Bypass Switch

Optical Path	Electrical Drive		Status Sensor					
	Pin1	Pin10	Pin5	Pin6	Pin2-3	Pin3-4	Pin7-8	Pin 8-9
Port 1 → Port 2 Port 4 → Port 3	GND	5V	N/A	N/A	Close	Open	Open	Close
Port 1 → Port 3	5V	GND	N/A	N/A	Open	Close	Close	Open

Non-Latching Type

LB Mini 1x2 Switch

Optical Path	Electrical Drive		Status Sensor					
	Pin1	Pin10	Pin5	Pin6	Pin2-3	Pin3-4	Pin7-8	Pin 8-9
Port 1 → Port 2	No Power		N/A	N/A	Close	Open	Open	Close
Port 1 → Port 3	5V	GND	N/A	N/A	Open	Close	Close	Open

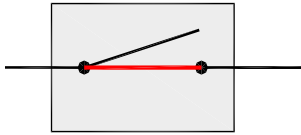
LB Mini 2x2 Bypass Switch

Optical Path	Electrical Drive		Status Sensor					
	Pin1	Pin10	Pin5	Pin6	Pin2-3	Pin3-4	Pin7-8	Pin 8-9
Port 1 → Port 2 Port 4 → Port 3	No Power		N/A	N/A	Close	Open	Open	Close
Port 1 → Port 3	5V	GND	N/A	N/A	Open	Close	Close	Open

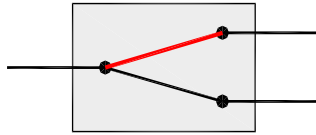
LightBend™ Mini

1x1, 1x2, 2x2 Bypass Fiber Optic Switch

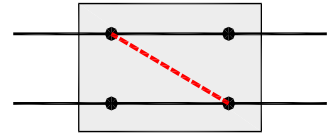
Functional Diagram



LB 1x1 Switch



LB 1x2 Switch



LB 2x2 Bypass Switch

Ordering Information

LBSW-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector		
1x1 Latching=11 1x1 N/T ^[1] =1T 1x1 N/D ^[2] =1D 1x2=12 2x1=21 2x2 Bypass=22 Special=00	1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550=9 1260-1620=B Special=0	Latching=1 Non-latching=2	-5-+70°C=7 -40-+85°C=8 Special=0	SMF-28=1 Corning XB=2 Draka BBE=3 Special=0	Bare fiber=1 900µm 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	

[1]. **N/T**: LB 1x1 Non-Latching Switch, **N**ormally **T**ransparent.

[2]. **N/D**: LB 1x1 Non-Latching Switch **N**ormally **D**ark.



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Driver Reference Design

