

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

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

Product Description

The LB Series Ultra-mini 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 patented 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.



Performance Specifications

LB U-Mini 1x1,1x2, 2x2 BP Switch	Min	Typical	Max	Unit
Operation Wavelength	Single Band	1260-1360 and 1510-1620		nm
	Dual Band	1260-1360 or 1510-1620		
	Broad Band	1260-1620		
Insertion Loss ^[1]	-5~+70 °C	0.4	0.7	dB
	-40~+85 °C	0.6	0.9	
Wavelength Dependent Loss	SW ^[2]		0.15	dB
	DW ^[3]		0.25	
Temperature Dependent Loss	-5~+70 °C		0.25	dB
	-40~+85 °C		0.40	
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 (Latching/Non-		30	60	mA
Voltage Pulse Width (Latching)		20		ms
Switching Type	Latching or Non-Latching			
Operating Temperature	-5		+70	°C
	-40		+85	
Storage Temperature	-40		+85	°C
Optical Power Handling ^[4]		300	500	mW
Package Dimension	31.0L x 10.0W x 8.0H			mm

Features

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

Applications

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

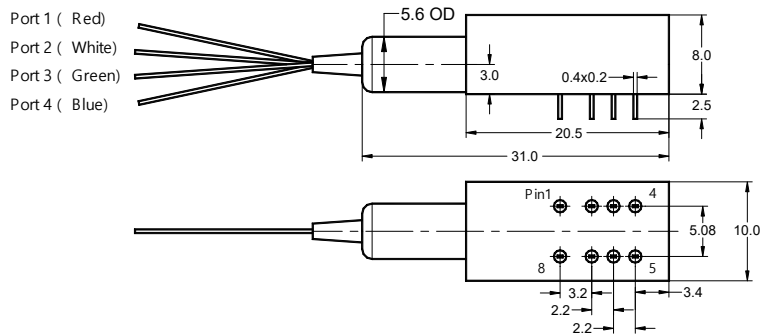


Revision: 11-16-17

[1]. Exclude connectors.
 [2]. SW: Single window.
 [3]. DW: Dual window.
 [4]. Continuous operation. For pulse operation call.

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

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

LB Ultra-Mini 1x2 Switch

Optical Path	Electrical Drive		Status Sensor			
	Pin 1	Pin 8	Pin 2-3	Pin 3-4	Pin 5-6	Pin 6-7
Port 1 → Port 2	5V Pulse	GND	Open	Close	Close	Open
Port 1 → Port 3	GND	5V Pulse	Close	Open	Open	Close

LB Ultra-Mini 2x2 Bypass Switch

Optical Path	Electrical Drive		Status Sensor			
	Pin 1	Pin 8	Pin 2-3	Pin 3-4	Pin 5-6	Pin 6-7
Port 1 → Port 2 Port 4 → Port 3	5V Pulse	GND	Open	Close	Close	Open
Port 1 → Port 3	GND	5V Pulse	Close	Open	Open	Close

Non-Latching Type

LB Ultra-Mini 1x2 Switch

Optical Path	Electrical Drive		Status Sensor			
	Pin1	Pin8	Pin2-3	Pin3-4	Pin5-6	Pin 6-7
Port 1 → Port 2	5V	GND	Open	Close	Close	Open
Port 1 → Port 3	No Power		Close	Open	Open	Close

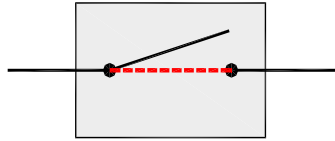
LB Ultra-Mini 2x2 Bypass Switch

Optical Path	Electrical Drive		Status Sensor			
	Pin1	Pin8	Pin2-3	Pin3-4	Pin5-6	Pin 6-7
Port 1 → Port 2 Port 4 → Port 3	5V	GND	Open	Close	Close	Open
Port 1 → Port 3	No Power		Close	Open	Open	Close

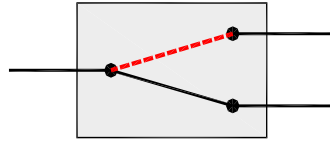


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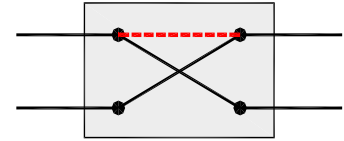
Functional Diagram



LB 1x1 Switch



LB 1x2 Switch



LB 2x2 Bypass Switch

Ordering Information

LBUM ^[1] -	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"/>	1x1 Latching=11 1x1 N/T ^[2] =1T 1x1 N/D ^[3] =1D 1x2=12 2x1=21 2x2 Bypass=22 Special=00	1060=1 C+L=2 1310=3 1550=5 650=6 780=7 850=8 1310 & 1550=9 1260~1620=B Special=0	Latching=4 Non-latching=5 Special=0	-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 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]. **LBUM**: LightBend Ultra Mini Switch.
 [2]. **N/T**: LB 1x1 Non-Latching Switch Normally Transparent.
 [3]. **N/D**: LB 1x1 Non-Latching Switch Normally Dark.

