



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.



Features

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

Performance Specifications

LB 1X1, 1x2, 2x2 Bypass Switch	Min	Typical	Max	Unit
Wavelength	Dual Band 1260-1360 and 1510-1620			nm
	Single Band 1260-1360 or 1510-1620			
	Broad Band 1260-1620			
Insertion Loss ^{1,2}		0.5	0.9	dB
Wavelength Dependent Loss		0.15	0.35(DW ³)	dB
Polarization Dependent Loss			0.1	dB
Return Loss ^{1,2}	55			dB
Cross Talk ¹	55			dB
Switching Time		3	10	ms
Repeatability			± 0.02	dB
Durability	10 ⁷			Cycles
Operating Optical Power ⁴		300	500	mW
Operating Voltage	4.5	5	6	VDC
Operating Current (Latching/Non-Latching)		30	60	mA
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:

¹ 23° over operating wavelength and all SOP.

² Excluding Connectors.

³ DW: Dual band and Broad band.

⁴ Continuous operation, for pulse operation call.

Applications

- Protection
- Instrumentation



Revised on 11/10/22

Warning: This device must use the reference circuit to driver otherwise it is unstable.

15 Presidential Way, Woburn, MA 01801 Tel: (781) 935-1200 Fax: (781) 935-2040

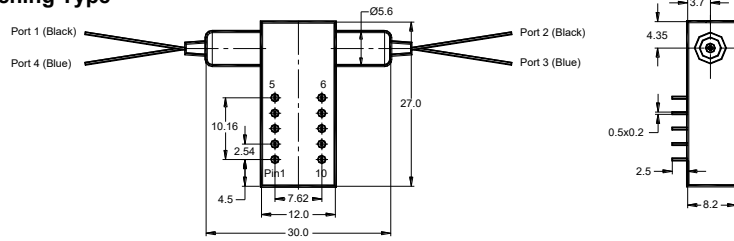
www.agiltron.com



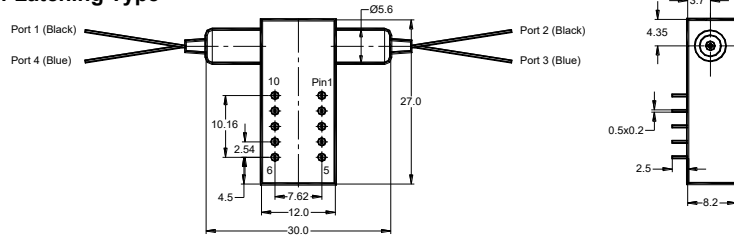
LightBend™ 1x1, 1x2, 2x2 Bypass Single-Mode Fiberoptic Switch

Mechanical Dimensions (Unit: mm)

Latching Type



Non-Latching Type



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

Electrical Connector Configurations

The load is a resistive coil which is activated by applying 5V (draw ~ 40mA). However, the current flow direction must be correct otherwise it will cancel the permanent magnet inside causing instability. We strongly recommend to use the reference circuit to avoid major issues. We offer pushbutton elevation driver for verifications or convenient income inspection.

Latching Type – Single Coil

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 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	0V	5V	N/A	N/A	Close	Open	Open	Close
Port 1—Port 3	5V	0V	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	0V	5V	N/A	N/A	Close	Open	Open	Close
Port 1—Port 3	5V	0V	N/A	N/A	Open	Close	Close	Open



15 Presidential Way, Woburn, MA 01801 Tel: (781) 935-1200 Fax: (781) 935-2040

www.agiltron.com



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

Non-Latching Type

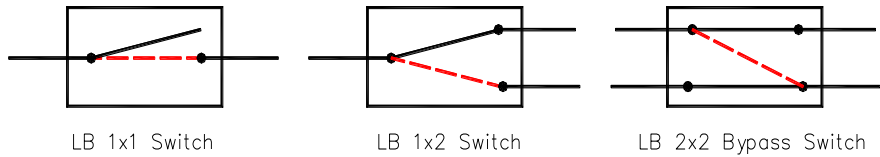
LB 1x2 Switch

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	0V	N/A	N/A	Open	Close	Close	Open
Port 1 → Port 3	0V		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	0V	N/A	N/A	Open	Close	Close	Open
Port 1 → Port 3	0V		N/A	N/A	Close	Open	Open	Close

Functional Diagram



Ordering Information

Prefix	Type	Wavelength	Switch	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
LBSW-	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 1260-1620=B Special=0	Latch = 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.



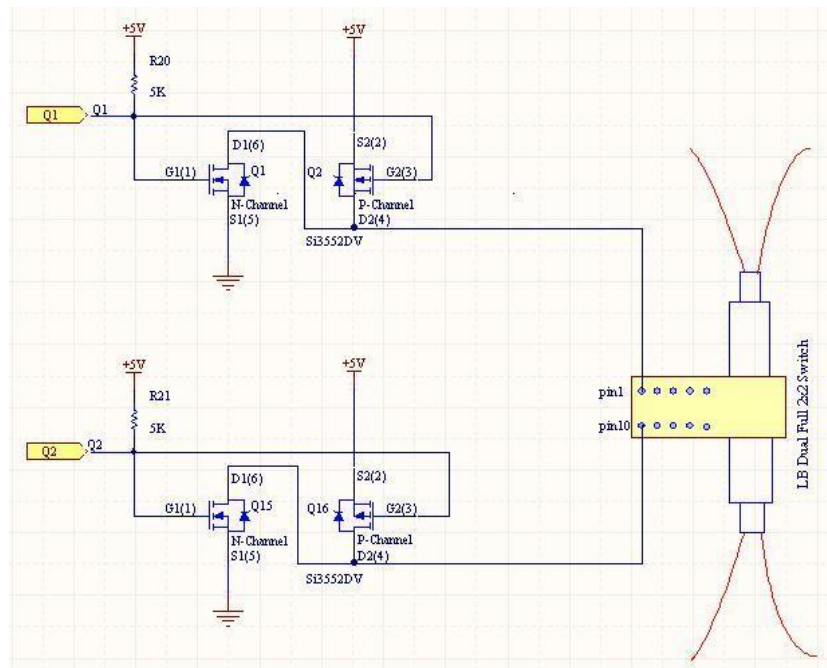
15 Presidential Way, Woburn, MA 01801 Tel: (781) 935-1200 Fax: (781) 935-2040

www.agiltron.com



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

Driver Reference Design



15 Presidential Way, Woburn, MA 01801 Tel: (781) 935-1200 Fax: (781) 935-2040

www.agiltron.com