

## LightBend™ Dual 1x2 Single-Mode Fiber Optic Switch (Bidirectional)

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

### Product Description

The LB Series Dual 1x2 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 Series Dual 1x2 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 <sup>1,2</sup>		0.5	0.9 (DW <sup>3</sup> )	dB
Wavelength Dependent Loss		0.15	0.4 (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		300	500*	mW
Operating Voltage	4.5	5	6	VDC
Operating Current		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:

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

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

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

\* Continuous operation, for pulse operation call

### Applications

- Protection
- Instrumentation



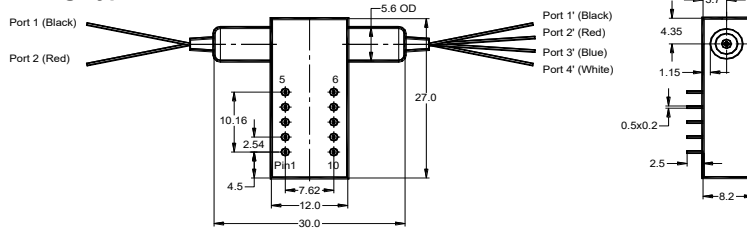
Revised on 06/29/22

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

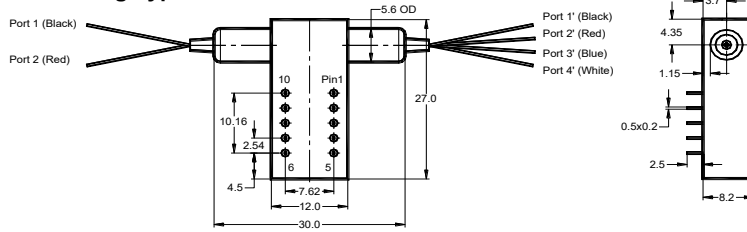
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## Mechanical Dimensions (Unit: mm)

### 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.

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 1' Port 2 → Port 2'	GND	5V	N/A	N/A	Close	Open	Open	Close
Port 1 → Port 3' Port 2 → Port 4'	5V	GND	N/A	N/A	Open	Close	Close	Open

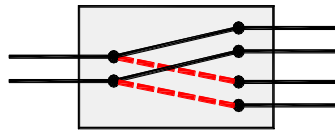
### Non-Latching Type

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



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### Functional Diagram



LB Dual 1x2 Switch

### Ordering Information

LBDU-	<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
	1x2=12 2x1=21 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 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 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



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### Driver Reference Design

