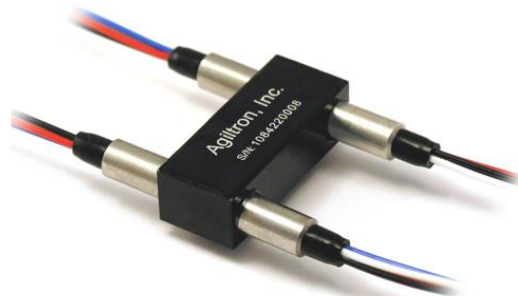# LightBend™ Quad 2x2 Bypass MultiMode Fiberoptic Switch
(Bidirectional)

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

Product Description

The LB Series Quad 2x2 Bypass multimode OptoMechanical Fiberoptic switch integrated 4 simultaneously activated 2x2 Bypass switches in a single compact format. The device connects optical channels by redirecting incoming optical signals into selected output fibers. 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 electrical position sensors. This novel design significantly reduces moving part position sensitivity, offering unprecedented high stability as well as an unmatched low cost. 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
- High Reliability
- Fail-Safe Latching
- Epoxy-Free Optical Path

Applications

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

Performance Specifications

LB Quad 2x2 Bypass MM Switch	Min	Typical	Max	Unit
Operation Wavelength		850, 1310, 1410, 1550		nm
Insertion Loss *, **, ***		0.6	1.1	dB
Wavelength Dependent Loss			0.30	dB
Return Loss *, **, ***	35			dB
Cross Talk *, ***	35			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
Voltage Pulse Width (Latching)		20		mS
Switching Type		Latching/Non-Latching		
Operating Temperature	-5		70	^{o}C
Optical Power Handling		300	500****	mW
Storage Temperature	-40		85	^{o}C
Package Dimension		28.0L x 27.0W x 8.0H		mm

* Insertion loss excludes connector.
** Light source CPR<14dB.
*** Our device is designed and optimized for certain laser launch condition which is characterized as CPR value. In general, if application exceeds the specified CPR value, optical performance will become worsen.
**** Continuous operation, for pulse operation call.

RoHS Compliant

Mechanical Dimensions (Unit:mm)

Port 1
Port 2
Port 3
Port 4

Port 1'
Port 2'
Port 3'
Port 4'

4.3

2.2
2.2
3.2

4   5

27.0

20.7

0.5x0.2

Pin1   8

2.6

3.8

5.08

Port 5
Port 6
Port 7
Port 8

Port 5'
Port 6'
Port 7'
Port 8'

11.0
28.0

8.0
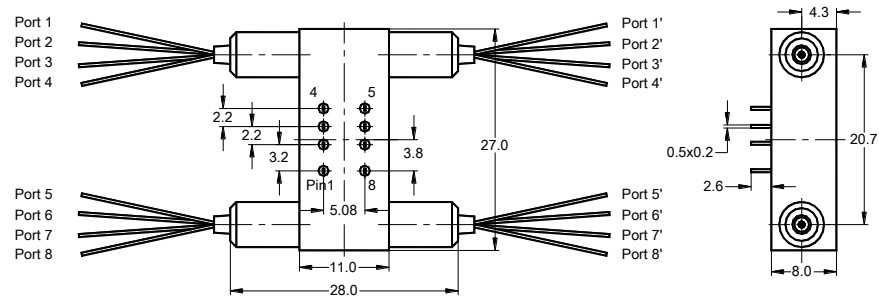
Electrical Driving Requirements

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.
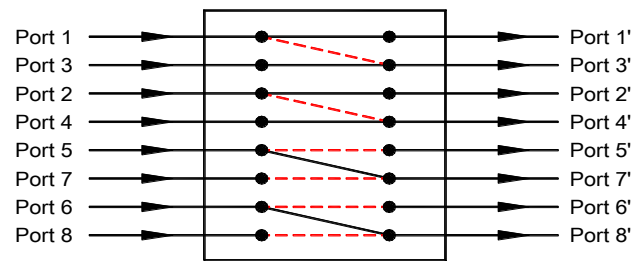
Latching Type

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

Non-Latching Type

Optical Path	Electric Drive		Status Sensor			
	Pin 1	Pin 8	Pin 2-3	Pin 3-4	Pin 5-6	Pin 6-7
1→1', 2→2' 3→3', 4→4' 5→7', 6→8'	No Power		Close	Open	Open	Close
1→3', 2→4' 5→5', 6→6' 7→7', 8→8'	5V	GND	Open	Close	Close	Open

Functional Diagram

Port 1 — Port 1'
Port 3 — Port 3'
Port 2 — Port 2'
Port 4 — Port 4'
Port 5 — Port 5'
Port 7 — Port 7'
Port 6 — Port 6'
Port 8 — Port 8'

LB Quad 2x2 Bypass MM

Ordering Information

LBQB*-		Type	Wavelength	Switch	Package	Fiber Type		Fiber Length	Connector
		Quad 2x2=22 Special=00	1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550= 9 Special=0	Latching=1 Non-Latching=2 Special=0	Standard=1 Special=0	50/125=5 62.5/125=6 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

* LB: Light Bend switch. Q: Quad. B: Bypass.