LightBend™ Quad 1x1 Multimode Fiberoptic Switch (Bidirectional)

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

Product Description

The LB Quad 1x1 Multimode Fiberoptic switch is a highly integrated single device with 8 fiber ports. Based on an Agiltron's pending patent, the switch is designed especially for protection and restoration applications. The switch is activated by a 5V pulse between two states and latching operation preserves the selected optical path after the drive signal has been removed. The switch has integrated electrical contact based position sensors. The proprietary simple design significantly reduces moving part position sensitivity, offering unprecedented high stability as well as 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
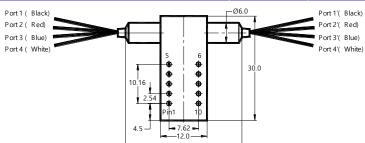- Fail-Safe Latching
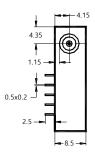- Epoxy-Free Optical Path
- Low Cost

Applications

- Protection
- Instrumentation

Performance Specifications

LB Series Quad 1x1 MM Switch	Min	Typical	Max	Unit
Wavelength		850, 1310, 1410, 1550		nm
Insertion Loss *, **		0.6	0.9	dB
Wavelength Dependent Loss			0.25	dB
Cross Talk*	35			dB
Return Loss*, **	35			dB
Switching Time		10	20	ms
Repeatability			± 0.02	dB
Durability	10^7			Cycles
Operating Optical Power		300	500	mW
Operating Voltage	4.5	5	6	V
Operating Current		30	60	mA
Switch Type		Latching / Non-Latching		
Operating Temperature		0 ~ 70		ºC
Fiber Type		MM62.5/125 or MM50/125		
Storage Temperature		-40 ~ 85		ºC
Package Dimension		30.0L x 30.0W X 8.5H		mm

Notes:
* Within operating temperature and with light source CPR <14 dB.
** Excluding Connectors.
*** 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.

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LightBend™ Quad 1x1 Multimode Fiberoptic Switch

Mechanical Dimensions (Unit:mm)

Port 1 (Black)
Port 2 (Red)
Port 3 (Blue)
Port 4 (White)

Port 1'(Black)
Port 2'(Red)
Port 3'(Blue)
Port 4'(White)

Ø6.0
30.0
5
6
10.16
2.54
Pin1
10
4.5
7.62
12.0
30.0

4.15
4.35
1.15
0.5x0.2
2.5
8.5

Electrical Connector Configurations

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.

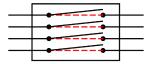### Latching Type (Single Coil)

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.

Optical 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
1→1', 2→2' 3→3', 4→4'	GND	5V	N/A	N/A	Close	Open	Open	Close
Block	5V	GND	N/A	N/A	Open	Close	Close	Open

Non-Latching Type

Optical 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
1→1', 2→2' 3→3', 4→4'	No Power		N/A	N/A	Close	Open	Open	Close
Block	5V	GND	N/A	N/A	Open	Close	Close	Open

Functional Diagram

LB Quad 1x1 MM Switch

Ordering Information

LBQU-		Type	Wavelength	Switch	Package	Fiber Type		Fiber Length	Connector
		1x1 Latching=11 1x1 N/O*=1O 1x1 N/C**=1C Special=00	1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550=9 850 & 1310=A Special=0	Latching(SingleCoil)=2 Non-latching=3 Special=0	Standard=1 Special=0	MM 50/125=5 MM62.5/125=6 Special=0	Bare fiber=1 900μm tube=3 Special=0	0.25m=1 0.5m=2 1.0=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 Quad 1x1 MM Switch Non-Latching Normally Open.

** N/C: LB Quad 1x1 MM Switch Non-Latching Normally Close.