

LightBend™ Quad 2x2 Bypass Fiber Optic Switch

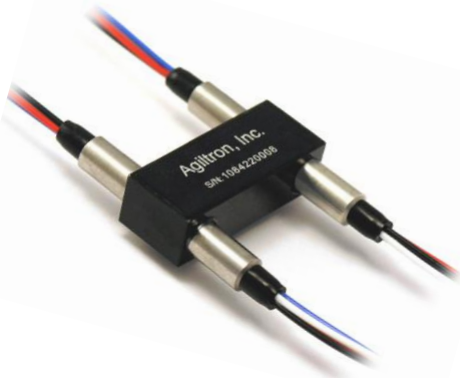
(Bidirectional)

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



DATASHEET

BUY NOW



Features

- Low Optical Distortions
- High Reliability
- Fail-Safe Latching
- Epoxy-Free Optical Path

Applications

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

The LB Series Quad 2x2 Bypass Fiber Optic 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. This feature enables smaller overall foot print.

Specifications

Parameter		Min	Typical	Max	Unit
Operation Wavelength	Single Band	1260~1360 or 1510~1620			nm
	Dual Band	1260~1360 and 1510~1620			
	Broad Band	1260~1620			
Insertion Loss ^{[1], [2]}			0.6	1.1	dB
Wavelength Dependent Loss			0.15	0.30 ^[3]	dB
Polarization Dependent Loss				0.1	dB
Return Loss ^{[1], [2]}		55			dB
Cross Talk ^{[1], [2]}		55			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
Switching Type		Latching or Non-Latching			
Operating Temperature		-5		+70	°C
Storage Temperature		-40		+85	°C
Optical Power Handling			300	500	mW

Notes:

[1]. Within operating temperature and SOP.

[2]. Excluding Connectors.

[3]. Dual and Broad Band.

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

Legal notices: All product information is believed to be accurate and is subject to change without notice. Information contained herein shall legally bind Agiltron only if it is specifically incorporated into the terms and conditions of a sales agreement. Some specific combinations of options may not be available. The user assumes all risks and liability whatsoever in connection with the use of a product or its application.

Rev 01/02/24

© Photonwares Corporation

P +1 781-935-1200

E sales@photonwares.com

W www.agiltron.com

Information contained herein is deemed to be reliable and accurate as of the issue date. Photonwares reserves the right to change the design or specifications at any time without notice. Agiltron is a registered trademark of Photonwares Corporation in the U.S. and other countries.

LightBend™ Quad 2x2 Bypass Fiber Optic Switch

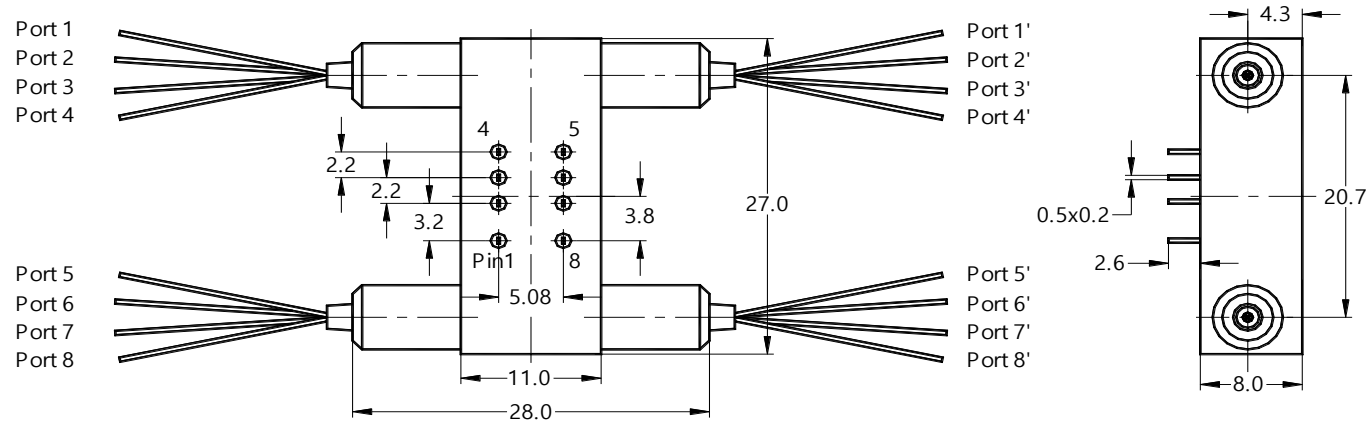
(Bidirectional)

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



DATASHEET

Mechanical Dimensions (Unit: mm)



*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

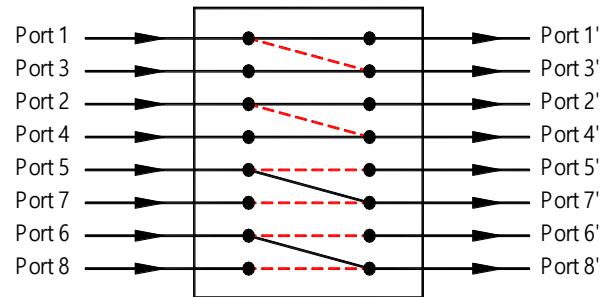
Application Note: Applying a constant driving voltage increases stability. The switches can also be driven by a pulse mode using Agiltron recommended circuit for energy saving.

Optical Path	Electrical 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'	0	5V	Close	Open	Open	Close
1→3', 2→4' 5→5', 6→6' 7→7', 8→8'	5V	0	Open	Close	Close	Open

Non-Latching Type

Optical Path	Electrical 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	0	Open	Close	Close	Open

Functional Diagram



LightBend™ Quad 2x2 Bypass Fiber Optic Switch

(Bidirectional)

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



DATASHEET

Ordering Information (Part Number)

Prefix	Type	Wavelength	Switch	Package	Fiber Type	Fiber Cover	Fiber Length	Connector ^[2]
LBQB ^[1]	Quad 2x2=22 Special = 00	1060 = 1 C+L = 2 1310 = 3 1410 = 4 1550 = 5 850 = 8 1310 & 1550 = 9 1260~1620 = B Special = 0	Latching = 1 Non-latching = 2 Special = 0	Standard = 1 Special = 0	SMF-28 = 1 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/PC = 7 Duplex LC/PC = 8 LC/UPC = U Special = 0

[1]. **LBQB**: Light Bend Quad 2x2 Bypass Switch.

[2]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters (<5 µm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

LightBend™ Quad 2x2 Bypass Fiber Optic Switch

(Bidirectional)

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



DATASHEET

Driver Reference Design

