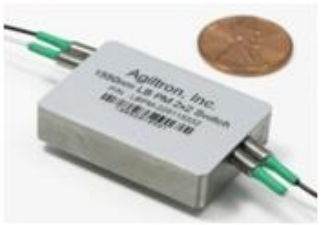
LightBend™
Full 2x2 Series Fiber Optic Switch
(SM, MM, PM, SM High power, MM High power, PM High power)

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

Product Description

The LB series Full 2x2 High Power fiber optic switch is a polarization-maintaining fiber switch, which connects optical channels by directing or blocking an incoming optical signal into the output fiber. This is achieved using a patent pending opto-mechanical configuration and achieved via an electrical control signal. A latching version preserves the selected optical path after the drive signal has been removed, while the non-latching version defaults to either the open or close state when power is removed. The switch has integrated electrical position sensors. The new material-based advanced design significantly reduces moving part position sensitivity, offering high stability as well as an unmatched low cost. Electronic driver is available for this series of switches. The switch is bidirectional. The same format can accommodate configurations of Full 2x2 SM Switch, Full 2x2 MM Switch, Full 2x2 PM Switch, Full 2x2 SM High power Switch, Full 2x2 MM High power Switch, and Full 2x2 PM High power Switch.



Features

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

Applications

- Fault Protection
- Channel Add/Drop
- Channel Switching
- Instrumentation

RoHS Compliant

Performance Specification

LB 2x2 High Power Switch		Min	Typical	Max	Unit
Operation Wavelength			850, 980, 1060, 1310, 1550		nm
Insertion Loss [1], [2]			0.6	1.1	dB
Polarization Dependent Loss (SM)				0.1	dB
Extinction Ratio (PM)		18	25		dB
Cross Talk [1]	SM, PM	50		0.25	dB
	MM	35			dB
Return Loss [1]	SM, PM	50		0.1	dB
	MM	35			dB
Repeatability				±0.02	dB
Durability		10^7			Cycle
Switching Time			3	10	ms
Operating Voltage		4.5	5	6	VDC
Operating Current (each Relay)			30	60	mA
Switching Type			Latching / Non-Latching		
Optical Power Handling	Standard		300	500	mW
	High Power		3	5	W
Operating Temperature		-5		70	°C
Storage Temperature		-40		85	°C
Fiber Type	Single Mode	SMF-28, or equivalent			
	Multimode	MM 50/125, MM 62.5/125, or equivalent			
	PM	Panda 250 PM, or equivalent			

Note:
[1] Exclude connectors.
[2] Light source CPR<14 dB.
[3] Within operating temperature and SOP.

Revision: 5-9-19

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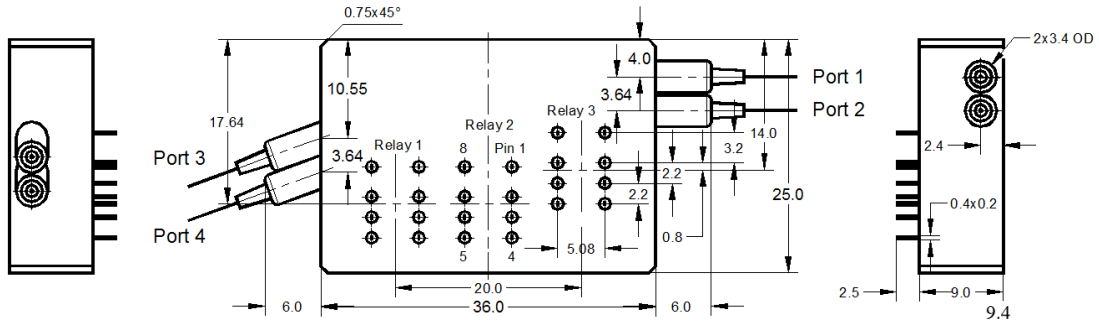
Mechanical Dimensions (Unit: mm)



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

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	Relay	Electrical Drive		Status Sensor			
		Pin 1	Pin 8	Pin2-3	Pin3-4	Pin5-6	Pin 6-7
Port 1 → Port 3 Port 2 → Port 4	Relay 1, 3	GND	5V	Close	Open	Open	Close
	Relay 2	5V	GND	Open	Close	Close	Open
Port 1 → Port 4 Port 2 → Port 3	Relay 1, 3	5V	GND	Open	Close	Close	Open
	Relay 2	GND	5V	Close	Open	Open	Close

Non-Latching Type

Optical Path	Relay	Electrical Drive		Status Sensor			
		Pin 1	Pin 8	Pin2-3	Pin3-4	Pin5-6	Pin 6-7
Port 1 → Port 3 Port 2 → Port 4	Relay 1, 3	No Power		Close	Open	Open	Close
	Relay 2	5V	GND	Open	Close	Close	Open
Port 1 → Port 4 Port 2 → Port 3	Relay 1, 3	5V	GND	Open	Close	Close	Open
	Relay 2	No Power		Close	Open	Open	Close

RoHS Compliant

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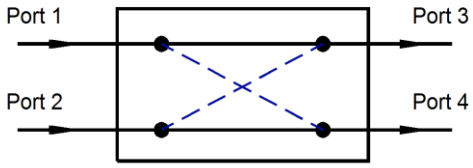
Functional Diagram



LB Full 2x2 High Power Switch

Ordering Information

□□□□-	□□	□	□	□	□	□	□	□
	Type	Wavelength	Switch	Package	Fiber Type		Fiber Length	Connector
LBSW [1] LBMM [2] LBPM [3] LBHP [4] LBMH [5] LBPH [6]	2x2=22 Special=00	1060=1 1310=3 1550=5 780=7 850 =8 Special=0	Latching=1 Non-latching=2 Special=0	Standard=1 Special=0	SMF-28=1 MM 50/125=5 MM 62.5/125 =6 PM 250=B Special=0	Bare fiber=1 900 µm tube=3 Special=0	0.25 m=1 0.5 m=2 1.0 m=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

[1]. **LBSW**: **LB** Full 2x2 SM **SW**ITCH.
[2]. **LBMM**: **LB** Full 2x2 **M**ULTI**M**ODE Switch.
[3]. **LBPM**: **LB** Full 2x2 **PM** Switch.
[4]. **LBSH**: **LB** Full 2x2 **S**M **H**igh Power Switch.
[5]. **LBMH**: **LB** Full 2x2 **M**M **H**igh Power Switch.
[6]. **LBPH**: **LB** Full 2x2 **P**M **H**igh Power Switch.

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