

LightBend™ Dual 2x2 Bypass Single-Mode Fiberoptic Switch

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

Product Description

The LB Dual 2x2 Bypass OptoMechanical Fiberoptic switch is an integrated single device with 8 fiber ports. Based on Agiltron's patented technologies, the switch is designed especially for protection and restoration applications. The switch is activated by a low voltage pulse between two states, and the latching operation preserves the selected optical path after the drive signal has been removed. The switch has integrated electrical contact based status sensors. The design significantly reduces moving part position sensitivity, offering unprecedented high stability as well as an unmatched low cost. Electronic driver and circuit design assistance are available for this series of switches.

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 Dual 2x2 Bypass Switch | Min | Typical | Max | Unit |
|---|------------------------------------|---------|-----------------------|--------|
| Wavelength | Single Band 1260-1360 or 1510-1610 | | | nm |
| | Dual Band 1260-1360 and 1510-1610 | | | |
| | Broad Band 1260-1610 | | | |
| Insertion Loss ^{1,2} | | 0.7 | 1.0(DW ³) | dB |
| Wavelength Dependent Loss | | 0.15 | 0.4(DW ³) | dB |
| Polarization Dependent Loss | | | 0.1 | dB |
| Return Loss ^{1,2} | 55 | | | dB |
| Cross Talk ¹ | 55 | | | dB |
| Switching Time | | 4 | 10 | ms |
| Repeatability | | | ± 0.02 | dB |
| Durability | 10 ⁷ | | | Cycles |
| Operating Optical Power | | 300 | 500 | mW |
| Operating Voltage | 5 | 5 | 7 | VDC |
| Operating Current (Latching/Non-Latching) | | 30 | 60 | mA |
| Voltage Pulse Width (square) | | 20 | | ms |
| 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:

¹ Within operating temperature and SOP.

² Excluding Connectors.

³ DW: Dual band and Broad Band.

Applications

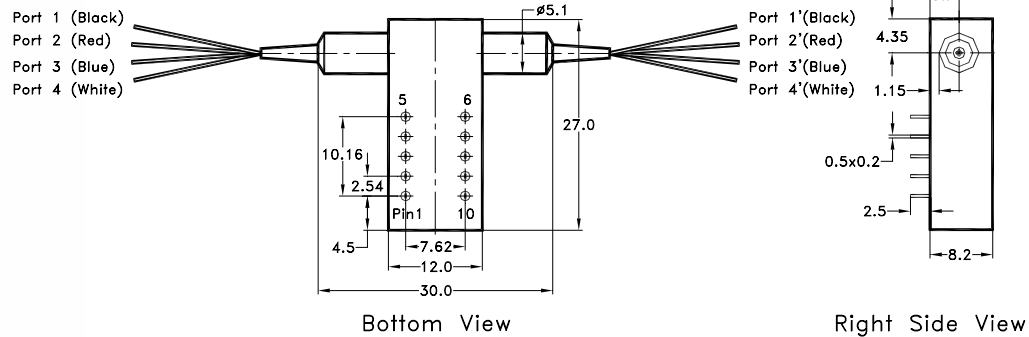
- Protection
- Instrumentation



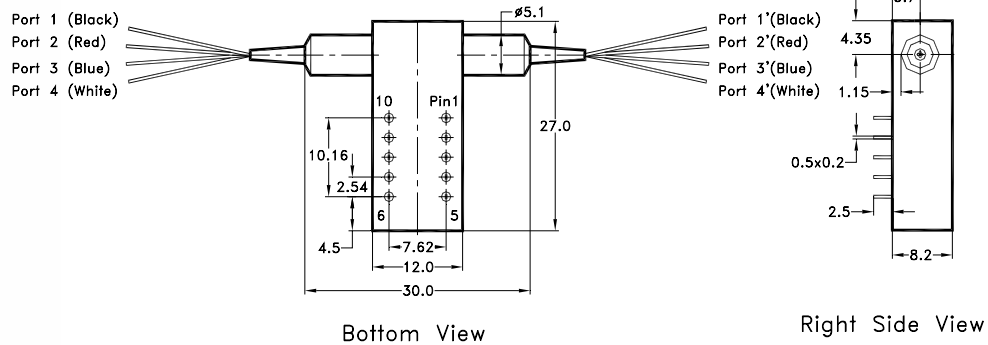
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Mechanical Dimensions (Unit:mm)

Latching Type



Non-Latching Type



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 RS232 interfaces and Windows™ GUI

Latching Type

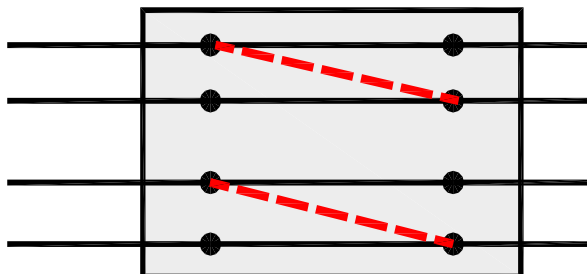
| Optical Path | Electric Drive | | | | Status Sensor | | | |
|--|----------------|----------|-------|-------|---------------|---------|---------|---------|
| | Pin 1 | Pin 10 | Pin 5 | Pin 6 | Pin 2-3 | Pin 3-4 | Pin 7-8 | Pin 8-9 |
| Port 1 → Port 1' Port 2 → Port 2' Port 3 → Port 3' Port 4 → Port 4' | GND | 5V Pulse | N/A | N/A | Close | Open | Open | Close |
| Port 1 → Port 3' Port 2 → Port 4' | 5V Pulse | GND | N/A | N/A | Open | Close | Close | Open |

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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 |
| Port 1 → Port 1' Port 2 → Port 2' Port 3 → Port 3' Port 4 → Port 4' | 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 |

Functional Diagram



LB Dual 2x2 Bypass Switch

Ordering Information

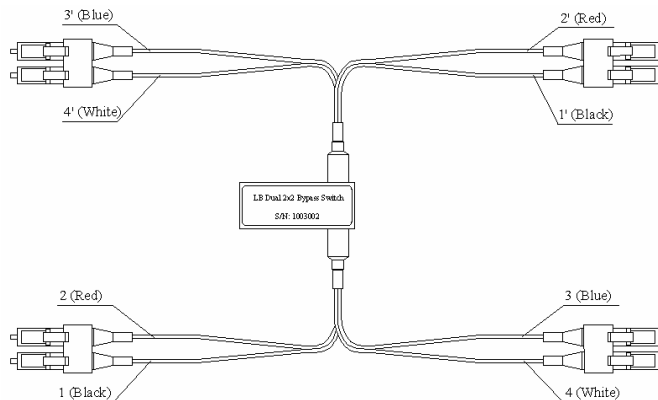
| LSBW- | Type | Wavelength | Switch | Package | Fiber Type | Fiber Length | Connector | |
|-------|------------|--|---|-------------------------|--|---|---|---|
| 4 2 | Special=00 | 1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550=9 Special=0 | Latching Type Single Coil=2 Latching Type Dual Coil=1 Non-latch=3 | Standard=1 Special=0 | SMF-28=1 Corning XB=2 Draka BBE=3 Special=0 | Bare fiber=1 900um 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 |



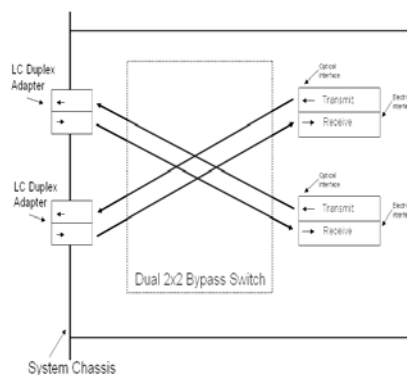
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Application

Prepared with 4 duplex LC connectors and customized fiber length for convenient installation



Normal Mode



Bypass Mode

