

# CrystaLatch™ Mini 1x3, 1x4 Solid State Fiberoptic Switch

(Protected by U.S. patents 7224860, 6757101, 6577430 and pending patents)

## Product Description

The CL Series 1x3,1x4 Mini fiber optical switch connects optical channels by redirecting an incoming optical signal into a selected output fiber. This is achieved using patented non-mechanical configurations and activated via an electrical control signal. Latching operation preserves the selected optical path after the drive signal has been removed. The all solid state CL 1x3,1x4 fiberoptic switch features low insertion loss, high extinction ratio, high channel isolation, and extremely high reliability and repeatability. It is designed to meet the most demanding switching requirements of continuous operation without failure, longevity, operation under shock/vibration environment and large temperature variations, and fast response time.

The switch also has build-in circulator and isolator functions. Electronic driver is available for this series of switches.



## Performance Specifications

| CL Series 1x3, 1x4 Mini Switch    | Min                   | Typical | Max  | Unit  |
|-----------------------------------|-----------------------|---------|------|-------|
| Operation Wavelength <sup>1</sup> | 1520                  | 1550    | 1580 | nm    |
|                                   | 1295                  | 1310    | 1325 | nm    |
| Insertion Loss <sup>2</sup>       | 0.8                   | 1.3     | 1.5  | dB    |
| Polarization Dependent Loss       |                       | 0.1     | 0.25 | dB    |
| Cross Talk                        | 40                    | 45      | 55   | dB    |
| Polarization Mode Dispersion      |                       | 0.1     | 0.2  | ps    |
| Return Loss <sup>2</sup>          | 50                    |         |      | dB    |
| Switch Time (Rise, Fall)          | 5                     | 50      | 200  | µs    |
| Repetition Rate                   |                       | 2K      |      | Hz    |
| Durability                        | 10 <sup>11</sup>      |         |      | cycle |
| Operating Temperature             | -5 <sup>3</sup>       |         | 70   | °C    |
| Optical Power <sup>3</sup>        |                       | 300     | 500  | mW    |
| Storage Temperature               | -40                   |         | 85   | °C    |
| Switch type                       | Solid-Status Latching |         |      |       |
| Fiber Type                        | Corning SMF28         |         |      |       |
| Package Dimension                 | 42.0L x 20.0W x 7.8H  |         |      | mm    |

1. Agiltron can achieve same SPEC at L band

2. Measured without connectors

3. Continuous operation, for pulse operation call.

## Features

- Solid-State High Speed
- Non-Mechanical
- Ultra-High Reliability
- Fail-Safe Latching
- Low Insertion Loss
- Direct Low Voltage Drive
- Compact
- Low Cost

## Applications

- Optical Signal Routing
- Network Protection/Restoration
- Burst Switching
- Configurable Add/Drop
- Signal Monitoring
- Instrumentation

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## Electrical Driving Information

The switch is actuated by applying a voltage pulse. Applying one polarity pulse, one light path will be connected and latched to the position. Applying a reversed polarity pulse, another light path will be connected and latched to the position after pulse removed.

| Parameter               | Minimum | Typical | Maximum | Unit |
|-------------------------|---------|---------|---------|------|
| Resistance (each group) | 15      | 18      | 22      | Ω    |
| Switch Voltage          | 2.25    | 2.5     | 2.75    | V    |
| Pulse Duration          | 0.2     | 0.3     | 0.5     | ms   |

Driving kit with RS232 and TTL interfaces and Windows™ GUI is available

### CL 1x4 Switch

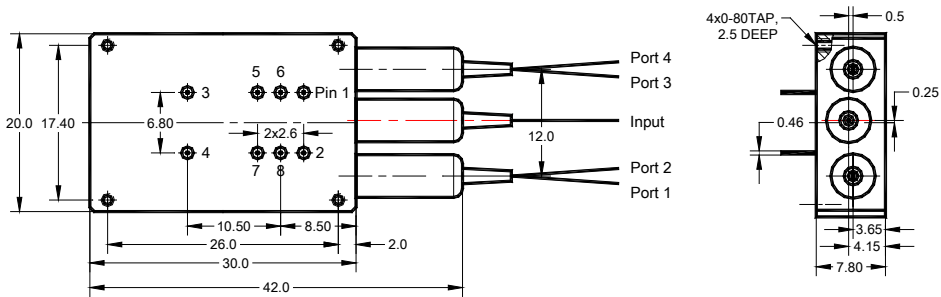
| Optical Path   | Pin Group 1 |   | Pin Group 2 |   | Pin Group 3 |   | Pin Group 4 |   |
|----------------|-------------|---|-------------|---|-------------|---|-------------|---|
|                | 1           | 2 | 3           | 4 | 5           | 6 | 7           | 8 |
| Input → Port 1 | +           | - | +           | - | -           | + | +           | - |
| Input → Port 2 | -           | + | -           | + | -           | + | +           | - |
| Input → Port 3 | +           | - | -           | + | +           | - | -           | + |
| Input → Port 4 | -           | + | +           | - | +           | - | -           | + |

### CL 4x1 Switch

| Optical Path    | Pin Group 1 |   | Pin Group 2 |   | Pin Group 3 |   | Pin Group 4 |   |
|-----------------|-------------|---|-------------|---|-------------|---|-------------|---|
|                 | 1           | 2 | 3           | 4 | 5           | 6 | 7           | 8 |
| Port 1 → Output | -           | + | -           | + | +           | - | -           | + |
| Port 2 → Output | +           | - | +           | - | +           | - | -           | + |
| Port 3 → Output | -           | + | +           | - | -           | + | +           | - |
| Port 4 → Output | +           | - | -           | + | -           | + | +           | - |

Note: "+" is 2.5~3.0V Pulse. "-" is Ground.

## Mechanical Footprint Dimensions (mm)



## Ordering Information

| CLMN-   | Type                                 | Wavelength                    | Switch                    | Package                 | Fiber Type   | Fiber Length                                   | Connector  |
|---|--------------------------------------|-------------------------------|---------------------------|-------------------------|--|--|--|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | 1x3=13<br>3x1=31<br>1x4=14<br>4x1=41 | 1310=3<br>1550=5<br>Special=0 | Dual Stage=2<br>Special=0 | Standard=1<br>Special=0 | SMF-28=1<br>Special=0<br>Bare fiber=1<br>900µm loose tube=3<br>Special=0 | 0.25m = 1<br>0.5m = 2<br>1.0m = 3<br>Special=0 | None = 1<br>FC/PC = 2<br>FC/APC = 3<br>SC/PC = 4<br>SC/APC = 5<br>ST/PC = 6<br>LC = 7<br>Special = 0 |