CrystaLatch™
1x1,1x2 Fiber Optic Switch Dual Stage

(Aerospace, OutSpace, and Undersea qualified)

(SM, PM, High Power, Bidirectional, Isolator/Circulate Build-in)

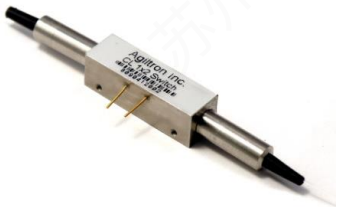
(Protected by U.S. patents 7224860，6757101，6577430 and pending patents)

Product Description

The CL Series Fiber Optical Switch redirects an incoming optical signal into a selected output fiber, 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 fiber optic switch features low insertion loss, high extinction ratio, high channel isolation, and extremely high reliability and repeatability. Available configurations include polarization-independent; polarization-maintaining; bidirectional, and high power. It is designed to meet the most demanding switching requirements of continuous operation without failure, over 25-year longevity, operation under shock/vibration environment and large temperature variations, and fast response time.

The switch also has circulator and isolator functions. An electronic driver is available for this series of switches.

The magneto-optical crystals used in the CL switches have no fatigue nor drift effect.



Features

- Solid-State high speed
- Ultra-high reliability
- Fail-safe latching
- Low insertion loss
- Direct low voltage drive
- Compact
- Low cost

Performance Specifications

CL 1x1, 1x2 Series Switch		Min	Typical	Max	Unit
Operation Wavelength [1]		1520	1550	1580	nm
		1295	1310	1325	
Insertion Loss [2]			0.7	1.0 (1.2 [4])	dB
Cross Talk [2]	Bidirectional Series	35	50		dB
	Unidirectional Series	40	50		dB
Return Loss [2]		50	55		dB
PDL (SM Series)			0.1	0.2	dB
Extinction Ratio (PM Series)		18	25		dB
Optical Switching Speed (rise, fall)		5		10	μs
Repetition Rate			2K		Hz
Polarization Mode Dispersion			0.1	0.2	ps
Operating Temperature		-5		70	°C
Storage Temperature		-40		85	°C
Optical Power Handling [3]			300	500	mW
				2	W
Package Dimension		58.2L x 8.4W x 8.4H			mm
Durability		10^{15}			cycles

[1]. Agiltron can achieve the same SPEC at the L band.

[2]. Measured without connectors. Each connector adds 0.3dB

[3]. Special operating temperature -40 to +85 °C is available with Ordering Information.

[4]. For special operating temperatures, lower than -20 °C and higher than +70 °C.

Applications

- Optical channel blocking
- Configurable Add/Drop
- System monitoring
- Instrumentation

RoHS Compliant

Revised on 03/24/23

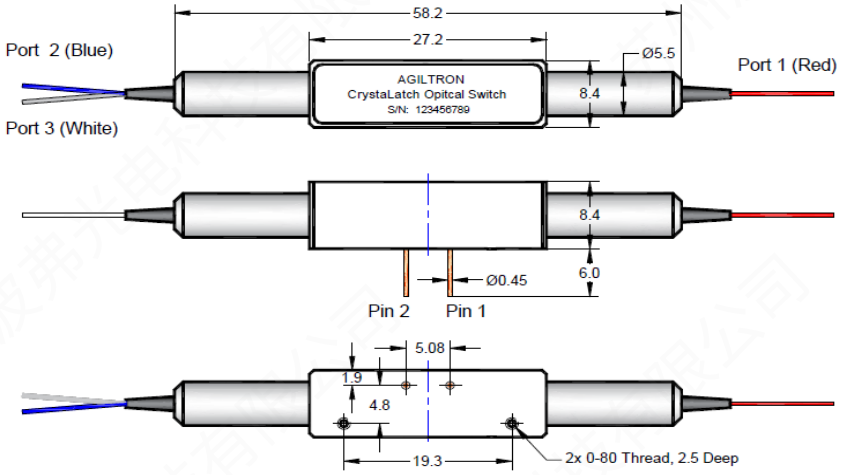
CrystaLatch™

1x1, 1x2 Series Fiber Optic Switch

(Full aerospace, OutSpace, and Undersea qualified)

(SM, PM, High Power, Bidirectional, Isolator/Circulate Build-in)

Mechanical Dimensions (Unit: mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

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
Drive Voltage	4.5	5	5.5	V
Resistance (each Pin Group)	15	18	22	Ω
Pulse Duration	0.2	0.3	0.5	ms

Driving kit with USB and TTL interfaces and Windows™ GUI is available. We also offer RS232 interface as an option – please contact Agiltron sales.

Bidirectional Series 1x1, 1x2 or 2x1 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	1x2 or 2x1		
Port 1 ↔ Port 2	Port 1 ↔ Port 2	-	+
Dark	Port 1 ↔ Port 3	+	-

"+" is 4.5 ~ 5.5 V pulse, typical pulse is 5 V. "-" is ground.

Unidirectional Series 1x1, 1x2 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	1x2		
Port 1 → Port 2	Port 1 → Port 2	-	+
Dark	Port 1 → Port 3	+	-

"+" is 4.5 ~ 5.5 V pulse, typical pulse is 5 V. "-" is ground.

Unidirectional Series 1x1, 2x1 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	2x1		
Port 2 → Port 1	Port 2 → Port 1	+	-
Dark	Port 3 → Port 1	-	+

"+" is 4.5 ~ 5.5 V pulse, typical pulse is 5 V. "-" is ground.

RoHS Compliant

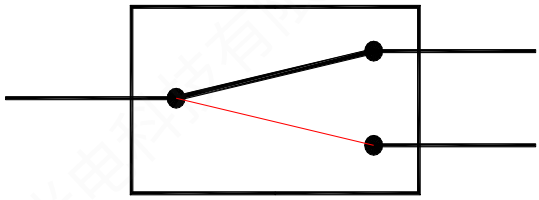
CrystaLatch™

1x1, 1x2 Series Fiber Optic Switch

(Full aerospace, OutSpace, and Undersea qualified)

(SM, PM, High Power, Bidirectional, Isolator/Circulate Build-in)

Function Diagram



CL 1x2 Series Switch

Ordering Information

	☐☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**Type**	**Wavelength**	**Switch**	**Package**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector [9]**
CLSW- [1] **CLPM-** [2] **CLHP-** [3] **CLBD-** [4] **CLPH-** [5] **CLHB-** [6] **CLPB-** [7] **CPHB-** [8]	1x1 = 11 1x2 = 12 2x1 = 21 Special = 00	1310 = 3 1550 = 5 Special = 0	Dual Stage[10] = 2 Special = 0	Standard = 3 -40~+85°C = A -40~+70°C = B -20~+85°C = C -20~+70°C = D Special = 0	SMF-28 = 1 PM 1550 = B PM 1310 = D Special = 0	Bare fiber = 1 900 um 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 = 8 Special = 0

[1]. **CLSW**: CrystaLatch 1x1, 1x2 SM SWITCH.
[2]. **CLPM**: CrystaLatch 1x1, 1x2 PM Switch.
[3]. **CLHP**: CrystaLatch 1x1, 1x2 SM High Power Switch.
[4]. **CLBD**: CrystaLatch 1x1, 1x2 SM BIDIRECTIONAL Switch.
[5]. **CLPH**: CrystaLatch 1x1, 1x2 PM High Power Switch.
[6]. **CLHB**: CrystaLatch 1x1, 1x2 High Power Bidirectional Switch.
[7]. **CLPB**: CrystaLatch 1x1, 1x2 PM Bidirectional Switch.
[8]. **CPHB**: CrystaLatch 1x1, 1x2 PM High Power Bidirectional Switch.
[9]. Please contact us for high power connectors.
[10]. Using two switching cores for high on/off ratio

RoHS Compliant