

CrystaLatch™

1x1, 1x2 Fiber Optic Switch Single Stage

(Aerospace, OutSpace, and Undersea qualified)
(SM, PM, High Power, Bidirectional, Isolator/Circulate Build-in)

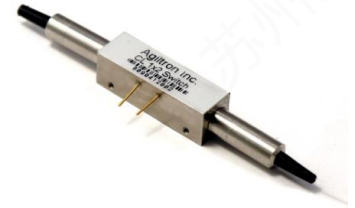
(Protected by U.S. patents 7224860, 6757101, 6577430 and pending patents)

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.



Performance Specifications

Parameter	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	Bidirectional	18	25	dB
	Unidirectional	20	28	dB
Return Loss	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.

Features

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

Applications

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



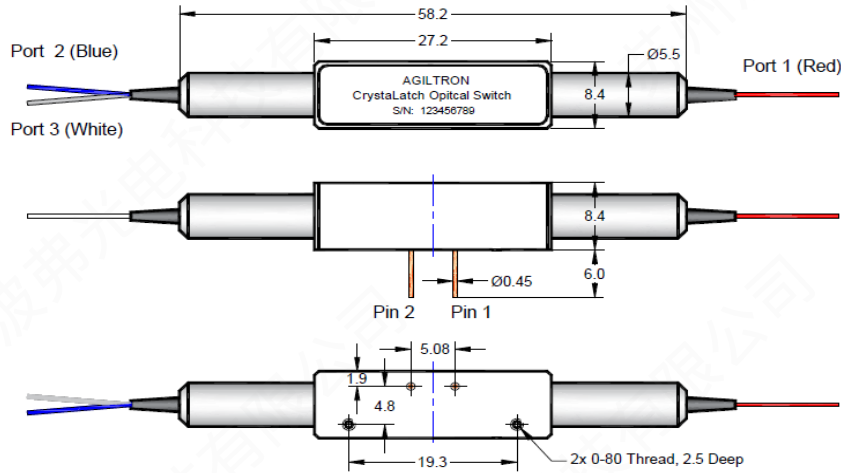
Revised on 02/13/23

CrystaLatch™

1x1, 1x2 Fiber Optic Switch Single Stage

(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	2.25	2.5	2.75	V
Resistance (each Pin Group)	7	9	11	Ω
Pulse Duration	0.2	0.3	0.5	ms

Driving PCB with RS232, USB, TTL, and Windows™ GUI is available.

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	0	+
Dark	Port 1 ↔ Port 3	+	0

"+" is high voltage pulse, "0" is zero voltage.

Unidirectional Series 1x1, 1x2 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	1x2		
Port 1 → Port 2	Port 1 → Port 2	0	+
Dark	Port 1 → Port 3	+	0

"+" is high voltage pulse, "0" is zero voltage.

Unidirectional Series 1x1, 2x1 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	2x1		
Port 2 → Port 1	Port 2 → Port 1	+	0
Dark	Port 3 → Port 1	0	+

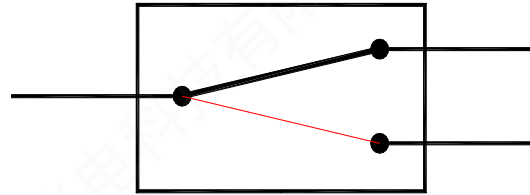
"+" is high voltage pulse, "0" is zero voltage.

CrystaLatch™

1x1, 1x2 Fiber Optic Switch Single Stage

(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]	1x1 = 11	1310 = 3	11 Stage ^[10] = 1	Standard = 3	SMF-28 = 1	Bare fiber = 1	0.25m = 1	None = 1
CLPM- ^[2]	1x2 = 12	1550 = 5	Special = 0	-40~+85°C = A	PM 1550 = B	900 um tube = 3	0.5m = 2	FC/PC = 2
CLHP- ^[3]	2x1 = 21	Special = 0		-40~+70°C = B	PM 1310 = D	Special = 0	1.0m = 3	FC/APC = 3
CLBD- ^[4]	Special = 00			-20~+85°C = C	Special = 0		Special = 0	SC/PC = 4
CLPH- ^[5]				-20~+70°C = D				SC/APC = 5
CLHB- ^[6]				Special = 0				ST/PC = 6
CLPB- ^[7]								LC/PC = 7
CPHB- ^[8]								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]. There isn't any connector in high power switches. Please contact us for high power connectors.

[10]. Using one switching cores for low cost