



# CrystaLatch™

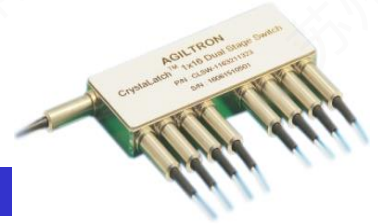
## 1x16 Series Fiber Optic Switch

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

### Product Description

The CL Series 1x16 Bidirectional Solid State fiber optical switch connects optical channels by redirecting an incoming optical signal into a selected output fiber without mechanical movement. This is achieved using patented magneto-optical 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 1x16 Bidirectional fiber optic 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.

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



### Features

- High Speed
- Non-Mechanical
- High Reliability
- Fail-Safe Latching
- Low Insertion Loss
- Rugged
- Compact
- Cost Effective
- Direct Low Voltage Drive

### Performance Specifications

CL 1x16 Series Switch		Min	Typical	Max	Unit
Operation Wavelength [1]		1520	1550	1580	nm
		1295	1310	1325	nm
Insertion Loss [2]	1-Stage		1.3	2.0	dB
	2-Stage		1.5	2.6	dB
Cross Talk [2]	Bidirectional Series Switch	1-Stage	17	25	dB
		2-Stage	34	50	dB
	Other Series	1-Stage	18	25	dB
		2-Stage	36	50	dB
Return Loss [2]		50		dB	
PDL (Except PM Series Switch)			0.15	0.3	dB
Extinction Ratio (PM Series only)		18	25		dB
Polarization Mode Dispersion				0.2	ps
Optical Switching Speed (Rise, Fall)		5		10	µs
Repetition Rate			2K		Hz
Durability		10 <sup>15</sup>			cycle
Optical Power	High Power Series			2	W
	Others		300	500	mW
Operating Temperature		-5		+65	°C
Storage Temperature		-40		+85	°C
Weight (without connectors)			100		g
Package Dimension			84.5L x 42.5W x 8.5H		mm

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

[2]. Measured without connectors.

### Applications

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

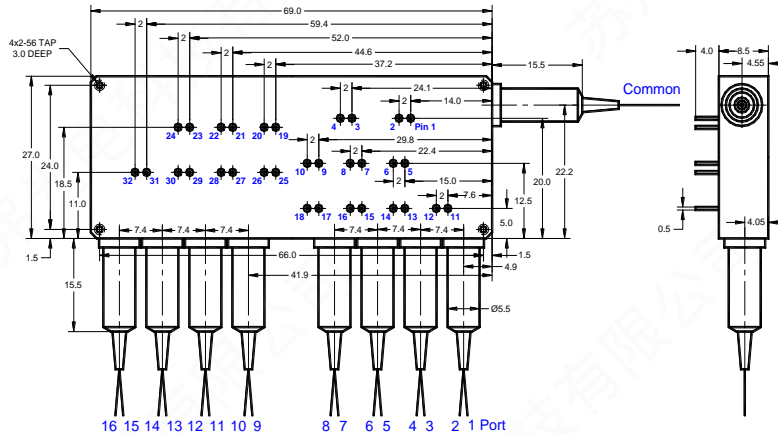


Revised on 02/13/23  
(Click here for latest revision)

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## 1x16 Series Fiber Optic Switch

### Mechanical Dimensions (Unit: mm)



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

### Electrical Driving Information

Each switching point 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	2.5	2.5	2.75	V
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.

### CL 1x16 1-Stage Switch Driving Table: TBD

### 2-Stage Bidirectional Series 1x16, or 16x1 Switch Driving Table

Optical Path	PG1 <sup>[1]</sup>		PG2		PG3		PG4		PG5		PG6		PG7		PG8		PG9		PG10		PG11		PG12		PG13		PG14		PG15		PG16		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
C↔P1 <sup>[2]</sup>	+	-	+	-	+	-	+	-	+	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C↔P2	-	+	-	+	+	-	+	-	+	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P3	+	-	+	-	-	+	+	-	+	-	-	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P4	-	+	-	+	-	+	+	-	+	-	-	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P5	+	-	+	-	-	+	-	+	+	-	-	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P6	-	+	-	+	-	+	-	+	+	-	-	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P7	+	-	+	-	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P8	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P9	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P10	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P11	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P12	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P13	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P14	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P15	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
C↔P16	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+

[1]. PG1: Pin Group 1. [2]. C: Common Port. P1: Port 1.

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## 1x16 Series Fiber Optic Switch

### 2-Stage Unidirectional Series 1x16 Switch Driving Table

Optical Path	PG1 <sup>[1]</sup>		PG2		PG3		PG4		PG5		PG6		PG7		PG8		PG9		PG10		PG11		PG12		PG13		PG14		PG15		PG16			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32		
C→P1 <sup>[2]</sup>	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+		
C→P2	-	+	-	+	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C→P3	+	-	+	-	-	+	+	-	+	-	-	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C→P4	-	+	-	+	-	+	+	-	+	-	-	+	+	-	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C→P5	+	-	+	-	-	+	-	+	+	-	-	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C→P6	-	+	-	+	-	+	-	+	+	-	-	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C→P7	+	-	+	-	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C→P8	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
C→P9	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+
C→P10	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+
C→P11	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+
C→P12	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+
C→P13	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+
C→P14	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+
C→P15	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+
C→P16	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-	+

[1]. PG1: Pin Group 1. [2]. C: Common Port. P1: Port 1.

### 2-Stage Unidirectional Series 16x1 Switch Driving Table

Optical Path	PG1 <sup>[1]</sup>		PG2		PG3		PG4		PG5		PG6		PG7		PG8		PG9		PG10		PG11		PG12		PG13		PG14		PG15		PG16		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
P1→C <sup>[2]</sup>	-	+	-	+	-	+	-	+	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P2→C	+	-	+	-	-	+	-	+	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P3→C	-	+	-	+	+	-	-	+	-	+	+	-	-	+	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P4→C	+	-	+	-	+	-	-	+	-	+	+	-	-	+	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P5→C	-	+	-	+	+	-	+	-	-	+	+	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P6→C	+	-	+	-	+	-	+	-	-	+	+	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P7→C	-	+	-	+	+	-	+	-	+	-	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P8→C	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-
P9→C	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-
P10→C	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	-	-	+	-	+	-	+	-
P11→C	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	-	+	+	-	+	+	-	-	+	-	+	-	+	-
P12→C	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	-	+	+	-	+	+	-	-	+	-	+	-	+	-
P13→C	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	-	+	-	+	+	-	+	-	+	-	+	-	+	-
P14→C	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	-	+	-	+	+	-	+	-	+	-	+	-	+	-
P15→C	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	-	+	-	+	-	+	+	-	+	-	+	-	+	-
P16→C	+	-	-	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	-	+	-	+	-	+	+	-	+	-	+	-	+	-

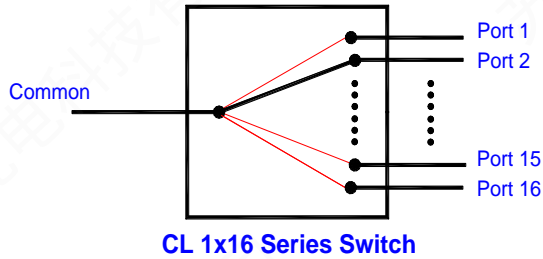
[1]. PG1: Pin Group 1. [2]. C: Common Port. P1: Port 1.



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## 1x16 Series Fiber Optic Switch

### Functional Diagram



### Ordering Information

Prefix	Type	Wavelength	Switch	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
CLSW- <sup>[1]</sup>	1x9=109	1310=3	1-Stage=1	Standard=1	SMF-28=1	Bare fiber=1	0.25m=1	None=1
CLPM- <sup>[2]</sup>	9x1=091	1550=5	2-Stage=2	Special=0	PM 1550=B	900µm tube=3	0.5m=2	FC/PC=2
CLHP- <sup>[3]</sup>	1x10=110	Special=0	Special=0		PM 1310=D	Special=0	1.0m=3	FC/APC=3
CLBD- <sup>[4]</sup>	10x1=101						Special=0	SC/PC=4
CLPH- <sup>[5]</sup>	...							SC/APC=5
CLHB- <sup>[6]</sup>	1x16=116							ST/PC=6
CLPB- <sup>[7]</sup>	16x1=161							LC=7
CPHB- <sup>[8]</sup>	Special=000							Duplex LC=8 MTP=9 Special=0

- [1]. **CLSW**: CrystaLatch 1x16 **SWITCH**.
- [2]. **CLPM**: CrystaLatch 1x16 **PM** Switch.
- [3]. **CLHP**: CrystaLatch 1x16 **High Power** Switch.
- [4]. **CLBD**: CrystaLatch 1x16 **BIDIRECTIONAL** Switch.
- [5]. **CLPH**: CrystaLatch 1x16 **PM High Power** Switch.
- [6]. **CLHB**: CrystaLatch 1x16 **High Power Bidirectional** Switch.
- [7]. **CLPB**: CrystaLatch 1x16 **PM Bidirectional** Switch.
- [8]. **CPHB**: CrystaLatch 1x16 **PM High Power Bidirectional** Switch.