

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 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 built-in Circulator and isolator functions. Electronic driver is available for this series of switches.



Performance Specifications

CL 1x16 Series Switch	Min	Typical	Max	Unit	
Operation Wavelength ^[1]	1520	1550	1580	nm	
	1295	1310	1325	nm	
Insertion Loss ^[2]		1.5	2.6	dB	
Cross Talk ^[2]	Bidirectional Series Switch		34	50	dB
	Others		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	
Switch Speed (Rise, Fall)		50	200	μs	
Repetition Rate		2K		Hz	
Durability	10 ¹⁴			cycle	
Optical Power	High Power Series		3	5	W
	Others		300	500	mW
Switch Type	Solid-State Latching				
Operating Temperature	-5		65	°C	
Storage Temperature	-40		85	°C	
Fiber Type	SMF-28 fiber, Panda PM fiber, or equivalent				
Package Dimension	84.5L x 42.5W x 8.5H			mm	

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

[2]. Measured without connectors.

Features

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

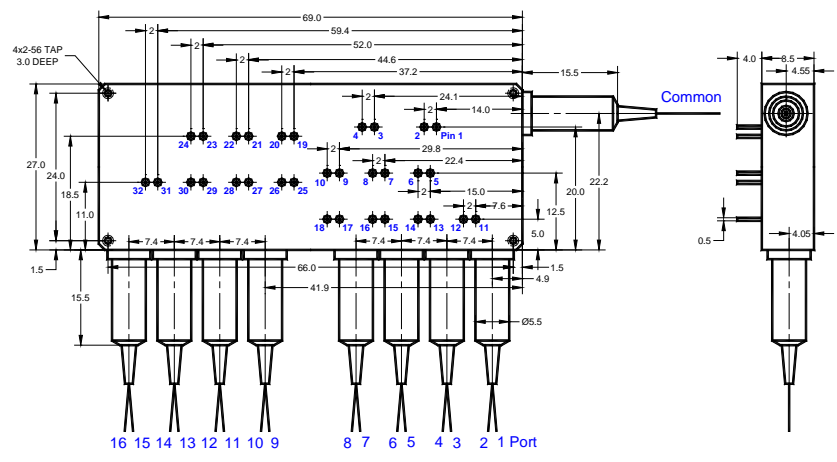
Applications

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



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Mechanical Dimensions (Unit: mm)



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.

Bidirectional Series 1x16, or 16x1 Switch Driving Table

Optical Path	PG1 ^[1]		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 ^[2]	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+		
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.



CrystaLatch™ 1x16 Series Fiber Optic Switch

Unidirectional Series 1x16 Switch Driving Table

Optical Path	PG1 ^[1]		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 ^[2]	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	+	-	+	-	+	-	+	
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	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	+	-	

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Unidirectional Series 16x1 Switch Driving Table

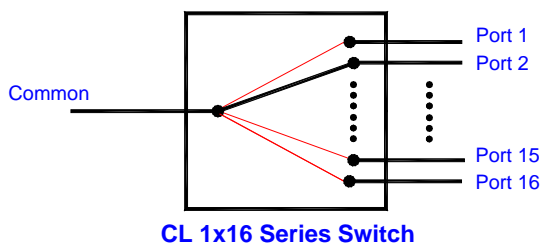
Optical Path	PG1 ^[1]		PG2		PG3		PG4		PG5		PG6		PG7		PG8		PG9		PG10		PG11		PG12		PG13		PG14		PG15		PG16	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
P1→C ^[2]	-	+	-	+	-	+	-	+	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
P2→C	+	-	+	-	-	+	-	+	-	+	-	+	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+
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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Functional Diagram



Ordering Information

Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector
CLSW ^[1]	1310=3	Dual Stage=2	Standard=1	SFM-28=1	Bare fiber=1	None=1
CLPM ^[2]	1550=5	Special=0	Special=0	Panda PM 250=B	900µm loose tube=3	FC/PC=2
CLHP ^[3]	Special=000			Special=0	Special=0	FC/APC=3
CLBD ^[4]						SC/PC=4
CLPH ^[5]						SC/APC=5
CLHB ^[5]						ST/PC=6
CLPB ^[6]						LC=7
CPHB ^[7]						Duplex LC=8
						MTP=9
						Special=0

- [1]. **CLSW**: CrystaLatch Dual Stage 1x16 **SWITCH**.
- [2]. **CLPM**: CrystaLatch Dual Stage 1x6 **PM** Switch.
- [3]. **CLHP**: CrystaLatch Dual Stage 1x16 **High Power** Switch.
- [4]. **CLBD**: CrystaLatch Dual Stage 1x16 **BIDIRECTIONAL** Switch.
- [5]. **CLPH**: CrystaLatch Dual Stage 1x16 **PM High Power** Switch.
- [6]. **CLHB**: CrystaLatch Dual Stage 1x16 **High Power Bidirectional** Switch.
- [7]. **CLPB**: CrystaLatch Dual Stage 1x16 **PM Bidirectional** Switch.
- [8]. **CPHB**: CrystaLatch Dual Stage 1x16 **PM High Power Bidirectional** Switch.

