

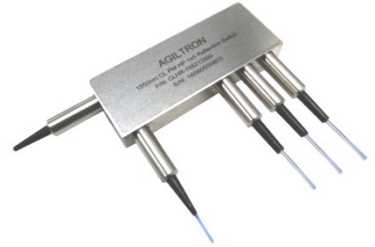
CrystalLatch™ 1x6 Fiber Optical Reflection Switch for LIDAR Sensor Applications (SM, PM, High Power)

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

Product Description

The CL 1x5 or 1x6 Series reflection switch connects optical channels by redirecting an incoming optical signal into a selected output fiber at the same time collect the reflected signal into a dedicate sensor port. This proprietary configuration is designed for sensor and LIDAR application, minimizing optical loss and eliminating the need for additional circulator or coupler. The switching 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.

This series of reflective switches are designed to meet the most demands of continuous operation without wear-out, longevity without fail, and live operation under vibration/shock, as well as -40 °C operation. Electronic driver is available for this series of switches.



Performance Specifications

CL 1x6 Reflection Series Switch	Min	Typical	Max	Unit	
Operation Wavelength ^[1]	1520	1550	1580	nm	
	1295	1310	1325		
Insertion Loss ^[2]		1.2	2.0	dB	
Cross Talk ^[2]	40	50		dB	
Return Loss ^[2]	50	55		dB	
PDL (SM Series Switch only)		0.15	0.25	dB	
Extinction Ratio (PM Series Switch only)	18	25		dB	
Directivity ^[3]	45	50		dB	
PMD (SM Series Switch only)			0.2	ps	
Switch Speed (Rise, Fall)	5	50	200	µs	
Repetition Rate		2K		Hz	
Durability	10 ¹¹			cycle	
Optical Power	High Power Series Switch		3	5	W
Handling	Others		300	500	mW
Switch type	Latching				
Operating Temperature ^[4]	-5		70	°C	
Storage Temperature	-40		85	°C	
Fiber Type	SMF-28, Panda PM, or equivalent				
Package Dimension	72L x 37W x 7.8H			mm	

[1]. Same specs switches at L band are available, please contact us.

[2]. Measured without connectors.

[3]. Defined as the optical power at the sensor port when light is launched into the input.

[4]. Operating temperature -40-85 °C version is available as special.

Features

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

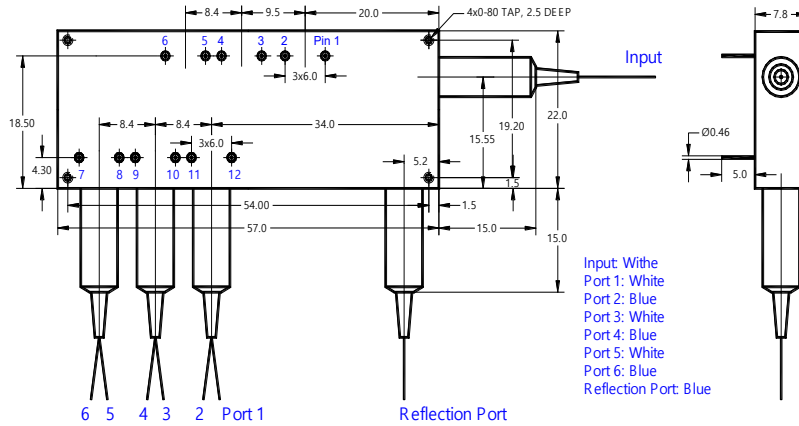
Applications

- Optical Sensing
- Optical Signal Routing
- 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	2.25	2.5	2.75	V
Pulse Duration	0.2	0.3	0.5	ms

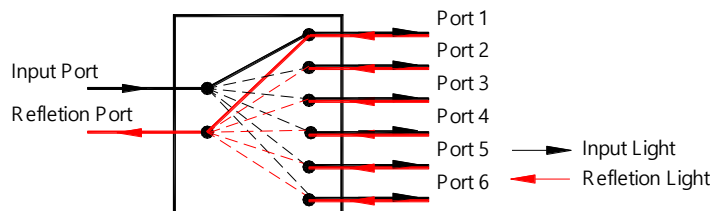
Driving kit with USB and TTL interfaces and Windows™ GUI is available. We also offer RS232 interface as an option - please contact Agiltron sales.

Electrical Driving Table

Optical Path	Pin Group 1		Pin Group 2		Pin Group 3		Pin Group 4		Pin Group 5		Pin Group 6	
	Pin 1	2	3	4	5	6	7	8	9	10	11	12
IN → P1 & P1 → R *	+ **	-	+	-	-	+	+	-	+	-	+	-
IN → P2 & P2 → R	-	+	-	+	-	+	+	-	+	-	+	-
IN → P3 & P3 → R	+	-	-	+	+	-	+	-	-	+	-	+
IN → P4 & P4 → R	-	+	+	-	+	-	+	-	-	+	-	+
IN → P5 & P5 → R	+	-	-	+	-	+	-	+	+	-	-	+
IN → P6 & P6 → R	-	+	+	-	-	+	-	+	+	-	-	+

* IN: Input port. P1: Port 1. R: Reflection Port. ** "+": 2.25-2.75 V pulse, "-": Ground.

Functional Diagram



CL 1x5, 1x6 PM High Power Reflection Switch

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Ordering Information

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> -	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Configuration	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector ^[5]	
CLRS ^[1] CLPR ^[2] CLHR ^[3] CPHR ^[4]	1x5=15 1x6=16 Special=00	1310nm=3 1550nm=5 Special=0	Dual Stage=2	Standard=1 Special=0	SFM-28=1 Panda PM 250=B Special=0	Bare fiber=1 900µm loose 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=7 Duplex LC=8 MTP =9 Special=0

- [1]. **CLRS**: CrystaLatch Dual Stage **R**eflection Switch.
- [2]. **CLPR**: CrystaLatch Dual Stage **P**M Reflection Switch.
- [3]. **CLHR**: CrystaLatch Dual Stage **H**igh Power Reflection Switch.
- [4]. **CPHR**: CrystaLatch Dual Stage **P**M **H**igh Power Reflection Switch.
- [5]. There isn't any connector in the high power switches normally. Please contact us for high power connectors.

