

# CrystaLatch™

## 1x2 LiDAR Fiber Optic Switch

(PM, High Power)

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

### Product Description

The CrystaLatch™ 1x2 Series LiDAR fiber optical switch is a non-mechanical device having advantageous features for LIDAR applications. It scans a probing laser beam among two output fiber ports with high power handling capability (5W CW) and redirects the reflecting light into a dedicated receiving signal fiber port. The patent pending design reduces more than 2dB system optical loss by eliminating the need to pass the reflected signal through an additional circulator or coupler. Moreover, it provides the receiving signal with over 60dB isolation from the probe laser beam via a proprietary patent pending configuration. The all solid state CL fiber optic switch further offers extremely high reliability in addition to low insertion loss, high extinction ratio, high channel isolation, and high repeatability. It is designed to meet the most demanding switching requirements of continuous operation without failure, longevity, operation under shock/vibration environment, with large temperature variations, and fast response time. The switches have been used in aerospace, out space, under sea, and outdoor applications.

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

CL 1x2 LiDAR Switch	Min	Typical	Max	Unit
Operation Wavelength <sup>[1]</sup>	1520	1550	1580	nm
	1295	1310	1325	nm
Insertion Loss <sup>[2]</sup>		1.2	1.6	dB
Receive Signal Isolation <sup>[3]</sup>	60	65		dB
Switch Speed (Rise, Fall)		50	200	µs
Repetition Rate		2K		Hz
Channel Crosstalk	26	30		dB
Optical Power Handling	Standard	300	500	mW
	High Power		5 <sup>[4]</sup>	W
Durability	10 <sup>15</sup>			cycles
Switch type	Solid-State Latching			
Operating Temperature <sup>[5]</sup>	-5		+70	°C
Storage Temperature	-40		+85	°C
Fiber Type	PM1310/250, PM1550/250, or equivalent			

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

[2]. Measured without connectors. We offer 5W connectors.

[3]. Receiving signal isolation from probing laser, the value is for PM version

[4]. Continuous operation.

[5]. -40 to +85 °C version is available. See "Ordering Information".

### Features

- Low Loss
- High Reliability
- Compact

### Applications

- Gain Control
- Power Equalizer



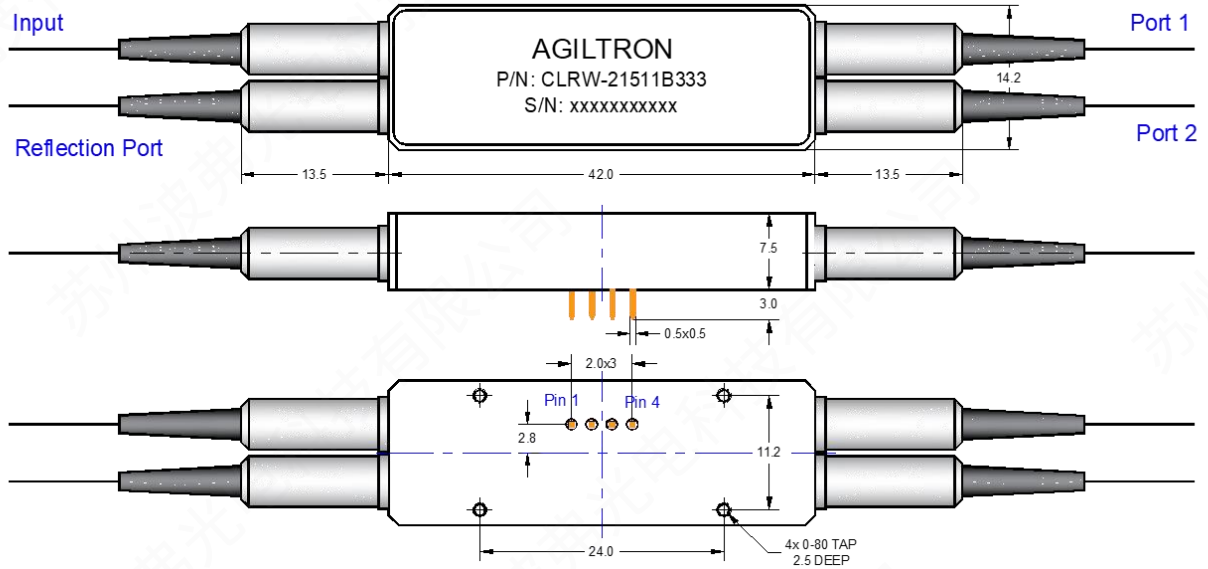
Revision: 02/13/23

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### Mechanical Dimensions (Unit: mm)



### Electrical Driving Information

Each switching point is actuated by applying a polarity voltage pulse through a pair of PINS, and latched after pulse removed.

Parameter	Min	Typical	Max	Unit
Resistance (each Pin group)	15	18	22	Ω
Switch Voltage	2.25	2.5	2.75 <sup>[1]</sup>	V
Pulse Duration	0.2	0.3	0.5	ms

[1]. Over this value will damage the device.

### Electrical Driving Table

Optical Path	Pin Group 1		Pin Group 2	
	Pin 1	Pin 2	Pin 3	Pin 4
IN → P1 & P1 → R <sup>[1]</sup>	+ <sup>[2]</sup>	-	+	-
IN → P2 & P2 → R	-	+	-	*

[1]. IN: Input Port; P1: Port 1; R: Receive Port.

[2]. "+": 2.25~2.75V Pulse, Typical is 2.5V pulse; "-": 0V.

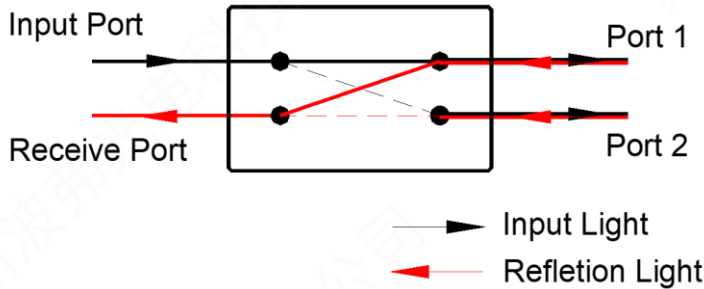
Driving kit with USB and/or RS232 or TTL interfaces is available. We provide GUI for USB and RS232 interface. Please contact sales for more information.

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### Optical Path Diagram



### Ordering Information

Prefix	Type	Stage	Wavelength	Power Handling	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
CLRW-	1x2 = 2 Special=0	Single Stage=1	1310=3 1550=5 Special=0	500 mW = 1 5 W = 2 Special = 0	Standard=1 -40~+85°C=A -40~+70°C=B -20~+85°C=C Special=0	PM1550=B PM1310=D Special=0	Bare fiber=1 900µm 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 Special=0