



# CrystaLatch™ 4x4 Non-Blocking Switch

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

## Product Description

The CrystaLatch™ (CL) type 4x4 fiber optic switch connects optical channels by redirecting any incoming optical signal into any selected output fiber. This is achieved using patented non-mechanical configurations and activated via an electrical control signal. It is a truly non-blocking switching matrix. Latching operation preserves the selected optical path after the drive signal has been removed. The all solid state CL 4x4 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.



## Features

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

## Performance Specifications

CL Series 4x4 Switch	Min	Typical	Max	Unit
Operation Wavelength <sup>[1]</sup>	1520	1550	1580	nm
	1295	1310	1325	nm
Insertion Loss <sup>[2]</sup>		1.5	2.8	dB
Cross Talk	30			dB
Switch Speed (Rise, Fall)		50	200	µs
Repetition Rate		2K		Hz
Durability	10 <sup>11</sup>			cycle
Polarization Dependent Loss		0.1	0.3	dB
Polarization Mode Dispersion			0.2	ps
Return Loss <sup>[2]</sup>	50			dB
Operating Temperature	0		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling <sup>[3]</sup>		300	500	mW
Switch type	Solid-State Latching			
Fiber Type	Corning SMF28			

[1]. L band version available, please call

[2]. Measured without connectors

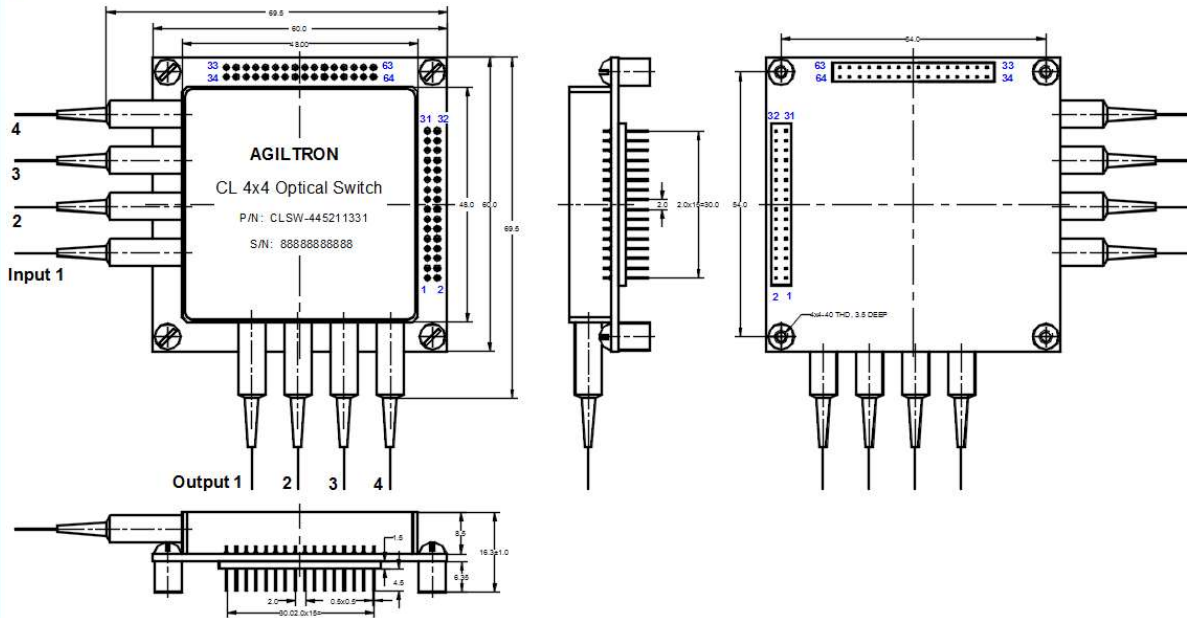
[3]. High power version available.

## Applications

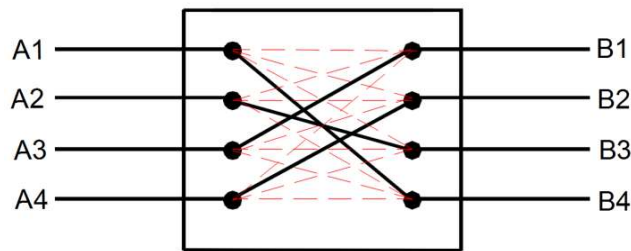
- Optical Signal Routing
- Network Protection
- Signal Monitoring
- Instrumentation

# CrystaLatch™ 4X4 Non-Blocking Switch Module

## Mechanical Footprint Dimensions (Unit: mm)



## Functional Diagram



## Electrical Driving Information

Each connection is switched by applying the polarity voltage pulses on a series of PIN pairs. The polarity of voltage is noted as either “+” or “-”, as shown in the driving table. The PIN pair is composed two PINs. For instance, Pin#1 and Pin#2 for one pair, Pin # 49 and Pin #50 for one pair, etc. “Blank” in PIN pair on the driving table means that no voltage pulse is needed.

Parameter	Minimum	Typical	Maximum	Unit
Switch Voltage	2.5		3	V
Resistance (each pair)	15	18	22	Ω
Pulse Duration	0.2	0.3	0.5	ms



# CrystaLatch™ 4X4 Non-Blocking Switch Module

## Electrical Driving Table for 4x4 configuration

No	Optical Path	G1		G2				G3				G4				G5				G6				G7				G8				G9				G10				G11				G12				G13				G14				G15					
		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	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
1	I1→O1, I2→O2, I3→O3, I4→O4	+	-	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+

Note: Other configuration such as 3x3 can refer this 4x4 configuration to create the customer own driving table.



# CrystaLatch™ 4X4 Non-Blocking Switch

## Ordering Information

CLSW-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type	Wavelength	Driver	Package	Fiber Type		Fiber Length	Connector	
4x4=44 4x2=42 4x3=43 3x3=33	1310=3 1550=5 Special=0	No driving Kit=1 Driving Kit=2	Standard=1 Module in box=2 Special=0	SMF-28=1 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 Special=0	

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15 Presidential Way , Woburn, MA 01801 Tel: (781) 935-1200 Fax: (781) 935-2040

www.agiltron.com