

CrystaLatch™ 1xN Fiber Optical Switch

No-Blocking, Bidirectional, Unidirectional, SM, PM, Up to 10W

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



DATASHEET

[Return to the Webpage](#)



Features

- Non-Blocking
- High Speed
- High Reliability
- Fail-Safe Latching
- Low Insertion Loss
- Rugged
- Compact
- USB, Ethernet, RS232, TTL

Applications

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



The CLSM 1xN Series 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. The latching operation preserves the selected optical path after removing the drive signal. The CLSM series fiber optic switch features low insertion loss, high extinction ratio, high channel isolation, and extremely high reliability and repeatability. It is vibration-insensitive without moving parts. It is designed to meet the most demanding switching requirements of continuous operation without failure, longevity, operation under shock/vibration environments, large temperature variations, and fast response time.

The magneto-optical crystals used in the CL switches have no fatigue or drift effect. They have unidirectional and bidirectional configurations and can handle high optical power of up to 10W. RS232 is a standard interface. Each switch driver includes a GUI for programming and a command set (API) so customers can develop their own control software. Python and LabVIEW interface libraries; integration support is available for a fee.

Due to inherent computer delays under Windows, response speed can be improved by using a Linux-based controller or executing stored switching sequences directly on the board. In this mode, the host computer simply issues start, pause, and repeat commands.

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength ^[1]	1520	1550	1580	nm
	1295	1310	1325	nm
Insertion Loss ^[2]	1x4	1.1	1.3	1.7
	1x8	1.2	1.5	2.2
	1x12	1.4	2.1	2.6
	1x16	1.5	2.2	2.6
	1x18	2.1	2.6	3.2
Cross Talk On/Off Ratio ^[2]	Single Stage	17	25	28
	Dual Stage	35	45	50
Return Loss ^[2]	50	55		dB
PDL (SM series)		0.1	0.3	dB
Extinction Ratio (PM Series)	18		30	dB
Optical Switching Speed (Rise, Fall)	5		10	μs
Repetition Rate		2K		Hz
Durability	10 ¹⁵			cycle
Repeatability		0.05	0.1	dB
Polarization Mode Dispersion			0.2	ps
Operating Temperature	0		55 ^[2]	°C
Storage Temperature	-40		85	°C
Optical Power Handling	Standard	300	500	mW
	High Power	3	5	W

Notes:

[1]. L band version available, please call

[2]. Measured without connectors, for 4x4. Larger matrix have higher loss

[3]. Wide temperature range of version is available in the premium version, where some performances may be degraded. Please check the order information.

Legal notices: All product information is believed to be accurate and is subject to change without notice. Information contained herein shall legally bind Agiltron only if it is specifically incorporated into the terms and conditions of a sales agreement. Some specific combinations of options may not be available. The user assumes all risks and liability whatsoever in connection with the use of a product or its application.

Rev 09/05/26

P +1 781-935-1200

E sales@agiltron.com

W www.agiltron.com

CrystaLatch™ 1xN Fiber Optical Switch

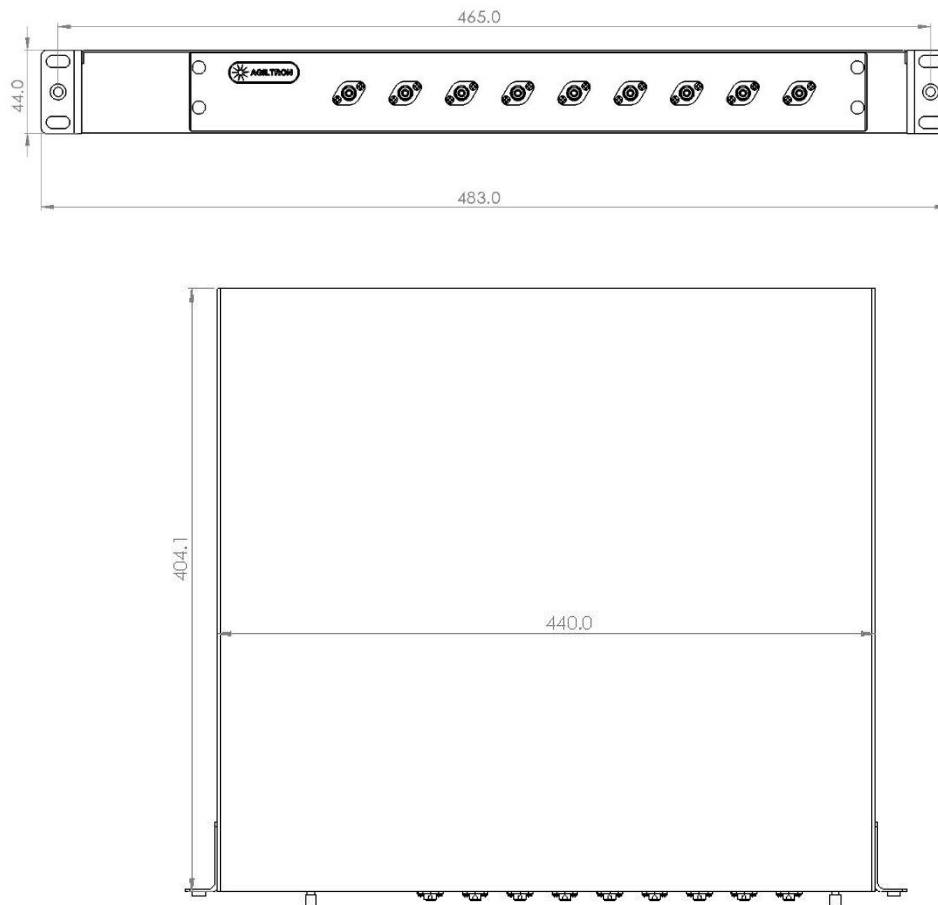
No-Blocking, Bidirectional, Unidirectional, SM, PM, Up to 10W

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



DATASHEET

Mechanical Dimensions (Unit: mm) 1U



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

Electrical Driving Information

TTL driving format provides the speed performance listed on the specification table. Other methods introduce additional delay, in which the Ethernet is the slowest.

- **RS232 (GUI)**
- **USB (GUI)**
- **TTL**
- **Ethernet (GUI)**

CrystaLatch™ 1xN Fiber Optical Switch



No-Blocking, Bidirectional, Unidirectional, SM, PM, Up to 10W

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

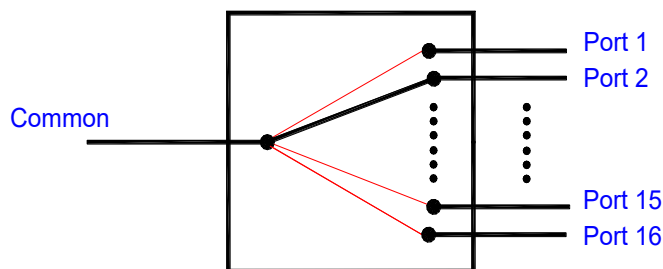
DATASHEET

Ordering Information (Part Number)

Prefix	Type	Wavelength	Directivity	Stage	Optical Power	Fiber Type	Polarization ER	Connector	Interface	Interface Code ^[1]
CLSM-	1x4 = 14 1x6 = 16 1x8 = 18 1x12 = 12 1x16 = 16 1x18 = 18 Special = 00	1310 = 3 1550 = 5 Special = 0	Bidirectional = 2 Unidirectional = 1	Single = 1 Dual = 2	Standard = 1 1W = A 2W = 2 3W = 3 4W = 4 5W = 5 10W = 10	SFM-28 = 1 PM1550 = 2 PM 1310 = 3 Special = 0	Non = 1 18dB = 2 23dB = 3 25dB = 4 30dB = 5	None = 1 FC/PC = 2 FC/APC = 3 LC/PC = 7 High ER FC/PC = H High ER FC/APC = A MPO = Y Special = 0	RS232 = 1 TTL = 2 USB = 3 Ethernet = 4	Non = N Python = P LabVIEW = L

[1]. GUI and a command set (API) are included. Python **\$860**. LabVIEW interface libraries **\$950**

Functional Diagram



Electrical Driving Information

TTL driving format provides the speed performance listed on the specification table. Other methods introduce additional delay, in which the Ethernet is the slowest.

- **RS232 (GUI)**
- **USB (GUI)**
- **TTL**
- **Ethernet (GUI)**

CrystaLatch™ 1xN Fiber Optical Switch

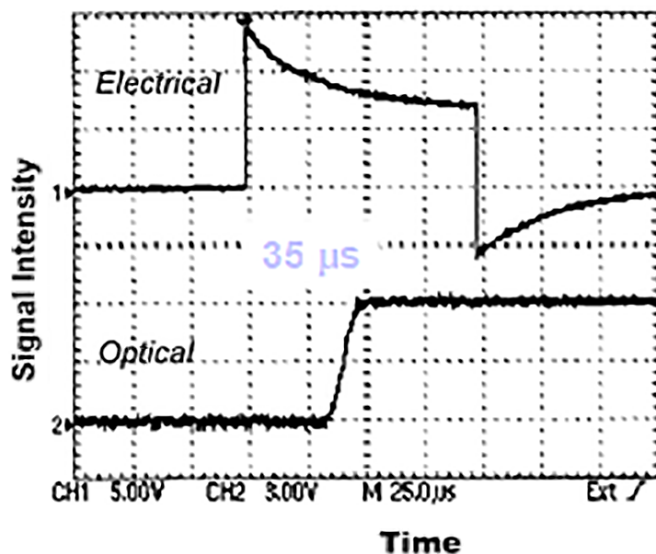
No-Blocking, Bidirectional, Unidirectional, SM, PM, Up to 10W

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

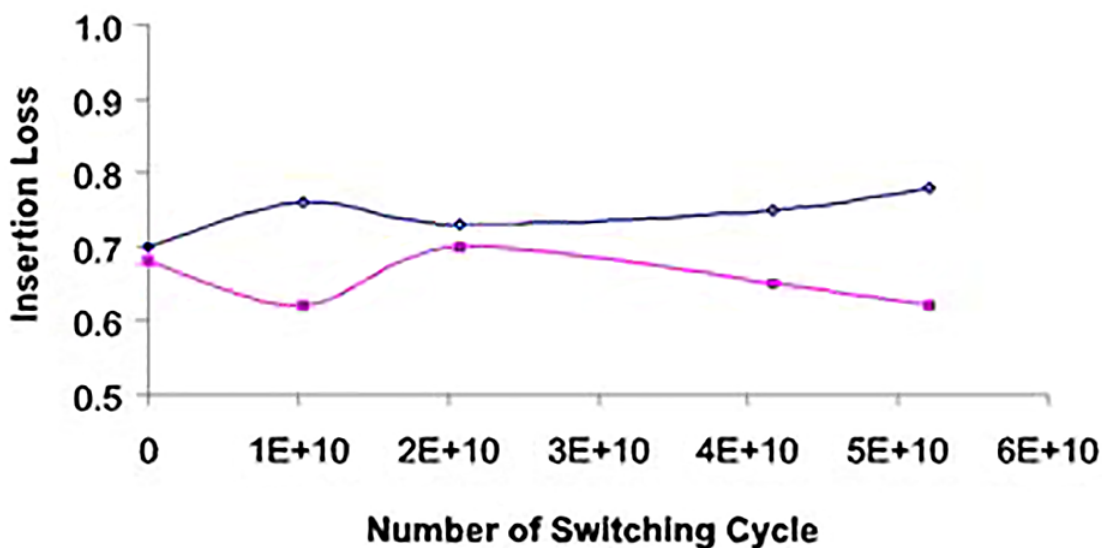


DATASHEET

Typical Switching Response



Typical Loss Change of 1x2 vs Switching Numbers



CrystaLatch™ 1xN Fiber Optical Switch

No-Blocking, Bidirectional, Unidirectional, SM, PM, Up to 10W

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



DATASHEET

Ethernet Remote Control with Python

Several options: Telnet, HTTP/JSON API, or VISA Raw Socket mode (SCPI over TCP/IP)

```
#####
Telnet:

import telnetlib

HOST = "192.168.0.1"
PORT = 23

#####
username = "admin"
password="admin"
#####
tn=telnetlib.Telnet(HOST,PORT)

reply=tn.read_until(b"username:",timeout=10)
print(reply.decode("ascii"))#debug
tn.write(username.encode("ascii")+b"\r\n")

reply=tn.read_until(b"password:",timeout=10)
print(reply.decode("ascii"))#debug
tn.write(password.encode("ascii")+b"\r\n")

reply=tn.read_until(b"telnet>",timeout=10)
print(reply.decode("ascii"))#debug

tn.write(b"setswitch 31 32 0 0\r\n")
reply=tn.read_until(b"telnet>",timeout=10)
print(reply.decode("ascii"))#debug

tn.write(b"runswitch\r\n")
reply=tn.read_until(b"telnet>",timeout=10)
print(reply.decode("ascii"))#debug

tn.write(b"quit\r\n")

#####
```

CrystaLatch™ 1xN Fiber Optical Switch

No-Blocking, Bidirectional, Unidirectional, SM, PM, Up to 10W

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



DATASHEET

Ethernet Remote Control with Python (ending)

Several options: Telnet, HTTP/JSON API, or VISA Raw Socket mode (SCPI over TCP/IP)

```
#####  
API:  
import requests  
  
BASE_URL = "  
TOKEN = "TOKEN"  
def api_post(path, payload):  
    r = requests.post(  
        BASE_URL + path,  
        json=payload,  
        headers={"X-Auth-Token": TOKEN},  
        timeout=3,  
    )  
    r.raise_for_status()  
    return r.json()  
  
def api_get(path):  
    r = requests.get(  
        BASE_URL + path,  
        headers={"X-Auth-Token": TOKEN},  
        timeout=3,  
    )  
    r.raise_for_status()  
    return r.json()  
  
# Set port 3  
print(api_post("/api/set_permanent_port", {"port": 3}))  
# Read status  
print(api_get("/api/status"))  
  
#####  
pyVISA:  
import pyvisa  
  
HOST = "192.168.0.1"  
TOKEN = "TOKEN"  
  
rm = pyvisa.ResourceManager()  
  
inst = rm.open_resource(f"TCPIP0::{HOST}::5025::SOCKET")  
inst.read_termination = "\n"  
inst.write_termination = "\n"  
inst.timeout = 2000 # ms  
  
print("IDN:", inst.query("*IDN?").strip())  
  
# Set port  
inst.write("SWITCH:PERMANENTPORT 3")  
print("PORT?:", inst.query("SWITCH:PERMANENTPORT?").strip())  
  
# Status  
print("STATUS:", inst.query("SWITCH:STATUS?").strip())  
  
#####
```