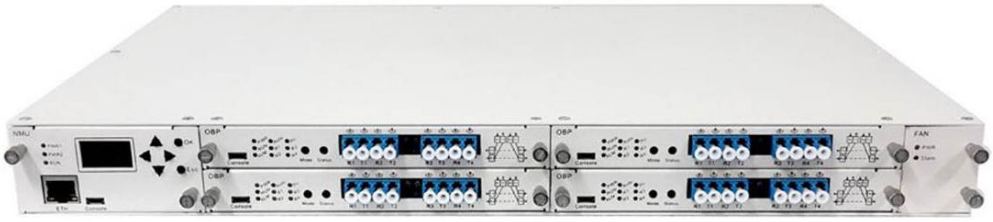
Return to the Webpage

MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

MEMS Series Fiber Optical Switches are plug-and-play, all-in-one units that provide direct, non-blocking optical signal routing between any input ports to any output ports with millisecond switching speeds. These passive devices preserve signal integrity, supporting all data rates and waveforms. Engineered for long-term reliability, they are rated for continuous operation and backed by a five-year warranty. The standard version is optimized for lasers with linewidths greater than 1 GHz; optional specialized coatings are available to mitigate etalon effects for narrow-linewidth lasers. Each switch is housed in a rack-mounted enclosure, with height determined by the selected front panel connectors. A web-based GUI is included, compatible with standard network management protocols. For developers, a complete command set is provided, and code-writing services are available upon request. The GUI supports time-based step scripts, enabling pre-stored switching sequences to eliminate execution latency — particularly useful in automated test setups. To further minimize control delays caused by non-real-time systems, a dedicated computer running a real-time OS (e.g., Linux on a single-board computer) is recommended. A multicast version is also available for applications requiring simultaneous distribution from one input to multiple outputs.

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.



5-year manufacturer warranty

Features

- Low Cost
- High Reliability
- Low Insertion Loss
- Broad Band
- Compact Design
- Low Voltage

Applications

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

Telcordia®

RoHS compliant

Specifications [1]

Parameters	Min	Typical	Max	Unit
Operation Wavelength	750		2400	nm
Wavelength Bandwidth		± 30		nm
Insertion Loss [1] (SM)	1.2	1.8	2	dB
Insertion Loss [1] (MM)		1.8	2.5	dB
Crosstalk, On/Off Ratio	45		65	dB
Extinction Ratio (PM Fiber)	18		23	dB
Switch Speed (Rise, Fall) [2]		10	20	ms
Durability	10^9			cycle
Polarization Dependent Loss		0.04	0.2	dB
Wavelength Dependence Loss [3]		0.1	0.3	dB
Return Loss	50 [7]			dB
Repeatability		0.05	0.1	dB
Operating Temperature [4]	-5		65	°C
Transit Time Delay			0.2	ms
Port to Port Time Delay Difference			0.5	ns
Optical Power Handling (CW) [5]		300	500	mW
Storage Temperature	-40		85	°C
Electrical Power Consumption			50 [6]	W
Package Dimension	1RU/2RU			

Notes:

[1]. Measured at 1550nm without connectors, each connector adds 0.2-0.3dB. Shorter or longer wavelength loss increases.
Minimum loss version is available as special order

[2]. This is intrinsic switch component performance. The remote control adds delay (Ethernet is the longest)

[3]. Within 50nm bandwidth

[4]. -25°C~75°C version is also available.

[5]. High power version available

[6]. For the non-latching version

[7]. For SM fiber, MM fiber is 35dB

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:

Rev 02/17/26

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

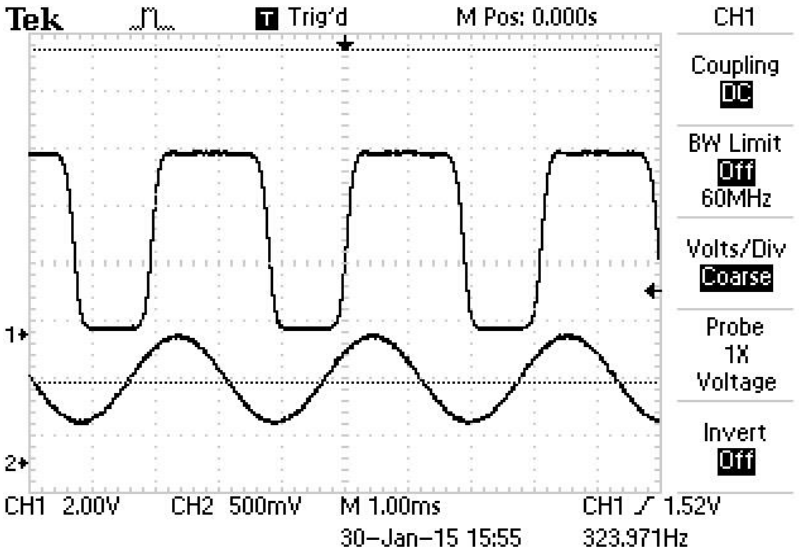
Mechanical Dimension

19-inch rack with 1U, 1.5U or 2U depending on the connector type

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

10^9 Switching Cycle Test (This was performed on 1x2 component, not the switch system)

We have tested MEMS 1x2 switch at the resonant frequency ~300Hz for more than 40 days, as shown in the attachment, which corresponds over 10^9 switching cycles. The measurements show little changes in Insertion loss, Cross Talk, Return loss, etc, all parameters are within our specs.



Control & Electric Interface

The switch default control is Ethernet with a GUI.

- Physical Layer: 10/100Base-T
- Data Link Layer: Ethernet Protocol per IEEE 802.3
- Network Layer: IPv4
- Transport Layer: UDP
- Application Protocol: SNMP
- Connector Type: RJ-45
- Dual 48V/110-220V Power Input

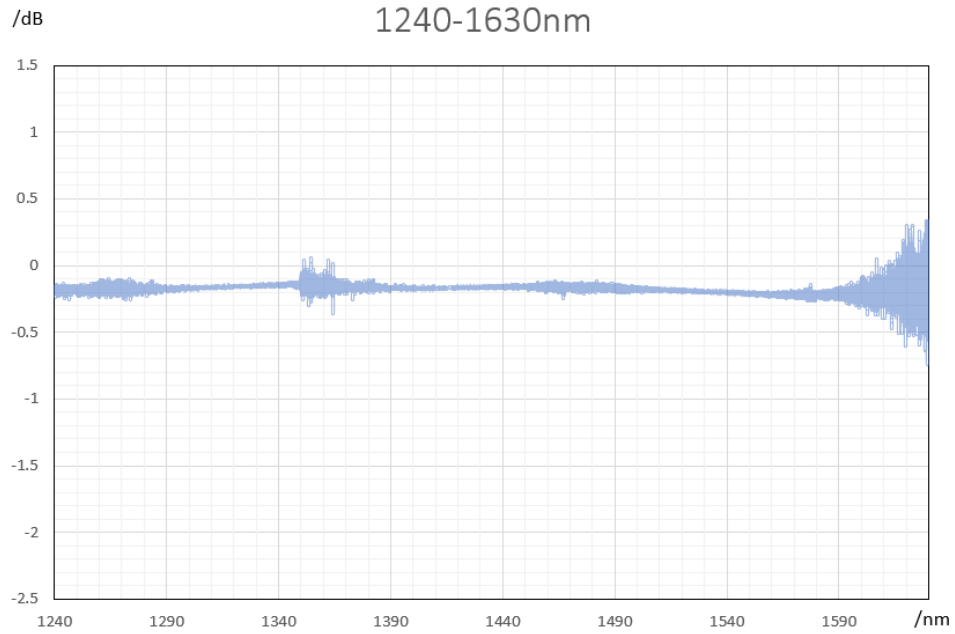
We provide a command list for customers to write their control code, such as Python

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

Typical Insertion Loss vs Wavelength (1240-1630nm)



Ordering Information (Part Number)

	☐☐☐☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**Configuration**	**Channel**	**Wavelength [1]**	**Control Interface**	**Package [2]**	**Fiber Type**	**Power Supply**	**Connector [3][5]**	**On/Off**	**PER**	**Monitor**	**Interface Code [4]**
MEMS-	16x16 = 1616 2x16 = 0216 4x16 = 0416 Nx16 = 0N16 Special = 0000	Single = 1 Duplex = 2	1240-1640nm = 1 1060 = 6 1310 = 3 1410 = 4 1550 = 5 1310/1550 = 2 850 = 8 Special = 0	Ethernet = 2 RS232 = 3 USB = 4 Special = 0	1RU = 1 1.5U = 5 2RU = 2 4RU = 4 Special = 0	SMF-28 = 1 MM 50/125 = 2 PM1550 = 5 62.5/125 = 6 105/125 = E Hi1060 = 3 Hi780 = 8 PM980 = 9 SM800 = A PM850 = B PM780 = C Special = 0	110-220V = 4 48V = 5	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 LC/PC = 7 Duplex LC/PC = 8 LC/APC = A LC/UPC = U E2000/APC = E MPO = Y Special = 0	Regular = 1 SM65dB = 2 MM50dB = 3 PM65dB = 5	Non = N >18 = 1 23 = 2 29 = 3	Non = 1 Output = 2 Input Output = 3 Input = 4	Non = N Python = P LabVIEW = L

[1]. Measured wavelength. The device has a wider wavelength coverage. Customer can request to measure at several wavelengths.

[2]. Rack Mount Depth ~ 430mm.

[3]. Regular fiber connector has PER ~22dB. Connector with PER >27 dB is available using special process

[4]. GUI and a command set (API) are included. Python $**560**. LabVIEW interface libraries $**750**

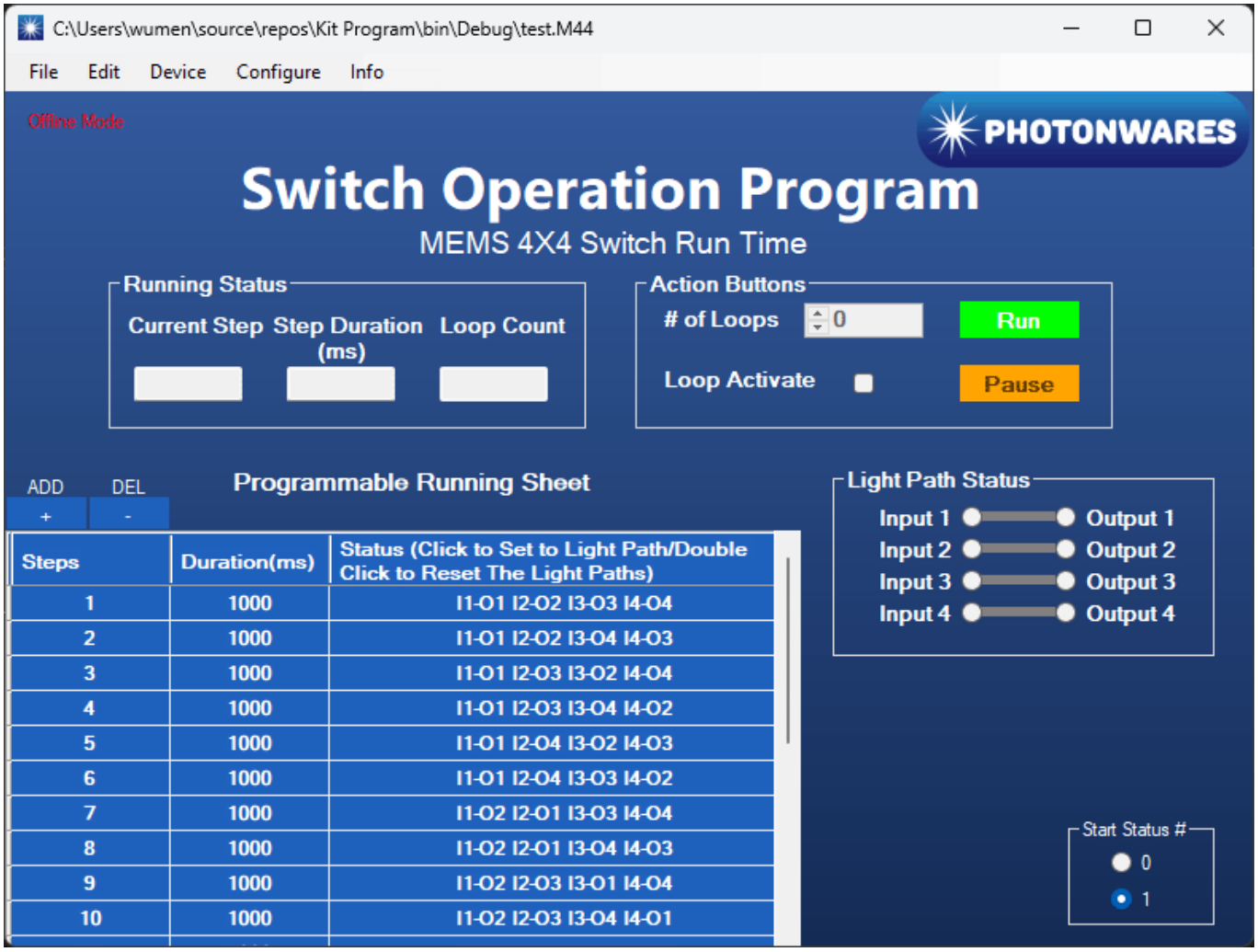
[5]. The connector cannot be installed directly onto bare fiber, as it is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

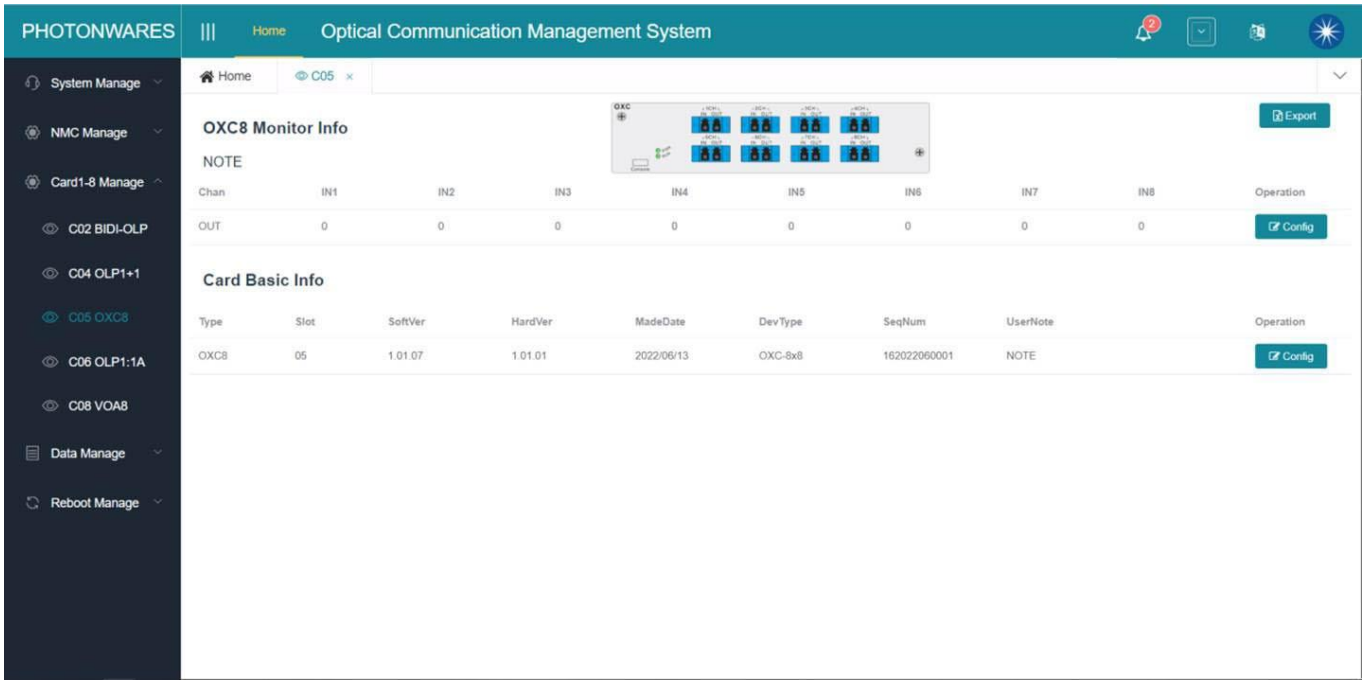
Example of RS232 Control GUI
(one can create a running receipt, pause, repeat loop)



MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

Example of Ethernet Remote Control GUI



P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

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")

############################################################
```

MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

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())

############################################################
```

MEMS 16 x 16 Fiber Optical Switch

(Non-Blocking, Bidirectional, Passive, 65dB on/off)

Questions and Answers

Q: If the device were to fail, would the switch continue to pass the fiber light through the switch as configured before failure?
A: This depends, if one mirror fails, it only affects the light going through that mirror.

Q: When power is restored, does the IN/OUT configuration before failure remain in place?
A: Yes, when power back up it will go to the previous flightpath

Q: If the power to the device were shut off, would the device continue to pass the fiber light as configured before failure?
A: This function is called latching. We uniquely offer MEMS latching switches but cost more.

Q: With the Ethernet Control Option, does the switch support SNMPv3
A: Yes. This internet standard protocol allows user to write their own control code

Q: With the Ethernet Control Option, what type of encryption does the SNMPv3 use?
A: MD5/DES

Q: With the Ethernet Control Option, could this device be controlled by multiple users at different locations and all users will also see the configuration updates?
A: Yes

Q: With the Ethernet Control Option, does the user need to install any software on their computer other than a web browser?
A: No