

BUY NOW

NanoSpeed™ Fiber Optical Switch Array (SM, PM, Bidirectional)

(Protected by U.S. patent 7,403,677B1 and pending patents)

Features

- High Speed
- High Reliability
- Low Loss
- Compact

Product Description

The NS fiber optical switch array cascades multiple 1x2 or 2x2 switches to redirect an incoming optical signal among N output optical fibers rapidly controlled. It mounts multiple switches on a PCB controlled by a TTL input signal via a single SMC connector. This array is designed as a compact OEM module. The all-solid-state crystal design provides exceptionally high reliability. The switch has passed Telcordia reliability qualification tests and is used in space applications. It is designed to meet the most demanding ultra-high reliability requirements, fast response time, and continuous operation. The unit comes with a wall plug-in power supply. Available with several electronic drivers having performance optimized for various repetition rates. No GUI is available due to high speed.

Performance Specifications

| Variable Fiber Optical Splitter | Min | Typical | Max | Unit |
|--|--------------------------|---------|------|--------|
| Central Wavelength | 450 | | 2000 | nm |
| Insertion Loss ^[1] | 1260~1650nm | 0.6 | 1 | dB |
| | 900~1260nm | 0.8 | 1.3 | dB |
| | 760~900nm | 1 | 1.6 | dB |
| | 650~850 | 1.5 | 2.2 | dB |
| | 450~580 | 2 | 2.8 | dB |
| Cross Talk ^[2] | 18 | 25 | 35 | dB |
| Durability | 10 ¹⁴ | | | cycles |
| Optical Response (Rise, Fall) ^[3] | 50 | | 100 | ns |
| Repetition Rate | DC | 20 | 300 | kHz |
| Polarization Dependent Loss | | 0.1 | 0.35 | dB |
| IL Temperature Dependency | | 0.25 | 0.5 | dB |
| Polarization Mode Dispersion | | 0.1 | 0.2 | Ps |
| Return Loss | 45 | 50 | 60 | dB |
| Operating Temperature | -5 | | 70 | °C |
| Optical Power Handling ^[4] | | 300 | | mW |
| Storage Temperature | -40 | | 85 | °C |
| Package Dimension | See mechanical dimension | | | mm |

[1] Excluding connectors.

[2] Cross talk is measured at 5kHz, which may be degraded at the high repeat rate.

[3] The rise/fall time does not include electrical signal delay

[4] Defined at 1310/1550nm. For the shorter wavelength, the handling power may be reduced.

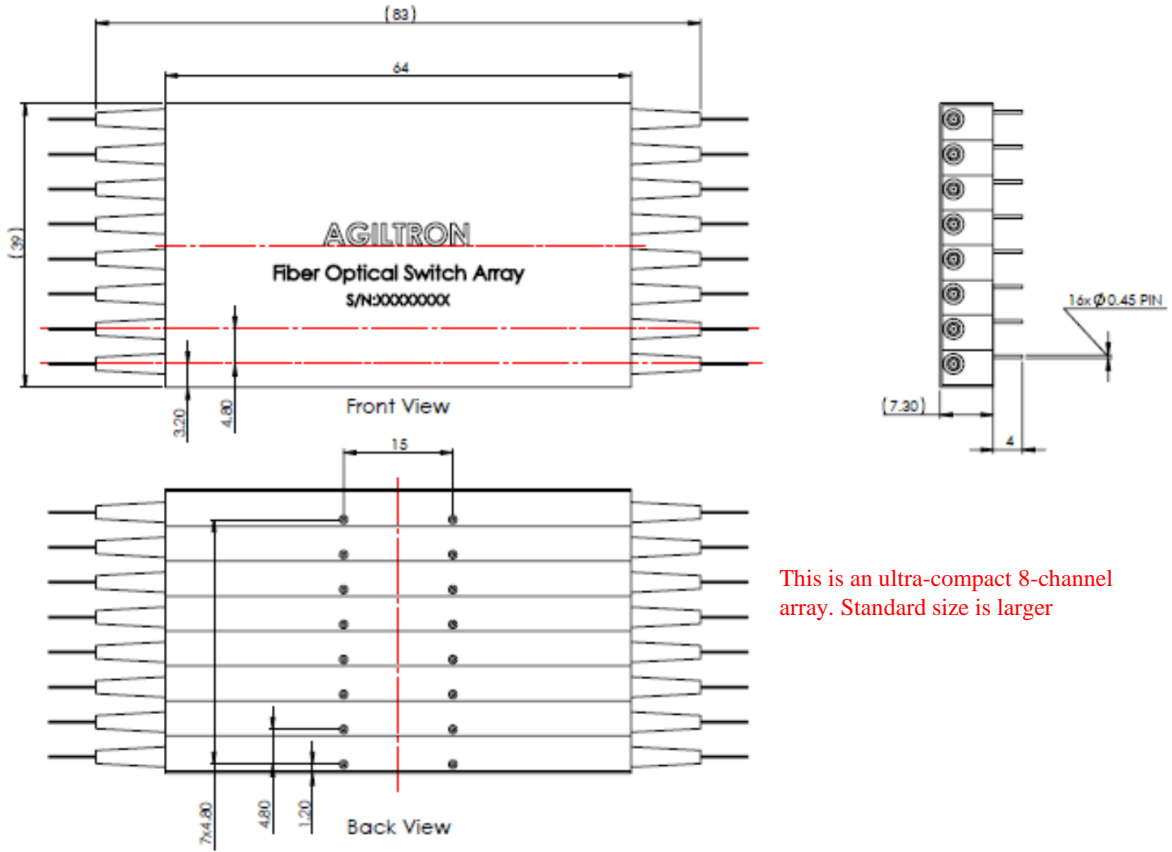
Applications

- Instrumentation
- Power balance
- Sensor

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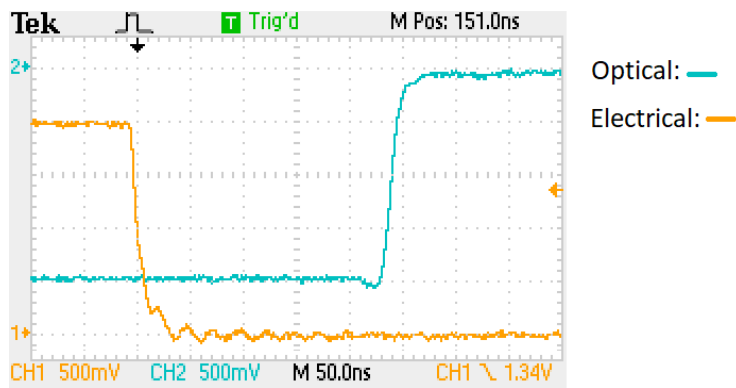
Mechanical Dimensions (mm)



This is an ultra-compact 8-channel array. Standard size is larger

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

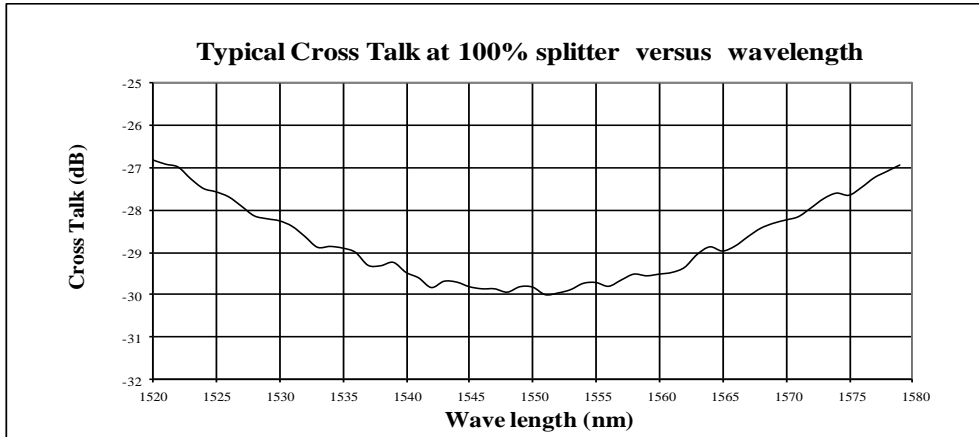
Typical Speed Response Measurement



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Wavelength Dependence of CT



Ordering Information

| NSAS- | Type | Channel | Wavelength | Repetition/Rise Time | Fiber Type | Fiber Length | Connector | |
|---|--|-------------------------|---|--|--|---|---|--|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | 1x2=1 2x2=2 1x2mini=4 2x2mini=8 | 4 =04 8 =08 12=12 | 1060=1 2000=2 1310=3 1480=4 1550=5 1625=6 780=7 850=8 650=E 550=F 400=G 1565-1620=L Special=0 | 50kHz (100ns) =1 100kHz(100ns)= 2 300kHz (100ns)=3 | SMF-28=1 HI1060=2 HI780=3 PM1550/250=5 PM850=8 PM980=9 Special=0 | Bare fiber=1 900um tube=3 Special=0 | 0.25m=1 0.5m=2 1.0 m=3 Special=0 | None=1 FC/PC=2 FC/APC=3 SC/PC=4 SC/APC=5 ST/PC=6 LC/PC=7 LC Duplex=8 LC/APC=9 Special=0 |

NanoSpeed™ Fiber Optical Switch Array

8x (1x2, 2x2, SM, PM, Bidirectional)

Q&A

Q: Does NS device drift over time and temperature?

A: NS devices are based on electro-optical crystal materials that can be influenced to a certain range by the environmental variations. The insertion loss of the device is only affected by the thermal expansion induced miss-alignment. For extended temperature operation, we offer special packaging to -40 -100 °C. The extinction or cross-talk value is affected by many EO material characters, including temperature-dependent birefringence, V_p , temperature gradient, optical power, at resonance points (electronic). However, the devices are designed to meet the minimum extinction/cross-talk stated on the spec sheets. It is important to avoid a temperature gradient along the device length.

Q: What is the actual applying voltage on the device?

A: 100 to 400V depending on the version.

Q: How does the device work?

A: NS devices are not based on Mach-Zander Interference, rather birefringence crystal's nature beam displacement, in which the crystal creates two different paths for beams with different polarization orientations.

Q: What is the limitation for faster operation?

A: NS devices have been tested to have an optical response of about 300 ps. However, practical implementation limits the response speeds. It is possible to achieve a much faster response when operated at partial extinction value. We also offer resonance devices over 20MHz with low electrical power consumption.