



SERIES 7000n

Network Optical Matrix Switch

SINGLE MODE NETWORK OPTICAL SWITCH UP TO 384x384 PORTS



The Polatis Series 7000n Network Optical Switch is the largest-capacity, highest-density, highest-performance and most reliable non-blocking all-optical matrix switch available in the industry. The Series 7000n 384x384 all-optical circuit switch is designed to meet the most demanding applications with exceptionally low optical loss, compact size, and fast switching speeds. With support for Software-Defined Networks (SDNs) via embedded

NETCONF and RESTCONF control interfaces, the Series 7000n can route time-critical traffic with very low-latency to enable new virtual cloud services in hybrid packet-optical data centers. The Series 7000n is the latest addition to the Polatis product line of optical switches and modules, creating the broadest portfolio available of dynamic fiber cross-connect solutions (up to 384x384), all built on the Polatis' patented DirectLight® optical switching platform that has been proven in the most challenging data center, telecom and defense and test applications for over a decade.

KEY FEATURES

- Non-blocking 384x384 matrix switch
- SDN enabled with NETCONF and RESTCONF control interfaces
- Industry leading ultra-low insertion loss and superior optical specifications
- Available in symmetric NxN, asymmetric MxN, and single-sided NxCC any-to-any port configurations
- Able to switch and hold dark fiber connections
- Transparent fully bidirectional optics
- Protocol and bit-rate agnostic up to 400Gbs and beyond
- User configurable optical power alarms
- Carrier-class interfaces with SNMP, TL1, and SCPI control
- High reliability distributed architecture
- Built-in user-friendly Web GUI interface
- Eco-friendly with very low power consumption
- Seamlessly interfaces with infrastructure automation and orchestration solutions including QualiSystems TestShell and CloudShell
- Easily integrated into popular SDN controllers such as OpenDaylight, ONOS and Cisco NSO
- Supports RADIUS secure user access protocols

DIRECTLIGHT TECHNOLOGY

The Series 7000n 384x384 optical switch uses Polatis' patented, highly reliable piezoelectric DirectLight beam-steering technology that sets the industry standard for lowest optical loss and highest optical performance that enables a wide range of network applications. Polatis' DirectLight technology makes connections without light being present on the fiber. This allows operators to pre-provision paths over lit or dark fiber. Polatis DirectLight can also switch bi-directional optical signals for PON, FTTx and other types of transmission systems.

SDN ENABLED

Polatis switches can be easily deployed in an SDN platform using our NETCONF or RESTCONF interfaces. Optical switching combined with SDN enables network operators to monitor and dynamically reconfigure the network in real time to quickly respond to changing network conditions. This added level of flexibility increases equipment utilization and lowers overall costs while increasing network availability.

SWITCH MATRIX SIZE OPTIONS

Polatis offers a wide variety of matrix switch size and configuration options from up to 384x384 to meet a broad range of application requirements. The Series 7000n switch is available in symmetric (NxN), asymmetric (MxN), and single-sided (NxCC) customer configurable sizes with any-to-any port connectivity. Switch matrix sizes can also be optimized for individual applications.

CARRIER-CLASS RELIABILITY

The Polatis Series 7000n switch has carrier-class reliability. The switch has a high reliability distributed architecture that eliminates the possibility of any single point of failure disabling the switch and includes dual hotswap power supplies and network interface cards. In addition, the switch software can be easily upgraded in the field without affecting in-service connections. NETCONF, RESTCONF, SNMP, TL1 and SCPI control interfaces allow for seamless integration with higher-level network management systems and test equipment controllers. A user-friendly web interface can also be used to provision, monitor and control the switch.

OPTIONAL POWER MONITORS AND OPTICAL TAPS

The Polatis Series 7000n switches include options for integrated optical power monitoring or optical taps on every connection. These integrated features are ideal for network monitoring, data mirroring and intrusion detection, as well as for testing applications. Polatis switches can be easily configured to provide fully automated multilevel protection switching using a combination of power monitoring, threshold alarm indicators and fast switching. Systems can also be customized to incorporate a wide variety of passive and active components to suit individual customer needs.

BENEFITS OF POLATIS SWITCHING

- Low optical loss enables dynamic novel network architectures with minimal system impact
- Superior optical specifications enables DWDM operation at 400Gbs and beyond
- SDN NETCONF and RESTCONF interfaces enable faster deployment of new network orchestration solutions
- Bi-directional, all-band transmission with minimal signal impairment provides truly transparent connections
- Fast switching times enable efficient provisioning and protection services
- Dark-fiber switching enables preprovisioning and use with intermittent signals

APPLICATIONS

- Software-defined networking
- Data center aggregation
- Colocation peering and demarcation
- High performance computing
- Automated access, metro and long-haul network operations
- Centralized equipment sharing and automated network testing
- UHD Video distribution
- Automated systems verification testing
- Fast automatic provisioning and protection switching
- Network monitoring and automatic fault location
- Infrastructure as a service (IaaS) automation and orchestration

For installation and technical support:

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Performance Parameters

Performance Parameters	Polatis 7000n Specifications
Maximum Matrix Switch Size (NxN and NxCC) ¹	Up to 384x384 and 384xCC
Typical Insertion Loss ²	1.5dB
Maximum Insertion Loss ^{2,3}	2.7dB
Loss Repeatability	+/-0.1dB
Connection Stability	+/-0.1dB
Dark Fiber Switching	Yes
Bi-Direction Optics	Yes
Switching Time	50ms for a single connection or to reconfigure the entire switch
Polarization Dependent Loss (PDL)	<0.1dB (C+L Bands) <0.3dB with optional OPMs (C+L Band)
Crosstalk	<-50dB
Operating Wavelength Range	1260-1675nm
Wavelength Dependent Loss (WDL)	<0.3 dB (C+L Band)
Return Loss (with APC connectors)	>50dB
Data Latency through a switch connection	25ns
Optical Input Power Range	Dark to +27dBm
Optional Optical Power Monitoring (OPM)	Dynamic range -25dBm to +20dBm Accuracy +/-1.0dBm
Switch Lifetime	>10 ⁹ Cycles
Operating Temperature ⁴	+10°C to +40°C <85% RH non-condensing
Storage Temperature	-40°C to +70°C <40% RH non-condensing

Electrical and Mechanical

Electrical and Mechanical	Polatis 7000n Specifications
Fiber Type	Single Mode
Single Fiber Connector Types	LC or LC-HD Connectors Angled (APC) or Ultra (UPC) connector types available
Array Connector Types	MTP-8 or MTP-12 Elite Array Connectors
Control Interfaces	NETCONF, RESTCONF, SNMP, TL1, SCPI & Secure User-Friendly Web GUI
User Interfaces	RJ45 Dual redundant Hot-Swap Gigabit Ethernet
Craft Interface	RS232 Serial and USB
Secure User Access Protocols	RADIUS
Power Options	Hot Swappable Dual Redundant 100-240 VAC 50/60 Hz Hot Swappable Dual Redundant -48 VDC
Power Consumption	100W Standard switch 140W with optional OPMs

**Switch Chassis Height⁴
Optical Connector Type**

Switch Chassis Height ⁴ Optical Connector Type	Polatis 7000n Matrix Size 320x320	Polatis 7000n Matrix Size 384x384
MTP	4RU	4RU
MTP with optional OPMs	6RU	6RU
LC-HD (High Density LC)	6RU	6RU
LC	6RU	8RU

All parameters are measured excluding connectors at 1550nm and 20°C with an unpolarized source after thermal equalization unless otherwise noted.

1. Asymmetric MxN sizes and single-sided NxCC customer configurable sizes with any-to-any port connectivity are available.
2. Measured using the 3 patch-cord method as defined in ANSI/TIA/EIA-526-7-1998.
3. Stability and repeatability are measured at maximum transmission.
4. The switch chassis width is 19" and the depth is 22" for all Series 7000 switches.