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DATA SHEET

polatis

SERIES 6000 48xCC

Network Switch Module

COMPACT 48xCC "ANY-TO-ANY" NETWORK OPTICAL SWITCH MODULE

The Polatis Series 6000 48xCC all-optical network switch module is a compact, high-performance and ultra-low power fully non-blocking all-optical 48 port "any-to-any" matrix switch module. This unique customer configurable single-sided switch design allows any of the 48 ports to be connected to any other ports enabling new interconnection architectures not possible with traditional symmetric NxN switch matrixes. The ultra-compact size and low-power usage make this an ideal choice for OEM applications and enables the switch to be mounted onto pluggable circuit packs. It is designed to meet the highest performance and reliability needs of the most demanding applications with exceptionally low optical loss, compact size, low power requirements and fast switching speeds. The Series 6000 48xCC enables extremely low latency for time-critical traffic required for new virtual cloud services in hybrid packet-optical data centers. The Series 6000 48xCC is based on Polatis' patented DirectLight® optical switching technology that has been proven in the most challenging data center, telecom and defense applications and is also used in video distribution and by major network equipment manufacturers to automate testing of optical components and subsystems.

KEY FEATURES

- **Industry's smallest 48-fiber optical switching module**
- **Non-blocking 48 port "any-to-any" switch**
- **Typical insertion loss of less than 1.0 dB**
- **Compact design - 41mm x 122mm x 266mm**
- **Ideal for OEM applications**
- **Module can be mounted onto pluggable circuit packs**
- **Energy efficient using less than 5 Watts**
- **Simple robust SCPI command interface**
- **Able to switch and hold dark fiber connections**
- **Fully bidirectional optics**
- **Protocol and bit-rate agnostic up to 100Gbs and beyond**
- **Optional SDN enabled network card provides TL1, SNMP OpenFlow and NETCONF command interfaces along with user-friendly Web GUI**
- **Superior optical performance specifications**
- **High resiliency**
- **Requires no cooling fan**
- **Designed specifically for integration with network equipment and fiber management systems**
- **Cost effective alternative to traditional OEO switches**

DIRECTLIGHT BEAM-STEERING

The Series 6000n 48xCC switch leverages Polatis' patented, highly reliable piezoelectric DirectLight beam-steering technology that sets the industry standard for lowest optical loss and highest optical performance. Polatis' beam-steering technology can be switched without light being present on the fiber. This allows operators to pre-provision paths as well as perform intelligent network monitoring and test over lit or dark fiber. The Polatis DirectLight technology can also switch bi-directional optical signals for PON, FTTx and other types of transmission systems.

ULTRA-COMPACT SIZE WITH HIGH ENERGY EFFICIENCY

The 6000n 48xCC is a high performance 48 port matrix switch fitted into a 41mm x 122mm x 266mm ultra-compact module that uses less than 5 Watts of power. The small form factor full-featured switch can be easily mounted on pluggable circuit packs to meet a broad range of application requirements. The 48xCC is specifically designed for integration with network equipment, fiber management systems along with test and measurement systems. The ultra-small form factor opens up an array of new applications where it was not possible to use all-optical switching in the past.

CUSTOMER CONFIGURABLE SINGLE-SIDED SWITCH FABRIC

The Polatis 48xCC switch is a single-sided switch fabric where the "CC" stands for "Customer Configurable." This means that any of the 48 fiber ports can be used as input or outputs unlike traditional double-sided NxM switches which have N defined inputs and M defined outputs where inputs can only be connected to outputs. Unlike a double-double sided switch, the ports on the 48xCC can be dynamically used as inputs or outputs and changed in real time. The same 48 port switch can be used as a 1x47, 24x24 or any other arrangement of 48 ports desired.

ADVANTAGE OF SINGLE-SIDED SWITCH FABRICS

Single sided fabrics can be built into more efficient single and multi-stage switch architectures than double-sided switches, which enables a higher degree of interconnection flexibility to monitor, test and reconfigure networks. They enable new and unique architectures for both networks and datacenters. The flexible port configuration also enables new and more efficient test architectures for components, circuit packs and system test networks.

SWITCH MODULE CONTROL AND INTERFACES

The switch module is controlled directly using the standard text-based SCPI protocol. Additionally, an optional NIC card is available to provide OpenFlow, NETCONF, SNMP and TL1 command languages along with a user-friendly HTML web browser to allow seamless integration with traditional and SDN-based network management systems. The switch software can be easily upgraded in the field without affecting in-service switch operations.

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SERIES 6000 48xCC Network Switch Module

BENEFITS OF POLATIS SWITCHING

- **Compact module size enables a wide range of new applications**
- **Low optical loss reduces the need for extra optical amplification and enables novel architectures**
- **Superior optical specifications enable operation at 100Gbs and beyond**
- **SDN OpenFlow and NETCONF interfaces enable faster deployment of new control applications**
- **Bi-directional, all-band transmission with minimal signal impairment provides truly transparent connections**
- **Fast switching times enable efficient provisioning and protection switching**
- **Dark-fiber switching enables preprovisioning and use with intermittent signals**

APPLICATIONS

- **Ideal for OEM applications**
- **Software-defined networking**
- **Data center aggregation**
- **Colocation peering**
- **Cloud computing and data center virtualization**
- **Automated access, metro and long-haul network operations**
- **Centralized equipment sharing and automated network testing**
- **Video feed distribution**
- **Automated systems verification testing**
- **Fast automatic provisioning and protection switching**
- **Component and board-level test automation**

Performance Parameters	Polatis 6000 48xCC Specifications
Maximum Matrix Switch Size (NxN)	48x48
Typical Insertion Loss	1.0dB
Maximum Insertion Loss[1]	2.0dB
Loss Repeatability	+/-0.1dB
Connection Stability	+/-0.1dB
Dark Fiber Switching	Yes
Bi-Direction Optics	Yes
Max Switching Time	25ms
Polarization Dependent Loss (PDL)	<0.1dB (C+L Bands)
Crosstalk	<-50dB
Operating Wavelength Range	1260-1675nm
Wavelength Dependent Loss (WDL)	<0.3 dB (C+L Band)
Return Loss (with APC connectors)	>50dB
Maximum Optical Input Power	+27dBm
Switch Lifetime	$>10^9$ Cycles
Operating Temperature	+10ºC to +40ºC <85% RH non-condensing
Storage Temperature	-40ºC to +70ºC <40% RH non-condensing

Electrical and Mechanical	Polatis 6000 48xCC Specifications
Fiber Type	Single Mode
Single Fiber Connectors	LC, SC, FC, or E-2000 connectors Angled or straight connectors types available
Array Connector Types	MTP-8 (MPX Elite) Array Connectors
Native Control Language	SCPI over RS-232 Serial
Control Languages (with optional Network Interface Card)	OpenFlow, NETCONF, TL1, SCPI & HTML over 10/100 Base T Ethernet
Power	12 VDC
Power Consumption	5W
Switch Module Size	41mm x 122mm x 266mm

All parameters are measured excluding connectors at 1550nm and 20ºC with an unpolarized source after thermal equalization unless otherwise noted.
1. Measured using the 3 patch-cord method as defined in ANSI/TIA/EIA-526-7-1998

Other Related Materials

- Polatis 48 port OSM Installation and Commissioning Guide, September 2015
- SCPI Operations Manual

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