

Achieve More with Optical Switching™

DATA SHEET



SERIES **6500n-PST**  
All-Optical Protection  
Services Switch Tray

COMPACT AUTOMATED 1+1 PROTECTION SWITCHING SOLUTION FOR UP TO 16 RX/TX LINE PAIRS



The Polatis Series 6500n Protection Services Switch Tray (PST) is a versatile solution for a wide range of protection switching applications. The PST can provide 1+1 all-optical protection switching for up to 16 transmission RX/TX line pairs in a compact 2 RU space and uses less

than 25 Watts. It can operate as a completely automated standalone protection switch or it can be controlled and monitored by a higher level network management system to expand its capabilities. The PST combines optical switching with integrated power monitors and optical splitters to provide a fast, efficient and cost-effective protection switching solution. If the equipment power is lost, the PST latches and holds the current switch state indefinitely. Protection switching is triggered on user command or automatically on loss of service, which is defined by user-settable optical power alarm thresholds. The Polatis 6500n-PST can be used to detect optical power degradations, line or equipment faults and will switch to a protection path in less than 30ms. The high-reliability PST can provide 1+1 fiber or wavelength protection in a wide variety of demanding telecom, datacenter or secure government applications.

**KEY FEATURES**

- Provides 1+1 protection switching for up to 16 bi-directional line services in a compact 2RU package
- Supports manual or fully automated protection switching and reversion
- Latches to hold all optical switch connections if equipment power is lost
- Can be used standalone or integrated with existing network management systems
- Fully programmed "drop-in" solution that simplifies provisioning and management
- Integrated switching, optical power monitors and signal splitters in a single package
- User-configurable major and minor optical power alarm thresholds
- Supports standard control interfaces with TL1, SNMP and secure, user-friendly web GUI
- Supports NETCONF and RESTCONF SDN control interfaces
- High-reliability design with redundant "hot-swap" power supplies and network interfaces
- Protocol and bit-rate agnostic up to 40Gbs, 100Gbs, 400Gbs and beyond
- Eco-friendly with low 25W power consumption

**AUTOMATIC PROTECTION SWITCHING**

The H+S Polatis Series 6500n-PST provides protection switching against fiber faults or any other conditions that cause loss or degradation of the optical signal power. The Series 6500n-PST supports both manual and fully automated protection switching operation. The manual mode allows remote users or network controllers to switch between working and protection lines and check monitor connection status. In the automated mode, protection switching is triggered when the optical signal goes outside of user settable high or low threshold alarm levels. The PST can be programmed to automatically revert back to the working line after the fault is repaired and a stable signal power is measured on the working line.

Figure 1 shows the internal PST block diagram for a six-line protection service. The 1+1 line protection is implemented by splitting the head-end optical signals over two diverse paths, one working and the other protection, and using a tail-end switch to select between the working and protection paths. The TX Section uses a passive optical splitter to duplicate the signals from a common input connected to the client transmitter. The splitter broadcasts the client signal on both the working and protection lines. The RX-Section uses an

optical switch to connect to either the working or the protection line to the client receiver.

There are four optical power monitors (PD-1 to PD-4) in each protection line service group. In the TX-Section, PD-1 is used to monitor the input transmitted signal power level. In the RX-Section, PD-3 monitors the power level on the working line and PD-3 monitors the power on the protection line. PD-2 is used to monitor the signal power out of the optical switch. Protection switching is triggered by a loss, or reduction, in power on the working-line optical detector PD-2 and the PST can detect faults and protection switch in less than 30ms.

All of the power monitors have user settable major and minor alarms that can be used to individually customize the protection switching threshold of each line service. The Series 6500n-PST can also be programmed to send minor alarms if the power on any service drops below a programmable minor (degraded) alarm level.

The PST can be used in a wide variety of line-side and client-side protection switching applications. This flexibility allows the PST to work seamlessly with single channel, CWDM and DWDM traffic protecting against equipment failures or fiber breaks.

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SERIES 6500<sub>n</sub>-PST<sup>T</sup> Protection Services Switch Tray

**BENEFITS OF POLATIS SOLUTION**

- Simple drop-in, stand-alone, protection switching solution
- Cost effective all-optical protection switching solution
- Low optical loss minimizes impact on system power budget
- Superior optical specifications enable format-independent operation at line rates to 100Gbs and beyond
- Fast 30ms detection plus switching time insures fast recovery
- Available in 6, 8 or 12 or service configurations

**6500n 1+1 PST part codes:**

**6 Protection Services**  
N-PST-12x6-HU1-HMHES-800

**8 Protection Services**  
N-PST-16x8-HU1-HMHES-800

**16 Protection Services**  
N-PST-32x16-HU1-HMHES-800



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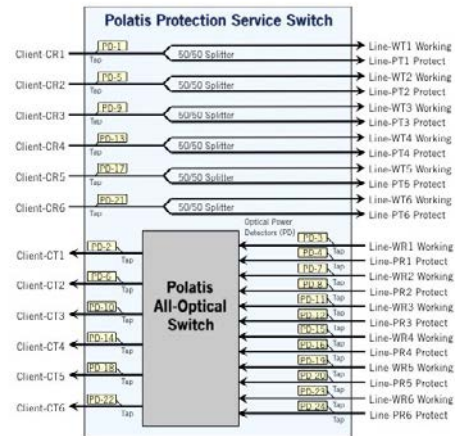


Figure 1: Block diagram of a six-line service on the Polatis Protection-Services Switch Tray (PST)

**SDN ENABLED WITH USER-FRIENDLY INTERFACES**

The Series 6500n Polatis PST offers NETCONF and RESTCONF Software Defined Network (SDN) interfaces which allow network and datacenter operators to dynamically and cost effectively setup, monitor and operate cloud-based network configurations. H+S Polatis works closely with innovative SDN partners to provide leading-edge fiber-layer virtualization solutions. In addition, the PST supports standard SNMP and TL1 command languages that allow for seamless integration with higher level control systems. Each PST optical switch also has an embedded user-friendly secure web browser GUI interface that can be used to provision, monitor, and control the switch, as well as facilitating simple field software upgrades without affecting in-service switch operations.

Performance Parameters	Polatis 6500n-PST Specifications
Number of Protection Services	6, 8 or 16 RX/TX Line Pairs
Insertion Loss <sup>1</sup> (Client-CR to Line-WT/PT)	4.0dB
Insertion Loss <sup>1</sup> (Line-WR/PR to Client-CT)	2.0dB
Connection Stability (Line-WR/PR to Client-CT)	+/-0.1dB
Dark Fiber Switching	Yes
Max Protection Switching Time	30ms
Polarization Dependent Loss (PDL)	<0.5dB (C+L Band)
Crosstalk	< -50dB
Operating Wavelength Range	1290-1330nm & 1510-1620nm
Return Loss	45dB
Optical Power Monitoring (OPM)	Dynamic range -25dBm to +20dBm Accuracy +/-1.0dBm
Maximum Optical Input Power	+20dBm
Switch Lifetime	>10 <sup>7</sup> Cycles
Operating Temperature	+10°C to +40°C <85% RH non-condensing
Storage Temperature	-40°C to +70°C <40% RH non-condensing

Electrical and Mechanical	Polatis 6500n-PST Specifications
Fiber Type	Single Mode
Single Fiber Connectors	LC Connectors (high density)
Control Protocols	TL1, SNMP, HTML, NETCONF and RESTCONF
User Interfaces	RJ45 Multi-Session Ethernet 10/100 Base T and USB
Craft Interface	RS232 Serial
Power options	Hot Swappable Dual Redundant 100-240 VAC 50/60 Hz Hot Swappable Dual Redundant -48 VDC
Power Consumption	25W

Fiber Connector	Polatis 6500n-PST Size (HxWxD)
LC-UPC	2RU x 19" x 9"

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