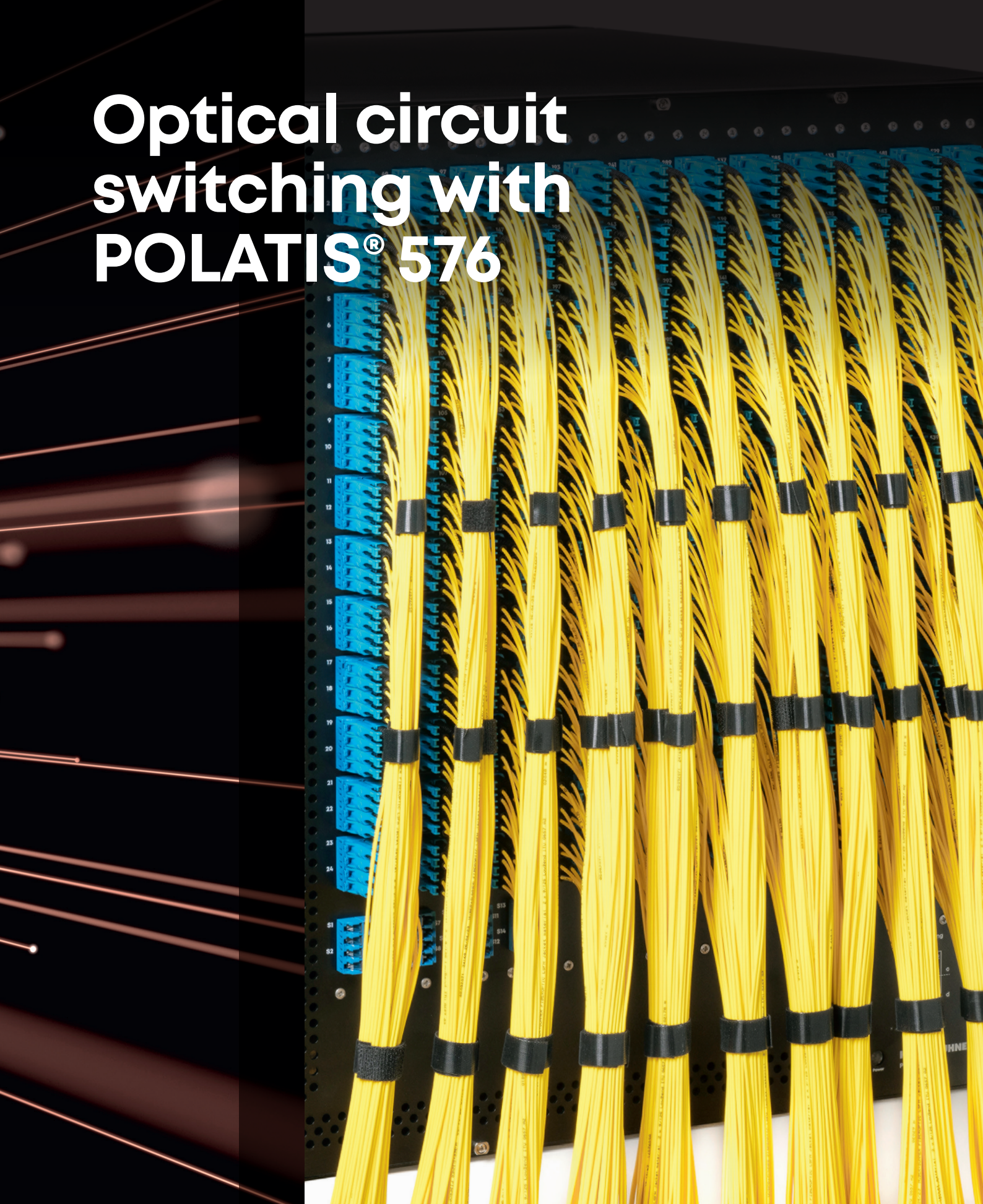


Optical circuit switching with POLATIS® 576



POLATIS® 576: Evolution of a market leader

The exponential increase in demand for data and the emergence of new technologies and applications is putting pressure on data centers, hyperscalers, telecom operators and government agencies to scale their network operations rapidly. Bandwidth and transmission speeds are increasing relentlessly to keep pace.

In many cases new network architectures are being developed to meet these market needs and they present a challenge for power consumption, optical budgets and resilience.

Automating the fiber layer is the first step towards increasing network efficiency and remote, software-controlled automated circuit switching plays a vital role in that.





Why optical circuit switches?



With very low insertion loss, optical circuit switches help to keep a tight rein on optical budgets.



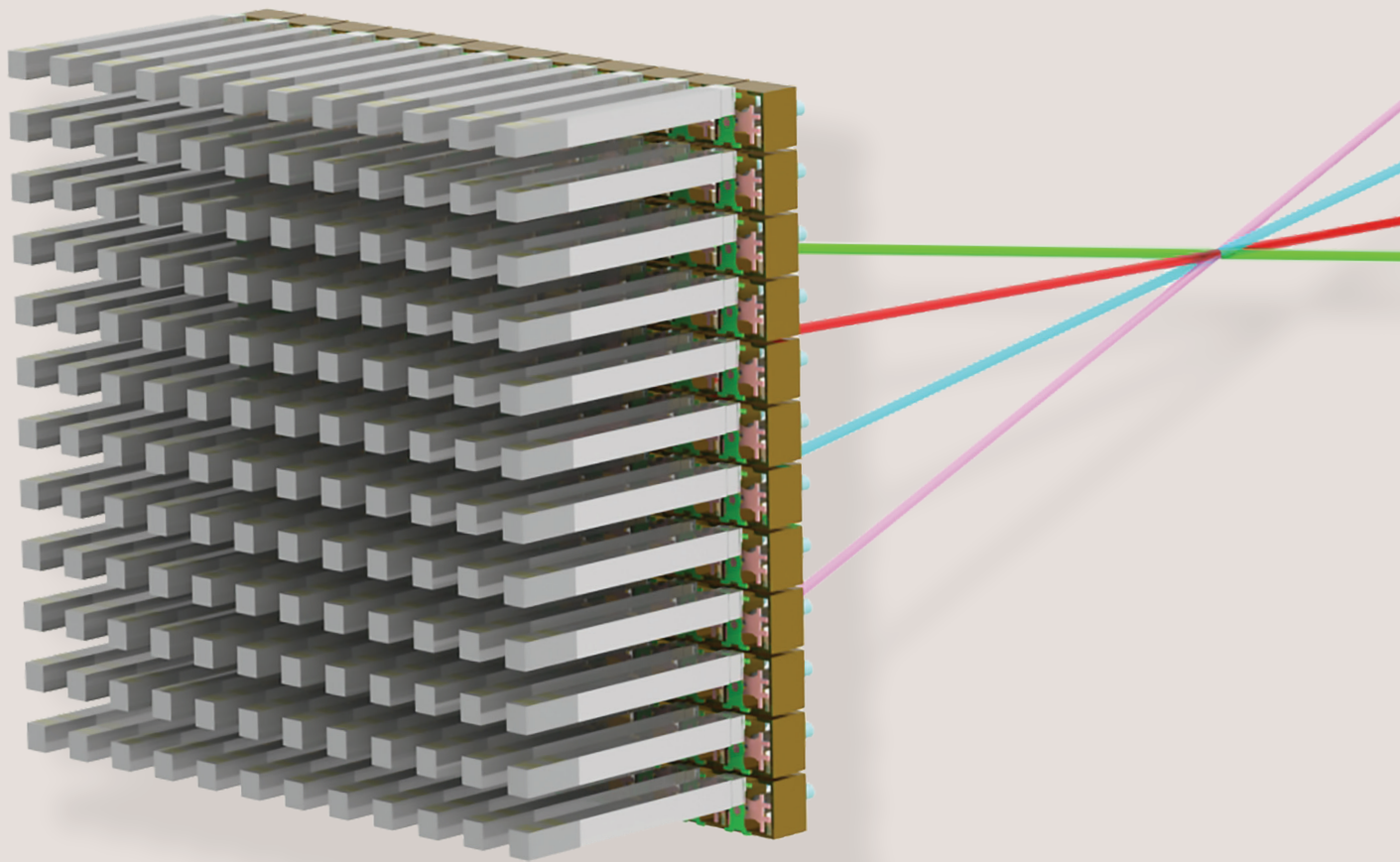
Data passing through an optical circuit switch remains in the optical domain, maintaining absolute security of the data in the network.



The very low power consumption of optical circuit switches compares favourably with opto-electrical switching technologies.

As networks and applications scale, the need for equipment to have ever greater resilience via fault tolerance and rapid fault recovery becomes even more acute, in order to maintain the availability of service, whether it be for a mission-critical government application or ensuring a consumer gets an excellent online shopping experience. The POLATIS 576 represents

a quantum leap in the development of optical circuit switches by HUBER+SUHNER Polatis. It is the product of a dedication to driving to the next size of optical matrix switch to meet the increasing market demand for capacity, while responding to the need for greater resilience with enhancements to its core technology and introducing some technical innovations.

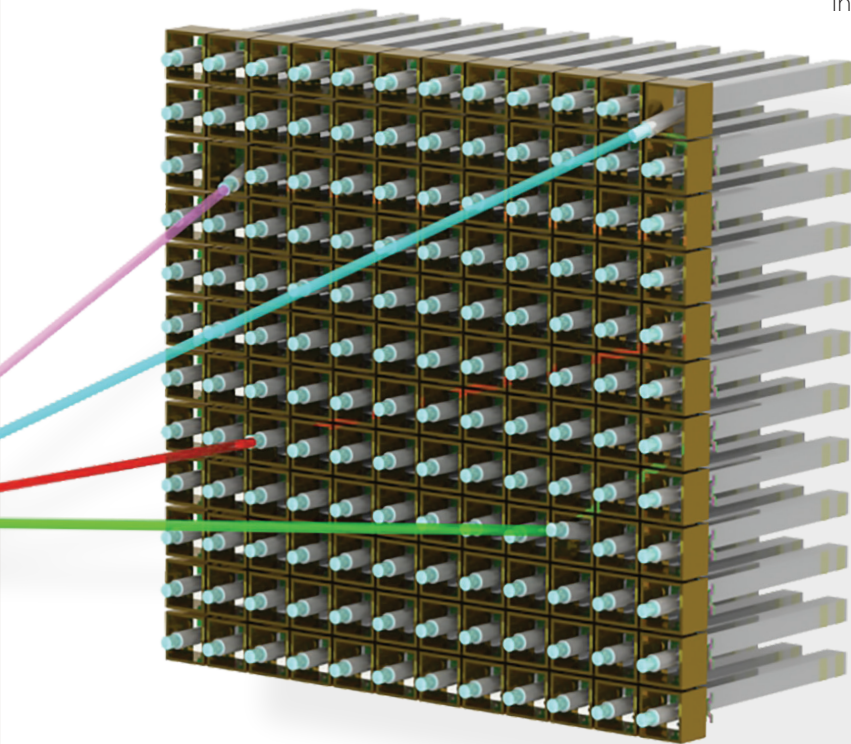


POLATIS® optical circuit switches

POLATIS patented DirectLight™ beam-steering technology is the proven market leader in the world of optical circuit switching. With no moving mirrors or robotic arms, DirectLight is the most reliable, highest-performing all-optical switching technology.

How does it work?

- The optical switch matrix core is made up of optical ports.
- An optical port comprises a compact piezo-electric actuator bearing a collimator connected to an input or output fiber.
- Individual ports are mounted in groups known as slices for ease of assembly but they continue to operate autonomously.
- The actuators align collimated beams of light from opposing arrays of input and output ports – no moving mirrors.
- Port alignment is maintained using feedback from integrated position sensors on a per port basis.



Benefits of DirectLight™ for optical circuit switching

- The monitoring of port alignment ensures individual connections are stable over time, temperature and external disturbances.
- Minimal loss, distortion or interference between paths leads to superior optical performance.
- Maintaining the signal in optical format through the switch matrix ensures very low latency on each connection.
- Maintaining the signal in optical format through the switch matrix preserves the security of the data being carried.
- DirectLight is agnostic to data rate, protocol and signal type, making it future-proof as transmission standards evolve.
- DirectLight is able to hold connections on unlit or low-light paths – dark fiber capability is ideal for pre-provisioning and switching low or intermittent power signals.
- DirectLight delivers rapid switching times whether on single connections or for reconfiguring the whole switch simultaneously.

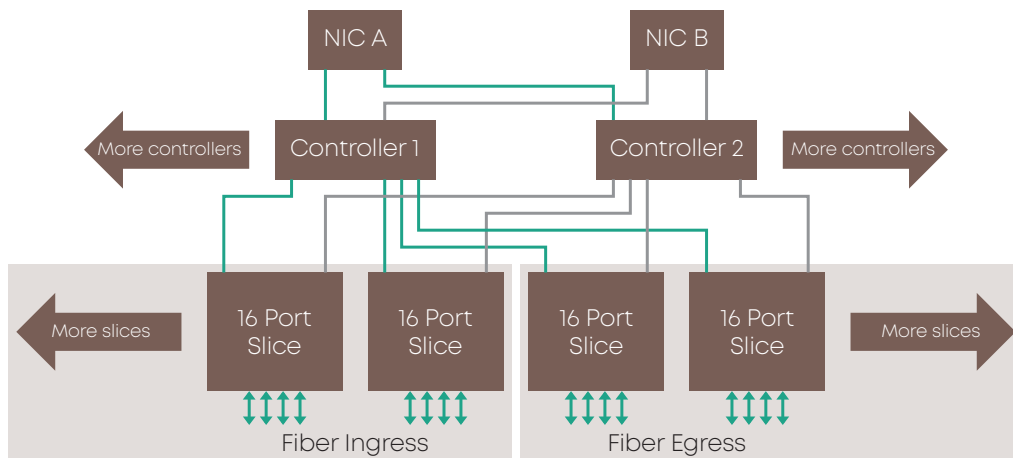
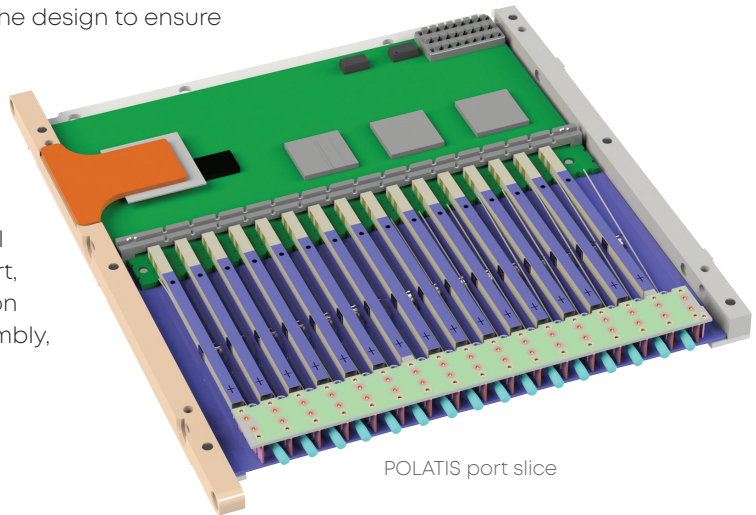
Reliability and resilience

New technology to meet new challenges

With a single POLATIS 576 offering over 330,000 light paths through the switch, reliability and fault tolerance rank very high in the design to ensure there is no single point of failure and faults are contained to a limited number of ports. Vital in mission-critical applications.

Control and recovery are devolved as far down the system architecture as possible.

In the latest iteration of DirectLight™, the control loop for the position sensor on each optical port, which plays a key role in maintaining connection stability, is tightly integrated with the port assembly, eliminating interconnects and minimizing the response path. Individual optical ports operate autonomously.

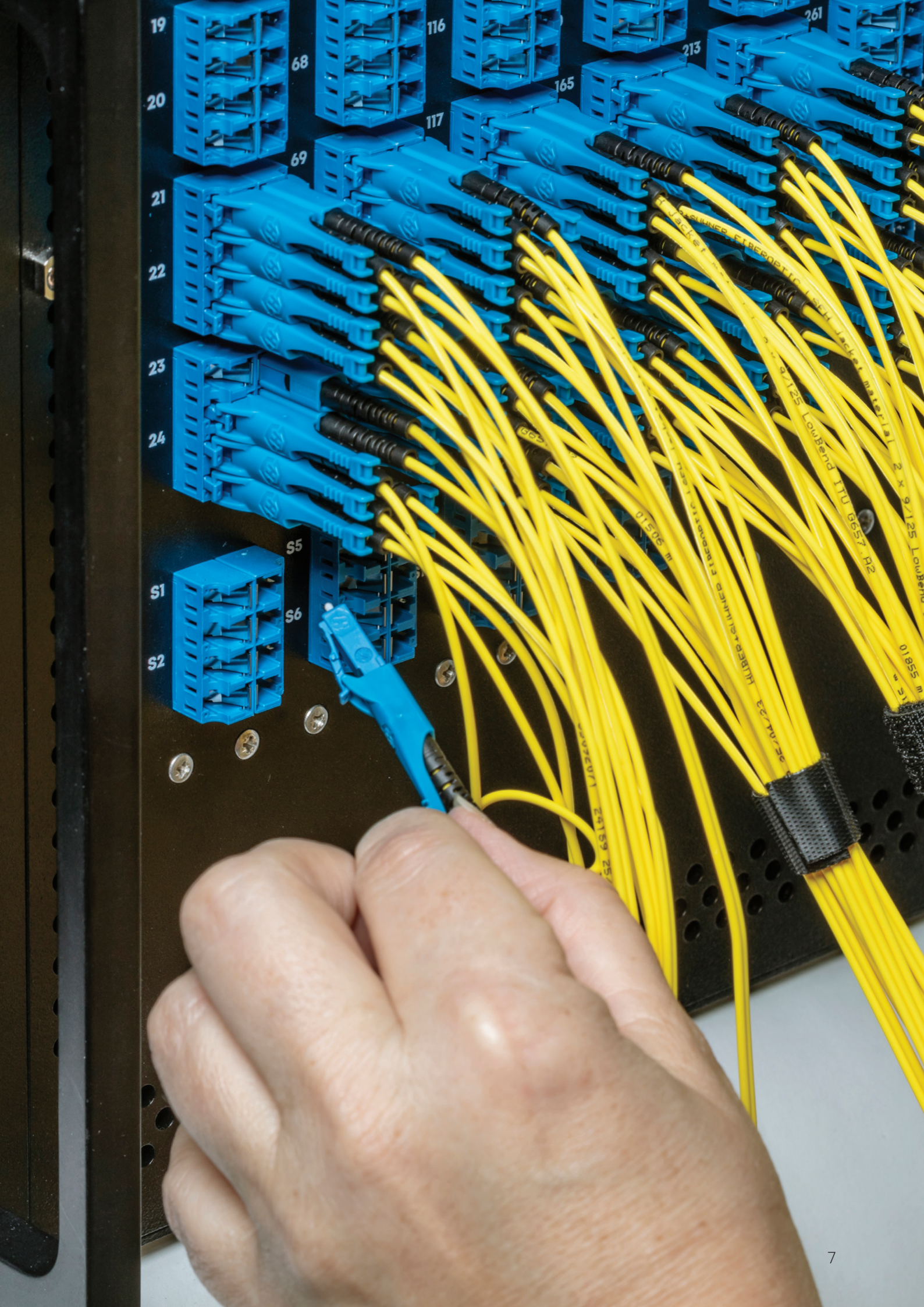


Above the port slices sit dual redundant controllers which are constantly monitored to determine which control circuit is better positioned to manage the section in its control and respond accordingly.

Dual redundant network interface controllers (NIC) which connect the switch to the rest of the network control system sit above the controllers with redundant communication paths.

A new high-speed data path between all the system elements ensures system responsiveness to network demands and allows the switch to manage operations at its increased scale, without missing a beat or compromising optical performance.

Finally, for the ultimate in speedy recovery of a port failure and to increase the availability of the switch, the POLATIS 576 can be specified with field-addressable spare ports (see right). In the event of a service being interrupted on a particular port, it can be rapidly rerouted by moving the affected fiber to one of the spare ports and reassigning the port in software.



POLATIS 576

Scaling up without compromise

Featuring DirectLight™ technology, the new, compact optical core of the POLATIS 576 allows for greater port density, minimizing the use of valuable rack space, enabling a fully non-blocking matrix of 576x576 ports to be accommodated in as a little as 8 RU with MPO connectors.

Increasing the size of the switch matrix does not mean compromising on optical performance either.

Switching time, insertion loss and connection stability continue the POLATIS track record of being best-in-class.

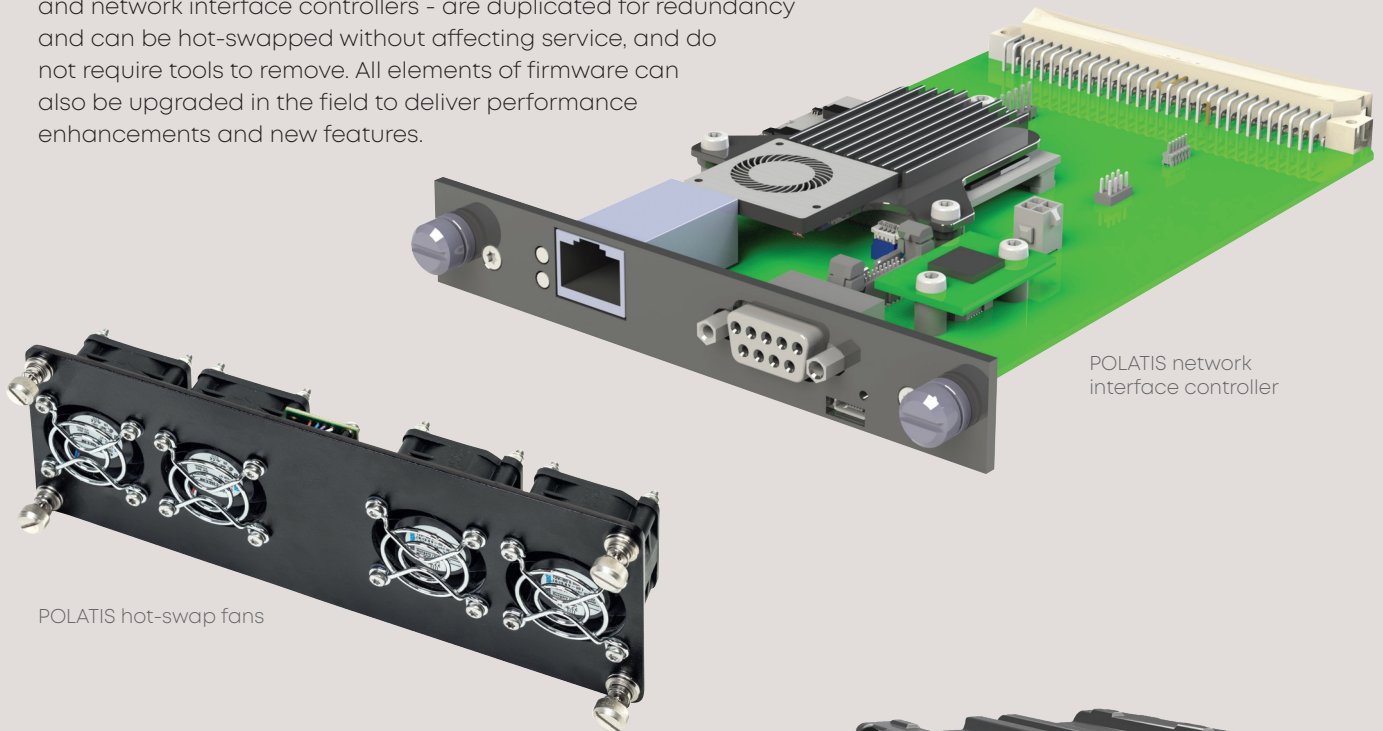


Ever conscious of the environmental impact of expanding IT infrastructures, the POLATIS 576 consumes very little power despite the increase in size over its predecessors. It also consumes many times less power than other switching technologies such as packet switches and routers.

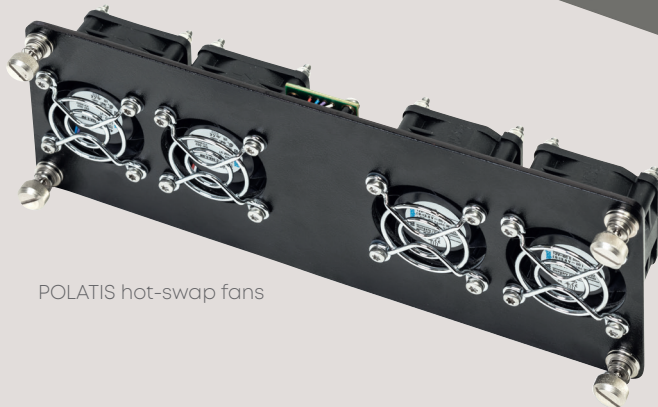


Field-replaceable units

For serviceability, all the field-replaceable units - fans, power supplies and network interface controllers - are duplicated for redundancy and can be hot-swapped without affecting service, and do not require tools to remove. All elements of firmware can also be upgraded in the field to deliver performance enhancements and new features.



POLATIS network interface controller



POLATIS hot-swap fans

A wealth of application configuration options

Optical power monitors can be specified for ports on just one side or both sides of the matrix, providing real time information about the optical power running through each connection path.

Adding Variable Optical Attenuation allows the operator to manage power levels through each connection, for example to protect sensitive equipment.

For deployments involving harsh transit conditions, the POLATIS 576 can be supplied in MIL 810 – compliant transport packaging.

Optional standoffs to the front and rear mean the switch can be laid on its front or back without damaging connectors to ease configuration and commissioning in tight spots.



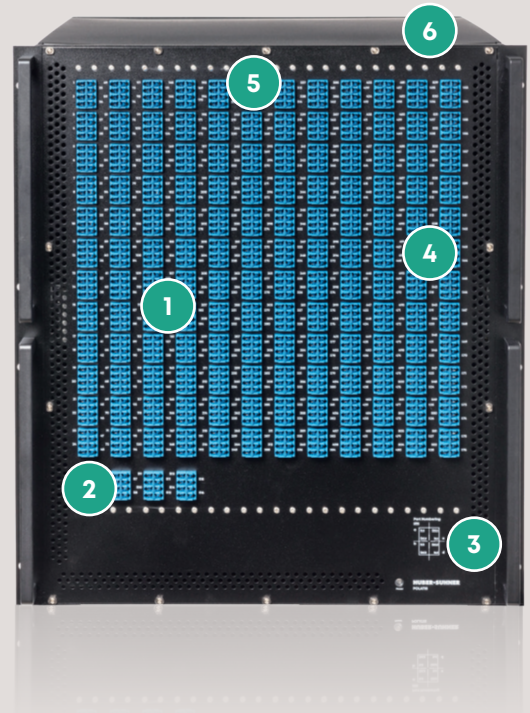
POLATIS MIL 810 packaging



Optional standoff

Overview

576x576 ports in a non-blocking matrix



1

Optical connector types available include LC, MPO-8 and MPO-12 and can be located on the front or rear panel as required.



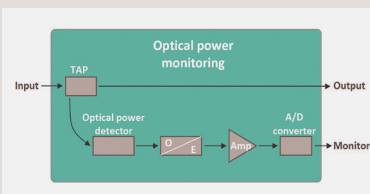
2

Optional field-addressable spare ports to recover service interruptions.



3

Optional front and rear standoffs to support configuring switch in tight spots.



4

Optional optical power monitors on input, output or both sets of ports.



5

Robust black powder-coated chassis with contrasting white labelling fitting an industry-standard 19" rack.



6

Field replaceable redundant fans, power supplies and network interface controllers to rear panel.

Integration

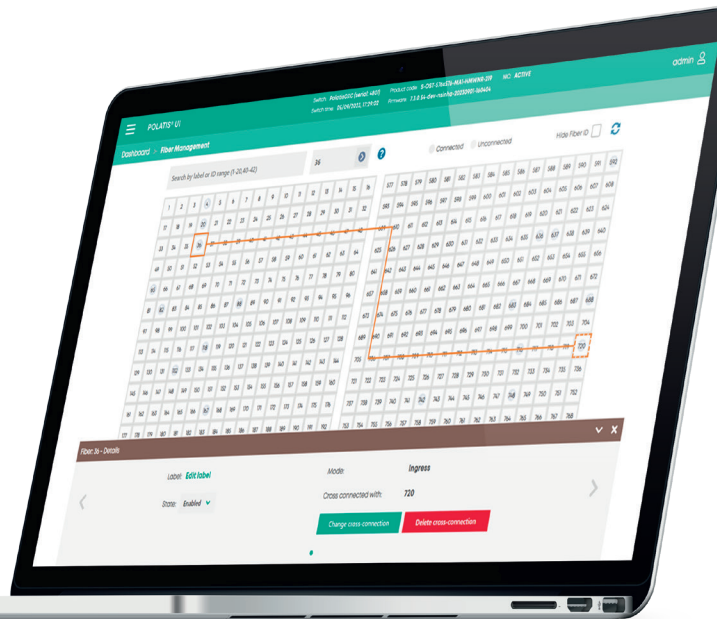
Network integration

The POLATIS 576 is supplied with a rich suite of application interfaces, enabling it to be integrated into any network control or orchestration system.

In addition to Command Line Interfaces such as TL1 and SCPI, the switch can be integrated with SDN controllers over RESTCONF and NETCONF interfaces.

The POLATIS 576 ships with the POLATIS Web UI as standard, an intuitive graphical solution to provide ease of switch setup and control from a web browser and which can run in tandem with other interfaces.

POLATIS Web UI



Securing your data and your users

In a networked world, security is everything and POLATIS supports a range of AAA protocols such as RADIUS and LDAP.

Your guarantee of success

With a POLATIS 576 at the heart of an automated fiber layer, operators can scale their application, relaxed in the knowledge that the resilience and reliability of the switch will support their ambition.

The manufacture of the port slices is automated to ensure high-precision assembly and repeatability of these key components.

Backed by almost a quarter of a century of R+D, manufactured with state-of-the-art technology in world-class facilities and supported by the HUBER+SUHNER global sales and service team, POLATIS 576 is the undisputed new market leader in optical circuit switching.



The HUBER+SUHNER advantage

HUBER+SUHNER offers a broad range of fiber optic products such as fiber cables, patch cords, fiber management, structured cabling solutions, POLATIS optical circuit switches, WDM components and more.

Worldwide sales and support are available to make sure our customers' systems continue to operate day in and day out.

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HUBER+SUHNER is certified according to ISO 9001, ISO 14001, OHSAS 18001, EN(AS) 9100, IATF 16949 and ISO/TS 22163 – IRIS.

Waiver

Facts and figures herein are for information only and do not represent any warranty of any kind.