

# 800G Optical Module and Liquid-Cooled Server Concepts



## Overview

These devices are critical for enabling ultra-high bandwidth communication and supporting the expansion of 800G and 1. A liquid-cooled optical transceiver integrates cooling technologies such as cold plates or microchannels directly into its design. With the rapid development of 400G, 800G, and even 1.6T optical modules, the power consumption of individual modules continues to rise, making traditional air cooling methods insufficient to meet the heat dissipation demands of high-density data centers and AI clusters. An ultra-compact, palm-sized AI productivity tool designed to handle inference for 200B parameter models and complex AI development right from your desktop. Zhejiang University First Hospital. The next key development is 800G, and the industry is already gearing up to deploy this next generation of client optics in hyperscale data centers. Developments in three distinct areas are needed for 800G deployment: optical modules and direct attach copper (DAC) cables, switch ASICs, and 800GE. ToneCooling provides custom-designed 800G optical module liquid cooling plates, engineered for hyperscale data centers, switch OEMs, and optical module manufacturers seeking stable, scalable, and production-ready thermal solutions. It is used to link the Quantum-X800 QM3x00 switches using Twin-port OSFP 2x800Gb/s transceivers to the dual 800Gb/s ConnectX-8 mezzanine card in liquid cooled system and ConnectX-8 PCIe.

## Article Content

Everything You Need to Know About 800G/1.6T Optical Transceiver

In contrast, the 800G tends to use 5nm DSP and traditional hybrid packaging. Additionally, the current power consumption and cost of the 1.6T optical module are quite high, and there is still a

OSFP 8x100G FR / DR8+ Liquid Cooling Module | AscentOptics

Liquid Cooling Transceivers OSFP 8x100G FR / DR8+ Liquid Cooling Transceivers AscentOptics" OSFP 800G DR8+ immersion cooled transceiver module is designed for use in 800 Gigabit Ethernet links

The New Era of Data Center Performance: Liquid-Cooled Optical ...

The rise of liquid-cooled optical transceivers marks a critical shift in the way we design and operate data centers. As the demand for higher speeds and greater power density continues to

Thermal Management Solutions Report for I/O Modules

Thermal management in data centers has always been challenging. But now, advanced applications such as artificial intelligence (AI) and machine learning are

H3C's Core Liquid Cooling Breakthrough: Redefining 800G Switch ...

Building on its S9827 series 800G switch platform, which already incorporates liquid cooling design and has been validated through large-scale deployments, H3C has refined liquid

From Airflow to Liquid Cooling: A Deep Dive into 800G

By selecting the right OSFP form factor based on cooling strategy (air vs. liquid) and system layout, operators can maximize module performance,

800G Optical Transceivers - Architectures, Progress

800G optical transceivers push module power toward 14-18 W. OSFP form factors offer better cooling headroom compared to QSFP-DD. Some hyperscale

800G OSFP Liquid Cooling Optical Transceiver Modules

AscentOptics" 800G OSFP optical transceivers with two-phase immersion cooling (2PIC) are fully compliant with the latest OSFP MSA standards. The firmware

Full-Scale Immersion Cooling of Optical Transceiver, PCBs

In this video from SuperComputing 2019, Arlon Martin and the Samtec Optical Group are demonstrating the latest developments in full-scale immersion

What is Liquid-Cooled Optical Module□

As data center cooling performance demands rise, liquid-cooled optical modules will emerge as a key trend in data center cooling.

### 800G Optical Module Liquid Cooling Plate | ToneCooling

What is a optical module liquid cooling? A optical module liquid cooling is a precision-engineered heat exchanger that uses liquid coolant flowing through internal

NVIDIA MMS4A20 800Gbps, DR4 Single-port OSFP,

Based on 9-um, single mode fibers, the 800G transceiver can reach up to 500-meters, supporting large GPU clusters. The plug formfactor is a single-port

### Liquid-Cooled Optical Transceivers for 800G/1.6T

This product line overcomes the limitations of traditional optical modules by maintaining reliability even under immersion depths of up to 10

### The New Era of Data Center Performance: Liquid-Cooled Optical ...

Explore the advantages of liquid-cooled optical transceivers for high-performance data centers. Learn how liquid cooling solutions improve thermal management, energy efficiency, and

### H3C's Core Liquid Cooling Breakthrough: Redefining 800G Switch ...

It employs a hybrid air-liquid cooling architecture, achieving precise liquid cooling coverage for core heat sources such as MAC chips and optical modules, while using air cooling as a

### The New Era of 800G Optical Transceiver

Therefore, AI servers have stringent requirements for underlying data transmission rates and latency, necessitating high-speed optical modules. This

### The 224G Breakthrough: Why OSFP224 is the Backbone of NVIDIA

Also known as the "Flat" top. These modules do not have fins; instead, they rely on a "riding" heat sink built into the device cage or a cold-plate in liquid-cooled environments. Application:

### Cooling the Network Revolution: Edgecore's Liquid and

Revolutionizing data center cooling with Edgecore's liquid cooling and immersion tech for AI, 800G networks, and sustainable performance.

### BRKOPT-2699

High-Speed Interconnects: Backend network requires high speed 100G/200G or 800G optics to connect servers and network switches. These high bandwidth connections are essential for handling the data

### Thermal Management Solutions Report for I/O Modules

This report will examine the limitations of legacy approaches for thermal characterization and management and explore new innovations in server cooling

Everything You Need to Know About 800G/1.6T Optical

With the maturity of supporting solutions such as liquid cooling technology and intelligent computing power scheduling, 800G/1.6T optical modules have not only

From Airflow to Liquid Cooling: A Deep Dive into 800G

The OSFP (Octal Small Form Factor Pluggable) has become one of the most widely adopted pluggable form factors for 800G optical modules in high

ECOC 2024: Source Photonics debuts immersion

Source Photonics, has released 800G DR8/DR8+ and 400G DR4/DR4+ immersion liquid-cooled optical transceiver series products (pictured)

Gigalight Liquid-Cooled Optics: A Thematic Study on

Conclusion Gigalight's immersion liquid-cooling extenders and silicon photonics liquid-cooled optical modules represent the future of optical

Heavy Reading White Paper: 800G Client Optics in the Data Center

The vast data centers used by cloud service providers have thousands of identical racks of servers and networking equipment. When hyperscale data center operators start deploying a new generation of

Immersion Liquid Cooling Optics - GIGALIGHT

GIGALIGHT offers 10G to 800G rates immersion pluggable optical modules with SFP+, SFP28, QSFP+, QSFP28, QSFP56, OSFP-RHS, QSFP112, QSFP-DD and OSFP

Heavy Reading White Paper: 800G Client Optics in the Data Center

Developments in three distinct areas are needed for 800G deployment: optical modules and direct attach copper (DAC) cables, switch ASICs, and 800GE standardization. Not all these need to be fully

FIBERSTAMP to Showcase Immersion Liquid-Cooled 800G Optical

At Booth #4008, FIBERSTAMP will present a live demonstration of its immersion liquid-cooled 800G optical module and 800G optical extender series, welcoming industry professionals to explore the

OCP EMEA 2025: FiberMall Demonstrates 800G

FiberMall's demonstration of the 800G pluggable optical module with immersion cooling showcases a significant improvement in energy efficiency.

## Contact Us

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