

Optical modules in liquid-cooled environments



Overview

As computing systems shift toward liquid cooling, an often-overlooked component, the optical module, is becoming a key focus. In highly integrated environments like NVIDIA's GB200/GB300, high-speed optical modules are not only vital for data transmission but also major heat sources. Liquid cooling works faster than air cooling and keeps your equipment working well. Good heat control gives you steady performance and helps keep electronics. As North American hyperscale data centers accelerate the deployment of immersion and direct liquid cooling, optical interconnects are being exposed to new risks such as condensation, coolant corrosion, and rapid temperature swings. Traditional optical module designs were never intended for such. High-power optical modules, liquid-cooled OSFPs, and emerging architectures such as XPO (eXtra-dense Pluggable Optics) are redefining thermal management requirements across modern data centers.



Article Content

Liquid Cooling for Optical Modules | Meet Stäubli at ECOC 2026

Discover Stäubli at ECOC 2026 and explore Mini QD, UQD and MQD solutions for liquid-cooled optical modules, OSFP, XPO and

FiberMall Launches Liquid-Cooled Optical Modules and AOCs, Driving ...

FiberMall, a global leader in optical communication solutions, today officially announced the launch of multiple liquid

Liquid-Cooled Heat Dissipation Technology for Co-Packaged Optics

With the rise of machine learning and artificial intelligence, data center power usage has increased continuously in recent years, and

OCP EMEA 2025: FiberMall Demonstrates 800G Pluggable Optical Modules ...

A further comparison of immersion cooling effects among the modules reveals that the cooling liquid, which has a

Understanding Liquid-Cooled Optical Modules and Heat

Discover how liquid-cooled optical modules manage heat efficiently in high-speed data systems. Explore

Pro-optics Launches Immersive Liquid-Cooled Optical Modules for

Immersion-cooled data center technology is gaining traction in the industry and is expected to generate revenue from liquid-cooled

DC Sustainability: Liquid Cooling for Optical Networking Equipment

Additionally, the article presents an innovative solution for integrating liquid cooling into

Simulation and experimental investigation of liquid-cooling thermal ...

Abstract This study explores the application of cold plate liquid cooling technology in co-packaged optics (CPO). By integrating

Liquid Cooling for Optical Networking Equipment

Liquid Cooling for Optical Networking Equipment Abstract: This article provides insights into a successful upgrade of

Gigalight Liquid-Cooled Optics: A Thematic Study on Data Center ...

As a leader in optical interconnect technology, Gigalight is pioneering immersion liquid-cooling extenders and silicon

WO2020150036A1

The liquid cooled optical cage structure provides single phase liquid cooling that minimizes the overall form factor of the cooling plate

Full-Scale Immersion Cooling of Optical Transceiver, PCBs

In this video from SuperComputing 2019, Arlon Martin and the Samtec Optical Group are

Deep Dive into Liquid-Cooled Optical Modules in the NVIDIA ...

As computing systems shift toward liquid cooling, an often-overlooked component, the optical module, is becoming a

Introduction to Liquid-Cooled Optical Modules and Development Trends

Liquid-cooled optical modules are specialized optical interconnect devices developed for high-density AI computing

ECOC 2024: Source Photonics debuts immersion

Source Photonics, has released 800G DR8/DR8+ and 400G DR4/DR4+ immersion liquid

What is Liquid-Cooled Optical Module□

Liquid-cooled optical modules are a powerful thermal management technology utilized in optical systems. The aim is

Arista Announces XPO High Density Liquid Cooled Pluggable Optics

Multi-source Agreement for 64-channel XPO module delivering 12.8Tbps capacity
Arista Networks (NYSE: ANET)

Immersion Liquid Cooling Modules | AscentOptics

This cable series the lack of optical transceivers which perform reliability in immersion even liquid immersion depth up to 10m, the

Liquid-Cooled Optical Transceivers for 800G/1.6T

The core concept of liquid-cooled optical modules is the integration of liquid cooling

GB300 Era: Liquid-Cooled Optical Modules for High-Efficiency ...

GB300 ushers in the liquid-cooled AI computing era, with liquid-cooled optical modules enabling efficient

Liquid-Cooled Optical Modules: Deep Dive into NVIDIA Blackwell

Explore the liquid-cooled optical module technology driving the NVIDIA Blackwell platform. Essential analysis of how liquid cooling

Cooling Environments

In these cases liquid cooling, and specifically warm water cooling, becomes an effective alternative for heat extraction. Liquid Cooling

Next-Gen AI Cooling by Stäubli at OCP

The new Mini-QD technology enables the liquid cooling of next-generation optical pluggable modules such as OSFP

Advanced Thermal Management Strategies | Molex

Thermal management plays a pivotal role in enhancing the reliability and efficiency of high-power pluggable optical modules. Explore

GB300 Era: Liquid-Cooled Optical Modules for High-Efficiency ...

By immersing modules in dielectric coolant or using dedicated liquid cooling interfaces, liquid-cooled optical modules

Liquid Cooling Is Submerging Racks: Are Your Optical Modules Ready to

As North American hyperscale data centers accelerate the deployment of immersion and direct liquid cooling, optical

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