Hot-selling large-core optical fiber for supercomputing centers



Overview

Currently, high-core ribbon fiber optic cables have entered large-scale commercial use, with accelerated penetration driven by pilot projects and bulk procurement of leading enterprises.

Key Takeaways

Hollow-core fiber (HCF) from Relativity Networks, co-manufactured with Prysmian, is currently a leading large-core optical fiber solution for AI and supercomputing data centers.

Overview of Hollow-

Core Fiber (HCF)HCF features a hollow central core through which light travels, replacing the traditional solid glass core. This design allows data to move nearly 50% faster and over 1. 5 times farther without introducing latency that can disrupt multi-location data operations, making it ideal for supercomputing and AI workloads.

Unlike conventional fiber, HCF extends the effective distance between data centers and power sources from 60 km to 90 km, providing greater flexibility in data center placement. Advantages for Supercomputing CentersUltra-low latency: Critical for AI inference and high-frequency computations where microsecond-level delays impact performance. High bandwidth: Supports 400G/800G and beyond, accommodating petabyte-scale data exchanges in GPU clusters.

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Scalability: Modular design allows for multi-rate optical modules and future upgrades to 1. 6T Ethernet. Integration: HCF solutions are compatible with existing fiber-optic interfaces, enabling seamless deployment in current infrastructure.

Leading Providers and Production

Relativity Networks, in partnership with Prysmian, is at the forefront of HCF production. Their collaboration leverages Prysmian's global manufacturing expertise and Relativity Networks' patent-pending HCF technology, enabling high-volume production to meet the growing demand from hyperscalers and AI data centers. Production is centralized at Prysmian's facility in Eindhoven, Netherlands, ensuring quality, reliability, and large-scale availability.

Complementary High-

Density Solutions

For supercomputing centers requiring dense cabling and immersion-ready solutions, companies like Leviton offer high-density fiber optic systems designed for AI and hyperscale networks, supporting rapid deployment and scalability. These solutions complement HCF by providing end-to-end connectivity and efficient management in high-performance computing environments.

Conclusion

For supercomputing centers and AI-focused data centers, hollow-core fiber from Relativity Networks and Prysmian represents the current hot-selling large-core optical fiber, offering speed, distance, low latency, and scalability. When combined with high-density cabling solutions, it provides a future-proof infrastructure capable of supporting the exponential growth of AI workloads and hyperscale computing demands.

Article Content

Fiber Optics Industry Leaders Announce Collaboration to Define a

TeraHop is a world leader in providing high-speed optical connectivity solutions for AI and Data-Center networking applications, with head quarter in Singapore and global footprints in the US,

High-Core Ribbon Fiber Optic Cables: Core Solution for Data Center ...

Currently, high-core ribbon fiber optic cables have entered large-scale commercial use, with accelerated penetration driven by pilot projects and bulk procurement of leading enterprises.

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Major fiber vendors strategize for huge demand from AI

There''s going to be a big surge in demand for fiber in 2026, and Fierce Network checked in with some major fiber vendors — STL, CommScope, Clearfield and Corning — to gauge their

Multi-Core Fiber (MCF) Options for 400G-PAM4 Data Center

This may pose a challenge to the fiber vendors as they will have to be able to select cores for this parameter prior to putting those cores into a blank, if that is practical.

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OFC 2025: Hollow core fiber hype stands out amid the

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Fiber optics for data centers: the state of the art in 2025

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Blog Fiber optics for data centers: the state of the art in 2025 The datacom optical component market will grow over 60% to exceed $16 billion in revenue during 2025, driven primarily

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Optical interconnection networks for high-performance systems

Abstract Large-scale high-performance computing (HPC) systems in the form of supercomputers and warehouse-scale data centers permeate nearly every corner of modern life from applications in

Hollow core fiber cable technologies

Hollow core fibers (HCF) are innovative optical fibers having the potential to break the limits of conventional optical fibers. Examples of innovation are ultra-low loss potential, ultra-low

Hollow-Core Fiber: A Key Breakthrough for Data Center Interconnect

Hollow-core fiber (HCF) uses air instead of glass to transmit light, delivering lower latency, lower loss, and higher capacity than conventional fibers. With rapid progress in technology, HCF is poised to

How will fiber and equipment vendors meet the increased demand for ...

Fiber optic network equipment vendors like Ciena and Nokia are preparing for increased demand in 2026 by significantly ramping up production of high-speed optical components (like 800G

Inside Nvidia''s $4B Optical Strategy--And Why CPO

Marvell believes the increase in fiber usage will be so large that the industry must create new innovations to manage it. Optical Demand Is Inflecting

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