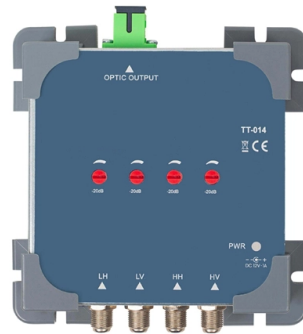


## Largest core optical cable



### Overview

Discover the best fiber optic manufacturers globally, offering cutting-edge multimode and single mode fiber solutions.

### Key Takeaways

The current largest core optical cables have 13,824 individual fiber cores, developed for ultra-high-density data transmission. Overview of Ultra-High-Density Optical Cables

The largest core optical cables in the world are 13,824-core ultra-high-density cables, recently developed and mass-produced by companies such as Furukawa Electric and China Information and Communication Technologies Group Corporation (CICT) . Each "core" represents a single optical fiber capable of transmitting light independently, meaning a single cable can carry 13,824 separate data channels simultaneously.

#### Technical Features

- **Outer Diameter:** Despite the massive number of cores, these cables maintain a compact 40 mm diameter, roughly the size of a golf ball .
- **Fiber Arrangement:** The high density is achieved using rollable ribbon technology, where ultra-thin fibers (0.2 mm each) are bonded into flexible ribbons and efficiently folded within the cable .
- **Transmission Capacity:** Doubling the fiber count compared to previous generations effectively doubles the data transmission capacity, making these cables ideal for AI-focused data centers and hyperscale computing environments .

- **Efficiency:** A single 13,824-core cable can replace 48 conventional 288-core cables, saving over 90% of pipeline resources and reducing installation complexity .

#### Applications

These ultra-high-density cables are primarily used in:

- **Data Centers:** Supporting massive interconnectivity for AI accelerators and GPU clusters.
- **High-Capacity Networks:** Enabling large-scale optical communication infrastructure with minimal physical footprint.
- **Submarine Networks:** While submarine cables like NTT's 192-core multicore optical fiber exist, the 13,824-core cables are optimized for terrestrial high-density deployments rather than long-distance undersea transmission .

#### Comparison to Other High-Core Cables

- **NTT 192-Core Submarine Cable:** Designed for undersea networks, it uses multicore optical fiber (MCF) to quadruple transmission capacity without increasing cable diameter .
- **19-Core Long-Distance Fiber:** Achieved record transmission of 1.02 petabits per second over 1,808 km, demonstrating high-capacity long-haul performance .
- **13,824-Core Cables:** Focused on ultra-dense, short-distance, high-bandwidth applications, particularly in AI and hyperscale data centers .

#### Key Takeaway

The 13,824-core optical cable represents the largest number of cores in a single optical cable to date, combining extreme fiber density with compact design to meet the growing demands of AI, cloud computing, and high-speed data networks. This innovation significantly improves cabling efficiency, reduces infrastructure costs, and supports the next generation of high-capacity optical communication systems.

## Article Content

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The core of step index multimode fiber is made completely of one type of optical material and the cladding is another type with

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Fibre optic cable selection guide

This fibre optic cable selection guide explains the differences between the different types and the commonly available construction

Fiber-optic cable

A TOSLINK optical fiber cable with a clear jacket. These cables are used mainly for digital audio connections between devices. A

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