

Hollow Core Fibre and Adapter

— Product Description

Breaking away from traditional solid-core fibre transmission mediums, hollow-core fibres feature an air-guiding waveguide structure. They are characterized by low latency, wide transmission bandwidth, low loss, and low nonlinearity, making them ideal for high-capacity, high-speed, low-latency, and long-distance optical transmission networks. These networks are particularly well-suited for various fields, such as computing power networks, AI data centers, dedicated lines for industrial finance, and electric power networks. Additionally, hollow core fibres exhibit ultra-low Rayleigh scattering, low dispersion, large effective area, tunable wavelength, and higher laser damage thresholds. These properties render them highly promising for applications in high-power laser transmission, ultraviolet to mid-infrared optical transmission, pulse compression, quantum transmission, and gas sensing. As a world-leading supplier of communication fibre products, YOFC is committed to the research and development of hollow core fibre series. By leveraging independently synthesized raw materials, a capillary preparation process with precise size control, and a cutting-edge drawing process for hollow core fibres, YOFC has developed a range of hollow core fibres suitable for wavelengths spanning from visible light to mid-infrared. These fibres have achieved internationally leading performance levels and scale production. Furthermore, YOFC offers a comprehensive suite of solutions encompassing hollow core fibre cables and hollow core fibre adapters, ensuring rapid responses to diverse customer needs and facilitating batch delivery.

— Applications

- Low-latency communication
- Special-wavelength optical transmission
- Gas detection/laser
- Fluid sensing/detection
- High-power laser transmission

— Product Features

- Multi-layered, nodeless, negative curvature structure
- Low loss and long delivery length
- Customizable in terms of transmission wavelength, core diameter, and fibre size
- Large mode field diameter, low nonlinearity, high damage threshold, and suitable for gas/liquid filling

— Performance Parameters of Hollow Core Fibre

Table 1 Geometrical and Optical Characteristic Parameters of Hollow Core Fibre

Fibre Type	HCF-235/ 370-C+L	HCF-235/ 370-O	HCF-235/ 370-1 μ m	HCF-215/ 360-0.85 μ m	HCF-325/ 460-2 μ m	HCF-425/ 540-3 μ m
Geometrical Properties						
Core diameter (μ m)	30 \pm 2	30 \pm 2	30 \pm 2	27 \pm 2	40 \pm 2	52 \pm 2
Cladding diameter (μ m)	235 \pm 5	235 \pm 5	235 \pm 5	215 \pm 5	325 \pm 5	425 \pm 5
Coating diameter (μ m)	370 \pm 10	370 \pm 10	370 \pm 10	360 \pm 10	460 \pm 10	540 \pm 10
Optical Properties						
Transmission window (nm)	1530-1625	1260-1360	980-1100	800-920	1960-2120	2820-3100
Maximum attenuation (dB/km)	0.5	0.5	2	1.4	1.4	62
Mode field diameter (μ m)	21 \pm 2 @1550nm	20.5 \pm 2 @1310nm	20 \pm 2 @1060nm	19.5 \pm 2 @850nm ***	28.5 \pm 2 @2000nm ***	37 \pm 2 @3000nm ***
Dispersion coefficient (ps/nm/km)	3 \pm 3 @1550nm	3 \pm 3 @1310nm	—	—	—	—
Macro-bending loss/ D60-100 turns (dB)	\leq 0.1 @1550nm	\leq 0.1 @1310nm	—	—	—	—

*Hollow core fibres with other wavelengths can be customized

**Both the fibre attenuation and the delivery length can be customized to meet the customer's requirements

***Simulation results

Note: The hollow core fibres shall be stored in a sealed manner.

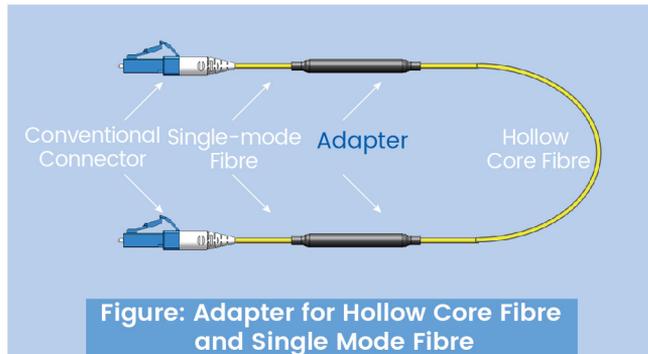
— Hollow Core Fibre Adapter

A hollow core fibre adapter is designed to connect hollow core fibres with single-mode fibres. Featuring a modular packaging design, the adapter enables optical power coupling between hollow core fibres and single-mode fibres with low insertion loss and low return loss. It allows for direct connection of hollow core fibres to existing transmission systems, enhancing user convenience. Furthermore, when used in conjunction with hollow core fibre cables, the adapter contributes to the construction of a complete low-latency communication system.

— Specifications

Optical Properties	Range
Insertion loss	$\leq 0.5\text{dB}$
Return loss	$\geq 40\text{dB}$

Geometrical Properties	
Length of hollow core fibre	$> 1\text{m}$
Length of single-mode pigtail	1~1.5m
Single-mode connector	Customizable
Encapsulation box description	4*6*60mm



— Hollow Core Fibre Splicing

YOFC offers hollow core fibre cable splicing services, achieving a hollow core to hollow core splicing loss as low as 0.05 dB. This offers customers a one-stop optical interconnection solution.



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