Technical parameters of fiber optic collimator

Article Overview

Fiber optic collimators are defined by parameters such as beam diameter, divergence, focal length, lens type, fiber compatibility, wavelength range, and alignment precision.

Key Parameters

1. Beam Diameter and Spot Size The collimated beam diameter is determined by the fiber's mode field diameter (MFD) for single-mode fibers or core size/NA for multimode fibers, combined with the lens focal length. Adjustable collimators or zoom collimators allow variable beam diameters, while fixed collimators produce a specific beam size at the design wavelength . 2. Beam Divergence Beam divergence depends on the fiber type, lens focal length, and lens quality. Lower divergence is achieved with longer focal lengths and high-quality aspheric or doublet lenses. Divergence affects the Rayleigh length and free-space propagation distance . 3. Lens Type Common lens types include:

• GRIN lenses: Compact and cost-effective, suitable for small beams and standard telecom fibers.
• Aspheric lenses: Minimize spherical aberration, ideal for high-quality collimation.
• Singlet or doublet lenses: Used for larger beams or broadband applications, correcting spherical and chromatic aberrations . 4. Focal Length The distance from the fiber end to the lens determines collimation. Longer focal lengths produce larger, less divergent beams, while shorter focal lengths yield compact collimators with hig...

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Fiber optic collimators and their applications is the topic of this blog article. This blog article is

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Fiber Optic Collimators

These collimators can be glued into a 2D array with high precision and all light channels are thus parallel. The type of fiber, the

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Fiber Optic Collimators | MEETOPTICS Academy

Fiber-optic collimators are used to launch the light from an optical fiber into a free space collimated beam with specified beam

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