

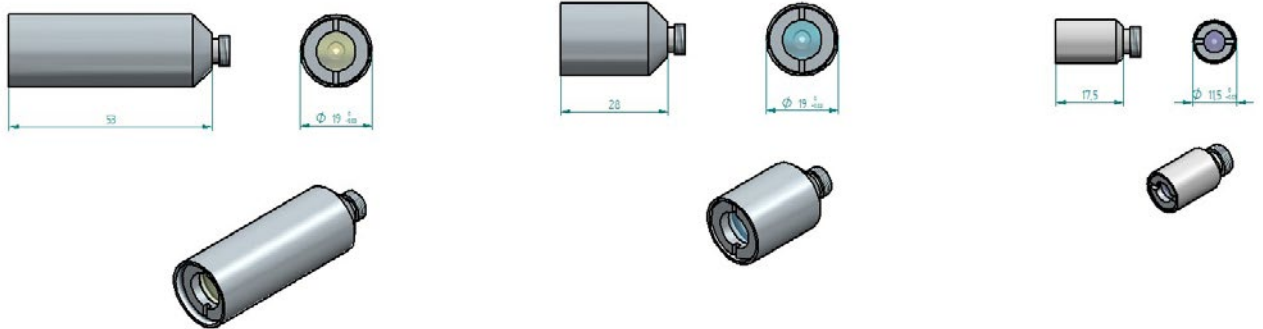
Fiber-optic Collimator

To couple light both into and out of an optical fiber, it is essential to have a collimated light beam. With the help of an optical collimator, the divergence of the light beam can be significantly reduced. To meet this demand, LASER COMPONENTS developed its own collimator systems. These solutions are manufactured at the production facility in Olching and are currently available with six focal lengths, three housing assemblies, and various coatings. Emphasis is primarily placed on single-mode fibers, silica fibers with an NA of 0.22, and hollow-core fibers. These collimators can be focused mechanically and are available for SMA and FC connector systems.



Specifications

Applicable with following fiber types	Single mode 9/125, Step-index fibers with NA 0.22, Hollow-core fibers with 750-1000 µm core diameter
Wavelength range	350 – 700 nm, 650 – 1050 nm, 1050 – 1600 nm, 10.6 µm
Connector system	SMA, FC wide key, FC small key, FC/APC wide key, FC/APC small key (other connector systems available upon request)
Temperature range	-40 – +140 °C
Housing dimensions Design for single-mode and multi-mode fibers Design for CO ₂ fibers	19 mm in diameter, 28 mm in length / 11.5 mm in diameter and 17.5 mm in length 19 mm in diameter and 53 mm in length
Power efficiency multimode fiber	>/=85%
Power efficiency CO ₂ fiber	>/=90%



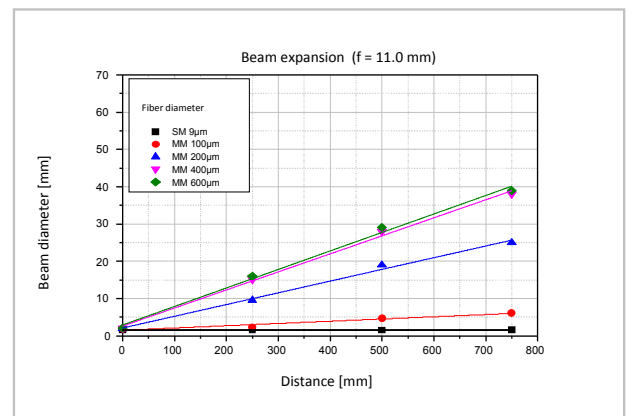
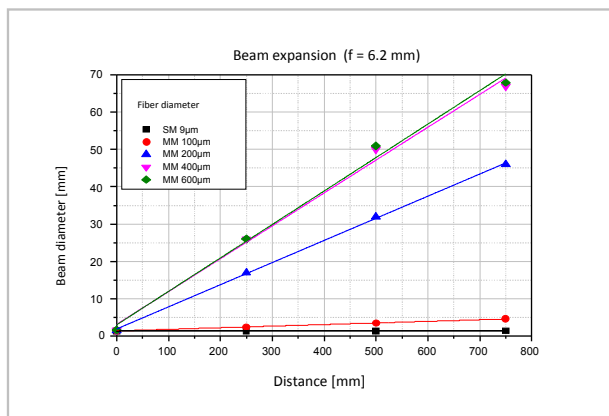
Beam diameter of collimators

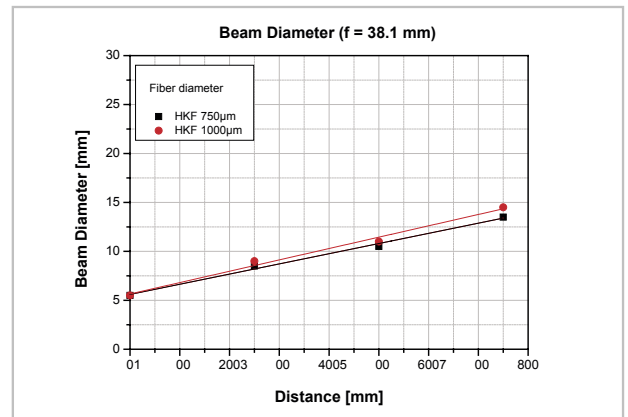
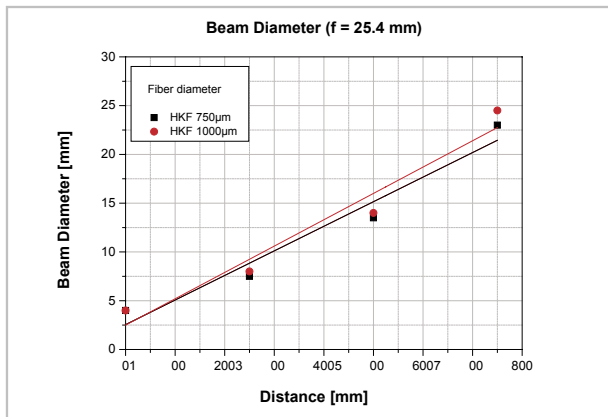
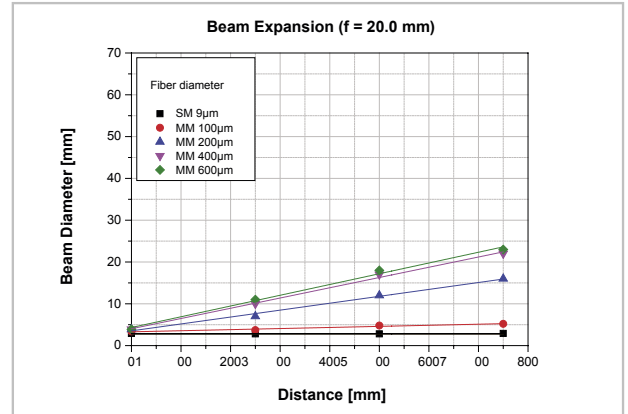
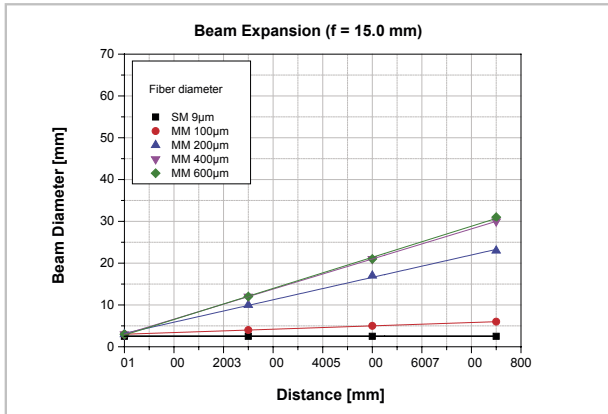
Collimator (Vis/IR)

Lens / NA fiber	Theoretical beam diameter at the collimator exit (Fiber-core overlap) NA 0.22
f = 6.2 mm	2.8 mm
f = 11 mm	4.9 mm
f = 15 mm	6.7 mm
f = 20 mm	9 mm

CO₂ collimator

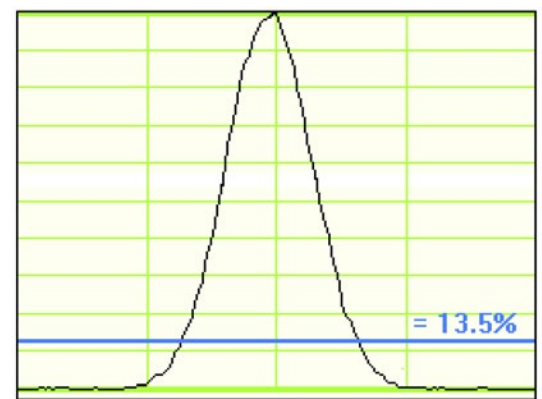
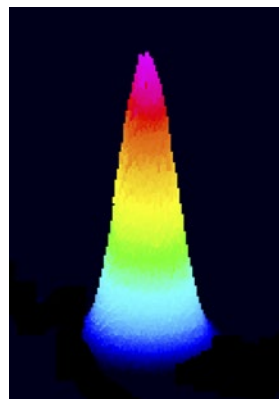
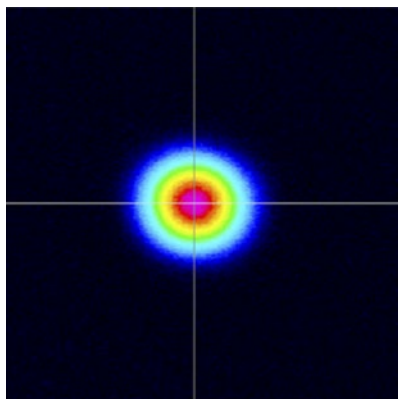
Lens \ fiber	Beam diameter (after measurement)
f = 25.4	4 mm
f = 38.1	5.5 mm





f = (focus length), SM (single-mode), MM (multi-mode), NA (numerical aperture)

Beam profile from a single-mode fiber



Collimated beam at collimator exit by using an SM fiber with a core diameter of 9 µm.

Beam diameter: 2.5 mm at $1/e^2$ (achieved with a focal length of 6.2 mm)