Midel Photonics

ALL-REFLECTIVE
Ring-Core Shapers
based on micro-structured mirrors

The Ring-Core Shaper is specifically designed for material processing applications, offering unparalleled depth of focus for stable and reliable production. By stabilizing the keyhole, it enables faster and more efficient operation with reduced spatter, ensuring the highest quality. With a customizable ring diameter and a uniquely adjustable power distribution between the ring and the central laser spot, this beam shaper ensures exceptional precision. It is particularly well-suited for welding and cutting processes where both speed and quality are critical.

Ring-Core Solutions

Uncompromising Quality

The ring diameter and power ratio are precisely customized to your specifications and system requirements as a standard.

- **Unmatched Depth-of-Focus**: Up to 5x propagation stability
- **Exceptional Homogeneity**: with smallest core size
- **Robust against Thermal Lensing**: Ideal for multi-kW-setups

Midel Benefits

Core

System-Adapted DOE with Individual Support: The winning strategy for beam shaping in industrial context

Valuable

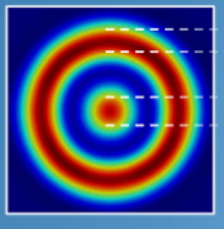
Superior Productivity by unmatched efficiency in shaping laser light

Fast Delivery within 3 weeks

Baseline

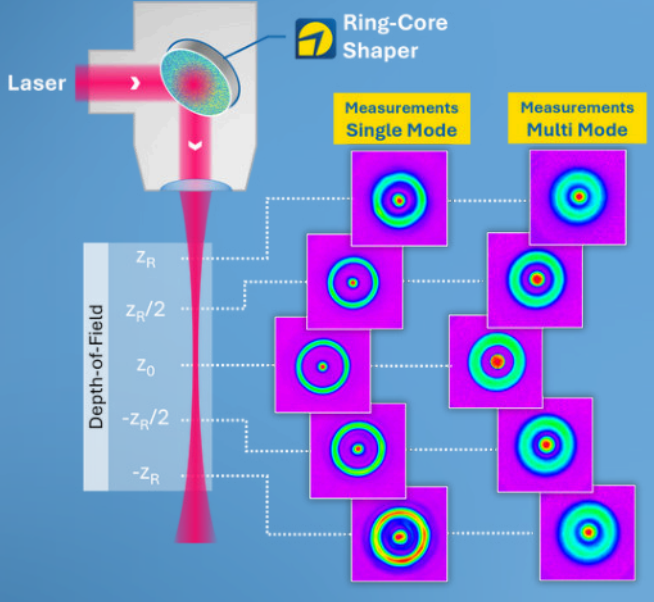
All Lasers, all Power Levels: Deep-UV to Near-IR, femto to continuous, low power to 50kW+

Parameters & Measurements



Ring Width
(~0.8 Spot Width)
Core Width
Diffraction Limited
$(M^2 \lambda f / 2\pi w_{in})$

Ring Diameter
Individual



Measurements with Primes MicroSpotMonitor MSM+ with single- and multi-mode systems up to 3kW

Contact us for your optimal Ring-Core solution. Fully customized and in your hands faster than ever!

Start NextGen Laser Processing!
Say Hi to our Team.

Call us +49 (0)228/28-679710
Write us info@midel-photonics.de
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Specifications

Ring-Core Geometry

Core Width	1.0 * Gaussian spot diameter (1/e²)
Ring Width	0.8 * Gaussian spot diameter (1/e²)
Ring Diameter	Individualized
Efficiency	85-95% | >95% version available on request
Depth of focus	~ 100% of Gaussian spot for both core & ring

Input Beam Requirements

Input Beam	Works with single- or multi-mode
Input Beam Diameter	Up to diameter 16mm (AOI=45°)
Wavelengths	1064/1030 nm; 532/515 nm; 450 nm; 355/343 nm; 266 nm; others on request
Clear Aperture	Clear aperture ≥2x beam diameter (1/e²)

Integration

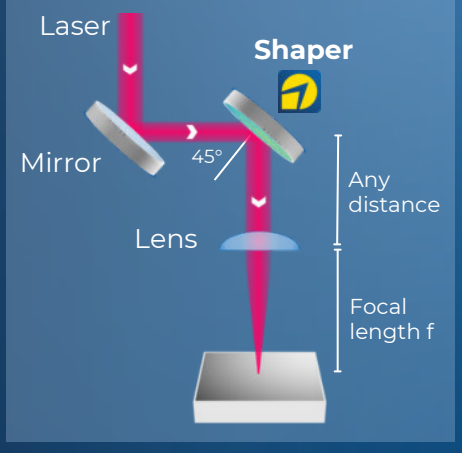
Alignment	Lateral alignment required
Setup	Recommended: Integrate into collimated beam with a focusing lens (see below). For setups without a lens, contact us for analysis.

Further Specs

Material	Micro-structured dielectric HR coating on fused silica substrate
Reflectivity	>99.9% @ 1064/1032 nm; 532/515 nm; 355/343 nm; >99.8% @266 nm
Dimensions	Ø25mm/1" and Ø50mm/2". Other dimensions on request.

Configurations

Parallel / Z-Folded



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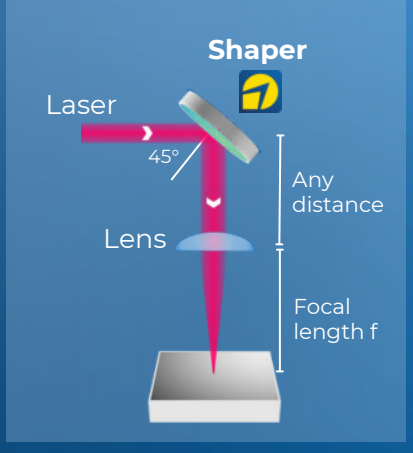
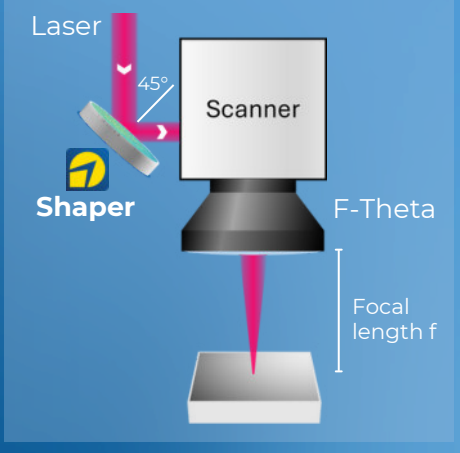


Scanner



Other configurations and angles-of-incidence (AOI) available

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Version 1.3