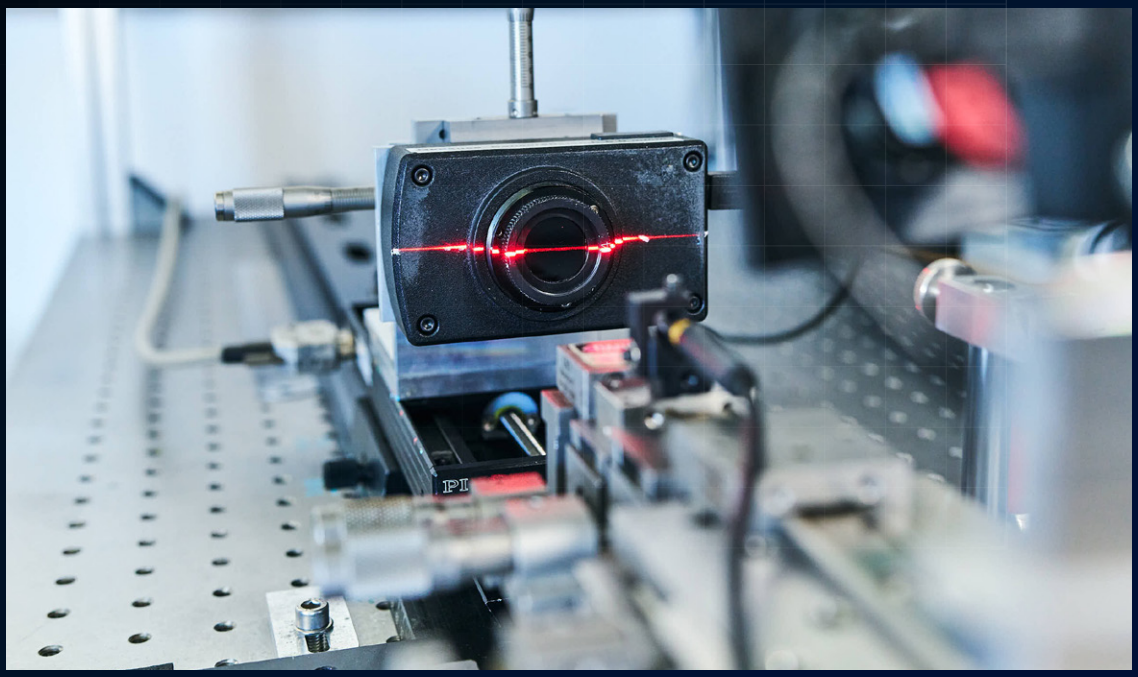
GRINTECH

Gradient Index Optics

Laser Line Modules



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Ultra compact GRIN lens-based laser line modules for high precision cutting-edge technologies

GRIN micro-optical components with plano-optical surfaces generate a homogeneous laser line from a Gaussian beam of a single-mode laser diode.

- Red laser diode: QDLaser – QLF063A-AA, λ = 660 nm, PLD = 50 mW
- Red, green, blue wavelengths are available as standard
- Exceptionally compact module size of 6.50 mm × 14.0 mm
- Weight of only 1.5 g
- High uniformity homogeneity of the laser line, up to +/- 5% for different wavelengths
- Almost diffraction-limited focus size

Applications: 3D Contour Mapping, Optical Adjustment, Machine Vision, Biomedicine

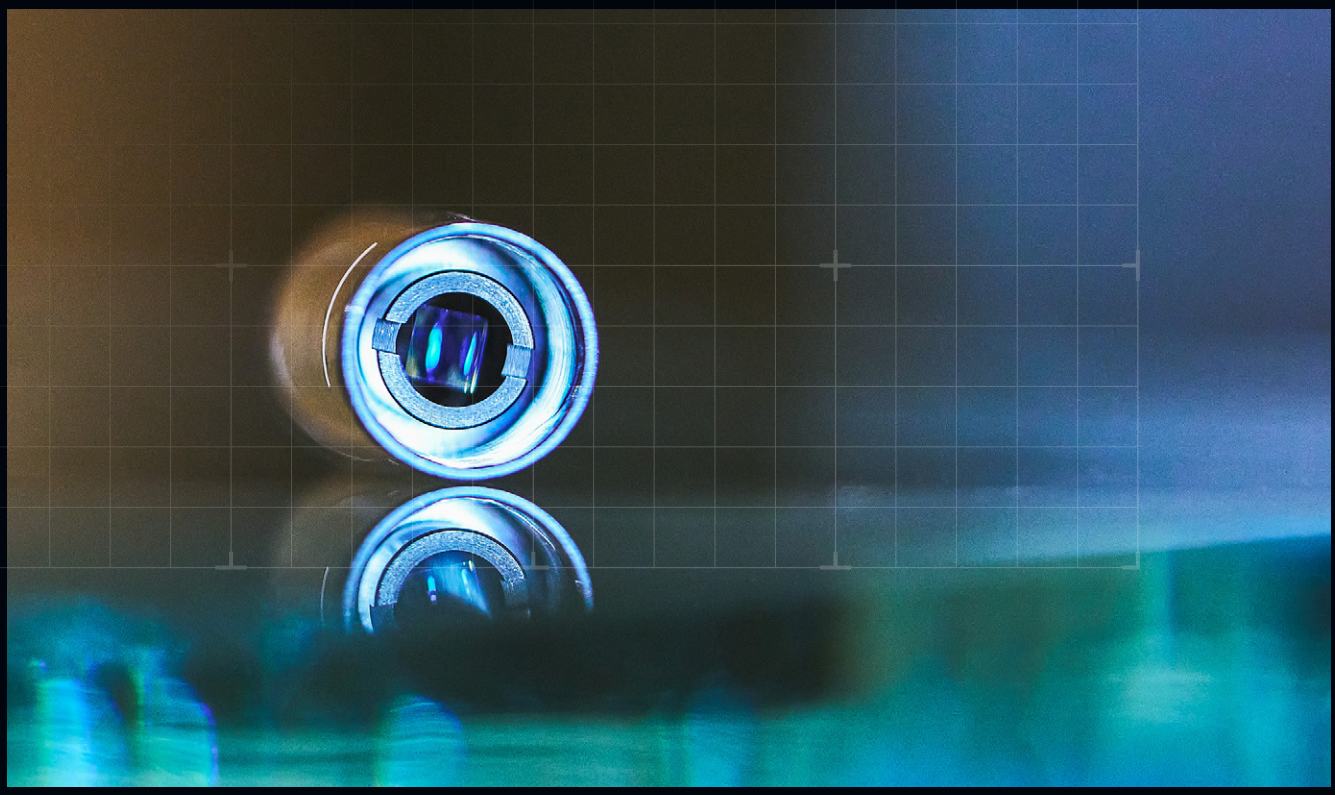
GRINTECH offers cylindrical lenses with a numerical aperture of 0.5 in a standard thickness of 1.0 mm. Typical applications include:

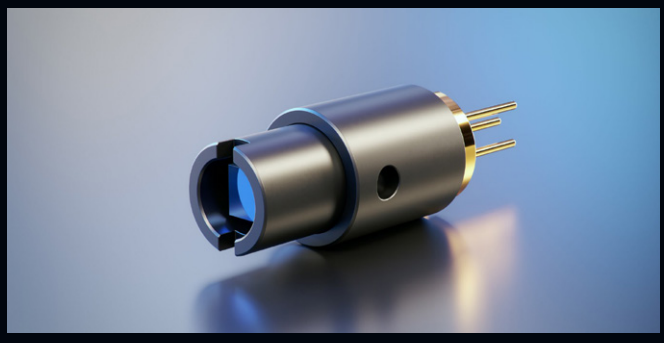
- Fast Axis collimation of high-power laser diodes
- One-dimensional beam shaping
- Light sheet generation

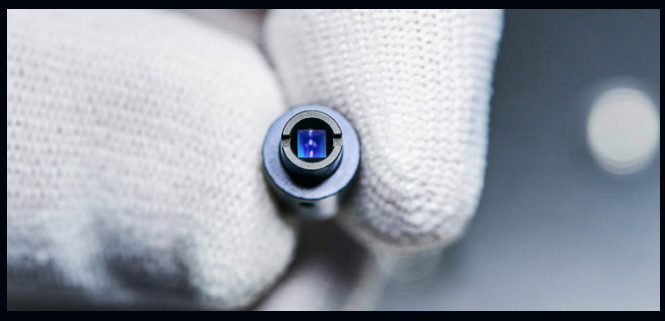
Customizable at the customer's request

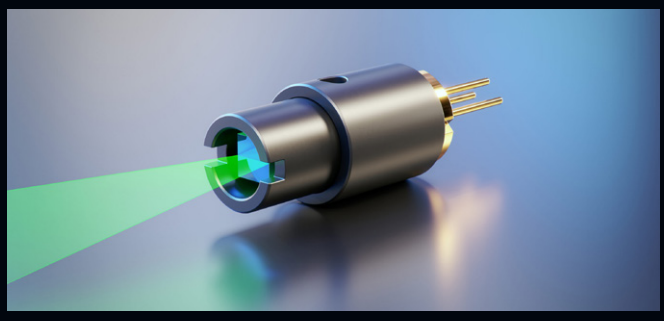
On request, the following are possible:

- Adaptation to laser diodes according to customer requirements and feasibility
- Module size adjustment
- Working distance and divergence angle changes according to feasibility
- Design wavelength change
- Anti-reflective coatings









Ultra compact GRIN lens-based laser line modules for high precision cutting-edge technologies

Smaller than the most compact modules for industrial applications on the market, with a diameter of 6.50 mm and a length of 14 mm. Gradient-Index Micro-Optic Components with plane optical surfaces generate a homogeneous laser line from a Gaussian beam of a single-mode laser diode with a line uniformity up to +/- 5% and a diffraction-limited focus size.

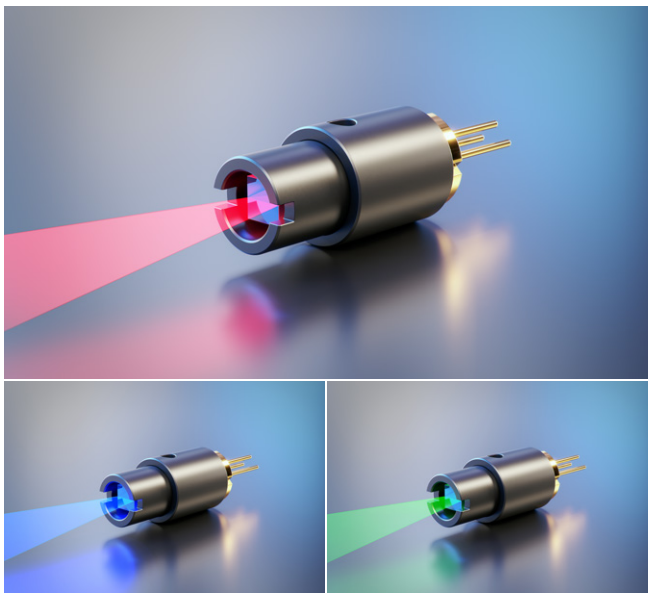
GRIN-Optics laser line modules are performed by a team of experts who have more than two decades of experience in the specialized field of micro-optics.

Applications

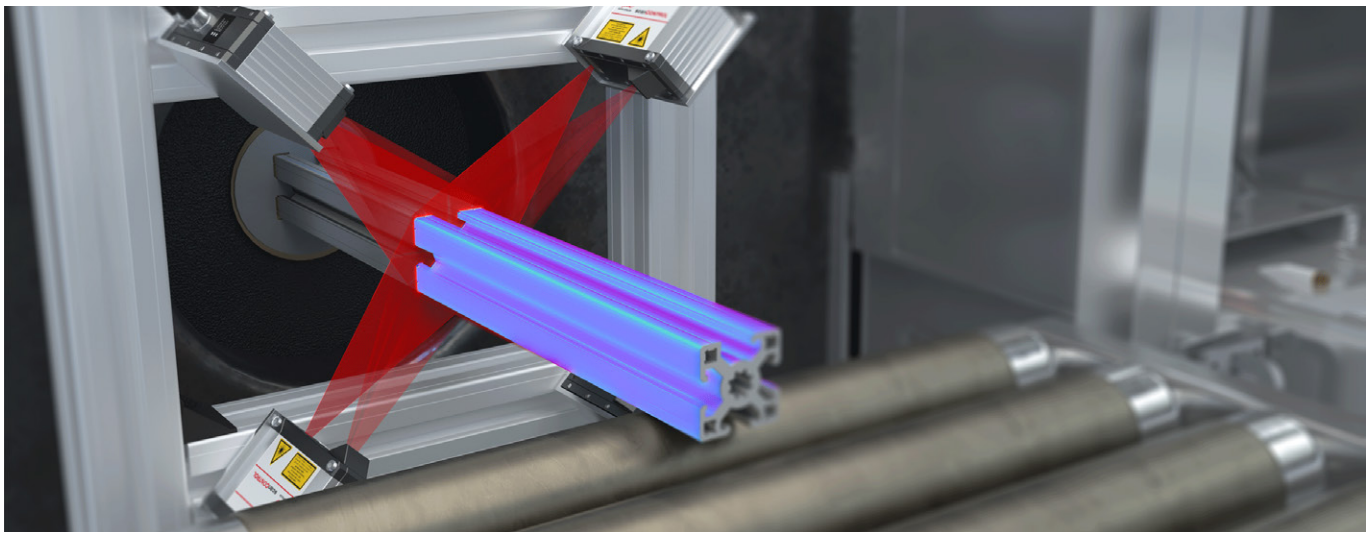
- 3D contour mapping
- Optical alignment
- Machine vision
- Biomedicine

Features

- Gradient Index Lenses generating a thin homogeneous laser line from a unique GRIN doublet lens unit
- High uniformity homogeneity of the laser line, up to +/-5% for different wavelengths
- Excellent line straightness
- Pointing and focus stability
- Exceptionally compact module size of 6.50 mm × 14.0 mm
- 2 housing diameters 6.50 mm and 8.00 mm as standard, as well as custom sizes on request
- Red, green, blue wavelengths available as standard
- Close diffraction-limited gaussian focus size
- Weight of only 1.5 g
- Variety of configuration options



Application: 3D contour mapping with Laser Line Triangulation Sensors (courtesy of Micro-Epsilon)

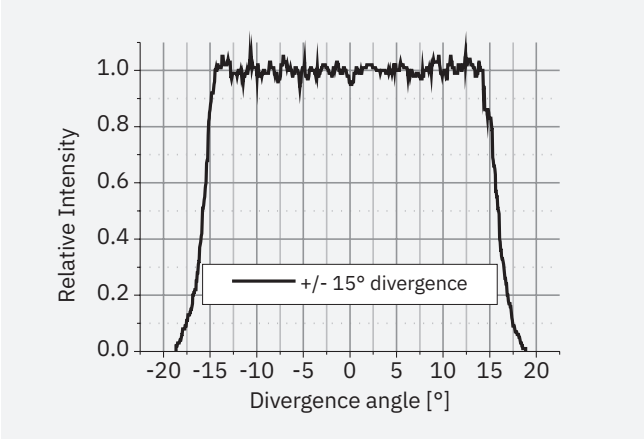


Optical Specifications

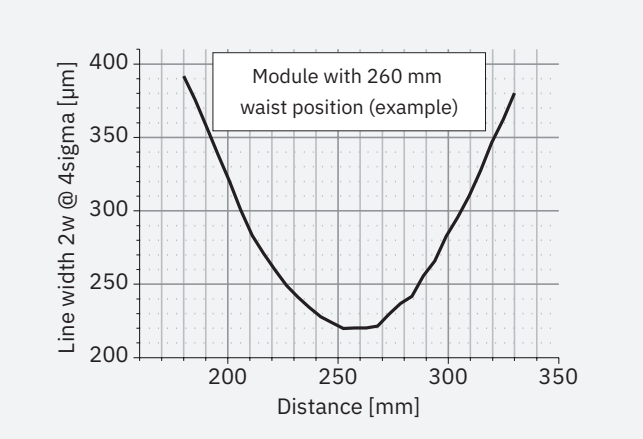
- Fan divergence angles : ± 10°, ± 15°, ± 20°
- Focus distance: 80 mm – infinity, Gaussian shape
- Line width in focus: 2w@4sigma/Distance = 0.91 µm/mm,
- Example: approx. 182 µm line width (2w@4sigma) in 200 mm distance
- Far field divergence depending on line widths, approx. according to Gaussian beam laws Squint angle: ≤ 2°
- Single Mode Laser diode TO-56 package (driver on request)
- Red laser diode: QDLaser – QLF063A-AA, λ = 660 nm, PLD = 50 mW
- 450 nm and 520 nm wavelength – are also available
- Transmission efficiency: P_{out}/P_{LD} = 90 – 95% with anti-reflex coated GRIN optics

Mechanical Specifications

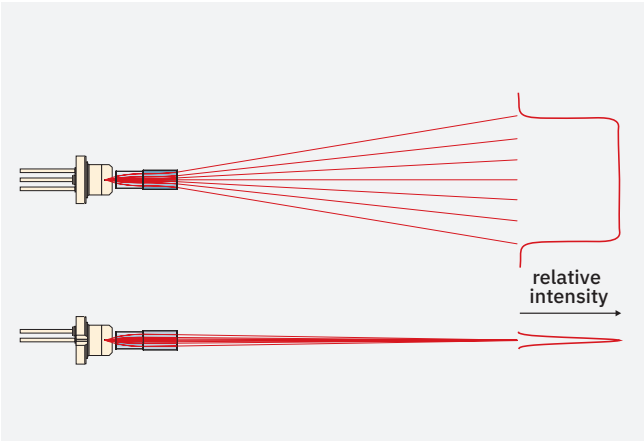
- Weight: 1.5 g
- Dimensions version 1: ø 6.50 mm × 14.0 mm
- Dimensions version 2: ø 8.00 mm × 14.0 mm
- Package material: anodised black aluminium



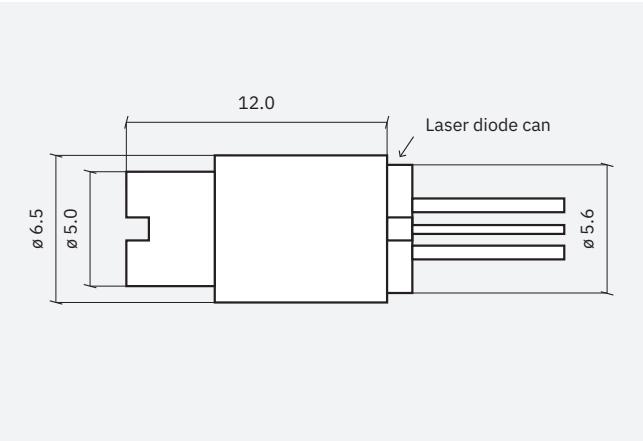
Far Field Divergence



Axial dependence of Line Width



Principle of laser line generation by GRIN optics



Dimensions Version 1

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