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Diffraction gratings for Spectral Beam Combining

Demanding applications. Customized solutions.



Diffraction gratings for Spectral Beam Combining

Demanding applications. Customized solutions.

Cover: Transmission grating with clear aperture of 134 mm × 107 mm

Top: Reflection grating with clear aperture of 72 mm × 35 mm

Description

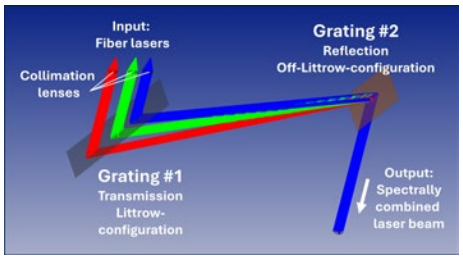
Customized diffraction gratings for applications in spectral beam combining (SBC). Design optimization is offered for the gratings or the full SBC-unit. The gratings are fabricated with lithographic technologies and characterized with respect to their optical parameters.

Parameters

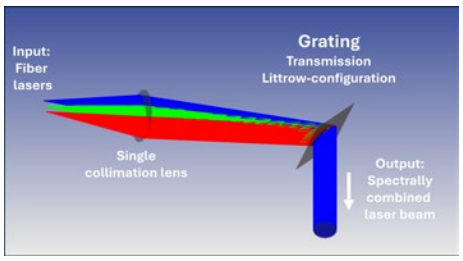
- Reflection (R) or Transmission (T)
- Line density: up to 3500 L/mm (depending on central wavelength)
- Polarization: TE, TM, unpolarized
- Central wavelength: 266–2100 nm
- Bandwidth: 20–100 nm
- Angle of incidence: Littrow preferred < ±5° off Littrow (R) < 7°conical angle
- Efficiency: > 95 % over band width unpolarized > 97 % over band width polarized > 99 % peak polarized (TE or TM)
- Laser power: > 100 kW (cw)
- Element size: up to 275 × 120 mm² or 200 × 200 mm²
- Substrate material: Fused silica

Service / technology

- Grating design
- Full system design (SBC-unit)
- Lithographic wafer-level processing:
  - Electron beam lithography
  - Reactive ion etching
- Characterization:
  - Diffraction efficiency
  - Wavefront error
- Dicing / machining of grating elements
- Back-side anti-reflection coating (T)



Configuration using two gratings.



Configuration using only one grating.

Contact

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