

BragGrate™ - Combiner

Transmitting or reflecting volume Bragg gratings for spectral beam combining

Product Description

BragGrate™ Combiner is a transmitting or reflecting volume Bragg grating (or set of gratings) enabling Spectral Beam Combining (SBC) of laser radiation from multiple sources with offset wavelengths into a single near-diffraction limited beam with increased energy brightness. SBC by means of BragGrate™ Combiners is a simple and robust technique for combining high-power laser radiation. Excellent mechanical properties and a refractive index, independent of temperature, enable the Combiners to withstand high-power laser radiation, thus making them ideal elements for high-power SBC.

Standard Parameters

Center Wavelength: 930-980, 1030-1100 nm

Spectral Bandwidth (FWHM): 0.2-0.5 nm

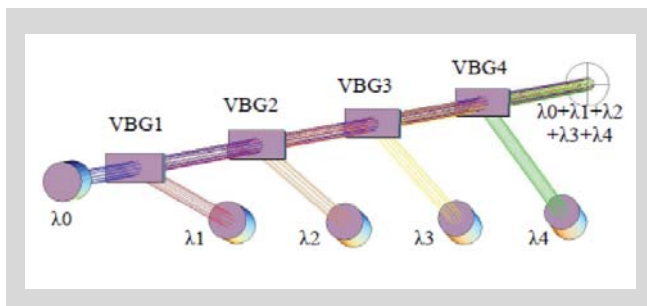
Diffraction Efficiency 95-99%

Lateral Dimensions: 15x15, 20x20 mm²

Applications

High power spectral beam combining. Wavelength multiplexing and demultiplexing.

Latest achievements: 5 beam combining with total output power of 780 W, combining efficiency of > 90%, channel spacing 0.25 nm.



Spectral beam combining scheme with 4 BragGrate™ Combiners

Specifications

Diffraction Efficiency (DE): 90-99%

Spectral Bandwidth: 50 pm to 20 nm

Operating Range λ : 400-2700 nm

Grating Thickness: 0.50-10 mm

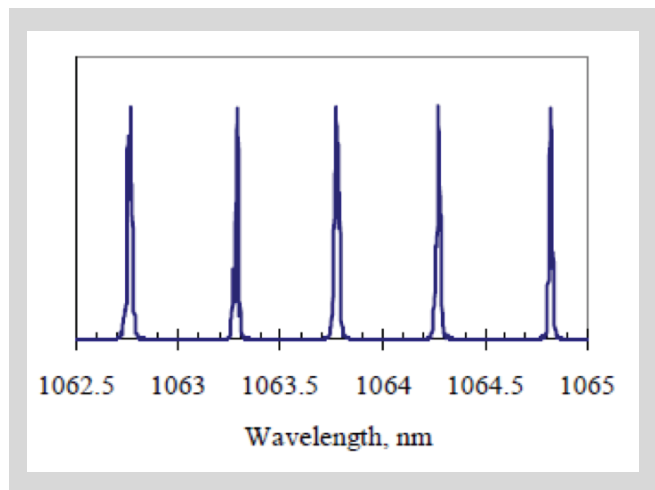
Apertures: up to 50x50 mm²

Angular Selectivity: 0.5-10 mrad

Deflection Angles: 5-45 deg

Advantages & Features

- High power operations up to 10 kW
- High energy operations up to 5 J/cm²
- Unrestricted lifetime, no degradation of parameters has been detected for over 10 years
- High angular selectivity (TBG)
- High spectral selectivity (RBG)
- Superior environmental stability
- No polarization dependence at small incident angles
- Near-diffraction-limited beam quality



Spectrum of spectrally-combined output beam with total power of 780 W and channel spacing of 0.5 nm



OptiGrate Corp designs and manufactures a full range of BragGrate™ holographic optical elements (volume Bragg gratings) in inorganic photosensitive silicate glass. OptiGrate pioneered commercial VBG technology and supplied VBG-based diffractive optical components to hundreds of customers on 5 continents. This technology is protected by a portfolio of issued and pending patents.