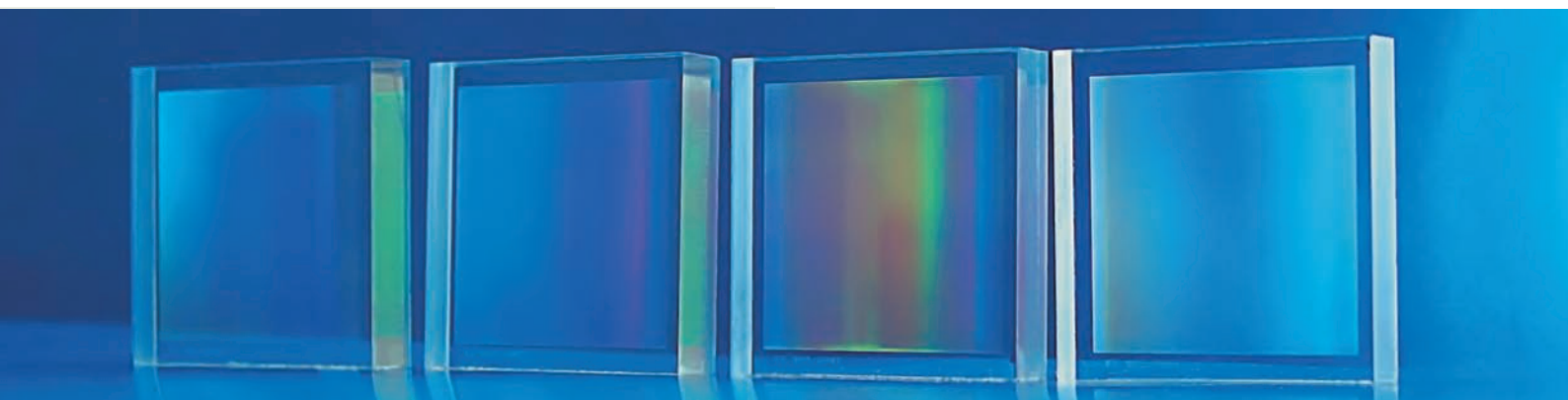




Pulse Compression Transmission Gratings



High output power femtosecond lasers require sophisticated chirped pulse amplification (CPA) setups.

Pulse compressors using dielectric gratings in Littrow mounting show very high efficiencies and lifetimes in such CPA setups.

Jenoptik dielectric pulse compression gratings are highly efficient and durable under high laser power densities. The efficiency advantage over metal gratings results in more than 20% additional output power in a typical CPA setup with four grating passes.

The Jenoptik pulse compression gratings are made of high-purity fused silica and are thus well suited for a broad wavelength range.

Features:

- Fused silica transmission grating
- High diffraction efficiency
- High uniformity of efficiency
- Low thermal wavefront distortion by the use of non-absorbing dielectric material
- Monolithic fused silica design for highest damage threshold and lifetime
- Low Self Phase Modulation (SPM)
- Custom designs with short delivery time

Applications:

- Laser pulse compression in chirped pulse amplifiers (CPA)
- Intracavity Dispersion Control
- Wavelength selection and bandwidth narrowing
- UV laser applications

Pulse Compression Transmission Gratings

Specifications

| | | | | |
|---|---|--------------------------|----------|----------|
| Configuration: | Single or multi pass transmission setup | | | |
| Ultrafast Laser: | Ti:Sapphire | Yb:KAW, Nd:Glass, Nd:YAG | Yb fiber | Er fiber |
| Wavelength (nm): | 670 ... 1080 | 1025 ... 1064 | 1080 | 1560 |
| Frequency (typ. lines/ mm): | 1480 | 1250 | 1000 | 800 |
| Efficiency maximum ¹ (%): | 98 | 97 | 98 | 97 |
| Clear Aperture (typ. in mm): | up to 125 x 125 | | | |
| Polarization: | s-polarized | | | |
| Damage threshold ² (mJ/ cm ²): | 300 | | | |
| Thermal load ³ (kW/ cm ²): | > 3 | | | |
| Wavefront distortion: | < λ 10 | | | |
| Thickness ⁴ (mm): | 6.3 | | | |
| Options: | Custom size, Thickness and Groove frequency | | | |
| Product number: | 029130 | | | |

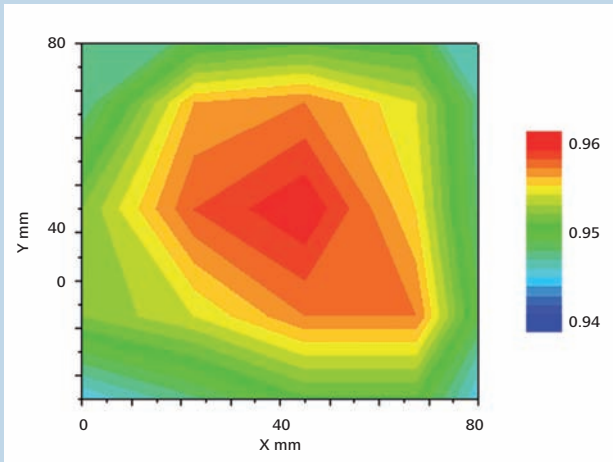
¹ with AR-Coating, single pass, theoretical maximum,

² 800 nm, 140 fsec, 1.480 lpmm, with AR-Coating,

³ 1080 nm, 8 kW Disc laser,

⁴ optional 3.05 or 2.3 mm

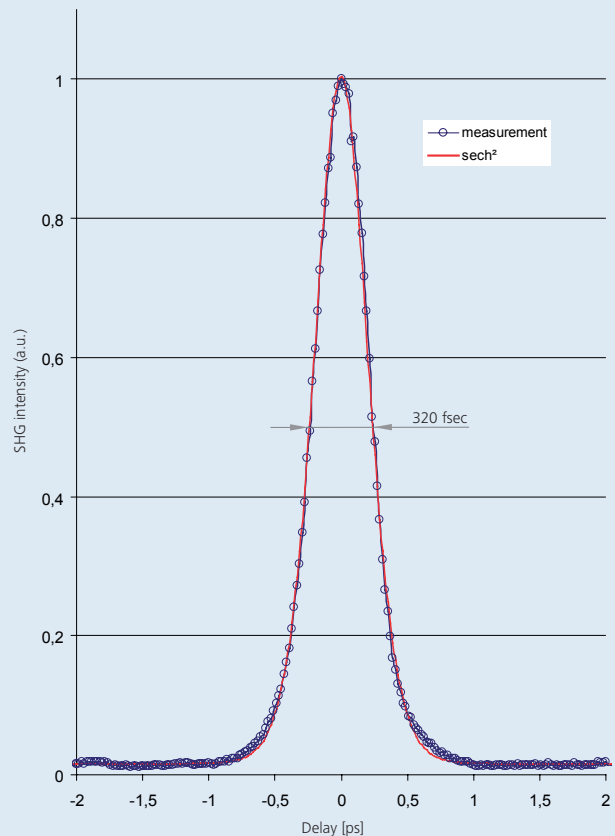
Typical measured 1st order efficiency uniformity map



| | |
|----------------------------|------------------------|
| Groove density (lines/mm): | 1480 |
| Diffraction: | -1 st order |
| Dispersion (°/nm): | 0.105 |
| Clear Aperture (mm x mm): | 80 x 80 |
| Wavelength (nm): | 800 |
| Polarization: | s-polarized |

Results

| | |
|-------------------------|------|
| Average efficiency (%): | 95.5 |
| Uniformity (%): | ±1.2 |



It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.



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