

Homogenizer / Diffuser

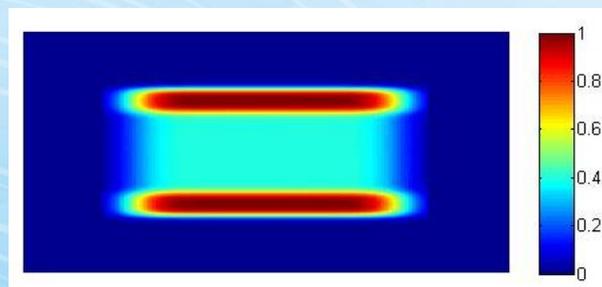
Homogenizer/Diffuser diffractive optical elements (DOE) allow conversion of a single or multi-mode input beam into a well-defined output beam, characterized with a desired shape, and uniform intensity.



Features:	Applications:
<ul style="list-style-type: none"> • Works with single or multi-mode input beams • Glass or plastic materials • Low centration requirement • Any output shape or symmetry • Uniform/Tailored intensity profile 	<ul style="list-style-type: none"> • Laser homogenizing/shaping • Laser material processing: perforation, ablation, derailing, marking, scribing and welding • Medical/aesthetic laser treatment • Beam shaping for Excimer lasers • Hot spot reducer

The Homogenizer/Diffuser DOE is mainly beneficial with improved uniform exposure. When sharp shaped edges are required, while keeping small divergence, and enabling high transmission efficiency.

The most common shapes are: round, square, rectangular, elliptical and hexagonal. However, almost any shape of image can be designed. Also possible, is a tailored intensity distribution of the image, so that different areas present higher/lower energy. Holo/Or can also design a Multi-level diffuser DOE to achieve higher efficiency.



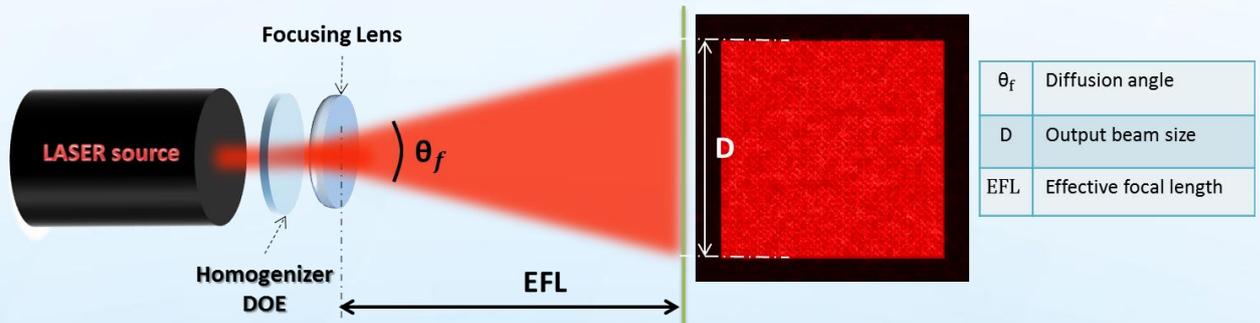
High homogeneity series (RH/HH/XH):

Holo/Or developed a new class of homogenizers with enhanced performance referred to as the high homogeneity series. Its advantages are: higher homogeneity, lower zero order. Also, it corresponds well with input beams of lower M^2 .



Design Considerations

1. Common homogenizer/diffuser elements are manufactured on a DOE window. Since the homogenizer defines a certain diffusion angle, the customer is able to control the image size on the image plane by choosing a focusing lens with a correct EFL. Typical set up for homogenizer is presented below:



2. Holo/Or has the capability to design an integrated solution: combining the DOE window and a specific focusing lens into one single hybrid element. Here, the diffractive pattern will be etched on the Plano side of the focusing lens (plano-convex lens). The advantage of this solution includes less optical surfaces, compact dimension and low weight.
3. Additional improvement in the performance may be achieved by using a high M^2 input beam.

Specifications:

Materials:	Fused Silica, ZnSe, Plastics
Wavelength range:	193nm to 10.6um
DOE design:	Binary and up to 16-level
Element size:	2mm to 100mm
Diffraction efficiency:	75%-98%
Coating (optional):	AR/AR
Custom Design:	Tailored shape and intensity distribution
Pattern angles@532nm:	Few mRad to 160°

