General Purpose High Power Homogenizers

Preliminary Datasheet -60705

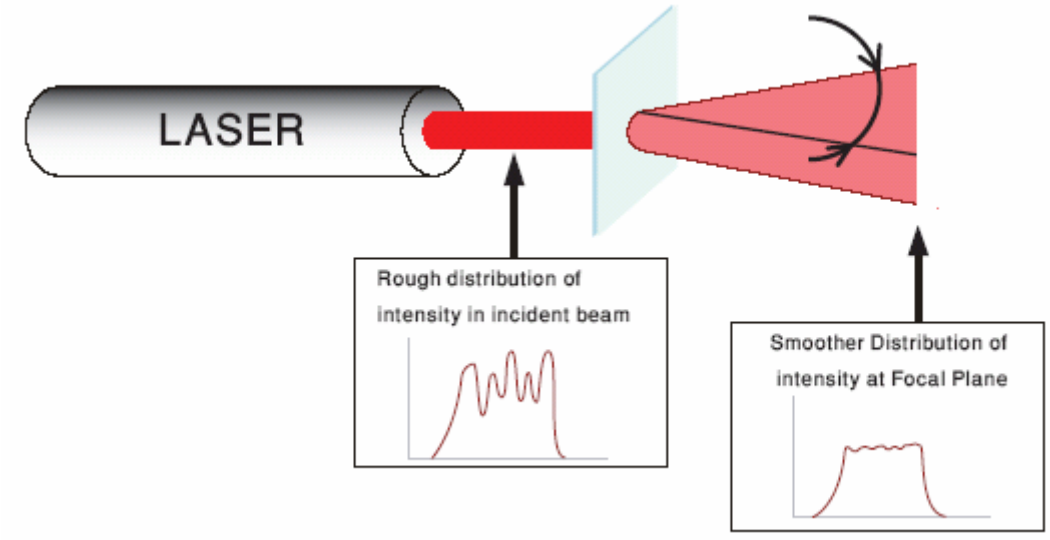
Holo-Or introduces a new series HM Homogenizers that consist of pure fused silica with an optional high power AR V-Coating on both surfaces, which makes them superior to competing solutions. This can reduce the back reflection to a typical 0.2% (0.1% per surface).

- High Damage Threshold
- Low Back Reflection
- Ar/Ar coated option
- High Efficiency
- Works at any distance
- Accepts any beamshape
- Pure Fused Silica
- Small diffusing angle
- Custom angles, wavelengths and dimensions possible

Standard Homogenizers

Wavelength	Part number	Full Angle	Part number	Full Angle	Part number	Full Angle
10600nm	HM-1060	5^0				
1064nm	HM-106	0.5^0	HM-1-106	2	HM-2-106	2.75
755nm	HM-075	0.35^0	HM-1-075	1.4	HM-2-075	1.93
694nm	HM-069	0.33^0	HM-1-069	1.33	HM-2-069	1.83
532nm	HM-053	0.25^0	HM-1-053	1	HM-2-053	1.38
355nm	HM-035	0.17^0	HM-1-035	0.68	HM-2-035	0.94
266nm	HM-026	0.125^0	HM-1-026	0.5	HM-2-026	0.69
248nm	HM-024	0.12^0	HM-1-024	0.48	HM-2-024	0.66
193nm	HM-019	0.09^0	HM-1-019	0.36	HM-2-019	0.5

Fig 1. Typical Optical Scheme



HOLO/OR

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Application note: The homogenizer smoothens the profile from the moment it leaves the element. The best Homogenization of a homogenizer with diffusion angle α_{DF} with input diameter D_{INP} can normally be obtained at the optimal working distance $WD_{optimal}$ as in the equation:

$WD_{optimal} = D_{INP} / Tan (\alpha_{DF})$

At shorter distance the element will also show certain homogenization. At longer distance the homogenization will be even stronger, but the beam will become significantly larger as well.

One can reduce the $WD_{optimal}$ with a positive lens, as with our spot-Homogenizer series. But in general the new HM type is less sensitive for positioning and provides a nicer homogenization of the beam.

Options

Coating	ARAR NC	*Back Reflection < 0.5%* *Back Reflection < 9%*
Grades	A	Less than 5% energy in Zero Order @1064nm Less than 7.5% energy in Zero Order @532nm Less than 15% energy in Zero Order @266nm
	B	Less than 20% energy in Zero Order

Dimensions

Dimensions	25.4mm dia	11mm dia	8mm dia
Clear Aperture	23mm dia	8.5mm dia	5.5mm dia
Thickness	3mm	3mm	3mm

General specifications

	Ar/Ar Coated	**Uncoated**	***Possible for Custom design***
Transmission Efficiency:	*>92%*	*>84%*	*>95%*
Part of energy expected within Defined angle	*80%*	72%	*95%*
Zero Order	*Depend on Grade*	Depend on Grade	*< 2.5%*
Back Reflection	*< 0.5%*	< 9%	*< 0.2%*

Material:	*Fused Silica*	**Angle of incidence:**	*0^0*
Dimensions:	*+0/-0.2mm*	**Damage threshold coating @1064nm:**	*> 10J/cm^2 (@5ns)*
		Damage Threshold Part	*Depends on wavelength and end of life definition, generally close to threshold coating*

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Specs –HM-XXX type

Diffusion angle	*0.5 deg*Operating Wavelength / 1064nm*		
Optimal Beam Dia	*>3mm*	**Min Spike Dia at input**	*1mm*

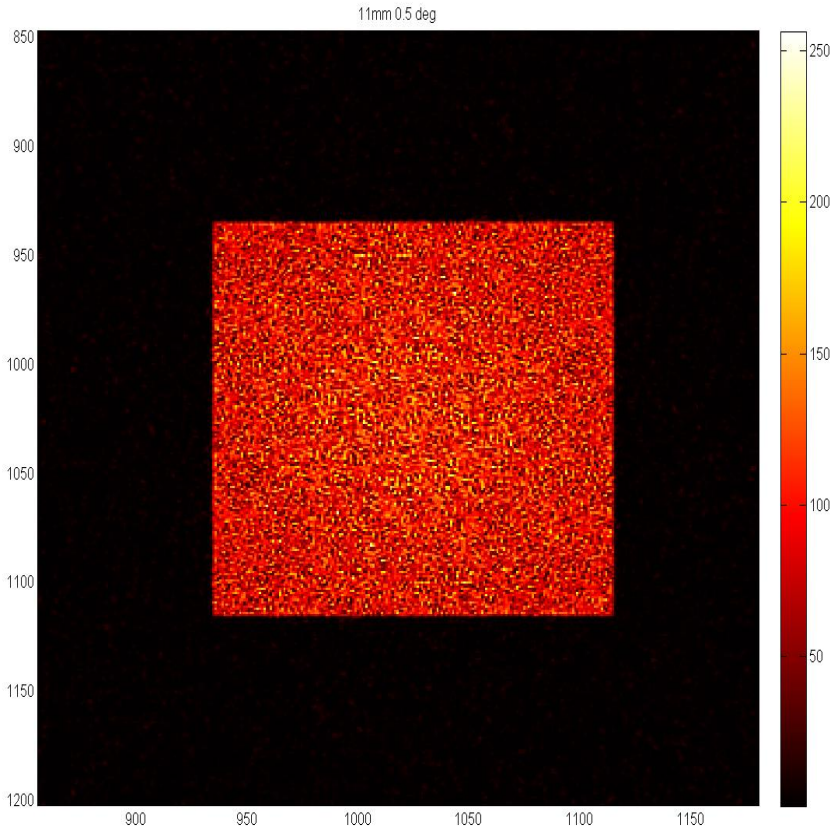
Specs –HM-1-XXX type

Diffusion angle	*2.0 deg*Operating Wavelength / 1064nm*		
Optimal Beam Dia	*>1mm*	**Min Spike Dia at input**	*0.5mm*

Specs –HM-2-XXX type

Diffusion angle	*2.75 deg*Operating Wavelength / 1064nm*		
Optimal Beam Dia	*>1mm*	**Min Spike Dia at input**	*0.5mm*

Fig 2. Simulation of intensity profile of HM-106 type



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