

Collimated Beam Shaper

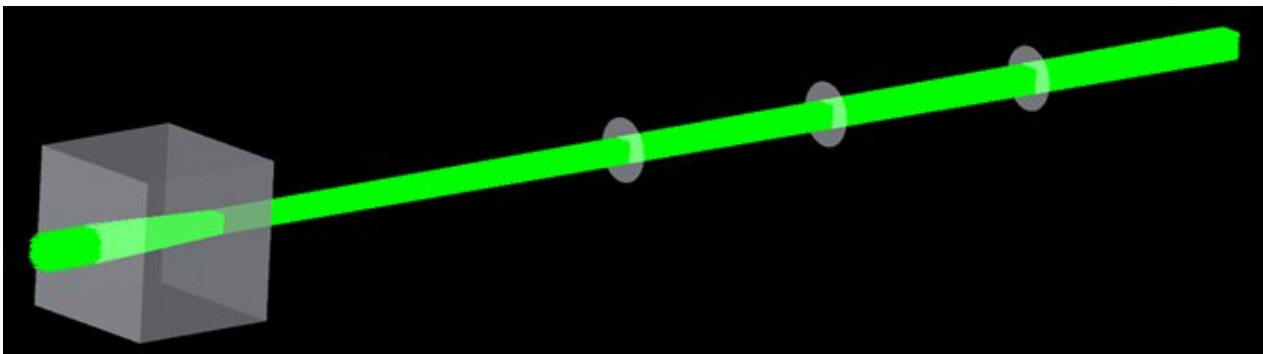
Introduction

Collimated Beam Shaper Module is Holo/Or's tailored solution for applications requiring an extended working distance range or a long depth of focus. The Collimated flat top is the natural complement for our more standard flat top beam shaper element which gives a uniform-intensity beam at a unique specified working distance. With a Collimated Beam Shaper Module, the uniform-intensity beam is maintained with high fidelity, power uniformity, and constant size/shape over an extended working distance range. The shape is well-defined with sharp edges, and it can be round, square, rectangular, elliptical, line or any other dimension suiting the user.

Single-mode input

For single mode input sources, the Collimated Top-Hat will be a good solution for applications such as industrial surface treatment where the working surface can be located at widely varying distances from the laser delivery system. This ensures that the processing will be even and smooth with a clean edge at any working distance suiting the user's convenience, in the specified range.

HOLO/OR offers a novel single element collimated beam shaper - the Top Hat Cube . This novel 25mm cube element can shape any 3mm input beam into a collimated square or round top hat beam. Read more



Specifications of Collimated Top-Hat Singlet element

Physical characteristics		
Material	Fused Silica	
dimensions [mm]	25x25x25	
Input parameters		
Wavelength range [nm]	320-2000	
Input beam diameter [mm]1	3	
M2	<1.5	
Output parameters		
Shape	Square	Round
Size [mm]1	3x3	3mm diameter
Efficiency	>97%	
Collimation properties	Collimated shape at exit along 300 [mm] range	

Multi-mode input

For multi-mode sources, the Collimated Homogenizer Module is HOLO/OR's tailored solution for applications requiring a long working distance range. The Collimated Homogenizer is the obvious supplement to our standard diffractive homogenizers which give a shaped intensity beam at a unique specified working distance. The Collimated Homogenizer is a good solution for applications such as industrial surface treatment where the working surface is uneven or located at varying distances from the laser delivery system.



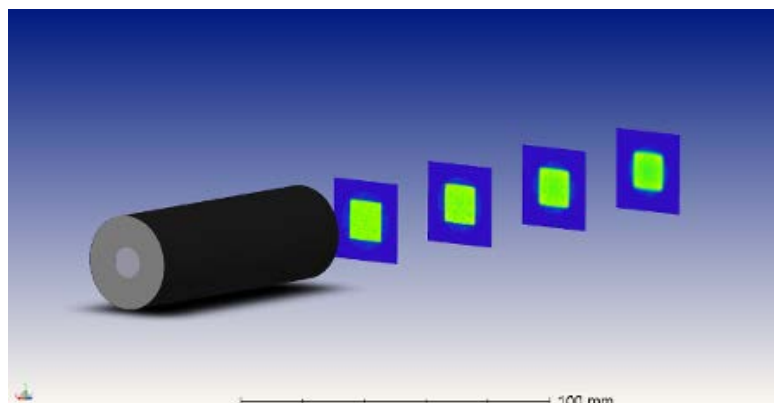
Typical applications:

- Aesthetic skin treatment
- Laser welding of polymers
- Surface treatment
- Laser cleaning
- Laser hardening
- Color ablation/Paint removal
- Coating removal

Key Advantages of the module

- Affordable
- Easy installation and system integration
- Not sensitive to incident beam parameters
- Easy customization

Figure 1: 3D animation of module with output propagation on optical axis.



Product list

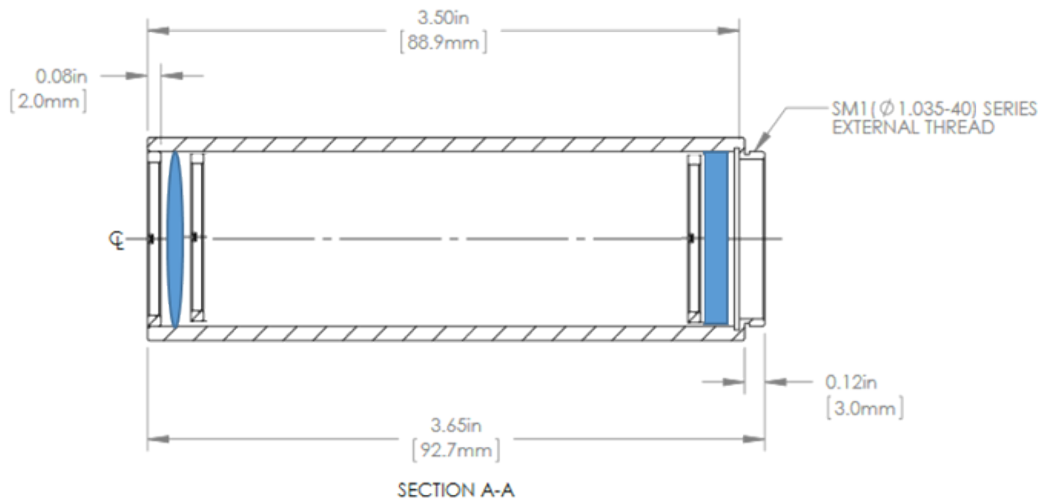
	Wavelength[nm]	Output shape[mm]	Output size[mm]	Data Sheet
Col_RD-001-Q	532	Round	7.8	Data Sheet
Col_HM-001-I	1064	Square	13.2x13.2	Data Sheet

Data sheet example for standard products:

Optical properties	Value
Wavelength	1064 nm
Incident beam size	<3 mm*
Incident beam mode	MultiMode or Single Mode**
Glass material: DOE/Lens	Fused Silica/ BK7
Collimation length	> 200 mm
Output Shape	Round/Square/Line
Coating	AR/ AR (specific type of coating)
Optomechanical properties	
Module length	92.7 mm
External Diameter	30.5 mm

*Smaller beam has better effect on collimation length and shape contrast

**For highly coherent laser beam, speckles will appear



Application idea: Fiber coupled Collimated Homogenizer

Collimated line intensity is needed for many optical applications, for example:

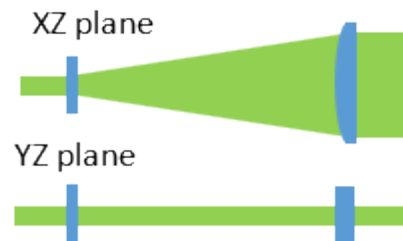
- Laser cleaning
- Laser inspection
- Ablation
- Surface modification
- Debonding
- Laser 3D scanning

Typically, there is a specific requirement for line length and width; therefore, for prototyping, we suggest a custom solution for a line shape module based on catalogues' opto-mechanical parts, and for industrial purposes we

suggest a custom opto-mechanical solution.

Collimated Line Homogenizer can also be combined with a fiber interface.

Figure 3: Optical sketch for Collimated Homogenizer Line system



Contact Us for more information or for custom solution.