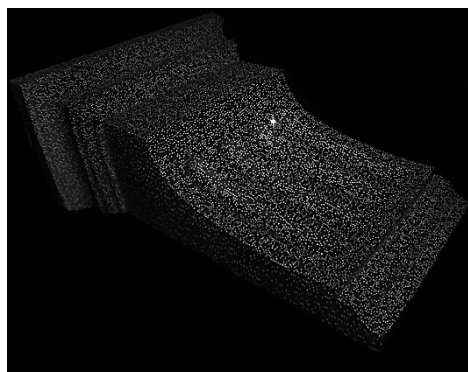


# DE-R 372 Diffractive Optical Element



- **Element Number: DE-R 372**
- **Current Product Revision: A**
- Description: Pseudo-Random Pattern
- Number of Dots: 40100 Dots
- Substrate Material: Polycarbonate (PC)
- Size (Ø x Thickness): 8 x 1.2 mm
- Minimum Recommended Beam Diameter: 2-3 mm
- Design Wavelength: 850 nm
- Recommended Wavelength Range: 825-870 nm

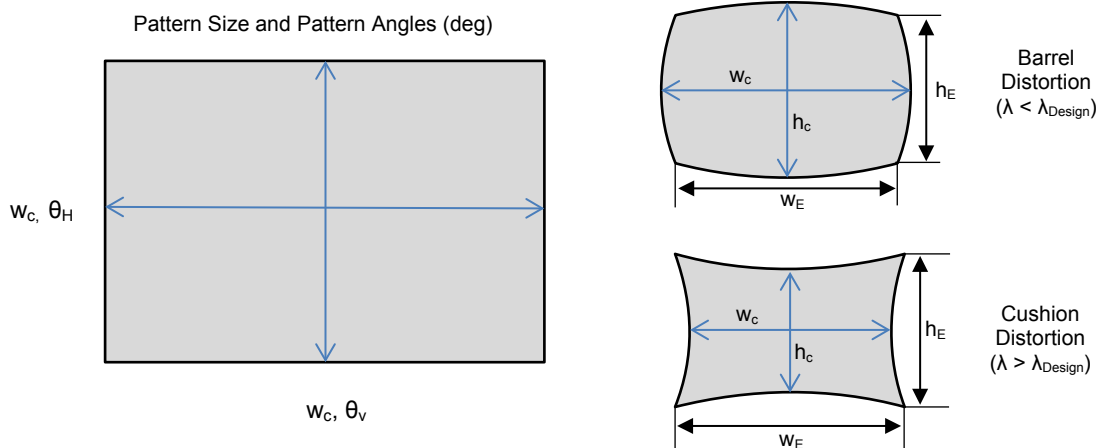
Pattern on wall ornament

When the DOE is used at a wavelength different from the design wavelength, the pattern will scale in size and geometrical distortions may occur (see section 'Geometry and Diffraction Angles ▼'). When the DOE is used at a wavelength within the recommended wavelength range, the element shows the lowest intensity in the central spot (see section 'Zero Order Diffraction Intensity ▼' on reverse page).

Pattern licensed from ixellence GmbH, Author: Ralf Vandenhouten ([www.ixellence.com](http://www.ixellence.com)).

For further details about the pattern, see section 'Pattern properties ▼' on reverse page, or please contact [doe@holoeye.com](mailto:doe@holoeye.com).

## Geometry and Diffraction Angles



$\theta_H$  = horizontal angle,  $\theta_V$  = vertical angle,  $h_c$  = center height,  $w_c$  = center width,  $h_E$  = edge height,  $w_E$  = edge width

If the DOE is used at laser wavelengths close to the design wavelength ( $\Delta\lambda < 50\text{nm}$ ) the geometrical distortion is usually tolerable (see table below).

Wavelength	Pattern Size @ 100 mm Distance				Ratio corner-to-center		Pattern Angles	
	$w_c$	$h_c$	$w_E$	$h_E$	Width	Height	$\theta_H$	$\theta_V$
652 nm	82.9 mm	53.8 mm	81.0 mm	50.6 mm	97.7 %	94.1 %	45.0°	30.1°
687 nm	88.2 mm	56.9 mm	86.4 mm	54.0 mm	98.0 %	94.9 %	57.6°	31.8°
752 nm	98.4 mm	62.8 mm	97.2 mm	60.7 mm	98.7 %	96.7 %	52.4°	34.9°
801 nm	107 mm	67.4 mm	106 mm	66.2 mm	99.3 %	98.2 %	56.1°	37.2°
825 nm	111 mm	59.6 mm	110 mm	69.0 mm	99.6 %	99.1 %	58.0°	38.4°
846 nm	115 mm	71.6 mm	114 mm	71.5 mm	99.9 %	99.8 %	59.6°	39.4°
893 nm	123 mm	76.2 mm	124 mm	77.5 mm	100.7 %	101.8 %	63.3°	41.7°
923 nm	129 mm	79.1 mm	131 mm	81.6 mm	101.3 %	103.2 %	65.6°	43.2°
980 nm	141 mm	84.8 mm	144 mm	90.1 mm	102.5 %	106.2 %	70.3°	46.0°

### MOUNTED VERSION

For testing or setups under laboratory conditions we offer a version mounted in 12.7 mm stainless steel frame for use with standard laboratory holders.



### COLLIMATED / CONVERGING LASER

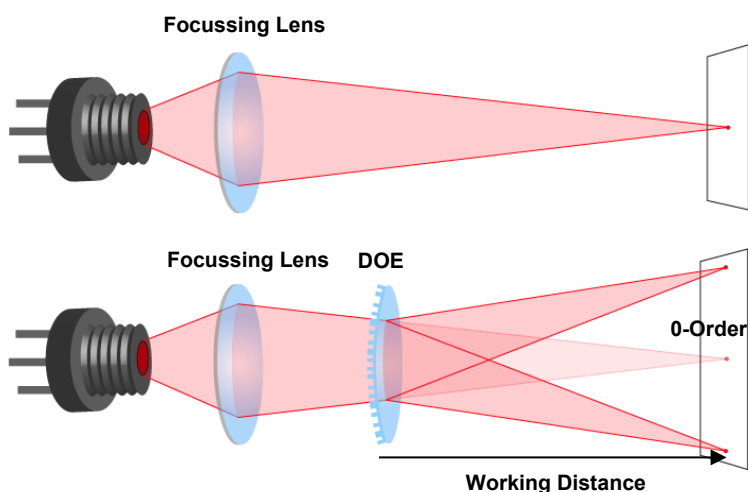
The laser can be collimated for long range use or converging for a fixed working distance.

Please note that the size/thickness of each spot or line depends on the focusing of the laser.

## Pattern properties

Ixellence Pseudo-Random base tile (PSM)	'Van3'
Tile Grid Size (X * Y)	212 x 96
Spot number in base tile	2516
Corresponding spot density	12.4%
Uniqueness window size (X * Y)	7 x 7
Total Pattern (with repetitions)	
Base Tile Repetitions (X * Y)	3.4 x 4.7
Total Pattern Grid Size (X * Y)	721 x 451
Aspect Ratio	1.6 (16:10)
Total spot number	40100

## Setup



Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

The DOEs are best with collimated or convergent laser sources. The microstructure surface should be oriented towards the laser.

The 0-order spot is equivalent in size and shape to the original beam, but its power is attenuated.

## Zero Order Diffraction Intensity

Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

Wavelength	0-Order Intensity
652 nm	16.2%
687 nm	11.0%
752 nm	4.2%
801 nm	1.2%
825 nm	0.4%
846 nm	0.1%
893 nm	1.2%
923 nm	0.8%
980 nm	2.5%

