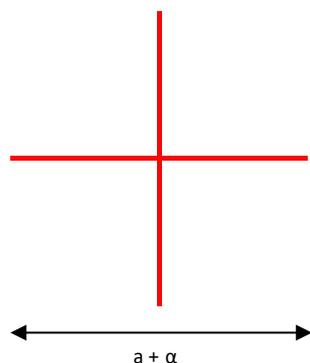


DE-R 249 Diffractive Optical Element



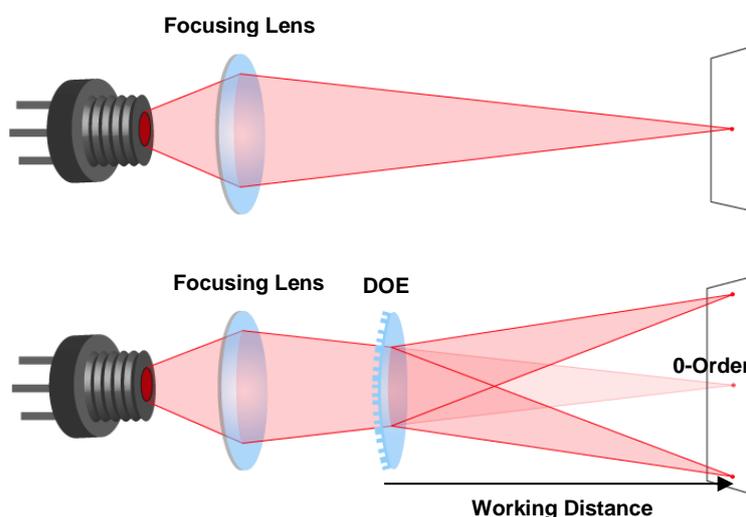
- **Element number: DE-R 249**
- **Current product revision: F**
- Description: cross with 45° @ 633
- Number of spots on line: 1051
- Substrate material: Polycarbonate (PC)
- Size (Ø x thickness): 8 mm x 0.6 mm
- Design wavelength: 633 nm
- Recommended wavelength range: 600-670 nm *
- Minimum recommended beam diameter: 1.5-2 mm

Within the recommended wavelength range, the element shows the lowest intensity in the zeroth order Z0 / central spot. Pattern size and pattern angles as well as the ratio between central spot / zeroth order ('zero order intensity', see reverse page) and the spots on the cross will vary most with the wavelength. Diffraction efficiencies given on this datasheet have been measured using elements of product revision F.

Pattern geometry and diffraction angles

Wavelength	Pattern size @ 100 mm distance	Pattern angle
λ [nm]	a [mm]	α [°]
515	65.7	36.4
532	68.1	37.6
640	84.2	45.7
660	87.3	47.2
684	91.1	49.0
750	102.1	54.1
808	112.4	58.7
850	120.3	62.0

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.

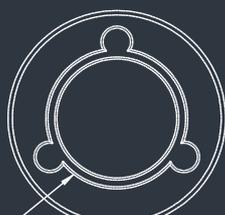
The DOEs are best used with collimated or convergent laser sources. The microstructure surface should be oriented towards the laser.

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

*the recommended wavelength range is defined with $Z0 \leq 1.0\%$

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.



Ø 0.32" (Ø 8.0 mm)

Thorlabs 8 mm steel lens adapter

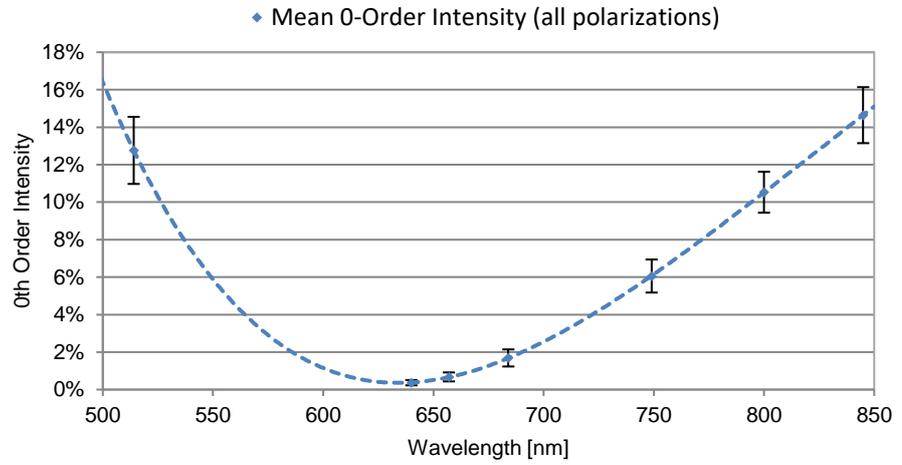
COLLIMATED / CONVERGING LASER

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.

Zero order intensity:

Wavelength [nm]	Mean 0-Order Intensity
514	12.8%
640	0.4%
657	0.7%
684	1.7%
749	6.1%
800	10.5%
845	14.6%



The interval of deviation for the mean values corresponds to 2σ .