

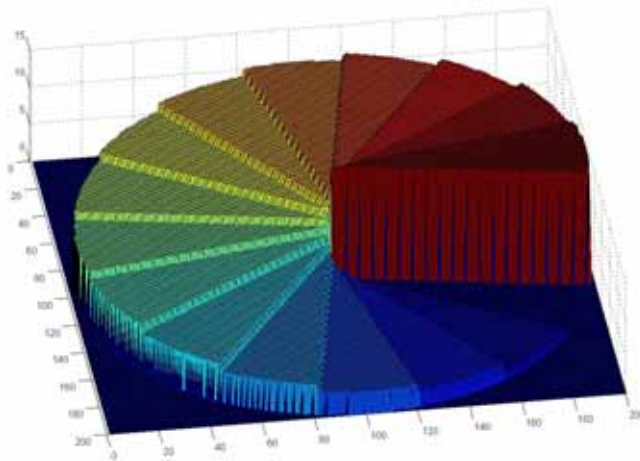
Vortex Lens

Preliminary Datasheet -61205



Holo-Or introduces The VL series Vortex lenses that consist of pure fused silica or ZnSe 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).

Fig. 1. False color image of the surface profile of a Vortex lens having 16 levels.



A Vortex lens transforms a planar wavefront into a helicoid wave.

Features

- High Damage Threshold
- Low Back Reflection
- Ar/Ar coated option
- High Efficiency

Applications

- Astronomy
- Laser Physics
- Optical Tweezers
- Optical Pattern Recognition
- Encryption

Application note: The Vortex Lens has a variety of applications. Some of them can be found at www.u.arizona.edu/~grovers/SO//so.html

Standard Vortex Lens

| Wavelength | Material | Part number | Levels | Part number | Levels | Part number | Levels |
|--|--------------|-------------|--------|-------------|--------|-------------|--------|
| 800nm | Fused Silica | VL-4-080 | 4 | VL-8-080 | 8 | VL-16-080 | 16 |
| 1064nm | Fused Silica | VL-4-106 | 4 | VL-8-106 | 8 | VL-16-106 | 16 |
| 10600nm | ZnSe | VL-4-1060 | 4 | VL-8-1060 | 8 | VL-16-1060 | 16 |
| Diffraction Efficiency (Estimated Grade A) | | | 77% | | | ~92% | ~95% |

Options

| | | |
|----------------|------|--|
| Coating | ARAR | <i>Back Reflection < 0.5%</i> |
| | NC | <i>Back Reflection < 9%</i> |
| Grades | A | Less than 5% energy in Zero Order |
| | B | Less than 20% energy in Zero Order |
| | C | Typical less than 30% energy in Zero Order |

Dimensions

| | | |
|-----------------------|------------|-----------|
| Dimensions | 25.4mm dia | 11mm dia |
| Clear Aperture | 22mm dia | 9.0mm dia |


General specifications

| | Ar/Ar Coated | Uncoated | Possible for Custom design |
|---------------------------------|------------------------|-----------------|----------------------------|
| Transmission Efficiency: | >95% | >85% | >97% |
| Zero Order | <i>Depend on Grade</i> | Depend on Grade | < 2.5% |
| Back Reflection | < 0.5% | < 9% | < 0.2% |

| | |
|--|---|
| Angle of incidence: | 0° |
| Damage threshold coating @1064nm: | $> 10J/cm^2$ (@5ns) |
| Damage Threshold Part | <i>Depends on wavelength and end of life definition, generally close to threshold coating</i> |

Ordering Info:

| VL | - | - | - | - | - |
|----|-------------|-------------------|-----------------|----------------|----------|
| | # of levels | Wavelength | Diameter | Coating | Grade |
| | 4 | 080 (for 0.8um) | R (for 11mm) | ArAr (Coated) | A (Best) |
| | 8 | 106 (for 1.06um) | LR (for 25.4mm) | UNC (Uncoated) | B |
| | 16 | 1060 (for 10.6um) | | | |

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