



# LiDAR Polygon Mirror

## LiDAR Polygon Mirror for Projection Display

LiDAR Polygon Mirrors are essential components for mechanical scanning in LiDAR systems. The sensing range, number of beam lines, resolution, repeatability, and scan angle are all critical attributes of the mirror. Polygon mirror products from Materion Balzers Optics provide optimum scanning performance for LiDAR sensors. Our coating technology and integration solutions enable your LiDAR system to achieve outstanding optical and durability performance. We have optimized coating designs for large incidence of angles (AOI) to provide excellent reflectivity and consequently increases the LiDAR's the field of view (FOV) and detection distance. Materion Balzers Optics is also able to integrate a rotational solution to achieve an excellent scanning resolution as a package. Materion Balzers Optics technology is flexible in handling various substrate geometries and materials, enabling your LiDAR system to realize specific design targets.



### Benefits

- High reflectivity coating technology specific for LiDAR polygon mirror
- Covering NIR&SWIR wavelengths from 840nm to 1600nm
- Full area coating solution for each facet
- Excellent surface profile to achieve high resolution scanning performance
- Excellent surface accuracy
- Integration solution including motor assembly and balancing
- Excellent environmental durability for automotive applications

### Applications

- Automotive LiDAR
- Laser 3D Scanning

### Technical Data

Wavelength range 840 nm - 1600 nm  
AOI 12 - 80°

#### Reflectance

$R_s \geq 97\%$  in the 880 - 940nm at AOI=12 - 80°  
 $R_p \geq 97\%$  in the 880 - 940nm at AOI=12 - 80°  
 $R_s \geq 97\%$  in the 1500 - 1600nm at AOI=12 - 80°  
 $R_p \geq 97\%$  in the 1500 - 1600nm at AOI=12 - 80°

#### Surface Accuracy

PV < 1.5λ @633nm

#### Profile

Appearance tolerance ±0.1mm  
Parallelism < 0.02mm  
Perpendicularity < 0.02mm

#### Dimensions

Customized, typical 50 x 50 x 50mm

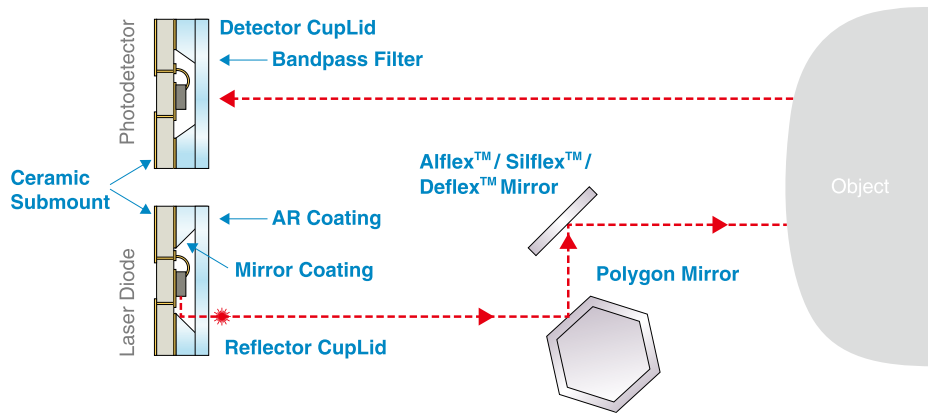
#### Environmental Durability

High temp: -40°C - 95°C 20minutes/cycle for 200 cycles  
Thermal Shock: +85°C, RH: 85 - 95% for 24 hours  
Humidity : +40°C, RH: 100% for 16 days  
Salt spray(Fog): 35°C ±2°C 24h,4.5%NaCl

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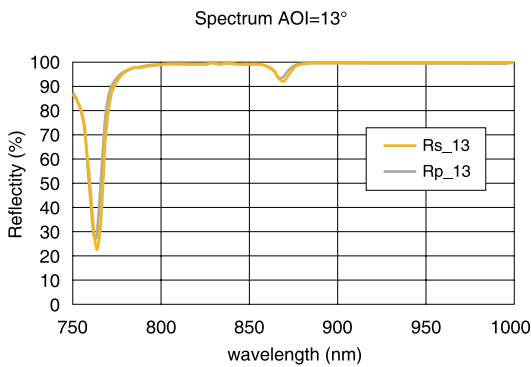
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**Schematic of Polygon Mirror for Mechanical Scanning LiDAR**

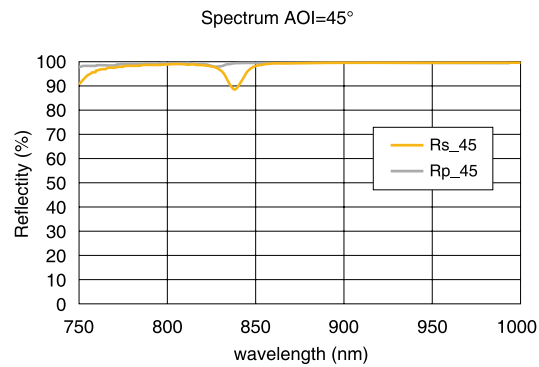


**LiDAR Polygon Mirror Spectrum**

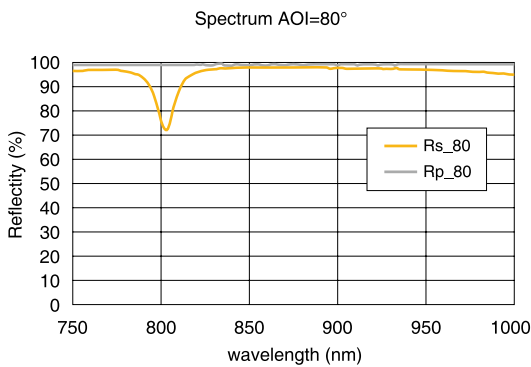
Reflectivity at AOI = 13°



Reflectivity at AOI = 45°



Reflectivity at AOI = 13°



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