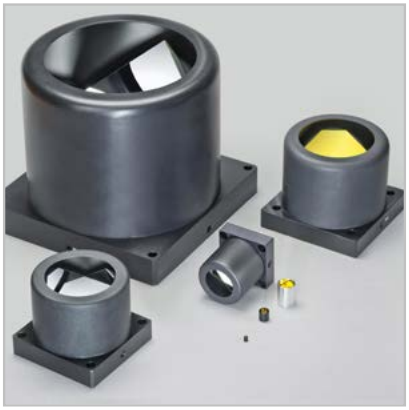
Omni Wave Hollow Retroreflectors

Description



The Omni Wave Hollow Retroreflector (OWHR™) can be described as a self-compensating mirror that is totally insensitive to position and movement such as tilt.

Features / Characteristics

Parallel incident light that hits the OWHR™ will be returned with great accuracy to the light source, regardless of the OWHR™`s physical orientation. The OWHR™ is constructed of three first-surface mirrors assembled by a proprietary process into a mutually-orthogonal inside corner. This hollow configuration eliminates material absorption and chromatic aberration present in prism-type retroreflectors. The mirror coating can be optimized for various spectral ranges, from UV to far IR.

Applications

- Metrology
- OEM use
- Motion control
- OEM Interferometry
- OEM Spectroscopy
- Laboratory
- Industrial
- Military
- Space

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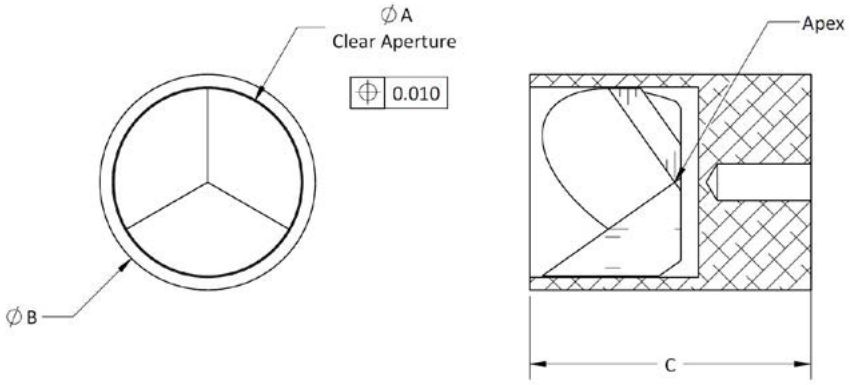
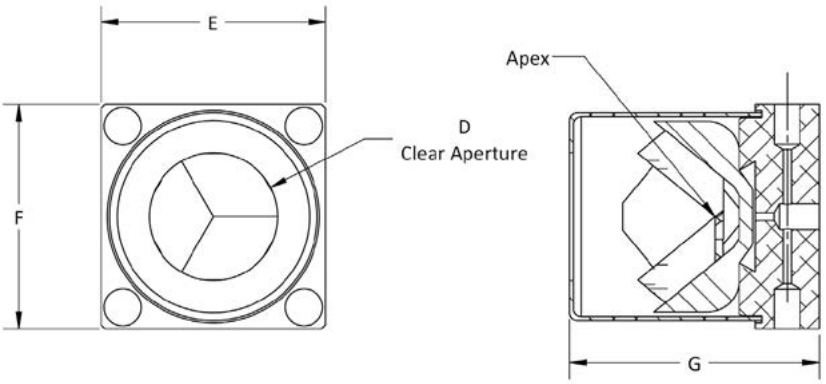
Specifications

Item	Ø A (in/mm)	Ø B (in/mm)	C (in/mm)
OW-008	0.08/2.03	0.13/3.18	0.14/3.63
OW-016	0.16/4.06	0.21/5.33	0.20/5.08
OW-025	0.25/6.35	0.32/8.13	0.32/8.13
OW-05	0.5/12.7	0.58/14.61	0.75/19.05



Item	Ø D (in/mm)	E/F (in/mm)	G (in/mm)
OW-10	1.00/25.40	1.75/44.45	1.95/49.53
OW-15	1.50/38.10	2.63/66.68	2.41/61.09
OW-20	2.00/50.80	3.10/78.74	2.61/66.20
OW-52	2.50/63.50	3.66/92.96	3.11/78.90
OW-50	5.00/127	6.75/171.45	5.98/151.89



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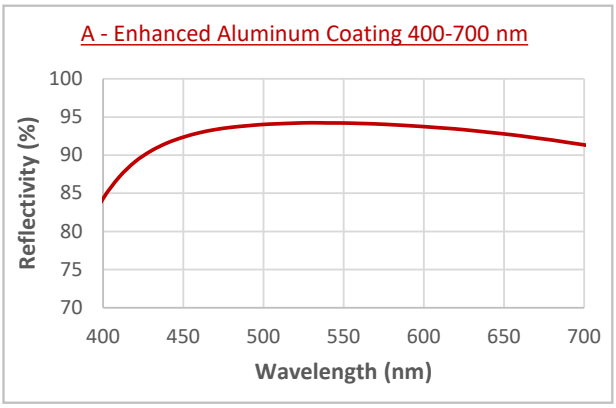
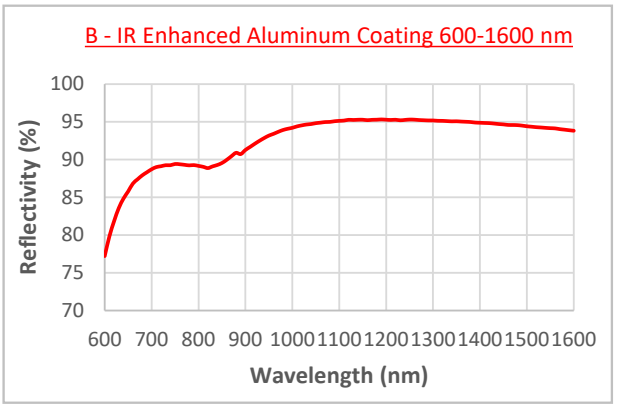
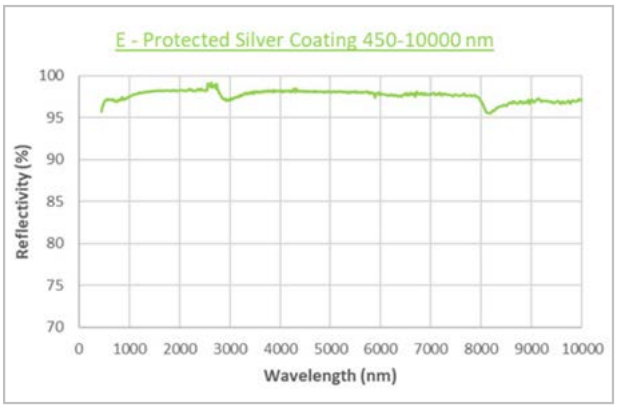
Coating types

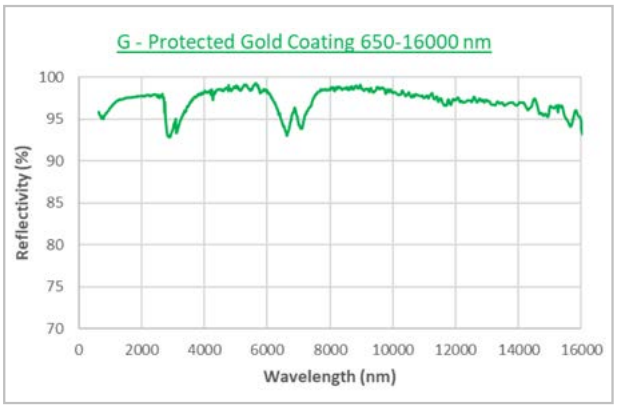
Enhanced Aluminum (400 –700 nm)	93% (AOI 55° per surface reflectance average)
IR Enhanced Aluminum (600 – 1.600 nm)	89% (AOI 55° per surface reflectance average)
Unprotected Aluminum (225 – 10.000 nm)	90% (AOI 55° per surface reflectance average)
UV Enhanced Aluminum (225 – 700 nm)	89% (AOI 55° per surface reflectance average)
Protected Silver (450 – 10.000 nm)	96% (AOI 55° per surface reflectance average)
Protected Gold (650 – 16.000 nm)	97% (AOI 55° per surface reflectance average)
Unprotected Gold (650 – 20.000 nm)	97% (AOI 55° per surface reflectance average)
Protected Aluminum (400 – 750 nm)	87% (AOI 55° per surface reflectance average)

Simulations









Note:
Coatings meet Ravg requirement, but coating curves are for reference as R(λ) may vary ± 2%

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Specifications

Substrate	Pyrex
Housing material	Aluminum 6061
Surface flatness	λ/10 – λ/20 @633 nm
Surface quality	80 – 50 Scratch-Dig
Beam deviation	0.5 – 30.0 Arcsecond

Item	Exiting Wavefront (p.v. 633 nm)	Weight (grams)
OW-008	0.35	0.06
OW-016	0.55	0.07
OW-025	0.60	0.80
OW-05	0.30 – 0.90	5.9
OW-10	0.15 – 3.50	108
OW-15	0.10 – 5.25	330
OW-20	0.15 – 7.00	454
OW-25	0.25 – 9.00	772
OW-50	0.45 – 18.0	3860

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Good to know

- OWHR™ s are available in standard sizes of 0.08 in (2 mm) to 5.0 in (125 mm). The units are available in accuracies to 0.5 arc seconds beam deviation and λ/10 wave reflected wavefront error. In the new improved configuration, the OWHR™ has a unique, patented, cushion mounting, which makes the unit extremely resistant to shock. The OWHR™ is provided in a versatile housing, which is compatible with all major mounting systems. The OWHR™ is available with a broad range of standard metallic coatings which meet all applicable MIL-specs. Unprotected metallic coatings are especially suited to interferometric applications.
- **Detailed drawings** and **detailed coating curves** are available on request.
- **Custom coatings** are available upon request.
- **Beam Deviation** is the maximum deviation from parallelism, expressed in seconds of arc, of any single return beam from any of the 6 sub-apertures of the retroreflector, when the retroreflector is fully-illuminated.
- **Exiting Wavefront** is the resultant maximum peak-to-valley wavefront deformation from a fully-illuminated retroreflector, where lambda = 633 nm.
- Beam deviation and exiting wavefront are interrelated, and it is only necessary to specify one.
- Certain high accuracy models may be heavier than indicated here. Check with us for actual weight.

For inquiries we need to know:

- Which type of retroreflector
- CA
- Beam deviation
- Coating

Product Code

Type of retroreflector -	**CA -(inch)**	**Beam deviation (arc.sec)**	**Coating**

For example:

OW-025-20PS, hollow retrorefl. prot.silver, 0.25"ap.,20"accuracy

(Omni Wave hollow retroreflector, CA 0.25 inch = 6 mm, beam deviation = 20 arcsec with protected silver coating)

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