

Ultra Low-Profile Retroreflector (ULPR™)

Description

The Ultra Low-Profile Retroreflector (ULPR™) series is a cutting-edge ultralight compact retroreflector.

Features / Characteristics

The ULPR™ series will fit where other retros won't, it is the ideal retro-reflector series with up to a 36% weight reduction over the other retroreflector series. The round shape is ideal for mounting into bores or standard optical bench lens and mirror holders. In the new improved configuration, our partner pushes the cutting-edge of design and performance further with the ULPR's patent pending mounting design. Despite its compact, sleek appearance, the unit is extremely stable over temperature changes, vibration and shock conditions.

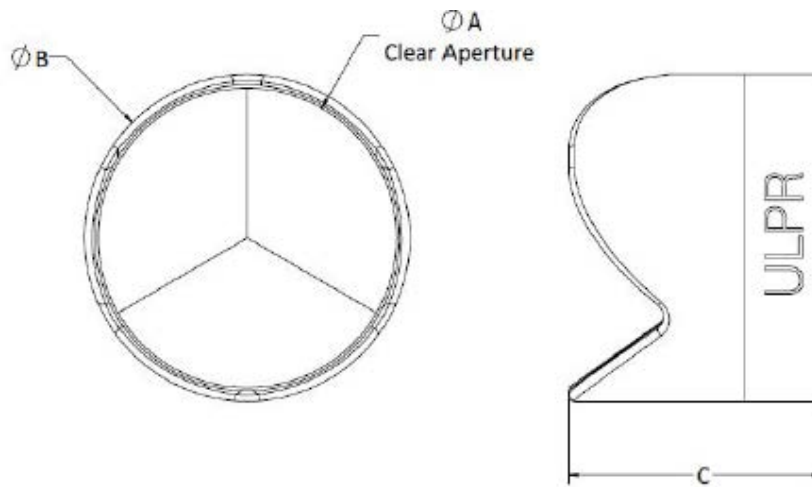


Applications

The mirrors can be coated to maximize performance over a spectral range from the UV to the far IR. Optically, the ULPR™ performs the same as the rest of PLX's retroreflectors, returning light parallel to its incoming direction. The hollow design, of three front surface mirrors, eliminates material absorption and chromatic aberration that plagues prism style retroreflectors. The ULPR™ retroreflectors are ideal for bore/collar mountings and in FTIR interferometer applications.

Specifications

Substrate	Pyrex
Housing material	Aluminum 6061
Surface flatness	$\lambda/10 - \lambda/20 @ 633 \text{ nm}$
Surface quality	80-50 Scratch-Dig
Beam deviation	0.5 – 30.0 Arcsecond



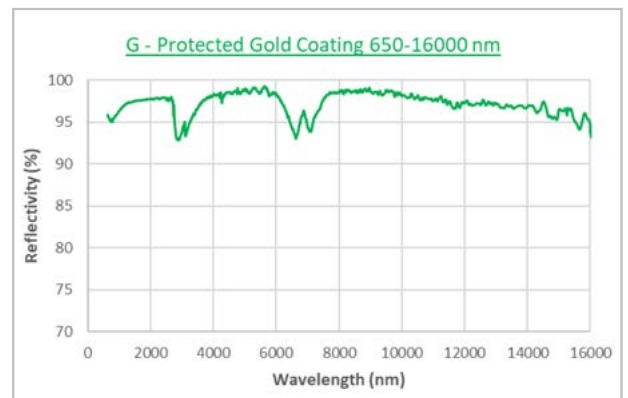
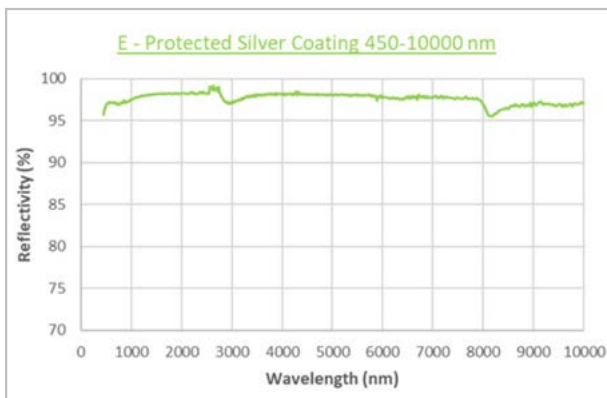
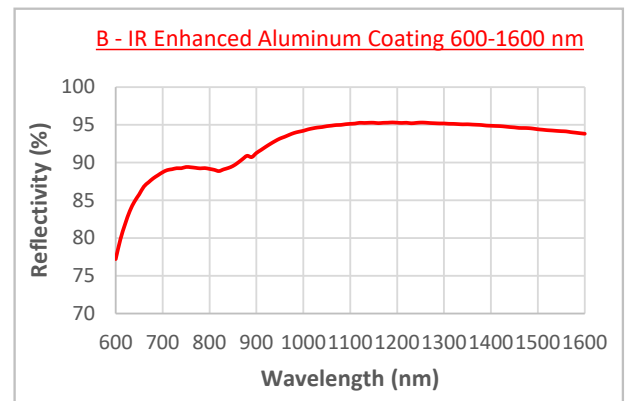
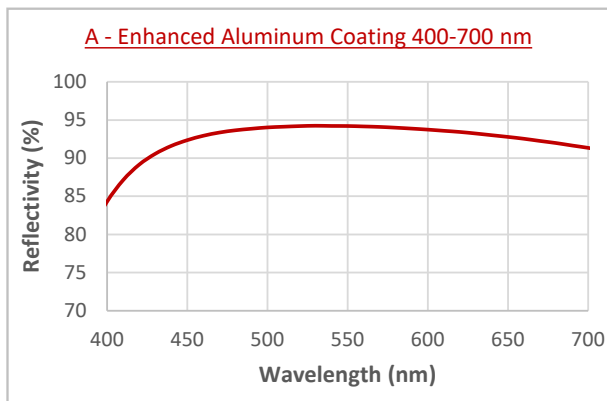
Item	Ø A (in/mm)	Ø B (in/mm)	C (in/mm)
ULPR-05	0.50/12.70	0.58/14.61	0.50/12.57
ULPR-10	1.00/25.40	1.09/27.69	0.85/21.59
ULPR-15	1.48/37.54	1.57/39.82	1.22/30.99
ULPR-20	1.98/50.40	2.09/53.09	1.58/40.13
ULPR-25	2.37/60.14	2.48/62.99	1.85/46.99
ULPR-50	4.53/114.95	4.68/118.75	3.38/85.85

Item	Exiting Wavefront (p.v. 633 nm)	Weight (grams)
ULPR-05	0.30 – 0.90	3.26
ULPR-10	0.15 – 3.50	17.4
ULPR-15	0.10 – 5.25	46.6
ULPR-20	0.15 – 7.00	96-105
ULPR-25	0.25 – 9.0	159-168
ULPR-50	0.45 – 18.0	840-980

Simulations

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)



Note:

Coatings meet Ravg requirement, but coating curves are for reference as $R(\lambda)$ may vary $\pm 2\%$. Detailed drawings and detailed coating curves are available on request.

Good to know

- ULPR™s are available in standard sizes of 0.5 in (12.7 mm) to 5.0 in (125 mm). The units are available in accuracies to 0.5 arc seconds beam deviation and $\lambda/10$ wave reflected wavefront error. The ULPR™ is provided in a versatile housing, which is compatible with all major mounting systems. The ULPR™ 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.
- 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 ϕ 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
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For example:

ULPR-10-5-PS, Ultra Low-Profile Retroreflector, 1.0", 5" acc., prot. silver

(Ultra Low-Profile Retroreflector, clear aperture $\varnothing 1$ ", beam deviation 5 arcsec, with protected silver coating)