

The Ultra Low-Profile Retroreflector™ (ULPR™) series

Is a cutting-edge ultralight compact retroreflector. This series represents the PLX brand by having a rugged stability, offered in a range of accuracy options and configurations.

The Ultra Low-Profile Retroreflector™ (ULPR™) series will fit where other retros won't. The ULPR™ is the ideal retroreflector series with a 36% weight reduction over the other retroreflector series. The round shape of the ULPR™ is ideal for direct mounting on to bores, standard optical bench lenses and mirror holders or can be purchased with the integration module to fit directly onto standard mounting posts. The PLX retroreflector family pushes performance further with its compact and sleek patented mounting design. The Ultra Low-Profile Retroreflector™ is also extremely stable across varying temperatures, vibration levels, and shock conditions.



Coating Types

- A – Enhanced Aluminum
- B – IR Enhanced Aluminum
- C – Unprotected Aluminum
- D – UV Enhanced Aluminum
- E – Protected Silver
- G – Protected Gold
- H – Unprotected gold
- I – Protected Aluminum

NOTE:

- **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 $\lambda = 633\text{nm}$. (See next page)

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.

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Specifications

Substrate	Pyrex
Housing Material	Aluminum 6061
Surface Flatness	$\lambda/10 - \lambda/20 @633\text{nm}$
Surface Quality	80 – 50 Scratch - Dig
Beam Deviation	0.25 – 30.0 Arcsecond

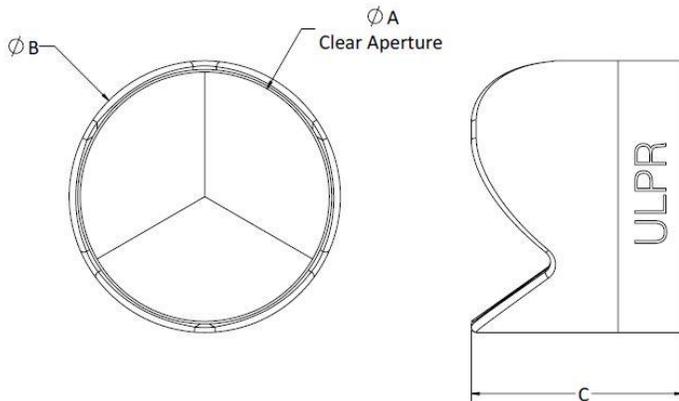
The ULPR™ series is available in standard sizes of 0.5 in (12.7mm) to 5.0 in (125mm). The units are available in accuracies to 0.25 arc seconds beam deviation and $\lambda/10$ wave reflected wavefront error. The ULPR™ is provided in a versatile housing, which is compatible with all major mounting systems. 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.

Product Datasheet

Ultra Low-Profile Retroreflector™ - ULPR™

Outline Drawings



Suffix	Wavelength Range (nm)	AOI 55° Per-Surface Reflectance (avg)
A	400 – 700	93%
B	600 – 1,600	89%
C	225 – 10,000	90%
D	225 – 700	89%
E	450 – 10,000	96%
G	650 – 20,000	97%
H	650 – 20,000	97%
I	400 – 750	87%

Detailed coating curves are available in the appendix

Item	ØA (in/mm)	ØB (in/mm)	ØC (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

Custom Configurations

Custom configurations for specialized applications

PLX engineers can create a custom product for your application. Potential variations include:

- Smaller and larger apertures.
- Modified mounts to meet your interface.
- Super-critical accuracies.
- Dielectric mirror coatings for high-powered lasers

Specifications

Item	Exiting Wavefront (p.v.633nm)	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 – 9.00	159 – 168
ULPR-50	0.45 – 18.0	840 - 980

For more information on custom configurations please contact us directly.

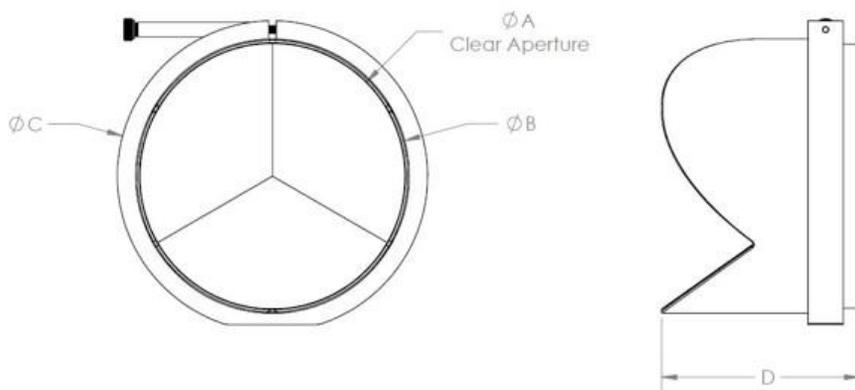
Ultra Low-Profile Retroreflector™(ULPR™) Integration Module

This module is an option to enable the ULPR™ to be used directly with standard mounting posts Specifically designed to create a single, lightweight, compact, and robust unit that can be directly integrated into any rapid prototyping, research, and educational projects. The housing has been enhanced and combined with a mounting clamp which supports standard breadboards. All specifications are the same as the standard ULPR™. The coating curves can be viewed in the appendix.

NOTE:

To ensure optimum performance the clamp should only be used with the specifically designed ULPR™ as described below.

Outline Drawings



Item	ØA (in/mm)	ØB (in/mm)	ØC (in/mm)	ØD (in/mm)
ULPR_C-05	0.5/12.70	0.58/14.61	0.85/21.59	0.50/12.57
ULPR_C-10	1.00/25.40	1.09/27.69	1.57/39.88	0.85/21.59
ULPR_C-15	1.48/37.54	1.57/39.82	2.05/52.07	1.22/30.99
ULPR_C-20	1.98/50.40	2.09/53.09	2.57/65.29	1.58/40.13
ULPR_C-25	2.37/60.114	2.48/62.99	3.03/76.96	1.85/46.99
ULPR_C-50	4.53/114.95	4.68/118.75	5.30/134.62	3.38/85.85

Product Datasheet

Ultra Low-Profile Retroreflector™ - ULPR™



Mounting Post

The ULPR™ integration module attaches directly to a standard mounting post. The post can be purchased with the ULPR™ to ensure direct integration into optical projects.

We work directly with our providers to ensure you have the best quality mounting post in several lengths for Imperial and metric breadboards.

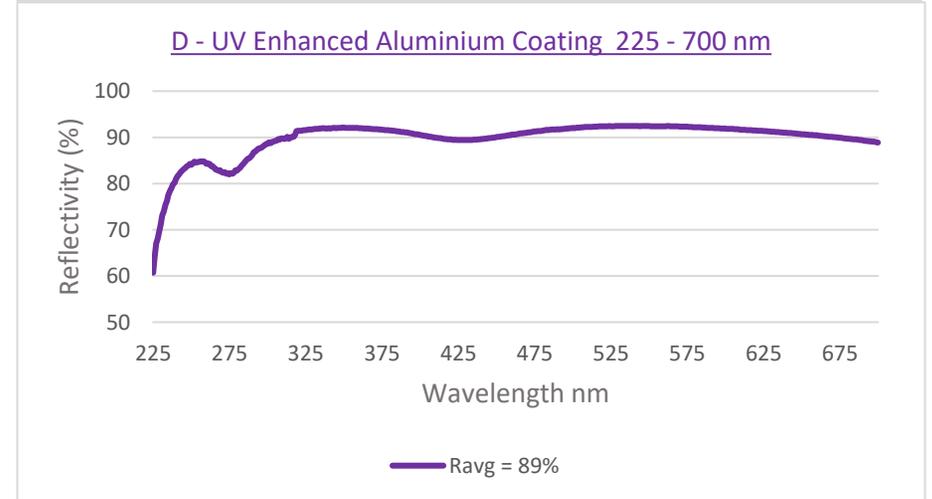
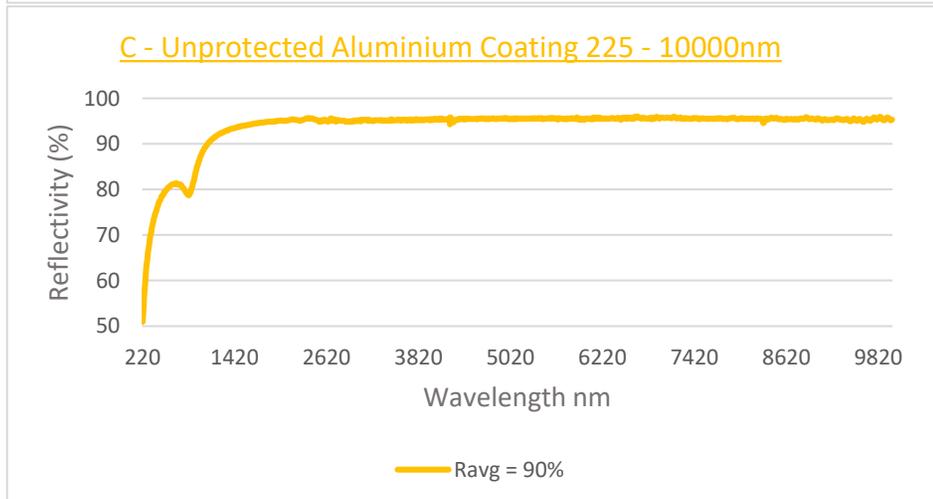
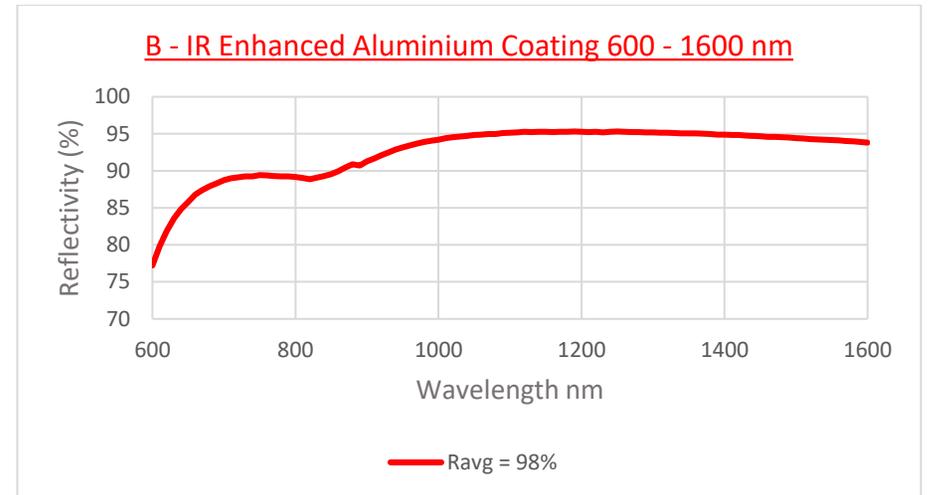
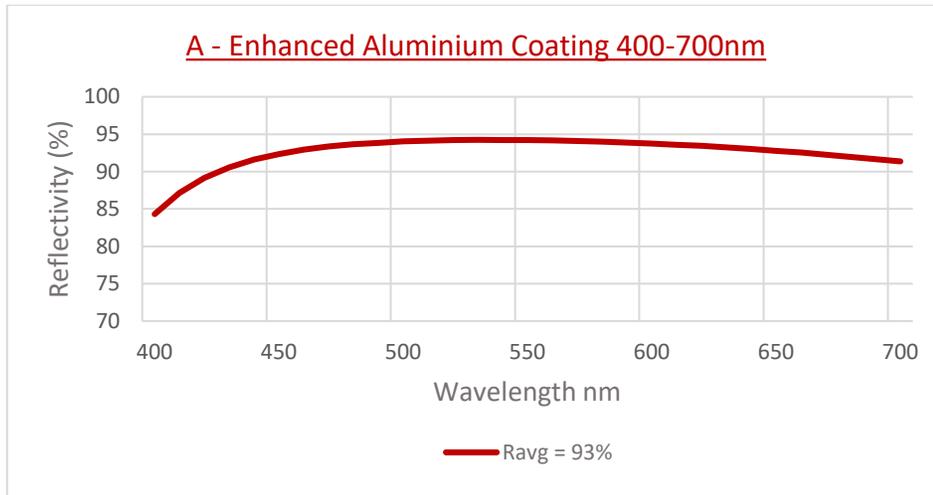
Item	Thread size	Height (in/mm)
ULPR_CP05	4-40 / M3	4-6 / 101.6-152.
ULPR_CP10+	8-32/M4	4-6 / 101.6-152.4



Appendix – Coating Curve

AOI 55°

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



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AOI 55°

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

