

Polarization Filters



Call us for OEM versions

Schneider polarization filters are constructed with dichroic sheets of laminated polymers that are cemented between protective glasses. Natural light and many artificial light sources used for illumination emit unpolarized light or at least light with a low degree of polarization. If light goes through a linear polarizer it will afterwards be linearly polarized in the orientation of the polarization axis of the filter. When using a circular polarizer, light will be either left or right circular polarized. A circular polarizer consists of a linear polarizer combined with a $\lambda/4$ element at an angle of 45° . If a pair of corresponding polarizers

is used (linear with linear or circular with circular), light passes when the orientation of their polarization axis is parallel. Light is blocked if the orientation is orthogonal to each other – this means for linear polarizers perpendicular polarization axes and for circular polarizer, left circular combined with right circular (or vice versa). In imaging applications, this effect is used to efficiently suppress reflections on dielectric or metallic surfaces because the reflected light is partially polarized (depending on material and reflective angle) and will be blocked if the filter is rotated in the appropriate orientation.

Key Features

- Linear and circular versions
- High transmission
- Edge sealed versions

Applications

- Machine Vision and other imaging applications
- 3D projection, microscopy
- Material testing (e.g. mechanical stress analysis by photoelasticity)
- Scientific & research measurements

Technical Specifications¹

Filter Type:	AUF Linear polarizer	AUC Circular polarizer ²
Wavelength range:	380 nm – 780 nm	380 nm – 780 nm
Transmission ³	30% (single), 20% (parallel pair)	30% (single), 20% (parallel pair)
Extinction ratio (crossed pair) ³	10,000:1	4,000:1 ⁴
Surface:	$5/2 \times 0.16^5$	$5/2 \times 0.16^5$
Wavefront distortion ⁶ :	1λ	1λ
Parallelism:	1 arc minute	1 arc minute
Diameter tolerance:	+ 0 - 0.3 mm	+ 0 - 0.3 mm
Thickness:	2.6 ± 0.2 mm	2.7 ± 0.2 mm

¹ Specifications for unmounted and uncoated versions

² Typically left circular

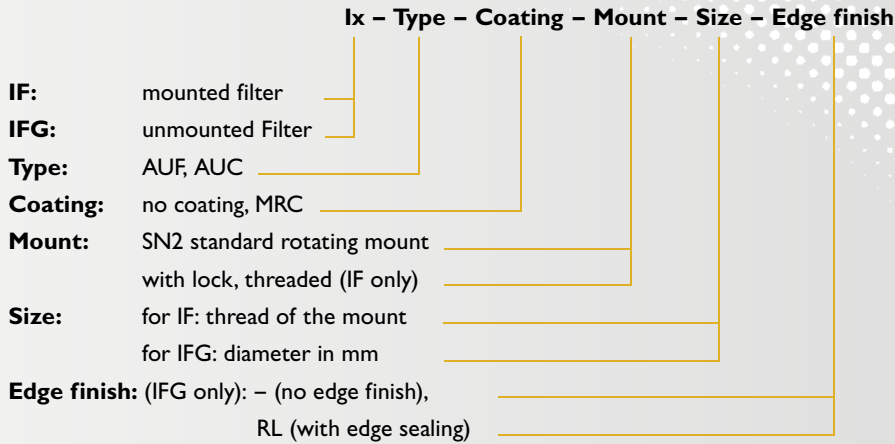
³ Average over wavelength range for unpolarized light

⁴ Measured with pair of left circular polarizers, linear sides pointing to each other

⁵ Surface specification according to ISO 10110, quality usually similar to MIL 80-50 scratch-dig or better

⁶ Per 30 mm at 633 nm

ORDER INSTRUCTIONS:



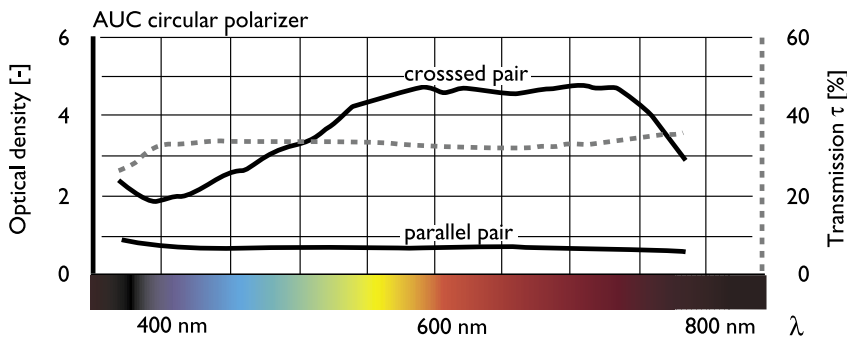
Examples:

IF - AUF - SN2 - 25.5

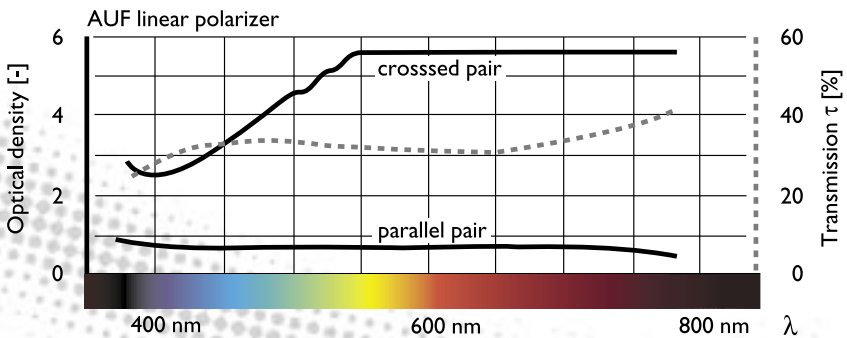
(AUF filter with no coating in rotating mount for M25.5)

IFG - AUC - MRC - 30 - RL

(unmounted filter AUC with MRC coating, 30 mm diameter, with edge sealing)



For industrial applications, a linear polarizer can often be used. If there are any mirrors between the filter and the sensor, circular polarizer are recommended (like for auto-exposure and auto-focus in SLR cameras). Since the polymer film is sensitive to humidity, we recommend the edge sealed version if the filter is not glued into a mount.



POLARIZATION FILTERS