Air Gap Type Waveplates | AGTWP

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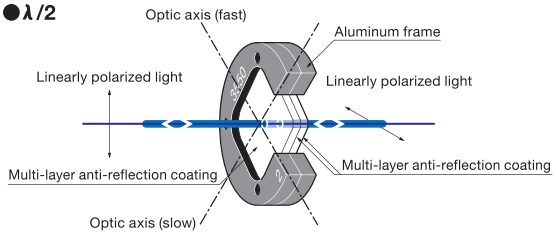
Air spaced type two-piece waveplates. Compatible with high-energy lasers (no optical contact occurs).

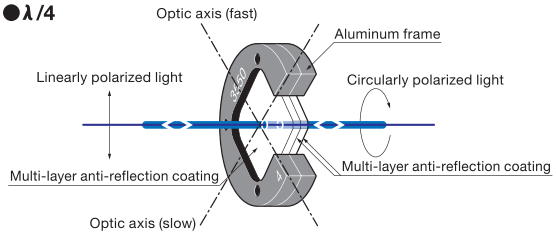
- These products utilize birefringence of quartz and give phase difference of λ/4 (π/2, 90°) or λ/2 (π, 180°) to the input beams. λ/4 retarders convert linearly polarization to circularly and circularly polarization to linearly. λ/2 retarders convert the direction of polarization arbitrarily.
- Air spaced type waveplates are zero-order (first-order) retardation plates (phase plates) which are assembled from pairs of crystalline quartz plates and are mounted on aluminum frames.
- Custom-made air spaced type waveplates for other wavelengths (248nm, 257nm, 308nm etc.) are also available.

Schematic

●λ/2



●λ/4



Specifications

Material	Optical grade crystalline quarts
Material of frame	Aluminum Finishing: Black anodized
Clear aperture	15×15mm
Surface flatness of substrate	λ/10
Angular deviation of beam	<5″
Coating	Both surfaces: Narrowband multi-layer anti-reflection coating (Four surfaces)
retardation tolerance	<λ/50 (λ<400nm) λ/100 – λ/200 (400nm<λ<700nm) λ/200 – λ/500 (700nm<λ)
Transmittance	>99%
Surface Quality (Scratch–Dig)	20–10

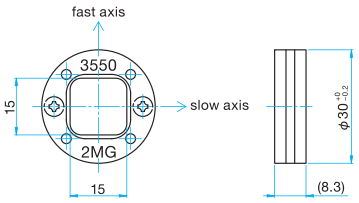
Guide

▶Please contact our International Sales Division for customized products. (Customized on size etc.)

Attention

▶Unlike multiple-order (higher-order) waveplates that are made from a single quartz plate, the net retardations of zero-order waveplates are almost not affected by temperature change.
▶Optical axis is parallel to the edge of 15mm squared plate.
▶These products can be used for the beams which wavelengths are in +/–1% of rated wavelengths.
▶The surface flatness is the reflected wavefront distortion of the surface before coating.
▶Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.
▶Standard thickness of Aluminum frame is 8.3mm (subject to differ without notice).

Outline Drawing (in mm)



λ/2

Part Number	Wavelength Range [nm]	Theoretical retardation [nm]	Laser Type	Laser Damage Threshold* [J/cm²]
AGTWP-2660-2M	266	133.0	YAG4ω	1.4
AGTWP-3550-2M	355	177.5	YAG3ω	4
AGTWP-5320-2M	532	266.0	YAG2ω	4
AGTWP-10640-2M	1064	532.0	YAG	7

* Laser pulse width 10ns, repetition frequency 20Hz

λ/4

Part Number	Wavelength Range [nm]	Theoretical retardation [nm]	Laser Type	Laser Damage Threshold* [J/cm²]
AGTWP-2660-4M	266	66.5	YAG4ω	1.4
AGTWP-3550-4M	355	88.8	YAG3ω	4
AGTWP-5320-4M	532	133.0	YAG2ω	4
AGTWP-10640-4M	1064	266.0	YAG	7

* Laser pulse width 10ns, repetition frequency 20Hz