

Broadband Quartz Waveplates | WPQW

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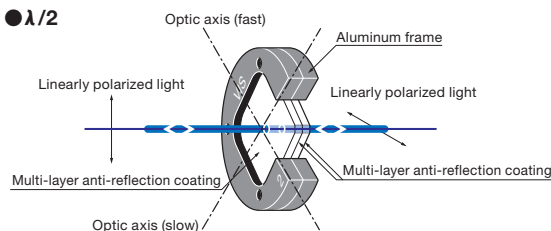
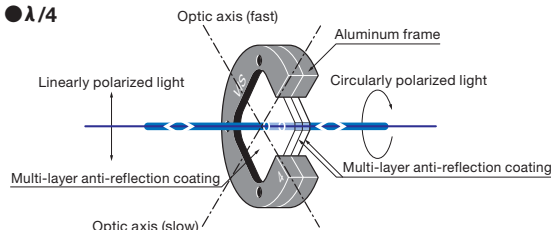
Polarizers

Air spaced two piece waveplates are suitable for use with high-energy lasers (no optical contact occurs). These products utilize birefringence of quartz and give phase difference of $\lambda/4$ ($\pi/2$, 90°) or $\lambda/2$ (π , 180°) to the input beams. $\lambda/4$ retarders convert linearly polarization to circularly and circularly polarization to linearly. $\lambda/2$ 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.



Schematic

● $\lambda/2$ ● $\lambda/4$ 

Specifications

Material	Optical grade crystalline quartz, MgF ₂
Material of frame	Aluminum Finishing: Black anodized
Clear aperture	14x14mm
Transmitted wavefront distortion	$\lambda/4$ (per one surface)
Angular deviation of beam	<5"
Coating	Both surfaces: Narrowband multi-layer anti-reflection coating (Four surfaces)
Transmittance	> Average 98%
Surface Quality (Scratch-Dig)	20-10

Guide

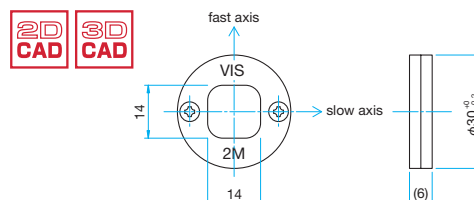
- ▶ Custom-made air spaced broadband quartz waveplates for other wavelengths are also available, contact our Sales Division with you requests.
- ▶ Standard thickness of Aluminum frame is 6mm (subject to differ without notice).
- ▶ Optical axis is parallel to the edge of 14mm squared plate.

Attention

- ▶ These products can be used for the beams which wavelengths are in +/-1% of rated wavelength.
- ▶ 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.

Outline Drawing

(in mm)



Visible

Part Number	Type	Wavelength Range λ [nm]	Theoretical retardation [nm]				Laser Damage Threshold* [J/cm ²]
			$\lambda=400\text{nm}$	$\lambda=500\text{nm}$	$\lambda=600\text{nm}$	$\lambda=700\text{nm}$	
WPQW-VIS-2M	$\lambda/2$	400 – 700	184.6	259.0	300.3	328.9	4
WPQW-VIS-4M	$\lambda/4$	400 – 700	92.8	130.0	150.6	164.9	4

650 – 780nm

Part Number	Type	Wavelength Range λ [nm]	Theoretical retardation [nm]				Laser Damage Threshold* [J/cm ²]
			$\lambda=650\text{nm}$	$\lambda=700\text{nm}$	$\lambda=750\text{nm}$	$\lambda=800\text{nm}$	
WPQW-65/78-2M	$\lambda/2$	650 – 780	325.3	352.7	376.9	398.8	7
WPQW-65/78-4M	$\lambda/4$	650 – 780	162.2	175.9	188.0	198.9	7

700 – 1000nm

Part Number	Type	Wavelength Range λ [nm]	Theoretical retardation [nm]				Laser Damage Threshold* [J/cm ²]
			$\lambda=700\text{nm}$	$\lambda=800\text{nm}$	$\lambda=900\text{nm}$	$\lambda=1000\text{nm}$	
WPQW-NIR-2M	$\lambda/2$	700 – 1000	344.8	402.0	450.4	494.4	7
WPQW-NIR-4M	$\lambda/4$	700 – 1000	172.4	201.0	225.2	247.2	7

1000 – 1600nm

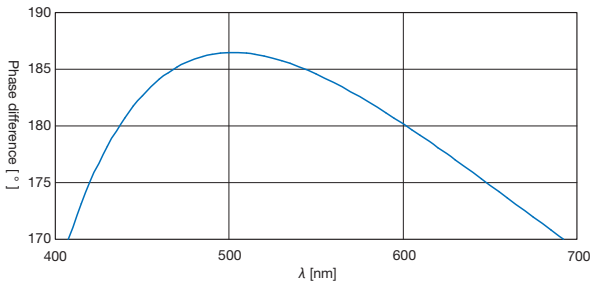
Part Number	Type	Wavelength Range λ [nm]	Theoretical retardation [nm]				Laser Damage Threshold* [J/cm ²]
			$\lambda=1000\text{nm}$	$\lambda=1200\text{nm}$	$\lambda=1400\text{nm}$	$\lambda=1600\text{nm}$	
WPQW-IR-2M	$\lambda/2$	1000 – 1600	510.2	595.4	696.3	814.3	7
WPQW-IR-4M	$\lambda/4$	1000 – 1600	255.1	297.7	348.1	407.1	7

* Laser pulse width 10ns, repetition frequency 20Hz

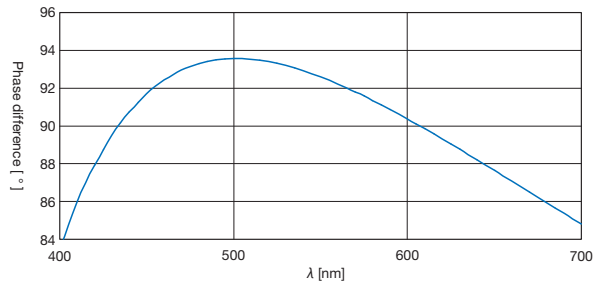


Typical Angular Field Data

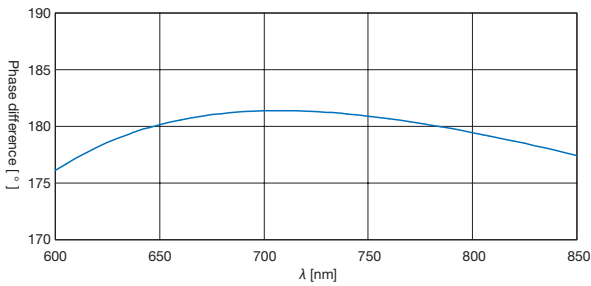
WPQW-VIS-2M



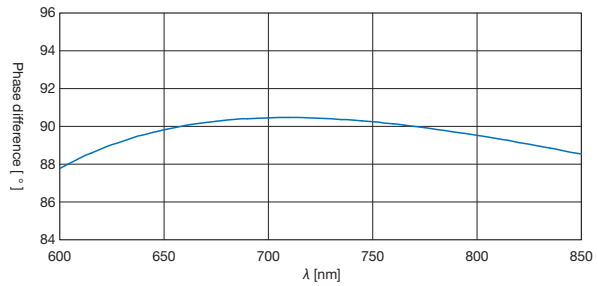
WPQW-VIS-4M



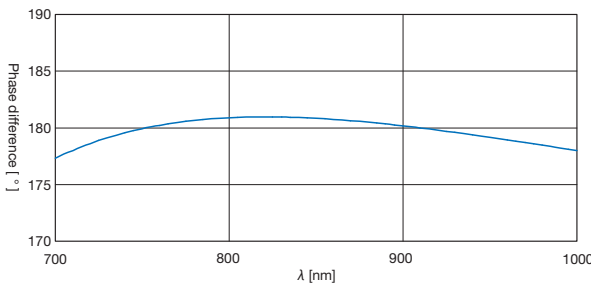
WPQW-65/78-2M



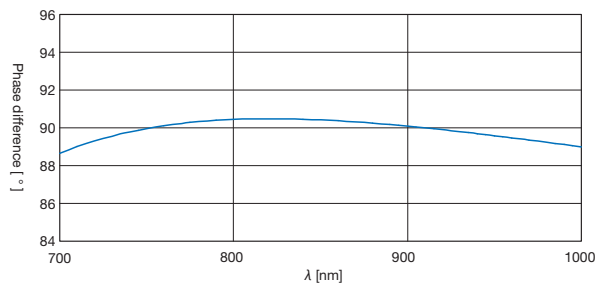
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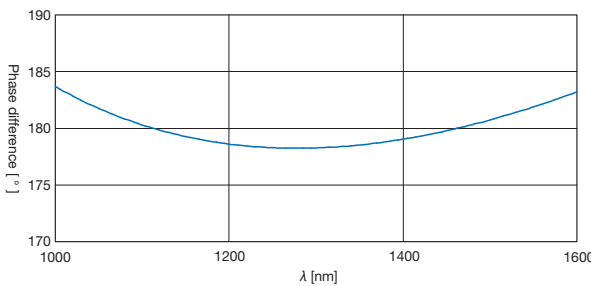
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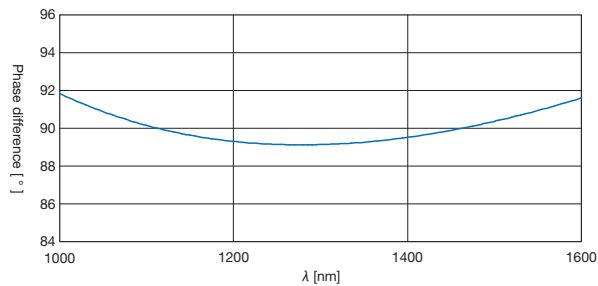
WPQW-NIR-4M



WPQW-IR-2M



WPQW-IR-4M



Compatible Optic Mounts

PH-30-ARS / SPH-30-ARS

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