

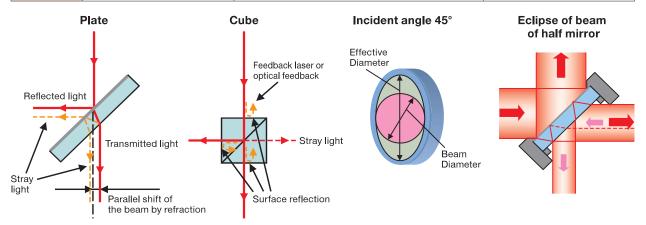
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Beamsplitters selection Guide

A beamsplitter is an optic that splits light into 2 directions. The split ratio of light transmittance and reflectance is 1:1 and is called a half mirror.

The 2 forms of beamsplitters are cube and plate type.

Туре	Overview drawing	Features	Application
Plate		Good fit for large beam size applications at a reasonable price. Advantages are: minimal back reflection, compact light-path as compared to cube type beamsplitters and low chromatic dispersion. There may be a slight offset of the transmitted beam due to refraction. For 45 degrees incident application, the clear aperture would be elliptical. There may be some vignetting on angle of incidence.	Large beam size optical set up. Used in large beam size optical layouts. Used for monitoring optical systems, split beams into different wave- lengths, polarizations or intensities.
Cube		Can be applied at its maximum effective area from any incident direction, easy to be applied in optical design and simple for optical set up adjustment High cost and high weight for large beam size application. Feedback light at less than 1% may happen. The transmittance light through the cube is longer than a plate type, the chromatic dispersion is higher. Eliminates the problem of beam deviation.	For a compact size optical set up. For high accuracy experiment and optical set up usage.



Experimentation with laser (Linear polarized light)

Lasers are used to evaluate our half mirrors and with the polarization properties of the laser, we are able to check the change of light splitting ratios.

Туре	Image	Application	Polarization constraints received when laser light is used	Polarization dependency
Non-polarizing (NPCH)	805	For high accuracy laser experiment with accurate light ratios at any polarization levels.	The light ratios at 1:1 stay stable even when the polarization situation changes. No power loss.	Small
Hybrid (HBCH) Reference B048	Ucce	For multi-wavelength light splitting solutions.	Light ratio at 1:1 from any specified light incident direction will remain similar.	
Laser Line Plate (PSMH)	900	Large beam size, multi mirror optical set up with small power light source and supports high power laser light splitting.	Polarization at 45 degree (AOI) or circle polarization light with no power loss detected.	
Chromium Plate (PSCH)		Large beam size and observation optical system.	Polarization at 45 degree (AOI) or circle polarization light with 36% absorption of light power.	
Chromium Cube (CSCH)	O ₃	For basic laser experiments and compact optical solutions. Great entry level price.	Polarization at 45 degree (AOI) or circle polarization light with 40% absorption of light power.	
Dielectric Cube (CSMH)		For general white light and non-polarizing light i.e. LED light splitting solutions.	Polarization at 45 degree (AOI) or circle polarization light with no power loss detected.	Large

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Non-polarizing Cube Half Mirrors

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Others

Half mirrors have an even 1:1 ratio of reflection and transmission in both linear polarized light and normal light source.

- The reflection to transmission ratio is 1:1 regardless of the polarization condition from the input beam.
- Depending on polarization, the reflection to transmission ratio of these products does not vary.
- The laser lines listed correspond to various laser wavelengths.
- Narrowband multi-layer AR coatings are applied to the four surfaces of the cube.
- These cubes afe designed for a single wavelenght because the effective bandwidth of a non-polarizing coating is narrow.



Schematic Hypotenuse surface: Dielectric multi-layer nonpolarizing coating Transmitted light Four surface with multi-layer anti-reflection coating.

Outline Drawing ■Tolerance $A \pm 0.2$ B ±0.2 C ±0.1

Specifications		
Material	BK7, Synthetic fused silica	
Surface flatness of substrate	λ/4	
Beam Deviation	<5′	
Coating	Hypotenuse Surface: Dielectric multi-layer nonpolarizing coating Four Surfaces: Multi-layer anti-reflection coating	
Incident angle	0°	
Divergence ratio (reflectance : transmittance)	1:1	
Laser Damage Threshold	0.3J/cm ² (Laser pulse width 10ns, repetition frequency 20Hz)	
Surface Quality (Scratch-Dig)	20–10	
Clear aperture	85% of Circle to actual dimension (80% of actual aperture for 5 and 7mm dimension (A=B=C) products.)	

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- ▶ Please contact our Sales Team for customized products. (Customized on size, wavelength or R:T, etc.) Reference B068
- Non-polarizing beam splitter (plate type) is also possible.
- For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division.

Attention

- ▶Input beam from the prism side is indicated by a "○"
- ▶ Phase retardation of light input will not be preserved. Use a waveplate for phase compensation.
- Wavelength dispersion of transmitted and reflected light is derived from refractive index and glass thickness and when diverging or introducing a focusing beam, chromatic aberration or spherical aberration may occur.

266 – 532nm					
Part Number	Wavelength Range [nm]	A=B=C [mm]	Material	Transmittance [%]	
NPCH-10-2660	266	10	Synthetic fused silica	50±10	
NPCH-15-2660	266	15	Synthetic fused silica	50±10	
NPCH-20-2660	266	20	Synthetic fused silica	50±10	
NPCH-10-3550	355	10	Synthetic fused silica	50±7	
NPCH-15-3550	355	15	Synthetic fused silica	50±7	
NPCH-20-3550	355	20	Synthetic fused silica	50±7	
NPCH-10-4050	405	10	BK7	50±7	
NPCH-15-4050	405	15	BK7	50±7	
NPCH-20-4050	405	20	BK7	50±7	
NPCH-10-4880	488	10	BK7	50±5	
NPCH-15-4880	488	15	BK7	50±5	
NPCH-20-4880	488	20	BK7	50±5	
NPCH-10-5145	514.5	10	BK7	50±5	
NPCH-15-5145	514.5	15	BK7	50±5	
NPCH-20-5145	514.5	20	BK7	50±5	
NPCH-10-5320	532	10	BK7	50±5	
NPCH-15-5320	532	15	BK7	50±5	
NPCH-20-5320	532	20	BK7	50±5	

Compatible Optic Mounts

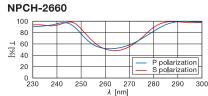
PLH-25, -40 / KKD-25PHRO, -40PHRO

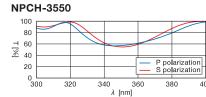


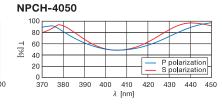
Cube Type: Nonpolarizing	g 632.8 – 1550nm			
Part Number	Wavelength Range [nm]	A=B=C [mm]	Material	Transmittance [%]
NPCH-05-6328	632.8	5	BK7	50±5
NPCH-10-6328	632.8	10	BK7	50±5
NPCH-15-6328	632.8	15	BK7	50±5
NPCH-20-6328	632.8	20	BK7	50±5
NPCH-10-6700	670	10	BK7	50±5
NPCH-15-6700	670	15	BK7	50±5
NPCH-20-6700	670	20	BK7	50±5
NPCH-10-7800	780	10	BK7	50±5
NPCH-15-7800	780	15	BK7	50±5
NPCH-20-7800	780	20	BK7	50±5
NPCH-10-8300	830	10	BK7	50±5
NPCH-15-8300	830	15	BK7	50±5
NPCH-20-8300	830	20	BK7	50±5
NPCH-10-10640	1064	10	BK7	50±5
NPCH-15-10640	1064	15	BK7	50±5
NPCH-20-10640	1064	20	BK7	50±5
NPCH-10-13000	1300	10	BK7	50±5
NPCH-15-13000	1300	15	BK7	50±5
NPCH-20-13000	1300	20	BK7	50±5
NPCH-10-15500	1550	10	BK7	50±5
NPCH-15-15500	1550	15	BK7	50±5
NPCH-20-15500	1550	20	BK7	50±5

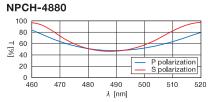
Typical Transmittance Data

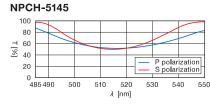
T: Transmission

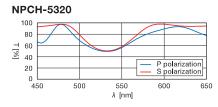


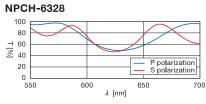


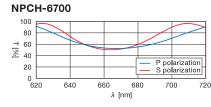


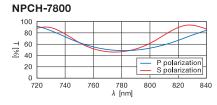


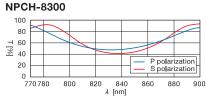


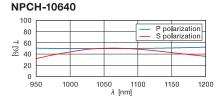


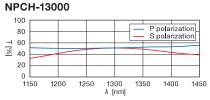












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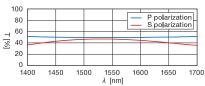
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Hybrid Cube Half Mirrors

HBCH



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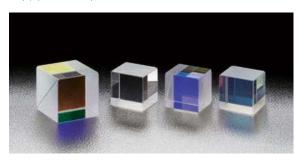
Others

lybrid Cube Hall Will of 5

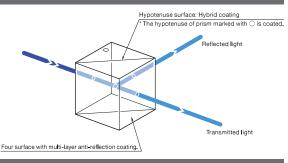
Low polarizing cube half mirrors can be used for broadband visible and infrared light.

Cubes are applicable for use in polarizing systems and lasers with multiple wavelength or visible light.

- This hybrid coating is a special combination of metallic and dielectric multi-layers that result in low polarizing and broadband coating.
- As it is cube shaped, there will not be any lateral shift of the optical axis when a normal incident beam is applied. During transmission and reflection of lights, the aperture remains unchanged.
- Even when the orientation of linear polarization has been changed, beams are equally divided as reflected (R): transmitted (T) (ratio is 1:1)

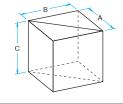


Schematic



Outline Drawing

(in mr



•Tolerance A ±0.2 B ±0.2 C ±0.2

Specifications	
Material	BK7
Surface flatness of substrate	λ/4
Beam Deviation	<5′
Coating	Hypotenuse surface: Hybrid coating (dielectric multi-layer coating and metallic coating) Four surfaces: Multi-layer anti-reflection coating
Incident angle	0°
Divergence ratio (reflectance : transmittance)	1:1
Laser Damage Threshold	0.3J/cm ² (Laser pulse width 10ns, repetition frequency 20Hz)
Surface Quality (Scratch-Dig)	40–20
Clear aperture	85% of actual dimension

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- ▶ For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division.

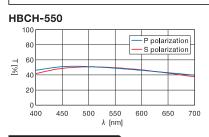
Attention

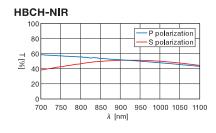
- ▶Input beam from the prism side is indicated by a "○". Reflection and refraction over wavelength will differ when light input is applied from the opposite side of the prism.
- ▶ Approximately 10% to 15% of absorption occurs in hybrid coating due to the properties in metallic coating reducing the transmitted or reflected light.
- ▶ Phase retardation of light input will not be preserved. Use a waveplate for phase compensation.
- ▶ Wavelength dispersion of transmitted and reflected light is derived from refractive index and glass thickness and when diverging or introducing a focusing beam, chromatic aberration or spherical aberration may occur.

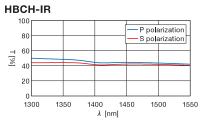
Specifications				
Part Number	Wavelength Range [nm]	A=B=C [mm]	Transmittance [%]	Polarization dependency Tp-Ts [%]
HBCH-10-550	400 – 700	10	45±10 (550nm)	<10
HBCH-15-550	400 – 700	15	45±10 (550nm)	<10
HBCH-20-550	400 – 700	20	45±10 (550nm)	<10
HBCH-10-NIR	700 – 1100	10	47±10 (900nm)	<20 (<10: 800 – 1100nm)
HBCH-15-NIR	700 – 1100	15	47±10 (900nm)	<20 (<10: 800 – 1100nm)
HBCH-20-NIR	700 – 1100	20	47±10 (900nm)	<20 (<10: 800 – 1100nm)
HBCH-10-IR	1300 – 1550	10	45±10 (1400nm)	<10
HBCH-15-IR	1300 – 1550	15	45±10 (1400nm)	<10
HBCH-20-IR	1300 – 1550	20	45±10 (1400nm)	<10

Typical Transmittance Data

T: Transmission







Compatible Optic Mounts

PLH-25, -40 / KKD-25PHRO, -40PHRO



Chromium cube half mirrors consist of two right angle prisms. One of them is coated with chromium (Cr) on the hypotenuse face. Half mirror divides input beam to reflectance and transmittance in 1:1. A beamsplitter of R:T=1:1 is called "Half Mirror".

- Four surfaces of the cube are coated with multi-layer anti-reflection coatings.
- Approximately one third of the input beam is lost because of absorption of chromium coating on the hypotenuse. However these beamsplitters are not wavelength, polarization and incident angle of the input beam dependent and therefore provide a highly neutral reflectivity.
- For cube beamsplitters, unlike plate beamsplitters, transmission beam deviations and ghosts rarely occur.



Schematic Hypotenuse surface: Chromium coating * The hypotenuse of prism marked with Reflected light Transmitted light Four surface with multi-layer anti-reflection coating.

Outline Drawing Tolerance $A \pm 0.2$ B ±0.2 C ±0.1

Specifications				
Part Number	Wavelength Range [nm]	A=B=C [mm]		
CSCH-10-550	400 – 700	10		
CSCH-15-550	400 – 700	15		
CSCH-20-550	400 – 700	20		
CSCH-25-550	400 – 700	25		
CSCH-30-550	400 – 700	30		
CSCH-40-550	400 – 700	40		
CSCH-50-550	400 – 700	50		
CSCH-10-800	750 – 850	10		
CSCH-15-800	750 – 850	15		
CSCH-20-800	750 – 850	20		

Specifications	
Material	BK7
Surface flatness of substrate	λ/4
Beam Deviation	<5′
Coating	Hypotenuse surface: Chromium Four surfaces: Multi-layer anti-reflection coating
Incident angle	0°
Transmittance	Average 28±5% (The average value of the P-Polarization and the S-Polarization)
Divergence ratio (reflectance : transmittance)	1:1
Laser Damage Threshold	0.3J/cm ² (Laser pulse width 10ns, repetition frequency 20Hz)
Surface Quality (Scratch-Dig)	40–20
Clear aperture	85% of actual aperture

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- For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division.

Attention

- ▶Input beam from the prism side is indicated by a "○"
- Phase retardation of light input will not be preserved. Use a waveplate for phase compensation.
- Wavelength dispersion of transmitted and reflected light is derived from refractive index and glass thickness and when diverging or introducing a focusing beam, chromatic aberration or spherical aberration may occur.
- ▶The transmittance curves are based on actual measurements and may vary with manufacturing lots.
- ▶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.

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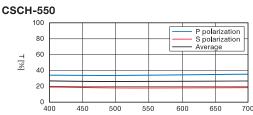
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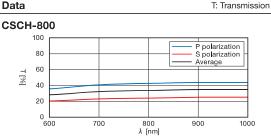
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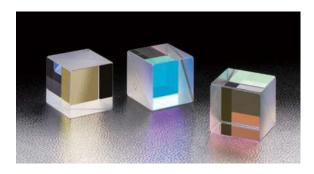
Harmonic Separator

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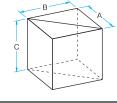
Dielectric cube half mirrors consist of two right angle prisms. One of them is coated with dielectric multi-layer partial reflection coating on the hypotenuse face.

- Half mirror divides input beam into reflectance and transmittance at a 1:1 ratio. A beamsplitter with R:T (1:1 ratio) is called "Half Mirror".
- Four surfaces of the cube are coated with multi-layer anti-reflection coatings.
- The loss of input beam is minimized as there is no absorption from dielectric coating. However the reflection to transmission ratio of these dielectric cube half mirrors vary depending on wavelength, polarization and the incident angle of input



Schematic Hypotenuse surface: Dielectric multi-layer coating Reflected light Transmitted light

Outline Drawing



Tolerance A ±0.2 B ±0.2 C ±0.1

Specifications		
Material	BK7	
Surface flatness of substrate	λ/4	
Beam Deviation	<5′	
Coating	Hypotenuse surface: Dielectric multi-layer coating Four surfaces: Multi-layer anti-reflection coating	
Incident angle	0°	
Divergence ratio (reflectance : transmittance)	1:1	
Polarization of the incident beam	Unpolarized light or 45 degrees Linear polarization or cirlular polarization	
Laser Damage Threshold	0.3J/cm ² (Laser pulse width 10ns, repetition frequency 20Hz)	
Surface Quality (Scratch-Dig)	20–10	
Clear aperture	85% of circle to actual dimension (80% of actual aperture for 5 and 7mm dimension (A=B=C) products,)	

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- ▶ Please contact our Sales Team for customized products. (Customized on size, wavelength or R:T, etc.) Reference B068
- For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division.

Attention

- ▶Input beam from the prism side is indicated by a "○". Reflection and refraction over wavelength will differ when light input is applied from the opposite side of the prism.
- The transmittance curves are based on actual measurements and may vary with manufacturing lots.
- 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.

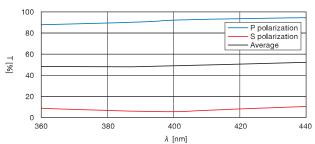
Specifications				
Part Number	Wavelength Range [nm]	A=B=C [mm]	Transmittance (The average value of the P-Polarization and the S-Polarization) [%]	
CSMH-10-405	390 – 410	10	Average 50±3	
CSMH-12.7-405	390 – 410	12.7	Average 50±3	
CSMH-15-405	390 – 410	15	Average 50±3	
CSMH-20-405	390 – 410	20	Average 50±3	
CSMH-25-405	390 – 410	25	Average 50±3	
CSMH-30-405	390 – 410	30	Average 50±3	
CSMH-05-550	400 – 700	5	Average 50±5	
CSMH-07-550	400 – 700	7	Average 50±5	
CSMH-10-550	400 – 700	10	Average 50±5	
CSMH-12.7-550	400 – 700	12.7	Average 50±5	
CSMH-15-550	400 – 700	15	Average 50±5	
CSMH-20-550	400 – 700	20	Average 50±5	
CSMH-25-550	400 – 700	25	Average 50±5	
CSMH-30-550	400 – 700	30	Average 50±5	
CSMH-40-550	400 – 700	40	Average 50±5	
CSMH-50-550	400 – 700	50	Average 50±5	
CSMH-10-800	750 – 850	10	Average 50±5	
CSMH-12.7-800	750 – 850	12.7	Average 50±5	
CSMH-15-800	750 – 850	15	Average 50±5	
CSMH-20-800	750 – 850	20	Average 50±5	
CSMH-25-800	750 – 850	25	Average 50±5	
CSMH-30-800	750 – 850	30	Average 50±5	
CSMH-10-1400	1300 – 1550	10	Average 50±5	
CSMH-12.7-1400	1300 – 1550	12.7	Average 50±5	
CSMH-20-1400	1300 – 1550	20	Average 50±5	



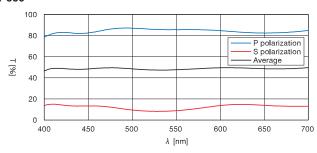
Typical Transmittance Data

T: Transmission

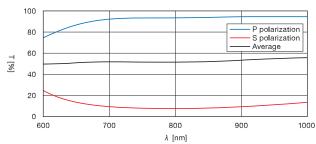
CSMH-405



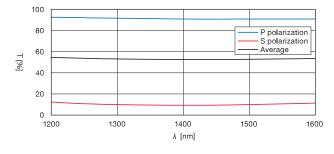
CSMH-550



CSMH-800



CSMH-1400



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Ultra Broadband Dieletric Half Mirrors

PMH/PSMH



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We offer Half-Mirror optics designed for use in Ultraviolet, Visible and Infrared wavelengths. They can be used for both transmission and divergence of multi-wavelength lasers and white light sources.

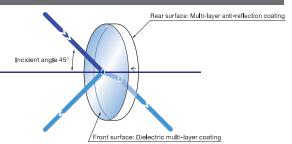
Ultra broadband half-mirrors are used for spectrometry applications.

- PMH series have 4 types of ultra-broadband optics suitable for UV to IR applications.
- PSMH series have 3 types of ultra-broadband optics for ranges from Visible to NIR, which are used for optical communication applications.
- Dielectric multi-layer coated optics are an excellent choice for beam deviation applications because of its low absorption capabilities.
- Its low polarization characteristic can also be applied in beam deviation with a linear polarization laser or a laser light.
- Sigma Koki produces plate from optics that are light weight and maintains low dispersion with less aberration.
- Both wedge and plate type mirrors are made to have "low ghosting and low interference effects".



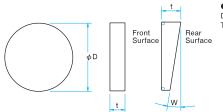
Specifications	
Material	BK7, Synthetic fused silica
Surface Flatness	λ/10
Coating	Front surface: Dielectric multi-layer coating Rear surface: Multi-layer anti-reflection coating
Incident angle	45°
Divergence ratio (reflectance : transmittance)	1:1
Surface Quality (Scratch–Dig)	10–5
Clear aperture	90% of actual aperture

Schematic



Outline Drawing

(in m



•Tolerance Diameter φD=α Thickness t±0.1

Guide

- ▶ For customization, we can offer different sizes, wavelengths and deviation ratios.

 Reference ▶ B068

 Please contact our Sales Division with your requests.
- For guaranteed higher reflectance accuracy and higher transmittance optics, please contact us.
- An arrow mark will be printed on the thick side of the wedge plate to indicate the surface of the mirror.

Attention

- ▶ When applying laser linear polarized light, the direction of polarization may affect the amount of reflectance and transmittance. For a divergence usage of 1:1 ratio, ensure the direction of polarization is set to 45 degrees or use a circular polarizer.
- ▶ When a laser light transmits through the optics, the light path may shift by a few millimeters horizontally due to refraction and the thickness of the wedge plate.
- ▶The transmittance wavelength properties may be different if the incident angle is other than 45 degrees.
- ▶ Please check the arrow mark on the side of the wedge plate that indicates the coated surface.
- ▶ The phase difference of incident light cannot be preserved on light transmittance and reflectance; Please use a wave plate to compensate

Ultra broadband							
Part Number	Wavelength Range [nm]	Diameter φD [mm]	Thickness t [mm]	Material	Parallelism W	Transmittance (The average value of the P-Polarization and the S-Polarization) [%]	Laser Damage Threshold* [J/cm ²]
PMH-25.4C03-10-25/7	250 – 700	φ25.4	3	Synthetic fused silica	<5″	Average 50±10	0.5
PMH-30C03-10-25/7	250 – 700	φ30	3	Synthetic fused silica	<5″	Average 50±10	0.5
PMH-50C05-10-25/7	250 – 700	φ50	5	Synthetic fused silica	<5″	Average 50±10	0.5
PMH-25.4C03-10-3/10	300 – 1000	φ25.4	3	Synthetic fused silica	<5″	Average 50±10	0.5
PMH-30C03-10-3/10	300 – 1000	φ30	3	Synthetic fused silica	<5″	Average 50±10	0.5
PMH-50C05-10-3/10	300 – 1000	φ50	5	Synthetic fused silica	<5″	Average 50±10	0.5
PMH-25.4C03-10-6/18	600 – 1800	φ25.4	3	BK7	<5"	Average 50±10	0.5
PMH-30C03-10-6/18	600 – 1800	φ30	3	BK7	<5″	Average 50±10	0.5
PMH-50C05-10-6/18	600 – 1800	φ50	5	BK7	<5″	Average 50±10	0.5
PMH-25.4C03-10-4/20	400 – 2000	φ25.4	3	BK7	<5"	Average 50±10	0.5
PMH-30C03-10-4/20	400 – 2000	φ30	3	BK7	<5″	Average 50±10	0.5
PMH-50C05-10-4/20	400 – 2000	φ50	5	BK7	<5″	Average 50±10	0.5

^{*} Laser pulse width 10ns, repetition frequency 20Hz

Compatible Optic Mounts

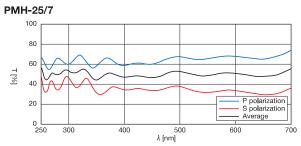
BHAN-30S, -50S / MHG-HS25-NL, MP30-NL, MP50-NL

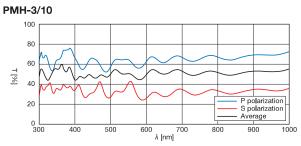


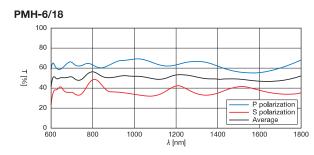


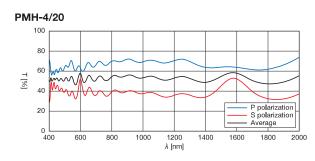
T: Transmission

Typical Transmittance Data



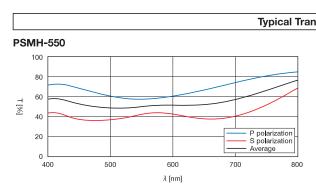


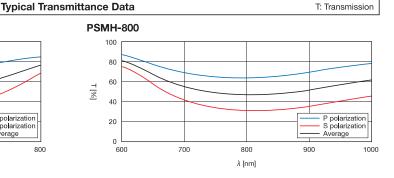


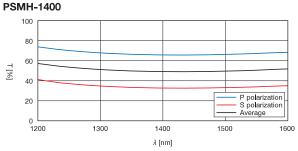


Broadband							
Part Number	Wavelength Range [nm]	Diameter φD [mm]	Thickness t [mm]	Material	Parallelism W	Transmittance (The average value of the P-Polarization and the S-Polarization) [%]	Laser Damage Threshold* [J/cm ²]
PSMH-25.4C03-10-550	400 – 700	φ25.4	3	BK7	<5"	Avarage 50±5	2.1
PSMH-30C03-10-550	400 – 700	φ30	3	BK7	<5″	Avarage 50±5	2.1
PSMH-30C05-10W-550	400 – 700	φ30	5	BK7	1°±5′	Avarage 50±5	2.1
PSMH-40C04-10-550	400 – 700	φ40	4	BK7	<5″	Avarage 50±5	2.1
PSMH-50C05-10-550	400 – 700	φ50	5	BK7	<5″	Avarage 50±5	2.1
PSMH-50C08-10W-550	400 – 700	φ50	8	BK7	1°±5′	Avarage 50±5	2.1
PSMH-30C03-10-800	700 – 900	φ30	3	BK7	<5″	50±3 (800nm)	2.1
PSMH-30C05-10W-800	700 – 900	φ30	5	BK7	1°±5′	50±3 (800nm)	2.1
PSMH-50C05-10-800	700 – 900	φ50	5	BK7	<5″	50±3 (800nm)	2.1
PSMH-50C08-10W-800	700 – 900	φ50	8	BK7	1°±5′	50±3 (800nm)	2.1
PSMH-30C03-10-1400	1300 – 1550	φ30	3	BK7	<5″	50±3 (1400nm)	2.1
PSMH-30C05-10W-1400	1300 – 1550	φ30	5	BK7	1°±5′	50±3 (1400nm)	2.1

^{*} Laser pulse width 10ns, repetition frequency 20Hz







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Thin Plate Beamsplitter



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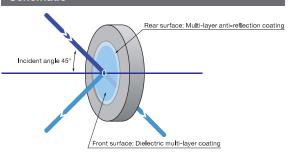
Extremely thin beamsplitter.

It can be inserted into an optical light path without any beam shift or chromatic dispersion for any light transmittance application.

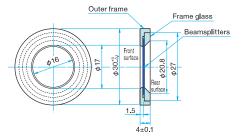
- We offer 2 choices of thickness, 300um and 90um.
- Dielectric multi-layer optical coating with reflectance and transmittance ratios at 1:1.
- Dielectric multi-layer optical coating on the front surface and AR coating on the rear surface to provide a mirror with no loss of power.
- Due to the fabrication method, these offer good durability and high resistance against vibration making them an excellent alternative to traditional pellicle beamsplitters.



Schematic



Outline Drawing



Specifications						
Material	Synthetic fused silica					
Coating	Front surface: Dielectric multi-layer coating Rear surface (45 degrees taper hole): Anti-reflection coating					
Incident angle	45°					
Transmittance	Average 50±5% (The average value of the P-Polarization and the S-Polarization)					
Divergence ratio (reflectance : transmittance)	1:1					
Surface Quality (Scratch–Dig)	40–20					
Clear aperture	φ10mm					
Frame specification	Frame glass: Synthetic fused silica Outer frame: Aluminum Finishing: Matt black almite					

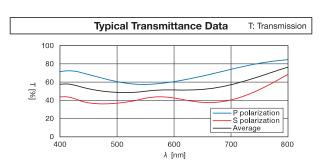
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For customization, we can offer different sizes, wavelengths and deviation ratios. Reference B068 Please contact our Sales Division with your requests.

Attention

- ▶Thin beamsplitters are extremely thin and fragile. Special care must be taken during cleaning and handling.
- When removing dust from the surface, do not use optics tissue paper to clean. Use a compress gas spray instead.
- When applying a laser linear polarized light, the direction of polarization may affect the amount of reflectance and transmittance. For divergence usage of 1:1 ratio, ensure the direction of polarization is set to 45 degrees or use a circular polarizer.
- The transmittance wavelength properties may be different if the incident angle is other than 45 degrees.
- Avoid pushing the glass retainer as the mirror can bend or break. When handling, please use the other metal frame.
- ▶The surface reflectance accuracy may deteriorate when used outside recommended operating temperature.
- ▶The phase difference of incident light cannot be preserved on light transmittance and reflectance. Please use a wave plate to compen-

Specifications			
Part Number	Wavelength Range [nm]	Optics Thickness [mm]	Surface flatness after coating
MPSMH-30C0.3-1-550	400 – 700	0.3±0.03	Reflectance: λ Transmittance: λ
MPSMH-30C0.09-1-550	400 – 700	0.09±0.01	Reflectance: Polishing



Compatible Optic Mounts

MHG-HS30-NL / BHAN-30S

Laser line plate mirrors are plate beamsplitters that are optically coated with dielectric multi-layer on the front surface of optical parallels or wedged substrates. The rear surface is coated with multi-layer anti-reflection.

- Half mirrors divide input beam into reflectance and transmittance ratio of 1:1. A beamsplitter of R:T=1:1 is called "Half
- Any loss from the input beams of this product is minimized because dielectric coatings have no absorption properties. However, the input ratio of reflection to transmission depends on wavelength, polarization and angle of incident of input
- Plate beamsplitters have beam deviations on transmission and ghost on rear surface reflections. Wedged substrates are used to prevent ghosting.



Specifications	
Material	BK7, Synthetic fused silica, CaF2
Surface Flatness	$\lambda/10$ (PSMH-157 is Polished)
Coating	Front surface: Dielectric multi-layer partial refection coating Rear surface: Multi-layer anti-reflection coating
Incident angle	45°
Divergence ratio (reflectance : transmittance)	1:1
Surface Quality (Scratch–Dig)	10–5 (PSMH-157: 40–20)
Clear aperture	90% of actual aperture

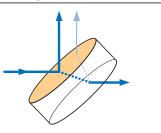
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- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength or R:T, etc.) Refe
- We also have ultra-wideband, broadband and cube types.
- ▶ For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division with your requests.
- ▶ Wedged types are marked with an arrow on the side of the substrate indicating the thickest point of the wedge.

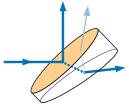
Attention

- ▶ Should these products not function as a half mirror, please check the polarization characteristics of the light source. Do note that LD laser is linear in polarization.
- ▶ The beam deviation at transmission of a wedged beamsplitter is large compared to a one made of optical parallel.
- The amount of beam deviation of a beamsplitter depends on the thickness of the substrate and the wavelength or the incident angle of the input beam.
- Transmission curves are based on actual measurements and may vary with manufacturing lots.
- Surface flatness is the reflected wavefront distortion of the surface prior to coating.
- ▶Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.

Schematic Rear surface Dielectric multi-layer partial refection coating Incident angle ont surface: Dielectric multi-layer coating **Optical Parallel**



Wedged Substrate



Outline Drawing Tolerance Diameter $\phi D_{-0.1}^{+0}$ Thickness t ±0.1

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Compatible Optic Mounts

BHAN-30S, -50S / MHG-MP30-NL, MP50-NL



Laser Line Plate Half Mirrors | PSMH



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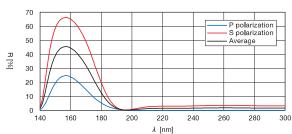
Laser Line							
Part Number	Wavelength Range [nm]	Diameter φD [mm]	Thickness t [mm]	Material	Parallelism W	Reflectance:R Transmittance:T (The average value of the P-Polarization and the S-Polarization [%]	Laser Damage Threshold* [J/cm ²]
PSMH-30C03-P-157	157	φ30	3	CaF ₂	<3′	R=40±10	0.5
PSMH-50C05-P-157	157	φ50	5	CaF ₂	<3′	R=40±10	0.5
PSMH-30C03-10-193	193	φ30	3	Synthetic fused silica	<5"	T=45±5	1
PSMH-30C05-10W-193	193	φ30	5	Synthetic fused silica	1°±5′	T=45±5	1
PSMH-50C05-10-193	193	φ50	5	Synthetic fused silica	<5″	T=45±5	1
PSMH-50C08-10W-193	193	φ50	8	Synthetic fused silica	1°±5′	T=45±5	1
PSMH-30C03-10-248/266	248 – 266	φ30	3	Synthetic fused silica	<5"	T=50±3	2
PSMH-30C05-10W-248/266	248 – 266	φ30	5	Synthetic fused silica	1°±5′	T=50±3	2
PSMH-50C05-10-248/266	248 – 266	φ50	5	Synthetic fused silica	<5″	T=50±3	2
PSMH-50C08-10W-248/266	248 – 266	φ50	8	Synthetic fused silica	1°±5′	T=50±3	2
PSMH-30C03-10-308/355	308 – 355	φ30	3	Synthetic fused silica	<5"	T= Average 50±5	2
PSMH-30C05-10W-308/355	308 – 355	φ30	5	Synthetic fused silica	1°±5′	T= Average 50±5	2
PSMH-50C05-10-308/355	308 – 355	φ50	5	Synthetic fused silica	<5 <i>"</i>	T= Average 50±5	2
PSMH-50C08-10W-308/355	308 – 355	φ50	8	Synthetic fused silica	1°±5′	T= Average 50±5	2
PSMH-30C03-10-405	390 – 410	φ30	3	BK7	<5"	T=50±3	2.1
PSMH-30C05-10W-405	390 – 410	φ30	5	BK7	1°±5′	T=50±3	2.1
PSMH-50C05-10-405	390 – 410	φ50	5	BK7	<5″	T=50±3	2.1
PSMH-50C08-10W-405	390 – 410	φ50	8	BK7	1°±5′	T=50±3	2.1
PSMH-30C03-10-1064	1064	φ30	3	BK7	<5"	T=50±3	20
PSMH-30C05-10W-1064	1064	φ30	5	BK7	1°±5′	T=50±3	20
PSMH-50C05-10-1064	1064	φ50	5	BK7	<5″	T=50±3	20
PSMH-50C08-10W-1064	1064	φ50	8	BK7	1°±5′	T=50±3	20

^{*}Laser pulse width 10ns (PSMH-157: 20ns), repetition frequency 20Hz

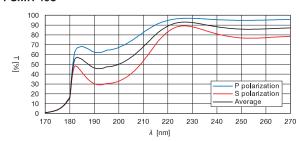
Typical Reflectance Data & Typical Transmittance Data

R: Reflectance T: Transmission

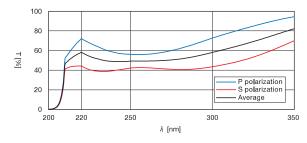




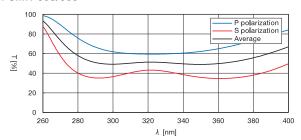
PSMH-193



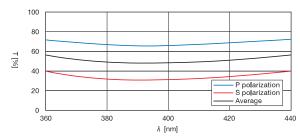
PSMH-248/266



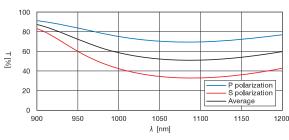
PSMH-308/355



PSMH-405



PSMH-1064



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Chromium Plate Half Mirrors | PSCH



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Chromium plate half mirrors are plate beamsplitters that are coated with chromium (Cr) on the front surface of optical parallels or wedged substrates. The other surface is coated with multi-layer anti-reflection.

- Half mirror divides input beam into reflectance and transmittance ratio of 1:1. A beamsplitter of R:T=1:1 is called "Half
- Approximately one third of the input beam is lost because of the absorption of chromium. However these beamsplitters do not depend on wavelength, polarization and angle of incidence of the input beam, and provide a highly neutral reflectivity.
- Plate beamsplitters have beam deviations on transmission and ghost on rear surface reflections. Wedged substrates are used to prevent ghosting.



Rear surface: Multi-laver anti-reflection coating

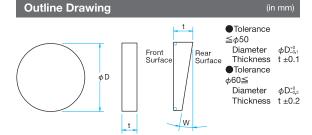
Material	BK7
Surface Flatness	λ/10
Coating	Front surface: Chromium Rear surface: Multi-layer anti-reflection coating
Incident angle	45°
Transmittance	Average 30±5% (The average value of the P-Polarization and the S-Polarization
Divergence ratio (reflectance : transmittance)	1:1
Laser Damage Threshold	0.25J/cm ² (Laser pulse width 10ns, repetition frequency 20Hz
Surface Quality (Scratch-Dig)	40–20
Clear aperture	90% of actual aperture

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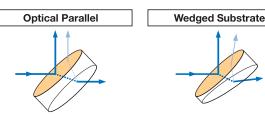
- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength or R:T, etc.) Reference B068
- For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division with your requests.

Attention

- ▶ The beam deviation at transmission of a wedged beamsplitter is large compared to a one made of optical parallel.
- The amount of beam deviation of a beamsplitter depends on the thickness of the substrate, the wavelength or the angle of incidence of the input beam.
- Transmission curves are based on actual measurements and may vary with manufacturing lots,
- Surface flatness is the reflected wavefront distortion of the surface prior to coating.
- Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.

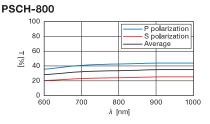


Front surface: Chromium coating



Specifications				
Part Number	Wavelength Range [nm]	Diameter φD [mm]	Thickness t [mm]	Parallelism W
PSCH-25_4C03-10-550	400 – 700	φ25.4	3	<5"
PSCH-30C03-10-550	400 – 700	φ30	3	<5″
PSCH-30C05-10W-550	400 – 700	φ30	5	1°±5′
PSCH-40C04-10-550	400 – 700	φ40	4	<5″
PSCH-50C05-10-550	400 – 700	φ50	5	<5″
PSCH-50C08-10W-550	400 – 700	φ50	8	1°±5′
PSCH-60C06-10-550	400 – 700	φ60	6	<5″
PSCH-100C10-10-550	400 – 700	φ100	10	<5″
PSCH-100C15-10W-550	400 – 700	φ100	15	1°±5′
PSCH-25.4C03-10-800	750 – 850	φ25.4	3	<5"
PSCH-30C03-10-800	750 – 850	φ30	3	<5″
PSCH-30C05-10W-800	750 – 850	φ30	5	1°±5′
PSCH-50C05-10-800	750 – 850	φ50	5	<5″
PSCH-50C08-10W-800	750 – 850	φ50	8	1°±5′

Typical Transmittance Data														
PSCH	1-5	50								T:	Tra	ans	mis	sion
	100					_		ı —			_		_	1
	80							=		P pol S pol Avera	ar	izat		-
-	60								_	Avera	191	=		-
T[%]	40													
	20													1
	0 40	00	48	50	50	00	55 λ [50 nm]	60	00	68	50	70	00
							ΛΙ	ming						



Compatible Optic Mounts

BHAN-30S, -50S / MHAN-25.4S, -40S, -60S / MHG-MP25-NL, MP30-NL, MP50-NL

Application Note

About light behaviour on a beamsplitter

A half mirror is designed with reflectance and transmission of light with a 1:1 ratio. If light incident direction and polarization conditions change, it may impact the ratio.

Reflectance and transmittance properties of the incident light direction

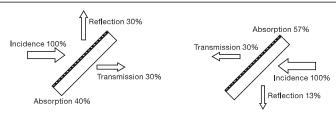
Chrome coating and multi-wavelength coating application.

Reflection properties change when light is projected onto the coated and black surfaces.

Any configuration similar to Michelson interferometer may require both sides to have incident light. In this case, light ratios may be unbalanced.

Choose the following set up if the light incident direction can be selected. Incident light onto the coated surface of plate type beamsplitter. Incident light onto the \bigcirc mark surface for cube type beamsplitter. If the Incident light is on the wrong surface, the specifications mentioned in the catalogue cannot be realized.

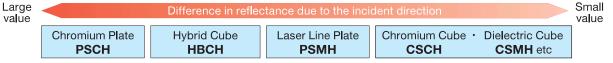
Comparison reflectance and transmittance properties of the incident light direction in the chromium plate half mirror.



Front surface reflection 30%
Rear surface reflection 13%
Total reflection mirror

Total reflection mirror

The difference in reflectance due to the incident direction occurs when there is absorption in the coating. It does not occur in the dielectric multilayer coating.



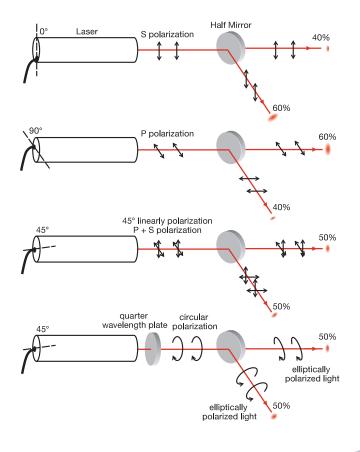
The reflectance and the transmittance of a polarized light incident

In case fo using Laser

Light emitted from the laser is linearly polarized light. Because of this, even though it is used in the experiments and the optical system which are not related to the polarization, it is necessary to take into account the polarization characteristics of the beam splitter.

The transmittance and the reflectance may change in accordance with the type of beamsplitter and its polarization direction.

To split the light into a balanced light ratio, a nonpolarized beam splitter (NPCH) is recommanded. The polarization properties of the laser has no influence to it.



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Dielectric Cube Beamsplitters | CSM



Cube beamsplitters with dielectric multi-layer coated on the hypotenuse face of a 45° right angle prism.

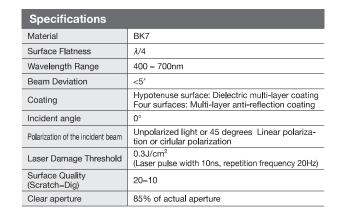
Divides beams at reflected light (R): transmission light (T) ratio of 1:2 or 1:3.

- Anti-reflection coating (AR coat) is applied to the incident and outgoing faces.
- The dielectric multi-layer films has virtually zero light absorption and very low light intensity loss. However, transmittance and reflectance may change according to wavelength, polarization and incident angles.
- In contrast to plate type half mirrors, cube mirrors have no ghosting or transmission optical path deviation.



Schematic Hypotenuse surface: Dielectric multi-layer coating ^{*} The hypotenuse of prism marked with ○ is coated.

Transmitted light Four surface with multi-layer anti-reflection coating. **Outline Drawing** Tolerance A ±0.2 B ±0.2 C ±0.1



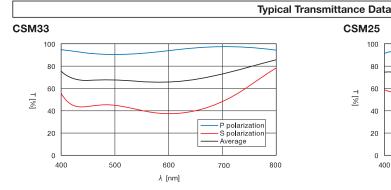
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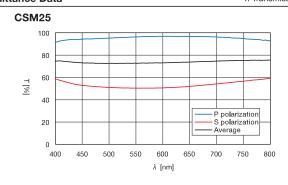
- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength or R:T, etc.) Reference B068
- For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division with your requests.

Attention

- ▶Input beam from the prism side is indicated by a "○"(hypotenuse coated side).
- The transmission curve on the graph is based on actual measurements and may vary from different production lots.
- ▶ Phase retardation of inputting light will not be preserved. Please use waveplate for phase compensation.
- Use only non-polarized light or circular polarized light as incident light for dielectric multi-layer coated beam splitters. Using polarized light may result in R:T ratios that vary according to polarization components.
- Dielectric multi-layer coated cube half mirrors sometimes do not function effectively. If this should occur, first check the polarization characteristics of the light source (laser) and keep in mind that lasers used in the semiconductor field emit a linear polarized light.

Specifications	\$			
Part Number	Reflectance : Transmittance	A=B=C [mm]	Transmittance at 550nm (The average value of the P-Polarization and the S-Polarization) [%]	Transmittance at 400·700nm (The average value of the P-Polarization and the S-Polarization) [%]
CSM33-10-550	1:2	10	67±5	<80
CSM33-20-550	1:2	20	67±5	<80
CSM25-10-550	1:3	10	75±5	<90
CSM25-20-550	1:3	20	75±5	<90





T: Transmission

Compatible Optic Mounts

PLH-25, -40 / KKD-25PHRO, -40PHRO

B060

Plate-type beamsplitters are dielectric multi-layer coatings on a parallel plate or a wedge substrate. They are designed to divide beams at a reflected light (R): transmission light (T) ratio of 1:2 or 1:3. The rear surface is coated with anti-reflection (AR).

• The dielectric multi-layer films have virtually zero light absorption and very low light intensity loss. However, transmittance and reflectance may vary according to wavelength, polarization and incident angles. Some deviation of the transmission optical path or ghosting may occur. To prevent ghosting, use wedge beamsplitters.



Specifications Material BK7 Surface Flatness $\lambda/10$ Front surface: Dielectric multi-layer coating Rear surface: Multi-layer anti-reflection coating Coating Wavelength Range 400 - 700nm Incident angle 2.1J/cm² Laser Damage Threshold (Laser pulse width 10ns, repetition frequency 20Hz) Surface Quality 10-5 (Scratch-Dig) Clear aperture 90% of actual aperture

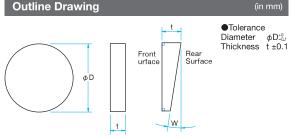
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- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength or R:T, etc.) Reference B068
- ▶ For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division with your requests.
- ▶ Wedged types are marked with an arrow on the side of the substrate indicating the thickest point of the wedge.

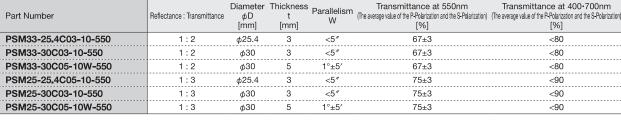
Attention

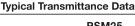
- ▶ The transmission curve on the graph is based on actual measurements and may vary from different production lots.
- Surface flatness is the reflected wavefront distortion of the surface prior to coating.
- Compared to precision parallel plate type splitters, wedged substrate type beam splitters can prevent ghosting caused by rear surface reflection and significantly increase the displacement of the optical
- Dielectric multi-layer coated beamsplitters sometimes do not function effectively in specified R:T ratios. If this should occur, first check the polarization characteristics of the light source (laser). Do keep in mind that lasers used in the semiconductor field emit a linear polarized light.
- Use only non-polarized light or circular polarized light as incident light for dielectric multi-layer coated beam splitters. Using polarized light may result in R:T ratios that vary according to polarization compo-

Schematic Rear surface: Multi-layer anti-reflection coating Front surface: Dielectric multi-layer coating

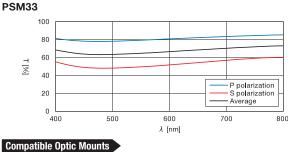


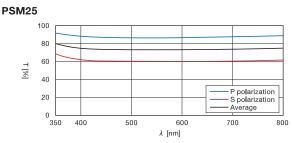
Specifications						
Part Number	Reflectance : Transmittance	Diameter	Thickness t [mm]	Parallelism W	Transmittance at 550nm (The average value of the P-Polarization and the S-Polarization) [%]	Transmittance at 400·700nm (The average value of the P-Polarization and the S-Polarization) [%]
PSM33-25.4C03-10-550	1:2	φ25.4	3	<5″	67±3	<80
PSM33-30C03-10-550	1:2	φ30	3	<5″	67±3	<80
PSM33-30C05-10W-550	1:2	φ30	5	1°±5′	67±3	<80
PSM25-25.4C05-10-550	1:3	φ25.4	3	<5″	75±3	<90
PSM25-30C03-10-550	1:3	φ30	3	<5″	75±3	<90
PSM25-30C05-10W-550	1:3	φ30	5	1°±5′	75±3	<90





T: Transmission





BHAN-30S / MHAN-25.4DS / MHG-MP25-NL, MP30-NL

B061

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Variable Beamsplitter Light path corrector

WSQNA/WBNA



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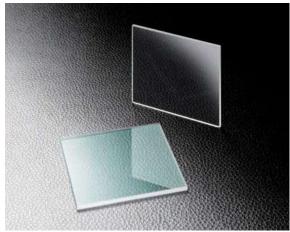
Beam Samplers

Others

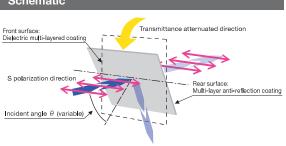
With a variable beamsplitter, the incident angle of a laser can be changed. The (R:T) ratios can also be modified.

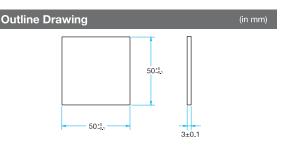
This is commonly used to adjust the light intensity of the laser without a variable adjustment of the light intensity or the laser to be stabilized.

- The veriable beamsplitter has a dielectric multilayer coating which has excellent durability and light resistance.
- The beam shift caused by the tilt of the beamsplitter can be removed by using a correcting plate. (See how to use)
- It can be used for arbitrary polarization. However, the transmittance characteristic depends on the polarization.



Schematic	
Front surface:	Transmittance atternuated direction





Specifications	
Material	BK7, Synthetic fused silica
Surface Flatness	λ
Parallelism	<5″
Coating	VBS Front surface: Dielectric multi-layer Coating Rear surface: Multi-layer anti-reflection coating WBMA, WSQMA Both surfaces: Multi-layer anti-reflection coating
Surface Quality (Scratch-Dig)	10–5
Clear aperture	Circle that internally connected to 90% of the side length
Effective beam incident diameter	Ellipsoidal 30×43mm (Angle of inclinaison)

Guide

- Different size, wavelength and deviation not mentioned on-line or in our catalog are available as custom product upon on request. Reference B068
- We offer the most comprehensive range of beamsplitter holders and stages to select from. Let us know the angle of your choice.
- This variable attenuator (model SVAB) can be used in a system and is available.



Attention

- ▶When using with high power laser, make sure to execute at the end edge of the reflected light.
- The reflectance properties of the optics may change in a high temperature environment.
- ▶When adjusting the transmittance, the incident angle may change and cause the light path to shift. To correct this, please use the light path corrector (model WSQNA/WBNA)
- For a large beam size of 30mm diameter or larger and used it at a high inclinaison level, the beam can be cut at the reflected area.
- For "P" polarization use, make sure that the incident angle is at 45 degrees or more.

Variable beamsplitter					
Part Number	Wavelength Range [nm]	Transmittance of S polarization $(\theta = 0^{\circ})$ [%]	Transmittance of S polarization $(\theta=45^{\circ})$ [%]	Material	Laser Damage Threshold* [J/cm²]
VBS-50S03-1-266	266	>90	<5	Synthetic fused silica	1
VBS-50S03-1-355	355	>93	<5	Synthetic fused silica	1
VBS-50S03-1-532	532	>95	<5	BK7	2.5
VBS-50S03-1-1064	1064	>95	<5	BK7	3.5

^{*} Laser pulse width 10ns, repetition frequency 20Hz

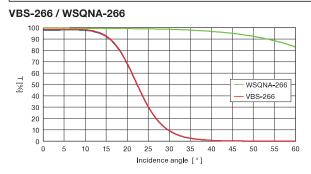
Light path corrector				
Part Number	Wavelength Range [nm]	Transmittance of S polarization $(\theta=0^{\circ}-45^{\circ})$ [%]	Material	Laser Damage Threshold* [J/cm ²]
WSQNA-50S03-1-266-0/45D	266	Average 97	Synthetic fused silica	1
WSQNA-50S03-1-355-0/45D	355	Average 97	Synthetic fused silica	1
WBNA-50S03-1-532-0/45D	532	Average 98	BK7	2.5
WBNA-50S03-1-1064-0/45D	1064	Average 98	BK7	3.5

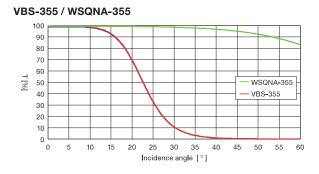
^{*} Laser pulse width 10ns, repetition frequency 20Hz



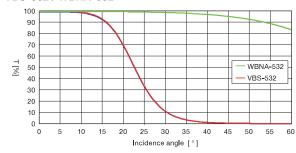
Typical Transmittance Data

T: Transmission (S polarization)

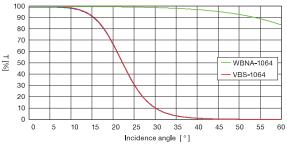




VBS-532 / WBNA-532





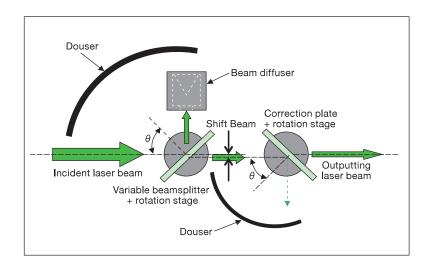


Sample of use

The variable beam splitter can be used individually. When modifying the incident angle, optics thickness and its refractive properties, a shift may occur in the light path. To reduce this shift, we highly recommend a light path corrector. Please see image below.

- Place the variable beamsplitter onto a rotation stage to allow an angle adjustment.
- Install the light path corrector onto a rotating stage.
- Position the light path corrector at a similar angle with the variable beamsplitter on an opposite side.
- If the reflected light of the variable beamsplitter is not used, make sure to place a light cut-off material or a beam diffuser at the edge-end of the light.
- The power of the reflected light from the light path corrector must be cut off at the edge-end of the light.

For part structure, please contact our International Sales Division.



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CHA-60, -60F

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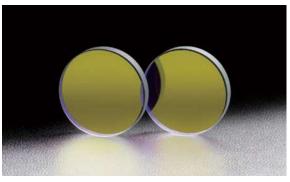
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Harmonic separators are designed to separate specific YAG harmonics from other harmonics. We offer three standard wavelength (1064nm, 532nm, 355nm) reflectance YAG harmonics.

- These mirrors are coated with multi-layered dielectric with different refractive index, using BK7 optical parallels with $\lambda/10$ surface flatness and parallelism of 5 arc second. The other surface is coated with multi-layer anti-reflection.
- These mirrors are used at 45° incident angle to reflect specific wavelength beam and transmits other YAG wavelengths.
- For plate type, you can use a large laser beam diameter.



Schematic Rear surface: Multi-layer anti-reflection coating Incident light Transmitted light Front surface: Dielectric multi-layer coating

Outline Drawing		(in mm)
φD	t	●Tolerance Diameter $\phi D^{\cdot 0}_{\cdot 0,1}$ Thickness t±0.1

Specifications	
Material	BK7
Surface Flatness	λ/10
Coating	Front surface: Dielectric multi-layer coating Rear surface: Multi-layer anti-reflection coating
Angle of Incidence	45°
Parallelism	<5"
Surface Quality (Scratch-Dig)	10–5
Clear aperture	90% of actual aperture

Guide

- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength or R:T, etc.) Reference B068
- For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Team with your requests.

Attention

- The reflection surface is indicated with an arrow on the side of substrate.
- The reflectance curves are based on actual measurements and may vary from different manufacturing lots.
- ▶Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.
- The reflectance in the specifications list is at random polarization or (p-polarization reflectance + s-polarization reflectance) / 2.

For Reflected wavelength : 355nm, Transmitted wavelength : 532, 1064nm					
Part Number	Diameter φD [mm]	Thickness t [mm]	Reflectance at 355nm (The average value of the P-Polarization and the S-Polarization) [%]	Transmittance at 532-1064nm (The average value of the P-Polarization and the S-Polarization) [%]	Laser Damage Threshold* [J/cm²]
YHS-25,4C05-355	φ25.4	5	>99.5	>85	5
YHS-30C05-355	φ30	5	>99 . 5	>85	5
YHS-50C08-355	φ50	8	>99.5	>85	5

^{*}Laser pulse width 10ns, repetition frequency 20Hz

For Reflected wavelength : 532nm, Transmitted wavelength : 1064nm					
Part Number	Diameter φD [mm]	Thickness t [mm]	Reflectance at 532nm (The average value of the P-Polarization and the S-Polarization) [%]	Transmittance at 1064nm (The average value of the P-Polarization and the S-Polarization) L [%]	aser Damage Threshold* [J/cm²]
YHS-25.4C05-532	φ25.4	5	>99.5	>95	8
YHS-30C05-532	φ30	5	>99.5	>95	8
YHS-50C08-532	φ50	8	>99.5	>95	8

^{*}Laser pulse width 10ns, repetition frequency 20Hz

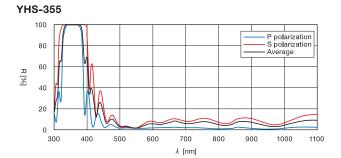
For Reflected wavelength : 1064m, Transmitted wavelength : 532nm					
Part Number	Diameter φD [mm]	Thickness t [mm]	Reflectance at 1064nm (The average value of the P-Polarization and the S-Polarization) [%]	Transmittance at 532nm (The average value of the P-Polarization and the S-Polarization) [%]	Laser Damage Threshold* [J/cm ²]
YHS-25.4C05-1064	φ25.4	5	>99.5	>90	20
YHS-30C05-1064	φ30	5	>99.5	>90	20
YHS-50C08-1064	φ50	8	>99.5	>90	20

^{*}Laser pulse width 10ns, repetition frequency 20Hz

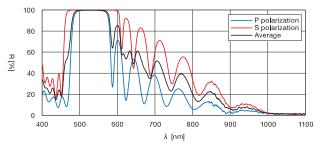


Typical Reflectance Data

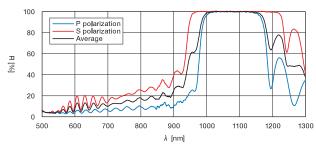
R:Reflectance



YHS-532



YHS-1064



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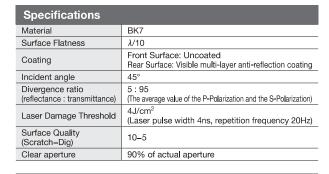
Others

A beam sampler behaves like a plate beamsplitter, it has the ability to reflect approximately 5,2% of the total beam.

- Uncoated surface of optical parallels or wedged substrates are used as reflection surfaces. The rear surfaces are coated with multi-layer anti-reflection.
- These products have transmitted beam deviation and ghosting of the rear surface reflections due to the characteristics of plate beamsplitters.
- Wedged beam samplers with AR coating on the rear surface should be selected to prevent ghosting.



Rear surface: Visible multi-layer anti-reflection coating

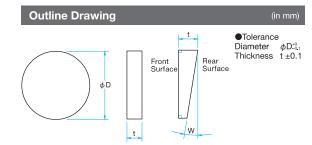


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- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength or R:T, etc.) Reference B068
- For a guarantee in reflected wavefront error or transmitted wavefront error, please contact our Sales Division with your requests.
- ▶ Wedged types are marked with an arrow on the side of the substrate indicating the thickest point of the wedge.

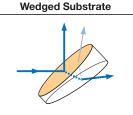
Attention

- ▶The Beam Sampler has a reflectance of 5.2% when the material is BK7 and the input beam is unpolarized or circularly polarized.
- The transmitted beam deviation of a wedged beamsplitter is larger then with a beamsplitter made of an optical parallel.
- The amount of beam deviation of a beamsplitter depends on thickness of the substrate and the wavelength of the incident angle of the input beam.
- ▶Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.

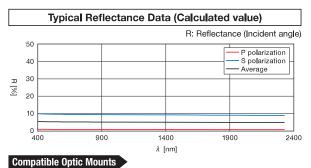


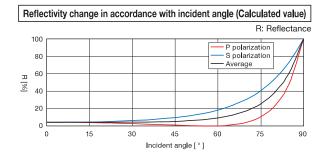
Front surface: Uncoated

Optical Parallel



φ30•φ50				
Part Number	Wavelength Range [nm]	Diameter φD [mm]	Thickness t [mm]	Parallelism W
BS4-25.4C03-10-550	400 – 700	φ25.4	3	<5″
BS4-30C03-10-550	400 – 700	φ30	3	<5″
BS4-30C05-10W-550	400 – 700	φ30	5	1°±5′
BS4-50C05-10-550	400 – 700	<i>φ</i> 50	5	<5″
BS4-50C08-10W-550	400 – 700	φ50	8	1°±5′



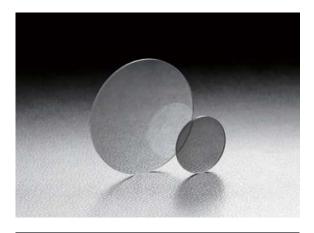


BHAN-30S, -50S / MHG-MP25-NL, MP30-NL

The polka dot beamsplitter is a beamsplitter that has aluminum coating of halftone dots (polka dots) on the glass substrate.

It has a low dependence on the incident angle and can be used in a wide range of wavelengths from ultraviolet region to the infrared region.

- Reflectance to transmittance ratio is manufactured by adjusting the area ratio of the points that have been coated.
- Unlike dielectric beamsplitters, the polka dot beamsplitter reflectance and trasmittance ratio does not change as the incident angle changes.
- ullet There are two sizes available ϕ 25.4mm and ϕ 50.8mm diameter and three types of reflectance to transmittance ratio, 7:3, 5:5 and 3:7.



Specifications	
Material	Synthetic fused silica
Parallelism	<3′
Coating	Front Surface: Al+MgF ₂ Rear Surface: Uncoated
Recommended angle of incidence	0 – 45°
Wavelength range	250 – 2200nm
Surface Quality (Scratch-Dig)	80–50
Dot pitch	0.3mm
Clear aperture	Circle except surrounding 1.5mm

Guide

▶ We also offer different sizes, wavelengths and ratios that are not listed on our website or in our catalog. Re ce B068

Attention

- ▶ When used with a laser beam with high interference, diffraction occurs.
- When light is incident, scattering light by the halftone dot occurs.
- ▶ By the effect of the refractive index and the thickness of the substrate, the optical path of the transmitted light over the incident light will move by 0.5 extent parallel.
- ▶When the incident beam diameter is very thin, it is not possible to separate into the split ratio.
- ▶ Do not clean with water or solvents. It may cause surface deterioration.
- ▶ Please use in the environments which are non-condensing and less

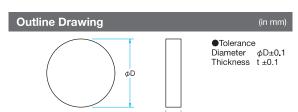
If the dust or dirt is deposited, please do not blow but blow it off gently with dried air.

1250

	Typical Transmittance Data	T: Transmissi
100	Ang	le of Incidence : 0°
100		— PDBS70
80		— PDBSH — PDBS30
-		
60 T [%]		
<u>\$</u>		-1
20		

Schematic	
	Rear surface: Uncoated
Angle of Incidence 0 – 45°	
	Rear surface: Aluminum coating (Halftone dot)
	Surface enlargement





Specifications								
Part Number	Reflectance : Transmittance	Diameter φD [mm]	Thickness t [mm]	Transmission (Wavelength Range 555nm, Angle of Incidence : 0°, [%]				
PDBS70-25.4C1.5	70 : 30	φ25.4	1.5	30-5				
PDBS70-50,8C1,5	70 : 30	φ50.8	1.5	30 ^{±0} ₅				
PDBSH-25.4C1.5	50 : 50	φ25.4	1.5	50±0 5				
PDBSH-50.8C1.5	50 : 50	φ50.8	1.5	50±0 5				
PDBS30-25.4C1.5	30 : 70	φ25.4	1.5	70±0 5				
PDBS30-50,8C1,5	30 : 70	φ50.8	1.5	70±⁰				

Compatible Optic Mounts

P25-NL, MP50.8-NL / MHAN-25.4S, -50.8S

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Harmonic Separator

Beam Samplers

Others

										Date			
☐ To: Sig	ma	Koki	Co.,	Ltd.	F	4X -	+81-	3	-5638-	6550)		
Affiliation (Organization Name)													
Department							Nam	ne					
TEL				FA	Х		'		E-mail				
Country Adress					'								
Name & Designation												(Tentative	name is okay
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Desired Delivery Date							Budg	jet					JP Yen
Quantity					р	ieces							
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Substrates If you do not specify a dimension tolerance is outside the standard tolerance.			φΑ	++ ^t +-			φ	Α		mm	С		mm
							° a	a		mm	d		mm
			a	t t				5		mm			mm
			b					t		mm			
			e flatness					l	t $\lambda = 632.8$ nm)			I am splitter, please n and wedge of su	
			llelism						Wedge			······································	0
		ilength ange	λ =	1			nm		Incident angle	$\theta =$			0
		9-	□ На	ılf Mii	rror \square	Beam	splitter		Type of Light Source				
	0-	tallic ating	☐ Ot	her ()						
			R :	Т		:			Power				W
			□ На	☐ Half Mirror ☐ Beamsplitter					or Energy	pulse w	/idth		J s
		ectric	☐ Die	chroi	c Mirror				Litergy	Repetition		су	Hz
	CO	i-layer ating	☐ Ot	her ()	ı	Beam Size				mm
Type of Coating			R		% T		9	6 *	There was a mo	re detailed :	specifica	ation, please fil	l in this field
-				ıltilayı LAR)	er antiref	lection	coating	9					
	AR	coat		ıltilay (LAR)	er antiref	ection	coating	9					
			,	her ()					
	Dala	.::		Pola	rization								
	of inc	rization the ident am	dire	ection	polarizati of lineraly	polariza	ation						
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Contact sheet for Special Half Mirror and Beamsplitter and Beam Sampler Estimation

Sigma Koki Co., Ltd.

General Catalog 02



B073

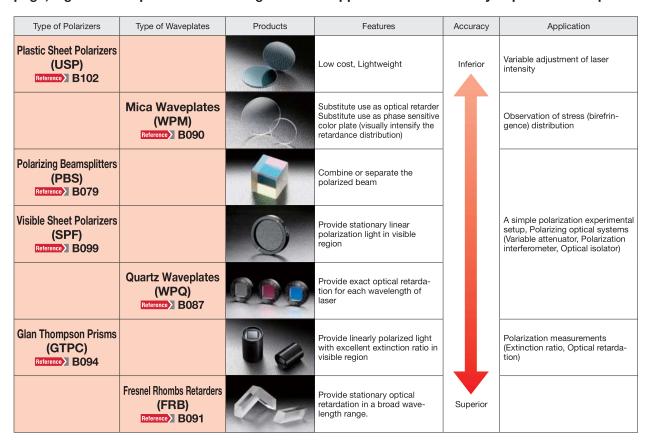
	Tolarizers Selection	dulue	5073
			-33
Polarizing Beamsplitters		Plate Polarizing Beamsplitters PBS-C	B074
eamsplitters		High Power Polarizing Beamsplitters PBSHP	B076
ı		Broadband Polarizing Beamsplitters PBSW	B077
		Polarizing Beamsplitters PBS	B079
	Contact sheet for polariz	zation beamsplitter ———————————————————————————————————	B081
Waveplates	Application Note		B082
ı	0	Broadband Quartz Waveplates WPQW	B084
ı	0	Air Gap Type Waveplates WPQG	B086
ı		Quartz Waveplates WPQ	B087
	0	Quartz Depolarizers DEQ	B089
		Mica Waveplates WPM	B090
	A	Fresnel Rhomb Waveplates	B091

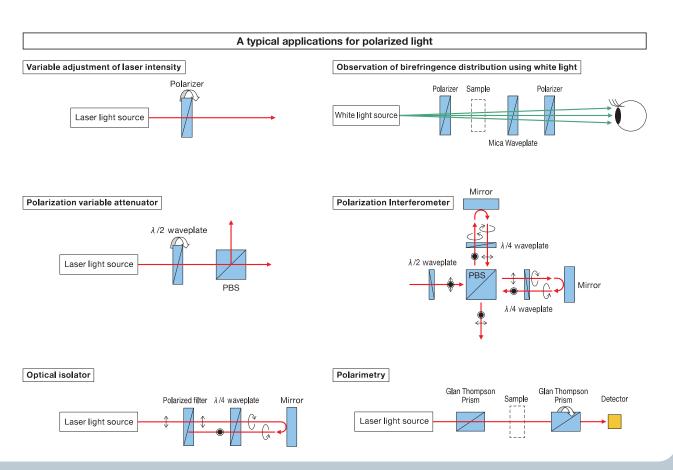
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Polarizers	Application Note	:	B092
ľ	TO	Glan Thompson Prisms GTPB/GTPC	B094
ľ	N	Glan Laser Prisms GLPB/GLPC	B095
ľ	9	Glan Tayler Prisms GYPB/GYPC	B096
ı		Wollaston Prisms WPPB/WPPC	B097
ı	9	Roshon Polarizing Prism RSPCQ/RSPMF	B098
	Q	Sheet Polarizers SPF/NSPFU/SPFN	B099
	Q	Wire Grid Polarizing Filter WGPF	B100
į	0	Polarcor Polarizers PLC	B101
		Plastic Polarizer USP	B102
		Z-Polarizer Custom-made	B103

Polarizers Selection Guide

Human eyes have no ability to perceive the polarization of light. Also, the most of the optical detectors do not carry sensitivity of the polarization. For this reason, filters that selectively transmit the light with specific polarization or optics that can change the polarization state become necessary. In this page, a guidance is provided for finding a suitable application for the variety of polarization optics.







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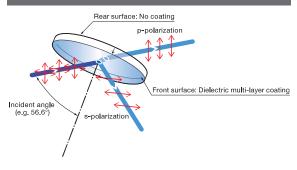
Polarizers

Plate polarizing beamsplitters are a plate that is coated with a polarizing coating.

- Plate polarizing beamsplitters transmit p-polarization and reflect s-polarization as the monochromatic beam entering is at Brewster's angle.
- The losses of input beam of these products are minimized because of no absorption of dielectric coating.
- Coating characteristic are not influenced marginally by temperature change.



Schematic



Outline Drawing	(in m	m)
øD	•Tolerance Diameter ϕD^{-0}_{-2} , 3 ± 0.1	

BK7, Synthetic fused silica
λ/10
Ts: Tp = 1:200
<5″
Front surface: Dielectric multi-layer polarization coating Rear surface: No coating
10–5
90% of the diameter

Guide

- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength, extinction ratio etc.)
- If the surface accuracy is required after coating, please contact our Sales Division.

Attention

- ▶ 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.
- ▶ Rear surface has no coating.

266nm – 1064nm								
Part Number	Wavelength Range [nm]	Diameter φD [mm]	Maximum diameter of transmitted beam [mm]	Material	Incident angle [°]	Transmittance of P polarized light [%]	Reflectance of S polarized light [%]	Laser Damage Threshold* [J/cm ²]
PBS-20C03-10-266	266	φ20	φ10.0	Synthetic fused silica	56.3	>92	>95	2
PBS-25.4C03-10-266	266	φ25.4	φ12.7	Synthetic fused silica	56.3	>92	>95	2
PBS-30C03-10-266	266	ϕ 30	φ15.0	Synthetic fused silica	56.3	>92	>95	2
PBS-20C03-10-355	355	φ20	φ10.1	Synthetic fused silica	55.9	>94	>95	2
PBS-25.4C03-10-355	355	φ25.4	φ13.1	Synthetic fused silica	55.9	>94	>95	2
PBS-30C03-10-355	355	ϕ 30	φ15.7	Synthetic fused silica	55.9	>94	>95	2
PBS-20C03-10-532	532	φ20	φ9.9	BK7	56.6	>95	>98	5
PBS-25.4C03-10-532	532	φ25.4	φ12.9	BK7	56.6	>95	>98	5
PBS-30C03-10-532	532	ϕ 30	φ15.4	BK7	56.6	>95	>98	5
PBS-20C03-10-1064	1064	φ20	φ10.0	BK7	56.4	>96	>98	7
PBS-25.4C03-10-1064	1064	φ25.4	φ12.9	BK7	56.4	>96	>98	7
PBS-30C03-10-1064	1064	φ30	φ15.5	BK7	56.4	>96	>98	7

^{*} Incident angle0°, Laser pulse width 10ns, repetition frequency 20Hz

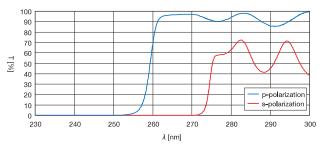


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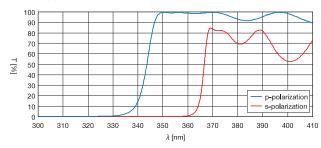
Typical Transmittance Data

T: Transmission

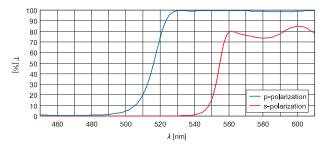
PBS-C-266



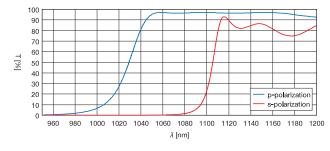
PBS-C-355



PBS-C-532



PBS-C-1064



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High Power Polarizing Beamsplitters

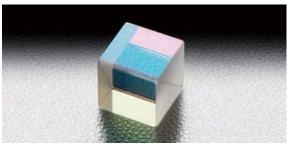
PBSHP





High Power Polarizing Beamsplitters have more laser durability compared to our standard Polarizing Beamsplitters (PBS). Polarizing beamsplitters consist of two right angle prisms. One of them is coated with dielectric multi-layer polarizing coating on the hypotenuse face.

- Polarizing beamsplitters split a monochromatic beam entering at zero degrees into p-polarization as transmitted and s-polarization as reflected.
- Four surfaces of the cube are coated with narrowband multi-layer anti-reflection coating.
- The losses of input beam of these products are minimized because of no absorption resulting from the dielectric coating.
- For cube beamsplitters, unlike plate beamsplitters, beam deviations of transmitted beams and ghosts rarely occur.



Schematic Hypotenuse: Dielectric multi-layer coating * The substrate side marked with ○ is coated. s-polarization p-polarization Four surfaces: Multi-layer anti-reflection coating

Four surfaces: Multi-layer anti-reflection coating

Outline Drawing

Tolerance
Length A·B±0.2
Height C±0.1

Specifications	
Material	BK7, Synthetic fused silica
Surface flatness of substrate	λ/4
Angular deviation of transmitted beam	<10′
Coating	Hypotenuse Surface: Dielectric multi-layer polarizing coating Four Surfaces: Narrowband multi-layer anti-reflection coating
Incident angle	0°
Transmittance of P polarized light	>97%
Extinction ratio of transmission	Ts: Tp = 1:200
Surface Quality (Scratch-Dig)	20–10
Clear aperture	Circle inscribed in a square of 85% of the dimensions

Guide

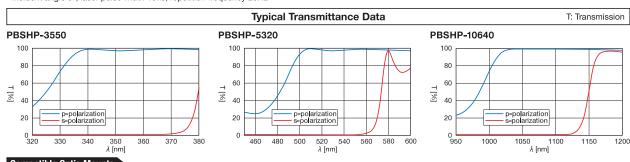
- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength etc.)
- There is also a high extinction ratio Glan-Thompson prism (GTPB/GTPC).

Attention

- ▶ Input beam from the prism on the side indicated by ○. When the light is incident from the side of the prism without mark, there is a possibility that the characteristics of the transmittance and extinction ratio will change.
- ▶ The surface flatness is the reflected wave front distortion of the surface before coating.
- ▶ Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.

Specifications	Specifications							
Part Number	Wavelength Range [nm]	A=B=C [mm]	Material	Reflectance of S polarized light [%]	Laser Damage Threshold* [J/cm ²]			
PBSHP-10-3550	355	10	Synthetic fused silica	>97	2			
PBSHP-12.7-3550	355	12.7	Synthetic fused silica	>97	2			
PBSHP-15-3550	355	15	Synthetic fused silica	>97	2			
PBSHP-20-3550	355	20	Synthetic fused silica	>97	2			
PBSHP-10-5320	532	10	BK7	>97	5			
PBSHP-12.7-5320	532	12.7	BK7	>97	5			
PBSHP-15-5320	532	15	BK7	>97	5			
PBSHP-20-5320	532	20	BK7	>97	5			
PBSHP-10-10640	1064	10	BK7	>97	7			
PBSHP-12.7-10640	1064	12.7	BK7	>97	7			
PBSHP-15-10640	1064	15	BK7	>97	7			
PBSHP-20-10640	1064	20	BK7	>97	7			

^{*} Incident angle 0°, laser pulse width 10ns, repetition frequency 20Hz

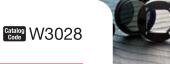


PLH-25, -40 / KKD-25PHRO, -40PHRO / MHG12.7PAD + MHG-MP30-NL / MHG-20PAD + MHG-MP30-NL

Broadband Polarizing Beamsplitters

PBSW





Broadband Polarizing Beamsplitters provides wide band polarizing.

Polarizing beamsplitters consist of two right angle prisms.

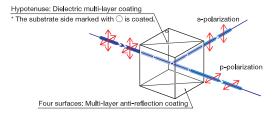
One of them is coated with dielectric multi-layer polarizing coating on the hypotenuse face.

- Polarizing beamsplitters split the light entering at zero degrees into p-polarization as transmitted and s-polarization as reflected.
- Four surfaces of the cube are coated with multi-layer anti-reflection coatings.
- For cube beamsplitters, unlike plate beamsplitters, beam deviations of transmitted beams and ghosts rarely occur.



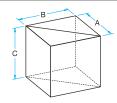
Specifications	
Material	BK7, SK2, SF15, Synthetic fused silica
Surface flatness of substrate	λ/4
Angular deviation of transmitted beam	<10′
Coating	Hypotenuse Surface: Dielectric multi-layer polarizing coating Four Surfaces: Narrowband multi-layer anti-reflection coating
Incident angle	0°
Laser Damage Threshold	0.3J/cm ² (Laser pulse with 10ns,repetition frequency 20Hz)
Surface Quality (Scratch-Dig)	20–10
Clear aperture	Circle inscribed in a square of 85% of the dimensions

Schematic



Outline Drawing

(in m



●Tolerance Length A•B±0.2 Height C±0.1

Guide

- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength etc.)
- ▶ There is also a high extinction ratio Glan-Thompson prism (GTPB/GTPC).
 Reference ▶ B094

Attention

- ▶ Input beam from the prism on the side indicated by ○. When the light is incident from the side of the prism without mark, there is a possibility that the characteristics of the transmittance and extinction ratio will change.
- ▶The surface flatness is the reflected wave front distortion of the surface before coating.
- ▶ Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.

Specifications						
Part Number	Wavelength Range [nm]	A=B=C [mm]	Material	Transmittance of P polarized light [%]	Reflectance of S polarized light [%]	Extinction ratio of transmission* Ts : Tp
PBSW-10-250	235 – 265	10	Synthetic fused silica	>85	>90	1:100
PBSW-12.7-250	235 – 265	12.7	Synthetic fused silica	>85	>90	1:100
PBSW-15-250	235 – 265	15	Synthetic fused silica	>85	>90	1:100
PBSW-20-250	235 – 265	20	Synthetic fused silica	>85	>90	1:100
PBSW-10-350	330 – 370	10	Synthetic fused silica	>85	>95	1:100
PBSW-12.7-350	330 – 370	12.7	Synthetic fused silica	>85	>95	1:100
PBSW-15-350	330 – 370	15	Synthetic fused silica	>85	>95	1:100
PBSW-20-350	330 – 370	20	Synthetic fused silica	>85	>95	1:100
PBSW-10-550	450 – 650	10	BK7	>85	> Average 85	1:200
PBSW-12.7-550	450 – 650	12.7	BK7	>85	> Average 85	1:200
PBSW-15-550	450 – 650	15	BK7	>85	> Average 85	1:200
PBSW-20-550	450 – 650	20	BK7	>85	> Average 85	1:200
PBSW-10-800	750 – 850	10	BK7	>92	>97	1:200
PBSW-12.7-800	750 – 850	12.7	BK7	>92	>97	1:200
PBSW-15-800	750 – 850	15	BK7	>92	>97	1:200
PBSW-20-800	750 – 850	20	BK7	>92	>97	1:200
PBSW-10-3/7	380 – 750	10	SK2	> Average 92	> Average 95	1:500*
PBSW-12.7-3/7	380 – 750	12.7	SK2	> Average 92	> Average 95	1:500*
PBSW-15-3/7	380 – 750	15	SK2	> Average 92	> Average 95	1:500*
PBSW-20-3/7	380 – 750	20	SK2	> Average 92	> Average 95	1:500*
PBSW-10-4/10	450 – 1080	10	SF15	> Average 92	> Average 95	1:500*
PBSW-12.7-4/10	450 – 1080	12.7	SF15	> Average 92	> Average 95	1:500*
PBSW-15-4/10	450 – 1080	15	SF15	> Average 92	> Average 95	1:500*
PBSW-20-4/10	450 – 1080	20	SF15	> Average 92	> Average 95	1:500*
PBSW-10-10/20	1000 – 2000	10	SF15	> Average 94	> Average 95	1:300*
PBSW-12.7-10/20	1000 – 2000	12.7	SF15	> Average 94	> Average 95	1:300*
PBSW-15-10/20	1000 – 2000	15	SF15	> Average 94	> Average 95	1:300*
PBSW-20-10/20	1000 – 2000	20	SF15	> Average 94	> Average 95	1:300*

 $^{^{\}star}$ It is the average extinction ratio transmission in the wavelength range.

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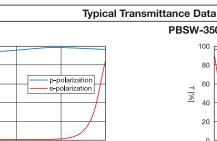
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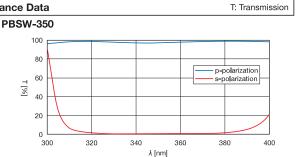
Waveplates

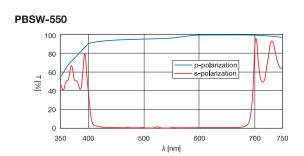
Polarizers

Broadband Polarizing Beamsplitters | PBSW

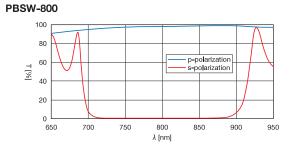


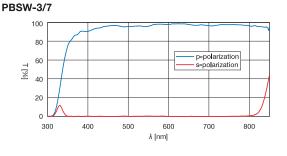
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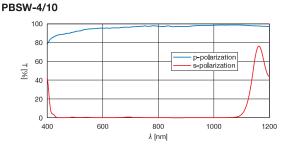


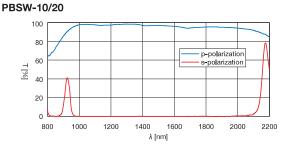


λ [nm]









Compatible Optic Mounts

Polarizing beamsplitters consist of two right angle prisms.

One of them is coated with dielectric multi-layer polarizing coating on the hypotenuse face. Polarizing beamsplitters split a monochromatic beam entering at zero degree into p-polarization as transmitted and s-polarization as reflected.

- Four surfaces of the cube are coated with narrowband multi-layer anti-reflection coatings.
- The losses of input beam of these products are minimized because of no absorption of the dielectric coatings.
- For cube beamsplitters, unlike plate beamsplitters, beam deviations of transmitted beams and ghosts rarely occur.



Schematic Hypotenuse: Dielectric multi-layer coating * The substrate side marked with ○ is coated Four surfaces: Multi-layer anti-reflection coating

Outline Drawing ●Tolerance Length A·B±0.2 Height C±0.1

405nm – 670nm									
Part Number	Wavelength Range [nm]	A=B=C [mm]	Reflectance of S polarized light [%]						
PBS-10-4050	405	10	>97						
PBS-15-4050	405	15	>97						
PBS-20-4050	405	20	>97						
PBS-10-4416	441.6	10	>97						
PBS-15-4416	441.6	15	>97						
PBS-20-4416	441.6	20	>97						
PBS-10-4579	457.9	10	>97						
PBS-15-4579	457.9	15	>97						
PBS-20-4579	457.9	20	>97						
PBS-10-4880	488	10	>98						
PBS-15-4880	488	15	>98						
PBS-20-4880	488	20	>98						
PBS-10-5320	532	10	>98						
PBS-12.7-5320	532	12.7	>98						
PBS-15-5320	532	15	>98						
PBS-20-5320	532	20	>98						
PBS-5-6328	632.8	5	>98						
PBS-10-6328	632.8	10	>98						
PBS-12.7-6328	632.8	12.7	>98						
PBS-15-6328	632.8	15	>98						
PBS-20-6328	632.8	20	>98						
PBS-5-6700	670	5	>98						
PBS-10-6700	670	10	>98						

670

670

670

12.7

15

20

>98

>98

>98

PBS-12.7-6700

PBS-15-6700

PBS-20-6700

Specifications	
Material	BK7
Surface flatness of substrate	λ/4
Angular deviation of transmitted beam	<10′
Coating	Hypotenuse Surface: Dielectric multi-layer polarizing coating Four Surfaces: Narrowband multi-layer anti-reflection coating
Incident angle	0°
Transmittance of P polarized light	>97% (405nm: >90%)
Extinction ratio of transmission	Ts: Tp = 1:1000
Laser Damage Threshold	0.3J/cm ² (Laser pulse with 10ns,repetition frequency 20Hz)
Surface Quality (Scratch-Dig)	20–10
Clear aperture	Circle inscribed in a square of 85% of the dimensions

Guide

- ▶ Please contact our Sales Division for customized products. (Customized on size, wavelength etc.)
- Plate-type Polarizing Beamsplitters (PBS-C) are also available upon your request. Reference B074
- There is also a high extinction ratio Glan-Thompson prism (GTPB/ GTPC). Refe ence B094

Attention

- ▶ Input beam from the prism on the side indicated by ○. When the light is incident from the side of the prism without mark, there is a possibility that the characteristics of the transmittance and extinction ratio will change.
- ▶ The transmittance curves are based on actual measurements and might vary between manufacturing lots.
- ▶ 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.

780nm – 1550nm							
Part Number	Wavelength Range [nm]	A=B=C [mm]	Reflectancee of S polarized light [%]				
PBS-5-7800	780	5	>98				
PBS-10-7800	780	10	>98				
PBS-12.7-7800	780	12.7	>98				
PBS-15-7800	780	15	>98				
PBS-20-7800	780	20	>98				
PBS-5-8300	830	5	>98				
PBS-10-8300	830	>98					
PBS-12.7-8300	830	>98					
PBS-15-8300	830	15	>98				
PBS-20-8300	830	20	>98				
PBS-10-10640	1064	10	>97				
PBS-15-10640	1064	>97					
PBS-20-10640	1064	20	>97				
PBS-5-15500	1550	5	>97				
PBS-10-15500	1550	10	>97				
PBS-12.7-15500	1550	12.7	>97				
PBS-15-15500	1550	15	>97				
PBS-20-15500	1550	20	>97				

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PBS-4050

100

80

60 T[%]

20

300

350

400

450

500



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Polarizing Beamsplitters | PBS

p-polarization

550

600

300

350

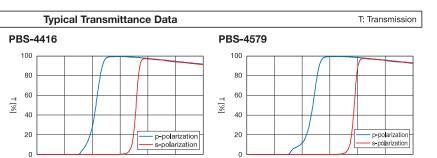
400

450

λ [nm]

500 550

polarization



600

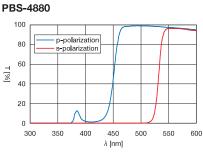
300

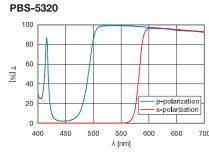
350

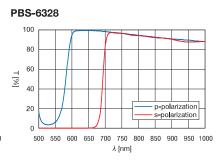
400 450

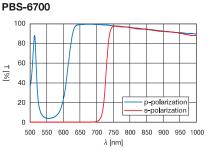
λ [nm]

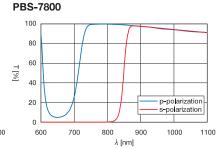
550 600

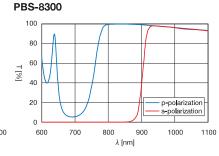


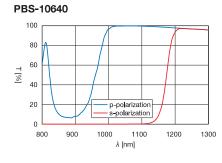


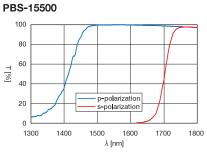












Compatible Optic Mounts

Contact sheet



® W3819	

Contact s	sheet for	polarization	beamsplitter
		polar Lation	Bodillopileto.

Estimation

Date

☐ To: Sig	ma k	Coki (Co	Ltd.	F/	7 X -	+81 -3	-56	338-	6550		
Affiliation (Organization Name)										0000		
Department							Name					
TEL				FAX			1	Ė	-mail			
Country/Adress			l		<u> </u>							
Name & Designation											(Tentative name is okay)
Drawing Number							Estimat	e 🗆	Yes: by	Date		□ No
Desired Delivery Date							Budget					JP Yen
Quantity						piece	es					
	If you are using a substrate of standard product, please fill in the product number.								product,			
Substrates If you do not specify	ဂ	Mate	erial	□BŁ	<7 [Synt	hetic fus	ed sil	ica 🗆	Other ()
a dimension tolerance is outside the standard tolerance.	Custom-made		b	a	а		m			e flatness ibstrate		(at $\lambda = 632.8$ nm)
	n-ma	c	\nearrow		b		mm		Angula of transr	Angular deviation f transmitted beam		
	lde				С			mm				
	Waveleng	gth Range	λ =			1	nm	Typ Light	be of Source			
	Incider	nt angle					0	Bear	n Size			mm
Type of Coating	Dielectric multi-layer Tp≧			% Ts≦		%	Po	ower			W	
	ΔR	coat		☐ Multi-layer anti-reflection (MLAR)			coating		or	pulse width		J s
	AIT	coat	Other ()	Fuerov i.		Repetition fr		Hz	
	* There	was a mo	ore detai	led speci	fication,	please f	ill in this fiel	d.				
Other												

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