DataRay Inc.
*Advancing the Technology of Laser Beam Analysis*

LASER 2000

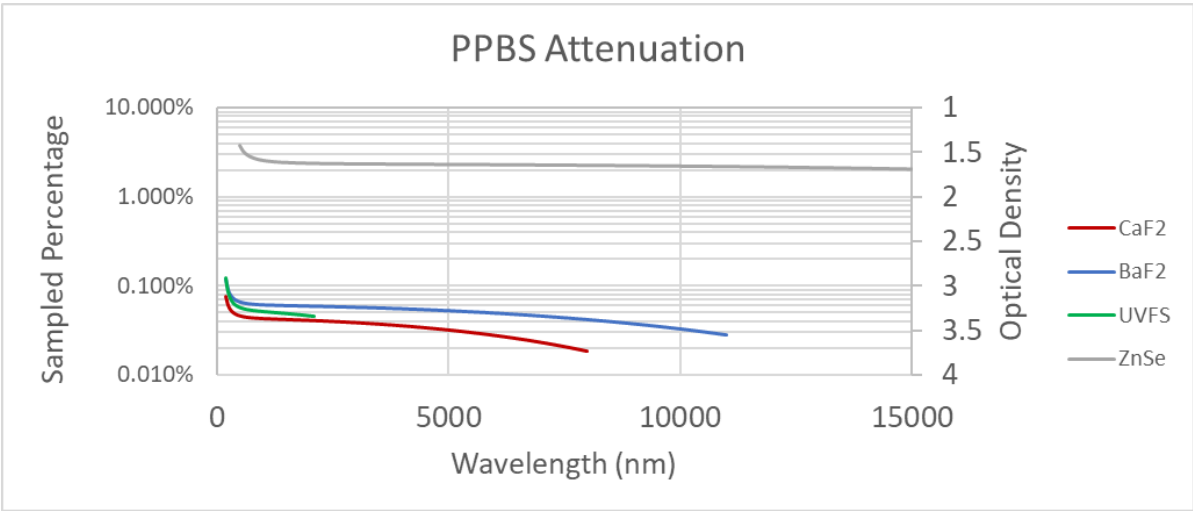
**Attenuation Options**

# Polarization Preserving Beam Sampler (PPBS)

The Polarization Preserving Beam Sampler (PPBS) uses a dual wedge design to sample a small percentage of a beam's power for laser beam profiling applications. The PPBS samples the reflections from two orthogonal wedge windows to safely reduce the power of high intensity light while preserving the original polarization of the input beam and eliminating the effects of multiple reflections from each air-glass interface

## Product Features

- Wavelength range: 0.190-16 µm (model dependent)
- Clear Aperture: 17.5 mm
- Sampled Percentage: 0.1%-3%
- Optical Path Length: 50 mm
- Wedge Materials: $CaF_2$, $BaF_2$, UV-FS, ZnSe
- Optional Beam Trap (BT-50) offered for beams to 50 W
- Available with post mount kit (Post-Kit-2-A)


| Model | Wavelength (nm) | Average Transmission % | OD |
|---|---|---|---|
| PPBS-UV-FS | 190-2000 | 0.05 | 3.3 |
| PPBS-BaF2 | 3000 | 0.06 | 3.2 |
| PPBS-CaF2 | 3000 | 0.04 | 3.4 |
| PPBS-BaF2 | 10600 | 0.03 | 3.5 |
| PPBS-ZnSe | 10600 | 2.2 | 1.7 |

**Table 1:** Attenuation at Common Wavelengths

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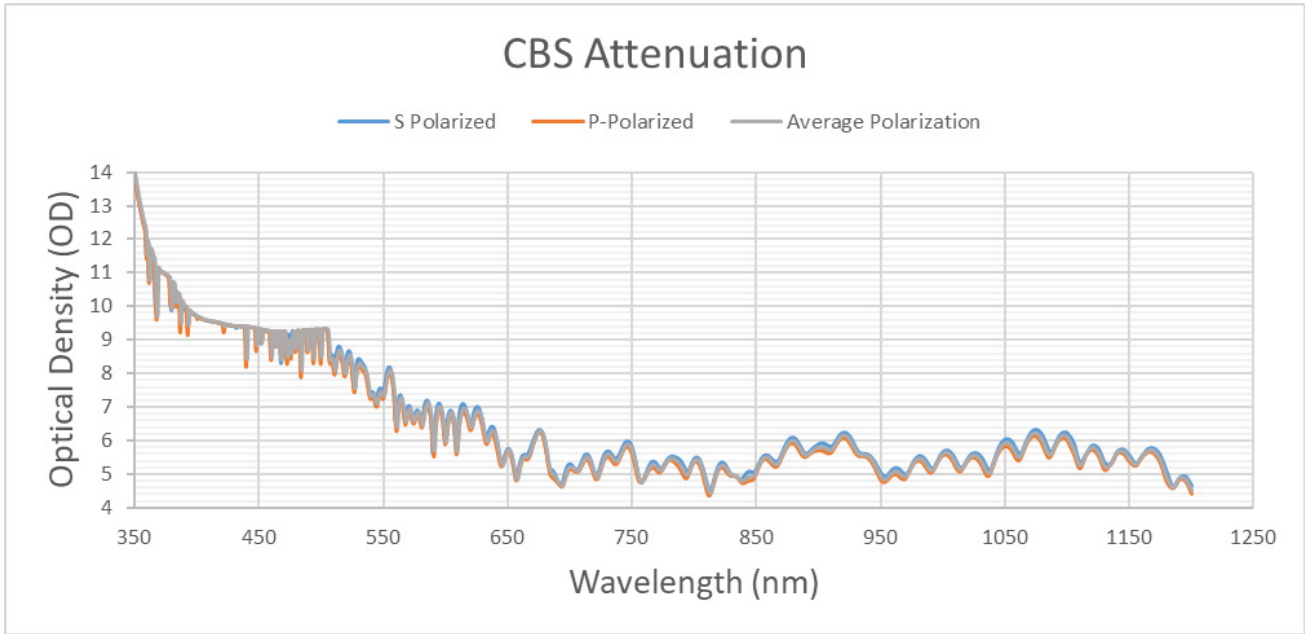
# Compact Beam Sampler (CBS)

The Compact Beam Sampler (CBS) samples a small percentage of a beam's power for short working distance measurement applications where the original beam's power density would otherwise damage the measurement instrument or standard absorptive ND filters. The CBS samples the transmission through a high damage threshold angled mirror to safely reduce the power of high intensity light. An ND filter optically glued to the rear of the mirror eliminates unwanted interference effects from multiple reflections.

## Product Features

- Wavelength range: 350 – 1100 nm
- Clear Aperture: 21.5 mm
- OD Value: 5 to 10 (wavelength dependent)
- Optical Path Length: 20 mm
- Damage Threshold: 1 J/cm² @ 355 nm; 2 J/cm² @ 532 nm; 6 J/cm² @ 1064 nm; (10 ns pulse width)


****** IMPORTANT *** It is a specific condition of use that the customer/user accepts complete responsibility for laser safety in terms of the >99% of the incident beam which is reflected from the front surface of the CBS.***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**Attenuation Options**

# EAM-2 Variable Attenuator

The EAM-2 is a simple to use manual variable attenuator. It consists of a bank of four filter wheels, each with three different filters ranging from 100% transmission down to 0.003 %. This filter bank offers almost continuous attenuation from 0 to more than 93 dB (Optical Density > 9). The EAM-2 has three M6 mounting holes and can also connect directly to the C-mount port of a camera. EAM-2 uses Schott NG absorbing filter glass (NG). The filters are laser grade polished to 10-5 scratch-dig and λ/10 finish. All filters are mounted at a 4° angle to suppress back-reflection

**Product Features**

- Max. attenuation: 93 dB (OD=9)
- Min. attenuation: 0 dB
- Max. Power Density: Power:1W/cm²
- Max. Energy Density: 100mJ/cm²
- Wavelength range: 350 to 2200 nm
- Clear Aperture: 18mm
- Filter Mounting Angle: 4°
- 3 x M6 threaded post holes
- C-mount threads


| Wheel | 1 | | 2 | | 3 | | 4 | |
|---|---|---|---|---|---|---|---|---|
| Filter# | dB | % | dB | % | dB | % | dB | % |
| 1 | 0 | 100 | 0 | 100 | 0 | 100 | 0 | 100 |
| 2 | 0.5 | 90 | 5 | 30 | 20 | 1 | 35 | 0.03 |
| 3 | 1 | 80 | 10 | 10 | 25 | 0.3 | 40 | 0.01 |
| 4 | 3 | 50 | 15 | 3 | 30 | 0.1 | 45 | 0.003 |

**Table 2:** EAM-2 Attenuation at 516 nm

# ND Filters

DataRay offers several ND filter options. Our standard visible ND filters use absorptive glass and are available in C-mount and 1" format holders. We also offer reflective filters for operation in the UV as well as broadband Germanium filters for operation in the IR in a 1" format. Our UV and visible filters are also available in MagND format which contains a 1" filter in a holder that magnetically snaps onto our WinCamD-LCM cameras. Please see our website for additional information.

| OD | UV | Vis | IR |
|---|---|---|---|
| 0.5 | NDL-0.5-UV | ND-0.5 | N/A |
| 1 | NDL-1-UV | ND-1 | NDL-Ge-1 |
| 2 | NDL-2-UV | ND-2 | NDL-Ge-2 |
| 3 | NDL-3-UV | ND-3 | N/A |
| 4 | NDL-4-UV | ND-4 | N/A |
| 5 | N/A | ND-5 | N/A |

**Table 3:** Available Optical Densities


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## Attenuation Options

| Ordering Information | |
|---|---|
| PPBS-UV-FS | Polarization Preserving Beam Sampler. UV Fused Silica Wedges 190-2000 nm |
| PPBS-BaF2 | Polarization Preserving Beam Sampler. BaF2 Wedges 300 nm – 11 µm |
| PPBS-CaF2 | Polarization Preserving Beam Sampler. CaF2 Wedges 300 nm – 8 µm |
| PPBS-ZnSe | Polarization Preserving Beam Sampler. ZnSe Wedges 600 nm – 16 µm |
| BT-50 | Beam Trap for beams to 50 W, 19 mm aperture |
| CBS | Compact Beam Sampler. Reflective attenuator - <0.01% Transmission, to 200 W incident power. 355-1100 nm. |
| EAM-2 | Variable Attenuator, 93 dB optical dynamic range. Max Power: 1 W/cm2, 350 nm - 2200 nm. |
| MagND-X | ND filter 355-1100 nm in magnetic holder, ND values: 0.5, 1,2,3,4,5, for S-WCD-LCM cameras |
| MagND-X-UV | Filters for 200-355 nm in magnetic holder ND Values available: 0.5,1,2,3,4 for S-WCD-LCM Cameras |
| ND-X | ND Filters for 355 to 1100 nm 22 mm CA, in stackable C-mount holder, ND Values available: 0.5,1,2,3,4,5 |
| NDL-X-UV | Reflective filters for UV 200-1200 nm in stackable 1" Holder, ND Values available: 0.5,1,2,3,4 |
| NDL-Ge-X | Filters for Infra-Red 2-16 µm in 1" Holder ND Values available: 1,2 |
| Post-Kit-2-A | Post mount kit includes: 2” post, 2” post holder, and adjustable base |
| ETCM-2 | C-mount tube set (2 50 mm tubes + 4 adaptor rings) |
| ETCM-3 | C-mount tube set (3 50 mm tubes + 4 adaptor rings) |


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