POWER MANAGEMENT

NEUTRAL DENSITY (ND) FILTERS - UP TO 1 W

We offer various SM1 threaded absorptive ND (Neutral Density) filters that can be fixed directly on the aperture of the Beamage camera via a SM1 to C-mount adaptor. We also offer SM2 threaded filters that can be fixed on the Beamage-4M-FOCUS via a SM2 to T-Mount adaptor. Subsequent filters can be stacked directly on each other. These filters reduce the intensity of all wavelengths without affecting the wavefront of the beam or distorting the image. Sets of 3 filters or 6 filters as well as individual filters are available. An empty SM1 threaded filter holder is also available for those who would like to use their own ND filters with their camera. It holds 25 mm wide filters.

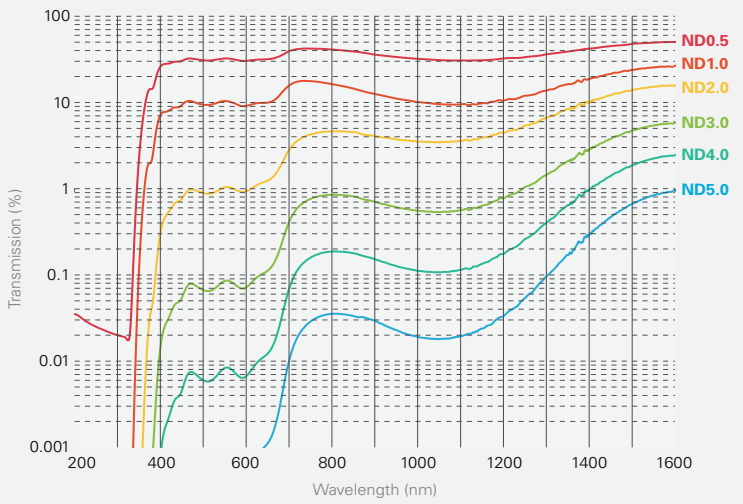
Each 25 mm filter and each holder comes with a SM1 to C-mount adaptor and each 50 mm filter comes with a SM2 to T-Mount adaptor.

MAIN SPECIFICATIONS

MODEL	ND0.5 TO ND5.0
Spectral Range	400 nm[a] - 1595 nm
Filter Diameter	25 mm Ø
Clear Aperture	22.5 mm Ø (90% of diameter)
Dimensional Tolerance	+0.0/-0.25 mm
Optical Density Tolerance	±5%
Parallelism	< 10 arcsec
Transmitted Wavefront Error	< λ/10 at 633 nm
Surface Flatness	< λ/4
Surface Quality	40-20 Scratch-Dig
Maximum Power	1 W
Damage Thresholds	100 W/cm² or 3 J/cm²

** Data specified at 633 nm*
a. For ND4.0 filter, lower limit with other models.

SPECTRAL TRANSMISSION OF ALL FILTERS



OVERVIEW OF THE MODELS

25 MM FILTERS		50 MM FILTERS		EQUIVALENT ATTENUATION	TRANSMITTANCE @ 633NM	SUBSTRATE
MODEL	(P/N)	MODEL	(P/N)			
ND0.5	201094	ND0.5-FOCUS	203403	(1/3,16)	~32%	NG4
ND1.0	201045	ND1.0-FOCUS	203404	(1/10)	~10%	NG4
ND2.0	201046	ND2.0-FOCUS	203405	(1/100)	~1%	NG9
ND3.0	201047	ND3.0-FOCUS	203406	(1/1000)	~0.1%	NG9
ND4.0	202600	ND4.0-FOCUS	203407	(1/10 000)	~0.01%	NG9
ND5.0	202601	ND5.0-FOCUS	203408	(1/100 000)	~0.001%	NG9
"NDSET-6 (Set of all 6 filters)"	202605	-		See Above	See Above	See Above
"NDSET-3 (Set of 3 filters (ND1, ND2, ND3))"	202606	-		See Above	See Above	See Above
"ND-H (ND filter holder)"	202607	-				

POWER MANAGEMENT

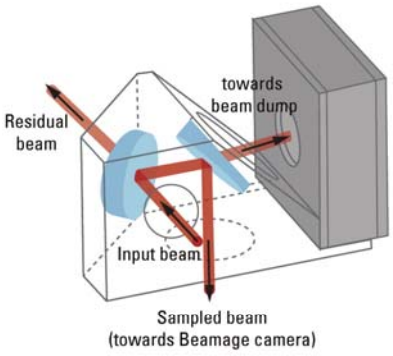
OPTICAL ATTENUATORS - UP TO 500 W

* Beam profiling camera and stand sold separately, adaptor tube for Beam profiling camera is included

	BA16-60S	BA16K-150S-H5-D0	BA16K-500F-H9-D0
MAXIMUM POWER	60 W	150 W	500 W
EFFECTIVE APERTURE	16 mm Ø	16 mm Ø	16 mm Ø
COOLING METHOD	Convection	Convection	Fan
MEASUREMENT CAPABILITY			
Spectral Range	200 nm - 2100 nm	200 nm - 2100 nm	200 nm - 2100 nm
Integrated Power Meter	None	UP19K-15S-H5-D0	UP19K-110F-H9-D0
Fan Input Voltage	N/A	N/A	12 VDC
Average Attenuation	1700 @ 1064 nm	1700 @ 1064 nm	1700 @ 1064 nm
Maximum Beam Diameter	16 mm Ø	16 mm Ø	16 mm Ø
Optical Wedges Material	UV Fused Silica (uncoated)	UV Fused Silica (uncoated)	UV Fused Silica (uncoated)
Sampled Beam Lateral Shift	21 mm	21 mm	21 mm
Sampled Beam Deviation	90°	90°	90°
Residual Beam Deviation	4°	4°	4°
Polarization correction	Yes (pair of orthogonal wedges)	Yes (pair of orthogonal wedges)	Yes (pair of orthogonal wedges)
PHYSICAL CHARACTERISTICS			
Aperture Diameter	16 mm Ø	16 mm Ø	16 mm Ø
Dimensions	45H x 47W x 81L mm	54H x 50W x 86L mm	54H x 54H x 126L mm
Weight	0.26 kg	0.37 kg	0.46 kg
ORDERING INFORMATION			
Product Name	BA16-60S	BA16K-150S-H5-D0	BA16K-500F-H9-D0
Product Number (without stand)	203791	203792	203793
Add Extension for INTEGRA (USB)	N/A	-INT	-INT
Add Extension for INTEGRA (RS-232)	N/A	-IDR	-IDR
Add Extension for BLU	N/A	-BLU	-BLU

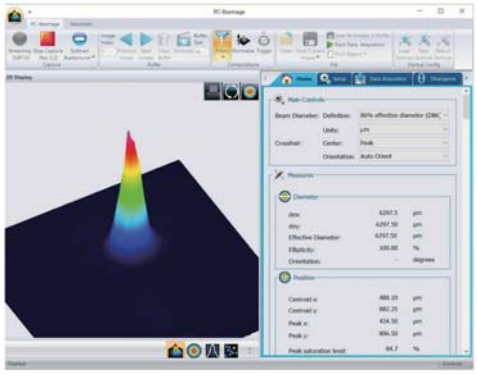
Specifications are subject to change without notice

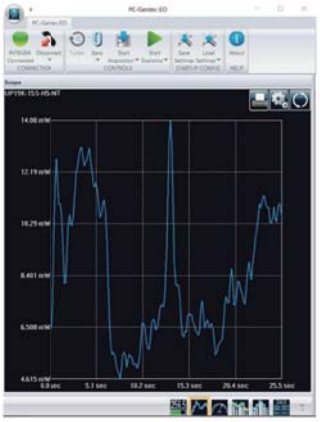
POWER MANAGEMENT



PRESERVES POLARIZATION

The BA Series Optical Attenuators use Fresnel reflection on two optical wedges to pick off a small percentage of the input beam. Since the wedges are oriented orthogonally, the S and P polarization states are switched when the reflected beam hits the second wedge, and the difference in reflectance between the two states cancels out. The incoming beam polarization state and irradiance are thus preserved. The wavefront distortion is negligible and the laser output power stability is not affected.





MONITOR POWER AND PROFILE SIMULTANEOUSLY

The BA16K models include a calibrated thermal power detector that also acts as a beam dump. Simply plug the detector into a Gentec-EO Power Meter to measure and display relative power in real time.

To obtain an absolute measurement of power, you will have to determine a correction factor for the BA16K. This can be accomplished in few simple steps. Note, however, that such a correction factor is dependent on the laser polarization and will only be valid if the polarization is stable over time.

In the near future, a power measurement feature will be added to the PC-Beamage software which will then be able to display the laser power density (i.e. W / cm^2).

MODULAR CONCEPT

The "Sampled beam" port can be connected to the Beamage via the included adaptor tube. The adaptor tube is also compatible with our ND filters for additional attenuation (recommended for small beams at high power). An ND4 filter is always included with the purchase of a Beamage profiling camera.

The BA Series Optical Attenuators can also be used, stand-alone, as follows:

- OPTICAL PICK-OFF FOR USE WITH OUR ENERGY OR POWER DETECTORS
- ATTENUATOR FOR OUR HIGH SENSITIVITY DETECTORS LIKE M6, PH, ETC.
- POLARIZATION INSENSITIVE BEAM-SPLITTER WITH NO BACK REFLECTIONS

SEE ALSO

ACCESSORIES FOR BEAM DIAGNOSTICS
LIST OF REGULAR ACCESSORIES