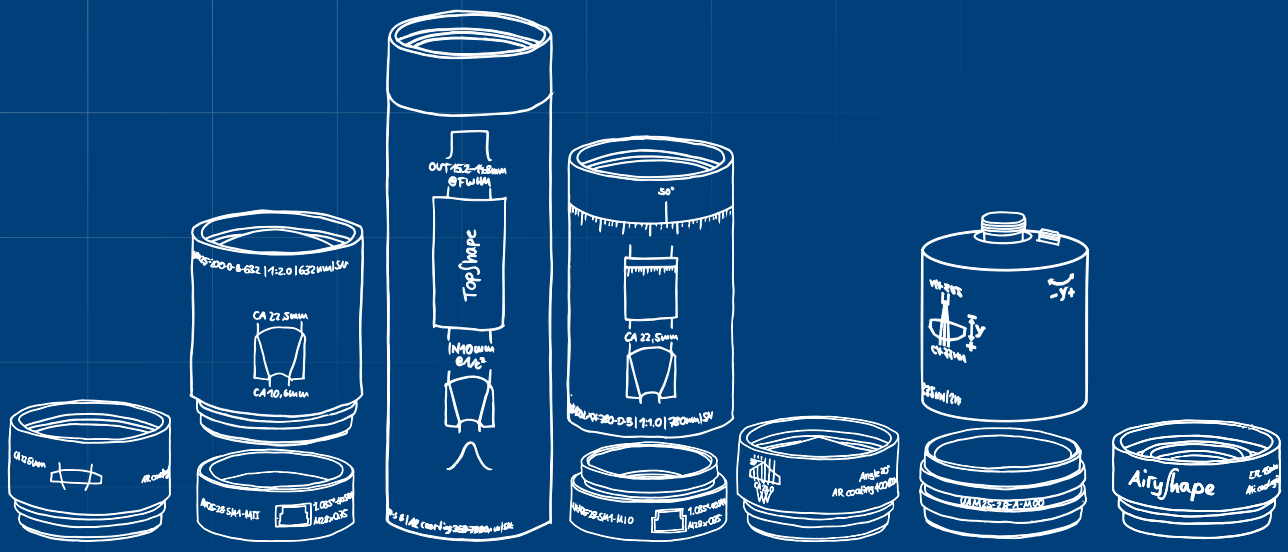
asphericon

BeamTuning

Beam expansion and
Beam shaping at the next level



Discover plug and play perfection.

asphericon BeamTuning

asphericon BeamTuning for beam expansion, fiber collimation and beam shaping at the next level. Discover a comprehensive range of laser beam processing elements, the various possible combinations and compile your own individual product selection.

BEAMEXPANSION

The world‘s first aspheric beam expansion system is the right choice when it comes to beam expansion or reduction with outstanding quality.

BEAMEXPANSION PRODUCTS:

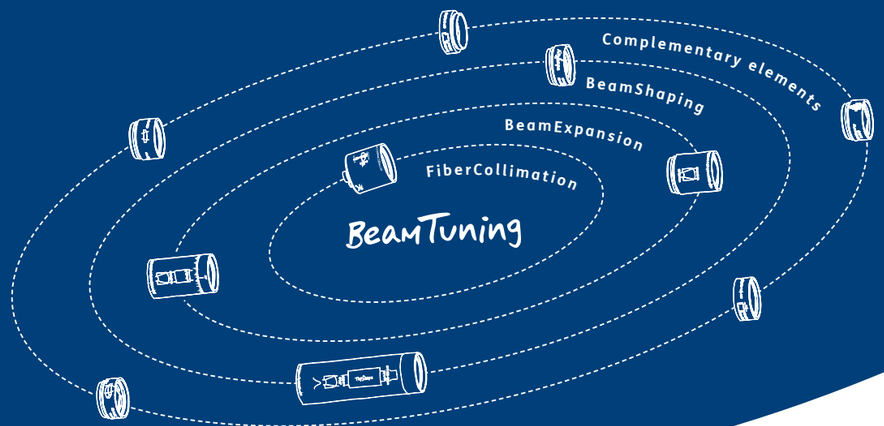
= a|BeamExpander (p. 6)
= a|Waveλdapt (p. 8)

FIBERCOLLIMATION/FIBERCOUPLING

Use our adjustable fiber collimation package to easily combine all BeamTuning elements directly to your fiber coupled laser source.

FIBERCOLLIMATING PRODUCT:

= a|AspheriColl (p. 10)



BEAMSHAPING

Simply transform collimated Gaussian laser beams into collimated and focused Top-Hat beams and take advantage of the easy handling.

BEAMSHAPING PRODUCTS:

= a|TopShape, a|TopShape LD (p. 12)
= a|AiryShape, a|SqAiryShape (p. 14)

COMPLEMENTARY ELEMENTS

Connect all elements or combine them with other systems. Matching adapters and MountedOptics allow for 100 % flexibility.

COMPLEMENTARY PRODUCTS:

= a|Adapters cross-system & intra-system (p. 17)
= a|MountedAspheres/Axicons/Acylinders (p. 19)

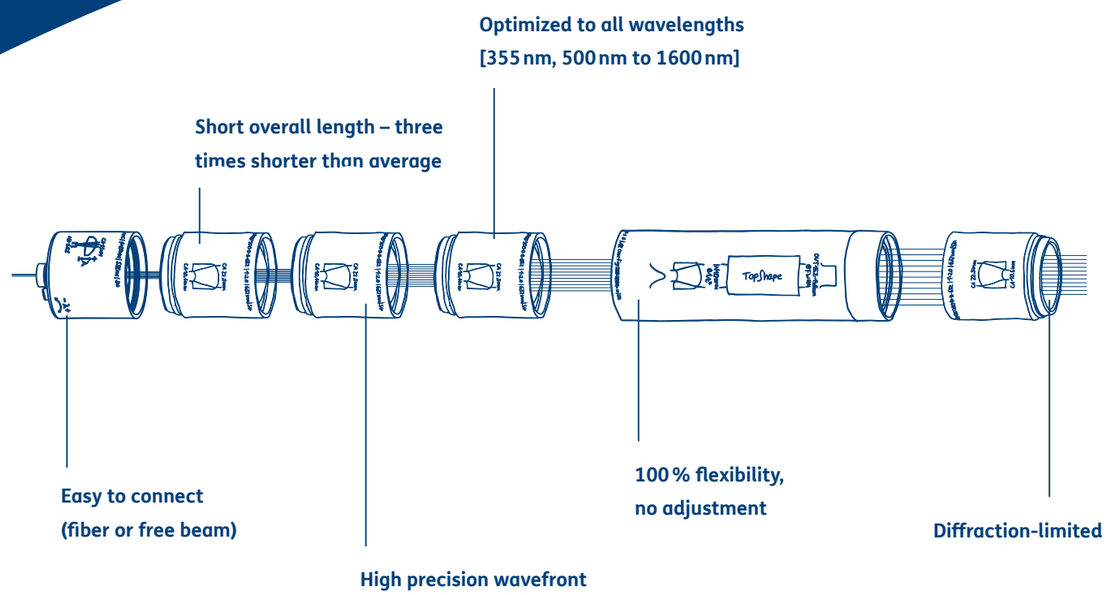
tu·ning [‘tju:nIŋ],
to adjust something for maximum usability or performance

= Flexible choice of input and output beam diameter

= Economical to use – Simple integration into any optical system by an intelligent mounting concept

= Low contamination due to tightly sealed mountings

= Easy and timesaving handling



Application areas

Discover the wide application range of our BeamTuning products. Flexible in use, with the highest quality, ideal for your specific needs. Below you find some selected examples. Need help with an individual solution? Let us know!

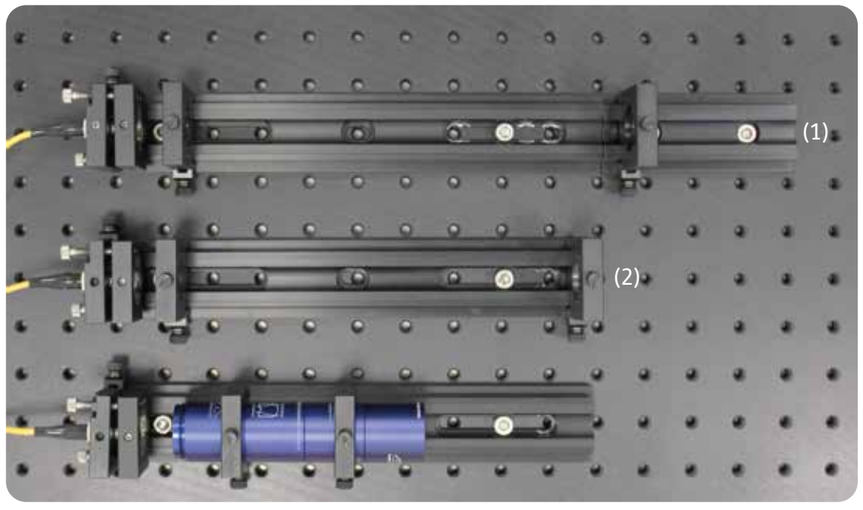
LABORATORY

Beam expansion and beam shaping systems are used for optimum beam adaption between light sources (i.e. laser) and a following optical element. Accurate illumination of the optically effective surfaces is especially essential for beam shaping and focusing with high numerical apertures. Conventional systems can only be adapted with high effort, are relatively large and only suitable for a certain wavelength.

BeamTuning by asphericon covers a wide wavelength range with just a few products, enables flexible adjustments and saves you a lot of time.

Discover, for example, how the a|BeamExpander can help you reduce the overall length of your beam expansion system and still achieve outstanding performance results.

→ *Learn more on page 6/7.*



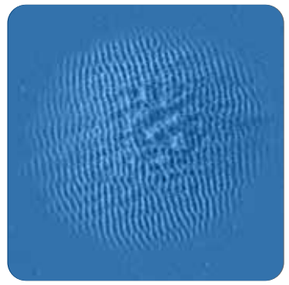
Magnification (M = 10) with a|BeamExpander compared to conventional systems (1) Kepler and (2) Galilean.

High-end BeamTuning solutions for your application.

MATERIAL PROCESSING

If a laser beam with a Gaussian intensity profile is used, e.g. for drilling or cutting, the energy loss at the edge of the beam affects the cutting edge quality of the workpiece. Good results require further cuts, which influence the efficiency of the process. In the case of surface functionalization, a Gaussian distribution is also disadvantageous, since uneven melting of the surface prevents homogeneity. Discover how BeamTuning elements easily generate homogeneous intensity distributions (e.g. Top-Hat or Donut). The latter allows for a uniform heat input into the material, which results in smooth profiles.

→ *Learn more on page 14/15.*



Surface functionalization with conventional system (Gaussian Beam)

Surface functionalization with a|AiryShape (Top-Hat)

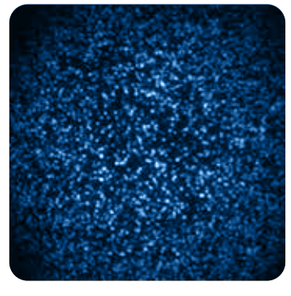
Surface functionalization with a|AiryShape (Donut)

Image reference: Otto Schott Institute of Materials Research (OSIM) at the Friedrich Schiller University of Jena

IMAGING/ILLUMINATION

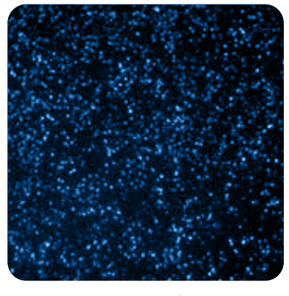
The uneven illumination of Gaussian intensity profiles makes quantitative analysis in laser-based wide-field fluorescence microscopy highly challenging. One disadvantage of non-uniform illumination is the uneven activation of molecules. Those being closest to the center of the beam fluoresced more strongly than those near the periphery. Discover how BeamTuning by asphericon allows to achieve uniform illumination (homogeneity > 95 %) while remaining tolerant to variations in size of the incoming laser beams.

→ *Learn more on page 12/13.*



Conventional illumination system

Paper Download:



Illumination with a|TopShape

Image reference: I. Khaw, B. Croop, J. Tang, A. Moehl, U. Fuchs, K. Y. Han: „Flat-field illumination for quantitative fluorescence imaging“, In: OPTICS EXPRESS, Vol. 26, No. 12, 11 Jun 2018, pp. 15276-15288

a|BeamExpander

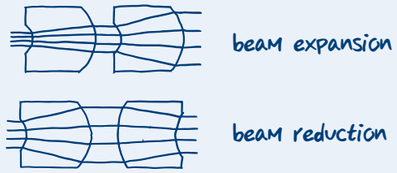
Discover the world's first aspheric and diffraction-limited beam expander. The a|BeamExpander is a monolithic laser accessory with just one aspheric lens for the highest level of precision. Experience nearly endless possibilities with up to 32× beam magnification and optimized performance for different design wavelengths – individually measured and certified.

- Available in five design wavelengths [355 nm / 532 nm / 632 nm / 780 nm / 1064 nm]
- Max. input aperture 10.6 – 14.7 mm, max. output aperture 22.5 mm
- Available with magnifications of 1.5 | 1.75 | 2.0
- Possibility of combining up to five expander for up to 32 times beam expansion and over 230 intermediate stages
- Completely diffraction-limited – individually measured and guaranteed by an original asphericon certificate
- Laser induced damage threshold (Coating): 12 J/cm², 100 Hz, 6 ns, 532 nm
  Like all BeamTuning elements all a|BeamExpander come with a broadband coating. For higher laser power applications please request a V-Coating. Contact us for an individual offer. Please note the material damage threshold of your set-up!

Also available as UV version, made of Suprasil and optimized for Nd:YAG-Laser [355 nm], which enables diffraction-limited beam expansion in the UV range.

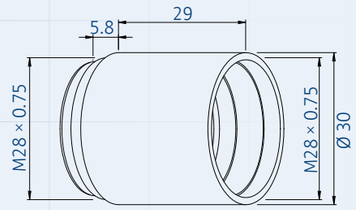
APPLICATION

A beam expander is used to increase or decrease the diameter of a collimated input beam to a larger or smaller collimated output beam.
Use the a|BeamExpander for applications such as interferometry, telescopes, or microscopy.

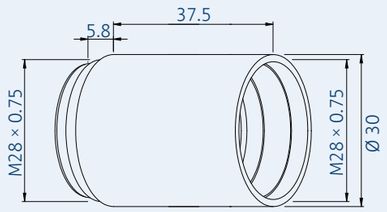


TECHNICAL DIMENSIONS

a|BeamExpander [532 – 1064 nm]

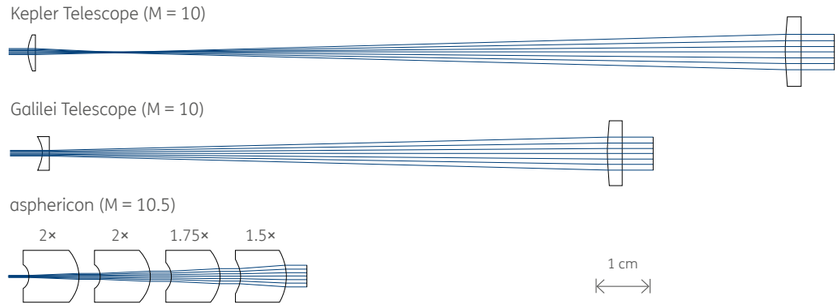


a|BeamExpander UV [355 nm]



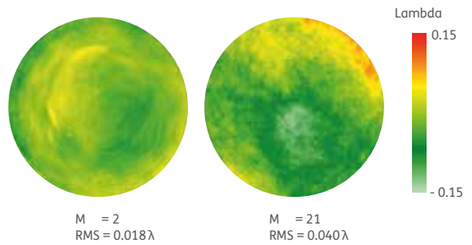
LENGTH

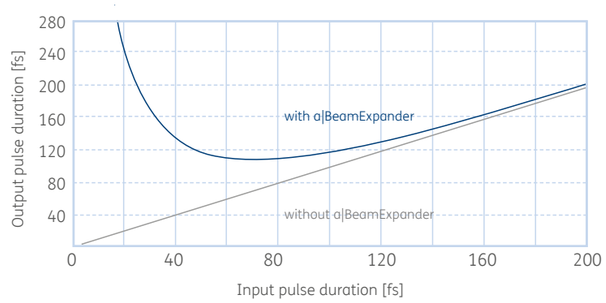
The a|BeamExpander, based on the use of aspheric and monolithic beam expansion elements, achieves overall lengths up to 50 % shorter than those of conventional systems – even when used in a cascade. Shown are a Kepler and Galilean telescope with 10× magnification (M = 10) in comparison with our beam expansion system.



PERFORMANCE

Its high performance is particularly evident regarding the wavefront measurements. Depicted are the measured wavefront maps of an a|BeamExpander with a magnification M = 2 (left) and a five element set of a|BeamExpander with M = 21 (right) at 532 nm. The aspheric element is made of glass by grinding and polishing the surface. Having values of wavefront RMS = 0.018 λ (left) and RMS = 0.040 λ (right) prove the exceptional precision of the lenses and its well-suited use in a cascade system.





FLEXIBILITY

The a|BeamExpander can also be used flexibly in the wavelength range from 500 nm to 1600 nm for ulta short pulse laser applications. Please be aware of the pulse broadening effect. In the chart on the left, you can see how your input pulse changes by propagating through an optical element such as the a|BeamExpander.

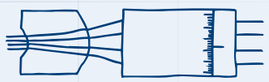
a|Waveλdapt

Using an a|BeamExpander at a wavelength, which differs from its design wavelength? No problem with the a|Waveλdapt. It covers the complete spectral range from 500 nm to 1600 nm, corrects wavefront deformation and adjusts divergence while retaining the beam diameter. This laser device is very flexible in usage – especially, since the overall length of the system is very short compared to conventional systems. Due to it's metric fine thread the a|Waveλdapt, like all BeamTuning elements, can be easily integrated into any optical system.

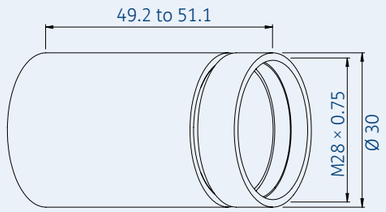
- = Available for the four a|BeamExpander design wavelengths [532 nm / 632 nm / 780 nm / 1064 nm]
- = Optimized adaptation to wavelength range from 500 nm to 1600 nm
- = Compensation of divergent incoming beams up to 1 mrad
- = Combinable with up to five BeamTuning elements – completely diffraction-limited
- = Preservation of adjusted magnification
- = Max. input aperture 22.5 mm, max. output aperture 22.5 mm
- = Easy and flexible handling
- = Laser induced damage threshold: 12 J/cm², 100Hz, 6ns, 532nm
  For higher laser power applications please request a V-Coating. Contact us for an individual offer.

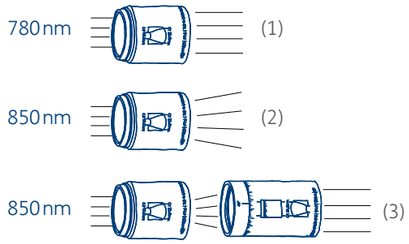
APPLICATION

The a|Waveλdapt allows the use of an a|BeamExpander with wavelengths other than its design wavelength.



TECHNICAL DIMENSIONS





FLEXIBILITY

The outgoing beam is either divergent or convergent, when an a|BeamExpander is used at a different wavelength than the design wavelength. Additionally, higher order wavefront aberrations occur since the asphere and the center thickness do no longer match the design intention.

A suitable a|Waveλdapt can easily set these problems within its range of use and thus increases the flexibility of the a|BeamExpander. By using a 780 nm a|Waveλdapt, for example, beams with a wavelength of 850 nm can be collimated by an a|BeamExpander 780 nm. The diffraction-limited performance is achieved by collimating the outgoing beam at the new wavelength.

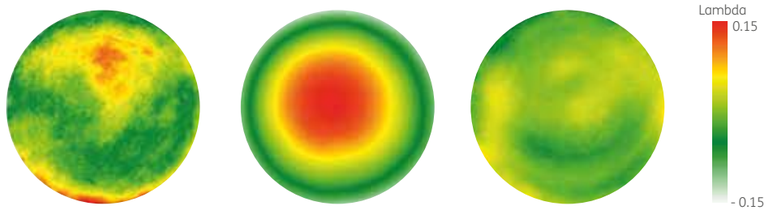
PERFORMANCE

Shown are the measured wavefront maps for two different wavelengths using a cascade with three a|BeamExpander at 780 nm and a corresponding a|Waveλdapt.

(1) shows the measurement of a cascade with three a|BeamExpander with M = 8 at 780 nm having RMS = 0.042 λ.

(2) illustrates what happens when using the „wrong" wavelength. The obvious effect is a resulting defocus and consequently divergence of the beam. The measurement showing an a|BeamExpander cascade at 850 nm with a defocus of 2.9 λ PV (RMS = 0.78 λ).

(3) demonstrates how the problem from (2) can be easily solved, when adding the 780 nm a|Waveλdapt to the set-up. A RMS = 0.024 λ underlines the strong performance (which is even better in the example shown than with a single a|BeamExpander) and high quality of the element.



(1) (2) (3)

The optical design of an a|Waveλdapt is meant to compensate the right amount of aberrations resulting in a diffraction-limited wavefront in real world when obtaining a collimated beam. Therefore, the a|Waveλdapt has to be placed at the position of the largest beam diameter to perform as desired.

a|AspheriColl

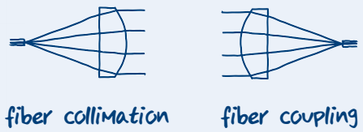
Now even easier to adapt: the a|AspheriColl, an adjustable fiber collimation device, which enables the perfect connection of FC/PC patch fibers to your set-up. Combine the world's smartest off-the-shelf fiber collimator for NA's up to 0.275 with BeamTuning or other beam shaping elements to obtain any desired output beam while maintaining a diffraction-limited wavefront.

- = Fiber collimator covering for NA's up to 0.275
- = Focal length: f = 20 mm, with $Ø_e$ = 11.5 mm
- = Optimized for wavelength range 355 nm - 1600 nm
- = Simplified wavelength adaption by setting adjustment unit with SW2 allen key
- = Perfectly aligned lateral position
- = Completely diffraction-limited performance (Strehl > 0.95) when used with FC/PC patch fibers
- = Thanks to matching adapters also usable for APC fibers
- = No truncation effects compared to other available fiber couplers
- = Thanks to bigger output beam diameters, no additional expansion might be needed (shorter system length)
- = Laser induced damage threshold: 12J/cm², 100Hz, 6ns, 532nm
  For higher laser power applications please request a V-Coating. Contact us for an individual offer.

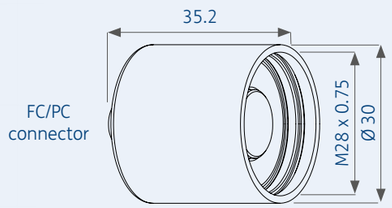
Now available: a|AspheriColl UV 355 nm

APPLICATION

Easily use a|AspheriColl to collimating or coupling fibers.

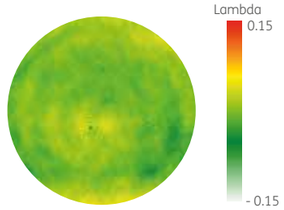


TECHNICAL DIMENSIONS



PERFORMANCE

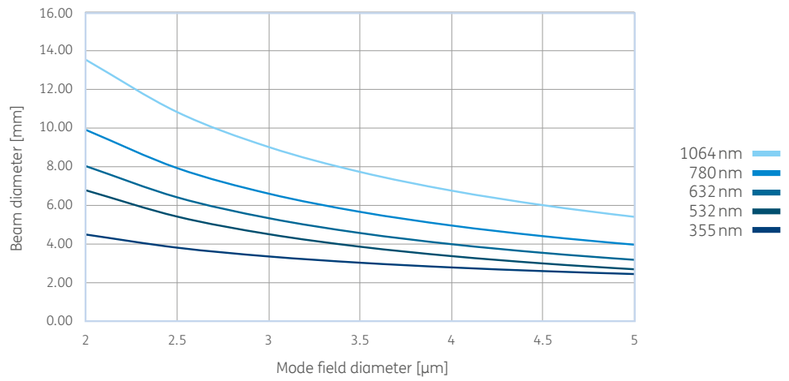
The map on the right shows the measured wavefront of an a|AspheriColl at 632 nm. The diameter of the collimated output beam, which depends on your fiber's numerical aperture (NA) and mode field diameter (MFD), is already in a usable range. It is already perfectly aligned to the design wavelength. If needed, it can also be adjusted in a certain wavelength range. Due to its outer diameter of 30 mm the a|AspheriColl fits into any standard holder (e.g. from OWIS). By simply pluging in the fiber the a|AspheriColl is ready to use.

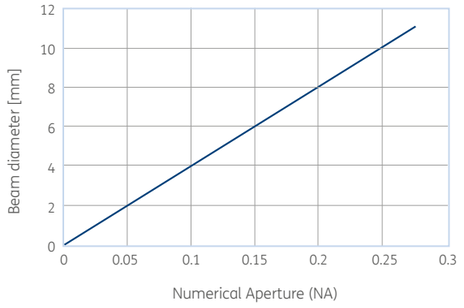


FLEXIBILITY

The diameter of the collimated output beam generated by an a|AspheriColl depends on the NA and MFD of the fiber. Both are functions of the wavelength.

Due to fiber manufacturing process, the MFD might deviate from its nominal value. The figure shows collimated output beam diameter as a function of MFD for a|AspheriColl. The large output beam diameter is advantageous, since there are no truncation effects compared to other available types of fiber couplers.



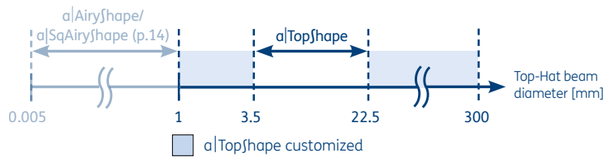


The basic diameter is set as shown in the graph on the left. Pre-aligned for the wavelengths [nm] 355, 532, 632, 780 and 1064, the a|AspheriColl collimates the output of single mode fibers with NA's up to 0.275.

a|TopShape, a|TopShape LD

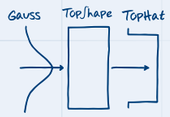
Discover innovative beam shapers, which easily transform collimated Gaussian beams into collimated Top-Hat beams. These laser devices convince with very compact designs and unbeatable optical performance. Available in two versions, for stable beam profiles up to 300 mm and as LongDistance (LD) variant for up to 1 m, both beam shapers cover a large spectral range and accept varying input beam diameter (± 10%). Since the effective working distance decreases with subsequent beam size reduction, using the a|TopShape LD is recommended if an application calls for smaller beam diameter.

- = Unbeatable optical performance (homogeneity > 90%) without any power losses
- = Large spectral range (320 nm to 2500 nm) and ideal for multi-wavelength applications
- = Accepts varying input beam diameter (± 10%)
- = Stable beam profiles (with homogeneity > 90%): a|TopShape for at least 300 mm, a|TopShape LD for longer working distance of at least 1 m
- = Input beam diameter @ $1/e^2$ = 10 mm; output beam diameter @ FWHM = between 15.2 mm and 15.7 mm
- = Laser induced damage threshold: 12 J/cm², 100 Hz, 6 ns, 532 nm
  For higher laser power applications please request a V-Coating. Contact us for an individual offer.
- = Usable for applications in the following beam diameter range:

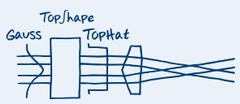


APPLICATION

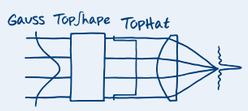
a|TopShape is the perfect support for your application, e.g. in the field of metrology, microscopy or material processing.



flat TopHat-profile

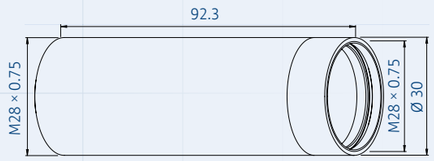


homogeneous Bessel beam

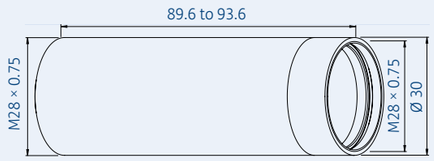


Airy-focus

TECHNICAL DIMENSIONS



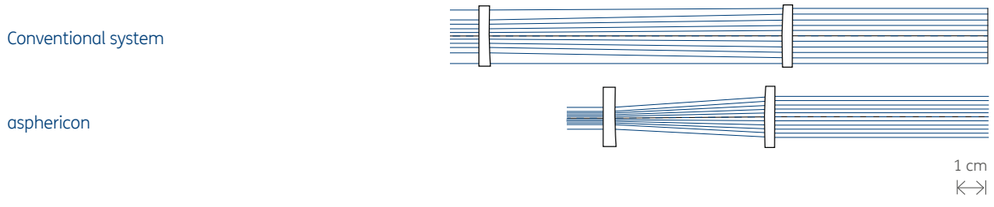
a|TopShape



a|TopShape LongDistance (LD)

LENGTH

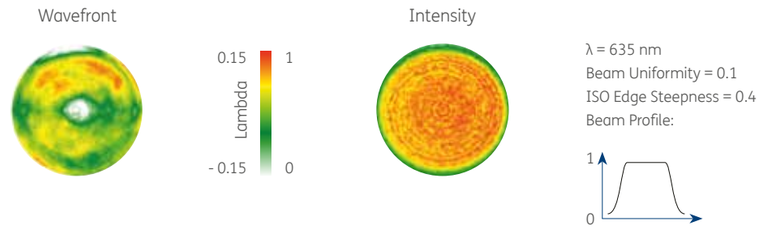
The principle layout of a conventional afocal beam shaping system compared to our system is shown below. The incoming Gaussian beam having an input beam diameter of 10 mm @ $1/e^2$ is redistributed in a way that the output beam has a uniform intensity distribution with a diameter of about 15 mm (FWHM) depending on the wavelength. The length could be reduced by half as compared with most systems available on the market.



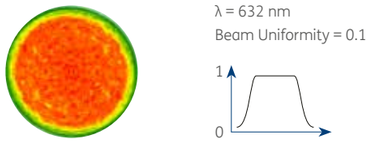
PERFORMANCE & FLEXIBILITY

The following figures show the measured wavefront, using a|TopShape, after passing 14 surfaces, incl. seven aspheres (left) and the beam profile after passing 12 surfaces, incl. six aspheres, at a working distance of 100 mm (right). The resulting RMS wavefront error of 0.05 λ, which corresponds with a Strehl value of 0.9, proves the high optical quality. The resulting Beam Uniformity of 0.1 and the ISO Edge Steepness of 0.4 emphasize this.

Measurement equipment:
Phasics SID4-HR-307c,
300x400 pts
Wavelength: 632 nm
Wavefront RMS: 0.05 λ
Strehl: 0.9



The outstanding feature of a|TopShape LD is its long and stable propagation distance. The figure on the right displays the intensity distribution at a working distance of 1500 mm. It is characterized by an ISO Beam Uniformity of 0.1.



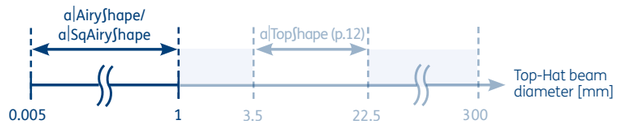
If a lower homogeneity of the beam profile is sufficient, larger working distances are also possible. Perfect input conditions for both a|TopShapes are obtained with a combination of a|AsphériColl and a|BeamExpanders. High flexibility is guaranteed by matching adapters (→ see p. 17) - use the beam shapers also with other common systems. For more possible combinations or an individual solution contact us.

a|AiryShape, a|SqAiryShape

NEW

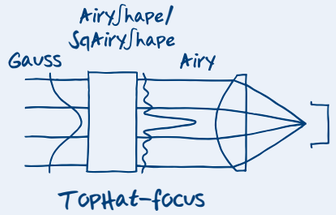
Want to generate focused round or squared beam profiles, like Top-Hat or Donut? No problem with a|AiryShape and a|SqAiryShape! Optimized for wavelengths from 300 nm up to 1600 nm, these beam shapers enable, in combination with a focusing lens, the transformation of collimated Gaussian beams into different focused round (a|AiryShape) and squared (a|SqAiryShape) beam profiles. Thanks to their compact designs, both beam shaping elements can be easily integrated into existing set-ups.

- = Generation of different round and squared beam profiles
- = Profile size easily scalable by focal length
- = Optimized for wavelengths from 300 nm to 1600 nm
- = Easy integration into existing set-ups
- = Perfect alignment by high-precision mounting
- = Compact design
- = Input beam diameter @ $1/e^2$ = 10 mm; output beam diameter d_{Airy} = 10 mm
- = Laser induced damage threshold: 12 J/cm², 100 Hz, 6 ns, 532 nm
  For higher laser power applications please request a V-Coating. Contact us for an individual offer.
- = Usable for applications in the following beam diameter range:

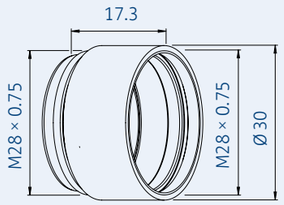


APPLICATION

Conveniently use these perfectly aligned BeamTuning elements for your application, e.g. in the fields of material processing or medical applications.



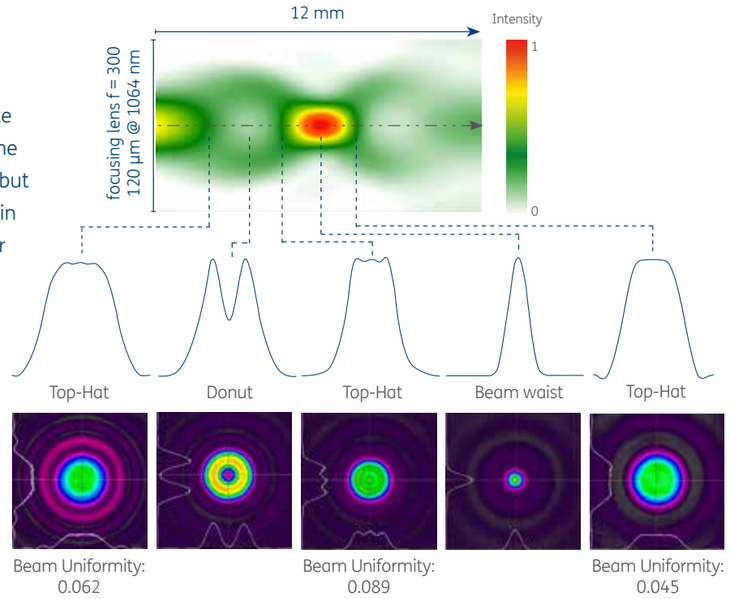
TECHNICAL DIMENSIONS



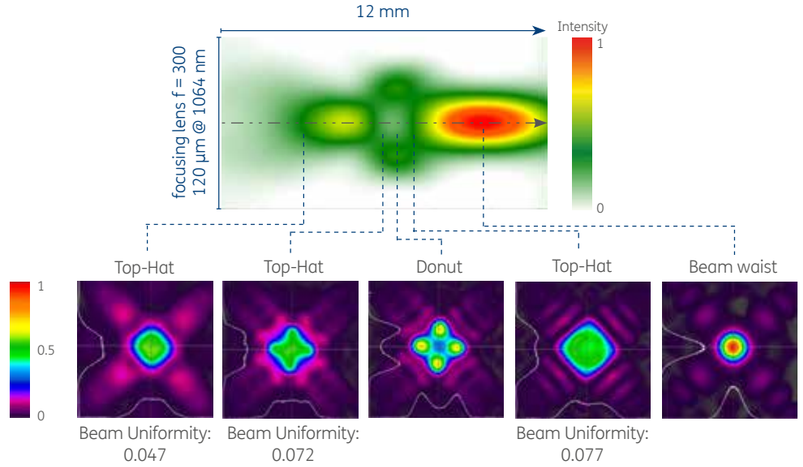
PERFORMANCE

In the figure below, beam profile cross sections along its propagation direction (z-axis) of the a|AiryShape are summarized in one diagram. The detected range is ± 6 mm around the waist location. Furthermore, the corresponding most interesting intensity profiles in the different working planes are shown as 2D and cross-sectional plots. Both plots of the characteristic beam profiles are generated with the a|AiryShape (λ = 1064 nm).

According to the working principle of the a|AiryShape, it is possible, not just to generate one Top-Hat beam profile in the focal plane of a focusing lens but also to create various profiles in different working distances for your flexibility.



The following figure shows beam profile cross sections of the a|SqAiryShape (λ = 1064 nm), as well as its intensity profiles in the different working planes. Due to the working principle of the a|SqAiryShape, not only one squared Top-Hat profile is generated in the focal region, but a variety of profiles with four-fold symmetry.

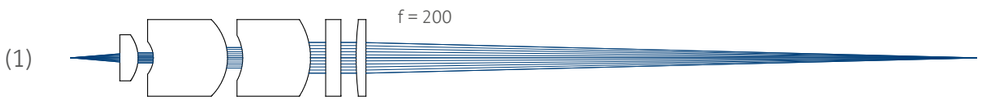


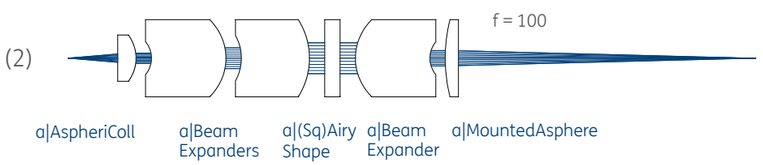
The generation of all shown beam profiles depends on the input beam quality. For optimum results a perfect collimated beam with minimized wavefront aberrations is required.

Shape it 'til you make it!

LENGTH & FLEXIBILITY

a|AiryShape and a|SqAiryShape have extremely compact designs. With lengths of only 17.3 mm, the beam shapers can easily be integrated into existing set-ups. Thanks to the optical design, the working distance can be reduced by a subsequent a|BeamExpander without altering the size of the focal intensity distribution. The example system (1) has an overall length of 290 mm. By using another a|BeamExpander (2), the length can already be reduced by 25 %, since shorter focal lengths can be used. With more a|BeamExpanders total system reductions of up to 75 % are possible.





SIZE OF THE TOP-HAT BEAM PROFILE

a|AiryShape and a|SqAiryShape are based on a modular approach, thus, only the number of elements, which are really necessary for the application, are added to the set-up. The overall length of the systems can be kept as small as possible. Following formula can be used to roughly estimate the size of the Top-Hat beam profile:

$$d_{FWHM} = 2.44 * \frac{f * \lambda}{D}$$

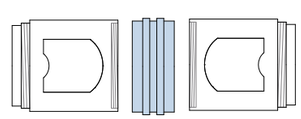
D = Input beam diameter
d = Top-Hat beam diameter (FWHM)
f = Focal length

a|Adapter

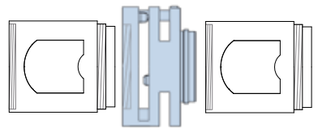
Cross-system and intra-system a|Adapters conveniently connect all BeamTuning elements to any optical set-up - without additional adjustment.

INTRA-SYSTEM

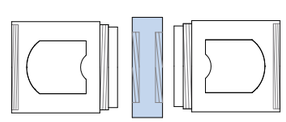
Intra-system a|Adapters allow to combine all BeamTuning elements, e.g. to use a|BeamExpander in both functional directions, to expand or reduce the beam diameter. The a|Adapter tilt can even be inclined in different directions and compensate for application-related tilts within the beam path.



a|Adapter intra-system



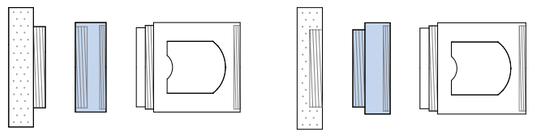
a|Adapter tilt



a|Adapter 1.2" circumference

CROSS-SYSTEM

Easy integrate all BeamTuning elements into any optical system (e.g. Qioptiq, OWIS or Edmund Optics) through a variety of mounting concepts by using the cross-system a|Adapters (C-Mount, SM1). Thanks to its outer diameter, the 1.2" circumference can be used both as intra-system and as cross-system a|Adapter.



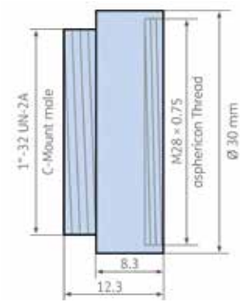
a|Adapter cross-system (female/female, male/female)

PRODUCT OVERVIEW ADAPTER TYPES

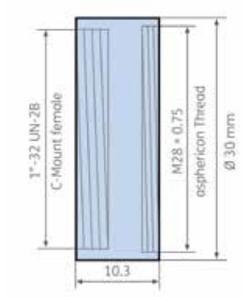
Adapter type	Product code	Thread type
C-Mount male	UAM25-28-C-MIO	male/female
C-Mount female	UAM25-28-C-MII	female/female
SM1 male	UAM25-28-SM1-MIO	male/female
SM1 female	UAM25-28-SM1-MII	female/female
Intra-System	UAM25-28-A-MOO	male/male
Tilt	UAM25-28-tilt-MIO	female/male
1.2" circumference	UAM25-28-1.2in-MII	female/female

TECHNICAL DIMENSIONS

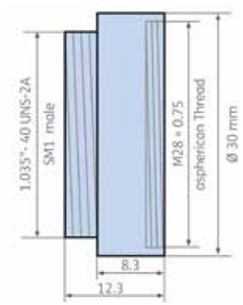
C-MOUNT MALE



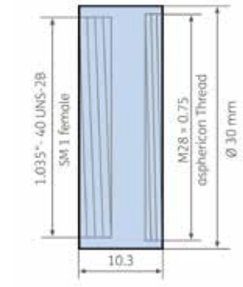
C-MOUNT FEMALE



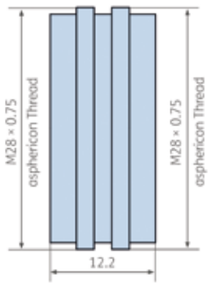
SM1 MALE



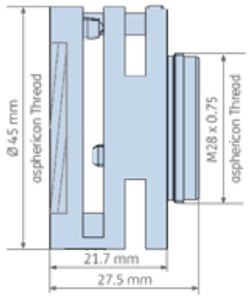
SM1 FEMALE



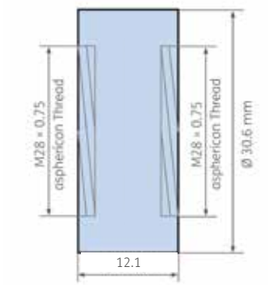
INTRA-SYSTEM



TILT



1.2" CIRCUMFERENCE (DUAL USE)



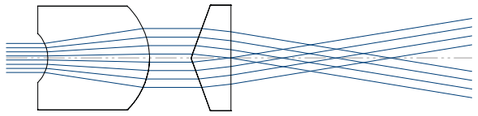
MountedOptics

Expand your laser application with the attractive selection of pre-aligned a|Aspheres, a|Axicons and a|Acylinders from the StockOptics product line in high-precision mounts. All aspheres and axicons with diameters from 12.5 mm to 25.4 mm, as well as all acylinders with diameters from 10 mm to 18 mm are perfectly aligned with < 10 µm decentration of the optical and mechanical axis. Using the a|Adapters a very simple integration into any optical system is guaranteed.

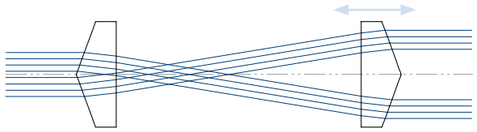
- a|MountedAspheres, a|MountedAxicons, a|MountedAcylinders
- Especially designed mounts, engraved with lens specifications
- Perfect alignment (< 10 µm decentration)
- Tilt-reduced for optimal focusing
- Modular design for high compatibility to all asphericon products and common optical systems
- Comfortable and timesaving handling

TECHNICAL DIMENSIONS

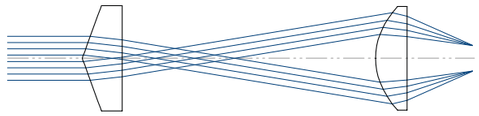
APPLICATIONS



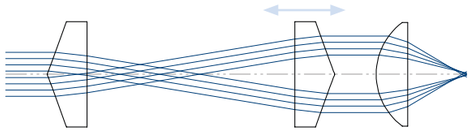
Optimizing the illumination of the axicon to adjust the length of the Bessel Beam.



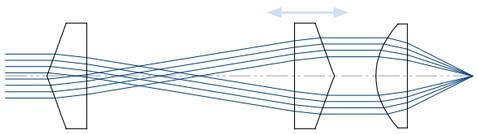
Generation of a collimated ring-shaped beam by altering the distance between the two axicons.



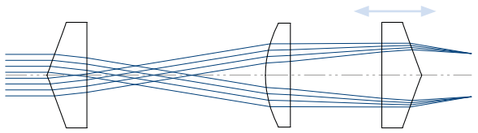
Generation of a ring focus - Distance changing through focal length of the lens, diameter changing through axicon angle.



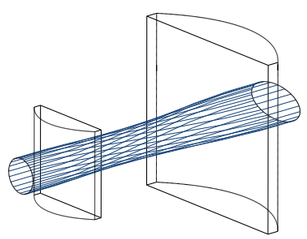
Changing the focal length of a sphere by altering the distance between the axicons and improving the performance.



Changing the focus width of an asphere by altering the distance between the axicons - Focusing under the diffraction limit.



Generation of adjustable ring foci by shifting the last axicon to vary the ring diameters.



Generate an elliptical beam by using two acylinder in an anamorphic telescope.

a|BeamBox

Regardless whether you need beam expansion, fiber collimation or beam shaping components: simply choose and combine them in one convenient a|BeamBox.

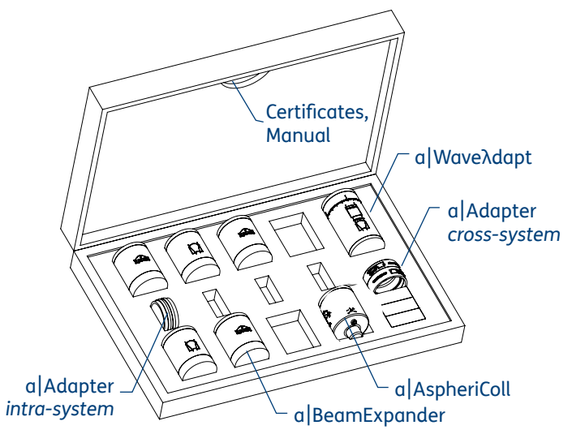
The following boxes are available:

- Essential series: Including beam expansion elements for different wavelengths
- a|TopShape & a|AiryShape series: Including beam expansion and shaping elements for different wavelengths

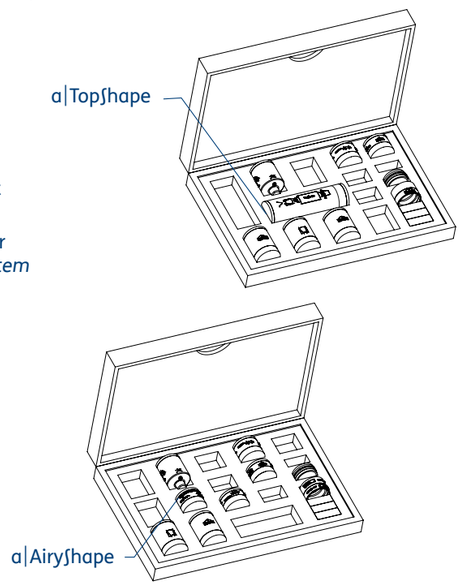
VARIATIONS

BeamBox	Possible content
a|BeamBox Essential 355	1 – 8 BeamExpander 355 nm, Adapter
a|BeamBox Essential 532	1 – 8 BeamExpander 532 nm, AspheriColl, Wavelλdapt, Adapter
a|BeamBox Essential 632	1 – 8 BeamExpander 632 nm, AspheriColl, Wavelλdapt, Adapter
a|BeamBox Essential 780	1 – 8 BeamExpander 780 nm, AspheriColl, Wavelλdapt, Adapter
a|BeamBox Essential 1064	1 – 8 BeamExpander 1064 nm, AspheriColl, Wavelλdapt, Adapter
a|BeamBox TopShape	1 – 5 BeamExpander, TopShape, AspheriColl, Adapter, MountedAspheres/Axicons
a|BeamBox AiryShape	1 – 6 BeamExpander, AiryShape, AspheriColl, Adapter, MountedAspheres

a|BEAMBOX ESSENTIAL



a|BEAMBOX TOPSHAPE/AIRYSHAPE

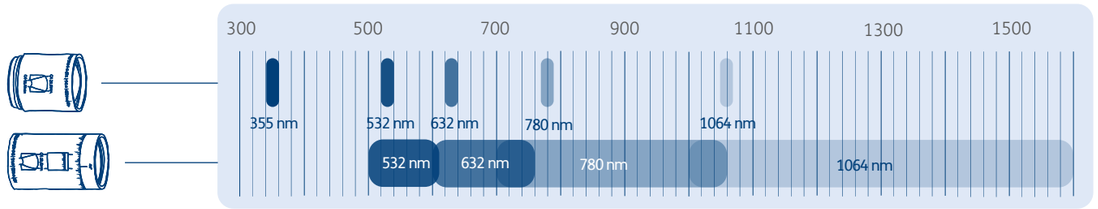


Mix & match, any combination is possible - For your individual a|BeamBox, please contact us!

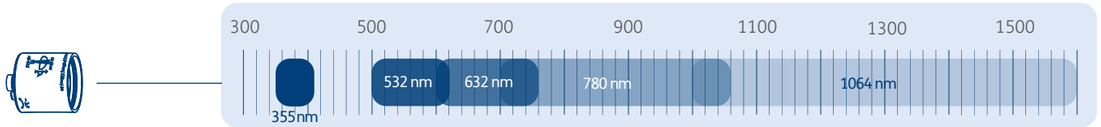
asphericon BeamTuning

Mix & Match - BeamTuning products cover almost the entire range of wavelengths. The right solution for every application.

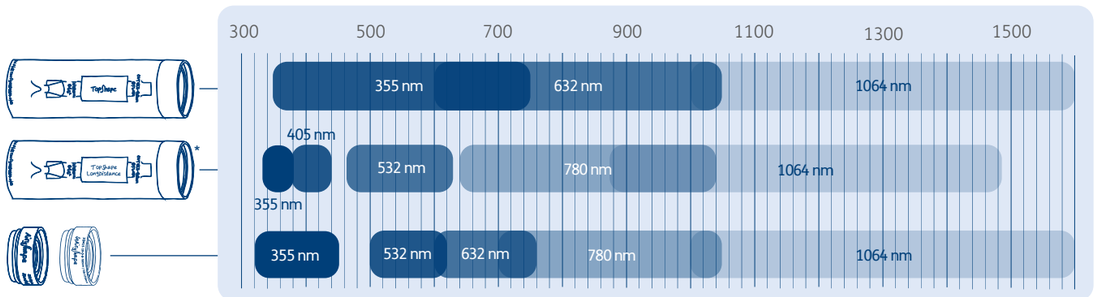
BEAMEXPANSION



FIBERCOLLIMATION



BEAMSHAPING



* For a|TopShape LongDistance wavelength ranges refer to WD 1000 mm. Respective coatings cover a wider range.

COMPLEMENTARY ELEMENTS

MountedOptics

a|MountedAspheres

a|MountedAxicons

a|MountedAcylinders

Adapters

C-Mount male

C-Mount female

SM 1 male

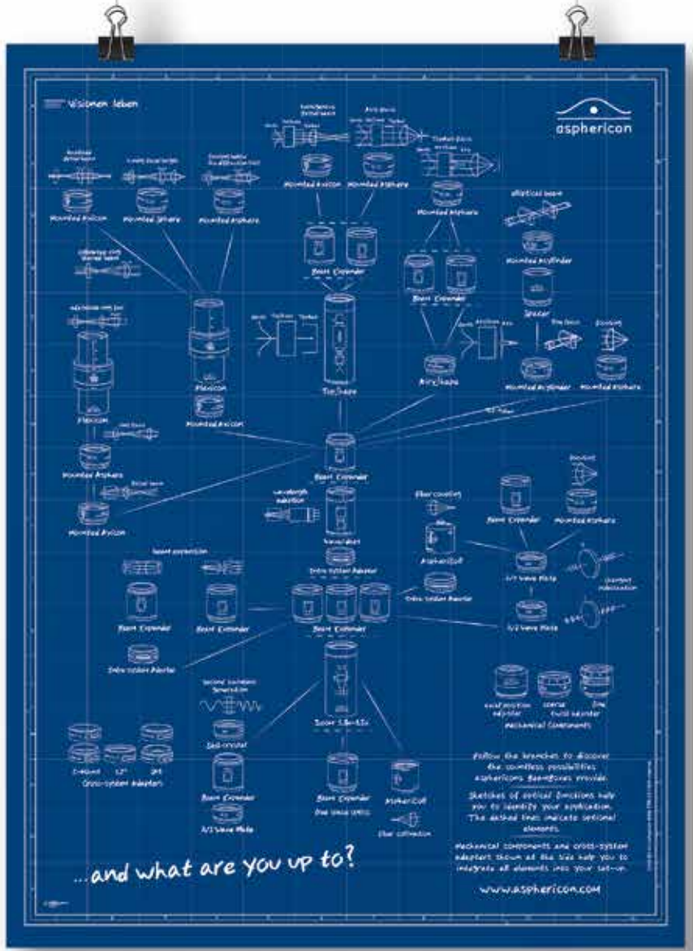
SM 1 female

1.2" circumference

Intra-System

Tilt

BeamTuning Sources



Order all elements online:

Videos:

BeamTooling App

asphericon BeamTooling is the ultimate tool for the perfect usage of BeamTuning products. Whether for applications in the lab or in the field, with this app you will find quickly and easily solutions at any time. The app is now available in the Apple and Google App Stores.

Download on the App Store

GET IT ON Google Play

asphericon GmbH

+49 (0) 3641 - 31 00 500
+49 (0) 3641 - 31 00 501
sales@asphericon.com
www.asphericon.com

Stockholmer Straße 9
07747 Jena
Germany

asphericon, Inc.

+1 941 564 0890
info@asphericon-inc.com
www.asphericon.com

2601 Cattlemen Road,
Suite 301
Sarasota, FL 34232 | USA

asphericon, s.r.o.

+420 488 100 300
sales@asphericon.cz
www.asphericon.com

Milířská 449,
Jeřmanice 463 12
Czech Republic

YOUR CONTACT:

Mr. Torsten Stephan
t.stephan@asphericon.com