OPTOMAN HIGH POWER BEAM EXPANDERS

Optics define performance in laser beam expanders. OPTOMAN IBS-coated optics have been applied in laser beam expanders, ensuring **high Laser-Induced Damage Threshold (LIDT)**, **long lifetime** and **low losses**. IBS coatings provide ultra-low absorption and high transmission, making them ideal for high-power laser applications. Designed for demanding environments, they **enhance beam quality, stability,** and **system reliability**.

Recommended when you have:

>100W @ 1030/1070 nm
>30W @ 515/532 nm
>10W @ 343/355 nm

OPTOMAN HIGH POWER ZOOM BEAM EXPANDER 1X – 4X

Features

- Diffraction limited performance for ≥Ø6 mm beam in whole expansion range even at λ=343 nm.
- Ability to sustain high laser beam energy, therefore extend laser system uptime.
- Collimation is maintained during expansion adjustment.

Designed for high-power applications

- Laser lift-off
- PCB drilling
- Glass cutting

LIDT

- >3.7 J/cm^2 @ 1030 nm, 10 ps, 10 kHz
- >1 J/cm^2 @ 515 nm, 10 ps, 10 kHz
- >0.5 J/cm^2 @ 343 nm, 1 ps, 1 kHz

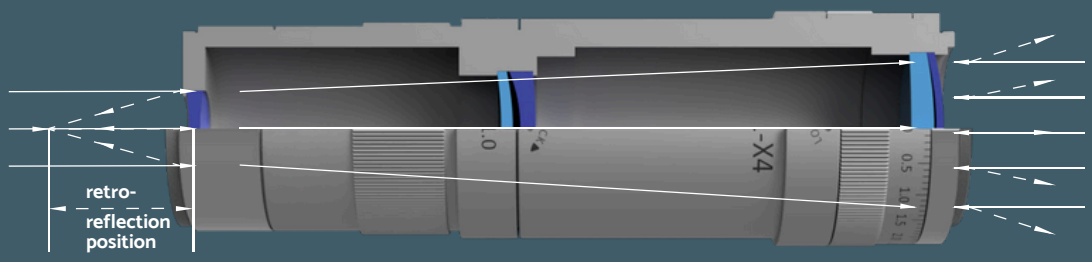
Specifications

Wavelength	343, 355, 515, 532, 1030, 1064 nm
Magnification range	1x-4x
Pointing stability	<200 µrad
Optical principle	Ever-expanding beam
Diffraction limited performance	Yes
Number of lenses	5
Transmittance	>99%
No internal ghosts	Yes
No internal ghosts in reversed	No, Ghost at x3.5
Mounting thread	SM2 on both ends
Clamping	Ø58 x 67 mm cylinder

Max recommended input beam Ø

	343-355 nm	515-532 nm	1030-1064 nm
x1 -	7 mm	8 mm	8 mm
x2 -	8 mm	9 mm	9 mm
x3 -	7 mm	8 mm	8.5 mm
x4 -	6 mm	6.5 mm	7 mm

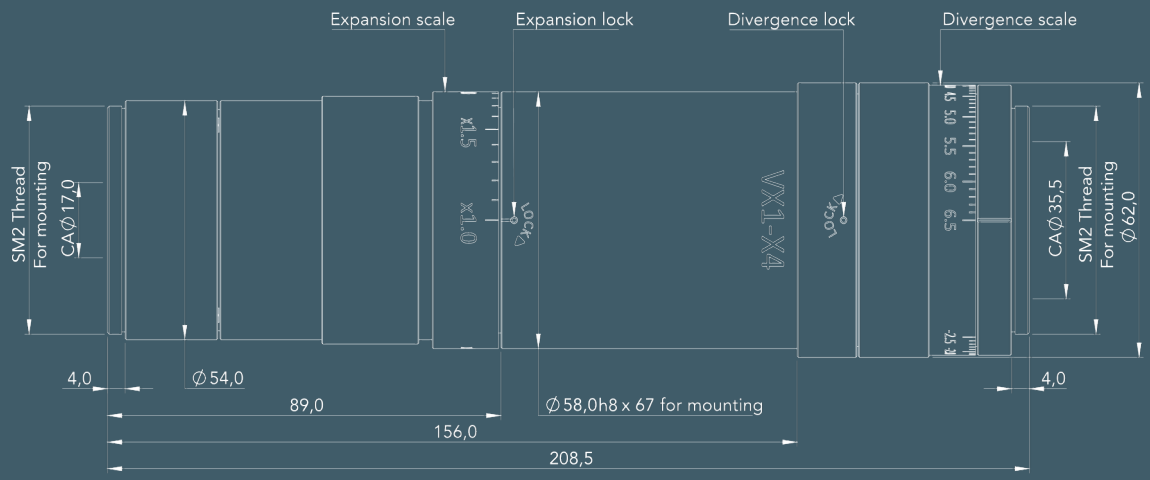
EXTERNAL RETRO-REFLECTIONS



retro-reflection position in reverse mode (none)

Retro-reflections in regular mode - at 38 mm

No retro-reflections in reverse (beam reduction) mode



ULTRA SHORT PULSE ZOOM BEAM EXPANDERS 0.5X - 1.7X

Features

- Only 7.5mm on-axis dielectric thickness makes sure the device introduces minimum GDD (Group Delay Dispersion).
- Compatible with 50 fs and shorter pulses.
- Collimation is ALWAYS maintained during expansion adjustment over the whole expansion range.

LIDT

- >3.7 J/cm^2 @ 1030 nm, 10 ps, 10 kHz
- >1 J/cm^2 @ 515 nm, 10 ps, 10 kHz
- >0.5 J/cm^2 @ 343 nm, 1 ps, 1 kHz

Designed for high power applications

- Microfabrication
- PCB drilling
- Scribing

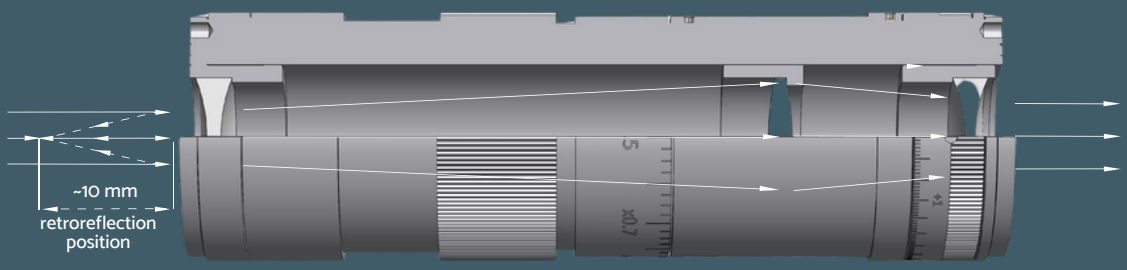
Specifications

Wavelength	343, 515, 1030 nm
Magnification range	0.5x - 1.7x
Pointing stability	<500 µrad
Optical design	Gallileo
Diffraction limited performance	Yes
Number of lenses	4
Total glass thickness	7.5 mm
Transmittance	>99%
No internal ghosts	Yes
Mounting thread	SM2 at input & output
Clamping	Ø51.9 x 42 mm cylinder

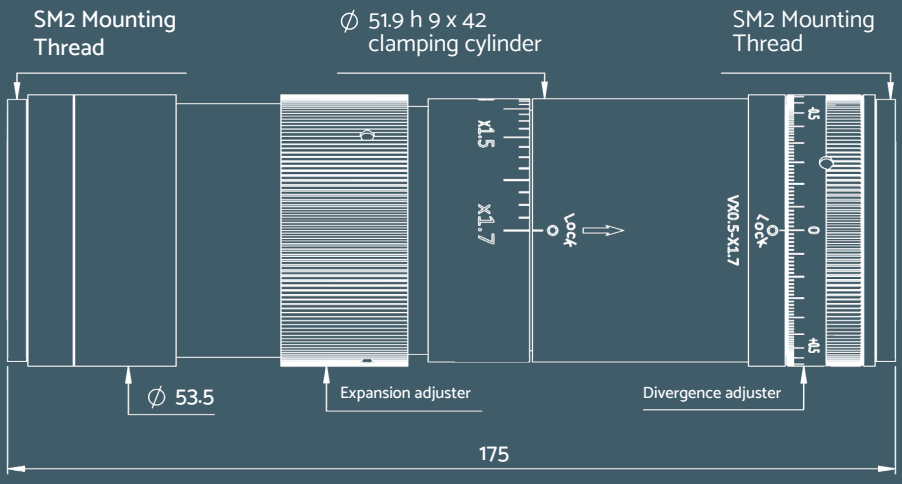
Max recommended input beam Ø

	343-355 nm	515-532 nm	1030-1074 nm
0.5x -	8 mm	9 mm	9 mm
1.0x -	7 mm	6 mm	6 mm
1.7x -	3 mm	4 mm	4 mm

EXTERNAL RETRO-REFLECTIONS



Retroreflection 10mm from the input side



ULTRA SHORT PULSE MOTORIZED ZOOM BEAM EXPANDERS 1X - 4X

Features

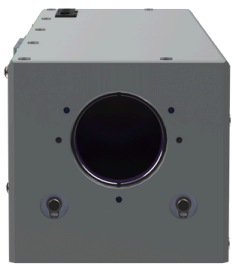
- System lifetime >2.5M cycles.
- Diffraction limited performance for ≥Ø4.5mm beam in the whole expansion range even at λ=343nm.
- Ability to sustain high laser beam energy, extending laser system uptime.
- Collimation is maintained during zooming.
- Only 7.5mm on-axis dielectric thickness makes sure the device introduces minimum GDD (Group Delay Dispersion).
- Compatible with 50 fs and shorter pulses.

LIDT

- >3.7 J/cm^2 @ 1030 nm, 10 ps, 10 kHz
- >1 J/cm^2 @ 515 nm, 10 ps, 10 kHz
- >0.5 J/cm^2 @ 343 nm, 1 ps, 1 kHz

Specifications

Wavelength	343, 355, 515, 532, 1030, 1064, 1070 nm
Magnification range	1x-4x
Divergence adjustment range	±1~5 mrad
Pointing stability	<200 µrad
Optical design	Gallileo
Diffraction limited performance	Yes
Number of lenses	4
Transmittance	>99%
No internal ghosts	Yes
No internal ghosts in reversed use	No



Max recommended input beam Ø

	343-355 nm	515-532 nm	1030-1070 nm
1x -	8 mm	8 mm	8 mm
2x -	6 mm	6 mm	6 mm
3x -	5 mm	5 mm	5 mm
4x -	4.5 mm	4.5 mm	4.5 mm

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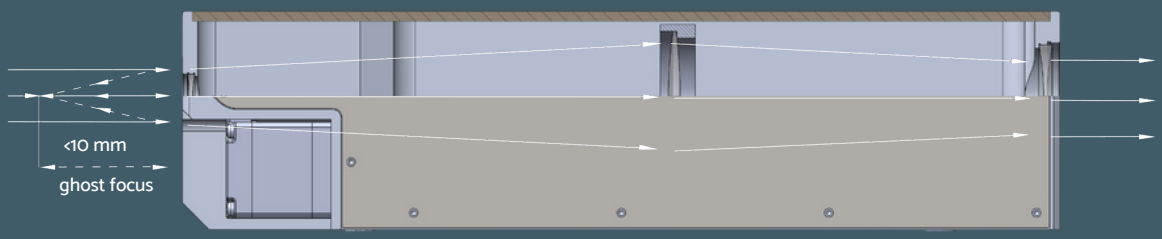
RETRO-REFLECTIONS



Ghost focus - at <10mm from the input side

MOTORIZATION RELATED SPECIFICATIONS

Zoom repeatability:	<0.3%
Divergence repeatability:	<±3 µrad
Min. zoom Increment:	0.1%
Min. divergence Increment:	1 µrad
Speed:	1-6 sec. (min to max zoom)
Control interfaces:	USB, D-SUB (DE-9), WR-TBL
Communication protocol:	RS232 and ASCII strings
Weight:	<2 kg
Dimensions:	65 x 70 x 260 mm

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HIGH POWER FIXED BEAM EXPANDERS

Features

- Large input aperture.
- Fine divergence adjustment.
- Sliding lens design.
- Hard locking.

LIDT

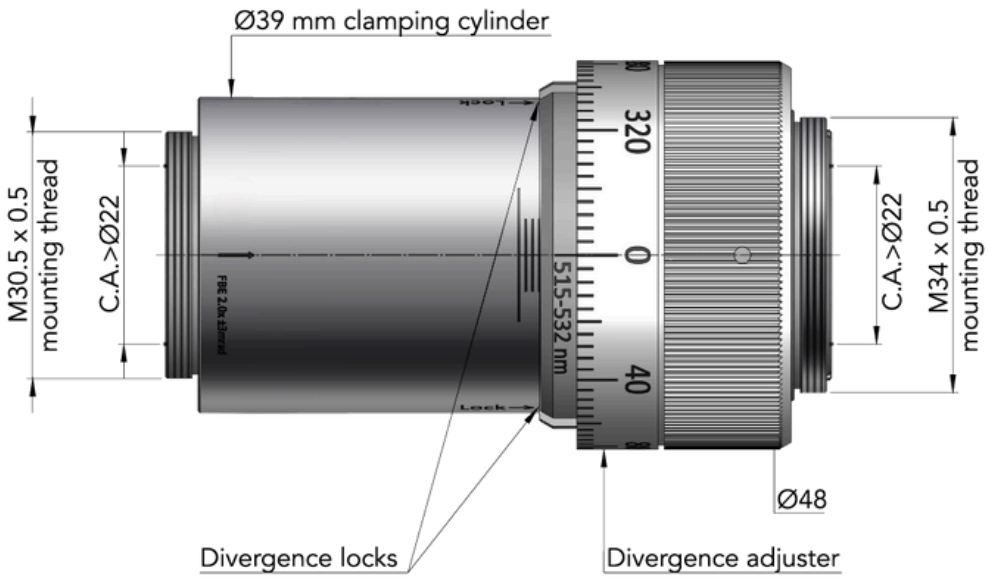
- >25 J/cm^2@ 1064 nm, 10 ns, 100 Hz
- >10 J/cm^2@ 532 nm, 10 ns, 100 Hz
- >5 J/cm^2@ 355 nm, 10 ns, 100 Hz

Designed for high power applications

- Laser marking and engraving
- Laser micro fabrication

Specifications

Wavelength	343-355, 515-532, 1030-1070 nm
Available expansions	x0.8~x2.4
Pointing stability	100 µrad
Optical design	Gallileo
Diffraction limited performance	Yes
Number of lenses	2~3
Transmittance	>99%
No internal ghosts	Yes
No internal ghosts in reversed use	Yes
Mounting thread	input M30.5 x 0.5, exit M.34 x 0.5
Clamping	Ø37.5 x 17 mm cylinder



Standard items

Expansion	Recommended max input beam Ø	Divergence adjustment range	Product ID*
0.8x-	15.5 mm	±2 mrad	FX0.8-*H
1.0x-	14 mm	±3 mrad	FX1.0-*H
1.2x-	13 mm	±1.5 mrad	FX1.2-*H
1.35x-	11.5 mm	±3 mrad	FX1.35-*H
1.5x-	10 mm	±2 mrad	FX1.5-*H
2.0x-	8 mm	±2 mrad	FX2.0-*H
2.5x-	6 mm	±2 mrad	FX2.5-*H
3.0x-	5 mm	±2 mrad	FX3.0-*H
4.0x-	4 mm	±2 mrad	FX4.0-*H

“ * ” in product ID denotes harmonics 1,2 & 3 for 1st, 2nd & 3rd harmonics respectively