



■ ビームエキスパンダー

ビームエキスパンダーは、レーザビームの直径を拡大または縮小させるための光学システムです。ビームエキスパンダーは、入力ビームを光学倍率Mだけ拡大できますが、逆向きで使用した場合のビーム光路では1/Mだけ縮小することもできます。

■ Beam expanders

Beam expanders are optical systems for increasing or decreasing the diameter of a laser beam. A beam expander can enlarge an input beam by the factor M, but it can also reduce it by the factor 1/M with a reversed optical beam path.

$$\theta_0 = \frac{\lambda}{\pi \cdot w_0} \rightarrow \theta_0 \cdot w_0 = \text{const.}$$

θ_0 = Divergenzwinkel / divergence angle
 w_0 = Strahldurchmesser (an der Taille) / beam diameter (at the waist)
 λ = Wellenlänge / wavelength

構成

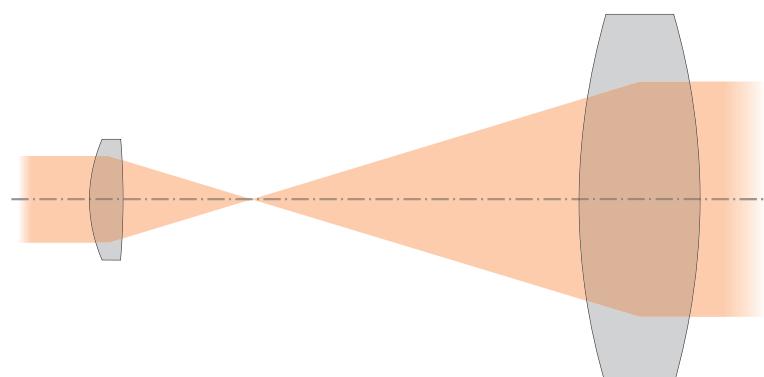
ビームエキスパンダーは、ケプラー方式とガリレオ方式の2種類あります。

ケプラー方式は、第1レンズ群でビームを集束させます。第2レンズ群は焦点の後方に配置し、発散光を再度コリメートします。

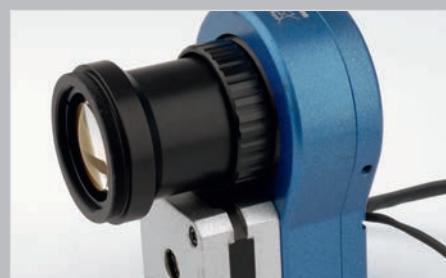
Structure

On principal a beam expander can be realized by two different types.

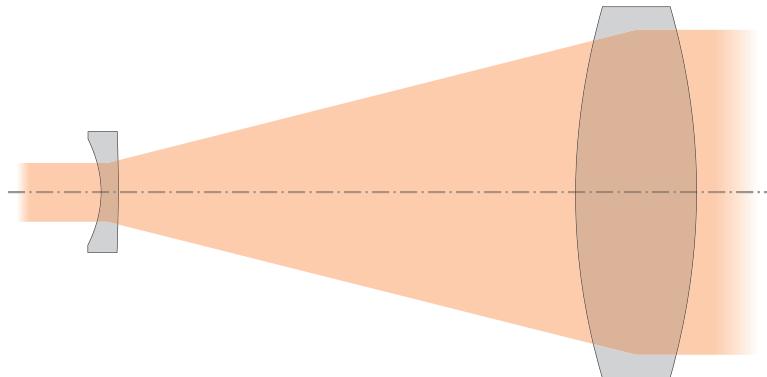
On the one hand there is the Kepler principle which consists of two focusing lens groups. The first one focusses the beam. The second lens group is positioned behind the common focus point and collimates the divergent light again.



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一方、正の焦点距離と負の焦点距離のレンズ群からなるガリレオ方式があります。第1レンズ群ではビームを発散させ、第2レンズ群でビームをコリメートします。入力ビームと出力ビームの両方が光軸に平行になります。



ガリレオ方式はケプラー方式に比べ、全長を短くすることができます。また、ケプラー方式とは対照的に内部焦点がないため、短パルスレーザに適しています。上記理由によりガリレオ方式が一般的に採用されています。

On the other hand there is the Galilei setup which consists of a dispersing and a collecting lens group. The group at the front side makes the beam divergent while the group behind collimates so that the input and the output beam are both parallel to the optical axis.

セレクション

Sill Optics社では、さまざまなシリーズのビームエキスパンダーを提供しています。「ALPHA」シリーズは、特に入射ビーム径が大きい場合に適しています。また、最大倍率4倍のコンパクトシリーズ、可変倍率のズームビームエキスパンダーもご用意しています。さらに、266nm～1980nmの波長を有するレーザー用に電動ズーム/発散角調整可能な電動モータ式のタイプ、ハイパワー用として熱影響を避けるために低吸収コーティングのタイプをご用意しています。

カタログ項目部で ● がマークされているタイプは内部ゴーストがフリーになるよう設計しています。短パルスレーザー用に適しています。

The Galilei principle enables beam expanders with short overall lengths. In contrast to the Kepler structure there is no internal focus point, which can result in a critical rise of temperature inside the lens if the distance to the neighbored lenses is too small. Therefor this type is suitable for short pulsed lasers. Because of these crucial advantages over the Kepler principle the Galilei principle is often the first choice.

Selection

Sill Optics offers different series of beam expanders. The "ALPHA" series is especially for great entrance beam diameters. The portfolio also includes a compact series with a maximum magnification of 4x and zoom beam expanders with a variable magnification for a specified region. Furthermore there are motorized beam expanders with an electrical divergence and/or zoom control and versions for lasers with wavelengths between 266nm and 1,980nm. The beam expanders include fused silica lenses with a low-absorption coating to avoid excessive heat.

The identification ● points out that the equivalent beam expander does not have any internal ghosts for the magnifying case. These products withstand high strain even with small beam diameters and they are suitable for short pulse lasers.

If there is a special combination from magnification, wavelength and maximum input beam diameter not existent in the catalogue you can request it nevertheless.

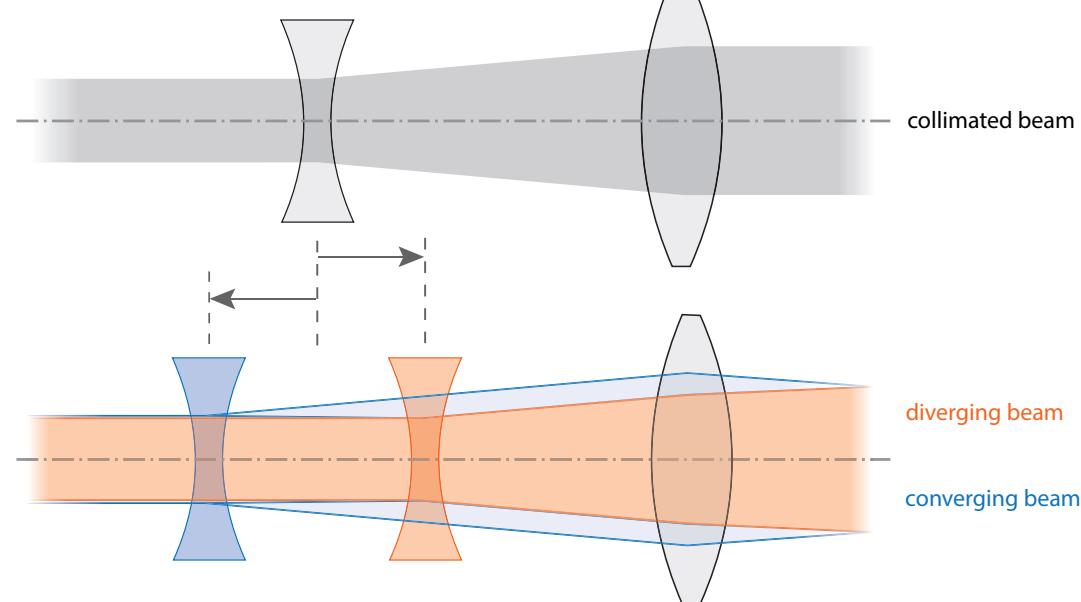
ビームエキスパンダー

Beam expanders

発散角調整

Sill Optics社製のすべてのビームエキスパンダーには、機械的または電気的に発散角を調整可能な機能があります。この機能により、レーザー固有の発散などを補正してコリメート光を出射することが可能になります。さらに、ビームをデフォーカスすることもできます。

第1レンズ群と第2レンズ群との間の距離が短くなると、出力ビームはより発散します(図を参照)。一方、距離が大きくなると、ビームはより収束します。(図の下部を参照)



発散角調整は、高倍率の場合に非常に有効的です。逆に低倍率時の発散角調整はうまく働かないケースがあります。

Sill社の発散角調整用の目盛はレンズの距離の変化(mm)を表します。通常、 $\pm 3\text{mm}$ の領域で変更することができます。カスタム仕様の場合、3mm以上の調整範囲でも製作可能です。

ズームビームエキスパンダー

ズームビームエキスパンダーの利点は倍率を可変調整できることです。手動またはモータ式の可変調整は、1~3倍または1~8倍の倍率可変を可能にします。欠点は、固定倍率のタイプに比べてビーム品質が落ちることです。さらに、ほとんどのズームビームエキスパンダーでは内部ビームで縮小するため、レンズ要素に高密度またはエネルギー密度が生じる可能性があります。そのため、可能であれば、固定倍率のビームエキスパンダーを使用することを推奨しています。

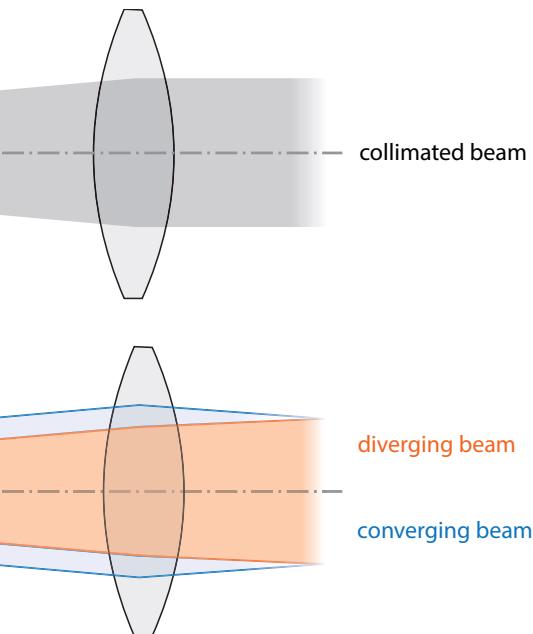
Sill Optics社のズームビームエキスパンダーには発散角調整機能が付いています。

ご希望に応じて、リモート制御による発散または倍率を電動モータで調整するタイプもご用意しています。データシート、マニュアルなどが必要な際はお問合せください。

Divergence adjustment

Every beam expander from Sill Optics has a mechanical or electrical divergence adjustment available. This enables a compensation of the inherent laser divergence and an optimal collimation. Furthermore the beam can be focused (convergent beam path), defocused (divergent beam path) systematically.

A decreasing distance between the first and second lens group makes the output beam more divergent (see middle of the figure). On the other hand an increasing distance makes the beam more convergent (see lower part of the figure).



The divergence adjustment is very sensible for a high magnification. Reversely, standard divergence adjustments in combination with small magnifications do not suffice in some cases.

The scale for the divergence adjustment of Sill lenses specifies the lens distance change [mm]. Normally it can be varied in a region of $\pm 3\text{mm}$. In case of custom specific special lenses the adjustment range can even exceed 3mm .

Zoom beam expanders

A tunable magnification is the main advantage of zoom beam expanders. A manual or motorized variable adjustment enables a 1 to 3 times or respectively a 1 to 8 times variation of the magnification. For that zoom beam expanders are more flexible than normal ones. A disadvantage is a lower beam quality. Furthermore most of the zoom beam expanders have a short-term internal beam reduction. This can result in high power or rather energy densities on top of the lens elements. Because of that reasons it is only recommended to use zoom beam expanders if it is really necessary. The suitability for high power and short pulsed lasers should be cleared up before.

The zoom beam expanders from Sill Optics also have a separate divergence adjustment which can be varied independent of the magnification.

Depending on your wishes an electrical adjustment of the divergence or the magnification or both by a computer is possible. Instructions and manuals are available on request.

セットアップ

特にズームビームエキスパンダーでは、光学セットアップ全体の位置決めが重要な役割を果たします。光軸とエキスパンダーとの間に傾きがあると、光軸の位置ズレが生じます。正確な位置決め、またはそのような位置の変動を補正できるセットアップが、光学システム全体の最適な光路に必要です。

Sill Optics社は、アクセサリーとし光軸調整可能なマウント(S5SET125およびS5SET150)をご用意しています。

さらに、ビームエキスパンダーのCマウント部で固定する代わりに、中央のクランプリングでズームビームエキスパンダーを固定することを推奨します。

Holding and positioning

Especially for zoom beam expanders the positioning inside the whole optical setup has an important role to play. A tilt between the optical axis and the expander can result in a high pointing default. Pointing means the lateral aberration of the laser beam or the change of direction after the beam expander depending on the zoom adjustment. Exact positioning or alternatively a setup which is able to compensate such position variations is necessary for an optimal light ray path through the whole setup.

Sill Optics offers two adjustable mounts (S5SET0125 and S5SET0150) with these adjustment possibilities as an accessories.

Furthermore for a horizontal setup it is better to fix the long zoom beam expanders with a central clamping ring instead of using the lateral C-Mount. For more details we are looking forward to supporting you.

合成石英を使用したビームエキスパンダーシリーズ「ALPHA」（Absorption Low Plus High Aperture）は、大きいレーザービーム径のために特別に設計されています。高出力レーザーでは、一般的に $\phi 6\sim 9\text{mm}$ ($1/e^2$)の平行光によるビーム径を放射します。この場合、フルサイズのビーム径は $\phi 18\text{mm}$ になります。このビーム径を制限してしまうと、出力は大幅に損失し、ビームエキスパンダーを加熱させ、損傷の原因になります。特に高出力のレーザーでは、1,030nm～1,090nmのAR(+低熱吸収)コーティングを推奨します。ご希望の波長帯域向けに「ALPHA」シリーズのビームエキスパンダーをご希望される場合は、別途お問合せください。



■ 1030-1090 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture	max. Eintritts-Ø [mm]	freie Ausgangsapertur max. exit aperture	max. Außen-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6ASS6008/328	0.8	12.0	12.0	20.0	46.0	58.0	M30x1
S6ASS0807/328	1.1	25.5	22.0	50.0	77.0	84.0	M30x1
S6ASS6012/328	1.2	12.0	12.0	28.0	46.0	85.0	M30x1
S6ASS0812/328	1.2	25.5	22.0	50.0	77.0	84.0	M30x1
S6ASS3116/328	1.5	25.5	22.0	50.0	77.0	84.0	M30x1
S6ASS0884/328	1.8	25.5	22.0	50.0	77.0	84.0	M30x1
S6ASS3121/328	2.0	24.0	22.0	50.0	77.0	120.2	M30x1
S6ASS3126/328	2.5	25.5	18.0	50.0	77.0	138.4	M30x1
S6ASS3132/328	3.0	25.5	16.0	50.0	77.0	150.2	M30x1
S6ASS5040/328	4.0	14.0	9.0	31.0	77.0	100.9	M30x1
S6ASS3140/328	4.0	24.0	12.0	50.0	77.0	249.0	M30x1
S6ASS5065/328	5.0	10.0	8.0	50.0	77.0	104.5	M30x1
S6ASS5070/328	6.0	10.0	7.0	50.0	77.0	104.5	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request

標準サイズのビームエキスパンダーシリーズでは、波長は266nm～1,980nm、倍率は1.5x～20xまでの合成石英を使用した製品を取り揃えています。コリメーションのレンズ系は、エアースペース型の2枚組のレンズを使用し、収差を最小限に抑え、回折限界に近い性能を実現しています。さらに、ビームの拡がり角を容易に調整することができます。設計はガリレイ式を採用しているため内部に焦点を持ちません。また、ケプラー式に比べて光学系の全長が短いです。



■ 1850 - 1980 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture	max. Eintritts-Ø max. input beam-Ø	freie Ausgangsapertur max. exit aperture	max. Außen-Ø max. outside-Ø	Länge length	Anschlussgewinde thread
		[mm]	[mm]	[mm]	[mm]	[mm]	
S6EXP0015/159 ¹	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/159 ¹	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0025/159 ¹	2.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/159 ¹	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0040/159 ¹	4.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/159 ¹	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0060/159 ¹	6.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0070/159 ¹	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0080/159 ¹	8.0	8.0	3.5	31.0	46.0	85.0	M30x1
S6EXP0090/159 ¹	9.0	8.0	3.0	31.0	46.0	85.0	M30x1
S6EXP0100/159 ¹	10.0	6.0	2.5	31.0	46.0	85.0	M30x1
S6EXP0120/159 ¹	12.0	8.0	2.2	31.0	46.0	85.0	M30x1

¹für Wellenlänge 1850-1980 nm - bei Verwendung der Sonderoptiken zum Schweißen von Kunststoffen, kann das Patent EP 1 098 751 B1 der Firma Lisa Laser products OHG Fuhrberg & Teichmann, Kaltenburg-Lindau, verletzt werden / for wavelength 1850-1980 nm - when using special optics for welding of plastics, the patent EP 1 098 751 B1 owned by Lisa laser products OHG Fuhrberg & Teichmann, Kaltenburg-Lindau, may be infringed

■ 1550 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture	max. Eintritts-Ø max. input beam-Ø	freie Ausgangsapertur max. exit aperture	max. Außen-Ø max. outside-Ø	Länge length	Anschlussgewinde thread
		[mm]	[mm]	[mm]	[mm]	[mm]	
S6EXP0015/008	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/008	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0025/008	2.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/008	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0040/008	4.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/008	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0060/008	6.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0070/008	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0080/008	8.0	8.0	3.5	31.0	46.0	85.0	M30x1
S6EXP0090/008	9.0	8.0	3.0	31.0	46.0	85.0	M30x1
S6EXP0100/008	10.0	6.0	2.5	31.0	46.0	85.0	M30x1
S6EXP0120/008	12.0	8.0	2.2	31.0	46.0	85.0	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request



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■ 1030 - 1090 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXP0015/328 ●	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/328 ●	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0025/328 ●	2.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/328 ●	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0040/328 ●	4.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/328 ●	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0060/328 ●	6.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0070/328 ●	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0080/328 ●	8.0	8.0	3.5	31.0	46.0	85.0	M30x1
S6EXP0090/328 ●	9.0	8.0	3.0	31.0	46.0	85.0	M30x1
S6EXP0100/328 ●	10.0	6.0	2.5	31.0	46.0	85.0	M30x1
S6EXP0120/328 ●	12.0	8.0	2.2	31.0	46.0	85.0	M30x1
S6EXP0150/328 ●	15.0	6.0	1.8	31.0	46.0	85.0	M30x1
S6EXP0200/328 ●	20.0	5.0	1.4	31.0	46.0	86.4	M30x1

■ 808 - 980 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXP0020/094 ●	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/094 ●	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/094 ●	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0100/094 ●	10.0	6.0	2.5	31.0	46.0	85.0	M30x1

■ 515 - 545 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXP0015/292 ●	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/292 ●	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0025/292 ●	2.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/292 ●	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0040/292 ●	4.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/292 ●	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0060/292 ●	6.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0070/292 ●	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0080/292 ●	8.0	8.0	3.5	31.0	46.0	85.0	M30x1
S6EXP0090/292 ●	9.0	8.0	3.0	31.0	46.0	85.0	M30x1
S6EXP0100/292 ●	10.0	6.0	2.5	31.0	46.0	85.0	M30x1
S6EXP0120/292 ●	12.0	8.0	2.2	31.0	46.0	85.0	M30x1
S6EXP0150/292 ●	15.0	6.0	1.8	31.0	46.0	85.0	M30x1
S6EXP0200/292 ●	20.0	5.0	1.4	31.0	46.0	85.0	M30x1

■ 405 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXP0015/173 ●	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/173 ●	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/173 ●	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/173 ●	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0070/173 ●	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0100/173 ●	10.0	6.0	2.5	31.0	46.0	85.0	M30x1
S6EXP0200/173 ●	20.0	5.0	1.4	31.0	46.0	85.0	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request

■ 343 - 355 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture	max. Eintritts-Ø max. input beam-Ø	freie Ausgangsapertur max. exit aperture	max. Außen-Ø max. outside-Ø	Länge length	Anschlussgewinde thread
		[mm]	[mm]	[mm]	[mm]	[mm]	
S6EXP0015/574 ●	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/574 ●	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0025/574 ●	2.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/574 ●	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0040/574 ●	4.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/574 ●	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0060/574 ●	6.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0070/574 ●	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0080/574 ●	8.0	8.0	3.5	31.0	46.0	85.0	M30x1
S6EXP0090/574 ●	9.0	8.0	3.0	31.0	46.0	85.0	M30x1
S6EXP0100/574 ●	10.0	6.0	2.5	31.0	46.0	85.0	M30x1
S6EXP0120/574 ●	12.0	8.0	2.2	31.0	46.0	85.0	M30x1
S6EXP0150/574 ●	15.0	6.0	1.8	31.0	46.0	85.0	M30x1
S6EXP0200/574 ●	20.0	5.0	1.4	31.0	46.0	85.0	M30x1

■ 355 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture	max. Eintritts-Ø max. input beam-Ø	freie Ausgangsapertur max. exit aperture	max. Außen-Ø max. outside-Ø	Länge length	Anschlussgewinde thread
		[mm]	[mm]	[mm]	[mm]	[mm]	
S6EXP0015/075 ●	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/075 ●	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0025/075 ●	2.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/075 ●	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0040/075 ●	4.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/075 ●	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0060/075 ●	6.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0070/075 ●	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0080/075 ●	8.0	8.0	3.5	31.0	46.0	85.0	M30x1
S6EXP0090/075 ●	9.0	8.0	3.0	31.0	46.0	85.0	M30x1
S6EXP0100/075 ●	10.0	6.0	2.5	31.0	46.0	85.0	M30x1
S6EXP0120/075 ●	12.0	8.0	2.2	31.0	46.0	85.0	M30x1
S6EXP0150/075 ●	15.0	6.0	1.8	31.0	46.0	85.0	M30x1
S6EXP0200/075 ●	20.0	5.0	1.4	31.0	46.0	85.0	M30x1

■ 266 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture	max. Eintritts-Ø max. input beam-Ø	freie Ausgangsapertur max. exit aperture	max. Außen-Ø max. outside-Ø	Länge length	Anschlussgewinde thread
		[mm]	[mm]	[mm]	[mm]	[mm]	
S6EXP0015/199 ●	1.5	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0020/199 ●	2.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0030/199 ●	3.0	8.0	6.0	31.0	46.0	85.0	M30x1
S6EXP0050/199 ●	5.0	8.0	5.5	31.0	46.0	85.0	M30x1
S6EXP0070/199 ●	7.0	8.0	4.0	31.0	46.0	85.0	M30x1
S6EXP0100/199 ●	10.0	6.0	2.5	31.0	46.0	85.0	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request



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■ 1030-1090 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXK0008/328 ●	0.8	12.0	10.0	12.0	44.0	44.7	M30x1
S6EXK0010/328 ●	1.0	12.0	10.0	14.0	44.0	44.7	M30x1
S6EXK0012/328 ●	1.2	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0015/328 ●	1.5	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0020/328 ●	2.0	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0025/328 ●	2.5	11.0	8.0	26.0	44.0	44.7	M30x1
S6EXK0030/328 ●	3.0	8.0	6.0	26.0	44.0	44.7	M30x1
S6EXK0035/328 ●	3.5	8.0	4.0	20.0	44.0	44.7	M30x1
S6EXK0040/328 ●	4.0	8.0	4.0	20.0	44.0	44.7	M30x1

■ 515-545 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXK0008/292 ●	0.8	12.0	10.0	12.0	44.0	44.7	M30x1
S6EXK0010/292 ●	1.0	12.0	10.0	14.0	44.0	44.7	M30x1
S6EXK0012/292 ●	1.2	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0015/292 ●	1.5	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0020/292 ●	2.0	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0025/292 ●	2.5	11.0	8.0	26.0	44.0	44.7	M30x1
S6EXK0030/292 ●	3.0	8.0	6.0	26.0	44.0	44.7	M30x1
S6EXK0035/292 ●	3.5	8.0	4.0	20.0	44.0	44.7	M30x1
S6EXK0040/292 ●	4.0	8.0	4.0	20.0	44.0	44.7	M30x1

■ 343-355 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXK0008/574 ●	0.8	12.0	10.0	12.0	44.0	44.7	M30x1
S6EXK0010/574 ●	1.0	12.0	10.0	14.0	44.0	44.7	M30x1
S6EXK0012/574 ●	1.2	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0015/574 ●	1.5	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0020/574 ●	2.0	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0025/574 ●	2.5	11.0	8.0	26.0	44.0	44.7	M30x1
S6EXK0030/574 ●	3.0	8.0	6.0	26.0	44.0	44.7	M30x1
S6EXK0035/574 ●	3.5	8.0	4.0	20.0	44.0	44.7	M30x1
S6EXK0040/574 ●	4.0	8.0	4.0	20.0	44.0	44.7	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request

■ 355 nm

Artikelnummer part number	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	max. Außen-Ø <i>max. outside-Ø</i> [mm]	Länge <i>length</i> [mm]	Anschlussgewinde <i>thread</i>
S6EXK0008/075 ●	0.8	12.0	10.0	12.0	44.0	44.7	M30x1
S6EXK0012/075 ●	1.2	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0015/075 ●	1.5	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0020/075 ●	2.0	12.0	10.0	26.0	44.0	44.7	M30x1
S6EXK0025/075 ●	2.5	11.0	8.0	26.0	44.0	44.7	M30x1
S6EXK0030/075 ●	3.0	8.0	6.0	26.0	44.0	44.7	M30x1
S6EXK0035/075 ●	3.5	8.0	4.0	20.0	44.0	44.7	M30x1
S6EXK0040/075 ●	4.0	8.0	4.0	20.0	44.0	44.7	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request



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EXPシリーズのビームエキスパンダーは拡がり角調整機構をリモート制御に変更することができます。光学仕様は変わりません。モーターアダプターにより、6mmの調整幅を2400ステップの分解能でを提供します。



■ 1850-1980 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Abmessungen dimension [mm x mm x mm]	Anschlussgewinde thread
S6EXM0015/159 ¹	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/159 ¹	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0025/159 ¹	2.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/159 ¹	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0040/159 ¹	4.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/159 ¹	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0060/159 ¹	6.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/159 ¹	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0080/159 ¹	8.0	8.0	3.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0090/159 ¹	9.0	8.0	3.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/159 ¹	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0120/159 ¹	12.0	8.0	2.2	31.0	65.0 x 97.5 x 85.1	M30x1

¹für Wellenlänge 1850-1980 nm - bei Verwendung der Sonderoptiken zum Schweißen von Kunststoffen, kann das Patent EP 1 098 751 B1 der Firma Lisa Laser products OHG Fuhrberg & Teichmann, Kaltenberg-Lindau, verletzt werden / for wavelength 1850-1980 nm - when using special optics for welding of plastics, the patent EP 1 098 751 B1 owned by Lisa laser products OHG Fuhrberg & Teichmann, Kaltenburg-Lindau, may be infringed

■ 1550 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Abmessungen dimension [mm x mm x mm]	Anschlussgewinde thread
S6EXM0015/008	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/008	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0025/008	2.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/008	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0040/008	4.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/008	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0060/008	6.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/008	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0080/008	8.0	8.0	3.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0090/008	9.0	8.0	3.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/008	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0120/008	12.0	8.0	2.2	31.0	65.0 x 97.5 x 85.1	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request

■ 1030 - 1090 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Abmessungen dimension [mm x mm x mm]	Anschlussgewinde thread
S6EXM0015/328 ●	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/328 ●	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0025/328 ●	2.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/328 ●	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0040/328 ●	4.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/328 ●	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0060/328 ●	6.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/328 ●	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0080/328 ●	8.0	8.0	3.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0090/328 ●	9.0	8.0	3.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/328 ●	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0120/328 ●	12.0	8.0	2.2	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0150/328 ●	15.0	6.0	1.8	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0200/328 ●	20.0	5.0	1.4	31.0	65.0 x 97.5 x 85.1	M30x1

■ 808 - 980 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Abmessungen dimension [mm x mm x mm]	Anschlussgewinde thread
S6EXM0020/094 ●	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/094 ●	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/094 ●	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/094 ●	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1

■ 515 - 545 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Abmessungen dimension [mm x mm x mm]	Anschlussgewinde thread
S6EXM0015/292 ●	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/292 ●	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0025/292 ●	2.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/292 ●	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0040/292 ●	4.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/292 ●	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0060/292 ●	6.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/292 ●	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0080/292 ●	8.0	8.0	3.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0090/292 ●	9.0	8.0	3.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/292 ●	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0120/292 ●	12.0	8.0	2.2	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0150/292 ●	15.0	6.0	1.8	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0200/292 ●	20.0	5.0	1.4	31.0	65.0 x 97.5 x 85.1	M30x1

■ 405 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Abmessungen dimension [mm x mm x mm]	Anschlussgewinde thread
S6EXM0015/173 ●	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/173 ●	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/173 ●	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/173 ●	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/173 ●	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/173 ●	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0200/173 ●	20.0	5.0	1.4	31.0	65.0 x 97.5 x 85.1	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request



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■ 343 - 355 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>dimension</i> [mm x mm x mm]	Anschlussgewinde <i>thread</i>
S6EXM0015/574 ●	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/574 ●	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0025/574 ●	2.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/574 ●	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0040/574 ●	4.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/574 ●	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0060/574 ●	6.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/574 ●	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0080/574 ●	8.0	8.0	3.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0090/574 ●	9.0	8.0	3.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/574 ●	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0120/574 ●	12.0	8.0	2.2	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0150/574 ●	15.0	6.0	1.8	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0200/574 ●	20.0	5.0	1.4	31.0	65.0 x 97.5 x 85.1	M30x1

■ 355 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>dimension</i> [mm x mm x mm]	Anschlussgewinde <i>thread</i>
S6EXM0015/075 ●	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/075 ●	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0025/075 ●	2.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/075 ●	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0040/075 ●	4.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/075 ●	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0060/075 ●	6.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/075 ●	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0080/075 ●	8.0	8.0	3.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0090/075 ●	9.0	8.0	3.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/075 ●	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0120/075 ●	12.0	8.0	2.2	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0150/075 ●	15.0	6.0	1.8	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0200/075 ●	20.0	5.0	1.4	31.0	65.0 x 97.5 x 85.1	M30x1

■ 266 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>dimension</i> [mm x mm x mm]	Anschlussgewinde <i>thread</i>
S6EXM0015/199 ●	1.5	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0020/199 ●	2.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0030/199 ●	3.0	8.0	6.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0050/199 ●	5.0	8.0	5.5	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0070/199 ●	7.0	8.0	4.0	31.0	65.0 x 97.5 x 85.1	M30x1
S6EXM0100/199 ●	10.0	6.0	2.5	31.0	65.0 x 97.5 x 85.1	M30x1

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request

ズームビームエキスパンダーは、高度に補正された4枚のレンズで構成された光学系です。拡がり角調整および倍率設定はそれぞれ独立しているため、非常に使いやすい構成になっております。さらに、ビームエキスパンダーの全長は、倍率または拡がり角を調整しても変わりません。



■ 1850 - 1980 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXZ5310/159 ¹	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	C-mount
S6EXZ5311/159 ¹	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	M30x1

¹ Für Wellenlänge 1850-1980 nm - bei Verwendung der Sonderoptiken zum Schweißen von Kunststoffen, kann das Patent EP 1 098 751 B1 der Firma Lisa Laser products OHG Fuhrberg & Teichmann, Kaltenburg-Lindau, verletzt werden / For wavelength 1850-1980 nm - when using special optics for welding of plastics, the patent EP 1 098 751 B1 owned by Lisa laser products OHG Fuhrberg & Teichmann, Kaltenburg-Lindau, may be infringed

■ 1550 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXZ5310/008	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	C-mount
S6EXZ5311/008	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	M30x1

■ 1030 - 1090 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXZ5310/328	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	C-mount
S6EXZ5311/328	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	M30x1
S6EXZ5312/328	1.2-3.0	18.5	18.0 (1.2x) - 14.0 (3x)	43.0	80.0	230.2	M30x1
S6EXZ5076/328	1.0-8.0	10.3	9.0 (1x) - 3.5 (8x)	31.0	58.0	162.0	C-mount

■ 515 - 545 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXZ5310/292	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	C-mount
S6EXZ5311/292	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	M30x1
S6EXZ5312/292	1.2-3.0	18.5	18.0 (1.2x) - 14.0 (3x)	43.0	80.0	230.2	M30x1
S6EXZ5076/292	1.0-8.0	10.3	9.0 (1x) - 3.5 (8x)	31.0	58.0	162.0	C-mount

■ 343 - 355 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXZ5310/574	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	C-mount
S6EXZ5311/574	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	M30x1
S6EXZ5075/574	1.0-8.0	10.3	9.0 (1x) - 3.5 (8x)	31.0	58.0	162.0	C-mount

■ 355 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	max. Außen-Ø max. outside-Ø [mm]	Länge length [mm]	Anschlussgewinde thread
S6EXZ5310/075	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	C-mount
S6EXZ5311/075	1.0-3.0	10.5	9.0 (1x) - 6.0 (3x)	20.0	47.0	85.2	M30x1
S6EXZ5075/075	1.0-8.0	10.3	9.0 (1x) - 3.5 (8x)	31.0	58.0	162.0	C-mount

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request



■ 266 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	max. Außen-Ø <i>max. outside-Ø</i> [mm]	Länge <i>length</i> [mm]	Anschlussgewinde <i>thread</i>
S6EXZ5075/199 ●	1.0 - 8.0	10.3	9.0 (1x) - 3.5 (8x)	31.0	58.0	162.0	C-mount

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request

標準用途向けとして、倍率設定をパソコンからリモート制御で行うためにモーターアダプターを組み込んだタイプも提供しております。拡がり角の調整は本体から手動で行う必要があります。



■ 1550 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Breite x Höhe width x height [mm x mm]	Länge length [mm]	Anschlussgewinde thread
NEW S6EZM5310/008	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	C-mount
NEW S6EZM5311/008	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	M30x1
NEW S6EZM5076/008	● 1.0-8.0	10.0	9.0 (1x) - 3.5 (8x)	30.0	97.5 x 65.0	162.0	C-Mount

■ 1030 - 1090 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Breite x Höhe width x height [mm x mm]	Länge length [mm]	Anschlussgewinde thread
S6EZM5310/328	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	C-mount
S6EZM5311/328	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	M30x1
NEW S6EZM5412/328	● 1.2-3.0	18.5	18.0 (1.2x) - 14.0 (3x)	43.0	103.8 x 78.0	229.7	M30x1
S6EZM5076/328	● 1.0-8.0	10.0	9.0 (1x) - 3.5 (8x)	30.0	97.5 x 65.0	162.0	C-mount

■ 515 - 545 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Breite x Höhe width x height [mm x mm]	Länge length [mm]	Anschlussgewinde thread
S6EZM5310/292	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	C-mount
S6EZM5311/292	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	M30x1
S6EZM5076/292	● 1.0-8.0	10.0	9.0 (1x) - 3.5 (8x)	30.0	97.5 x 65.0	162.0	C-mount

■ 343 - 355 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Breite x Höhe width x height [mm x mm]	Länge length [mm]	Anschlussgewinde thread
S6EZM5310/574	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	C-mount
S6EZM5311/574	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	M30x1
S6EZM5075/574	● 1.0-8.0	10.0	9.0 (1x) - 3.5 (8x)	30.0	97.5 x 65.0	162.0	C-mount

■ 355 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Breite x Höhe width x height [mm x mm]	Länge length [mm]	Anschlussgewinde thread
S6EZM5310/075	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	C-mount
S6EZM5311/075	● 1.0-3.0	10.5	9.0 (1x) - 6.5 (3x)	20.0	97.5 x 65.0	105.8	M30x1
S6EZM5075/075	● 1.0-8.0	10.0	9.0 (1x) - 3.5 (8x)	30.0	97.5 x 65.0	162.0	C-mount

■ 266 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture [mm]	max. Eintritts-Ø max. input beam-Ø [mm]	freie Ausgangsapertur max. exit aperture [mm]	Breite x Höhe width x height [mm x mm]	Länge length [mm]	Anschlussgewinde thread
S6EZM5075/199	● 1.0-8.0	10.0	9.0 (1x) - 3.5 (8x)	30.0	97.5 x 65.0	162.0	C-mount

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request



太平貿易株式会社 TEL 03-3270-4826 tokyo@taiheiboeki.co.jp

高精度にモーター制御した「Power Zoom」のシリーズを提供しております。多くのお客様に導入いただいているこの光学系は、拡がり角および倍率設定の調整において優れた繰返し精度と信頼性を提供します。



■ 1030 - 1090 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>Dimension</i> [mm x mm x mm]	Anschlussplatte <i>mounting plate</i> [mm]
S6EXZ3976/328 ●	1.0 - 8.0	9.0	6.0 (1x) - 3.5 (8x)	30.0	200.4 x 160.0 x 70.5	220 x 100

■ 515 - 545 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>Dimension</i> [mm x mm x mm]	Anschlussplatte <i>mounting plate</i> [mm]
S6EXZ3976/292 ●	1.0 - 8.0	9.0	6.0 (1x) - 3.5 (8x)	30.0	200.4 x 160.0 x 70.5	220 x 100

■ 343 - 355 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>Dimension</i> [mm x mm x mm]	Anschlussplatte <i>mounting plate</i> [mm]
S6EXZ3976/574 ●	1.0 - 8.0	9.0	6.0 (1x) - 3.5 (8x)	30.0	200.4 x 160.0 x 70.5	220 x 100

■ 355 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>Dimension</i> [mm x mm x mm]	Anschlussplatte <i>mounting plate</i> [mm]
S6EXZ3976/075 ●	1.0 - 8.0	9.0	6.0 (1x) - 3.5 (8x)	30.0	200.4 x 160.0 x 70.5	220 x 100

■ 266 nm

Artikelnummer <i>part number</i>	Aufweitung <i>magnification</i>	freie Eintrittsapertur <i>max. entrance aperture</i> [mm]	max. Eintritts-Ø <i>max. input beam-Ø</i> [mm]	freie Ausgangsapertur <i>max. exit aperture</i> [mm]	Abmessungen <i>Dimension</i> [mm x mm x mm]	Anschlussplatte <i>mounting plate</i> [mm]
S6EXZ3976/199 ●	1.0 - 8.0	9.0	6.0 (1x) - 3.5 (8x)	30.0	200.4 x 160.0 x 70.5	220 x 100

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request

色補正されたビームエキスパンダーは、ブロードバンドおよびマルチスペクトルのIRアプリケーションに適しています。「ALPHA」シリーズと同様に、大きな開口部を持っています。設計はガリレイの原理に基づいており、特殊な反射防止コーティングにより吸収が最小限に抑えられ、1000nm～1100 nmの波長域で高効率を得られます。



■ 1000 - 1100 nm

Artikelnummer part number	Aufweitung magnification	freie Eintrittsapertur max. entrance aperture	max. Eintritts-Ø max. input beam-Ø	freie Ausgangsapertur max. exit aperture	max. Außen-Ø max. outside-Ø	Länge length	Anschlussgewinde thread
		[mm]	[mm]	[mm]	[mm]	[mm]	
NEW S6ASS4803/450	3.0	15.0	10.0	31.0	46.0	85.0	M30x1

NEW S6ASS4803/450 ●

Legende / Explanation: ● KP & UKP tauglich / SP & USP useable ! Lieferzeit auf Anfrage / Time of delivery on request



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