

Scan Lenses (f- θ Lenses)

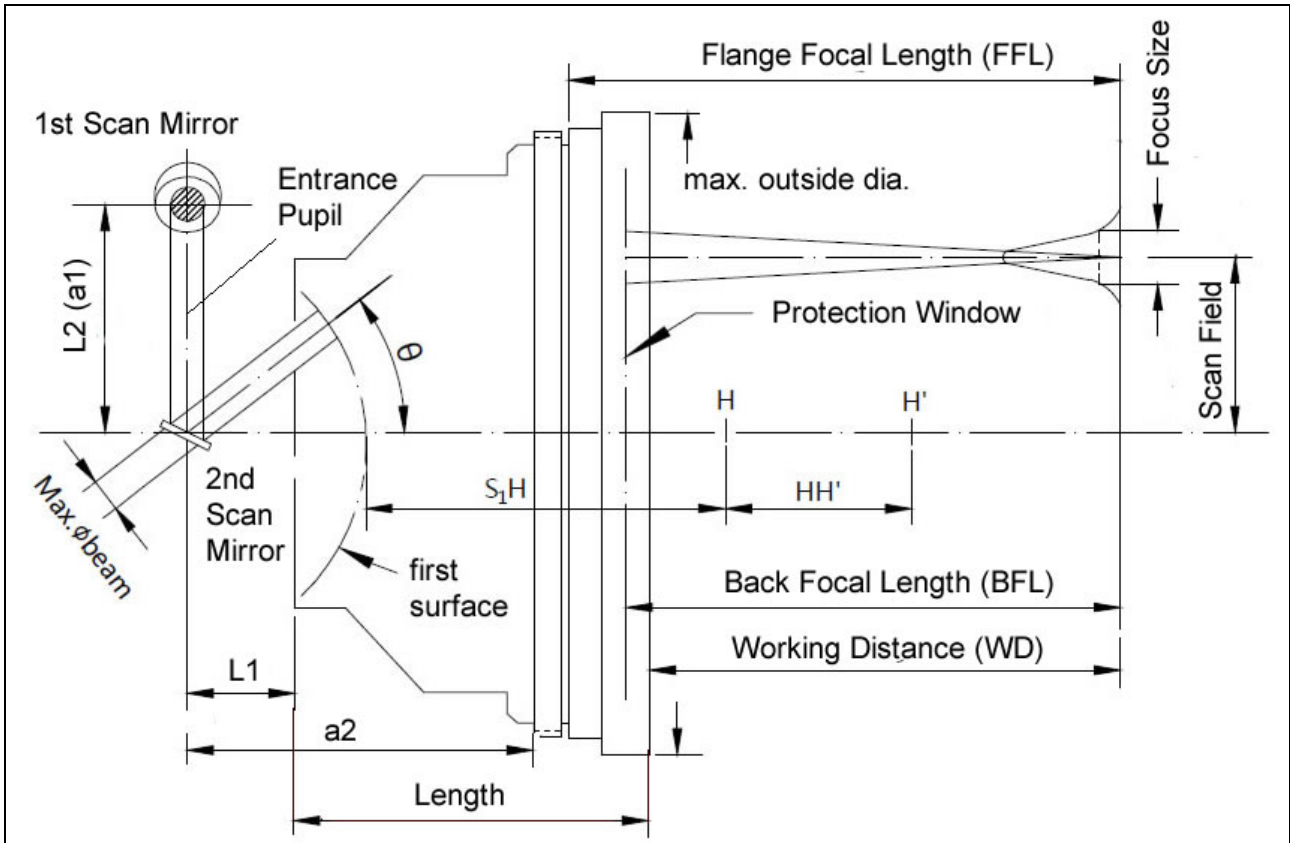
Lenses used in combination with XY galvanometer scanner are called f -theta lenses, plane field objectives or simple scan lenses. f -theta lenses are used in various applications from industrial material processing, drilling, welding of synthetic material and cutting in addition to medical and biotechnology (confocal microscopy, ophthalmology) to science and research. The design and the quality of the optical components are playing a decisive role.



A standard lens focuses the laser beam on a spherical plain in contrast to an ideal flat or plane field. The use of f -theta lenses provides a plane focusing surface and almost constant spot size over the entire XY image plane or scan field. The position of the spot on the image plane is directly proportional to the scan angle. Telecentric f -theta lenses focus the laser beam so it is almost perpendicular (within 1 degree) to the work surface over the entire scan field. This ensures the spot is round even in the corners of the scan field and if holes or channels are machined, they are perpendicular to the work surface.

Color corrected f -theta lenses are designed to accommodate multiple wavelengths. Normally each wavelength would focus to a different point on the work surface. In a color corrected lens the focal point for each wavelength coincide. This is achieved by scheduling an ideal combination of different glass types for the various lens elements in the lens. Color corrected f -theta lenses are primarily used for simultaneously viewing the work surface through the scan lens with a camera while laser processing. Another common application for color corrected scan lenses are for use in confocal scan microscopes which require a broad range of visible wavelengths.

We mainly provide 3 series of f -theta lenses, STY, STS and STJ.



Description of STY Series F-theta Lenses: STY-xxxx-yyy-zzz-dd-A

STY--- STY series laser f-theta lenses

xxxx-- laser wavelength, 1064 means 1064nm, 10.6 means 10.6um.

yyy---- mark field (scan field), yyy x yyy mm

zzz---- effective focal length in mm

dd----- entrance pupil (allowed maximum input laser beam diameter) in mm (option)

A----- others

Remark: (1) The f-theta lens consists of 3 lenses and one protective window/glass. The coating is a dielectric layer. The transmission is >99% at 1064nm. Two sides of the protective glass are AR-coated at 1064nm.

(2) In the following tables, the abbreviations are as follows: FL means effective focal length; EP means max. input beam diameter; SAR means scan area, AS means aperture stop; WD means working distance; OD means max. outside diameter; MT means mount thread; fs means fused silica, SA means max. full diagonal scan angle; L2 (a1) means recommended mirror separation; a2 means 2nd mirror to flange; L1 means the distance between 2nd mirror and scan lens; SL means scan length; Length means the total length of the scan lens; FSD means focused spot diameter; WC means water-cooled.

1. Multi-spectral F-theta Lenses

532nm + 1064nm

Model	FL (mm) @532nm	FL (mm) @1064nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @532nm	WD (mm) @1064nm	OD (mm)	Length (mm)	MT
STS-1163/081	163.2	163.2	12	102 x 102	29	159.7	159.7	106	82.5	M85x1
STS-8254/081	254	253.9	15	180 x 180	25	211.4	211.4	128	122	M85x1

355nm + 1064nm

Model	FL (mm) @355nm	FL (mm) @1064nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @355nm	WD (mm) @1064nm	OD (mm)	Length (mm)	MT
STS-7400	398.9	398.3	15	70 x 70	45	160.7	160.7	132	291.7	M85x1

808nm + 980nm

Model	FL (mm) @808nm	FL (mm) @980nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @808nm	WD (mm) @980nm	OD (mm)	Length (mm)	MT
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STS-8163	163	163.1	20	102 x 102	22	151.2	151.1	106	90.5	M85x1
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450nm+650nm

Model	FL (mm) @450nm	FL (mm) @650nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @450nm	WD (mm) @650nm	OD (mm)	Length (mm)	MT
STS-0061/065	60.3	60.5	5	22 x 22	25.7	75.5	75.4	59	48.5	TK 52

405nm+650nm

Model	FL (mm) @405nm	FL (mm) @650nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @405nm	WD (mm) @650nm	OD (mm)	Length (mm)	MT
STS-4345	40.2	40.2	4	15.5 x 15.5	16.9	38.4	38.4	38	40	---
STS-4375	80.2	80.7	6	14 x 14	95.2	24.2	24.2	59	87.9	TK 52

405nm+532nm

Model	FL (mm) @405nm	FL (mm) @532nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @405nm	WD (mm) @532nm	OD (mm)	Length (mm)	MT
STS-5110/322	98	101.8	10	66 x 66	30.3	125.6	129.6	128	86	M85x1

2. Wavelength 1850 - 1980nm

STY Series 1940nm Standard F-theta Lens (Fused Silica)

Model	FL mm	WD mm	EP mm	SA θ_{max}	SAR mm	FSD μm	OD mm	MT
STY-1940-98-166	166	207.58	14	$\pm 24^\circ$	$\Phi 139/98 \times 98$	40.68	120	M85x1
STY-1940-2000-175-260	260	323.65	14	$\pm 25^\circ$	$\Phi 247.5/175 \times 175$	64.4	126	M85x1
STY-1940-190-280	280	346.1	14	$\pm 27.5^\circ$	$\Phi 269/190 \times 190$	71	120	M85x1
STY-1940-318-465	465	554	14	$\pm 27.5^\circ$	$\Phi 446/318 \times 318$	117.9	120	M85x1
STY-1940-380-554	554	655.77	14	$\pm 27.5^\circ$	$\Phi 532/380 \times 380$	140.49	120	M85x1

STYT Series 1940nm Telecentric F-theta Lens (Fused Silica)

Model	FL mm	WD mm	EP mm	SA maxi	SAR, mm (round/square)	FSD μm	OD mm	Max IA ($^\circ$)	MT
STYT-1940-26-68	68	88.38	10	$\pm 16^\circ$	$\Phi 37/26 \times 26$	24.1	90	1.25	M85x1
STYT-1940-56-100		135.66	14	$\pm 22.5^\circ$	$\Phi 79/56 \times 56$	25.5	130	2.1	M85x1

STS Series 1850-1980nm Standard F-theta Lens (Fused Silica)

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0260/159	1850 - 1980	260	fs	20	160 x 160	33.1	120.1	155	182.6	M85x1
STS-1330/159	1850 - 1980	344.8	fs	20	215 x 215	38.5	203	163	179.4	M85x1

STS Series 1850-1980nm Telecentric F-theta Lens (Fused Silica)

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-1901/159	1850 - 1980	103.6	fs	10	60 x 60	22.5	130.1	106	82	M85x1
STS-1957/159	1850 - 1980	57.1	fs	10	20 x 20	17.5	72.5	89	51.9	M85x1
STS-3162/159	1850 - 1980	170.2	fs	15	90 x 90	27.7	209.8	130	102	M85x1

3. Wavelength 1550nm

STYT Series 1550nm Telecentric F-theta Lens (Fused Silica)

Model	FL mm	WD mm	EP mm	SA maxi	SAR, mm (round/square)	FSD μm	OD mm	Max IA ($^\circ$)	MT
STYT-1550-57.5-100	100	126	15	$\pm 22^\circ$	$\Phi 77/57.5 \times 57.5$	18.9	120	2.3	M85x1

STS Series 1550nm F-theta Lens (Fused Silica)

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0260/008	1550	264.1	fs	15	160 x 160	33.1	124	155	182.6	M85x1
STS-1330/008	1550	342.2	fs	20	215 x 215	38.5	202.6	163	177.4	M85x1
STS-2250/008	1550	264.7	fs	10	170 x 170	26.9	327.9	105	61	M85x1

STS-3100/008	1550	118.4	fs	6	82 x 82	17.1	160.1	89	49	M85x1
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STS Series Telecentric F-theta Lens

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-1901/008	1550	101.8	fs	10	60 x 60	22.5	127.7	106	82	M85x1
STS-1957/008	1550	56.1	fs	10	20 x 20	17.5	71.3	89	51.9	M85x1
STS-3162/008	1550	167	fs	15	90 x 90	27.7	205.8	130	102	M85x1
STS-7010/008	1544	100	glass	10	35 x 35	32	113.6	94	98.8	M85x1
STS-7010/008	1560	100	glass	10	35 x 35	32	113.6	94	98.8	M85x1

4. Wavelength 1064nm, 1030–1080nm & 900–1100nm

STY Series F-theta Lens (Fused Silica)

Model	FL mm	WD mm	E.P. mm	Scan Angle θ_{max}	Scan area mm	Spot μm	OD mm	Screw
STY-1030-1080-66-100	100	126.49	10	$\pm 27.8^\circ$	$\phi 93/66 \times 66$	20	90	M85x1
STY-1030-1080-66-100WC	100	126.48	10	$\pm 27.8^\circ$	$\phi 93/66 \times 66$	20	108	M55x1; M85x1
STY-1030-1080-77-120	120	158.18	14	$\pm 25^\circ$	$\phi 109/77 \times 77$	16.68	120	M85x1
STY-1030-1080-110-160	160	192.5	10	$\pm 28.3^\circ$	$\phi 156/110 \times 110$	31.15	90	M85x1
STY-1030-1080-100-160	160	209.01	12	$\pm 25^\circ$	$\phi 140/100 \times 100$	25.96	105	M85x1
STY-1030-1080-100-160-12	160	199.21	12	$\pm 25^\circ$	$\phi 140/100 \times 100$	22.25	120	M85x1
STY-1030-1080-100-160-14	160	203.3	14	$\pm 25^\circ$	$\phi 140/100 \times 100$	22.25	120	M85x1
STY-1030-1080-78-160	160	183.61	15	$\pm 20^\circ$	$\phi 110/78 \times 78$	20.8	120	M85x1
STY-1030-1080-71-160	160	203.53	20	$\pm 18^\circ$	$\phi 100/71 \times 71$	15.57	120	M85x1
STY-1030-1080-117-170	170	199.75	10	$\pm 28^\circ$	$\phi 166/117 \times 117$	33.1	90	M85x1
STY-1030-1080-70-170	170	213.64	30	$\pm 25^\circ$	$\phi 98/70 \times 70$	11.03	146	M102x1; M112x1
STY-1030-1080-70-170WC	170	215.0	30	$\pm 25^\circ$	$\phi 98/70 \times 70$	11.03	166	M102x1; M112x1
STY-1030-1080-122-200	200	246.43	20	$\pm 24^\circ$	$\phi 173/122 \times 122$	20	132	M85x1
STY-1030-1080-120-206	206	258	20	$\pm 23^\circ$	$\phi 170/120 \times 120$	20	120	M85x1
STY-1030-1080-100-210	210	269.23	30	$\pm 25^\circ$	$\phi 140/100 \times 100$	18	143	M112x1
STY-1030-1080-175-254-10	254	298.25	10	$\pm 28^\circ$	$\phi 247/175 \times 175$	49.6	90	M39x1
STY-1030-1080-175-254-12	254	296.96	12	$\pm 28^\circ$	$\phi 247/175 \times 175$	41.5	105	M85x1
STY-1030-1080-167-254	254	292.21	14	$\pm 25^\circ$	$\phi 247/167 \times 167$	36.3	120	M85x1
STY-1030-1080-175-254	254	306.14	14	$\pm 28^\circ$	$\phi 248/175 \times 175$	35.25	126	M85x1
STY-1030-1080-175-254WC	254	289.01	14	$\pm 28^\circ$	$\phi 248/175 \times 175$	35.25	126	M85x1
STY-1030-1080-128-254	254	305.09	30	$\pm 21^\circ$	$\phi 181/128 \times 128$	16.48	157	M102x1; M112x1
STY-1030-1080-128-254WC	254	304.09	30	$\pm 21^\circ$	$\phi 181/128 \times 128$	16.48	166	M102x1; M112x1
STY-1030-1080-120-254WC	254	319.38	30	$\pm 21^\circ$	$\phi 181/120 \times 120$	16	190	M102x1; M112x1
STY-1030-1080-153-255	255	318.34	20	$\pm 25^\circ$	$\phi 216/153 \times 153$	30	132	M85x1
STY-1030-1080-203-295	295	336.72	10	$\pm 28^\circ$	$\phi 287/203 \times 203$	57.44	90	M85x1
STY-1030-1080-208-300-15	300	371.14	15	$\pm 25^\circ$	$\phi 262/185 \times 185$	38.9	120	M85x1
STY-1030-1080-185-300-20	300	371.14	20	$\pm 25^\circ$	$\phi 262/185 \times 185$	29.2	140	M85x1
STY-1030-1080-203-330	330	396.25	20	$\pm 25^\circ$	$\phi 287/203 \times 203$	32.12	120	M85x1
STY-1030-1080-175-330	330	392.64	30	$\pm 22^\circ$	$\phi 253/175 \times 175$	21.41	146	M102x1; M112x1
STY-1030-1080-175-330WC	330	388.14	30	$\pm 22^\circ$	$\phi 253/175 \times 175$	21.41	166	M102x1; M112x1
STY-1030-1080-175-330DWC	330	406.77	30	$\pm 22^\circ$	$\phi 263/175 \times 175$	21	180	M102x1; M112x1
STY-1030-1080-210-350	350	429.55	20	$\pm 24^\circ$	$\phi 298/210 \times 210$	34.55	128	M85x1
STY-1030-1080-300-420	420	510.81	20	$\pm 24^\circ$	$\phi 424/300 \times 300$	41	120	M112x1
STY-1030-1080-251-420	420	511.63	30	$\pm 24^\circ$	$\phi 355/251 \times 251$	27.25	140	M112x1
STY-1030-1080-251-420WC	420	421.94	30	$\pm 24^\circ$	$\phi 355/251 \times 251$	27.63	166	M102x1; M112x1
STY-1030-1080-270-460WC	460	558.13	30	$\pm 24^\circ$	$\phi 382/270 \times 270$	29.9	186	M102x1; M112x1
STY-1030-1080-440-750WC	750	888.53	30	$\pm 24^\circ$	$\phi 622/440 \times 440$	48.7	165	M102x1
STY-1030-1080-550-870	870	984.46	20	$\pm 24^\circ$	$\phi 778/550 \times 550$	84.7	120	M85x1

STY Series 1064nm F-theta Lens (Optical Glass)

Model	FL mm	WD mm	E.P. mm	Scan Angle θ_{max}	Scan area mm	Spot μm	OD mm	Screw
STY-1064-35-63	63	61.8	12	$\pm 22^\circ$	$\phi 50/35 \times 35$	10	90	M85x1
STY-1064-50-80-10	80	83.27	10	$\pm 22^\circ$	$\phi 70/50 \times 50$	15	90	M85x1
STY-1064-50-80-20	80	77.86	20	$\pm 25^\circ$	$\phi 70/50 \times 50$	7.7	105	M85x1
STY-1064-70-100M	100	113.85	8	$\pm 28^\circ$	$\phi 100/70 \times 70$	24.33	60	M55x1

STY-1064-70-100LNS	100	118.49	12	±28 °	Φ100/70x70	16.2	90	M85×1
STY-1064-70-100R	100	105.75	12	±28 °	Φ100/70x70	16	90	M85×1
STY-1064-70-100-20	100	104.85	20	±22 °	Φ100/70x70	9.76	105	M85×1
STY-1064-62-100-20D	100	103.37	20	±25°	Φ87/62x62	9.8	105	M85×1
STY-1064-74-120	120	127.6	30	±25°	Φ105/80x74	15	140	M85x1
STY-1064-85-130	130	141.96	12	±25 °	Φ120/85x85	21.1	90	M85×1
STY-1064-70-160M-8	160	178.66	8	±18 °	Φ100.3/70x70	38.85	47	M39x1
STY-1064-110-160LNS-12	160	181.29	12	±28 °	Φ155/110x110	25.9	90	M85×1
STY-1064-110-160R-12	160	177.04	12	±28 °	Φ156.35/110x110	25.95	90	M85×1
STY-1064-101-160H-20	160	180.72	20	±25°	Φ142/101x101	15.86	120	M85×1
STY-1064-113-163B-12	163	186.45	12	±28°	Φ16.5/113x113	26.6	90	M85x1
STY-1064-120-163R-10	164	181.86	10-12	±31.7 °	Φ169/120x120	31.7	90	M85×1
STY-1064-113-163C-20	163	182.15	20	±28 °	Φ160/113x113	15.9	115	M85×1
STY-1064-99.5-168	168	181.12	36	±25 °	Φ148/99.5x99.5	9.1	163	M112×1
STY-1064-110-170	170	198.31	30	±25°	Φ150/110x110	11.03	140	M112×1;M102x1;M95x1
STY-1064-120-173	173	197.51	12	±28°	Φ170/120x120	28	90	M85x1
STY-1064-130-188	188	21	12	±28 °	Φ185/130X130	30	90	M85×1
STY-1064-150-210A	210	231.88	12	±28 °	Φ212/150x150	34	90	M85×1
STY-1064-145-210B	210	325.8	12	±28 °	Φ205/145x145	25	90	M85x1
STY-1064-140-210-30	210	240.42	30	±25 °	Φ185/140x140	13.63	140	M112×1;M102x1;M95x1
STY-1064-153-220-15	220	259.78	15	±28 °	Φ216/153x153	29	90	M55x1; M85×1
STY-1064-150-220-20	220	241.55	20	±28°	Φ212/150x150	21.4	120	M85×1
STY-1064-180-254M-8	254	299.42	8	±28°	Φ254/180x180	61	52	M39x1
STY-1064-175-254B-14	254	277.7	14	±28 °	Φ245/175x175	42	90	M85×1
STY-1064-175-254LNS-16	254	281.14	8.5-16	±28 °	Φ245/175x175	30	105	M85×1
STY-1064-175-254C-20	254	272.4	20	±25 °	Φ245/175x175	24.8	120	M85×1
STY-1064-175-254-30	254	284.58	30	±25°	Φ222/175x175	16.35	140	M102x1
STY-1064-190-255	255	292.94	15	±30.2°	Φ268/190x190	33.1	99.5	M85x1
STY-1064-180-260	260	287.54	12	±28 °	Φ255/180x180	30	90	M85×1
STY-1064-210-290	290	348.52	12	±28 °	Φ283/210x210	47	90	M85x1
STY-1064-208-300	300	360.86	10-14	±28 °	Φ295/208x208	35	90	M85×1
STY-1064-230-330-12	330	383.93	12	±28 °	Φ325/230x230	53	90	M85×1
STY-1064-230-330-16	330	387.61	16	±28 °	Φ325/230x230	40	120	M85×1
STY-1064-230-330-30	330	376.42	30	±28 °	Φ325/230x230	21.2	140	M112x1; M102x1; M95x1
STY-1064-244-350	350	417.81	20	±28 °	Φ345/244x244	34	120	M85x1
STY-1064-296-420-10	420	481.32	10	±28 °	Φ419/296x296	82	90	M85×1
STY-1064-290-420-20	420	486.08	20	±28 °	Φ410/290x290	40.8	120	M85x1
STY-1064-290-420-30	420	491.03	30	±28 °	Φ410/290x290	27.3	140	M112×1; M132x1
STY-1064-300-430	430	497.77	20	±28 °	Φ425/300x300	41.9	120	M85×1
STY-1064-400-515	515	570.35	20	±31.5 °	Φ565/400x400	50.1	120	M85×1
STY-1064-402-525	525	604.73	20	±31.5 °	Φ568/402x402	51.1	125	M85x1
STY-1064-400-580	580	670.19	24	±28 °	Φ566/400x400	47	125	M85x1
STY-1064-565-815	815	899.83	24	±28 °	Φ800/565X565	66	125	M85×1

STYT Series 1064nm Telecentric F-theta Lens (Fused Silica)

Model	FL mm	WD mm	E.P. mm	SA max	SAR, mm (round/square)	FSD μm	OD mm	Max IA (°)	MT
STYT-1030-1080-6-32	32	31.79	10	±7.6°	Φ8.5/6x6	6.2	90	1.4	M85x1
STYT-1030-1080-26-65	65	80.99	10	±16°	Φ36/26x26	12.65	90	0.58	M85x1
STYT-1030-1080-20-88	88	120.51	20	±9.5°	Φ28.28/20x20	8.78	120	1.3	M85x1
STYT-1030-1080-38-90	91	101.32	20	±17°	Φ54/38x38	35	120	1.9	M85x1
STYT-1030-1080-54-100	100	142.73	14	±20.7°	Φ76/54x54	13.5	120	0.59	M85x1
STYT-1030-1080-54-100WC	100	142.73	14	±20.7°	Φ76/54x54	13.5	135	0.59	M85x1
STYT-1030-1080-51-100	100	130.44	14	±20°	Φ72/51x51	13.9	120	0.5	M85x1
STYT-1030-1080-70-120	120	168.69	10	±24°	Φ98/70x70	23.5	120	3.0	M85x1
STYT-1030-1080-55-125	125	153.27	14	±16.5°	Φ77.7/55x55	17.39	112	2.0	M85x1
STYT-1030-1080-50-125	125	153.27	20	±18°	Φ70.7/50x50	12.17	112	1.8	M85x1
STYT-1030-1080-85-167	167	215.5	14	±20.3°	Φ120/85x85	17	140	3.69	M85x1
STYT-1030-1080-100-200	200	296.95	14	±20°	Φ141/100x100	27.82	173	2	M85x1
STYT-1030-1080-110-254	254	376.53	14	±18°	Φ155.5/110x110	35.3	126	5	M85x1

STYT Series 1064nm Telecentric F-theta Lens (Optical Glass)

Model	FL mm	WD mm	E.P. mm	Scan angle maxi	Scan area mm (round/square)	Focus size μm	OD mm	Max IA (°)	MT
STYT-1064-55-100	100	122.8	15	±22°	Φ77/55x55	13	120	2.1	M85x1
STYT-1064-66-125	125	139.58	20	±21.5°	Φ109/66x66	12	120	3	M85x1

STYT-1064-90-167	167	216.23	20	±21°	Φ125/90x90	16.5	140	4.4	M85x1
STYT-1064-88-170	170	209.61	30	±21°	Φ120/88x88	11.1	140	4.4	M85x1
STYT-1064-50-183	183	219.63	20	±11.5°	Φ70.7/50x50	17.82	113	0.8	M102x1;M112x1
STYT-1064-115-210	210	279.63	20	±22°	Φ161/115x115	13.69	188	3.3	M95x1
STYT-1064-108-210	210	279.63	30	±21°	Φ154/108x108	13.69	188	3.3	M102x1
STYT-1064-104-211	211	279.63	10	±20°	Φ147/104x104	41.1	150	4.4	M85x1
STYT-1064-190-315	315	432.07	14	±24.5°	Φ269/190x190	43.8	270	2.3	M85x1

STS Series Standard F-theta Lens (Fused Silica & Optical Glass)

Model	WL (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0063/126	1064	63	glass	8	36 x 36	15	74.5	59.2	35.8	M39x1; M55x1
STS-0099/126	1064	105.1	glass	12	60 x 60	27.2	125.3	90	50.2	M85x1
STS-0101/126	1064	99.7	glass	10	55 x 55	16.5	110.8	90	40	M85x1
STS-0116/126	1064	99.7	glass	7	65 x 65	14.3	111.5	47	28.5	M39x1
STS-0162/126	1064	160.1	glass	8	100 x 100	15	180.1	59.2	25.2	M39x1; M55x1
STS-0163/126	1064	162.4	glass	12	107 x 107	22	181.2	89	43.1	M85x1
STS-0169/126	1064	160.1	glass	8	100 x 100	15	178.9	47	25	M39x1
STS-0192/126	1064	191.4	glass	20	125 x 125	40	220.5	128	57.9	M85x1
STS-0202/126	1064	201.6	glass	30	90 x 90	43	242.2	132	85	M85x1
STS-0253/126	1064	254.4	glass	14	160 x 160	27	284.9	89	43.1	M85x1
STS-0271/126	1064	250	glass	8.5	155 x 155	13	273.3	47	25	M39x1
STS-0299/126	1064	300.8	glass	20	142 x 142	35	346.4	128	72.2	M85x1
STS-0300/126	1064	298	glass	20	175 x 175	35	350.8	128	78	M85x1
STS-0316/126	1064	299.9	glass	8.5	180 x 180	14.7	327.7	47	23	M39x1
STS-0335/126	1064	335.1	glass	8.5	210 x 210	15.2	366.3	47	23	M39x1
STS-0350/126	1064	346.3	glass	12	212 x 212	22.5	412.2	95	52.3	M85x1
STS-0352/126	1064	354.5	glass	30	160 x 160	53.5	396.9	128	48.5	M85x1
STS-0411/126	1064	409.6	glass	20	210 x 210	44	472.5	105	56.8	M85x1
STS-0420/126	1064	420	glass	30	242 x 242	59.5	480	136	52	M132x1
STS-0508/126	1064	569.7	glass	20	325 x 325	45	651.4	127	56.9	M85x1
STS-0580/328	1030-1090	638.6	fs	10	350 x 350	39	734.7	89	38	M85x1
STS-0635/126	1064	657.3	glass	25	370 x 370	75	732.8	133	48.5	M110x1
STS-0655/328	1030-1090	649.7	fs	20	410 x 410	34.1	561.8	134	114.8	M85x1
STS-0710/328	1030-1090	101.4	fs	5	60 x 60	15	120.7	59.2	31	M39x1
STS-0725/328	1030-1090	254.2	fs	8	140 x 140	15.5	282.8	59.2	33.3	M39x1
STS-0763/328	1030-1090	163	fs	7	100 x 100	15.8	194.1	59.2	33.3	M39x1
STS-0800/328	1030-1090	874.2	fs	20	425 x 425	35	975.2	96	42.5	M85x1
STS-0825/126	1064	819.7	glass	24	560 x 560	43.3	893.8	130	58	M102x1
STS-0910/328	1030-1090	910	fs	30	500 x 500	47	1048.8	154	80.8	M110x1
STS-1163/081	1064	163.2	glass	12	102 x 102	29	159.7	106	82.5	M85x1
STS-1254/126	1064	254.7	glass	12	160 x 160	23.5	306.5	109	55.3	M85x1
STS-1330/328	1030-1090	340	fs	20	215 x 215	38.5	203.4	163	174.6	M85x1
STS-1420/328	1030-1090	420	fs	14	280 x 280	28.3	499.2	122	67.7	M85x1
STS-1500/328	1030-1090	500	fs	20	340 x 340	30.5	569.8	148	68	M85x1
STS-1655/328	1030-1090	649.4	fs	20	410 x 410	32.1	581.6	134	105.5	M85x1
STS-2163/126	1064	163	glass	20	106 x 106	29	192.3	128	66	M85x1
STS-2175/328	1030-1090	163.3	fs	20	94 x 94	30.5	205.4	159	110.2	M85x1
STS-2340/328	1030 - 1090	339.9	fs	20	61 x 61	30.5	441.7	89	91.7	M85x1
STS-2430/328	1030 - 1090	420.1	fs	30	180 x 180	52.8	293	139	186.6	M85x1
STS-2500/328	1030 - 1090	500	fs	30	280 x 280	48.5	620.2	198	127	M120x1
STS-3163/126	1064	163	glass	15	120 x 120	22.9	186.7	103	52	M85x1
STS-3250/328	1030 - 1090	255	fs	15	160 x 160	32.5	321.3	159	91.3	M85x1
STS-3254/126	1064	253.8	glass	30	115 x 115	48.9	297	130	75.5	M85x1
STS-3260/328	1030 - 1090	277.1	fs	15	142 x 142	31	346.2	105	61	M85x1

STS-3480/126	1064	479.8	glass	30	320 x 320	63.7	443.7	260	183.2	M150x1
STS-4255/126	1064	254	glass	20	168 x 168	38	292.8	130	70.1	M85x1
STS-7163	1064	163	glass	10	95 x 95	27	197.2	89	44	M85x1
STS-8254/081	1064	253.9	glass	15	180 x 180	25	211.4	128	122	M85x1

STS Series Telecentric F-theta Lens (Fused Silica & Optical Glass)

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0055/126	1064	59.7	glass	14	19 x 19	20.1	66.6	89	58	M85x1
STS-0058/126	1064	56.5	glass	10	16 x 16	26.4	58.4	90	40.7	M85x1
STS-0080/126	1064	79.9	glass	25	39 x 39	27.2	79.4	107	84.1	M85x1
STS-0082/328	1030 - 1090	82	fs	15	20 x 20	33	84.5	93.8	103.1	M85x1
STS-0141/126	1064	183.1	glass	15	50 x 50	108.7	216.4	108	70.6	M85x1
STS-0221/126	1064	207.3	glass	14	139 x 139	46	273.4	281	178.7	TK267
STS-3046/328	1030 - 1090	50	fs	15	7 x 7	26	60.5	90	69.9	M85x1
STS-3050/328	1030 - 1090	60.5	fs	6	20 x 20	22.3	81.9	87	39.8	M85x1
STS-3162/328	1030 - 1090	163.5	fs	15	90 x 90	27.7	201.5	130	102	M85x1
STS-3301/328	1030 - 1090	317.6	fs	15	137 x 137	30	506.2	218	248.3	M85x1
STS-4010/328	1030 - 1090	100.3	fs	10	35 x 35	32	129.8	106	78.7	M85x1
STS-4031/328	1030 - 1090	32.8	fs	10	6 x 6	16.5	28.7	90	39.9	M85x1
STS-4065/328	1030 - 1090	65.1	fs	15	15 x 15	24	83.1	94	76.5	M85x1
STS-4127/328	1030 - 1090	125.4	fs	15	50 x 50	33.5	157.6	106	108.2	M85x1
STS-5100/126	1064	107.7	glass	12	69 x 69	34.9	137.8	128	85.5	M85x1
STS-5165/126	1064	163.6	glass	10	75 x 75	58.3	193.9	136	128	M85x1
STS-5365/126	1064	162.9	glass	20	73 x 73	61.5	197.8	154	115	M85x1
STS-6125/126	1064	99.2	glass	25	40 x 40	37.4	115	116	80.4	M85x1

STJ Series Standard F-theta Lens

Model	Wavelength (nm)	FL (mm)	SAR (mm)	SA (°)	EP (mm)	FSD (μm)	a1 (mm)	a2 (mm)	Telecentricity (l with scanner (°))	WD (mm)	MT
STJ-017700-024-26	1030 - 1080	100	93	54	10	19	13	43	8.7 9.1	87	M85x1
STJ-017700-003-26	1030 - 1080	125	80	37	15	16	18	38	4.9 5.1	155	M85x1
	1030 - 1080	125	93	43	15	16	18	28	7.2 7.4	155	M85x1
STJ-601926	1030 - 1080	125	80	37	15	16	18	38	4.9 5.1	155	M85x1
	1030 - 1080	125	93	43	15	16	18	28	7.2 7.4	155	M85x1
STJ-017700-019-26	1030 - 1080	160	170	60	10	31	13	43	17.1 17.2	178	M85x1
STJ-601914	1030 - 1080	160	170	60	10	31	13	43	17.1 17.2	178	M85x1
STJ-017700-018-26	1030 - 1080	170	170	57	14	24	17	41	11.6 11.7	194	M85x1
STJ-017700-017-26	1030 - 1080	255	239	53	20	24	25	39	14.3 15.0	291	M85x1
STJ-601948	1030 - 1080	255	239	53	20	24	25	39	14.3 15.0	291	M85x1
STJ-017700-022-26	1030 - 1080	347	354	58	16	46	17	41	18.7 18.7	404	M85x1
STJ-017700-009-26	1030 - 1080	350	452	71	15	45	23	25	23.7 24.0	395	M85x1
STJ-017700-021-26	1030 - 1080	420	420	57	15	55	17	41	18.7 18.8	501	M85x1

STJ Series High-power F-theta Lens

Model	Wavelength (nm)	FL (mm)	SAR (mm)	SA (°)	EP (mm)	FSD (μm)	a1 (mm)	a2 (mm)	Telecentricity (l with scanner (°))	WD (mm)	MT
STJ-017700-025-26	1030 - 1080	160	110	40	14	22	17	40	5.2 5.4	184	M85x1
STJ-017700-026-26	1030 - 1080	255	160	36	20	25	25	48	7.2 7.4	303	M85x1
STJ-609120	1030 - 1080	423	360	48	14	59	17	40	16.4 16.4	500	M85x1
STJ-601787	900 - 1100	160	110	40	14	19	17	40	5.2 5.4	182	M85x1
STJ-601804	900 - 1100	255	161	36	20	21	25	48	7.2 7.4	302	M85x1
STJ-628951	900 - 1100	423	360	48	14	50	17	40	16.4 16.4	500	M85x1

5. Wavelength 780-980nm

STY Series 780-980nm F-theta Lens (Optical Glass)

Model	FL mm	WD mm	EP mm	SA	SAR mm	FSD μm	OD mm	MT
STY-980-70-100	100	111.62	12	±28°	Φ100/70x70	16.33	90	M85x1
STY-780-980-70-100R	100	104	12	±28°	Φ100/70x70	15	90	M85x1
STY-980-110-160	160	182.29	12	±28°	Φ158/110x110	25.9	90	M85x1
STY-980-100-160	160	181.04	20	±28°	Φ141/100x100	14.62	120	M85x1
STY-980-113-163	163	185	12	±28°	Φ160/113x113	24.43	90	M85x1
STY-980-100-163	163	179.61	20	±28°	Φ160/100x100	15.77	115	M85x1
STY-980-100-165	165	181.04	20	±28°	Φ141/100x100	14.62	120	M85x1
STY-915-940-100-170	170	191.97	30	±25°	Φ140/100x100	10.11	140	M85x1
STY-980-100-170	170	191.97	30	±25°	Φ144/100x100	10.11	140	M85x1
STY-915-940-175-254	254	271.07	14-20	±28°	Φ247/175x175	32.5	120	M85x1
STY-915-940-156-254	254	286.08	30	±25°	Φ220/156x156	15	140	M85x1
STY-980-156-254	254	286.08	30	±25°	Φ220/156x156	15	140	M85x1
STY-980-261-420	420	502.23	30	±25.2°	Φ369/261x261	25.11	140	M85x1
STY-915-400-510	510	565.93	18	±31.5°	Φ565/400x400	47.5	120	M85x1

STYT Series 980nm Telecentric F-theta Lens (Optical Glass)

Model	FL mm	WD mm	E.P. mm	Scan angle max	SAR, mm (round/square)	Focus size μm	OD mm	Max IA (°)	MT
STYT-532-115-210M95	210	279.63	30	±22°	Φ161/115x115	20	198	3.3	M55x1
STYT-532-115-210M112	210	256.48	30	±22.5°	Φ161/115x115	20	198	2.42	M112x1

STY Series 915nm F-theta Lens (Fused Silica)

Model	FL mm	WD mm	EP mm	Scan angle	SAR mm	FSD μm	OD mm	MT
STY-915-100-160	160	203.05	20	±26°	Φ143/100x100	13.4	130	M85x1
STY-915-100-170	254	314.17	20	±25°	Φ219/155x155	21.3	130	M85x1
STY-510-550-156-225	330	392.53	20	±28°	Φ325/230x230	27.6	130	M85x1

6. Wavelength 532nm, 515-540nm

STY Series 515-540nm F-theta Lens (Fused Silica)

Model	F.L. mm	WD mm	EP mm	Scan angle	Scan area mm	FSD μm	OD mm	MT
STY-515-540-98-160	160	57.33	10	±23.7°	Φ138/98x98	15.83	120	M85x1
STY-510-550-100-170	170	221.09	10	±25°	Φ148/100x100	17.5	90	M85x1
STY-510-550-156-225	225	247.51	18	±28°	Φ220/156x156	12.17	120	M85x1
STY-510-550-170-255	255	367.81	14	±27.5°	Φ240/170x170	17	120	M85x1
STY-510-550-212-350	350	283.37	14	±23.7°	Φ300/212x212	24.5	122	M85x1
STY-510-550-315-450	450	526.39	14	±28°	Φ445/315x315	31.29	120	M85x1
STY-510-550-550-840	840	960.17	20	±28°	Φ778/550x550	40.9	120	M85x1
STY-510-550-800-1150	1150	1249.47	18	±28°	Φ1131/800x800	40.9	120	M85x1

STY Series 532nm F-theta Lens (Optical Glass)

Model	FL mm	WD mm	EP mm	SA	SAR mm	FSD μm	OD mm	MT
STY-532-50-63	63	58	8	±22°	Φ70/50x50	12	90	M85x1
STY-532-58-100-10	100	110.37	10	±25°	Φ82/58x58	9.7	90	M85x1
STY-532-58-100-12	100	112.77	12	±25°	Φ82/58x58	8	90	M85x1
STY-532-74-120	120	132	12	±25°	Φ105/74x74	10	90	M85x1
STY-532-110-160	160	183.18	12	±28°	Φ155/110x110	12.8	90	M85x1
STY-532-98-160-58	160	186.88	12	±28°	Φ155/110x110	13	90	M85x1
STY-532-115-165	165	189.89	20	±28°	Φ1162/115x115	8	120	M85x1
STY-532-145-237	237	252.31	20	±25°	Φ207/145x145	11.53	120	M85x1
STY-532-165-254	254	261.51	14	±28°	Φ235/165x165	16	105	M85x1

STY-532-165-255	255	294.0	20	±26°	Φ233/165x165	12.5	120	M85x1
STY-532-200-280	280	283.46	12	±28°	Φ273/200x200	22	90	M85x1
STY-532-190-290	290	335.98	20	±26.5°	Φ268/190x190	14.1	120	M85x1
STY-532-203-330B	330	397.46	14	±25°	Φ287/203x203	22.9	105	M85x1
STY-532-203-330C	330	388.27	14	±25°	Φ287/203x203	22.9	120	M85x1
STY-532-283-410	410	474	15	±28°	Φ400/283x283	26.6	120	M85x1
STY-532-317-480	480	565	20	±28°	Φ448/317x317	31.15	120	M85x1
STY-532-370-535B	535	623.67	20	±28°	Φ532/370x370	26.04	125	M85x1
STY-532-400-600	600	656.71	20	±27°	Φ565/400x400	29.2	140	M85x1

STYT Series 532nm Telecentric F-theta Lens (Fused Silica)

Model	FL mm	WD mm	EP mm	SA max	SAR, mm (round/square)	FSD μm	OD mm	Max IA (°)	MT
STYT-510-550-23-62	62	82.10	10	±16°	Φ33/23x23	6.2	90	1	M85x1
STYT-510-550-37-88	88	100.63	14	±17°	Φ52/37x37	10	120	1.9	M85x1
STYT-510-550-54-100	100	142.2	10	±20.7°	Φ76/54x54	13.5	120	0.38	M85x1
STYT-510-550-50-100	100	136.4	14	±21°	Φ70.7/50x50	7	120	1.3	M85x1
STYT-510-550-90-167	167	232.23	14	±21°	Φ127/90x90	11.61	140	3	M85x1

STYT Series 532nm Telecentric F-theta Lens (Optical Glass)

Model	FL mm	WD mm	E.P. mm	Scan angle maxi	SAR, mm (round/square)	FSD μm	OD mm	Max A (°)	MT
STYT-532-15-100	100	125.04	15	±21.5°	Φ71/50x50	6.5	120	3.2	M85x1
STYT-532-60-110	110	132.94	15	±21.5°	Φ83/60x60	7.2	120	3.2	M85x1
STYT-532-91-170	170	214.66	14	±21.8°	Φ129/91x91	11.8	140	3	M85x1
STYT-532-100-170	170	204.79	20	±24°	Φ141/100X100	8.53	164	4	M102x1

STY-WT Series F-theta Lens

Part No.	FL (mm)	SA (±°)	SL (mm)	SAR (mm)	EP (mm)	FSD (μm)	Length (mm)	WD (mm)	MT
STY-532-70-100-WT	100	25°	87.0	70x70	14.0	12.0	50.0	100.0	M85x1
STY-532-90-120-WT	120	25°	102.0	90x90	8.0	10.8	38.85	134.0	M85x1
STY-532-100-162-WT	162	23°	132.9	100x100	7.0	-	25.2	183.4	M39/M55
STY-532-115-165-WT	165	20°	163.0	115x115	10.0	18.5	48.0	186.0	M85x1
STY-532-148-233-WT	234	26°	211.0	148x148	10.0	-	55.3	282.0	M85x1
STY-532-150-254-WT	254	25°	220.0	150x150	10.0	21.5	51.0	280.0	M85x1
STY-532-225-410-WT	410	25°	366.0	225x225	15.0	15.0	48.94	443.7	M85x1
STY-532-350-508-WT	508	25°	500.0	350x350	16.0	15.0	57.0	581.0	M85x1
STY-532-510-740-WT	740	20°	721.0	510x510	16.0	18.5	65.0	896.5	M85x1
STY-532-550-768-WT	768	28°	710.0	550x550	16.0	24.0	58.0	839.0	M102x1

STS Series Standard F-theta Lens (Fused Silica & Optical Glass)

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0063/121	532	62.9	glass	7	30 x 30	15	75.7	59.2	35.7	M39x1/M55x1
STS-0101/121	532	89.7	glass	6	58 x 58	16.5	96.3	90	40	M85x1
STS-0162/121	532	162.1	glass	7	100 x 100	16.1	183.5	59.2	25.2	M39x1/M55x1
STS-0163/121	532	147.1	glass	7	77 x 77	20	161.8	89	43.1	M85x1
STS-0300/121	532	276.9	glass	14	200 x 200	29	324.1	128	78	M85x1
STS-0508/121	532	528.3	glass	16	330 x 330	43	603.8	127	56.9	M85x1
STS-0580/292	515 - 545	613.2	fs	10	367 x 367	33.5	706.9	89	38	M85x1
STS-0825/121	532	768.6	glass	16	585 x 585	43	842.9	130	9	M102x1
STS-1163/081	532	163.2	glass	12	102 x 102	29	159.7	106	82.5	M85x1
STS-1254/121	532	233.5	glass	10	148 x 148	24.7	282.1	109	55.3	M85x1
STS-1330/292	515 - 545	347.9	fs	14	212 x 212	36	279	122	108.4	M85x1
STS-3100/292	515 - 545	113.2	fs	5	74 x 74	19.2	152	89	48.5	M85x1
STS-3164/121	532	162.8	glass	10	120 x 120	28	186.5	106	47	M85x1
STS-3260/292	515 - 545	259.4	fs	10	162 x 162	26	325.5	105	61	M85x1
STS-3430/121	532	430	glass	20	310 x 310	56.3	409.1	240	149	M130x1
STS-8254/081	532	254	glass	15	180 x 180	25	211.4	128	122	M85x1

STS Series 515-545nm Telecentric F-theta Lens

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0055/121	532	59.3	glass	10	20 x 20	16.9	72.1	89	58	M85x1
STS-0058/121	532	53.1	glass	6	15 x 15	25.5	52.6	90	40.7	M85x1
STS-0080/121	532	77	glass	14	49 x 49	22.8	74.1	107	83.8	M85x1
STS-0141/121	532	171	glass	15	50 x 50	102.1	196.6	108	70.6	M85x1
STS-0200/121	532	198.4	glass	20	75 x 75	111.6	232	142	94	TK 133.0
STS-0221/121	532	201.5	glass	10	139 x 139	46	264	281	178.7	TK 267.0
STS-1094/121	532	88	glass	16	36 x 36	33.8	107.5	85	66.3	70
STS-1095/121	532	88	glass	16	32 x 32	39.8	107.3	85	66.3	M55x1/M85x1
STS-3046/292	515 - 545	48.1	fs	15	7 x 7	26	60.2	90	64.9	M85x1
STS-3050/292	515 - 545	58.6	fs	6	20 x 20	21	79.3	87	39.7	M85x1
STS-3161/292	515 - 545	163.9	fs	10	90 x 90	26.3	219	122	98	M85x1
STS-3301/292	515 - 545	305.5	fs	15	141 x 141	30	487.9	218	248.3	M85x1
STS-4010/292	515 - 545	100	fs	10	35 x 35	30	130.2	106	78.7	M85x1
STS-4031/292	515 - 545	32.2	fs	10	6 x 6	16.5	28.4	90	39.9	M85x1
STS-4066/292	515 - 545	67.2	fs	15	15 x 15	24	85.8	94	73.3	M85x1
STS-4126/292	515 - 545	125.3	fs	10	53 x 53	34.6	167	106	92.2	M85x1
STS-4262/292	515 - 545	163.6	fs	12	65 x 65	35.2	195.4	121	148.1	M85x1
STS-5100/121	532	100.1	glass	10	69 x 69	30	126.7	128	85.5	M85x1
STS-5165/121	532	162.7	glass	10	75 x 75	53.9	195.1	136	128	M85x1

STJ Series 515-540nm F-theta Lens

Model	Wavelength (nm)	FL (mm)	SAR (mm)	SA (°)	EP (mm)	Focus size (μm)	a1 (mm)	a2 (mm)	Telecentricity (I with scanner (°))	WD (mm)	MT
STJ-017700-209-26	515 - 540	100	90	53	10	10	13	43	7.7 7.8	95	M85x1
STJ-017700-202-26	515 - 540	102	75	43	15	7	18	36	4.1 4.9	133	M85x1
STJ-017700-203-26	515 - 540	108	75	40	15	7	16	39	4.9 5.1	130	M85x1
	515 - 540	108	86	46	15	7	16	31	7.1 7.3	130	M85x1
STJ-017700-206-26	515 - 540	170	160	54	14	12	17	41	10.9 11.0	195	M85x1
STJ-017700-205-26	515 - 540	255	233	52	20	12	25	39	14.2 14.3	294	M85x1
STJ-017700-208-26	515 - 540	330	347	58	16	23	17	41	18.4 18.4	384	M85x1
STJ-017700-207-26	515 - 540	420	420	57	15	27	17	41	19.3 19.3	485	M85x1

7. Wavelength 405nm

STY Series 405nm F-theta Lens (Fused Silica)

Model	FL mm	WD mm	EP mm	SA max	SAR, mm (round/square)	FSD μm	OD mm	MT
STY-405-300-375	375.42	430.89	10	±31.2°	Φ424/300x300	27.8	116	M92x1
STY-405-520-750	750	839.53	16	±28°	Φ736/520x520	35	120	M85x1
STY-405-600-840	840	941.93	18	±28°	Φ850/600x600	34.59	120	M85x1

STS Series 405nm Standard F-theta Lens

Model	FL mm	Material	SAR, mm	EP mm	AS, mm	WD mm	OD mm	Length, mm	MT
STS-3160/173	176	FS	110x110	6	21.1	157.6	220.9	36.8	M85x1
STS-3260/173	263.9	FS	164x164	10	26	331.3	105	61	M85x1
STS-0580/173	593.8	FS	326x326	10	19	686.1	89	38	M85x1
STS-0314/173	315.1	Optical glass	200x200	10	36.2	372	116	49	M92x1
STS-0375/173	375.3	Optical glass	300x300	10	35.5	447.9	116	47.9	M92x1
STS-1210/173	1202.7	Optical glass	748x748	20	48.5	1353.7	152	96.9	M85x1
STS-1208/173	1794	Optical glass	1010x1010	20	47.5	1929.7	96	31.8	M85x1
STS-1208/173	1794	Optical glass	800x800	30	47.5	1929.7	96	31.8	M85x1

STS Series 405nm Telecentric F-theta Lens

Model	FL mm	Material	SAR, mm	EP mm	AS, mm	WD mm	OD mm	Length, mm	MT
STS-4110/173	111.4	FS	63x63	6	33.1	157.6	121	86	M85x1
STS-8050/173	55.1	Optical glass	30x30	6	16.2	67.3	90	52	M85x1

8. Wavelength 355nm

STY Series F-theta Lens (Fused Silica)

Model	FL mm	WD mm	E.P. mm	SA max	SAR, mm (round/square)	FSD μ m	OD mm	MT
STY-355-65-100	100	121.37	8	$\pm 25^\circ$	$\Phi 90/65 \times 65$	8.36	90	M85x1
STY-355-80-130	130	161.14	10	$\pm 25^\circ$	113/80x80	8.5	90	M85x1
STY-355-100-160	160	193.89	10	$\pm 25^\circ$	$\Phi 140/100 \times 100$	10.3	90	M85x1
STY-355-110-162	162	200.82	12	$\pm 28^\circ$	$\Phi 155/110 \times 110$	8.77	105	M85x1
STY-355-105-170	170	210.19	10	$\pm 25^\circ$	$\Phi 148/105 \times 105$	11.04	90	M85x1
STY-355-135-210	210	250.55	10	$\pm 25^\circ$	$\Phi 190/135 \times 135$	13.6	90	M85x1
STY-355-130-210	210	236.91	15	$\pm 25^\circ$	$\Phi 185/130 \times 130$	9.1	120	M85x1
STY-355-103-235	235	189.02	10	$\pm 17.4''$	$\Phi 146/103 \times 103$	15.27	90	M85x1
STY-355-175-254-10	254	300.72	10	$\pm 25^\circ$	$\Phi 247.5/175 \times 175$	16.4	90	M85x1
STY-355-170-254-14	254	318.21	14	$\pm 27^\circ$	$\Phi 241.2/175 \times 175$	11.79	120	M85x1
STY-355-175-255	255	313.53	10	$\pm 28^\circ$	$\Phi 221/175 \times 175$	16.57	120	M85x1
STY-355-201-305	305	365.55	16	$\pm 26.7^\circ$	$\Phi 285/201 \times 201$	12.38	120	M85x1
STY-355-195-330	330	390.77	10	$\pm 24^\circ$	$\Phi 276/195 \times 195$	21.43	90	M85x1
STY-355-203-330	330	383.39	14	$\pm 25^\circ$	$\Phi 288/203 \times 203$	15.3	120	M85x1
STY-355-216-350	350	409.61	10	$\pm 25^\circ$	$\Phi 305/216 \times 216$	16.24	120	M85x1
STY-355-290-470	470	535.30	16	$\pm 25^\circ$	$\Phi 410/290 \times 290$	19.08	120	M85x1
STY-355-320-500	500	568.14	14	$\pm 26^\circ$	$\Phi 452/320 \times 320$	23	120	M85x1
STY-355-360-580	580	663.11	16	$\pm 25^\circ$	$\Phi 509/360 \times 360$	25.22	120	M85x1
STY-355-468-730	730	702.04	10	$\pm 26^\circ$	$\Phi 661/468 \times 468$	47.4	90	M85x1
STY-355-520-750	750	823.37	16	$\pm 28^\circ$	$\Phi 735/520 \times 520$	32.3	120	M85x1
STY-355-600-840	840	921.44	18	$\pm 29^\circ$	$\Phi 850/600 \times 600$	30.3	120	M85x1
STY-355-660-910	910	990.84	18	$\pm 29.5^\circ$	$\Phi 933/660 \times 660$	42.2	120	M85x1
STY-355-780-1090	1090	1177.90	18	$\pm 29^\circ$	$\Phi 1103/780 \times 780$	44.24	120	M85x1
STY-355-800-1180	1180	1174.87	14	$\pm 28^\circ$	$\Phi 1130/800 \times 800$	54.76	120	M85x1
STY-355-885-1280	1280	1164.59	14	$\pm 25^\circ$	$\Phi 1251/885 \times 885$	59.4	120	M85x1
STY-355-900-1450	1450	1499.77	14	$\pm 25^\circ$	$\Phi 1272/900 \times 900$	67.29	120	M85x1
STY-355-1070-1550	1550	1175.40	10	$\pm 28^\circ$	$\Phi 1513/1070 \times 1070$	174.7	120	M85x1

STYT Series 355nm Tele-centric F-theta Lens (Fused Silica)

Model	FL mm	WD mm	E.P. mm	SA max	SAR, mm (round/square)	FSD μ m	OD mm	Max IA ($^\circ$)	MT
STYT-355-8-30	30	35.35	10	$\pm 10.5^\circ$	$\Phi 8.5/8 \times 8$	1.95	90	1.8	M85x1
STYT-355-1-32	32	26.34	10	$\pm 7.6^\circ$	$\Phi 8.5/1 \times 1$	3.2	90	2	M85x1
STYT-355-22-60	60	73.65	10	$\pm 16^\circ$	$\Phi 31/22 \times 22$	11.5	90	1.26	M85x1
STYT-355-15-65	65	81.1	10	$\pm 9.4^\circ$	$\Phi 21.2/15 \times 15$	4.2	94	1.8	M85x1
STYT-355-28-74	74	91.35	10	$\pm 16^\circ$	$\Phi 40/28 \times 28$	4.5	90	1.0	M85x1
STYT-355-50.8-100	100	107.68	14	$\pm 20.4^\circ$	$\Phi 71/50.8 \times 50.8$	6.69	120	1.6	M85x1
STYT-355-50-100	100	136.48	14	$\pm 21^\circ$	$\Phi 70.7/50 \times 50$	5	120	0.5	M85x1
STYT-355-51-103	103	136.13	12	$\pm 20.4''$	$\Phi 72/51 \times 51$	5.58	100	1.93	M85x1
STYT-355-65-110	110	153.88	8	$\pm 24^\circ$	$\Phi 92/65 \times 65$	8.9	120	1.6	M85x1
STYT-355-65-120	120	149.1	10	$\pm 22.5^\circ$	$\Phi 92/65 \times 65$	8	118	1.5	M85x1
STYT-355-60-130	130	159.92	10	$\pm 19^\circ$	$\Phi 85/60 \times 60$	8.45	120	0.98	M85x1
STYT-355-90-167	167	211.25	10	$\pm 24^\circ$	$\Phi 127/90 \times 90$	10.8	130	5.28	M85x1
STYT-355-70-167	167	234.52	14	$\pm 18^\circ$	$\Phi 99/70 \times 70$	7.8	140	0.48	M85x1
STYT-355-90-166.57	166.57	229.16	14	$\pm 22^\circ$	$\Phi 127/90 \times 90$	7.7	159	<2	M85x1
STYT-355-101-175	175	247.49	10	$\pm 24^\circ$	$\Phi 142/101 \times 101$	11.8	140	3.13	M85x1
STYT-355-172-295	295	426.75	14	$\pm 23.7^\circ$	$\Phi 244/172 \times 172$	13	280	1.7	M85x1
STYT-355-173-330	330	681.58	14	$\pm 20^\circ$	$\Phi 245/173 \times 173$	15.3	270	1.35	M85x1

STY-WT Series 355nm F-theta Lens

Part No.	FL (mm)	SA (\pm°)	SL (mm)	SAR (mm)	EP (mm)	FSD (μ m)	Length (mm)	WD (mm)
STY-355-60-100-WT	100.0	25°	85.0	60x60	6.0	15.5	56.0	130.5
STY-355-76-108-WT	108.3	28.4°	107.7	76x76	6.0	-	49.0	146.0
STY-355-109-174-WT	173.9	25°	153.2	109x109	6.0	-	36.8	218.4
STY-355-112-160-WT	160.0	20°	158.0	112x112	7.0	13.5	50.0	177.79
STY-355-112-160Q-WT	160.0	29°	160.0	112x112	6.0	18	50.36	206.6
STY-355-155-250-WT	250.3	25.4°	219.2	155x155	10.0	-	61.0	309.6
STY-355-160-254-WT	254.0	25°	220.0	160x160	12.0	22.0	55.0	311.0
STY-355-130-269-WT	269.3	19.0°	183.0	130x130	4.0	-	47.0	276.1
STY-355-180-290-WT	290.0	25.5°	255.0	180x180	20.0	40.0	65.0	332.5
STY-355-250-410-WT	410.0	25°	354.0	250x250	10.0	7.0	46.8	488.2
STY-355-320-580-WT	580.0	22°	455.0	320x320	10.0	27.0	38.0	668.0
STY-355-350-580-WT	580.0	25°	495.0	350x350	15.0	24.0	46.0	689.0
STY-355-500-810-WT	810.0	28°	850.0	500x500	24.0	55.0	57.0	880.0
STY-355-440-831-WT	831.1	21.4°	624.5	440x440	14.0	-	62.5	983.2
STY-355-470-912-WT	919.2	20.8°	678.0	470x470	14.0	-	40.0	1032.0

STS Series 355nm Standard F-theta Lens

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
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STS-0580/075	355	580.8	fs	10	320 x 320	39	671.5	89	38	M85x1
STS-0815/075	355	829.4	fs	14	440 x 440	25	981.1	90	62.5	M85x1
STS-0920/075	355	919.9	fs	14	470 x 470	41	1035.1	89	40	M85x1
STS-1330/075	355	329.3	fs	14	210 x 210	36	260.5	122	108.4	M85x1
STS-3100/075	355	108.3	fs	6	76 x 76	17.1	145.7	89	49	M85x1
STS-3160/075	355	174.7	fs	6	109 x 109	21.1	219	89	36.8	M85x1
STS-3260/075	355	250.3	fs	10	155 x 155	28.1	309.8	105	61	M85x1

STS Series 355nm Telecentric F-theta Lens

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-3046/075	355	45	fs	15	7 x 7	26	55.7	90	64.9	M85x1
STS-3050/075	355	56	fs	6	20 x 20	19.5	75.9	87	39.5	M85x1
STS-3170/075	355	163.4	fs	10	90 x 90	26	221.7	127	103.7	M85x1
STS-3301/075	355	290	fs	10	137 x 137	30	465.9	218	248.3	M85x1
STS-4010/075	355	100.2	fs	10	35 x 35	34.6	132	106	78.7	M85x1
STS-4031/075	355	32.1	fs	10	6 x 6	16.5	29.1	90	39.8	M85x1
STS-4067/075	355	65.5	fs	15	15 x 15	24	81.7	94	79	M85x1
STS-4110/075	355	109.4	fs	6	63 x 63	33.1	154.6	121	86	M85x1
STS-4125/075	355	125	fs	10	53 x 53	36.8	156.9	106	106.3	M85x1
STS-4262/075	355	163	fs	10	65 x 65	35.2	193.7	121	145.5	M85x1
STS-5256/075	355	256.8	fs	6	86 x 86	24	145.4	138	173.5	M85x1

STJ Series 355nm Standard F-theta Lens

Model	WL (nm)	FL (mm)	SAR (mm)	SA (°)	EP (mm)	FSD (µm)	a1 (mm)	a2 (mm)	Telecentricity (l with scanner (°))	WD (mm)	MT
STJ-017700-401-26	355	53	24	24	10	3.5	13	46	0.4 1.5	65	M85x1

STJ Series 355nm High-Power F-theta Lens

Model	Wavelength (nm)	FL (mm)	SAR (mm)	SA (°)	EP (mm)	Focus spot (µm)	a1 (mm)	a2 (mm)	Telecentricity (l with scanner (°))	WD (mm)	MT
STJ-017700-402-26	355	103	71	40	9	8	14	47	2.4 2.8	135	M85x1
STJ-017700-406-26	355	255	240	54	10	17	13	42	12.7 12.7	314	M85x1
STJ-017700-405-26	355	510	431	51	14	24	14	42	18.2 18.2	609	M85x1
STJ-586840	355	170	140	50	10	11	13	42	4.8 4.8	236	M85x1

9. Wavelength 266nm

STY-WT Series 266nm F-theta Lens

Part No.	FL (mm)	SA (±°)	SL (mm)	SAR (mm)	EP (mm)	FSD (µm)	Length (mm)	WD (mm)
STY-266-70-100-WT	100.0	28°	95.0	70x70	5.0	8.0	49.0	137.0
STY-266-110-160-WT	160.0	28°	160.0	110x110	5.0	10.0	36.7	200.0
STY-266-90-254-WT	254.0	18°	156.0	90x90	4.0	16.0	47.0	25.0

STS Series 266nm Standard F-theta Lens

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0256/199	266	245.4	fs	4	148 x 148	13.5	249.3	90	47	M85x1
STS-3100/199	266	101.5	fs	5	73 x 73	17.1	136.3	89	49	M85x1
STS-3160/199	266	161.4	fs	5	105 x 105	21.1	202.8	89	36.8	M85x1

STS Series 266nm Telecentric F-theta Lens

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-3050/199	266	53.5	fs	6	20 x 20	17.8	72	87	39	M85x1
STS-4105/199	266	96.1	fs	5	50 x 50	26.9	134.5	121	86.2	M85x1
STS-4163/199	266	159.8	fs	10	64 x 64	32.6	213.6	121	173	M85x1
STS-4263/199	266	162.9	fs	10	70 x 70	35.2	218.4	121	110.4	M85x1

STJ Series 266nm High-Power F-theta Lens

Model	Wavelength (nm)	FL (mm)	SAR (mm)	SA (°)	EP (mm)	Focus spot (μm)	a1 (mm)	a2 (mm)	Telecentricity (with scanner) (°)	WD (mm)	MT
STJ-017700-601-26	266	103	71	40	9	6	14	46	2.6 2.9	133	M85x1

10. Achromatic F-theta Lens

Achromatic f-theta lenses are designed to focus laser beam and visible light on the same focal planes of laser processing field and CCD monitoring field, which allows a full CCD monitoring during laser processing.



STY Series 355nm Achromatic F-theta Lens

Model	FL mm	WD mm	E.P. mm	Scan angle max	SAR, mm (round/square)	FSD μm	OD mm	MT
STY-355-635-50-140	140	100.29	10-12	±14.5°	Φ70.7/50x50	9.1	90	M85x1
STY-355-532-60-170	170	135	10	±15°	Φ80/60x60	11.1	105	M85x1
STY-355-633120-254	254	222.49	10	±19°	Φ170/120x120	16.49	105	M85x1

STY Series 532nm Achromatic F-theta Lens

Model	FL mm	WD mm	E.P. mm	Scan angle max	SAR, mm (round/square)	FSD μm	OD mm	MT
STY-532-633-50-140	500	517.29	14	±28°	Φ495/350x350	34.8	105	M85x1

STY Series 915nm Achromatic F-theta Lens

Model	FL mm	WD mm	E.P. mm	SA max	SAR, mm (round/square)	FSD μm	OD mm	MT
STY-915-633-130-210	210	229.76	30	±25°	Φ184/130x130	12.06	132	M102x1;M121x1
STY-915-680-300-500	500	535.43	30	±25°	Φ424/300x300	27.9	140	M102x1

STY Series 1064nm Achromatic F-theta Lens

Model	FL mm	WD mm	E.P. mm	SA max	SAR, mm (round/square)	FSD μm	OD mm	MT
STY-1064-633-70-100	100	102.84	10	±25°	Φ100/70x70	19.5	90	M85x1
STY-1064-633-110-160-10	160	169.87	10	±28°	Φ155/110x110	31	105	M85x1
STY-1064-633-110-160-12	160	172.47	12	±28°	Φ156/110x110	25.9	105	M85x1
STY-1064-633-100-170	170	179.99	30	±25°	Φ150/100x100	11	140	M112x1;M102x1;M95x1
STY-1064-633-130-210	210	232.31	30	±25°	Φ185/145x130	13.65	140	M112x1;M102x1;M95x1
STY-1064-633-175-254	254	261.75	10	±25°	Φ247/175x175	49.4	90	M85x1
STY-1064-633-157-254	254	269.27	30	±25°	Φ222/157x157	30	140	M112x1;M102x1;M95x1
STY-1064-468-176-255	255	262.43	10	±28°	Φ248/176x176	49.4	90	M85x1
STY-1064-633-180-260	260	253.45	15	±28°	Φ255/180x180	33.75	135	M85x1
STY-1064-633-200-330	330	356.13	30	±25°	Φ283/200x200	21.4	140	M112x1;M102x1;M95x1
STY-1064-633-260-420	420	455.42	30	±25°	Φ368/260x260	27.3	140	M112x1;M102x1;M95x1

11. Scan Lenses for Laser Cleaning

The scan lenses are designed for laser cleaning. These portable f-theta lenses have the advantages on small size and light weight and thus used for hand-hold laser cleaning systems.



Part number	FL mm	WD mm	EP mm	SA max	SAR, mm (square)	FSD μm	OD mm	MT
STY-405-200x1-330Q	330	401.37	10	±17.5°	200x10	24.5	75x21x44.5	D4.5x285x1
STY-1030-1080-70X8-160	160	204.03	20	±12.5°	70x8	15.57	90x49x75	D4.5x285x1
STY-1070-650-80X5-160Q	160	199.9	10	±14.7°	80x5	31.15	63.5x21x42.7	D4.5x285x1
STY-1030-1080-80X10-255	255	320.34	20	±10°	80x10	30	90x49x82	D4.5x285x1

Scan Lenses for 10.6um CO₂ Lasers

1. Single-element Scan Lenses

1) STSL Series Lenses

STSL scanner lenses specially designed and optimized for use in CO₂ laser 2-axis galvo-scanner systems with full beam diameters of up to 15.0mm. Mirror sets appropriate for use with beam diameters up to 15mm require an increase in mirror separation in comparison with smaller mirrors. These changed optical conditions are catered for by the STSL series. These single-element lenses are designed to represent the best achievable compromise for on-axis and off-axis aberrations, field flatness and F-theta characteristics, obtainable using single-element spherical-surface designs of (standard) 48mm diameter. The lens material is ZnSe.

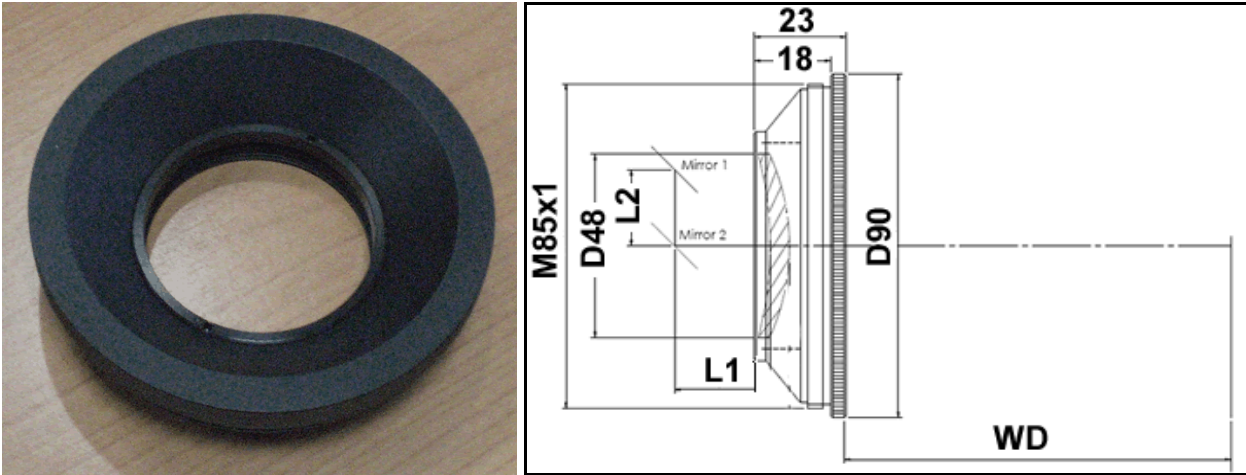


Part no.	Focal length (mm)	Scan field (mm)	Back focal length (mm)	Flange focal length (mm)	Average spot diameter (μm)
STSL-10.6-50-75	75.2	50 x 50	74.2	78.4	171
STSL-10.6-60-90	90.1	60 x 60	90.0	94.8	174
STSL-10.6-70-101	101.3	70 x 70	101.4	106.1	181
STSL-10.6-105-149	149.1	105 x 105	150.6	155.6	219
STSL-10.6-120-175	175.0	120 x 120	177.4	178.4	243
STSL-10.6-125-179	179.2	125 x 125	181.9	187.3	247
STSL-10.6-140-201	200.6	140 x 140	203.5	208.8	269
STSL-10.6-155-226	225.5	155 x 155	228.0	232.8	296
STSL-10.6-175-249	249.4	175 x 175	253.3	258.5	320
STSL-10.6-210-298	298.0	210 x 210	302.6	307.7	373
STSL-10.6-250-363	362.6	250 x 250	368.2	373.2	445
STSL-10.6-280-394	394.4	280 x 280	401.4	406.7	481
STSL-10.6-300-433	432.7	300 x 300	441.0	446.2	525
STSL-10.6-340-482	481.8	340 x 340	490.2	495.3	581
STSL-10.6-370-529	528.8	370 x 370	538.5	543.5	634
STSL-10.6-415-592	591.7	415 x 415	586.5	589.9	717
STSL-10.6-500-717	716.5	500 x 500	730.0	734.7	850
STSL-10.6-550-782	781.6	550 x 550	797.7	802.2	925
STSL-10.6-600-848	848.4	600 x 600	859.6	863.7	1000
STSL-10.6-680-978	977.6	680 x 680	993.7	997.9	1150
STSL-10.6-840-1183	1183	840 x 840	1205	1208	1390
STSL-10.6-850-1201	1201	850 x 850	1216	1220	1410
STSL-10.6-920-1285	1285	920 x 920	1317	1321	1520
STSL-10.6-1000-1409	1409	1000 x 1000	1421	1425	1650
STSL-10.6-1120-1577	1577	1120 x 1120	1593	1596	1840
STSL-10.6-1256-1746	1746	1256 x 1256	1783	1787	2040
STSL-10.6-1500-2122	2122	1500 x 1500	2173	2177	2420

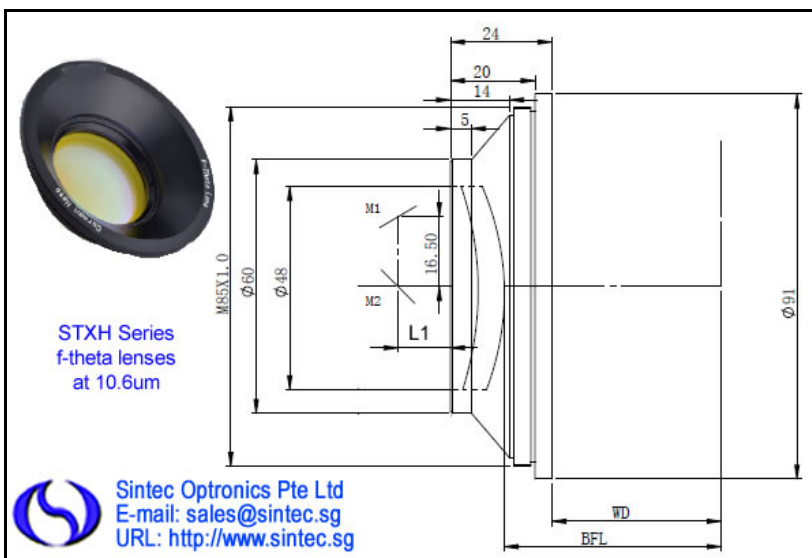
Remark:

- (1) The lenses are meniscus form; one concave and one convex surface. The concave always faces the incident beam.
- (2) The mirror locations are the same for every STSL lens, so any lens can replace any other in the cell and be correctly positioned. The field sizes given, assume an optical field angle of +/-20deg.
- (3) Focused spot diameters assume a 15mm diameter full beam (approximately 12mm 1/e²) and TEM₀₀ mode (M² = 1). The 'average' is the mean of 25 field positions in a quadrant.
- (4) For all STSL lenses, the diameter is 48.0 +/-0.1 mm, and the edge thickness is 3.0 +/-0.1 mm.

For the above lenses, we can provide a mount as option as follows:



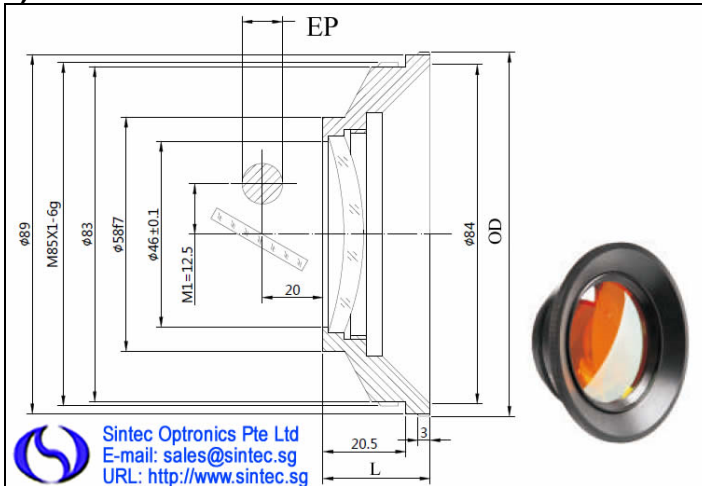
2) STXH Series Mounted F-theta Lenses



Part No.	SAR(mm)	FSD(mm)	FL(mm)	WD(mm)	L1(mm)	Telecentricity(°)
STXH-10.6-50-75	50×50	0.12	75	57.5	15.5	16.1
STXH-10.6-70-100	70×70	0.18	101.3	85.7	14.4	19
STXH-10.6-90-125	90×90	0.22	128.3	111.9	13.3	21.8
STXH-10.6-110-150	110×110	0.29	150.2	135.9	13.3	23.5
STXH-10.6-140-230	140×140	0.50	238.1	227	12.8	23.6
STXH-10.6-175-250	175×175	0.54	250	238	14.0	23.9
STXH-10.6-210-300	210×210	0.61	300	288	13.8	24.5
STXH-10.6-250-360	250×250	0.80	360	352.8	12.4	26.7
STXH-10.6-300-430	300×300	1.00	430	356.5	13.8	27.8

Remark: For all STXH lenses, the lens diameter is 48.0 +0/-0.1 mm, allowed maximum input beam diameter is 14mm (20mm is available upon request), scan mirror spacing L2 is 16.5mm, outside diameter is 91mm, total length is 24mm, mount thread is M85x1mm and the lens materials is ZnSe. For the lens diameters, 38mm and 65mm are available upon request.

3) STY Series 10.6um Mounted F-theta Lenses



Model	FL mm	WD mm	EP mm	SA max	SAR, mm (round/square)	FSD μ m	ODxL mm	MT
STY-10.6-70-100	100	85.5	10	$\pm 25^\circ$	$\Phi 100/70 \times 70$	193.98	90x26.5	M85x1
STY-10.6-110-150	150	131.5	12	$\pm 25^\circ$	$\Phi 155/110 \times 110$	242.47	90.2x26.5	M85x1
STY-10.6-140-200	200	185.7	15	$\pm 25^\circ$	$\Phi 198/140 \times 140$	258.64	90.2x26.5	M85x1
STY-10.6-175-250	250	244.8	15	$\pm 25^\circ$	$\Phi 248/175 \times 175$	323.3	90x26	M85x1
STY-10.6-210-300	300	298.8	12	$\pm 25^\circ$	$\Phi 297/210 \times 210$	484.95	90x26	M85x1
STY-10.6-250-360	360	350	12	$\pm 25^\circ$	$\Phi 495/250 \times 250$	581.94	90x26	M85x1
STY-10.6-300-430	430	420.2	15	$\pm 25^\circ$	$\Phi 424/300 \times 300$	558.08	90x26	M85x1
STY-10.6-350-500	500	552.52	20	$\pm 28.4''$	$\Phi 494/350 \times 350$	48.67	120x32.5	M85x1
STY-10.6-400-580	580	663.8	20	$\pm 25^\circ$	$\Phi 580/400 \times 400$	562.54	120x47	M85x1

2. STU2 Series Mounted 2-element F-theta Lenses

These doublet (STU2) and triplet scanning (STU3) lenses are intended to work with the same configuration of scanning mirrors and beam sizes as the STSL single-element lenses, but are offered at the shorter focal lengths where better performance is possible. The doublets have focal lengths from 75 to 300mm. Above 300mm the benefits of using a doublet are not great. The triplets are offered in two focal lengths, 75 and 100mm. These give diffraction limited performance and even further improvement over the corresponding doublet.

All the lenses are made from laser grade ZnSe. Each of the lenses comes in a black anodized aluminium mount and can also be fitted with a ZnSe protection window as an option.

Specifications:

Material: All elements and protection window made from Laser Grade ZnSe.

Mount details: See Figure 10.51.

Beam diameter: Up to 15mm (12mm 1/e²)

Optical scan field: $\pm 20^\circ$ in X and Y.

Focal length: Within 1%.

Absorption: < 0.25% per element.

Transmission: > 99.6% per element coated AR/AR for 10.6mm.

Damage threshold: CW 3000W/mm at 10.6mm.

Part no	Scan field (mm)	Focal length (mm)	Focus size (μ m)	WD no window (mm)	WD with window (mm)	Max. Fq error X axis(%)	Max. Fq error Y axis(%)
STU2-10.6-50-75	50x50	75.0	118	60.27	62.03	-2.4	-2.4
STU2-10.6-70-100	70x70	100.0	139	87.57	89.34	-1.5	-1.4
STU2-10.6-105-151	105x105	151.4	171	149.06	150.84	0.9	0.9
STU2-10.6-140-200	140x140	200.0	225	213.94	215.73	1	1
STU2-10.6-175-250	175x175	250.0	282	261.36	263.17	1.3	1.3
STU2-10.6-210-300	210x210	300.0	338	312.06	313.87	1.5	1.5

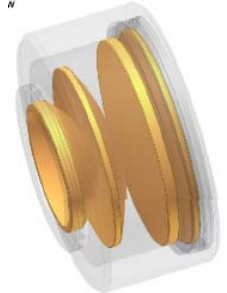
3. Mounted Triple Element F-theta Lenses

SL3 Series 3-element F-theta Lenses

Part No.	Wavelength (um)	FL(mm)	WD (mm)	SA	SAR (mm ²)	EP (mm)	A1 (mm)	A2 (mm)	Focus size (um)	MT	length (mm)
SL3-9.4-50-80W	9.4	80	89.4	+/- 25°	50X50	14	18	18	84.5	M85X1	39.20
SL3-9.4-60-105Z	9.4	105	60.1	+/- 25°	60X60	14	18	21	88.5	M85X1	86
SL3-10.6-50-80W	10.6	80	89.4	+/- 25°	50X50	14	18	18	84.5	M85X1	39.20
SL3-10.6-60-105Z	10.6	105	60.1	+/- 25°	60X60	14	18	21	88.5	M85X1	86

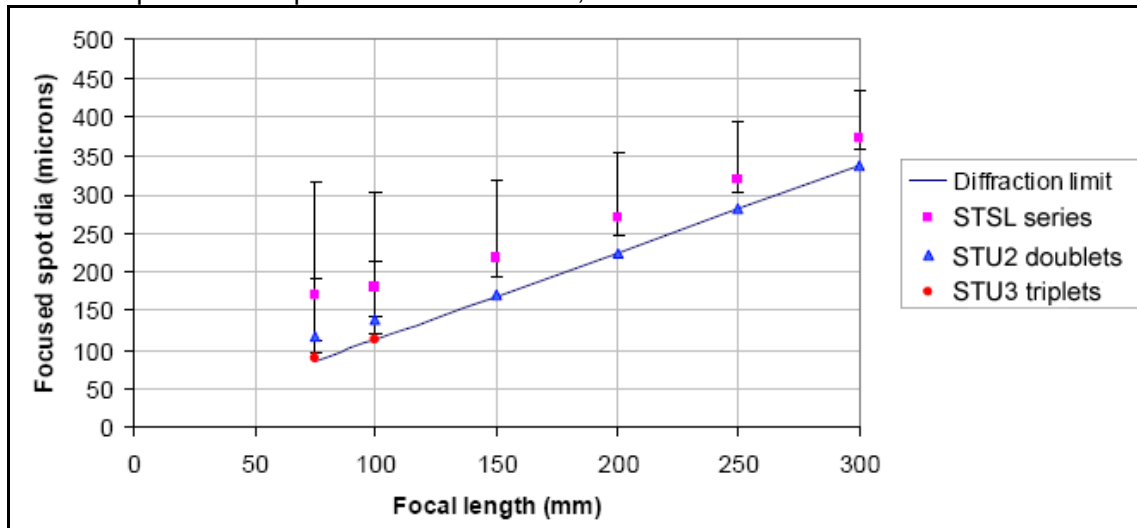
STU3 Series Scan Lenses

- focal lengths 75 and 100mm respectively
- the 75mm focal length lens is also nearly telecentric (see below) with the focused beam less than 5° to the normal diffraction limited performance over the entire image plane
- virtually zero F-theta error
- can be fitted with a protective window

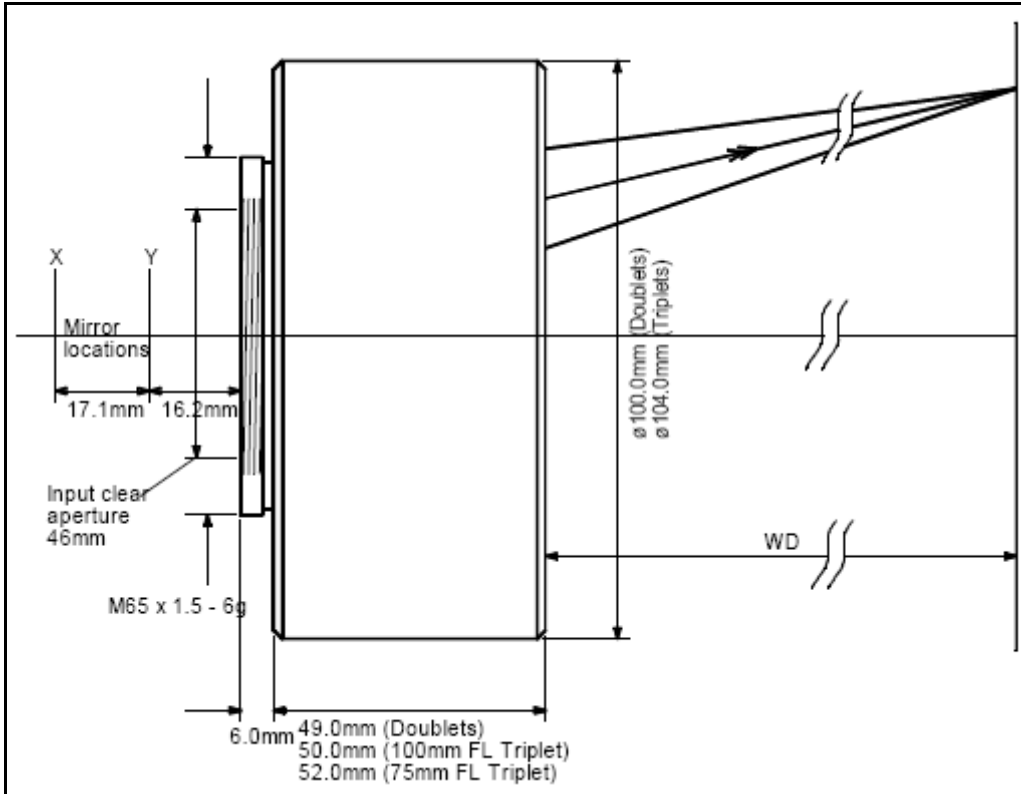


Part No.	Wavelength (um)	FL (mm)	SAR (mm)	EP (mm)	Focus size (mm)
STU3-10.6-50-75	10.6	75	50x50	15	89
STU3-10.6-70-100	10.6	100	70x70	15	113

Focused spot size comparison between STSL, STU2 and STU3



Dimension of STU2 and STU3



Scan Lenses for Other Wavelengths

STY Series F-theta Lens

Model	Wavelength nm	FL mm	WD mm	SAR mm	Scan Angle	EP mm	Focus size, μm	D2 mm	MT
STY-980-70-100	980	100	111.62	$\Phi 100/70 \times 70$	$\pm 25^\circ$	12	16.33	90	M85x1
STY-780-980-55-100R	780-980	100	104	$\Phi 88/55 \times 55$	$\pm 25.2^\circ$	12	15	90	M85x1
STY-980-110-160	980	160	181.29	$\Phi 158/110 \times 110$	$\pm 28^\circ$	12	25.9	90	M85x1
STY-980-100-160	980	160	181.04	$\Phi 141/100 \times 100$	$\pm 28^\circ$	20	14.62	120	M85x1
STY-980-100-163	980	163	179.61	$\Phi 160/100 \times 100$	$\pm 25^\circ$	20	15.77	115	M85x1
STY-980-100-165	980	165	181.04	$\Phi 141/100 \times 100$	$\pm 28^\circ$	20	14.62	120	M85x1
STY-915-940-100-170	915-940	170	191.97	$\Phi 144/100 \times 100$	$\pm 25^\circ$	30	10.11	140	M102x1
STY-980-100-170	980	170	191.97	$\Phi 144/100 \times 100$	$\pm 25^\circ$	30	10.11	140	M102x1
STY-980-100-170	980-100	170	191.97	$\Phi 144/100 \times 100$	$\pm 25^\circ$	30	10.11	140	M102x1
STY-915-940-170-254	915-940	254	271.07	$\Phi 240/170 \times 170$	$\pm 25^\circ$	14-20	10.11	120	M85x1
STY-915-940-175-254	915-940	254	286.08	$\Phi 247/175 \times 175$	$\pm 25^\circ$	30	32.5	140	M102x1
STY-980-156-254	980	254	286.08	$\Phi 220/156 \times 156$	$\pm 25^\circ$	30	15	140	M102x1
STY-980-261-420	980	420	502.23	$\Phi 369/261 \times 261$	$\pm 25.2^\circ$	30	25.11	140	M132x1
STY-915-400-510	915	510	565.93	$\Phi 565/400 \times 400$	$\pm 31.5^\circ$	18	47.5	120	M85x1
STY-1940-190-280	1840	280	346.1	$\Phi 268/190 \times 190$	$\pm 27.5^\circ$	14	71	120	
STY-1940-318-465	1940	465	554.04	$\Phi 446/318 \times 318$	$\pm 27.5^\circ$	14	117.9	120	
STY-1940-380-554	1940	554	655.77	$\Phi 268/380 \times 380$	$\pm 27.5^\circ$	14	140.49	120	

Standard f-Theta Lenses for 808nm

Part No.	FL (mm)	SA (\pm°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-0101/094	97.53	28.00	75.71	53x53	10	18.00	40.00	90.00	108.90	M85x1
STS-0163/094	158.28	27.60	156.21	108x108	12	20.80	43.30	89.00	176.42	M85x1
STS-2163/094	158.88	26.80	150.05	103x103	20	29.00	66.00	128.00	187.26	M85x1
STS-0202/094	196.85	19.00	130.88	90x90	30	43.00	83.10	132.00	237.41	M85x1
STS-3254/094	248.66	19.20	168.83	115x115	30	47.93	75.50	130.00	290.03	M85x1
STS-0300/094	294.17	25.00	258.39	175x175	20	35.00	78.00	128.00	346.21	M85x1
STS-0400/094	397.87	21.40	303.07	213x213	20	33.00	53.00	118.00	486.87	M85x1
STS-0420/094	410.93	25.20	374.59	250x250	30	54.64	52.00	136.00	468.59	M132x1
STS-0555/094	556.24	21.40	426.26	290x290	25	40.00	65.40	130.00	628.87	M85x1
STS-0635/094	636.51	25.60	594.02	415x415	30	58.25	48.50	133.00	709.51	M110x1
STS-0825/094	803.55	28.00	642.68	450x450	30	54.00	58.00	130.00	875.96	M102x1

Telecentric f-Theta Lenses for 808nm

Part No.	FL (mm)	SA (\pm°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-0053/094	56.33	11.00	21.61	14x14	10.00	17.50	55.15	90.00	69.12	M85x1
STS-0075/094	76.78	9.80	26.40	19x19	10.00	32.60	45.00	70.00	103.63	TK60
STS-0080/094	79.55	21.20	58.15	39x39	25.00	27.70	83.40	107.00	79.53	M85x1
STS-5100/094	105.63	26.80	96.39	68x68	12.00	35.00	85.50	126.00	135.25	M85x1

Standard f-Theta Lenses for 980nm

Part No.	FL (mm)	SA (\pm°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-0101/094	99.46	28.00	75.71	53x53	10.00	18.00	40.00	90.00	111.17	M85x1
STS-0163/094	161.38	27.60	156.21	108x108	12.00	20.80	43.30	89.00	179.88	M85x1
STS-2163/094	162.00	26.80	150.05	103x103	20.00	29.00	66.00	128.00	191.26	M85x1
STS-0202/094	200.40	19.00	130.88	90x90	30.00	43.00	83.10	132.00	241.65	M85x1
STS-3254/094	253.12	19.20	168.83	115x115	30.00	47.93	75.50	130.00	295.61	M85x1
STS-0300/094	298.52	25.00	258.39	175x175	20.00	35.00	78.00	128.00	351.32	M85x1
STS-0400/094	400.16	21.40	303.07	213x213	20.00	33.00	53.00	118.00	489.16	M85x1
STS-0420/094	419.58	25.20	374.59	250x250	30.00	54.64	52.00	136.00	478.65	M132x1
STS-0555/094	565.20	21.40	426.26	290x290	25.00	40.00	65.40	130.00	638.85	M85x1
STS-0635/094	649.59	25.60	594.02	415x415	30.00	58.25	48.50	133.00	724.17	M110x1

STS-0825/094	812.18	28.00	642.68	450x450	30.00	54.00	58.00	130.00	885.11	M102x1
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Telecentric *f*-Theta Lenses for 980nm

Part No.	FL (mm)	SA (±°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-0053/094	57.39	11.00	21.61	14x14	10	17.50	55.15	90.00	70.56	M85x1
STS-0075/094	78.18	9.80	26.40	19x19	10	32.60	45.00	70.00	105.56	TK60
STS-0080/094	80.96	21.20	58.15	39x39	25	27.70	83.40	107	81.30	M85x1
STS-5100/094	107.19	26.80	96.39	68x68	12	35.00	85.50	126	137.17	M85x1

Standard *f*-Theta Lenses at 633nm

Part No.	FL (mm)	SA (±°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-0155/123	154.63	11.00	59.28	40x40	15.00	40.00	50.00	70.00	192.00	No thread

Standard *f*-Theta Lenses at 633nm

Part No.	FL (mm)	SA (±°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-0075/123	74.79	10.40	27.00	19X19	10.00	31.00	45.00	70.00	100.30	No thread
STS-1088/093	87.48	15.80	48.22	34X34	7.00	34.00	55.00	98.00	116.61	TK87
STS-0093/123	89.02	17.00	51.96	36X36	16.00	34.00	62.05	83.00	113.37	No thread
STS-1100/123	100.59	12.00	42.16	30X30	10.00	53.30	92.00	155.00	221.34	TK145
STS-1114/093	156.06	20.00	108.80	77X77	10.00	53.30	92.00	155.00	223.27	TK145
STS-0200/123	203.55	15.00	105.79	75X75	20.00	116.50	93.95	142.00	235.97	TK133

Standard *f*-Theta Lenses at 670nm

Part No.	FL (mm)	SA (±°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-1088/093	87.96	15.80	48.50	34X34	7.00	34.40	55.00	98.00	116.27	TK87
STS-1114/093	157.32	20.00	109.65	77X77	10.00	53.30	92.00	155.00	223.00	TK145
STS-040/093	157.47	19.60	107.73	76X76	5.00	53.40	90.00	155.00	225.22	TK145

Color-corrected *f*-theta lenses

1544nm – 1560nm

Model	FL (mm) @1544nm	FL (mm) @1560nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @1544nm	WD (mm) @1560nm	OD (mm)	Length (mm)	MT
STS-7010/008	100		10	35 x 35	32	113.2	113.2	94	98.8	M85x1

1000nm – 1100nm

Model	FL (mm) @1544nm	FL (mm) @1560nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @1544nm	WD (mm) @1560nm	OD (mm)	Length (mm)	MT
STS-7010/450	100.2		10	35 x 35	32	115	115	94	98.8	M85x1

515nm – 589nm

Model	FL (mm) @1544nm	FL (mm) @1560nm	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm) @1544nm	WD (mm) @1560nm	OD (mm)	Length (mm)	MT
STS-7012/292	100		10	35 x 35	36.1	101.9	101.9	94	98.8	M85x1

Standard *f*-Theta Lenses at 405nm

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-0314/173	405	315.1	glass	10	200 x 200	36.2	372	116	49	M92x1
STS-0375/173	405	375.3	glass	10	300 x 300	35.5	447.9	116	47.9	M92x1
STS-0580/173	405	593.8	fs	10	326 x 326	39	686.1	89	38	M85x1
STS-1208/173	405	1794	glass	20	1100 x 1100	47.5	1929.7	96	31.8	M85x1
STS-1208/173	405	1794	glass	30	800 x 800	47.5	1929.7	96	31.8	M85x1
STS-1210/173	405	1202.7	glass	20	748 x 748	48.5	1353.7	152	96.9	M85x1
STS-3160/173	405	176	fs	6	110 x 110	21.1	220.9	89	36.8	M85x1
STS-3260/173	405	263.9	fs	10	164 x 164	26	331.3	105	61	M85x1

Telecentric *f*-Theta Lenses at 405nm

Model	Wavelength (nm)	FL (mm)	Material	EP (mm)	SAR (mm x mm)	AS (mm)	WD (mm)	OD (mm)	Length (mm)	MT
STS-3170/173	405	166.3	fs	10	90 x 90	26	226.3	127	103.7	M85x1
STS-4110/173	405	111.4	fs	6	63 x 63	33.1	157.6	121	86	M85x1

STS-4175/173	405	107.1	glass	10	60 x 60	60.7	191.6	119	143	M85x1
STS-8050/173	405	55.1	glass	6	30 x 30	16.2	67.3	90	52	M85x1

f-Theta Lens for Mask Imaging for Excimer Laser at 248nm

Part No.	FL (mm)	SA (±°)	Magnification	SAR (mmxmm)	EP (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-4200/198	221.10	14.00	0.33	200X200	10X10	38.6	88	303.60	M85x1

Standard *f*-Theta Lenses for Excimer Laser at 193nm

Part No.	FL (mm)	SA (±°)	SL (mm)	SAR (mm x mm)	EP (mm)	AS (mm)	Length (mm)	OD (mm)	WD (mm)	MT
STS-4056/198	56	18.8	25X25	7	15	34	87	M85X1	Yes	71.36
STS-4057/198	66.24	19.2	30X30	7	15	34	87	M85X1	Yes	83.78

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When you select *f*-theta lens, you need to consider the following factors:

1. When the marking field increases, the focal length will be longer and the focused beam diameter will be larger.
2. When the diameter is larger, the power density on the workpiece will be lower. Thus you may need higher laser power.
3. When the laser power is higher, the laser beam quality may be worse and then the focused beam diameter will be larger.

Thus you should choose a proper *f*-theta lens according to a reasonable marking field. In order to meet various application requirements such as large field and small field, you may buy a few lenses with different marking fields to achieve good marking quality.