

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.



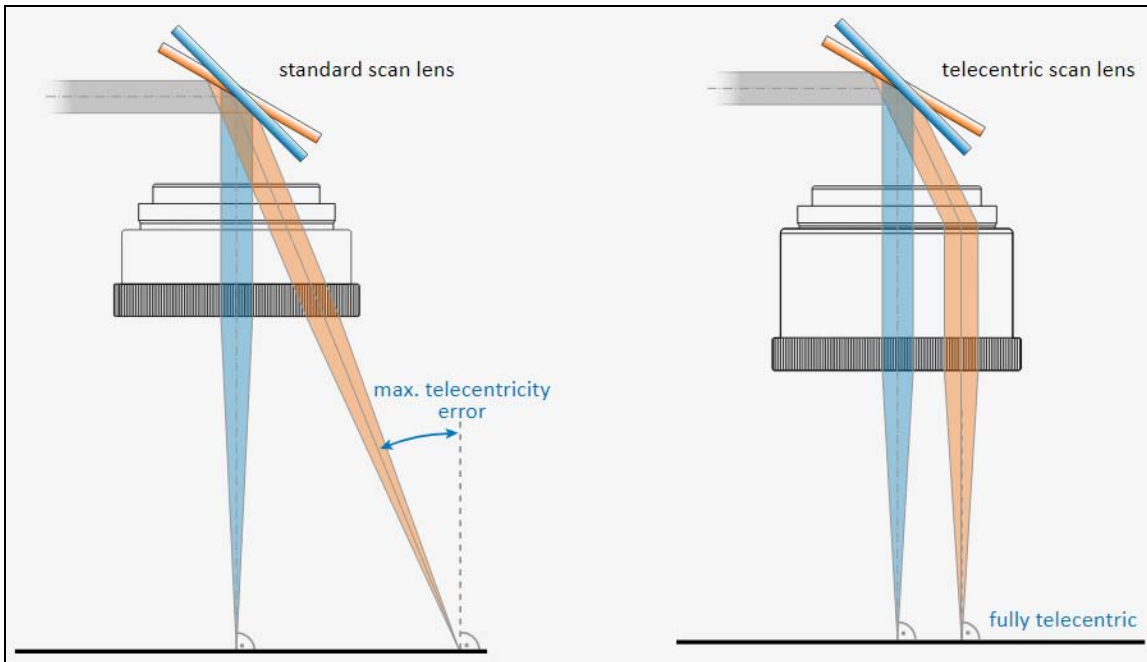
A standard lens focuses the laser beam on a spherical plain in contrast to an ideal flat or plane field. The use of f -theta lenses provides a plane focusing surface and almost constant spot size over the entire XY image plane or scan field. The position of the spot on the image plane is directly proportional 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.

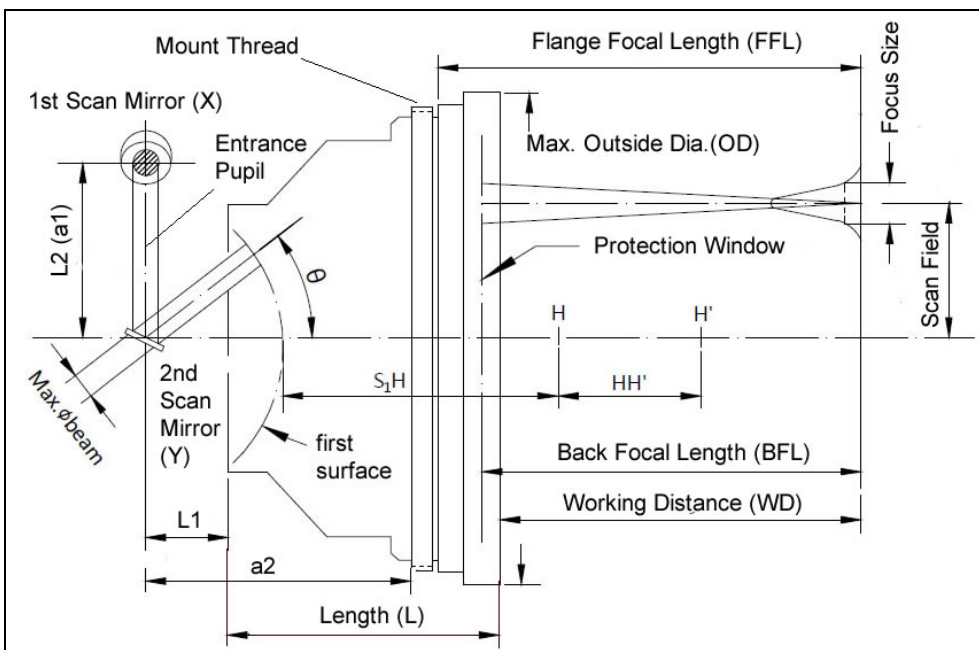
Telecentric f -theta lenses provide a beam with perpendicular incidence onto the image surface. This is necessary for drilling holes and structuring surfaces in the third dimension (depth). The downside is generally a smaller focal plane compared to a non-telecentric lens, because the size of the frontal lens elements has to be larger than the scan area. Sill offers for both kinds of f -theta lenses a large variety of options and focal distances.

The telecentricity error specifies the deviation of the laser beam from perpendicular. Usually it is maximum in the corner of the XY scan field. Note, that the telecentricity error is always zero on the optical axis. The telecentricity error or maximum incidence angle is a sign of quality for telecentric or entocentric lenses. Perfect telecentricity is only possible if all light comes from the object sided focus. In

principle you can say: the larger the space between the mirrors, the larger the distance from one mirror to the object sided focus the larger the telecentricity error.



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 |
|----------|-------------------|-------------------|------------|------------------|------------|-------------------|-------------------|------------|----------------|-------|
| STS-8163 | 163 | 163.1 | 20 | 102 x 102 | 22 | 151.2 | 151.1 | 106 | 90.5 | M85x1 |

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)

| New Model | Old Model | FL mm | WD mm | EP mm | SA θ_{max} | SAR mm | FSD μm | OD mm | MT |
|-------------------------|-----------------------|----------|----------|----------|----------------------|-----------------------------|----------------|----------|-------|
| STY-F-160A-14-1940 | STY-1940-98-166 | 166 | 207.58 | 14 | $\pm 24^\circ$ | $\Phi 139/98 \times 98$ | 40.68 | 120 | M85x1 |
| STY-F-260A-14-1940-2000 | STY-1940-2000-175-260 | 260 | 323.65 | 14 | $\pm 25^\circ$ | $\Phi 247.5/175 \times 175$ | 64.4 | 126 | M85x1 |
| STY-F-280-1940 | STY-1940-190-280 | 280 | 346.1 | 14 | $\pm 27.5^\circ$ | $\Phi 269/190 \times 190$ | 71 | 120 | M85x1 |
| STY-F-465-1940 | STY-1940-318-465 | 465 | 554 | 14 | $\pm 27.5^\circ$ | $\Phi 446/318 \times 318$ | 117.9 | 120 | M85x1 |
| STY-F-554-1940 | 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)

| New model | Old model | FL mm | WD mm | EP mm | SA maxi | SAR, mm (round/square) | FSD μm | OD mm | Max IA ($^\circ$) | MT |
|-----------------|------------------|----------|----------|----------|------------------|---------------------------|----------------|----------|---------------------------|-------|
| STY-F-68T-1940 | STYT-1940-26-68 | 68 | 88.38 | 10 | $\pm 16^\circ$ | $\Phi 37/26 \times 26$ | 24.1 | 90 | 1.25 | M85x1 |
| STY-F-100t-1940 | STYT-1940-56-100 | 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

STH Series 1550nm F-theta Lens

| Model | FL mm | WD mm | EP mm | SA max | SAR mm | FSD μ m | Mirrors L2/L1 mm | MT |
|-------------------|-------|-------|-------|----------------|--------|-------------|------------------|-------|
| STH-1550-28-63-8 | 63 | 77 | 8 | $\pm 18^\circ$ | 28x28 | 22 | 10/10 | M39x1 |
| STH-1550-45-100-8 | 100 | 106 | 8 | $\pm 18^\circ$ | 45x45 | 35 | 10/10 | M39x1 |

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

| Model | FL mm | WD mm | EP mm | SA maxi | SAR, mm (round/square) | FSD μ m | OD mm | Max IA ($^\circ$) | MT |
|-----------------|-------|-------|-------|----------------|----------------------------|-------------|-------|---------------------|-------|
| STY-F-100T-1550 | 100 | 125 | 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 |

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)

| New part number | Old part number | FL mm | WD mm | E.P. mm | Scan Angle θ_{max} | Scan area mm | Spot μ m | OD mm | Screw |
|----------------------------------|------------------------------|-------|--------|---------|---------------------------|---------------------------|--------------|-------|-------------------|
| STY-F-100Q-1030-1080 | STY-1030-1080-66-100 | 100 | 126.49 | 10 | $\pm 27.8^\circ$ | $\Phi 93/66 \times 66$ | 20 | 90 | M85x1 |
| STY-100Q01030-1080Water | STY-1030-1080-66-100WC | 100 | 126.48 | 10 | $\pm 27.8^\circ$ | $\Phi 93/66 \times 66$ | 20 | 108 | M55x1; M85x1 |
| STY-F-120A-14-1030-1080 | STY-1030-1080-77-120 | 120 | 158.18 | 14 | $\pm 25^\circ$ | $\Phi 109/77 \times 77$ | 16.68 | 120 | M85x1 |
| STY-F-160Q-1-3--1080 | STY-1030-1080-110-160 | 160 | 192.5 | 10 | $\pm 28.3^\circ$ | $\Phi 156/110 \times 110$ | 31.15 | 90 | M85x1 |
| STY-F-160-1030-1080 | STY-1030-1080-100-160 | 160 | 209.01 | 12 | $\pm 25^\circ$ | $\Phi 140/100 \times 100$ | 25.96 | 105 | M85x1 |
| STY-F-160K-1030-1080 | STY-1030-1080-100-160-12 | 160 | 199.21 | 12 | $\pm 25^\circ$ | $\Phi 140/100 \times 100$ | 22.25 | 120 | M85x1 |
| STY-F-160A-14-1030-1080 | STY-1030-1080-100-160-14 | 160 | 203.3 | 14 | $\pm 25^\circ$ | $\Phi 140/100 \times 100$ | 22.25 | 120 | M85x1 |
| STY-F-160-15-1030-1080 | STY-1030-1080-78-160 | 160 | 183.61 | 15 | $\pm 20^\circ$ | $\Phi 110/78 \times 78$ | 20.8 | 120 | M85x1 |
| STY-F-160-20-1030-1080 | STY-1030-1080-71-160 | 160 | 203.53 | 20 | $\pm 18^\circ$ | $\Phi 100/71 \times 71$ | 15.57 | 120 | M85x1 |
| STY-F-170-10-1030-1080 | STY-1030-1080-117-170 | 170 | 199.75 | 10 | $\pm 28^\circ$ | $\Phi 166/117 \times 117$ | 33.1 | 90 | M85x1 |
| STY-F-F-170-30-1030-1080 | STY-1030-1080-70-170 | 170 | 213.64 | 30 | $\pm 25^\circ$ | $\Phi 98/70 \times 70$ | 11.03 | 146 | M102x1; M112x1 |
| STY-F-170-30-1030-1080Water | STY-1030-1080-70-170WC | 170 | 215.0 | 30 | $\pm 25^\circ$ | $\Phi 98/70 \times 70$ | 11.03 | 166 | M102x1; M112x1 |
| STY-F-200-1030-1080 | STY-1030-1080-122-200 | 200 | 245.43 | 20 | $\pm 24^\circ$ | $\Phi 173/122 \times 122$ | 20 | 132 | M85x1 |
| STY-F-206-1030-1080 | STY-1030-1080-120-206 | 206 | 258 | 20 | $\pm 23^\circ$ | $\Phi 170/120 \times 120$ | 20 | 120 | M85x1 |
| STY-F-210-30-1030-1080 | STY-1030-1080-100-210 | 210 | 269.23 | 30 | $\pm 25^\circ$ | $\Phi 140/100 \times 100$ | 18 | 143 | M112x1 |
| STY-F-254- $\Phi 90$ -1030-1080 | | 254 | 298.25 | 10 | $\pm 28^\circ$ | $\Phi 247/175 \times 175$ | 49.5 | 90 | M85x1 |
| STY-F-254- $\Phi 105$ -1030-1080 | STY-1030-1080-175-254-12-105 | 254 | 296.96 | 12 | $\pm 28^\circ$ | $\Phi 247/175 \times 175$ | 41.2 | 105 | M85x1 |
| STY-F-254- $\Phi 120$ -1030-1080 | STY-1030-1080-167-254 | 254 | 292.21 | 14 | $\pm 25^\circ$ | $\Phi 247/167 \times 167$ | 36.3 | 120 | M85x1 |
| STY-F-254-14-1030-1080 | STY-1030-1080-175-254-14 | 254 | 306.14 | 14 | $\pm 28^\circ$ | $\Phi 247/175 \times 175$ | 35.32 | 120 | M85x1 |

| | | | | | | | | | |
|------------------------------|--------------------------|-----|--------|----|------|--------------|-------|-----|-------------------|
| STY-F-254-14-1030-1080Water | STY-1030-1080-175-254WC | 254 | 289.01 | 14 | ±28° | Φ248/175×175 | 35.25 | 126 | M85×1 |
| STY-F-254-30-1030-1080 | STY-1030-1080-128-254 | 254 | 305.09 | 30 | ±21° | Φ181/128×128 | 16.48 | 157 | M102×1; M112×1 |
| STY-F-254-30-1030-1080Water | STY-1030-1080-128-254WC | 254 | 304.09 | 30 | ±21° | Φ181/128×128 | 16.48 | 166 | M102×1; M112×1 |
| STY-F-254D-30-1030-1080Water | STY-1030-1080-120-254WC | 254 | 319.36 | 30 | ±21° | Φ181/120×120 | 16 | 190 | M102×1; M112×1 |
| STY-F-255-20-1030-1080 | STY-1030-1080-153-255 | 255 | 318.34 | 20 | ±25° | Φ216/153×153 | 30 | 132 | M85×1 |
| STY-F-295Q-1030-1080 | STY-1030-1080-203-295 | 295 | 336.72 | 10 | ±28° | Φ287/203×203 | 57.44 | 90 | M85×1 |
| STY-F-300-15-1030-1080 | STY-1030-1080-208-300-15 | 300 | 371.14 | 15 | ±25° | Φ262/185×185 | 38.9 | 120 | M85×1 |
| STY-F-300-20-1030-1080 | STY-1030-1080-185-300-20 | 300 | 371.14 | 20 | ±25° | Φ262/185×185 | 29.2 | 140 | M85×1 |
| STY-F-330E-20-1030-1080 | STY-1030-1080-203-330 | 330 | 396.25 | 20 | ±25° | Φ287/203×203 | 32.12 | 120 | M85×1 |
| STY-F-330-1030-1080 | STY-1030-1080-175-330 | 330 | 392.64 | 30 | ±22° | Φ253/175x175 | 21.41 | 146 | M102×1; M112×1 |
| STY-F-330-1030-1080Water | STY-1030-1080-175-330WC | 330 | 388.14 | 30 | ±22° | Φ253/175x175 | 21.41 | 166 | M102×1; M112×1 |
| STY-F-330D-1030-1080Water | STY-1030-1080-175-330DWC | 330 | 406.77 | 30 | ±22° | Φ263/175×175 | 21 | 180 | M102×1; M112×1 |
| STY-F-350-1030-1080 | STY-1030-1080-210-350 | 350 | 429.55 | 20 | ±24° | Φ298/210×210 | 34.55 | 128 | M85×1 |
| STY-F-420E-1030-1080 | STY-1030-1080-300-420 | 420 | 510.81 | 20 | ±24° | Φ424/300x300 | 41 | 120 | M112×1 |
| STY-F-420-30-1030-1080 | STY-1030-1080-251-420 | 420 | 511.63 | 30 | ±24° | Φ355/251×251 | 27.25 | 140 | M112×1 |
| STY-F-420-30-1030-1080Water | STY-1030-1080-251-420WC | 420 | 421.94 | 30 | ±24° | Φ355/251×251 | 27.63 | 166 | M102×1; M112×1 |
| STY-F-460D-30-1030-1080Water | STY-1030-1080-270-460WC | 460 | 558.13 | 30 | ±24° | Φ382/270×270 | 29.9 | 186 | M102×1; M112×1 |
| STY-F-750-30-1030-1080 | STY-1030-1080-440-750WC | 750 | 888.53 | 30 | ±24° | Φ622/440x440 | 48.7 | 165 | M102×1 |
| STY-F-870-30-1030-1080 | STY-1030-1080-550-870 | 870 | 984.46 | 20 | ±24° | Φ778/550x550 | 84.7 | 120 | M85×1 |

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

| New part number | Old part number | FL mm | WD mm | E.P. mm | Scan Angle θmax | Scan area mm | Spot μm | OD mm | Screw |
|-----------------------|------------------------|-------|--------|---------|-----------------|----------------|---------|-------|----------------|
| STY-F-63-1064 | STY-1064-35-63 | 63 | 61.8 | 12 | ±22° | Φ50/35x35 | 10 | 90 | M85×1 |
| STY-F-80-20KNS-1064 | STY-1064-50-80-10 | 80 | 83.27 | 10 | ±22° | Φ70/50x50 | 15 | 90 | M85×1 |
| STY-F-80-20LNS-1064 | STY-1064-50-80-20 | 80 | 77.86 | 20 | ±25° | Φ70/50x50 | 7.7 | 105 | M85×1 |
| STY-F-100M-1064 | STY-1064-70-100M | 100 | 113.85 | 8 | ±28 ° | Φ100/70x70 | 24.33 | 60 | M55×1 |
| STY-F-100-10LNS-1064 | STY-1064-70-100LNS | 100 | 118.49 | 12 | ±28 ° | Φ100/70x70 | 16.2 | 90 | M85×1 |
| STY-F-100R-1064 | STY-1064-70-100R | 100 | 105.75 | 12 | ±28 ° | Φ100/70x70 | 16 | 90 | M85×1 |
| STY-F-100-20-1064 | STY-1064-70-100-20 | 100 | 104.85 | 20 | ±22 ° | Φ100/70x70 | 9.76 | 105 | M85×1 |
| STY-F-100D-1064 | STY-1064-62-100-20D | 100 | 103.37 | 20 | ±25° | Φ87/62x62 | 9.8 | 105 | M85×1 |
| STY-F-120-30-1064 | STY-1064-74-120 | 120 | 127.6 | 30 | ±25° | Φ105/80x74 | 15 | 140 | M85x1 |
| STY-F-130-1064 | STY-1064-85-130 | 130 | 141.96 | 12 | ±25 ° | Φ120/85x85 | 21.1 | 90 | M85×1 |
| STY-F-160M-1064 | STY-1064-70-160M-8 | 160 | 178.66 | 8 | ±18 ° | Φ100.3/70x70 | 38.85 | 47 | M39x1 |
| STY-F-160-12LNS-1064 | STY-1064-110-160LNS-12 | 160 | 181.29 | 12 | ±28 ° | Φ155/110x110 | 25.9 | 90 | M85×1 |
| STY-F-160R-1064 | | 160 | 176.26 | 12 | ±28 ° | Φ155/110x110 | 25.9 | 90 | M85×1 |
| STY-F-160H-20LNS-1064 | STY-1064-101-160H-20 | 160 | 180.72 | 20 | ±25° | Φ142/101x101 | 15.86 | 120 | M85×1 |
| STY-F-163B-1064 | STY-1064-113-163B-12 | 163 | 186.45 | 12 | ±28° | Φ16.5/113x113 | 26.6 | 90 | M85x1 |
| STY-F-163R-1064 | STY-1064-120-163R-10 | 164 | 181.86 | 10-12 | ±31.7 ° | Φ169/120x120 | 31.7 | 90 | M85×1 |
| STY-F-163C-1064 | STY-1064-113-163C-20 | 163 | 182.15 | 20 | ±28 ° | Φ160/113x113 | 15.9 | 115 | M85×1 |
| STY-F-168-36-1064 | STY-1064-99.5-168 | 168 | 181.22 | 36 | ±25 ° | Φ146/99.5x99.5 | 9.1 | 163 | M112×1 |
| STY-F-170-30- | STY-1064-110-170 | 170 | 198.31 | 30 | ±25° | Φ150/110x110 | 11.03 | 140 | M112×1;M102x1; |

| | | | | | | | | | |
|----------------------|------------------------|-----|--------|--------|--------|--------------|-------|------|-----------------------|
| 1064 | | | | | | | | | M95x1 |
| STY-F-173B-1064 | STY-1064-120-173 | 173 | 197.51 | 12 | ±28° | Φ170/120x120 | 28 | 90 | M85x1 |
| STY-F-188-1064 | STY-1064-130-188 | 188 | 212 | 12 | ±28° | Φ185/130X130 | 30 | 90 | M85x1 |
| STY-F-210A-1064 | STY-1064-150-210A | 210 | 231.88 | 12 | ±28° | Φ212/150x150 | 34 | 90 | M85x1 |
| STY-F-210B-1064 | STY-1064-145-210B | 210 | 225.8 | 12 | ±28° | Φ205/145x145 | 25 | 90 | M85x1 |
| STY-F-210-30-1064 | STY-1064-140-210-30 | 210 | 240.42 | 30 | ±25° | Φ185/140x140 | 13.63 | 140 | M112x1;M102x1;M95x1 |
| STY-F-220-10LNS-1064 | STY-1064-153-220-15 | 220 | 259.78 | 15 | ±28° | Φ216/153x153 | 29 | 90 | M55x1; M85x1 |
| STY-F-20LNS-1064 | STY-1064-150-220-20 | 220 | 241.55 | 20 | ±28° | Φ212/150x150 | 21.4 | 120 | M85x1 |
| STY-F-254M-1064 | STY-1064-180-254M-8 | 254 | 299.42 | 8 | ±28° | Φ254/180x180 | 61 | 52 | M39x1 |
| STY-F-254B-1064 | STY-1064-175-254B-14 | 254 | 277.7 | 14 | ±28° | Φ245/175x175 | 42 | 90 | M85x1 |
| STY-F-254-10LNS-1064 | STY-1064-175-254LNS-16 | 254 | 281.14 | 8.5-16 | ±28° | Φ245/175x175 | 30 | 105 | M85x1 |
| STY-F-254-20LNS-1064 | STY-1064-175-254C-20 | 254 | 271.94 | 20 | ±25° | Φ245/175x175 | 24.8 | 120 | M85x1 |
| STY-F-254-30-1064 | STY-1064-175-254-30 | 254 | 284.58 | 30 | ±25° | Φ222/175x175 | 16.35 | 140 | M102x1 |
| STY-F-255-8.5B-1064 | STY-1064-190-255 | 255 | 292.94 | 15 | ±30.2° | Φ268/190x190 | 33.1 | 99.5 | M85x1 |
| STY-F-260-1064 | STY-1064-180-260 | 260 | 287.54 | 12 | ±28° | Φ255/180x180 | 30 | 90 | M85x1 |
| STY-F-290-1064 | STY-1064-210-290 | 290 | 348.52 | 12 | ±28° | Φ283/210x210 | 47 | 90 | M85x1 |
| STY-F-300D-1064-58 | STY-1064-208-300 | 300 | 360.86 | 10-14 | ±28° | Φ295/208x208 | 35 | 90 | M85x1 |
| STY-F-330-1064 | STY-1064-230-330-12 | 330 | 383.93 | 12 | ±28° | Φ325/230x230 | 53 | 90 | M85x1 |
| STY-F-330C-1064 | STY-1064-230-330-16 | 330 | 387.61 | 16 | ±28° | Φ325/230x230 | 40 | 120 | M85x1 |
| STY-F-330-30-1064 | STY-1064-230-330-30 | 330 | 376.42 | 30 | ±28° | Φ325/230x230 | 21.2 | 140 | M112x1; M102x1; M95x1 |
| STY-F-350C-1064 | STY-1064-244-350 | 350 | 417.81 | 20 | ±28° | Φ345/244x244 | 34 | 120 | M85x1 |
| STY-F-420-10LNS-1064 | STY-1064-296-420-10 | 420 | 481.32 | 10 | ±28° | Φ419/296x296 | 82 | 90 | M85x1 |
| STY-F-420B-1064 | STY-1064-290-420B-20 | 420 | 486.08 | 20 | ±28° | Φ410/290x290 | 40.8 | 120 | M85x1 |
| STY-F-420-30-1064 | STY-1064-290-420-30 | 420 | 491.03 | 30 | ±28° | Φ410/290x290 | 27.3 | 140 | M112x1; M132x1 |
| STY-F-430B-1064 | STY-1064-300-430B | 430 | 497.77 | 20 | ±28° | Φ425/300x300 | 41.9 | 120 | M85x1 |
| STY-F-515-1064 | STY-1064-400-515 | 515 | 570.35 | 20 | ±31.5° | Φ565/400x400 | 50.1 | 120 | M85x1 |
| STY-F-525-1064 | STY-1064-402-525 | 525 | 604.73 | 20 | ±31.5° | Φ568/402x402 | 51.1 | 125 | M85x1 |
| STY-F-580-1064 | STY-1064-400-580 | 580 | 670.19 | 24 | ±28° | Φ566/400x400 | 47 | 125 | M85x1 |
| STY-F-815-1064 | STY-1064-565-815 | 815 | 899.83 | 24 | ±28° | Φ800/565X565 | 66 | 125 | M85x1 |

STH Series 1064nm F-theta Lens

STH Series F-theta Lenses



| Model | FL mm | WD mm | EP mm | SA max | SAR mm | FSD μm | Mirrors L2/L1 mm | MT |
|-------------------|-------|-------|-------|--------|--------|--------|------------------|-------------|
| STH-1064-28-63-8 | 63 | 77 | 8 | ±18° | 28x28 | 15 | 10/10 | M39x1/M55x1 |
| STH-1064-50-63-12 | 63 | 78 | 12 | ±28° | 50x50 | 12 | 16/16 | M85x1/M79x1 |
| STH-1064-50-80-8 | 80 | 92 | 8 | ±25° | 50x50 | 20 | 10/10 | M39x1/M55x1 |
| STH-1064-63-100-8 | 100 | 114 | 8 | ±25° | 63x63 | 24 | 10/10 | M39x1/M55x1 |

| | | | | | | | | |
|---------------------|-----|-------|----|------|---------|-----|-------|------------------------------|
| STH-1064-70-100-12 | 100 | 114.6 | 12 | ±28° | 70x70 | 16 | 16/16 | M85x1/M79x1 |
| STH-1064-70-100-20 | 100 | 125 | 20 | ±28° | 70x70 | 617 | 18/24 | M85x1/M79x1 |
| STH-1064-90-130-12 | 130 | 143 | 12 | ±28° | 90x90 | 21 | 16/16 | M85x1/M79x1 |
| STH-1064-105-160-8 | 160 | 185 | 8 | ±25° | 105x105 | 39 | 10/10 | M39x1/M55x1 |
| STH-1064-110-160-12 | 160 | 176 | 12 | ±28° | 110x110 | 26 | 16/16 | M85x1/M79x1 |
| STH-1064-110-163-20 | 163 | 185 | 20 | ±28° | 110x110 | 17 | 18/24 | M85x1/M79x1 |
| STH-1064-100-170-30 | 170 | 195 | 30 | ±25° | 100x100 | 11 | 26/30 | M85x1/M95x1 M102x1/M112x1 |
| STH-1064-140-210-12 | 210 | 230 | 12 | ±28° | 140x140 | 34 | 16/16 | M85x1/M79x1 |
| STH-1064-140-210-30 | 210 | 263 | 30 | ±25° | 140x140 | 15 | 26/30 | M85x1/M95x1 M102x1/M112x1 |
| STH-1064-150-210-20 | 210 | 255 | 20 | ±28° | 150x150 | 24 | 18/24 | M85x1/M79x1 |
| STH-1064-150-225-12 | 225 | 250 | 12 | ±28° | 150x150 | 34 | 16/16 | M85x1/M79x1 |
| STH-1064-170-254-8 | 254 | 283 | 8 | ±25° | 170x170 | 62 | 10/10 | M39x1/M55x1 |
| STH-1064-175-254-16 | 254 | 284 | 16 | ±28° | 175x175 | 31 | 16/16 | M85x1/M79x1 |
| STH-1064-175-254-20 | 254 | 285 | 20 | ±28° | 175x175 | 31 | 18/24 | M85x1/M79x1 |
| STH-1064-175-254-30 | 254 | 312 | 30 | ±25° | 175x175 | 17 | 26/30 | M85x1/M95x1 M102x1/M112x1 |
| STH-1064-200-290-16 | 290 | 324 | 16 | ±28° | 200x200 | 31 | 16/16 | M85x1/M79x1 |
| STH-1064-220-330-16 | 330 | 346 | 16 | ±28° | 220x220 | 40 | 16/16 | M85x1/M79x1 |
| STH-1064-220-330-8 | 330 | 360 | 8 | ±25° | 220x220 | 81 | 10/10 | M39x1/M55x1 |
| STH-1064-220-330-20 | 330 | 377 | 20 | ±28° | 220x220 | 40 | 18/24 | M85x1/M79x1 |
| STH-1064-220-330-30 | 330 | 365 | 30 | ±25° | 220x220 | 25 | 26/30 | M85x1/M95x1 M102x1/M112x1 |
| STH-1064-250-380-16 | 380 | 414 | 16 | ±28° | 250x250 | 46 | 16/16 | M85x1/M79x1 |
| STH-1064-300-420-16 | 420 | 467 | 16 | ±28° | 300x300 | 50 | 16/16 | M85x1/M79x1 |
| STH-1064-300-420-20 | 420 | 467 | 20 | ±28° | 300x300 | 55 | 18/24 | M85x1/M79x1 |
| STH-1064-360-500-20 | 500 | 535 | 20 | ±28° | 360x360 | 66 | 18/24 | M85x1/M79x1 |
| STH-1064-400-650-20 | 650 | 697 | 20 | ±28° | 400x400 | 85 | 18/24 | M85x1/M79x1 |
| STH-1064-500-800-20 | 800 | 860 | 20 | ±28° | 500x500 | 104 | 18/24 | M85x1/M79x1 |
| STH-1064-600-900-20 | 900 | 973 | 20 | ±28° | 600x600 | 117 | 18/24 | M85x1/M79x1 |

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 |

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

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

| New Model | Old Model | FL mm | WD mm | E.P. mm | Scan angle | Scan area mm | Focus size | OD mm | Ma x IA | MT |
|-----------|-----------|-------|-------|---------|------------|--------------|------------|-------|---------|----|
|-----------|-----------|-------|-------|---------|------------|--------------|------------|-------|---------|----|

| | | | | mm | maxi | (round/square) | μm | | (°) | |
|-------------------------|-------------------|-----|--------|----|--------|----------------|-------|-----|-----|-------------------|
| STY-F-100T-1064 | STYT-1064-55-100 | 100 | 122.8 | 15 | ±22° | Φ77/55x55 | 13 | 120 | 2.1 | M85x1 |
| STY-F-125T-1064 | STYT-1064-66-125 | 125 | 139.58 | 20 | ±21.5° | Φ109/66x66 | 12 | 120 | 3 | M85x1 |
| STY-F-167T-1064 | STYT-1064-90-167 | 167 | 216.23 | 20 | ±21° | Φ125/90x90 | 16.5 | 140 | 4.4 | M85x1 |
| STY-F-170T-30-1064 | STYT-1064-88-170 | 170 | 209.61 | 30 | ±21° | Φ120/88x88 | 11.1 | 140 | 4.4 | M85x1 |
| STY-F-183T-20-1064 | STYT-1064-50-183 | 183 | 219.63 | 20 | ±11.5° | Φ70.7/50x50 | 17.82 | 113 | 0.8 | M102x1; M112x1 |
| STY-F-210T-30-1064-M95 | STYT-1064-115-210 | 210 | 279.63 | 20 | ±22° | Φ161/115x115 | 13.69 | 188 | 3.3 | M95x1 |
| STY-F-210T-30-1064-M102 | STYT-1064-108-210 | 210 | 279.63 | 30 | ±21° | Φ154/108x108 | 13.69 | 188 | 3.3 | M102x1 |
| STY-F-211T-10-1064-M85 | STYT-1064-104-211 | 211 | 279.63 | 10 | ±20° | Φ147/104x104 | 41.1 | 150 | 4.4 | M85x1 |
| STY-F-315T-14-1064B | STYT-1064-190-315 | 315 | 432.07 | 14 | ±24.5° | Φ269/190x190 | 43.8 | 270 | 2.3 | M85x1 |

5. Wavelength 780-980nm

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

| New Model | Old Model | FL mm | WD mm | EP mm | SA | SAR mm | FSD μm | OD mm | MT |
|----------------------|---------------------|-------|--------|-------|--------|--------------|--------|-------|-------|
| STY-F-100-980 | STY-980-70-100 | 100 | 111.62 | 12 | ±28° | Φ100/70x70 | 16.33 | 90 | M85x1 |
| STY-F-100r-780-980 | STY-780-980-70-100R | 100 | 104 | 12 | ±28° | Φ100/70x70 | 15 | 90 | M85x1 |
| STY-F-160-980 | STY-980-110-160 | 160 | 182.29 | 12 | ±28° | Φ158/110x110 | 25.9 | 90 | M85x1 |
| STY-F-160-20-980 | STY-980-100-160 | 160 | 181.04 | 20 | ±28° | Φ141/100x100 | 14.62 | 120 | M85x1 |
| STY-F-163-980 | STY-980-113-163 | 163 | 185 | 12 | ±28° | Φ160/113x113 | 24.43 | 90 | M85x1 |
| STY-F-163-20-980 | STY-980-100-163 | 163 | 179.61 | 20 | ±28° | Φ160/100x100 | 15.77 | 115 | M85x1 |
| STY-F-165-20-980 | STY-980-100-165 | 165 | 181.04 | 20 | ±28° | Φ141/100x100 | 14.62 | 120 | M85x1 |
| STY-F-170-30-915-940 | STY-915-940-100-170 | 170 | 191.97 | 30 | ±25° | Φ140/100x100 | 10.11 | 140 | M85x1 |
| STY-F-170-30-980 | STY-980-100-170 | 170 | 191.97 | 30 | ±25° | Φ144/100x100 | 10.11 | 140 | M85x1 |
| STY-F-254-14-915-940 | STY-915-940-175-254 | 254 | 271.07 | 14-20 | ±28° | Φ247/175x175 | 32.5 | 120 | M85x1 |
| STY-F-30-915-980 | STY-915-940-156-254 | 254 | 286.08 | 30 | ±25° | Φ220/156x156 | 15 | 140 | M85x1 |
| STY-F-254-30-980 | STY-980-156-254 | 254 | 286.08 | 30 | ±25° | Φ220/156x156 | 15 | 140 | M85x1 |
| STY-F-420-980 | STY-980-261-420 | 420 | 502.23 | 30 | ±25.2° | Φ369/261x261 | 25.11 | 140 | M85x1 |
| STY-F-510-915 | | 510 | 565.9 | 18 | ±31.5° | Φ565/400X400 | 47.5 | 120 | M85X1 |

Remark: STY-980-156-254 and STY-980-261-420 can be used at 940nm & 815nm, too.

STH Series 980nm F-theta Lens

| Model | FL mm | WD mm | EP mm | SA max | SAR mm | FSD μm | Mirrors L2/L1 mm | MT |
|--------------------|-------|-------|-------|--------|---------|--------|------------------|-------|
| STH-980-70-100-12 | 100 | 114.6 | 12 | ±28° | 70x70 | 16 | 16/16 | M85x1 |
| STH-980-110-160-12 | 160 | 176 | 12 | ±28° | 110x110 | 26 | 16/16 | M85x1 |

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

| New Model | Old Model | FL mm | WD mm | E.P. mm | Scan angle max | SAR, mm (round/square) | Focus size μm | OD mm | Max IA (°) | MT |
|------------------------|----------------------|-------|--------|---------|----------------|------------------------|---------------|-------|------------|--------|
| STY-F-210T-30-980-M95 | STYT-532-115-210M95 | 210 | 279.63 | 30 | ±22° | Φ161/115x115 | 20 | 198 | 3.3 | M55x1 |
| STY-F-210T-30-980-M112 | 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)

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

STH Series 915nm F-theta Lens

| Model | FL mm | WD mm | EP mm | SA max | SAR mm | FSD μm | Mirrors L2/L1 mm | MT |
|--------------------|-------|-------|-------|--------|---------|--------|------------------|-------|
| STH-915-110-160-12 | 160 | 176 | 12 | ±28° | 110x110 | 26 | 16/16 | M85x1 |

6. Wavelength 532nm, 515-540nm

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

| New Model | Old Model | F.L. mm | WD mm | EP mm | Scan angle | Scan area mm | FSD μm | OD mm | MT |
|----------------------|---------------------|---------|--------|-------|------------|--------------|--------|-------|-------|
| STY-F-160-10-515-540 | STY-515-540-98-160 | 160 | 57.33 | 10 | ±23.7° | Φ138/98x98 | 15.83 | 120 | M85x1 |
| STY-F-170-510-550 | STY-510-550-100-170 | 170 | 221.09 | 10 | ±25° | Φ148/100x100 | 17.5 | 90 | M85x1 |

| | | | | | | | | | |
|----------------------|----------------------|------|---------|----|--------|---------------|-------|-----|-------|
| STY-F-225-510-550 | STY-510-550-156-225 | 225 | 247.51 | 18 | ±28° | Φ220/156×156 | 12.17 | 120 | M85x1 |
| STY-F-255-510-550 | STY-510-550-170-255 | 255 | 367.81 | 14 | ±27.5° | Φ240/170×170 | 17 | 120 | M85x1 |
| STY-F-350-14-510-550 | STY-510-550-212-350 | 350 | 283.37 | 14 | ±23.7° | Φ300/212×212 | 24.5 | 122 | M85x1 |
| STY-F-450-14-510-550 | STY-510-550-315-450 | 450 | 526.39 | 14 | ±28° | Φ445/315×315 | 31.29 | 120 | M85x1 |
| STY-F-840-20-510-550 | STY-510-550-550-840 | 840 | 960.17 | 20 | ±28° | Φ778/550x550 | 40.9 | 120 | M85x1 |
| STY-F-1150-510-550 | STY-510-550-800-1150 | 1150 | 1249.47 | 18 | ±28° | Φ1131/800x800 | 40.9 | 120 | M85x1 |

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

| New Model | Old Model | FL mm | WD mm | EP mm | SA | SAR mm | FSD μm | OD mm | MT |
|---------------------|-------------------|----------|----------|----------|--------|---------------|-----------|----------|-------|
| STY-F-63-532 | STY-532-35-63 | 63 | 58 | 8 | ±22° | Φ50/35x35 | 7.6 | 90 | M85x1 |
| STY-F-80-532 | STY-532-50-80 | 80 | 91.6 | 10 | ±22° | Φ70/50X50 | 12 | 90 | M85x1 |
| STY-F-100B-532 | STY-532-58-100-10 | 100 | 110.37 | 10 | ±25° | Φ82/58x58 | 9.7 | 90 | M85x1 |
| STY-F-100R-532 | STY-532-58-100-12 | 100 | 112.77 | 12 | ±25° | Φ82/58x58 | 8 | 90 | M85x1 |
| STY-F-120-532 | STY-532-74-120 | 120 | 132 | 12 | ±25° | Φ105/74x74 | 10 | 90 | M85x1 |
| STY-F-160-532 | STY-532-110-160 | 160 | 183.18 | 12 | ±28° | Φ155/110x110 | 12.8 | 90 | M85x1 |
| STY-F-160-532-58 | STY-532-98-160-58 | 160 | 186.88 | 12 | ±28° | Φ155/110x110 | 13 | 90 | M85x1 |
| STY-F-165B-532 | STY-532-115-165 | 165 | 189.89 | 20 | ±28° | Φ1162/115x115 | 8 | 120 | M85x1 |
| STY-F-240B-532 | STY-532-145-237 | 237 | 252.31 | 20 | ±25° | Φ207/145x145 | 11.53 | 120 | M85x1 |
| STY-F-254-10LNS-532 | STY-532-165-254 | 254 | 261.51 | 14 | ±28° | Φ235/165x165 | 16 | 105 | M85x1 |
| STY-F-255-20-532 | STY-532-165-255 | 255 | 294.0 | 20 | ±26° | Φ233/165x165 | 12.5 | 120 | M85x1 |
| STY-F-280-532 | STY-532-200-280 | 280 | 283.46 | 12 | ±28° | Φ273/200x200 | 22 | 90 | M85x1 |
| STY-F-290-20-532 | STY-532-190-290 | 290 | 335.98 | 20 | ±26.5° | Φ268/190x190 | 14.1 | 120 | M85x1 |
| STY-F-330B-532 | STY-532-203-330B | 330 | 397.46 | 14 | ±25° | Φ287/203x203 | 22.9 | 105 | M85x1 |
| STY-F-330C-532 | STY-532-203-330C | 330 | 388.27 | 14 | ±25° | Φ287/203x203 | 22.9 | 120 | M85x1 |
| STY-F-410-532 | STY-532-283-410 | 410 | 474 | 15 | ±28° | Φ400/283x283 | 26.6 | 120 | M85x1 |
| STY-F-480-532 | STY-532-317-480 | 480 | 565 | 20 | ±28° | Φ448/317x317 | 31.15 | 120 | M85x1 |
| STY-F-535B-532 | STY-532-370-535B | 535 | 623.67 | 20 | ±28° | Φ532/370x370 | 26.04 | 125 | M85x1 |
| STY-F-600-20-532 | STY-532-400-600 | 600 | 656.71 | 20 | ±27° | Φ565/400x400 | 29.2 | 140 | M85x1 |

STH Series 532nm F-theta Lens

| Model | FL mm | WD mm | EP mm | SA max | SAR mm | FSD μm | Mirrors L2/L1 mm | MT |
|--------------------|----------|----------|----------|-----------|-----------|-----------|---------------------|-------------|
| STH-532-70-100-12 | 100 | 114.5 | 12 | ±28° | 70x70 | 10 | 16/16 | M85x1/M79x1 |
| STH-532-110-160-12 | 160 | 186 | 12 | ±28° | 110x110 | 16 | 16/16 | M85x1/M79x1 |
| STH-532-140-210-12 | 210 | 234 | 12 | ±28° | 140x140 | 21 | 16/16 | M85x1/M79x1 |
| STH-532-175-254-12 | 254 | 262 | 12 | ±28° | 175x175 | 25 | 16/16 | M85x1/M79x1 |
| STH-532-230-330-12 | 330 | 359 | 12 | ±28° | 230x230 | 33 | 16/16 | M85x1/M79x1 |
| STH-532-350-500-12 | 500 | 540 | 12 | ±28° | 350x350 | 50 | 16/16 | M85x1/M79x1 |

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 |

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

| New Model | Old Model | FL mm | WD mm | EP mm | SA max | SAR, mm (round/square) | FSD μ m | OD mm | Max IA ($^{\circ}$) | MT |
|-----------------------|---------------------|-------|--------|-------|--------------------|--------------------------|-------------|-------|-----------------------|-------|
| STY-F-63T-510-550 | STYT-510-550-23-63 | 63 | 82.10 | 10 | $\pm 16^{\circ}$ | $\Phi 33/23 \times 23$ | 6.2 | 90 | 1 | M85x1 |
| STY-F-88T-14-510-550 | STYT-510-550-37-88 | 88 | 100.63 | 14 | $\pm 17^{\circ}$ | $\Phi 52/37 \times 37$ | 10 | 120 | 1.9 | M85x1 |
| STY-F-100T-510-550 | STYT-510-550-54-100 | 100 | 142.2 | 10 | $\pm 20.7^{\circ}$ | $\Phi 76/54 \times 54$ | 13.5 | 120 | 0.38 | M85x1 |
| STY-F-100T-14-510-55- | STYT-510-550-50-100 | 100 | 136.4 | 14 | $\pm 21^{\circ}$ | $\Phi 70.7/50 \times 50$ | 7 | 120 | 1.3 | M85x1 |
| STY-F-167T-14-510-550 | STYT-510-550-90-167 | 167 | 232.23 | 14 | $\pm 21^{\circ}$ | $\Phi 127/90 \times 90$ | 11.61 | 140 | 3 | M85x1 |

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

| New Model | Old Model | FL mm | WD mm | E.P. mm | Scan angle maxi | SAR, mm (round/square) | FSD μ m | OD mm | Max A ($^{\circ}$) | MT |
|-------------------|------------------|-------|--------|---------|--------------------|---------------------------|-------------|-------|----------------------|--------|
| STY-F-100T-532 | STYT-532-50-100 | 100 | 125.04 | 15 | $\pm 21.5^{\circ}$ | $\Phi 71/50 \times 50$ | 6.5 | 120 | 3.2 | M85x1 |
| STY-F-110T-532 | STYT-532-60-110 | 110 | 132.94 | 15 | $\pm 21.5^{\circ}$ | $\Phi 83/60 \times 60$ | 7.2 | 120 | 3.2 | M85x1 |
| STY-F-170T-532 | STYT-532-91-170 | 170 | 214.66 | 14 | $\pm 21.8^{\circ}$ | $\Phi 129/91 \times 91$ | 11.8 | 140 | 3 | M85x1 |
| STY-F-170T-20-532 | STYT-532-100-170 | 170 | 204.79 | 20 | $\pm 24^{\circ}$ | $\Phi 141/100 \times 100$ | 8.53 | 164 | 4 | M102x1 |

STHT Series 532nm Telecentric F-theta lenses

| Model | Material | FL mm | WD mm | E.P. mm | Max Scan angle | SAR, mm | FSD μ m | ODxL mm | Max A ($^{\circ}$) | MT |
|---------------------|----------|-------|-------|---------|------------------|---------|-------------|----------|----------------------|-------|
| STHT-532-65-100 | OG | 100 | 138 | 8 | $\pm 25^{\circ}$ | 65x65 | 10 | 120x83.8 | 1.5 | M85x1 |
| STHT-510-550-50-100 | FS | 100 | 127 | 12 | $\pm 25^{\circ}$ | 50x50 | 10 | 120x82.1 | 1.5 | M85x1 |
| STHT-510-550-65-100 | FS | 100 | 127 | 12 | $\pm 25^{\circ}$ | 65X65 | 10 | 120x82.1 | 1.5 | M85x1 |

Remark: OG means optical glass; FS means fused silica.

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 |

STK Series 515/532nm F-theta & Telecentric F-theta Lenses

| Model | FL (mm) | EP (mm) | SAR (mm) | SA (deg) | FSD (um) | WD (mm) | Telecentricity | OD (mm) | Length (mm) | MT |
|-----------------|---------|---------|--------------|----------|----------|---------|----------------|---------|-------------|---------|
| STK-515-28-79 | 70 | 14 | Φ40/28x28 | | | 82.2 | <1° | | | M85x1 |
| STK-532-40-110 | 110 | 14 | Φ57/40X40 | | | 149 | <2° | | | M85x1 |
| STK-532-80-163 | 163 | 10 | Φ113/80X80 | | | 227 | <1.1° | | | M85x1 |
| STK-515-150-350 | 350 | 30 | 150x150 | ±18 | 20 | 464 | <7° | 205 | 157 | M110x1 |
| STK-515-162-250 | 250 | 10 | Φ230/162X162 | | | 319 | <5 | | | M85x1 |
| STK-532-165-250 | 250 | 20 | Φ233/165X165 | | | 300 | | | | M83.5x1 |
| STK-532-165-255 | 255 | 20 | Φ255/165x165 | | | 272 | <16° | | | M85x1 |
| STK-532-170-260 | 260 | 20 | Φ240/170X170 | | | 360 | <1.5° | | | M85x1 |
| STK-532-230-350 | 350 | 16 | Φ327/230x230 | | | 381 | | | | M85x1 |

7. Wavelength 405nm

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

| New Model | Old Model | FL mm | WD mm | EP mm | SA max | SAR, mm (round/square) | FSD μm | OD mm | MT |
|---------------|-----------------|-------|--------|-------|--------|------------------------|--------|-------|-------|
| STY-F-750-405 | STY-405-520-750 | 750 | 839.53 | 16 | ±28° | Φ736/520x520 | 35 | 120 | M85x1 |
| STY-F-840-405 | STY-405-600-840 | 840 | 941.93 | 18 | ±28° | Φ850/600x600 | 34.59 | 120 | M85x1 |

STH Series 405nm F-theta Lens

| Model | FL mm | WD mm | EP mm | SA max | SAR mm | FSD μm | Mirrors L2/L1 mm | MT |
|--------------------|-------|-------|-------|--------|---------|--------|------------------|-------|
| STH-405-110-160-12 | 160 | 176 | 12 | ±28° | 110x110 | 26 | 16/16 | M85x1 |
| STH-405-140-210-12 | 210 | 230 | 12 | ±28° | 140x140 | 34 | 16/16 | M85x1 |
| STH-405-175-254-16 | 254 | 284 | 16 | ±28° | 175x175 | 31 | 16/16 | M85x1 |
| STH-405-200-290-16 | 290 | 324 | 16 | ±28° | 200x200 | 31 | 16/16 | 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 355nm F-theta Lens (Fused Silica)

| New Model | Old Model | FL mm | WD mm | E.P. mm | SA max | SAR, mm (round/square) | FSD μm | OD mm | MT |
|----------------|--------------------|-------|--------|---------|--------|------------------------|--------|-------|-------|
| STY-F-100Q-355 | STY-355-65-100 | 100 | 121.37 | 8 | ±25° | Φ90/65×65 | 8.36 | 90 | M85x1 |
| STY-F-130-355 | STY-355-80-130 | 130 | 161.14 | 10 | ±25° | 113/80x80 | 8.5 | 90 | M85x1 |
| STY-F-160Q-355 | STY-355-100-160 | 160 | 193.89 | 10 | ±25° | Φ140/100×100 | 10.3 | 90 | M85x1 |
| STY-F-162B-355 | STY-355-110-162 | 162 | 200.82 | 12 | ±28° | Φ155/110×110 | 8.77 | 105 | M85x1 |
| STY-F-170R-355 | STY-355-105-170 | 170 | 210.19 | 10 | ±25° | Φ148/105×105 | 11.04 | 90 | M85x1 |
| STY-F-210R-355 | STY-355-135-210 | 210 | 250.55 | 10 | ±25° | Φ190/135×135 | 13.6 | 90 | M85x1 |
| STY-F-210C-355 | STY-355-130-210 | 210 | 236.91 | 15 | ±25° | Φ185/130×130 | 9.1 | 120 | M85x1 |
| STY-F-235-355 | STY-355-103-235 | 235 | 189.02 | 10 | ±17.4° | Φ146/103×103 | 15.27 | 90 | M85x1 |
| STY-F-254Q-355 | STY-355-175-254-10 | 254 | 300.72 | 10 | ±25° | Φ247.5/175×175 | 16.4 | 90 | M85x1 |
| STY-F-254C-355 | STY-355-170-254-14 | 254 | 318.21 | 14 | ±27° | Φ241.2/175×175 | 11.79 | 120 | M85x1 |
| STY-F-255B-355 | STY-355-175-255 | 255 | 313.53 | 10 | ±28° | Φ221/175×175 | 16.57 | 120 | M85x1 |
| STY-F-305B-355 | STY-355-201-305 | 305 | 365.55 | 16 | ±26.7° | Φ285/201×201 | 12.38 | 120 | M85x1 |
| STY-F-330Q-355 | STY-355-195-330 | 330 | 390.77 | 10 | ±24° | Φ276/195×195 | 21.43 | 90 | M85x1 |
| STY-F-330B-355 | STY-355-203-330 | 330 | 383.39 | 14 | ±25° | Φ288/203×203 | 15.3 | 120 | M85x1 |
| STY-F-350C-355 | STY-355-216-350 | 350 | 409.61 | 10 | ±25° | Φ305/216×216 | 16.24 | 120 | M85x1 |
| STY-F-470C-355 | STY-355-290-470 | 470 | 535.30 | 16 | ±25° | Φ410/290×290 | 19.08 | 120 | M85x1 |
| STY-F-500C-355 | STY-355-320-500 | 500 | 568.14 | 14 | ±26° | Φ452/320×320 | 23 | 120 | M85x1 |
| STY-F-580B-355 | STY-355-360-580 | 580 | 663.11 | 16 | ±25° | Φ509/360×360 | 25.22 | 120 | M85x1 |
| STY-F-730Q-355 | STY-355-468-730 | 730 | 702.04 | 10 | ±26° | Φ661/468×468 | 47.4 | 90 | M85x1 |

| | | | | | | | | | |
|-------------------|-------------------|------|---------|----|--------|-----------------|-------|-----|-------|
| STY-F-750-355 | STY-355-520-750 | 750 | 823.37 | 16 | ±28° | Φ735/520×520 | 32.3 | 120 | M85x1 |
| STY-F-840-355 | STY-355-600-840 | 840 | 921.44 | 18 | ±29° | Φ850/600×600 | 30.3 | 120 | M85x1 |
| STY-F-910-355 | STY-355-660-910 | 910 | 990.84 | 18 | ±29.5° | Φ933/660×660 | 42.2 | 120 | M85x1 |
| STY-F-1090-355 | STY-355-780-1090 | 1090 | 1177.90 | 18 | ±29° | Φ1103/780×780 | 44.24 | 120 | M85x1 |
| STY-F-1180-355 | STY-355-800-1180 | 1180 | 1174.87 | 14 | ±28° | Φ1130/800×800 | 54.76 | 120 | M85x1 |
| STY-F-1280-14-355 | STY-355-885-1280 | 1280 | 1164.59 | 14 | ±25° | Φ1251/885×885 | 59.4 | 120 | M85x1 |
| STY-F-1450-14-355 | STY-355-900-1450 | 1450 | 1499.77 | 14 | ±25° | Φ1272/900×900 | 67.29 | 120 | M85x1 |
| STY-F-1550-10-355 | STY-355-1070-1550 | 1550 | 1175.40 | 10 | ±28° | Φ1513/1070x1070 | 174.7 | 120 | M85x1 |

STH Series 355nm F-theta Lens (Fused Silica)

STH Series F-theta Lenses



| Model | FL mm | WD mm | EP mm | SA max | SAR mm | FSD μm | ODxL mm | Mirrors L2/L1, mm | MT |
|-----------------------|----------|----------|----------|-----------|-----------|-----------|------------|----------------------|-------|
| STH-355-15-34-7 | 34 | 29 | 7 | ±16° | 15x15 | 4 | 90x44.9 | 12/10 | M85x1 |
| STH-355-13-34-7M79 | 34 | 29 | 7 | ±16° | 13x13 | 4 | 85x45.4 | 12/10 | M79x1 |
| STH-355-30-50-7 | 50 | 45 | 7 | ±25° | 30x30 | 5 | 90x68.3 | 13/12 | M85x1 |
| STH-355-50-63-7 | 63 | 83 | 7 | ±25° | 50x50 | 4 | 90x60.8 | 16/16 | M85x1 |
| STH-355-70-100-7 | 100 | 126 | 7 | ±25° | 70x70 | 10 | 90x54.6 | 13/15 | M85x1 |
| STH-355-80-130-8 | 130 | 151 | 8 | ±25° | 80x80 | 11 | 60x34.2 | 12/9 | M55x1 |
| STH-355-100-160-8M79 | 160 | 200 | 8 | ±25° | 100x100 | 15 | 90x50 | 16/16 | M79x1 |
| STH-355-100-160-8 | 160 | 200 | 8 | ±25° | 100x100 | 15 | 90x50 | 16/16 | M85x1 |
| STH-355-100-160-12 | 160 | 200 | 12 | ±25° | 100x100 | 10 | 90x50 | 15/20 | M85x1 |
| STH-355-114-170-8 | 170 | 207 | 8 | ±28° | 114x114 | 14 | 90x54.6 | 13/13 | M85x1 |
| STH-355-140-210-8M79 | 210 | 252 | 8 | ±25° | 140x140 | 17 | 90x50 | 13/12 | M79x1 |
| STH-355-140-210-8 | 210 | 252 | 8 | ±25° | 140x140 | 17 | 90x50 | 16/16 | M85x1 |
| STH-355-170-254-10 | 254 | 309 | 10 | ±28° | 170x170 | 17 | 90x50 | 16/16 | M85x1 |
| STH-355-170-254-10M55 | 254 | 309 | 10 | ±28° | 170x170 | 17 | 90x50 | 13/12 | M55x1 |
| STH-355-200-290-10 | 290 | 336 | 10 | ±25° | 200x200 | 20 | 90x50 | 13/12 | M85x1 |
| STH-355-220-330-8 | 330 | 373 | 8 | ±25° | 220x220 | 30 | 90x50 | 13/12 | M85x1 |
| STH-355-220-330-8M79 | 330 | 373 | 8 | ±25° | 220x220 | 30 | 90x50 | 13/12 | M85x1 |
| STH-355-250-380-8 | 380 | 442 | 8 | ±25° | 250x250 | 35 | 90x50 | 13/12 | M85x1 |
| STH-355-300-420-8 | 420 | 475 | 8 | ±28° | 300x300 | 38 | 90x50 | 13/12 | M85x1 |
| STH-355-330-470-8 | 470 | 531 | 8 | ±28° | 330x330 | 39 | 90x50 | 16/12 | M85x1 |
| STH-355-360-510-8 | 510 | 585 | 8 | ±28° | 350x350 | 42 | 90x50 | 13/12 | M85x1 |
| STH-355-450-650-8 | 650 | 710 | 8 | ±28° | 450x450 | 53 | 90x50 | 13/12 | M85x1 |
| STH-355-550-750-8 | 750 | 833 | 8 | ±28° | 550x550 | 74 | 90x50 | 16/16 | M85x1 |
| STH-355-600-840-8 | 840 | 924 | 8 | ±28° | 600x600 | 83 | 90x50 | 16/16 | M85x1 |
| STH-355-800-1090-8 | 1090 | 1178 | 8 | ±25° | 800x800 | 30 | 90x41 | 20/12 | M85x1 |

Remark: M79x1mm or others available upon request.

STY-WT Series 355nm F-theta Lens

| Part No. | FL (mm) | SA (±°) | SL (mm) | SAR (mm) | EP (mm) | FSD (μm) | 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 |
|--------------|--------------------|------------|----------|------------|------------------|------------|------------|------------|----------------|-------|
| 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 |

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

| New Model | Old Model | FL mm | WD mm | E.P. mm | SA max | SAR, mm (round/square) | FSD μ m | OD mm | Max IA ($^{\circ}$) | MT |
|--------------------|--------------------|--------|--------|---------|--------------------|----------------------------|-------------|-------|-----------------------|-------|
| STY-F-30T-355 | STYT-355-8-30 | 30 | 35.35 | 10 | $\pm 10.5^{\circ}$ | $\Phi 8.5/8 \times 8$ | 1.95 | 90 | 1.8 | M85x1 |
| STY-F-32T-355B | STYT-355-1-32 | 32 | 26.34 | 10 | $\pm 7.6^{\circ}$ | $\Phi 8.5/1 \times 1$ | 3.2 | 90 | 2 | M85x1 |
| STY-F-60T-355 | STYT-355-22-60 | 60 | 73.65 | 10 | $\pm 16^{\circ}$ | $\Phi 31/22 \times 22$ | 11.5 | 90 | 1.26 | M85x1 |
| STY-F-65T-355 | STYT-355-15-65 | 65 | 81.1 | 10 | $\pm 9.4^{\circ}$ | $\Phi 21.2/15 \times 15$ | 4.2 | 94 | 1.8 | M85x1 |
| STY-F-70T-355 | STYT-355-28-74 | 74 | 91.35 | 10 | $\pm 16^{\circ}$ | $\Phi 40/28 \times 28$ | 4.5 | 90 | 1.0 | M85x1 |
| STY-F-100T-355 | 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 |
| STY-F-100T-14-355B | STYT-355-50-100 | 100 | 135.48 | 14 | $\pm 21^{\circ}$ | $\Phi 70.7/50 \times 50$ | 5 | 120 | 0.5 | M85x1 |
| STY-F-103T-355 | STYT-355-51-103 | 103 | 136.13 | 12 | $\pm 20.4^{\circ}$ | $\Phi 72/51 \times 51$ | 5.58 | 100 | 1.93 | M85x1 |
| STY-F-110T-355 | STYT-355-65-110 | 110 | 153.88 | 8 | $\pm 24^{\circ}$ | $\Phi 92/65 \times 65$ | 8.9 | 120 | 1.6 | M85x1 |
| STY-F-120T-355 | STYT-355-65-120 | 120 | 149.1 | 10 | $\pm 22.5^{\circ}$ | $\Phi 92/65 \times 65$ | 8 | 118 | 1.5 | M85x1 |
| STY-F-130T-355 | STYT-355-60-130 | 130 | 159.92 | 10 | $\pm 19^{\circ}$ | $\Phi 85/60 \times 60$ | 8.45 | 120 | 0.98 | M85x1 |
| STY-F-167T-10-355 | STYT-355-90-167 | 167 | 211.25 | 10 | $\pm 24^{\circ}$ | $\Phi 127/90 \times 90$ | 10.8 | 130 | 5.28 | M85x1 |
| STY-F-167T-14-355 | STYT-355-70-167 | 167 | 234.52 | 14 | $\pm 18^{\circ}$ | $\Phi 99/70 \times 70$ | 7.8 | 140 | 0.48 | M85x1 |
| STY-F-167T-14-355B | STYT-355-90-166.57 | 166.57 | 229.16 | 14 | $\pm 22^{\circ}$ | $\Phi 127/90 \times 90$ | 7.7 | 159 | <2 | M85x1 |
| STY-F-175T-355 | STYT-355-101-175 | 175 | 247.49 | 10 | $\pm 24^{\circ}$ | $\Phi 142/101 \times 101$ | 11.8 | 140 | 3.13 | M85x1 |
| STY-F-295T-14-355 | STYT-355-172-295 | 295 | 426.75 | 14 | $\pm 23.7^{\circ}$ | $\Phi 244/172 \times 172$ | 13 | 280 | 1.7 | M85x1 |
| STY-F-330T-355 | STYT-355-173-330 | 330 | 681.58 | 14 | $\pm 20^{\circ}$ | $\Phi 245/173 \times 173$ | 15.3 | 270 | 1.35 | M85x1 |

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

| Model | FL mm | WD mm | E.P. mm | SA max | SAR, mm | FSD μ m | Mirrors L2/L1 mm | ODxL mm | Max IA ($^{\circ}$) | MT |
|--------------------|-------|-------|---------|------------------|---------|-------------|------------------|----------|-----------------------|-------|
| STHT-355-50-63-8 | 63 | 90 | 8 | $\pm 25^{\circ}$ | 50x50 | 8 | 16/20 | 90x60.8 | 1.5 | M85x1 |
| STHT-355-60-100-8 | 100 | 133 | 8 | $\pm 25^{\circ}$ | 60x60 | 11 | 14/20 | 120x83.8 | 1.5 | M85x1 |
| STHT-355-65-110-8 | 110 | 150 | 8 | $\pm 25^{\circ}$ | 65x65 | 11 | 14/22 | 120x85.8 | 1.5 | M85x1 |
| STHT-355-85-130-8 | 130 | 180 | 8 | $\pm 25^{\circ}$ | 80x80 | 15 | 14/22 | 129x117 | 1.5 | M85x1 |
| STHT-355-100-160-8 | 160 | 220 | 8 | $\pm 25^{\circ}$ | 100x100 | 13 | 14/22 | 155x129 | 1.5 | 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 |

STK Series 355nm Telecentric F-theta Lenses

| Model | FL (mm) | EP (mm) | SAR (mm) | SA (deg) | WD (mm) | FSD (mm) | Tele-centricity | OD (mm) | Length (mm) | MT |
|-----------------|---------|---------|-----------------------------|----------|---------|----------|-----------------|---------|-------------|-------|
| STK-355-25-70 | 70 | 8 | $\Phi 36/25 \times 25$ | | 78.6 | 10 | <1.0 $^{\circ}$ | | | M85x1 |
| STK-355-50-103 | 103 | 9 | $\Phi 70/50 \times 50$ | | 143 | | <1.2 $^{\circ}$ | | | M85x1 |
| STK-355-90-165 | 165 | 10 | $\Phi 127/90 \times 90$ | | 226 | 11 | <1.0 $^{\circ}$ | | | M85x1 |
| STK-355-118-220 | 220 | 14 | $\Phi 167/118 \times 118$ | | 280 | 13 | <1.5 $^{\circ}$ | | | M85x1 |
| STK-355-130-265 | 265 | | $\Phi 186/130 \times 130$ | | 353 | 10 | <1.0 $^{\circ}$ | | | M85x1 |
| STK-355-160-255 | 255 | 14 | $\Phi 230.8/160 \times 160$ | ± 27 | 344 | 19 | <1.5 $^{\circ}$ | 278 | 218 | M85x1 |
| STK-355-180-320 | 320 | 14 | $\Phi 254/180 \times 180$ | | 422 | 19 | <1.5 $^{\circ}$ | | | M85x1 |

| | | | | | | | | | | |
|-----------------|-----|----|--------------|-----|-----|----|-------|-----|-----|-------|
| STK-355-200-330 | 330 | 14 | Φ283/200x200 | ±26 | 445 | 14 | <1.5° | 295 | 360 | M85x1 |
| STK-355-230-356 | 356 | 14 | Φ325/230x230 | | 498 | 22 | >1.0° | | | 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-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-0256/199 | 266 | 245.4 | fs | 4 | 148 x 148 | 13.5 | 249.3 | 90 | 47 | 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

| New Model | Old Model | FL mm | WD mm | E.P. mm | Scan angle max | SAR, mm (round/square) | FSD μm | OD mm | MT |
|----------------------|---------------------|-------|--------|---------|----------------|------------------------|--------|-------|-------|
| STY-F-140-10-355-635 | STY-355-635-50-140 | 140 | 100.29 | 10-12 | ±14.5° | Φ70/750x50 | 9.1 | 90 | M85x1 |
| STY-F-170-10-355-532 | STY-355-532-60-170 | 170 | 135 | 10 | ±15° | Φ80/60x60 | 11.1 | 105 | M85x1 |
| STY-F-254-10-355-633 | STY-355-633/120-254 | 254 | 222.49 | 10 | ±19° | Φ170/120x120 | 16.49 | 105 | M85x1 |

STY Series 532nm Achromatic F-theta Lens

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

STY Series 915nm Achromatic F-theta Lens

| New Model | Old Model | FL mm | WD mm | E.P. mm | SA max | SAR, mm (round/square) | FSD μm | OD mm | MT |
|---------------------------|---------------------|-------|--------|---------|--------|------------------------|--------|-------|---------------|
| STY-F-210G-14-915-940-633 | STY-915-633-130-210 | 210 | 229.76 | 30 | ±25° | Φ184/130x130 | 12.06 | 132 | M102x1;M121x1 |
| STY-F-500-30-915-680-2000 | STY-915-680-300-500 | 500 | 535.43 | 30 | ±25° | Φ424/300x300 | 27.9 | 140 | M102x1 |

STY Series 1064nm Achromatic F-theta Lens

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

| | | | | | | | | | |
|-----------------------|----------------------|-----|--------|----|------|--------------|------|-----|---------------------|
| STY-F-330-30-1064-633 | STY-1064-633-200-330 | 330 | 356.13 | 30 | ±25° | Φ283/200x200 | 21.4 | 140 | M112x1;M102x1;M95x1 |
| STY-F-420-30-1064-633 | 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.



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

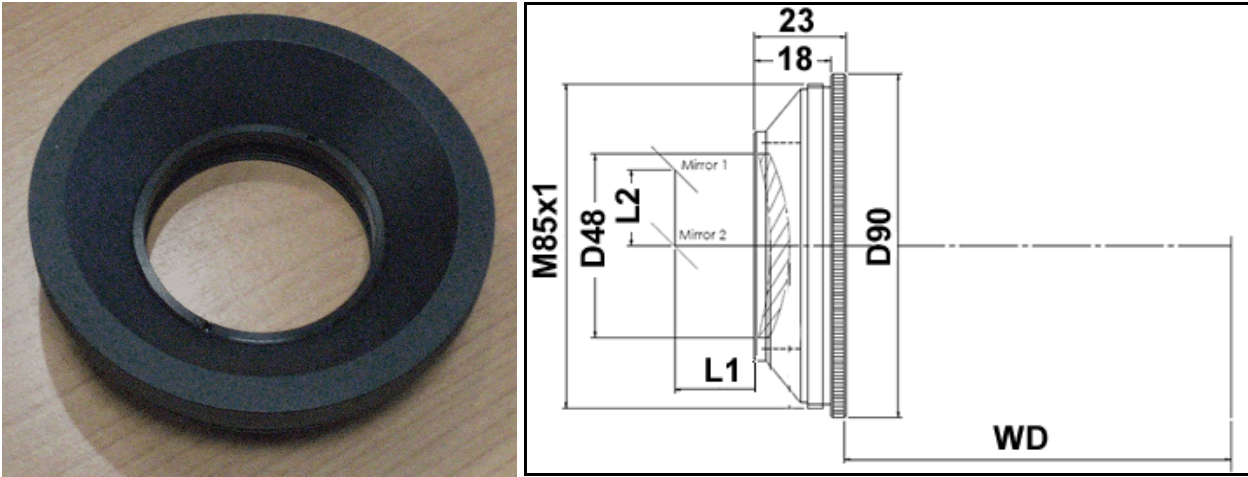


| Part no. | Focal length (mm) | Scan field (mm) | Back focal length (mm) | Flange focal length (mm) | Average spot diameter (μm) |
|---------------------|-------------------|-----------------|------------------------|--------------------------|----------------------------|
| STSL-10.6-50-75 | 75.2 | 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 |

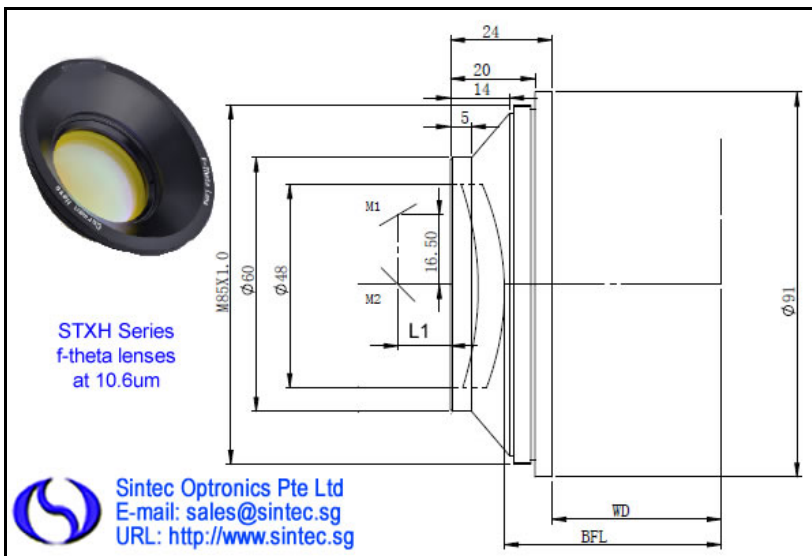
Remark:

- (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:



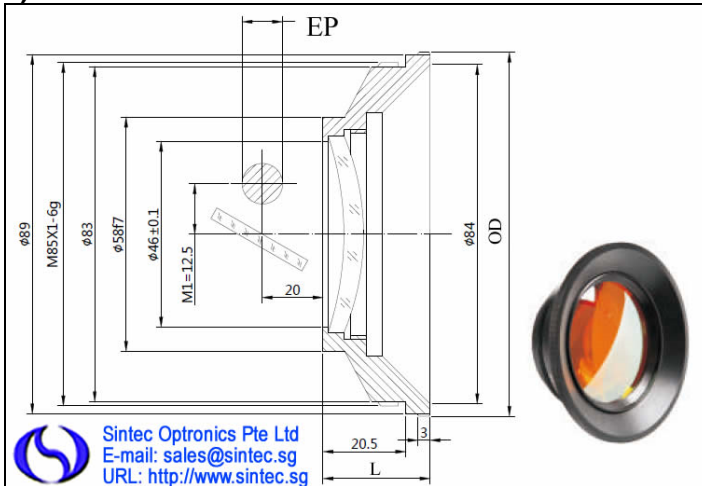
2) STXH Series Mounted F-theta Lenses



| 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



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

4) STH Series 10.6um Mounted F-theta Lenses

| Model | FL, mm | SAR, mm | FSD, mm | MT |
|------------------|--------|---------|---------|-------|
| STH-10.6-50-63 | 63 | 50x50 | 0.2 | M85x1 |
| STH-10.6-70-100 | 100 | 70x70 | 0.2 | M85x1 |
| STH-10.6-110-160 | 160 | 110x110 | 0.2 | M85x1 |
| STH-10.6-140-230 | 230 | 140x140 | 0.2 | M85x1 |
| STH-10.6-175-254 | 254 | 175x175 | 0.2 | M85x1 |
| STH-10.6-210-300 | 300 | 210x210 | 0.2 | M85x1 |
| STH-10.6-250-360 | 360 | 250x250 | 0.25 | M85x1 |
| STH-10.6-300-450 | 450 | 300x300 | 0.35 | M85x1 |
| STH-10.6-400-592 | 592 | 400x400 | 0.2 | M85x1 |
| STH-10.6-600-650 | 650 | 600x600 | 0.7 | 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 SAR 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 (um) | 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 |

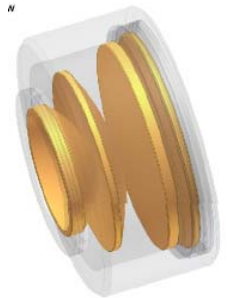
3. Mounted Triple Element F-theta Lenses

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 |

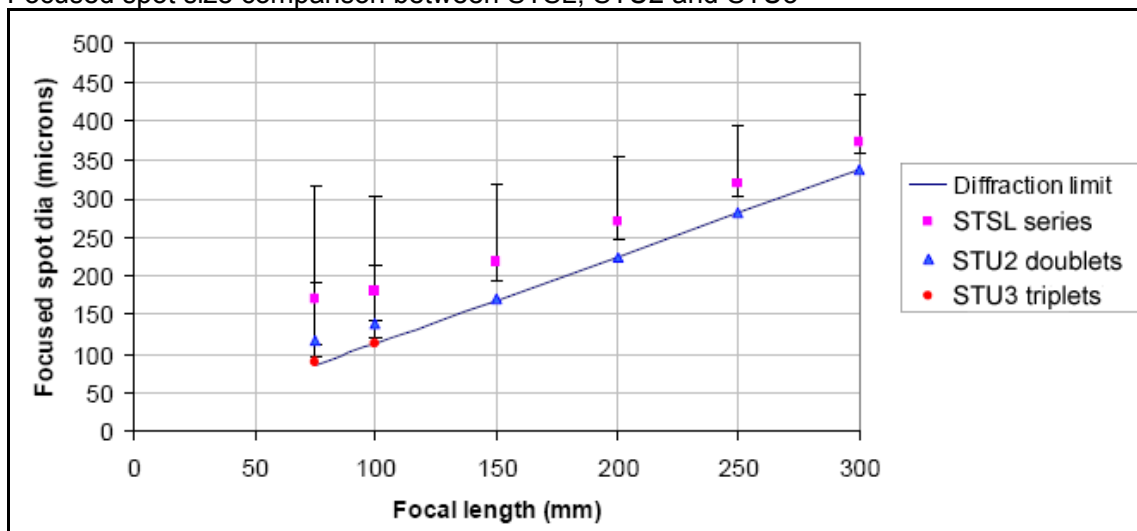
STU3 Series Scan Lenses

- 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

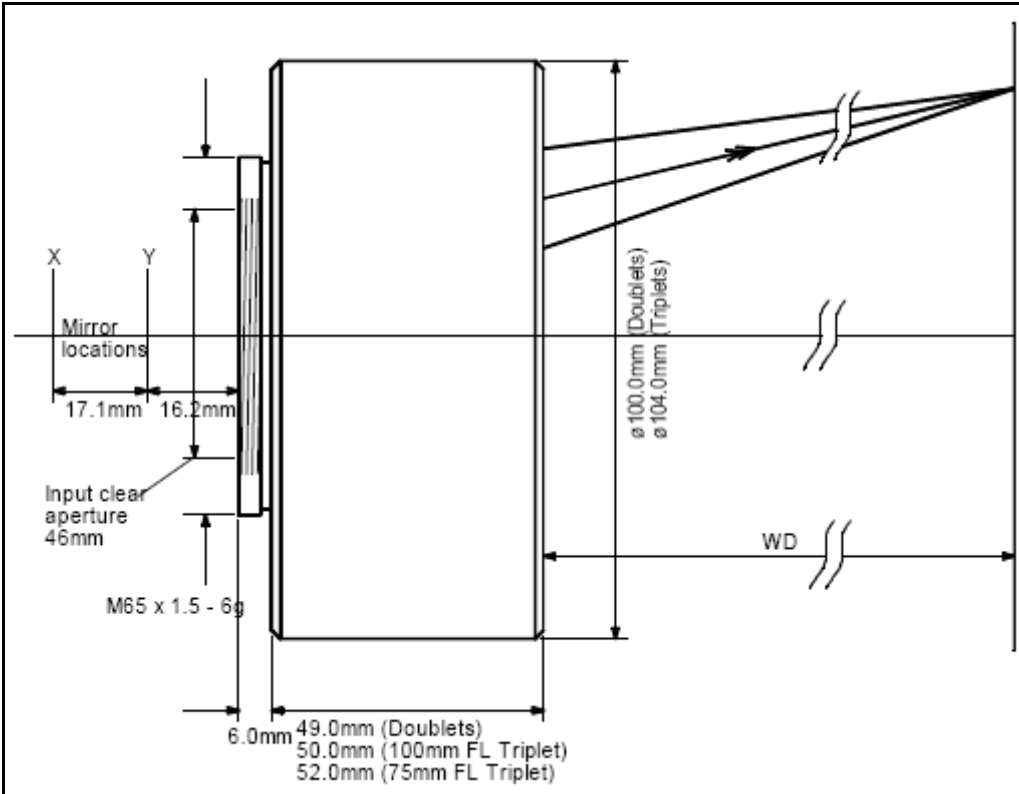


| Part No. | Wavelength (um) | FL (mm) | SAR (mm) | EP (mm) | Focus size (mm) |
|------------------|-----------------|---------|----------|---------|-----------------|
| STU3-10.6-50-75 | 10.6 | 75 | 50x50 | 15 | 89 |
| STU3-10.6-70-100 | 10.6 | 100 | 70x70 | 15 | 113 |

Focused spot size comparison between STSL, STU2 and STU3



Dimension of STU2 and STU3



4. STG Series CO2 Telecentric F-theta Lenses

| Part No. | FL (mm) | SA max (\pm°) | SAR (mm) | EP (mm) | FSD (μm) | Length (mm) | WD (mm) |
|------------------|---------|------------------------|----------|---------|-----------------------|-------------|---------|
| STG-10.6-50-100G | 100 | 20 | 50*50 | 25 | 60 | 93 | 106 |
| STG-9.6-50-110Z | 110 | 14.5 | 50*50 | 15 | 140 | 99 | 97 |
| STG-9.6-70-140Z | 140 | 20 | 70*70 | 15 | 126 | 142 | 124 |

Custom-design and –made available upon request.

Scan Lenses for Other Wavelengths

Standard *f*-Theta Lenses for 808nm

| Part No. | FL (mm) | SA (±°) | 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 (±°) | 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 (±°) | 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 |

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 filed 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.