excelitas® | LINOS®

LINOS F-Theta-Ronar Lenses made of Fused Silica

Highest Performance for Laser Material Processing

Excelitas has developed a range of F-Theta-Ronar scan lenses made of fused silica for high power and ultra-short-pulse laser material processing. Fused silica minimizes focus shift while providing high power density.

The optical designs are optimized with respect to back reflections of the input beam, which significantly reduces the risk of damage to the galvo mirrors.

The LINOS F-Theta-Ronar lenses are all treated with a sophisticated broad band and angle optimized coating, making them suitable for a wide variety of laser material processing applications.

Interchangeable fused-silica protective glasses, coated with the equivalent coating, are included. Leading-edge production technologies ensure long-term optical stability.

YOUR BENEFITS

- Diffraction limited designs
- Wavelengths 355 nm, 450 nm, 532 nm or 1064 nm
- Focal length ranging from 70 mm to 420 mm
- Broad band coating 340-360 nm, 440-460 nm, 515-540 nm or 1030-1080 nm
- Dust-tight on the output side inclusive protective glass according to the criteria of IP6X

SPECIFICATIONS

- Transmission ≥ 96 %
- Low absorption coating ≤ 30 ppm at 532 nm and ≤ 20 ppm at 1064 nm per surface for special lens types
- LIDT up to 40 J/cm² at 1064 nm, 12 ns
  LIDT up to 0.9 J/cm² at 1030 nm, 291 fs

  LIDT up to 20 J/cm² at 532 nm, 8 ns
  LIDT up to 0.6 J/cm² at 515 nm, 204 fs

  LIDT up to 4 J/cm² at 355 nm, 6 ns
  LIDT up to 0.4 J/cm² at 343 nm, 200 fs

LINOS F-THETA-RONAR LENSES MADE OF FUSED-SILICA

Wavelength (nm)	Focal length (mm)	Entrance-beam diameter at 1/e² (mm)	Scan field (mm²)	Spot size (µm)	Part No.
340 - 360	160	7	98 x 98	15	4401-399-000-21
340 – 360	252	14	133 x 133	12	4401-619-000-29 [2]
340 - 360	255	10	170 x 170	17	4401-481-000-21
340 - 360	330	14	212 x 212	15	4401-617-000-28 [1]
340 - 360	330	14	212 x 212	15	4401-617-000-29 [2]
440 - 460	262	30	61 x 61	8	4401-611-000-26 [3]
515 - 540	160	14	83 x 83	12	4401-587-000-26 [3]
515 - 540	255	10	183 x 183	25	4401-496-000-26 [3]
515 - 540	265	20	133 x 133	13	4401-605-000-26 [3]
515 - 540	420	14	251 x 251	29	4401-590-000-26 [3]
1030 - 1080	163	14	85 x 85	23	4401-589-000-26 [3]
1030 - 1080	255	10	187 x 187	50	4401-499-000-26 [3]
1030 - 1080	270	20	136 x 136	27	4401-604-000-26 [3]
1030 - 1080	340	20	176 x 176	33	4401-546-000-26 [3]
1030 - 1080	420	20	254 x 254	42	4401-508-000-26 [3]

[1] Version -28: low outgassing lenses
[2] Version -29: reduced outgassing lenses
[3] Version -26: low absorption coating

LINOS F-THETA-RONAR LENSES MADE OF FUSED-SILICA - TELECENTRIC DESIGN

Wavelength (nm)	Focal length (mm)	Max. telecentric error (°)	Entrance-beam diameter at 1/e² (mm)	Scan field (mm²)	Spot size (µm)	Part No.
340 - 360	70	0.8	10	28 x 28	5	4401-576-000-21
340 - 360	100	0.5	10	46 x 46	7	4401-509-000-21
340 - 360	167	0.2	10	65 x 65	13	4401-511-000-21
515 - 540	75	1.4	14	24 x 24	5	4401-599-000-26 [1]
515 - 540	100	1.7	14	43 x 43	9	4401-547-000-26 [1]
515 - 540	114	1.2	10	65 x 65	11	4401-608-000-26 [1]
515 - 540	167	3.4	14	86 x 86	12	4401-517-000-26 [1]
515 - 540	250	0.4	14	69 x 69	17	4401-616-000-26 [1]
1030 - 1080	70	1.8	14	26 x 26	10	4401-551-000-26 [1]
1030 - 1080	100	2.1	14	44 x 44	15	4401-561-000-26 [1]
1030 - 1080	118	1.6	14	50 x 50	17	4401-607-000-26 [1]
1030 - 1080	167	3.7	20	84 x 84	16	4401-513-000-26 [1]
1030 - 1080	251	0.6	20	63 x 63	25	4401-631-000-26 [1]

[1] Version -26: low absorption coating

When using differing beam diameters (depending on the optical design, varies from 7 mm to 30 mm), scan fields and spot size diameters can be modified.