

Line Scan Lens

XENON-SAPPHIRE 3.2/88, beta' = -1.75 for use with Beam Splitter Prism (BSP)

This high-resolution, high-speed lens is optimized for the use with 16k pixel line scan sensors. It is broadband coated and can be used in the spectral range of 400 – 1000 nm.

The V-mount makes it easy to install and rotate into the desired azimuth position for a wide range of high resolution applications.

The XENON Sapphire 3.2/88 provides two significant stop positions that are especially marked on the stop ring:

- F#3.2 is the maximum opening of the stop and provides maximum brightness. It is free of artificial vignetting. The MTF for 100 lp/mm is very high up to the edge of a 58 mm field. Due to the high aperture the lens is more sensitive with respect to change of magnification.
- F#4.0 shows maximum MTF and practically diffraction limited performance over the whole field. Hence the depth of field is bigger.



XENON-SAPPHIRE lens

Key Features

- for 16k line scan cameras (57.3mm length / pixel sizes 3.5µm and 82mm length / pixel size 5.1µm) as well as
- for 12k line scan cameras (62.5mm length / pixel sizes appr. 5µm)
- High resolution optics from 400 - 1000 nm
- Use with suitable BSP (25 mm thick BK7) for illumination
- Robust mechanics for industrial environment
- Vibration insensitive
- Focus and iris setting lockable

Applications

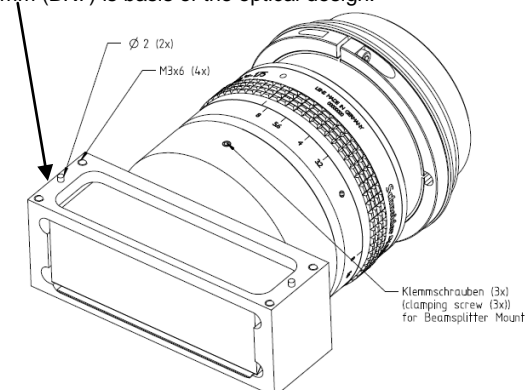
- High-resolution 16k line scan applications with coaxial illumination for inspecting reflective objects
- Bright field applications
- 12k TDI inspection
- Machine Vision and other imaging applications with high throughput
- Flat panel inspection
- Digitalization
- Detection of micro defects

| Technical Specifications | XENON-SAPPHIRE 3,2/88 |
|----------------------------|--------------------------|
| F# range | 3.2 - 8 |
| Focal length | 88.2 mm |
| Image circle | 62.5 mm |
| Beta' | -1.75 (-1.65 ... -1.85) |
| Object to image distance | 380 (375 ... 386) mm |
| Transmission | 400 -1000 nm |
| Interface | Schneider V-mount 70 |
| Weight without BSP | 765 gr. |
| Code no. lens only | 1072762 |
| lens including mounted BSP | 1073347 |

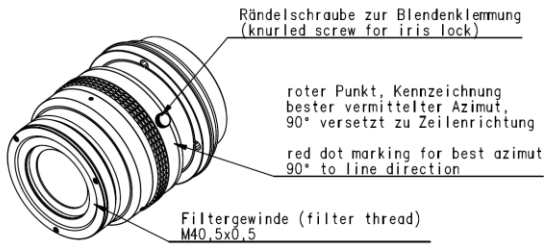
Accessories

| | |
|--------------------------------|-----------------------|
| Beam Splitter Prism in mount | Code no. # 1073831 |
| Adapter V70 / M72 x 0.75 10 mm | # 1072419 |
| Extension tube 5 mm | # 1072420 |
| Extension tube 10 mm | # 1072421 |
| Extension tube 25 mm | # 26406 |
| Extension tube 50 mm | # 1054733 |

A BSP must be used with this lens as its thickness of 25 mm (BK7) is basis of the optical design.



XENON-SAPPHIRE 3.2/88 for use with BSP



XENON SAPPHIRE 3.2/88

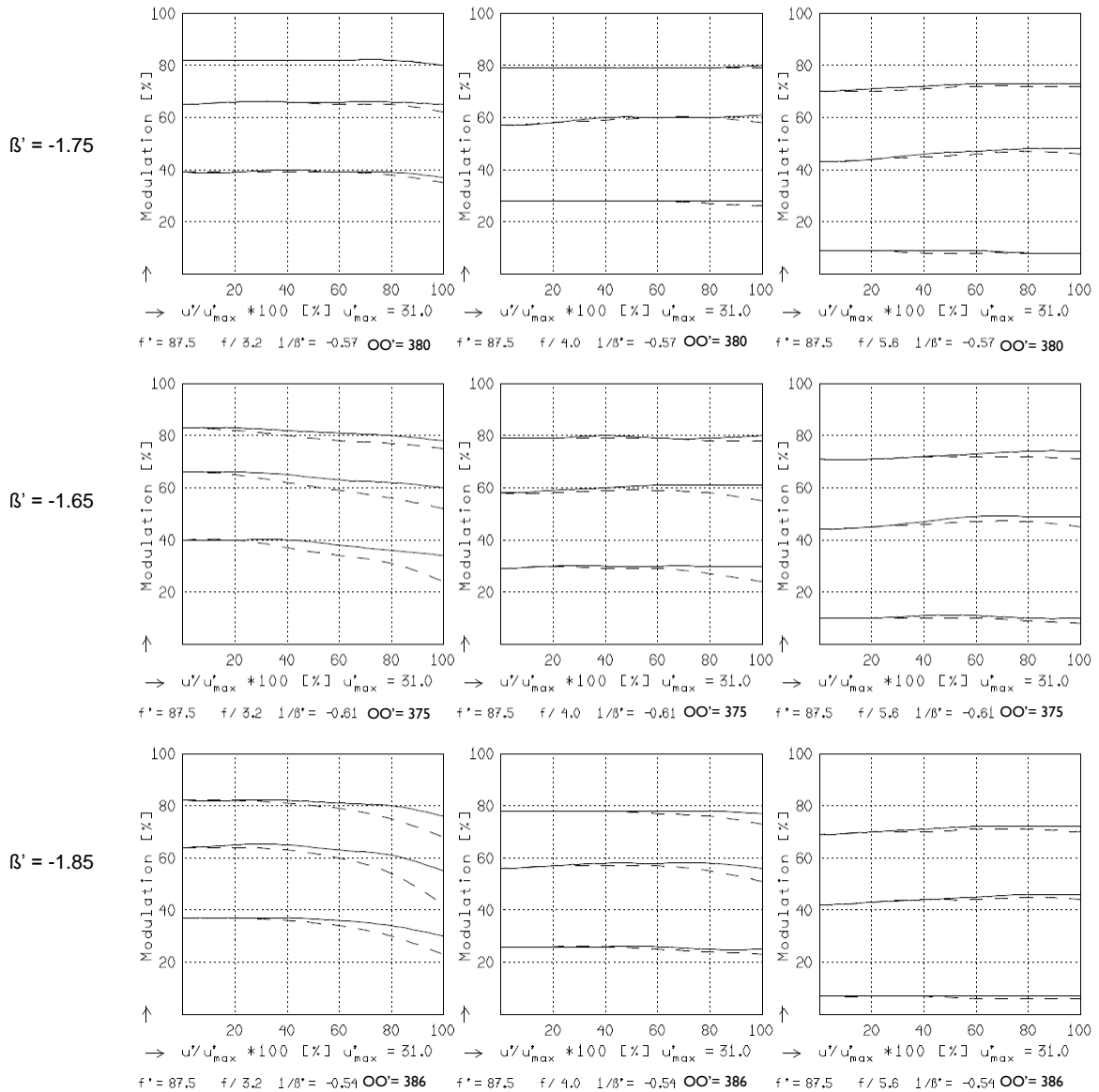
| | |
|--------------------------|------------------------------|
| $f = 88,2 \text{ mm}$ | $\beta'_p = 1,10$ |
| $s_f = -46,0 \text{ mm}$ | $s_{EP} = 34,6 \text{ mm}$ |
| $s'_f = 56,9 \text{ mm}$ | $s'_{AP} = -39,5 \text{ mm}$ |
| $HH' = -0,9 \text{ mm}$ | $\Sigma d = 72,8 \text{ mm}$ |

XENON SAPPHIRE 3.2/88 for use with BSP

MODULATION with reference to the relative image height

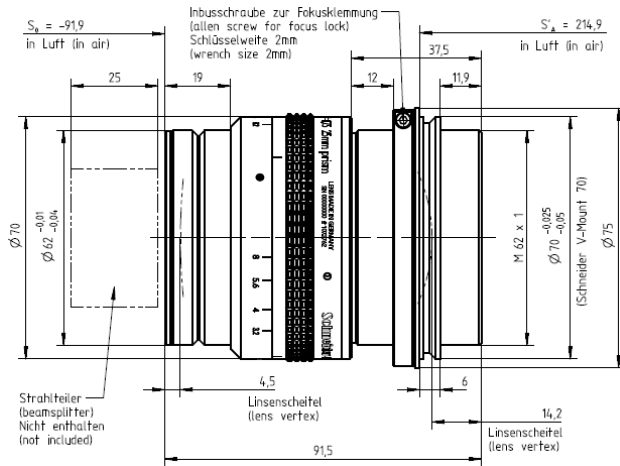
| | | | | | | |
|-------------------------------------|------|-----|------|------|------|-----|
| Wavelength λ [nm] : | 525 | 675 | 625 | 575 | 475 | 425 |
| Spectral weighting [%] : | 26.5 | 6.4 | 24.2 | 27.8 | 13.6 | 1.5 |
| Spatial frequency R [1/mm] : | 25 | 50 | 100 | | | |
| Image- \emptyset $f / 3.2$ [mm] : | 62.0 | | | | | |
| Image- \emptyset $f / 5.6$ [mm] : | 62.0 | | | | | |

radial —
tangential - -



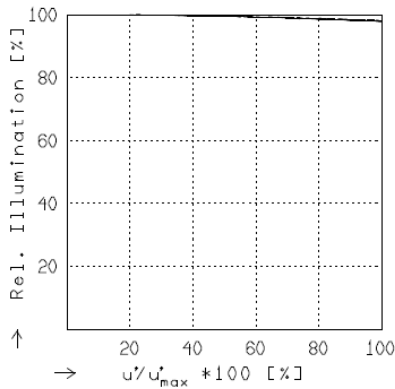
Focusing : MTF_{max} at $f / 4.8$, $R = 50$ 1/mm, $u'/u'_{max} = 0$

XENON-SAPPHIRE 3.2/88 for use with BSP



XENON SAPPHIRE 3.2/88

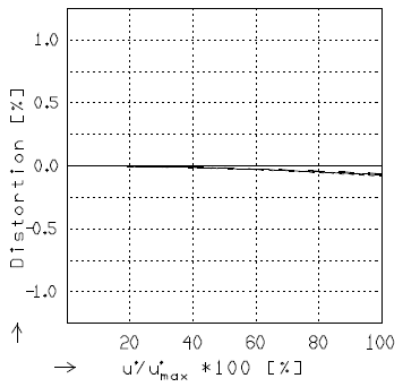
| | |
|--------------------------|------------------------------|
| $f = 88,2 \text{ mm}$ | $\beta'_p = 1,10$ |
| $s_F = -46,0 \text{ mm}$ | $s_{EP} = 34,6 \text{ mm}$ |
| $s'_F = 56,9 \text{ mm}$ | $s'_{AP} = -39,5 \text{ mm}$ |
| $HH' = -0,9 \text{ mm}$ | $\Sigma d = 72,8 \text{ mm}$ |



RELATIVE ILLUMINATION

The relative illumination is shown for the given focal distances or magnifications.

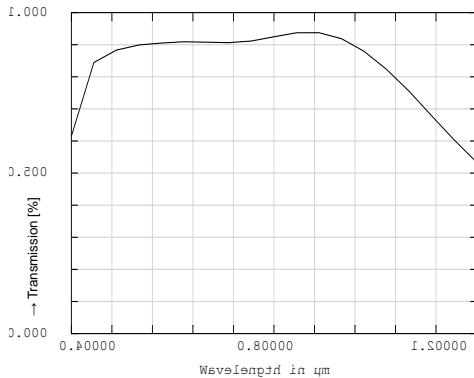
| | | |
|----------------------|----------------------|----------------------|
| $f / 3.2$ | $f / 4.0$ | $f / 5.6$ |
| — $\beta' = -1,7500$ | — $\beta' = -1,6500$ | — $\beta' = -1,8500$ |
| $u'_{max} = 31,0$ | $u'_{max} = 31,0$ | $u'_{max} = 31,0$ |
| $OO' = 380$ | $OO' = 375$ | $OO' = 386$ |



DISTORTION

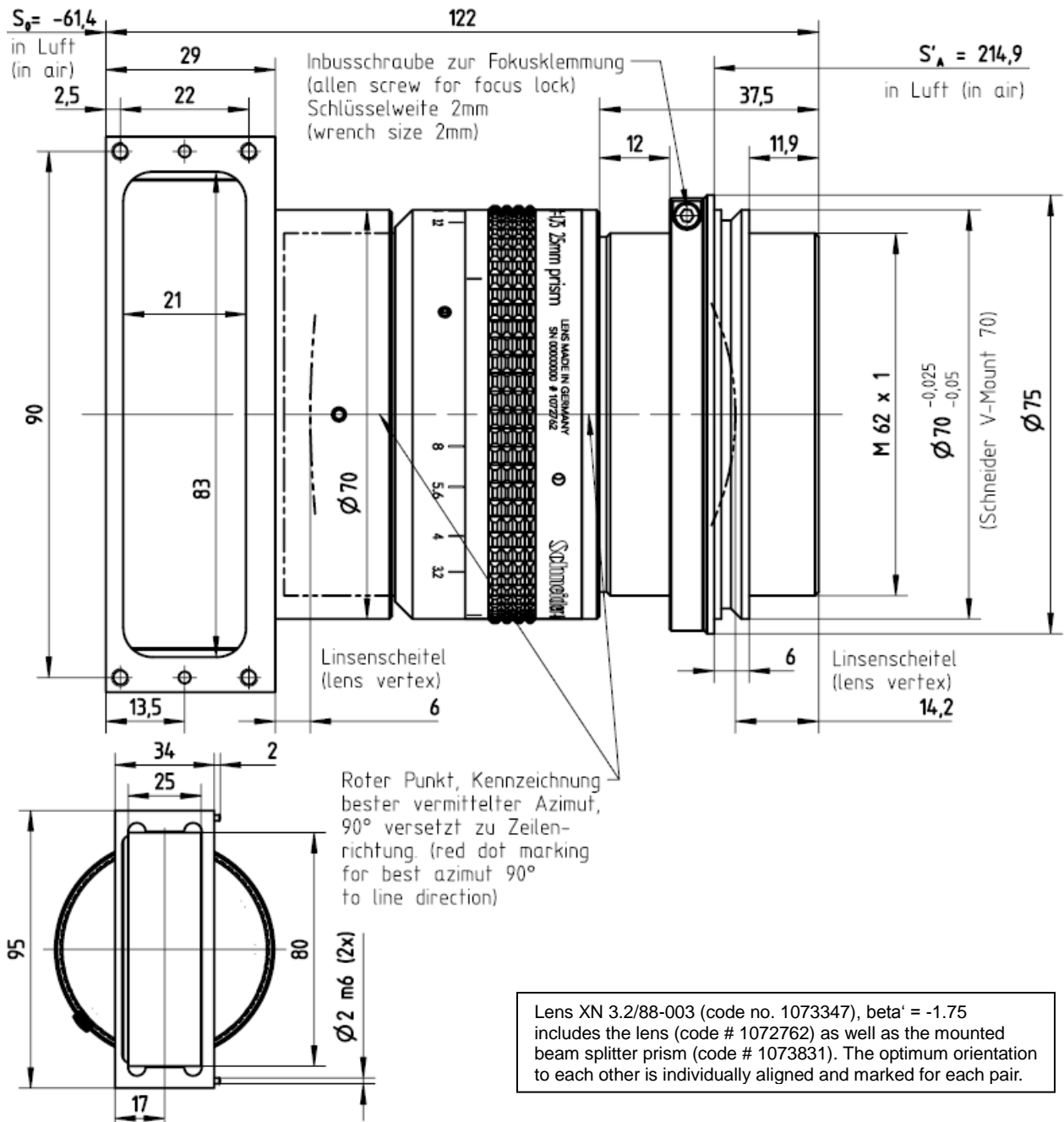
Distortion is shown for the given focal distances or magnifications. Positive values indicate pincushion distortion and negative values barrel distortion.

| | | |
|--------------------|-------------------|-------------|
| $\beta' = -1,7500$ | $u'_{max} = 31,0$ | $OO' = 380$ |
| $\beta' = -1,6500$ | $u'_{max} = 31,0$ | $OO' = 375$ |
| $\beta' = -1,8500$ | $u'_{max} = 31,0$ | $OO' = 386$ |



TRANSMITTANCE without Beam Splitter Prism

Relative spectral transmittance is shown with reference to wavelength.



Contact

Jos. Schneider Optische Werke GmbH
Ringstraße 132
55543 Bad Kreuznach
Germany
Phone +49 671 601-205
Fax +49 671 601-286
www.schneiderkreuznach.com
industrie@schneiderkreuznach.com

Schneider Optical Technologies Co., Ltd.
Rm. A505 Yingdali Science Park, Hongmian Rd.,
Futian Free Trade Zone, Shenzhen 518038,
P.R. China
Phone: +86 755 88 32 11 70
Fax: +86 755 88 32 11 75
www.schneiderkreuznach.com
info@schneider-asiapacific.com

Schneider Optics Inc.
285 Oser Ave.
Hauppauge, NY 11788
USA
Phone +1 631 761-5000
Fax +1 631 761-5090
www.schneideroptics.com/industrial
industrial@schneideroptics.com