

Line Scan Lens

XENON-SAPPHIRE 3.2/88, beta' = -1.75

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 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 400 - 1000 nm
- Robust mechanics for industrial environment
- Vibration insensitive
- Focus and iris setting lockable

Applications

- High-resolution 16k line scan 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

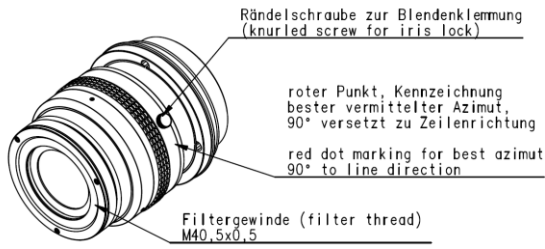
F# range	3.2 - 8
Focal length	87.5 mm
Image circle	62.5 mm
Beta'	-1.75 (-1.65 ... -1.85)
Object to image distance	371 (365 ... 377mm)
Transmission	400 -1000 nm
Interface	Schneider V-mount 70
Weight	765 gr.
Code no.	1068014

Accessories

		Code no.
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
Extension tube	100 mm	# 1079483
Extension tube	200 mm	# 1079484

If a beam splitter is used a different lens (#1072762) has to be chosen which takes the glass thickness of the beam splitter into consideration.

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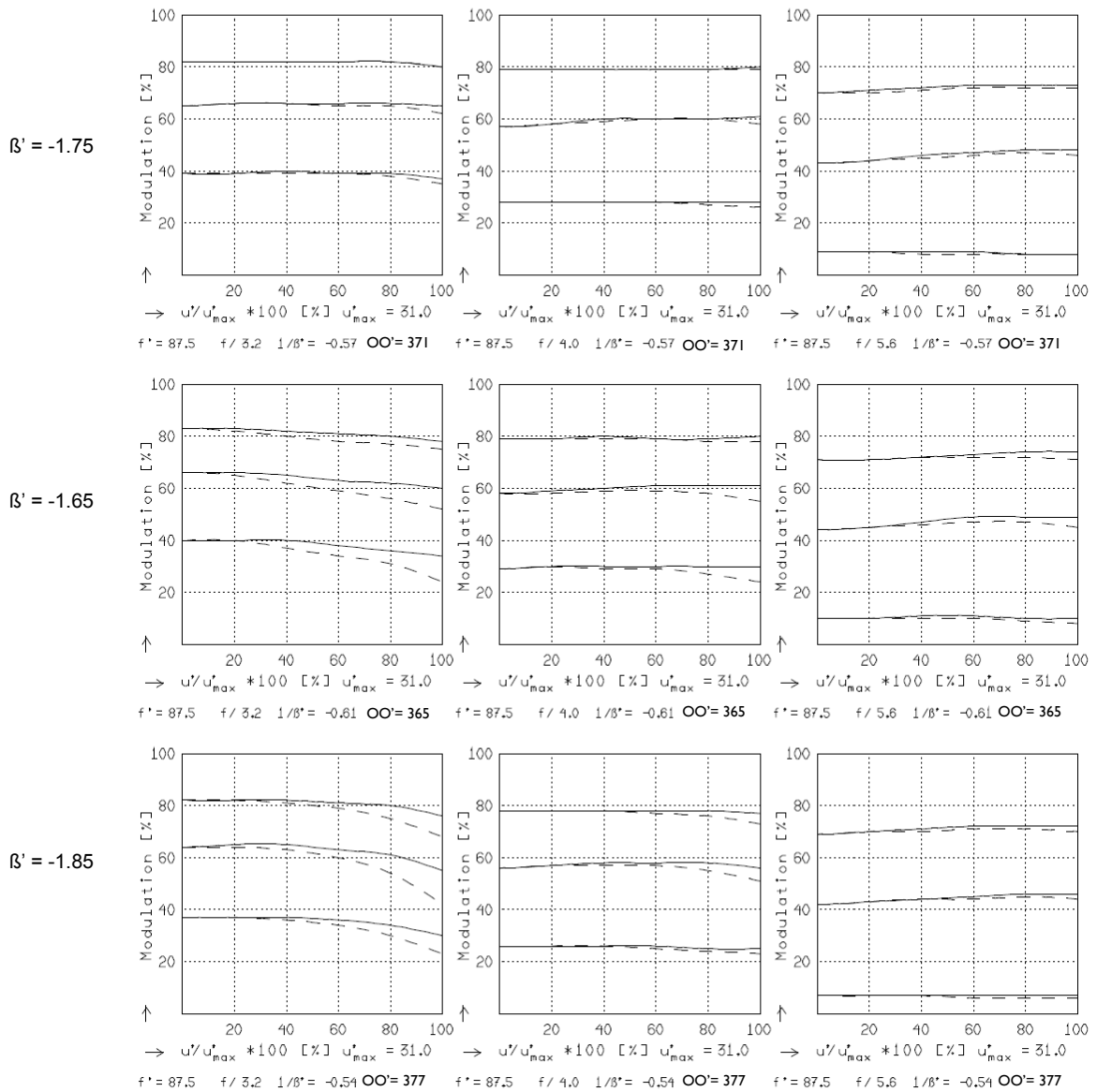
$f = 87,5 \text{ mm}$	$B'_P = 1,07$
$s_F = -38,7 \text{ mm}$	$s_{EP} = 43,3 \text{ mm}$
$s'_F = 57,5 \text{ mm}$	$s'_{AP} = -35,8 \text{ mm}$
$HH' = -7,2 \text{ mm}$	$\square d = 71,4 \text{ mm}$

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MODULATION with reference to the relative image height

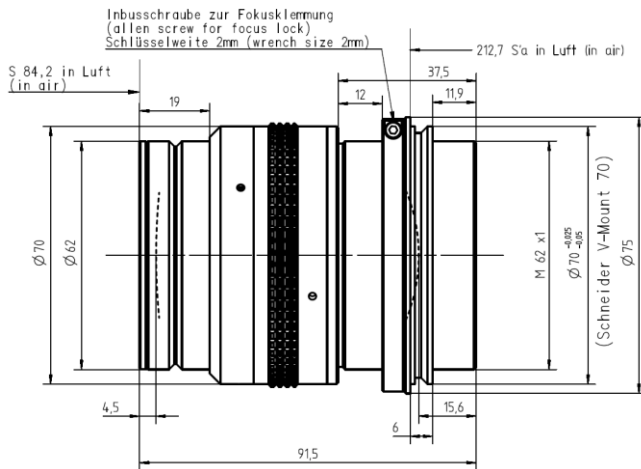
Wavelength λ	[nm]	525	675	625	575	475	425
Spectral weighting	[%]	26.5	6.4	24.2	27.8	13.6	1.5
Spatial frequency R	[1/mm]	25	50	100			
Image- \emptyset f / 3.2	[mm]	62.0					
Image- \emptyset f / 5.6	[mm]	62.0					

radial —
tangential - -



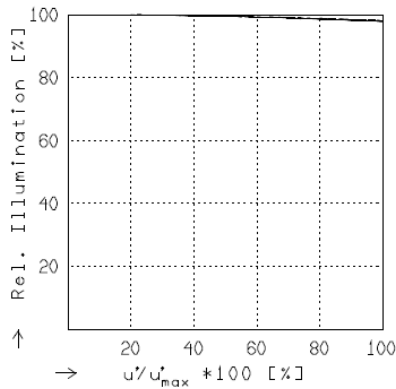
Focusing : MTF_{max} at f / 4.8 , R = 50 1/mm. $u'/u'_{max} = 0$

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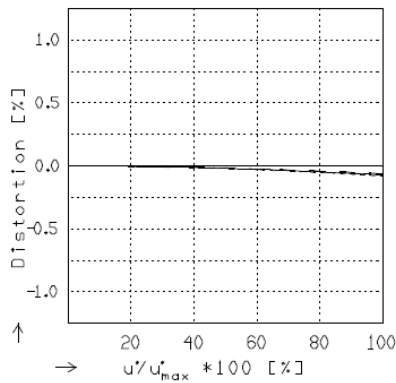
$f = 87,5 \text{ mm}$	$\beta'_P = 1,07$
$s_F = -38,7 \text{ mm}$	$s_{EP} = 43,3 \text{ mm}$
$s'_F = 57,5 \text{ mm}$	$s'_{AP} = -35,8 \text{ mm}$
$HH' = -7,2 \text{ mm}$	$\square d = 71,4 \text{ mm}$



RELATIVE ILLUMINATION

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

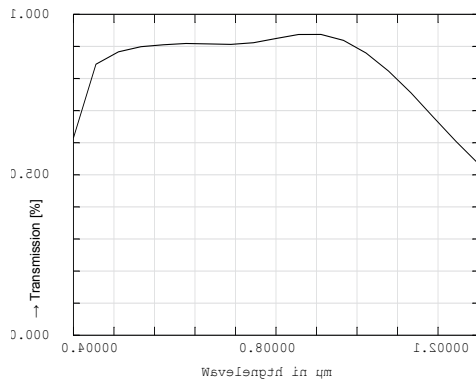
	$f / 3.2$	$f / 4.0$	$f / 5.6$
—	$\beta' = -1.7500$	$u'_{max} = 31.0$	$OO' = 371$
- -	$\beta' = -1.6500$	$u'_{max} = 31.0$	$OO' = 365$
----	$\beta' = -1.8500$	$u'_{max} = 31.0$	$OO' = 377$



DISTORTION

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

—	$\beta' = -1.7500$	$u'_{max} = 31.0$	$OO' = 371$
- -	$\beta' = -1.6500$	$u'_{max} = 31.0$	$OO' = 365$
----	$\beta' = -1.8500$	$u'_{max} = 31.0$	$OO' = 377$



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.