

# Line Scan Lens

## XENON-SAPPHIRE 2.8/98, beta' = -0.875

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 2.8/98, beta' = -0.875x can be used for 12K as well as for 16K line sensors.

- F#2.8 is the maximum opening of the stop and provides maximum brightness. The mechanical vignetting at this F/number is approx. 25% at the edge of the 16K line. The MTF for 100 lp/mm is 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#3.8 shows excellent MTF over the whole field. The depth of field is bigger and the lens is less sensitive to magnification changes. At 3.8 the lens is free of artificial vignetting.
- F#5.6 produces more diffraction which reduces the MTF slightly but is now quite homogenous over the entire field. The lens is recommended for the complete magnification range from  $-0.92 < \beta' < -0.83$ .



XENON-SAPPHIRE lens

### Key Features

- for 16k line scan cameras (57.3mm length / pixel sizes 3.5µm)
- 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
- Quality control, etc.

### Technical Specifications

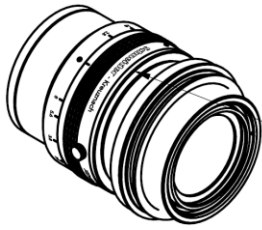
#### XENON-SAPPHIRE 2.8/98

F# range	2.8 – 8
Focal length	97.5 mm
Image circle	62.5 mm
Beta'	-0.875 (-0.83 ... -0.92 )
Object to image distance	379 (380 ... 378) mm
Transmission	400 -1000 nm
Interface	Schneider V-mount 70
Weight	720 gr.
Code no.	1076452

### Accessories

			Code no.
Adapter	V70 / M72x0.75	10 mm	# 1072419
Extension tube	M72x0.75	5 mm	# 1072420
Extension tube	M72x0.75	10 mm	# 1072421
Extension tube	M72x0.75	25 mm	# 26406
Extension tube	M72x0.75	50 mm	# 1054733
Extension tube	M72x0.75	100 mm	# 1079483
Extension tube	M72x0.75	200 mm	# 1079484

# XENON-SAPPHIRE 2.8/98



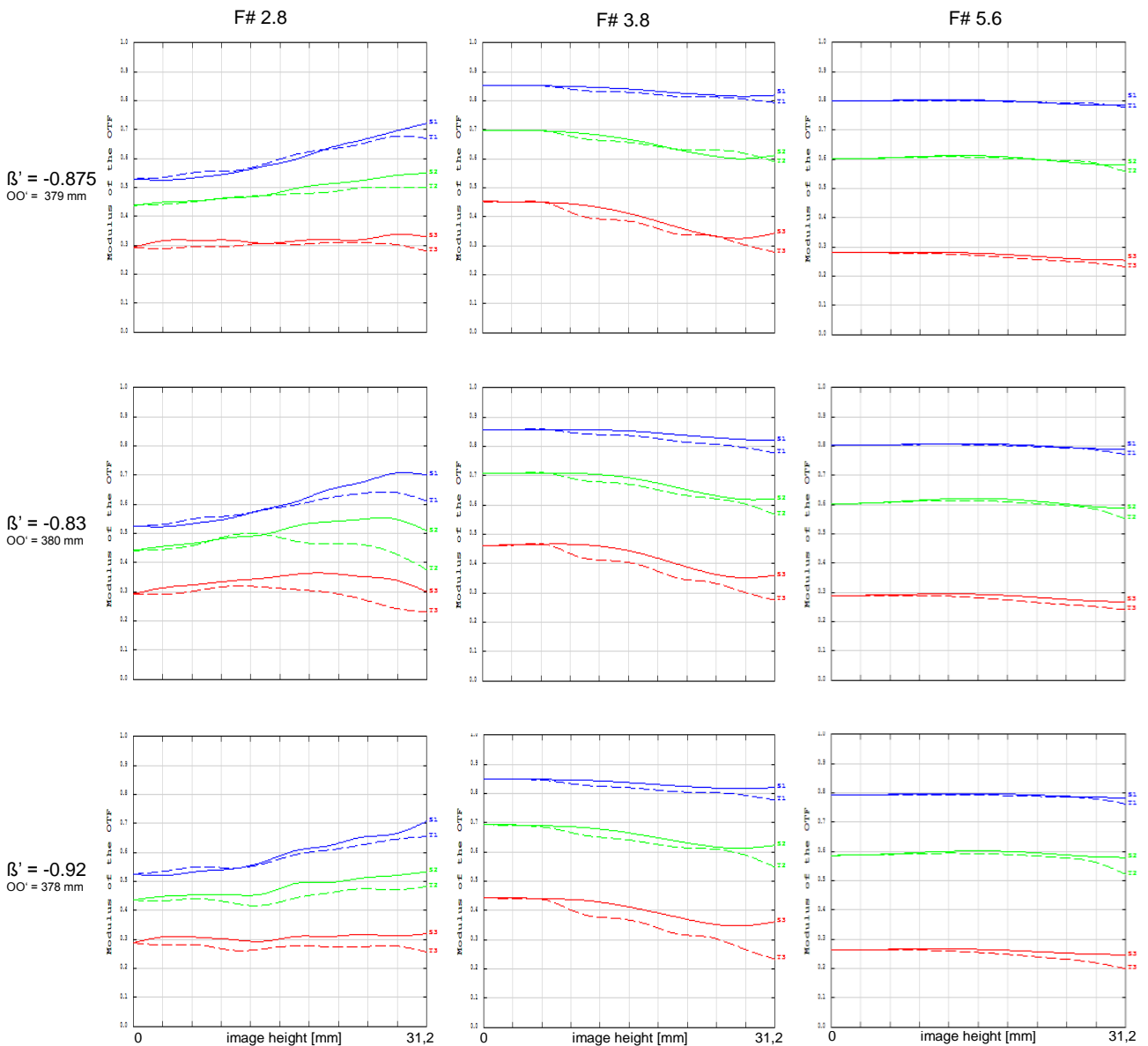
Roter Punkt:  
Kennzeichnung vermittelter Azimut  
90° versetzt zur Zeilenrichtung.  
(Red dot, marking for best azimuth  
90° to line direction).

## XENON SAPPHIRE 2.8/98

$f = 97,50 \text{ mm}$       $\beta'_p = 1,04$   
 $s_f = -49,52 \text{ mm}$       $s_{EP} = 44,54 \text{ mm}$   
 $s'_F = 52,46 \text{ mm}$       $s'_{AP} = -48,61 \text{ mm}$   
 $HH' = -12,89 \text{ mm}$       $\square d = 80,13 \text{ mm}$

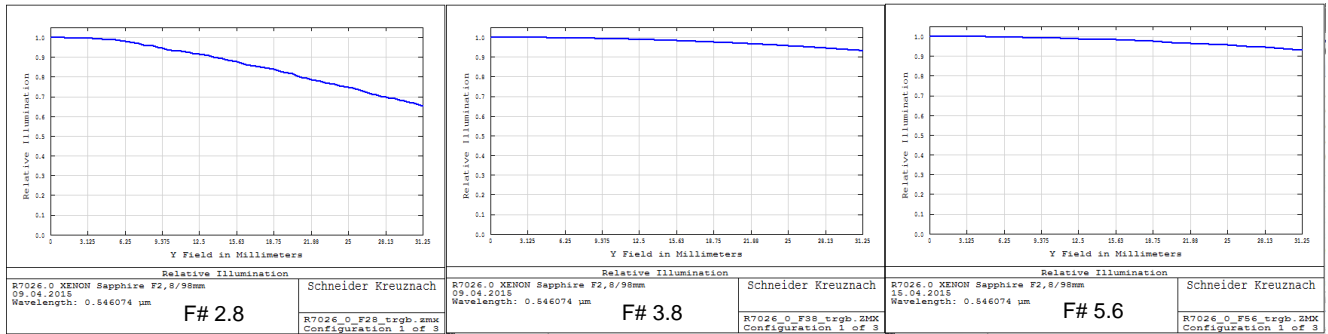
### XENON Sapphire 2.8/98 MTF with reference to image height for 12K line sensor with appr. 5 $\mu\text{m}$ pixel or 16K with 3.5 $\mu\text{m}$

Wavelength $\lambda$	[nm]:	425	475	525	575	625	675	radial	———
Spectral weighting	[%]:	1.5	13.6	26.5	27.8	24.2	6.4	tangential	- - - - -
Spatial frequency R	[1/mm]:	25	50	100 (= 16K sensor)					
Image- $\emptyset$	[mm]:	62.5							

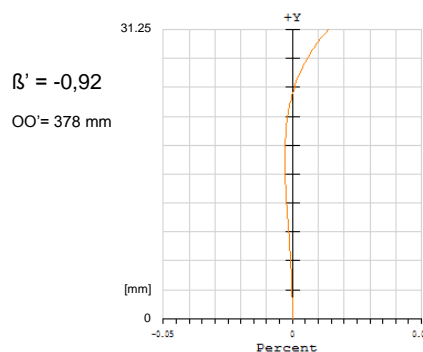
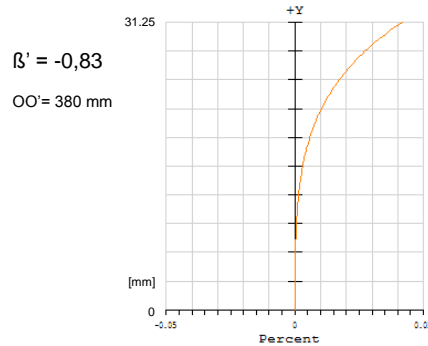
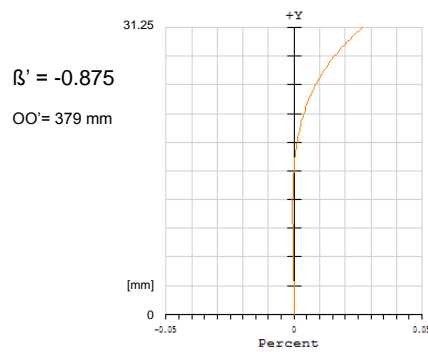


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## Relative Illumination for 62.5 mm line sensor



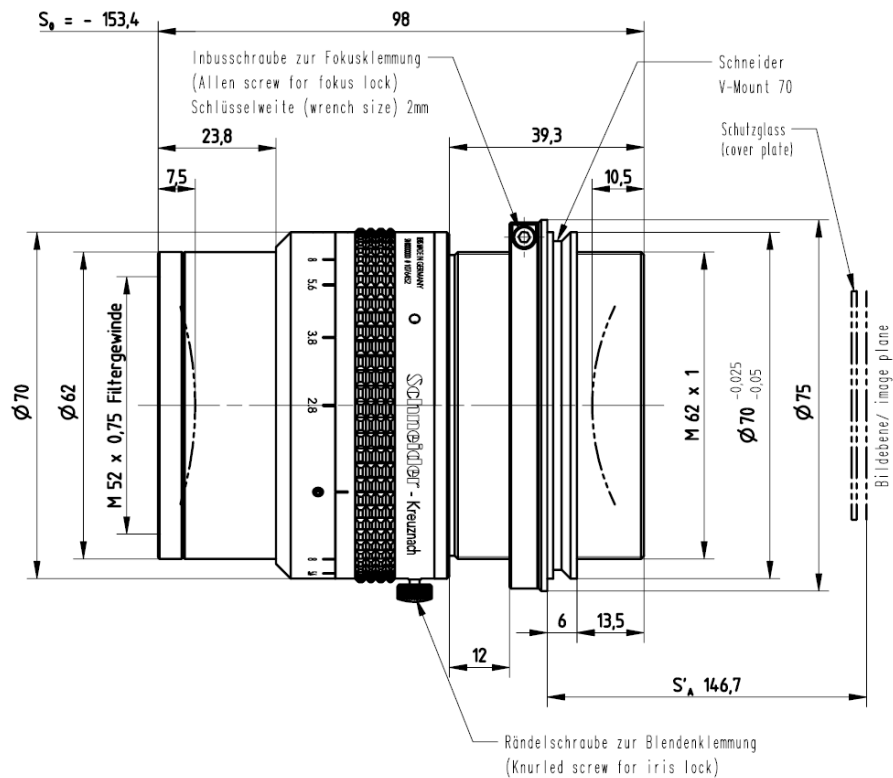
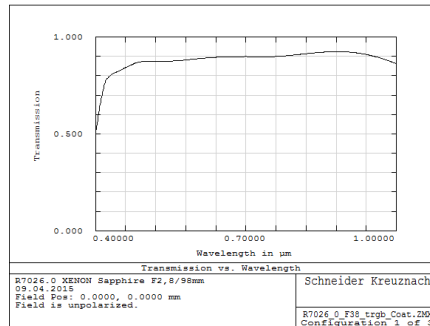
## Distortion



Distortion is shown for different magnifications. Positive values indicate pincushion distortion and negative values barrel distortion.

# XENON-SAPPHIRE 2.8/98

## Transmission



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