Schneider KREUZNACH

Line scan lens

Makro-Symmar 5.6/120-0.33x

Wherever complex web and surface inspections are concerned, the line scan image capture method is used in most cases. Due to the principle used, this method requires a very careful choice of camera and an optimally adapted lens in order to achieve maximum system performance. It is essential to observe important application-specific and physical parameters: the size of the CCD or CMOS imaging sensor in the camera defines the minimum required image circle of the lens.

Makro-Symmar 5.6/120

Key Features

- Very high optical image quality in the large sensor range
- Vibration-insensitive for stable optical performance
- Reverse position of the lens possible to enlarge the magnification range
- Lockable distance and aperture settings
- Use in best azimuth position possible
- Industry-compatible V-mount interface
- 100% quality control guarantees reliability and constant quality
- Low maintenance requirements, therefore high system availability

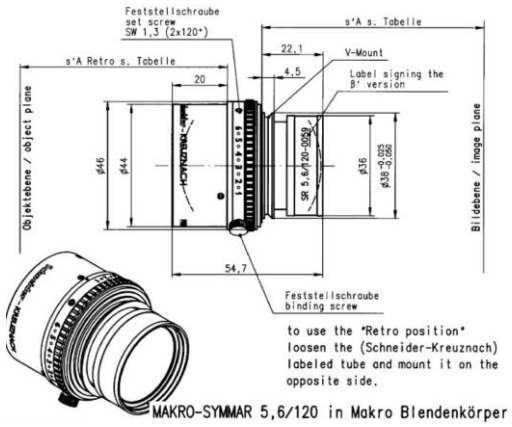
Applications

- Web and surface inspections
- Quality control
- FPD inspection
- PCB inspection
- OLED inspection
- Line scan applications

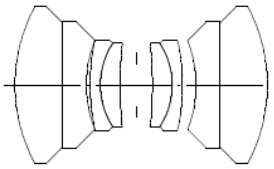
Technical Specifications

F-number	5.6
Focal length	118.9 mm
Image circle	86 mm
Magnification	-0.33
Transmission	400 - 1000 nm
Interface	V-Mount
Weight	170 gr.
Option	Optical filter

Makro-Symmar 5.6/120-0.33



MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



M-SR 5.6/120

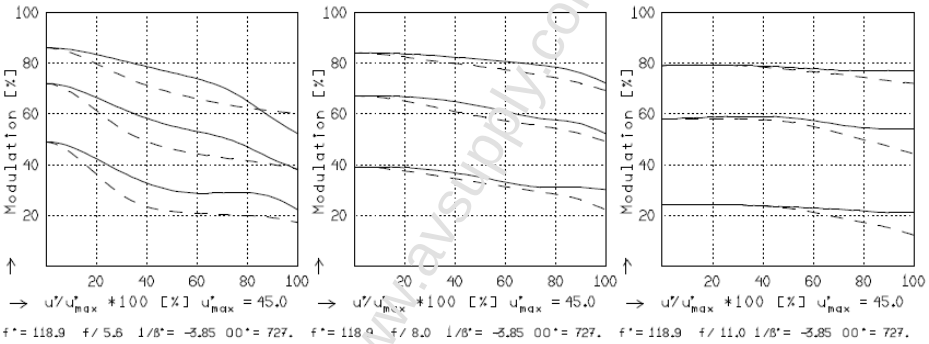
f'	= 118.9 mm	β'_P	= 1.001
s_F	= -96.3 mm	s_{EP}	= 22.6 mm
s'_F	= 93.7 mm	s'_{AP}	= -25.3 mm
HH'	= 0.6 mm	Σ d	= 48.5 mm

M-SR 5.6/120

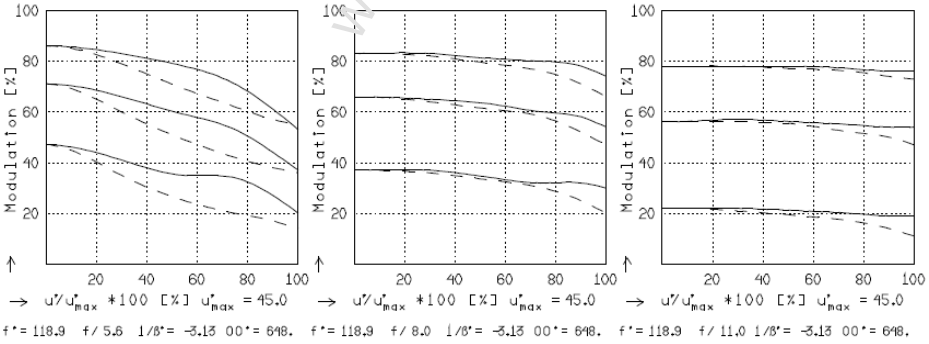
MODULATION with reference to the relative image height

Wavelength λ	[nm] :	555	655	605	505	455	405
Spectral weighting	[%] :	19.6	23.7	22.2	15.7	12.1	6.7
Spatial frequency R	[1/mm] :	20	40	80			
Format	[mm X mm] :	90.0		0.0			
Diagonal 2u'	[mm] :	90.0					

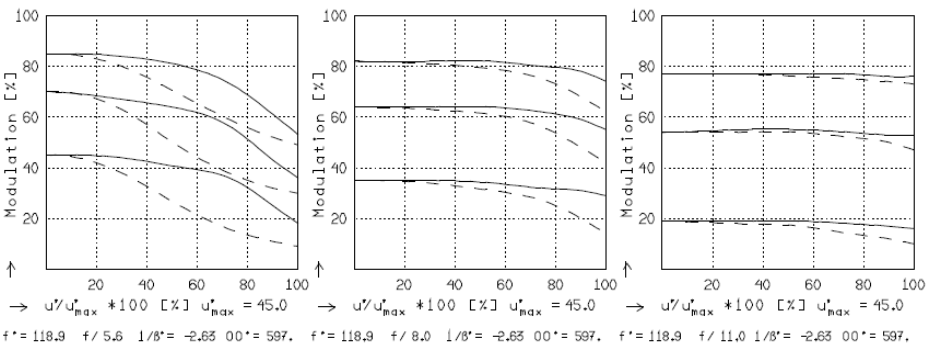
radial ——
tangential — —



f'= 118.9 f/ 5.6 1/β'= -3.85 00'= 727. | f'= 118.9 f/ 8.0 1/β'= -3.85 00'= 727. | f'= 118.9 f/ 11.0 1/β'= -3.85 00'= 727.



f'= 118.9 f/ 5.6 1/β'= -3.13 00'= 648. | f'= 118.9 f/ 8.0 1/β'= -3.13 00'= 648. | f'= 118.9 f/ 11.0 1/β'= -3.13 00'= 648.



f'= 118.9 f/ 5.6 1/β'= -2.63 00'= 597. | f'= 118.9 f/ 8.0 1/β'= -2.63 00'= 597. | f'= 118.9 f/ 11.0 1/β'= -2.63 00'= 597.

Focusing : MTF_{max} at f / 5.6 . R = 72 1/mm. u'/u'_{max} = 0

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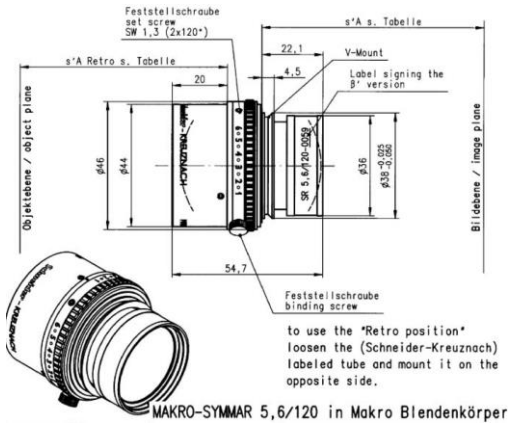
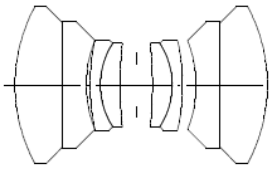


MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



M-SR 5.6/120

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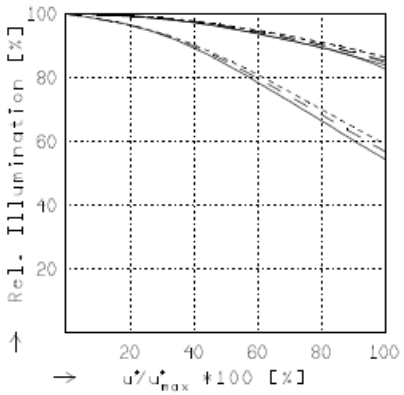
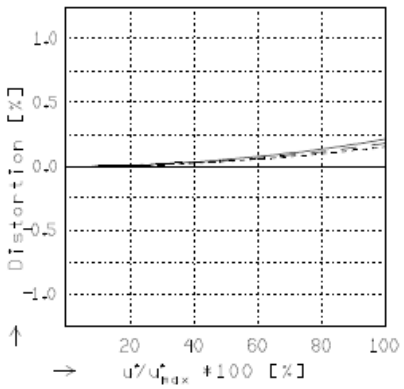


RELATIVE ILLUMINATION

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

f / 5.6 f / 8.0 f / 11.0

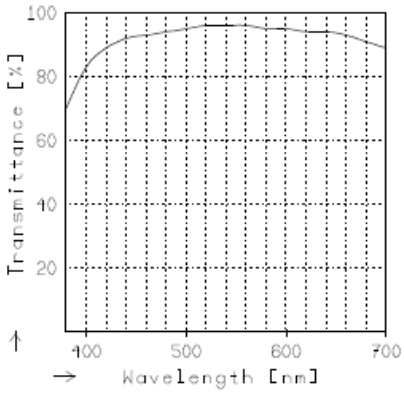
—— β' = -0.2600 u'_{max} = 45.1 ω' = 72°.
— — β' = -0.3200 u'_{max} = 45.1 ω' = 64°.
----- β' = -0.3800 u'_{max} = 45.1 ω' = 59°.



DISTORTION

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

—— β' = -0.2600 u'_{max} = 45.1 ω' = 72°.
— — β' = -0.3200 u'_{max} = 45.1 ω' = 64°.
----- β' = -0.3800 u'_{max} = 45.1 ω' = 59°.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.