

Line scan lens

Makro-Symmar 5.6/120-0.75x

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.



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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

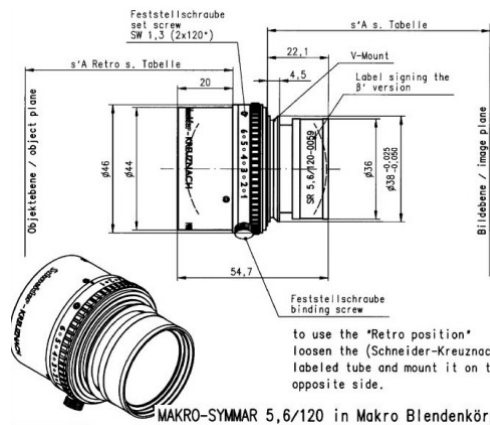
Applications

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

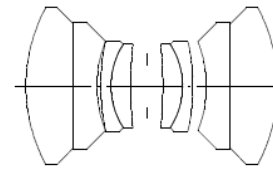
Technical Specifications

F-number	5.6
Focal length	120.2 mm
Image circle	86 mm
Magnification	-0.75
Transmission	400 - 1000 nm
Interface	V-Mount
Weight	170 gr.
Option	Optical filter

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MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



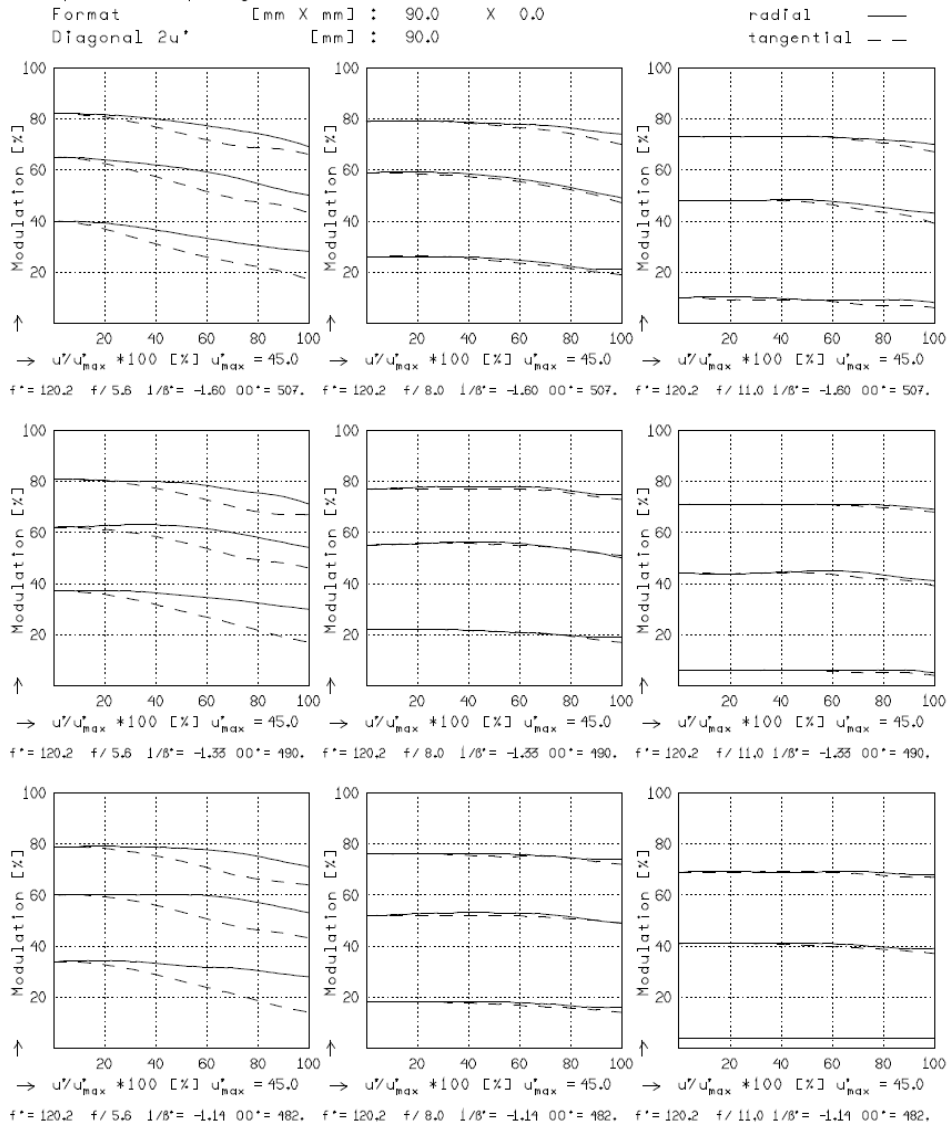
M-SR 5.6/120 BETA -0.625...-0.875

$f^* = 120.2 \text{ mm}$ $\beta_p = 0.994$
 $s_F = -94.8 \text{ mm}$ $s_{EP} = 26.1 \text{ mm}$
 $s_F^* = 94.1 \text{ mm}$ $s_{AP} = -25.4 \text{ mm}$
 $HH^* = -1.2 \text{ mm}$ $\Sigma d = 50.4 \text{ mm}$

M-SR 5.6/120 BETA -0.625...-0.875

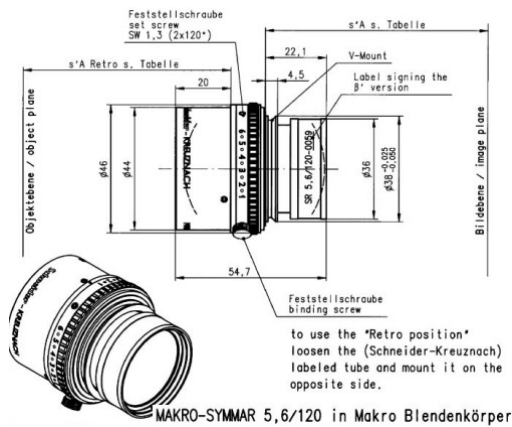
MODULATION with reference to the relative image height

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

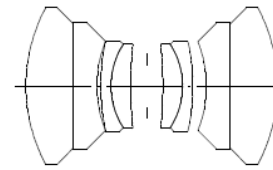


Focusing : MTF_{max} at f / 5.6 . R = 80 1/mm. $u/u_{max}^* = 0$

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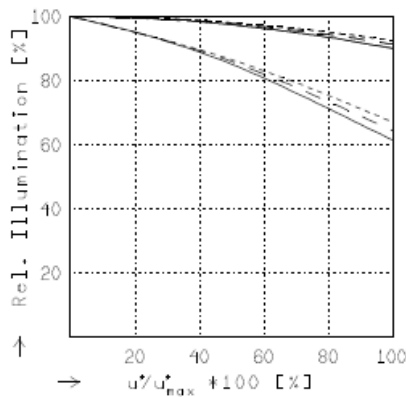


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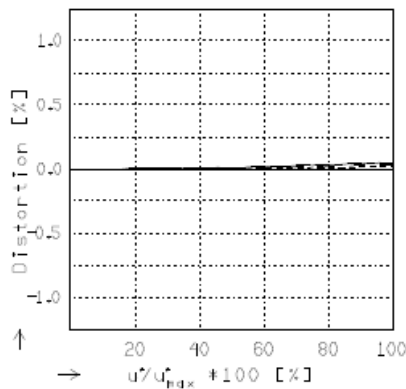
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RELATIVE ILLUMINATION

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

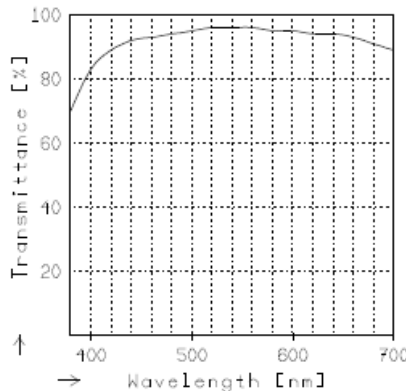
	$f / 5.6$	$f / 8.0$	$f / 11.0$
— $\beta' = -0.6250$	$u_{max}^* = 45.0$	$00^* = 507.$	
- - $\beta' = -0.7500$	$u_{max}^* = 45.0$	$00^* = 490.$	
- · - $\beta' = -0.8750$	$u_{max}^* = 45.0$	$00^* = 482.$	



DISTORTION

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

— $\beta' = -0.6250$	$u_{max}^* = 45.0$	$00^* = 507.$
- - $\beta' = -0.7500$	$u_{max}^* = 45.0$	$00^* = 490.$
- · - $\beta' = -0.8750$	$u_{max}^* = 45.0$	$00^* = 482.$



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.