Line scan lens

Pyramid Imaging

Makro-Symmar 5.6/120-1.0x

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	120.7 mm
Image circle	86 mm
Magnification	-1.0
Transmission	400 - 1000 nm
Interface	V-Mount
Weight	170 gr.
Option	Optical filter

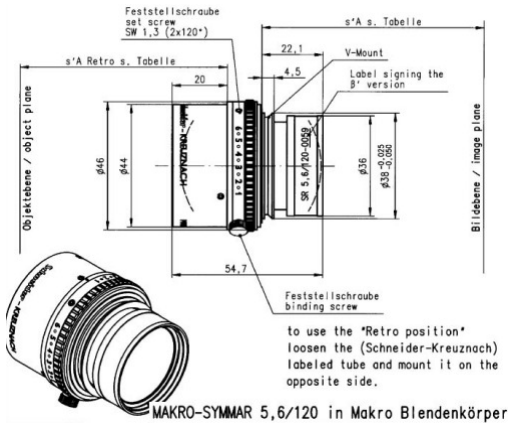
Contact

Jos. Schneider Optische Werke GmbH
Ringstraße 132
55543 Bad Kreuznach
Germany
Phone +49 671 601-387
Fax +49 671 601-286
www.schneiderkreuznach.com/industrialoptics
industrie@schneiderkreuznach.com

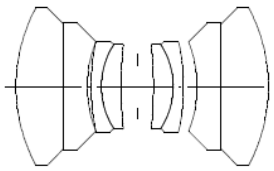
Schneider Asia Pacific Ltd.
20/F Central Tower, 28 Queen's Road
Central, Hong Kong
China
Phone +852 8302 0301
Fax +852 8302 4722
www.schneider-asiapacific.com
info@schneider-asiapacific.com

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

Makro-Symmar 5.6/120-1.0



MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



M-SR 5.6/120 BETA -0.875..-1.125

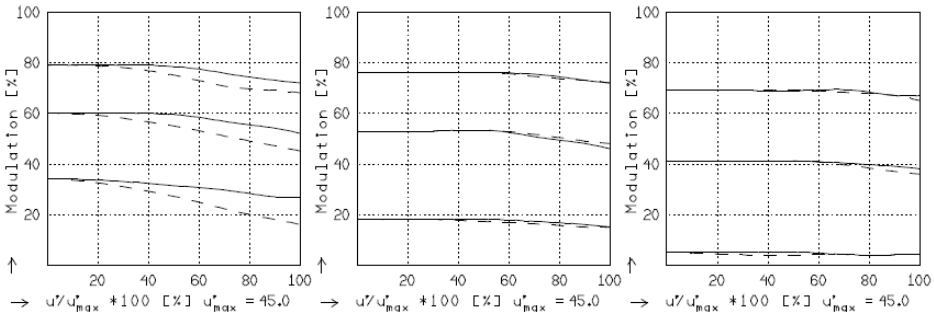
f'	= 120.7 mm	β'_P	= 1.002
s_F	= -94.3 mm	s_{EP}	= 26.1 mm
s'_F	= 94.3 mm	s'_{AP}	= -26.6 mm
HH'	= -1.8 mm	Σ d	= 50.9 mm

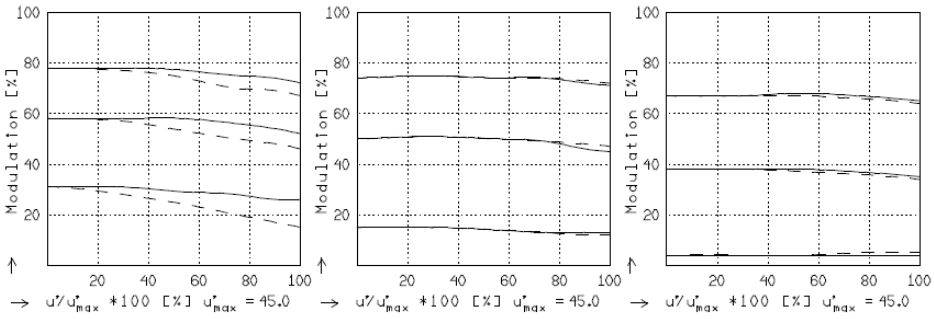
M-SR 5.6/120 BETA -0.875..-1.125

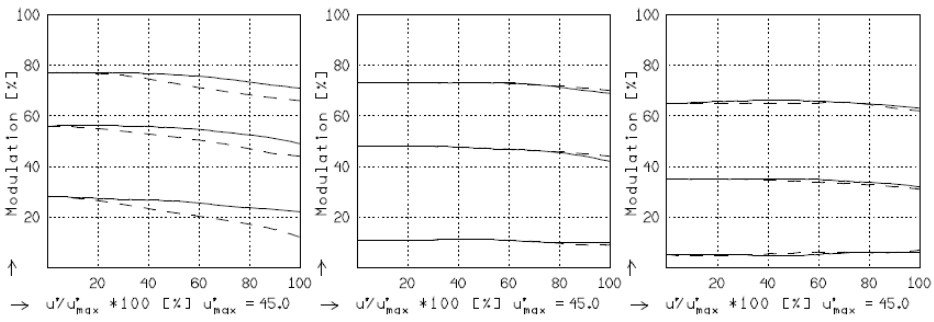
MODULATION with reference to the relative image height

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	X	0.0			
Diagonal 2u'	[mm] :	90.0					

radial ——
tangential — —

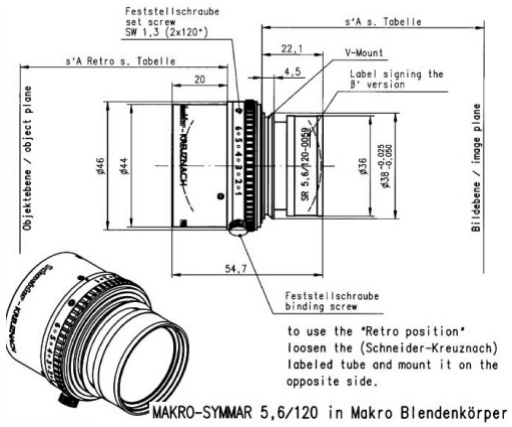




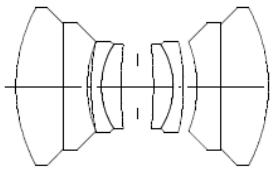


Focusing : MTF_{max} at f / 5.6 . R = 80 1/mm. u'/u'_{max} = 0

Makro-Symmar 5.6/120-1.0



MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



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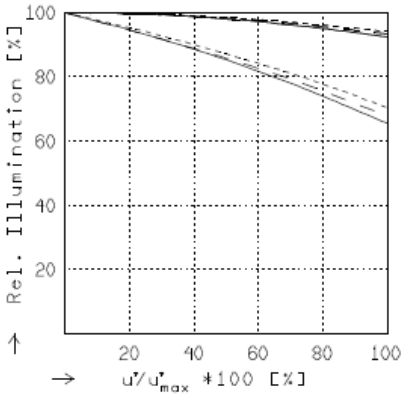
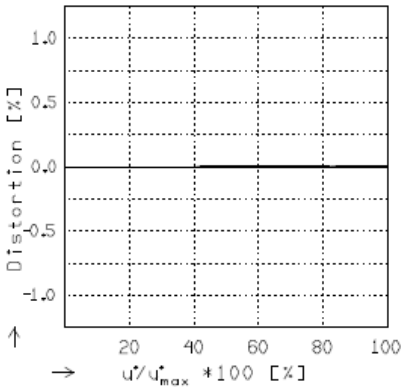


RELATIVE ILLUMINATION

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

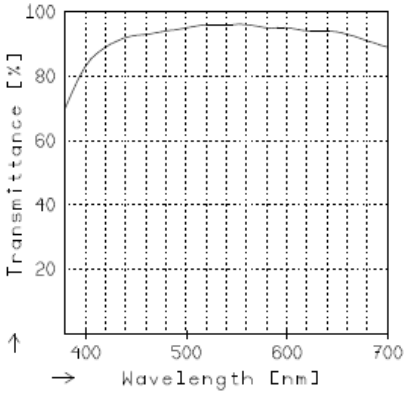
	f / 5.6	f / 8.0	f / 11.0
——	ß' = -0.8750	u'_{max} = 45.0	00' = 483.
— —	ß' = -1.0000	u'_{max} = 45.0	00' = 481.
-----	ß' = -1.1250	u'_{max} = 45.0	00' = 483.



DISTORTION

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

——	ß' = -0.8750	u'_{max} = 45.0	00' = 483.
— —	ß' = -1.0000	u'_{max} = 45.0	00' = 481.
-----	ß' = -1.1250	u'_{max} = 45.0	00' = 483.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.