

# Macro lens

## Makro-Symmar 5.6/80-0033

Unlike conventional camera lenses where the optical performance decreases as the magnification increases, Schneider-Kreuznach macro lenses have been developed and corrected exclusively for the close-up range of 1:20 to 1:1. Due to its mechanical stability and the robust V-mount interface enabling simpler adjustment of the best azimuth position, the system is exceptionally well suited to demanding, continuous industrial use.



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### Key Features

- Excellent optical imaging performance when using large sensors
- Vibration-insensitive for stable optical performance
- Industry-compatible V-mount interface
- Lockable distance and aperture settings
- Infinitely adjustable aperture, guaranteed long-term stability
- 100% quality control guarantees reliability and constant quality
- Low maintenance requirements, therefore high system reliability

### Applications

- Machine Vision and other imaging applications
- PCB inspection
- LCD inspection
- OLED inspection
- Solar inspection

### Technical Specifications

F-number	5.6
Focal length	82.4 mm
Image circle	141.2 mm
Magnification	-1.0
Transmission	400 - 700 nm
Interface	V-Mount
Weight	136 gr.
Option	Optical filter

### Contact

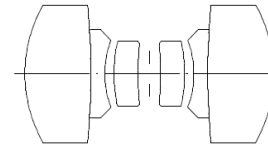
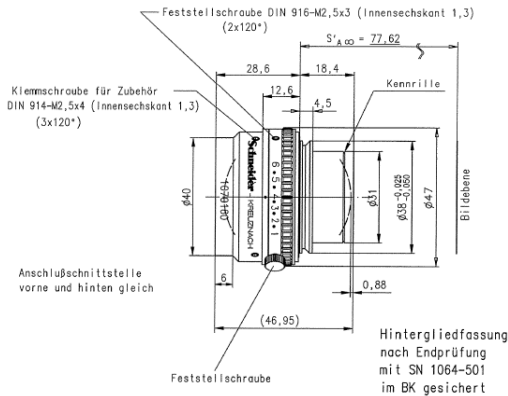
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# Makro-Symmar 5.6/80

# Pyramid Imaging



## MAKRO-SYMMAR 5.6/80

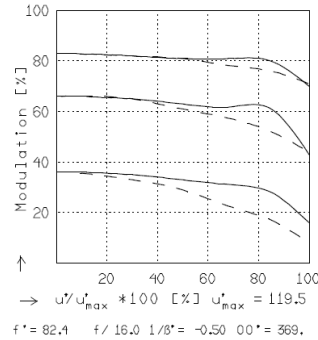
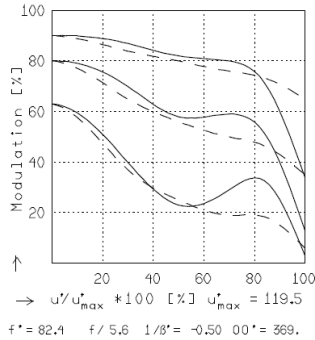
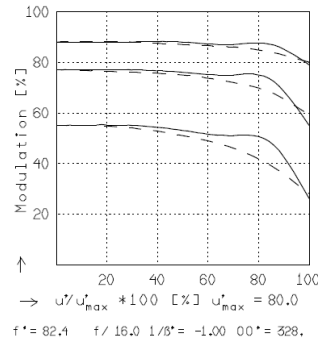
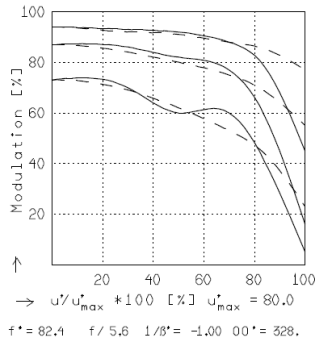
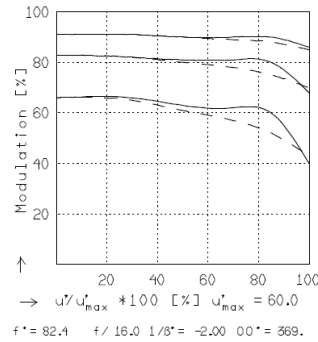
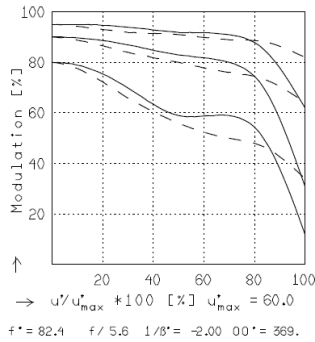
$f'$ = 82.4 mm	$\beta'_p$ = 1.000
$s_F$ = -60.1 mm	$s_{EP}$ = 22.2 mm
$s_{F^*}$ = 60.1 mm	$s_{AP^*}$ = -22.3 mm
$HH'$ = -1.3 mm	$\Sigma d$ = 43.2 mm

## MAKRO-SYMMAR 5.6/80

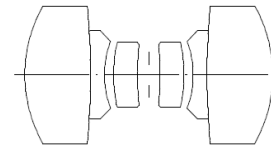
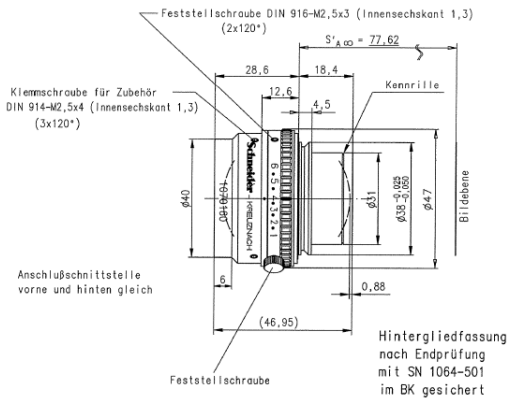
MODULATION with reference to the relative image height

Wavelength $\lambda$ [nm] :	546	644	588	480	436	405
Spectral weighting [%] :	24.6	18.6	22.1	12.4	15.2	7.1
Spatial frequency R [1/mm] :	5	10	20			
Image- $\emptyset$ f / 5.6 [mm] :	160.0					
Image- $\emptyset$ f / 16.0 [mm] :	160.0					

radial —  
tangential - -

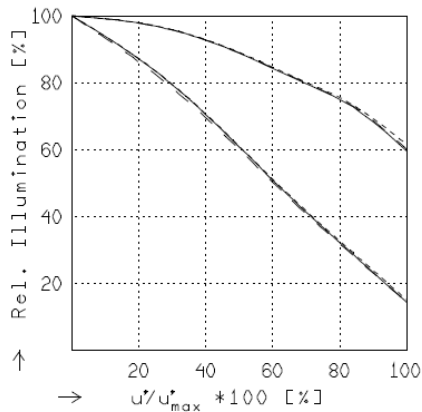


Focusing : MTF<sub>max</sub> at f / 5.6 , R = 20 1/mm.  $u'/u'_{max} = 0$



## MAKRO-SYMMAR 5.6/80

$f^*$ = 82.4 mm	$\beta_p^*$ = 1.000
$s_F$ = -60.1 mm	$s_{EP}$ = 22.2 mm
$s_F^*$ = 60.1 mm	$s_{AP}^*$ = -22.3 mm
$HH^*$ = -1.3 mm	$\Sigma d$ = 43.2 mm

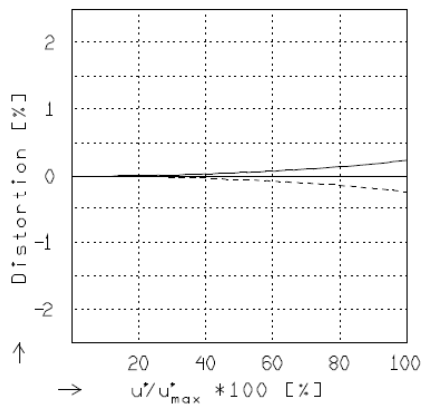


## RELATIVE ILLUMINATION

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

$f / 5.6$        $f / 16.0$

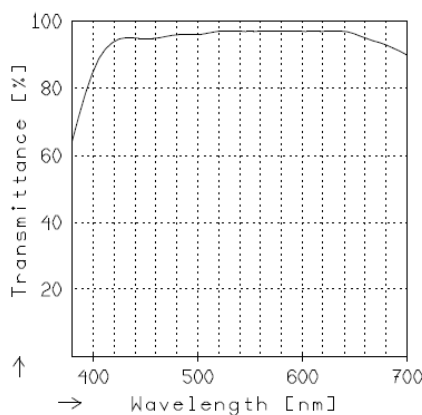
— $\beta^* = -0.5000$	$u'_{max} = 60.1$	$00^* = 369.$
- - $\beta^* = -1.0000$	$u'_{max} = 80.0$	$00^* = 328.$
- - - $\beta^* = -2.0000$	$u'_{max} = 119.2$	$00^* = 369.$



## DISTORTION

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

— $\beta^* = -0.5000$	$u'_{max} = 59.9$	$00^* = 369.$
- - $\beta^* = -1.0000$	$u'_{max} = 79.8$	$00^* = 328.$
- - - $\beta^* = -2.0000$	$u'_{max} = 119.2$	$00^* = 369.$



## TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.



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