

## V-Mount Macro Lens

### Apo-Componon 4.0/60-0016

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
- Continuous aperture adjustment, guaranteed long-term stability
- 100% quality control guarantees reliability and constant quality
- Low maintenance requirements, therefore high system reliability

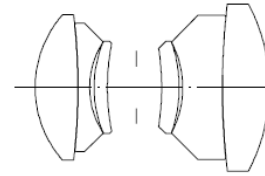
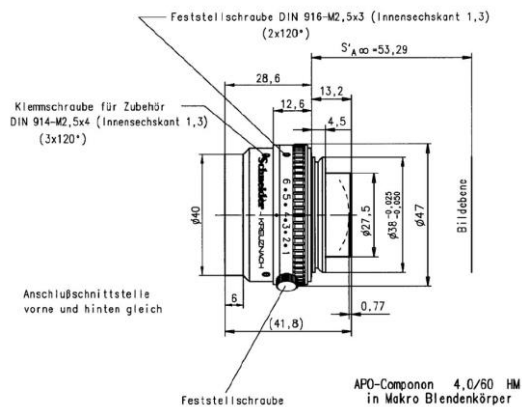
#### Applications

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

#### Technical Specifications

F-number	4.0
Focal length	59.9 mm
Image circle	60 mm
Magnification	1:20 to 1:1, optimized for -0.17
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	120 gr.
Filter tread	M37 x 0.75
Code no.	14802

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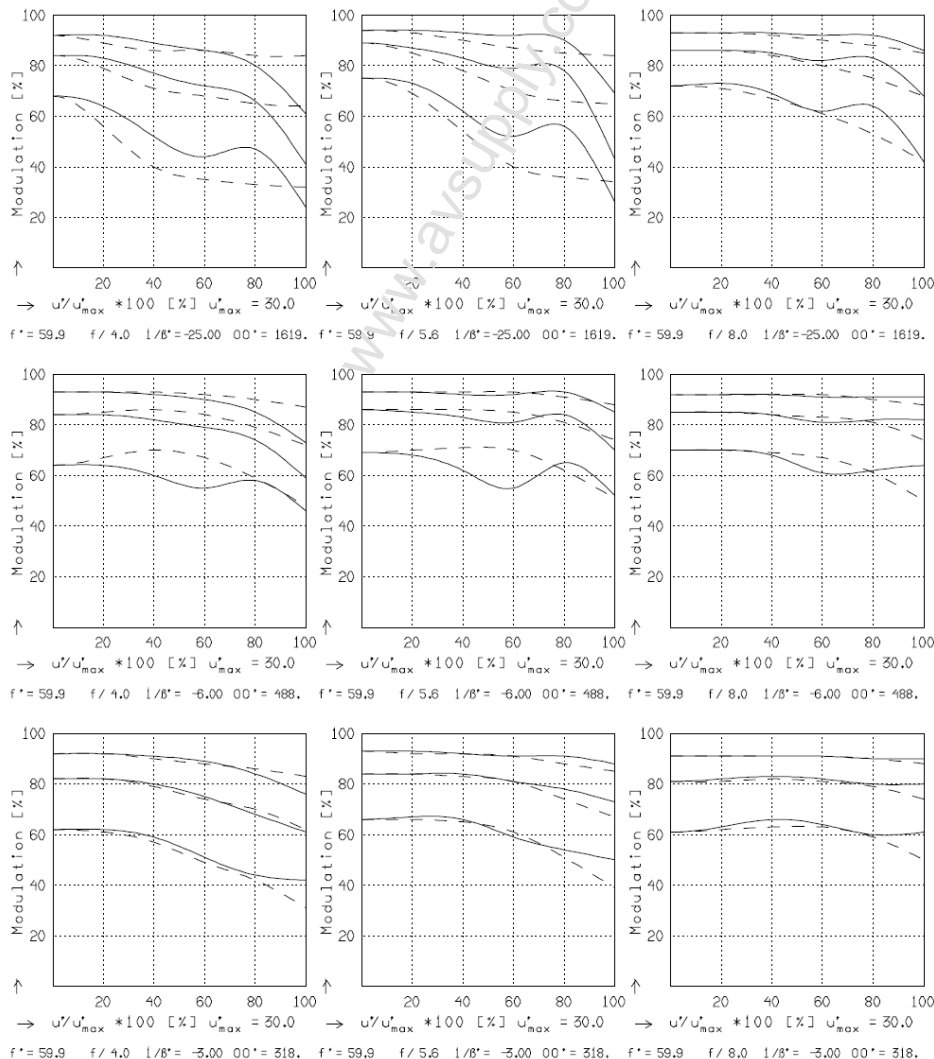
$f^* = 59.9 \text{ mm}$	$\beta_p^* = 0.970$
$s_F = -47.1 \text{ mm}$	$s_{EP} = 14.6 \text{ mm}$
$s_F^* = 40.9 \text{ mm}$	$s_{AP}^* = -17.3 \text{ mm}$
$HH^* = -1.9 \text{ mm}$	$\Sigma d = 30.0 \text{ mm}$

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MODULATION with reference to the relative image height

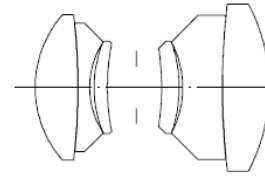
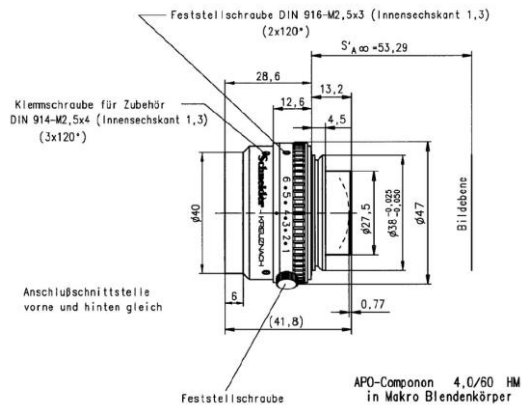
Wavelength $\lambda$ [nm]	546	706	644	480	436	405
Spectral weighting [%]	27.4	12.4	24.1	18.3	12.6	5.2
Spatial frequency R [1/mm]	10	20	40			
Format [mm X mm]	42.0	X 42.0				
Diagonal $2u'$ [mm]	60.0					

radial —  
tangential - -



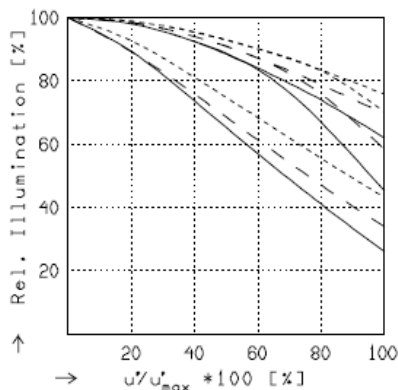
Focusing :  $MTF_{max}$  at  $f / 4.0$  ,  $R = 20$  1/mm,  $u'/u'_{max} = 0$

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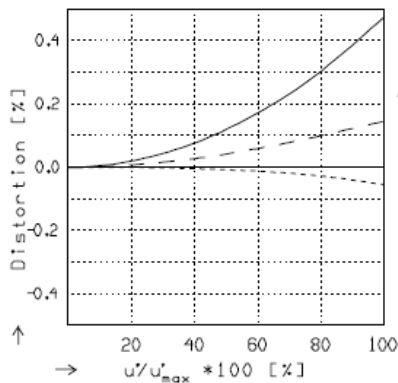


### RELATIVE ILLUMINATION

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

$f / 4.0$        $f / 5.6$        $f / 8.0$

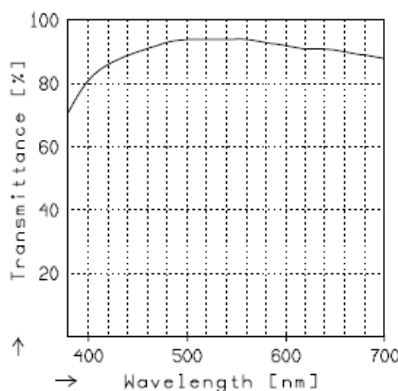
$\beta^* = -0.0400$	$u_{max}^* = 30.1$	$00^* = 1619.$
$\beta^* = -0.1667$	$u_{max}^* = 30.0$	$00^* = 488.$
$\beta^* = -0.3333$	$u_{max}^* = 30.0$	$00^* = 318.$



### DISTORTION

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

$\beta^* = -0.0400$	$u_{max}^* = 30.0$	$00^* = 1619.$
$\beta^* = -0.1667$	$u_{max}^* = 30.0$	$00^* = 488.$
$\beta^* = -0.3333$	$u_{max}^* = 30.0$	$00^* = 318.$



### TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.