Componon S 4.0/80

The Componon S 4.0/80 (Version -0022) is an 80 mm focal length macro lens with 80.6 mm image circle for large format sensors and short working distance. This macro lens is developed and corrected for the close-up range of 1:20 to 1:1 and can also be used in reverse position, depending on the field of vision and pixel size with the symmetrical V-Mount interface without additional accessories.

The modular system with wide-ranging accessories such as helical focus barrel (Unifoc 7 and 12), extension tubes, and adapters for various cameras, can be used for all kind of sophisticated applications from OLED inspection to food processing control. This, the fast F/# of 4.0 and low longitudinal and lateral chromatic aberration, as well as extremely low distortion all combined make these lens unique. Vibration insensitivity for stable imaging performance even when the lens used in harsh industrial environmental, as common in food processing control and web inspection systems.

The Unifoc Series offers more macro lenses with 35 mm, 40 mm, 45 mm, 50 mm, 60 mm, 80 mm, 90 mm, 100 mm focal length and a line scan lens series plus a enlarging lens series for Unifoc 58 and 76 helicoid focus barrels.

Componon S 4.0/80

Key features

- Large Format
- Short working distance
- Modular: Unifoc 7 and 12 focus helical barrels, extension tubes, various camera adapters
- Possibility to be used in retro position
- Vibration insensitivity for stable imaging performance

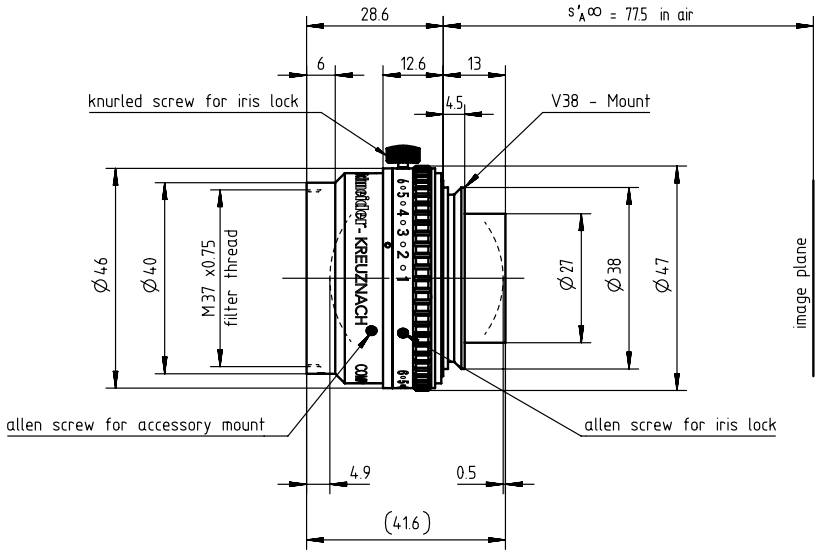
Applications

- OLED inspection
- Web inspection
- Medical applications
- Laser triangulation
- Quality control

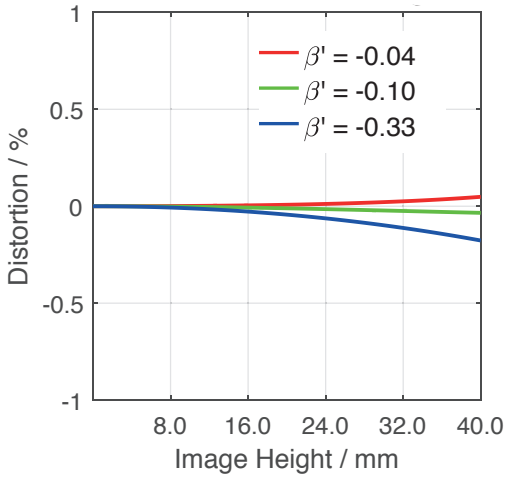
Name	Componon S 4.0/80
Type	-0022
Focal Length [mm]	80
Magnification	-0.5
Image circle [mm]	80
Resolution [µm]	6.45
F/# range	4 ... 22
NA	0.12
Interface	V38-Mount
Working distance [mm]	∞ - 220
AoV [°]	52
Focus control	manual
Transmission [nm]	400 - 1000
Filter thread [mm]	M37 x 0,75

Name	Componon S 4.0/80
Dimensions L x D [mm]	41.6 x 47.0
Weight [g]	115
Storage temperature [°C]	-25 … +70
f'_{eff} [mm]	80.34
S_F [mm]	-57.92
$S'_{F'}$ [mm]	64.67
HH' [mm]	-1.81
β'_P	1.027
S_{EP} [mm]	20.29
S'_{AP} [mm]	-17.86
Σd [mm]	36.28
ID	14780

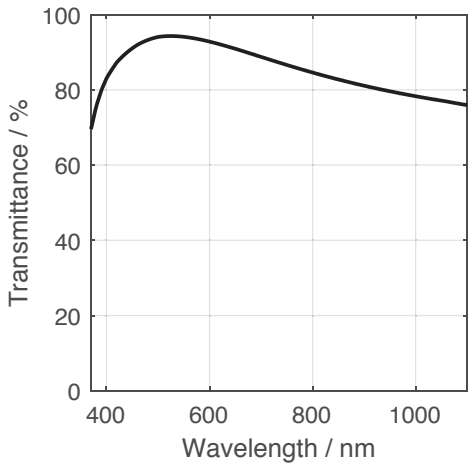
Componon S 4.0/80



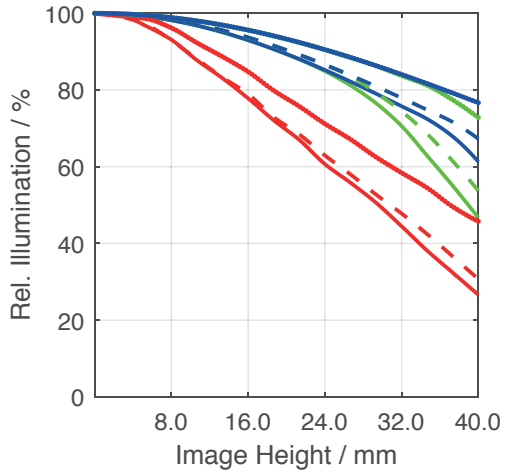
Distortion vs. Image Height

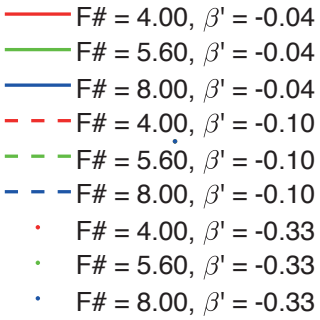


Transmittance vs. Wavelength



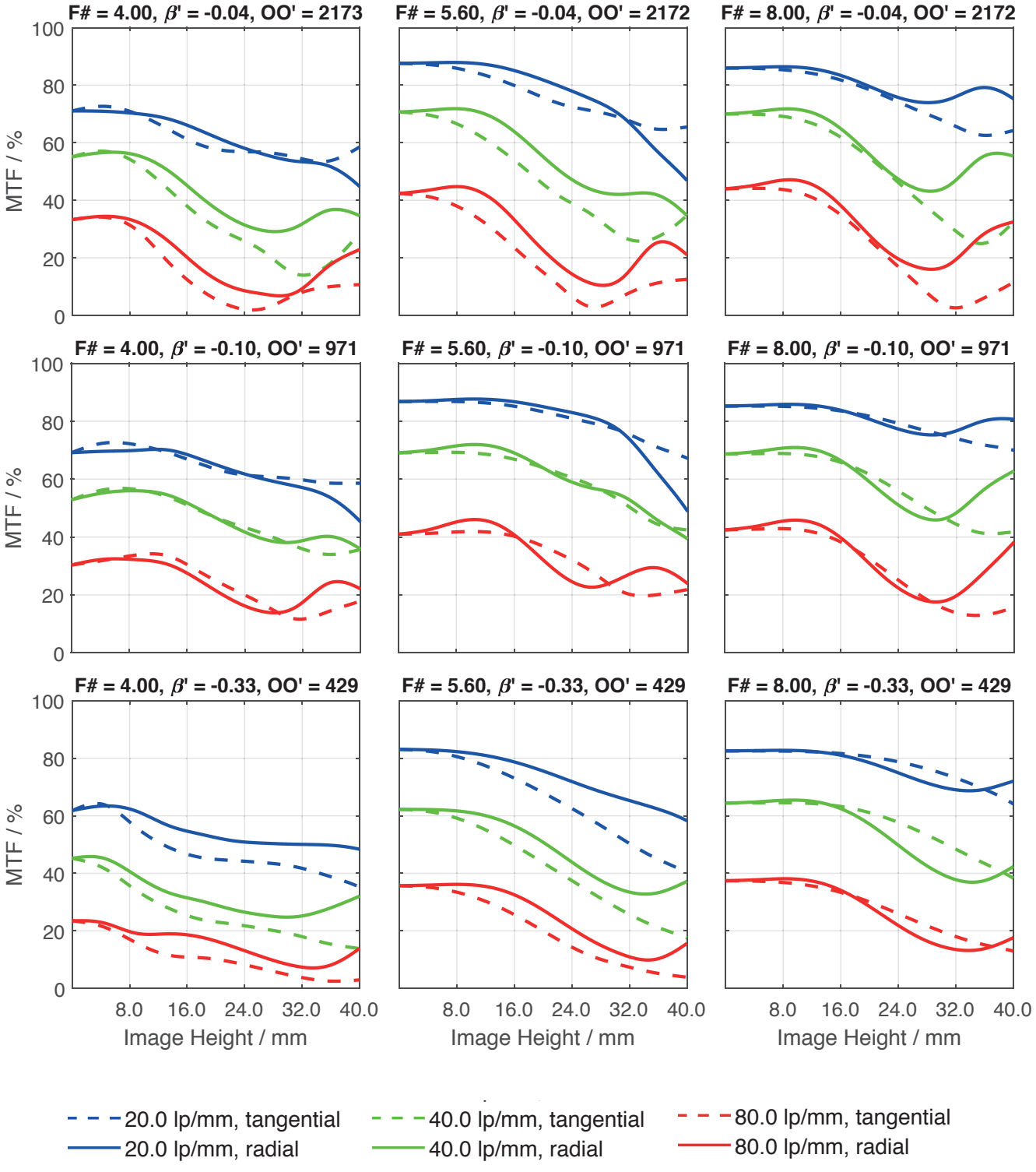
Relative Illumination vs. Image Height





Componon S 4.0/80

Spectrum Name	VIS					
Wavelenghts [nm]	425	475	525	575	625	675
Weights	8	16	23	22	19	13



Componon S 4.0/80

Accessories	Mount	Length	ID
Makro	UNIFOC 12	V38/V38	11726
	UNIFOC 7	V38/V38	1001041
	UNIFOC 7 (M58 x 0,75)	V38/M58 x 0,75	1054532
Zwischenring	Ext. Tube 6 mm	V38 / V38	20176
	Ext. Tube 8 mm	V38 / V38	20177
	Ext. Tube 10 mm	V38 / V38	20178
	Ext. Tube 25 mm	V38 / V38	20179
	Ext. Tube 50 mm	V38 / V38	20154
	Ext. Tube 75 mm	V38 / V38	20155
Adapter	V38 / C-Mount	V38 / C-Mount	20052
	V38 / C-Mount Hub 19.2 - 24.2 mm	V38 / C-Mount	1011634
	V38 / Leica (M39 x 26 Gg.)	V38 / Leica	20054
	V38 / T2 (M42 x 0,75)	V38 / T2	20053
	V38 / M42 x 1	V38 / M42 x 1	20059
	V38 / M42 x 1 - Length 35 mm	V38 / M42 x 1	1001692
	V38 / M58 x 0,75	V38 / M58 x 0,75	1018385
	V38 / Nikon F-Mount	V38 / Nikon	21610

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V-Mount 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.

Makro-Symmar 5.6/80

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	5.6
Focal length	82.4 mm
Image circle	141.2 mm
Magnification	1:20 to 1:1, optimized for -1.0
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	136 gr.
Filter thread	M37 x 0.75
Code no.	1070160

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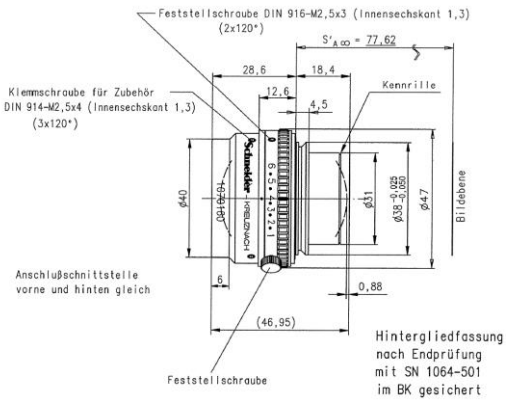
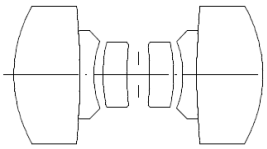
Makro-Symmar 5.6/80





MAKRO-SYMMAR 5.6/80

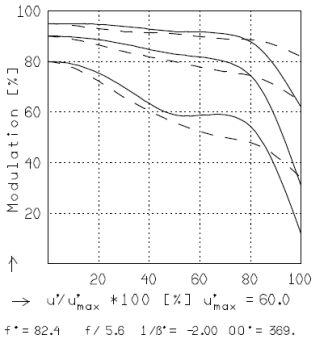
f' =	82.4 mm	β'_P =	1.000
s_F =	-60.1 mm	s_{EP} =	22.2 mm
s'_F =	60.1 mm	s'_{AP} =	-22.3 mm
HH' =	-1.3 mm	Σ d =	43.2 mm

MAKRO-SYMMAR 5.6/80

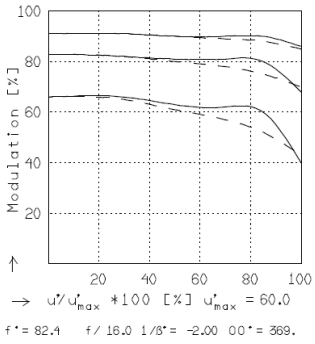
MODULATION with reference to the relative image height

Wavelength	λ	[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-Ø f / 5.6		[mm] :	160.0					
Image-Ø f / 16.0		[mm] :	160.0					

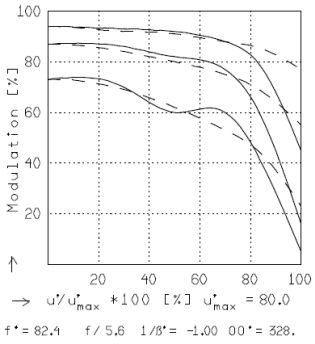
radial ——
tangential — —



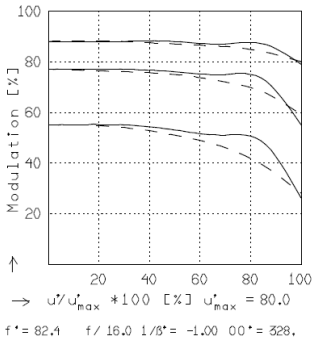
f' = 82.4 f/ 5.6 1/β' = -2.00 00' = 369.



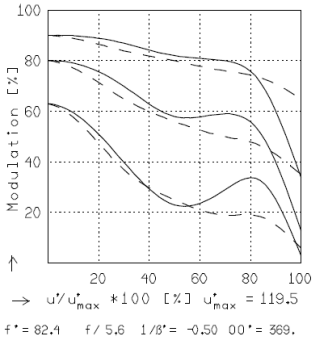
f' = 82.4 f/ 16.0 1/β' = -2.00 00' = 369.



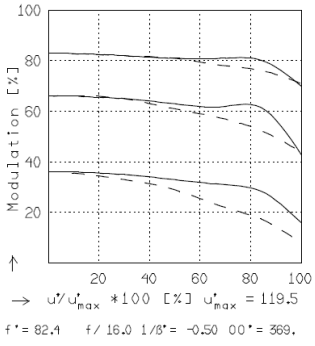
f' = 82.4 f/ 5.6 1/β' = -1.00 00' = 328.



f' = 82.4 f/ 16.0 1/β' = -1.00 00' = 328.



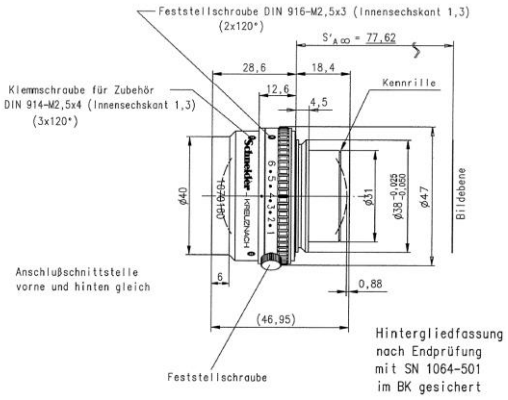
f' = 82.4 f/ 5.6 1/β' = -0.50 00' = 369.

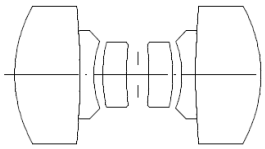


f' = 82.4 f/ 16.0 1/β' = -0.50 00' = 369.

Focusing : MTF_{max} at f / 5.6 , R = 20 1/mm, u'/u'_{max} = 0

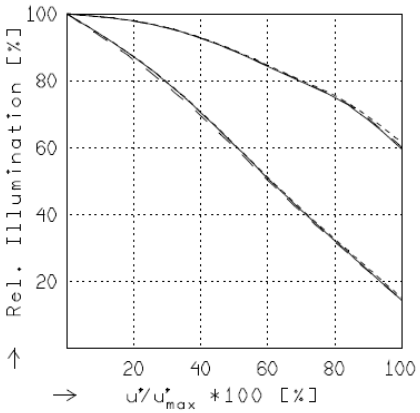
Makro-Symmar 5.6/80





MAKRO-SYMMAR 5.6/80

f' = 82.4 mm		β'_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		Σ d = 43.2 mm	

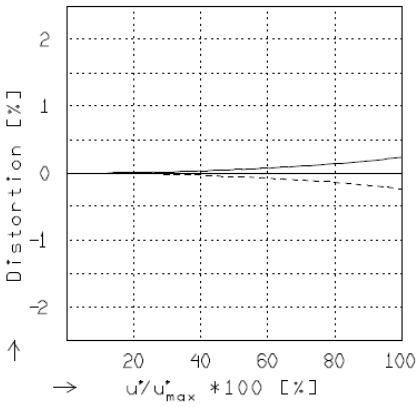


RELATIVE ILLUMINATION

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

f / 5.6 f / 16.0

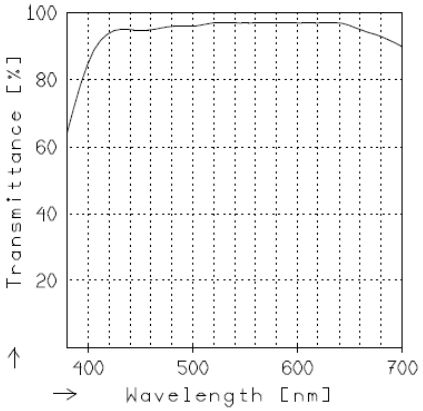
——	β' = -0.5000	u'_{max} = 60.1	OO' = 369.
— —	β' = -1.0000	u'_{max} = 80.0	OO' = 328.
-----	β' = -2.0000	u'_{max} = 119.2	OO' = 369.



DISTORTION

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

——	β' = -0.5000	u'_{max} = 59.9	OO' = 369.
— —	β' = -1.0000	u'_{max} = 79.8	OO' = 328.
-----	β' = -2.0000	u'_{max} = 119.2	OO' = 369.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

V-Mount Macro Lens

Apo-Componon 4.5/90-0025

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.

Apo-Componon 4.5/90

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	4.5
Focal length	91.2 mm
Image circle	87.8 mm
Magnification	1:20 to 1:1, optimized for -0.17
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	135 gr.
Filter tread	M37 x 0.75
Code no.	1070213

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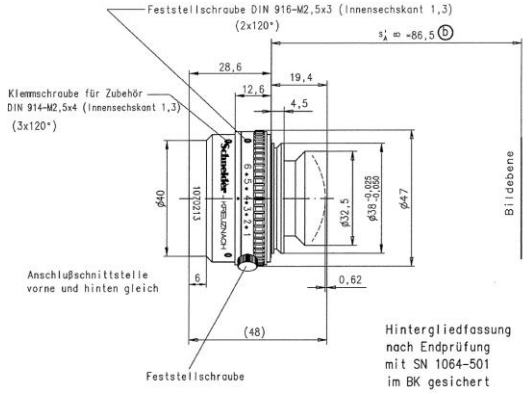
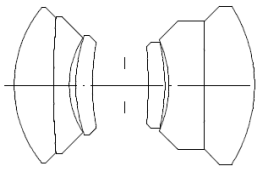
Apo-Componon 4.5/90





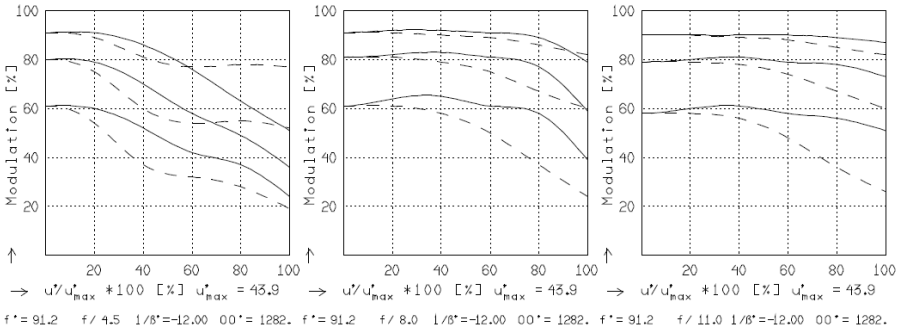
R4839.3 APO-CPN 4.5/90

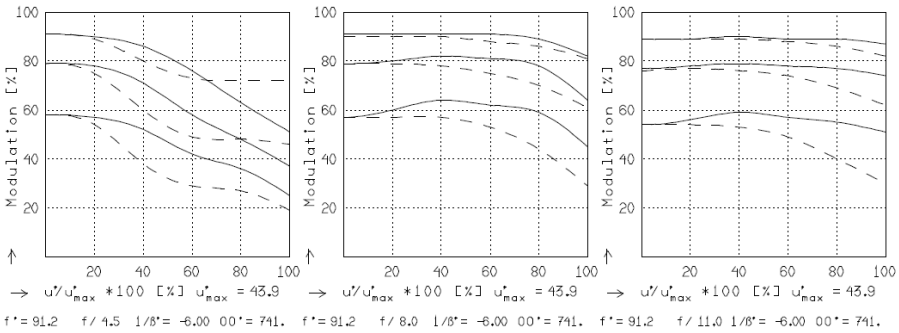
f' = 91.2 mm	β'_P = 1.014		
s_F = -67.5 mm	s_{EP} = 22.4 mm		
$s'_{F'}$ = 67.8 mm	s'_{AP} = -24.7 mm		
HH' = -3.6 mm	Σ d = 43.5 mm		

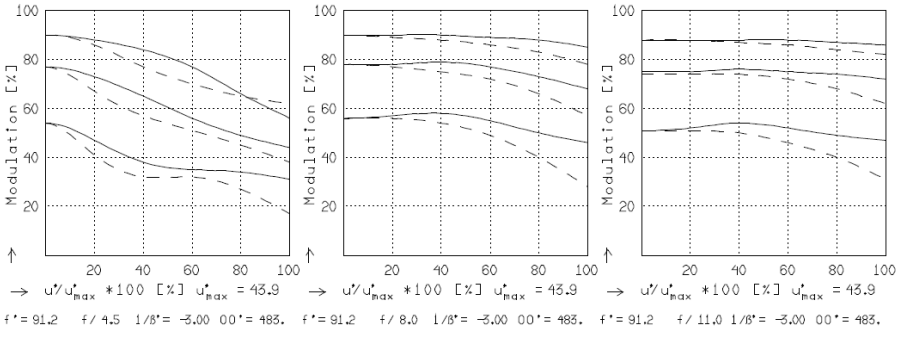
R4839.3 APO-CPN 4.5/90

MODULATION with reference to the relative image height

Wavelength λ [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] :	0.0		0.0				radial ——
Diagonal 2u' [mm] :	87.9						tangential — —

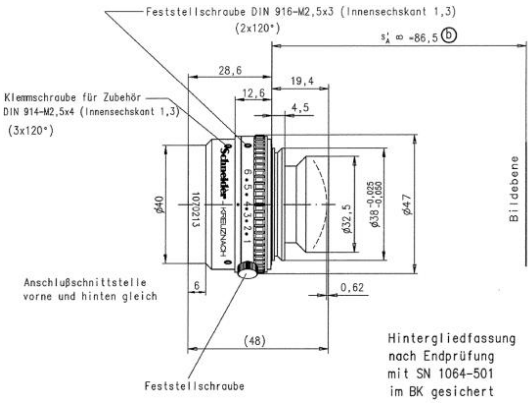


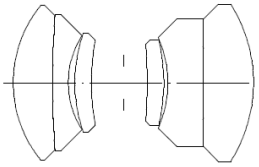




Focusing : MTF_{max} at f / 4.5 , R = 50 l/mm, u'/u'_{max} = 0

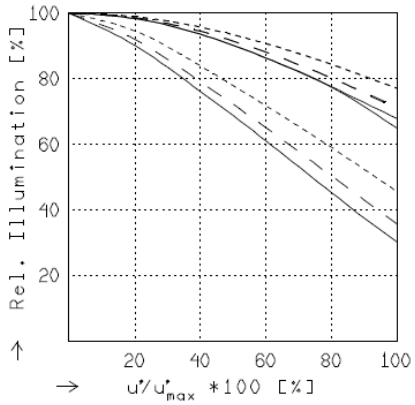
Apo-Componon 4.5/90





R4839.3 APO-CPN 4.5/90

f' = 91.2 mm	β'_p = 1.014		
s_F = -67.5 mm	s_{EP} = 22.4 mm		
s'_F = 67.8 mm	s'_{AP} = -24.7 mm		
HH' = -3.6 mm	Σd = 43.5 mm		

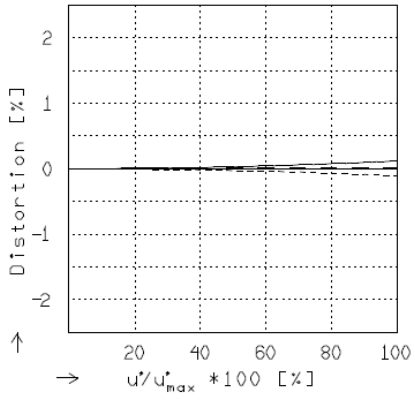


RELATIVE ILLUMINATION

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

f / 4.5 f / 8.0 f / 11.0

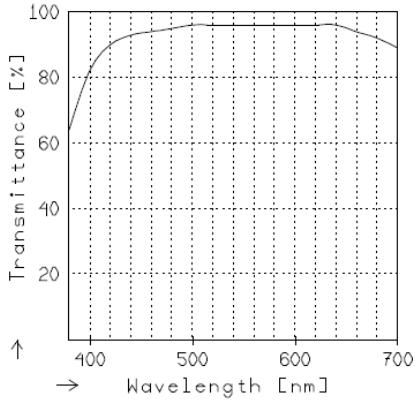
—— β' = -0.0833 u'_{max} = 44.0 ω' = 1282.
— — β' = -0.1667 u'_{max} = 43.9 ω' = 741.
----- β' = -0.3330 u'_{max} = 43.9 ω' = 483.



DISTORTION

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

—— β' = -0.0833 u'_{max} = 43.9 ω' = 1282.
— — β' = -0.1667 u'_{max} = 43.9 ω' = 741.
----- β' = -0.3330 u'_{max} = 43.9 ω' = 483.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

Apo-Componon 4.5/90

The Apo-Componon 4.5/90 (Version -0018) is a 90 mm focal length, line scan lens with 86 mm image circle for large format sensors and short working distance. This lens can also be used in reverse position. The modular system with wide-ranging accessories such as helical focus barrel (Unifoc 7 and 12), extension tubes, and adapters for various cameras, can be used for all kind of sophisticated applications from web inspection to surface inspection. This, the fast F/# of 4.5 and low chromatic aberration, as well as extremely low distortion all combined make these lens unique. Vibration insensitivity even when the lens used in harsh industrial environmental, as common in solar inspection systems. The Unifoc series offers 4 more 120 mm focal length line scan lenses with different magnifications and a line macro series plus an enlarging lens series for Unifoc 58 and 76 helicoid focus barrels.

Apo-Componon 4.5/90

Key features

- Large format
- Short working distance
- Resolves 5 µm pixel size
- Modular: Unifoc 7 and 12 focus helical barrels, extension tubes, various camera adapters
- Possibility to be used in retro position
- Vibration insensitivity for stable imaging performance

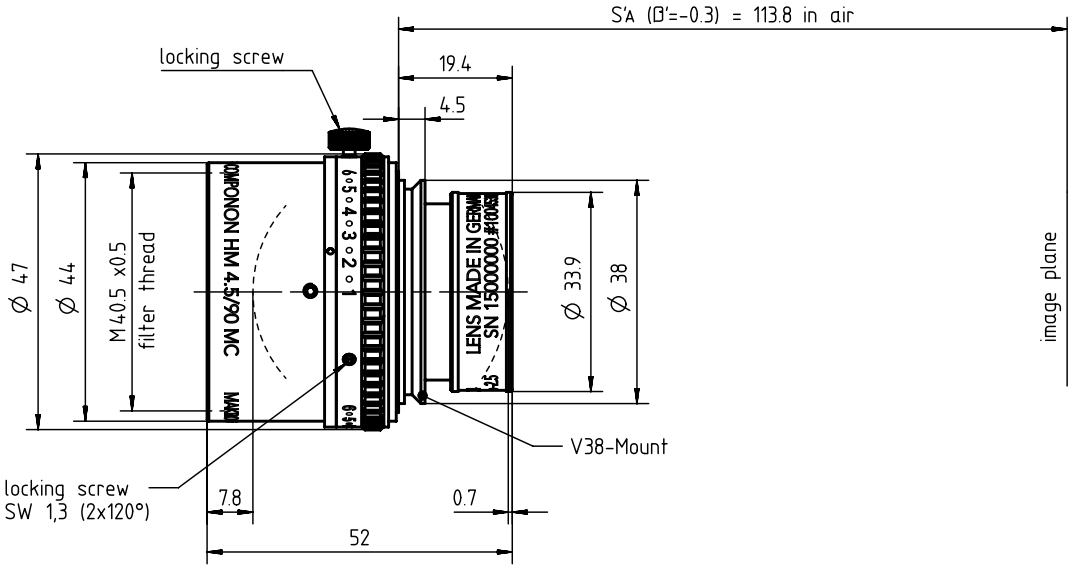
Applications

- Solar inspection
- Web inspection
- Surface inspection
- Quality control

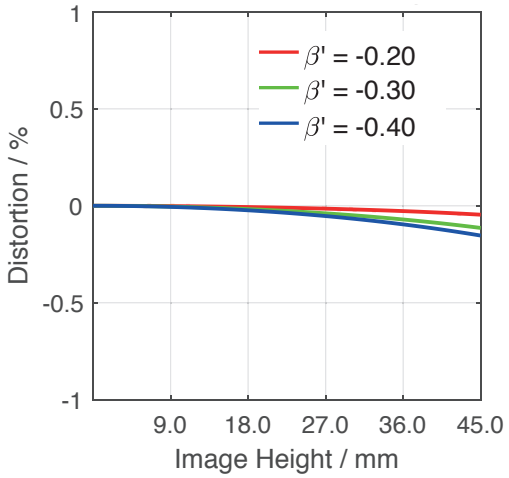
Name	Apo-Componon 4.5/90
Type	-0018
Focal Length [mm]	90
Magnification	-0.3
Image circle [mm]	90
Resolution [µm]	5
F/# range	4.5 ... 26
NA	0.11
Interface	V38-Mount
Working distance [mm]	250
AoV [°]	42
Focus control	manual
Transmission [nm]	400 - 680
Filter thread [mm]	M40.5 x 0.5
Dimensions L x D [mm]	52.0 x 47.0

Name	Apo-Componon 4.5/90
Weight [g]	140
Storage temperature [°C]	-25 … +70
$f'e_{ff}$ [mm]	91.19
S_F [mm]	-67.47
$S'_{F'}$ [mm]	67.77
HH' [mm]	-3.62
β'_P	1.014
S_{EP} [mm]	22.44
S'_{AP} [mm]	-24.72
Σd [mm]	43.52
ID	1004531

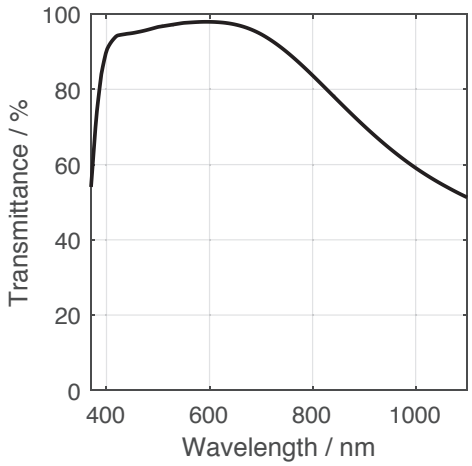
Apo-Componon 4.5/90



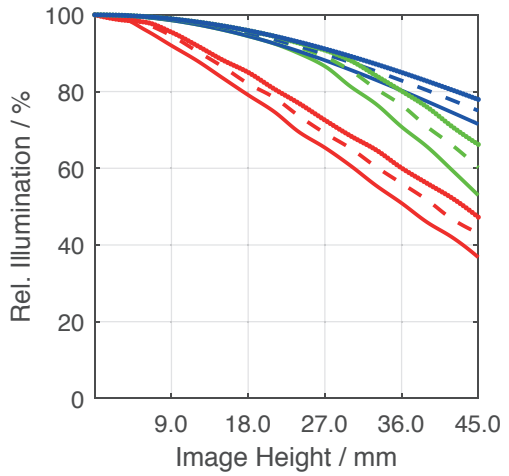
Distortion vs. Image Height

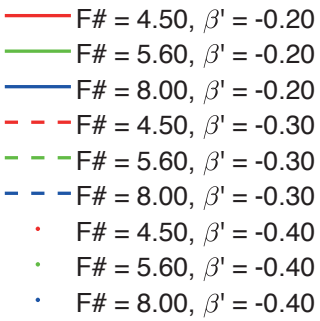


Transmittance vs. Wavelength



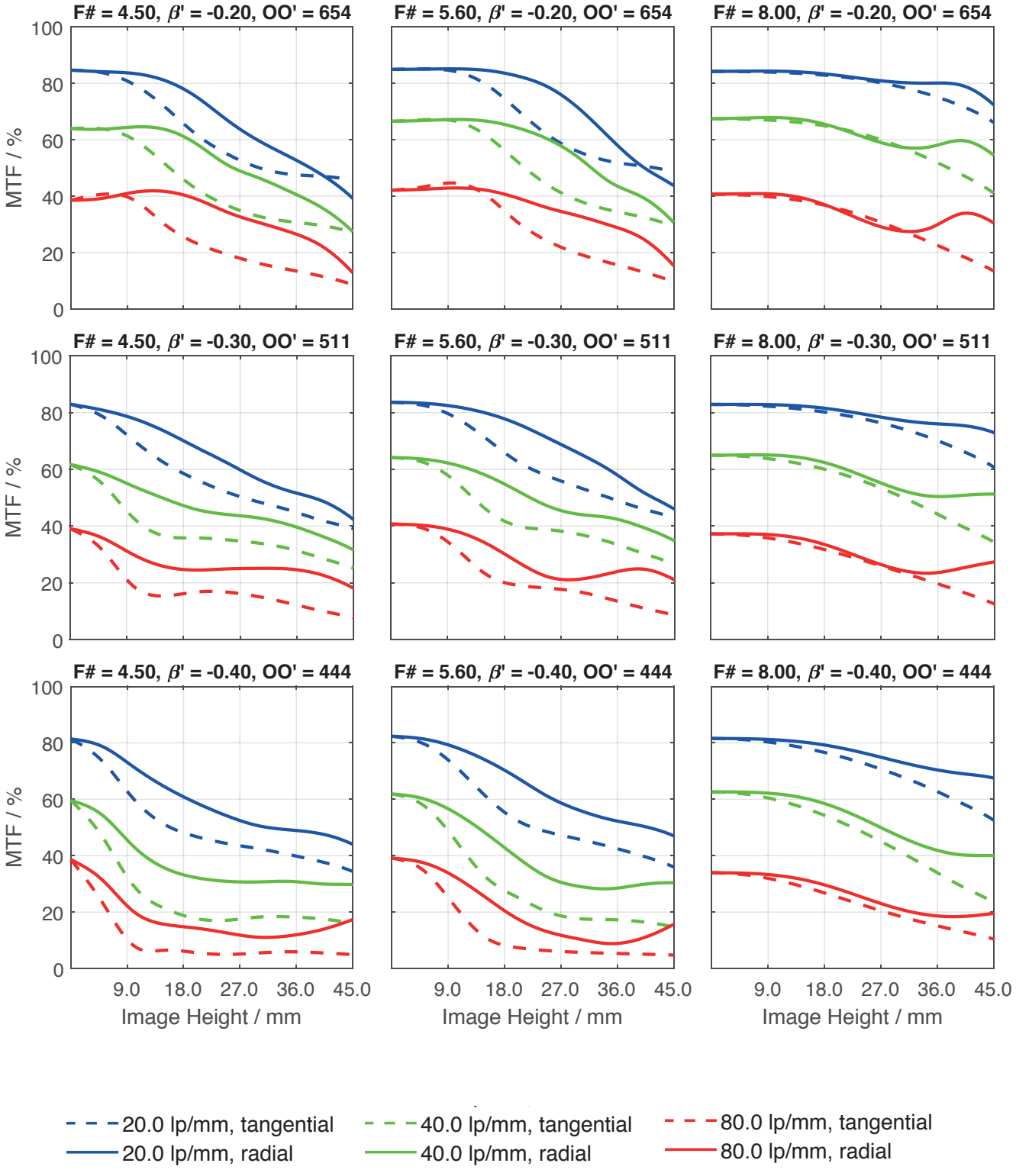
Relative Illumination vs. Image Height





Apo-Componon 4.5/90

Spectrum Name	VIS					
Wavelenghts [nm]	425	475	525	575	625	675
Weights	8	16	23	22	19	13



Apo-Componon 4.5/90

Accessories	Mount	Length	ID
Makro	UNIFOC 12 V38 / V38	-	11726
	UNIFOC 7 V38 / V38	-	1001041
	UNIFOC 7 V38 / M58 x 0.75	-	1054532
Ext. Tube	V38 / V38	6 mm	20176
	V38 / V38	8 mm	20177
	V38 / V38	10 mm	20178
	V38 / V38	25 mm	20179
	V38 / V38	50 mm	20154
	V38 / V38	75 mm	20155
Adapter	V38 / C-Mount	10 mm	20052
	V38 / C-Mount	-	1011634
	V38 / Leica	4 mm	20054
	V38 / T2	6 mm	20053
	V38 / M42 x 1	6 mm	20059
	V38 / M42 x 1	-	1001692
	V38 / M58 x 0,75	-	1018385
	M95 x 1 / M72 x 0.75	6.6 mm	1077295

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Line scan lens

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

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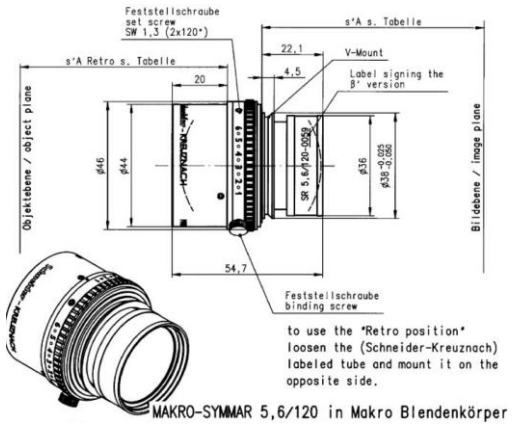
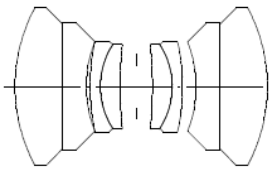
Makro-Symmar 5.6/120-1.0



MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



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

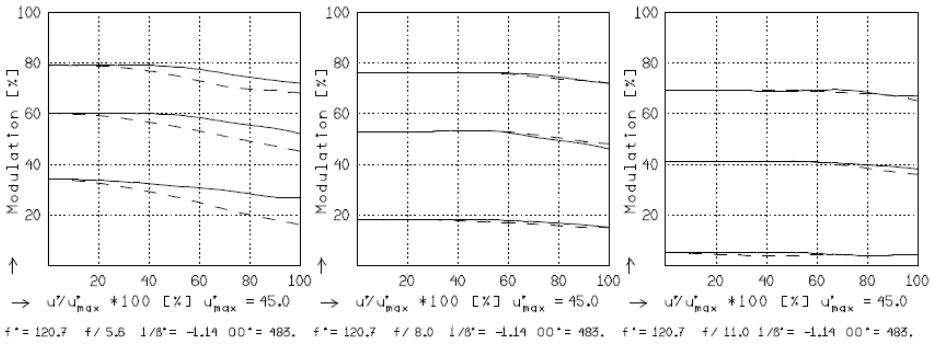
f'	= 120.7 mm	β'_P	= 1.002
s_F	= -94.3 mm	s_{EP}	= 26.1 mm
$s'_{F'}$	= 94.3 mm	s'_{AP}	= -26.6 mm
HH'	= -1.8 mm	Σ d	= 50.9 mm

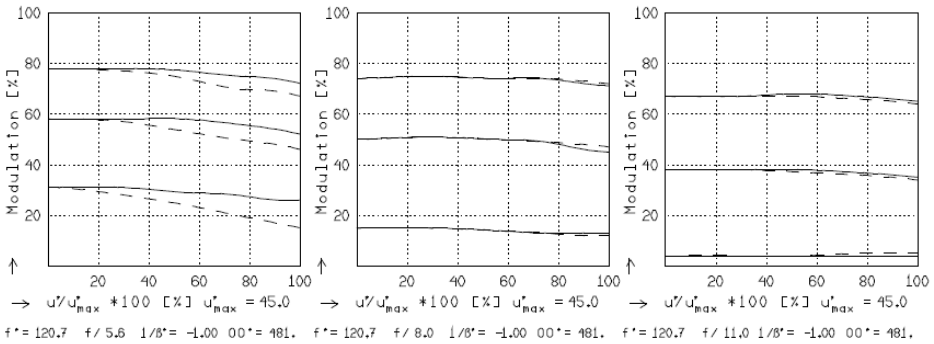
M-SR 5.6/120 BETA -0.875..-1.125

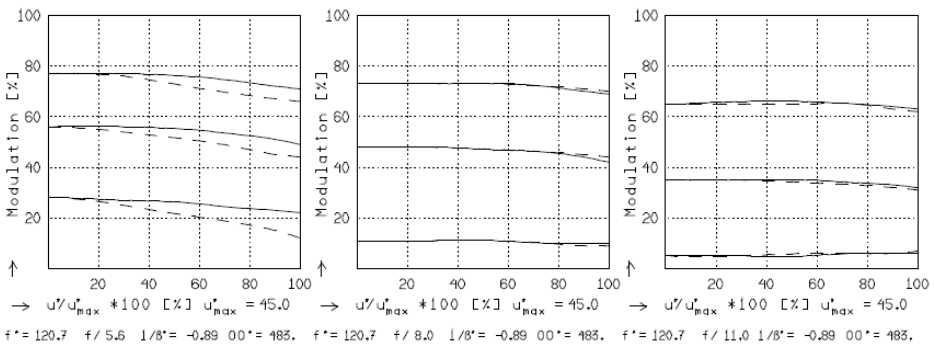
MODULATION with reference to the relative image height

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 — —

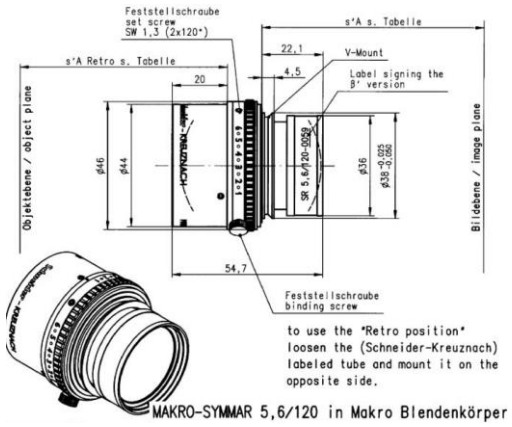




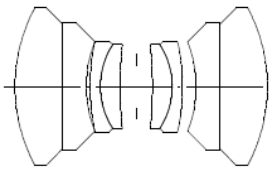


Focusing : MTF_{max} at f / 5.6 . R = 80 1/mm. u'/u'_{max} = 0

Makro-Symmar 5.6/120-1.0

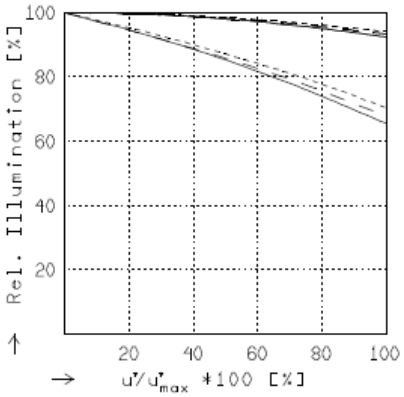


MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



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

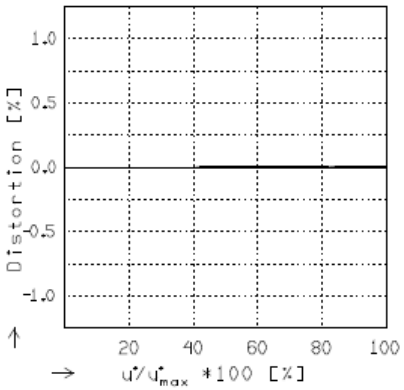


RELATIVE ILLUMINATION

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

f / 5.6 f / 8.0 f / 11.0

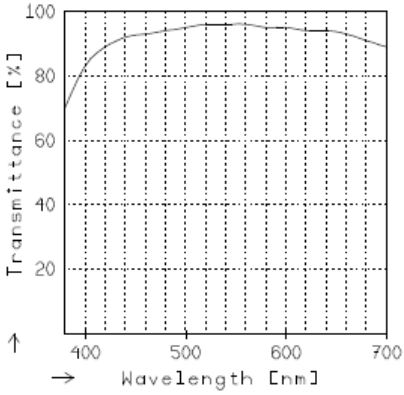
——	β' = -0.8750	u'_{max} = 45.0	00' = 483.
— —	β' = -1.0000	u'_{max} = 45.0	00' = 481.
-----	β' = -1.1250	u'_{max} = 45.0	00' = 483.



DISTORTION

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

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



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

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.

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

Contact

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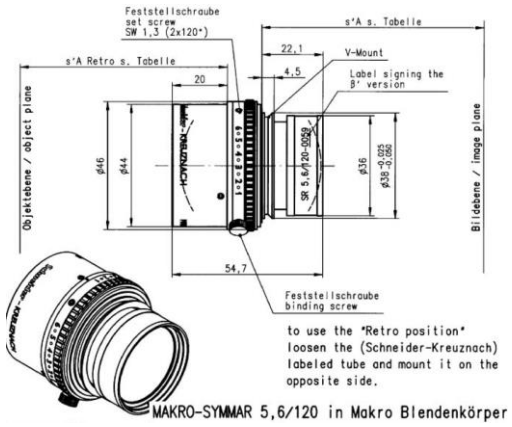
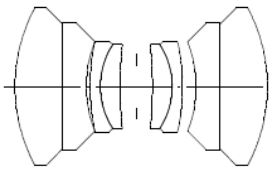
Version 2.0, 20.11.2008

Makro-Symmar 5.6/120-0.75



MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



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

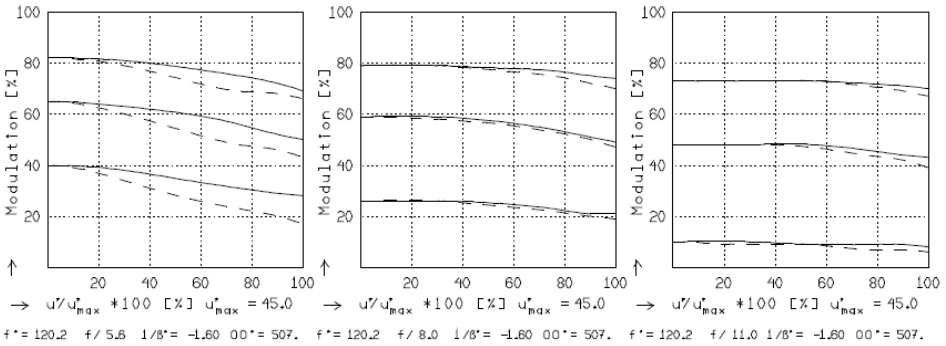
f'	= 120.2 mm	β'_p	= 0.999
s_F	= -94.8 mm	s_{EP}	= 26.1 mm
s'_F	= 94.1 mm	s'_{AP}	= -25.4 mm
HH'	= -1.2 mm	Σ d	= 50.4 mm

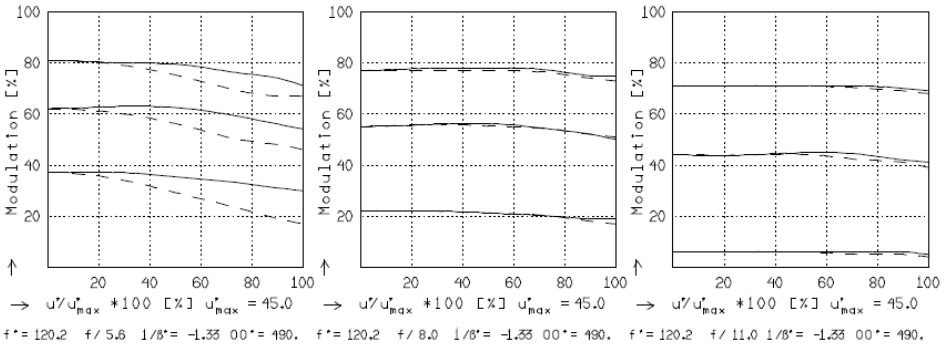
M-SR 5.6/120 BETA -0.625..-0.875

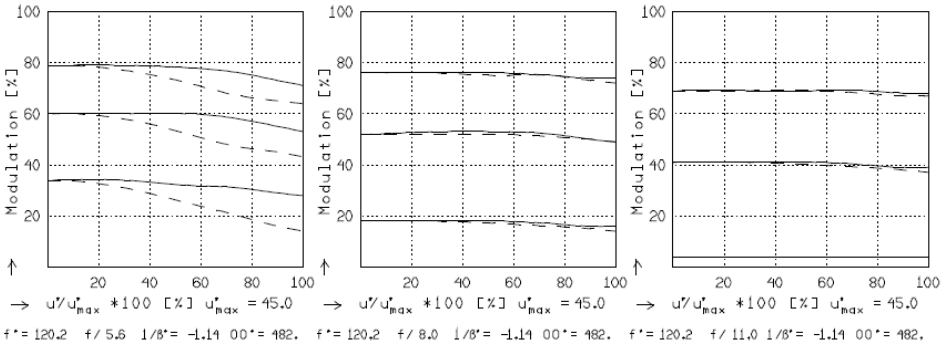
MODULATION with reference to the relative image height

Wavelength	λ [nm] :	555	655	605	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 — —

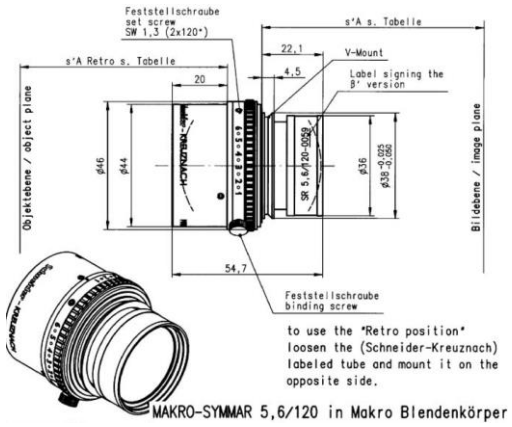




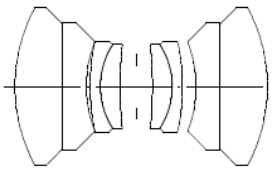


Focusing : MTF_{max} at f / 5.6 . R = 80 1/mm. u'/u'_{max} = 0

Makro-Symmar 5.6/120-0.75

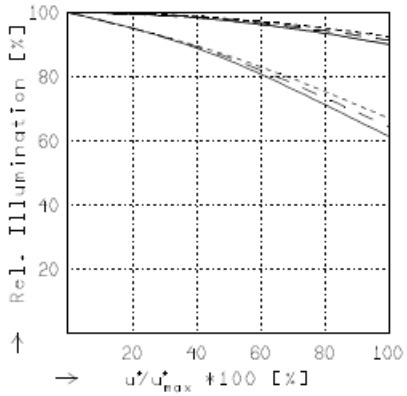


MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



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

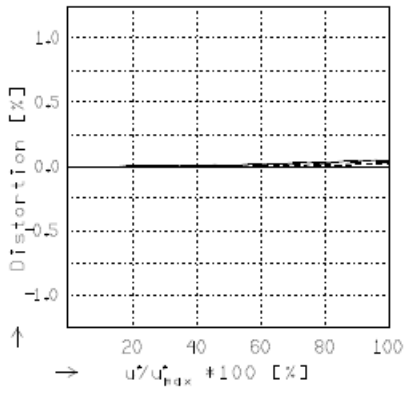
f' =	120.2 mm	β'_p =	0.999
s_F =	-94.8 mm	s_{EP} =	26.1 mm
$s'_{F'}$ =	94.1 mm	s'_{AP} =	-25.4 mm
HH' =	-1.2 mm	Σ d =	50.4 mm



RELATIVE ILLUMINATION

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

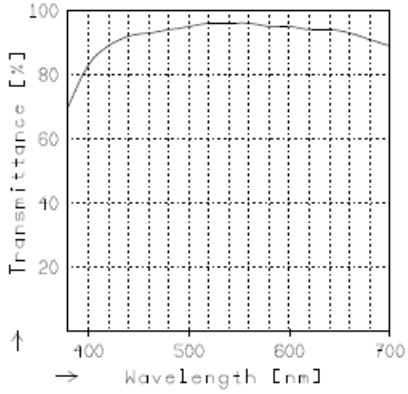
	f / 5.6	f / 8.0	f / 11.0
——	β' = -0.6250	u'_{max} = 45.0	00' = 507.
— —	β' = -0.7500	u'_{max} = 45.0	00' = 490.
-----	β' = -0.8750	u'_{max} = 45.0	00' = 482.



DISTORTION

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

	f / 5.6	f / 8.0	f / 11.0
——	β' = -0.6250	u'_{max} = 45.0	00' = 507.
— —	β' = -0.7500	u'_{max} = 45.0	00' = 490.
-----	β' = -0.8750	u'_{max} = 45.0	00' = 482.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

Line scan lens

Makro-Symmar 5.6/120-0.5x

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	119.8 mm
Image circle	86 mm
Magnification	-0.5
Transmission	400 - 1000 nm
Interface	V-Mount
Weight	170 gr.
Option	Optical filter

Contact

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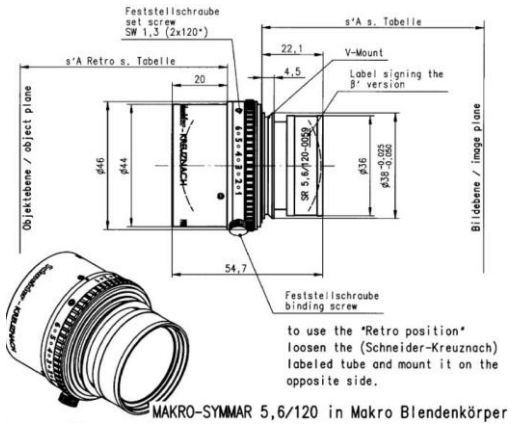
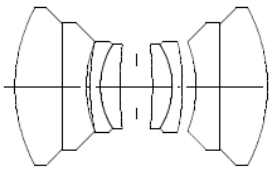
Makro-Symmar 5.6/120-0.5





M-SR 5.6/120 BETA -0.375..-0.625

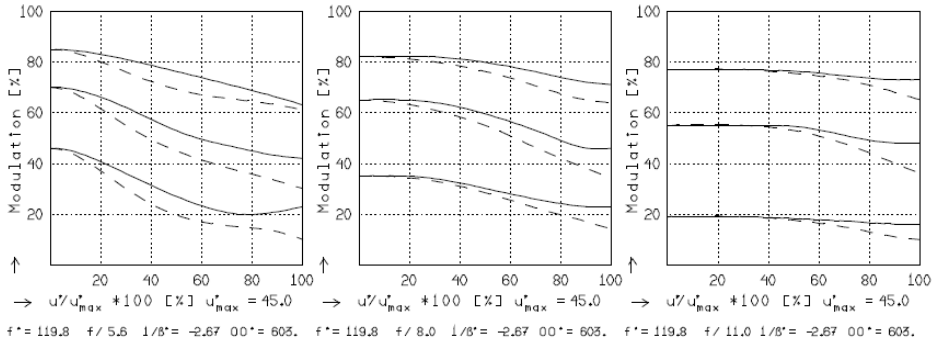
f'	= 119.8 mm	β'_P	= 0.986
s_F	= -95.4 mm	s_{EP}	= 26.1 mm
$s'_{F'}$	= 93.9 mm	s'_{AP}	= -24.2 mm
HH'	= -0.5 mm	Σ d	= 49.7 mm

M-SR 5.6/120 BETA -0.375..-0.625

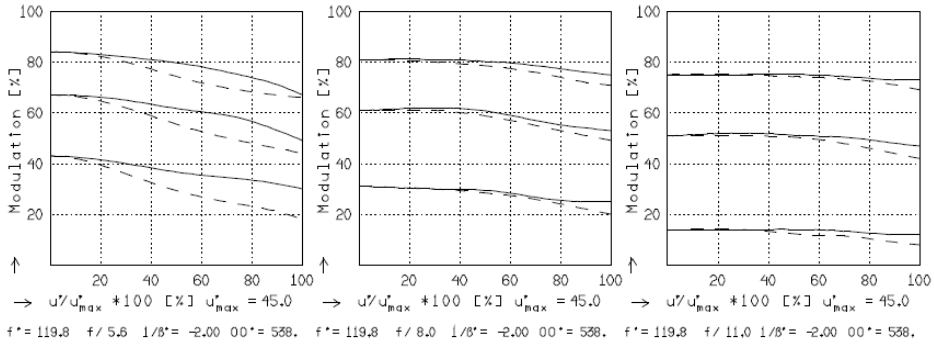
MODULATION with reference to the relative image height

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					

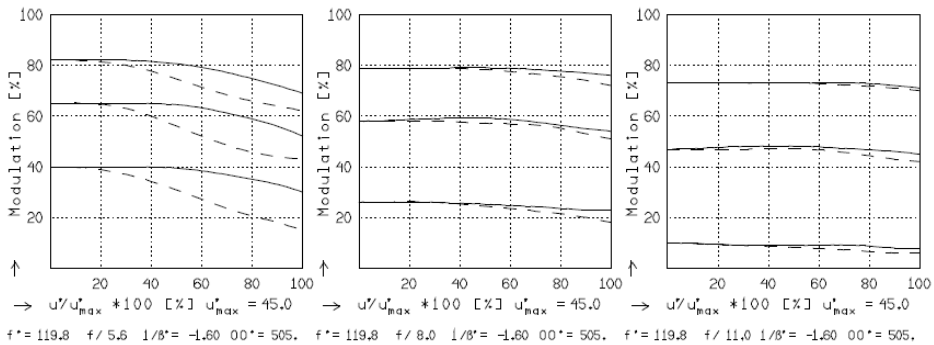
radial ——
tangential — —



f'= 119.8 f/ 5.6 1/β'= -2.67 00'= 603. | f'= 119.8 f/ 8.0 1/β'= -2.67 00'= 603. | f'= 119.8 f/ 11.0 1/β'= -2.67 00'= 603.



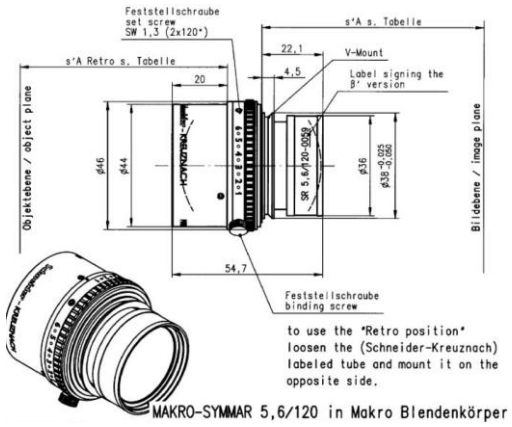
f'= 119.8 f/ 5.6 1/β'= -2.00 00'= 538. | f'= 119.8 f/ 8.0 1/β'= -2.00 00'= 538. | f'= 119.8 f/ 11.0 1/β'= -2.00 00'= 538.



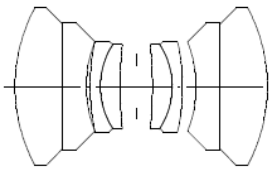
f'= 119.8 f/ 5.6 1/β'= -1.60 00'= 505. | f'= 119.8 f/ 8.0 1/β'= -1.60 00'= 505. | f'= 119.8 f/ 11.0 1/β'= -1.60 00'= 505.

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

Makro-Symmar 5.6/120-0.5

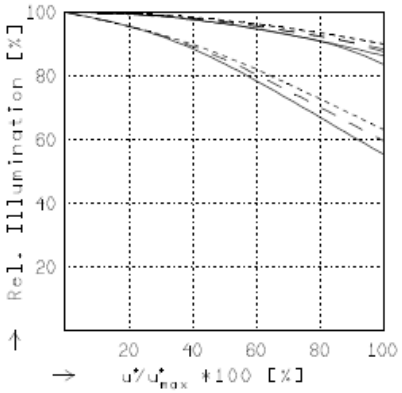


MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



M-SR 5.6/120 BETA -0.375..-0.625

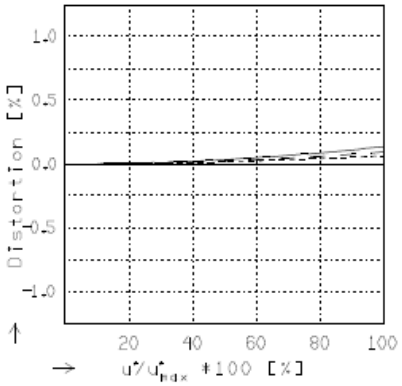
f'	= 119.8 mm	β'_P	= 0.986
s_F	= -95.4 mm	s_{EP}	= 26.1 mm
s'_F	= 93.9 mm	s'_{AP}	= -24.2 mm
HH'	= -0.5 mm	Σ d	= 49.7 mm



RELATIVE ILLUMINATION

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

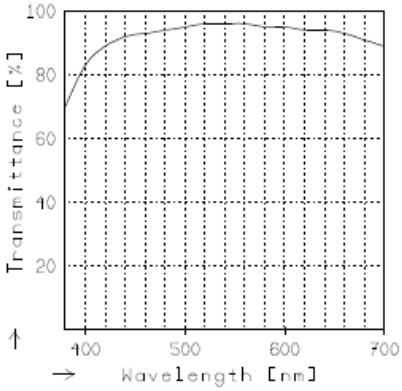
	f / 5.6	f / 8.0	f / 11.0
——	β' = -0.3750	u'_{max} = 45.1	00' = 603.
— —	β' = -0.5000	u'_{max} = 45.0	00' = 538.
-----	β' = -0.6250	u'_{max} = 45.0	00' = 505.



DISTORTION

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

——	β' = -0.3750	u'_{max} = 45.0	00' = 603.
— —	β' = -0.5000	u'_{max} = 45.0	00' = 538.
-----	β' = -0.6250	u'_{max} = 45.0	00' = 505.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

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

Contact

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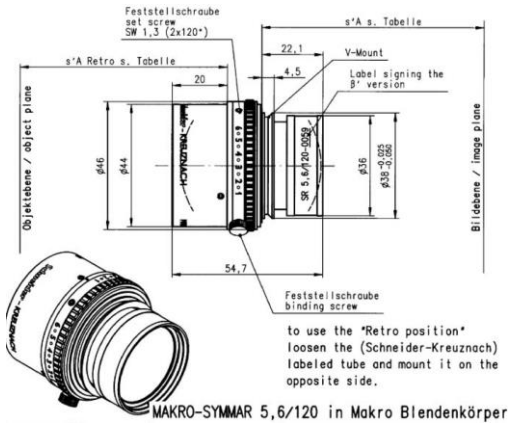
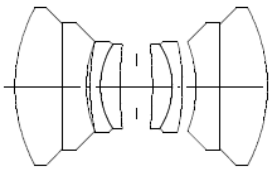
Makro-Symmar 5.6/120-0.33





M-SR 5.6/120

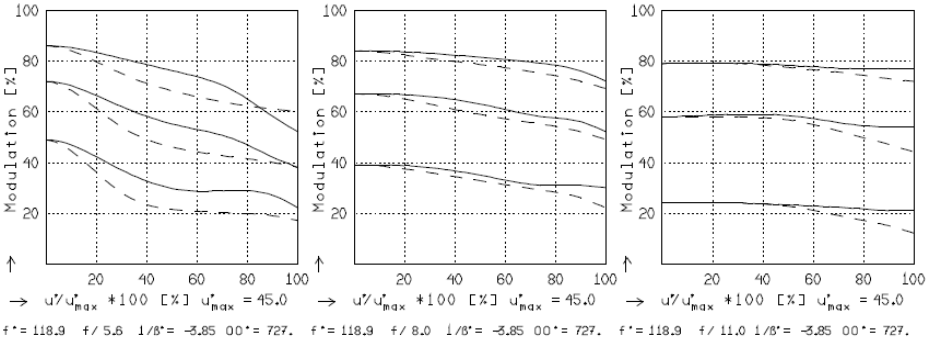
f'	= 118.9 mm	β'_P	= 1.001
s_F	= -96.3 mm	s_{EP}	= 22.6 mm
$s'_{F'}$	= 93.7 mm	s'_{AP}	= -25.3 mm
HH'	= 0.6 mm	Σ d	= 48.5 mm

M-SR 5.6/120

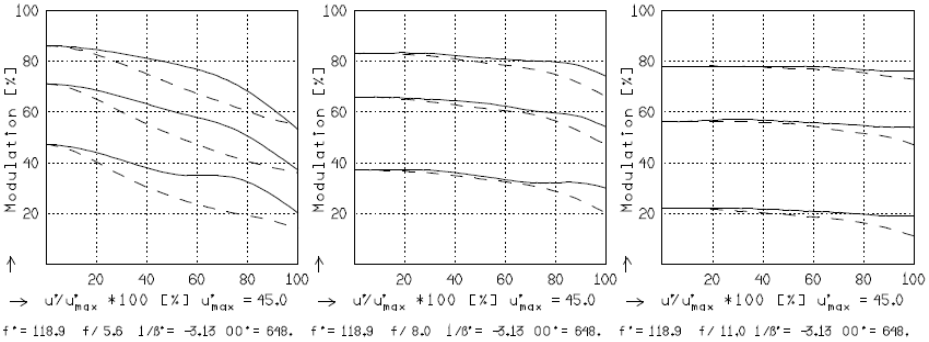
MODULATION with reference to the relative image height

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					

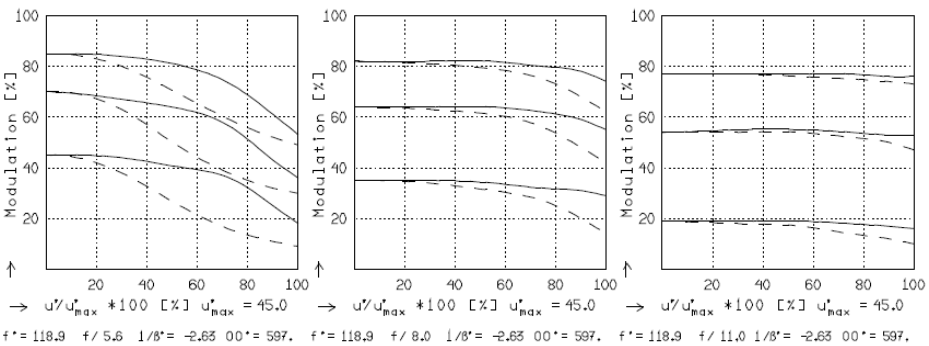
radial ——
tangential — —



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



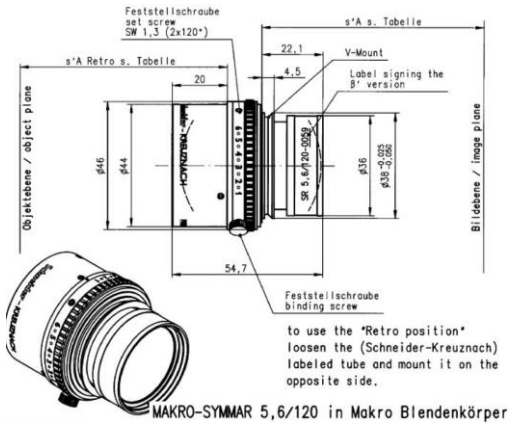
f'= 118.9 f/ 5.6 l/β'= -3.13 00'= 648. | f'= 118.9 f/ 8.0 l/β'= -3.13 00'= 648. | f'= 118.9 f/ 11.0 l/β'= -3.13 00'= 648.



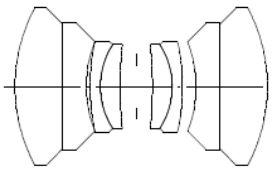
f'= 118.9 f/ 5.6 l/β'= -2.63 00'= 597. | f'= 118.9 f/ 8.0 l/β'= -2.63 00'= 597. | f'= 118.9 f/ 11.0 l/β'= -2.63 00'= 597.

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

Makro-Symmar 5.6/120-0.33

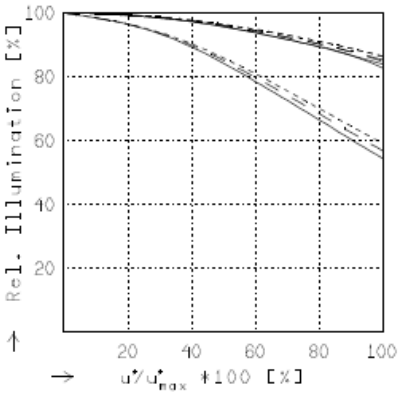


MAKRO-SYMMAR 5,6/120 in Makro Blendenkörper



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		

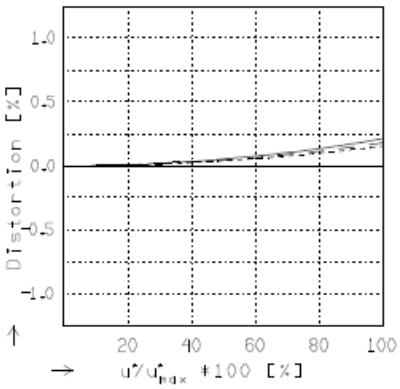


RELATIVE ILLUMINATION

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

f / 5.6 f / 8.0 f / 11.0

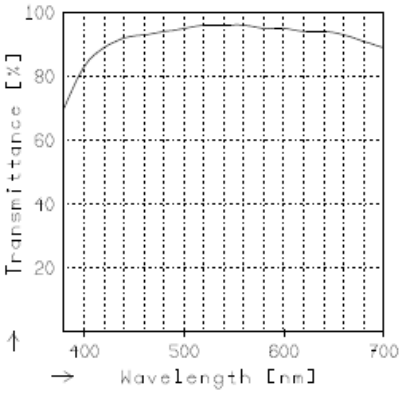
—— β' = -0.2600 u'_{max} = 45.1 ω' = 72°
— — β' = -0.3200 u'_{max} = 45.1 ω' = 64°
----- β' = -0.3800 u'_{max} = 45.1 ω' = 59°



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.

Componon 2.8/28

The Componon 2.8/28 is a 28 mm focal length, macro lens with 30 mm image circle (for F/# 2.8 only for 2/3" sensor recommended) for large format sensors and short working distance. This macro lens is developed and corrected for the close-up range of 1:20 to 1:1 and can also be used in reverse position depending, on the field of vision and pixel size with the symmetrical V-Mount interface without additional accessories.

The modular system with wide-ranging accessories such as helical focus barrel (Unifoc 7 and 12), extension tubes, and adapters for various cameras, can be used for all kind of sophisticated applications from OLED inspection to food processing control. This, the fast F/# of 2.8 and low longitudinal and lateral chromatic aberration, as well as extremely low distortion all combined make these lens unique.

Vibration insensitivity for stable imaging performance even when the lens used in harsh industrial environmental, as common in food processing control and web inspection systems. The Unifoc Series offers more macro lenses with 35 mm, 40 mm, 45 mm, 50 mm, 60 mm, 80 mm, 90 mm, 100 mm focal length and a line scan lens series plus a enlarging lens series for Unifoc 58 and 76 helicoid focus barrels.

Componon 2.8/28

Key features

- Large Format
- Short working distance
- Modular: Unifoc 7 and 12 focus helical barrels, extension tubes, various camera adapters
- Possibility to be used in retro position
- Vibration insensitivity for stable imaging performance

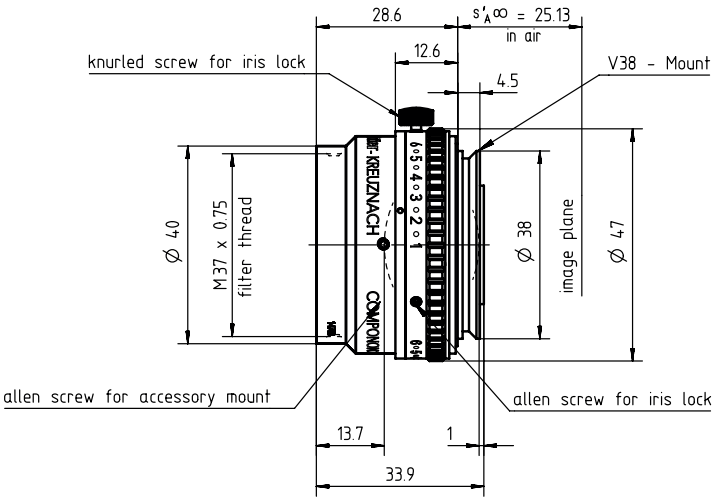
Applications

- OLED inspection
- Web inspection
- Medical applications
- Laser triangulation
- Quality control

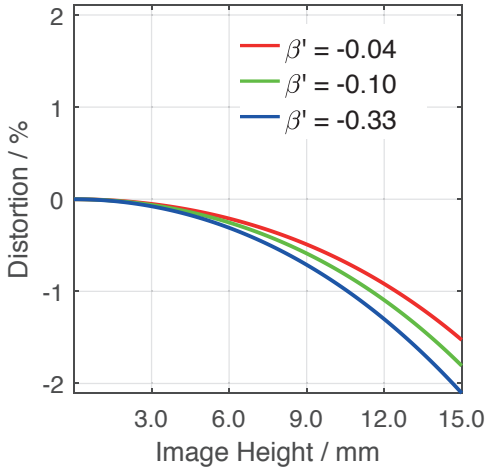
Name	Componon 2.8/28
Type	-0001
Focal Length [mm]	28
Magnification	-0.5
Image circle [mm]	30
Resolution [µm]	3.65
F/# range	2.8 ... 16
NA	0.18
Interface	V38-Mount
Working distance [mm]	∞ - 77
AoV [°]	54
Focus control	manual
Transmission [nm]	400 - 1000
Filter thread [mm]	M37 x 0.75
Dimensions L x D [mm]	33.2 x 47.0

Name	Componon 2.8/28
Weight [g]	105
Storage temperature [°C]	-25 … +70
f'_{eff} [mm]	29.29
S_F [mm]	-16.31
$S'_{F'}$ [mm]	20.82
HH' [mm]	-2.94
β'_P	1.049
S_{EP} [mm]	11.62
S'_{AP} [mm]	-9.90
Σd [mm]	18.52
ID	14794

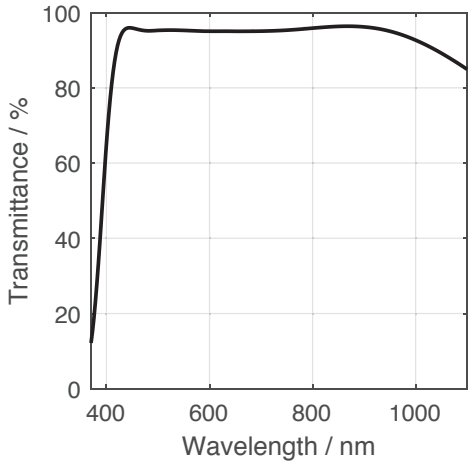
Componon 2.8/28



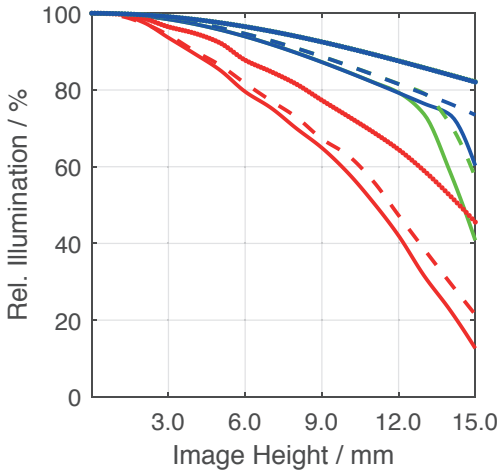
Distortion vs. Image Height



Transmittance vs. Wavelength



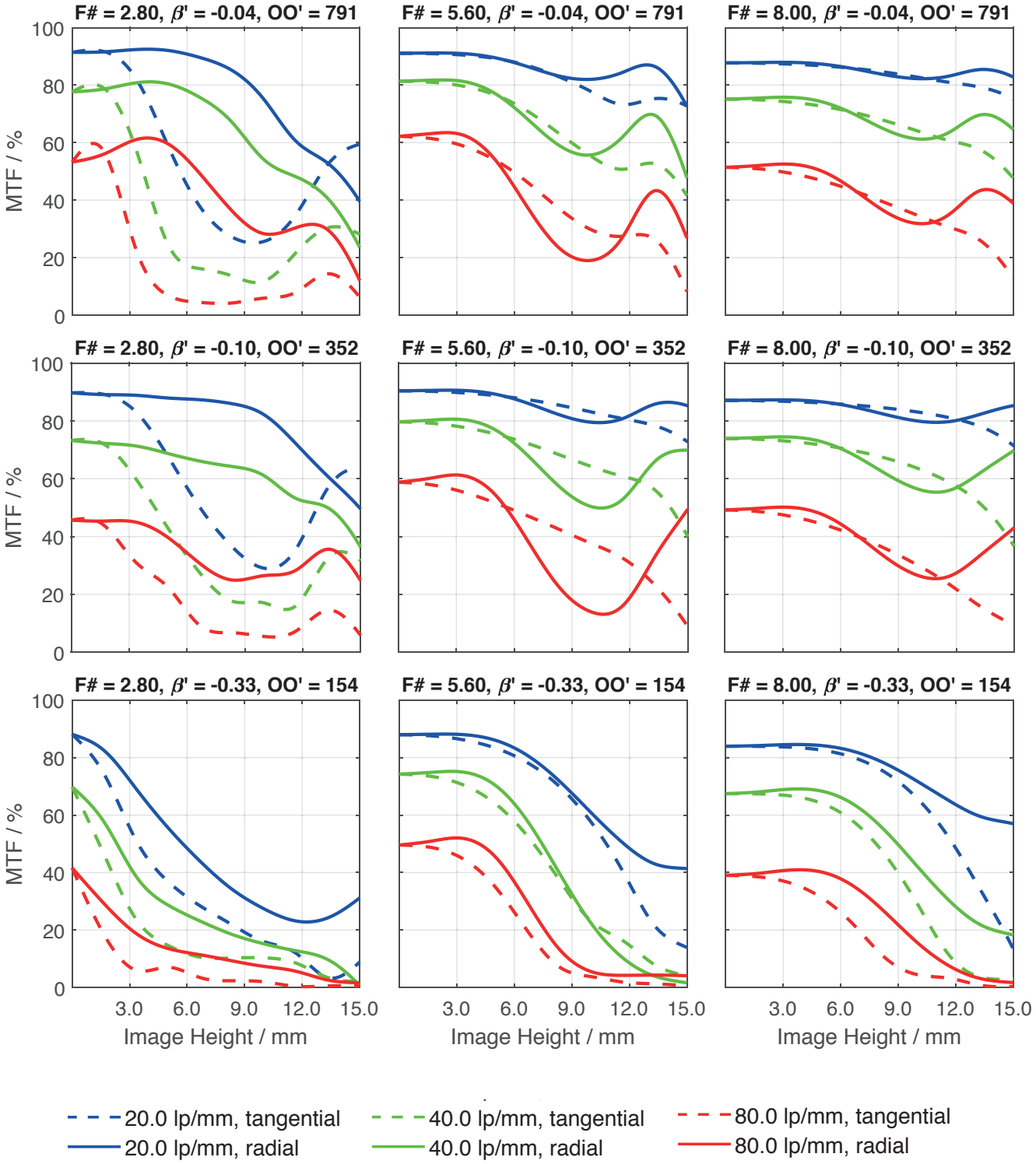
Relative Illumination vs. Image Height



F# = 2.80, β' = -0.04
F# = 5.60, β' = -0.04
F# = 8.00, β' = -0.04
F# = 2.80, β' = -0.10
F# = 5.60, β' = -0.10
F# = 8.00, β' = -0.10
F# = 2.80, β' = -0.33
F# = 5.60, β' = -0.33
F# = 8.00, β' = -0.33

Componon 2.8/28

Spectrum Name	VIS					
Wavelenghts [nm]	425	475	525	575	625	675
Weights	8	16	23	22	19	13



Accessories	Mount	Length	ID
Makro	UNIFOC 12	-	11726
	UNIFOC 7	-	1001041
	UNIFOC 7 (M58 x 0.75)	-	1054532
Ext. Tube	V38 / V38	6 mm	20176
	V38 / V38	8 mm	20177
	V38 / V38	10 mm	20178
	V38 / V38	25 mm	20179
	V38 / V38	50 mm	20154
	V38 / V38	75 mm	20155
Adapter	V38 / C-Mount	-	20052
	V38 / C-Mount Hub V38 / C-Mount	19.2 - 24.2 mm	1011634
	V38 / Leica (M39 x 26 Gg.)	-	20054
	V38 / T2 (M42 x 0.75)	-	20053
	V38 / M42 x 1	-	20059
	V38 / M42 x 1 - Length 35 mm	-	1001692
	V38 / M58 x 0.75	-	1018385
	V38 / Nikon F-Mount	-	21610

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V-Mount Macro Lens

Apo-Componon 4.0/45-0007

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.

Apo-Componon 4.0/45

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	46.5 mm
Image circle	43.2 mm
Magnification	1:20 to 1:1, optimized for -0.17
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	100 gr.
Filter tread	M37 x 0.75
Code no.	14783

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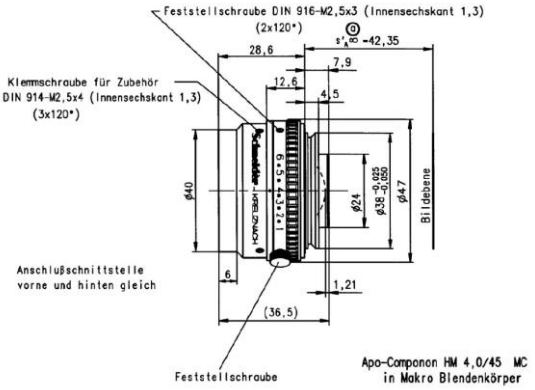
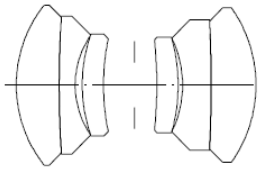
Apo-Componon 4.0/45



Apo-Componon HM 4,0/45 MC
in Makro Blendenkörper



APO-COMPONON 4/45

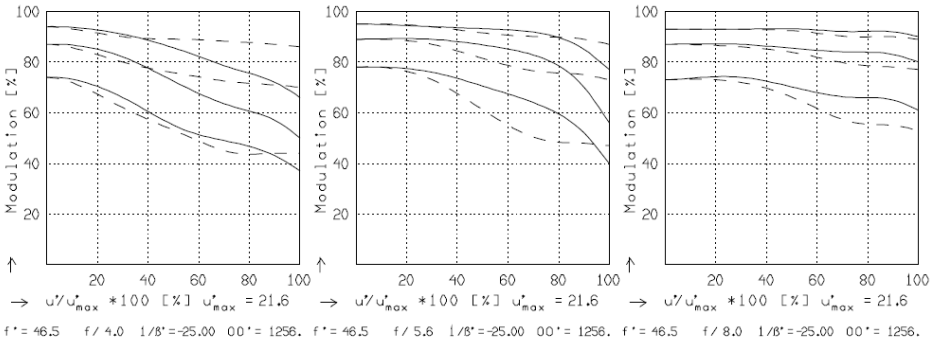
f' =	46.5 mm	β'_P =	1.026
s_F =	-33.1 mm	s_{EP} =	12.3 mm
s'_F =	35.7 mm	s'_{AP} =	-12.1 mm
HH' =	-1.8 mm	Σ d =	22.5 mm

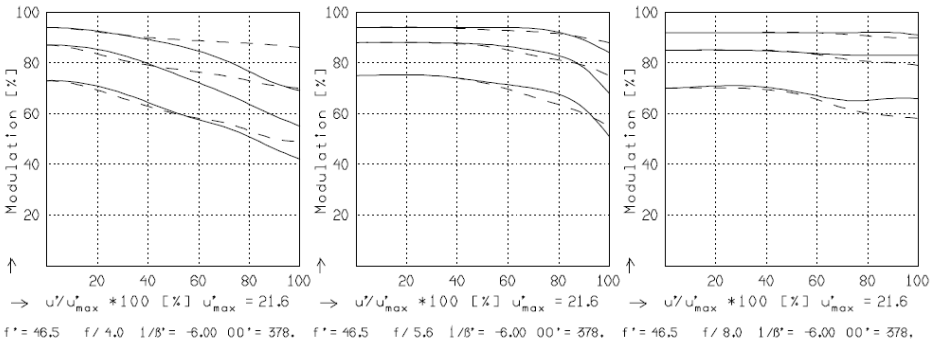
APO-COMPONON 4/45

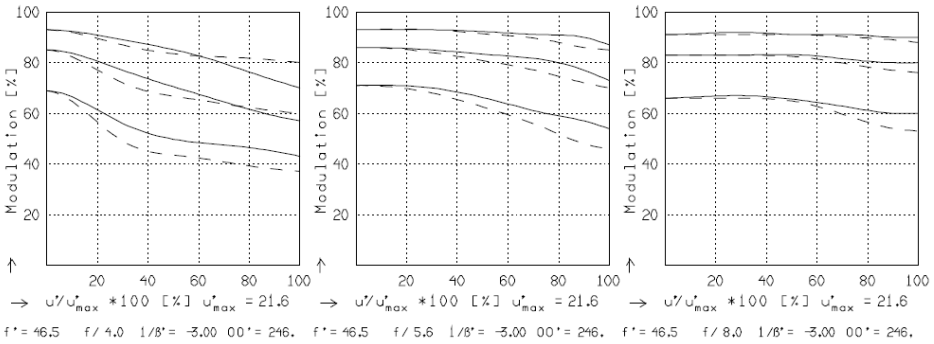
MODULATION with reference to the relative image height

Wavelength	λ [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] :	24.0 X 36.0					
Diagonal 2u'	[mm] :	43.2					

radial ——
tangential — —

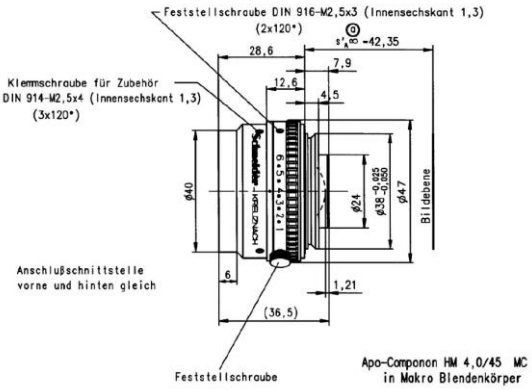


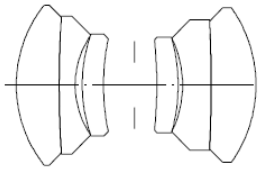




Focusing : MTF_{max} at f / 4.0 , R = 20 1/mm, u'/u'_{max} = 0

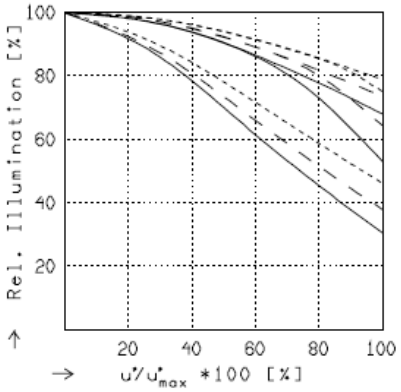
Apo-Componon 4.0/45





APO-COMPONON 4/45

f'	=	46.5 mm	β'_P	=	1.026
s_F	=	-33.1 mm	s_{EP}	=	12.3 mm
s'_F	=	35.7 mm	s'_{AP}	=	-12.1 mm
HH'	=	-1.8 mm	Σ d	=	22.5 mm

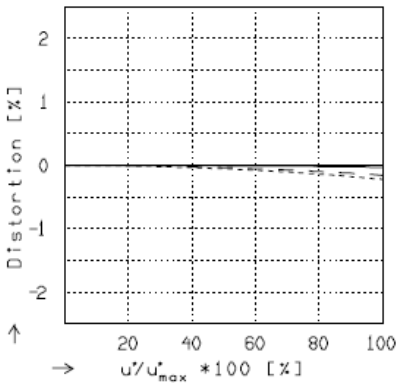


RELATIVE ILLUMINATION

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

f / 4.0 f / 5.6 f / 8.0

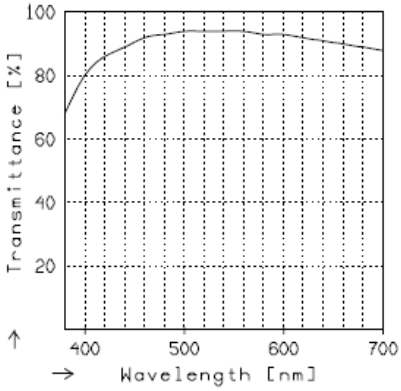
——	β' = -0.0400	u'_{max} = 21.6	OO' = 1256.
— —	β' = -0.1667	u'_{max} = 21.6	OO' = 378.
-----	β' = -0.3333	u'_{max} = 21.6	OO' = 246.



DISTORTION

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

——	β' = -0.0400	u'_{max} = 21.6	OO' = 1256.
— —	β' = -0.1667	u'_{max} = 21.6	OO' = 378.
-----	β' = -0.3333	u'_{max} = 21.6	OO' = 246.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

V-Mount Macro Lens

Componon-S 2.8/50-0018

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.

Componon-S 2.8/50

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	2.8
Focal length	50.2 mm
Image circle	43.2 mm
Magnification	1:20 to 1:1, optimized for -0.10
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	113 gr.
Filter tread	M37 x 0.75
Code no.	14796

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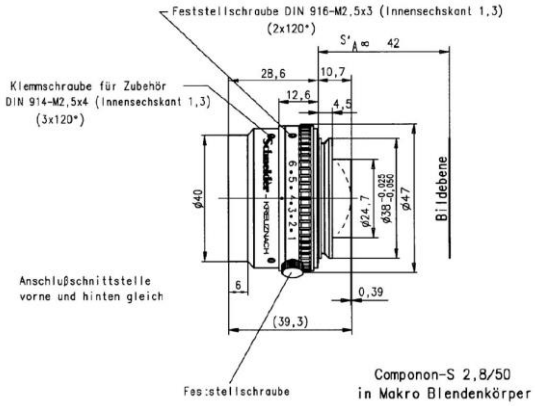
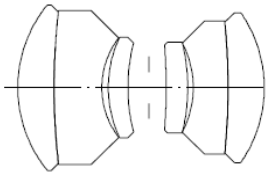
industrial@schneideroptics.com

Componon-S 2.8/50



Componon-S 2,8/50
in Makro Blendenkörper



COMPONON-S 2.8/50

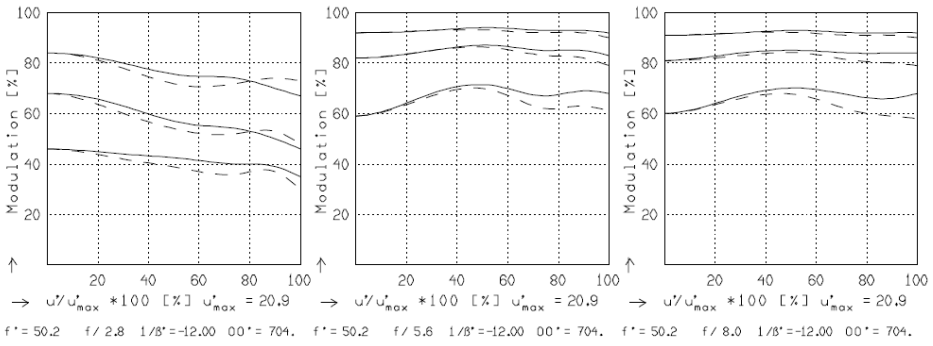
f' = 50.2 mm		β'_P = 0.945	
s_F = -33.5 mm		s_{EP} = 19.6 mm	
s'_F = 31.7 mm		s'_{AP} = -15.7 mm	
HH' = -3.1 mm		Σ d = 32.0 mm	

COMPONON-S 2.8/50

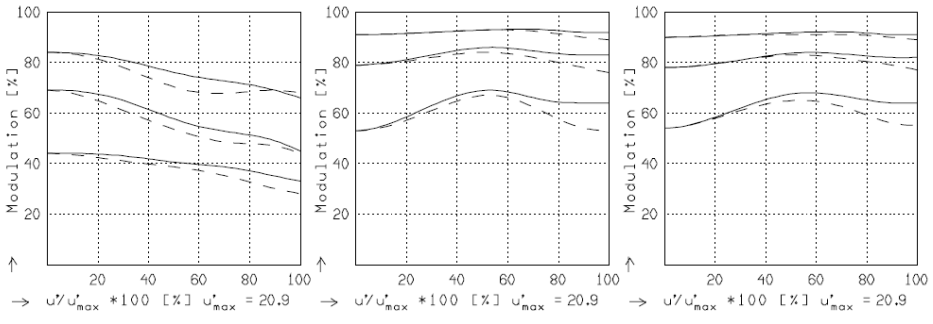
MODULATION with reference to the relative image height

Wavelength	λ	[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] :	23.0 X 35.0					
Diagonal 2u'		[mm] :	41.9					

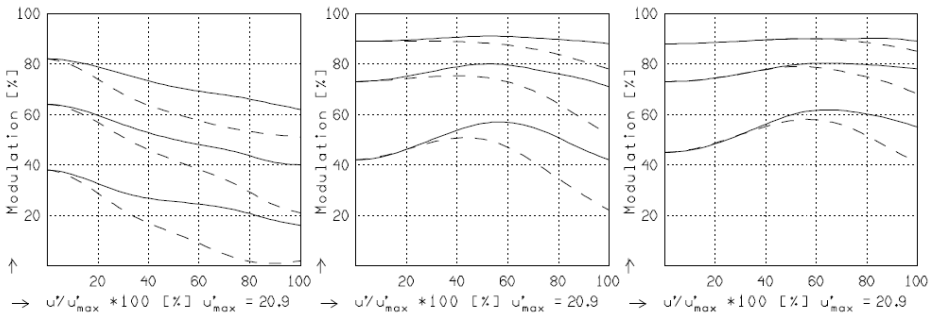
radial ——
tangential — —



f' = 50.2 f/ 2.8 1/ß' = -12.00 00' = 704. | f' = 50.2 f/ 5.6 1/ß' = -12.00 00' = 704. | f' = 50.2 f/ 8.0 1/ß' = -12.00 00' = 704.



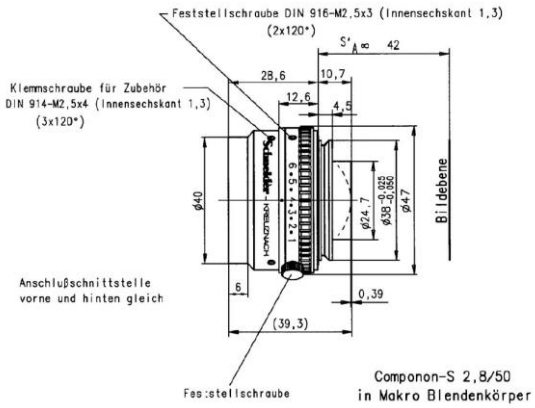
f' = 50.2 f/ 2.8 1/ß' = -6.00 00' = 407. | f' = 50.2 f/ 5.6 1/ß' = -6.00 00' = 407. | f' = 50.2 f/ 8.0 1/ß' = -6.00 00' = 407.

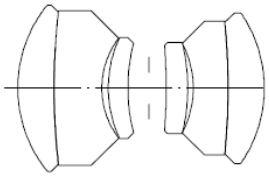


f' = 50.2 f/ 2.8 1/ß' = -3.00 00' = 264. | f' = 50.2 f/ 5.6 1/ß' = -3.00 00' = 264. | f' = 50.2 f/ 8.0 1/ß' = -3.00 00' = 264.

Focusing : MTF_{max} at f / 2.8 , R = 20 1/mm, u'/u'_{max} = 0

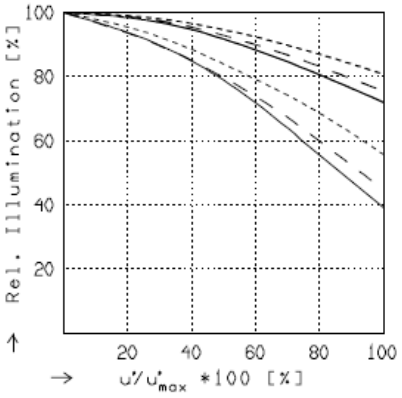
Componon-S 2.8/50





COMPONON-S 2.8/50

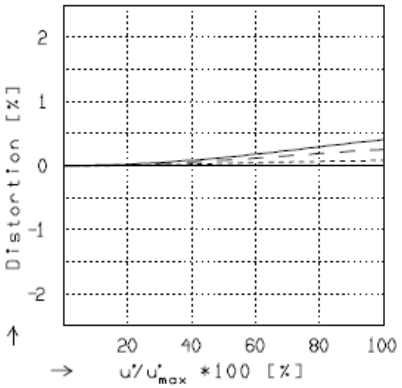
f' =	50.2 mm	β'P =	0.945
sF =	-33.5 mm	sEP =	19.6 mm
s'F =	31.7 mm	s'AP =	-15.7 mm
HH' =	-3.1 mm	Σ d =	32.0 mm



RELATIVE ILLUMINATION

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

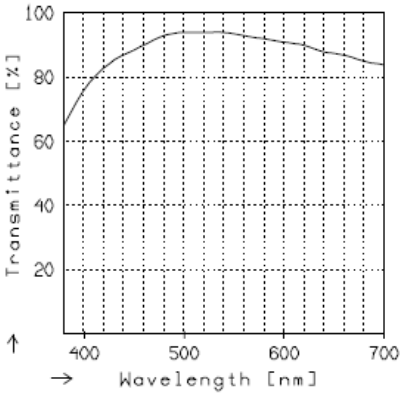
	f / 2.8	f / 5.6	f / 8.0
——	β' = -0.0833	u'max = 21.0	00' = 704.
— —	β' = -0.1667	u'max = 21.0	00' = 407.
-----	β' = -0.3333	u'max = 20.9	00' = 264.



DISTORTION

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

——	β' = -0.0833	u'max = 20.9	00' = 704.
— —	β' = -0.1667	u'max = 20.9	00' = 407.
-----	β' = -0.3333	u'max = 20.9	00' = 264.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

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.

Apo-Componon 4.0/60

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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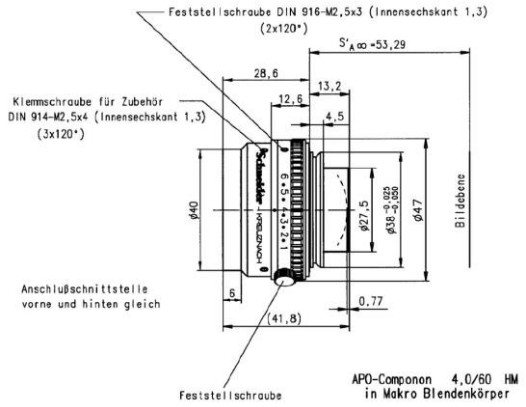
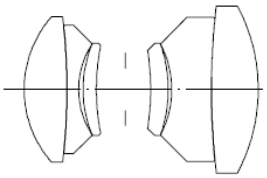
Apo-Componon 4.0/60





APO-COMPONON 4/60

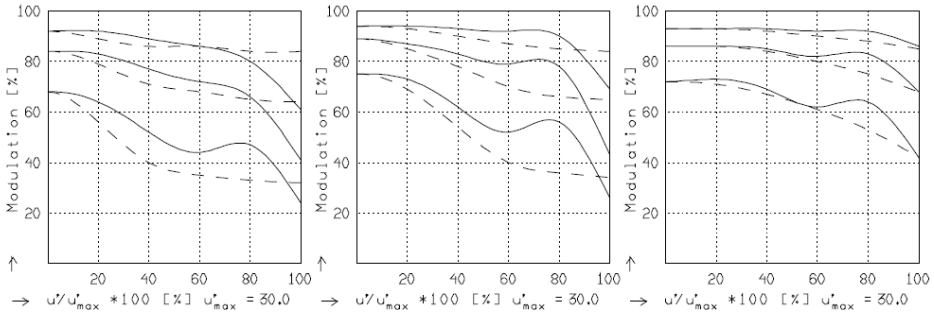
f' = 59.9 mm	ß'p = 0.970		
sF = -47.1 mm	sEP = 14.6 mm		
s'F = 40.9 mm	s'AP = -17.3 mm		
HH' = -1.9 mm	Σ d = 30.0 mm		

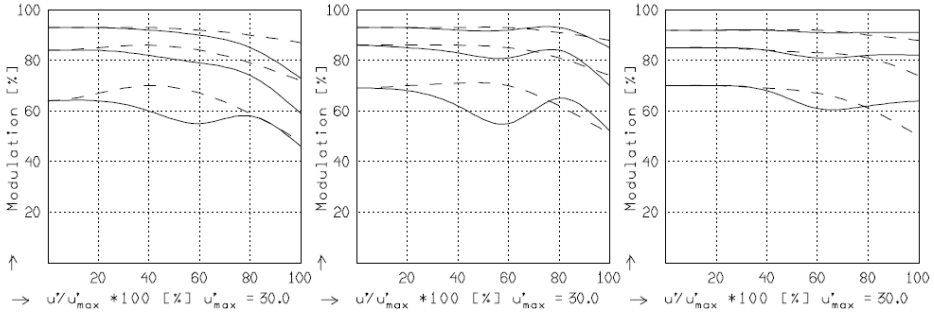
APO-COMPONON 4/60

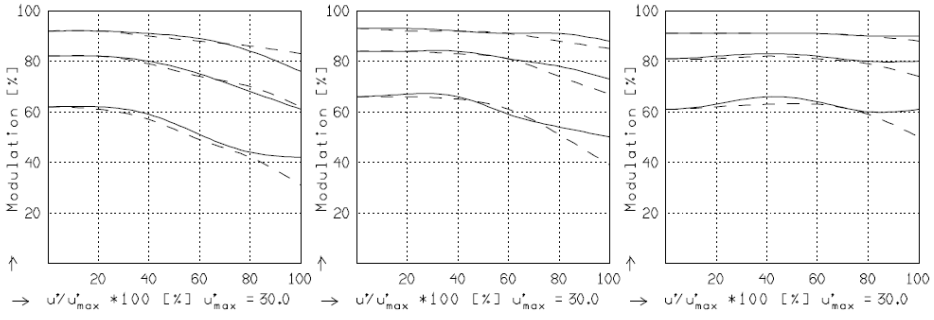
MODULATION with reference to the relative image height

Wavelength	λ [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 — —

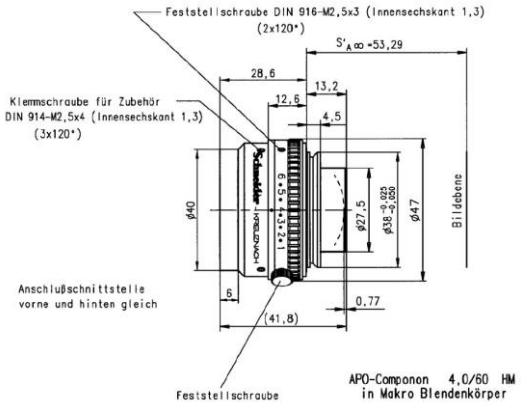


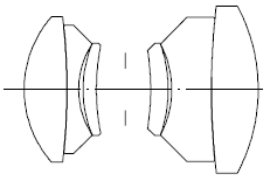




Focusing : MTF_{max} at f / 4.0 , R = 20 1/mm, u'/u'_{max} = 0

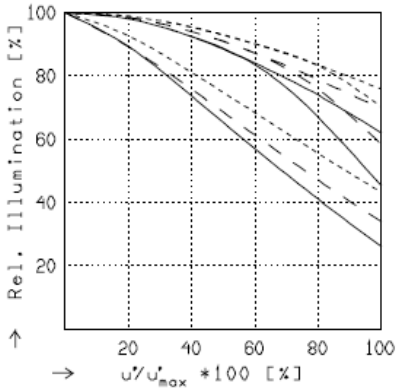
Apo-Componon 4.0/60





APO-COMPONON 4/60

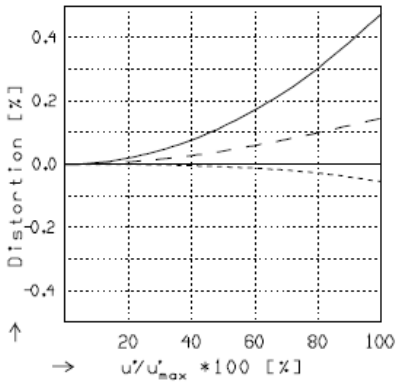
f' = 59.9 mm	β'_P = 0.970		
s_F = -47.1 mm	s_{EP} = 14.6 mm		
s'_F = 40.9 mm	s'_{AP} = -17.3 mm		
HH' = -1.9 mm	Σ d = 30.0 mm		



RELATIVE ILLUMINATION

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

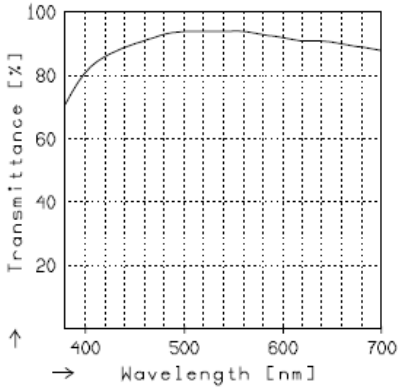
	f / 4.0	f / 5.6	f / 8.0
——	β' = -0.0400	u'_{max} = 30.1	00' = 1619.
— —	β' = -0.1667	u'_{max} = 30.0	00' = 488.
-----	β' = -0.3333	u'_{max} = 30.0	00' = 318.



DISTORTION

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

——	β' = -0.0400	u'_{max} = 30.0	00' = 1619.
— —	β' = -0.1667	u'_{max} = 30.0	00' = 488.
-----	β' = -0.3333	u'_{max} = 30.0	00' = 318.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

V-Mount Macro Lens

Componon-S 2.8/50-0018

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.

Componon-S 2.8/50

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	2.8
Focal length	50.2 mm
Image circle	43.2 mm
Magnification	1:20 to 1:1, optimized for -0.10
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	113 gr.
Filter tread	M37 x 0.75
Code no.	14796

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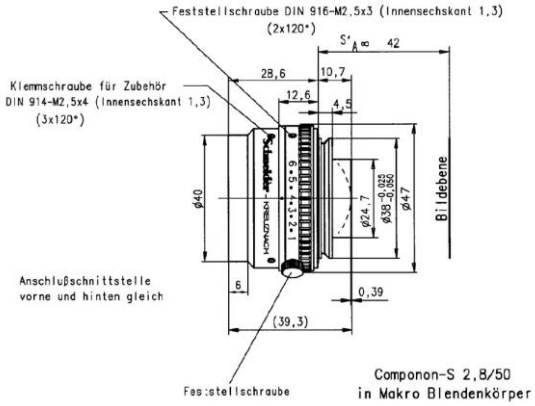
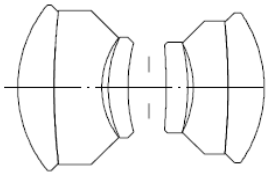
Componon-S 2.8/50



Componon-S 2,8/50
in Makro Blendenkörper



COMPONON-S 2.8/50

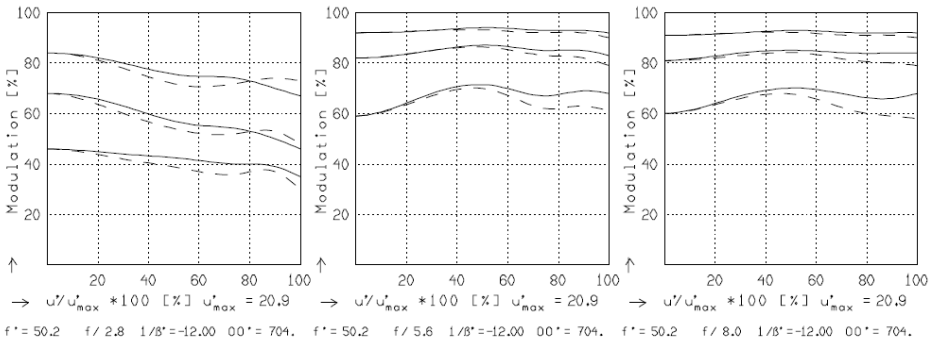
f' = 50.2 mm		β'_P = 0.945	
s_F = -33.5 mm		s_{EP} = 19.6 mm	
s'_F = 31.7 mm		s'_{AP} = -15.7 mm	
HH' = -3.1 mm		Σ d = 32.0 mm	

COMPONON-S 2.8/50

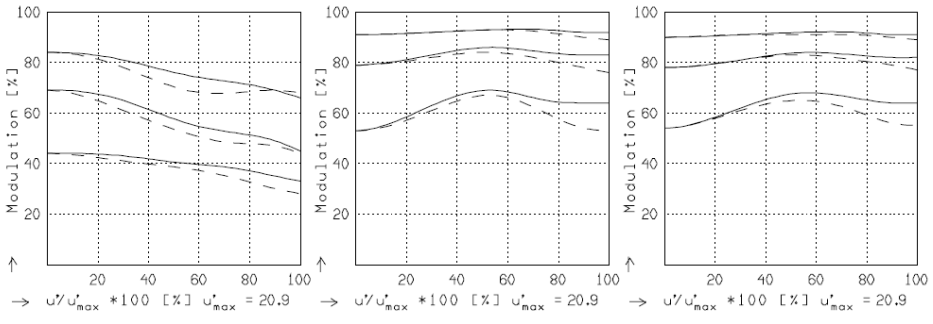
MODULATION with reference to the relative image height

Wavelength	λ	[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] :	23.0 X 35.0					
Diagonal 2u'		[mm] :	41.9					

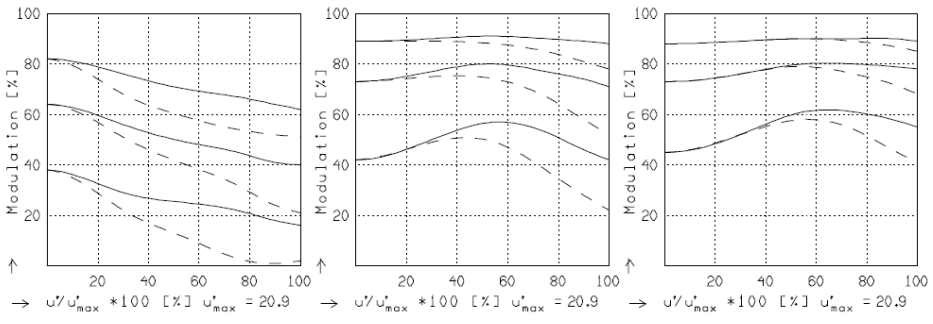
radial ——
tangential — —



f' = 50.2 f/ 2.8 1/ß' = -12.00 00' = 704. | f' = 50.2 f/ 5.6 1/ß' = -12.00 00' = 704. | f' = 50.2 f/ 8.0 1/ß' = -12.00 00' = 704.



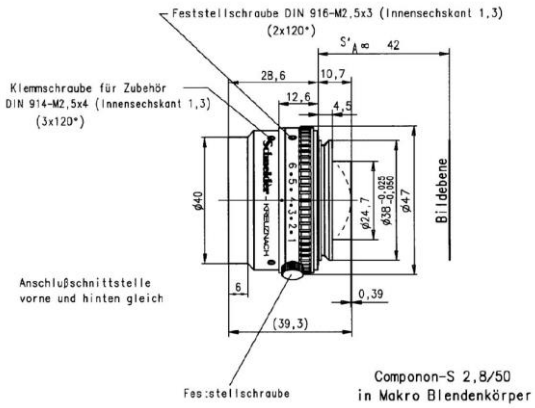
f' = 50.2 f/ 2.8 1/ß' = -6.00 00' = 407. | f' = 50.2 f/ 5.6 1/ß' = -6.00 00' = 407. | f' = 50.2 f/ 8.0 1/ß' = -6.00 00' = 407.

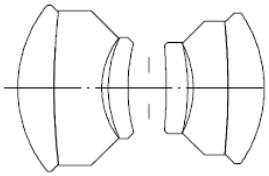


f' = 50.2 f/ 2.8 1/ß' = -3.00 00' = 264. | f' = 50.2 f/ 5.6 1/ß' = -3.00 00' = 264. | f' = 50.2 f/ 8.0 1/ß' = -3.00 00' = 264.

Focusing : MTF_{max} at f / 2.8 , R = 20 1/mm, u'/u'_{max} = 0

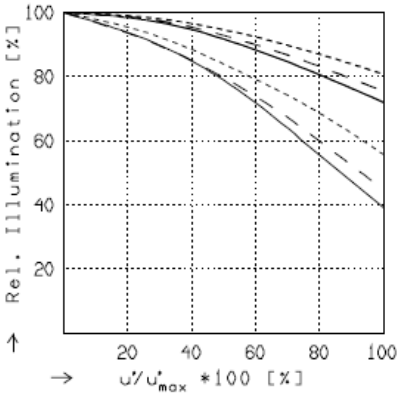
Componon-S 2.8/50





COMPONON-S 2.8/50

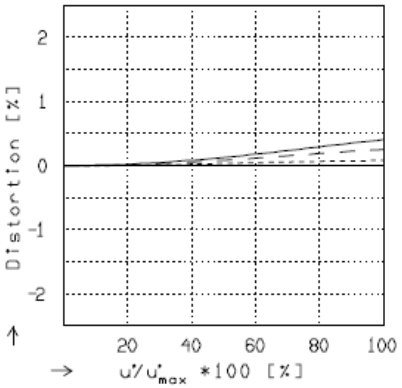
f' =	50.2 mm	β'P =	0.945
sF =	-33.5 mm	sEP =	19.6 mm
s'F =	31.7 mm	s'AP =	-15.7 mm
HH' =	-3.1 mm	Σ d =	32.0 mm



RELATIVE ILLUMINATION

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

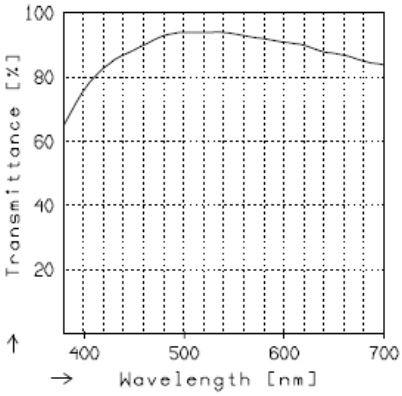
	f / 2.8	f / 5.6	f / 8.0
——	β' = -0.0833	u'max = 21.0	00' = 704.
— —	β' = -0.1667	u'max = 21.0	00' = 407.
-----	β' = -0.3333	u'max = 20.9	00' = 264.



DISTORTION

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

——	β' = -0.0833	u'max = 20.9	00' = 704.
— —	β' = -0.1667	u'max = 20.9	00' = 407.
-----	β' = -0.3333	u'max = 20.9	00' = 264.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

V-Mount Macro Lens

Componon 2.8/35-0001

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.

Componon 2.8/35

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	2.8
Focal length	34.9 mm
Image circle	32.5 mm
Magnification	1:20 to 1:1, optimized for -0.10
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	105 gr.
Filter tread	M37 x 0.75
Code no.	14792

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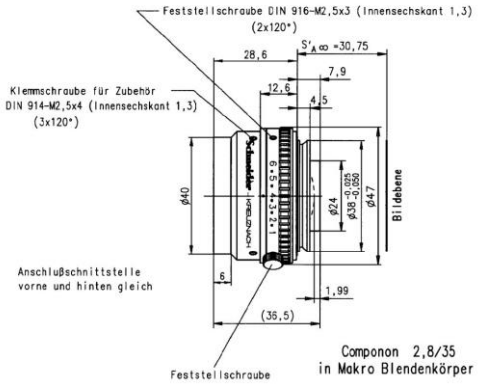
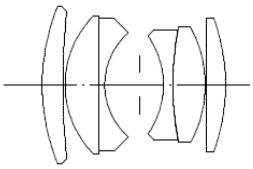
Componon 2.8/35





CPN 2.8/35

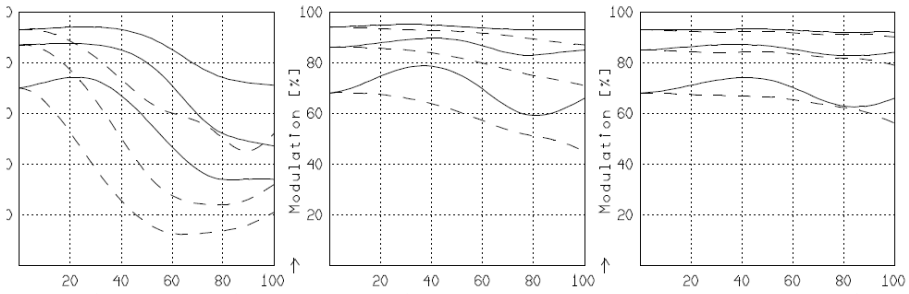
f'	=	35.0 mm	β'_P	=	1.047
s_F	=	-19.5 mm	s_{EP}	=	13.9 mm
s'_F	=	24.8 mm	s'_{AP}	=	-11.8 mm
HH'	=	-3.5 mm	Σ d	=	22.1 mm

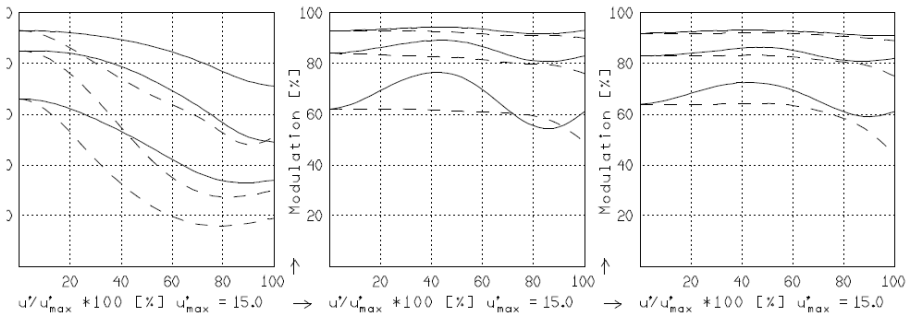
CPN 2.8/35

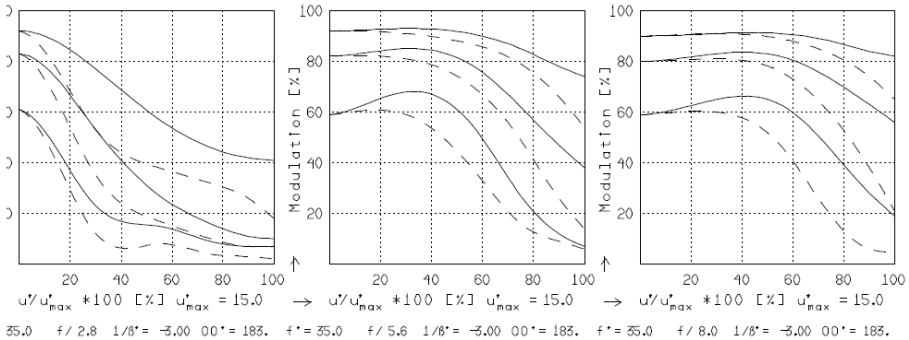
MODULATION with reference to the relative image height

Wavelength	λ	[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] :	23.0 X 23.0					
Diagonal 2u'		[mm] :	30.0					

radial ——
tangential — —

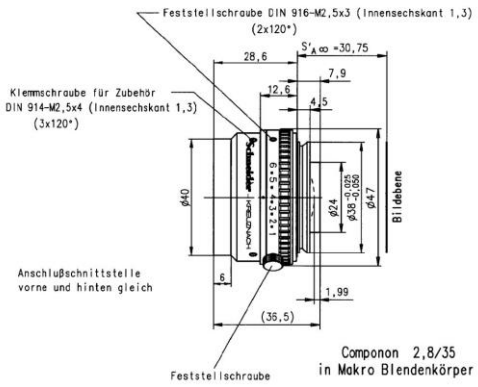


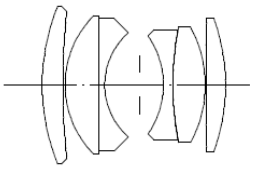




Focusing : MTF_{max} at f / 2.8 , R = 20 1/mm, u'/u'_{max} = 0

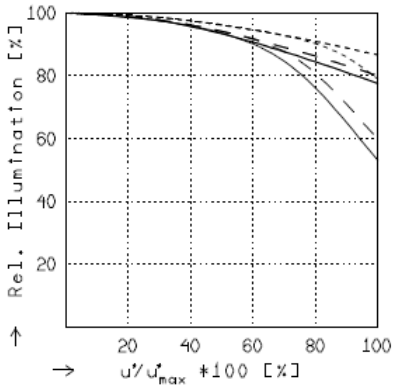
Componon 2.8/35





CPN 2.8/35

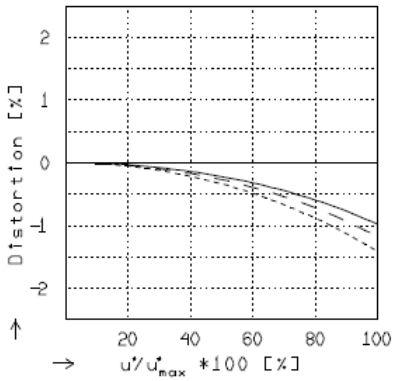
f' = 35.0 mm		β'_P = 1.047	
s_F = -19.5 mm		s_{EP} = 13.9 mm	
s'_F = 24.8 mm		s'_{AP} = -11.8 mm	
HH' = -3.5 mm		Σ d = 22.1 mm	



RELATIVE ILLUMINATION

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

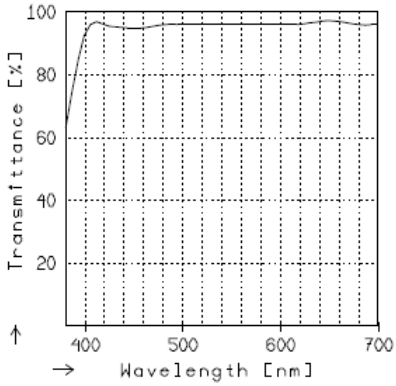
	f / 2.8	f / 5.6	f / 8.0
——	β' = -0.0400	u'_{max} = 14.9	00' = 942.
— —	β' = -0.1000	u'_{max} = 14.8	00' = 420.
-----	β' = -0.3333	u'_{max} = 14.8	00' = 183.



DISTORTION

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

——	β' = -0.0400	u'_{max} = 14.8	00' = 942.
— —	β' = -0.1000	u'_{max} = 14.8	00' = 420.
-----	β' = -0.3333	u'_{max} = 14.8	00' = 183.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.

V-Mount Macro Lens

Componon-S 5.6/100-0022

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.

Componon-S 5.6/100

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	5.6
Focal length	102.3 mm
Image circle	108 mm
Magnification	1:20 to 1:1, optimized for -0,17
Transmission	400 - 700 nm
Interface	V38-Mount
Weight	140 gr.
Filter tread	M37 x 0.75
Code no.	35142

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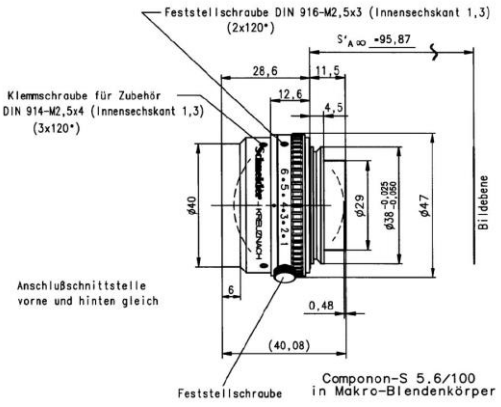
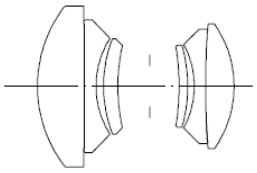
Componon-S 5.6/100





COMPONON-S 5.6/100

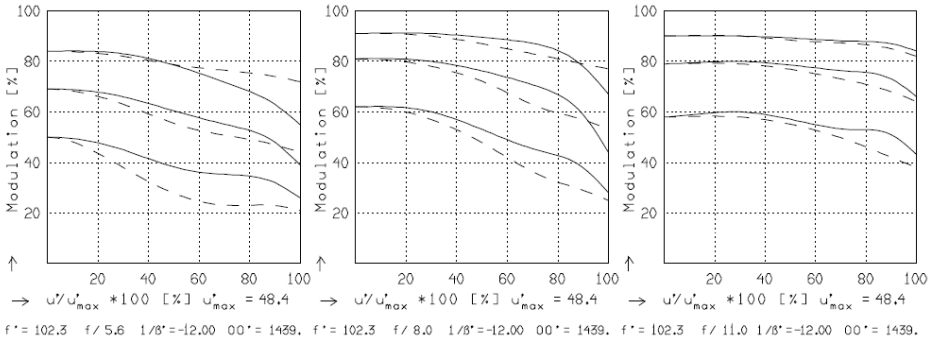
f' = 102.3 mm	β'_P = 0.988		
s_F = -81.8 mm	s_{EP} = 21.8 mm		
s'_F = 84.9 mm	s'_{AP} = -16.2 mm		
HH' = -2.4 mm	Σ d = 35.6 mm		

COMPONON-S 5.6/100

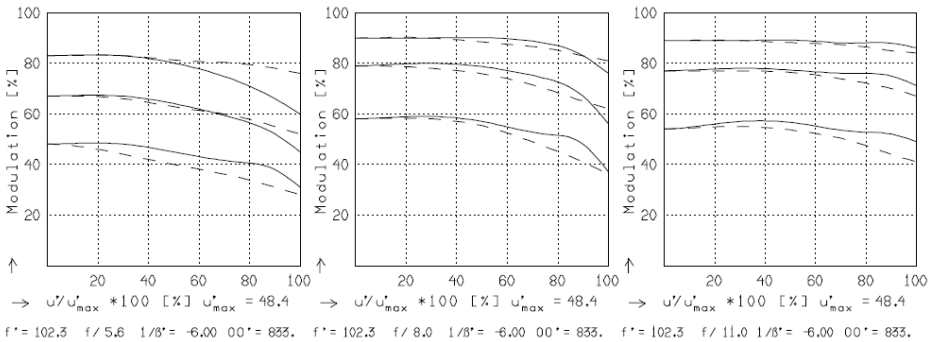
MODULATION with reference to the relative image height

Wavelength	λ [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] :	56.0	X 79.0				
Diagonal 2u'	[mm] :	96.8					

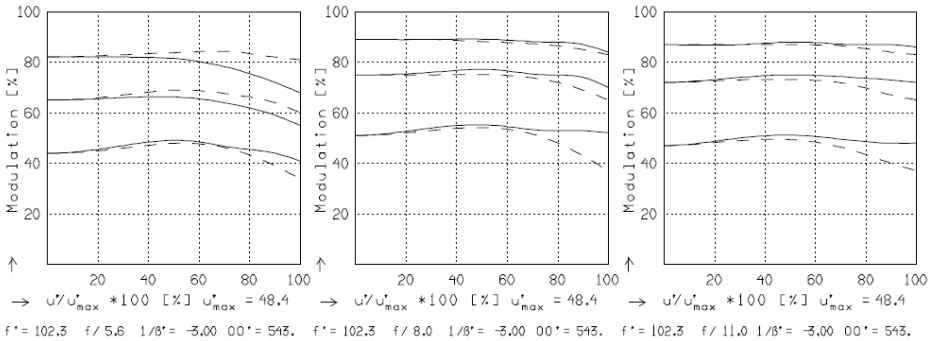
radial ——
tangential — —



f' = 102.3 f/ 5.6 1/β' = -12.00 00' = 1439. | f' = 102.3 f/ 8.0 1/β' = -12.00 00' = 1439. | f' = 102.3 f/ 11.0 1/β' = -12.00 00' = 1439.



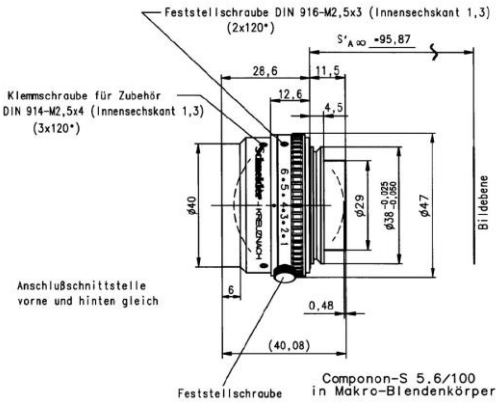
f' = 102.3 f/ 5.6 1/β' = -6.00 00' = 833. | f' = 102.3 f/ 8.0 1/β' = -6.00 00' = 833. | f' = 102.3 f/ 11.0 1/β' = -6.00 00' = 833.

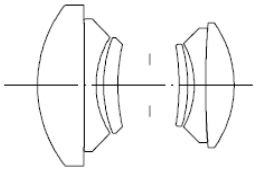


f' = 102.3 f/ 5.6 1/β' = -3.00 00' = 543. | f' = 102.3 f/ 8.0 1/β' = -3.00 00' = 543. | f' = 102.3 f/ 11.0 1/β' = -3.00 00' = 543.

Focusing : MTF_{max} at f / 5.6 , R = 20 1/mm, u'/u'_{max} = 0

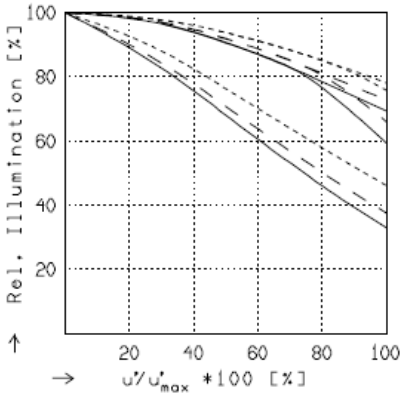
Componon-S 5.6/100





COMPONON-S 5.6/100

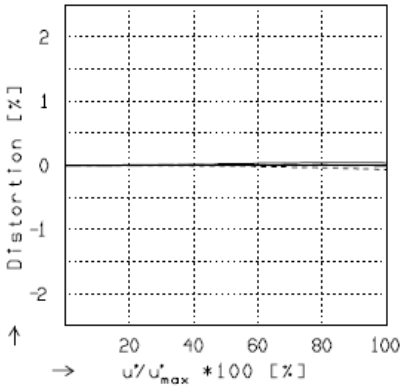
f'	=	102.3 mm	β'_P	=	0.988
s_F	=	-81.8 mm	s_{EP}	=	21.8 mm
s'_F	=	84.9 mm	s'_{AP}	=	-16.2 mm
HH'	=	-2.4 mm	Σ d	=	85.6 mm



RELATIVE ILLUMINATION

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

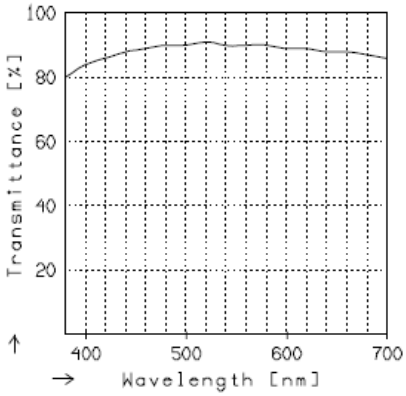
	f / 5.6	f / 8.0	f / 11.0
——	β' = -0.0833	u'_{max} = 48.4	OO' = 1439.
— —	β' = -0.1667	u'_{max} = 48.4	OO' = 833.
-----	β' = -0.3333	u'_{max} = 48.4	OO' = 543.



DISTORTION

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

	f / 5.6	f / 8.0	f / 11.0
——	β' = -0.0833	u'_{max} = 48.4	OO' = 1439.
— —	β' = -0.1667	u'_{max} = 48.4	OO' = 833.
-----	β' = -0.3333	u'_{max} = 48.4	OO' = 543.



TRANSMITTANCE

Relative spectral transmittance is shown with reference to wavelength.