TECHSPEC® HPr SERIES
FIXED FOCAL LENGTH LENSES
#36-863 • 12mm • f/11.0

Designed with a high level of machine vision performance in mind, TECHSPEC® HPr Series Fixed Focal Length Lenses are stability ruggedized with all individual lens elements glued in place to reduce object shift on the image. Additionally, they feature robust mechanical components with a simplified focus and stainless steel locking C-Mount clamp. These lenses are exemplary for calibrated imaging systems.



Focal Length:	12mm
Working Distance[1]:	100mm - ∞
Optimized Working Distance:	400 - 2000mm
Max. Sensor Format:	2/3"
Camera Mount:	C-Mount
Aperture (f/#):	f/11.0
Distortion %[2]:	<3.81%
Object Space NA[2]:	0.004478

Magnification Range:	0X - 0.101X
Type:	Fixed Focal Length Lens
Length:	39.2mm
Weight:	77g
RoHS:	Compliant
Stability Ruggedized:	<1 µm pixel shift at 50 G
Number of Elements (Groups):	10 (6)
AR Coating:	425 - 675nm BBAR

1. From front housing 2. At Minimum W.D.

At Minimum W.D. (100mm)						
Sensor Size	1/4"	1/3"	1/2.5"	1/2"	1/1.8"	2/3"
Field Of View[3]	35.8mm - 17.4°	47.9mm - 23.1°	58.0mm - 27.9°	64.2mm - 30.7°	72.5mm - 34.4°	89.3mm - 41.7°

3. Horizontal FOV on Standard (4:3) sensor format. Min W.D.

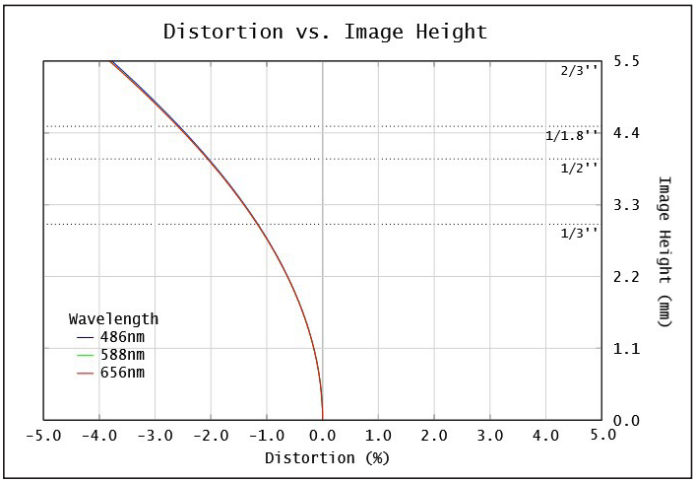


Figure 1: Distortion at the maximum sensor format. Positive values correspond to pincushion distortion, negative values correspond to barrel distortion.

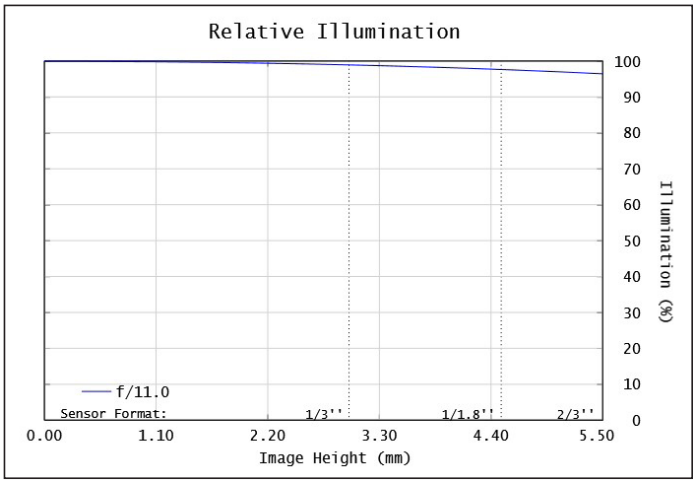


Figure 2: Relative illumination (center to corner)

In both plots, field points corresponding to the image circle of common sensor formats are included. Plots represent theoretical values from lens design software. Actual lens performance varies due to manufacturing tolerances.

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MTF & DOF: f/11.0
WD: 639mm
HORIZONTAL FOV: 500mm



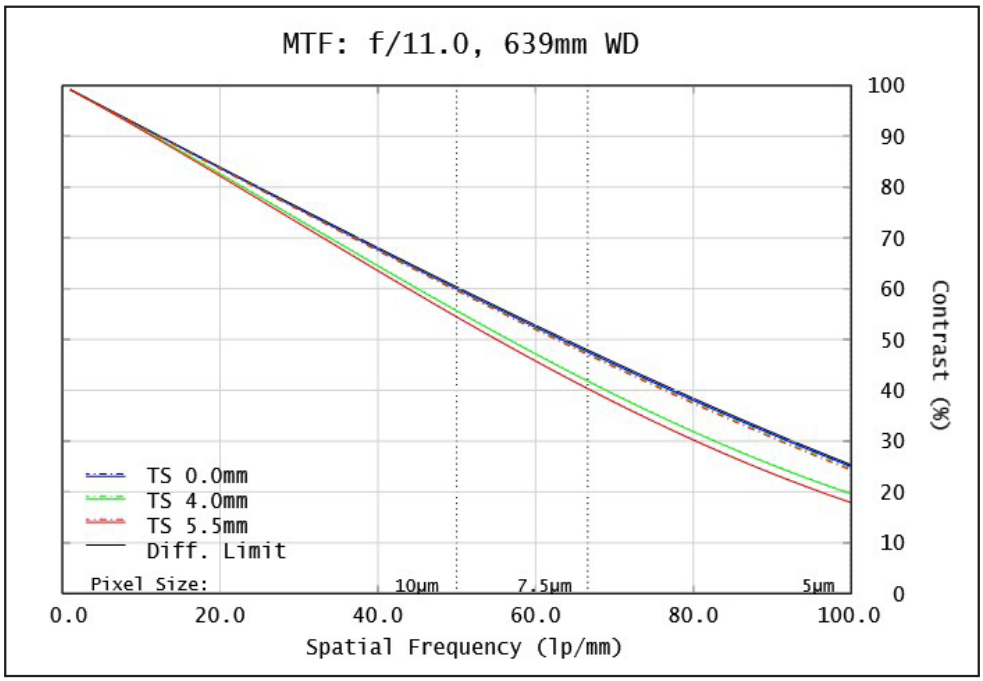


Figure 3: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are the Tangential and Sagittal values for field points on center, at 70% of full field and the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined aperture. Frequencies corresponding to the Nyquist resolution limit of pixel sizes are indicated.

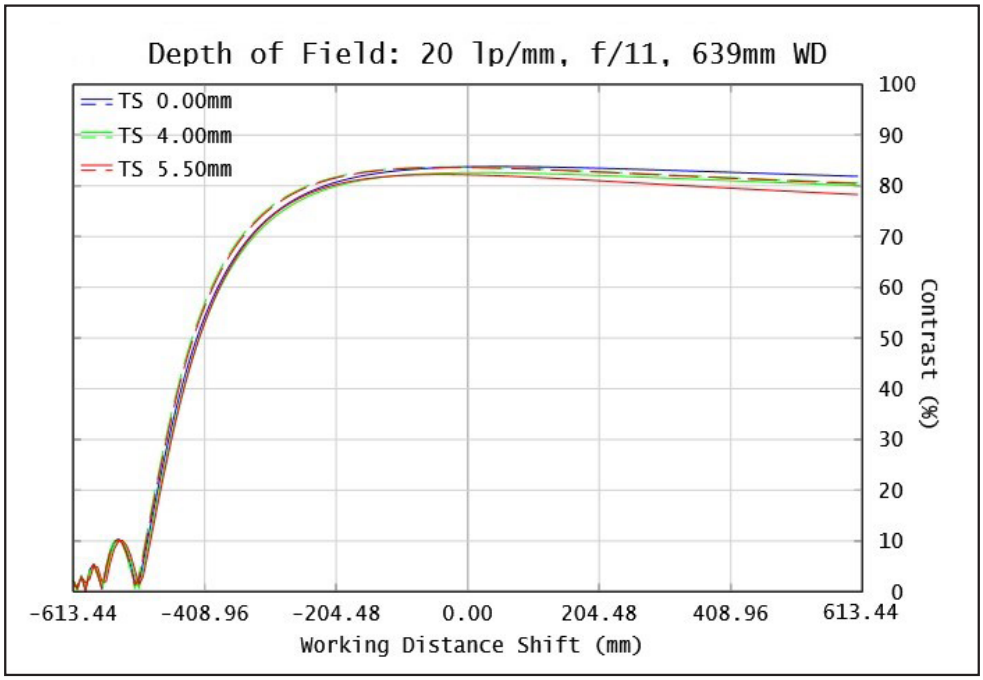


Figure 4: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

Plots represent theoretical values from lens design software. Actual lens performance varies due to manufacturing tolerances.

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MTF & DOF: f/11.0
WD: 1294mm
HORIZONTAL FOV: 1000mm



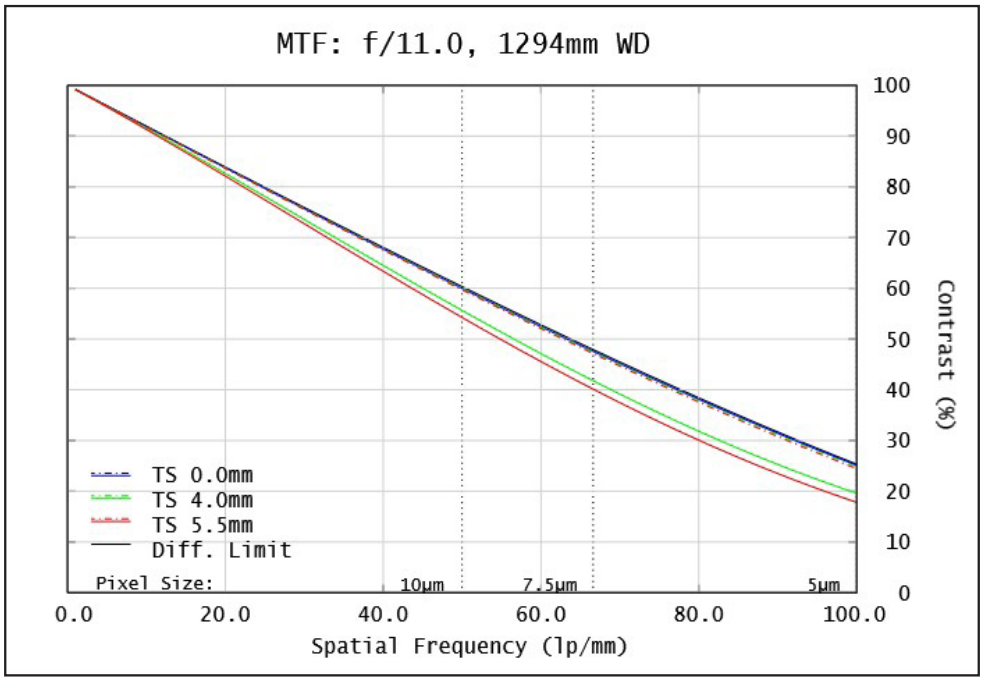


Figure 5: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are the Tangential and Sagittal values for field points on center, at 70% of full field and the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined aperture. Frequencies corresponding to the Nyquist resolution limit of pixel sizes are indicated.

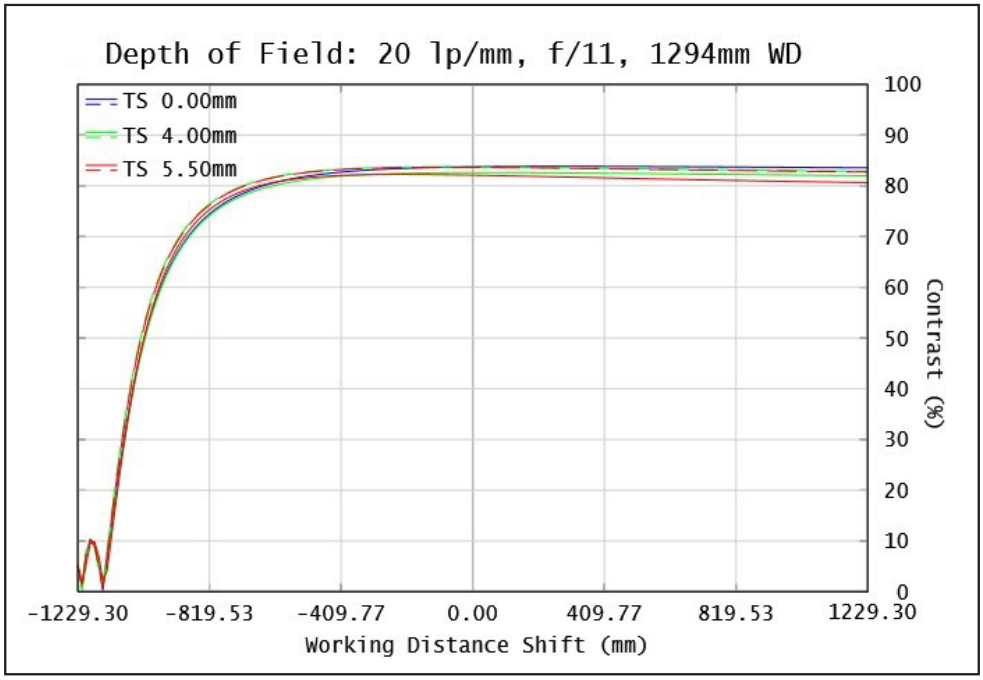


Figure 6: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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