

# TECHSPEC® LARGE FORMAT FIXED FOCAL LENGTH LENS

## #85-203 • 50mm FL • f/2

Our TECHSPEC® Large Format Fixed Focal Length Lenses are ideal for use in web inspection, sorting, or identification applications. Optimized for machine vision working distances, TECHSPEC® Large Format Fixed Focal Length Lenses feature high resolving powers to easily detect small defects. Additionally, these lenses also feature a lockable focus and iris, which is ideal for factory automation applications where vibrations can cause performance decreases.



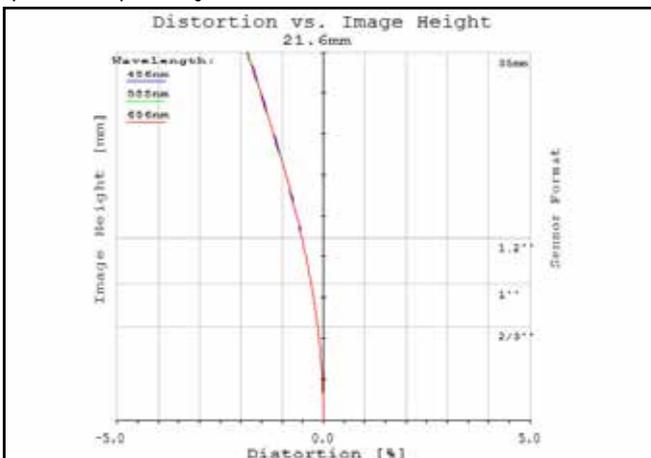
TECHSPEC® LARGE FORMAT FIXED FOCAL LENGTH LENS

|  |                 |
|--|-----------------|
| <b>Focal Length:</b>                         | 50mm            |
| <b>Minimum Working Distance<sup>1</sup>:</b> | 500mm           |
| <b>Focus Range<sup>1</sup>:</b>              | 500mm - ∞       |
| <b>Max Length:</b>                           | 43mm            |
| <b>Max Rear Protrusion:</b>                  | 10.6mm          |
| <b>Filter Thread:</b>                        | M43 x 0.75      |
| <b>Max Sensor Format:</b>                    | 35mm Full Frame |
| <b>Camera Mount:</b>                         | F-mount         |

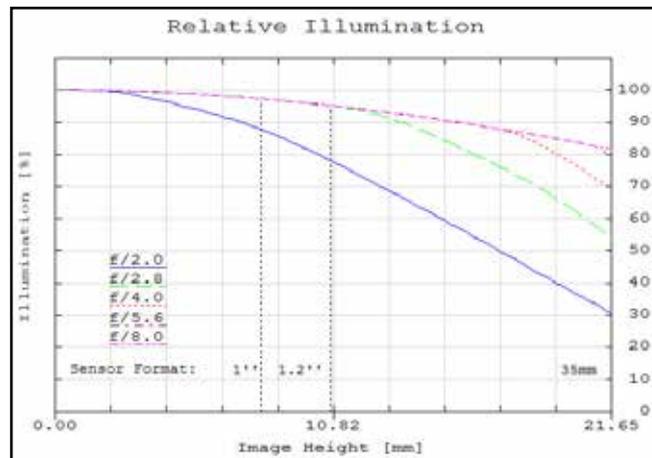
|                                     |                               |
|-------------------------------------|-------------------------------|
| <b>Aperture (f/#):</b>              | f/2.0 - f/22, lockable        |
| <b>Magnification Range:</b>         | 0X - 0.1X                     |
| <b>Distortion<sup>2</sup>:</b>      | <2%                           |
| <b>Object Space NA<sup>2</sup>:</b> | 0.024                         |
| <b>No. of Elements (Groups):</b>    | 7 (5)                         |
| <b>AR Coating:</b>                  | 1/4λ MgF <sub>2</sub> @ 550nm |
| <b>Weight:</b>                      | 223g                          |

| Sensor Size                      | 2/3"           | Sony 2/3"     | 1"              | 1" sq**         | 4/3"            | 28.7mm***       | 35mm*           | 43.0mm***       |
|----------------------------------|----------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Field of View<sup>3</sup></b> | 87.5mm - 10.1° | 84.0mm - 9.7° | 127.5mm - 14.6° | 112.0mm - 12.9° | 180.6mm - 20.6° | 287.9mm - 32.2° | 362.9mm - 39.9° | 435.6mm - 46.9° |

1. From front of housing    2. At Min Working Distance    3. Horizontal FOV on standard 4:3 sensor format    \*Full frame 43.3mm diag    \*\*1:1 Aspect ratio 16mm diag    \*\*\* Linear array  
 Specifications subject to change



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



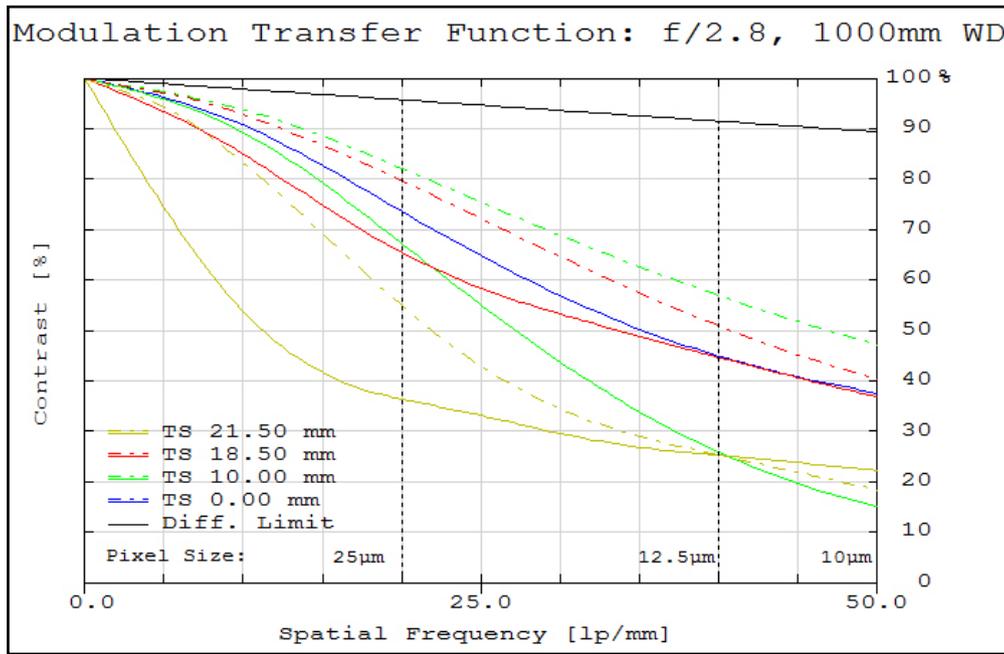
**Figure 2:** Relative illumination (center to corner)

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.

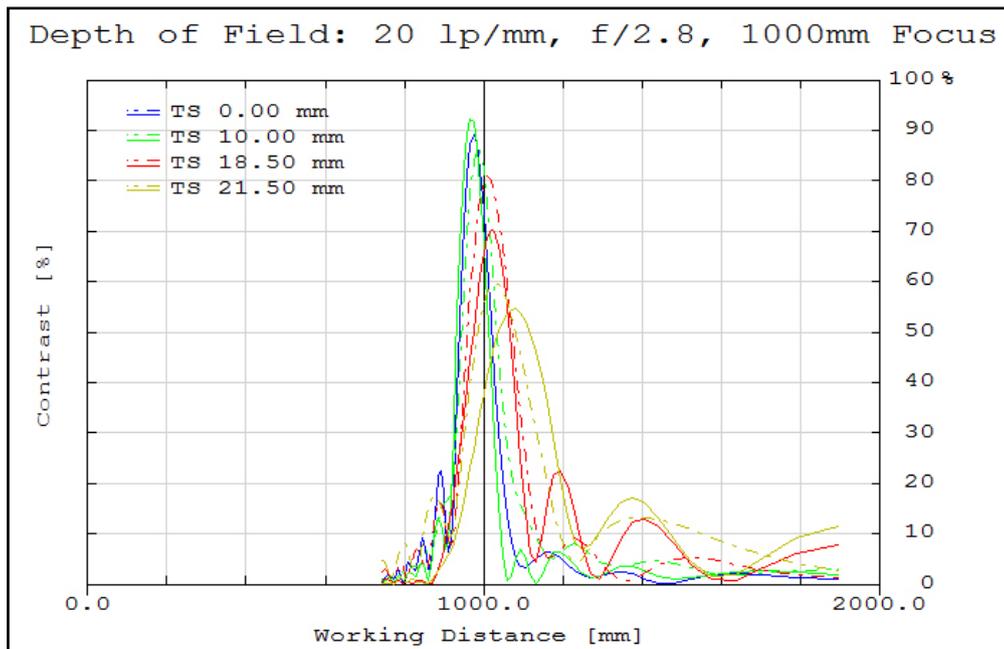
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MTF & DOF: f/2.8  
WD: 500mm



**Figure 3:** Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for  $\lambda = 486\text{nm}$  to  $656\text{nm}$ . Included are Tangential and Sagittal values for field points on center, at 70% of full field and at 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.



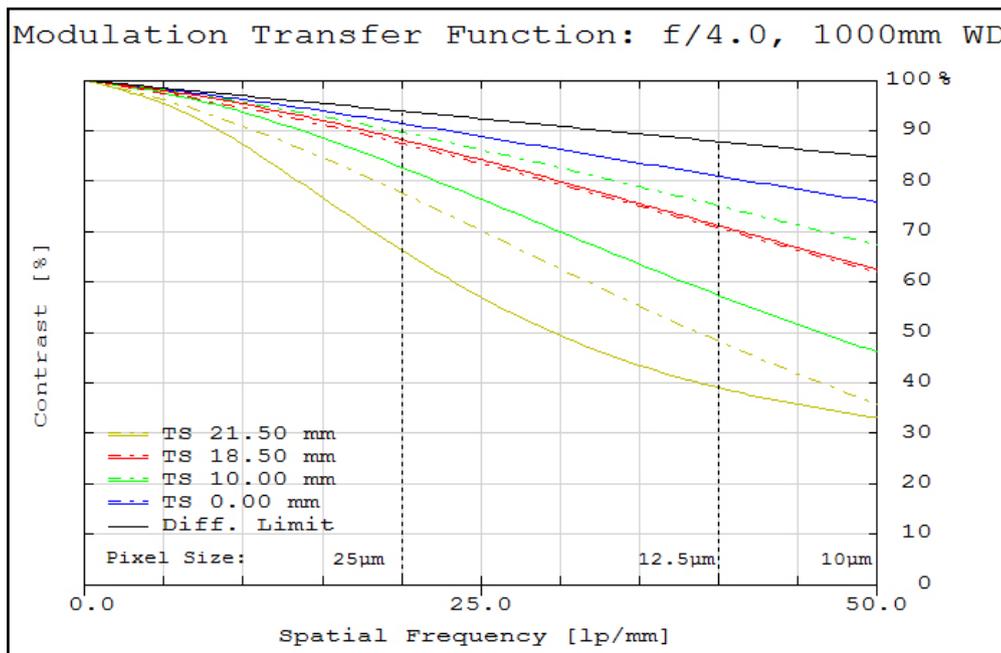
**Figure 4:** Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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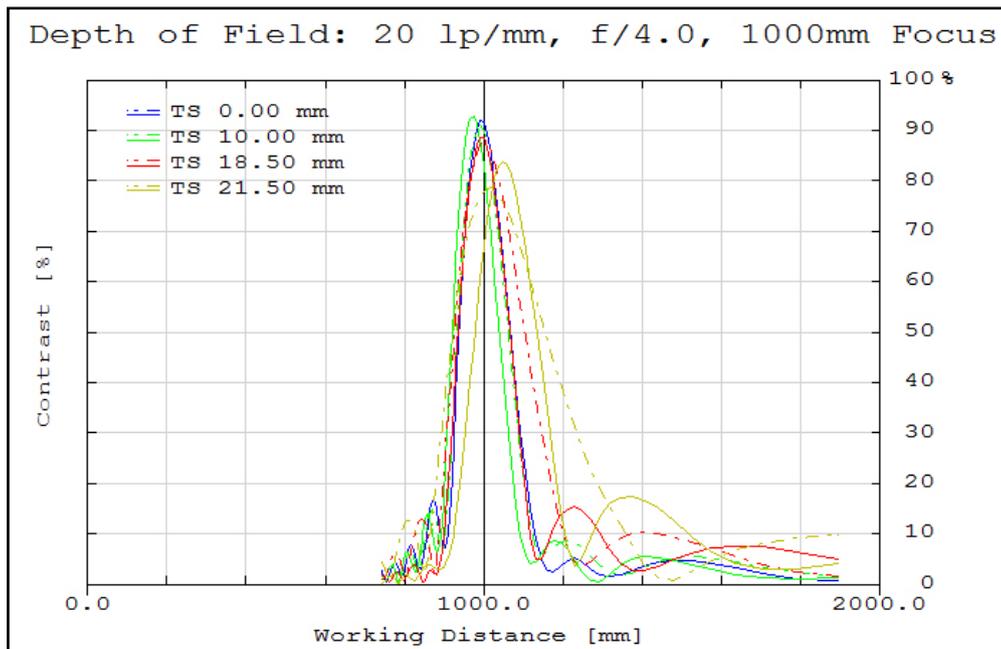
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MTF & DOF: f/4.0  
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**Figure 5:** Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for  $\lambda = 486\text{nm}$  to  $656\text{nm}$ . Included are Tangential and Sagittal values for field points on center, at 70% of full field and at 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.



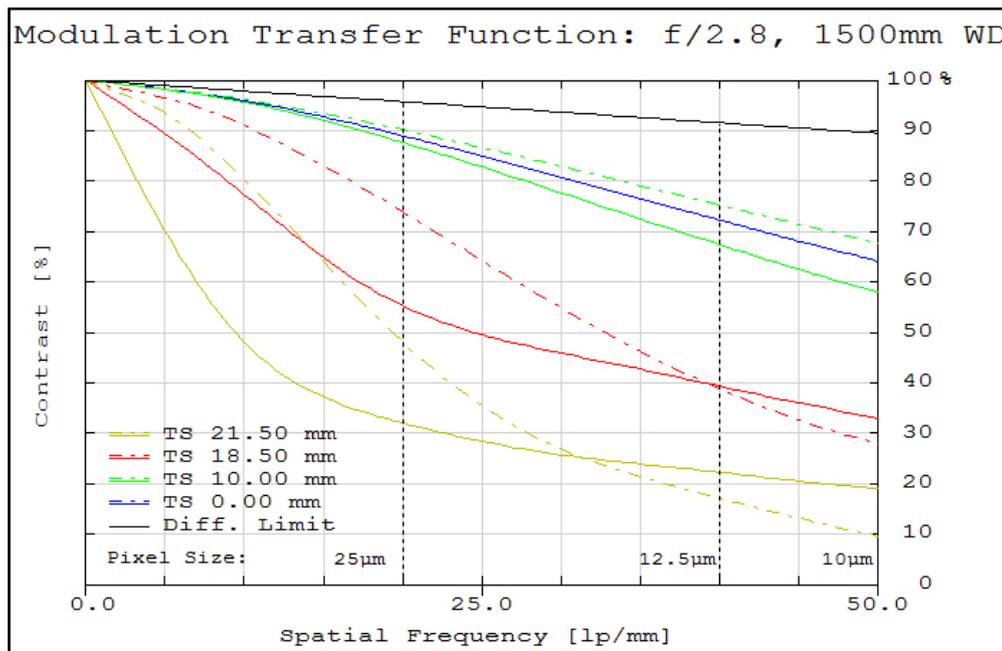
**Figure 6:** Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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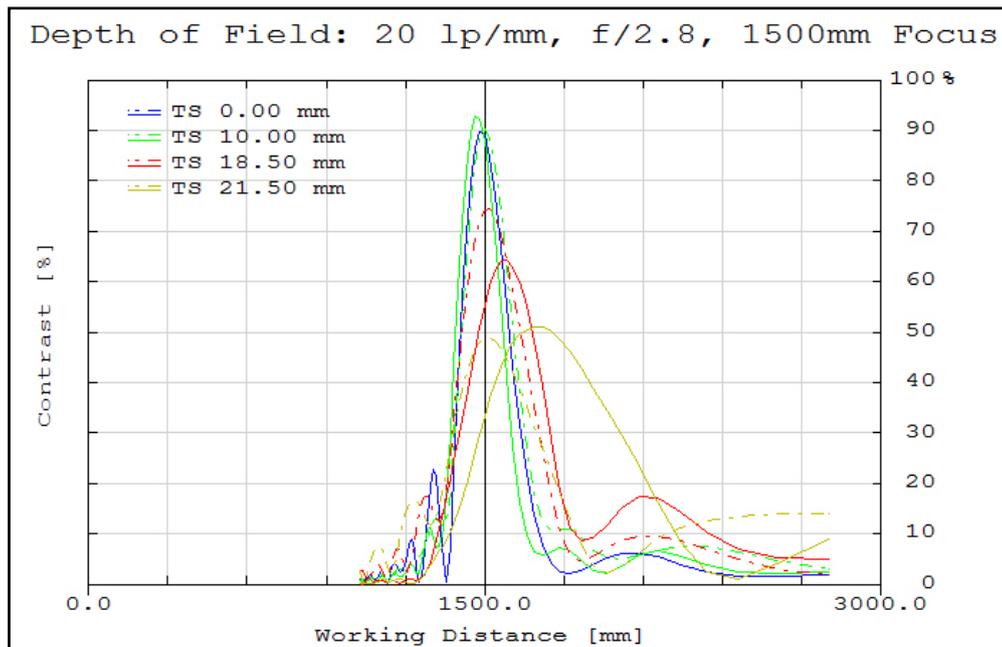
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#85-203 • 50mm FL • f/2

MTF & DOF: f/2.8  
WD: 1000mm



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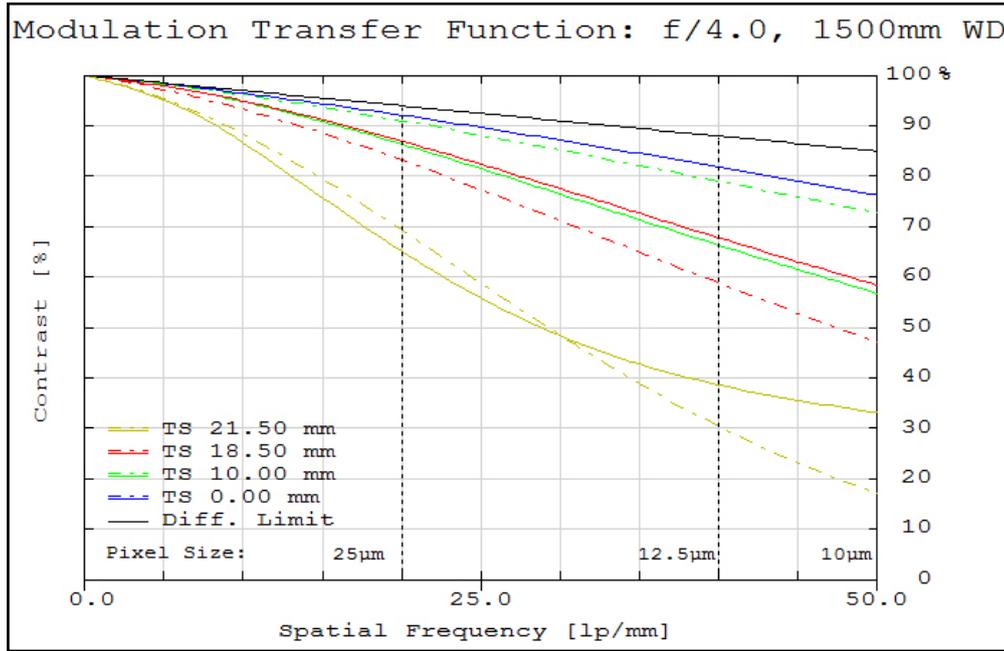
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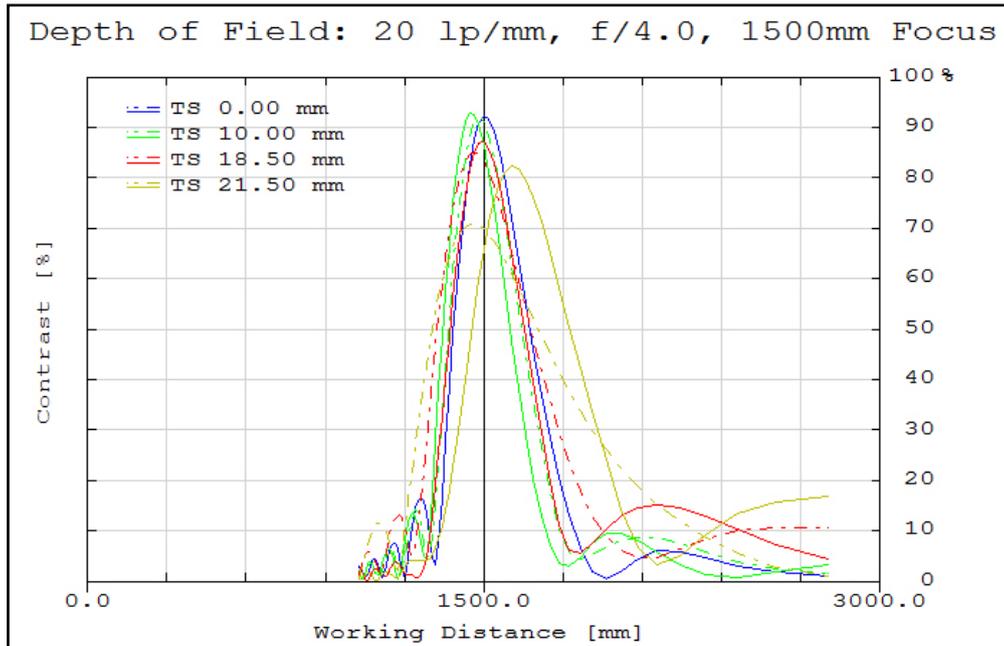
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