TECHSPEC® TitanTL™ TELECENTRIC LENS
#34-017 • 0.124X, 22.5mm • f/11

TECHSPEC® TitanTL™ Telecentric Lenses are designed for machine vision systems and metrology applications that require a large field of view. These lenses feature large maximum sensor formats, a variety of working distance and magnification options, and a rear filter holder on the back of the lenses to allow for easy filter integration. On our 118mm, 182mm and 242mm FOV versions, the integrated mounting flange allows for ease of securing each lens without requiring an additional mount and provides an easy to locate reference plane. TECHSPEC® TitanTL™ Telecentric Lenses contain shims that provide adjustment for variation in camera sensor location, an adjustable iris and a 3 set screw lens mount for simple rotational alignment to the camera. Typical applications include automotive and electronic inspection, measurement and gauging applications.

Primary Magnification PMAG:	0.124X
Maximum Camera Sensor Format:	22.5mm
Field of View, 1/1.8" Sensor:	58.3mm (Horizontal)
Field of View, 2/3" Sensor:	71.2mm (Horizontal)
Field of View, 1" Sensor:	103.6mm (Horizontal)
Field of View, 4/3" Sensor:	140.1mm (Horizontal)
Working Distance (mm)[1]:	284
Depth of Field (mm)[2]:	±37.0
NA Object Space:	0.00561
Resolution Image Space MTF, open[2]:	50lp/mm @ 40%
Telecentricity:	0.1

Distortion:	0.066
Aperture (f/#):	f/11
Number of Elements (Groups):	6 (4)
Filter Thread:	M200 x 2.1
Rear Filter Diameter:	25.4mm
Weight:	7.12kg
Coating:	λ/4 MgF_{14}
Mount:	C-Mount
Length (A):	429.6
Front Diameter (B):	208
Back Diameter (C):	42

Sensor Size:	1/2"	1/1.8"	2/3"	1"	4/3"	35mm
Field of View[3]:	51.8	58.3	71.2	103.6	140.1	NA

1. From front of housing 2. Image Space MTF Contrast 3. Horizontal FOV on standard 4:3 sensor format

Specifications subject to change

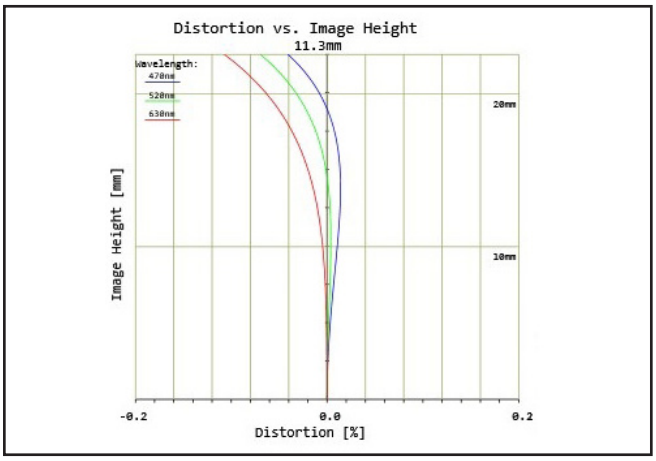

Figure 1: Distortion at the maximum sensor format. Postive values correspond to pincushion distortion, negative values correspond to barrel distortion.

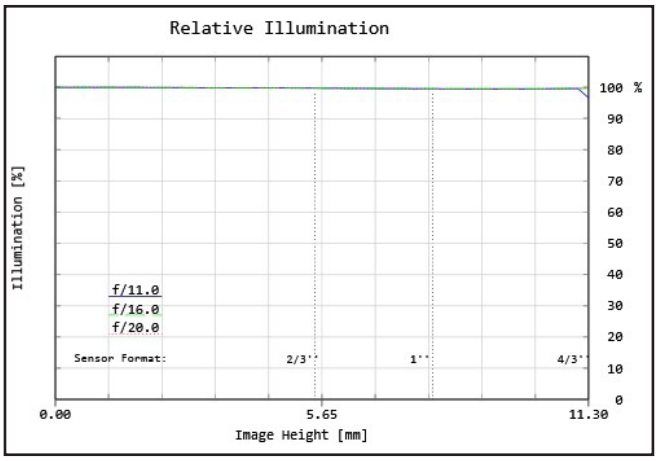

Figure 2: Relative illumination (center to corner)

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.

TECHSPEC® TitanTL™ TELECENTRIC LENS
#34-017 • 0.124X, 22.5mm • f/11

MTF & DOF: f/11
WD: 284mm

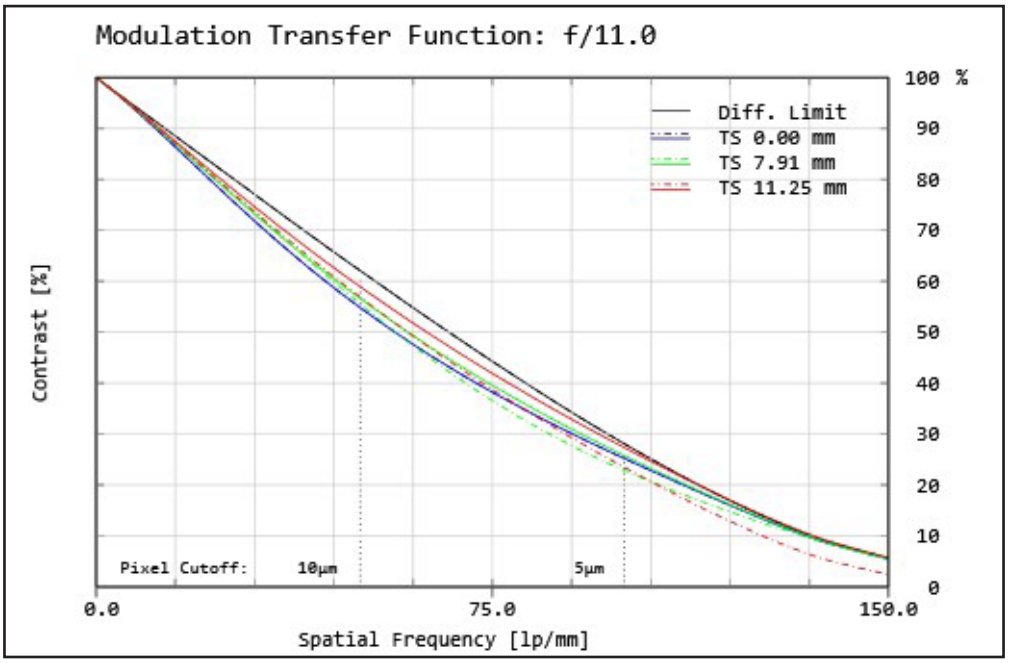

Figure 3: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are Tangential and Sagittal values for field points on center, at 70% of full field and at the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined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

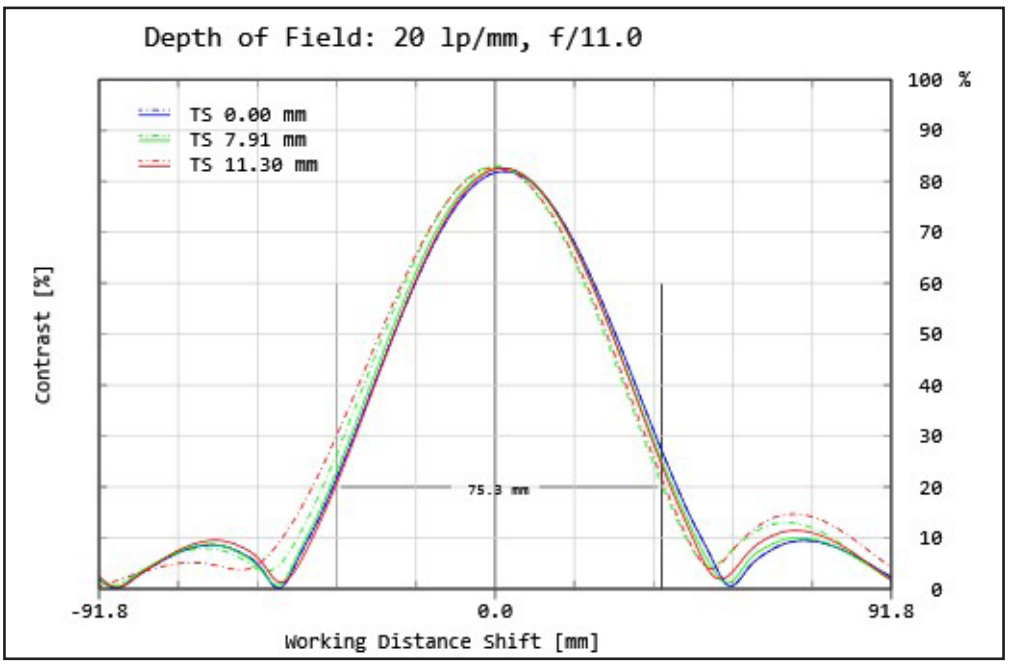

Figure 4: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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

TECHSPEC® TitanTL™ TELECENTRIC LENS

#34-017 • 0.124X, 22.5mm • f/11

MTF & DOF: f/16
WD: 284mm

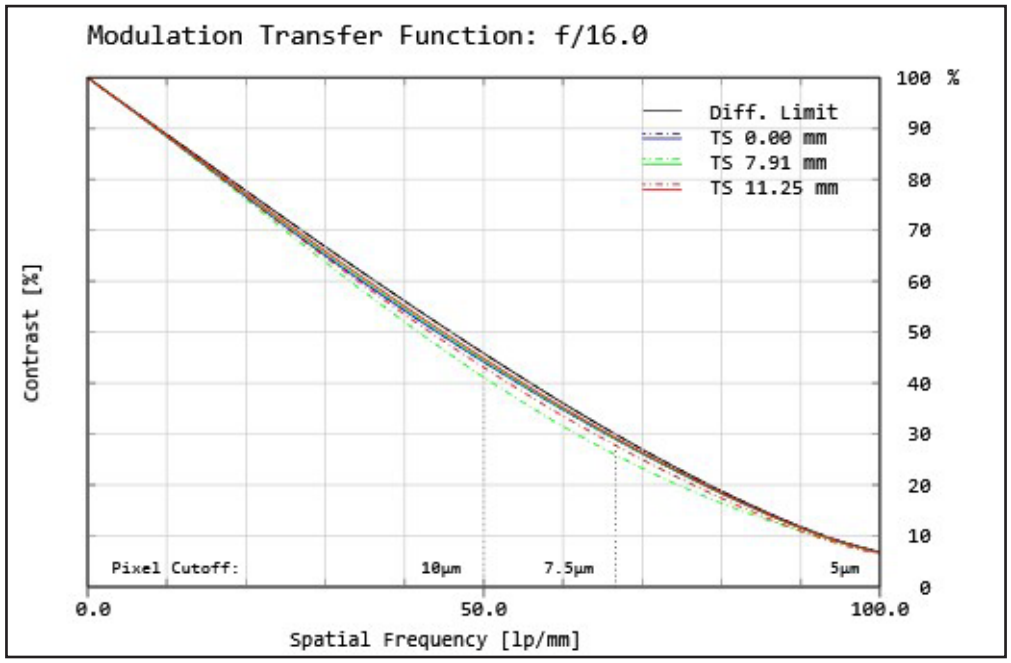

Figure 5: Image space polychromatic diffraction FFT Modulation Transfer Function (MTF) for λ = 486nm to 656nm. Included are Tangential and Sagittal values for field points on center, at 70% of full field and at the maximum sensor format. Solid black line indicates diffraction limit determined by f/#-defined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

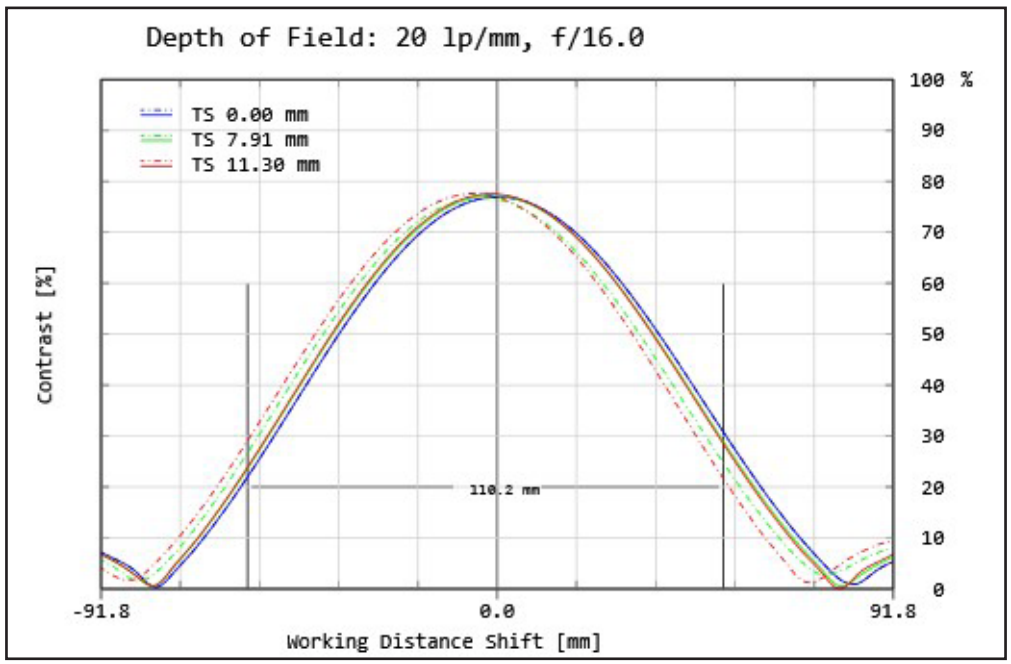

Figure 6: Polychromatic diffraction through-focus MTF at 20 linepairs/mm (image space). Contrast is plotted to two times the focus distance. Note object spatial frequency changes with working distance.

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