TCLWD020-275-23 | DATASHEET

OPTO ENGINEERING

Telecentric lens for 2/3" detectors, 276 mm working distance, magnification 0.200x

KEY ADVANTAGES

Cost effective design
Design has been optimized to reduce the cost without any loss in performance.

Long working distance
Perfect for electronic components inspection and tool pre-setting machines.

High numerical aperture
For small pixel size / high resolution detectors.

TCLWD3M series is a range of telecentric lenses specifically designed for electronic, semiconductor and faster applications.

SPECIFICATIONS

Optical specifications

Magnification		0.200
Image circle	(mm)	11.0
Max sensor size		2/3"
Working distance[2]	(mm)	276
wf/N[3]		8
Telecentricity typical (max)[4]	(°)	< 0.25
Distortion [5]	(%)	< 0.15
Field depth[6]	(mm)	10.3
Resolution (max)[7]	(μm)	25

Mechanical specifications

Mount		C
Phase adjustment		Yes
Length[9]	(mm)	201.0
Front diameter	(mm)	82.0
Mass	(g)	651

FIELD OF VIEW

Sensors[1]	(mm x mm)
1/2.5" (5.70 x 4.28 mm x mm)	28.50 x 21.40
1/1.8" (7.13 x 5.33 mm x mm)	35.65 x 26.65
2/3" (8.50 x 7.09 mm x mm)	42.50 x 35.45
1" (14.19 x 7.51 mm x mm)	$\varnothing = 37.55$
1.1" (14.16 x 10.37 mm x mm)	$\varnothing = 51.85$

[1] Object field of view. For the fields with the indication "$\varnothing$=", the image of a circular object of such diameter is fully inscribed into the detector.

[2] Working distance: distance between the front end of the mechanics and the object. Set this distance within $\pm3\%$ of the nominal value for maximum resolution and minimum distortion.

[3] working f/N: the real f/N of a lens in operating conditions.

[4] Maximum angle between chief rays and optical axis on the object side. Maximum (guaranteed) values are listed.

[5] Percent deviation of the real image compared to an ideal, undistorted image.

[6] At the borders of the field depth the image can be still used for measurement but, to get a very sharp image, only half of the nominal field depth should be considered. Pixel size used for calculation is 3.45 μm.

[7] Object side, calculated with the Rayleigh criterion with λ= 520 nm

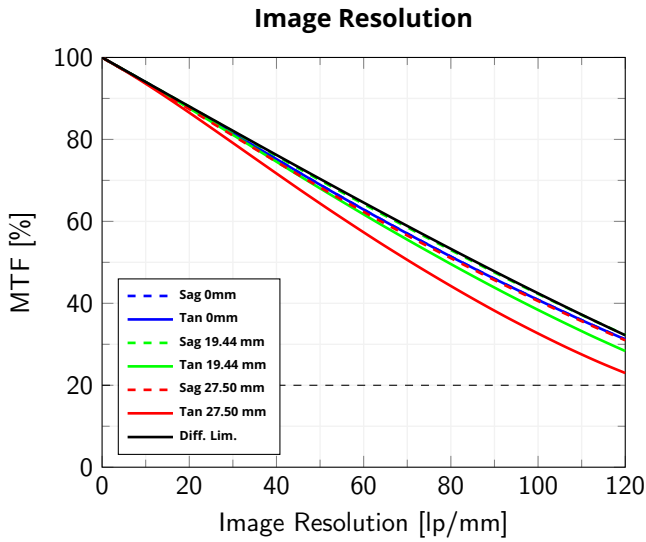[8] Measured from the front end of the mechanics to the camera flange.

COMPATIBLE PRODUCTS

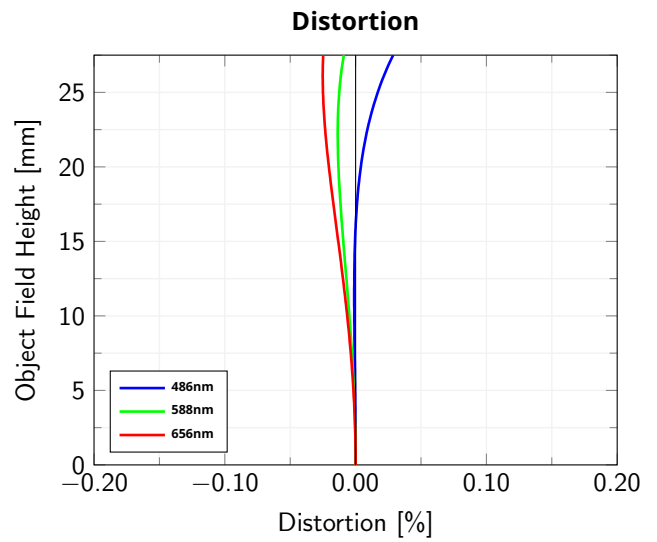**Full list of compatible products available *here*.**

OPTICS	LIGHTING	CAMERAS	SOFTWARE	ACCESSORIES

A wide selection of innovative machine vision components.
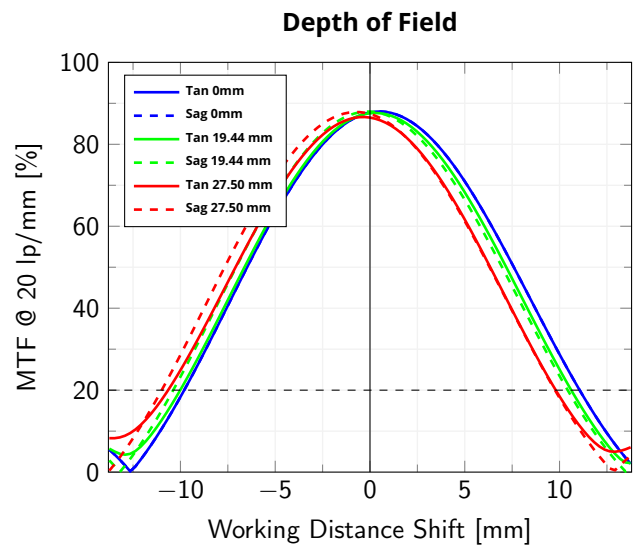
Image Resolution

Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm

Distortion

Object Field Height vs. Distortion, from the optical axis to the corner of the field of view

Relative Illumination
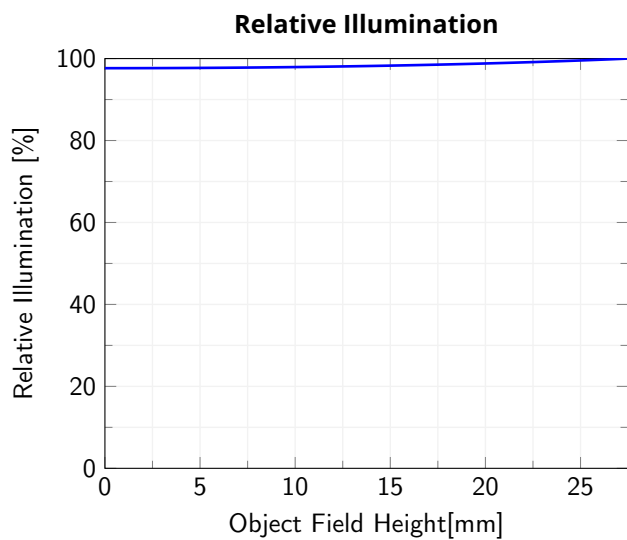
Relative illumination vs. Object Field Height, from the optical axis to the corner of the field of view

Depth of Field

Modulation Transfer Function (MTF) @ 20 lp/mm vs. Working Distance Shift from the best focus Working Distance, wavelength range 486 nm - 656 nm