



TCCXQ150-W | DATASHEET

Telecentric assembly with coaxial illumination for 2/3" sensors, magnification 1.500x, white

KEY ADVANTAGES

Completely free from stray-light

Compatible with both reflective and diffusive surface objects imaging

High resolution

For sharp edge imaging and small imperfections detection

Bi-telecentric design

Same degree of measurement accuracy as standard bi-telecentric lenses

Optimal light collimation

For precise direct light measurement applications

Detailed test report with measured optical parameters.



TCCXQ optical assemblies integrate the high optical performances of TC telecentric lenses and the LTCLHP series ability to provide accurate and reliable illumination.

SPECIFICATIONS

Optical specifications

| | | |
|---|------|---------------|
| Magnification | | 1.500 |
| Image circle | (mm) | 11.0 |
| Max sensor size | | 2/3" |
| Working distance ¹ | (mm) | 78.0 |
| wF/N ² | | 16 |
| Telecentricity typical (max) ³ | (°) | < 0.04 (0.06) |
| Distortion typical (max) ⁴ | (%) | < 0.05 (0.10) |
| Field depth ⁵ | (mm) | 0.4 |
| Resolution (max) ⁶ | (µm) | 7 |

Electrical specifications

| | | |
|--|------|---------------|
| Light color, peak wavelength | | white, 6000 K |
| Spectral FWHM | (nm) | - |
| Supply voltage | (V) | 12-24 |
| Max power consumption | (W) | 2.5 |
| LED forward voltage typ (max) ⁷ | (V) | 2.8 (-) |
| Max LED forward current ⁸ | (mA) | 350 |
| Max LED pulse Current ⁹ | (mA) | 2000 |
| Connector | | M8 |
| Included cable | | CB244P1500 |

¹ Working distance: distance between the front end of the mechanics and the object. Set this distance within ±3% of the nominal value for maximum resolution and minimum distortion.

² working *f/N*: the real *f/N* of a lens in operating conditions.

³ Maximum angle between chief rays and optical axis on the object side. Typical (average production) values and maximum (guaranteed) values are listed.

Mechanical specifications

| | | |
|----------------------|------|-------|
| Mount | | C |
| Phase adjustment | | Yes |
| Length ¹⁰ | (mm) | 195.4 |
| Width | (mm) | 64.0 |
| Height | (mm) | 155.0 |
| Mass | (g) | 1028 |

Environment

| | | |
|-----------------------------|------|-----------------------|
| Operating temperature | (°C) | 0-40 |
| Storage temperature | (°C) | 0-50 |
| Operating relative humidity | (%) | 20-85, non condensing |
| Installation | | Indoor use only |

Eye safety

| | | |
|--------------------------------|--|--------------|
| Risk group (CEI EN 62471:2010) | | Risk group 2 |
|--------------------------------|--|--------------|

⁴ Percent deviation of the real image compared to an ideal, undistorted image. Typical (average production) values and maximum (guaranteed) values are listed.

⁵ 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.

⁶ Object side, calculated with the Rayleigh criterion with λ= 520 nm

⁷ Used in continuous (not pulsed) mode.

⁸ At max forward current. Tolerance is ±0.06V on forward voltage measurements.

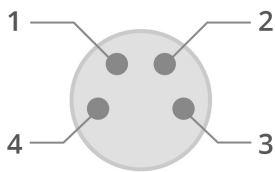
⁹ At pulse width ≤ 10 ms, duty cycle ≤ 10% condition. Built-in electronics board must be bypassed (see tech info).

¹⁰ Measured from the front end of the mechanics to the camera flange.

FIELD OF VIEW

| Sensors | (mm x mm) |
|------------------------------|-------------|
| 1/3" (4.8 x 3.6 mm x mm) | 3.20 x 2.40 |
| 1/2.5" (5.70 x 4.28 mm x mm) | 3.80 x 2.85 |
| 1/2" (6.4 x 4.8 mm x mm) | 4.27 x 3.20 |
| 1/1.8" (7.13 x 5.33 mm x mm) | 4.75 x 3.55 |
| 2/3" (8.50 x 7.09 mm x mm) | 5.67 x 4.73 |

CONNECTOR PINOUT



Device side

COMPATIBLE PRODUCTS

Full list of compatible products available [here](#).

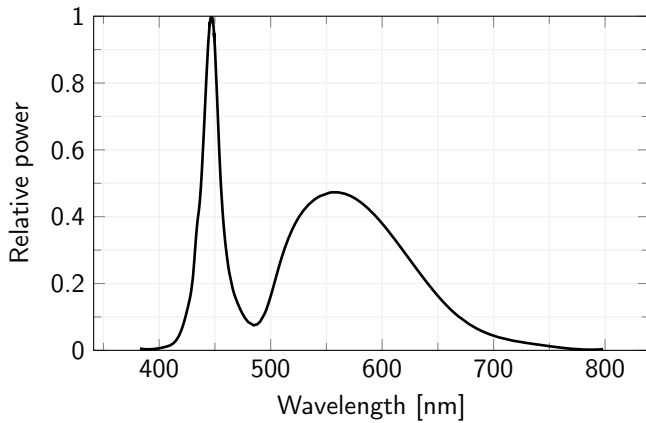


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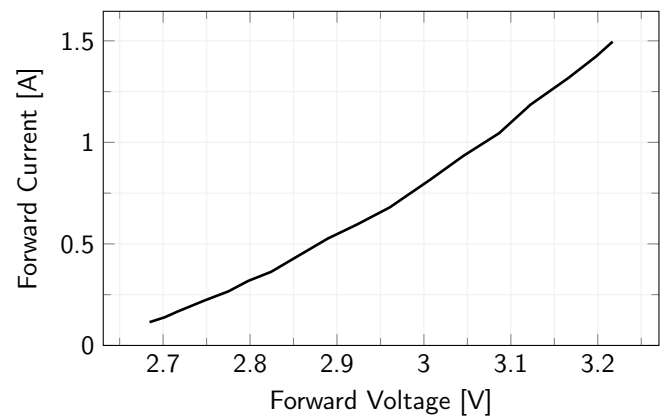
| Pin | Function | Cable color |
|-----|-------------------------|--------------|
| 1 | Earth | Yellow/green |
| 2 | Ground | Black |
| 3 | LED anode | Blue |
| 4 | Power supply (+12/24 V) | Brown |

ADDITIONAL INFORMATION

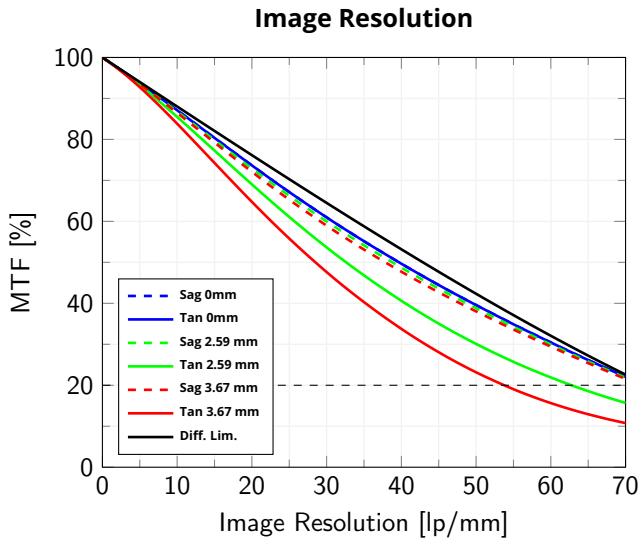
LED color spectrum



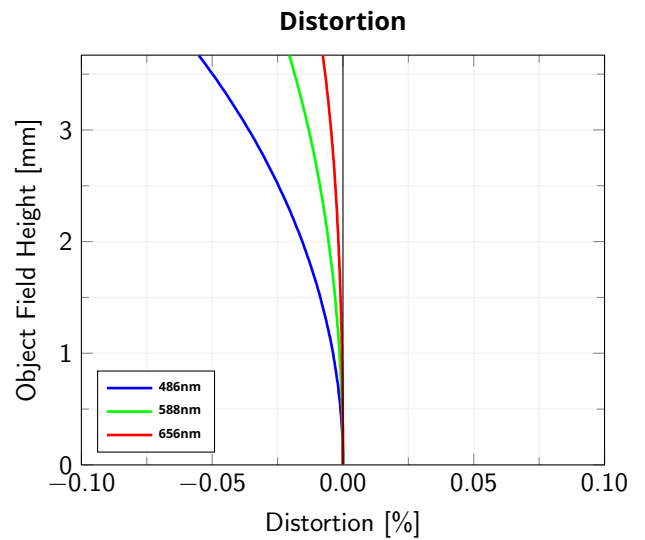
Forward Current Characteristics



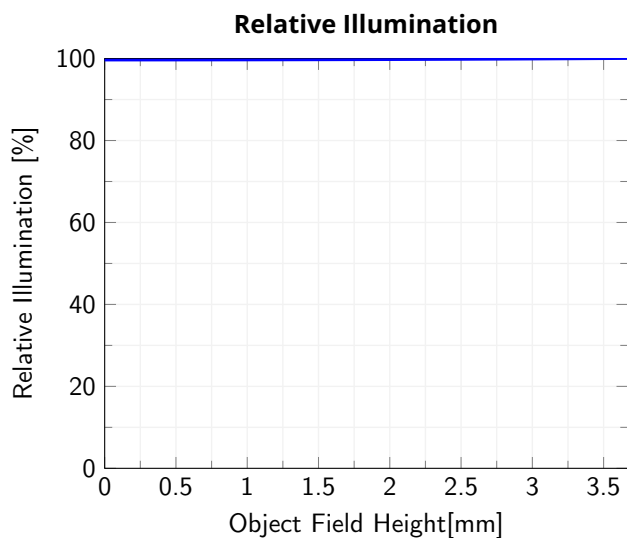
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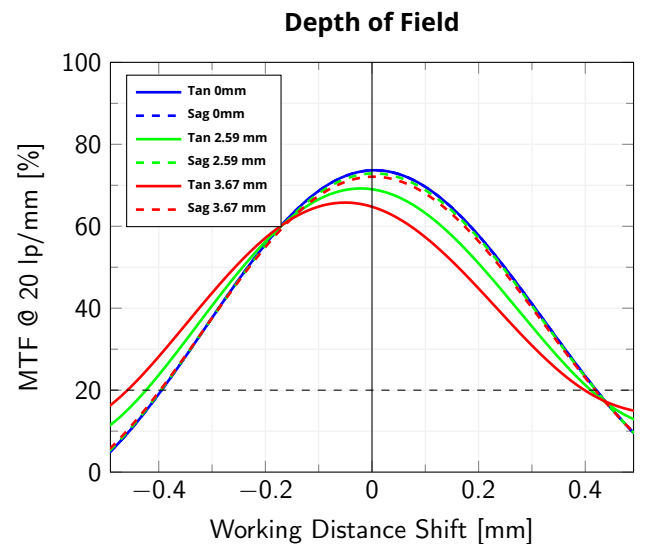
Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm



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



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



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

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