



TCCRBENCH048 | DATASHEET

Telecentric CORE optical bench, magnification 0.184x



SPECIFICATIONS

Optical specifications

Magnification		0.184
Image shape ¹	($\varnothing, x=$ mm)	$\varnothing=11.0, x=9.6$
Max sensor size		2/3"
Working distance ²	(mm)	132.9
wf/N ³		8
Telecentricity typical (max) ⁴	(°)	< 0.08 (0.10)
Distortion typical (max) ⁵	(%)	< 0.05 (0.10)
Field depth ⁶	(mm)	12.2
Resolution (max) ⁷	(μ m)	28

Electrical specifications

Light color, peak wavelength		green, 520 nm
Supply voltage	(V)	12-24
Max power consumption	(W)	2.5
LED forward voltage typ(max) ⁸	(V)	3.3 (4.0)
Max LED forward current ⁹	(mA)	350
Max LED pulse current ¹⁰	(mA)	2000

Mechanical specifications

Mount		C
Phase adjustment		Yes
Length ¹¹	(mm)	352.0
Width	(mm)	157.0
Height	(mm)	118.0
Mass	(g)	4056

KEY ADVANTAGES

Multi-level cost cutting

Saves money on manufacturing and transportation costs.

Downsized vision system

Allows to reduce the length of your measurement system.

Pre-assembled set-up

Just add a camera and a measurement software and you're ready to go.

Best optical performances in a super tight space

A complete optical system designed for hassle free development of demanding precision measurement applications.

Detailed test report with measured optical parameters.

TCCRBENCH CORE series are complete optical systems offering superior performances needed for highly demanding measurement applications in a super compact assembly.

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 1
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¹ Indicates the dimensions and shape of image, where " \varnothing " stands for diameter and "x=" indicates the nominal image height and width

² Working distance: distance between the front end of the mechanics and the object. Set this distance within $\pm 3\%$ 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 calculated at 588nm

⁵ Percent deviation of the real image compared to an ideal, undistorted image: typical (average production) values and maximum (guaranteed) values are listed.

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 μ m.

⁷ Object side, calculated with the Rayleigh criterion with $\lambda = 520$ nm

⁸ Used in continuous (not pulsed) mode.

⁹ At max forward current. Tolerance is ± 0.06 V on forward voltage measurements.

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

¹¹ Measured from the camera flange of the objective lens to the electronic end of the illuminator. Cable, connector and mount thread excluded

All product specifications and data are subject to change without notice to improve reliability, functionality, design or other. Photos and pictures are for illustration purposes only.

Data are reported by design, actual lens performance may vary due to manufacturing tolerances.

FIELD OF VIEW

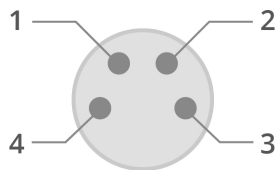
Sensors	(mm x mm)
1/3" (4.8 x 3.6 mm x mm)	26.09 x 19.57
1/2.5" (5.70 x 4.28 mm x mm)	30.98 x 23.26
1/2" (6.4 x 4.8 mm x mm)	34.78 x 26.09
1/1.8" (7.13 x 5.33 mm x mm)	38.75 x 28.97
2/3" (8.50 x 7.09 mm x mm)	46.20 x 38.53

INCLUDED IN TC BENCH CORE

Each kit contains:

- 1 TC CORE bi-telecentric lens for 2/3" detectors
- 1 LTCLHP CORE telecentric illuminator (green)
- 1 CMPTCR base-plate

CONNECTOR PINOUT



Device side

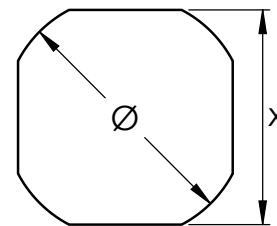
COMPATIBLE PRODUCTS

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



A wide selection of innovative machine vision components.

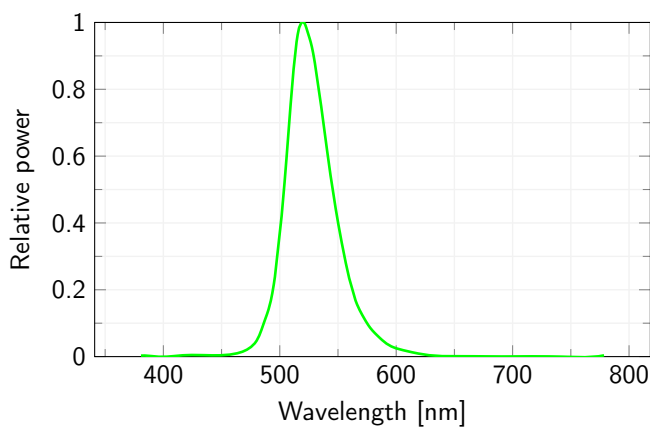
IMAGE SHAPE DIMENSION



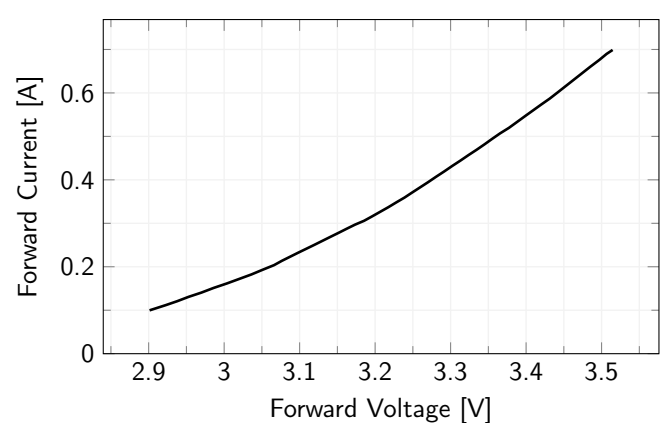
Pin	Function	Cable color
1	Earth	Yellow/green
2	Ground	Black
3	LED anode	Blue
4	Power supply (+12/24 V)	Brown

ADDITIONAL INFORMATION

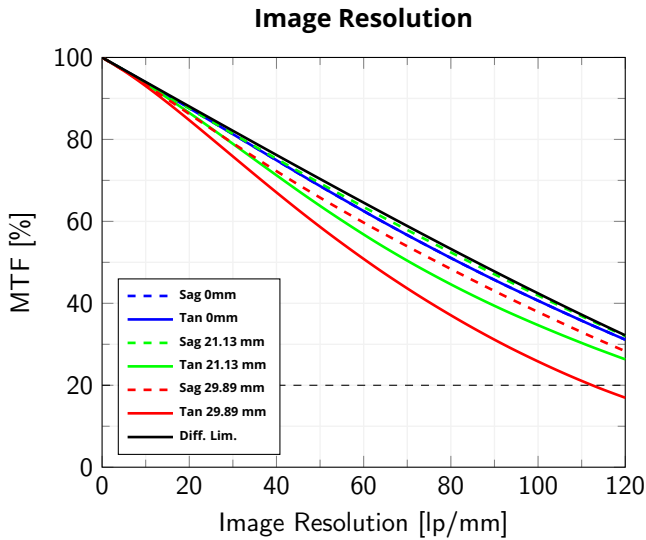
LED color spectrum



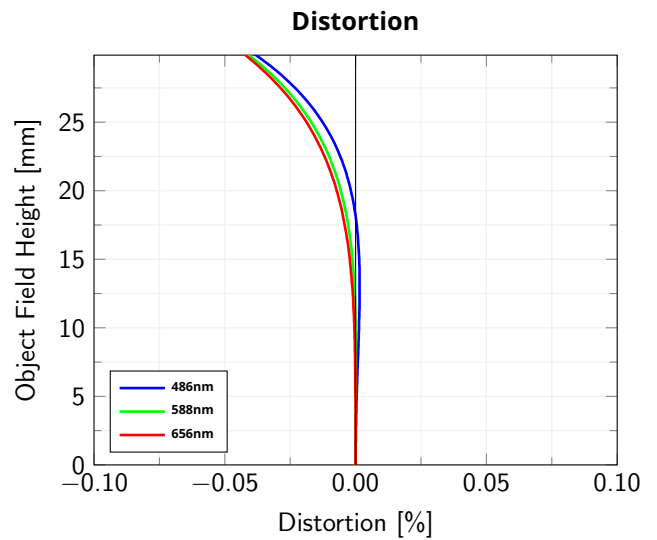
Forward Current Characteristics



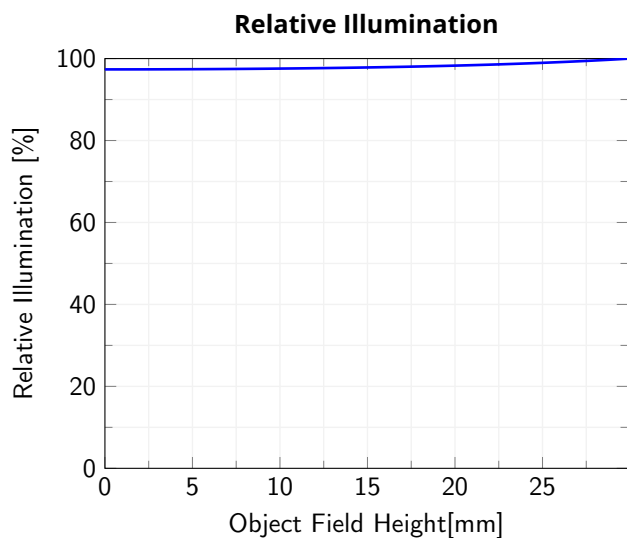
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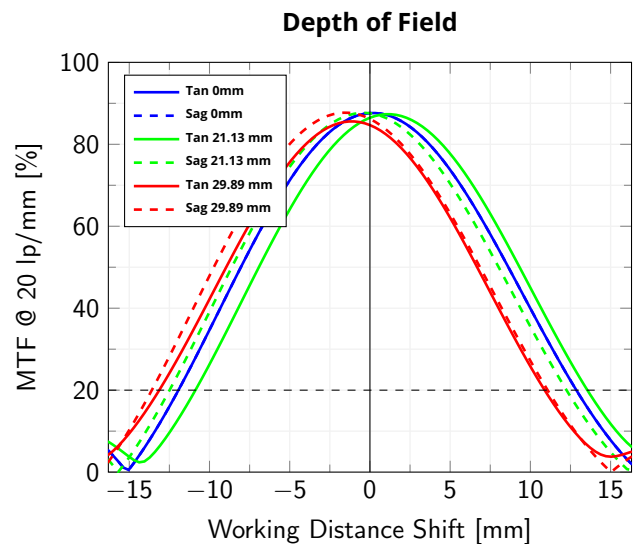
Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm



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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