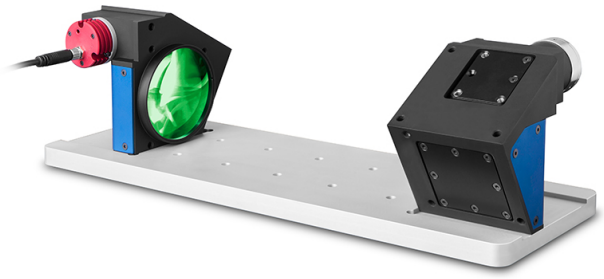
TCCRBENCH056 | DATASHEET

OPTO ENGINEERING

Telecentric CORE optical bench, magnification 0.157x



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.

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

SPECIFICATIONS

Optical specifications

Magnification		0.157
Image shape [1]	(⌀,x=mm)	⌀=11.1, x=9.6
Max sensor size		2/3"
Working distance[2]	(mm)	157.8
w*f*/*N*[3]		8
Telecentricity typical (max)[4]	(°)	< 0.05 (0.08)
Distortion typical (max)[5]	(%)	< 0.03 (0.10)
Field depth[6]	(mm)	16.8
Resolution (max)[7]	(µm)	32

Electrical specifications

Light color, peak wavelength		green, 520 nm
Supply voltage	(V)	12-24
Max power consuption	(W)	2.5
LED forward voltage typ(max)[8]	(V)	2.8 (-)
Max LED forward current[9]	(mA)	350
Max LED pulse current[10]	(mA)	2000

Mechanical specifications

Mount		C
Phase adjustment		Yes
Length[11]	(mm)	424.0
Width	(mm)	167.0
Height	(mm)	122.0
Mass	(g)	5227

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)	Exempt

[1] Indicates the dimensions and shape of image, where "⌀ =" 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 µm.
[7] Object side, calculated with the Rayleigh criterion with λ= 520 nm
[8] Used in continuous (not pulsed) mode.
[9] At max forward current. Tolerance is ±0.06V on forward voltage measurements.
[10] At pulse width <= 10 ms, duty cycle <= 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

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FIELD OF VIEW

Sensors	(mm x mm)
1/3" (4.8 x 3.6 mm x mm)	30.57 x 22.93
1/2.5" (5.70 x 4.28 mm x mm)	36.31 x 27.26
1/2" (6.4 x 4.8 mm x mm)	40.76 x 30.57
1/1.8" (7.13 x 5.33 mm x mm)	45.41 x 33.95
2/3" (8.50 x 7.09 mm x mm)	54.14 x 45.16

COMPATIBLE PRODUCTS

Full list of compatible products available *here*.



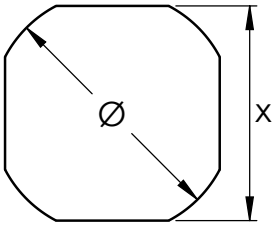
A wide selection of innovative machine vision components.

INCLUDED IN TCBENCH CORE

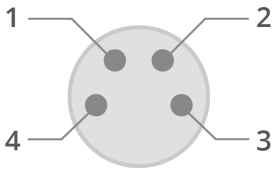
Each kit contains:

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

IMAGE SHAPE DIMENSION



CONNECTOR PINOUT

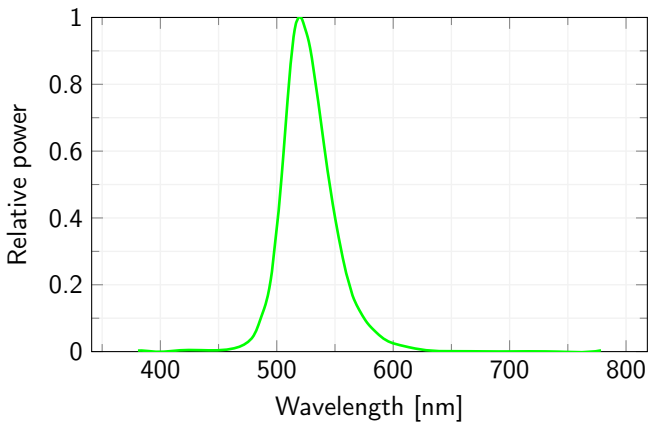


Device side

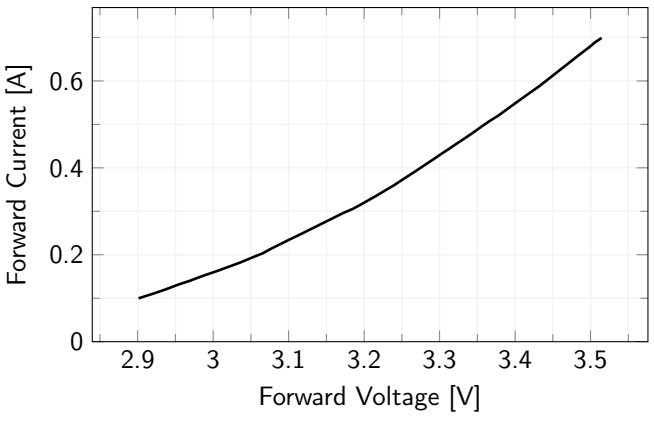
Pin	Function	Cable color
1	Earth	Yellow/green
2	Ground	Black
3	LED anode	Blue
4	Power supply (+12/24 V)	Brown

ADDITIONAL INFORMATION

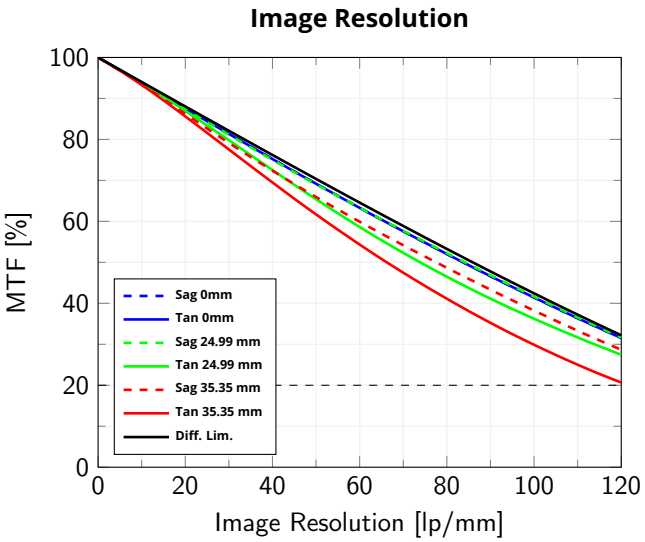
LED color spectrum



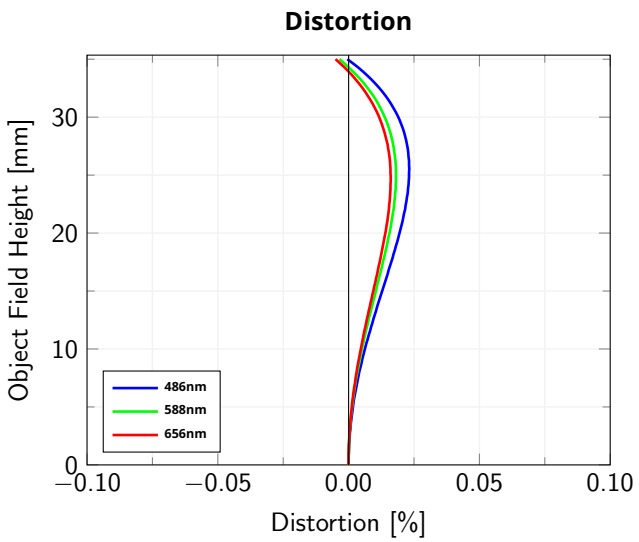
Forward Current Characteristics



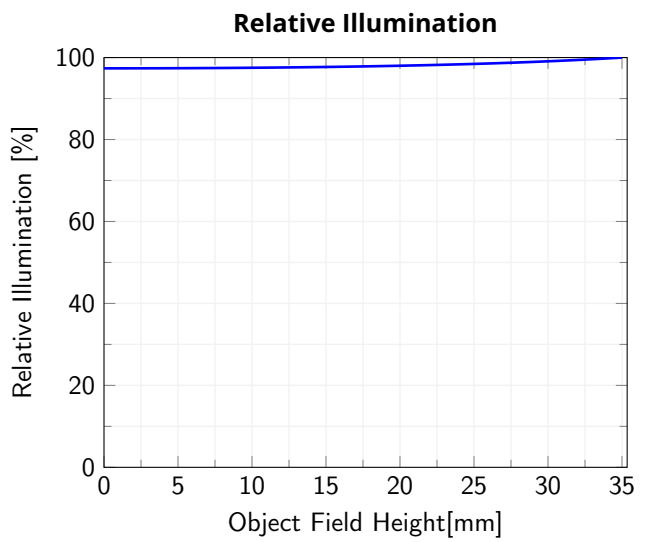
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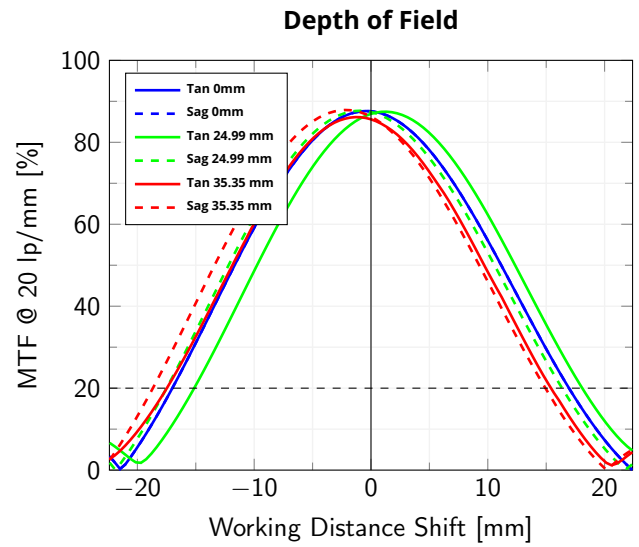
Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm



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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