TCBENCH080 | DATASHEET

OPTO ENGINEERING

Telecentric optical bench, magnification 0.110x

KEY ADVANTAGES

Pre-assembled set-up
Just attach yor camera, and the bench is ready for measurement

Best optical performances
The bench is pre-set to provide unpaired measurement accuracy

Tested system
The bench is quality tested as a whole system

Detailed test report with measured optical parameters.

TCBENCH series are complete optical systems designed for hassle-free development of demanding measurement applications.

SPECIFICATIONS

Optical specifications

Magnification		0.110
Image circle	(mm)	11.0
Max sensor size		2/3"
Working distance[1]	(mm)	226.8
wF/N[2]		8
Telecentricity typical (max)[3]	(°)	< 0.04 (0.08)
Distortion typical (max)[4]	(%)	< 0.02 (0.10)
Field depth[5]	(mm)	34.2
Resolution (max)[6]	(µm)	46

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)[7]	(V)	2.8 (-)
Max LED forward current[8]	(mA)	350
Max LED pulse Current[9]	(mA)	2000

Mechanical specifications

Mount		C
Phase adjustment		No
Length[10]	(mm)	936.0
Width	(mm)	158.0
Height	(mm)	168.0
Mass	(g)	11150

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] 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.
[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.
[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 camera flange of the objective lens to the electronic end of the illuminator. Cable, connector and mount thread excluded.

FIELD OF VIEW

Sensors	(mm x mm)
1/3" (4.8 x 3.6 mm x mm)	43.64 x 32.73
1/2.5" (5.70 x 4.28 mm x mm)	51.82 x 38.91
1/2" (6.4 x 4.8 mm x mm)	58.18 x 43.64
1/1.8" (7.13 x 5.33 mm x mm)	64.82 x 48.45
2/3" (8.50 x 7.09 mm x mm)	77.27 x 64.45

COMPATIBLE PRODUCTS

Full list of compatible products available *here*.

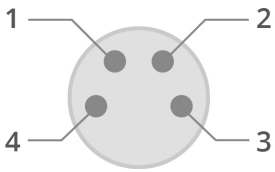
A wide selection of innovative machine vision components.

INCLUDED IN TCBENCH

Each kit contains:

- → 1 bi-telecentric lens for 2/3" detectors
- → 1 LTCLHP telecentric illuminator (green)
- → 2 CMHO mechanical clamps
- → 1 CMPT base-plate
- → 1 PTTC chrome-on-glass calibration pattern
- → 1 CMPH pattern holder

CONNECTOR PINOUT

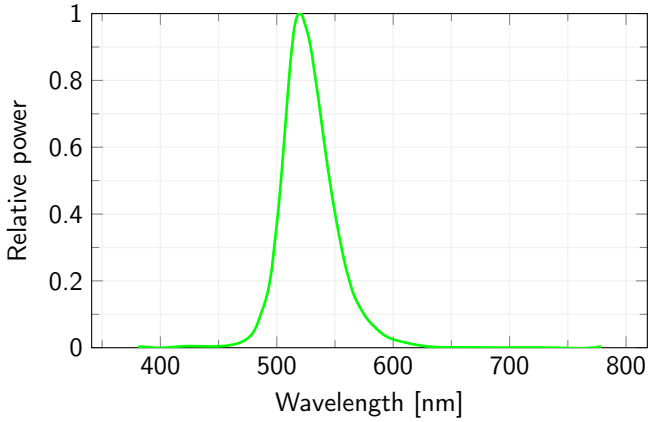


Device side

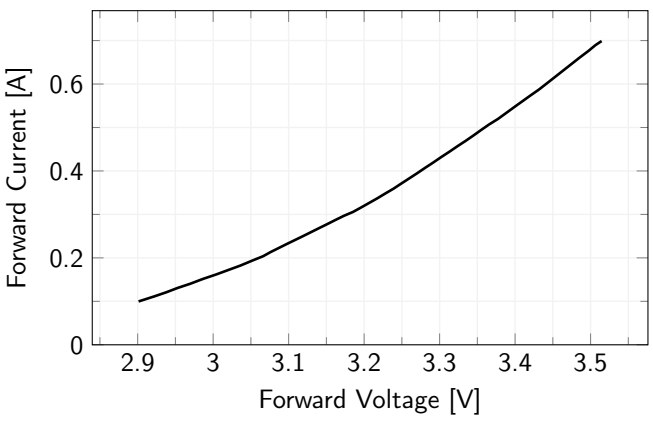
Pin	Function	Cable color
1	Earth	Yellow/green
2	Ground	Black
3	LED anode	Blue
4	Power supply (+12/24 V)	Brown

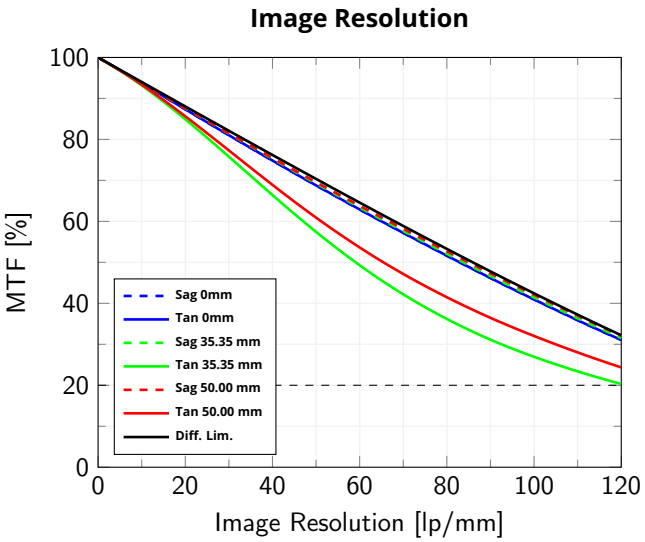
ADDITIONAL INFORMATION

LED color spectrum

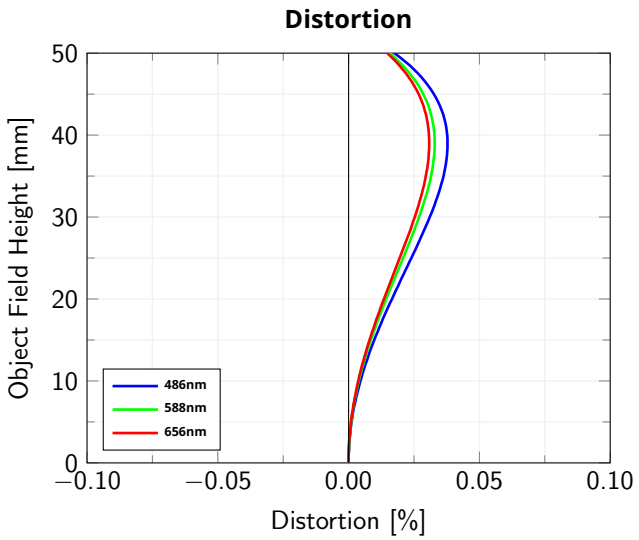


Forward Current Characteristics

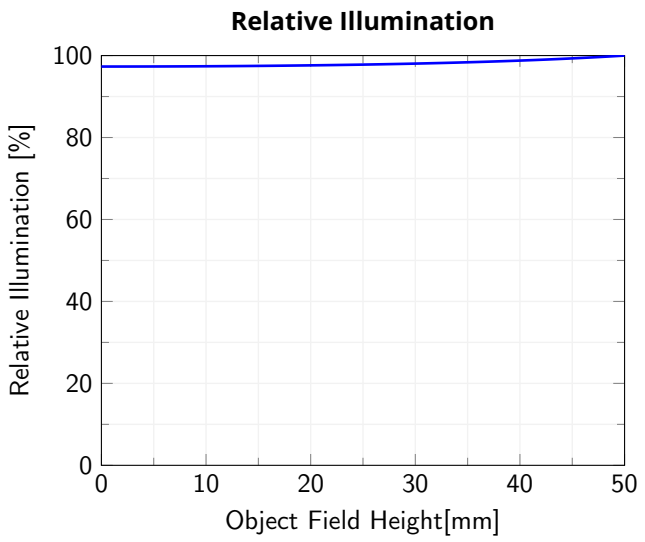




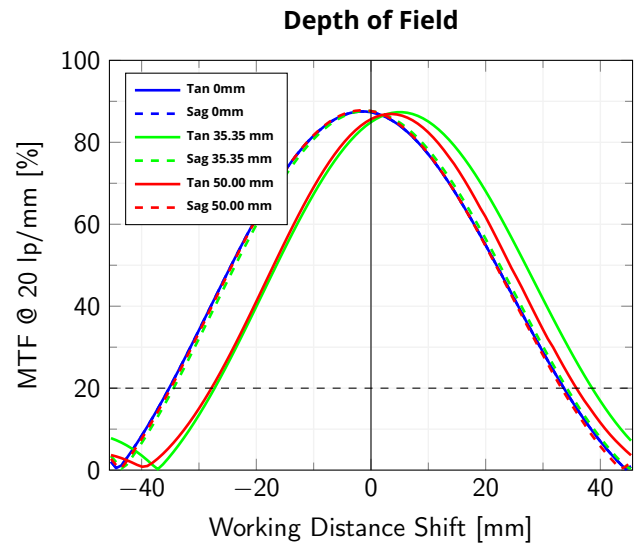
Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm



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