

TC13024

Bi-telecentric lens for 1/3" detectors, magnification 0.192 ×, C-mount

SPECIFICATIONS

Magnification	(×)	0.192
Image circle Ø	(mm)	6.0
Object field of view(8)		
with 1/3" detector (4.8 x 3.6 mm)	(mm × mm)	25.00 x 18.75
with 1/2.5" detector (5.70 x 4.28 mm)	(mm × mm)	Ø = 22.3
with 1/2" detector (6.4 x 4.8 mm)	(mm × mm)	Ø = 25.0
with 1/1.8" detector (7.13 x 5.37 mm) (7)	(mm × mm)	Ø = 27.8
with 2/3" - 5 MP detector (8.45 x 7.07 mm)	(mm × mm)	Ø = 31.3
Optical specifications		
Working distance (1)	(mm)	67.2
wF/# (2)		8
Telecentricity typical (max) (3)	(deg)	< 0.08 (0.10)
Distortion typical (max) (4)	(%)	< 0.04 (0.08)
Field depth (5)	(mm)	19
CTF @ 70 lp/mm	(%)	> 45
Dimensions		
Mount		C
Phase Adjustment (9)		
Length (6)	(mm)	105.6
Diameter	(mm)	44
Mass	(g)	-



NOTES

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-number (higher wF/#): the real F-number of a lens when used as a macro. Lenses with smaller apertures can be supplied on request.
3. Maximum slope of chief rays inside the lens: when converted to millirad, it gives the maximum measurement error for any millimeter of object displacement. 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 5.5 µm.
6. Measured from the front end of the mechanics to the camera flange.
7. With 1/1.8" (8.9 mm diagonal) detectors, the FOV of TC12yyy lenses may show some vignetting at the image corners, as these lenses are optimized for 1/2" detectors (8 mm diagonal).
8. For the fields with the indication "Ø =", the image of a circular object of such diameter is fully inscribed into the detector.
9. Indicates the availability of an integrated camera phase adjustment feature. If missing, it can be supplied upon request (except for TC23004, TC23007, TC23009, TC23012).

COMPATIBLE PRODUCTS

Despite the efforts made to generate an error-free compatibility list, we always recommend to consult the Opto Engineering® technical support department before purchasing a compatible product. Opto Engineering® shall not be liable for any damage or malfunctioning caused by the incorrect selection of a compatible product.



LTCLHP series

High-performance telecentric illuminators

LTCLHP024-G	Telecentric HP illuminator, beam diameter 30 mm, green
LTCLHP024-B	Telecentric HP illuminator, beam diameter 30 mm, blue
LTCLHP024-W	Telecentric HP illuminator, beam diameter 30 mm, white



LTLAIC series (discontinued models)

Continuous LED low angle diffused ringlights

LT2RZF070-60-2-W-24V	LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, white, 24V
LT2RZF070-60-2-R-24V	LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, red, 24V
LT2RZF070-60-2-G-24V	LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, green, 24V
LT2RZF070-60-2-B-24V	LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, blue, 24V



LTLAIC series

Continuous LED low angle diffused ringlights

LT3RZF080-60-1-W-24V	LED ringlight, 1 LED row, 81 mm outer diameter, 60°, white, 24V
LT3RZF080-60-1-R-24V	LED ringlight, 1 LED row, 81 mm outer diameter, 60°, red, 24V
LT3RZF080-60-1-G-24V	LED ringlight, 1 LED row, 81 mm outer diameter, 60°, green, 24V
LT3RZF080-60-1-B-24V	LED ringlight, 1 LED row, 81 mm outer diameter, 60°, blue, 24V



LTLADC series

Continuous LED low angle direct ringlights

LTZZO130-75-3-W-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, white, 24V
LTZZO130-75-3-R-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, red, 24V
LTZZO130-75-3-G-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, green, 24V
LTZZO130-75-3-B-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, blue, 24V



LTRNST series

LED ring illuminators - straight type

LTRN024RD	Ring LED illuminator, inner diameter 44 mm, straight type, red 630 nm
LTRN024GR	Ring LED illuminator, inner diameter 44 mm, straight type, green 525 nm
LTRN024BL	Ring LED illuminator, inner diameter 44 mm, straight type, blue 470 nm
LTRN024NW	Ring LED illuminator, inner diameter 56 mm, straight type, white



LTRNDC series

Continuous LED direct ringlights

LTZGK070-45-3-W-24V	LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, white, 24V
LTZGK070-45-3-R-24V	LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, red, 24V
LTZGK070-45-3-G-24V	LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, green, 24V
LTZGK070-45-3-B-24V	LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, blue, 24V



LTBC series

Continuous LED backlight

LTBC054054-W	Continuous LED backlight, 54x54 illumination area, white
LTBC054054-G	Continuous LED backlight, 54x54 illumination area, green



LTBFC series

Continuous flat side-emitting LED backlights

LTPVR070-00-1-W-24V	Flat side-emitting LED backlight, 70X70 mm illumination area, white, 24V
LTPVR070-00-1-R-24V	Flat side-emitting LED backlight, 70X70 mm illumination area, red, 24V
LTPVR070-00-1-G-24V	Flat side-emitting LED backlight, 70X70 mm illumination area, green, 24V
LTPVR070-00-1-B-24V	Flat side-emitting LED backlight, 70X70 mm illumination area, blue, 24V
LTPVRG070-00-1-W-24V	Flat side-emitting LED backlight, thin borders, 70X70 mm illumination area, white, 24V
LTPVRG070-00-1-R-24V	Flat side-emitting LED backlight, thin borders, 70X70 mm illumination area, red, 24V

LTPVRG070-00-1-G-24V Flat side-emitting LED backlight, thin borders, 70X70 mm illumination area, green, 24V

LTPVRG070-00-1-B-24V Flat side-emitting LED backlight, thin borders, 70X70 mm illumination area, blue, 24V



LTBRDC series

Continuous LED bar lights

LTZPFL040-00-6-W-24V LED bar light, 6 LED rows, 40X26.3 illumination area, white, 24V

LTZPFL040-00-6-R-24V LED bar light, 6 LED rows, 40X26.3 illumination area, red, 24V

LTZPFL040-00-6-G-24V LED bar light, 6 LED rows, 40X26.3 illumination area, green, 24V

LTZPFL040-00-6-B-24V LED bar light, 6 LED rows, 40X26.3 illumination area, blue, 24V



CMHO series

Clamping mechanics

CMHO024 Clamping mechanics for TCxx024 lenses and LTCLHP024-X illuminators



PTTC, PTC series

Accurate calibration patterns for machine vision systems

PT016-024 Calibration pattern

PT016-024-C Calibration pattern for telecentric lenses with a certificate of conformity



LTPR series

LED patterns projectors

LTPRHP3W-W LED pattern projector 3W, HP, white

LTPRHP3W-R LED pattern projector 3W, HP, red

LTPRHP3W-G LED pattern projector 3W, HP, green

LTPRHP3W-B LED pattern projector 3W, HP, blue

LTPRUP-W 90W strobed LED pattern projector white

LTPRUP-R 90W strobed LED pattern projector red

LTPRUP-G 90W strobed LED pattern projector green

LTPRUP-B 90W strobed LED pattern projector blue



COE-G series

GeniCam® PoE cameras

COE-003-M-POE-010-IR-C Area Scan camera Python 300, CMOS, Global shutter, 640 x 480, 0.3 MP, 4.8 pix, 1/4", Gray, GigE, POE, 173 fps, C - mount, Glass filter

COE-004-M-POE-010-IR-C Area Scan camera Python 300, CMOS, Global shutter, 640 x 480, 0.3 MP, 4.8 pix, 1/4", Gray, 300 fps, GigE, POE, C - mount, Glass filter

COE-003-C-POE-010-IR-C Area Scan camera Python 300, CMOS, Global shutter, 640 x 480, 0.3 MP, 4.8 pix, 1/4", Color, 173 fps, GigE, POE, C - mount, Infrared cut filter

COE-004-C-POE-010-IR-C Area Scan camera Python 300, CMOS, Global shutter, 640 x 480, 0.3 MP, 4.8 pix, 1/4", Color, 300 fps, GigE, POE, C - mount, Infrared cut filter

COE-003-M-POE-020-IR-C Area Scan camera RJ33B4AD0DT, CCD, Global shutter, 640 x 480, 0.3 MP, 7.4 pix, 1/3", Gray, 200 fps, GigE, POE, C - mount, Glass filter

COE-003-C-POE-020-IR-C Area Scan camera RJ33B4AD0DT, CCD, Global shutter, 640 x 480, 0.3 MP, 7.4 pix, 1/3", Color, 200 fps, GigE, POE, C - mount, Infrared cut filter

COE-012-M-POE-020-IR-C Area Scan camera RJ33J4CA3DE, CCD, Global shutter, 1280 x 960, 1.2 MP, 3.75 pix, 1/3", Gray, 30 fps, GigE, POE, C - mount, Glass filter

COE-012-C-POE-020-IR-C Area Scan camera RJ33J4CA3DE, CCD, Global shutter, 1280 x 960, 1.2 MP, 3.75 pix, 1/3", Color, 30 fps, GigE, POE, C - mount, Infrared cut filter



COE-U series

USB 3.0 GeniCam® cameras

COE-003-M-USB-010-IR-C Area Scan camera PYTHON 300, CMOS, Global shutter, 640 x 480, 0.3 MP, 4.8 pix, 1/4", Gray, 814 fps, USB 3.0, C - mount, Glass filter

COE-003-C-USB-010-IR-C Area Scan camera PYTHON 300, CMOS, Global shutter, 640 x 480, 0.3 MP, 4.8 pix, 1/4", Color, 814 fps, USB 3.0, C - mount, Infrared cut filter



GigE & Dual GigE Vision cameras

[RT-mvBC-X100w](#) Camera with interface GigE (1GB/s), sensor size 1/3", mpixel 0.36, resolution 752 x 480, sensor name MT9V034, sensor type CMOS



Accessories

Accessories and add-ons to make the most of Opto Engineering lenses.

[RT-mvBC-X104iC](#) CMOS camera GIGE, 2064 x 1544 color, 1/1.8", 37 Hz, IR cut, C-mount, I/O

[RT-mvBC-X105bC](#) CMOS camera GIGE, 2464 x 2056 Colour sensor, 2/3", 23.5 Hz, IR cut, C-mount, I/O
