

# TC13080

Bi-telecentric lens for 1/3" detectors, magnification 0.059 x, C-mount

## SPECIFICATIONS

|  |           |                       |
|--|-----------|-----------------------|
| Magnification                              | (x)       | 0.059                 |
| Image circle $\varnothing$                 | (mm)      | 6.0                   |
| <b>Object field of view(8)</b>             |           |                       |
| with 1/3" detector (4.8 x 3.6 mm)          | (mm x mm) | 81.36 x 61.02         |
| with 1/2.5" detector (5.70 x 4.28 mm)      | (mm x mm) | $\varnothing = 72.5$  |
| with 1/2" detector (6.4 x 4.8 mm)          | (mm x mm) | $\varnothing = 81.4$  |
| with 1/1.8" detector (7.13 x 5.37 mm) (7)  | (mm x mm) | $\varnothing = 90.3$  |
| with 2/3" - 5 MP detector (8.45 x 7.07 mm) | (mm x mm) | $\varnothing = 101.7$ |
| <b>Optical specifications</b>              |           |                       |
| Working distance (1)                       | (mm)      | 225.9                 |
| wF/# (2)                                   |           | 8                     |
| Telecentricity typical (max) (3)           | (deg)     | < 0.05 (0.08)         |
| Distortion typical (max) (4)               | (%)       | < 0.03 (0.08)         |
| Field depth (5)                            | (mm)      | 192                   |
| CTF @ 70 lp/mm                             | (%)       | > 40                  |
| <b>Dimensions</b>                          |           |                       |
| Mount                                      |           | C                     |
| <b>Phase Adjustment (9)</b>                |           |                       |
| Length (6)                                 | (mm)      | 259.2                 |
| Diameter                                   | (mm)      | 116                   |
| Mass                                       | (g)       | 1216                  |



## 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  $\mu\text{m}$ .
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 " $\varnothing =$ ", 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

|             |   |
|-------------|---|
| LTCLHP080-G | Telecentric HP illuminator, beam diameter 100 mm, green |
| LTCLHP080-B | Telecentric HP illuminator, beam diameter 100 mm, blue  |
| LTCLHP080-W | Telecentric HP illuminator, beam diameter 100 mm, white |



LTCLHP CORE series

Ultra compact telecentric illuminators

|             |   |
|-------------|---|
| LTCLCR080-R | Telecentric CORE illuminator, beam dimensions $\varnothing = 98$ ; $x = 90$ , red   |
| LTCLCR080-G | Telecentric CORE illuminator, beam dimensions $\varnothing = 98$ ; $x = 90$ , green |
| LTCLCR080-W | Telecentric CORE illuminator, beam dimensions $\varnothing = 98$ ; $x = 90$ , white |



LTLADC series

Continuous LED low angle direct ringlights

|                     |   |
|---------------------|---|
| LTZZO170-75-3-W-24V | LED low angle ringlight, 3 LED rows, outer diameter 175 mm, 75°, white, 24V |
| LTZZO170-75-3-R-24V | LED low angle ringlight, 3 LED rows, outer diameter 175 mm, 75°, red, 24V   |
| LTZZO170-75-3-G-24V | LED low angle ringlight, 3 LED rows, outer diameter 175 mm, 75°, green, 24V |
| LTZZO170-75-3-B-24V | LED low angle ringlight, 3 LED rows, outer diameter 175 mm, 75°, blue, 24V  |



LTRNST series

LED ring illuminators - straight type

|           |  |
|-----------|--|
| LTRN080RD | Ring LED illuminator, inner diameter 116 mm, straight type, red 630 nm   |
| LTRN080GR | Ring LED illuminator, inner diameter 116 mm, straight type, green 525 nm |
| LTRN080BL | Ring LED illuminator, inner diameter 116 mm, straight type, blue 470 nm  |
| LTRN080NW | Ring LED illuminator, inner diameter 116 mm, straight type, white        |



LTBC series

Continuous LED backlight

|              |  |
|--------------|--|
| LTBC114114-W | Continuous LED backlight, 114x114 illumination area, white |
| LTBC114114-G | Continuous LED backlight, 114x114 illumination area, green |



LTBRDC series

Continuous LED bar lights

|                      |   |
|----------------------|---|
| LTZPFL120-00-6-W-24V | LED bar light, 6 LED rows, 120X26.3 illumination area, white, 24V |
| LTZPFL120-00-6-R-24V | LED bar light, 6 LED rows, 120X26.3 illumination area, red, 24V   |
| LTZPFL120-00-6-G-24V | LED bar light, 6 LED rows, 120X26.3 illumination area, green, 24V |
| LTZPFL120-00-6-B-24V | LED bar light, 6 LED rows, 120X26.3 illumination area, blue, 24V  |



LTCXC series

Continuous LED coaxial lights

|                      |   |
|----------------------|---|
| LT2QOG100-00-X-W-24V | LED coaxial light, 100x100 mm light emitting area, white, 24V |
| LT2QOG100-00-X-R-24V | LED coaxial light, 100x100 mm light emitting area, red, 24V   |
| LT2QOG100-00-X-G-24V | LED coaxial light, 100x100 mm light emitting area, green, 24V |
| LT2QOG100-00-X-B-24V | LED coaxial light, 100x100 mm light emitting area, blue, 24V  |



CMBS series

45° beam splitters

|         |  |
|---------|--|
| CMBS080 | 45° beam splitter with mount for 116 mm clamping diameter optics |
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CMMR series








45° first surface mirrors

|         |  |
|---------|--|
| CMMR080 | 45° first surface mirror for 116 mm clamping diameter optics |
|---------|--|



WI series

## Protective windows

|  |   |
|--|---|
| WI080  | Protective window for 116 mm clamping diameter optics   |
|    | CMHO series<br>Clamping mechanics   |
| CMHO080  | Clamping mechanics for TCxx072, TCxx080, LTCLHP080-X illuminators and PCxx030XS   |
|    | PTTC, PTCP series<br>Accurate calibration patterns for machine vision systems   |
| PT064-096  | Calibration pattern   |
| PT064-096-C  | Calibration pattern for telecentric lenses with a certificate of conformity   |
|    | CMT series<br>Precision alignment mechanics   |
| CMTH080  | Precision alignment mechanics for telecentric optics 080  |
|    | LTPR series<br>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<br>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<br>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    |
|  | mvBlueCOUGAR series<br>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

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## Accessories

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

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[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

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