



# TCCR3M056-C

Telecentric CORE lens for 1.1" detectors, magnification 0.259 x, mount C, WD=157.8

## SPECIFICATIONS

|                           |                       |                           |
|---------------------------|-----------------------|---------------------------|
| Part number               |                       | TCCR3MHR056-C             |
| Magnification             | (x)                   | 0.259                     |
| Image shape dimension (8) | ( $\emptyset$ , x mm) | $\emptyset=17.6$ , x=15.2 |
| Phase adjustment (7)      |                       | Yes                       |

### Object field of view 7

|   |           |                       |
|---|-----------|-----------------------|
| with IMX174/IMX249 13.3 mm diag w x h 11.35 x 7.13    | (mm x mm) | 43.6 x 27.4           |
| with KAI-2020 14.8 mm diagonal w x h 11.84 x 8.88     | (mm x mm) | 43.6 x 27.4           |
| with IMX253/IMX304 17.6 mm diag w x h 14.16 x 10.37   | (mm x mm) | 54.8 x 40.2           |
| with KAI-4022/4021 21.5 mm diagonal w x h 15.2 x 15.2 | (mm x mm) | $\emptyset=68$ , x=59 |
| with KAI-08050 22.6 mm diagonal w x h 18.1 x 13.6     | (mm x mm) | $\emptyset=68$ , x=53 |

### Optical specifications

|                                  |       |               |
|----------------------------------|-------|---------------|
| Working distance (1)             | (mm)  | 157.8         |
| wF/# (2)                         |       | 8             |
| Telecentricity typical (max) (3) | (deg) | < 0.08 (0.10) |
| Distortion typical (max) (4)     | (%)   | < 0.08 (0.10) |
| Field depth (5)                  | (mm)  | 9.8           |
| CTF@ 50 lp/mm                    | (%)   | > 55          |

### Mechanical specifications

|           |      |      |
|-----------|------|------|
| Mount (6) |      | C    |
| A         | (mm) | 94   |
| B         | (mm) | 110  |
| C         | (mm) | 162  |
| Mass      | (g)  | 1584 |

### Compatibility

{compatibility}

Last update: 2019-05-10

## NOTES

- 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.
- Working F-number (wF/#): the real F-number of a lens when used as a macro. Lenses with smaller apertures can be supplied on request.
- Maximum slope of chief rays inside the lens: when converted to milliradians, it gives the maximum measurement error for any millimeter of object displacement. Typical (average production) values and maximum (guaranteed) values are listed.
- Percent deviation of the real image compared to an ideal, undistorted image: typical (average production) values and maximum (guaranteed) values are listed.
- At the borders of the field depth the image can be still used for measurement but, to get a perfectly sharp image, only half of the nominal field depth should be considered. Pixel size used for calculation is 5.5  $\mu$ m.
- In case the of vignetting, FOV dimensions are indicated with " $\emptyset$  = , x = ", where " $\emptyset$  =" stands for diameter and "x=" indicates the nominal FOV height and length (see [Tech Info](#) for related drawing).
- Indicates the availability of an integrated camera phase adjustment feature.
- Indicates the dimensions and shape of image, where " $\emptyset$  =" stands for diameter and "x=" indicates the nominal image height and length (see [Tech Info](#) for related drawing)

## 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.

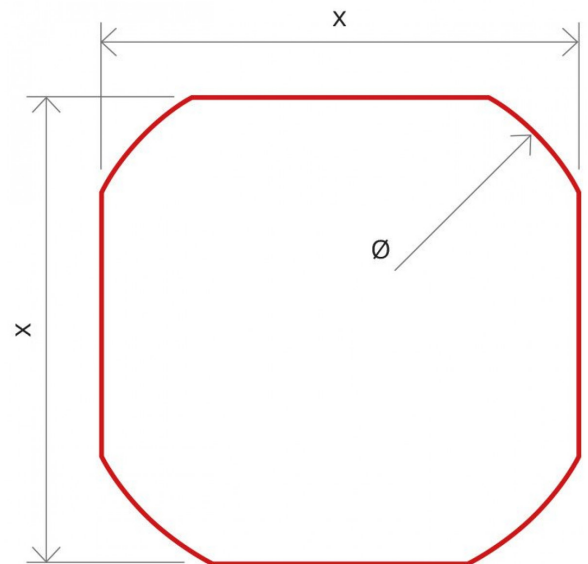
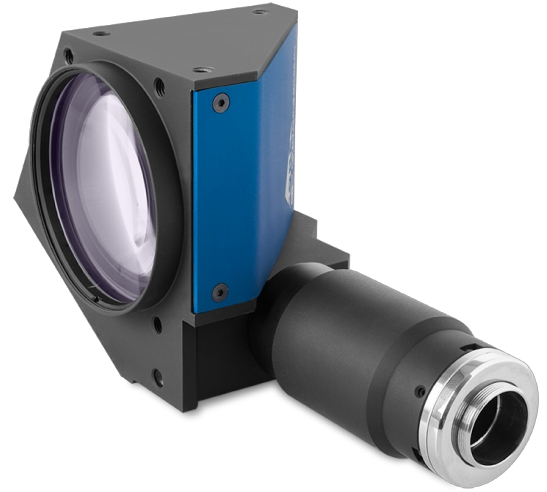


Image shape dimensions ( $\emptyset$ , x)

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.



### LTCLHP CORE series

Ultra compact telecentric illuminators

|             |   |
|-------------|---|
| LTCLCR056-R | Telecentric CORE illuminator, beam dimensions Ø = 74; x = 66, red   |
| LTCLCR056-G | Telecentric CORE illuminator, beam dimensions Ø = 74; x = 66, green |
| LTCLCR056-W | Telecentric CORE illuminator, beam dimensions Ø = 74; x = 66, white |
| LTCLCR064-R | Telecentric CORE illuminator, beam dimensions Ø = 86; x = 67, red   |
| LTCLCR064-G | Telecentric CORE illuminator, beam dimensions Ø = 86; x = 67, green |
| LTCLCR064-W | Telecentric CORE illuminator, beam dimensions Ø = 86; x = 67, white |



### CMHOCR series

Clamping mechanics CORE series

|           |  |
|-----------|--|
| CMHOCR056 | Clamping mechanics for CORE telecentric lenses and illuminators TCRRxx56 and LTCLCR056-x |
|-----------|--|



### COE-G series

GenICam® PoE cameras

|                        |  |
|------------------------|--|
| COE-053-M-POE-070-IR-C | Area Scan camera PYTHON 5000, CMOS, Global shutter, 2592 x 2048, 5.3 MP, 4.8 pix, 1", Gray, 22 fps, GigE, POE, C - mount, Glass filter         |
| COE-053-C-POE-070-IR-C | Area Scan camera PYTHON 5000, CMOS, Global shutter, 2592 x 2048, 5.3 MP, 4.8 pix, 1", Color, 22 fps, GigE, POE, C - mount, Infrared cut filter |
| COE-089-M-POE-070-IR-C | Area Scan camera IMX267, CMOS, Global shutter, 4096 x 2160, 8.8 MP, 3.45 pix, 1", Gray, 13 fps, GigE, POE, C - mount, Glass filter             |
| COE-089-C-POE-070-IR-C | Area Scan camera IMX267, CMOS, Global shutter, 4096 x 2160, 8.8 MP, 3.45 pix, 1", Color, 13 fps, GigE, POE, C - mount, Infrared cut filter     |
| COE-123-M-POE-080-IR-C | Area Scan camera IMX304, CMOS, Global shutter, 4096 x 3000, 12.3 MP, 3.45 pix, 1.1", Gray, 9.4 fps, GigE, POE, C - mount, Glass filter         |
| COE-123-C-POE-080-IR-C | Area Scan camera IMX304, CMOS, Global shutter, 4096 x 3000, 12.3 MP, 3.45 pix, 1.1", Color, 9.4 fps, GigE, POE, C - mount, Infrared cut filter |



### COE-U series

USB 3.0 GenICam® cameras

|                        |   |
|------------------------|---|
| COE-053-M-USB-070-IR-C | Area Scan camera PYTHON 5000, CMOS, Global shutter, 2592 x 1944, 5 MP, 4.8 pix, 1", Gray, 60 fps, USB 3.0, C - mount, Glass filter          |
| COE-053-C-USB-070-IR-C | Area Scan camera PYTHON 5000, CMOS, Global shutter, 2592 x 1944, 5 MP, 4.8 pix, 1", Color, 30 fps, USB 3.0, C - mount, Infrared cut filter  |
| COE-089-M-USB-070-IR-C | Area Scan camera IMX267, CMOS, Global shutter, 4096 x 2160, 8.8 MP, 3.45 pix, 1", Gray, 32 fps, USB 3.0, C - mount, Glass filter            |
| COE-089-C-USB-070-IR-C | Area Scan camera IMX267, CMOS, Global shutter, 4096 x 2160, 8.8 MP, 3.45 pix, 1", Color, 32 fps, USB 3.0, C - mount, Infrared cut filter    |
| COE-123-M-USB-080-IR-C | Area Scan camera IMX304, CMOS, Global shutter, 4096 x 3000, 12.3 MP, 3.45 pix, 1.1", Gray, 23 fps, USB 3.0, C - mount, Glass filter         |
| COE-123-C-USB-080-IR-C | Area Scan camera IMX304, CMOS, Global shutter, 4096 x 3000, 12.3 MP, 3.45 pix, 1.1", Color, 23 fps, USB 3.0, C - mount, Infrared cut filter |



### mvBlueFOX3-2 series

USB3 vision camera with Sony Pregius CMOS sensors

|                |   |
|----------------|---|
| RT-mvBF3-2089a | USB3 Vision camera with Sony Pregius CMOS sensor IMX267 |
| RT-mvBF3-2089  | USB3 Vision camera with Sony Pregius CMOS sensor IMX255 |
| RT-mvBF3-2124a | USB3 Vision camera with Sony Pregius CMOS sensor IMX304 |
| RT-mvBF3-2124  | USB3 Vision camera with Sony Pregius CMOS sensor IMX253 |



### mvBlueCOUGAR series

GigE & Dual GigE Vision cameras

|                |  |
|----------------|--|
| RT-mvBC-X109b  | Camera with interface GigE (1GB/s), sensor size 1", mpixel 8.95, resolution 4112 x 2176, sensor name IMX267, sensor type CMOS      |
| RT-mvBC-XD109b | Camera with interface Dual GigE (2GB/s), sensor size 1", mpixel 8.95, resolution 4112 X 2176, sensor name IMX267, sensor type CMOS |

|                                 |   |
|---------------------------------|---|
| <a href="#">RT-mvBC-X1012b</a>  | Camera with interface GigE (1GB/s), sensor size 1.1", mpixel 12.37, resolution 4112 x 3008, sensor name IMX304, sensor type CMOS      |
| <a href="#">RT-mvBC-XD107</a>   | Camera with interface Dual GigE (2GB/s), sensor size 1.1", mpixel 7.1, resolution 3216 x 2208, sensor name IMX420, sensor type CMOS   |
| <a href="#">RT-mvBC-XD1012b</a> | Camera with interface Dual GigE (2GB/s), sensor size 1.1", mpixel 12.37, resolution 4112 x 3008, sensor name IMX304, sensor type CMOS |



#### TCLIB Suite

Software library & stand-alone tools for the optimization of telecentric setups

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[TCLIB-01](#) Software library & stand-alone tools for the optimization of telecentric setups



#### COE HR AS-X series

20MP, 26MP and 29MP area scan cameras for high-speed applications

|  |   |
|--|---|
| <a href="#">COE-200-M-POE-070-IR-C</a> | HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 × 3648, 20.4 MP, 2.4 pix, 1", Gray, GigE, 6 fps, POE, C - mount, Glass filter         |
| <a href="#">COE-200-C-POE-070-IR-C</a> | HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 × 3648, 20.4 MP, 2.4 pix, 1", Color, GigE, 6 fps, POE, C - mount, Infrared cut filter |
| <a href="#">COE-200-M-USB-070-IR-C</a> | HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 × 3648, 20.4 MP, 2.4 pix, 1", Gray, 14 fps, C - mount, Glass filter                   |
| <a href="#">COE-200-C-USB-070-IR-C</a> | HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 × 3648, 20.4 MP, 2.4 pix, 1", Color, 14 fps, C - mount, Infrared cut filter           |