



TC1MHR056-C

High resolution telecentric lens for 1/1.2" detectors, magnification 0.190x, C-mount

SPECIFICATIONS

Magnification	(x)	0.190
Image circle Ø	(mm)	13.3

Object field of view ⁸	(mm x mm or Ø)
with IMX174/IMX249 13.3 mm diag w x h 11.35 x 7.13	59.71 x 37.51
with IMX255/IMX267 16.1 mm diag w x h 14.19 x 7.51	Ø = 39.53
with IMX253/IMX304 17.6 mm diag w x h 14.16 x 10.37	Ø = 54.58
with KAI-4022/4021 21.5 mm diagonal w x h 15.2 x 15.2	Ø = 70.00
with KAI-08050 22.6 mm diagonal w x h 18.1 x 13.6 ⁽⁷⁾	Ø = 70.00

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)	16.6
CTF@ 50 lp/mm	(%)	> 55

Mechanical specifications

Mount		C
Phase adjustment ⁽⁹⁾		Yes
Length ⁽⁶⁾	(mm)	238.7
Diameter	(mm)	80
Mass	(g)	940

Last update: 2018-06-12

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 (higher wF/#) 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 µm.
- Measured from the front end of the mechanics to the camera flange.
- With KAI-08050 (22.6 mm diagonal) detectors, the FOV of TC4MHRyyy-x lenses may show some vignetting at the image corners.
- For the fields with the indication "Ø =", the image of a circular object of such diameter is fully inscribed into the detector.
- Indicates the availability of an integrated camera phase adjustment feature

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



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.

LTCLHP056-G	Telecentric HP illuminator, beam diameter 70 mm, green
LTCLHP056-B	Telecentric HP illuminator, beam diameter 70 mm, blue
LTCLHP056-W	Telecentric HP illuminator, beam diameter 70 mm, white



LTCLHP CORE series

Ultra compact telecentric illuminators

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



LTLA series

High-power strobed LED low angle diffused ringlights

LTLAC1-W	Diffusive strobed low angle ring light illuminator - large size medium power white
LTLAC2-R	Diffusive strobed low angle ring light illuminator - large size high power red
LTLAC2-G	Diffusive strobed low angle ring light illuminator - large size high power green
LTLAC2-W	Diffusive strobed low angle ring light illuminator - large size high power white



LTRNST series

LED ring illuminators - straight type

LTRN056RD	Ring LED illuminator, inner diameter 80 mm, straight type, red 630 nm
LTRN056GR	Ring LED illuminator, inner diameter 80 mm, straight type, green 525 nm
LTRN056BL	Ring LED illuminator, inner diameter 80 mm, straight type, blue 470 nm
LTRN056NW	Ring LED illuminator, inner diameter 80 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



CMBS series

45° beam splitters

CMBS056	45° beam splitter with mount for 80 mm clamping diameter optics
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CMMR series

45° first surface mirrors

CMMR056	45° first surface mirror for 80 mm clamping diameter optics
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WI series

Protective windows

WI056	Protective window for 80 mm clamping diameter optics
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CMHO series

Clamping mechanics

CMHO056	Clamping mechanics for TCx056 lenses and LTCLHP056-X illuminators
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COE-G series

GeniCam® PoE cameras

COE-023-M-POE-050-IR-C	Area Scan camera PYTHON 2000, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 4.8 pix, 2/3", Gray, 51 fps, GigE, POE, C - mount, Glass filter
COE-023-C-POE-050-IR-C	Area Scan camera PYTHON 2000, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 4.8 pix, 2/3", Color, 51 fps, GigE, POE, C - mount, Infrared cut filter
COE-050-M-POE-050-IR-C	Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Gray, 23.5 fps, GigE, POE, C - mount, Glass filter
COE-050-C-POE-050-IR-C	Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Color, 23.5 fps, GigE, POE, C - mount, Infrared cut filter
COE-023-M-POE-060-IR-C	Area Scan camera IMX249, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 5.86 pix, 1/1.2", Gray, 41 fps, GigE, POE, C - mount, Glass filter
COE-023-C-POE-060-IR-C	Area Scan camera IMX249, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 5.86 pix, 1/1.2", Color, 41 fps, GigE, POE, C - mount, Infrared cut filter



COE-U series

USB 3.0 GenICam® cameras

COE-050-M-USB-050-IR-C	Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Gray, 35 fps, USB 3.0, C - mount, Glass filter
COE-050-C-USB-050-IR-C	Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Color, 35 fps, USB 3.0, C - mount, Infrared cut filter
COE-023-M-USB-060-IR-C	Area Scan camera IMX249, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 5.86 pix, 1/1.2", Gray, 41 fps, USB 3.0, C - mount, Glass filter
COE-023-C-USB-060-IR-C	Area Scan camera IMX249, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 5.86 pix, 1/1.2", Color, 40 fps, USB 3.0, C - mount, Infrared cut filter



mvBlueFOX3-2 series

USB3 vision camera with Sony Pregius CMOS sensors

RT-mvBF3-2051a	USB3 Vision camera with Sony Pregius CMOS sensor IMX264
RT-mvBF3-2051	USB3 Vision camera with Sony Pregius CMOS sensor IMX250
RT-mvBF3-2024a	USB3 Vision camera with Sony Pregius CMOS sensor IMX249
RT-mvBF3-2024	USB3 Vision camera with Sony Pregius CMOS sensor IMX174



mvBlueCOUGAR series

GigE & Dual GigE Vision cameras

RT-mvBC-X105b	Camera with interface GigE (1GB/s), sensor size 2/3", mpixel 5.07, resolution 2464 x 2056, sensor name IMX264, sensor type CMOS
RT-mvBC-XD105a	Camera with interface Dual GigE (2GB/s), sensor size 2/3", mpixel 5.01, resolution 2448 x 2048, sensor name IMX250, sensor type CMOS
RT-mvBC-X104f	Camera with interface GigE (1GB/s), sensor size 1/1.2", mpixel 2.35, resolution 1936 x 1216, sensor name IMX249, sensor type CMOS
RT-mvBC-XD104d	Camera with interface Dual GigE (2GB/s), sensor size 1/1.2", mpixel 2.35, resolution 1936 x 1214, sensor name IMX174, sensor type CMOS