



TCCP3MHR192-C

Ultra compact bi-telecentric lens for matrix detectors up to 1/1", magnification 0.064x

SPECIFICATIONS

Magnification	(×)	0.064
Image rectangle (1)	(mm)	14.90 x 10.90

Object field of view

with IMX174/IMX249 13.3 mm diag w x h 11.35 x 7.13	(mm × mm)	176.3 x 110.8
with IMX255/IMX267 16.1 mm diag w x h 14.19 x 7.51	(mm × mm)	221.4 x 117.2
with IMX253/IMX304 17.6 mm diag w x h 14.16 x 10.37	(mm × mm)	221.5 x 162.2
with KAI-4022/4021 21.5 mm diagonal w x h 15.2 x 15.2	(mm × mm)	
with KAI-08050 22.6 mm diagonal w x h 18.1 x 13.6	(mm × mm)	

Optical specifications

Working distance (2)	(mm)	288.0
wF/# (3)		10
Telecentricity typical (max) (4)	(deg)	< 0.12 (0.18)
Distortion typical (max) (5)	(%)	< 0.8
Residual distortion (6)		< 0.01
Field depth (7)	(mm)	126
CTF @ 50 lp/mm	(%)	> 45

Mechanical specifications

Mount		C
Phase Adjustment (8)		Yes

Dimensions

A (9)	(mm)	410.4
B	(mm)	344.1
C (10)	(mm)	365.0
Mass	(g)	8750

Last update: 2019-11-21

NOTES

1. Since the square shape of the front window the lens forms a rectangular image
2. Working distance: distance between the front end of the mechanics and the object. Set this distance within +/- 5% of the nominal value for maximum resolution and minimum distortion.
3. 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. Typical (average production) values and maximum (guaranteed) values are listed .
4. Maximum slope of chief rays inside the lens: when converted to millirad, it gives the maximum measurement error for any millimeter of object displacement. Maximum (guaranteed) values are listed.
5. Percent deviation of the real image compared to an ideal, undistorted image. Maximum (guaranteed) values are listed.
6. Residual distortion after calibration with TCLIB Suite software library, using a PTCP calibrations pattern and a fully GenICam® compliant camera. For setup information see related table.
7. 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 3.45 µm.
8. Indicates the availability of an integrated camera phase adjustment feature.
9. Maximum dimension of the clamping flange.
10. Measured from the front end of the mechanics to the camera flange.

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



INTERNATIONAL
PATENT
PENDING



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.



High-performance telecentric illuminators

LTCLHP144-R	Telecentric HP illuminator, beam diameter 180 mm, red
LTCLHP144-G	Telecentric HP illuminator, beam diameter 180 mm, green
LTCLHP192-R	Telecentric HP illuminator, beam diameter 250 mm, red
LTCLHP192-G	Telecentric HP illuminator, beam diameter 250 mm, green
LTCLHP192-W	Telecentric HP illuminator, beam diameter 250 mm, white



LTBP series

High-power strobed LED backlights

LTBP192144-R	High power strobed LED backlight, 192 x 144 mm lighting area, red
LTBP192144-G	High power strobed LED backlight, 192 x 144 mm lighting area, green
LTBP192144-B	High power strobed LED backlight, 192 x 144 mm lighting area, blue
LTBP192144-W	High power strobed LED backlight, 192 x 144 mm lighting area, white



LTBC series

Continuous LED backlight

LTBC174174-W	Continuous LED backlight, 174x174 illumination area, white
LTBC174174-G	Continuous LED backlight, 174x174 illumination area, green
LTBC234234-W	Continuous LED backlight, 234x234 illumination area, white
LTBC234234-G	Continuous LED backlight, 234x234 illumination area, green



LT2BC series

High uniformity continuous LED backlights

LT2BC240180-R	High uniformity continuous LED backlights, 240 x 180 mm x mm, red, 625 nm
LT2BC240180-G	High uniformity continuous LED backlights, 240 x 180 mm x mm, green, 525 nm
LT2BC240180-B	High uniformity continuous LED backlights, 240 x 180 mm x mm, blue, 475 nm
LT2BC240180-W	High uniformity continuous LED backlights, 240 x 180 mm x mm, white, 6200 k



PTTC, PTCP series

Accurate calibration patterns for machine vision systems

PTCP-M1-LR1-C	Calibration pattern for telecentric lenses with a certificate of conformity
PTCP-M1-HR1-C	Calibration pattern for telecentric lenses with a certificate of conformity



COE-G series

GenICam® PoE cameras

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-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-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
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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
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-mvBF3-2024a	USB3 Vision camera with Sony Pregius CMOS sensor IMX249
RT-mvBF3-2024	USB3 Vision camera with Sony Pregius CMOS sensor IMX174
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-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
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
RT-mvBC-X1012b	Camera with interface GigE (1GB/s), sensor size 1.1", mpixel 12.37, resolution 4112 x 3008, sensor name IMX304, sensor type CMOS
RT-mvBC-XD107	Camera with interface Dual GigE (2GB/s), sensor size 1.1", mpixel 7.1, resolution 3216 x 2208, sensor name IMX420, sensor type CMOS
RT-mvBC-XD1012b	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

TCLIB-01	Software library & stand-alone tools for the optimization of telecentric setups
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COE HR AS-X series

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

COE-200-M-POE-070-IR-C	HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 x 3648, 20.4 MP, 2.4 pix, 1", Gray, GigE, 6 fps, POE, C - mount, Glass filter
COE-200-C-POE-070-IR-C	HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 x 3648, 20.4 MP, 2.4 pix, 1", Color, GigE, 6 fps, POE, C - mount, Infrared cut filter
COE-200-M-USB-070-IR-C	HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 x 3648, 20.4 MP, 2.4 pix, 1", Gray, 14 fps, C - mount, Glass filter
COE-200-C-USB-070-IR-C	HR Area Scan camera IMX183, CMOS, Rolling shutter, 5472 x 3648, 20.4 MP, 2.4 pix, 1", Color, 14 fps, C - mount, Infrared cut filter