

# TCCP5MHR144-F

Ultra compact bi-telecentric lens for matrix detectors up to 4/3", magnification 0.117x

## SPECIFICATIONS

Magnification	(x)	0.117
Image rectangle (1)	(mm)	19.82 x 14.88

### Object field of view

with IMX174/IMX249 13.3 mm diag w x h 11.35 x 7.13	(mm × mm)	96.05 x 60.7
with IMX255/IMX267 16.1 mm diag w x h 14.19 x 7.51	(mm × mm)	121.2 x 64.2
with IMX253/IMX304 17.6 mm diag w x h 14.16 x 10.37	(mm × mm)	121.3 x 88.8
with KAI-4022/4021 21.5 mm diagonal w x h 15.2 x 15.2	(mm × mm)	129.8 x 129.8
with KAI-08050 22.6 mm diagonal w x h 18.1 x 13.6	(mm × mm)	154.6 x 116.2

### Optical specifications

Working distance (2)	(mm)	216.9
wF/# (3)		14
Telecentricity typical (max) (4)	(deg)	< 0.06 (0.10)
Distortion typical (max) (5)	(%)	< 0.8
Residual distortion (6)		< 0.01
Field depth (7)	(mm)	53
CTF @ 50 lp/mm	(%)	> 35

### Mechanical specifications

Mount		F
Phase Adjustment (8)		Yes

### Dimensions

A (9)	(mm)	332.0
B	(mm)	302.5
C (10)	(mm)	350.4
Mass	(g)	6250

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## 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.

COE HR AS-X 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.



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

<a href="#">COE-260-C-10GIGE-100-IR-F</a>	Area scan camera 26.0 MP, CMOS SensorPYTHON 25K, 23mm x 23mm, Color, 10 Gigabit Ethernet, Mount F
<a href="#">COE-260-C-10GIGE-100-IR-I</a>	Area scan camera 26.0 MP, CMOS SensorPYTHON 25K, 23mm x 23mm, Color, 10 Gigabit Ethernet, Mount M58x0.75 FD11.48
<a href="#">COE-260-M-10GIGE-100-IR-F</a>	HR Area Scan camera PYTHON 25K, CMOS, 5120 x 5120, 26 MP, 4.5 pix, APS-H, Gray, 10GigE, 40 fps, F - mount, Glass filter
<a href="#">COE-260-M-10GIGE-100-IR-I</a>	HR Area Scan camera PYTHON 25K, CMOS, 5120 x 5120, 26 MP, 4.5 pix, APS-H, Gray, 10GigE, 40 fps, M58x0.75 - mount, Glass filter



LTCLHP series

High-performance telecentric illuminators

<a href="#">LTCLHP144-R</a>	Telecentric HP illuminator, beam diameter 180 mm, red
<a href="#">LTCLHP144-G</a>	Telecentric HP illuminator, beam diameter 180 mm, green



LTBP series

High-power strobed LED backlights

<a href="#">LTBP240180-R</a>	High power strobed LED backlight, 240 x 180 mm lighting area, red
<a href="#">LTBP240180-G</a>	High power strobed LED backlight, 240 x 180 mm lighting area, green
<a href="#">LTBP240180-B</a>	High power strobed LED backlight, 240 x 180 mm lighting area, blue
<a href="#">LTBP240180-W</a>	High power strobed LED backlight, 240 x 180 mm lighting area, white



LTBC series

Continuous LED backlight

<a href="#">LTBC234234-W</a>	Continuous LED backlight, 234x234 illumination area, white
<a href="#">LTBC234234-G</a>	Continuous LED backlight, 234x234 illumination area, green



LT2BC series

High uniformity continuous LED backlights

<a href="#">LT2BC192144-R</a>	High uniformity continuous LED backlights, 192 x 144 mm x mm, red, 625 nm
<a href="#">LT2BC192144-G</a>	High uniformity continuous LED backlights, 192 x 144 mm x mm, green, 525 nm
<a href="#">LT2BC192144-B</a>	High uniformity continuous LED backlights, 192 x 144 mm x mm, blue, 475 nm
<a href="#">LT2BC192144-W</a>	High uniformity continuous LED backlights, 192 x 144 mm x mm, white, 6200 k



PTTC, PTCP series

Accurate calibration patterns for machine vision systems

<a href="#">PTCP-S1-HR1-C</a>	Calibration pattern for telecentric lenses with a certificate of conformity
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TCLIB Suite

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

<a href="#">TCLIB-01</a>	Software library & stand-alone tools for the optimization of telecentric setups
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