

# TC2MHR080-F

High resolution telecentric lens for 1" detectors, magnification 0.160x, F-mount

## SPECIFICATIONS

Magnification	(x)	0.160
Image circle Ø	(mm)	16.9
Object field of view <sup>8</sup>	(mm x mm or Ø)	
with IMX174/IMX249 13.3 mm diag w x h 11.35 x 7.13		70.91 x 44.54
with IMX255/IMX267 16.1 mm diag w x h 14.19 x 7.51		88.69 x 46.94
with IMX253/IMX304 17.6 mm diag w x h 14.16 x 10.37		Ø = 64.82
with KAI-4022/4021 21.5 mm diagonal w x h 15.2 x 15.2		Ø = 94.72
with KAI-08050 22.6 mm diagonal w x h 18.1 x 13.6 <sup>(7)</sup>		Ø = 84.98

## Optical specifications

Working distance <sup>(1)</sup>	(mm)	226.8
wF/# <sup>(2)</sup>		16
Telecentricity typical (max) <sup>(3)</sup>	(deg)	<0.04 (0.08)
Distortion typical (max) <sup>(4)</sup>	(%)	<0.05 (0.10)
Field depth <sup>(5)</sup>	(mm)	46.9
CTF@ 50 lp/mm	(%)	> 40

## Mechanical specifications

Mount		F
Phase adjustment <sup>(9)</sup>		Yes
Length <sup>(6)</sup>	(mm)	295.0
Diameter	(mm)	116
Mass	(g)	1652

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## 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 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.

## 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-R	Telecentric HP illuminator, beam diameter 100 mm, red
LTCLHP080-G	Telecentric HP illuminator, beam diameter 100 mm, green



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.

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-W24V	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
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WI series

Protective windows

<a href="#">WI080</a>	Protective window for 116 mm clamping diameter optics
	CMHO series Clamping mechanics
<a href="#">CMHO080</a>	Clamping mechanics for TCxx072, TCxx080, LTCLHP080-X illuminators and PCxx030XS
	CMT series Precision alignment mechanics
<a href="#">CMTH080</a>	Precision alignment mechanics for telecentric optics 080
	mvBlueFOX3-2 series USB3 vision camera with Sony Pregius CMOS sensors
<a href="#">RT-mvBF3-2024a</a>	USB3 Vision camera with Sony Pregius CMOS sensor IMX249
<a href="#">RT-mvBF3-2024</a>	USB3 Vision camera with Sony Pregius CMOS sensor IMX174
<a href="#">RT-mvBF3-2089a</a>	USB3 Vision camera with Sony Pregius CMOS sensor IMX267
<a href="#">RT-mvBF3-2089</a>	USB3 Vision camera with Sony Pregius CMOS sensor IMX255
	mvBlueCOUGAR series GigE & Dual GigE Vision cameras
<a href="#">RT-mvBC-X104f</a>	Camera with interface GigE (1GB/s), sensor size 1/1.2", mpixel 2.35, resolution 1936 x 1216, sensor name IMX249, sensor type CMOS
<a href="#">RT-mvBC-XD104d</a>	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
<a href="#">RT-mvBC-X109b</a>	Camera with interface GigE (1GB/s), sensor size 1", mpixel 8.95, resolution 4112 x 2176, sensor name IMX267, sensor type CMOS
<a href="#">RT-mvBC-XD109b</a>	Camera with interface Dual GigE (2GB/s), sensor size 1", mpixel 8.95, resolution 4112 X 2176, sensor name IMX267, sensor type CMOS
	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 x 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 x 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 x 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 x 3648, 20.4 MP, 2.4 pix, 1", Color, 14 fps, C - mount, Infrared cut filter