PRODUCT DATASHEET

TC2MHR240-F

OPTO ENGINEERING®

High resolution telecentric lens for 1" detectors, magnification 0.053x, F-mount

SPECIFICATIONS

Magnification	(x)	0.053
Image circle Ø	(mm)	16.2

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	214.06 x 134.45
with IMX255/IMX267 16.1 mm diag w x h 14.19 x 7.51	267.74 x 141.70
with IMX253/IMX304 17.6 mm diag w x h 14.16 x 10.37	Ø = 195.68
with KAI-4022/4021 21.5 mm diagonal w x h 15.2 x 15.2	Ø = 285.94
with KAI-08050 22.6 mm diagonal w x h 18.1 x 13.6(7)	Ø = 256.53

Optical specifications		
Working distance (1)	(mm)	492.9
wF/# (2)		16
Telecentricity typical (max) (3)	(deg)	<0.05 (0.10)
Distortion typical (max) (4)	(%)	<0.04 (0.10)
Field depth (5)	(mm)	427.2
CTF@ 50 lp/mm	(%)	> 40

Mechanical specifications		
Mount		F
Phase adjustment(9)		Yes
Length (6)	(mm)	783.2
Diameter	(mm)	322
Mass	(g)	18498

Last update: 2018-06-12

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.

NOTES

1. 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.

2. 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.

3. 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.

4. Percent deviation of the real image compared to an ideal, undistorted image: typical (average production) values and maximum (guaranteed) values are listed.

5. 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.

6. Measured from the front end of the mechanics to the camera flange.

7. With KAI-08050 (22.6 mm diagonal) detectors, the FOV of TC4MHRyyy-x lenses may show some vignetting at the image corners.

8. 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

LTCLHP240-R	Telecentric HP illuminator, beam diameter 300 mm, red
LTCLHP240-G	Telecentric HP illuminator, beam diameter 300 mm, green

CMHO series

Clamping mechanics

CMHO240R	Clamping mechanics rotation for TCxx240 lenses and LTCLHP240-X illuminators rotation type

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

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

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 × 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 × 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 × 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 × 3648, 20.4 MP, 2.4 pix, 1", Color, 14 fps, C - mount, Infrared cut filter