

TC16M056

Telecentric lens for 35 mm detectors, magnification 0.641 x, F-mount

SPECIFICATIONS

Magnification	(x)	0.64
Image circle Ø	(mm)	43.3

Object field of view

with APS-H KAI-16050 32.4 mm diagonal w x h 26.93 x 17.95	(mm x mm)	42.01 x 28.01
with CHR70 38 mm diagonal w x h 31.0 x 21.99	(mm x mm)	48.36 x 34.31
with 8k x 5 µm detector	(mm)	63.65
Full frame 35 mm, 43.3 mm diagonal w x h 36.0 x 24.00	(mm x mm)	56.16 x 37.44
with CMV50000 45.72 mm diagonal w x h 36.43 x 27.62	(mm x mm)	56.84 x 43.09

Optical specifications

Working distance (1)	(mm)	148.6
wF/# (2)		16
Telecentricity typical (max) (3)	(deg)	< 0.04 (0.08)
Distortion typical (max) (4)	(%)	< 0.04 (0.10)
Field depth (5)	(mm)	3.2
CTF@ 50 lp/mm	(%)	> 40

Mechanical specifications

Mount (6)		F
Phase adjustment (7)		
Length (8)	(mm)	338.5
Diameter	(mm)	80
Mass	(g)	1250

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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/#: the real F/# 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 very sharp image, only half of the nominal field depth should be considered. Pixel size used for calculation is 5.5 µm.
- FD stands for Flange Distance (in mm), defined as the distance from the mounting flange (the "metal ring" in rear part of the lens) to the camera detector plane.
- Indicates the availability of an integrated camera phase adjustment feature.
- 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

High-performance telecentric illuminators

LTCLHP056-R	Telecentric HP illuminator, beam diameter 70 mm, red
LTCLHP056-G	Telecentric HP illuminator, beam diameter 70 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.

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



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



LTLAIC series (discontinued models)

Continuous LED low angle diffused ringlights

LT2RZF100-60-2-W-24V	LED ringlight, 2 LED rows, 100 mm outer diameter, 60°, white, 24V
LT2RZF100-60-2-R-24V	LED ringlight, 2 LED rows, 100 mm outer diameter, 60°, red, 24V
LT2RZF100-60-2-G-24V	LED ringlight, 2 LED rows, 100 mm outer diameter, 60°, green, 24V
LT2RZF100-60-2-B-24V	LED ringlight, 2 LED rows, 100 mm outer diameter, 60°, blue, 24V



LTLAIC series

Continuous LED low angle diffused ringlights

LT3RZF100-60-1-W-24V	LED ringlight, 1 LED row, 105.2 mm outer diameter, 60°, white, 24V
LT3RZF100-60-1-R-24V	LED ringlight, 1 LED row, 105.2 mm outer diameter, 60°, red, 24V
LT3RZF100-60-1-G-24V	LED ringlight, 1 LED row, 105.2 mm outer diameter, 60°, green, 24V
LT3RZF100-60-1-B-24V	LED ringlight, 1 LED row, 105.2 mm outer diameter, 60°, blue, 24V



LTLADC series

Continuous LED low angle direct ringlights

LTZZO130-75-3-W-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, white, 24V
LTZZO130-75-3-R-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, red, 24V
LTZZO130-75-3-G-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, green, 24V
LTZZO130-75-3-B-24V	LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, blue, 24V



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

LTBC11414-W	Continuous LED backlight, 114x114 illumination area, white
LTBC11414-G	Continuous LED backlight, 114x114 illumination area, green



LTBFC series

Continuous flat side-emitting LED backlights

LTPVRG070-00-1-W-24V	Flat side-emitting LED backlight, thin borders, 70x70 mm illumination area, white, 24V
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LTPVRG070-00-1-R-24V	Flat side-emitting LED backlight, thin borders, 70X70 mm illumination area, red, 24V
LTPVRG070-00-1-G-24V	Flat side-emitting LED backlight, thin borders, 70X70 mm illumination area, green, 24V
LTPVRG070-00-1-B-24V	Flat side-emitting LED backlight, thin borders, 70X70 mm illumination area, blue, 24V



LTBRDC series

Continuous LED bar lights

LTZPFL080-00-6-W-24V	LED bar light, 6 LED rows, 80X26.3 illumination area, white, 24V
LTZPFL080-00-6-R-24V	LED bar light, 6 LED rows, 80X26.3 illumination area, red, 24V
LTZPFL080-00-6-G-24V	LED bar light, 6 LED rows, 80X26.3 illumination area, green, 24V
LTZPFL080-00-6-B-24V	LED bar light, 6 LED rows, 80X26.3 illumination area, blue, 24V



LTCXC series

Continuous LED coaxial lights

LT2QOG070-00-X-W-24V	LED coaxial light, 70x70 mm light emitting area, white, 24V
LT2QOG070-00-X-R-24V	LED coaxial light, 70x70 mm light emitting area, red, 24V
LT2QOG070-00-X-G-24V	LED coaxial light, 70x70 mm light emitting area, green, 24V
LT2QOG070-00-X-B-24V	LED coaxial light, 70x70 mm light emitting area, blue, 24V



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 TCxx056 lenses and LTCLHP056-X illuminators
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COE HR AS series

29 MP, 48MP and 71MP area scan cameras for high-speed applications

COE29MUSB3IR-K	Area scan camera CCD, USB3, 6576 x 4384 monochrome, 35mm, 2fps, IR Cut filter, K mount
COE29CUSB3IR-K	Area scan camera CCD, USB3, 6576 x 4384 color, 35mm, 2fps, IR cut, IR Cut filter, K mount
COE29MUSB3IR-F	Area scan camera CCD, USB3, 6576 x 4384 monochrome, 35mm, 2fps, IR Cut filter, F-mount
COE29CUSB3IR-F	Area scan camera CCD, USB3, 6576 x 4384 color, 35mm, 2fps, IR cut, IR Cut filter, F-mount
COE29MCLIR-K	Area scan camera CCD, Camera Link, 6576 x 4384 monochrome, 35mm, 4fps, IR Cut filter, K mount
COE29CCLIR-K	Area scan camera CCD, Camera Link, 6576 x 4384 color, 35mm, 4fps, IR Cut filter, K mount
COE29MCLIR-F	Area scan camera CCD, Camera Link, 6576 x 4384 monochrome, 35mm, 4fps, IR Cut filter, F-mount
COE29CCLIR-F	Area scan camera CCD, Camera Link, 6576 x 4384 color, 35mm, 4fps, IR Cut filter, F-mount
COE29MUSB3SK-K	Area scan camera CCD, USB3, 6576 x 4384 monochrome, 35mm, 2fps, skylight/glass filter, K mount

COE29CUSB3SK-K	Area scan camera CCD, USB3, 6576 x 4384 color, 35mm, 2fps, skylight/glass filter, K mount
COE29MUSB3SK-F	Area scan camera CCD, USB3, 6576 x 4384 monochrome, 35mm, 2fps, skylight/glass filter, F-mount
COE29CUSB3SK-F	Area scan camera CCD, USB3, 6576 x 4384 color, 35mm, 2fps, skylight/glass filter, F-mount
COE29MCLSK-K	Area scan camera CCD, Camera Link, 6576 x 4384 monochrome, 35mm, 4fps, skylight/glass filter, K mount
COE29CCLSK-K	Area scan camera CCD, Camera Link, 6576 x 4384 color, 35mm, 4fps, skylight/glass filter, K mount
COE29MCLSK-F	Area scan camera CCD, Camera Link, 6576 x 4384 monochrome, 35mm, 4fps, skylight/glass filter, F-mount
COE29CCLSK-F	Area scan camera CCD, Camera Link, 6576 x 4384 color, 35mm, 4fps, skylight/glass filter, F-mount
COE50MUSB3IR-K	Area scan camera CMOS, USB3, 7920 x 6004, monochrome, 6.8fps, IR Cut filter, K mount
COE50CUSB3IR-K	Area scan camera CMOS, USB3, 7920 x 6004, color, 6.8fps, IR Cut filter, K mount
COE50MUSB3IR-F	Area scan camera CMOS, USB3, 7920 x 6004, monochrome, 6.8fps, IR Cut filter, F-mount
COE50CUSB3IR-F	Area scan camera CMOS, USB3, 7920 x 6004, color, 6.8fps, IR Cut filter, F-mount
COE50MCLIR-K	Area scan camera CMOS, Camera Link, 7920 x 6004, monochrome, 27.3fps, IR Cut filter, K mount
COE50CCLIR-K	Area scan camera CMOS, Camera Link, 7920 x 6004, color, 27.3fps, IR Cut filter, K mount
COE50MCLIR-F	Area scan camera CMOS, Camera Link, 7920 x 6004, monochrome, 27.3fps, IR Cut filter, F-mount
COE50CCLIR-F	Area scan camera CMOS, Camera Link, 7920 x 6004, color, 27.3fps, IR Cut filter, F-mount
COE50MUSB3SK-K	Area scan camera CMOS, USB3, 7920 x 6004, monochrome, 6.8fps, skylight/glass filter, K mount
COE50CUSB3SK-K	Area scan camera CMOS, USB3, 7920 x 6004, color, 6.8fps, skylight/glass filter, K mount
COE50MUSB3SK-F	Area scan camera CMOS, USB3, 7920 x 6004, monochrome, 6.8fps, skylight/glass filter, F-mount
COE50CUSB3SK-F	Area scan camera CMOS, USB3, 7920 x 6004, color, 6.8fps, skylight/glass filter, F-mount
COE50MCLSK-K	Area scan camera CMOS, Camera Link, 7920 x 6004, monochrome, 27.3fps, skylight/glass filter, K mount
COE50CCLSK-K	Area scan camera CMOS, Camera Link, 7920 x 6004, color, 27.3fps, skylight/glass filter, K mount
COE50MCLSK-F	Area scan camera CMOS, Camera Link, 7920 x 6004, monochrome, 27.3fps, skylight/glass filter, F-mount
COE50CCLSK-F	Area scan camera CMOS, Camera Link, 7920 x 6004, color, 27.3fps, skylight/glass filter, F-mount
COE71MUSB3IR-K	Area scan camera CMOS, USB3, 10000 x 7094, monochrome, 3fps, IR Cut filter, K mount
COE71CUSB3IR-K	Area scan camera CMOS, USB3, 10000 x 7094, color, 3fps, IR Cut filter, K mount
COE71MUSB3IR-F	Area scan camera CMOS, USB3, 10000 x 7094, monochrome, 3fps, IR Cut filter, F-mount
COE71CUSB3IR-F	Area scan camera CMOS, USB3, 10000 x 7094, color, 3fps, IR Cut filter, F-mount
COE71MCLIR-K	Area scan camera CMOS, Camera Link, 10000 x 7094, monochrome, 3fps, IR Cut filter, K mount
COE71CCLIR-K	Area scan camera CMOS, Camera Link, 10000 x 7094, color, 3fps, IR Cut filter, K mount
COE71MCLIR-F	Area scan camera CMOS, Camera Link, 10000 x 7094, monochrome, 3fps, IR Cut filter, F-mount
COE71CCLIR-F	Area scan camera CMOS, Camera Link, 10000 x 7094, color, 3fps, IR Cut filter, F-mount
COE71MUSB3SK-K	Area scan camera CMOS, USB3, 10000 x 7094, monochrome, 3fps, skylight/glass filter, K mount
COE71CUSB3SK-K	Area scan camera CMOS, USB3, 10000 x 7094, color, 3fps, skylight/glass filter, K mount
COE71MUSB3SK-F	Area scan camera CMOS, USB3, 10000 x 7094, monochrome, 3fps, skylight/glass filter, F-mount
COE71CUSB3SK-F	Area scan camera CMOS, USB3, 10000 x 7094, color, 3fps, skylight/glass filter, F-mount
COE71MCLSK-K	Area scan camera CMOS, Camera Link, 10000 x 7094, monochrome, 3fps, skylight/glass filter, K mount
COE71CCLSK-K	Area scan camera CMOS, Camera Link, 10000 x 7094, color, 3fps, skylight/glass filter, K mount

COE71MCLSK-F Area scan camera CMOS, Camera Link, 10000 x 7094, monochrome, 3fps, skylight/glass filter, F-mount

COE71CCLSK-F Area scan camera CMOS, Camera Link, 10000 x 7094, color, 3fps, skylight/glass filter, F-mount



COE HR AS-X series

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

COE-260-M-10GIGE-100-IR-F 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

COE-260-M-10GIGE-100-IR-I 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

COE-290-M-GIGE-110-IR-F-A HR Area Scan camera KAI29050-B1, CCD, Global shutter, 6576 x 4384, 29 MP, 5.5 pix, 35 mm, Gray, GigE, 4 fps, F - mount, Glass filter

COE-290-M-GIGE-110-IR-F-B HR Area Scan camera KAI29050-B2, CCD, Global shutter, 6576 x 4384, 29 MP, 5.5 pix, 35 mm, Gray, GigE, 4 fps, F - mount, Glass filter

COE-290-M-GIGE-110-IR-I-A HR Area Scan camera KAI29050-B1, CCD, Global shutter, 6576 x 4384, 29 MP, 5.5 pix, 35 mm, Gray, GigE, 4 fps, M58x0.75 - mount, Glass filter

COE-290-M-GIGE-110-IR-I-B HR Area Scan camera KAI29050-B2, CCD, Global shutter, 6576 x 4384, 29 MP, 5.5 pix, 35 mm, Gray, GigE, 4 fps, M58x0.75 - mount, Glass filter

COE-290-C-GIGE-110-IR-F-B HR Area Scan camera KAI29050-B2, CCD, Global shutter, 6576 x 4384, 29 MP, 5.5 pix, 35 mm, Color, GigE, 4 fps, F - mount, Infrared cut filter

COE-290-C-GIGE-110-IR-I-B HR Area Scan camera KAI29050-B2, CCD, Global shutter, 6576 x 4384, 29 MP, 5.5 pix, 35 mm, Color, GigE, 4 fps, M58x0.75 - mount, Infrared cut filter
