

TCZR036S

Bi-telecentric zoom with motorized controls, magnification 0.25x to 2x, for detectors up to 2/3"

SPECIFICATIONS

Magnification	(x)	0.250	0.500	1.000	2.000
Image circle Ø	(mm)	11.0			

Object field of view	(mm x mm)				
with 1/3" detector (4.8 x 3.6 mm)	19.2 x 14.4	9.6 x 7.2	4.8 x 3.6	2.4 x 1.8	
with 1/2.5" detector (5.70 x 4.28 mm)	22.8 x 17.1	11.4 x 8.56	5.70 x 4.28	2.85 x 2.14	
with 1/2" detector (6.4 x 4.8 mm)	25.6 x 19.2	12.8 x 9.6	6.4 x 4.8	3.2 x 2.4	
with 1/1.8" detector (7.13 x 5.37 mm)	28.5 x 21.3	14.3 x 10.7	7.13 x 5.33	3.57 x 2.67	
with 2/3" - 5 MP detector (8.45 x 7.07 mm)	34.0 x 28.4	17.0 x 14.2	8.50 x 7.09	4.25 x 3.55	

Optical specifications

Working distance	(mm)	74.0			
wF/# (1)		16			
Telecentricity (2)	(deg)	< 0.05			
Distortion	(%)	< 0.05	< 0.04	< 0.04	< 0.08
Field depth (3)	(mm)	13.2	3.3	0.8	0.2
CTF @ 70 lp/mm	(%)	> 40	> 35	> 40	> 35
Reference point repeatability at 1 σ (5)	(μ m)	< 6	< 5	< 2	< 4
Max. image displacement between magnification changes (image side)	(μ m)	350			

Mechanical specifications

Length	(mm)	212.0
Diameter	(mm)	56
Max Height	(mm)	144
Max Width	(mm)	103
Mass	(g)	2500
Mount		C
Phase adjustment(4)		Yes
Min. time for magnification change(6)	(s)	1.5
Max. time for magnification change(7)	(s)	2.0

Electrical specifications

Connector	DB15HD male
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Motor parameters

N° of motors	1
Type	Bipolar stepper
RMS winding current	(mA) 600
Winding voltage	(V) 24
Steps per revolution	200

Encoder parameters

N° of encoders	1
DC power supply	(V) 5
Maximum supply current	(mA) 30
Type	Magnetic rotary, incremental with reference
Output signals	A, B, Z (index)
Interfaces	RS422
Number of magnetic poles	120



Poles pitch	(mm)	2
Interpolation		500
Pulses per revolution		60000
Motor to encoder ratio(8)		2.56
Environmental specifications		
Operating temperature	°C	0 to 40
Storage temperature	°C	0 to 50
Operating Humidity	%	10-85 non condensing
IP rating		-
Installation		Indoor use only

NOTES

1. Working F/#: the real F/# of a lens when used as a macro. Lenses with smaller apertures (higher wf#) can be supplied on request.
2. Maximum slope of principal rays inside the lens: when converted to millirad, it gives the maximum measurement error for any millimeter of object displacement
3. 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 3.45 μm .
4. Indicates the availability of an integrated camera phase adjustment feature.
5. Image size, σ = standard deviation.
6. One magnification step
7. Two magnification steps
8. 1 encoder pulse = 2.56 motor μsteps (with a 256 microstepping control).

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.



LTLA series

High-power strobed LED low angle diffused ringlights

[LTLAB2-R](#) Diffusive strobed low angle ring light illuminator - medium size high power red

[LTLAB2-G](#) Diffusive strobed low angle ring light illuminator - medium size high power green

[LTLAB2-W](#) Diffusive strobed low angle ring light illuminator - medium size high power white



LTRNST series

LED ring illuminators - straight type

[LTRN032RD](#) Ring LED illuminator, inner diameter 56 mm, straight type, red 630 nm

[LTRN032GR](#) Ring LED illuminator, inner diameter 56 mm, straight type, green 525 nm

[LTRN032BL](#) Ring LED illuminator, inner diameter 56 mm, straight type, blue 470 nm

[LTRN032NW](#) Ring LED illuminator, inner diameter 56 mm, straight type, white



LTBC series

Continuos LED backlight

[LTBC054054-W](#) Continuos LED backlight, 54x54 illumination area, white

[LTBC054054-G](#) Continuos LED backlight, 54x54 illumination area, green



CB series

Cables

[CBMT002](#) 15 wires cable, DB15HD Male to DB15HD Female connector, 2 m



MTDV

Motion controller for bipolar stepper motors with additional encoder input

[MTDV1CH-22A2](#) Motion controller for bipolar stepper motors with additional encoder input

[MTDV2CH-22A2](#) Motion controller for bipolar stepper motors with additional encoder input



COE-G series

GeniCam® PoE cameras

COE-050-M-POE-023-IR-C	Area Scan camera MT9P031, CMOS, Rolling shutter, 2592 x 1944, 5 MP, 2.2 pix, 1/2.5", Gray, 14 fps, GigE, POE, C - mount, Glass filter
COE-013-M-POE-030-IR-C	Area Scan camera PYTHON 1300, CMOS, Global shutter, 1280 x 1024, 1.3 MP, 4.8 pix, 1/2", Gray, 90 fps, GigE, POE, C - mount, Glass filter
COE-013-C-POE-030-IR-C	Area Scan camera PYTHON 1300, CMOS, Global shutter, 1280 x 1024, 1.3 MP, 4.8 pix, 1/2", Color, 90 fps, GigE, POE, C - mount, Infrared cut filter
COE-106-M-POE-031-IR-C-2	Area Scan camera MT9J003, CMOS, Rolling shutter, 3840 x 2748, 10.6 MP, 1.67 pix, 1/2.3", Gray, 11 fps, GigE, POE, C - mount, Glass filter
COE-106-C-POE-031-IR-C	Area Scan camera MT9J003, CMOS, Global shutter, 3840 x 2748, 10.6 MP, 1.67 pix, 1/2.3", Color, 7 fps, GigE, POE, C - mount, Infrared cut filter
COE-032-M-POE-040-IR-C	Area Scan camera IMX265, CMOS, Global shutter, 2048 x 1536, 3.1 MP, 3.45 pix, 1/1.8", Gray, 37.5 fps, GigE, POE, C - mount, Glass filter
COE-032-C-POE-040-IR-C	Area Scan camera IMX265, CMOS, Global shutter, 2048 x 1536, 3.1 MP, 3.45 pix, 1/1.8", Color, 37.5 fps, GigE, POE, C - mount, Infrared cut filter
COE-063-M-POE-040-IR-C-B	Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Gray, 17 fps, GigE, POE, C - mount, Glass filter
COE-063-C-POE-040-IR-C	Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Color, 17 fps, GigE, POE, C - mount, Infrared cut filter
COE-122-M-POE-041-IR-C	Area Scan camera IMX226, CMOS, Rolling shutter, 4024 x 3036, 12.2 MP, 1.85 pix, 1/1.7", Gray, 9.6 fps, GigE, POE, C - mount, Glass filter
COE-122-C-POE-041-IR-C	Area Scan camera IMX226, CMOS, Rolling shutter, 4024 x 3036, 12.2 MP, 1.85 pix, 1/1.7", Color, 9.6 fps, GigE, POE, C - mount, Infrared cut filter
COE-023-M-POE-050-IR-C	Area Scan camera PYTHON 2000, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 4.8 pix, 2/3", Gray, 51 fps, GigE, POE, C - mount, Glass filter
COE-023-C-POE-050-IR-C	Area Scan camera PYTHON 2000, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 4.8 pix, 2/3", Color, 51 fps, GigE, POE, C - mount, Infrared cut filter
COE-050-M-POE-050-IR-C	Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Gray, 23.5 fps, GigE, POE, C - mount, Glass filter
COE-050-C-POE-050-IR-C	Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Color, 23.5 fps, GigE, POE, C - mount, Infrared cut filter



COE-U series

USB 3.0 GeniCam® cameras

COE-016-M-USB-021-IR-C	Area Scan camera IMX273, CMOS, Global shutter, 1440 x 1080, 1.6 MP, 3.45 pix, 1/2.9", Gray, 165 fps, USB 3.0, C - mount, Glass filter
COE-016-C-USB-021-IR-C	Area Scan camera IMX273, CMOS, Global shutter, 1440 x 1080, 1.6 MP, 3.45 pix, 1/2.9", Color, 165 fps, USB 3.0, C - mount, Infrared cut filter
COE-050-C-USB-023-IR-C	Area Scan camera AR0521, CMOS, Rolling shutter, 2592 x 1944, 5 MP, 2.2 pix, 1/2.5", Color, 31 fps, USB 3.0, C - mount, Infrared cut filter
COE-013-M-USB-030-IR-C	Area Scan camera PYTHON 1300, CMOS, Global shutter, 1280 x 1024, 1.3 MP, 4.8 pix, 1/2", Gray, 170 fps, USB 3.0, C - mount, Glass filter
COE-013-C-USB-030-IR-C	Area Scan camera PYTHON 1300, CMOS, Global shutter, 1280 x 1024, 1.3 MP, 4.8 pix, 1/2", Color, 90 fps, USB 3.0, C - mount, Infrared cut filter
COE-063-M-USB-040-IR-C	Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Gray, 42 fps, USB 3.0, C - mount, Glass filter
COE-063-C-USB-040-IR-C	Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Color, 42 fps, USB 3.0, C - mount, Infrared cut filter
COE-050-M-USB-050-IR-C	Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Gray, 35 fps, USB 3.0, C - mount, Glass filter



mvBlueFOX3-2 series

USB3 vision camera with Sony Pregius CMOS sensors

RT-mvBF3-2004	Usb3 vision camera with sony pregius cmos sensor imx287
RT-mvBF3-2016	Usb3 vision camera with sony pregius cmos sensor imx273
RT-mvBF3-2032a	USB3 Vision camera with Sony Pregius CMOS sensor IMX265
RT-mvBF3-2032	USB3 Vision camera with Sony Pregius CMOS sensor IMX252
RT-mvBF3-2064	Usb3 vision camera with sony pregius cmos sensor imx178
RT-mvBF3-2051a	USB3 Vision camera with Sony Pregius CMOS sensor IMX264
RT-mvBF3-2051	USB3 Vision camera with Sony Pregius CMOS sensor IMX250



mvBlueCOUGAR series

RT-mvBC-X100w	Camera with interface GigE (1GB/s), sensor size 1/3", mpixel 0.36, resolution 752 x 480, sensor name MT9V034, sensor type CMOS
RT-mvBC-X100f	Camera with interface GigE (1GB/s), sensor size 1/2.9", mpixel 0.4, resolution 728 x 544, sensor name IMX287, sensor type CMOS
RT-mvBC-X102f	Camera with interface GigE (1GB/s), sensor size 1/2.9", mpixel 1.58, resolution 1456 x 1088, sensor name IMX273, sensor type CMOS
RT-mvBC-XD102f	Camera with interface Dual GigE (2GB/s), sensor size 1/2.9", mpixel 1.58, resolution 1456 x 1088, sensor name IMX273, sensor type CMOS
RT-mvBC-X105	Camera with interface GigE (1GB/s), sensor size 1/2.5", mpixel 5.04, resolution 2592 x 1944, sensor name MT9P031, sensor type CMOS
RT-mvBC-X1010	Camera with interface GigE (1GB/s), sensor size 1/2.3", mpixel 10.66, resolution 3856 x 2764, sensor name MT9J003, sensor type CMOS
RT-mvBC-X104i	Camera with interface GigE (1GB/s), sensor size 1/1.8", mpixel 3.19, resolution 2064 x 1544, sensor name IMX265, sensor type CMOS
RT-mvBC-XD104h	Camera with interface Dual GigE (2GB/s), sensor size 1/1.8", mpixel 3.19, resolution 2064 x 1544, sensor name IMX252, sensor type CMOS
RT-mvBC-X105b	Camera with interface GigE (1GB/s), sensor size 2/3", mpixel 5.07, resolution 2464 x 2056, sensor name IMX264, sensor type CMOS
RT-mvBC-XD105a	Camera with interface Dual GigE (2GB/s), sensor size 2/3", mpixel 5.01, resolution 2448 x 2048, sensor name IMX250, sensor type CMOS



Accessories

Accessories and add-ons to make the most of Opto Engineering lenses.

RT-mvBC-X104iC	CMOS camera GIGE, 2064 x 1544 color, 1/1.8", 37 Hz, IR cut, C-mount, I/O
RT-mvBC-X105bC	CMOS camera GIGE, 2464 x 2056 Colour sensor, 2/3", 23.5 Hz, IR cut, C-mount, I/O