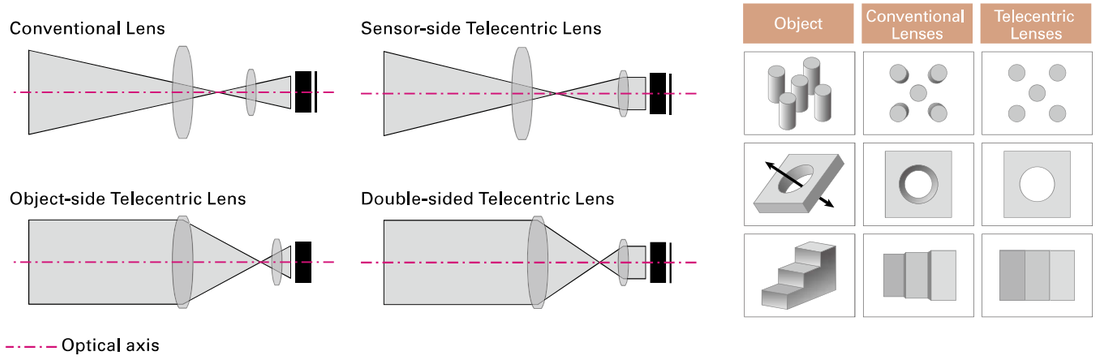
TVL Series 2/3" 1/1.8"

While being compact in size and light in weight the TVL series is our largest collection of telecentric lenses with WDs ranging from 40 - 340mm. They produce a clear, distortionless, high contrast image.

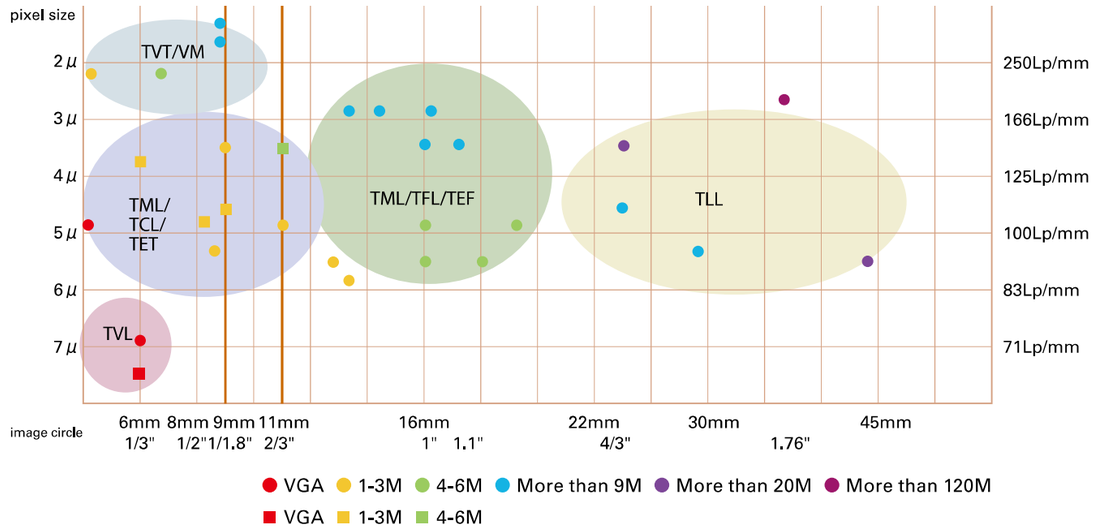
Features
- 1/2 - 2/3" sensor support
- 70 models available
- Compact
- Light weight
- Telecentric design

What are telecentric lenses?

A lens is considered telecentric when its chief rays are parallel to the optical axis. Due to the rays being parallel it is ideal for coaxial lighting. Telecentric lenses eliminate perspective errors and when the WD changes, the magnification does not. These aspects allow for accurate measurement of both static, and vertically moving objects.



Telecentric Lens Comparison Map



The recent trends in the image sensor market have been that as sensor sizes are now becoming larger, the resolution of pixels is becoming smaller. This means that sensors having the same dimensions will yield a picture with a greater resolution.

The advantage of pixels getting smaller in size is that more of them can now fit into a sensor of the same size. However since the surface area of the sensor stays the same, the amount of light that each pixel can absorb is lowered. This means that the ability for a lens to absorb a lot of light becomes more critical of a factor as sensor resolution increases.

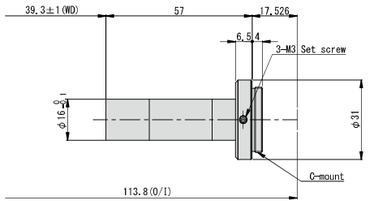
If however, the pixel size is to remain the same while the dimensions of the sensor increase, the size of the lenses image circle must also increase.

It is no easy task to reconcile between pixel size and sensor size with respect to light throughput optimization, but VS Technology has effectively elevated the industry's benchmark by consistently expanding the quality of our lineup of high resolution telecentric lenses.

TVL	P54-69	Standard Telecentric Lenses
TCL	P70-79	High Resolution Telecentric Lenses
TML	P80-87	High Resolution Telecentric LensesLarge Format Telecentric Lenses, Bi-Telecentric Lenses
TFL	P88-95	1.1 & 1" Telecentic Lenses
TVT	P96-97	1.67μm Telecentric Lenses
VM	P98-99	Telecentric Microscope Lenses
TET	P100-103	Variable Magnification Telecentric Lenses
TEF	P104-105	1.1" Variable Magnification Telecentric Lenses
TLL	P106-111	Large Format Line Scan Telecentric Lenses

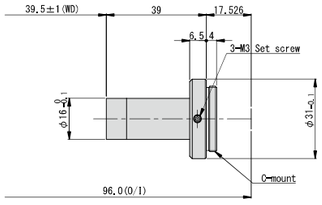
WD:40mm Series

TVL1.5-40



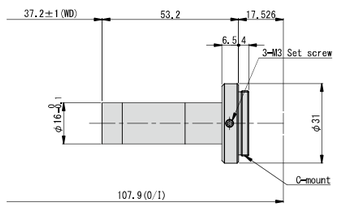
Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	—
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		39.3 mm ±1
O/I (Object & Imager Distance)		113.8 mm
Working F/#		11.2
NA		0.067
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		69 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		37 g
Dimension		φ31(max.) x L = 57 mm

TVL2-40



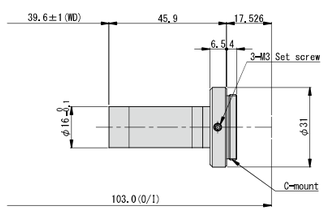
Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		39.5 mm ±1
O/I (Object & Imager Distance)		96.0 mm
Working F/#		15.0
NA		0.067
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		84 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		30 g
Dimension		φ31(max.) x L = 39 mm

TVL3-40



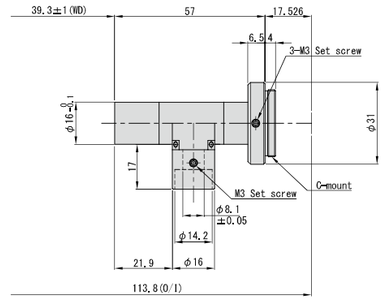
Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		37.2 mm ±1
O/I (Object & Imager Distance)		107.9 mm
Working F/#		23.5
NA		0.064
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		33 g
Dimension		φ31(max.) x L = 53.2 mm

TVL4-40



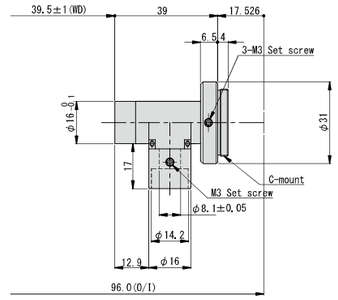
Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		39.6 mm ±1
O/I (Object & Imager Distance)		103.0 mm
Working F/#		29.4
NA		0.068
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		31 g
Dimension		φ31(max.) x L = 45.9 mm

TVL1.5-40CO



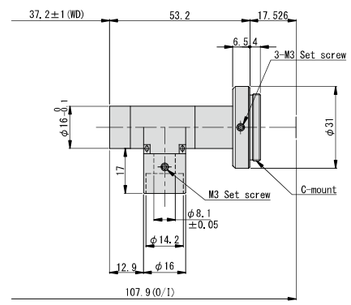
Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	—
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		39.3 mm ±1
O/I (Object & Imager Distance)		113.8 mm
Working F/#		11.2
NA		0.067
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		69 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		42 g
Dimension		φ31(max.) x L = 57 mm

TVL2-40CO



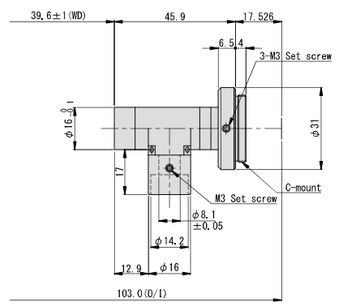
Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		39.5 mm ±1
O/I (Object & Imager Distance)		96.0 mm
Working F/#		15.0
NA		0.067
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		84 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		35 g
Dimension		φ31(max.) x L = 39 mm

TVL3-40CO



Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		37.2 mm ±1
O/I (Object & Imager Distance)		107.9 mm
Working F/#		23.5
NA		0.064
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		39 g
Dimension		φ31(max.) x L = 53.2 mm

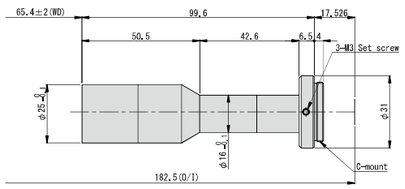
TVL4-40CO



Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		39.6 mm ±1
O/I (Object & Imager Distance)		103.0 mm
Working F/#		29.4
NA		0.068
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		38 g
Dimension		φ31(max.) x L = 45.9 mm

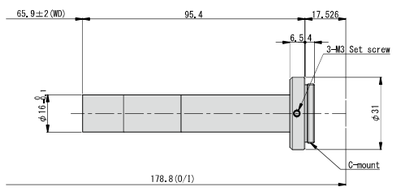
WD:65-70mm Series

TVL08-65



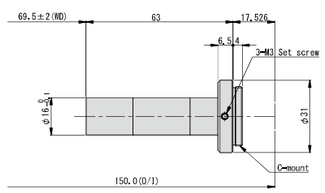
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		65.4 mm ±2
O/I (Object & Imager Distance)		182.5 mm
Working F/#		10.0
NA		0.040
DOF at PCoC φ0.04mm		1.3 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		72 g
Dimension		φ31(max.) x L = 99.6 mm

TVL1-65



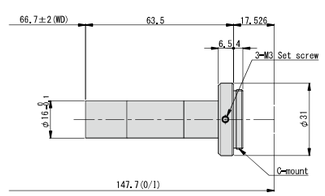
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		65.9 mm ±2
O/I (Object & Imager Distance)		178.8 mm
Working F/#		14.2
NA		0.035
DOF at PCoC φ0.04mm		1.1 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		48 g
Dimension		φ31(max.) x L = 95.4 mm

TVL1.5-70



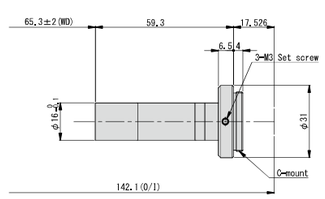
Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	4.7 x 5.6 mm
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		69.5 mm ±2
O/I (Object & Imager Distance)		150.0 mm
Working F/#		15.6
NA		0.048
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (2/3")		0.10 %
Relative Illuminance (Y=5.5)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		37 g
Dimension		φ31(max.) x L = 63 mm

TVL2-65



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		66.7 mm ±2
O/I (Object & Imager Distance)		147.7 mm
Working F/#		15.6
NA		0.064
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.04 %
Relative Illuminance (Y=5.5)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		40 g
Dimension		φ31(max.) x L = 63.5 mm

TVL3-65

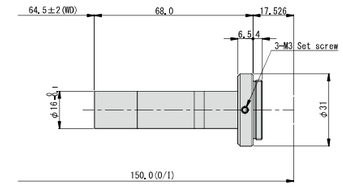


Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		65.3 mm ±2
O/I (Object & Imager Distance)		142.1 mm
Working F/#		22.0
NA		0.068
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.04 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		38 g
Dimension		φ31(max.) x L = 59.3 mm

HOURS
www.hours-web.com

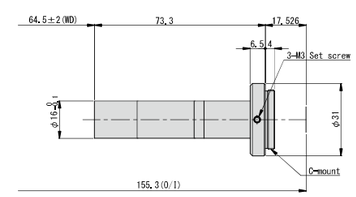
Standard Telecentric Lenses TVL Series

TVL4-65



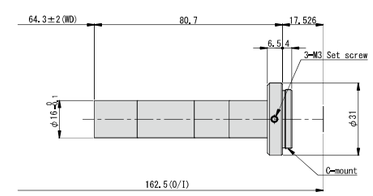
Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		64.5 mm ±2
O/I (Object & Imager Distance)		150.0 mm
Working F/#		29.1
NA		0.069
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		-0.01 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		38 g
Dimension		φ31(max.) x L = 68 mm

TVL5-65



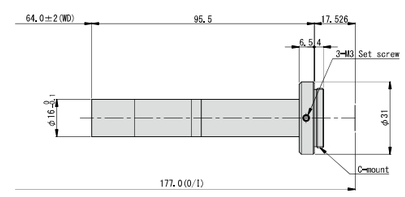
Optical Mag.		5.0x ±5 %
FOV(VxH)	2/3"	1.4 x 1.7 mm
	1/2"	1.0 x 1.3 mm
	1/3"	0.7 x 1.0 mm
WD		64.5 mm ±2
O/I (Object & Imager Distance)		155.3 mm
Working F/#		36.2
NA		0.069
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		41 g
Dimension		φ31(max.) x L = 73.3 mm

TVL6-65



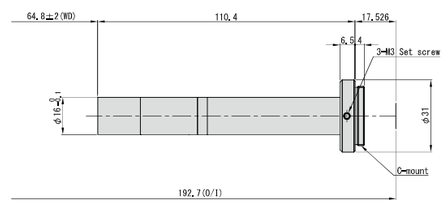
Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		64.3 mm ±2
O/I (Object & Imager Distance)		162.5 mm
Working F/#		43.1
NA		0.070
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		43 g
Dimension		φ31(max.) x L = 80.7 mm

TVL8-65



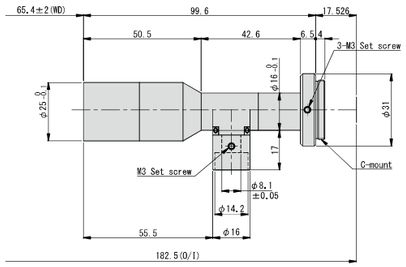
Optical Mag.		8.0x ±5 %
FOV(VxH)	2/3"	0.9 x 1.1 mm
	1/2"	0.6 x 0.8 mm
	1/3"	0.5 x 0.6 mm
WD		64.0 mm ±2
O/I (Object & Imager Distance)		177.0 mm
Working F/#		57.1
NA		0.070
DOF at PCoC φ0.04mm		0.07 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		48 g
Dimension		φ31(max.) x L = 95.5 mm

TVL10-65



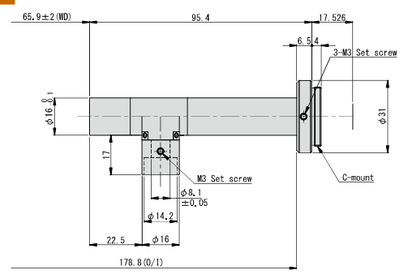
Optical Mag.		10.0x ±5 %
FOV(VxH)	2/3"	0.7 x 0.8 mm
	1/2"	0.5 x 0.6 mm
	1/3"	0.4 x 0.5 mm
WD		64.8 mm ±2
O/I (Object & Imager Distance)		192.7 mm
Working F/#		73.2
NA		0.068
DOF at PCoC φ0.04mm		0.06 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		54 g
Dimension		φ31(max.) x L = 110.4 mm

TVL08-65CO



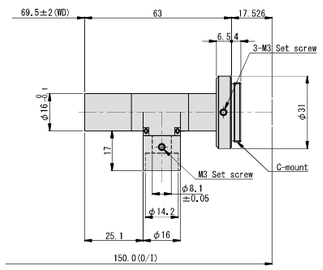
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		65.4 mm ±2
O/I (Object & Imager Distance)		182.5 mm
Working F/#		10.0
NA		0.040
DOF at PCoC φ0.04mm		1.3 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		78 g
Dimension		φ31(max.) x L = 99.6 mm

TVL1-65CO



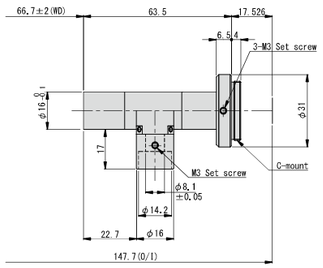
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		65.9 mm ±2
O/I (Object & Imager Distance)		178.8 mm
Working F/#		14.2
NA		0.035
DOF at PCoC φ0.04mm		1.1 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		56 g
Dimension		φ31(max.) x L = 95.4 mm

TVL1.5-70CO



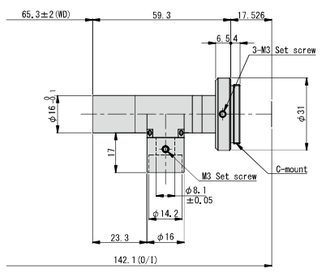
Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	4.7 x 5.6 mm
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		69.5 mm ±2
O/I (Object & Imager Distance)		150.0 mm
Working F/#		15.6
NA		0.048
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (2/3")		0.10 %
Relative Illuminance (Y=5.5)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		44 g
Dimension		φ31(max.) x L = 63 mm

TVL2-65CO



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		66.7 mm ±2
O/I (Object & Imager Distance)		147.7 mm
Working F/#		15.6
NA		0.064
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.04 %
Relative Illuminance (Y=5.5)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		46 g
Dimension		φ31(max.) x L = 63.5 mm

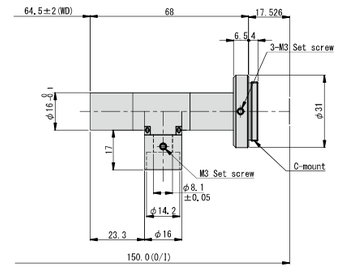
TVL3-65CO



Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		65.3 mm ±2
O/I (Object & Imager Distance)		142.1 mm
Working F/#		22.0
NA		0.068
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.04 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		42 g
Dimension		φ31(max.) x L = 59.3 mm

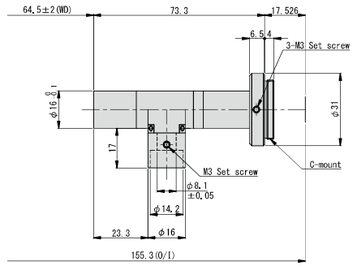
HOURS
www.hours-web.com

TVL4-65CO



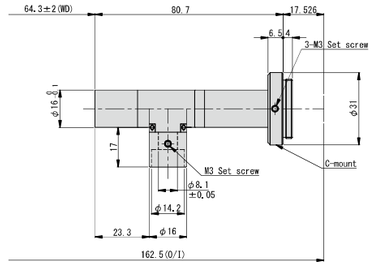
Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		64.5 mm ±2
O/I (Object & Imager Distance)		150.0 mm
Working F/#		29.1
NA		0.069
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		-0.01 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		45 g
Dimension		φ31(max.) x L = 68 mm

TVL5-65CO



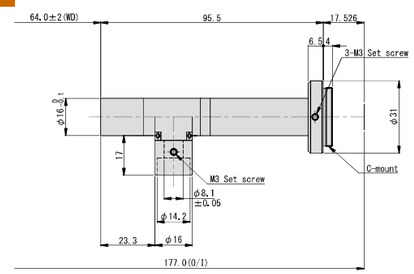
Optical Mag.		5.0x ±5 %
FOV(VxH)	2/3"	1.4 x 1.7 mm
	1/2"	1.0 x 1.3 mm
	1/3"	0.7 x 1.0 mm
WD		64.5 mm ±2
O/I (Object & Imager Distance)		155.3 mm
Working F/#		36.2
NA		0.069
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		47 g
Dimension		φ31(max.) x L = 73.3 mm

TVL6-65CO



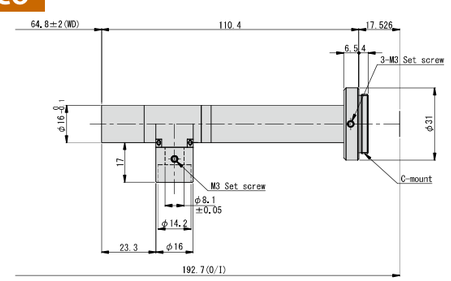
Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		64.3 mm ±2
O/I (Object & Imager Distance)		162.5 mm
Working F/#		43.1
NA		0.070
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		49 g
Dimension		φ31(max.) x L = 80.7 mm

TVL8-65CO



Optical Mag.		8.0x ±5 %
FOV(VxH)	2/3"	0.9 x 1.1 mm
	1/2"	0.6 x 0.8 mm
	1/3"	0.5 x 0.6 mm
WD		64.0 mm ±2
O/I (Object & Imager Distance)		177.0 mm
Working F/#		57.1
NA		0.070
DOF at PCoC φ0.04mm		0.07 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		54 g
Dimension		φ31(max.) x L = 95.5 mm

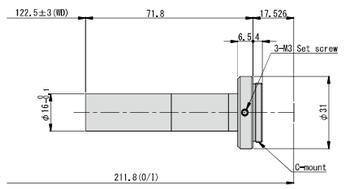
TVL10-65CO



Optical Mag.		10.0x ±5 %
FOV(VxH)	2/3"	0.7 x 0.8 mm
	1/2"	0.5 x 0.6 mm
	1/3"	0.4 x 0.5 mm
WD		64.8 mm ±2
O/I (Object & Imager Distance)		192.7 mm
Working F/#		73.2
NA		0.068
DOF at PCoC φ0.04mm		0.06 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		58 g
Dimension		φ31(max.) x L = 110.4 mm

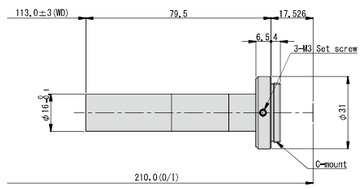
WD:110-170mm Series

TVL08-120



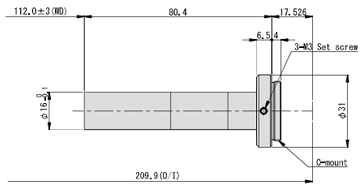
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		122.5 mm ±3
O/I (Object & Imager Distance)		211.8 mm
Working F/#		18.0
NA		0.022
DOF at PCoC φ0.04mm		2.3 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		40 g
Dimension		φ31(max.) x L = 71.8 mm

TVL1-110



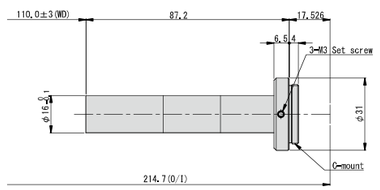
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		113.0 mm ±3
O/I (Object & Imager Distance)		210.0 mm
Working F/#		20.0
NA		0.025
DOF at PCoC φ0.04mm		1.6 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		97 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		42 g
Dimension		φ31(max.) x L = 79.5 mm

TVL1.5-110



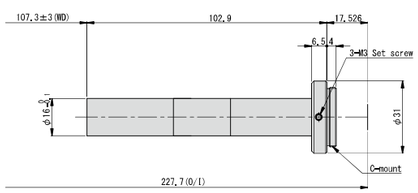
Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	—
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		112.0 mm ±3
O/I (Object & Imager Distance)		209.9 mm
Working F/#		18.8
NA		0.040
DOF at PCoC φ0.04mm		0.7 mm
TV Distortion (1/2")		0.02 %
Relative Illuminance (Y=4)		91 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		42 g
Dimension		φ31(max.) x L = 80.4 mm

TVL2-110



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		110.0 mm ±3
O/I (Object & Imager Distance)		214.7 mm
Working F/#		24.9
NA		0.040
DOF at PCoC φ0.04mm		0.5 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		46 g
Dimension		φ31(max.) x L = 87.2 mm

TVL3-110

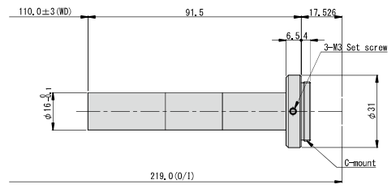


Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		107.3 mm ±3
O/I (Object & Imager Distance)		227.7 mm
Working F/#		37.5
NA		0.040
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.10 %
Relative Illuminance (Y=5.5)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		48 g
Dimension		φ31(max.) x L = 102.9 mm

HOURS
www.hours-web.com

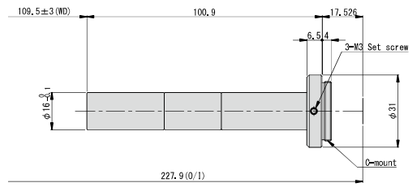
Standard Telecentric Lenses TVL Series

TVL4-110



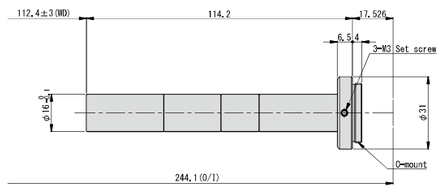
Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		110.0 mm ±3
O/I (Object & Imager Distance)		219.0 mm
Working F/#		41.7
NA		0.048
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		49 g
Dimension		φ31(max.) x L = 91.5 mm

TVL5-110



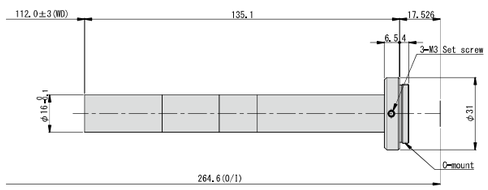
Optical Mag.		5.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	1.0 x 1.3 mm
	1/3"	0.7 x 1.0 mm
WD		109.5 mm ±3
O/I (Object & Imager Distance)		227.9 mm
Working F/#		51.8
NA		0.048
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		52 g
Dimension		φ31(max.) x L = 100.9 mm

TVL6-110



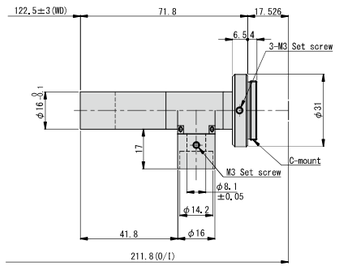
Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		112.4 mm ±3
O/I (Object & Imager Distance)		244.1 mm
Working F/#		67.3
NA		0.045
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		54 g
Dimension		φ31(max.) x L = 114.2 mm

TVL8-110



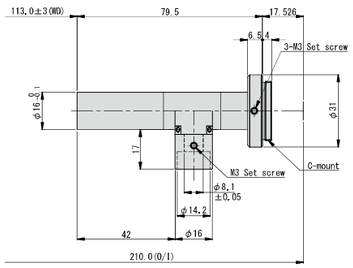
Optical Mag.		8.0x ±5 %
FOV(VxH)	2/3"	0.9 x 1.1 mm
	1/2"	0.6 x 0.8 mm
	1/3"	0.5 x 0.6 mm
WD		112.0 mm ±3
O/I (Object & Imager Distance)		264.6 mm
Working F/#		89.3
NA		0.045
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		60 g
Dimension		φ31(max.) x L = 135.1 mm

TVL08-120CO



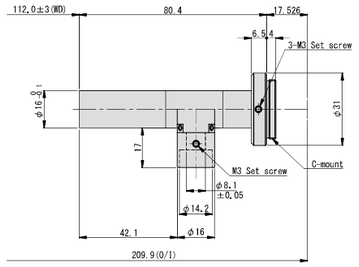
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		122.5 mm ±3
O/I (Object & Imager Distance)		211.8 mm
Working F/#		18.0
NA		0.022
DOF at PCoC φ0.04mm		2.3 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		46 g
Dimension		φ31(max.) x L = 71.8 mm

TVL1-110CO



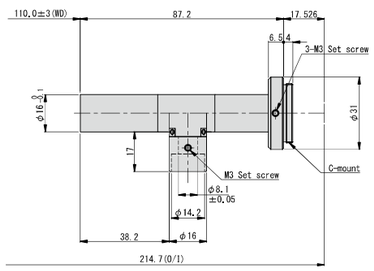
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		113.0 mm ±3
O/I (Object & Imager Distance)		210.0 mm
Working F/#		20.0
NA		0.025
DOF at PCoC φ0.04mm		1.6 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		97 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		48 g
Dimension		φ31(max.) x L = 79.5 mm

TVL1.5-110CO



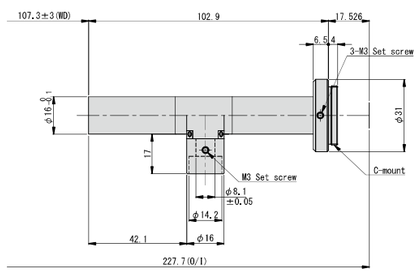
Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	—
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		112.0 mm ±3
O/I (Object & Imager Distance)		209.9 mm
Working F/#		18.8
NA		0.040
DOF at PCoC φ0.04mm		0.7 mm
TV Distortion (1/2")		0.02 %
Relative Illuminance (Y=4)		91 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		49 g
Dimension		φ31(max.) x L = 80.4 mm

TVL2-110CO



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		110.0 mm ±3
O/I (Object & Imager Distance)		214.7 mm
Working F/#		24.9
NA		0.040
DOF at PCoC φ0.04mm		0.5 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		52 g
Dimension		φ31(max.) x L = 87.2 mm

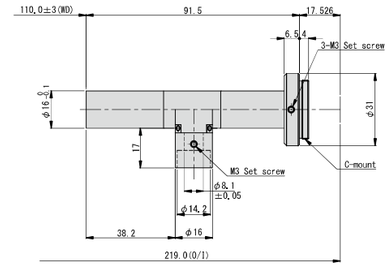
TVL3-110CO



Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		107.3 mm ±3
O/I (Object & Imager Distance)		227.7 mm
Working F/#		37.5
NA		0.040
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.10 %
Relative Illuminance (Y=5.5)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		56 g
Dimension		φ31(max.) x L = 102.9 mm

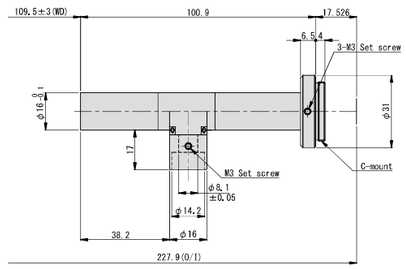
HOURS
www.hours-web.com

TVL4-110CO



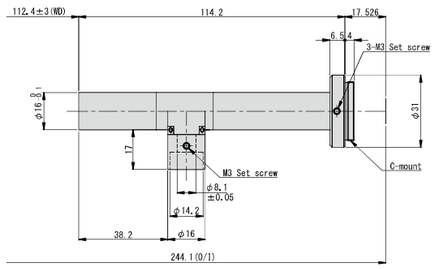
Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		110.0 mm ±3
O/I (Object & Imager Distance)		219.0 mm
Working F/#		41.7
NA		0.048
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		54 g
Dimension		φ31(max.) x L = 91.5 mm

TVL5-110CO



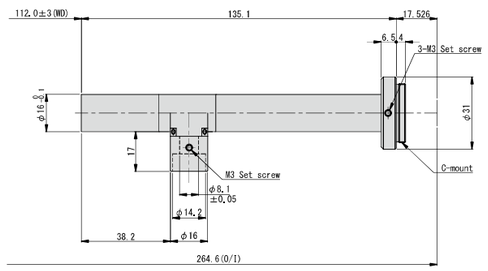
Optical Mag.		5.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	1.0 x 1.3 mm
	1/3"	0.7 x 1.0 mm
WD		109.5 mm ±3
O/I (Object & Imager Distance)		227.9 mm
Working F/#		51.8
NA		0.048
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1/2")		0.00 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		58 g
Dimension		φ31(max.) x L = 100.9 mm

TVL6-110CO



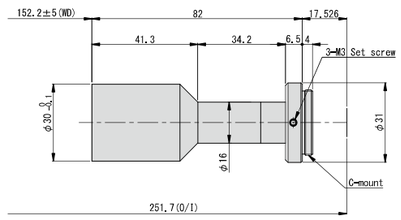
Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		112.4 mm ±3
O/I (Object & Imager Distance)		244.1 mm
Working F/#		67.3
NA		0.045
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		60 g
Dimension		φ31(max.) x L = 114.2 mm

TVL8-110CO



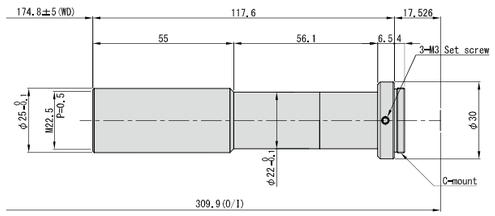
Optical Mag.		8.0x ±5 %
FOV(VxH)	2/3"	0.9 x 1.1 mm
	1/2"	0.6 x 0.8 mm
	1/3"	0.5 x 0.6 mm
WD		112.0 mm ±3
O/I (Object & Imager Distance)		264.6 mm
Working F/#		89.3
NA		0.045
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		66 g
Dimension		φ31(max.) x L = 135.1 mm

TVL05-150



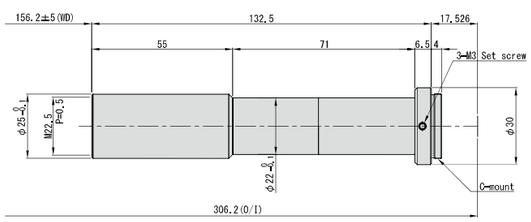
Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	—
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		152.2 mm ±5
O/I (Object & Imager Distance)		251.7 mm
Working F/#		12.5
NA		0.020
DOF at PCoC φ0.04mm		4.0 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		76 g
Dimension		φ31(max.) x L = 82 mm

TVL08-170



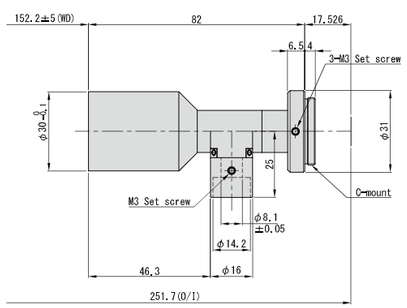
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		174.8 mm ±5
O/I (Object & Imager Distance)		309.9 mm
Working F/#		13.9
NA		0.029
DOF at PCoC φ0.04mm		1.7 mm
TV Distortion (1/2")		0.02 %
Relative Illuminance (Y=4)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		72 g
Dimension		φ30(max.) x L = 117.6 mm

TVL1-150



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		156.2 mm ±5
O/I (Object & Imager Distance)		306.2 mm
Working F/#		13.0
NA		0.038
DOF at PCoC φ0.04mm		1.0 mm
TV Distortion (1/2")		0.01 %
Relative Illuminance (Y=4)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		78 g
Dimension		φ30(max.) x L = 132.5 mm

TVL05-150CO

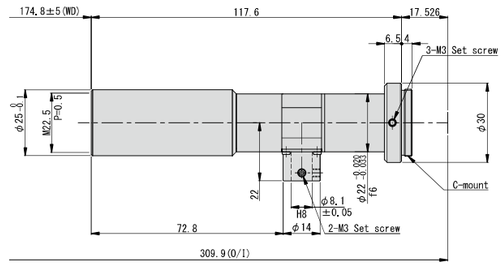


Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	—
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		152.2 mm ±5
O/I (Object & Imager Distance)		251.7 mm
Working F/#		12.5
NA		0.020
DOF at PCoC φ0.04mm		4.0 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		82 g
Dimension		φ31(max.) x L = 82 mm

HOURS
www.hours-web.com

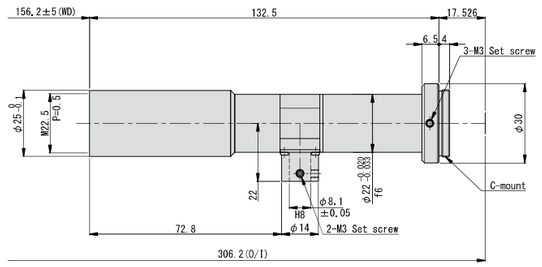
Standard Telecentric Lenses TVL Series

TVL08-170CO



Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		174.8 mm ±5
O/I (Object & Imager Distance)		309.9 mm
Working F/#		13.9
NA		0.029
DOF at PCoC φ0.04mm		1.7 mm
TV Distortion (1/2")		0.02 %
Relative Illuminance (Y=4)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		78 g
Dimension		φ30(max.) x L = 117.6 mm

TVL1-150CO

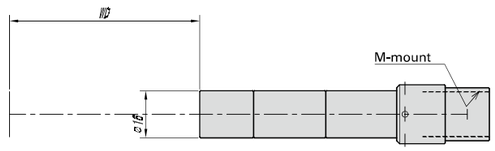


Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		156.2 mm ±5
O/I (Object & Imager Distance)		306.2 mm
Working F/#		13.0
NA		0.038
DOF at PCoC φ0.04mm		1.0 mm
TV Distortion (1/2")		0.01 %
Relative Illuminance (Y=4)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		82 g
Dimension		φ30(max.) x L = 132.5 mm

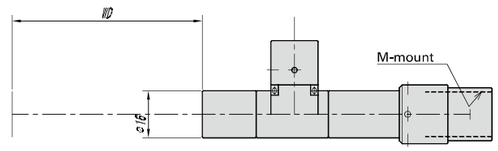
Custom-example

1/2" CCD (M15.5 P.0.5)

φ16mm (M15.5 P0.5) Straight model



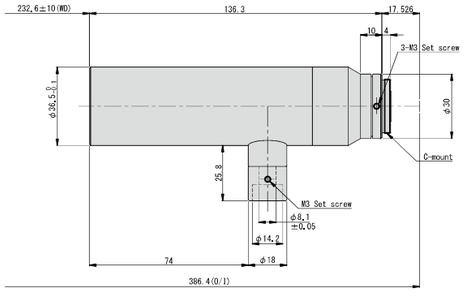
φ16mm (M15.5 P0.5) Co-axial model



Mag.	0.8x	1.0x	1.5x	2.0x	3.0x	4.0x	5.0x	6.0x	8.0x	10.0x
WD40 Series			○	○	○	○		○	○	
WD65 Series		○	○	○	○	○	○	○	○	○
WD110 Series	○	○	○	○	○	○	○	○	○	

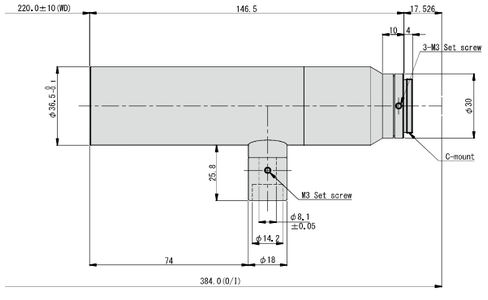
WD:220mm Series

TVL08-220CO



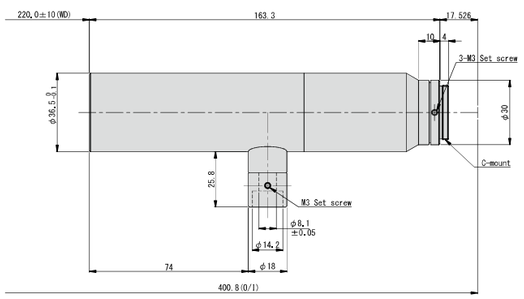
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		232.6 mm ±10
O/I (Object & Imager Distance)		386.4 mm
Working F/#		8.0
NA		0.050
DOF at PCoC φ0.04mm		1.0 mm
TV Distortion (1/2")		-0.15 %
Relative Illuminance (Y=4)		85 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		225 g
Dimension		φ36.5(max.) x L = 136.3 mm

TVL1-220CO



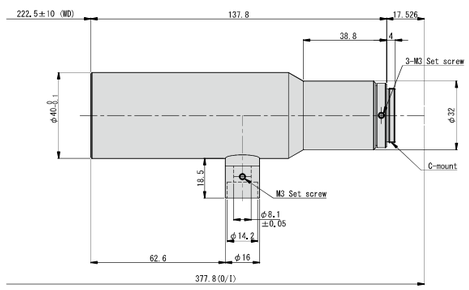
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		220.0 mm ±10
O/I (Object & Imager Distance)		384.0 mm
Working F/#		10.0
NA		0.050
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		245 g
Dimension		φ36.5(max.) x L = 146.5 mm

TVL2-220CO



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		220.0 mm ±10
O/I (Object & Imager Distance)		400.8 mm
Working F/#		20.0
NA		0.050
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		270 g
Dimension		φ36.5(max.) x L = 163.3 mm

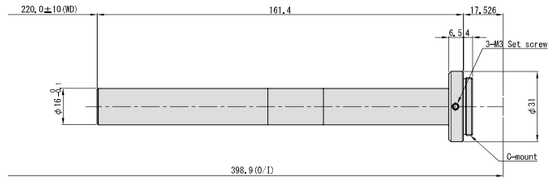
TVL4-220CO



Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		222.5 mm ±10
O/I (Object & Imager Distance)		377.8 mm
Working F/#		29.4
NA		0.068
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		330 g
Dimension		φ40(max.) x L = 137.8 mm

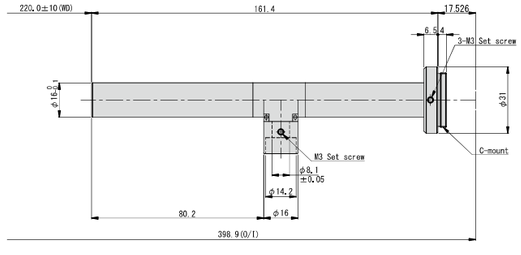
WD:220mmφ16 Series

TVL2-220S



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		222.0 mm ±10
O/I (Object & Imager Distance)		389.9 mm
Working F/#		43.5
NA		0.023
DOF at PCoC φ0.04mm		0.9 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		66 g
Dimension		φ31(max.) x L = 161.4 mm

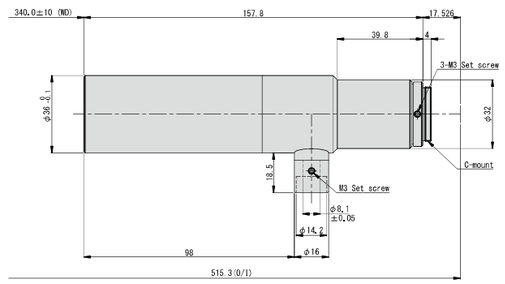
TVL2-220COS



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		220.0 mm ±10
O/I (Object & Imager Distance)		398.9 mm
Working F/#		43.5
NA		0.023
DOF at PCoC φ0.04mm		0.9 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		70 g
Dimension		φ31(max.) x L = 161.4 mm

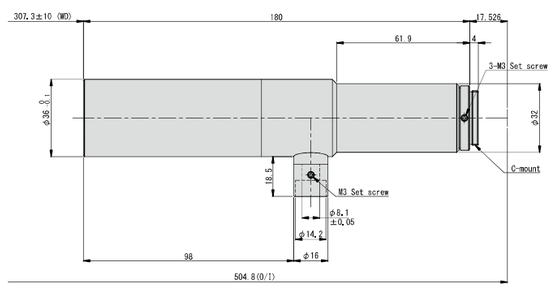
WD:300-340mm Series

TVL07-340CO



Optical Mag.		0.7x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.9 x 9.1 mm
	1/3"	5.1 x 6.9 mm
WD		340.0 mm ±10
O/I (Object & Imager Distance)		515.3 mm
Working F/#		10.9
NA		0.032
DOF at PCoC φ0.04mm		1.8 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		235 g
Dimension		φ36(max.) x L = 157.8 mm

TVL1-300CO



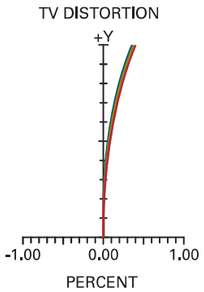
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		307.3 mm ±10
O/I (Object & Imager Distance)		504.8 mm
Working F/#		15.6
NA		0.032
DOF at PCoC φ0.04mm		1.2 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		265 g
Dimension		φ36(max.) x L = 180 mm

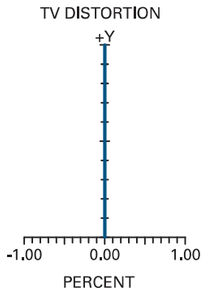
TCL Series 2/3" 1/1.8"

The TCL series was designed for use at a 65mm or 110mm WD (depending on the particular lens) with up to a 2/3" sensor camera. It is a great choice for any machine vision application needing a high resolution, distortionless image.

Features
- 2/3" sensor support
- 65/110mm WD
- High Resolution
- High Telecentricity

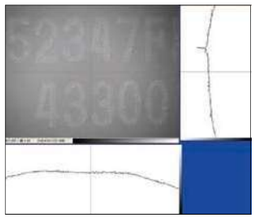
Low distortion



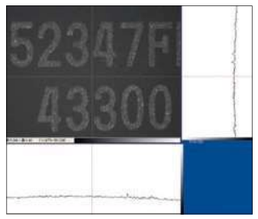


High contrast in entire Field of View

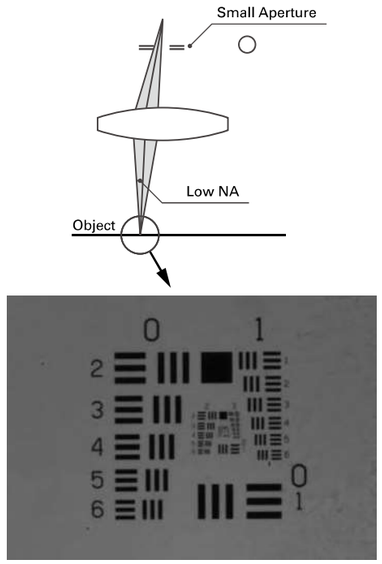
Other product



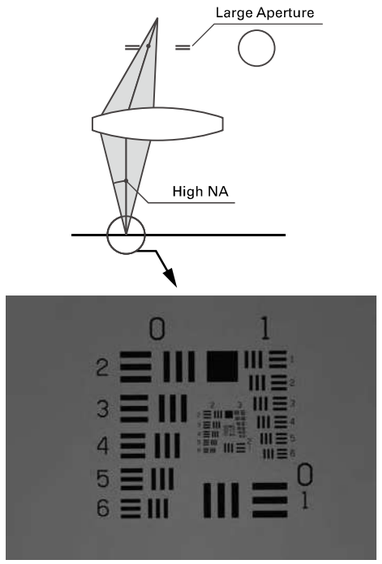
VS-TCH Series



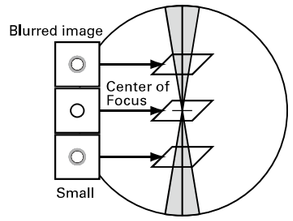
Lens Resolution, NA and Depth of Field (DOF)

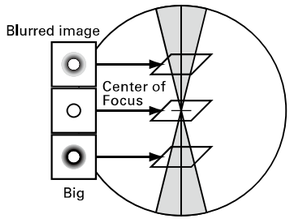


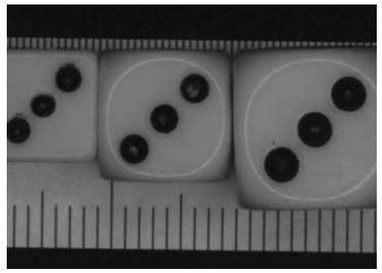
Low Resolution



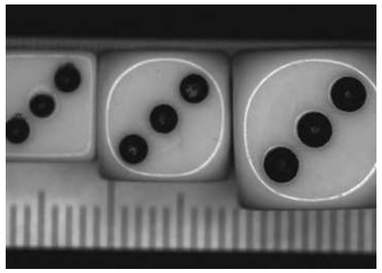
High Resolution







In focus small dice



Out of focus small dice

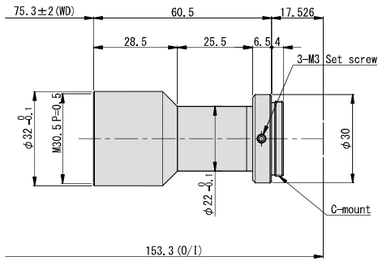
〈 Testing Environment 〉	Camera : STC-A152A Lens: NA High VS-TC M022-150/S (Open) NA Low VS-TCM022-150/S (Close) Lighting: Chart: UEB-70W50 Dice: UNSL-73W100

Note: Brightness is adjusted by camera shutter speed and lighting

Technology has a lineup of variable iris models to modify the depth of field easily .
In addition, we can customize a fixed iris to suit your needs.

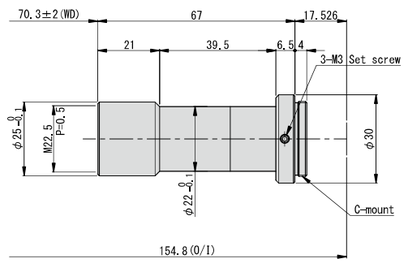
WD:65-75mm Series

TCL05-65



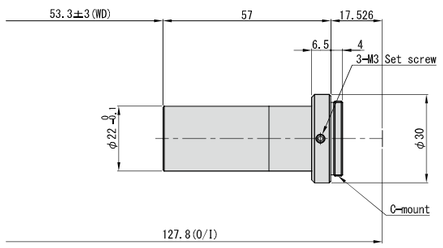
Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		75.3 mm ±2
O/I (Object & Imager Distance)		153.3 mm
Working F/#		9.4
NA		0.027
DOF at PCoC φ0.04mm		3.0 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		94 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		62 g
Dimension		φ32(max.) x L = 60.5 mm

TCL08-65



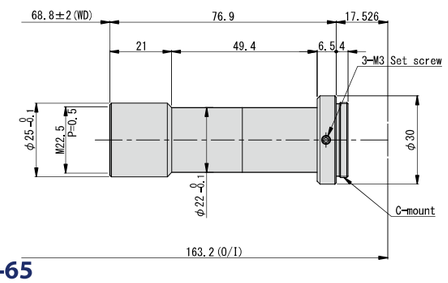
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	8.9 x 10.5 mm
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		70.3 mm ±2
O/I (Object & Imager Distance)		154.8 mm
Working F/#		9.6
NA		0.042
DOF at PCoC φ0.04mm		1.2 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		58 g
Dimension		φ30(max.) x L = 67 mm

TCL1-50



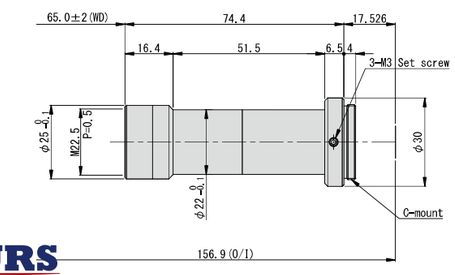
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		53.3 mm ±3
O/I (Object & Imager Distance)		127.8 mm
Working F/#		9.9
NA		0.050
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		47 g
Dimension		φ30(max.) x L = 57 mm

TCL1-65



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		68.8 mm ±2
O/I (Object & Imager Distance)		163.2 mm
Working F/#		9.9
NA		0.050
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		60 g
Dimension		φ30(max.) x L = 76.9 mm

TCL1.5-65

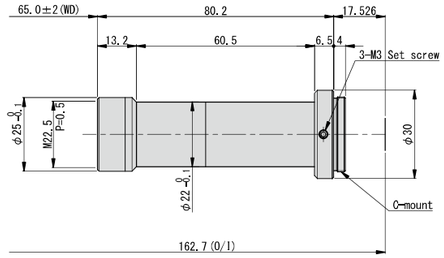


Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	4.7 x 5.6 mm
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		156.9 mm
Working F/#		11.8
NA		0.064
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		60 g
Dimension		φ30(max.) x L = 74.4 mm

HOURS
www.hours-web.com

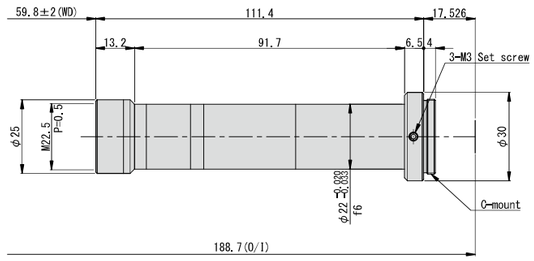
High Resolution Telecentric Lenses TCL Series

TCL2-65



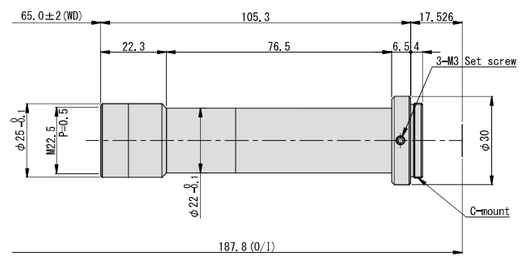
Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		162.7 mm
Working F/#		13.6
NA		0.074
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		58 g
Dimension		φ30(max.) x L = 80.2 mm

TCL3-60



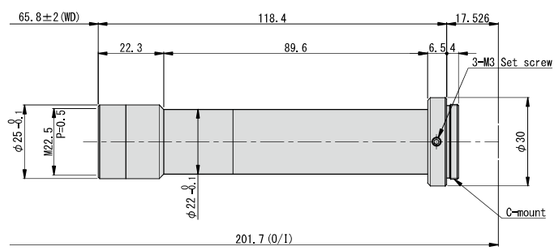
Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		59.8 mm ±2
O/I (Object & Imager Distance)		188.7 mm
Working F/#		20.5
NA		0.073
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		72 g
Dimension		φ30(max.) x L = 111.4 mm

TCL4-65



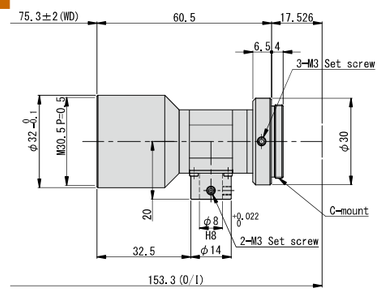
Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		187.8 mm
Working F/#		17.9
NA		0.112
DOF at PCoC φ0.04mm		0.09 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		85 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		80 g
Dimension		φ30(max.) x L = 105.3 mm

TCL6-65



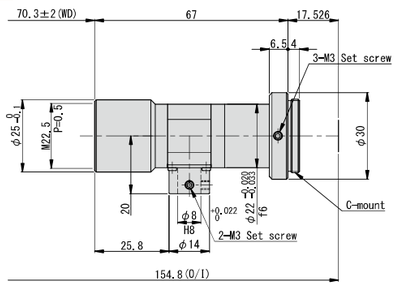
Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		65.8 mm ±2
O/I (Object & Imager Distance)		201.7 mm
Working F/#		27.0
NA		0.111
DOF at PCoC φ0.04mm		0.06 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		84 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		88 g
Dimension		φ30(max.) x L = 118.4 mm

TCL05-65CO



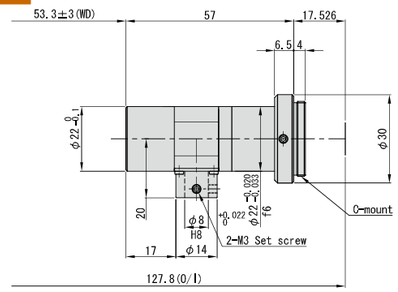
Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		75.3 mm ±2
O/I (Object & Imager Distance)		153.3 mm
Working F/#		9.4
NA		0.027
DOF at PCoC φ0.04mm		3.0 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		94 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		66 g
Dimension		φ32(max.) x L = 60.5 mm

TCL08-65CO



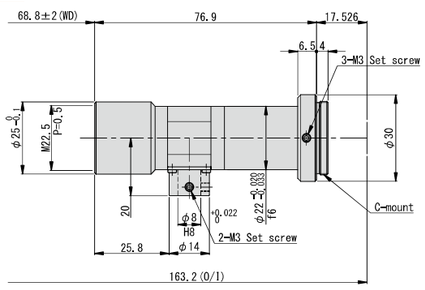
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	8.9 x 10.5 mm
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		70.3 mm ±2
O/I (Object & Imager Distance)		154.8 mm
Working F/#		9.6
NA		0.042
DOF at PCoC φ0.04mm		1.2 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		62 g
Dimension		φ30(max.) x L = 67 mm

TCL1-50CO



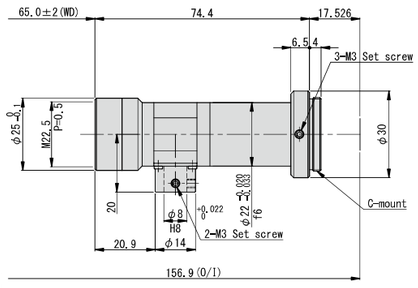
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		53.3 mm ±3
O/I (Object & Imager Distance)		127.8 mm
Working F/#		9.9
NA		0.050
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Weight (approx.)		52 g
Dimension		φ30(max.) x L = 57 mm

TCL1-65CO



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		68.8 mm ±2
O/I (Object & Imager Distance)		163.2 mm
Working F/#		9.9
NA		0.050
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		64 g
Dimension		φ30(max.) x L = 76.9 mm

TCL1.5-65CO

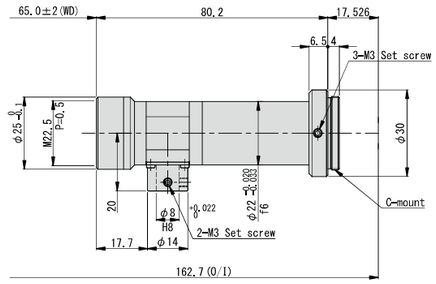


Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	4.7 x 5.6 mm
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		156.9 mm
Working F/#		11.8
NA		0.064
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		64 g
Dimension		φ30(max.) x L = 74.4 mm

HOURS
www.hours-web.com

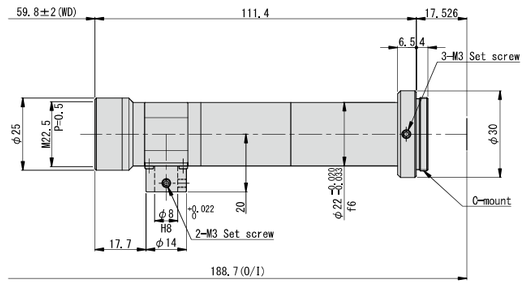
High Resolution Telecentric Lenses TCL Series

TCL2-65CO



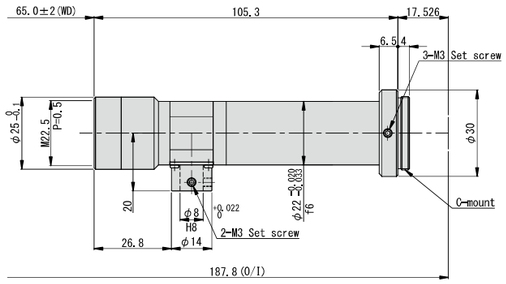
Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		162.7 mm
Working F/#		13.6
NA		0.074
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		62 g
Dimension		φ30(max.) x L = 80.2 mm

TCL3-60CO



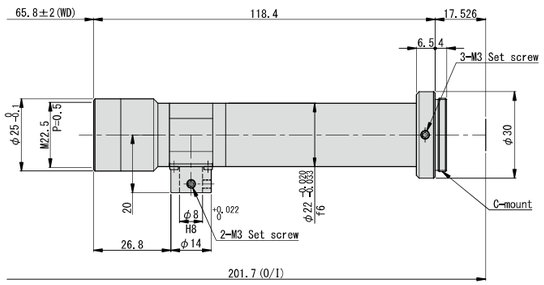
Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		59.8 mm ±2
O/I (Object & Imager Distance)		188.7 mm
Working F/#		20.5
NA		0.073
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		76 g
Dimension		φ30(max.) x L = 111.4 mm

TCL4-65CO



Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		187.8 mm
Working F/#		17.9
NA		0.112
DOF at PCoC φ0.04mm		0.09 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		85 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		84 g
Dimension		φ30(max.) x L = 105.3 mm

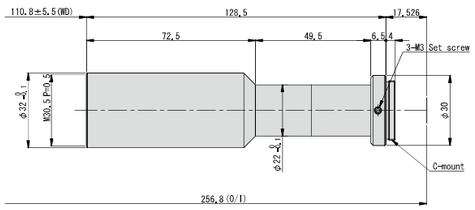
TCL6-65CO



Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		65.8 mm ±2
O/I (Object & Imager Distance)		201.7 mm
Working F/#		27.0
NA		0.111
DOF at PCoC φ0.04mm		0.06 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		84 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		92 g
Dimension		φ30(max.) x L = 118.4 mm

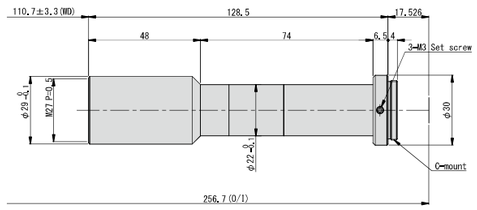
WD:110mm Series

TCL05-110



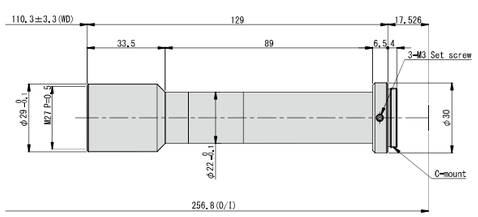
Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		110.8 mm ±5.5
O/I (Object & Imager Distance)		256.8 mm
Working F/#		9.5
NA		0.026
DOF at PCoC φ0.04mm		3.0 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		92 g
Dimension		φ32(max.) x L = 128.5 mm

TCL08-110



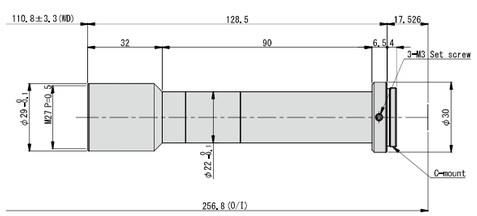
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	8.9 x 10.5 mm
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		110.7 mm ±3.3
O/I (Object & Imager Distance)		256.7 mm
Working F/#		11.0
NA		0.036
DOF at PCoC φ0.04mm		1.4 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 27 P = 0.5
Weight (approx.)		92 g
Dimension		φ30(max.) x L = 128.5 mm

TCL1-110



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		110.3 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		10.5
NA		0.048
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 27 P = 0.5
Weight (approx.)		92 g
Dimension		φ30(max.) x L = 129 mm

TCL1.5-110

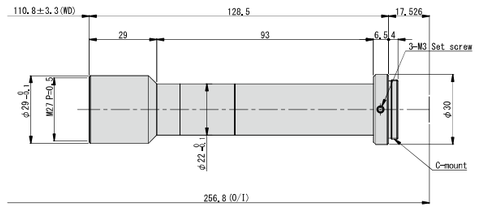


Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	4.7 x 5.6 mm
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		110.8 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		12.0
NA		0.063
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 27 P = 0.5
Weight (approx.)		84 g
Dimension		φ30(max.) x L = 128.5 mm

HOURS
www.hours-web.com

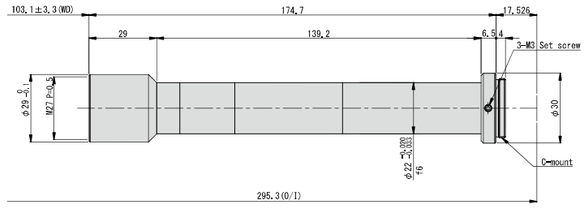
High Resolution Telecentric Lenses TCL Series

TCL2-110



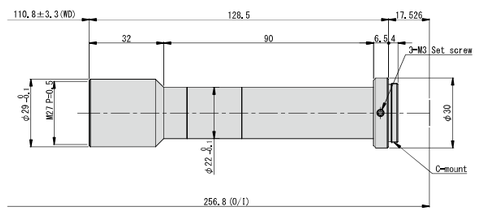
Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		110.8 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		13.5
NA		0.074
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 27 P = 0.5
Weight (approx.)		88 g
Dimension		φ30(max.) x L = 128.5 mm

TCL3-100



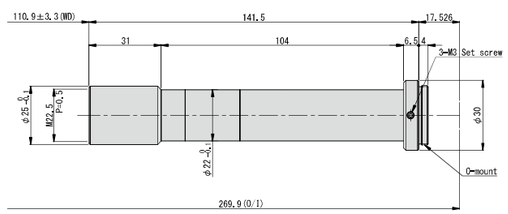
Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		103.1 mm ±3.3
O/I (Object & Imager Distance)		295.3 mm
Working F/#		20.9
NA		0.072
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 27 P = 0.5
Weight (approx.)		110 g
Dimension		φ30(max.) x L = 174.7 mm

TCL4-110



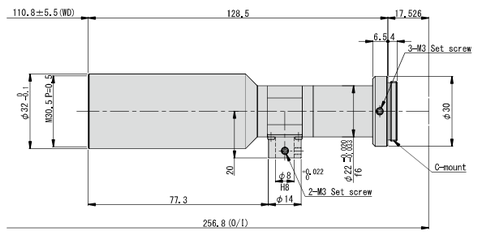
Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		110.8 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		22.2
NA		0.090
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		87 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 27 P = 0.5
Weight (approx.)		90 g
Dimension		φ30(max.) x L = 128.5 mm

TCL6-110



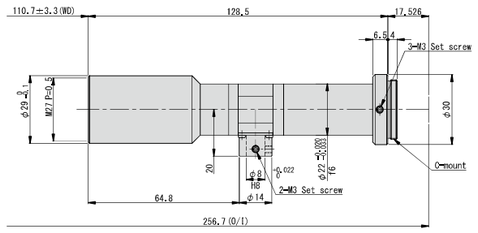
Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		110.9 mm ±3.3
O/I (Object & Imager Distance)		269.9 mm
Working F/#		39.3
NA		0.076
DOF at PCoC φ0.04mm		0.09 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		87 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		90 g
Dimension		φ30(max.) x L = 141.5 mm

TCL05-110CO



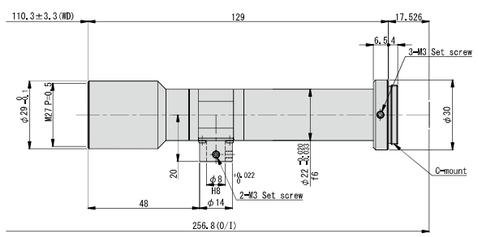
Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		110.8 mm ±5.5
O/I (Object & Imager Distance)		256.8 mm
Working F/#		9.5
NA		0.026
DOF at PCoC φ0.04mm		3.0 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		98 g
Dimension		φ32(max.) x L = 128.5 mm

TCL08-110CO



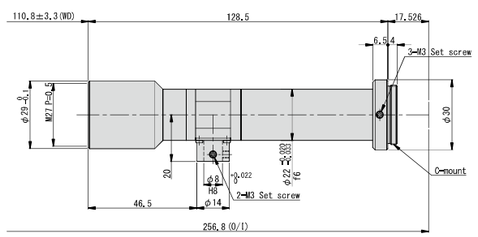
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	8.9 x 10.5 mm
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		110.7 mm ±3.3
O/I (Object & Imager Distance)		256.7 mm
Working F/#		11.0
NA		0.036
DOF at PCoC φ0.04mm		1.4 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 27 P = 0.5
Weight (approx.)		98 g
Dimension		φ30(max.) x L = 128.5 mm

TCL1-110CO



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		110.3 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		10.5
NA		0.048
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 27 P = 0.5
Weight (approx.)		96 g
Dimension		φ30(max.) x L = 129 mm

TCL1.5-110CO

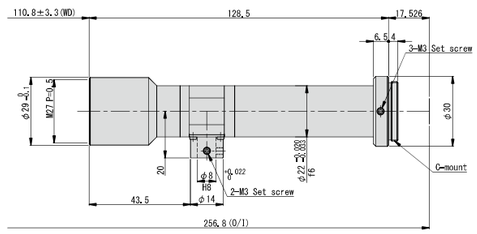


Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	4.7 x 5.6 mm
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		110.8 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		12.0
NA		0.063
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 27 P = 0.5
Weight (approx.)		88 g
Dimension		φ30(max.) x L = 128.5 mm

HOURS
www.hours-web.com

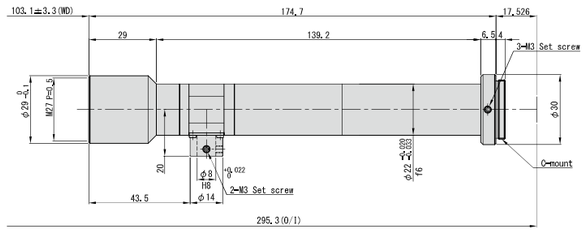
High Resolution Telecentric Lenses TCL Series

TCL2-110CO



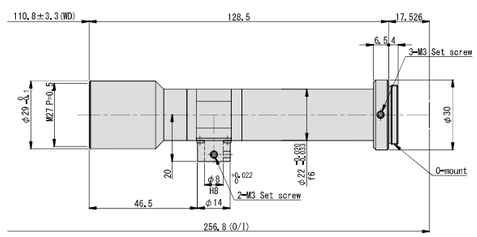
Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		110.8 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		13.5
NA		0.074
DOF at PCoC φ0.04mm		0.3 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 27 P = 0.5
Weight (approx.)		94 g
Dimension		φ30(max.) x L = 128.5 mm

TCL3-100CO



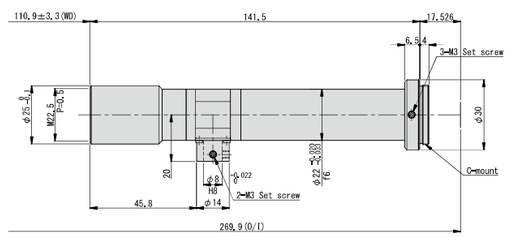
Optical Mag.		3.0x ±5 %
FOV(VxH)	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
	1/3"	1.2 x 1.6 mm
WD		103.1 mm ±3.3
O/I (Object & Imager Distance)		295.3 mm
Working F/#		20.9
NA		0.072
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 27 P = 0.5
Weight (approx.)		114 g
Dimension		φ30(max.) x L = 174.7 mm

TCL4-110CO



Optical Mag.		4.0x ±5 %
FOV(VxH)	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
	1/3"	0.9 x 1.2 mm
WD		110.8 mm ±3.3
O/I (Object & Imager Distance)		256.8 mm
Working F/#		22.2
NA		0.090
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		87 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 27 P = 0.5
Weight (approx.)		96 g
Dimension		φ30(max.) x L = 128.5 mm

TCL6-110CO



Optical Mag.		6.0x ±5 %
FOV(VxH)	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
	1/3"	0.6 x 0.8 mm
WD		110.9 mm ±3.3
O/I (Object & Imager Distance)		269.9 mm
Working F/#		39.3
NA		0.076
DOF at PCoC φ0.04mm		0.09 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		87 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 22.5 P = 0.5
Weight (approx.)		94 g
Dimension		φ30(max.) x L = 141.5 mm

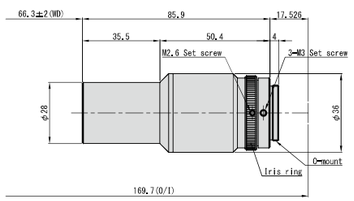
TML Series 1.1" 1" 1/1.2"

The TML series is made to suit larger sensor format, high resolution cameras. With its high NA these lenses are well suited for AOI, high accuracy inspection, and measurement applications. The adjustable aperture allows the DOF and contrast to be set to your application's needs.

Features

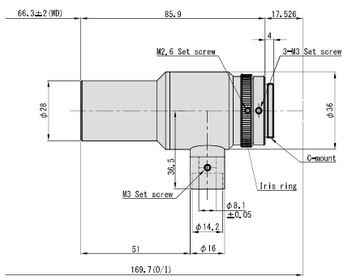
- 1/2" - 1.1" sensor support
- 33 models available
- 0.1x - 7.0x Magnification
- Telecentric design

TML075-65



Optical Mag.		0.75x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.4 x 8.5 mm
	1/3"	4.8 x 6.4 mm
WD		66.3 mm ±2
O/I (Object & Imager Distance)		169.7 mm
Working F/# *Value at Iris Open		5.0
NA		0.076
DOF at PCoC φ0.04mm		0.7 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		146 g
Dimension		φ36(max.) x L = 85.9 mm

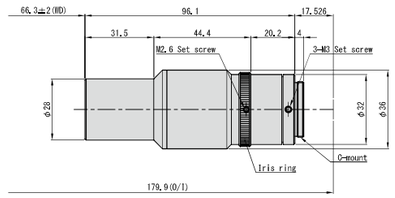
TML075-65CO



Optical Mag.		0.75x ±5 %
FOV(VxH)	2/3"	—
	1/2"	6.4 x 8.5 mm
	1/3"	4.8 x 6.4 mm
WD		66.3 mm ±2
O/I (Object & Imager Distance)		169.7 mm
Working F/# *Value at Iris Open		5.0
NA		0.076
DOF at PCoC φ0.04mm		0.7 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		148 g
Dimension		φ36(max.) x L = 85.9 mm

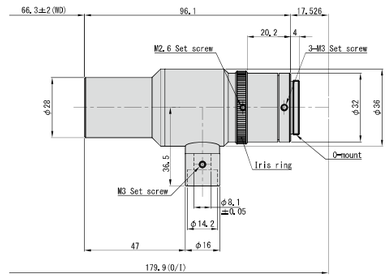
HOURS
www.hours-web.com

TML1-65



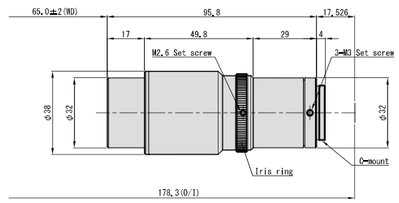
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		66.3 mm ±2
O/I (Object & Imager Distance)		179.9 mm
Working F/# *Value at Iris Open		6.2
NA		0.081
DOF at PCoC φ0.04mm		0.5 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		155 g
Dimension		φ36(max.) x L = 96.1 mm

TML1-65CO



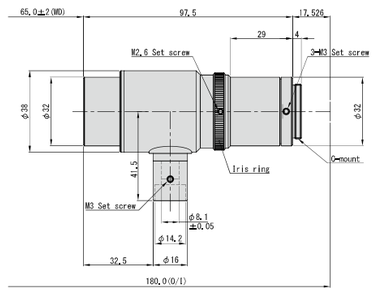
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		66.3 mm ±2
O/I (Object & Imager Distance)		179.9 mm
Working F/# *Value at Iris Open		6.2
NA		0.081
DOF at PCoC φ0.04mm		0.5 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		160 g
Dimension		φ36(max.) x L = 96.1 mm

TML2-65



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		178.3 mm
Working F/# *Value at Iris Open		6.6
NA		0.152
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		200 g
Dimension		φ38(max.) x L = 95.8 mm

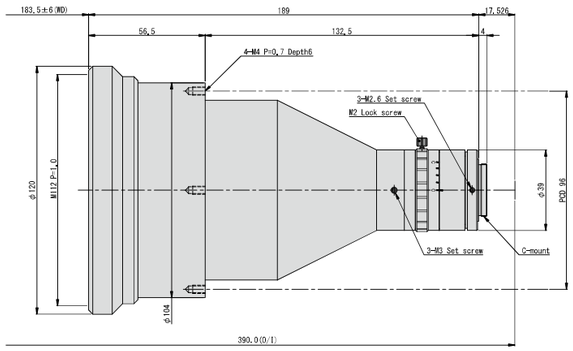
TML2-65CO



Optical Mag.		2.0x ±5 %
FOV(VxH)	2/3"	—
	1/2"	2.4 x 3.2 mm
	1/3"	1.8 x 2.4 mm
WD		65.0 mm ±2
O/I (Object & Imager Distance)		180.0 mm
Working F/# *Value at Iris Open		6.6
NA		0.152
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (1/2")		0.10 %
Relative Illuminance (Y=4)		95 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		210 g
Dimension		φ38(max.) x L = 97.5 mm

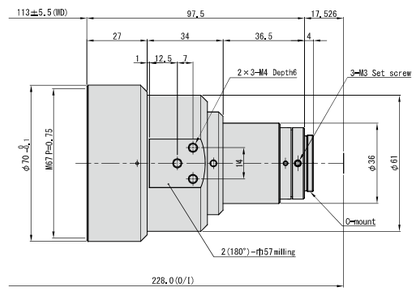
WD:110-335mm Series

TML01-180



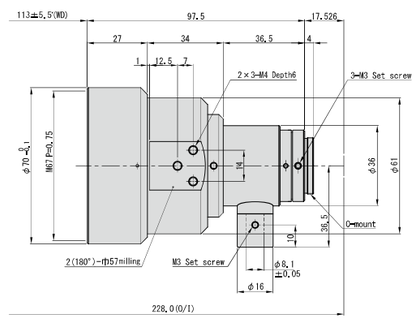
Optical Mag.		0.1x ±5 %
FOV(VxH)	1/1.8"	54.0 x 71.0 mm
	1/2"	48.0 x 64.0 mm
	1/3"	36.0 x 48.0 mm
WD		183.5 mm ±6
O/I (Object & Imager Distance)		390.0 mm
Working F/# *Value at Iris Open		5.6
NA		0.009
DOF at PCoC φ0.04mm		44.8 mm
TV Distortion (1/1.8")		0.01 %
Relative Illuminance (Y=4.4)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/1.8"
Co-Axial Prism		—
Filter Thread		M 112 P = 1.0
Weight (approx.)		940 g
Dimension		φ120(max.) x L = 189 mm

TML017-110



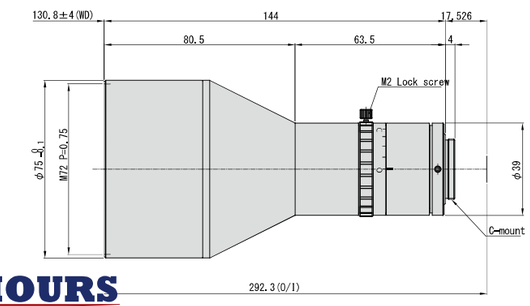
Optical Mag.		0.17x ±5 %
FOV(VxH)	1/1.8"	31.8 x 41.8 mm
	1/2"	28.2 x 37.6 mm
	1/3"	21.2 x 28.2 mm
WD		113.0 mm ±5.5
O/I (Object & Imager Distance)		228.0 mm
Working F/#		4.0
NA		0.021
DOF at PCoC φ0.04mm		11.1 mm
TV Distortion (1/1.8")		0.02 %
Relative Illuminance (Y=4.4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/1.8"
Co-Axial Prism		—
Filter Thread		M 67 P = 0.75
Weight (approx.)		380 g
Dimension		φ70(max.) x L = 97.5 mm

TML017-110CO



Optical Mag.		0.17x ±5 %
FOV(VxH)	1/1.8"	31.8 x 41.8 mm
	1/2"	28.2 x 37.6 mm
	1/3"	21.2 x 28.2 mm
WD		113.0 mm ±5.5
O/I (Object & Imager Distance)		228.0 mm
Working F/#		4.0
NA		0.021
DOF at PCoC φ0.04mm		11.1 mm
TV Distortion (1/1.8")		0.02 %
Relative Illuminance (Y=4.4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/1.8"
Co-Axial Prism		Built-in
Filter Thread		M 67 P = 0.75
Weight (approx.)		390 g
Dimension		φ70(max.) x L = 97.5 mm

TML019-130

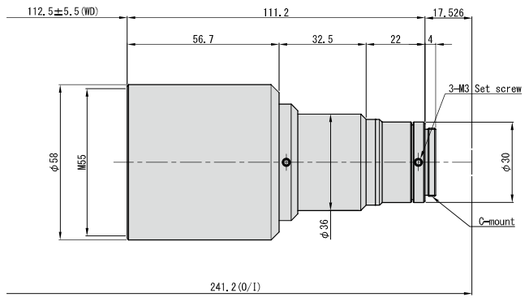


Optical Mag.		0.19x ±5 %
FOV(VxH)	2/3"	37.4 x 44.2 mm
	1/2"	25.3 x 33.7 mm
	1/3"	18.9 x 25.3 mm
WD		130.8 mm ±4
O/I (Object & Imager Distance)		292.3 mm
Working F/# *Value at Iris Open		4.3
NA		0.022
DOF at PCoC φ0.04mm		9.5 mm
TV Distortion (2/3")		-0.01 %
Relative Illuminance (Y=5.5)		96 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 72 P = 0.75
Weight (approx.)		410 g
Dimension		φ75(max.) x L = 144 mm

HOURS
www.hours-web.com

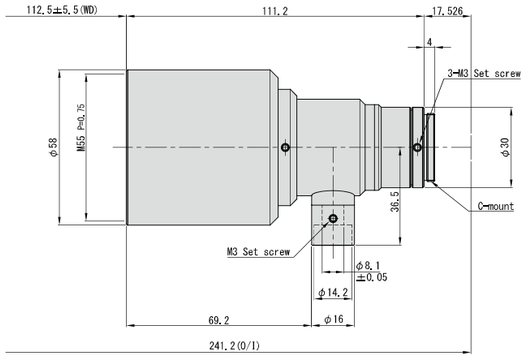
Large Sensor Format Telecentric Lenses TML Series

TML022-110



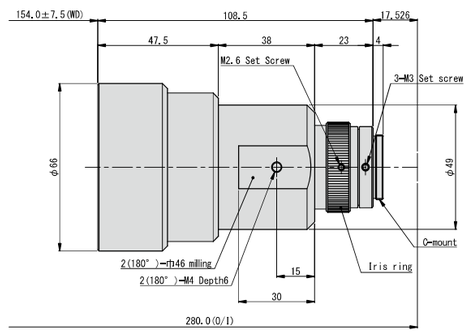
Optical Mag.		0.22x ±5 %
FOV(VxH)	1/1.8"	24.5 x 32.3 mm
	1/2"	21.8 x 29.1 mm
	1/3"	16.4 x 21.8 mm
WD		112.5 mm ±5.5
O/I (Object & Imager Distance)		241.2 mm
Working F/#		5.6
NA		0.020
DOF at PCoC φ0.04mm		9.3 mm
TV Distortion (1/1.8")		0.05 %
Relative Illuminance (Y=4.4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/1.8"
Co-Axial Prism		—
Filter Thread		M 55 P = 0.75
Weight (approx.)		380 g
Dimension		φ58(max.) x L = 111.2 mm

TML022-110CO



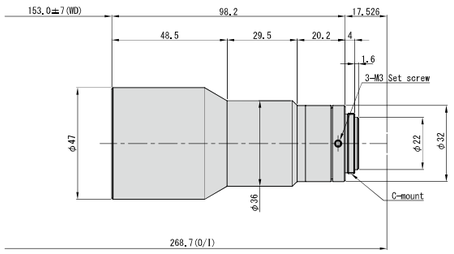
Optical Mag.		0.22x ±5 %
FOV(VxH)	1/1.8"	24.5 x 32.3 mm
	1/2"	21.8 x 29.1 mm
	1/3"	16.4 x 21.8 mm
WD		112.5 mm ±5.5
O/I (Object & Imager Distance)		241.2 mm
Working F/#		5.6
NA		0.020
DOF at PCoC φ0.04mm		9.3 mm
TV Distortion (1/1.8")		0.05 %
Relative Illuminance (Y=4.4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/1.8"
Co-Axial Prism		Built-in
Filter Thread		M 55 P = 0.75
Weight (approx.)		380 g
Dimension		φ58(max.) x L = 111.2 mm

TML022-150



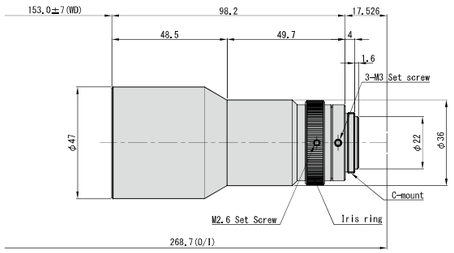
Optical Mag.		0.22x ±5 %
FOV(VxH)	2/3"	32.3 x 38.2 mm
	1/2"	21.8 x 29.1 mm
	1/3"	16.4 x 21.8 mm
WD		154.0 mm ±7.5
O/I (Object & Imager Distance)		280 mm
Working F/# *Value at Iris Open		5.5
NA		0.020
DOF at PCoC φ0.04mm		9.1 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Weight (approx.)		360 g
Dimension		φ66(max.) x L = 108.5 mm

TML025-150



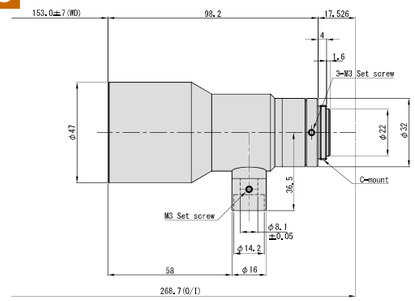
Optical Mag.		0.25x ±5 %
FOV(VxH)	2/3"	—
	1/2"	19.2 x 25.6 mm
	1/3"	14.4 x 19.2 mm
WD		153.0 mm ±7
O/I (Object & Imager Distance)		268.7 mm
Working F/#		3.9
NA		0.032
DOF at PCoC φ0.04mm		5.0 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		250 g
Dimension		φ47(max.) x L = 98.2 mm

TML025-150S



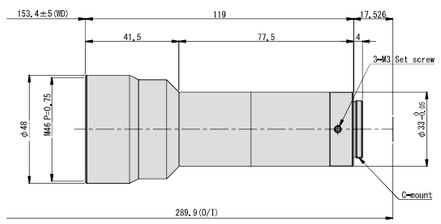
Optical Mag.		0.25x ±5 %
FOV(VxH)	2/3"	—
	1/2"	19.2 x 25.6 mm
	1/3"	14.4 x 19.2 mm
WD		153.0 mm ±7
O/I (Object & Imager Distance)		268.7 mm
Working F/# *Value at Iris Open		3.9
NA		0.032
DOF at PCoC φ0.04mm		5.0 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		—
Weight (approx.)		250 g
Dimension		φ47(max.) x L = 98.2 mm

TML025-150CO



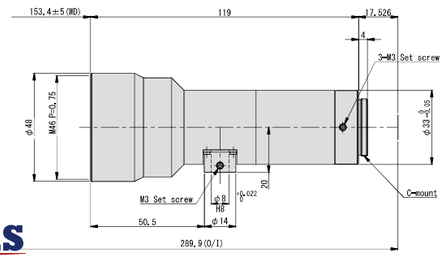
Optical Mag.		0.25x ±5 %
FOV(VxH)	2/3"	—
	1/2"	19.2 x 25.6 mm
	1/3"	14.4 x 19.2 mm
WD		153.0 mm ±7
O/I (Object & Imager Distance)		268.7 mm
Working F/#		3.9
NA		0.032
DOF at PCoC φ0.04mm		5.0 mm
TV Distortion (1/2")		0.05 %
Relative Illuminance (Y=4)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/2"
Co-Axial Prism		Built-in
Weight (approx.)		260 g
Dimension		φ47(max.) x L = 98.2 mm

TML03-150



Optical Mag.		0.3x ±5 %
FOV(VxH)	2/3"	23.7 x 28.0 mm
	1/2"	16.0 x 21.3 mm
	1/3"	12.0 x 16.0 mm
WD		153.4 mm ±5
O/I (Object & Imager Distance)		289.9 mm
Working F/#		7.5
NA		0.020
DOF at PCoC φ0.04mm		6.7 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		82 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 46 P = 0.75
Weight (approx.)		225 g
Dimension		φ48(max.) x L = 119 mm

TML03-150CO

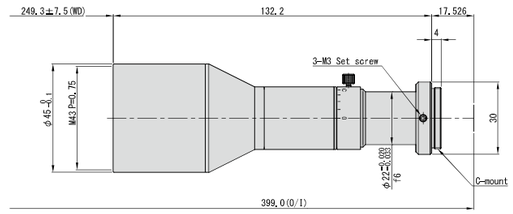


Optical Mag.		0.3x ±5 %
FOV(VxH)	2/3"	23.7 x 28.0 mm
	1/2"	16.0 x 21.3 mm
	1/3"	12.0 x 16.0 mm
WD		153.4 mm ±5
O/I (Object & Imager Distance)		289.9 mm
Working F/#		7.5
NA		0.020
DOF at PCoC φ0.04mm		6.7 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		82 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 46 P = 0.75
Weight (approx.)		225 g
Dimension		φ48(max.) x L = 119 mm

HOURS
www.hours-web.com

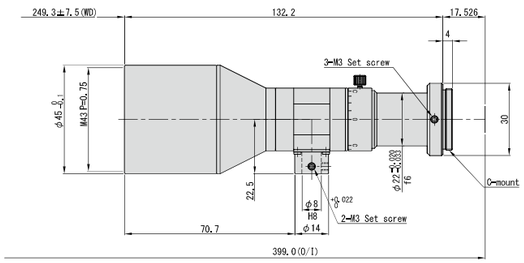
Large Sensor Format Telecentric Lenses TML Series

TML1-250



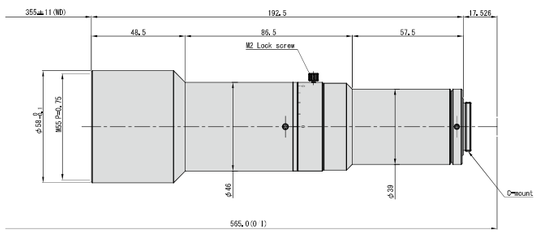
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		249.3 mm ±7.5
O/I (Object & Imager Distance)		399.0 mm
Working F/# *Value at Iris Open		10.0
NA		0.050
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		—
Filter Thread		M 43 P = 0.75
Weight (approx.)		220 g
Dimension		φ45(max.) x L = 132.2 mm

TML1-250CO



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		249.3 mm ±7.5
O/I (Object & Imager Distance)		399.0 mm
Working F/# *Value at Iris Open		10.0
NA		0.050
DOF at PCoC φ0.04mm		0.8 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 43 P = 0.75
Weight (approx.)		230 g
Dimension		φ45(max.) x L = 132.2 mm

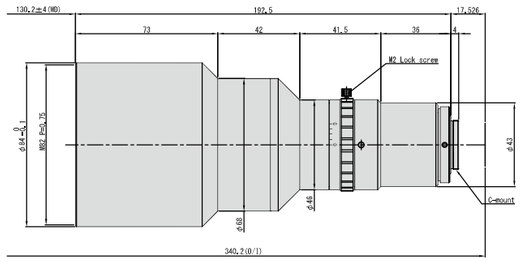
TML1-355



Optical Mag.		1.0x
FOV(VxH)	1/1.8"	5.4 x 7.1 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		355.0 mm ±11
O/I (Object & Imager Distance)		565.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.067
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (1/1.8")		0.05 %
Relative Illuminance (Y=4.4)		91 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1/1.8"
Co-Axial Prism		—
Filter Thread		M 55 P = 0.75
Weight (approx.)		440 g
Dimension		φ58(max.) x L = 192.5 mm

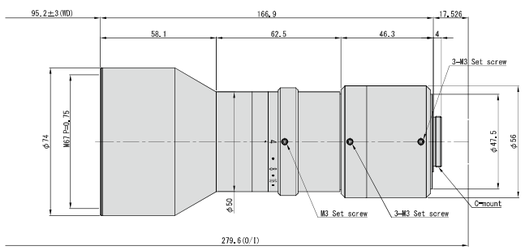
1.1" Support Series

TML03-130 Bi-Telecentric Lens



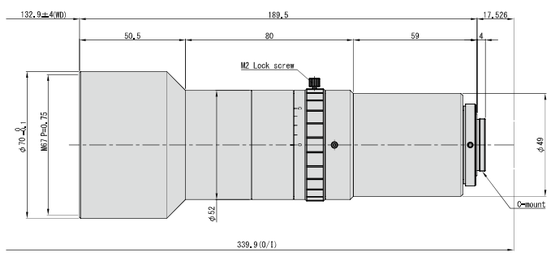
Optical Mag.		0.3x ±5 %
FOV(VxH)	1"	37.5 x 37.5 mm
	2/3"	23.7 x 28.0 mm
	1/2"	16.0 x 21.3 mm
WD		130.2 mm ±4
O/I (Object & Imager Distance)		340.2 mm
Working F/# *Value at Iris Open		5.8
NA		0.026
DOF at PCoC φ0.04mm		5.1 mm
TV Distortion (1")		0.01 %
Relative Illuminance (Y=10)		94 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ20 mm
Co-Axial Prism		—
Filter Thread		M 82 P = 0.75
Weight (approx.)		940 g
Dimension		φ84(max.) x L = 192.5 mm

TML04-100 Bi-Telecentric Lens



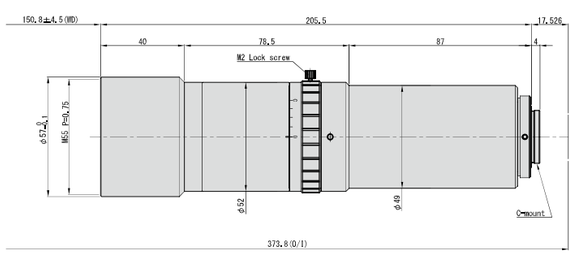
Optical Mag.		0.4x ±5 %
FOV(VxH)	1"	28.2 x 28.2 mm
	2/3"	17.8 x 21.0 mm
	1/2"	12.0 x 16.0 mm
WD		95.2 mm ±3
O/I (Object & Imager Distance)		279.6 mm
Working F/# *Value at Iris Open		4.0
NA		0.050
DOF at PCoC φ0.04mm		2.0 mm
TV Distortion (1")		0.02 %
Relative Illuminance (Y=8)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ16 mm
Co-Axial Prism		—
Weight (approx.)		M 67 P = 0.75
Dimension		680 g
		φ74(max.) x L = 166.9 mm

TML05-130 Bi-Telecentric Lens



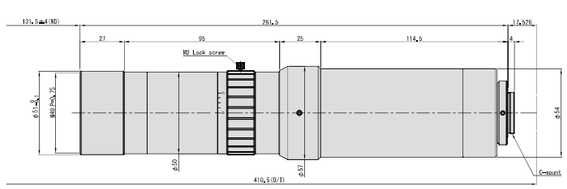
Optical Mag.		0.5x ±5 %
FOV(VxH)	1"	22.5 x 22.5 mm
	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
WD		132.9 mm ±4
O/I (Object & Imager Distance)		339.9 mm
Working F/# *Value at Iris Open		4.6
NA		0.055
DOF at PCoC φ0.04mm		1.5 mm
TV Distortion (1")		-0.02%
Relative Illuminance (Y=9)		97 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ18 mm
Co-Axial Prism		—
Filter Thread		M 67 P = 0.75
Weight (approx.)		720 g
Dimension		φ70(max.) x L = 189.5 mm

TML07-150 Bi-Telecentric Lens



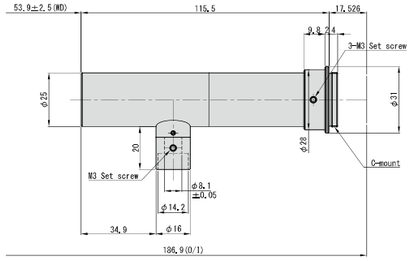
Optical Mag.		0.7x ±5 %
FOV(VxH)	1"	16.1 x 16.1 mm
	2/3"	10.1 x 12.0 mm
	1/2"	6.9 x 9.1 mm
WD		150.8 mm ±4.5
O/I (Object & Imager Distance)		373.8 mm
Working F/# *Value at Iris Open		5.3
NA		0.066
DOF at PCoC φ0.04mm		0.9 mm
TV Distortion (1")		0.01%
Relative Illuminance (Y=9)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ18 mm
Co-Axial Prism		—
Filter Thread		M 55 P = 0.75
Weight (approx.)		580 g
Dimension		φ57(max.) x L = 205.5 mm

TML1-130 Bi-Telecentric Lens



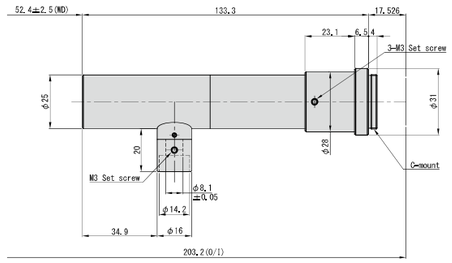
Optical Mag.		1.0x ±5 %
FOV(VxH)	1"	11.3 x 11.3 mm
	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
WD		131.5 mm ±4
O/I (Object & Imager Distance)		410.5
Working F/# *Value at Iris Open		6.3
NA		0.080
DOF at PCoC φ0.04mm		0.5 mm
TV Distortion (1")		0.00%
Relative Illuminance (Y=9)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ18 mm
Co-Axial Prism		—
Filter Thread		M 49 P = 0.75
Weight (approx.)		610 g
Dimension		φ57(max.) x L = 261.5 mm

TML3-50CO



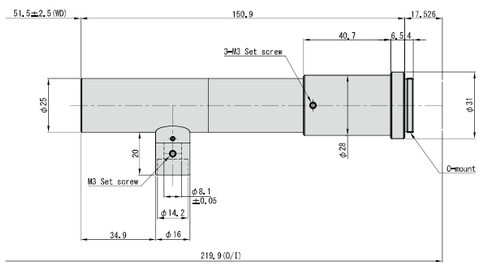
Optical Mag.		3.0x ±5 %
FOV(VxH)	1"	3.8 x 3.8 mm
	2/3"	2.4 x 2.8 mm
	1/2"	1.6 x 2.1 mm
WD		53.9 mm ±2.5
O/I (Object & Imager Distance)		186.9 mm
Working F/# *Value at Iris Open		15.0
NA		0.100
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (1")		0.32 %
Relative Illuminance (Y=9.25)		93 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ18.5 mm
Co-Axial Prism		Built-in
Weight (approx.)		120 g
Dimension		φ31(max.) x L = 115.5 mm

TML4-50CO



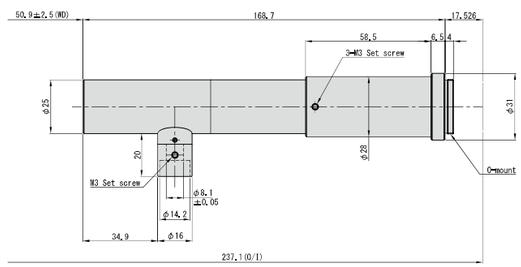
Optical Mag.		4.0x ±5 %
FOV(VxH)	1"	2.8 x 2.8 mm
	2/3"	1.8 x 2.1 mm
	1/2"	1.2 x 1.6 mm
WD		52.4 mm ±2.5
O/I (Object & Imager Distance)		203.2 mm
Working F/# *Value at Iris Open		20.0
NA		0.100
DOF at PCoC φ0.04mm		0.1 mm
TV Distortion (1")		0.09 %
Relative Illuminance (Y=11)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ22 mm
Co-Axial Prism		Built-in
Weight (approx.)		132 g
Dimension		φ31(max.) x L = 133.3 mm

TML5-50CO



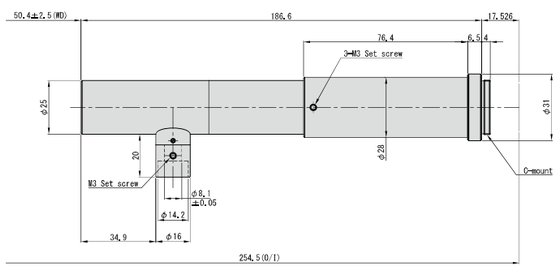
Optical Mag.		5.0x ±5 %
FOV(VxH)	1"	2.3 x 2.3 mm
	2/3"	1.4 x 1.7 mm
	1/2"	1.0 x 1.3 mm
WD		51.5 mm ±2.5
O/I (Object & Imager Distance)		219.9 mm
Working F/# *Value at Iris Open		25.0
NA		0.100
DOF at PCoC φ0.04mm		0.08 mm
TV Distortion (1")		0.03 %
Relative Illuminance (Y=11)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ22 mm
Co-Axial Prism		Built-in
Weight (approx.)		148 g
Dimension		φ31(max.) x L = 150.9 mm

TML6-50CO



Optical Mag.		6.0x ±5 %
FOV(VxH)	1"	1.9 x 1.9 mm
	2/3"	1.2 x 1.4 mm
	1/2"	0.8 x 1.1 mm
WD		50.9 mm ±2.5
O/I (Object & Imager Distance)		237.1 mm
Working F/# *Value at Iris Open		30.0
NA		0.100
DOF at PCoC φ0.04mm		0.07 mm
TV Distortion (1")		0.00 %
Relative Illuminance (Y=11)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ22 mm
Co-Axial Prism		Built-in
Weight (approx.)		155 g
Dimension		φ31(max.) x L = 168.7 mm

TML7-50CO



Optical Mag.		7.0x ±5 %
FOV(VxH)	1"	1.6 x 1.6 mm
	2/3"	1.0 x 1.2 mm
	1/2"	0.7 x 0.9 mm
WD		50.4 mm ±2.5
O/I (Object & Imager Distance)		254.5 mm
Working F/# *Value at Iris Open		35.0
NA		0.100
DOF at PCoC φ0.04mm		0.06 mm
TV Distortion (1")		0.00 %
Relative Illuminance (Y=11)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Image Circle		φ22 mm
Co-Axial Prism		Built-in
Weight (approx.)		160 g
Dimension		φ31(max.) x L = 186.6 mm

TFL Series 1.1" 1" 2/3"

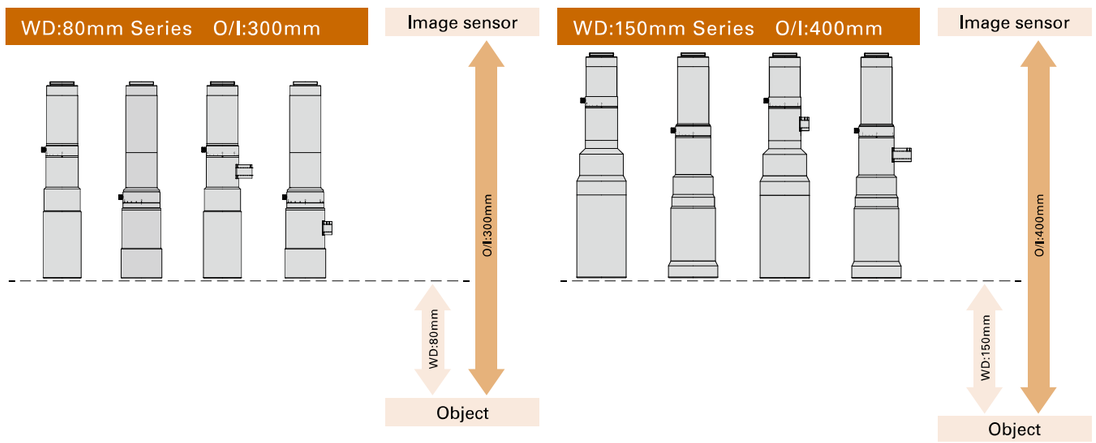
The TFL series is designed to support cameras with large sensors up to 1.1".
The adjustable aperture allows the DOF and contrast to be set to the need of your application.

Features

- 1.1" & 1" sensor support
- 23 models available
- 0.11x - 2.0x Magnification
- Built-In Coaxial Illumination Available
- Manual Iris to Adjust Depth of Fiels (DOF)

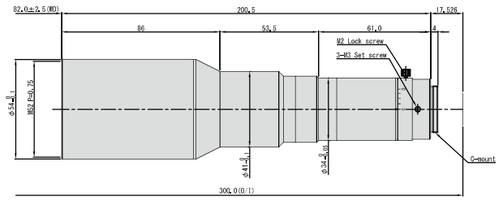
TFL (1.1") Series

Equal Object to Image Distance (O/I) Optical Design



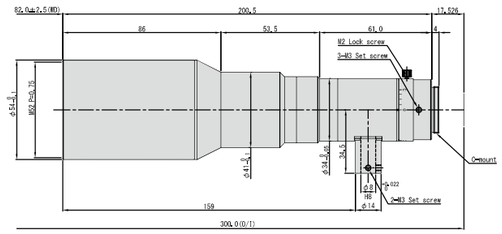
HOURS
www.hours-web.com

TFL05-80



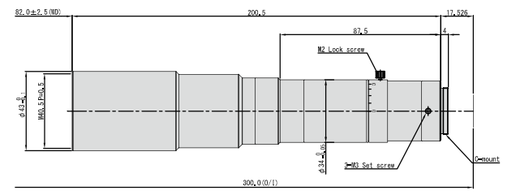
Optical Mag.		0.5x ±5 %
FOV(VxH)	1.1"	20.6 x 28.2 mm
	1"	22.5 x 22.5 mm
	2/3"	14.2 x 16.8 mm
WD		82.0 mm ±2.5
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.033
DOF at PCoC ϕ0.04mm		2.4 mm
TV Distortion (1.1")		0.01 %
Relative Illuminance (Y=8.8)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 52 P = 0.75
Weight (approx.)		370 g
Dimension		ϕ54(max.) x L = 200.5 mm

TFL05-80CO



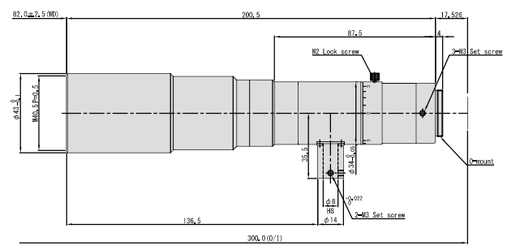
Optical Mag.		0.5x ±5 %
FOV(VxH)	1.1"	20.6 x 28.2 mm
	1"	22.5 x 22.5 mm
	2/3"	14.2 x 16.8 mm
WD		82.0 mm ±2.5
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.033
DOF at PCoC ϕ0.04mm		2.4 mm
TV Distortion (1.1")		0.01 %
Relative Illuminance (Y=8.8)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 52 P = 0.75
Weight (approx.)		370 g
Dimension		ϕ54(max.) x L = 200.5 mm

TFL08-80



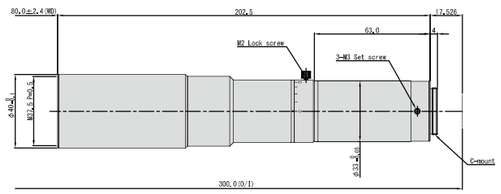
Optical Mag.		0.8x ±5 %
FOV(VxH)	1.1"	12.9 x 17.6 mm
	1"	14.1 x 14.1 mm
	2/3"	8.9 x 10.5 mm
WD		82.0 mm ±2.5
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.053
DOF at PCoC ϕ0.04mm		0.9 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 40.5 P = 0.5
Weight (approx.)		360 g
Dimension		ϕ43(max.) x L = 200.5 mm

TFL08-80CO



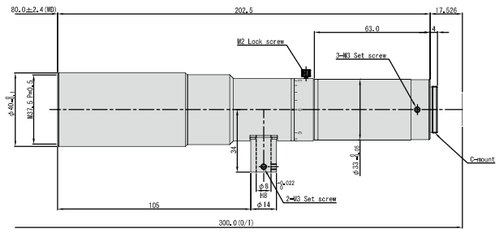
Optical Mag.		0.8x ±5 %
FOV(VxH)	1.1"	12.9 x 17.6 mm
	1"	14.1 x 14.1 mm
	2/3"	8.9 x 10.5 mm
WD		82.0 mm ±2.5
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.053
DOF at PCoC ϕ0.04mm		0.9 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 40.5 P = 0.5
Weight (approx.)		360 g
Dimension		ϕ43(max.) x L = 200.5 mm

TFL1-80



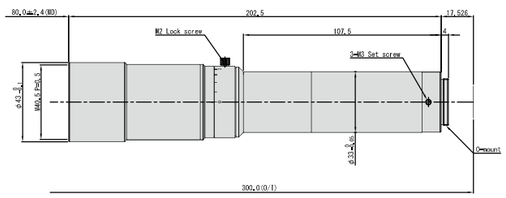
Optical Mag.		1.0x ±5 %
FOV(VxH)	1.1"	10.3 x 14.1 mm
	1"	11.3 x 11.3 mm
	2/3"	7.1 x 8.4 mm
WD		80.0 mm ±2.4
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.067
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 37.5 P = 0.5
Weight (approx.)		310 g
Dimension		φ40(max.) x L = 202.5 mm

TFL1-80CO



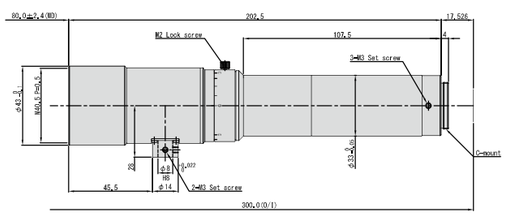
Optical Mag.		1.0x ±5 %
FOV(VxH)	1.1"	10.3 x 14.1 mm
	1"	11.3 x 11.3 mm
	2/3"	7.1 x 8.4 mm
WD		80.0 mm ±2.4
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.067
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 37.5 P = 0.5
Weight (approx.)		310 g
Dimension		φ40(max.) x L = 202.5 mm

TFL2-80



Optical Mag.		2.0x ±5 %
FOV(VxH)	1.1"	5.2 x 7.1 mm
	1"	5.6 x 5.6 mm
	2/3"	3.6 x 4.2 mm
WD		80.0 mm ±2.4
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.133
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1.1")		0.04 %
Relative Illuminance (Y=8.8)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 40.5 P = 0.5
Weight (approx.)		380 g
Dimension		φ43(max.) x L = 202.5 mm

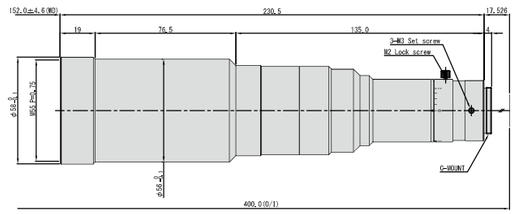
TFL2-80CO



Optical Mag.		2.0x ±5 %
FOV(VxH)	1.1"	5.2 x 7.1 mm
	1"	5.6 x 5.6 mm
	2/3"	3.6 x 4.2 mm
WD		80.0 mm ±2.4
O/I (Object & Imager Distance)		300.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.133
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1.1")		0.04 %
Relative Illuminance (Y=8.8)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 40.5 P = 0.5
Weight (approx.)		380 g
Dimension		φ43(max.) x L = 202.5 mm

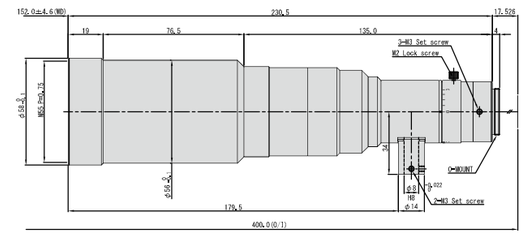
HOURS
www.hours-web.com

TFL05-150



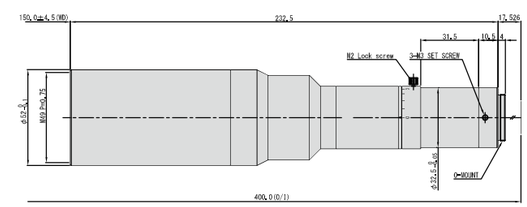
Optical Mag.		0.5x ±5 %
FOV(VxH)	1.1"	20.6 x 28.2 mm
	1"	22.5 x 22.5 mm
	2/3"	14.2 x 16.8 mm
WD		152.0 mm ±4.6
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.033
DOF at PCoC φ0.04mm		2.4 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 55 P = 0.75
Weight (approx.)		500 g
Dimension		φ58(max.) x L = 230.5 mm

TFL05-150CO



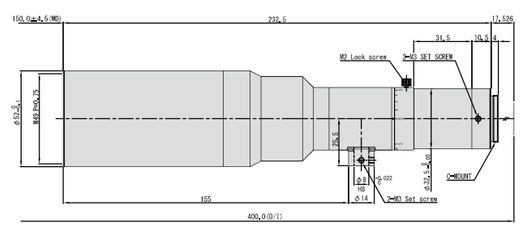
Optical Mag.		0.5x ±5 %
FOV(VxH)	1.1"	20.6 x 28.2 mm
	1"	22.5 x 22.5 mm
	2/3"	14.2 x 16.8 mm
WD		152.0 mm ±4.6
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.033
DOF at PCoC φ0.04mm		2.4 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 55 P = 0.75
Weight (approx.)		500 g
Dimension		φ58(max.) x L = 230.5 mm

TFL08-150



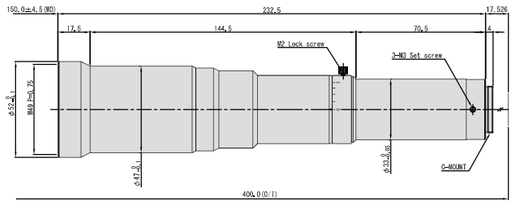
Optical Mag.		0.8x ±5 %
FOV(VxH)	1.1"	12.9 x 17.6 mm
	1"	14.1 x 14.1 mm
	2/3"	8.9 x 10.5 mm
WD		150.0 mm ±4.5
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.053
DOF at PCoC φ0.04mm		0.9 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 49 P = 0.75
Weight (approx.)		480 g
Dimension		φ52(max.) x L = 232.5 mm

TFL08-150CO



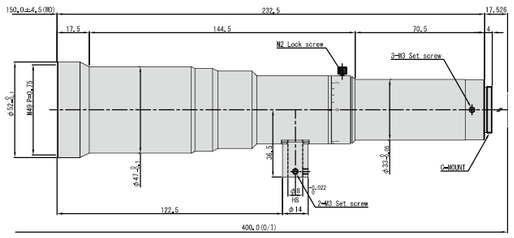
Optical Mag.		0.8x ±5 %
FOV(VxH)	1.1"	12.9 x 17.6 mm
	1"	14.1 x 14.1 mm
	2/3"	8.9 x 10.5 mm
WD		150.0 mm ±4.5
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.053
DOF at PCoC φ0.04mm		0.9 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 49 P = 0.75
Weight (approx.)		480 g
Dimension		φ52(max.) x L = 232.5 mm

TFL1-150



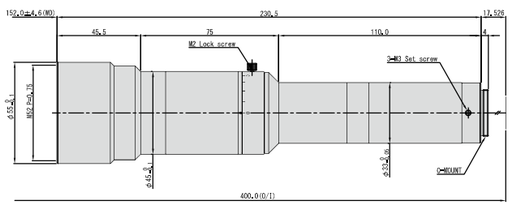
Optical Mag.		1.0x ±5 %
FOV(VxH)	1.1"	10.3 x 14.1 mm
	1"	11.3 x 11.3 mm
	2/3"	7.1 x 8.4 mm
WD		150.0 mm ±4.5
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.067
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 49 P = 0.75
Weight (approx.)		400 g
Dimension		φ52(max.) x L = 232.5 mm

TFL1-150CO



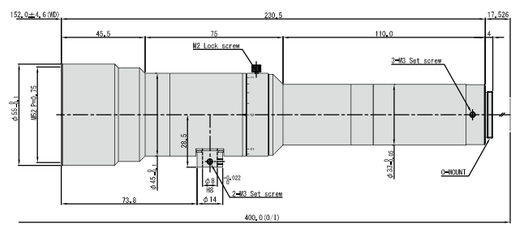
Optical Mag.		1.0x ±5 %
FOV(VxH)	1.1"	10.3 x 14.1 mm
	1"	11.3 x 11.3 mm
	2/3"	7.1 x 8.4 mm
WD		150.0 mm ±4.5
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		7.5
NA		0.067
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (1.1")		0.00 %
Relative Illuminance (Y=8.8)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 49 P = 0.75
Weight (approx.)		400 g
Dimension		φ52(max.) x L = 232.5 mm

TFL2-150



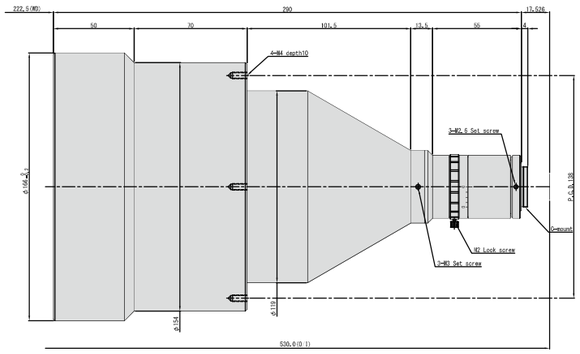
Optical Mag.		2.0x ±5 %
FOV(VxH)	1.1"	5.2 x 7.1 mm
	1"	5.6 x 5.6 mm
	2/3"	3.6 x 4.2 mm
WD		152.0 mm ±4.6
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		9.2
NA		0.109
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1.1")		-0.01 %
Relative Illuminance (Y=8.8)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		—
Filter Thread		M 52 P = 0.75
Weight (approx.)		600 g
Dimension		φ55(max.) x L = 230.5 mm

TFL2-150CO



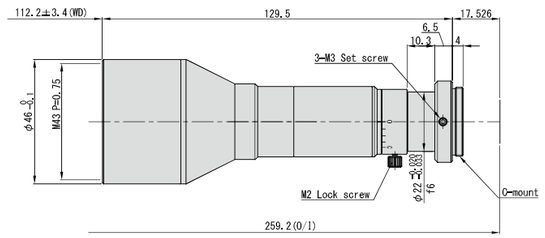
Optical Mag.		2.0x ±5 %
FOV(VxH)	1.1"	5.2 x 7.1 mm
	1"	5.6 x 5.6 mm
	2/3"	3.6 x 4.2 mm
WD		152.0 mm ±4.6
O/I (Object & Imager Distance)		400.0 mm
Working F/# *Value at Iris Open		9.2
NA		0.109
DOF at PCoC φ0.04mm		0.2 mm
TV Distortion (1.1")		-0.01 %
Relative Illuminance (Y=8.8)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1.1"
Co-Axial Prism		Built-in
Filter Thread		M 52 P = 0.75
Weight (approx.)		590 g
Dimension		φ55(max.) x L = 230.5 mm

TFL011-220



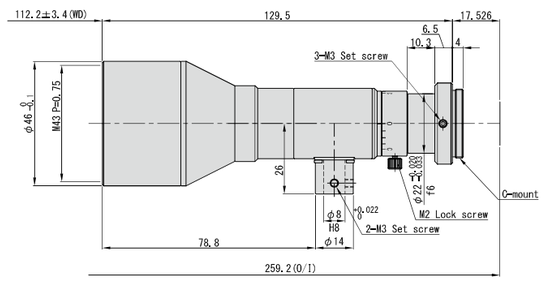
Optical Mag.		0.11x ±5 %
FOV(VxH)	1"	102.4 x 102.4 mm
	2/3"	64.5 x 76.4 mm
	1/2"	43.6 x 58.2 mm
WD		222.5 mm
O/I (Object & Imager Distance)		530.0 mm
Working F/# *Value at Iris Open		5.6
NA		0.010
DOF at PCoC φ0.04mm		37.0 mm
TV Distortion (1")		0.01 %
Relative Illuminance (Y=8)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1"
Co-Axial Prism		—
Weight (approx.)		2460 g
Dimension		φ166(max.) x L = 290 mm

TFL05-110



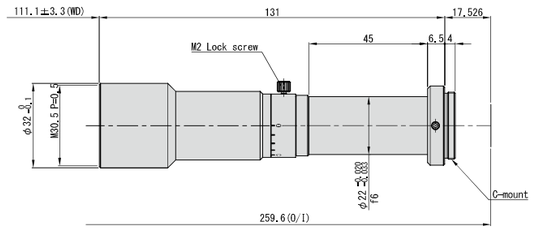
Optical Mag.		0.5x ±5 %
FOV(VxH)	1"	22.5 x 22.5 mm
	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
WD		112.2 mm ±3.4
O/I (Object & Imager Distance)		259.2 mm
Working F/# *Value at Iris Open		10.0
NA		0.025
DOF at PCoC φ0.04mm		3.2 mm
TV Distortion (1")		-0.02 %
Relative Illuminance (Y=8)		96 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1"
Co-Axial Prism		—
Filter Thread		M 43 P = 0.75
Weight (approx.)		146 g
Dimension		φ46(max.) x L = 129.5 mm

TFL05-110CO



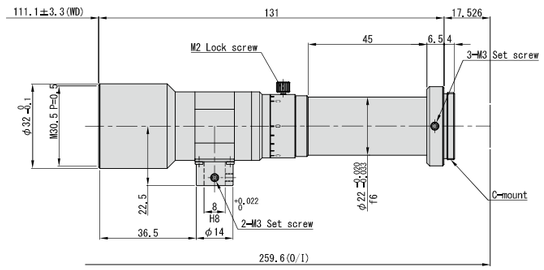
Optical Mag.		0.5x ±5 %
FOV(VxH)	1"	22.5 x 22.5 mm
	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
WD		112.2 mm ±3.4
O/I (Object & Imager Distance)		259.2 mm
Working F/# *Value at Iris Open		10.0
NA		0.025
DOF at PCoC φ0.04mm		3.2 mm
TV Distortion (1")		-0.02 %
Relative Illuminance (Y=8)		96 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1"
Co-Axial Prism		Built-in
Filter Thread		M 43 P = 0.75
Weight (approx.)		155 g
Dimension		φ46(max.) x L = 129.5 mm

TFL1-110



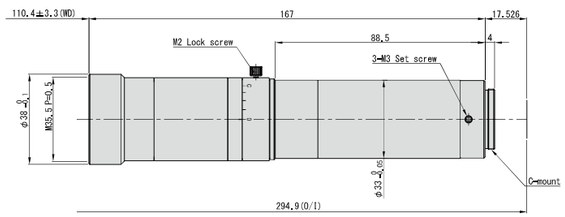
Optical Mag.		1.0x ±5 %
FOV(VxH)	1"	11.3 x 11.3 mm
	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
WD		111.1 mm ±3.3
O/I (Object & Imager Distance)		259.6 mm
Working F/# *Value at Iris Open		10.5
NA		0.048
DOF at PCoC ϕ0.04mm		0.8 mm
TV Distortion (1")		0.02 %
Relative Illuminance (Y=8)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1"
Co-Axial Prism		—
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		124 g
Dimension		ϕ32(max.) x L = 131 mm

TFL-110CO



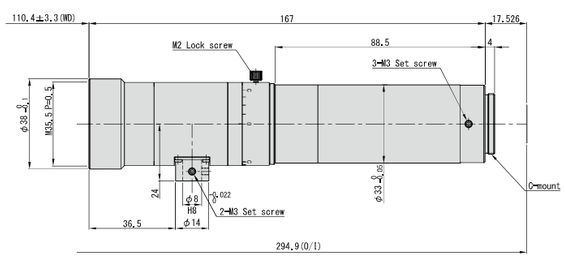
Optical Mag.		1.0x ±5 %
FOV(VxH)	1"	11.3 x 11.3 mm
	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
WD		111.1 mm ± 3.3
O/I (Object & Imager Distance)		259.6 mm
Working F/# *Value at Iris Open		10.5
NA		0.048
DOF at PCoC ϕ0.04mm		0.8 mm
TV Distortion (1")		0.02 %
Relative Illuminance (Y=8)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1"
Co-Axial Prism		Built-in
Filter Thread		M30.5 P = 0.5
Weight (approx.)		128 g
Dimension		ϕ32(max.) x L = 131 mm

TFL2-110



Optical Mag.		2.0x ±5 %
FOV(VxH)	1"	5.6 x 5.6 mm
	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
WD		110.4 mm ±3.3
O/I (Object & Imager Distance)		294.9 mm
Working F/# *Value at Iris Open		10.0
NA		0.100
DOF at PCoC ϕ0.04mm		0.2 mm
TV Distortion (1")		0.02 %
Relative Illuminance (Y=8)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1"
Co-Axial Prism		—
Filter Thread		M 35.5 P = 0.5
Weight (approx.)		235 g
Dimension		ϕ38(max.) x L = 167 mm

TFL2-110CO

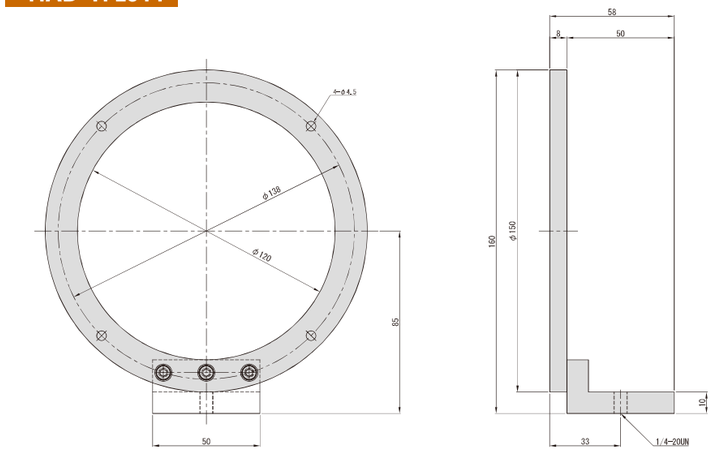


Optical Mag.		2.0x ±5 %
FOV(VxH)	1"	5.6 x 5.6 mm
	2/3"	3.6 x 4.2 mm
	1/2"	2.4 x 3.2 mm
WD		110.4 mm ± 3.3
O/I (Object & Imager Distance)		294.9 mm
Working F/# *Value at Iris Open		10.0
NA		0.100
DOF at PCoC ϕ0.04mm		0.2 mm
TV Distortion (1")		0.02 %
Relative Illuminance (Y=8)		100 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		1"
Co-Axial Prism		Built-in
Filter Thread		M35.5 P = 0.5
Weight (approx.)		240 g
Dimension		ϕ38(max.) x L = 167 mm

HOURS
www.hours-web.com

HAD-TFL011 Adapter

HAD-TFL011

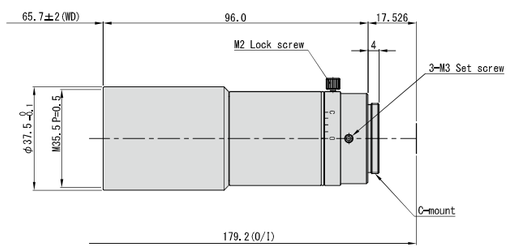


TVT Series 2/3" 1/1.8"

The TVT series lineup consists of our highest resolution Telecentric lenses. With 1.67 μm resolution you can expect an excellent image from any sensor 2/3" or lower. Both normal and coaxial lighting ready models are available.

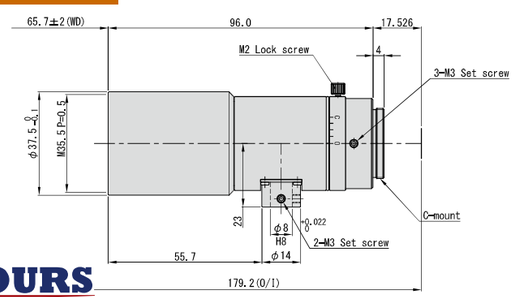
Features
- 2/3" sensor support
- 1.67μm resolution
- 0.5x - 1.0x Magnification
- 61.5 - 66mm WD
- Fno 4.5
- Telecentric design

TVT05-65



Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		65.7 mm ±2
O/I (Object & Imager Distance)		179.2 mm
Working F/# *Value at Iris open		4.5
NA		0.056
DOF at PCoC φ0.04mm		1.4 mm
TV Distortion (2/3")		0.00%
Relative Illuminance (Y=5.5)		97 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (Max)		2/3"
Co-Axial Prism		—
Filter Thread		M 35.5 P = 0.5
Weight (approx.)		205 g
Dimension		φ37.5(max.) x L = 96 mm

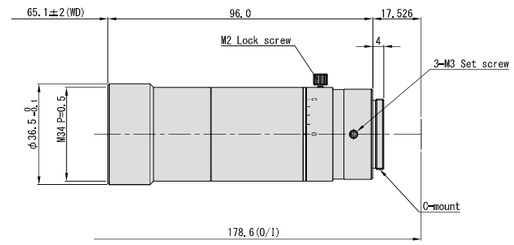
TVT05-65CO



Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		65.7 mm ±2
O/I (Object & Imager Distance)		179.2 mm
Working F/# *Value at Iris open		4.5
NA		0.056
DOF at PCoC φ0.04mm		1.4 mm
TV Distortion (2/3")		0.00%
Relative Illuminance (Y=5.5)		97 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (Max)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 35.5 P = 0.5
Weight (approx.)		205 g
Dimension		φ37.5(max.) x L = 96 mm

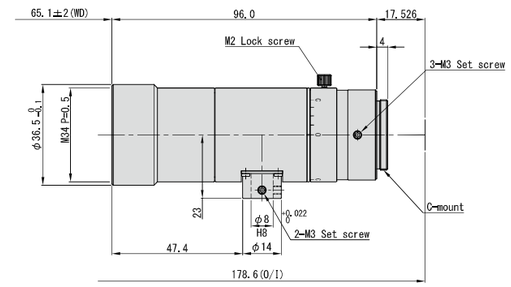
HOURS
www.hours-web.com

TVT08-65



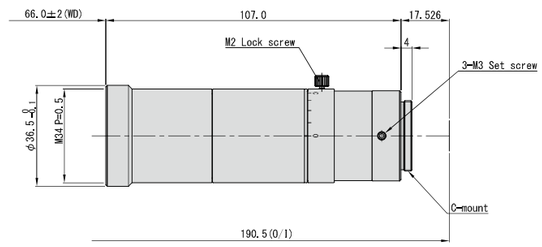
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	8.9 x 10.5 mm
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		65.1 mm ±2
O/I (Object & Imager Distance)		178.6 mm
Working F/# *Value at Iris open		4.5
NA		0.089
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (Max)		2/3"
Co-Axial Prism		—
Filter Thread		M 34 P = 0.5
Weight (approx.)		200 g
Dimension		φ36.5(max.) x L = 96 mm

TVT08-65CO



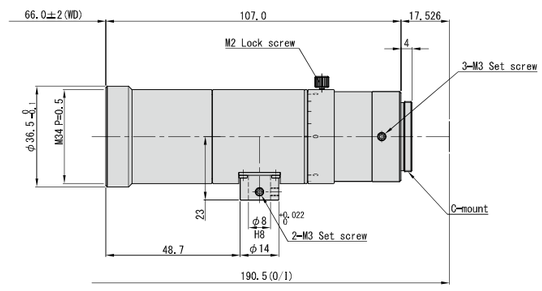
Optical Mag.		0.8x ±5 %
FOV(VxH)	2/3"	8.9 x 10.5 mm
	1/2"	6.0 x 8.0 mm
	1/3"	4.5 x 6.0 mm
WD		65.1 mm ±2
O/I (Object & Imager Distance)		178.6 mm
Working F/# *Value at Iris open		4.5
NA		0.089
DOF at PCoC φ0.04mm		0.6 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (Max)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 34 P = 0.5
Weight (approx.)		200 g
Dimension		φ36.5(max.) x L = 96 mm

TVT1-65



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		66.0 mm ±2
O/I (Object & Imager Distance)		190.5 mm
Working F/# *Value at Iris open		4.5
NA		0.111
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (Max)		2/3"
Co-Axial Prism		—
Filter Thread		M 34 P = 0.5
Weight (approx.)		215 g
Dimension		φ36.5(max.) x L = 107 mm

TVT1-65CO



Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		66.0 mm ±2
O/I (Object & Imager Distance)		190.5 mm
Working F/# *Value at Iris open		4.5
NA		0.111
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (2/3")		0.00 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (Max)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 34 P = 0.5
Weight (approx.)		215 g
Dimension		φ36.5(max.) x L = 107 mm

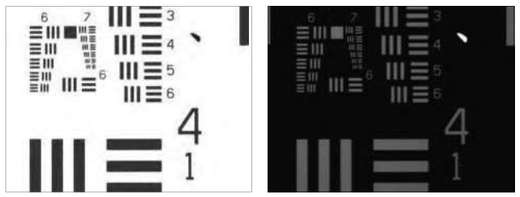
VM Series 2/3" 1/1.8"

With its 10x magnification and high 0.23 numerical aperture the VM series is an excellent lens to use for up close inspection. Higher magnifications of 15x and 20x are possible with the use of a rear converter lens.

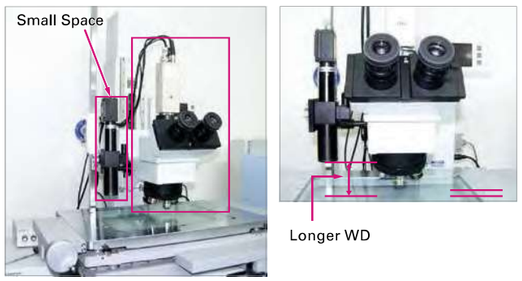
Features

- 2/3" sensor support
- 10x Magnification
- 0.23 NA
- 55mm WD
- Telecentric design

High Resolution

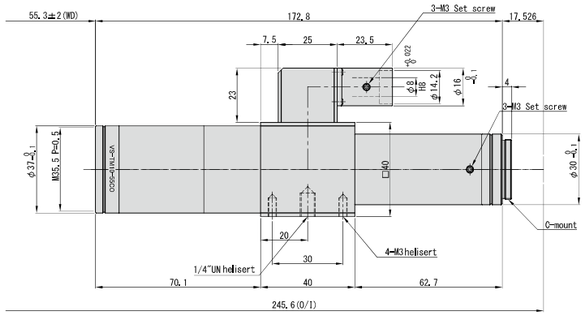


Compact Size



HOURS
www.hours-web.com

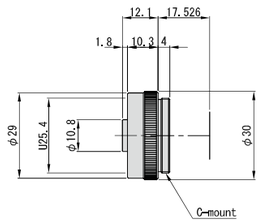
VM10-55CO



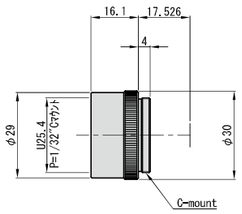
Optical Mag.		10x ±5 %
FOV(VxH)	2/3"	0.7 x 0.8 mm
	1/2"	0.5 x 0.6 mm
	1/3"	0.4 x 0.5 mm
WD		55.3 mm ±2
O/I (Object & Imager Distance)		245.6 mm
Working F/#		22.0
NA		0.23
DOF at PCoC φ0.04mm		0.02 mm
TV Distortion (2/3")		0.08 %
Relative Illuminance (Y=5.5)		90 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (Max)		2/3"
Co-Axial Prism		Built-in
Filter Thread		M 35.5 P = 0.5
Weight (approx.)		370 g
Dimension		φ37(max.) x L = 172.8 mm

Rear Converter Lens

VM-1.5X



VM-2.0X



TET Series 2/3" 1/1.8"

The variable magnification and iris make the TET series a great choice for a wide range of applications such as the inspection of electronic parts, semiconductors, and manufacturing equipment. The series is suitable for cameras with up to 2/3" sensors.

Features
- 2/3" sensor support
- 9 models available
- Variable magnification
- Telecentric design

Combination with optional unit

Mirror unit (picture①/②)

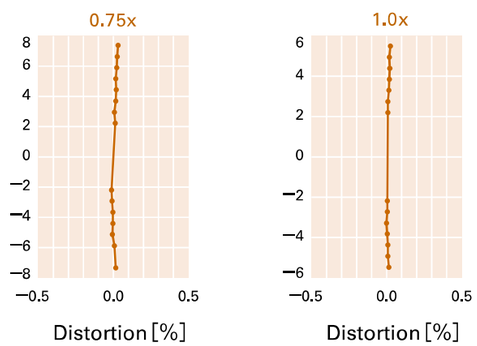
CPZ-C305NF : Allows you to set up in a limited space.

Co-axial unit (picture③)

HM-305 : Easy to set up co-axial lighting in front of the lens.

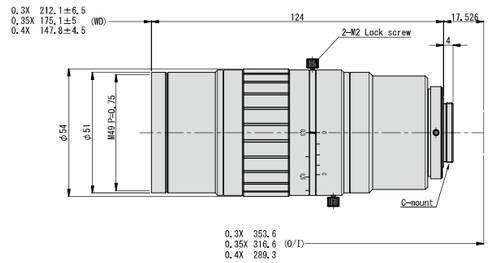
* for Mag. above0.5x model.

Distortion (measured value)



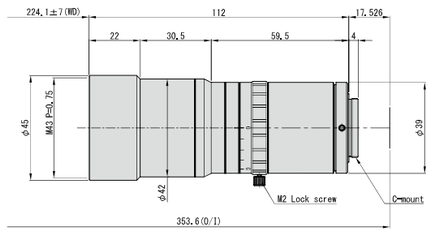
HOURS
www.hours-web.com

TET0304



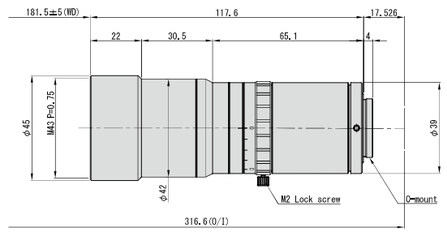
Optical Mag. Range		0.3x ~ 0.4x		
Optical Mag.		0.3x	0.35x	0.4x
FOV(VxH)	2/3"	23.7 x 28.0 mm	20.3 x 24.0 mm	17.8 x 21.0 mm
	1/2"	16.0 x 21.3 mm	13.7 x 18.3 mm	12.0 x 16.0 mm
	1/3"	12.0 x 16.0 mm	10.3 x 13.7 mm	9.0 x 12.0 mm
WD		212.1 mm	175.1 mm	147.8 mm
O/I (Object & Imager Distance)		353.6 mm	316.6 mm	289.3 mm
Working F/# *Value at Iris Open		4.3	4.7	5.0
NA		0.035	0.038	0.040
DOF at PCoC φ0.04mm		3.8 mm	3.0 mm	2.5 mm
TV Distortion (2/3")		0.02 %	-0.01 %	-0.03 %
Relative Illuminance (Y=5.5)		98 %		
Wavelength		Visible		
Mount		C-Mount		
Flange Back		17.526 mm		
Sensor Size (max.)		2/3"		
Filter Thread		M 49 P = 0.75		
Weight (approx.)		360 g		
Dimension		φ54(max.) x L = 124 mm		

TET03-220



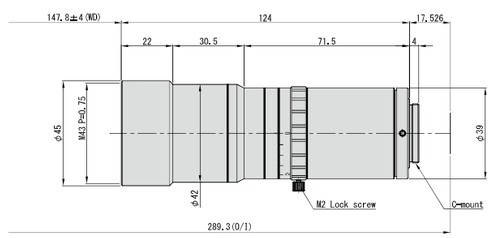
Optical Mag.		0.3x ±5 %
FOV(VxH)	2/3"	23.7 x 28.0 mm
	1/2"	16.0 x 21.3 mm
	1/3"	12.0 x 16.0 mm
WD		224.1 mm ±7
O/I (Object & Imager Distance)		353.6 mm
Working F/# *Value at Iris Open		4.3
NA		0.035
DOF at PCoC φ0.04mm		3.8 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 43 P = 0.75
Weight (approx.)		245 g
Dimension		φ45(max.) x L = 112 mm

TET035-180



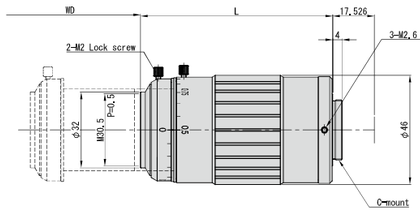
Optical Mag.		0.35x ±5 %
FOV(VxH)	2/3"	20.3 x 24.0 mm
	1/2"	13.7 x 18.3 mm
	1/3"	10.3 x 13.7 mm
WD		181.5 mm ±5
O/I (Object & Imager Distance)		316.6 mm
Working F/# *Value at Iris Open		4.7
NA		0.038
DOF at PCoC φ0.04mm		3.0 mm
TV Distortion (2/3")		-0.01 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 43 P = 0.75
Weight (approx.)		250 g
Dimension		φ45(max.) x L = 117.6 mm

TET04-150



Optical Mag.		0.4x ±5 %
FOV(VxH)	2/3"	17.8 x 21.0 mm
	1/2"	12.0 x 16.0 mm
	1/3"	9.0 x 12.0 mm
WD		147.8 mm ±4
O/I (Object & Imager Distance)		289.3 mm
Working F/# *Value at Iris Open		5.0
NA		0.040
DOF at PCoC φ0.04mm		2.5 mm
TV Distortion (2/3")		-0.03 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 43 P = 0.75
Weight (approx.)		255 g
Dimension		φ45(max.) x L = 124 mm

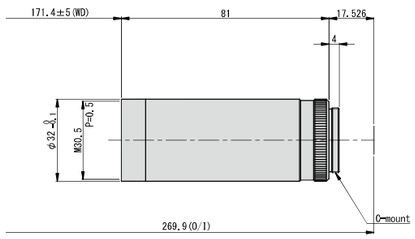
TET0513



倍率	WD	L
X0.5	171.7	81
X0.6	151.3	86.8
X0.7	136.7	92.9
X0.8	125.6	99.2
X0.9	117.1	105.3
X1.0	110.3	111.4
X1.1	104.6	117.6
X1.2	100	123.8
X1.3	95.9	130.1

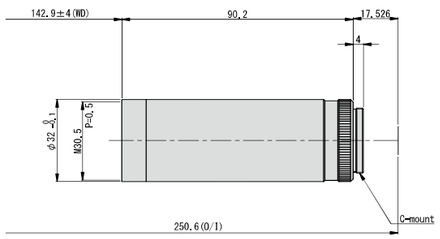
Optical Mag. Range		0.5x ~ 1.3x		
Optical Mag.		0.5x	1.0x	1.3x
FOV(VxH)	2/3"	14.2 x 16.8 mm	7.1 x 8.4 mm	5.5 x 6.5 mm
	1/2"	9.6 x 12.8 mm	4.8 x 6.4 mm	3.7 x 4.9 mm
	1/3"	7.2 x 9.6 mm	3.6 x 4.8 mm	2.8 x 3.7 mm
WD		171.7 mm	110.3 mm	95.9 mm
O/I (Object & Imager Distance)		270.2 mm	239.2 mm	248.5 mm
Working F/# *Value at Iris Open		5.3	8.3	10.2
NA		0.047	0.060	0.064
DOF at PCoC φ0.04mm		1.7 mm	0.7 mm	0.5 mm
TV Distortion (2/3")		0.03 %	0.01 %	0.01 %
Relative Illuminance (Y=5.5)		98 %	99 %	99 %
Wavelength		Visible		
Mount		C-Mount		
Flange Back		17.526 mm		
Sensor Size (max.)		2/3"		
Filter Thread		M 30.5 P = 0.5		
Weight (approx.)		255 g		
Dimension		φ46(max.) x L = 81 ~ 130.1 mm		

TET05-170



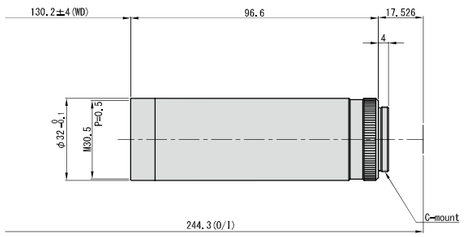
Optical Mag.		0.5x ±5 %
FOV(VxH)	2/3"	14.2 x 16.8 mm
	1/2"	9.6 x 12.8 mm
	1/3"	7.2 x 9.6 mm
WD		171.4 mm ±5
O/I (Object & Imager Distance)		269.9 mm
Working F/#		5.3
NA		0.047
DOF at PCoC φ0.04mm		1.7 mm
TV Distortion (2/3")		0.03 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		80 g
Dimension		φ32(max.) x L = 81 mm

TET065-140



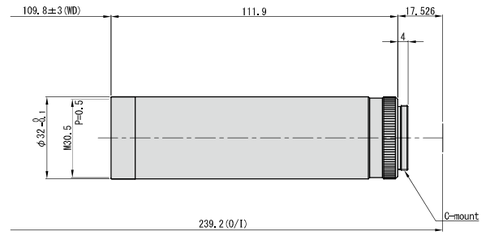
Optical Mag.		0.65x ±5 %
FOV(VxH)	2/3"	10.9 x 12.9 mm
	1/2"	7.4 x 9.8 mm
	1/3"	5.5 x 7.4 mm
WD		142.9 mm ±4
O/I (Object & Imager Distance)		250.6 mm
Working F/#		6.2
NA		0.053
DOF at PCoC φ0.04mm		1.2 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		97 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		86 g
Dimension		φ32(max.) x L = 90.2 mm

TET075-130



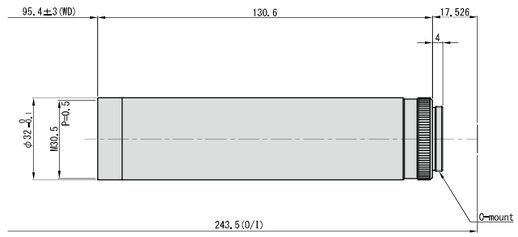
Optical Mag.		0.75x ±5 %
FOV(VxH)	2/3"	9.5 x 11.2 mm
	1/2"	6.4 x 8.5 mm
	1/3"	4.8 x 6.4 mm
WD		130.2 mm ±4
O/I (Object & Imager Distance)		244.3 mm
Working F/#		6.8
NA		0.055
DOF at PCoC φ0.04mm		1.0 mm
TV Distortion (2/3")		0.02 %
Relative Illuminance (Y=5.5)		98 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		90 g
Dimension		φ32(max.) x L = 96.6 mm

TET1-110



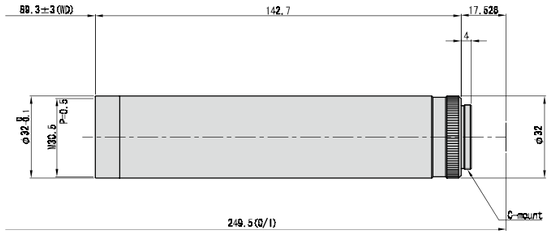
Optical Mag.		1.0x ±5 %
FOV(VxH)	2/3"	7.1 x 8.4 mm
	1/2"	4.8 x 6.4 mm
	1/3"	3.6 x 4.8 mm
WD		109.8 mm ±3
O/I (Object & Imager Distance)		239.2 mm
Working F/#		8.3
NA		0.060
DOF at PCoC φ0.04mm		0.7 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		96 g
Dimension		φ32(max.) x L = 111.9 mm

TET1.3-100



Optical Mag.		1.3x ±5 %
FOV(VxH)	2/3"	5.5 x 6.5 mm
	1/2"	3.7 x 4.9 mm
	1/3"	2.8 x 3.7 mm
WD		95.4 mm ±3
O/I (Object & Imager Distance)		243.5 mm
Working F/#		10.2
NA		0.064
DOF at PCoC φ0.04mm		0.5 mm
TV Distortion (2/3")		0.01 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		104 g
Dimension		φ32(max.) x L = 130.6 mm

TET1.5-90



Optical Mag.		1.5x ±5 %
FOV(VxH)	2/3"	4.7 x 5.6 mm
	1/2"	3.2 x 4.3 mm
	1/3"	2.4 x 3.2 mm
WD		89.3 mm ±3
O/I (Object & Imager Distance)		249.5 mm
Working F/#		11.4
NA		0.066
DOF at PCoC φ0.04mm		0.4 mm
TV Distortion (max.)		0.02 %
Relative Illuminance (Y=5.5)		99 %
Wavelength		Visible
Mount		C-Mount
Flange Back		17.526 mm
Sensor Size (max.)		2/3"
Filter Thread		M 30.5 P = 0.5
Weight (approx.)		116 g
Dimension		φ32(max.) x L = 142.7 mm

TEF Series 1.1" 1" 1/1.2"

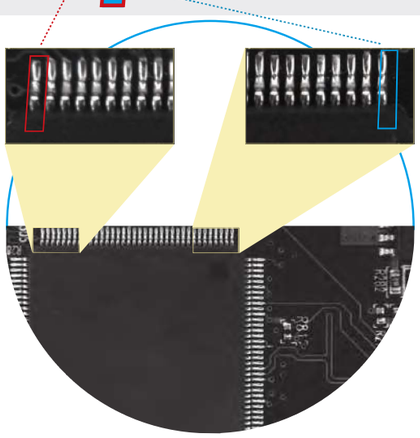
With 1.1" large format sensor support and a 3.45μm pixel resolution the TEF series excels at delivering a clear high quality image. Its three variable magnification ranges of 0.3x - 0.5x, 0.5x - 0.75x, 0.75x - 1x have you covered at every spectrum.

Features

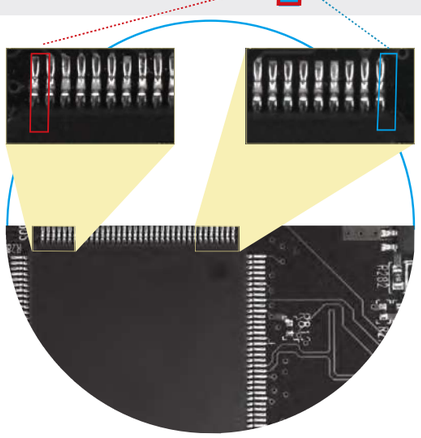
- 1.1" sensor support
- 3 models available
- 3.45μm resolution
- Variable Magnification
- Adjustable DOF
- High Telecentricity

Image Comparison

VS-TEV's peripheral brightness and telecentricity allow objects to appear sharper at the center and edges of the image with heigher accuracy for better inspection than conventional fixed focal lenses.

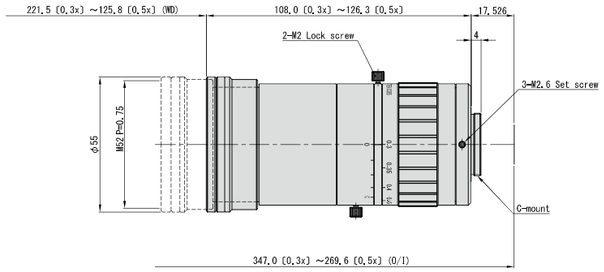


Conventional Fixed Focal Lens



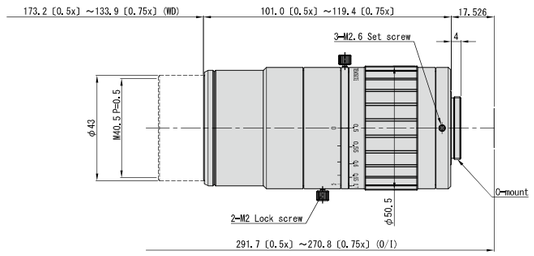
VS-TEV series

TEF0305



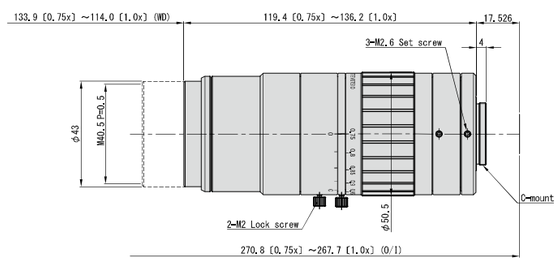
Optical Mag. Range		0.3x ~ 0.5x		
Optical Mag.		0.3x	0.4x	0.5x
FOV(VxH)	1.1"	34.7 x 47.0 mm	26.0 x 35.3 mm	20.8 x 28.2 mm
	1"	37.5 x 37.5 mm	28.2 x 28.2 mm	22.5 x 22.5 mm
	2/3"	23.7 x 28.0 mm	17.8 x 21.0 mm	14.2 x 16.8 mm
WD		221.5 mm	162.0 mm	125.8 mm
O/I (Object & Imager Distance)		347.0 mm	296.7 mm	269.6 mm
Working F/# *Value at Iris Open		4.3	5.2	6.2
NA		0.035	0.038	0.040
DOF at PCoC φ0.04mm		3.8 mm	2.6 mm	2.0 mm
TV Distortion (1.1")		0.03 %	-0.04 %	-0.04 %
Relative Illuminance (Y=8.8)		72 %	97 %	97 %
Wavelength		Visible		
Mount		C-Mount		
Flange Back		17.526 mm		
Sensor Size (max.)		1.1"		
Filter Thread		M 52 P = 0.75		
Weight (approx.)		390 g		
Dimension		φ55(max.) x L = 108.0 ~ 126.3 mm		

TEF05075



Optical Mag. Range		0.5x ~ 0.75x	
Optical Mag.		0.5x	0.75x
FOV(VxH)	1.1"	20.8 x 28.2 mm	13.9 x 18.8 mm
	1"	22.5 x 22.5 mm	15.0 x 15.0 mm
	2/3"	14.2 x 16.8 mm	9.5 x 11.2 mm
WD		173.2 mm	133.9 mm
O/I (Object & Imager Distance)		291.7 mm	270.8 mm
Working F/# *Value at Iris Open		5.0	6.8
NA		0.050	0.055
DOF at PCoC φ0.04mm		1.6 mm	1.0 mm
TV Distortion (1.1")		0.06 %	0.04 %
Relative Illuminance (Y=8.8)		90 %	98 %
Wavelength		Visible	
Mount		C-Mount	
Flange Back		17.526 mm	
Sensor Size (max.)		1.1"	
Filter Thread		M 40.5 P = 0.5	
Weight (approx.)		350 g	
Dimension		φ50.5(max.) x L = 101.0 ~ 119.4 mm	

TEF07510



Optical Mag. Range		0.75x ~ 1.0x	
Optical Mag.		0.75x	1.0x
FOV(VxH)	1.1"	13.9 x 18.8 mm	10.4 x 14.1 mm
	1"	15.0 x 15.0 mm	11.3 x 11.3 mm
	2/3"	9.5 x 11.2 mm	7.1 x 8.4 mm
WD		133.9 mm	114.0 mm
O/I (Object & Imager Distance)		270.8 mm	267.7 mm
Working F/# *Value at Iris Open		6.8	8.5
NA		0.055	0.059
DOF at PCoC φ0.04mm		1.0 mm	0.7 mm
TV Distortion (1.1")		0.04 %	0.02 %
Relative Illuminance (Y=8.8)		98 %	99 %
Wavelength		Visible	
Mount		C-Mount	
Flange Back		17.526 mm	
Sensor Size (max.)		1.1"	
Filter Thread		M 40.5 P = 0.5	
Weight (approx.)		370 g	
Dimension		φ50.5(max.) x L = 119.4 ~ 136.2 mm	

HOURS
www.hours-web.com

TLL Series

Sensors with diameters ranging from 21 - 45 mm can utilize the TLL series to produce a high resolution telecentric image. Specifically designed for large format line scan sensors, you can find within this series an excellent match for your line scan camera.

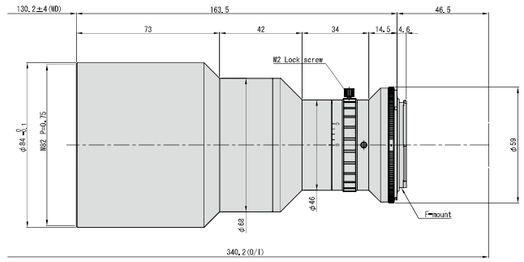
Features

- 21-45 mm sensor support
- 21 models available
- Reduced shading
- Adjustable DOF
- Telecentric design

Image circle chart

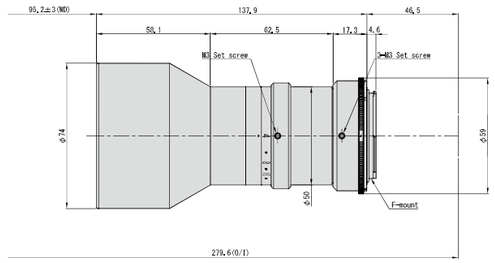
bit			2048	2048	4096	7450	4096	6144
Pixel Size (μm)			10	14	7	4.7	10	7
Image Circle ϕ(mm)			20.5	28.7	28.7	35	41	43
TLL03-130F	22	P107	●					
TLL04-100F	20.24	P107	●					
TLL05-130F	22	P107	●					
TLL07-150F	21	P107	●					
TLL1-130F	22	P107	●					
TLL075-70F	35	P108	●	●	●	●		
TLL075-70FCO	35	P108	●	●	●	●		
TLL1-70F	35	P108	●	●	●	●		
TLL1-70FCO	35	P108	●	●	●	●		
TLL2-70F	35	P109	●	●	●	●		
TLL2-70FCO	35	P109	●	●	●	●		
TLL2-60F	35	P109	●	●	●	●		
TLL3.3-45F	35	P109	●	●	●	●		
TLL1-130F45	45	P110	●	●	●	●	●	●
TLL1-130FCO45	45	P110	●	●	●	●	●	●
TLL2-130F	45	P110	●	●	●	●	●	●
TLL2-130FCO	45	P110	●	●	●	●	●	●
TLL4-50FCO	25	P111	●					
TLL5-50FCO	28.6	P111	●	●	●			
TLL6-50FCO	28.6	P111	●	●	●			
TLL7-50FCO	28.6	P111	●	●	●			

TLL03-130F



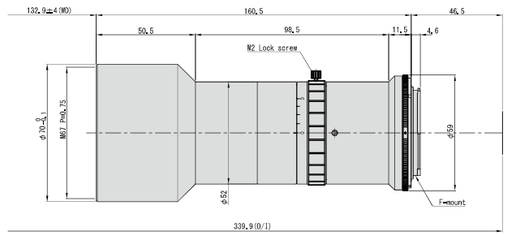
Optical Mag.	0.3x ±5 %
FOV	73.3 mm
WD	130.2 mm ±4
O/I (Object & Imager Distance)	340.2 mm
Working F/# *Value at Iris Open	5.8
NA	0.026
DOF at PCoC ϕ0.04mm	5.2 mm
TV Distortion	0.01 %
Relative Illuminance (Y=11)	94 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ22 mm
Filter Thread	M 82 P = 0.75
Weight (approx.)	960 g
Dimension	ϕ84(max.) x L = 163.5 mm

TLL04-100F



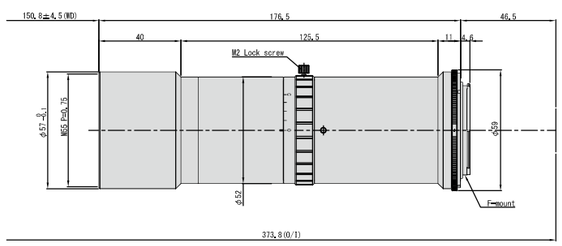
Optical Mag.	0.4x ±5 %
FOV	51.2 mm
WD	95.2 mm ±3
O/I (Object & Imager Distance)	279.6 mm
Working F/# *Value at Iris Open	4.0
NA	0.050
DOF at PCoC ϕ0.04mm	2.0 mm
TV Distortion	0.02 %
Relative Illuminance (Y=10.24)	90 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ20.48 mm
Weight (approx.)	660 g
Dimension	ϕ74(max.) x L = 137.9 mm

TLL05-130F



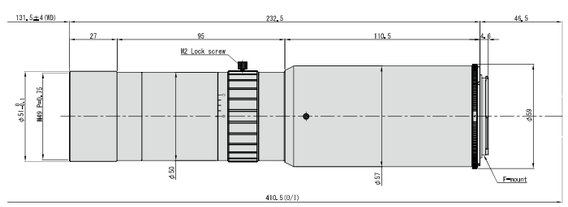
Optical Mag.	0.5x ±5 %
FOV	44.0 mm
WD	132.9 mm ±4
O/I (Object & Imager Distance)	339.9 mm
Working F/# *Value at Iris Open	4.6
NA	0.055
DOF at PCoC ϕ0.04mm	1.5 mm
TV Distortion	-0.04 %
Relative Illuminance (Y=11)	97 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ22 mm
Filter Thread	M 67 P = 0.75
Weight (approx.)	730 g
Dimension	ϕ70(max.) x L = 160.5 mm

TLL07-150F



Optical Mag.	0.7x ±5 %
FOV	30.0 mm
WD	150.8 mm ±4.5
O/I (Object & Imager Distance)	373.8 mm
Working F/# *Value at Iris Open	5.3
NA	0.066
DOF at PCoC ϕ0.04mm	0.9 mm
TV Distortion	0.01 %
Relative Illuminance (Y=10.5)	99 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ21 mm
Filter Thread	M 55 P = 0.75
Weight (approx.)	580 g
Dimension	ϕ59(max.) x L = 176.5 mm

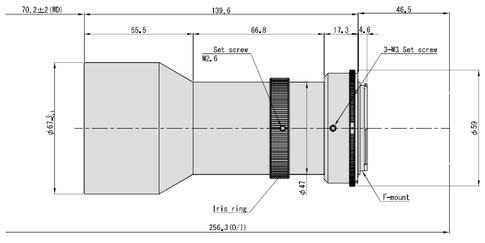
TLL1-130F



Optical Mag.	1.0x ±5 %
FOV	22.0 mm
WD	131.5 mm ±4
O/I (Object & Imager Distance)	410.5 mm
Working F/# *Value at Iris Open	6.3
NA	0.080
DOF at PCoC ϕ0.04mm	0.5 mm
TV Distortion	0.00 %
Relative Illuminance (Y=11)	99 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ22 mm
Filter Thread	M 49 P = 0.75
Weight (approx.)	610 g
Dimension	ϕ59(max.) x L = 232.5 mm

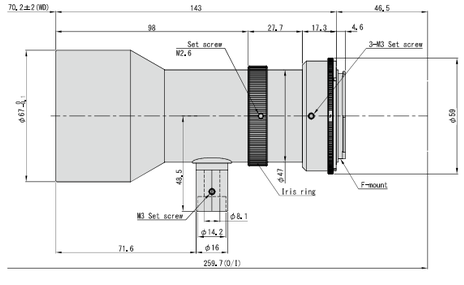
HOURS
www.hours-web.com

TLL075-70F



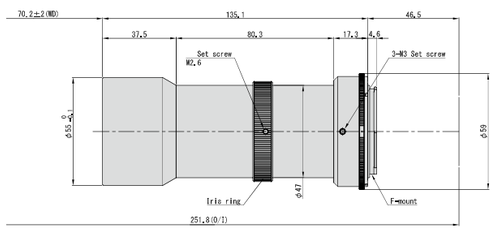
Optical Mag.	0.75x ±5 %
FOV	46.7 mm
WD	70.2 mm ±2
O/I (Object & Imager Distance)	256.3 mm
Working F/# *Value at Iris Open	5.4
NA	0.070
DOF at PCoC φ0.04mm	0.8 mm
TV Distortion	0.10 %
Relative Illuminance (Y=17.5)	90 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	φ35 mm
Co-Axial Prism	—
Weight (approx.)	740 g
Dimension	φ67(max.) x L = 139.6 mm

TLL075-70FCO



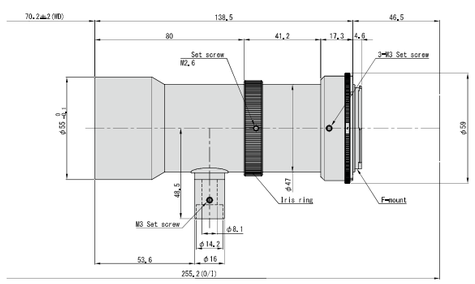
Optical Mag.	0.75x ±5 %
FOV	46.7 mm
WD	70.2 mm ±2
O/I (Object & Imager Distance)	259.7 mm
Working F/# *Value at Iris Open	5.4
NA	0.070
DOF at PCoC φ0.04mm	0.8 mm
TV Distortion	0.10 %
Relative Illuminance (Y=17.5)	90 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	φ35 mm
Co-Axial Prism	Built-in
Weight (approx.)	770 g
Dimension	φ67(max.) x L = 143 mm

TLL1-70F



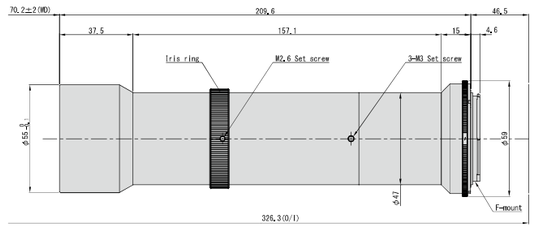
Optical Mag.	1.0x ±5 %
FOV	35 mm
WD	70.2 mm ±2
O/I (Object & Imager Distance)	251.8 mm
Working F/# *Value at Iris Open	6.3
NA	0.080
DOF at PCoC φ0.04mm	0.5 mm
TV Distortion	0.03 %
Relative Illuminance (Y=17.5)	90 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	φ35 mm
Co-Axial Prism	—
Weight (approx.)	550 g
Dimension	φ59(max.) x L = 135.1 mm

TLL1-70FCO



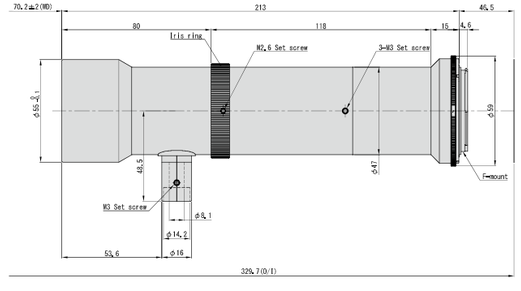
Optical Mag.	1.0x ±5 %
FOV	35 mm
WD	70.2 mm ±2
O/I (Object & Imager Distance)	255.2 mm
Working F/# *Value at Iris Open	6.3
NA	0.080
DOF at PCoC φ0.04mm	0.5 mm
TV Distortion	0.03 %
Relative Illuminance (Y=17.5)	90 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	φ35 mm
Co-Axial Prism	Built-in
Weight (approx.)	570 g
Dimension	φ59(max.) x L = 138.5 mm

TLL2-70F



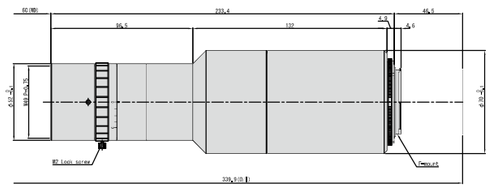
Optical Mag.	2.0x ±5 %
FOV	17.5 mm
WD	70.2 mm ±2
O/I (Object & Imager Distance)	326.3 mm
Working F/# *Value at Iris Open	12.5
NA	0.080
DOF at PCoC φ0.04mm	0.3 mm
TV Distortion	0.05 %
Relative Illuminance (Y=17.5)	90 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	φ35 mm
Co-Axial Prism	—
Weight (approx.)	670 g
Dimension	φ59(max.) x L = 209.6 mm

TLL2-70FCO



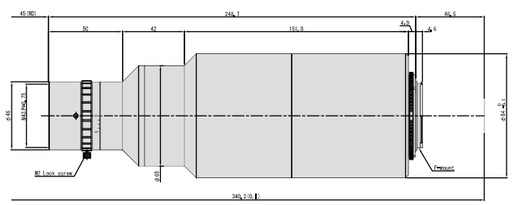
Optical Mag.	2.0x ±5 %
FOV	17.5 mm
WD	70.2 mm ±2
O/I (Object & Imager Distance)	329.7 mm
Working F/# *Value at Iris Open	12.5
NA	0.080
DOF at PCoC φ0.04mm	0.3 mm
TV Distortion	0.05 %
Relative Illuminance (Y=17.5)	90 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	φ35 mm
Co-Axial Prism	Built-in
Weight (approx.)	690 g
Dimension	φ59(max.) x L = 213 mm

TLL2-60F



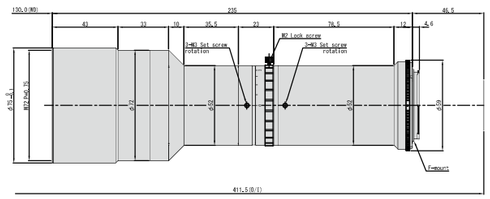
Optical Mag.	2.0x ±5 %
FOV	17.5 mm
WD	60.0 mm
O/I (Object & Imager Distance)	339.9 mm
Working F/# *Value at Iris Open	9.1
NA	0.110
DOF at PCoC φ0.04mm	0.2 mm
TV Distortion	0.02 %
Relative Illuminance (Y=17.5)	98 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	φ35 mm
Filter Thread	M 49 P = 0.75
Weight (approx.)	880 g
Dimension	φ70(max.) x L = 233.4 mm

TLL3.3-45F



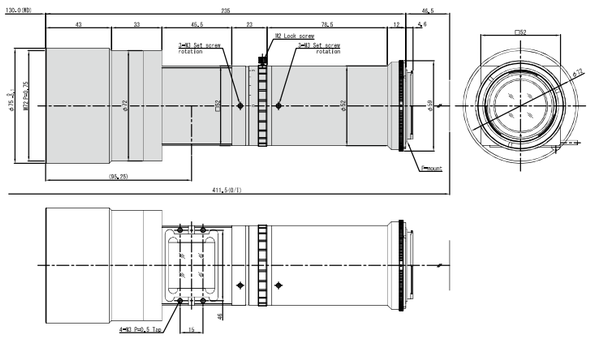
Optical Mag.	3.3x ±5 %
FOV	10.6 mm
WD	45.0 mm
O/I (Object & Imager Distance)	340.2 mm
Working F/# *Value at Iris Open	19.2
NA	0.086
DOF at PCoC φ0.04mm	0.1 mm
TV Distortion	-0.05 %
Relative Illuminance (Y=17.5)	95 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	φ35 mm
Filter Thread	M 43 P = 0.75
Weight (approx.)	1100 g
Dimension	φ84(max.) x L = 248.7 mm

TLL1-130F45



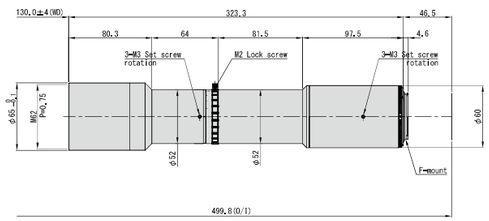
Optical Mag.	1.0x ±5 %
FOV(VxH)	ϕ45.0 mm
WD	130.0 mm
O/I (Object & Imager Distance)	411.5 mm
Working F/# *Value at Iris Open	6.4
NA	0.078
DOF at PCoC ϕ0.04mm	0.5 mm
Optical Distortion(Y=22.5)	0.04 %
Relative Illuminance (Y=22.5)	97 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ45 mm
Co-Axial Prism	—
Weight (approx.)	1180 g
Dimension	ϕ75(max.) x L = 235 mm

TLL1-130FCO45



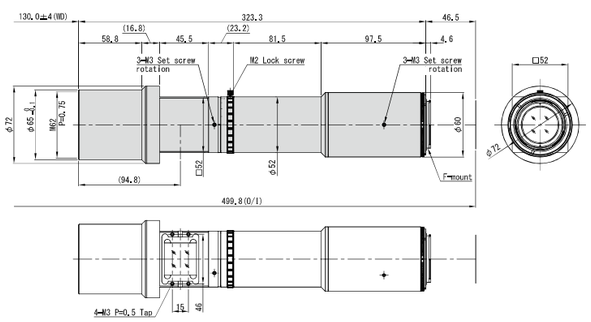
Optical Mag.	1.0x ±5 %
FOV(VxH)	ϕ45.0 mm
WD	130.0 mm
O/I (Object & Imager Distance)	411.5 mm
Working F/# *Value at Iris Open	6.4
NA	0.078
DOF at PCoC ϕ0.04mm	0.5 mm
Optical Distortion(Y=22.5)	0.04 %
Relative Illuminance (Y=22.5)	97 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ45 mm
Co-Axial Prism	Built-in
Weight (approx.)	1240 g
Dimension	ϕ75(max.) x L = 235 mm

TLL2-130F



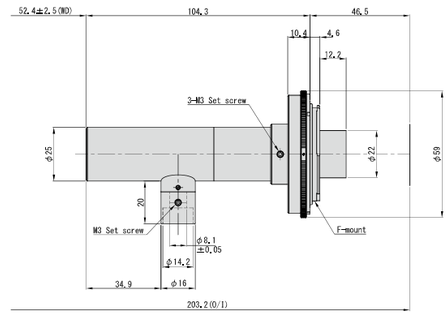
Optical Mag.	2.0x ±5 %
FOV(VxH)	ϕ22.5 mm
WD	130.0 mm ±4
O/I (Object & Imager Distance)	499.8 mm
Working F/# *Value at Iris Open	8.3
NA	0.120
DOF at PCoC ϕ0.04mm	0.2 mm
Optical Distortion (Y=22.5)	0.02 %
Relative Illuminance (Y=22.5)	99 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	ϕ45 mm
Co-Axial Prism	—
Filter Thread	M 62 P = 0.75
Weight (approx.)	1500 g
Dimension	ϕ65(max.) x L = 323.3 mm

TLL2-130FCO



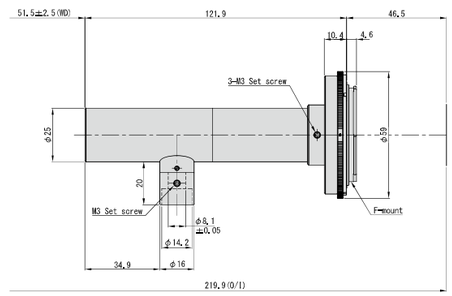
Optical Mag.	2.0x ±5 %
FOV(VxH)	ϕ22.5 mm
WD	130.0 mm ±4
O/I (Object & Imager Distance)	499.8 mm
Working F/# *Value at Iris Open	8.3
NA	0.120
DOF at PCoC ϕ0.04mm	0.2 mm
Optical Distortion (Y=22.5)	0.02 %
Relative Illuminance (Y=22.5)	99 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Sensor Size (max.)	ϕ45 mm
Co-Axial Prism	Built-in
Filter Thread	M 62 P = 0.75
Weight (approx.)	1580 g
Dimension	ϕ72(max.) x L = 323.3 mm

TLL4-50FCO



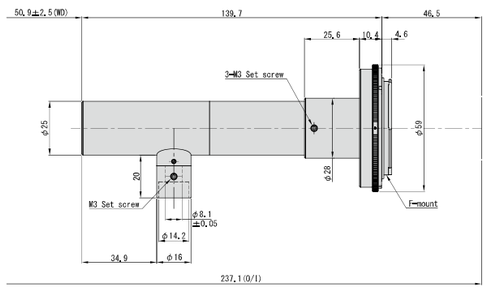
Optical Mag.	4.0x ±5 %
FOV	6.3 mm
WD	52.4 mm ±2.5
O/I (Object & Imager Distance)	203.2 mm
Working F/#	20.0
NA	0.100
DOF at PCoC ϕ0.04mm	0.1 mm
TV Distortion	0.27 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ25 mm
Co-Axial Prism	Built-in
Weight (approx.)	180 g
Dimension	ϕ59(max.) x L = 104.3 mm

TLL5-50FCO



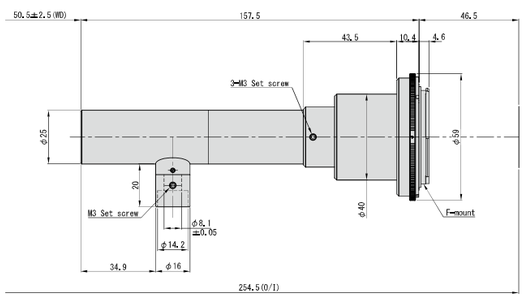
Optical Mag.	5.0x ±5 %
FOV	5.7 mm
WD	51.5 mm ±2.5
O/I (Object & Imager Distance)	219.9 mm
Working F/#	25.0
NA	0.100
DOF at PCoC ϕ0.04mm	0.08 mm
TV Distortion	0.08 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ28.6 mm
Co-Axial Prism	Built-in
Weight (approx.)	185 g
Dimension	ϕ59(max.) x L = 121.9 mm

TLL6-50FCO



Optical Mag.	6.0x ±5 %
FOV	4.8 mm
WD	50.9 mm ±2.5
O/I (Object & Imager Distance)	237.1 mm
Working F/#	30.0
NA	0.100
DOF at PCoC ϕ0.04mm	0.07 mm
TV Distortion	0.01 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ28.6 mm
Co-Axial Prism	Built-in
Weight (approx.)	195 g
Dimension	ϕ59(max.) x L = 139.7 mm

TLL7-50FCO



Optical Mag.	7.0x ±5 %
FOV	4.1 mm
WD	50.5 mm ±2.5
O/I (Object & Imager Distance)	254.5 mm
Working F/#	35.0
NA	0.100
DOF at PCoC ϕ0.04mm	0.06 mm
TV Distortion	0.02 %
Wavelength	Visible
Mount	F-Mount
Flange Back	46.5 mm
Image Circle	ϕ28.6 mm
Co-Axial Prism	Built-in
Weight (approx.)	210 g
Dimension	ϕ59(max.) x L = 157.5 mm

HOURS
www.hours-web.com