

TECHSPEC®

TELECENTRIC LENSES



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TECHSPEC® TitanTL™ TELECENTRIC LENSES



- Large Field of View Options up to 242mm
- Sensor Formats: 1/1.8", 2/3", 1" and 4/3"
- <0.1° Telecentricity

TECHSPEC® TitanTL™ Telecentric Lenses are designed for machine vision systems and metrology applications that require a large field of view. These lenses feature large maximum sensor formats and a rear filter holder on the back of the lenses to allow for easy filter integration. On our 118mm, 182mm, and 242mm FOV versions, the integrated mounting flange allows for ease of securing each lens. TECHSPEC® TitanTL™ Telecentric Lenses contain shims that provide adjustment for variation in camera sensor location, an adjustable iris and a 3 set screw lens mount for simple rotational alignment to the camera. Typical applications include automotive and electronic inspection, measurement and gauging applications.

Note: Detailed inspection report included with each lens.

LENS SELECTION

Max. Field of View	Sensor Size			
	1/1.8"	2/3"	1"	22.5mm
59.7mm	#34-000	#34-005	#34-010	#34-015
118mm	#34-001	#34-006	#34-011	#34-016
182mm	#34-002	#34-007	#34-012	#34-017
242mm	#34-003	#34-008	#34-013	#34-018

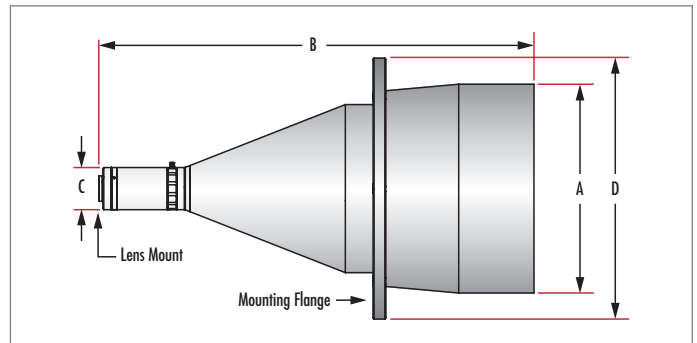
TECHSPEC® TitanTL™ TELECENTRIC LENSES

	0.151X	0.077X	0.050X	0.037X
Primary Magnification PMAG:	0.151X	0.077X	0.050X	0.037X
Max. Camera Sensor Format:	1/1.8"	1/1.8"	1/1.8"	1/1.8"
Horizontal FOV, 1/2" Sensor:	42.4mm	83.6mm	129.4mm	172.4mm
Horizontal FOV, 1/4.8" Sensor:	47.8mm	94.0mm	145.6mm	193.9mm
Horizontal FOV, 2/3" Sensor:	—	—	—	—
Horizontal FOV, 1" Sensor:	—	—	—	—
Horizontal FOV, 4/3" Sensor:	—	—	—	—
Working Distance:	111mm	224mm	287mm	379mm
Depth of Field (20 lp/mm, f/8):	±17.1mm	±66.2mm	±159.4mm	±284.2mm
Aperture (f/#):	f/8 - f/16	f/8 - f/16	f/8 - f/16	f/8 - f/16
Numerical Aperture NA, Object Side:	0.0094	0.0048	0.0031	0.0023
Resolution, Image Space MTF, f/8:	70 lp/mm @ 35%	70 lp/mm @ 44%	70 lp/mm @ 40%	70 lp/mm @ 45%
Typical Telecentricity @ 520nm:	<0.1°	<0.1°	<0.1°	<0.1°
Typical Distortion @ 520nm:	<0.04%	<0.19%	<0.03%	<0.09%
Coating:	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm
Number of Elements (Groups):	6 (4)	6 (4)	6 (4)	6 (4)
Rear Filter Diameter:	12.7mm	12.7mm	12.7mm	12.7mm
Lens Mount:	C-Mount	C-Mount	C-Mount	C-Mount
Stock No.	#34-000	#34-001	#34-002	#34-003
Mount Stock No.	#56-026	N/A	N/A	N/A

TECHSPEC® TitanTL™ TELECENTRIC LENSES

	0.184X	0.093X	0.060X	0.045X
Primary Magnification PMAG:	0.184X	0.093X	0.060X	0.045X
Max. Camera Sensor Format:	2/3"	2/3"	2/3"	2/3"
Horizontal FOV, 1/2" Sensor:	34.7mm	68.5mm	105.9mm	140.8mm
Horizontal FOV, 1/4.8" Sensor:	39.1mm	77.0mm	119.2mm	158.4mm
Horizontal FOV, 2/3" Sensor:	47.8mm	94.1mm	145.7mm	193.7mm
Horizontal FOV, 1" Sensor:	—	—	—	—
Horizontal FOV, 4/3" Sensor:	—	—	—	—
Working Distance:	110mm	222mm	284mm	374mm
Depth of Field (20 lp/mm, f/8):	±11.5mm	±45.1mm	±107.7mm	±192.1mm
Aperture (f/#):	f/8 - f/22	f/8 - f/22	f/8 - f/22	f/8 - f/22
Numerical Aperture NA, Object Side:	0.0115	0.0058	0.0038	0.0028
Resolution, Image Space MTF, f/8:	70 lp/mm @ 36%	70 lp/mm @ 40%	70 lp/mm @ 40%	70 lp/mm @ 35%
Typical Telecentricity @ 520nm:	<0.1°	<0.1°	<0.1°	<0.1°
Typical Distortion @ 520nm:	<0.05%	<0.10%	<0.08%	<0.05%
Coating:	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm
Number of Elements (Groups):	6 (4)	6 (4)	6 (4)	6 (4)
Rear Filter Diameter:	25.4mm	25.4mm	25.4mm	25.4mm
Lens Mount:	C-Mount	C-Mount	C-Mount	C-Mount
Stock No.	#34-005	#34-006	#34-007	#34-008
Mount Stock No.	#56-026	N/A	N/A	N/A

DIMENSIONS						Units: mm
PMAG	A	B	C	D	Bolt Circle on Mounting Flange	
0.151X	79	138.6	42	—	—	
0.077X	150	244.8	42	200	8x Ø8mm Thru on Ø180mm	
0.050X	208	383.1	42	260	8x Ø8mm Thru on Ø240mm	
0.037X	266	525.9	42	298	8x Ø8mm Thru on Ø280mm	
0.184X	79	145.5	42	—	—	
0.093X	150	251.7	42	200	8x Ø8mm Thru on Ø180mm	
0.060X	208	389.9	42	260	8x Ø8mm Thru on Ø240mm	
0.045X	266	520.1	42	298	8x Ø8mm Thru on Ø280mm	
0.268X	79	161.7	42	—	—	
0.136X	150	267.9	42	200	8x Ø8mm Thru on Ø180mm	
0.088X	208	405.8	42	260	8x Ø8mm Thru on Ø240mm	
0.066X	266	536.3	42	298	8x Ø8mm Thru on Ø280mm	
0.377X	79	185.8	42	—	—	
0.191X	150	292.1	42	200	8x Ø8mm Thru on Ø180mm	
0.124X	208	429.6	42	260	8x Ø8mm Thru on Ø240mm	
0.093X	266	560.5	42	298	8x Ø8mm Thru on Ø280mm	



TECHSPEC® TitanTL™ TELECENTRIC LENSES				
Primary Magnification PMAG:	0.268X	0.136X	0.088X	0.066X
Max. Camera Sensor Format:	1"	1"	1"	1"
Horizontal FOV, 1/2" Sensor:	23.9mm	47.2mm	72.9mm	96.9mm
Horizontal FOV, 1/4.8" Sensor:	26.9mm	53.0mm	82.0mm	109.0mm
Horizontal FOV, 2/3" Sensor:	32.8mm	64.8mm	100.2mm	133.2mm
Horizontal FOV, 1" Sensor:	47.8mm	94.2mm	145.8mm	193.8mm
Horizontal FOV, 3/4" Sensor:	—	—	—	—
Working Distance:	110mm	223mm	286mm	377mm
Depth of Field (20 lp/mm, f/11):	±7.8mm	±30.7mm	±72.8mm	±130.9mm
Aperture (f/#):	f/11 - f/22	f/11 - f/22	f/11 - f/22	f/11 - f/22
Numerical Aperture NA, Object Side:	0.0122	0.0062	0.0040	0.0030
Resolution, Image Space MTF, f/11:	50 lp/mm @ 30%	50 lp/mm @ 40%	50 lp/mm @ 40%	50 lp/mm @ 40%
Typical Telecentricity @ 520nm:	<0.1°	<0.1°	<0.1°	<0.1°
Typical Distortion @ 520nm:	<0.05%	<0.13%	<0.05%	<0.05%
Coating:	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm
Number of Elements (Groups):	6 (4)	6 (4)	6 (4)	6 (4)
Rear Filter Diameter:	25.4mm	25.4mm	25.4mm	25.4mm
Lens Mount:	C-Mount	C-Mount	C-Mount	C-Mount
Stock No.	#34-010	#34-011	#34-012	#34-013
Mount Stock No.	#56-026	N/A	N/A	N/A

TECHSPEC® TitanTL™ TELECENTRIC LENSES				
Primary Magnification PMAG:	0.377X	0.191X	0.124X	0.093X
Max. Camera Sensor Format:	22.5mm	22.5mm	22.5mm	22.5mm
Horizontal FOV, 1/2" Sensor:	17.0mm	33.5mm	51.8mm	68.9mm
Horizontal FOV, 1/4.8" Sensor:	19.1mm	37.7mm	58.3mm	77.5mm
Horizontal FOV, 2/3" Sensor:	23.3mm	46.1mm	71.2mm	94.8mm
Horizontal FOV, 1" Sensor:	34.0mm	67.1mm	103.6mm	137.8mm
Horizontal FOV, 3/4" Sensor:	45.9mm	90.6mm	140.1mm	186.3mm
Working Distance:	110mm	221mm	284mm	374mm
Depth of Field (20 lp/mm, f/11):	±4.0mm	±15.2mm	±37.0mm	±64.5mm
Aperture (f/#):	f/11 - f/22	f/11 - f/22	f/11 - f/22	f/11 - f/22
Numerical Aperture NA, Object Side:	0.0171	0.0087	0.0056	0.0042
Resolution, Image Space MTF, f/11:	50 lp/mm @ 21%	50 lp/mm @ 35%	50 lp/mm @ 40%	50 lp/mm @ 40%
Typical Telecentricity @ 520nm:	<0.1°	<0.1°	<0.1°	<0.1°
Typical Distortion @ 520nm:	<0.05%	<0.11%	<0.07%	<0.04%
Coating:	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm	λ/4 MgF ₂ @ 520nm
Number of Elements (Groups):	6 (4)	6 (4)	6 (4)	6 (4)
Rear Filter Diameter:	25.4mm	25.4mm	25.4mm	25.4mm
Lens Mount:	C-Mount	C-Mount	C-Mount	C-Mount
Stock No.	#34-015	#34-016	#34-017	#34-018
Mount Stock No.	#56-026	N/A	N/A	N/A

TECHSPEC® PlatinumTL™ TELECENTRIC LENSES



- <math><0.1^\circ</math> Telecentricity
- High Contrast at 72 lp/mm Across Full Sensor Field
- High Light Throughput f/6 Designs

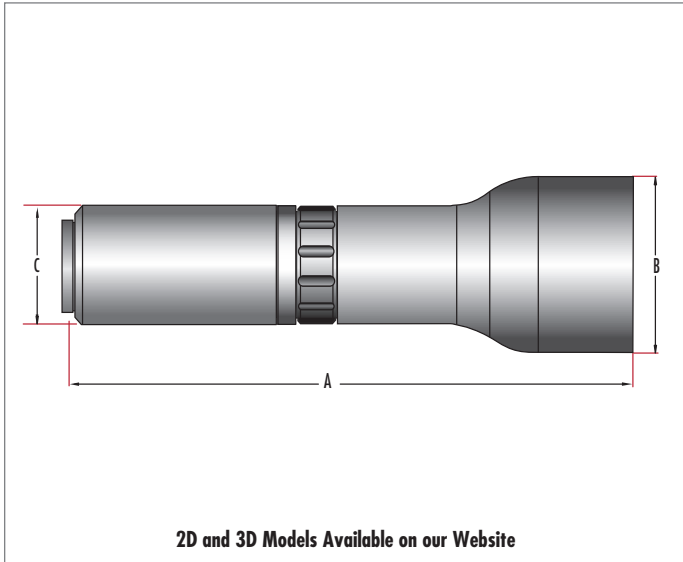
TECHSPEC® PlatinumTL™ Telecentric Lenses are designed for semiconductor and electronics inspection, measurement, and gauging applications. These telecentric lenses feature the lowest f/# in the industry for high light throughput, less than 0.1° telecentricity, and less than 0.1% distortion. Our 28.7mm diagonal sensor format lenses are compatible with the Kodak 4MP 1.3" sensor and other larger format sensors (7μm pixel, 4k Line Scan Cameras). TECHSPEC® PlatinumTL™ Telecentric Lenses produce unparallel levels of contrast yielding maximum image quality with the highest degree of measurement accuracy. These lenses are ideal for high vibration environments and feature an optional recessed set screw for permanently securing the iris in place.

TECHSPEC® PlatinumTL™ TELECENTRIC LENSES

Primary Magnification PMAG:	0.28X	0.5X	1.7X	0.367X	0.55X	0.9X
Max. Sensor Size:	⅜"	⅜"	⅜"	1"	1"	1"
Field of View, 1" Sensor:	N/A	N/A	N/A	34.9mm	23.3mm	14.2mm
Field of View, ⅜" Sensor:	31.8mm	17.7mm	5.2mm	24mm	16mm	9.8mm
Field of View, ½" Sensor:	23.1mm	12.9mm	3.8mm	17.5mm	11.6mm	7.1mm
Working Distance:	180mm	173mm	123mm	169mm	150mm	111mm
Depth of Field:	±6.9mm @ f/10 (20% @ 20 lp/mm)	±2.1mm @ f/10 (20% @ 20 lp/mm)	±0.18mm @ f/10 (20% @ 20 lp/mm)	±4mm @ f/10 (20% @ 20 lp/mm)	±1.75mm @ f/10 (20% @ 20 lp/mm)	±0.65mm @ f/10 (20% @ 20 lp/mm)
Numerical Aperture NA, Object Side:	0.023	0.041	0.083	0.017	0.018	0.045
Resolution, Full Field:	72 lp/mm @ >40%	72 lp/mm @ >40%	72 lp/mm @ >25%	72 lp/mm @ <40%	72 lp/mm @ >40%	72 lp/mm @ >40%
Typical Telecentricity @ 588nm:	<math><0.030^\circ</math>	<math><0.050^\circ</math>	<math><0.080^\circ</math>	<math><0.035^\circ</math>	<math><0.030^\circ</math>	<math><0.070^\circ</math>
Typical Distortion @ 588nm:	0.006%	0.006%	0.02%	0.003%	0.007%	0.035%
Aperture (f/#):	f/6 - f/22	f/6 - f/22	f/6 - f/22	f/6 - f/16	f/6 - f/16	f/6 - f/22
Number of Elements (Groups):	10 (7)	10 (7)	10 (7)	10 (7)	10 (7)	10 (7)
Filter Thread:	M58 x 0.75	M46 x 0.75	M58 x 0.75	M67 x 0.75	M58 x 0.75	M62 x 0.75
Weight:	722g	424g	748g	627g	627g	854g
Coating:	425 - 675nm BBAR	425 - 675nm BBAR	425 - 675nm BBAR	425 - 675nm BBAR	425 - 675nm BBAR	425 - 675nm BBAR
Mount:	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount
Stock No.	#62-933	#62-932	#63-232	#88-602	#88-603	#62-901
Mount Stock No.	#63-442	#63-442	#63-233	#89-721	#89-721	#56-025

DIMENSIONS

Primary Magnification PMAG:	0.28X	0.5X	1.7X	0.367X	0.55X	0.9X
Length (A):	203.8mm	174.9mm	189.5mm	163.5mm	182.5mm	199.8mm
Front Diameter (B):	60.5mm	50.0mm	60.0mm	70mm	62mm	65mm
Back Diameter (C):	33.5mm	33.5mm	46.0mm	43.5mm	43.5mm	53mm



TECHSPEC® PlatinumTL™ TELECENTRIC LENSES *C-Mount version is 1" max. format

Primary Magnification PMAG:	0.9X				0.5X				0.28X			
Max. Sensor Size:	28.7 (diagonal)*				28.7 (diagonal)*				28.7 (diagonal)*			
Working Distance:	111mm				175mm				182mm			
Horizontal FOV, 2/3" Sensor:	9.8mm				17.7mm				31.8mm			
Horizontal FOV, 1.2" Sensor:	16.9mm				30.49mm				54.9mm			
Horizontal FOV, 28.7mm Sensor:	31.9mm				57.75mm				103.6mm			
Resolution @ f/6:	72 lp/mm @ >40%				72 lp/mm @ >45%				72 lp/mm @ >40%			
Typical Telecentricity @ 588nm:	<0.070°				<0.055°				<0.035°			
Typical Distortion @ 588nm:	0.035%				0.020%				0.012%			
Aperture (f/#):	f/6 - f/22				f/6 - f/22				f/6 - f/22			
Filter Thread:	M62 x 0.75				M86 x 1.0				M132 x 0.75			
C-Mount (17.5mm) Stock No.	#62-901				#62-911				#62-921			
F-Mount (46.5mm) Stock No.	#62-902				#62-912				#62-922			
M42 x 1.0 (6.56mm) Stock No.	#62-903				#62-913				#62-923			
M42 x 1.0 (19.53mm) Stock No.	#62-904				#62-914				#62-924			
Mount Stock No.	#56-025				#63-441				#63-440			

DIMENSIONS

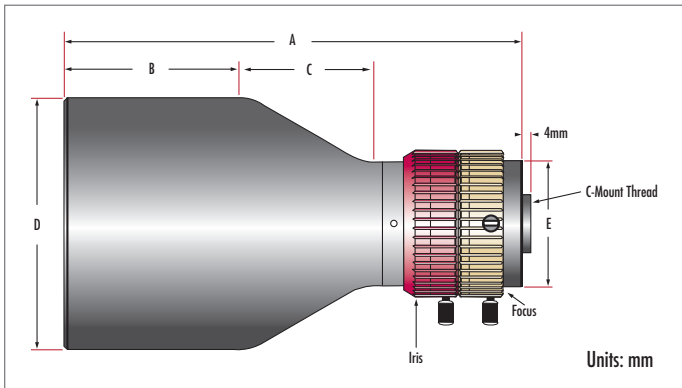
Primary Magnification PMAG:	0.9X				0.5X				0.28X			
Mount:	C-Mount	F-Mount	M42 x 1.0	M42 x 1.0	C-Mount	F-Mount	M42 x 1.0	M42 x 1.0	C-Mount	F-Mount	M42 x 1.0	M42 x 1.0
Stock No.	#62-901	#62-902	#62-903	#62-904	#62-911	#62-912	#62-913	#62-914	#62-921	#62-922	#62-923	#62-924
Flange:	17.5mm	46.5mm	6.56mm	19.53mm	17.5mm	46.5mm	6.56mm	19.53mm	17.5mm	46.5mm	6.56mm	19.53mm
Length (A):	199.8mm	170.8mm	210.7mm	197.8mm	172.9mm	143mm	184mm	171.1mm	197.5mm	167.6mm	208.5mm	195.5mm
Front Diameter (B):	65mm	65mm	65mm	65mm	90mm	90mm	90mm	90mm	138.6mm	138.6mm	138.6mm	138.6mm
Back Diameter (C):	53mm	55mm	53mm	53mm	50mm	55mm	50mm	50mm	50mm	55mm	50mm	50mm

TECHSPEC® GoldTL™ TELECENTRIC LENSES



- Focusable to Allow for Working Distance Adjustment
- High Light Throughput f/6 Designs
- Designed for 1/2" and 2/3" Sensor Formats

TECHSPEC® GoldTL™ Telecentric Lenses were designed specifically for machine vision and metrology applications. The unique focusable design allows for working distance adjustment, while still providing <math><0.2^\circ</math> telecentricity. These lenses also feature high resolutions, low distortions, and are available for 1/2" or 2/3" sensors. TECHSPEC® GoldTL™ Telecentric Lenses have a front filter thread for easy integration of color filters, polarizers, or other mounted components. Both the iris and focusing adjustment positions can be fixed by set screws to remain secure in high vibration environments.



DIMENSIONS

Primary Magnification PMAG:	1X / 0.73X	0.5X / 0.36X	0.25X / 0.18X	0.125X / 0.09X	0.08X / 0.064X
Overall Length (A):	200.1mm	150.0mm	196.3mm	200.0mm	277.2mm
Mounting Length (B):	29.7mm	37.7mm	74.3mm	76.4mm	93.6mm
Taper Length (C):	44.9mm	44.9mm	50.0mm	59.2mm	92.6mm
Max. Outer Diameter (D):	68.0mm	65.0mm	79.0mm	110.0mm	160.0mm
Rear Outer Diameter (E):	58.0mm	51.0mm	48.0mm	55.0mm	59.7mm

TECHSPEC® GoldTL™ TELECENTRIC LENSES

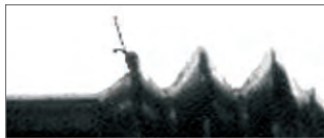
*Horizontal

Primary Magnification PMAG:	1.0X	0.73X	0.5X	0.36X	0.25X	0.18X	0.125X	0.09X	0.08X	0.064X
Field of View, 2/3" CCD*:	8.8mm	—	17.6mm	—	35.2mm	—	67.4mm	—	110.0mm	—
Field of View, 1/2" CCD*:	6.4mm	8.8mm	12.8mm	17.6mm	25.6mm	35.2mm	49.0mm	70.4mm	80.0mm	100.0mm
Max. Sensor Format:	2/3"	1/1.8"	2/3"	1/1.8"	2/3"	1/2"	2/3"	1/2"	2/3"	1/1.8"
Working Distance:	98 - 123mm	98 - 123mm	117 - 142mm	117 - 142mm	161 - 186mm	161 - 186mm	132 - 182mm	132 - 182mm	170 - 220mm	170 - 220mm
Res. (MTF Image Space @ f/10):	>50% @ 40 lp/mm	>65% @ 40 lp/mm	>55% @ 40 lp/mm	>70% @ 40 lp/mm	>55% @ 40 lp/mm	>60% @ 40 lp/mm	>45% @ 40 lp/mm	>60% @ 40 lp/mm	>65% @ 40 lp/mm	>65% @ 40 lp/mm
Telecentricity:	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.2^\circ</math>	<math><0.2^\circ</math>
Distortion (Max.):	0.10%	0.10%	0.10%	0.10%	0.50%	0.20%	0.50%	0.10%	0.35%	0.50%
DOF (20% @ 20 lp/mm):	$\pm 0.6\text{mm} @ f/10$	$\pm 0.95\text{mm} @ f/10$	$\pm 2.1\text{mm} @ f/10$	$\pm 3.7\text{mm} @ f/10$	$\pm 8.2\text{mm} @ f/10$	$\pm 15.5\text{mm} @ f/10$	$\pm 30.4\text{mm} @ f/10$	$\pm 63.6\text{mm} @ f/10$	$\pm 81.0\text{mm} @ f/10$	$\pm 129\text{mm} @ f/10$
Aperture (f/#):	f/6 - f/25	f/6 - f/19.5	f/6 - f/25	f/6 - f/18	f/6 - f/25	f/6 - f/18	f/6 - f/25	f/6 - f/17.4	f/6 - f/25	f/6 - f/25
Size (Max OD x L):	68 x 200mm	68 x 200mm	65 x 150mm	65 x 150mm	79 x 196mm	79 x 196mm	110 x 200mm	110 x 200mm	160 x 277mm	160 x 277mm
Filter Size:	M62 x 0.75	M62 x 0.75	M58 x 0.75	M58 x 0.75	M72 x 0.75	M72 x 0.75	M105 x 1.0	M105 x 1.0	M154 x 1.0	M154 x 1.5
Stock No.	#55-350	#58-256	#54-798	#58-257	#55-349	#58-258	#55-348	#58-259	#56-948	#58-260
Mounting Clamp Stock No.	#56-024	#56-024	#56-025	#56-025	#56-026	#56-026	#56-027	#56-027	Mount Included	Mount Included

TECHSPEC® TELECENTRIC BACKLIGHT ILLUMINATOR

- Increases Contrast on Product Edges for Inspection Systems
- Adjustable Aperture Allows Variable Output Without Varying Color Temperature
- ¼" Fiber Optic or LED Input for Easy Integration

The TECHSPEC® Telecentric Backlight Illuminator produces a high contrast silhouette, increasing edge contrast and measurement accuracy in gauging applications by decreasing diffuse reflections that increase edge softening.



Mounting Post using TECHSPEC® 1X Silver Series Telecentric Lens and Standard Diffuse Backlight



Mounting Post using TECHSPEC® 1X Silver Series Telecentric Lens and Telecentric Backlight Illuminator

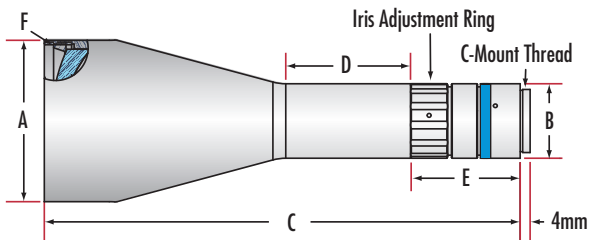
TECHSPEC® TELECENTRIC BACKLIGHT ILLUMINATOR

TECHSPEC® Telecentric Backlight Illuminator

#62-760

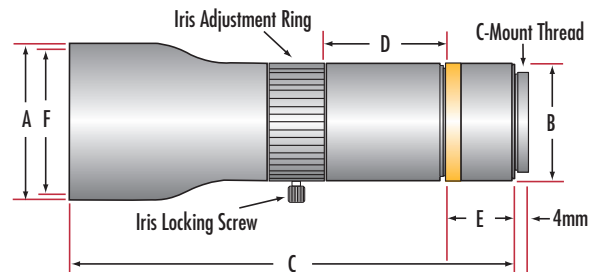
TECHSPEC® SilverTL™ TELECENTRIC LENSES

Standard 0.16X - 0.75X



Units: mm

Standard 1.0X - 4.0X



Units: mm

DIMENSIONS

*Mounting clamp fits over iris

Primary Magnification PMAG:	0.16X	0.20X	0.25X	0.30X	0.40X	0.50X	0.60X	0.75X	1.0X	2.0X	4.0X
Max. Outer Diameter (A):	65mm	60mm	48mm	46mm	45mm	40mm	42mm	36mm	40mm	45mm	61mm
Mounting Diameter (B):	30mm	30mm	30mm	30mm	30mm	30mm	30mm	30mm	30mm	30mm	30mm
Length (C) (Standard/In-Line):	191mm	188mm	158mm	158mm	159mm	153mm/156.2mm	156mm	151.2mm/155.2mm	114mm	141mm/144.6mm	249mm
Mounting Length (D) (Standard/In-Line):	50mm	42mm	49mm	60mm	67mm	42mm/45.1mm	57mm	34mm*/46.2mm	32mm*	45mm/42.2mm	99mm
Mounting Offset (E) (Standard/In-Line):	43mm	45mm	44mm	43mm	33mm	68mm/73.4mm	46mm	82.2mm/16.9mm	17mm	17mm/18.8mm	17mm
Filter Size (Mount Dia. x Thread Pitch) (F):	M62 x 0.75	M58 x 0.75	M46 x 0.75	M43 x 0.75	M43 x 0.75	M37 x 0.75	M40.5 x 0.5	M30.5 x 0.5	M37 x 0.75	M43 x 0.75	M58 x 0.75

MOUNTING CLAMPS

Silver Series Mounting Clamp, 1.75" Centerline

#56-870

Silver Series Mounting Clamp, 2.25" Centerline

#56-871

TECHSPEC® SilverTL™ TELECENTRIC LENSES



- <math><0.1^\circ</math> Telecentricity
- Double Sided Telecentric Designs
- High Light Throughput f/6 Designs

TECHSPEC® SilverTL™ Telecentric Lenses are ideal for both on-line and off-line machine vision production applications that require accurate measurements. These lenses combine high quality optics with a simplified non-focusing mechanical design and adjustable iris with a locking set screw. TECHSPEC® SilverTL™ Telecentric Lenses are designed for metrology and gauging applications and offer inline illumination options for maximum versatility. Each lens also features a standard front filter thread for use with color filters, polarizers, protective windows, and illumination adapters for LED or fiber-optic ring lights. **Note:** Mounting brackets are available that fit the 30mm diameter mounting surface.

TECHSPEC® SilverTL™ TELECENTRIC LENSES - FIELD OF VIEW AND RESOLUTIONS

*Metric pixel resolution is in microns

Primary Magnification PMAG:	0.16X		0.20X		0.25X		0.30X		0.40X	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
1/3" 1280 x 960										
FOV	30.00	1.18	24.00	0.94	19.20	0.76	16.00	0.63	12.00	0.47
Pixel Resolution*	23.44	0.0009	18.75	0.0007	15.00	0.0006	12.50	0.0005	9.38	0.0004
1/2.5" 2592 x 1944										
FOV	19.44	0.77	15.55	0.61	12.44	0.49	10.37	0.41	7.78	0.31
Pixel Resolution*	7.50	0.0003	6.00	0.0002	4.80	0.0002	4.00	0.0002	3.00	0.0001
1/2.3" 3840 x 2748										
FOV	40.08	1.58	32.06	1.26	25.65	1.01	21.38	0.84	16.03	0.63
Pixel Resolution*	10.44	0.0004	8.35	0.0003	6.68	0.0003	5.57	0.0002	4.18	0.0002
1/4.8" 1280 x 1024										
FOV	42.40	1.67	33.92	1.34	27.14	1.07	22.61	0.89	16.96	0.67
Pixel Resolution*	33.13	0.001	26.50	0.001	21.20	0.0008	17.67	0.0007	13.25	0.0005
1/4.8" 1600 x 1200										
FOV	45.00	1.77	36.00	1.42	28.80	1.13	24.00	0.94	18.00	0.71
Pixel Resolution*	28.13	0.001	22.50	0.0009	18.00	0.0007	15.00	0.0006	11.25	0.0004

TECHSPEC® SilverTL™ TELECENTRIC LENSES

Primary Magnification PMAG:	0.16X	0.20X	0.25X	0.30X	0.40X
Max. Sensor Format:	1/2"	1/4.8"	1/4.8"	1/2"	1/4.8"
Working Distance (±3mm):	177mm	164mm	160mm	139mm	103mm
Res. (Image Space @ f/10):	>40% @ 40 lp/mm	>40% @ 40 lp/mm	>40% @ 40 lp/mm	>40% @ 40 lp/mm	>40% @ 40 lp/mm
Telecentricity:	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>	<math><0.1^\circ</math>
Distortion (Max.):	<math><0.3\%</math>	<math><0.3\%</math>	<math><0.3\%</math>	<math><0.3\%</math>	<math><0.3\%</math>
DOF (10% @ 20 lp/mm):	±19.7mm @ f/10	±12.9mm @ f/10	±8.2mm @ f/10	±5.7mm @ f/10	±3.3mm @ f/10
Aperture (f/#):	f/6 - Closed	f/6 - Closed	f/6 - Closed	f/6 - Closed	f/6 - Closed
Lens Element Coating:	BBAR from 425-675nm	BBAR from 425-675nm	BBAR from 425-675nm	BBAR from 425-675nm	BBAR from 425-675nm
Standard Stock No.	#56-675	#63-073	#56-676	#58-428	#56-677
In-Line Stock No.	-	-	-	-	-
Mount Stock No.	#56-871	#56-871	#56-870	#56-870	#56-870

TECHSPEC® SilverTL™ TELECENTRIC LENSES



TECHSPEC® SilverTL™ TELECENTRIC LENSES - FIELD OF VIEW AND RESOLUTIONS

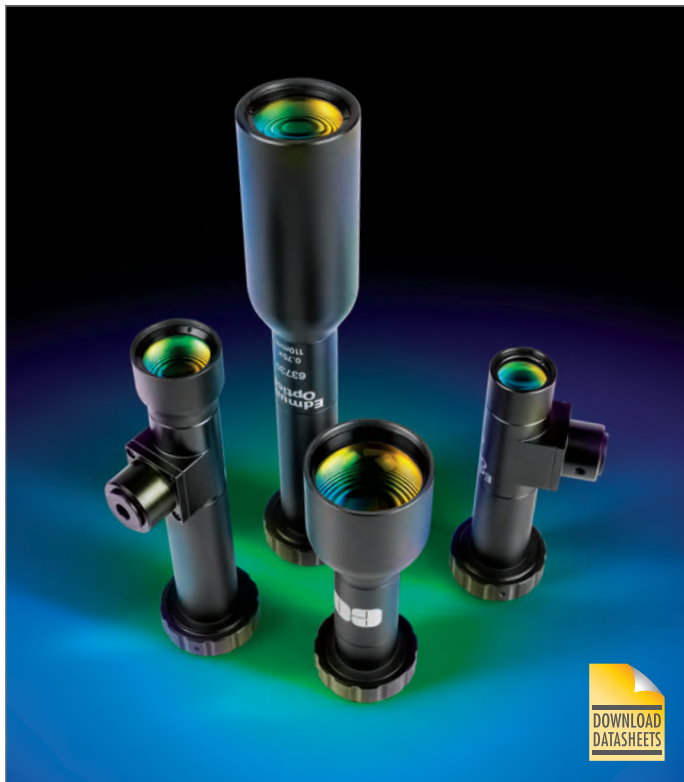
*Metric pixel resolution is in microns

Primary Magnification PMAG:	0.50X		0.60X		0.75X		1.0X		2.0X		4.0X	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
1/8" 1280 x 960												
FOV	9.60	0.38	8.00	0.31	6.40	0.25	4.80	0.19	2.40	0.09	1.20	0.05
Pixel Resolution*	7.50	0.0003	6.25	0.0002	5.00	0.0002	3.75	0.0001	1.88	0.00007	0.94	0.00004
1/2.5" 2592 x 1944												
FOV	6.22	0.24	5.18	0.20	4.15	0.16	3.11	0.12	1.56	0.06	0.78	0.03
Pixel Resolution*	2.40	0.0001	2.00	0.0001	1.60	0.0001	1.20	0.00005	0.60	0.00002	0.30	0.00001
1/2.3" 3840 x 2748												
FOV	12.83	0.50	10.69	0.42	8.55	0.34	6.41	0.25	3.21	0.13	1.60	0.06
Pixel Resolution*	3.34	0.0001	2.78	0.0001	2.23	0.00009	1.67	0.00007	0.84	0.00003	0.42	0.00002
1/4.8" 1280 x 1024												
FOV	13.57	0.53	11.31	0.45	9.05	0.36	6.78	0.27	3.39	0.13	1.70	0.07
Pixel Resolution*	10.60	0.0004	8.83	0.0003	7.07	0.0003	5.30	0.0002	2.65	0.0001	1.33	0.00005
1/4.8" 1600 x 1200												
FOV	14.40	0.57	12.00	0.47	9.60	0.38	7.20	0.28	3.60	0.14	1.80	0.07
Pixel Resolution*	9.00	0.0004	7.50	0.0003	6.00	0.0002	4.50	0.0002	2.25	0.00009	1.13	0.00004

TECHSPEC® SilverTL™ TELECENTRIC LENSES

Primary Magnification PMAG:	0.50X	0.60X	0.75X	1.0X	2.0X	4.0X
Max. Sensor Format:	1/4.8"	1/4.8"	3/8"	3/8"	3/8"	3/8"
Working Distance (±3mm):	120mm	103mm	100mm	83mm	75mm	44mm
Res. (Image Space @ f/10):	>40% @ 40 lp/mm	>40% @ 40 lp/mm	>40% @ 40 lp/mm	>40% @ 40 lp/mm	>40% @ 40 lp/mm	>40% @ 40 lp/mm
Telecentricity:	<0.1°	<0.1°	<0.1°	<0.1°	<0.1°	<0.1°
Distortion (Max.):	<0.3%	<0.3%	<0.3%	<0.3%	<0.3%	<0.3%
DOF (10% @ 20 lp/mm):	±2.1mm @ f/10	±1.4mm @ f/10	±8mm @ 20%	±0.5mm @ f/10	±0.13mm @ f/10	±0.03mm @ f/10
Aperture (f/#):	f/6 - Closed	f/6 - Closed	f/6 - Closed	f/6 - Closed	f/6 - Closed (In-Line: f/10-Closed)	f/6 - Closed
Lens Element Coating:	BBAR from 425-675nm	BBAR from 425-675nm	BBAR from 425-675nm	BBAR from 425-675nm	BBAR from 425-675nm	BBAR from 425-675nm
Standard Stock No.	#63-074	#56-678	#67-731	#58-430	#58-431	#58-432
In-Line Stock No.	#88-344	-	#88-346	-	#88-348	-
Mount Stock No.	#56-870	#56-870	#56-870	#56-870	#56-870	#56-870

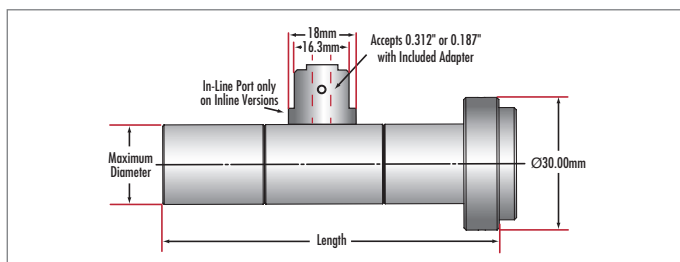
TECHSPEC® CompactTL™ TELECENTRIC LENSES



DOWNLOAD DATASHEETS

- Ultra-Compact Design
- Ideal for Volume Inspection Applications
- Variety of Working Distance and Magnification Options

TECHSPEC® CompactTL™ Telecentric Lenses have ultra-compact designs, making them ideal for applications with tight space constraints. These lenses feature a $\frac{2}{3}$ " sensor format and a number of different working distance and magnification options. TECHSPEC® CompactTL™ Telecentric Lenses are perfect for integration into gauging systems due to their excellent telecentricity and low distortion. From single unit to high volume implementation, these lenses provide a great price to performance ratio. The fixed iris and lockable focus are ideal for implementation into factory floors and assembly lines, as they will remain fixed over time.



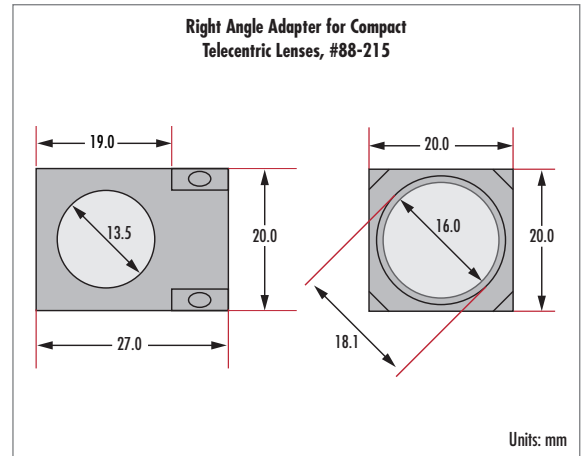
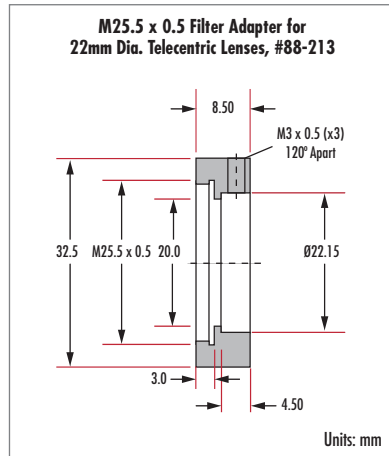
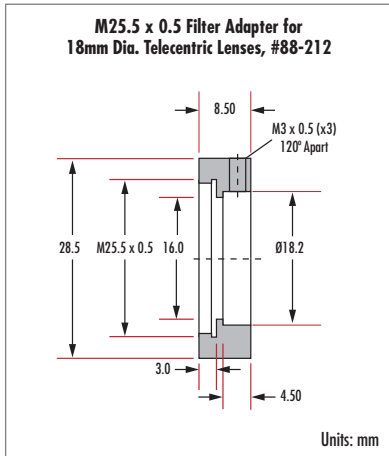
TECHSPEC® CompactTL™ TELECENTRIC LENSES

*Horizontal

Working Distance:	40mm (±1)				65mm (±1)							
Primary Magnification PMAG:	1X	2X	3X	4X	0.5X	0.8X	1X	2X	3X	4X	6X	8X
Field of View $\frac{2}{3}$ " Sensor*:	8.8mm	4.4mm	2.9mm	2.2mm	17.6mm	11.0mm	8.8mm	4.4mm	2.9mm	2.2mm	1.5mm	1.1mm
Field of View $\frac{1}{2}$ " Sensor*:	6.4mm	3.2mm	2.1mm	1.6mm	12.8mm	8.0mm	6.4mm	3.2mm	2.1mm	1.6mm	1.1mm	0.8mm
Field of View $\frac{1}{3}$ " Sensor*:	4.8mm	2.4mm	1.6mm	1.2mm	9.6mm	6.0mm	4.8mm	2.4mm	1.6mm	1.2mm	0.8mm	0.6mm
Maximum Sensor Format:	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "
Aperture (f/#):	f/11.0	f/14.3	f/16.0	f/20.0	f/9	f/14.9	f/18.6	f/17.3	f/21.9	f/27.0	f/35.0	f/45.0
Max. Diameter:	18.0mm	18.0mm	18.0mm	18.0mm	32.0mm	21.4mm	18.0mm	18.0mm	18.0mm	18.0mm	18.0mm	18.0mm
Length (Standard/In-Line):	50.0/53.5mm	37.0/40.0mm	48.0/52.3mm	47.1/50.3mm	86.7/90.0mm	86.5/89.9mm	76.1/79.5mm	76.5/79.9mm	76.3/79.4mm	81.0/84.4mm	116.1/119.5mm	100.0/103.7mm
Distortion:	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%
Telecentricity:	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°
Camera Mount:	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount
Standard Stock No.	#63-745	#63-746	#63-747	#63-748	#63-741	#63-742	#63-733	#63-734	#63-735	#63-736	#63-743	#63-744
In-Line Stock No.	#67-319	#67-320	#67-321	#67-322	#67-310	#67-311	#67-312	#67-313	#67-314	#67-315	#67-316	#67-317

TECHSPEC[®] CompactTL™ TELECENTRIC LENSES ACCESSORIES

Type	Compatible Diameter Telecentric	Note	Stock No.
M25.5 x 0.5 Filter Adapter	18mm	—	#88-212
M25.5 x 0.5 Filter Adapter	22mm	—	#88-213
Right Angle Adapter	18mm	21.2mm Distance from Input to Output	#88-215



TECHSPEC[®] CompactTL™ TELECENTRIC LENSES

*Horizontal

Working Distance:	110mm (±1)					220mm (±2)	300mm (±3)	
Primary Magnification PMAG:	0.5X	0.75X	1X	2X	3X	1X	1X	2X
Field of View 2/3" Sensor*:	17.6mm	11.7mm	8.8mm	4.4mm	2.9mm	8.8mm	8.8mm	4.4mm
Field of View 1/2" Sensor*:	12.8mm	8.5mm	6.4mm	3.2mm	2.1mm	6.4mm	6.4mm	3.2mm
Field of View 1/3" Sensor*:	9.6mm	6.4mm	4.8mm	2.4mm	1.6mm	4.8mm	4.8mm	2.4mm
Maximum Sensor Format:	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"
Aperture (f/#):	f/9.3	f/13.3	f/20.9	f/33.0	f/35	f/11.0	f/14.3	f/14.3
Max. Diameter:	40.0mm	29.5mm	22.0mm	18.0mm	18.0mm	36mm	36mm	31mm
Length (Standard/In-Line):	166.6/170.0mm	156.2/160.0mm	106.6/110.0mm	126.6/130.0mm	100.0/103.6mm	162.5/164.7mm	174.5/177.3mm	198.9/202.3mm
Distortion:	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%	<0.2%
Telecentricity:	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°	<0.2°
Camera Mount:	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount
Standard Stock No.	#63-729	#63-730	#63-731	#63-732	#63-738	#33-096	#33-100	#33-101
In-Line Stock No.	#67-303	#67-304	#67-305	#67-306	#67-307	#33-110	#33-114	#33-115

TECHSPEC® TELECENTRIC LENS SELECTION GUIDE

Stock No.	Magnification	Field of View (mm) by Sensor Size (When Ø is used, Image does not cover entire sensor.)									
		1/4" (3.6 x 2.7mm)	1/3" (4.8 x 3.6mm)	1/2.5" (5.8 x 4.3mm)	1/2.3" (6.14 x 4.6mm)	1/2" (6.4 x 4.8mm)	1/1.8" (7.2 x 5.4mm)	2/3" (8.8 x 6.6mm)	2/3" Sony 5MP (8.5 x 7.1mm)	1" (12.8 x 9.6mm)	4/3" (15.2 x 15.2mm)
#63-744	8.0X	0.5 x 0.3	0.6 x 0.5	0.7 x 0.5	0.8 x 0.6	0.8 x 0.6	0.9 x 0.7	1.1 x 0.8	1.1 x 0.9	Ø1.4	
#67-317	8.0X	0.5 x 0.3	0.6 x 0.5	0.7 x 0.5	0.8 x 0.6	0.8 x 0.6	0.9 x 0.7	1.1 x 0.8	1.1 x 0.9	Ø1.4	
#63-743	6.0X	0.6 x 0.5	0.8 x 0.6	1.0 x 0.7	1.0 x 0.8	1.1 x 0.8	1.2 x 0.9	1.5 x 1.1	1.4 x 1.2	Ø1.8	
#67-316	6.0X	0.6 x 0.5	0.8 x 0.6	1.0 x 0.7	1.0 x 0.8	1.1 x 0.8	1.2 x 0.9	1.5 x 1.1	1.4 x 1.2	Ø1.8	
#63-736	4.0X	0.9 x 0.7	1.2 x 0.9	1.5 x 1.1	1.5 x 1.2	1.6 x 1.2	1.8 x 1.3	2.2 x 1.7	2.1 x 1.8	Ø2.8	
#67-315	4.0X	0.9 x 0.7	1.2 x 0.9	1.5 x 1.1	1.5 x 1.2	1.6 x 1.2	1.8 x 1.3	2.2 x 1.7	2.1 x 1.8	Ø2.8	
#58-432	4.0X	0.9 x 0.7	1.2 x 0.9	1.5 x 1.1	1.5 x 1.2	1.6 x 1.2	1.8 x 1.3	2.2 x 1.7	2.1 x 1.8	Ø2.8	
#63-748	4.0X	0.9 x 0.7	1.2 x 0.9	1.5 x 1.1	1.5 x 1.2	1.6 x 1.2	1.8 x 1.3	2.2 x 1.7	2.1 x 1.8	Ø2.8	
#67-322	4.0X	0.9 x 0.7	1.2 x 0.9	1.5 x 1.1	1.5 x 1.2	1.6 x 1.2	1.8 x 1.3	2.2 x 1.7	2.1 x 1.8	Ø2.8	
#63-738	3.0X	1.2 x 0.9	1.6 x 1.2	1.9 x 1.4	2.0 x 1.5	2.1 x 1.6	2.4 x 1.8	2.9 x 2.2	2.8 x 2.4	Ø3.7	
#67-307	3.0X	1.2 x 0.9	1.6 x 1.2	1.9 x 1.4	2.0 x 1.5	2.1 x 1.6	2.4 x 1.8	2.9 x 2.2	2.8 x 2.4	Ø3.7	
#33-101	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.2 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#33-115	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.2 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#63-735	3.0X	1.2 x 0.9	1.6 x 1.2	1.9 x 1.4	2.0 x 1.5	2.1 x 1.6	2.4 x 1.8	2.9 x 2.2	2.8 x 2.4	Ø3.7	
#67-314	3.0X	1.2 x 0.9	1.6 x 1.2	1.9 x 1.4	2.0 x 1.5	2.1 x 1.6	2.4 x 1.8	2.9 x 2.2	2.8 x 2.4	Ø3.7	
#63-747	3.0X	1.2 x 0.9	1.6 x 1.2	1.9 x 1.4	2.0 x 1.5	2.1 x 1.6	2.4 x 1.8	2.9 x 2.2	2.8 x 2.4	Ø3.7	
#67-321	3.0X	1.2 x 0.9	1.6 x 1.2	1.9 x 1.4	2.0 x 1.5	2.1 x 1.6	2.4 x 1.8	2.9 x 2.2	2.8 x 2.4	Ø3.7	
#63-732	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#67-306	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#58-431	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#88-348	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#63-734	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#67-313	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#63-746	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#67-320	2.0X	1.8 x 1.4	2.4 x 1.8	2.9 x 2.2	3.1 x 2.3	3.2 x 2.4	3.6 x 2.7	4.4 x 3.3	4.3 x 3.6	Ø5.5	
#63-232	1.7X	2.1 x 1.6	2.8 x 2.1	3.4 x 2.5	3.6 x 2.7	3.8 x 2.8	4.2 x 3.2	5.2 x 3.9	5.0 x 4.2	Ø6.5	
#55-350	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#58-430	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#63-731	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#67-305	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#63-733	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#67-312	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#33-100	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.4 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#33-114	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.4 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#63-745	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#67-319	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.1 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#33-096	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.4 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#33-110	1.0X	3.6 x 2.7	4.8 x 3.6	5.8 x 4.3	6.4 x 4.6	6.4 x 4.8	7.2 x 5.4	8.8 x 6.6	8.5 x 7.1	Ø11.0	
#62-901	0.9X	4.0 x 3.0	5.3 x 4.0	6.4 x 4.8	6.8 x 5.1	7.1 x 5.3	8.0 x 6.0	9.8 x 7.3	9.4 x 7.9	14.2 x 10.7	16.9 x 16.9
#62-902	0.9X	4.0 x 3.0	5.3 x 4.0	6.4 x 4.8	6.8 x 5.1	7.1 x 5.3	8.0 x 6.0	9.8 x 7.3	9.4 x 7.9	14.2 x 10.7	16.9 x 16.9
#62-904	0.9X	4.0 x 3.0	5.3 x 4.0	6.4 x 4.8	6.8 x 5.1	7.1 x 5.3	8.0 x 6.0	9.8 x 7.3	9.4 x 7.9	14.2 x 10.7	16.9 x 16.9
#62-903	0.9X	4.0 x 3.0	5.3 x 4.0	6.4 x 4.8	6.8 x 5.1	7.1 x 5.3	8.0 x 6.0	9.8 x 7.3	9.4 x 7.9	14.2 x 10.7	16.9 x 16.9
#63-742	0.8X	4.5 x 3.4	6.0 x 4.5	7.3 x 5.4	7.7 x 5.8	8.0 x 6.0	9.0 x 6.7	11.0 x 8.3	10.6 x 8.9	Ø13.8	
#67-311	0.8X	4.5 x 3.4	6.0 x 4.5	7.3 x 5.4	7.7 x 5.8	8.0 x 6.0	9.0 x 6.7	11.0 x 8.3	10.6 x 8.9	Ø13.8	
#63-730	0.75X	4.8 x 3.6	6.4 x 4.8	7.7 x 5.7	8.2 x 6.1	8.5 x 6.4	9.6 x 7.2	11.7 x 8.8	11.3 x 9.5	Ø14.7	
#67-304	0.75X	4.8 x 3.6	6.4 x 4.8	7.7 x 5.7	8.2 x 6.1	8.5 x 6.4	9.6 x 7.2	11.7 x 8.8	11.3 x 9.5	Ø14.7	
#67-310	0.75X	4.8 x 3.6	6.4 x 4.8	7.7 x 5.7	8.2 x 6.1	8.5 x 6.4	9.6 x 7.2	11.7 x 8.8	11.3 x 9.5	Ø14.7	
#88-346	0.75X	4.8 x 3.6	6.4 x 4.8	7.7 x 5.7	8.2 x 6.1	8.5 x 6.4	9.6 x 7.2	11.7 x 8.8	11.3 x 9.5	Ø14.7	
#58-256	0.73X	4.9 x 3.7	6.6 x 4.9	7.9 x 5.9	8.4 x 6.3	8.8 x 6.6	9.8 x 7.4	12.1 x 9.0	11.6 x 9.7	Ø15.3	
#56-678	0.6X	6.0 x 4.5	8.0 x 6.0	9.7 x 7.2	10.2 x 7.7	10.7 x 8.0	11.9 x 9.0	Ø16.7	Ø16.7	Ø16.7	
#88-603	0.55X	6.5 x 4.9	8.7 x 6.5	10.5 x 7.8	11.1 x 8.4	11.6 x 8.7	13.0 x 9.8	16.0 x 12.0	15.5 x 12.9	23.3 x 17.5	Ø29.1
#62-932	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#62-911	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	25.6 x 19.2	Ø37.0
#62-912	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	25.6 x 19.2	30.4 x 30.4
#62-914	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	25.6 x 19.2	30.4 x 30.4
#62-913	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	25.6 x 19.2	30.4 x 30.4
#54-798	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#63-074	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#88-344	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#63-729	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#67-303	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#63-741	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#67-310	0.5X	7.2 x 5.4	9.6 x 7.2	11.6 x 8.6	12.2 x 9.2	12.8 x 9.6	14.3 x 10.7	17.6 x 13.2	17.0 x 14.2	Ø22.0	
#56-677	0.4X	9.0 x 6.8	12.0 x 9.0	14.5 x 10.8	15.3 x 11.5	16.0 x 12.0	17.9 x 13.4	Ø22.4	Ø22.4	Ø22.4	
#34-015	0.377X	9.6 x 7.2	12.7 x 9.6	15.4 x 11.4	17.0 x 12.2	17.0 x 12.7	19.1 x 14.3	23.3 x 17.5	22.6 x 18.8	34 x 25.5	40.3 x 40.3
#88-602	0.367X	9.8 x 7.4	13.1 x 9.8	15.8 x 11.7	16.7 x 12.5	17.4 x 13.1	19.5 x 14.6	24.0 x 18.0	23.2 x 19.3	34.9 x 26.2	Ø43.6
#58-257	0.36X	10.0 x 7.5	13.3 x 10.0	16.1 x 11.9	17.0 x 12.8	17.8 x 13.3	19.9 x 14.9	Ø24.4	Ø24.4	Ø24.4	
#58-428	0.3X	12.0 x 9.0	16.0 x 12.0	19.3 x 14.3	20.4 x 15.3	21.3 x 16.0	23.9 x 17.9	Ø30.0	Ø30.0	Ø30.0	
#62-921	0.277X	13.0 x 9.7	17.3 x 13.0	20.9 x 15.5	22.1 x 16.6	23.1 x 17.3	25.9 x 19.4	31.8 x 23.8	30.7 x 25.6	46.2 x 34.7	Ø77.6
#62-922	0.277X	13.0 x 9.7	17.3 x 13.0	20.9 x 15.5	22.1 x 16.6	23.1 x 17.3	25.9 x 19.4	31.8 x 23.8	30.7 x 25.6	46.2 x 34.7	54.9 x 54.9
#62-924	0.277X	13.0 x 9.7	17.3 x 13.0	20.9 x 15.5	22.1 x 16.6	23.1 x 17.3	25.9 x 19.4	31.8 x 23.8	30.7 x 25.6	46.2 x 34.7	54.9 x 54.9
#62-923	0.277X	13.0 x 9.7	17.3 x 13.0	20.9 x 15.5	22.1 x 16.6	23.1 x 17.3	25.9 x 19.4	31.8 x 23.8	30.7 x 25.6	46.2 x 34.7	54.9 x 54.9
#62-933	0.277X	13.0 x 9.7	17.3 x 13.0	20.9 x 15.5	22.1 x 16.6	23.1 x 17.3	25.9 x 19.4	31.8 x 23.8	30.7 x 25.6	Ø39.7	
#34-010	0.268X	13.4 x 10.1	17.9 x 13.4	21.6 x 16.0	23.9 x 17.2	23.9 x 17.9	26.9 x 20.1	32.8 x 24.6	31.7 x 26.5	47.8 x 35.8	Ø59.7

TECHSPEC® TELECENTRIC LENS SELECTION GUIDE

Stock No.	Magnification	f/#	Typical Telecentricity @ 588nm (°)	Typical Distortion @ 588nm (%)	Working Distance (mm)	Lens Mount	Dimensions (Max. Dia. x L) (mm)	Easy Modifications*	Comments*	Abbreviations Key*
#63-744	8.0X	f/45	<0.065	<0.160	65	C-Mount	18.0 x 100.0	Mag	Compact, FA	Compact: Compact Form Factor FA: Fixed Aperture FF: Fixed Focus FMag: Fixed Magnification Focus: Focusable, Working Distance Range HR: High Resolution In-Line: In-Line Illumination Iris: Variable Iris LF: Large Format, Covers up to 30mm Sensor Diagonal Mag: Magnification Adjustment Vari-Mag: Variable Magnification Range WD: Working Distance
#67-317	8.0X	f/45	<0.065	<0.160	65	C-Mount	18.0 x 103.7	Mag	In-Line, FA, Compact	
#63-743	6.0X	f/35	<0.075	<0.025	65	C-Mount	18.0 x 116.1	Mag	Compact, FA	
#67-316	6.0X	f/35	<0.075	<0.025	65	C-Mount	18.0 x 119.5	Mag	In-Line, FA, Compact	
#63-736	4.0X	f/27	<0.016	<0.007	65	C-Mount	18.0 x 81.0	Mag	Compact, FA	
#67-315	4.0X	f/27	<0.016	<0.007	65	C-Mount	18.0 x 84.4	Mag	In-Line, FA, Compact	
#58-432	4.0X	f/6 - f/22	<0.050	<0.060	44	C-Mount	61.0 x 249.0	FA	HR, Iris	
#63-748	4.0X	f/20	<0.065	<0.180	40	C-Mount	18.0 x 47.1	Mag	Compact, FA	
#67-322	4.0X	f/20	<0.065	<0.180	40	C-Mount	18.0 x 50.3	Mag	In-Line, FA, Compact	
#63-738	3.0X	f/35	<0.065	<0.160	110	C-Mount	18.0 x 100.0	Mag	Compact, FA	
#67-307	3.0X	f/35	<0.065	<0.160	110	C-Mount	18.0 x 103.6	Mag	In-Line, FA, Compact	
#33-101	2.0X	f/28.5	<0.06	<0.03	300	C-Mount	31 x 198.9	Mag	Compact, FA	
#33-115	2.0X	f/28.5	<0.06	<0.03	300	C-Mount	31 x 198.9	Mag	Compact, FA	
#63-735	3.0X	f/21.9	<0.075	<0.080	65	C-Mount	18.0 x 76.3	Mag	Compact, FA	
#67-314	3.0X	f/21.9	<0.075	<0.080	65	C-Mount	18.0 x 79.4	Mag	In-Line, FA, Compact	
#63-747	3.0X	f/16	<0.075	<0.200	40	C-Mount	18.0 x 48.0	Mag	Compact, FA	
#67-321	3.0X	f/16	<0.075	<0.200	40	C-Mount	18.0 x 52.3	Mag	In-Line, FA, Compact	
#63-732	2.0X	f/33	<0.075	<0.045	110	C-Mount	18.0 x 126.6	Mag	Compact, FA	
#67-306	2.0X	f/33	<0.075	<0.045	110	C-Mount	18.0 x 130.0	Mag	In-Line, FA, Compact	
#58-431	2.0X	f/6 - f/22	<0.075	<0.040	75	C-Mount	45.0 x 141.0	FA	HR, Iris	
#88-348	2.0X	f/10 - f/22	<0.075	<0.040	75	C-Mount	45.0 x 144.6	FA	In-Line, HR, Iris	
#63-734	2.0X	f/17.3	<0.100	<0.065	65	C-Mount	18.0 x 76.5	Mag	Compact, FA	
#67-313	2.0X	f/17.3	<0.100	<0.065	65	C-Mount	18.0 x 79.4	Mag	In-Line, FA, Compact	
#63-746	2.0X	f/14.3	<0.090	<0.140	40	C-Mount	18.0 x 37.0	Mag	Compact, FA	
#67-320	2.0X	f/14.3	<0.090	<0.140	40	C-Mount	18.0 x 40.0	Mag	In-Line, FA, Compact	
#63-232	1.7X	f/6 - f/22	<0.080	<0.020	123	C-Mount	60.0 x 189.5	WD, FA	HR, Iris	
#55-350	1.0X	f/6 - f/22	<0.003	<0.080	98-123	C-Mount	68.0 x 200.1	FF, FA	Focus, Iris	
#58-430	1.0X	f/6 - f/22	<0.045	<0.060	83	C-Mount	40.0 x 114.0	FA	HR, Iris	
#63-731	1.0X	f/20.9	<0.090	<0.040	110	C-Mount	22.0 x 106.6	Mag	Compact, FA	
#67-305	1.0X	f/20.9	<0.090	<0.040	110	C-Mount	22.0 x 110.0	Mag	In-Line, FA, Compact	
#63-733	1.0X	f/18.6	<0.035	<0.050	65	C-Mount	18.0 x 76.1	Mag	Compact, FA	
#67-312	1.0X	f/18.6	<0.035	<0.050	65	C-Mount	18.0 x 79.5	Mag	In-Line, FA, Compact	
#33-100	1.0X	f/14.3	<0.07	<0.02	300	C-Mount	36 x 174.5	Mag	Compact, FA	
#33-114	1.0X	f/14.3	<0.07	<0.02	300	C-Mount	36 x 174.5	Mag	Compact, FA	
#63-745	1.0X	f/11	<0.035	<0.002	40	C-Mount	18.0 x 50.0	Mag	Compact, FA	
#67-319	1.0X	f/11	<0.035	<0.002	40	C-Mount	18.0 x 53.5	Mag	In-Line, FA, Compact	
#33-096	1.0X	f/11	<0.03	<0.03	220	C-Mount	36 x 162.5	Mag	Compact, FA	
#33-110	1.0X	f/11	<0.03	<0.03	220	C-Mount	36 x 162.5	Mag	Compact, FA	
#62-901	0.9X	f/6 - f/22	<0.070	<0.009	111	C-Mount	65.0 x 199.8	WD, FA	HR, Iris	
#62-902	0.9X	f/6 - f/22	<0.070	<0.035	111	F-Mount	65.0 x 170.8	WD, FA	HR, Iris, LF	
#62-904	0.9X	f/6 - f/22	<0.070	<0.035	111	M42 x 1.0	65.0 x 197.8	WD, FA	19.53mm Flange, HR, Iris, LF	
#62-903	0.9X	f/6 - f/22	<0.070	<0.035	111	M42 x 1.0	65.0 x 210.7	WD, FA	6.56mm Flange, HR, Iris, LF	
#63-742	0.8X	f/14.9	<0.065	<0.004	65	C-Mount	21.4 x 86.5	WD, Mag	Compact, FA	
#67-311	0.8X	f/14.9	<0.065	<0.004	65	C-Mount	21.4 x 89.9	WD, Mag	In-Line, FA, Compact	
#63-730	0.75X	f/13.3	<0.100	<0.020	110	C-Mount	29.5 x 156.2	WD, Mag	Compact, FA	
#67-304	0.75X	f/13.3	<0.100	<0.020	110	C-Mount	29.5 x 160.0	WD, Mag	In-Line, FA, Compact	
#67-731	0.75X	f/6 - f/22	<0.080	<0.080	100	C-Mount	36.0 x 151.2	WD	HR, Iris	
#88-346	0.75X	f/6 - f/22	<0.080	<0.080	100	C-Mount	36.0 x 155.2	WD	In-Line, HR, Iris	
#58-256	0.73X	f/6 - f/22	<0.003	<0.100	98-123	C-Mount	68.0 x 200.1	FF, FA	Focus, Iris	
#56-678	0.6X	f/6 - f/22	<0.007	<0.035	103	C-Mount	42.0 x 156.0	WD	HR, Iris	
#88-603	0.55X	f/6 - f/22	<0.030	<0.007	150	C-Mount	62.0 x 182.5	WD, FA	HR, Iris	
#62-932	0.5X	f/6 - f/22	<0.050	<0.006	173	C-Mount	50.0 x 174.9	WD, FA	HR, Iris	
#62-911	0.5X	f/6 - f/22	<0.055	<0.015	173	C-Mount	90.0 x 172.9	WD, FA	HR, Iris	
#62-912	0.5X	f/6 - f/22	<0.055	<0.020	173	F-Mount	90.0 x 143.0	WD, FA	HR, Iris, LF	
#62-914	0.5X	f/6 - f/22	<0.055	<0.020	173	M42 x 1.0	90.0 x 171.1	WD, FA	19.53mm Flange, HR, Iris, LF	
#62-913	0.5X	f/6 - f/22	<0.055	<0.020	173	M42 x 1.0	90.0 x 184.0	WD, FA	6.56mm Flange, HR, Iris, LF	
#54-798	0.5X	f/6 - f/22	<0.025	<0.015	117-142	C-Mount	65.0 x 150.0	FF, FA	Focus, Iris	
#63-074	0.5X	f/6 - f/22	<0.012	<0.200	120	C-Mount	40.0 x 153.0	WD	HR, Iris	
#88-344	0.5X	f/6 - f/22	<0.012	<0.200	120	C-Mount	40.0 x 156.2	WD	In-Line, HR, Iris	
#63-729	0.5X	f/9.3	<0.250	<0.050	110	C-Mount	40.0 x 166.6	WD, Mag	Compact, FA	
#67-303	0.5X	f/9.3	<0.250	<0.050	110	C-Mount	40.0 x 170.0	WD, Mag	In-Line, FA, Compact	
#63-741	0.5X	f/9	<0.035	<0.025	65	C-Mount	32.0 x 86.7	WD, Mag	Compact, FA	
#67-310	0.5X	f/9	<0.035	<0.025	65	C-Mount	32.0 x 90.0	WD, Mag	In-Line, FA, Compact	
#56-677	0.4X	f/6 - f/22	<0.015	<0.020	103	C-Mount	45.0 x 159.0	WD	HR, Iris	
#34-015	0.377X	f/11 - f/22	<0.1	<0.05	110	C-Mount	79 x 185.8	WD, FA	TitanTL, Iris	
#88-602	0.367X	f/6 - f/22	<0.035	<0.003	169	C-Mount	70.0 x 163.5	WD, FA	HR, Iris	
#58-257	0.36X	f/6 - f/22	<0.025	<0.100	117-142	C-Mount	65.0 x 150.0	FF, FA	Focus, Iris	
#58-428	0.3X	f/6 - f/22	<0.025	<0.015	139	C-Mount	46.0 x 158.0	WD	HR, Iris	
#62-921	0.277X	f/6 - f/22	<0.035	<0.012	182	C-Mount	138.6 x 197.5	WD, FA	HR, Iris	
#62-922	0.277X	f/6 - f/22	<0.040	<0.025	182	F-Mount	138.6 x 167.6	WD, FA	HR, Iris, LF	
#62-924	0.277X	f/6 - f/22	<0.040	<0.025	182	M42 x 1.0	138.6 x 195.5	WD, FA	19.53mm Flange, HR, Iris, LF	
#62-923	0.277X	f/6 - f/22	<0.040	<0.025	182	M42 x 1.0	138.6 x 208.5	WD, FA	6.56mm Flange, HR, Iris, LF	
#62-933	0.277X	f/6 - f/22	<0.030	<0.006	180	C-Mount	60.5 x 203.8	WD, FA	HR, Iris	
#34-010	0.268X	f/11 - f/22	<0.1	<0.05	110	C-Mount	79 x 161.7	WD, FA	TitanTL, Iris	



Please visit our website for downloadable datasheets on all our Telecentric Lenses.

TECHSPEC® TELECENTRIC LENS SELECTION GUIDE

Stock No.	Magnification	f/#	Typical Telecentricity @ 588nm (°)	Typical Distortion @ 588nm (%)	Working Distance (mm)	Lens Mount	Dimensions (Max. Dia. x L) (mm)	Easy Modifications*	Comments*	Abbreviations Key*
#55-349	0.25X	f/6 - f/22	<0.040	<0.400	161-186	C-Mount	79.0 x 196.3	FF, FA	Focus, Iris	Compact: Compact Form Factor FA: Fixed Aperture FF: Fixed Focus FMag: Fixed Magnification Focus: Focusable, Working Distance Range HR: High Resolution In-Line: In-Line Illumination Iris: Variable Iris LF: Large Format, Covers up to 30mm Sensor Diagonal Mag: Magnification Adjustment Vari-Mag: Variable Magnification Range WD: Working Distance
#56-676	0.25X	f/6 - f/22	<0.035	<0.040	160	C-Mount	48.0 x 158.0	WD	HR, Iris	
#63-073	0.2X	f/6 - f/22	<0.055	<0.150	164	C-Mount	60.0 x 188.0	WD	HR, Iris	
#34-016	0.191X	f/11 - f/22	<0.1	<0.11	221	C-Mount	150 x 292.1	WD, FA	TitanTL, Iris	
#34-005	0.184X	f/8 - f/22	<0.1	<0.05	110	C-Mount	79 x 145.5	WD, FA	TitanTL, Iris	
#58-258	0.18X	f/6 - f/22	<0.040	<0.045	161-186	C-Mount	79.0 x 196.3	FF, FA	Focus, Iris	
#56-675	0.16X	f/6 - f/22	<0.030	<0.015	175	C-Mount	65.0 x 191.0	WD	HR, Iris	
#34-000	0.151X	f/8 - f/16	<0.1	<0.04	111	C-Mount	79 x 138.6	WD, FA	TitanTL, Iris	
#34-011	0.136X	f/11 - f/22	<0.1	<0.13	223	C-Mount	150 x 267.9	WD, FA	TitanTL, Iris	
#55-348	0.13X	f/6 - f/22	<0.028	<0.025	132-182	C-Mount	110.0 x 200.0	FF, FA	Focus, Iris	
#34-017	0.124X	f/11 - f/22	<0.1	<0.07	284	C-Mount	208 x 429.6	WD, FA	TitanTL, Iris	
#34-018	0.093X	f/11 - f/22	<0.1	<0.04	374	C-Mount	266 x 560.5	WD, FA	TitanTL, Iris	
#34-006	0.093X	f/8 - f/22	<0.1	<0.10	222	C-Mount	150 x 251.7	WD, FA	TitanTL, Iris	
#58-259	0.09X	f/6 - f/22	<0.028	<0.020	132-182	C-Mount	110.0 x 200.0	FF, FA	Focus, Iris	
#34-012	0.088X	f/11 - f/22	<0.1	<0.05	286	C-Mount	208 x 405.8	WD, FA	TitanTL, Iris	
#56-948	0.08X	f/6 - f/22	<0.018	<0.400	170-220	C-Mount	160.0 x 277.2	FF, FA	Focus, Iris	
#34-001	0.077X	f/8 - f/16	<0.1	<0.19	224	C-Mount	150 x 244.8	WD, FA	TitanTL, Iris	
#34-013	0.066X	f/11 - f/22	<0.1	<0.05	377	C-Mount	266 x 536.3	WD, FA	TitanTL, Iris	
#58-260	0.064X	f/6 - f/22	<0.018	<0.200	170-220	C-Mount	160.0 x 277.2	FF, FA	Focus, Iris	
#34-007	0.060X	f/8 - f/22	<0.1	<0.08	284	C-Mount	208 x 389.9	WD, FA	TitanTL, Iris	
#34-002	0.050X	f/8 - f/16	<0.1	<0.03	287	C-Mount	208 x 383.1	WD, FA	TitanTL, Iris	
#34-008	0.045X	f/8 - f/22	<0.1	<0.05	374	C-Mount	266 x 520.1	WD, FA	TitanTL, Iris	
#34-003	0.037X	f/8 - f/16	<0.1	<0.09	379	C-Mount	266 x 525.9	WD, FA	TitanTL, Iris	
Variable										
#88-385	0.25X 0.5X	f/6 - f/22	<0.070	<0.080	145.0 100.1	C-Mount	65.0 x 177.9	FA, FMag	HR, Vari-Mag, Iris	
#88-386	0.5X 1.0X	f/6 - f/22	<0.020	<0.020	115 100	C-Mount	50.8 x 175.5	FA, FMag	HR, Vari-Mag, Iris	
#88-387	1.0X 3.0X	f/6 - f/22	<0.035	<0.050	71.6 50.3	C-Mount	48.0 x 90.1 48.0 x 153.7	FA, FMag	HR, Vari-Mag, Iris	

TECHNICAL NOTE

WHY TELECENTRICS?

Perspective errors, also called parallax, are part of everyday human experience. This phenomenon is also present in conventional imaging systems in which the magnification of the object changes with its distance from the lens. Telecentric lenses optically correct for this occurrence so that objects remain the same perceived size independent of their location in space.

SETUP



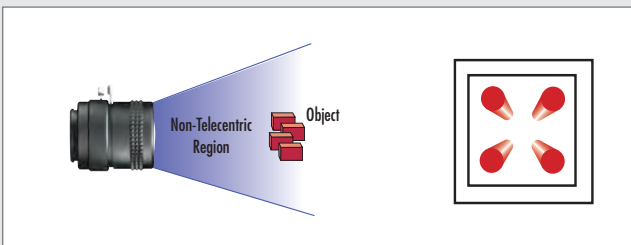
FIXED FOCAL LENGTH LENS



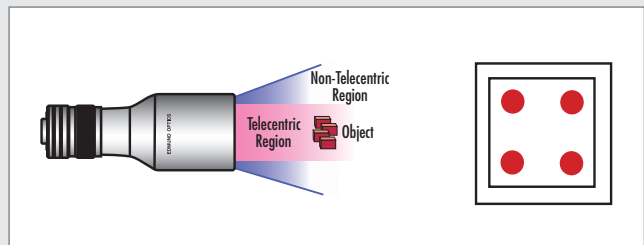
TELECENTRIC LENS



FIXED FOCAL LENGTH LENS WITH CREATED IMAGE



TELECENTRIC LENS WITH CREATED IMAGE

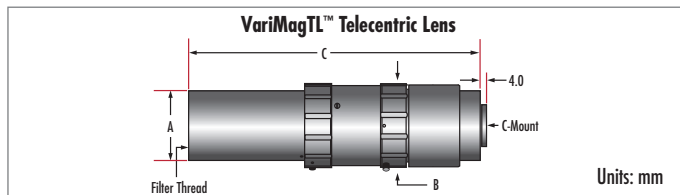
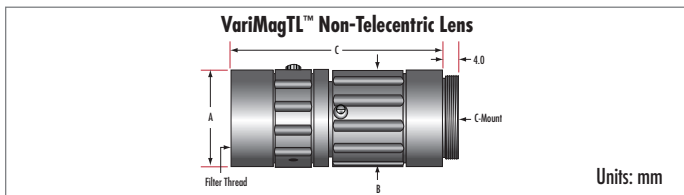


TECHSPEC® VariMagTL™ TELECENTRIC LENSES



- Adjustable Field of View
- Variable Iris to Control Light Throughput
- Fixed and Telecentric Versions Available

TECHSPEC® VariMagTL™ Telecentric Lenses are designed for applications that may require constant adjustment of a system's field of view. Each lens provides a range of magnifications that users can adjust or lock down with a set screw. With coverage for up to $\frac{2}{3}$ " format sensors, these telecentric lenses feature compact, C-mount compatible designs for easy system integration. TECHSPEC® VariMagTL™ Telecentric Lenses also include an adjustable iris to control light throughput and improve image quality. These lenses are ideal for use in semiconductor or electronics inspection and factory automation applications. **Note:** Customized fixed magnification versions are also available to meet volume requirements. Please contact technical support to discuss your specific requirements.



TECHSPEC® VariMagTL™ NON-TELECENTRIC LENSES		
Primary Magnification PMAG:	0.15X - 0.5X	0.5X - 1.0X
Maximum Camera Sensor Format:	$\frac{2}{3}$ "	$\frac{2}{3}$ "
Field of View, $\frac{2}{3}$ " Sensor:	58.7 - 17.6mm	17.6 - 8.8mm
Working Distance:	179.8 - 50.0mm	100.1 - 61.5mm
Resolution:	75 lp/mm @ >20%	>75 lp/mm @ >20%
Aperture (f/#):	f/4 - f/22	f/4 - f/22
Typical Distortion @ 588nm:	<0.1%	<0.1%
Filter Thread:	M25.5 x 0.5	M25.5 x 0.5
Lens Mount:	C-Mount	C-Mount
Front Diameter (A):	32mm	300mm
Rear Diameter (B):	32mm	30mm
Length (C):	59.5mm	56.11 - 75.45mm
Stock No.	#87-536	#87-535
0.5X Fixed Stock No.	N/A	#87-531
0.75X Fixed Stock No.	N/A	#87-532
1.0X Fixed Stock No.	N/A	#87-533

TECHSPEC® VariMagTL™ TELECENTRIC LENS			
Primary Magnification PMAG:	0.25X - 0.5X	0.5X - 1.0X	1.0X - 3.0X
Maximum Camera Sensor Format:	$\frac{2}{3}$ "	$\frac{2}{3}$ "	$\frac{2}{3}$ "
Field of View, $\frac{2}{3}$ " Sensor:	35.2 - 17.6mm	17.6 - 8.8mm	8.8 - 2.93mm
Working Distance:	145 - 100.1mm	115 - 100mm	71.6 - 50.3mm
Resolution:	75 lp/mm @ >20%	75 lp/mm @ >20%	75 lp/mm @ >20%
Aperture (f/#):	f/6 - Closed	f/6 - Closed	f/6 - Closed
Typical Telecentricity @ 588nm:	<0.070°	<0.020°	<0.035°
Typical Distortion @ 588nm:	<0.080%	<0.020%	<0.050%
Filter Thread:	M62 x 0.75	M40.5 x 0.5	M30.5 x 0.5
Lens Mount:	C-Mount	C-Mount	C-Mount
Front Diameter (A):	65mm	42mm	33.7mm
Rear Diameter (B):	51mm	42mm	48.5mm
Length (C):	177.9mm	175.48mm	90.1 - 153.7mm
Stock No.	#88-385	#88-386	#88-387
Replacement 2X - 3X Adapter	N/A	N/A	#89-409

[†]Can be used up to 1" from ~0.65X - 1.0X

^{**}Includes Adapter to Change from 1.0X - 2.0X to 2.0X - 3.0X

SPECIFICATIONS												*Horizontal on $\frac{2}{3}$ " sensor									
Lens	Mag	WD (mm)	FOV (mm)*	Lens	Mag	WD (mm)	FOV (mm)*	Lens	Mag	WD (mm)	FOV (mm)*	Lens	Mag	WD (mm)	FOV (mm)*						
0.15X - 0.5X Non-Telecentric Version	0.15X	179.8	58.7	0.5X - 1.0X Non-Telecentric Version	0.5X	100.1	17.6	0.25X - 0.30X Telecentric Version	0.25X	145.0	35.2	0.5X - 1.0X Telecentric Version	0.5X	115.0	17.6						
	0.2X	133.5	44		0.6X	87.4	14.67		0.30X	124.5	29.3		0.6X	106.0	14.67	1.0X - 1.5X	61.0	5.87			
	0.3X	87.3	29.3		0.7X	78.3	12.6		0.50X	0.35X	112.0		25.1	1.0X	0.7X	102.0	12.6	3.0X	2.0X	55.6	4.4
	0.4X	64	22		0.8X	71.3	11		0.40X	104.0	22.0		0.8X	100.0	11.0	Telecentric	2.5X	52.4	3.5		
	0.5X	50	17.6		0.9X	65.8	9.78		0.45X	100.2	19.6		0.9X	100.0	9.78	Version	3.0X	50.3	2.93		
	-	-	-	1.0X	61.5	8.8	0.50X	100.1	17.6	1.0X	100.0	8.8		-	-	-					

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