

Telecentric Lenses for Optotune liquid lens



MTF [30%] (lp/mm: unit of resolution)

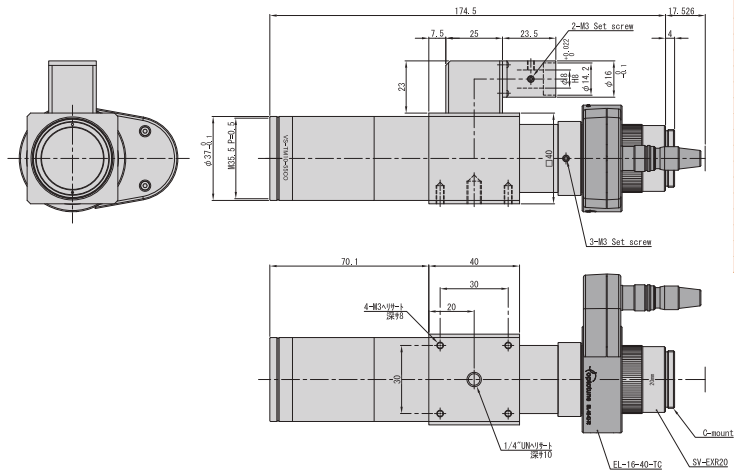
Center 100 lp/mm Periphery 90 lp/mm Image height 70%

Support sensor / image circle size

1/4" 1/3" 1/2" 1/1.8" 2/3" 1" 1.1" 4/3"

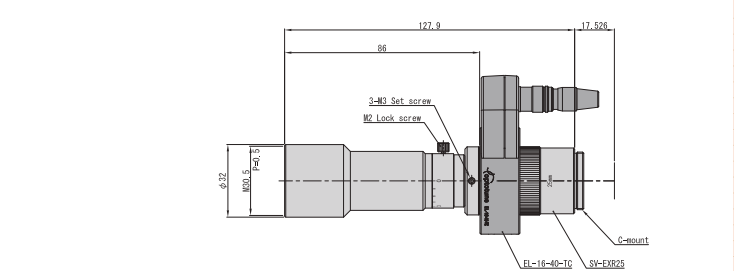
- Fast-focusing solution
- Focus adjustable within working distance range

VS-TM10-55CO-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR20



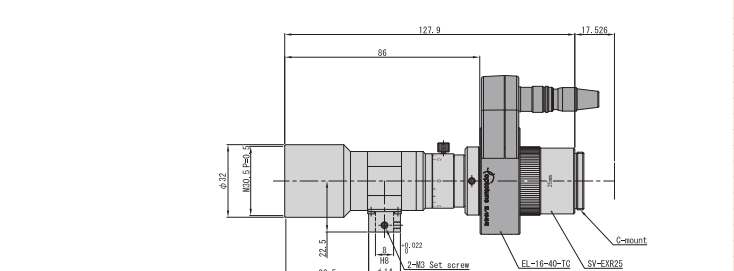
Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		10.5x	9.5x
FOV(VxH)	2/3"	0.7 x 0.8 mm	0.7 x 0.9 mm
	1/2"	0.5 x 0.6 mm	0.5 x 0.7 mm
	1/3"	0.3 x 0.5 mm	0.4 x 0.5 mm
WD		55.28 mm	55.18 mm
Optical leverage		0.02 mm/dpt	
O/I (Object & Imager Distance)		247.3 mm	247.2 mm
Working F/#		23.2	21.4
NA		0.226	0.222
DOF at PCoC ϕ 0.04mm		0.02 mm	0.02 mm
TV Distortion (2/3")		0.01 %	0.01 %
Relative Illuminance (Y=5.5)		89 %	87 %
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.)		— g	
Dimension		ϕ 37(max.) x L = 174.5 mm	

VS-THV1-110/S-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR25



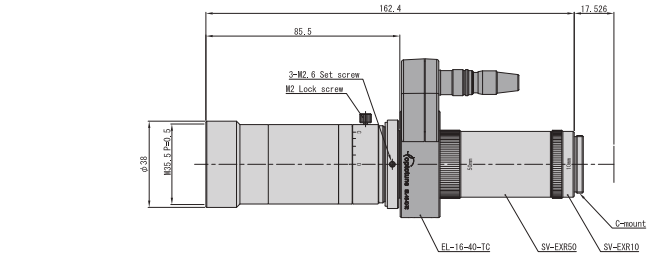
Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		1.0x	0.9x
FOV(VxH)	1"	11.3 x 11.3 mm	12.5 x 12.5 mm
	2/3"	7.1 x 8.4 mm	7.9 x 9.3 mm
	1/2"	4.8 x 6.4 mm	5.3 x 7.1 mm
WD		121.7 mm	107.3 mm
Optical leverage		2.88 mm/dpt	
O/I (Object & Imager Distance)		267.1 mm	252.7 mm
Working F/#		10.3	9.3
NA		0.049	0.048
DOF at PCoC ϕ 0.04mm		0.8 mm	0.9 mm
TV Distortion (1")		0.05 %	0.03 %
Relative Illuminance (Y=8)		99 %	99 %
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.)		— g	
Dimension		ϕ 32(max.) x L = 127.9 mm	

VS-THV1-110CO/S-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR25



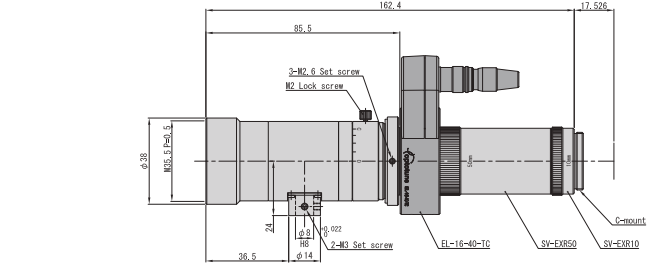
Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		1.0x	0.9x
FOV(VxH)	1"	11.3 x 11.3 mm	12.5 x 12.5 mm
	2/3"	7.1 x 8.4 mm	7.9 x 9.3 mm
	1/2"	4.8 x 6.4 mm	5.3 x 7.1 mm
WD		121.7 mm	107.3 mm
Optical leverage		2.88 mm/dpt	
O/I (Object & Imager Distance)		267.1 mm	252.7 mm
Working F/#		10.3	9.3
NA		0.049	0.048
DOF at PCoC ϕ 0.04mm		0.8 mm	0.9 mm
TV Distortion (1")		0.05 %	0.03 %
Relative Illuminance (Y=8)		99 %	99 %
Wavelength		Visible	
Mount		C-Mount	
Flange Back		17.526 mm	
Sensor Size (max.)		1"	
Co-Axial Prism		Built-in	
Filter Thread		M 30.5 P = 0.5	
Weight (approx.)		— g	
Dimension		ϕ 32(max.) x L = 127.9 mm	

VS-THV2-110/S-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR50 + SV-EXR10



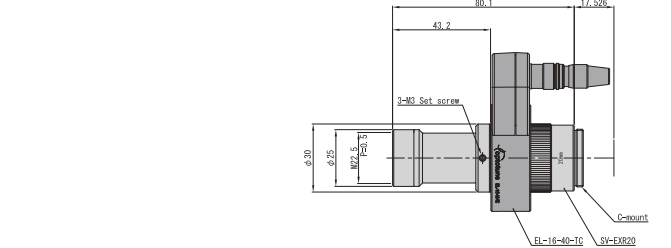
Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		2.0x	1.8x
FOV(VxH)	1"	5.6 x 5.6 mm	6.3 x 6.3 mm
	2/3"	3.6 x 4.2 mm	3.9 x 4.7 mm
	1/2"	2.4 x 3.2 mm	2.7 x 3.6 mm
WD		115.8 mm	105.6 mm
Optical leverage		2.04 mm/dpt	
O/I (Object & Imager Distance)		295.7 mm	285.5 mm
Working F/#		10.1	9.0
NA		0.099	0.099
DOF at PCoC ϕ 0.04mm		0.2 mm	0.2 mm
TV Distortion (1")		0.04 %	0.01 %
Relative Illuminance (Y=8)		98 %	98 %
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.)		— g	
Dimension		ϕ 38(max.) x L = 162.4 mm	

VS-THV2-110CO/S-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR50 + SV-EXR10



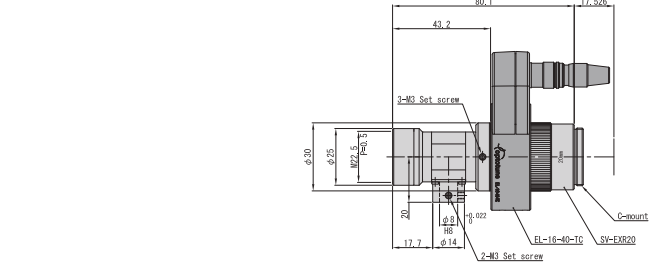
Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		2.0x	1.8x
FOV(VxH)	1"	5.6 x 5.6 mm	6.3 x 6.3 mm
	2/3"	3.6 x 4.2 mm	3.9 x 4.7 mm
	1/2"	2.4 x 3.2 mm	2.7 x 3.6 mm
WD		115.8 mm	105.6 mm
Optical leverage		2.04 mm/dpt	
O/I (Object & Imager Distance)		295.7 mm	285.5 mm
Working F/#		10.1	9.0
NA		0.099	0.099
DOF at PCoC ϕ 0.04mm		0.2 mm	0.2 mm
TV Distortion (1")		0.04 %	0.01 %
Relative Illuminance (Y=8)		98 %	98 %
Wavelength		Visible	
Mount		C-Mount	
Flange Back		17.526 mm	
Sensor Size (max.)		1"	
Co-Axial Prism		Built-in	
Filter Thread		M 35.5 P = 0.5	
Weight (approx.)		— g	
Dimension		ϕ 38(max.) x L = 162.4 mm	

VS-TCH2-65-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR20



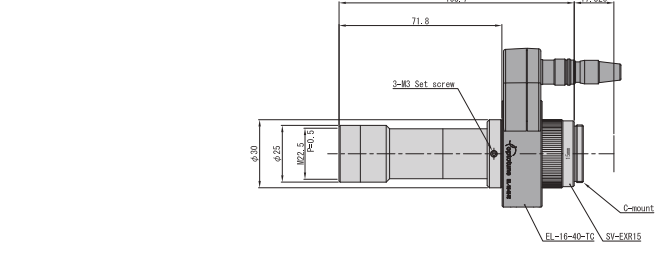
Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		2.0x	1.9x
FOV(VxH)	2/3"	3.6 x 4.2 mm	3.8 x 4.5 mm
	1/2"	2.4 x 3.2 mm	2.6 x 3.4 mm
	1/3"	1.8 x 2.4 mm	1.9 x 2.6 mm
WD		66.3 mm	63.6 mm
Optical leverage		0.54 mm/dpt	
O/I (Object & Imager Distance)		163.9 mm	161.2 mm
Working F/#		13.7	12.9
NA		0.073	0.074
DOF at PCoC ϕ 0.04mm		0.3 mm	0.3 mm
TV Distortion (2/3")		0.04 %	0.02 %
Relative Illuminance (Y=5.5)		98 %	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.)		— g	
Dimension		ϕ 30(max.) x L = 80.1 mm	

VS-TCH2-65CO-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR20



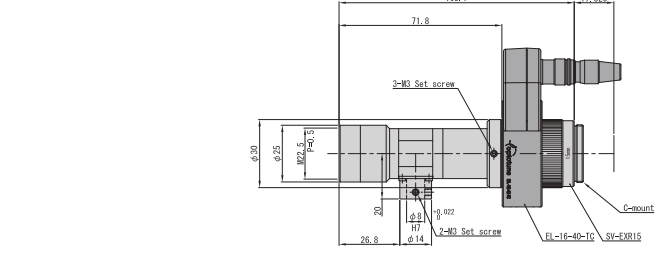
Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		2.0x	1.9x
FOV(VxH)	2/3"	3.6 x 4.2 mm	3.8 x 4.5 mm
	1/2"	2.4 x 3.2 mm	2.6 x 3.4 mm
	1/3"	1.8 x 2.4 mm	1.9 x 2.6 mm
WD		66.3 mm	63.6 mm
Optical leverage		0.54 mm/dpt	
O/I (Object & Imager Distance)		163.9 mm	161.2 mm
Working F/#		13.7	12.9
NA		0.073	0.074
DOF at PCoC ϕ 0.04mm		0.3 mm	0.3 mm
TV Distortion (2/3")		0.04 %	0.02 %
Relative Illuminance (Y=5.5)		98 %	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.)		— g	
Dimension		ϕ 30(max.) x L = 80.1 mm	

VS-TCH4-65-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR15



Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		4.0x	3.7x
FOV(VxH)	2/3"	1.8 x 2.1 mm	1.9 x 2.3 mm
	1/2"	1.2 x 1.6 mm	1.3 x 1.7 mm
	1/3"	0.9 x 1.2 mm	1.0 x 1.3 mm
WD		65.3 mm	64.8 mm
Optical leverage		0.10 mm/dpt	
O/I (Object & Imager Distance)		186.5 mm	186.0 mm
Working F/#		17.9	16.6
NA		0.112	0.111
DOF at PCoC ϕ 0.04mm		0.09 mm	0.10 mm
TV Distortion (2/3")		0.00 %	0.00 %
Relative Illuminance (Y=5.5)		90 %	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.)		— g	
Dimension		ϕ 30(max.) x L = 103.7 mm	

VS-TCH4-65CO-LQL1 +Liquid Lens(EL-16-40-TC-VIS-5D-C/Optotune) +SV-EXR15



Focus tunable lens	Focal Power	-2 dpt	+3 dpt
Optical Mag.		4.0x	3.7x
FOV(VxH)	2/3"	1.8 x 2.1 mm	1.9 x 2.3 mm
	1/2"	1.2 x 1.6 mm	1.3 x 1.7 mm
	1/3"	0.9 x 1.2 mm	1.0 x 1.3 mm
WD		65.3 mm	64.8 mm
Optical leverage		0.10 mm/dpt	
O/I (Object & Imager Distance)		186.5 mm	186.0 mm
Working F/#		17.9	16.6
NA		0.112	0.111
DOF at PCoC ϕ 0.04mm		0.09 mm	0.10 mm
TV Distortion (2/3")		0.00 %	0.00 %
Relative Illuminance (Y=5.5)		90 %	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.)		— g	
Dimension		ϕ 30(max.) x L = 103.7 mm	