

F-Mount Line Scan Lenses

CLL (F) Series

The CLL(F) series is designed with an F-mount for line scan cameras. There is a large range of focal lengths and supported sensors which make it a good choice for any line scan application.

Features

- 29 - 45mm sensor support
- 11 models available
- Focal Length 18 - 185mm
- F-Mount
- Distortionless



VS-L(F) Magnification chart

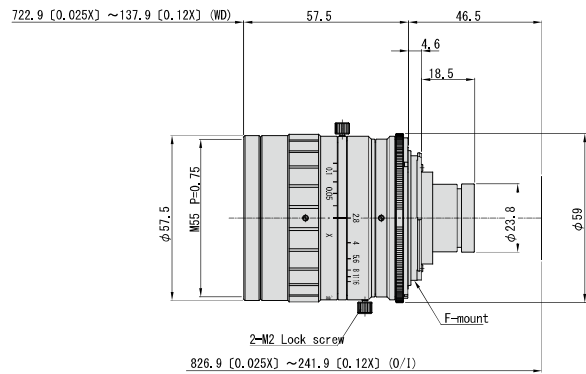
		∞	0.05x	0.1x	0.15x	0.2x	0.25x	0.3x	0.35x	0.5x	1x
CLL-1828F	P113	722.9mm (0.025x)	↔	137.9mm (0.12x)							
CLL-2526F	P113	1010.8mm (0.025x)	↔	198.1mm (0.12x)							
CLL-3528F	P113	706.9mm (0.05x)	↔					112.8mm (0.3x)			
CLL-3528MF	P113	1795.2mm (0.02x)	↔	289.0mm (0.12x)							
CLL-5018F	P114	1123.7mm (0.05x)	↔					388.8mm (0.14x)			
CLL-5028F	P114	1025.0mm (0.05x)	↔					181.4mm (0.3x)			
CLL-8540F	P114			864.2mm (0.1x)	↔				285.0mm (0.35x)		
CLL-10028F	P114			2050.7mm (0.05x)	↔					409mm (0.3x)	
CLL-8556F	P115			1951.7mm (0.108x)	↔	1404.4mm (0.159x)					



Please refer P106 for
Line scan telecentric lens series

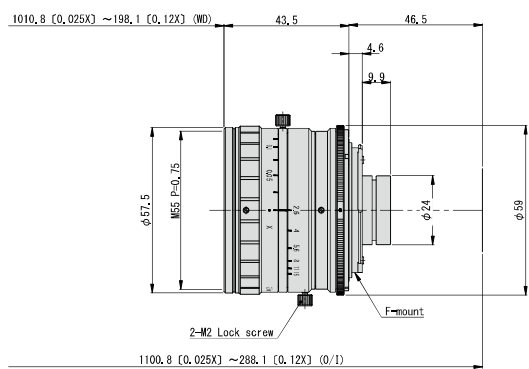
Low magnification model

CLL-1828F



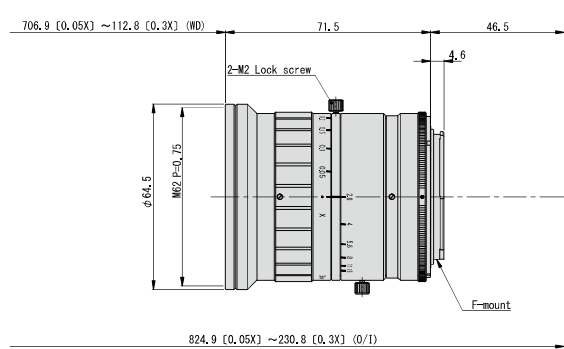
Focal Length(f)	18 mm			
Optical Mag. Range	(∞) 0.025x ~ 0.12x			
Optical Mag.	0.025x	0.05x	0.1x	0.12x
WD	722.9 mm	352.8 mm	168.4 mm	137.9 mm
O/I (Object & Imager distance)	826.9 mm	456.8 mm	272.4 mm	241.9 mm
Aperture	F 2.8 ~ 16			
Working F/# *Value at Iris open	2.9	3.0	3.1	3.2
DOF at PCoC φ0.04mm	371.2 mm	96 mm	24.8 mm	17.8 mm
Optical Distortion (Y=14.5)	-2.14 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ29 mm			
Filter Thread	M 55 P = 0.75			
Weight (approx.)	330 g			
Dimension	φ59(max.) x L = 57.5 mm			

CLL-2526F



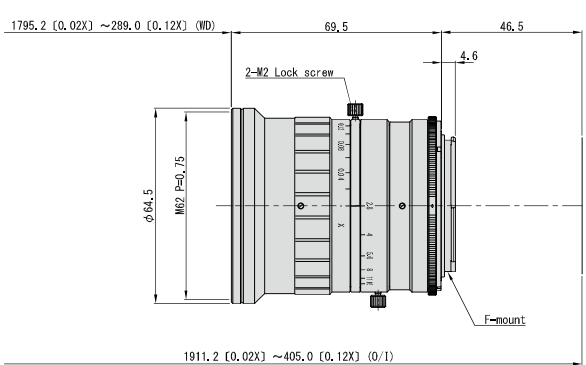
Focal Length(f)	25 mm			
Optical Mag. Range	(∞) 0.025x ~ 0.12x			
Optical Mag.	0.025x	0.05x	0.1x	0.12x
WD	1010.8 mm	496.6 mm	240.5 mm	198.1 mm
O/I (Object & Imager distance)	1100.8 mm	586.6 mm	330.5 mm	288.1 mm
Aperture	F 2.6 ~ 16			
Working F/# *Value at Iris open	2.7	2.8	2.9	2.9
DOF at PCoC φ0.04mm	345.6 mm	89.6 mm	23.2 mm	16.1 mm
Optical Distortion (Y=14.5)	-1.64 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ29 mm			
Filter Thread	M 55 P = 0.75			
Weight (approx.)	245 g			
Dimension	φ59(max.) x L = 43.5 mm			

CLL-3528F

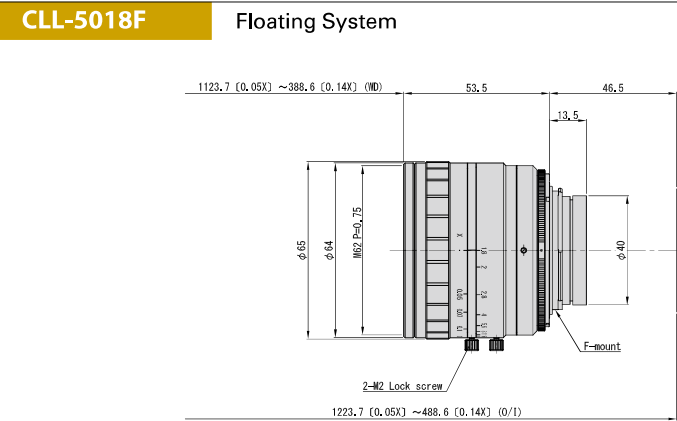


Focal Length(f)	35 mm			
Optical Mag. Range	(∞) 0.05x ~ 0.3x			
Optical Mag.	0.05x	0.1x	0.2x	0.3x
WD	706.9 mm	346.8 mm	169.5 mm	112.8 mm
O/I (Object & Imager distance)	824.9 mm	464.8 mm	287.5 mm	230.8 mm
Aperture	F 2.8 ~ 16			
Working F/# *Value at Iris open	2.8	3.0	3.3	3.5
DOF at PCoC φ0.04mm	89.6 mm	24.0 mm	6.6 mm	3.1 mm
Optical Distortion (Y=22.5)	-0.43 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ45 mm			
Filter Thread	M 62 P = 0.75			
Weight (approx.)	350 g			
Dimension	φ64.5(max.) x L = 71.5 mm			

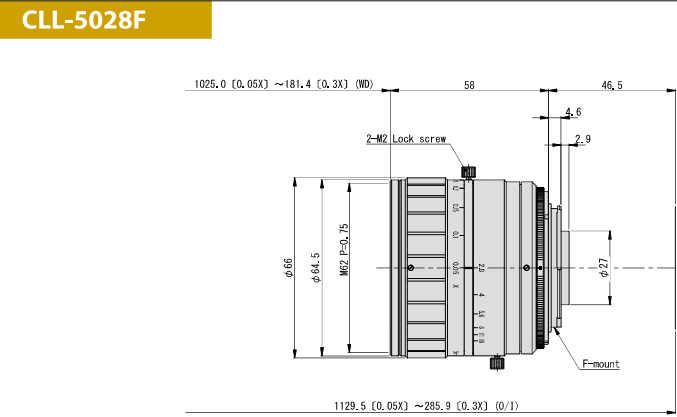
CLL-3528MF



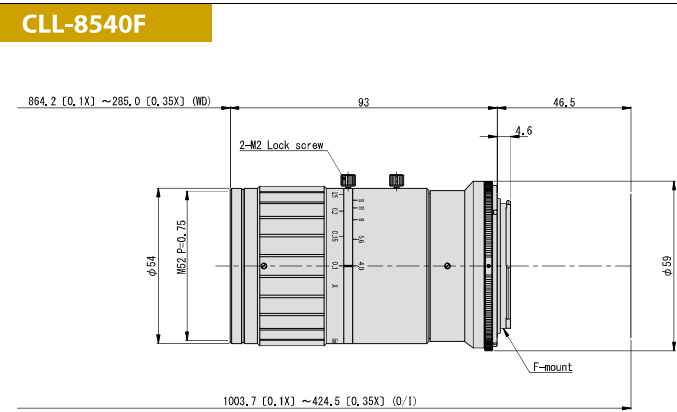
Focal Length(f)	35 mm			
Optical Mag. Range	(∞) 0.02x ~ 0.12x			
Optical Mag.	0.02x	0.04x	0.8x	0.12x
WD	1795.2 mm	890.0 mm	438.5 mm	289.0 mm
O/I (Object & Imager distance)	1911.2 mm	1006.0 mm	554.5 mm	405.0 mm
Aperture	F 2.8 ~ 16			
Working F/# *Value at Iris open	2.9	2.9	3.0	3.2
DOF at PCoC φ0.04mm	580.0 mm	145.0 mm	37.5 mm	17.8 mm
Optical Distortion (Y=22.5)	-0.21 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ45 mm			
Filter Thread	M 62 P = 0.75			
Weight (approx.)	340 g			
Dimension	φ64.5(max.) x L = 69.5 mm			



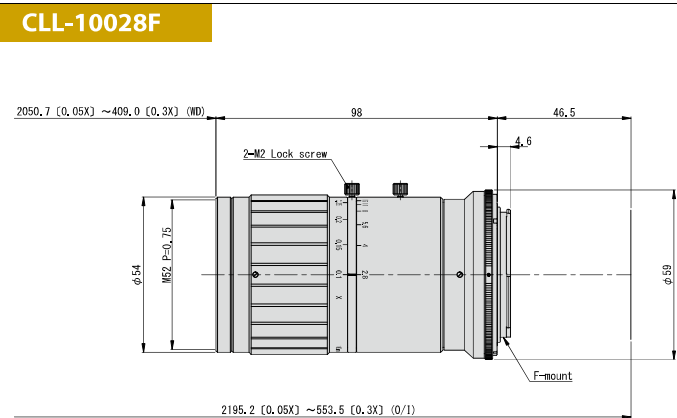
Focal Length (f)	50 mm			
Optical Mag. Range	(∞) 0.05x ~ 0.14x			
Optical Mag.	0.05x	0.07x	0.1x	0.14x
WD	1123.7 mm	752.4 mm	533.6 mm	388.6 mm
O/I (Object & Imager distance)	1223.7 mm	852.4 mm	633.6 mm	488.6 mm
Aperture	F 1.8 ~ 16			
Working F/# *Value at Iris open	2.0	2.1	2.2	
DOF at PCoC φ0.04mm	64.0 mm	32.7 mm	16.8 mm	9.0 mm
Optical Distortion (Y=21.5)	-2.37 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ45 mm			
Filter Thread	M 62 P = 0.75			
Weight (approx.)	340 g			
Dimension	φ65(max.) x L = 53.5 mm			



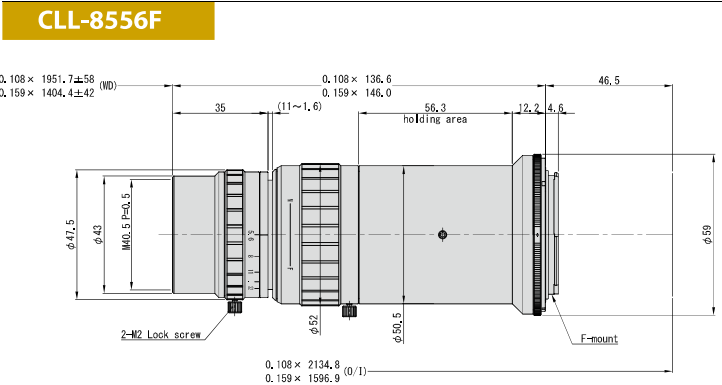
Focal Length (f)	50 mm			
Optical Mag. Range	0.05x ~ 0.3x			
Optical Mag.	0.05x	0.1x	0.2x	0.3x
WD	1025.0 mm	513.7 mm	261.9 mm	181.4 mm
O/I (Object & Imager distance)	1129.5 mm	618.2 mm	366.4 mm	285.9 mm
Aperture	F 2.8 ~ 16			
Working F/# *Value at Iris open	3.1	3.2	3.5	3.8
DOF at PCoC φ0.04mm	99.2 mm	25.6 mm	7.0 mm	3.4 mm
Optical Distortion (Y=22.5)	-0.02 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ45 mm			
Filter Thread	M 62 P = 0.75			
Weight (approx.)	290 g			
Dimension	φ66(max.) x L = 58 mm			



Focal Length (f)	85 mm			
Optical Mag. Range	0.1x ~ 0.35x			
Optical Mag.	0.1x	0.2x	0.3x	0.35x
WD	864.2 mm	452.5 mm	320.8 mm	285.0 mm
O/I (Object & Imager distance)	1003.7 mm	592.0 mm	460.3 mm	424.5 mm
Aperture	F 4 ~ 16			
Working F/# *Value at Iris open	4.4	4.8	5.2	5.4
DOF at PCoC φ0.04mm	35.2 mm	9.6 mm	4.6 mm	3.5 mm
Optical Distortion (Y=25)	0.00 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ50 mm			
Filter Thread	M 52 P = 0.75			
Weight (approx.)	350 g			
Dimension	φ59(max.) x L = 93 mm			

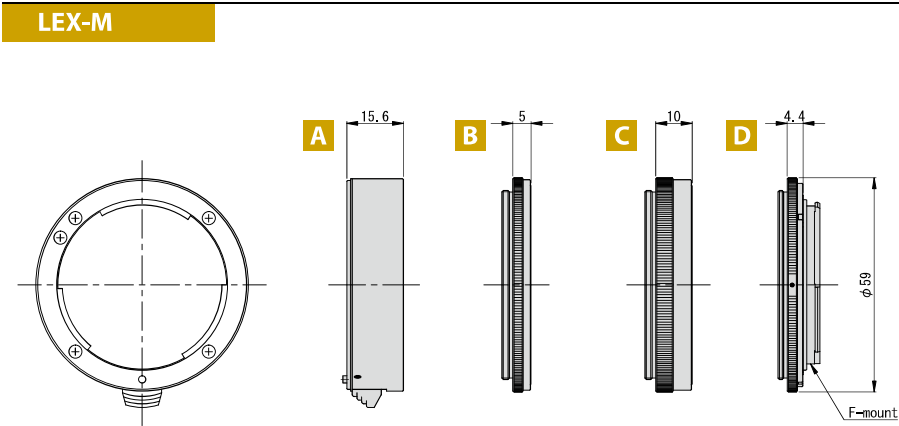


Focal Length (f)	100 mm			
Optical Mag. Range	0.05x ~ 0.3x			
Optical Mag.	0.05x	0.1x	0.2x	0.3x
WD	2050.7 mm	1055.7 mm	565.7 mm	409.0 mm
O/I (Object & Imager distance)	2195.2 mm	1200.2 mm	710.2 mm	553.5 mm
Aperture	F 2.8 ~ 16			
Working F/# *Value at Iris open	3.2	3.4	3.7	4.0
DOF at PCoC φ0.04mm	102.4 mm	27.2 mm	7.4 mm	3.6 mm
Optical Distortion (Y=22.5)	0.10 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	F-Mount			
Flange Back	46.5 mm			
Image Circle	φ45 mm			
Filter Thread	M 52 P = 0.75			
Weight (approx.)	360 g			
Dimension	φ59(max.) x L = 98 mm			



Focal Length (f)	185 mm	
Optical Mag. Range	0.108x ~ 0.159x	
Optical Mag.	0.108x	0.159x
WD	1951.7 mm ± 58	1404.4 mm ± 42
O/I (Object & Imager distance)	2134.8 mm	1596.9 mm
Aperture	F 5.6 ~ 32	
Working F/# *Value at Iris open	7.1	7.4
DOF at PCoC φ0.04mm	48.5 mm	23.4 mm
Optical Distortion (Y=22.5)	0.48 %	
Operation	Manual (Lock Screw M2)	
Wavelength	Visible	
Mount	F-Mount	
Flange Back	46.5 mm	
Image Circle	φ45 mm	
Filter Thread	M 40.5 P = 0.5	
Weight (approx.)	400 g	
Dimension	φ59(max.) x L = 133.6 ~ 146 mm	

F-Mount Extension Tube set



You may choose from any one of the following combinations:

- 1) A+D :default = 20mm
- 2) A+D+B = 25mm
- 3) A+D+C = 30mm
- 4) A+D+B+C = 35mm

Frange Back Chart

Mount	Camera Frange Back Length
F-Mount (Nikon Mount)	46.5mm
M42 mount	6.56mm
	10mm
	12mm
	19.53mm
M72 mount	45.5mm
	6.56mm
	12mm
	19.56mm
M95 mount	28.8mm
	31.8mm
	9.4mm

※ Camera Frange Back Length

Large Sensor Format Line Scan Lenses

CLL (V) Series

The CLL(V) series is especially designed for large sensors up to 90mm in length, with integrated vibration resistance, a large selection of various mount adapters, high resolution, and high contrast it is an exceptionally excellent choice for any line scan application.

- Features
- Up to 90mm sensors
 - 13 models available
 - Up to 2K, 12K, & 16K
 - Variable mounts
 - Distortionless

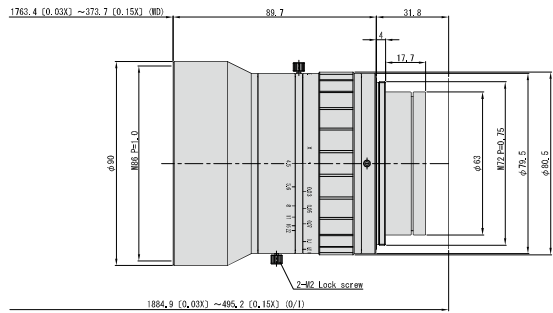


Line Up

Image Circle		Line Up					
		21Φ	28.6Φ	35Φ	45Φ	65Φ	90Φ
Line Sensor Size	2048bit×10μ=20.48mm	●	●	●	●	●	●
	2048bit×14μ=28.67mm		●	●	●	●	●
	7400bit×4.7μ=34.78mm		●	●	●	●	●
	4096bit×10μ=40.96mm				●	●	●
	6144bit×7μ=43.00mm				●	●	●
	8192bit×7μ=57.34mm					●	●
	12288bit×5μ=61.44mm					●	●
	16384bit×5μ=81.92mm						●
Area Sensor Seize	2048×2048(7.4μ)=15.15×15.15(dia 21.43mm)		●	●	●	●	●
	4096×3072(6μ)=24.57×18.43(dia 30.72mm)			●	●	●	●
	4008×2672(19μ×9μ)=76.15×24.04(dia 79.86mm)						●

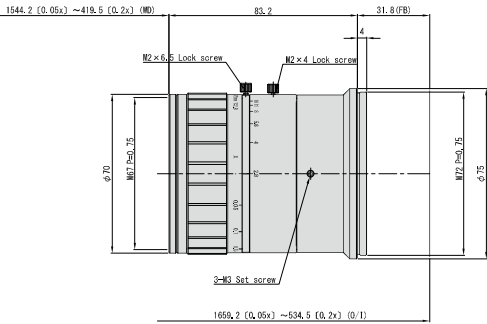
*Sensor size may differ depending on the camera manufacturer.

CLL-5045-M72



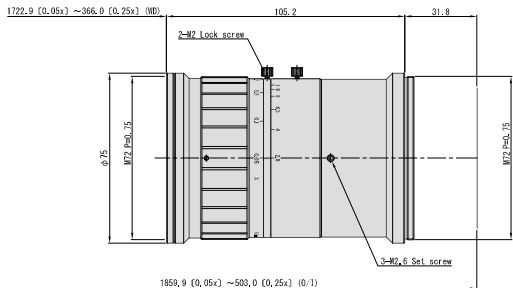
Focal Length (f)	52.5 mm		
Optical Mag. Range	(∞) 0.03x ~ 0.15x		
Optical Mag.	0.03x	0.10x	0.15x
WD	1763.4 mm	545.2 mm	373.7 mm
O/I (Object & Imager Distance)	1884.9 mm	666.7 mm	495.2 mm
Aperture	F 4.5 ~ 22		
Working F/# *Value at Iris Open	4.7	5.0	5.3
Optical Distortion (Y=37.5)	0.00 %	0.15 %	0.22 mm
Relative Illuminance (Y=37.5)	48 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	M 72 P = 0.75		
Flange Back	31.8 mm		
Image Circle	φ75 mm		
Filter Thread	M 86 P = 1.0		
Weight (approx.)	910 g		
Dimension	φ90(max.) x L = 89.7		

CLL-7528-M72



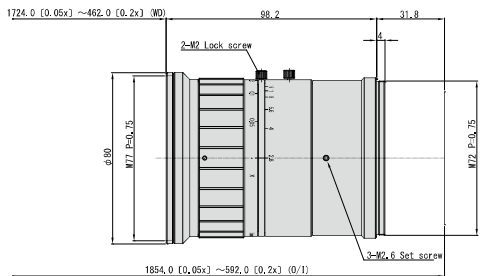
Focal Length (f)	75 mm			
Optical Mag. Range	(∞) 0.05x ~ 0.2x			
Optical Mag.	0.05x	0.1x	0.15x	0.2x
WD	1544.2 mm	790.6 mm	541.9 mm	419.5 mm
O/I (Object & Imager Distance)	1659.2 mm	905.6 mm	656.9 mm	534.5 mm
Aperture	F 2.8 ~ 16			
Working F/# *Value at Iris Open	3.0	3.1	3.3	3.4
NA	0.083	0.016	0.023	0.029
DOF at PCoC φ0.04mm	96.0 mm	24.8 mm	11.7 mm	6.8 mm
Optical Distortion (Y=36.5)	-0.66 %			
Relative Illuminance (Y=36.5)	45 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	M 72 P = 0.75			
Flange Back	31.8 mm			
Image Circle	φ73 mm			
Filter Thread	M 67 P = 0.75			
Weight (approx.)	440 g			
Dimension	φ75(max.) x L = 83.2 mm			

CLL-8528L-M72



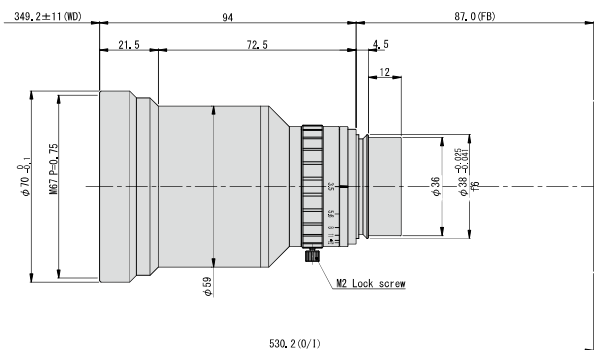
Focal Length (f)	85 mm		
Optical Mag. Range	0.05x ~ 0.25x		
Optical Mag.	0.05x	0.15x	0.25x
WD	1722.9 mm	598.0 mm	366.0 mm
O/I (Object & Imager Distance)	1859.9 mm	735.0 mm	503.0 mm
Aperture	F 2.8 ~ 16		
Working F/# *Value at Iris Open	3.0	3.2	3.5
DOF at PCoC φ0.04mm	96.0 mm	11.4 mm	4.5 mm
Optical Distortion (Y=31)	-0.06 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	M 72 P = 0.75		
Flange Back	31.8 mm		
Image Circle	φ62 mm		
Filter Thread	M 72 P = 0.75		
Weight (approx.)	520 g		
Dimension	φ75(max.) x L = 105.2		

CLL-8528-M72



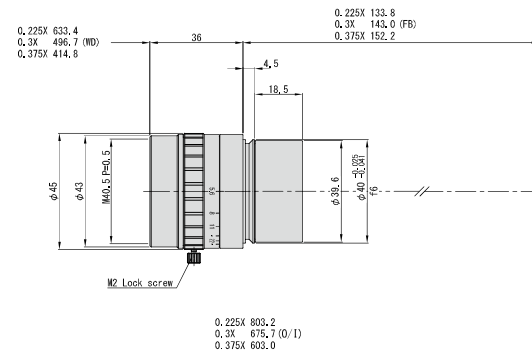
Focal Length (f)	85 mm			
Optical Mag. Range	(∞) 0.05x ~ 0.2x			
Optical Mag.	0.05x	0.1x	0.15x	0.2x
WD	1724.0 mm	878.4 mm	599.4 mm	462.0 mm
O/I (Object & Imager Distance)	1854.0 mm	1008.4 mm	729.4 mm	592.0 mm
Aperture	F 2.8 ~ 16			
Working F/# *Value at Iris Open	2.9	3.1	3.2	3.4
DOF at PCoC φ0.04mm	92.8 mm	24.8 mm	11.4 mm	6.8 mm
Optical Distortion (Y=31)	0.02 %			
Operation	Manual (Lock Screw M2)			
Wavelength	Visible			
Mount	M 72 P = 0.75			
Flange Back	31.8 mm			
Image Circle	φ62 mm			
Filter Thread	M 77 P = 0.75			
Weight (approx.)	540 g			
Dimension	φ80(max.) x L = 98.2 mm			

CLL-6035-V



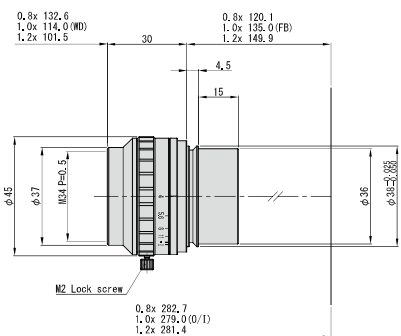
Focal Length (f)	60 mm
Optical Mag.	0.165x
WD	349.2 mm $\pm$ 11
O/I (Object & Imager Distance)	530.2 mm
Aperture	F 3.5 ~ 22
Working F/# *Value at Iris Open	4.1
NA	0.020
DOF at PCoC ϕ 0.04mm	12.0 mm
Optical Distortion (Y=31)	-0.08 %
Operation	Manual (Lock Screw M2)
Wavelength	Visible
Mount	V-Mount
Flange Back	87.0 mm
Image Circle	ϕ 62 mm
Filter Thread	M 67 P = 0.75
Weight (approx.)	360 g
Dimension	ϕ 70 (max.) x L = 94 mm

CLL-12056-03V



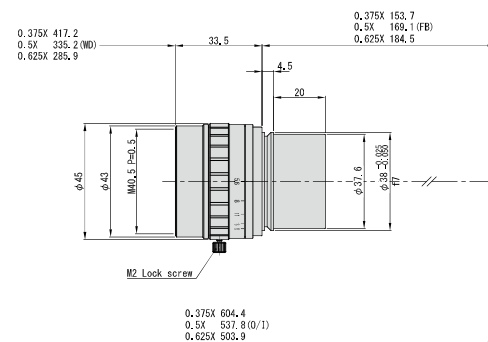
Focal Length (f)	120 mm		
Optical Mag.	0.225x	0.3x	0.375x
WD	633.4 mm	496.7 mm	414.8 mm
O/I (Object & Imager Distance)	803.2 mm	675.7 mm	603.0 mm
Aperture	F 5.6 ~ 32		
Working F/# *Value at Iris Open	6.9	7.3	7.7
NA	0.016	0.021	0.024
DOF at PCoC ϕ 0.04mm	10.9 mm	6.5 mm	4.4 mm
Optical Distortion (Y=45)	-0.02 %		
Relative Illuminance (Y=45)	57 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	133.8 mm	143.0 mm	152.2 mm
Image Circle	ϕ 90 mm		
Filter Thread	M 40.5 P = 0.5		
Weight (approx.)	170 g		
Dimension	ϕ 45(max.) x L = 36 mm		

CLL-7540-V



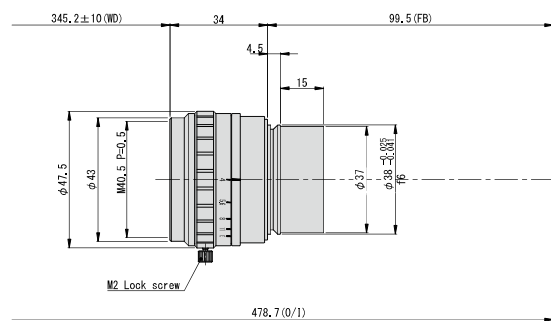
Focal Length (f)	75 mm		
Optical Mag.	0.8x	1.0x	1.2x
WD	132.6 mm	114.0 mm	101.5 mm
O/I (Object & Imager Distance)	282,7 mm	279,0 mm	281,4 mm
Aperture	F 4 ~ 22		
Working F/# *Value at Iris Open	7.7	8.7	9.6
NA	0,052	0,057	0,063
DOF at PCoC ϕ 0,04mm	1,0 mm	0,7 mm	0,5 mm
Optical Distortion (Y=41)	-0,01 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	120,1 mm	135,0 mm	149,9 mm
Image Circle	ϕ 82 mm		
Filter Thread	M 34 P = 0.5		
Weight (approx.)	134 g		
Dimension	ϕ 45(max.) x L = 30 mm		

CLL-12056-05V



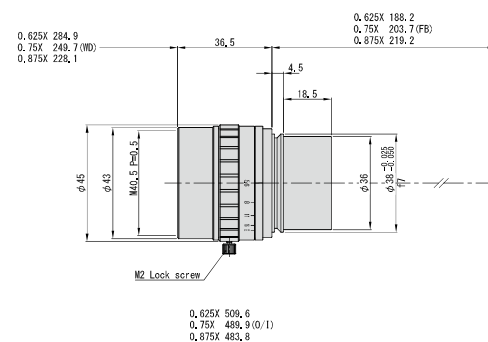
Focal Length (f)	120 mm		
Optical Mag.	0.375x	0.5x	0.625x
WD	417.2 mm	335.2 mm	285.9 mm
O/I (Object & Imager Distance)	604.4 mm	537.8 mm	503.9 mm
Aperture	F 5.6 ~ 32		
Working F/# *Value at Iris Open	7.7	8.4	9.1
NA	0.024	0.030	0.034
DOF at PCoC ϕ 0.04mm	4.4 mm	2.7 mm	1.9 mm
Optical Distortion (Y=45)	0.01 %		
Relative Illuminance (Y=45)	60 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	153.7 mm	169.1 mm	184.5 mm
Image Circle	ϕ 90 mm		
Filter Thread	M 40.5 P = 0.5		
Weight (approx.)	160 g		
Dimension	ϕ 45(max.) x L = 33.5 mm		

CLL-8540-V



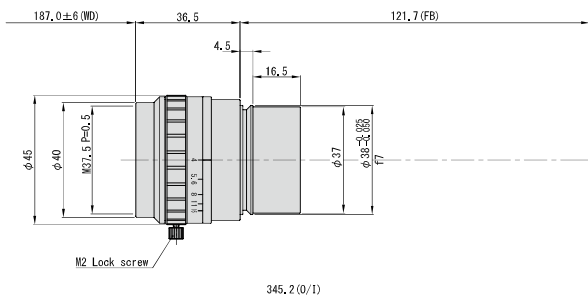
Focal Length (f)	85 mm
Optical Mag.	0,28x
WD	345,2 mm $\pm$ 10
O/I (Object & Imager Distance)	478,7 mm
Aperture	F 4 ~ 16
Working F/# *Value at Iris Open	5,1
NA	0,027
DOF at PCoC ϕ 0.04mm	5,2 mm
Optical Distortion (Y=31)	0.00 %
Operation	Manual(Lock Screw M2)
Wavelength	Visible
Mount	V-Mount
Flange Back	99,5 mm
Image Circle	ϕ 62 mm
Filter Thread	M 40.5 P = 0.5
Weight (approx.)	160 g
Dimension	ϕ 75 (max.) x L = 34 mm

CLL-12056-075V



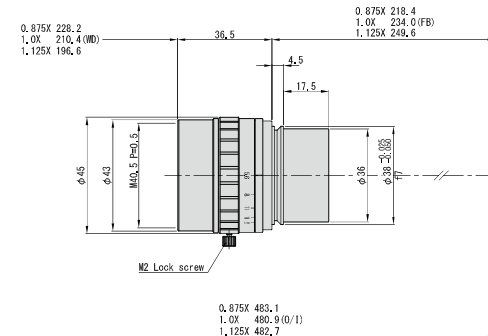
Focal Length (f)	120 mm		
Optical Mag.	0,625x	0,75x	0,875x
WD	284,9 mm	249,7 mm	228,1 mm
O/I (Object & Imager Distance)	509,6 mm	489,9 mm	483,8 mm
Aperture	F 5,6 ~ 32		
Working F/# *Value at Iris Open	9,0	9,6	10,3
NA	0,035	0,039	0,042
DOF at PCoC ϕ 0,04mm	1,8 mm	1,4 mm	1,1 mm
Optical Distortion (Y=45)	-0,02 %		
Relative Illuminance (Y=45)	63 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	188,2 mm	203,7 mm	219,2 mm
Image Circle	ϕ 90 mm		
Filter Thread	M 40,5 P = 0,5		
Weight (approx.)	165 g		
Dimension	ϕ 45(max.) x L = 36,5 mm		

CLL-8540-06V



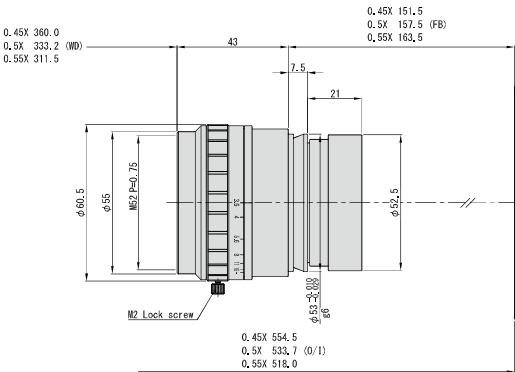
Focal Length (f)	85 mm
Optical Mag.	0.6x
WD	1870 mm $\pm$ 6
O/I (Object & Imager Distance)	345,2 mm
Aperture	F 4 ~ 16
Working F/# *Value at Iris Open	6,4
NA	0.047
DOF at PCoC ϕ 0,04mm	1,4 mm
Optical Distortion (Y=31)	-0,04 %
Operation	Manual (Lock Screw M2)
Wavelength	Visible
Mount	V-Mount
Flange Back	121,7 mm
Image Circle	ϕ 62 mm
Filter Thread	M 37,5 P = 0,5
Weight (approx.)	170 g
Dimension	ϕ 45 (max.) x L = 36,5 mm

CLL-12056-1V



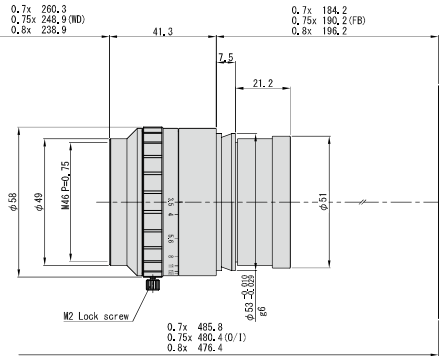
Focal Length (f)	120 mm		
Optical Mag.	0.875x	1.0x	1.125x
WD	228.2 mm	210.4 mm	196.6 mm
O/I (Object & Imager Distance)	483.1 mm	480.9 mm	482.7 mm
Aperture	F 5.6 ~ 32		
Working F/# *Value at Iris Open	10.3	11.0	11.7
NA	0.042	0.045	0.048
DOF at PCoC ϕ 0.04mm	1.1 mm	0.9 mm	0.7 mm
Optical Distortion (Y=45)	0.00 %		
Relative Illuminance (Y=45)	69 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	218.4 mm	234.0 mm	249.6 mm
Image Circle	ϕ 90 mm		
Filter Thread	M 40.5 P = 0.5		
Weight (approx.)	165 g		
Dimension	ϕ 45(max.) x L = 36.5 mm		

CLL-12035-05V



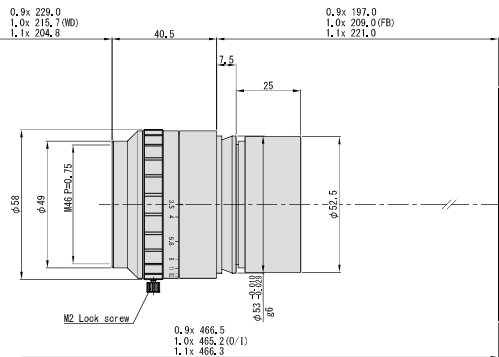
Focal Length (f)	120 mm		
Optical Mag.	0.45x	0.5x	0.55x
WD	360.0 mm	333.2 mm	311.5 mm
O/I (Object & Imager Distance)	554.5 mm	533.7 mm	518.0 mm
Aperture	F 3.5 ~ 32		
Working F/# *Value at Iris Open	5.1	5.3	5.4
NA	0.044	0.047	0.051
DOF at PCoC ϕ 0.04mm	2.0 mm	1.7 mm	1.4 mm
Optical Distortion (Y=45)	0.05 %		
Relative Illuminance (Y=45)	83 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	151.5 mm	157.5 mm	163.5 mm
Image Circle	ϕ 90 mm		
Filter Thread	M 52 P = 0.75		
Weight (approx.)	390 g		
Dimension	ϕ 60.5 (max.) x L = 43 mm		

CLL-12035-075V



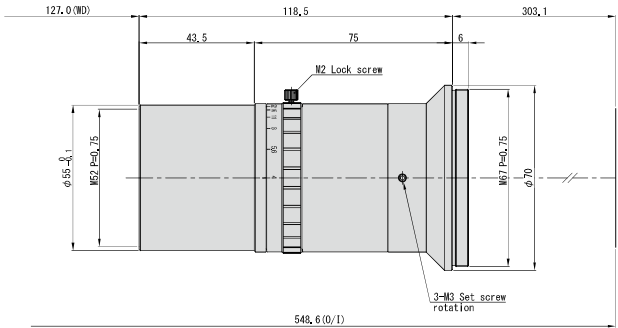
Focal Length (f)	120 mm		
Optical Mag.	0.7x	0.75x	0.8x
WD	260.3 mm	248.9 mm	238.9 mm
O/I (Object & Imager Distance)	485.8 mm	480.4 mm	476.4 mm
Aperture	F 3.5 ~ 22		
Working F/# *Value at Iris Open	6.0	6.1	6.3
NA	0.058	0.061	0.063
DOF at PCoC ϕ 0.04mm	1.0 mm	0.9 mm	0.8 mm
Optical Distortion (Y=45)	0.01 %		
Relative Illuminance (Y=45)	84 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	184.2 mm	190.2 mm	196.2 mm
Image Circle	ϕ 90 mm		
Filter Thread	M 46 P = 0.75		
Weight (approx.)	350 g		
Dimension	ϕ 58 (max.) x L = 41.3 mm		

CLL-12035-1V



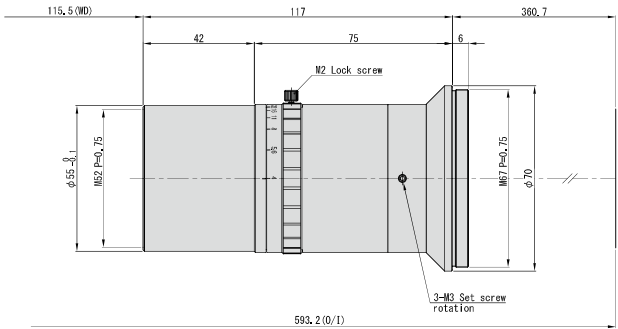
Focal Length (f)	120 mm		
Optical Mag.	0.9x	1.0x	1.1x
WD	229.0 mm	215.7 mm	204.8 mm
O/I (Object & Imager Distance)	466.5 mm	465.2 mm	466.3 mm
Aperture	F 3.5 ~ 22		
Working F/# *Value at Iris Open	6.7	7.0	7.4
NA	0.067	0.071	0.074
DOF at PCoC ϕ 0.04mm	0.7 mm	0.6 mm	0.5 mm
Optical Distortion (Y=45)	0.05 %		
Relative Illuminance (Y=45)	84 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	V-Mount		
Flange Back	197.0 mm	209.0 mm	221.0 mm
Image Circle	ϕ 90 mm		
Filter Thread	M 46 P = 0.75		
Weight (approx.)	350 g		
Dimension	ϕ 58 (max.) x L = 40.5		

CLL-12040-2M67



Focal Length (f)	120 mm		
Optical Mag.	2.0x		
WD	127.0 mm		
O/I (Object & Imager Distance)	548.6 mm		
Aperture	F 4 ~ 22		
Working F/# *Value at Iris Open	12.1		
NA	0.083		
DOF at PCoC ϕ 0.04mm	0.2 mm		
Optical Distortion (Y=45)	0.07 %		
Relative Illuminance (Y=45)	97 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	M 67 P = 0.75		
Flange Back	303.1 mm		
Image Circle	ϕ 90 mm		
Filter Thread	M 52 P = 0.75		
Weight (approx.)	680 g		
Dimension	ϕ 70 (max.) x L = 118.5 mm		

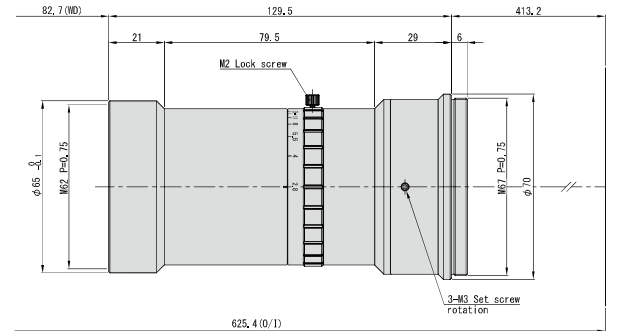
CLL-12040-2.5M67



Focal Length (f)	120 mm		
Optical Mag.	2.5x		
WD	115.5 mm		
O/I (Object & Imager Distance)	593.2 mm		
Aperture	F 4 ~ 22		
Working F/# *Value at Iris Open	13.7		
NA	0.091		
DOF at PCoC ϕ 0.04mm	0.2 mm		
Optical Distortion (Y=45)	0.04 %		
Relative Illuminance (Y=45)	98 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	M 67 P = 0.75		
Flange Back	360.7 mm		
Image Circle	ϕ 90 mm		
Filter Thread	M 52 P = 0.75		
Weight (approx.)	670 g		
Dimension	ϕ 70 (max.) x L = 117 mm		

CLL-12028-3.3M67

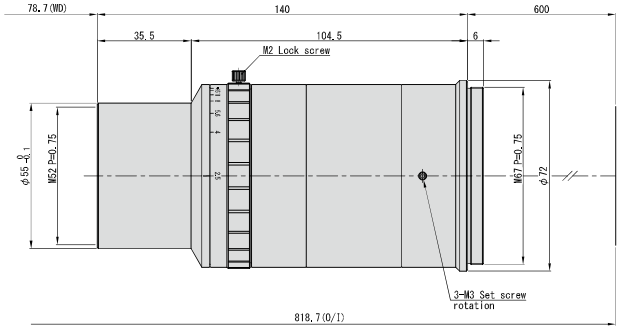
BTO



Focal Length (f)	120 mm		
Optical Mag.	3.3x		
WD	82.7 mm		
O/I (Object & Imager Distance)	625.4 mm		
Aperture	F 2.8 ~ 22		
Working F/# *Value at Iris Open	12.6		
NA	0.131		
DOF at PCoC ϕ 0.04mm	0.09 mm		
Optical Distortion (Y=45)	0.04 %		
Relative Illuminance (Y=45)	99 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	M 67 P = 0.75		
Flange Back	413.2 mm		
Image Circle	ϕ 90 mm		
Filter Thread	M 62 P = 0.75		
Weight (approx.)	950 g		
Dimension	ϕ 70 (max.) x L = 129.5 mm		

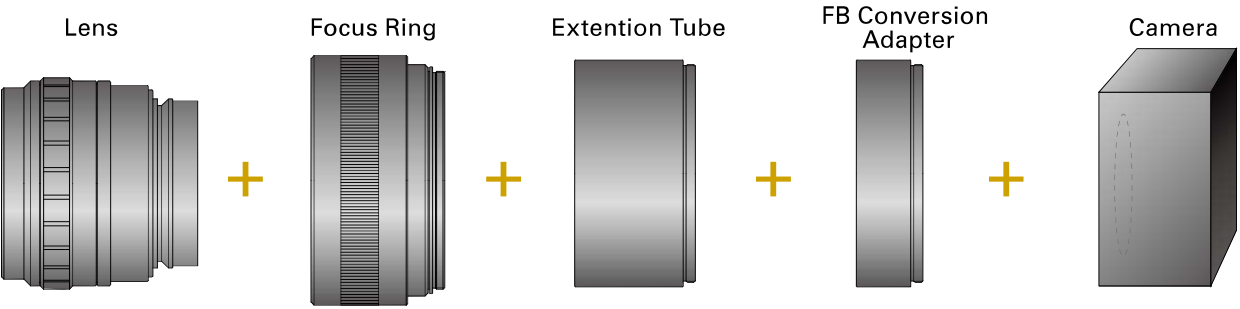
CLL-12025-5M67

BTO



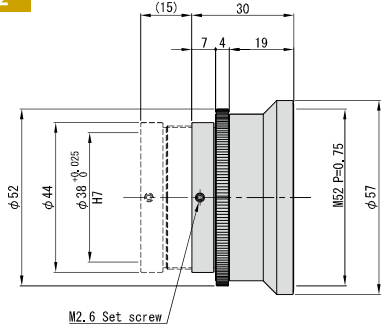
Focal Length (f)	116 mm		
Optical Mag.	5.0x		
WD	78.7 mm		
O/I (Object & Imager Distance)	818.7 mm		
Aperture	F 2.5 ~ 22		
Working F/# *Value at Iris Open	15.0		
NA	0.167		
DOF at PCoC ϕ 0.04mm	0.05 mm		
Optical Distortion (Y=43.2)	0.03 %		
Relative Illuminance (Y=43.2)	100 %		
Operation	Manual (Lock Screw M2)		
Wavelength	Visible		
Mount	M 67 P = 0.75		
Flange Back	600.0 mm		
Image Circle	ϕ 86.4 mm		
Filter Thread	M 52 P = 0.75		
Weight (approx.)	960 g		
Dimension	ϕ 72 (max.) x L = 140 mm		

F-mount Adapter

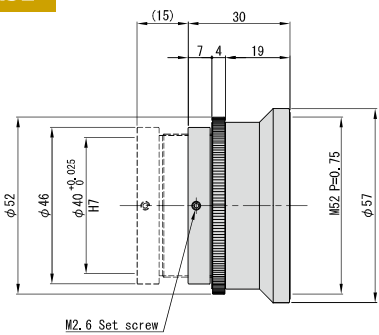


Focus Ring

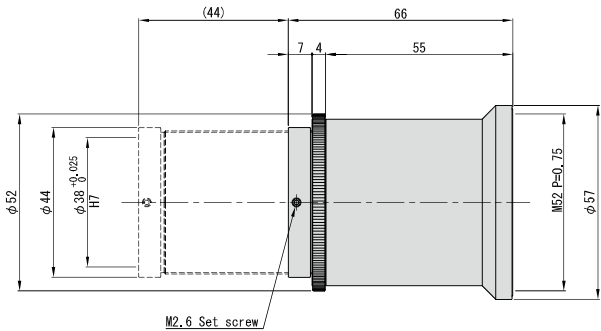
LADP-F38-M52



LADP-F40-M52

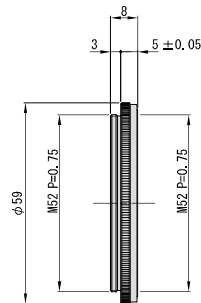


LADP-F38-M52L

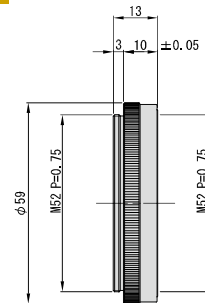


Extention Tube

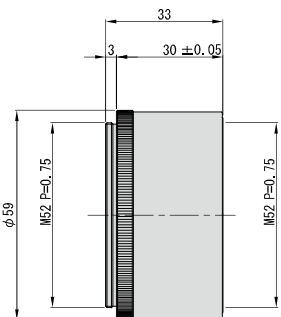
LEX-M52-5



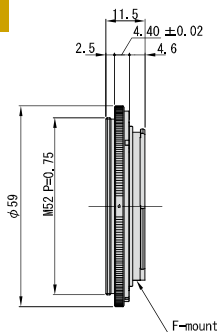
LEX-M52-10



LEX-M52-30

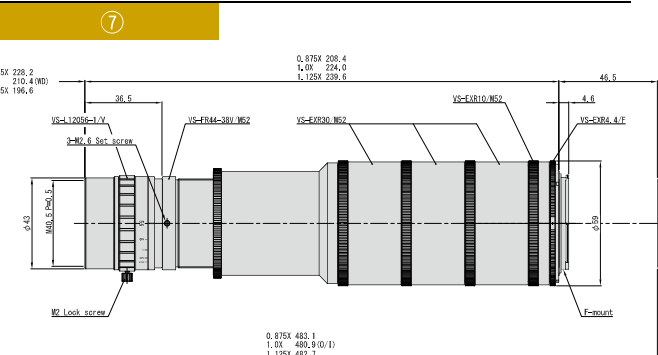
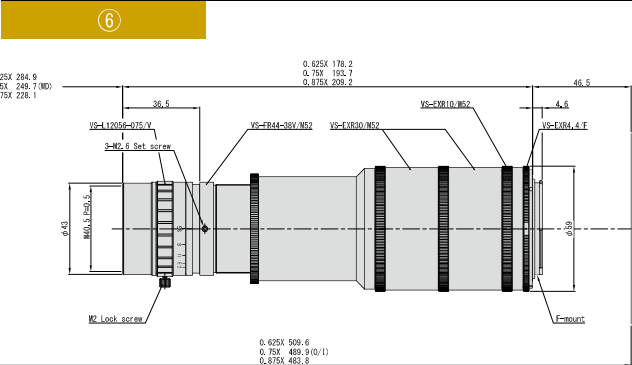
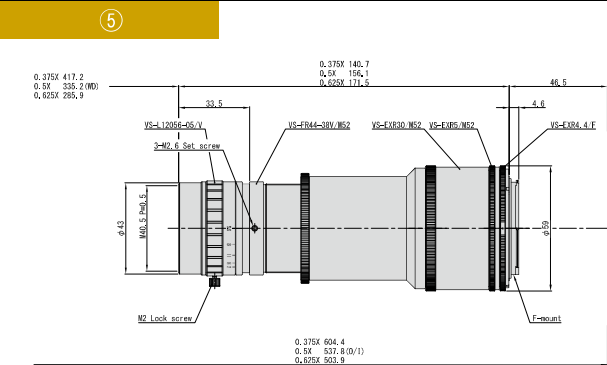
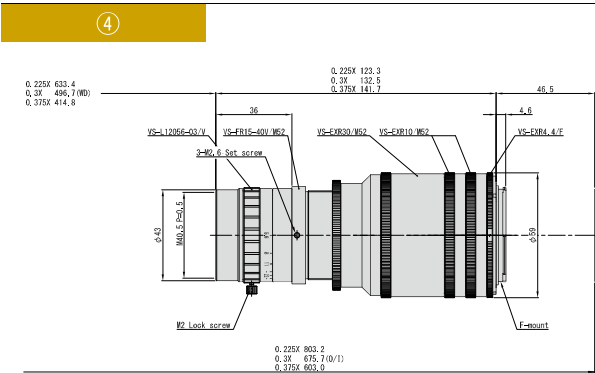
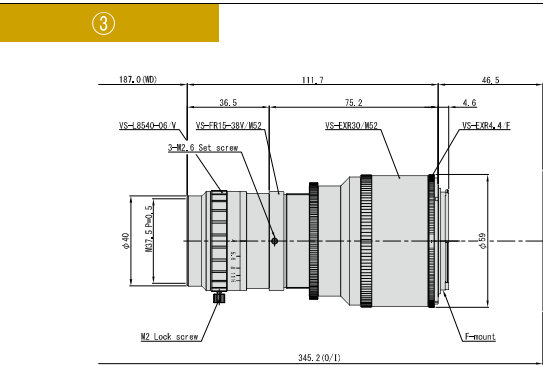
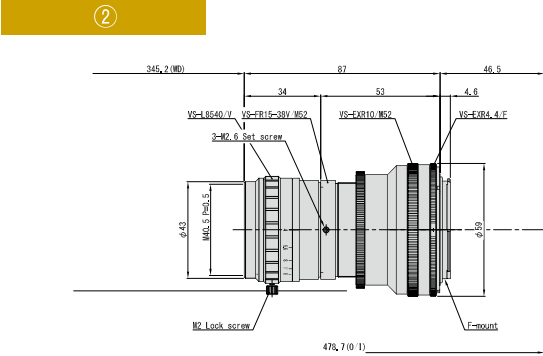
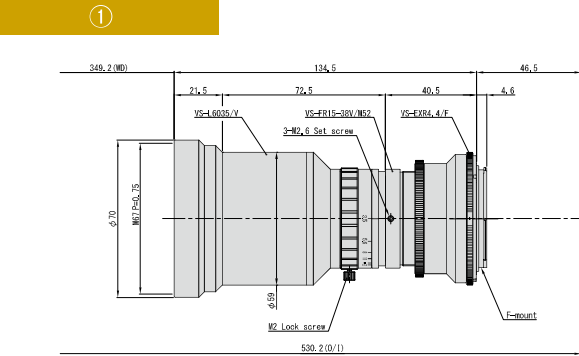


LEX-M52F-4.4

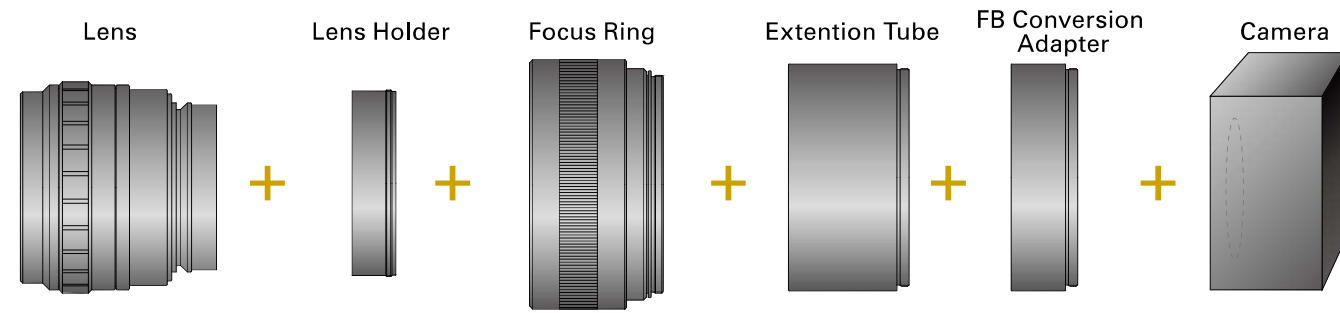


Reference drawing	Mag.	Mag. Range	WD	Lens	Recommend Components				
					Focus Ring	Extention Tube			
①	0.165	x0.07-x0.31	844-179	CLL-6035-V	LADP-F38-M52	LEX-M52F-4.4			
②	0.28	x0.18-x0.35	513-285	CLL-8540-V	LADP-F38-M52	LEX-M52-10	LEX-M52F-4.4		
③	0.6	x0.48-x0.64	223-177	CLL-8540-06V	LADP-F38-M52	LEX-M52-30	LEX-M52F-4.4		
④	0.3	x0.21-x0.32	673-471	CLL-12056-03V	LADP-F40-M52	LEX-M52-30	LEX-M52-10	LEX-M52-10	LEX-M52F-4.4
⑤	0.5	x0.36-x0.71	432-262	CLL-12056-05V	LADP-F38-M52L	LEX-M52-5	LEX-M52-30	LEX-M52F-4.4	
⑥	0.75	x0.62-x0.96	285-213	CLL-12056-075V	LADP-F38-M52L	LEX-M52-30	LEX-M52-30	LEX-M52-10	LEX-M52F-4.4
⑦	1	x0.87-x1.21	229-188	CLL-12056-1V	LADP-F38-M52L	LEX-M52-30	LEX-M52-30	LEX-M52-30	LEX-M52-10 LEX-M52F-4.4

※Magnification ranges in above chart may change with different combination of components
※Reference Data

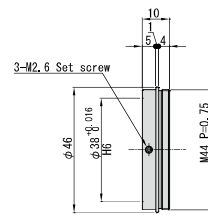


M72 mount Adapter

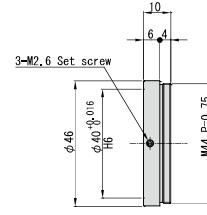


■ Lens Holder

LADP-F36-M44

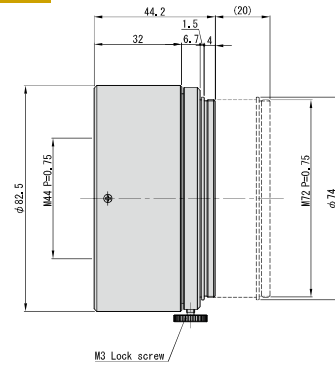


LADP-F40-M44

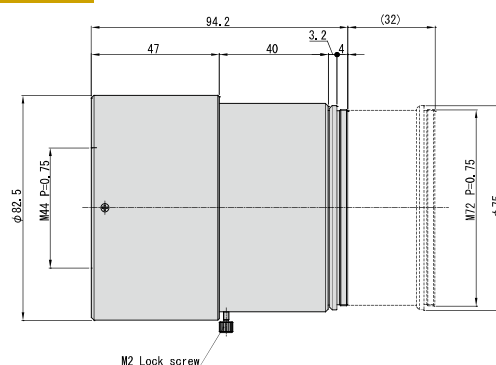


■ Focus Ring

LADP-M44-M72

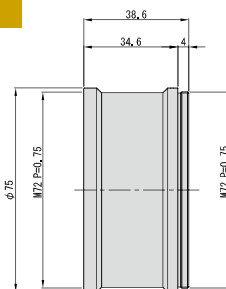


LADP-M44-M72L

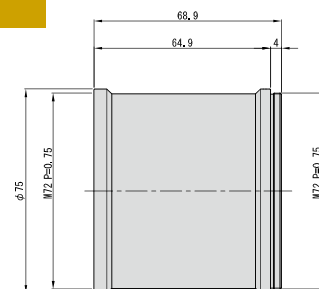


■ Extention Tube

LEX-M72-35

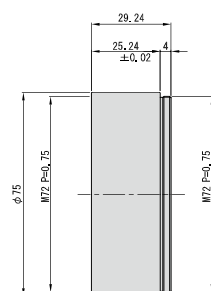


LEX-M72-65

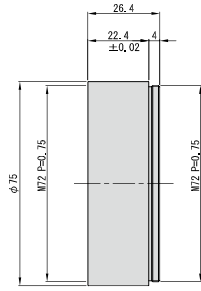


■ FB Conversion Adapter

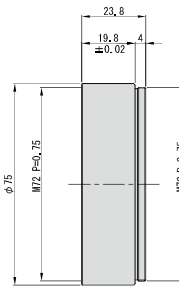
LEX-M72-25.4



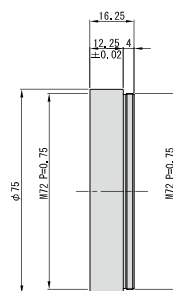
LEX-M72-22.4



LEX-M72-19.8



LEX-M72-12.25



Reference drawing	Mag.	Mag. Range	WD	Recommended Components					FB Conversion Adapter				
				Lens	Lens Holder	Focus Ring	Extention Tube		N 31.8mm	D 6.56mm	E 9.4mm	D (12mm)	O (19.55mm)
①	0.165	x0.01-x0.33	6000-167	CLL-6035-V	HR-LH/V	IADP-M44M72			LEX-M72-25.4	LEX-M72-22.4	LEX-M72-19.8	LEX-M72-12.25	
②	0.28	x0.16-x0.39	571-260	CLL-8540-V	HR-LH/V	IADP-M44M72	LEX-M72-12.25						
③	0.6	x0.48-x0.71	223-165	CLL-8540-06V	HR-LH/V	IADP-M44M72	LEX-M72-35						
④	0.3	x0.17-x0.43	811-373	CLL-12056-03V	HR-LH/V2	IADP-M44M72L							
⑤	0.5	x0.36-x0.62	432-287	CLL-12056-05V	HR-LH/V	IADP-M44M72L	LEX-M72-25.4						
⑥	0.75	x0.65-x0.91	276-220	CLL-12056-075V	HR-LH/V	IADP-M44M72L	LEX-M72-35	LEX-M72-25.4					
⑦	1	x0.79-x1.13	244-196	CLL-12056-1V	HR-LH/V	IADP-M44M72L	LEX-M72-65	LEX-M72-25.4					

*Magnification ranges in above chart may change with different combination of components

※Reference Data

