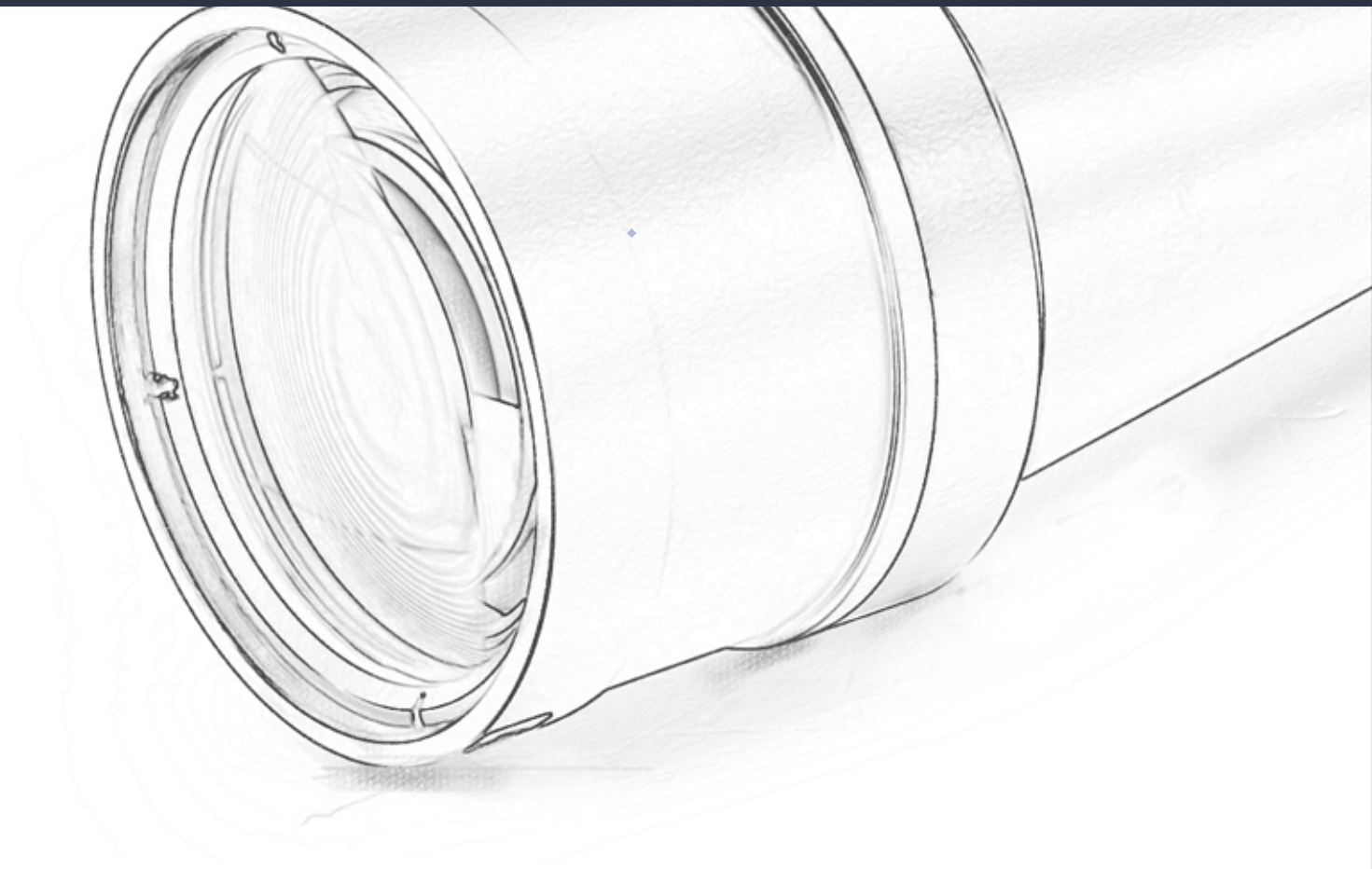


C A N R I L L

SINCE 2009



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 **CR 灿锐®**
Third Generation

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Shenzhen Can-Rill Technologies Co , Ltd

Canrill Optics is one of the most famous telecentric lens manufacturer in China. Dedicated to telecentric lens market for over 10 years, Canrill has accumulated well-rounded experience in considerable amount projects, earned the trust from clients worldwide and prominent position in the precision machine vision industry.

Canrill always puts research in the first place and invests millions per year. At the same time, we build several factories in different cities to optimize the supply chain and manufacturing. We strive to apply years' experience to offer best service and products. From manufacturing to creation, we are on the way.

Dream it, See it.

BI-TELECENTRIC
LENS FOR
FULL FRAME SENSOR



Magnification from 4X-0.16X,
object FOV up to 316mm.



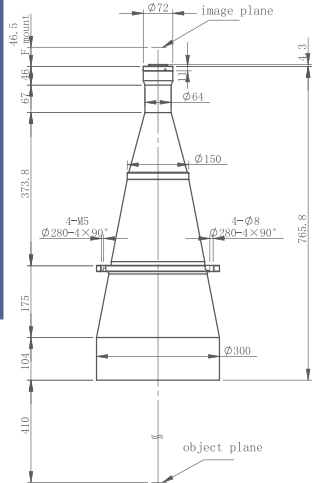
Support up to 29 Megapixels industry
cameras, or sensor size of line scan
cameras up to 44mm



Default to F mount,
M58 mount for option

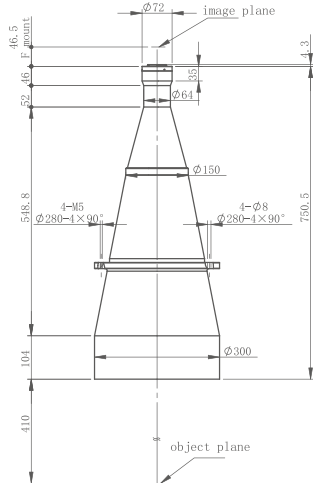
Model	Mag	WD (mm)	Telecentricity	Distortion	DOF (mm)	Aperture	MTF30 (LP/mm)	Mount	Fov for different Sensor Size(mmxmm)					
									2kx10um 20.48	4kx7um 28.67	8kx5um 40.96	1.1" 14.2x10.4 (17.6)	4/3 18x13.5 (22.6)	35mm Full 36.1x24.1
XF-MDT0187X410-D35	0.187	410	0.057	0.065%	45.3	F16	65	F	109.52	153.32	219.04	75.94X55.61	96.26X72.19	193.05X128.88
XF-MDT016X410-D35	0.16	410	0.066	0.095%	63.5	F16	65	F	128	179.19	256	88.75X65	112.5X84.38	225.63X150.63
XF-MDT0245X398-D35	0.245	398	0.05	0.055%	27.5	F16	63	F	83.59	117.02	167.18	57.96X42.45	73.47X55.1	147.35X98.37
XF-MDT0288X398-D35	0.288	398	0.05	0.053%	20.2	F16	63	F	71.11	99.55	142.22	49.31X36.11	62.5×46.88	125.35X83.68
XF-MDT038X260-D35	0.38	260	0.05	0.050%	11.6	F16	63	F	53.89	75.45	107.79	37.37X27.37	47.37X35.53	95X63.42
XF-MDT046X260-D35	0.46	260	0.04	0.040%	8	F16	60	F	44.52	65.33	89.04	30.87X22.61	39.13X29.35	78.48X52.39
XF-MDT048X200-D35	0.48	200	0.05	0.070%	7.1	F16	65	F	42.67	59.73	85.33	29.58X21.67	37.5X28.13	75.21X50.21
XF-MDT055X230-D35	0.55	230	0.05	0.030%	3.6	F16	65	F	37.24	52.13	74.47	25.82X18.91	32.73X24.55	65.64X43.82
XF-MDT058X200-D35	0.58	200	0.05	0.065%	4.8	F16	65	F	35.31	49.43	70.62	24.48X17.93	31.03X23.28	62.24X41.55
XF-MDT0641X150-D35	0.641	150	0.05	0.030%	4	F16	65	F	31.95	44.73	63.9	22.15X16.22	28.08X21.06	56.32X37.6
XF-MDT0741X150-D35	0.741	150	0.05	0.052%	2.9	F16	65	F	27.64	38.69	55.28	19.16X14.04	24.29X18.22	48.72X32.52
XF-MDT08X150-D35	0.8	150	0.05	0.045%	2.6	F16	63	F	25.6	35.84	51.2	17.75X13	22.5X16.88	45.13X30.13
XF-MDT1X150-D35	1	150	0.05	0.035%	1.7	F16	60	F	20.48	28.67	40.96	14.2X10.4	18X13.5	36.1X24.1
XF-MDT1.5X110-D35-VI	1.5	110	0.1	0.090%	0.54-6.6	F12-143.8	85-7	F	13.65	27.31	27.31	9.47X6.93	12X9	24.07X16.07
XF-MDT1.5X110D-D35-VI	1.5	110	0.1	0.090%	0.54-6.6	F12-143.8	85-7	F	13.65	27.31	27.31	9.47X6.93	12X9	24.07X16.07
XF-MDT2X110-D35-VI	2	110	0.1	0.075%	0.28-4.4	F12-143.8	85-6	F	10.24	20.48	20.48	7.1X5.2	9X6.75	18.05X12.05
XF-MDT2X110D-D35-VI	2	110	0.1	0.075%	0.28-4.4	F12-143.8	85-6	F	10.24	20.48	20.48	7.1X5.2	9X6.75	18.05X12.05
XF-MDT3X110-D35-VI	3	110	0.1	0.075%	0.15-2.6	F13.6-227	75-4.5	F	6.83	13.65	13.65	4.73X3.47	6X4.5	12.03X8.03
XF-MDT3X110D-D35-VI	3	110	0.1	0.075%	0.15-2.6	F13.6-227	75-4.5	F	6.83	13.65	13.65	4.73X3.47	6X4.5	12.03X8.03
XF-MDT4X110-D35-VI	4	110	0.08	0.075%	0.11-1.9	F17-301.6	60-3.5	F	5.12	10.24	10.24	3.55X2.6	4.5X3.38	9.03X6.03
XF-MDT4X110D-D35-VI	4	110	0.08	0.075%%	0.11-1.9	F17-301.6	60-3.5	F	5.12	10.24	10.24	3.55X2.6	4.5X3.38	9.03X6.03

XF-MDT0187X410-D35



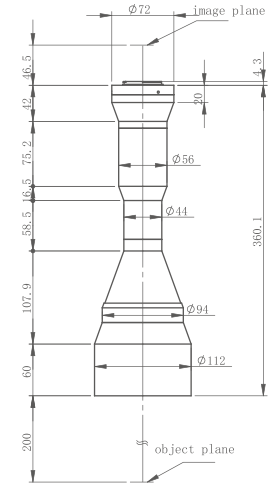
Optical Structure	Object telecentric
Magnification	0.187
Object FOV	Φ231.6mm
Image FOV	Φ43.3mm
WD	410mm±3%
Telecentricity	<0.057°
DOF	45.3mm
Aperture	F16
Resolution	56.9μm
MTF	>0.3@65lp/mm
Distortion	<0.065%
FOV for different sensor size	
35film 36x24	192.5x128.3mm
4/3' 18x13.5	96.3x72.2mm
1' 12.8x9.6	68.4x51.3mm
2kLinear scan2018x14μm	153.3mm
4kLinear scan4096x7μm	153.3mm
6kLinear scan6144x7μm	230mm
8kLinear scan8192x3.5μm	153.3mm

XF-MDT016X410-D35



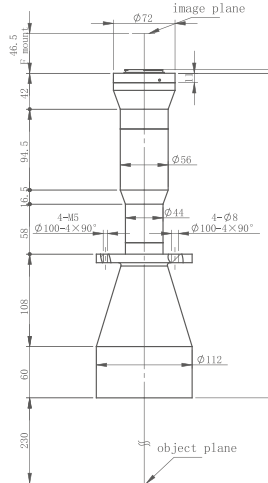
Optical Structure	Object telecentric
Magnification	0.16
Object FOV	Φ270.6mm
Image FOV	Φ43.3mm
WD	410mm±3%
Telecentricity	<0.066°
DOF	63.5mm
Aperture	F16
Resolution	66μm
MTF	>0.3@65lp/mm
Distortion	<0.095%
FOV for different sensor size	
35film 36x24	225x150mm
4/3' 18x13.5	112.5x84.4mm
1' 12.8x9.6	80x60mm
2kLinear scan2018x14μm	179.2mm
4kLinear scan4096x7μm	179.2mm
6kLinear scan6144x7μm	268.8mm
8kLinear scan8192x3.5μm	179.2mm

XF-MDT048X200-D35



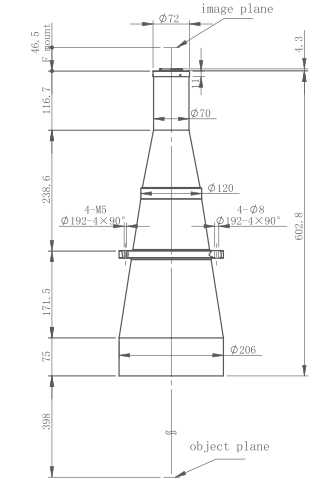
Optical Structure	Object telecentric
Magnification	0.48
Object FOV	Φ90.2mm
Image FOV	Φ43.3mm
WD	200mm±3%
Telecentricity	<0.05°
DOF	7.1mm
Aperture	F16
Resolution	22μm
MTF	>0.3@65lp/mm
Distortion	<0.07%
FOV for different sensor size	
35film 36x24	75x50mm
4/3' 18x13.5	37.5x28.1mm
1' 12.8x9.6	26.7x20mm
2kLinear scan2018x14μm	59.7mm
4kLinear scan4096x7μm	59.7mm
6kLinear scan6144x7μm	89.5mm
8kLinear scan8192x3.5μm	59.7mm

XF-MDT055X230-D35



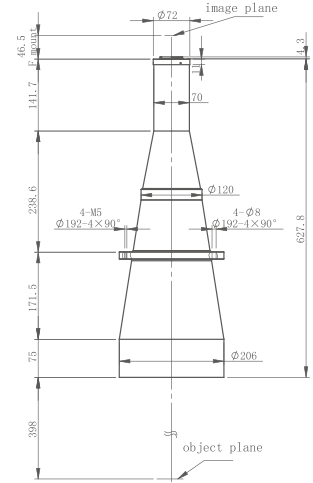
Optical Structure	Object telecentric
Magnification	0.55
Object FOV	Φ79.3mm
Image FOV	Φ43.6mm
WD	230mm±3%
Telecentricity	<0.05°
DOF	3.6mm
Aperture	F16
Resolution	19.1μm
MTF	>0.3@65lp/mm
Distortion	<0.03%
FOV for different sensor size	
35film 36x24	65.5x43.6mm
4/3' 18x13.5	32.7x24.5mm
1' 12.8x9.6	23.3x17.5mm
2kLinear scan2018x14μm	52.1mm
4kLinear scan4096x7μm	52.1mm
6kLinear scan6144x7μm	78.2mm
8kLinear scan8192x3.5μm	52.1mm

XF-MDT0245X398-D35



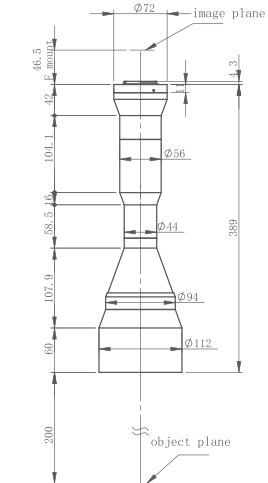
Optical Structure	Object telecentric
Magnification	0.245
Object FOV	Φ176.7mm
Image FOV	Φ43.3mm
WD	398mm±3%
Telecentricity	<0.05°
DOF	27.5mm
Aperture	F16
Resolution	43.4μm
MTF	>0.3@63lp/mm
Distortion	<0.055%
FOV for different sensor size	
35film 36x24	146.9x98mm
4/3' 18x13.5	73.5x55.1mm
1' 12.8x9.6	52.2x39.2mm
2kLinear scan2018x14μm	117mm
4kLinear scan4096x7μm	117mm
6kLinear scan6144x7μm	175mm
8kLinear scan8192x3.5μm	117mm

XF-MDT0288X398-D35



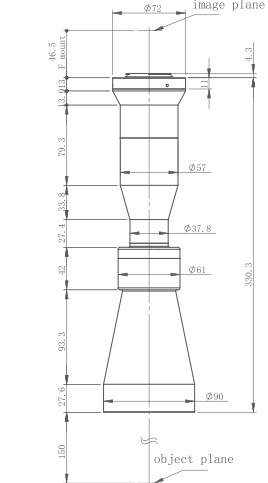
Optical Structure	Object telecentric
Magnification	0.288
Object FOV	Φ150.4mm
Image FOV	Φ43.3mm
WD	398mm±3%
Telecentricity	<0.05°
DOF	20.2mm
Aperture	F16
Resolution	36.3μm
MTF	>0.3@63lp/mm
Distortion	<0.053%
FOV for different sensor size	
35film 36x24	125x83.3mm
4/3' 18x13.5	62.5x46.9mm
1' 12.8x9.6	44.4x33.3mm
2kLinear scan2018x14μm	99.6mm
4kLinear scan4096x7μm	99.6mm
6kLinear scan6144x7μm	149.3mm
8kLinear scan8192x3.5μm	99.6mm

XF-MDT058X200-D35



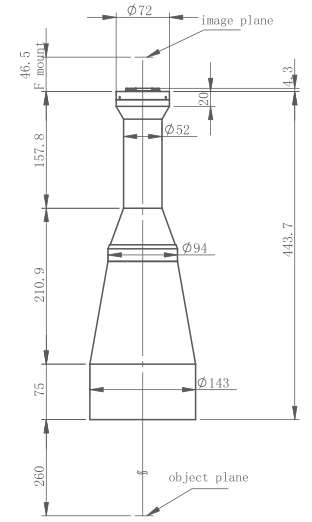
Optical Structure	Object telecentric
Magnification	0.58
Object FOV	Φ74.7mm
Image FOV	Φ43.3mm
WD	200mm±3%
Telecentricity	<0.05°
DOF	4.8mm
Aperture	F16
Resolution	18.3μm
MTF	>0.3@65lp/mm
Distortion	<0.065%
FOV for different sensor size	
35film 36x24	62.1x41.4mm
4/3' 18x13.5	31x23.3mm
1' 12.8x9.6	22.1x16.6mm
2kLinear scan2018x14μm	49.4mm
4kLinear scan4096x7μm	49.4mm
6kLinear scan6144x7μm	74.1mm
8kLinear scan8192x3.5μm	49.4mm

XF-MDT0641X150-D35



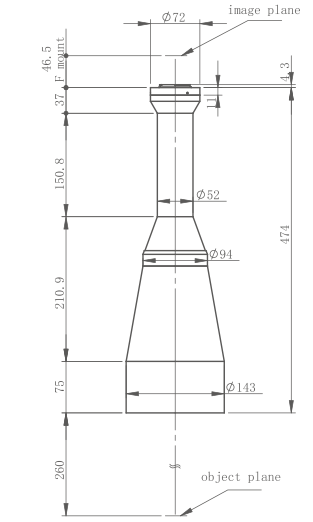
Optical Structure	Object telecentric
Magnification	0.641
Object FOV	Φ67.6mm
Image FOV	Φ43.3mm
WD	150mm±3%
Telecentricity	<0.05°
DOF	4mm
Aperture	F16
Resolution	16.5μm
MTF	>0.3@65lp/mm
Distortion	<0.03%
FOV for different sensor size	
35film 36x24	56.2x37.4mm
4/3' 18x13.5	28.1x21mm
1' 12.8x9.6	20x15mm
2kLinear scan2018x14μm	44.7mm
4kLinear scan4096x7μm	44.7mm
6kLinear scan6144x7μm	67mm
8kLinear scan8192x3.5μm	44.7mm

XF-MDT038X260-D35



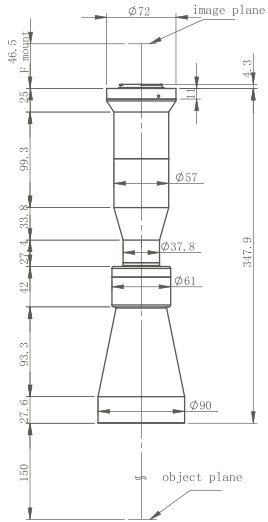
Optical Structure	Object telecentric
Magnification	0.38
Object FOV	Φ114mm
Image FOV	Φ43.3mm
WD	260mm±3%
Telecentricity	<0.05°
DOF	11.6mm
Aperture	F16
Resolution	28μm
MTF	>0.3@63lp/mm
Distortion	<0.05%
FOV for different sensor size	
35film 36x24	94.7x63.2mm
7/4' 22.5x16.9	59.2x44.5mm
4/3' 18x13.5	47.4x35.5mm
1' 12.8x9.6	33.7x25.3mm
2kLinear scan2018x14μm	75.4mm
4kLinear scan4096x7μm	75.4mm
6kLinear scan6144x7μm	113.1mm
8kLinear scan8192x3.5μm	75.4mm

XF-MDT046X260-D35



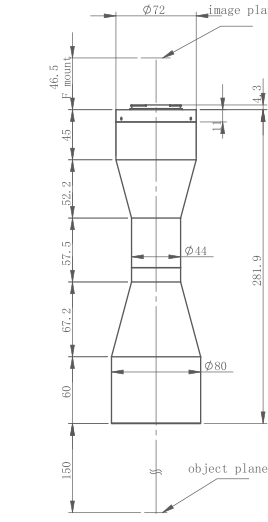
Optical Structure	Object telecentric
Magnification	0.46
Object FOV	Φ94.1mm
Image FOV	Φ43.3mm
WD	260mm±3%
Telecentricity	<0.04°
DOF	8mm
Aperture	F16
Resolution	23μm
MTF	>0.3@60lp/mm
Distortion	<0.04%
FOV for different sensor size	
35film 36x24	78.3x52.2mm
7/4' 22.5x16.9	48.9x36.7mm
4/3' 18x13.5	39.1x29.3mm
1' 12.8x9.6	27.8x20.9mm
2kLinear scan2018x14μm	62.3mm
4kLinear scan4096x7μm	62.3mm
6kLinear scan6144x7μm	93.4mm
8kLinear scan8192x3.5μm	62.3mm

XF-MDT0741X150-D35



Optical Structure	Object telecentric
Magnification	0.741
Object FOV	Φ58.4mm
Image FOV	Φ43.3mm
WD	150mm±3%
Telecentricity	<0.05°
DOF	2.9mm
Aperture	F16
Resolution	14.3μm
MTF	>0.3@65lp/mm
Distortion	<0.052%
FOV for different sensor size	
35film 36x24	48.6x32.4mm
4/3' 18x13.5	24.3x18.2mm
1' 12.8x9.6	17.3x13mm
2kLinear scan2018x14μm	38.69mm
4kLinear scan4096x7μm	38.69mm
6kLinear scan6144x7μm	58mm
8kLinear scan8192x3.5μm	38.69mm

XF-MDT08X150-D35



Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ54.1mm
Image FOV	Φ43.3mm
WD	150mm±3%
Telecentricity	<0.05°
DOF	2.6mm
Aperture	F16
Resolution	13.2μm
MTF	>0.3@63lp/mm
Distortion	<0.045%
FOV for different sensor size	
35film 36x24	45x30mm
4/3' 18x13.5	22.5x16.9mm
1' 12.8x9.6	16x12mm
2kLinear scan2018x14μm	35.83mm
4kLinear scan4096x7μm	35.83mm
6kLinear scan6144x7μm	53.7mm
8kLinear scan8192x3.5μm	35.83mm

BI-TELECENTRIC
LENS FOR
1" SENSOR



Support up to 20 megapixels industry cameras, high mag (2X,3X & 4X) can support 1.1 inch sensor size



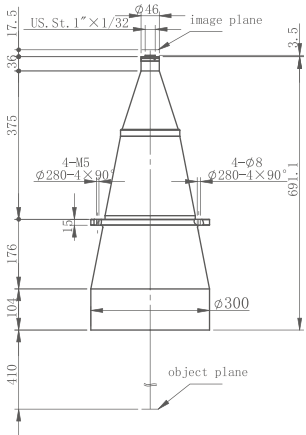
Magnification ranges from 0.06X to 4X.



Default to C mount, F mount can be customized

Model	Type of illumination	Mag	WD (mm)	Telecentricity	Distortion	DOF (mm)	Aperture	MTF30 (LP/mm)	Fov for different Sensor Size (mmxmm)	
									2/3 8.4×7.1	1 12.4×9.8
XF-10MDT006X410-1C-C	non-coaxial	0.06	410	0.066	0.110%	314.8	F12	85	140X118.33	206.67X163.33
XF-10MDT0084X400-1C	non-coaxial	0.084	400	0.066	0.054%	114	F8	125	100X84.52	147.62X116.67
XF-10MDT012X280-1C	non-coaxial	0.12	280	0.061	0.018%	59	F8	130	70X59.17	103.33X81.67
XF-10MDT015X250-1C	non-coaxial	0.15	250	0.061	0.023%	37.8	F8	130	56X47.33	82.67X65.33
XF-10MDT0209X178-1C	non-coaxial	0.209	178	0.065	0.088%	19	F8	130	40.19X33.97	59.33X46.89
XF-10MDT025X200-1C	non-coaxial	0.25	200	0.15	1.250%	14.3	F9	105	33.6X28.4	49.6X39.2
XF-10MDT0275X200-1C	non-coaxial	0.275	200	0.03	0.040%	11	F8	125	30.55X25.82	45.09X35.64
XF-10MDT03X200-1C	non-coaxial	0.3	200	0.1	0.045%	9.2	F8	120	28X23.67	41.33X32.67
XF-10MDT035X110-1C	non-coaxial	0.35	110	0.1	0.084%	6.5	F8	120	24X20.29	35.43X28
XF-10MDT035X110D-1C	coaxial	0.35	110	0.1	0.050%	6.5	F8	120	24X20.29	35.43X28
XF-10MDT0367X200-1C	non-coaxial	0.367	200	0.03	0.040%	6.2	F8	125	22.89X19.35	33.79X26.7
XF-10MDT04X110-1C	non-coaxial	0.4	110	0.1	0.085%	5.2	F8	120	21X17.75	31X24.5
XF-10MDT04X110D-1C	coaxial	0.4	110	0.1	0.080%	5.25	F8	120	21X17.75	31X24.5
XF-10MDT044X110-1C	non-coaxial	0.44	110	0.1	0.020%	4.3	F8	125	19.09X16.14	28.18X22.27
XF-10MDT044X110D-1C	coaxial	0.44	110	0.1	0.018%	4.3	F8	125	19.09X16.14	28.18X22.27
XF-10MDT05X65-1C	non-coaxial	0.5	65	0.07	0.010%	2.54	F6	165	16.8X14.2	24.8X19.6
XF-10MDT05X65D-1C	coaxial	0.5	65	0.07	0.010%	2.54	F6	165	16.8X14.2	24.8X19.6
XF-10MDT05X110-1C	non-coaxial	0.5	110	0.06	0.080%	3.3	F8	125	16.8X14.2	24.8X19.6
XF-10MDT05X110D-1C	coaxial	0.5	110	0.06	0.080%	3.3	F8	125	16.8X14.2	24.8X19.6
XF-10MDT05X220-1C	non-coaxial	0.5	220	0.1	0.095%	3.3	F8	125	16.8X14.2	24.8X19.6
XF-10MDT055X220-1C	non-coaxial	0.55	220	0.1	0.110%	2.7	F8	125	15.27X12.91	22.55X17.82
XF-10MDT06X80-1C	non-coaxial	0.6	80	0.1	0.017%	2.2	F8	125	14X11.83	20.67X16.33
XF-10MDT06X80D-1C	coaxial	0.6	80	0.1	0.062%	2.2	F8	125	14X11.83	20.67X16.33
XF-10MDT074X65-1C	non-coaxial	0.74	65	0.2	0.065%	1.6	F8.5	120	11.35X9.59	16.76X13.24
XF-10MDT074X65D-1C	coaxial	0.74	65	0.28	0.055%	1.6	F8.5	120	11.35X9.59	16.76X13.24
XF-10MDT08X178-1C	non-coaxial	0.8	178	0.15	0.080%	1.6	F10	100	10.5X8.88	15.5X12.25
XF-10MDT08X178D-1C	coaxial	0.8	178	0.15	0.080%	1.6	F10	100	10.5X8.88	15.5X12.25
XF-10MDT1X65-1C	non-coaxial	1	65	0.2	0.008%	0.75	F7	140	8.4X7.1	12.4X9.8
XF-10MDT1X65D-1C	coaxial	1	65	0.2	0.009%	0.75	F7	140	8.4X7.1	12.4X9.8
XF-10MDT1X110-1C	non-coaxial	1	110	0.08	0.08%	1.02	F10	100	8.4X7.1	12.4X9.8
XF-10MDT1X110D-1C	coaxial	1	110	0.08	0.08%	1.02	F10	100	8.4X7.1	12.4X9.8
XF-10MDT1X178-1C	non-coaxial	1	178	0.13	0.060%	1.1	F11.1	91	8.4X7.1	12.4X9.8
XF-10MDT1X178D-1C	coaxial	1	178	0.13	0.060%	1.1	F11.1	91	8.4X7.1	12.4X9.8
XF-10MDT1.5X110-1C	non-coaxial	1.5	110	0.1	0.075%	0.52	F11.5	85	5.6X4.73	8.27X6.53
XF-10MDT1.5X110D-1C	coaxial	1.5	110	0.1	0.075%	0.52	F11.5	85	5.6X4.73	8.27X6.53
XF-10MDT2X65-1C-VI	non-coaxial	2	65	0.2	0.095%	0.18-2.5	F7.1-98.9	135-10.5	4.2X3.55	6.2X4.9
XF-10MDT2X65D-1C-VI	coaxial	2	65	0.2	0.095%	0.18-2.5	F7.1-98.9	135-10.5	4.2X3.55	6.2X4.9
XF-10MDT3X65-1C-VI	non-coaxial	3	65	0.2	0.080%	0.11-1.6	F9.5-147.3	105-7	2.8X2.37	4.13X3.27
XF-10MDT3X65D-1C-VI	coaxial	3	65	0.2	0.080%	0.11-1.6	F9.5-147.3	105-7	2.8X2.37	4.13X3.27
XF-10MDT4X65-1C-VI	non-coaxial	4	65	0.2	0.080%	0.08-1.26	F11.8-194.8	84-5.5	2.1X1.78	3.1X2.45
XF-10MDT4X65D-1C-VI	coaxial	4	65	0.2	0.080%	0.08-1.26	F11.8-194.8	84-5.5	2.1X1.78	3.1X2.45

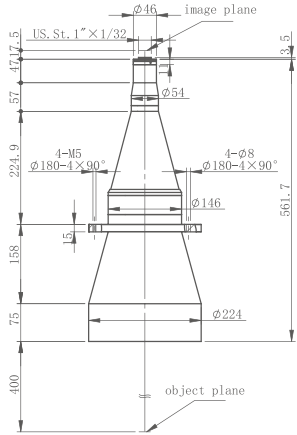
XF-10MDT006X410-1C



Optical Structure	Object telecentric
Magnification	0.06
Object FOV	Φ 267mm
Image FOV	Φ 16mm
WD	410mm±3%
Telecentricity	<0. 066°
DOF	314.8mm
Aperture	F12
Resolution	132 μ m
MTF	>0.3@85lp/mm
Distortion	<0.11%

FOV for different sensor size	
1' 12.8x9.6	213X160mm
2/3' 8.8x9.6	146.7X110mm
1/2' 6.4x4.8	106.7X80mm
1/3' 3.6	80X60mm

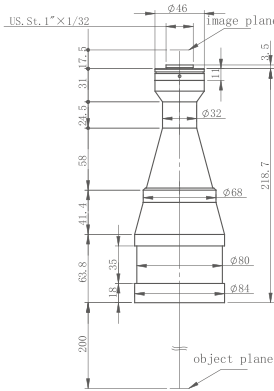
XF-10MDT0084X400-1C



Optical Structure	Object telecentric
Magnification	0.084
Object FOV	Φ194.6mm
Image FOV	Φ16.2mm
WD	400mm±3%
Telecentricity	<0.066°
DOF	114mm
Aperture	F8
Resolution	62.3μm
MTF	>0.3@125lp/mm
Distortion	<0.054%

FOV for different sensor size	
1' 12.8X9.6	152.4×114.3mm
2/3' 8.8X6.6	104.8×78.6mm
1/2' 6.4X4.8	76.2×57.1mm
1/3' 4.8x3.6	57.1×42.9mm

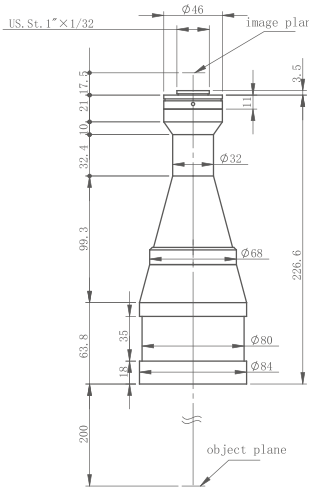
XF-10MDT0275X200-1C



Optical Structure	Object telecentric
Magnification	0.275
Object FOV	Φ58.2mm
Image FOV	Φ16mm
WD	200mm±3%
Telecentricity	<0.03°
DOF	11mm
Aperture	F8
Resolution	19.4μm
MTF	>0.3@125lp/mm
Distortion	<0.04%

FOV for different sensor size	
1' 12.8x9.6	46.5x34.9mm
2/3' 8.8x6.6	32x24mm
1/2' 6.4x4.8	23.3x17.5mm
1/3' 4.8x3.6	17.5x13.1mm

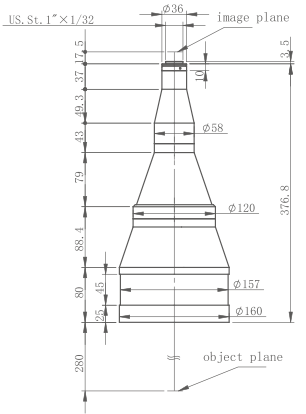
XF-10MDT03X200-1C



Optical Structure	Object telecentric
Magnification	0.3
Object FOV	Φ 53.3mm
Image FOV	Φ 16mm
WD	200mm±3%
Telecentricity	<0.1°
DOF	9.2mm
Aperture	F8
Resolution	17.4μm
MTF	>0.3@120lp/mm
Distortion	<0.045%

FOV for different sensor size	
1' 12.8X9.6	42.7x32mm
2/3' 8.8X6.6	29.3x22mm
1/2' 6.4X4.8	21.3x16mm
1/3' 4.8x3.6	16x12mm

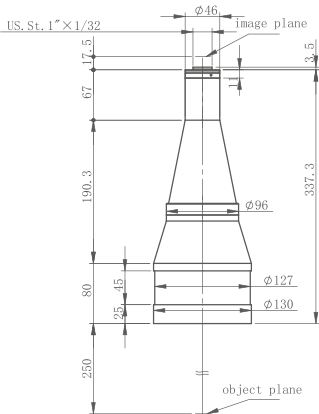
XF-10MDT012X280-1C



Optical Structure	Object telecentric
Magnification	0.12
Object FOV	Φ135mm
Image FOV	Φ16.2mm
WD	280mm±3%
Telecentricity	<0.061°
DOF	59mm
Aperture	F8
Resolution	44μm
MTF	>0.3@130lp/mm
Distortion	<0.018%

FOV for different sensor size	
1' 12.8x9.6	106.7X80mm
2/3' 8.8x9.6	73.3X55mm
1/2' 6.4x4.8	53.3X40mm
1/3' 3.6	40X30mm

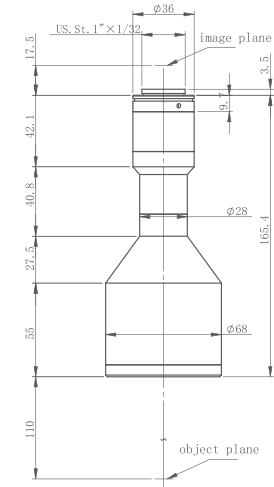
XF-10MDT015X250-1C



Optical Structure	Object telecentric
Magnification	0.15
Object FOV	Φ108mm
Image FOV	Φ16.2mm
WD	250mm±3%
Telecentricity	<0.061°
DOF	37.8mm
Aperture	F8
Resolution	35.11μm
MTF	>0.3@130lp/mm
Distortion	<0.023%

FOV for different sensor size	
1' 12.8x9.6	85.3x64mm
2/3' 8.8x6.6	58.7x44mm
1/2' 6.4x4.8	42.7x32mm
1/3' 4.8x3.6	32x24mm

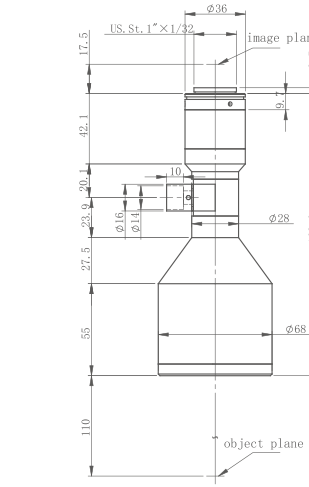
XF-10MDT035X110-1C



Optical Structure	Object telecentric
Magnification	0.35
Object FOV	Φ46.3mm
Image FOV	Φ16.2mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	6.5mm
Aperture	F8
Resolution	15μm
MTF	>0.3@120lp/mm
Distortion	<0.084%

FOV for different sensor size	
1' 12.8x9.6	36.6x27.4mm
2/3' 8.8x6.6	25.1x18.9mm
1/2' 6.4x4.8	18.3x13.7mm
1/3' 4.8x3.6	13.7x10.3mm

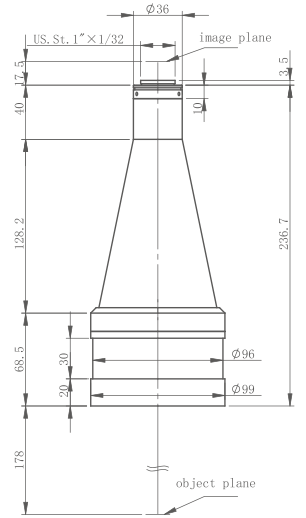
XF-10MDT035X110D-1C



Optical Structure	Object telecentric
Magnification	0.35
Object FOV	Φ46.3mm
Image FOV	Φ16.2mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	6.5mm
Aperture	F8
Resolution	15μm
MTF	>0.3@120lp/mm
Distortion	<0.05%

FOV for different sensor size	
1' 12.8x9.6	36.6x27.4mm
2/3' 8.8x6.6	25.1x18.9mm
1/2' 6.4x4.8	18.3x13.7mm
1/3' 4.8x3.6	13.7x10.3mm

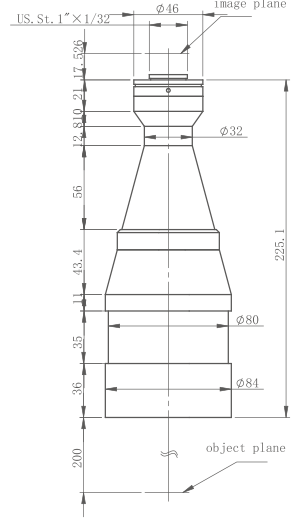
XF-10MDT0209X178-1C



Optical Structure	Object telecentric
Magnification	0.029
Object FOV	Φ77.5mm
Image FOV	Φ16.2mm
WD	178mm±3
Telecentricity	<0.065°
DOF	19mm
Aperture	F8
Resolution	25.2μm
MTF	>0.3@130lp/mm
Distortion	<0.088%

FOV for different sensor size	
1' 12.8x9.6	61.2x45.9
2/3' 8.8x6.6	42.1x31.6mm
1/2' 6.4x4.8	30.6x23mm
1/3' 4.8x3.6	23x17.2mm

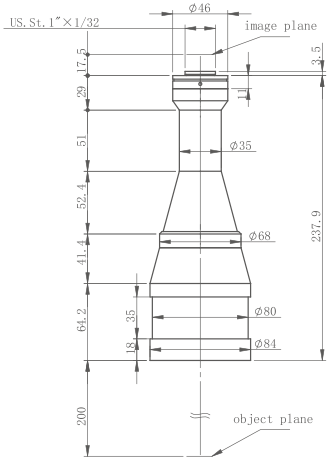
XF-10MDT025X200-1C



Optical Structure	Object telecentric
Magnification	0.25
Object FOV	Φ64mm
Image FOV	Φ16mm
WD	200mm±3%
Telecentricity	<0.15°
DOF	14.3mm
Aperture	F9
Resolution	23.6μ m
MTF	>0.3@105lp/mm
Distortion	<1.25%

FOV for different sensor size	
1' 12.8x9.6	51.2x38.4mm
2/3' 8.8x6.6	35.2x26.4mm
1/2' 6.4x4.8	25.6x19.2mm
1/3' 4.8x3.6	19.2x14.4mm

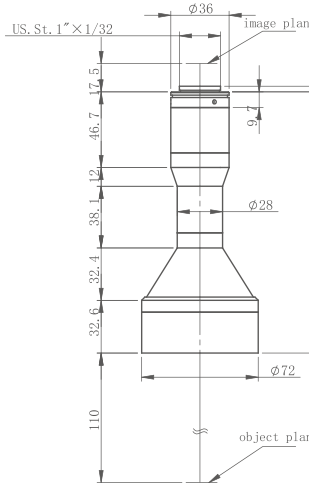
XF-10MDT0367X200-1C



Optical Structure	Object telecentric
Magnification	0.367
Object FOV	Φ 43.6mm
Image FOV	Φ16mm
WD	200mm±3%
Telecentricity	<0.03°
DOF	6.2mm
Aperture	F8
Resolution	13.2μ m
MTF	>0.3@125lp/mm
Distortion	<0.04%

FOV for different sensor size	
1' 12.8x9.6	34.9x26.2mm
2/3' 8.8x6.6	24x18mm
1/2' 6.4x4.8	17.4x13.1mm
1/3' 4.8x3.6	13.1x9.8mm

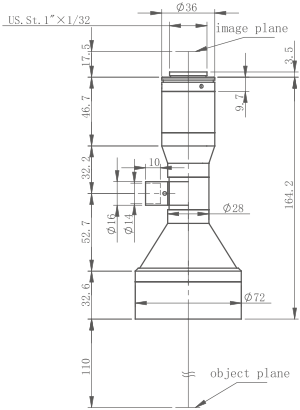
XF-10MDT04X110-1C



Optical Structure	Object telecentric
Magnification	0.4
Object FOV	Φ40.5mm
Image FOV	Φ16.2mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	5.2mm
Aperture	F8
Resolution	13.2μm
MTF	>0.3@120lp/mm
Distortion	<0.085%

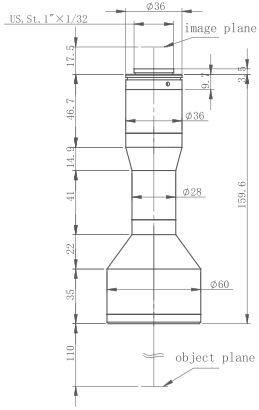
FOV for different sensor size	
1' 12.8x9.6	32x24mm
2/3' 8.8x6.6	22x16.5mm
1/2' 6.4x4.8	16x12mm
1/3' 4.8x3.6	12x9mm

XF-10MDT04X110D-1C



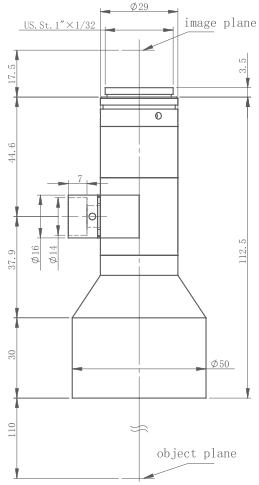
Optical Structure	Object telecentric
Magnification	0.4
Object FOV	Φ 40.5mm
Image FOV	Φ 16.2mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	5.25mm
Aperture	F8
Resolution	13.2μ m
MTF	>0.3@120lp/mm
Distortion	<0.08%
FOV for different sensor size	
1' 12.8×9.6	32×24mm
2/3' 8.8×6.6	22×16.5mm
1/2' 6.4×4.8	16×12mm
1/3' 4.8×3.6	12×9mm

XF-10MDT044X110-1C



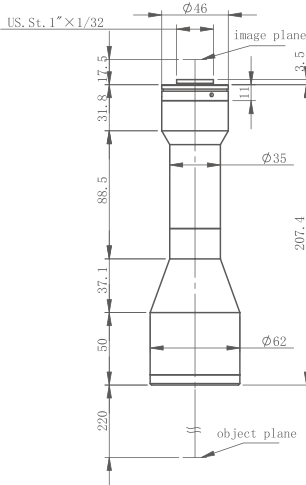
Optical Structure	Bi-telecentric
Magnification	0.44
Object FOV	Φ36.8mm
Image FOV	Φ16.2mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	4.3mm
Aperture	F8
Resolution	12μm
MTF	>0.3@125lp/mm
Distortion	<0.02%
FOV for different sensor size	
1' 12.8×9.6	29.1×21.8mm
2/3' 8.8×6.6	20×15mm
1/2' 6.4×4.8	14.5×10.9mm
1/3' 4.8×3.6	10.9×8.2mm

XF-10MDT05X110D-1C



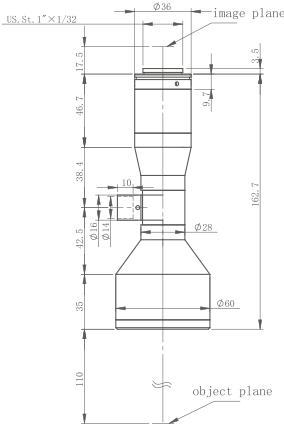
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ32mm
Image FOV	Φ16mm
WD	110mm±3%
Telecentricity	<0.06°
DOF	3.3mm
Aperture	F8
Resolution	10.6μm
MTF	>0.3@125lp/mm
Distortion	<0.08%
FOV for different sensor size	
1' 12.8×9.6	25.6×19.2mm
2/3' 8.8×6.6	17.6×13.2mm
1/2' 6.4×4.8	12.8×9.6mm
1/3' 4.8×3.6	9.6×7.2mm

XF-10MDT05X220-1C



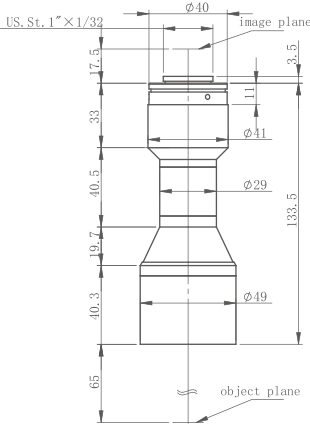
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ32mm
Image FOV	Φ16mm
WD	220mm±3%
Telecentricity	<0.1°
DOF	3.3mm
Aperture	F8
Resolution	10.6μm
MTF	>0.3@125lp/mm
Distortion	<0.095%
FOV for different sensor size	
1' 12.8×9.6	25.6×19.2mm
2/3' 8.8×6.6	17.6×13.2mm
1/2' 6.4×4.8	12.8×9.6mm
1/3' 4.8×3.6	9.6×7.2mm

XF-10MDT044X110D-1C



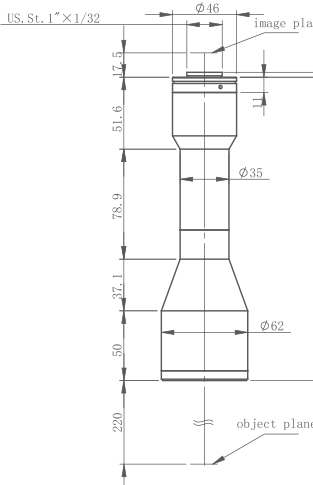
Optical Structure	Bi-telecentric
Magnification	0.44
Object FOV	Φ 36.8mm
Image FOV	Φ 16.2mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	4.3mm
Aperture	F8
Resolution	12μm
MTF	>0.3@125lp/mm
Distortion	<0.018%
FOV for different sensor size	
1' 12.8×9.6	29.1×21.8mm
2/3' 8.8×6.6	20×15mm
1/2' 6.4×4.8	14.5×10.9mm
1/3' 4.8×3.6	10.9×8.2mm

XF-10MDT05X65-1C



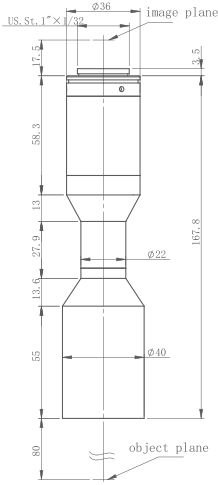
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ32mm
Image FOV	Φ16mm
WD	65mm±3%
Telecentricity	<0.07°
DOF	2.54mm
Aperture	F6
Resolution	7.95μm
MTF	>0.3@165lp/mm
Distortion	<0.01%
FOV for different sensor size	
1' 12.8×9.6	25.6×19.2mm
2/3' 8.8×6.6	17.6×13.2mm
1/2' 6.4×4.8	12.8×9.6mm
1/3' 4.8×3.6	9.6×7.2mm

XF-10MDT055X220-1C



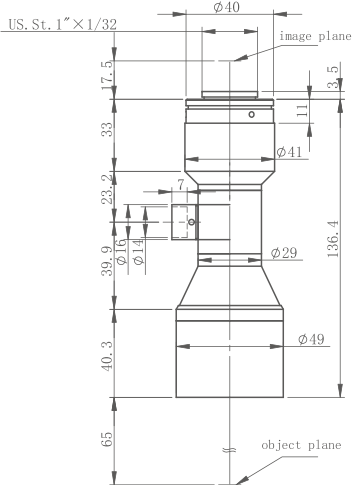
Optical Structure	Object telecentric
Magnification	0.55
Object FOV	Φ29.1mm
Image FOV	Φ16mm
WD	220mm±3%
Telecentricity	<0.1°
DOF	2.7mm
Aperture	F8
Resolution	9.7μm
MTF	>0.3@125lp/mm
Distortion	<0.11%
FOV for different sensor size	
1' 12.8×9.6	23.3×17.5mm
2/3' 8.8×6.6	16×12mm
1/2' 6.4×4.8	11.6×8.7mm
1/3' 4.8×3.6	8.7×6.5mm

XF-10MDT06X80-1C



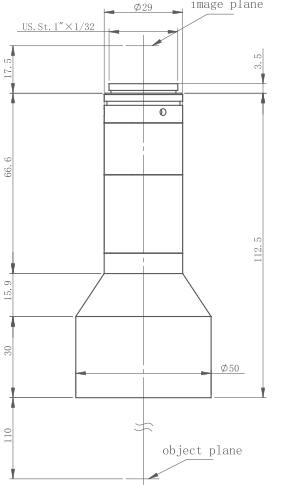
Optical Structure	Object telecentric
Magnification	0.6
Object FOV	Φ27mm
Image FOV	Φ16.2mm
WD	80mm±3%
Telecentricity	<0.1°
DOF	2.2mm
Aperture	F8
Resolution	8.9μm
MTF	>0.3@125lp/mm
Distortion	<0.017%
FOV for different sensor size	
1' 12.8×9.6	21.3×16mm
2/3' 8.8×6.6	14.7×11mm
1/2' 6.4×4.8	10.7×8mm
1/3' 4.8×3.6	8×6mm

XF-10MDT05X65D-1C



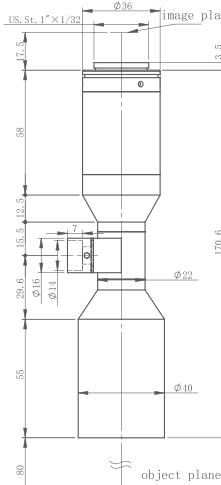
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ32mm
Image FOV	Φ16mm
WD	65mm±3%
Telecentricity	<0.07°
DOF	2.54mm
Aperture	F6
Resolution	7.95μm
MTF	>0.3@165lp/mm
Distortion	<0.01%
FOV for different sensor size	
1' 12.8×9.6	25.6×19.2mm
2/3' 8.8×6.6	17.6×13.2mm
1/2' 6.4×4.8	12.8×9.6mm
1/3' 4.8×3.6	9.6×7.2mm

XF-10MDT05X110-1C



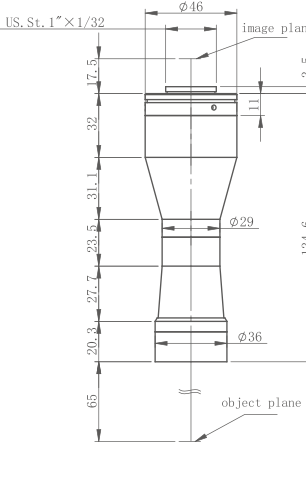
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ32mm
Image FOV	Φ16mm
WD	110mm±3%
Telecentricity	<0.06°
DOF	3.3mm
Aperture	F8
Resolution	10.6μm
MTF	>0.3@125lp/mm
Distortion	<0.08%
FOV for different sensor size	
1' 12.8×9.6	25.6×19.2mm
2/3' 8.8×6.6	17.6×13.2mm
1/2' 6.4×4.8	12.8×9.6mm
1/3' 4.8×3.6	9.6×7.2mm

XF-10MDT06X80D-1C



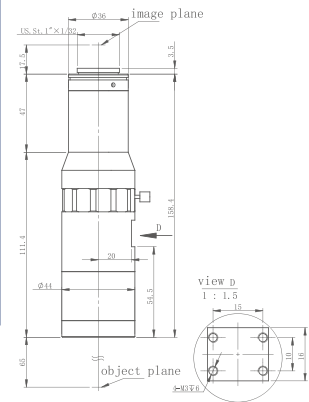
Optical Structure	Object telecentric
Magnification	0.6
Object FOV	Φ27mm
Image FOV	Φ16.2mm
WD	80mm±3%
Telecentricity	<0.1°
DOF	2.2mm
Aperture	F8
Resolution	8.9μm
MTF	>0.3@125lp/mm
Distortion	<0.062%
FOV for different sensor size	
1' 12.8×9.6	21.3×16mm
2/3' 8.8×6.6	14.7×11mm
1/2' 6.4×4.8	10.7×8mm
1/3' 4.8×3.6	8×6mm

XF-10MDT074X65-1C



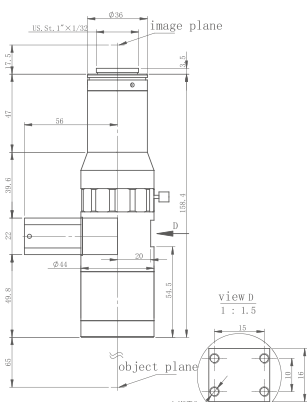
Optical Structure	Bi-telecentric
Magnification	0.74
Object FOV	Φ21.9mm
Image FOV	Φ16.2mm
WD	65mm±3%
Telecentricity	<0.2°
DOF	1.6mm
Aperture	F8.5
Resolution	7.6μm
MTF	>0.3@120lp/mm
Distortion	<0.065%
FOV for different sensor size	
1' 12.8×9.6	17.3×13mm
2/3' 8.8×6.6	11.9×8.9mm
1/2' 6.4×4.8	8.6×6.5mm
1/3' 4.8×3.6	6.5×4.9mm

XF-10MDT3X65-1C-VI



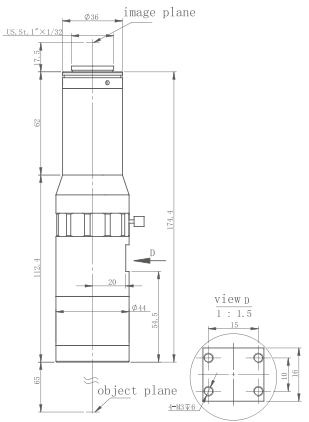
Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ5.4mm
Image FOV	Φ16.2mm
WD	65mm±3%
Telecentricity	<0.2°
DOF	0.11-1.6mm
Aperture	F9.5-147.3
Resolution	2.1-33.4μm
MTF	>0.3@105-7lp/mm
Distortion	<0.08%
FOV for different sensor size	
1" 12.8x9.6	4.3×3.2mm
2/3" 8.8x6.6	2.9×2.2mm
1/2" 6.4x4.8	2.1×1.6mm
1/3" 4.8x3.6	1.6×1.2mm

XF-10MDT3X65D-1C-VI



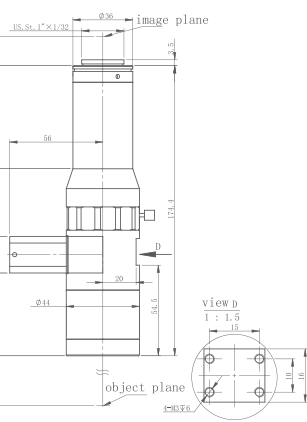
Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ5.4mm
Image FOV	Φ16.2mm
WD	65mm±3%
Telecentricity	<0.2°
DOF	0.11-1.6mm
Aperture	F9.5-147.3
Resolution	2.1-33.4μm
MTF	>0.3@105-7lp/mm
Distortion	<0.08%
FOV for different sensor size	
1" 12.8x9.6	4.3×3.2mm
2/3" 8.8x6.6	2.9×2.2mm
1/2" 6.4x4.8	2.1×1.6mm
1/3" 4.8x3.6	1.6×1.2mm

XF-10MDT4X65-1C-VI



Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ4.1mm
Image FOV	Φ16.2mm
WD	65mm±3%
Telecentricity	<0.2°
DOF	0.08-1.26mm
Aperture	F11.8-194.8
Resolution	1.98-32.35μm
MTF	>0.3@84-5.5lp/mm
Distortion	<0.08%
FOV for different sensor size	
1" 12.8x9.6	3.2×2.4mm
2/3" 8.8x6.6	2.2×1.7mm
1/2" 6.4x4.8	1.6×1.2mm
1/3" 4.8x3.6	1.2×0.9mm

XF-10MDT4X65D-1C-VI



Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ4.1mm
Image FOV	Φ16.2mm
WD	65mm±3%
Telecentricity	<0.2°
DOF	0.08-1.26mm
Aperture	F11.8-194.8
Resolution	1.98-32.35μm
MTF	>0.3@84-5.5lp/mm
Distortion	<0.08%
FOV for different sensor size	
1" 12.8x9.6	3.2×2.4mm
2/3" 8.8x6.6	2.2×1.7mm
1/2" 6.4x4.8	1.6×1.2mm
1/3" 4.8x3.6	1.2×0.9mm

LARGE FOV BI-TELECENTRIC LENS FOR 2/3 " SENSOR



Wide FOV range from 16.8mm to 298mm.



Support up to 5 megapixels , 2/3 inch industry cameras

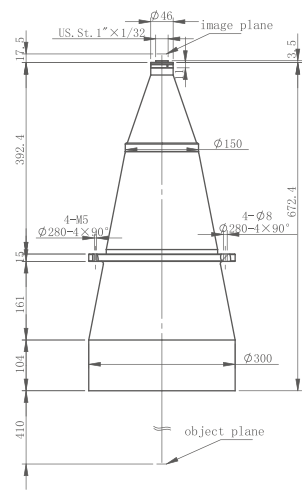


Aperature can be adjusted smaller to increase DOF value as request

Model	Type of illumination	Mag	WD (mm)	Telecentricity	Distortion	DOF (mm)	Aperture	MTF30 (LP/mm)	Mount	Fov for different Sensor Size (mmxmm)			
										1/3" 4.8×3.6	1/2" 6.5×4.9	1/1.8" 7.2×5.4	2/3" 8.4×7.1
XF-5MDT0041X410	non-coaxial	0.041	410	0.064	0.100%	450	F8	125	C	117.07X87.8	158.54X119.51	175.61X131.71	204.88X173.17
XF-5MDT0057X400	non-coaxial	0.057	400	0.066	0.070%	236	F8	135	C	84.21X63.16	114.04X85.96	126.32X94.74	147.37X124.56
XF-5MDT008X280	non-coaxial	0.08	280	0.055	0.016%	130	F8	130	C	60X45	81.25X61.25	90X67.5	105X88.75
XF-5MDT009X280	non-coaxial	0.09	280	0.035	0.040%	102	F8	130	C	53.33X40	72.22X54.44	80X60	93.33X78.89
XF-5MDT01X250	non-coaxial	0.1	250	0.035	0.050%	85	F8	130	C	48X36	65X49	72X54	84X71
XF-5MDT012X250	non-coaxial	0.12	250	0.036	0.040%	58	F8	130	C	40X30	54.17X40.83	60X45	70X59.17
XF-5MDT014X178	non-coaxial	0.14	178	0.031	0.060%	43.2	F8	130	C	34.29X25.71	46.43X35	51.43X38.57	60X50.71
XF-5MDT016X178	non-coaxial	0.16	178	0.029	0.060%	33	F8	130	C	30X22.5	40.63X30.63	45X33.75	52.5X44.38
XF-5MDT018X110	non-coaxial	0.18	110	0.64	0.070%	18	F6	165	C	26.67X20	36.11X27.22	40X30	46.67X39.44
XF-5MDT018X178	non-coaxial	0.18	178	0.031	0.055%	26	F8	130	C	26.67X20	36.11X27.22	40X30	46.67X39.44
XF-5MDT02X150	non-coaxial	0.2	150	0.039	0.030%	21	F8	125	C	24X18	32.5X24.5	36X27	42X35.5
XF-5MDT022X150	non-coaxial	0.22	150	0.032	0.030%	17.4	F8	130	C	21.82X16.36	29.55X22.27	32.73X24.55	38.18X32.27
XF-5MDT024X150	non-coaxial	0.24	150	0.031	0.030%	14.6	F8	125	C	20X15	27.08X20.42	30X22.5	35X29.58
XF-5MDT03X65	non-coaxial	0.3	65	0.044	0.043%	8.8	F7.5	135	C	16X12	21.67X16.33	24X18	28X23.67
XF-5MDT03X65D	coaxial	0.3	65	0.07	0.050%	8.8	F7.5	135	C	16X12	21.67X16.33	24X18	28X23.67
XF-5MDT03X110B	non-coaxial	0.3	110	0.1	0.025%	8.2	F7.5	135	C	16X12	21.67X16.33	24X18	28X23.67
XF-5MDT03X110BD	coaxial	0.3	110	0.1	0.065%	8.7	F7.5	135	C	16X12	21.67X16.33	24X18	28X23.67
XF-5MDT04X110B	non-coaxial	0.4	110	0.1	0.020%	5.2	F8	135	C	12X9	16.25X12.25	18X13.5	21X17.75
XF-5MDT04X110BD	coaxial	0.4	110	0.09	0.011%	5.2	F8	135	C	12X9	16.25X12.25	18X13.5	21X17.75
XF-5MDT05X65	non-coaxial	0.5	65	0.25	0.001%	2.54	F6	170	C	9.6X7.2	13X9.8	14.4X10.8	16.8X14.2
XF-5MDT05X65D	coaxial	0.5	65	0.25	0.010%	2.54	F6	170	C	9.6X7.2	13X9.8	14.4X10.8	16.8X14.2
XF-5MDT05X178	non-coaxial	0.5	178	0.11	0.045%	2.9	F7	145	C	9.6X7.2	13X9.8	14.4X10.8	16.8X14.2
XF-5MDT05X178D	coaxial	0.5	178	0.11	0.045%	2.9	F7	145	C	9.6X7.2	13X9.8	14.4X10.8	16.8X14.2

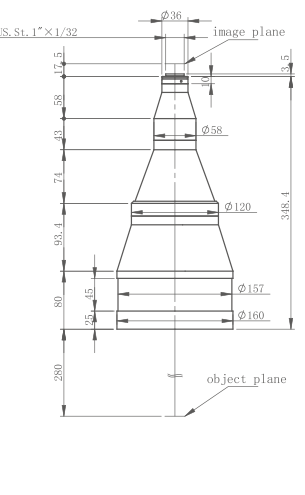
The DOF value is calculated when the dispersive spot radius is less than 20um. DOF value under specific resolution or contrast can be offered as request.

XF-5MDT0041X410



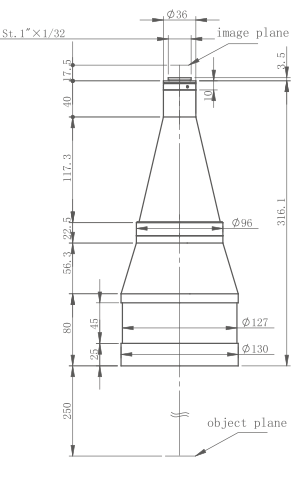
Optical Structure	Bi-telecentric
Magnification	0.041
Object FOV	Φ268.3mm
Image FOV	Φ11mm
WD	410mm±3%
Telecentricity	<0.064°
DOF	450mm
Aperture	F8
Resolution	126.9μm
MTF	>0.3@125lp/mm
Distortion	<0.1%
FOV for different sensor size	
2/3' 8.8x6.6	214.6×161mm
1/2' 6.4x4.8	156.1×117.1mm
1/3' 4.8x3.6	117.1×87.8mm

XF-5MDT008X280



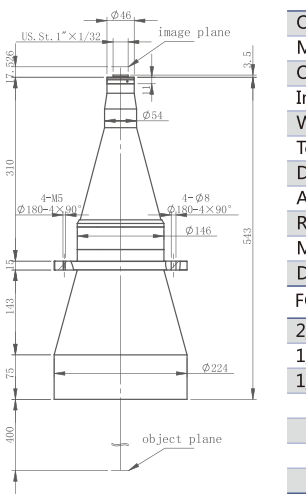
Optical Structure	Bi-telecentric
Magnification	0.08
Object FOV	Φ137.5mm
Image FOV	Φ11mm
WD	280mm±3%
Telecentricity	<0.055°
DOF	130mm
Aperture	F8
Resolution	66μm
MTF	>0.3@130lp/mm
Distortion	<0.016%
FOV for different sensor size	
2/3' 8.8x6.6	110×82.5mm
1/2' 6.4x4.8	80×60mm
1/3' 4.8x3.6	60×45mm

XF-5MDT01X250



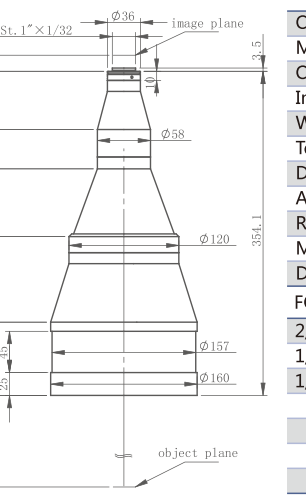
Optical Structure	Bi-telecentric
Magnification	0.1
Object FOV	Φ110mm
Image FOV	Φ11mm
WD	250mm±3%
Telecentricity	<0.035°
DOF	85mm
Aperture	F8
Resolution	52.8μm
MTF	>0.3@130lp/mm
Distortion	<0.05%
FOV for different sensor size	
2/3' 8.8x6.6	88×66mm
1/2' 6.4x4.8	64×48mm
1/3' 4.8x3.6	48×36mm

XF-5MDT0057X400



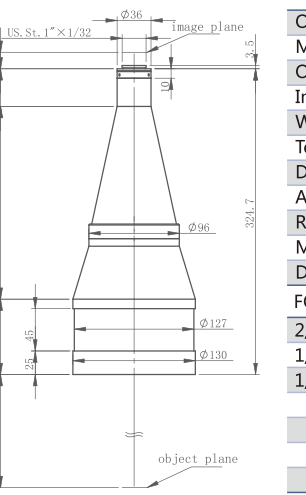
Optical Structure	Bi-telecentric
Magnification	0.057
Object FOV	Φ193mm
Image FOV	Φ11mm
WD	400mm±3%
Telecentricity	<0.066°
DOF	236mm
Aperture	F8
Resolution	92.4μm
MTF	>0.3@135lp/mm
Distortion	<0.07%
FOV for different sensor size	
2/3' 8.8x6.6	154.4×115.8mm
1/2' 6.4x4.8	112.3×84.2mm
1/3' 4.8x3.6	84.2×63.2mm

XF-5MDT009X280



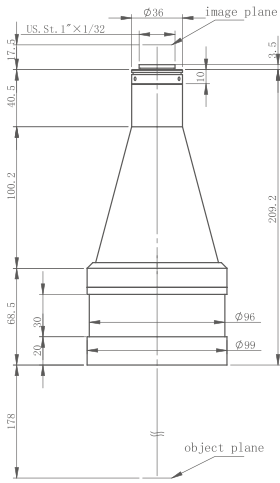
Optical Structure	Bi-telecentric
Magnification	0.09
Object FOV	Φ122.2mm
Image FOV	Φ11mm
WD	280mm±3%
Telecentricity	<0.035°
DOF	102mm
Aperture	F8
Resolution	58.9μm
MTF	>0.3@130lp/mm
Distortion	<0.04%
FOV for different sensor size	
2/3' 8.8x6.6	97.8×73.3mm
1/2' 6.4x4.8	71.1×53.3mm
1/3' 4.8x3.6	53.3×40mm

XF-5MDT012X250



Optical Structure	Object telecentric
Magnification	0.12
Object FOV	Φ91.7mm
Image FOV	Φ11mm
WD	250mm±3%
Telecentricity	<0.036°
DOF	58mm
Aperture	F8
Resolution	43.7μm
MTF	>0.3@130lp/mm
Distortion	<0.04%
FOV for different sensor size	
2/3' 8.8x6.6	73.3×55mm
1/2' 6.4x4.8	53.3×40mm
1/3' 4.8x3.6	40×30mm

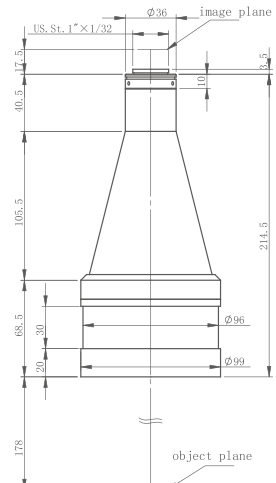
XF-5MDT014X178



Optical Structure	Object telecentric
Magnification	0.14
Object FOV	$\Phi 78.6\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$178\text{mm}\pm 3\%$
Telecentricity	$<0.031^\circ$
DOF	43.2mm
Aperture	F8
Resolution	$37.9\mu\text{m}$
MTF	$>0.3@130\text{lp/mm}$
Distortion	$<0.06\%$

FOV for different sensor size	
2/3' 8.8x6.6	$62.9\times 47.1\text{mm}$
1/2' 6.4x4.8	$45.7\times 34.3\text{mm}$
1/3' 4.8x3.6	$34.3\times 25.7\text{mm}$

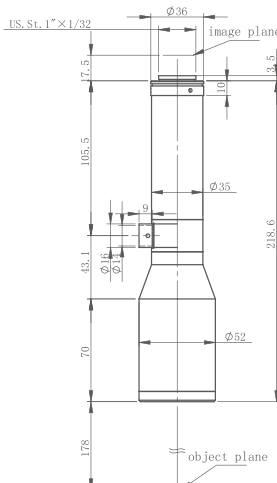
XF-5MDT016X178



Optical Structure	Object telecentric
Magnification	0.16
Object FOV	$\Phi 68.8\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$178\text{mm}\pm 3\%$
Telecentricity	$<0.029^\circ$
DOF	33mm
Aperture	F8
Resolution	$33\mu\text{m}$
MTF	$>0.3@130\text{lp/mm}$
Distortion	$<0.06\%$

FOV for different sensor size	
2/3' 8.8x6.6	$55\times 41.3\text{mm}$
1/2' 6.4x4.8	$40\times 30\text{mm}$
1/3' 4.8x3.6	$30\times 22.5\text{mm}$

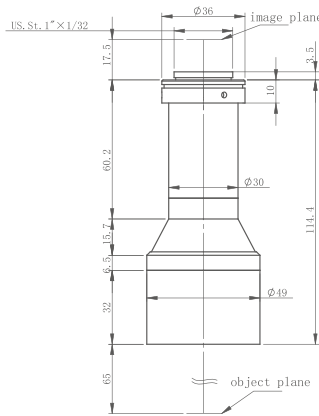
XF-5MDT05X178D



Optical Structure	Object telecentric
Magnification	0.5
Object FOV	$\Phi 22\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$178\text{mm}\pm 3\%$
Telecentricity	$<0.11^\circ$
DOF	2.9mm
Aperture	F7
Resolution	$9.2\mu\text{m}$
MTF	$>0.3@145\text{lp/mm}$
Distortion	$<0.045\%$

FOV for different sensor size	
2/3' 8.8x6.6	$17.6\times 13.2\text{mm}$
1/2' 6.4x4.8	$12.8\times 9.6\text{mm}$
1/3' 4.8x3.6	$9.6\times 7.2\text{mm}$

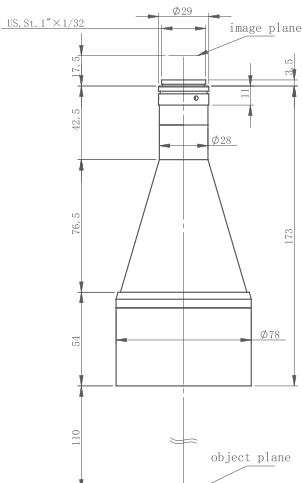
XF-5MDT03X65



Optical Structure	Object telecentric
Magnification	0.3
Object FOV	$\Phi 36.7\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$65\text{mm}\pm 3\%$
Telecentricity	$<0.044^\circ$
DOF	8.8mm
Aperture	F7.5
Resolution	$16.5\mu\text{m}$
MTF	$>0.3@135\text{lp/mm}$
Distortion	$<0.043\%$

FOV for different sensor size	
2/3' 8.8x6.6	$29.3\times 22\text{mm}$
1/2' 6.4x4.8	$21.3\times 16\text{mm}$
1/3' 4.8x3.6	$16\times 12\text{mm}$

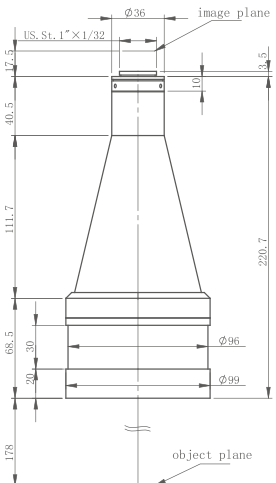
XF-5MDT018X110



Optical Structure	Object telecentric
Magnification	0.18
Object FOV	$\Phi 61.1\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$110\text{mm}\pm 3\%$
Telecentricity	$<0.64^\circ$
DOF	18mm
Aperture	F6
Resolution	$22\mu\text{m}$
MTF	$>0.3@165\text{lp/mm}$
Distortion	$<0.07\%$

FOV for different sensor size	
2/3' 8.8x6.6	$48.9\times 36.7\text{mm}$
1/2' 6.4x4.8	$35.6\times 26.7\text{mm}$
1/3' 4.8x3.6	$26.7\times 20\text{mm}$

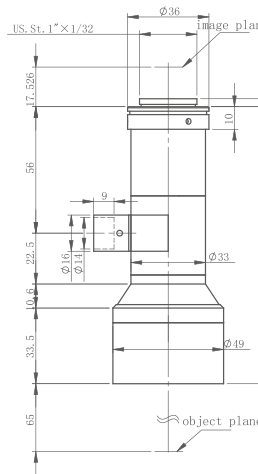
XF-5MDT018X178



Optical Structure	Object telecentric
Magnification	0.18
Object FOV	$\Phi 61.1\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$178\text{mm}\pm 3\%$
Telecentricity	$<0.031^\circ$
DOF	26mm
Aperture	F8
Resolution	$30\mu\text{m}$
MTF	$>0.3@130\text{lp/mm}$
Distortion	$<0.055\%$

FOV for different sensor size	
2/3' 8.8x6.6	$48.9\times 36.7\text{mm}$
1/2' 6.4x4.8	$35.6\times 26.7\text{mm}$
1/3' 4.8x3.6	$26.7\times 20\text{mm}$

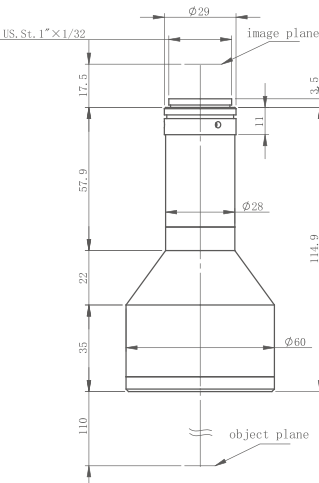
XF-5MDT03X65D



Optical Structure	Object telecentric
Magnification	0.3
Object FOV	$\Phi 36.7\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$65\text{mm}\pm 3\%$
Telecentricity	$<0.07^\circ$
DOF	8.8mm
Aperture	F7.5
Resolution	$16.5\mu\text{m}$
MTF	$>0.3@135\text{lp/mm}$
Distortion	$<0.05\%$

FOV for different sensor size	
2/3' 8.8x6.6	$29.3\times 22\text{mm}$
1/2' 6.4x4.8	$21.3\times 16\text{mm}$
1/3' 4.8x3.6	$16\times 12\text{mm}$

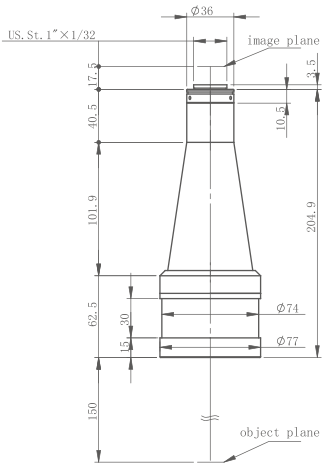
XF-5MDT03X110B



Optical Structure	Object telecentric
Magnification	0.3
Object FOV	$\Phi 36.7\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$110\text{mm}\pm 3\%$
Telecentricity	$<0.1^\circ$
DOF	8.2mm
Aperture	F7.5
Resolution	$16.4\mu\text{m}$
MTF	$>0.3@135\text{lp/mm}$
Distortion	$<0.025\%$

FOV for different sensor size	
2/3' 8.8x6.6	$29.3\times 22\text{mm}$
1/2' 6.4x4.8	$21.3\times 16\text{mm}$
1/3' 4.8x3.6	$16\times 12\text{mm}$

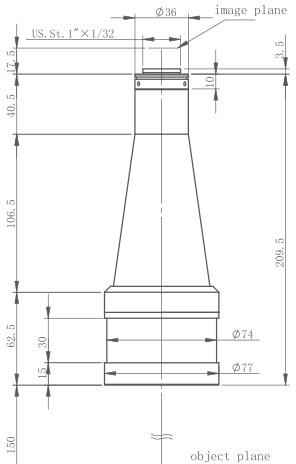
XF-5MDT02X150



Optical Structure	Object telecentric
Magnification	0.2
Object FOV	$\Phi 55\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$150\text{mm}\pm 3\%$
Telecentricity	$<0.039^\circ$
DOF	21mm
Aperture	F8
Resolution	$26.4\mu\text{m}$
MTF	$>0.3@125\text{lp/mm}$
Distortion	$<0.03\%$

FOV for different sensor size	
2/3' 8.8x6.6	$44\times 33\text{mm}$
1/2' 6.4x4.8	$32\times 24\text{mm}$
1/3' 4.8x3.6	$24\times 18\text{mm}$

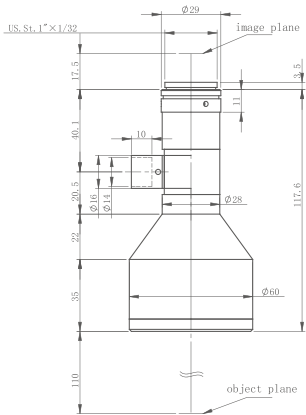
XF-5MDT022X150



Optical Structure	Object telecentric
Magnification	0.22
Object FOV	$\Phi 50\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$150\text{mm}\pm 3\%$
Telecentricity	$<0.032^\circ$
DOF	17.4mm
Aperture	F8
Resolution	$24.1\mu\text{m}$
MTF	$>0.3@130\text{lp/mm}$
Distortion	$<0.03\%$

FOV for different sensor size	
2/3' 8.8x6.6	$40\times 30\text{mm}$
1/2' 6.4x4.8	$29.1\times 21.8\text{mm}$
1/3' 4.8x3.6	$21.8\times 16.4\text{mm}$

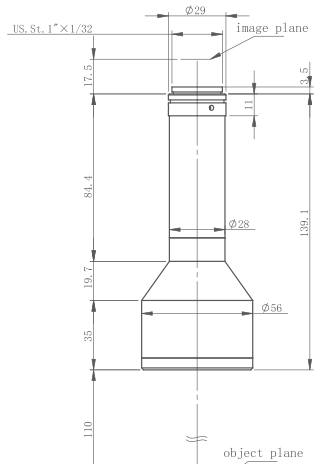
XF-5MDT03X110BD



Optical Structure	Object telecentric
Magnification	0.3
Object FOV	$\Phi 36.7\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$110\text{mm}\pm 3\%$
Telecentricity	$<0.1^\circ$
DOF	8.7mm
Aperture	F7.5
Resolution	$16.4\mu\text{m}$
MTF	$>0.3@135\text{lp/mm}$
Distortion	$<0.065\%$

FOV for different sensor size	
2/3' 8.8x6.6	$29.3\times 22\text{mm}$
1/2' 6.4x4.8	$21.3\times 16\text{mm}$
1/3' 4.8x3.6	$16\times 12\text{mm}$

XF-5MDT04X110B



Optical Structure	Object telecentric
Magnification	0.4
Object FOV	$\Phi 27.5\text{mm}$
Image FOV	$\Phi 11\text{mm}$
WD	$110\text{mm}\pm 3\%$
Telecentricity	$<0.1^\circ$
DOF	5.2mm
Aperture	F8
Resolution	$13.2\mu\text{m}$
MTF	$>0.3@135\text{lp/mm}$
Distortion	$<0.02\%$

FOV for different sensor size	
2/3' 8.8x6.6	$22\times 16.5\text{mm}$
1/2' 6.4x4.8	$16\times 12\text{mm}$
1/3' 4.8x3.6	$12\times 9\text{mm}$

XF-5MDT04X110BD

Optical Structure	Bi-telecentric
Magnification	0.4
Object FOV	Φ27.5mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.09°
DOF	5.2mm
Aperture	F8
Resolution	13.2μm
MTF	>0.3@135lp/mm
Distortion	<0.011%
FOV for different sensor size	
2/3' 8.8x6.6	22×16.5mm
1/2' 6.4x4.8	16×12mm
1/3' 4.8x3.6	12×9mm

XF-5MDT05X65

Optical Structure	Bi-telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.25°
DOF	2.54mm
Aperture	F6
Resolution	8.04μm
MTF	>0.3@170lp/mm
Distortion	<0.001%
FOV for different sensor size	
2/3' 8.8x6.6	17.6×13.2mm
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-5MDT05X65D

Optical Structure	Bi-telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.25°
DOF	2.54mm
Aperture	F6
Resolution	8μm
MTF	>0.3@170lp/mm
Distortion	<0.01%
FOV for different sensor size	
2/3' 8.8x6.6	17.6×13.2mm
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-5MDT05X178

Optical Structure	Bi-telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	178mm±3%
Telecentricity	<0.11°
DOF	2.9mm
Aperture	F7
Resolution	9.2μm
MTF	>0.3@145lp/mm
Distortion	<0.045%
FOV for different sensor size	
2/3' 8.8x6.6	17.6×13.2mm
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

HIGH RESOLUTION
TELECENTRIC
LENS(65MM)



Object telecentric design



Support 1 mega pixels industry
cameras, sensor size up to 2/3'

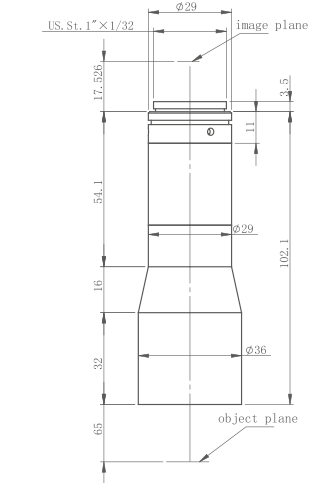


C mount

Model	Type of illumination	Mag	WD(mm)	Telecentricity	Distortion	DOF (mm)	Optical Resolution (μ m)	Mount	Fov for different Sensor Size (mmxmm)		
									1/3" 4.8×3.6	1/2" 6.5×4.9	2/3" 8.4×7.1
XF-MT05X65	non-coaxial	0.5	65	0.26	0.010%	6.4	14.35	C	9.6X7.2	13X9.8	16.8X14.2
XF-MT05X65D	coaxial	0.5	65	0.26	0.010%	6.4	14.35	C	9.6X7.2	13X9.8	16.8X14.2
XF-MT08X65	non-coaxial	0.8	65	0.1	0.090%	1.7	8.25	C	6X4.5	8.13X6.13	10.5X8.88
XF-MT08X65D	coaxial	0.8	65	0.1	0.090%	1.7	8.25	C	6X4.5	8.13X6.13	10.5X8.88
XF-MT1X65	non-coaxial	1	65	0.1	0.040%	1.2	7.33	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1X65D	coaxial	1	65	0.1	0.040%	1.2	7.33	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1.5X65	non-coaxial	1.5	65	0.15	0.099%	0.51	5.2	C	3.2X2.4	4.33X2.27	5.6X4.73
XF-MT1.5X65D	coaxial	1.5	65	0.15	0.099%	0.51	5.2	C	3.2X2.4	4.33X2.27	5.6X4.73
XF-MT2X65	non-coaxial	2.14	65	0.11	0.039%	0.34	4.5	C	2.24X1.68	3.04X2.29	3.93X3.32
XF-MT2X65D	coaxial	2.14	65	0.11	0.039%	0.34	4.5	C	2.24X1.68	3.04X2.29	3.93X3.32
XF-MT3X65	non-coaxial	3	65	0.15	0.038%	0.18	3.5	C	1.6X1.2	2.17X1.63	2.8X2.37
XF-MT3X65D	coaxial	3	65	0.15	0.038%	0.18	3.5	C	1.6X1.2	2.17X1.63	2.8X2.37
XF-MT4X65	non-coaxial	4	65	0.11	0.064%	0.1	3	C	1.2X0.9	1.63X1.23	2.1X1.78
XF-MT4X65D	coaxial	4	65	0.11	0.064%	0.1	3	C	1.2X0.9	1.63X1.23	2.1X1.78
XF-MT6X65	non-coaxial	6	65	0.15	0.030%	0.07	3	C	0.8X0.6	1.08X0.82	1.4X1.18
XF-MT6X65D	coaxial	6	65	0.15	0.030%	0.07	3	C	0.8X0.6	1.08X0.82	1.4X1.18

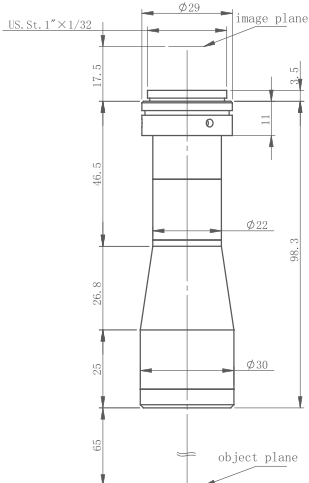
The DOF value calculation above is based on beam dispersion radius<20um. We can offer the specific DOF data according to customers' specific resolution and contrast ratio.

XF-MT05X65



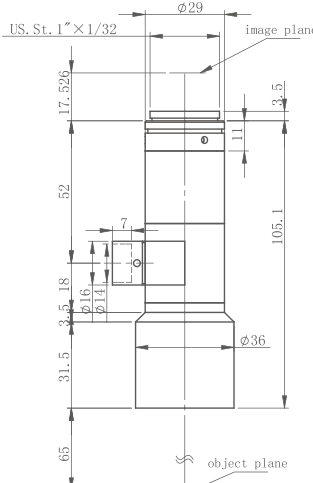
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.26°
DOF	6.4mm
Aperture	F16.5
Resolution	14.35μm
MTF	>0.3@60lp/mm
Distortion	<0.01%
FOV for different sensor size	
2/3" 8.8x6.6	17.6×13.2mm
1/2" 6.4x4.8	12.8×9.6mm
1/3" 4.8x3.6	9.6×7.2mm

XF-MT08X65



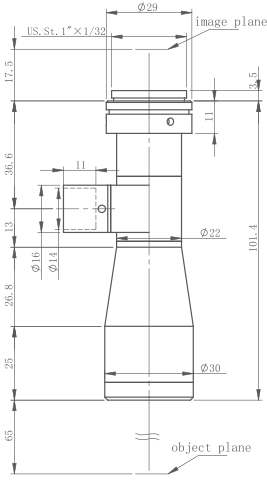
Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ13.8mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	1.7mm
Aperture	F10
Resolution	8.25μm
MTF	>0.3@100lp/mm
Distortion	<0.09%
FOV for different sensor size	
2/3' 8.8x6.6	11.0×8.3mm
1/2' 6.4x4.8	8.0×6.0mm
1/3' 4.8x3.6	6.0×4.5mm

XF-MT05X65D



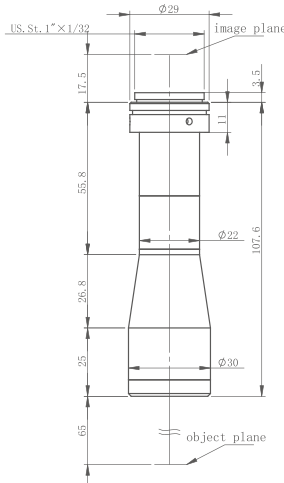
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.26°
DOF	6.4mm
Aperture	F16.5
Resolution	14.35μm
MTF	>0.3@60lp/mm
Distortion	<0.01%
FOV for different sensor size	
2/3" 8.8x6.6	17.6×13.2mm
1/2" 6.4x4.8	12.8×9.6mm
1/3" 4.8x3.6	9.6×7.2mm

XF-MT08X65D



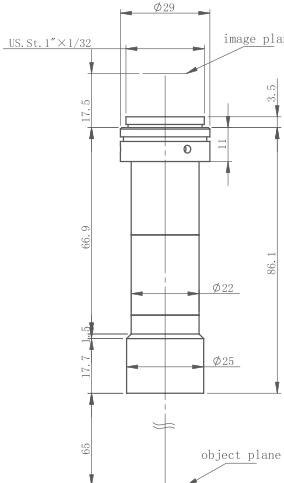
Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ13.8mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	1.7mm
Aperture	F10
Resolution	8.25μm
MTF	>0.3@100lp/mm
Distortion	<0.09%
FOV for different sensor size	
2/3" 8.8x6.6	11.0×8.3mm
1/2" 6.4x4.8	8.0×6.0mm
1/3" 4.8x3.6	6.0×4.5mm

XF-MT1X65



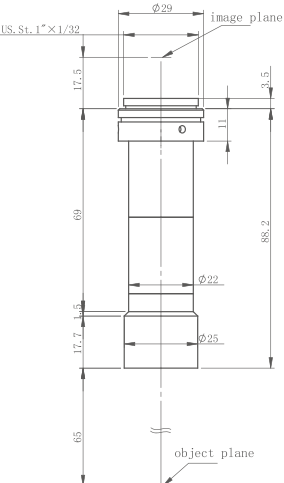
Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ11mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	1.2mm
Aperture	F11.1
Resolution	7.33μm
MTF	>0.3@90lp/mm
Distortion	<0.04%
FOV for different sensor size	
2/3" 8.8x6.6	8.8×6.6mm
1/2" 6.4x4.8	6.4×4.8mm
1/3" 4.8x3.6	4.8×3.6mm

XF-MT1.5X65



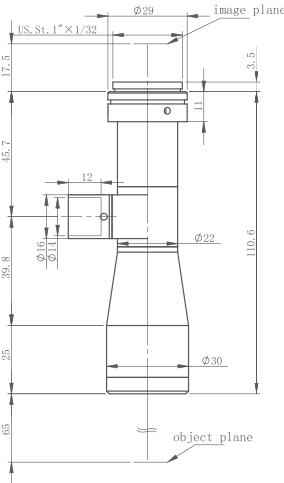
Optical Structure	Object telecentric
Magnification	1.5
Object FOV	Φ7.3mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.15°
DOF	0.51mm
Aperture	F11.9
Resolution	5.2μm
MTF	>0.3@82lp/mm
Distortion	<0.099%
FOV for different sensor size	
2/3' 8.8x6.6	5.9×4.4mm
1/2' 6.4x4.8	4.3×3.2mm
1/3' 4.8x3.6	3.2×2.4mm

XF-MT2X65



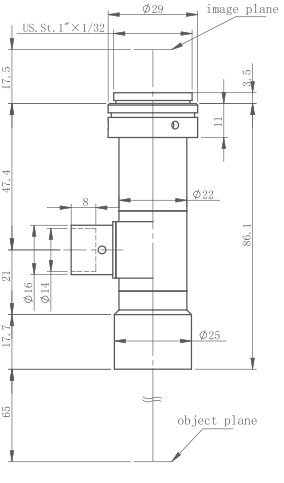
Optical Structure	Object telecentric
Magnification	2.14
Object FOV	Φ5.1mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.11°
DOF	0.34mm
Aperture	F14.4
Resolution	4.5μm
MTF	>0.3@74lp/mm
Distortion	<0.039%
FOV for different sensor size	
2/3" 8.8x6.6	4.1×3.1mm
1/2" 6.4x4.8	3.0×2.2mm
1/3" 4.8x3.6	2.2×1.7mm

XF-MT1X65D



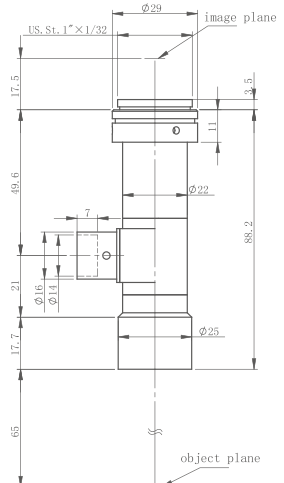
Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ11mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	1.2mm
Aperture	F11.1
Resolution	7.33μm
MTF	>0.3@90lp/mm
Distortion	<0.04%
FOV for different sensor size	
2/3" 8.8x6.6	8.8×6.6mm
1/2" 6.4x4.8	6.4×4.8mm
1/3" 4.8x3.6	4.8×3.6mm

XF-MT1.5X65D



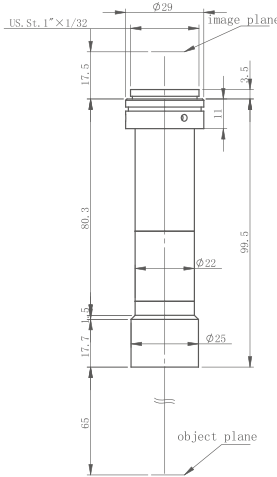
Optical Structure	Object telecentric
Magnification	1.5
Object FOV	Φ7.3mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.15°
DOF	0.51mm
Aperture	F11.9
Resolution	5.2μm
MTF	>0.3@82lp/mm
Distortion	<0.099%
FOV for different sensor size	
2/3" 8.8x6.6	5.9×4.4mm
1/2" 6.4x4.8	4.3×3.2mm
1/3" 4.8x3.6	3.2×2.4mm

XF-MT2X65D



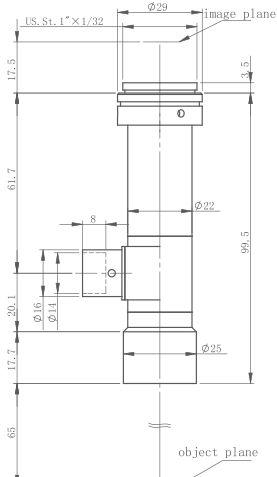
Optical Structure	Object telecentric
Magnification	2.14
Object FOV	Φ5.1mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.11°
DOF	0.34mm
Aperture	F14.4
Resolution	4.5μm
MTF	>0.3@74lp/mm
Distortion	<0.039%
FOV for different sensor size	
2/3" 8.8x6.6	4.1×3.1mm
1/2" 6.4x4.8	3.0×2.2mm
1/3" 4.8x3.6	2.2×1.7mm

XF-MT3X65



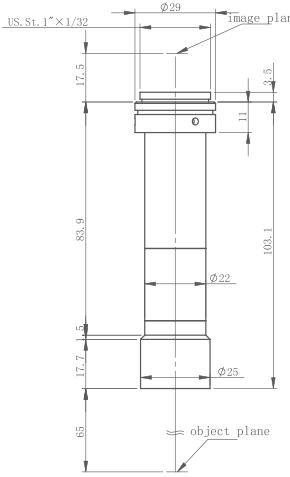
Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ3.7mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.15°
DOF	0.18mm
Aperture	F15.7
Resolution	3.5μm
MTF	>0.3@63lp/mm
Distortion	<0.038%
FOV for different sensor size	
2/3' 8.8x6.6	2.9×2.2mm
1/2' 6.4x4.8	2.1×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

XF-MT3X65D



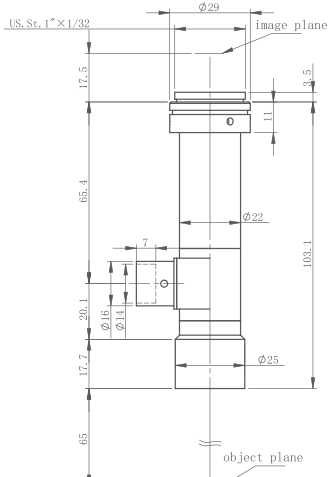
Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ3.7mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.15°
DOF	0.18mm
Aperture	F15.7
Resolution	3.5μm
MTF	>0.3@63lp/mm
Distortion	<0.038%
FOV for different sensor size	
2/3' 8.8x6.6	2.9×2.2mm
1/2' 6.4x4.8	2.1×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

XF-MT4X65



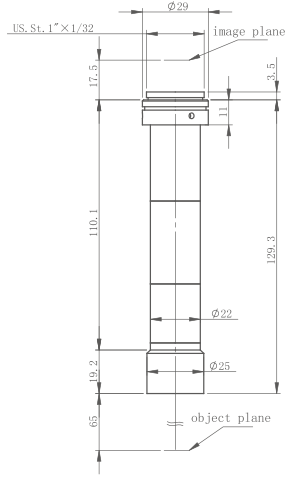
Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2.75mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.11°
DOF	0.1mm
Aperture	F17.7
Resolution	3μm
MTF	>0.3@55lp/mm
Distortion	<0.064%
FOV for different sensor size	
2/3' 8.8x6.6	2.2×1.7mm
1/2' 6.4x4.8	1.6×1.2mm
1/3' 4.8x3.6	1.2×0.9mm

XF-MT4X65D



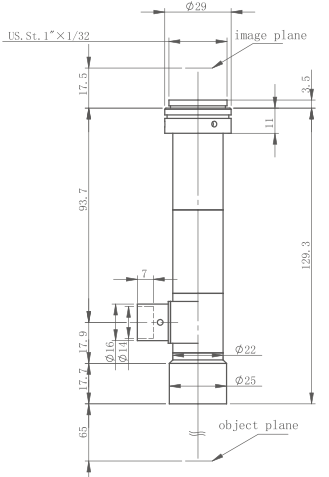
Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2.75mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.11°
DOF	0.1mm
Aperture	F17.7
Resolution	3μm
MTF	>0.3@55lp/mm
Distortion	<0.064%
FOV for different sensor size	
2/3' 8.8x6.6	2.2×1.7mm
1/2' 6.4x4.8	1.6×1.2mm
1/3' 4.8x3.6	1.2×0.9mm

XF-MT6X65



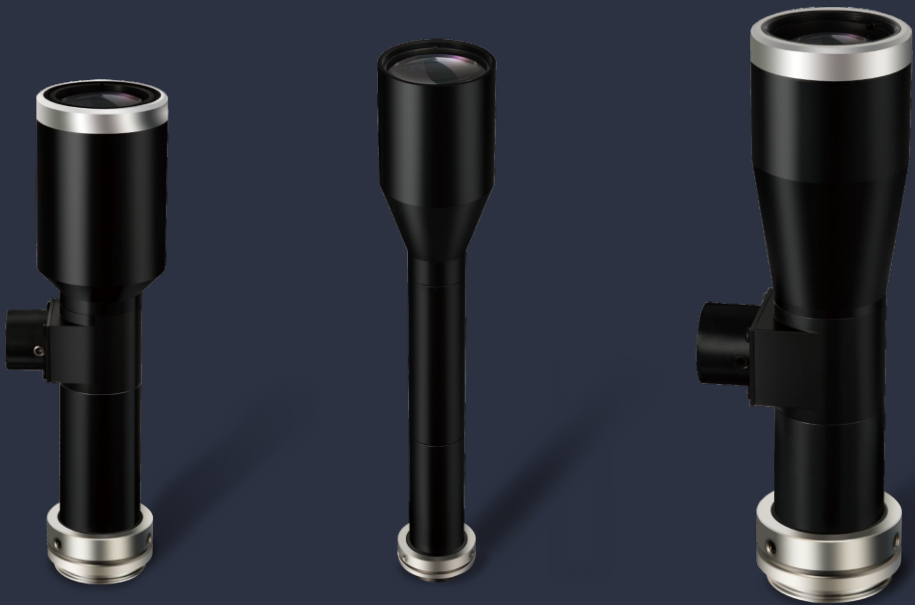
Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.8mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.15°
DOF	0.07mm
Aperture	F26.8
Resolution	3μm
MTF	>0.3@37lp/mm
Distortion	<0.03%
FOV for different sensor size	
2/3' 8.8x6.6	1.5×1.1mm
1/2' 6.4x4.8	1.1×0.8mm
1/3' 4.8x3.6	0.8×0.6mm

XF-MT6X65D



Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.8mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.15°
DOF	0.07mm
Aperture	F26.8
Resolution	3μm
MTF	>0.3@37lp/mm
Distortion	<0.03%
FOV for different sensor size	
2/3' 8.8x6.6	1.5×1.1mm
1/2' 6.4x4.8	1.1×0.8mm
1/3' 4.8x3.6	0.8×0.6mm

HIGH RESOLUTION
TELECENTRIC
LENS(110MM)



Working distance 110mm



Objective telecentric design



Standard C mount

Model	Type of illumination	Mag	WD(mm)	Telecentricity	Distortion	DOF (mm)	Optical Resolution (μ m)	Mount	Fov for different Sensor Size (mmxmm)		
									1/3" 4.8×3.6	1/2" 6.5×4.9	2/3" 8.4×7.1
XF-MT05X110	non-coaxial	0.5	110	0.1	0.095%	4	12.7	C	9.6X7.2	13X9.8	16.8X14.2
XF-MT05X110D	coaxial	0.5	110	0.1	0.095%	4	12.7	C	9.6X7.2	13X9.8	16.8X14.2
XF-MT08X110D	coaxial	0.8	110	0.1	0.010%	1.52	8.25	C	6X4.5	8.13X6.13	10.5X8.88
XF-MT08X110	non-coaxial	0.8	110	0.1	0.010%	1.52	8.25	C	6X4.5	8.13X6.13	10.5X8.88
XF-MT1X110	non-coaxial	1	110	0.1	0.030%	1.2	7.3	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1X110D	coaxial	1	110	0.1	0.030%	1.2	7.3	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1.5X110B	non-coaxial	1.5	110	0.15	0.023%	0.54	5.24	C	3.2X2.4	4.33X3.27	5.6X4.73
XF-MT1.5X110DB	coaxial	1.5	110	0.15	0.023%	0.54	5.24	C	3.2X2.4	4.33X3.27	5.6X4.73
XF-MT2X110B	non-coaxial	2	110	0.15	0.036%	0.34	4.46	C	2.4X1.8	3.25X2.45	4.2X3.55
XF-MT2X110DB	coaxial	2	110	0.15	0.036%	0.34	4.46	C	2.4X1.8	3.25X2.45	4.2X3.55
XF-MT3X110	non-coaxial	3	110	0.15	0.037%	0.2	4.02	C	1.6X1.2	2.17X1.63	2.8X2.37
XF-MT3X110D	coaxial	3	110	0.15	0.037%	0.2	4.02	C	1.6X1.2	2.17X1.63	2.8X2.37
XF-MT4X110	non-coaxial	4	110	0.04	0.058%	0.14	3.67	C	1.2X0.9	1.63X1.23	2.1X1.78
XF-MT4X110D	coaxial	4	110	0.04	0.058%	0.14	3.67	C	1.2X0.9	1.63X1.23	2.1X1.78
XF-MT6X110	non-coaxial	6	100	0.04	0.030%	0.096	3.67	C	0.8X0.6	1.08X0.82	1.4X1.18
XF-MT6X110D	coaxial	6	110	0.04	0.030%	0.096	3.67	C	0.8X0.6	1.08X0.82	1.4X1.18

The DOF value is calculated when the dispersive spot radius is less than 20um. DOF value under specific resolution or contrast can be offered as request.

XF-MT05X110

Optical Structure	Bi-telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	4mm
Aperture	F9.6
Resolution	12.7μm
MTF	>0.3@100lp/mm
Distortion	<0.095%
FOV for different sensor size	
2/3' 8.8x6.6	17.6×13.2mm
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-MT05X110D

Optical Structure	Bi-telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	4mm
Aperture	F9.6
Resolution	12.7μm
MTF	>0.3@100lp/mm
Distortion	<0.095%
FOV for different sensor size	
2/3' 8.8x6.6	17.6×13.2mm
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-MT08X110D

Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ13.75mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	1.52mm
Aperture	F10
Resolution	8.25μm
MTF	>0.3@100lp/mm
Distortion	<0.01%
FOV for different sensor size	
2/3' 8.8x6.6	11×8.25mm
1/2' 6.4x4.8	8×6mm
1/3' 4.8x3.6	6×4.5mm

XF-MT08X110

Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ13.75mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	1.52mm
Aperture	F10
Resolution	8.25μm
MTF	>0.3@100lp/mm
Distortion	<0.01%
FOV for different sensor size	
2/3' 8.8x6.6	11×8.25mm
1/2' 6.4x4.8	8×6mm
1/3' 4.8x3.6	6×4.5mm

XF-MT1X110

Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ11mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	1.2mm
Aperture	F11
Resolution	7.3μm
MTF	>0.3@90lp/mm
Distortion	<0.03%
FOV for different sensor size	
2/3' 8.8x6.6	8.8×6.6mm
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-MT1.5X110B

Optical Structure	Object telecentric
Magnification	1.5
Object FOV	Φ7.3mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.15°
DOF	0.54mm
Aperture	F11.8
Resolution	5.24μm
MTF	>0.3@84lp/mm
Distortion	<0.023%
FOV for different sensor size	
2/3' 8.8x6.6	5.9×4.4mm
1/2' 6.4x4.8	4.3×3.2mm
1/3' 4.8x3.6	3.2×2.4mm

XF-MT2X110B

Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ5.5mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.15°
DOF	0.34mm
Aperture	F13.5
Resolution	4.46μm
MTF	>0.3@75lp/mm
Distortion	<0.036%
FOV for different sensor size	
2/3' 8.8x6.6	4.4×3.3mm
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-MT1X110D

Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ11mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	1.2mm
Aperture	F11
Resolution	7.3μm
MTF	>0.3@90lp/mm
Distortion	<0.03%
FOV for different sensor size	
2/3' 8.8x6.6	8.8×6.6mm
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

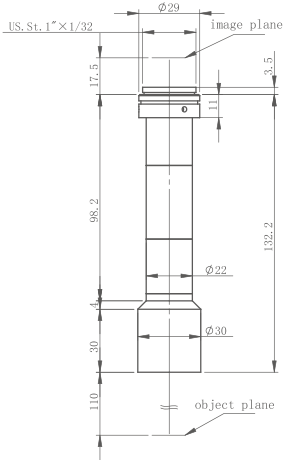
XF-MT1.5X110DB

Optical Structure	Object telecentric
Magnification	1.5
Object FOV	Φ7.3mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.15°
DOF	0.54mm
Aperture	F11.8
Resolution	5.24μm
MTF	>0.3@84lp/mm
Distortion	<0.023%
FOV for different sensor size	
2/3' 8.8x6.6	5.9×4.4mm
1/2' 6.4x4.8	4.3×3.2mm
1/3' 4.8x3.6	3.2×2.4mm

XF-MT2X110DB

Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ5.5mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.15°
DOF	0.34mm
Aperture	F13.5
Resolution	4.46μm
MTF	>0.3@75lp/mm
Distortion	<0.036%
FOV for different sensor size	
2/3' 8.8x6.6	4.4×3.3mm
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

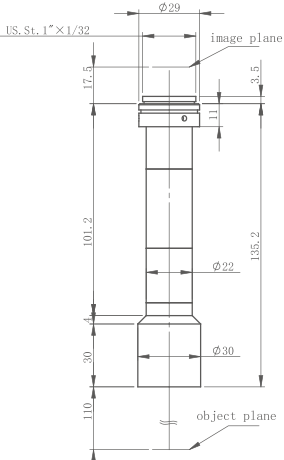
XF-MT3X110



Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ3.7mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.15°
DOF	0.2mm
Aperture	F18.3
Resolution	4.02μm
MTF	>0.3@55lp/mm
Distortion	<0.037%

FOV for different sensor size	
2/3' 8.8x6.6	2.9×2.2mm
1/2' 6.4x4.8	2.1×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

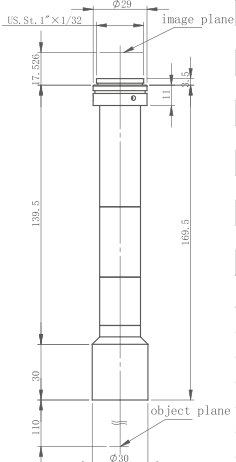
XF-MT4X110



Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2.8mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.04°
DOF	0.14mm
Aperture	F22.1
Resolution	3.67μm
MTF	>0.3@44lp/mm
Distortion	<0.058%

FOV for different sensor size	
2/3' 8.8x6.6	2.2×1.7mm
1/2' 6.4x4.8	1.6×1.2mm
1/3' 4.8x3.6	1.2×0.9mm

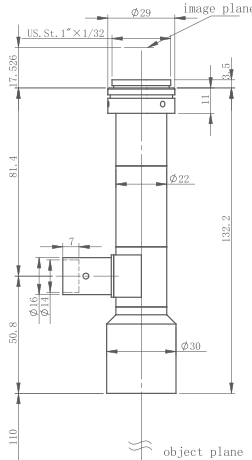
XF-MT6X110



Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.8mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.04°
DOF	0.096mm
Aperture	F33.2
Resolution	3.67μm
MTF	>0.3@30lp/mm
Distortion	<0.03%

FOV for different sensor size	
2/3' 8.8x6.6	1.5×1.1mm
1/2' 6.4x4.8	1.1×0.8mm
1/3' 4.8x3.6	0.8×0.6mm

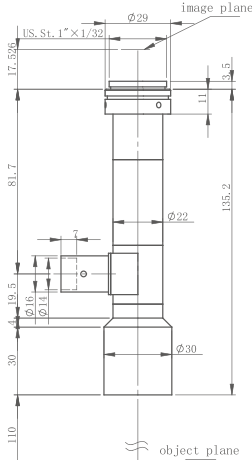
XF-MT3X110D



Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ3.7mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.15°
DOF	0.2mm
Aperture	F18.3
Resolution	4.02μm
MTF	>0.3@55lp/mm
Distortion	<0.037%

FOV for different sensor size	
2/3' 8.8x6.6	2.9×2.2mm
1/2' 6.4x4.8	2.1×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

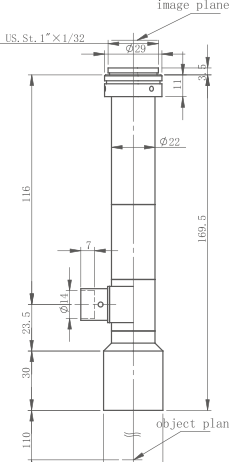
XF-MT4X110D



Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2.8mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.04°
DOF	0.14mm
Aperture	F22.1
Resolution	3.67μm
MTF	>0.3@44lp/mm
Distortion	<0.058%

FOV for different sensor size	
2/3' 8.8x6.6	2.2×1.7mm
1/2' 6.4x4.8	1.6×1.2mm
1/3' 4.8x3.6	1.2×0.9mm

XF-MT6X110D



Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.8mm
Image FOV	Φ11mm
WD	110mm±3%
Telecentricity	<0.04°
DOF	0.096mm
Aperture	F33.2
Resolution	3.67μm
MTF	>0.3@30lp/mm
Distortion	<0.03%

FOV for different sensor size	
2/3' 8.8x6.6	1.5×1.1mm
1/2' 6.4x4.8	1.1×0.8mm
1/3' 4.8x3.6	0.8×0.6mm

STANDARD RESOLUTION
TELECENTRIC
LENS(65MM)



2/3

Support 0.5Mega pixels industry
cameras, sensor size up to 2/3'



Suitable for HD picturing
& positioning

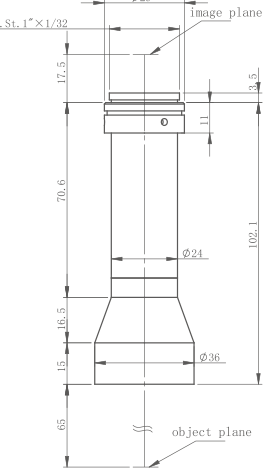


C mount

Model	Type of illumination	Mag	WD(mm)	Telecentricity	Distortion	DOF (mm)	Optical Resolution (μ m)	Mount	Fov for different Sensor Size (mmxmm)		
									1/3" 4.8×3.6	1/2" 6.5×4.9	2/3" 8.4×7.1
XF-T05X65	non-coaxial	0.5	65	0.3	0.001%	6.4	22	C	9.6X7.2	13X9.8	16.8X14.2
XF-T05X65D	coaxial	0.5	65	0.3	0.010%	6.4	22	C	9.6X7.2	13X9.8	16.8X14.2
XF-T08X65	non-coaxial	0.8	65	0.1	0.090%	2.4	12.22	C	6X4.5	8.13X6.13	10.5X8.88
XF-T08X65D	coaxial	0.8	65	0.1	0.090%	2.4	12.22	C	6X4.5	8.13X6.13	10.5X8.88
XF-T08X65-Y11	non-coaxial	0.8	65	0.5	0.230%	2.4	13.25	C	6X4.5	8.13X6.13	
XF-T1X65	non-coaxial	1	65	0.1	0.040%	1.7	11	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-T1X65D	coaxial	1	65	0.1	0.040%	1.7	11	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-T1X65-Y11	non-coaxial	1	65	0.5	0.090%	1.62	11	C	4.8X3.6	6.5X4.9	
XF-T1X65D-Y11	coaxial	1	65	0.5	0.090%	1.62	11	C	4.8X3.6	6.5X4.9	
XF-T2X65	non-coaxial	2	65	0.1	0.030%	0.45	5.8	C	2.4X1.8	3.25X2.45	
XF-T2X65D	coaxial	2	65	0.1	0.030%	0.45	5.8	C	2.4X1.8	3.25X2.45	
XF-T3X65	non-coaxial	3	65	0.1	0.130%	0.27	5.6	C	1.6X1.2	2.17X1.63	
XF-T3X65D	coaxial	3	65	0.1	0.130%	0.27	5.6	C	1.6X1.2	2.17X1.63	
XF-T4X65	non-coaxial	4	65	0.1	0.120%	0.12	4.5	C	1.2X0.9	1.63X1.23	
XF-T4X65D	coaxial	4	65	0.1	0.060%	0.12	4.5	C	1.2X0.9	1.63X1.23	
XF-T6X65	non-coaxial	6	65	0.1	0.030%	0.092	4.3	C	0.8X0.6	1.08X0.82	
XF-T6X65D	coaxial	6	65	0.1	0.030%	0.092	4.3	C	0.8X0.6	1.08X0.82	
XF-T8X65	non-coaxial	8	65	0.1	0.030%	0.07	4.3	C	0.6X0.45	0.81X0.61	
XF-T8X65D	coaxial	8	65	0.1	0.030%	0.07	4.3	C	0.6X0.45	0.81X0.61	

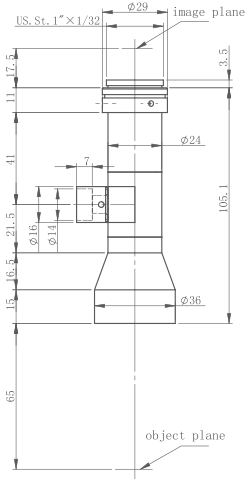
The DOF value is calculated when the dispersive spot radius is less than 20um. DOF value under specific resolution or contrast can be offered as request.

XF-T05X65



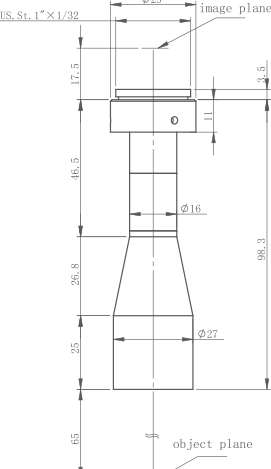
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.3°
DOF	6.4mm
Aperture	F16.7
Resolution	22μm
MTF	>0.3@60lp/mm
Distortion	<0.001%
FOV for different sensor size	
2/3' 8.8x6.6	17.6×13.2mm
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-T05X65D



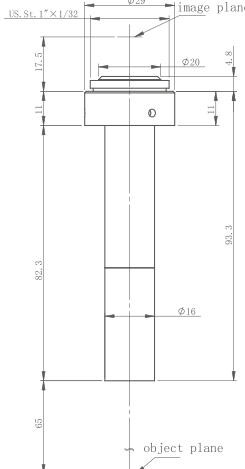
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ22mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.3°
DOF	6.4mm
Aperture	F16.7
Resolution	22μm
MTF	>0.3@60lp/mm
Distortion	<0.001%
FOV for different sensor size	
2/3' 8.8x6.6	17.6×13.2mm
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-T08X65



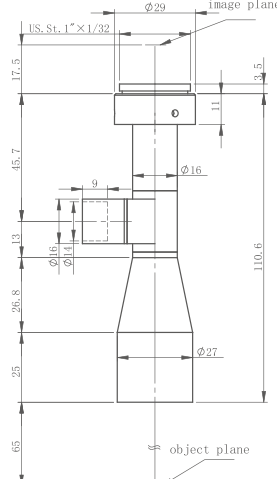
Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ13.75mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	2.4mm
Aperture	F15
Resolution	12.22μm
MTF	>0.3@70lp/mm
Distortion	<0.09%
FOV for different sensor size	
2/3' 8.8x6.6	11×8.3mm
1/2' 6.4x4.8	8.0×6.0mm
1/3' 4.8x3.6	6.0×4.5mm

XF-T08X65-Y11



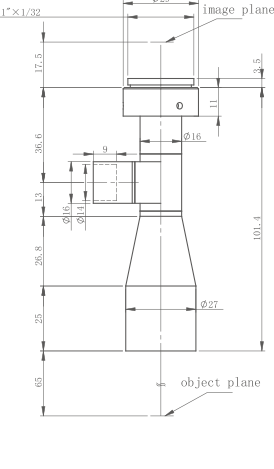
Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ10mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.5°
DOF	2.4mm
Aperture	F16
Resolution	13.25μm
MTF	>0.3@65lp/mm
Distortion	<0.23%
FOV for different sensor size	
1/2' 6.4x4.8	8×6mm
1/3' 4.8x3.6	6×4.5mm

XF-T1X65D



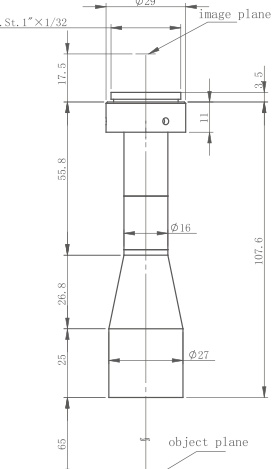
Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ11mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	1.7mm
Aperture	F16.7
Resolution	11μm
MTF	>0.3@60lp/mm
Distortion	<0.04%
FOV for different sensor size	
2/3' 8.8x6.6	8.8×6.6mm
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T08X65D



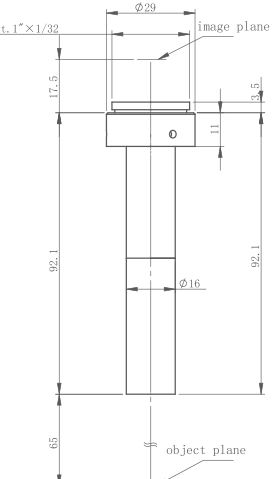
Optical Structure	Object telecentric
Magnification	0.8
Object FOV	Φ13.75mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	2.4mm
Aperture	F15
Resolution	12.22μm
MTF	>0.3@70lp/mm
Distortion	<0.09%
FOV for different sensor size	
2/3' 8.8x6.6	11×8.3mm
1/2' 6.4x4.8	8.0×6.0mm
1/3' 4.8x3.6	6.0×4.5mm

XF-T1X65



Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ11mm
Image FOV	Φ11mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	1.7mm
Aperture	F16.7
Resolution	11μm
MTF	>0.3@60lp/mm
Distortion	<0.04%
FOV for different sensor size	
2/3' 8.8x6.6	8.8×6.6mm
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T1X65-Y11



Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.5°
DOF	1.62mm
Aperture	F16.7
Resolution	11μm
MTF	>0.3@55lp/mm
Distortion	<0.09%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T1X65D-Y11

Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.5°
DOF	1.62mm
Aperture	F16.7
Resolution	11μm
MTF	>0.3@55lp/mm
Distortion	<0.09%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T2X65

Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.45mm
Aperture	F17
Resolution	5.8μm
MTF	>0.3@48lp/mm
Distortion	<0.03%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T4X65D

Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.12mm
Aperture	F27
Resolution	4.5μm
MTF	>0.3@34lp/mm
Distortion	<0.12%
FOV for different sensor size	
1/2' 6.4x4.8	1.6×1.2mm
1/3' 4.8x3.6	1.2×0.9mm

XF-T6X65

Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.3mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.092mm
Aperture	F39
Resolution	4.3μm
MTF	>0.3@24lp/mm
Distortion	<0.03%
FOV for different sensor size	
1/2' 6.4x4.8	1.07×0.8mm
1/3' 4.8x3.6	0.8×0.6mm

XF-T2X65D

Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.45mm
Aperture	F17
Resolution	5.8μm
MTF	>0.3@48lp/mm
Distortion	<0.03%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T3X65

Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ2.67mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.27mm
Aperture	F25
Resolution	5.6μm
MTF	>0.3@33lp/mm
Distortion	<0.13%
FOV for different sensor size	
1/2' 6.4x4.8	2.13×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

XF-T6X65D

Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.3mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.092mm
Aperture	F39
Resolution	4.3μm
MTF	>0.3@24lp/mm
Distortion	<0.03%
FOV for different sensor size	
1/2' 6.4x4.8	1.07×0.8mm
1/3' 4.8x3.6	0.8×0.6mm

XF-T8X65

Optical Structure	Object telecentric
Magnification	8
Object FOV	Φ1.0mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.07mm
Aperture	F52
Resolution	4.3μm
MTF	>0.3@17lp/mm
Distortion	<0.03%
FOV for different sensor size	
1/2' 6.4x4.8	0.8×0.6mm
1/3' 4.8x3.6	0.6×0.5mm

XF-T3X65D

Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ2.67mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.27mm
Aperture	F25
Resolution	5.6μm
MTF	>0.3@33lp/mm
Distortion	<0.13%
FOV for different sensor size	
1/2' 6.4x4.8	2.13×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

XF-T4X65

Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.12mm
Aperture	F27
Resolution	4.5μm
MTF	>0.3@34lp/mm
Distortion	<0.12%
FOV for different sensor size	
1/2' 6.4x4.8	1.6×1.2mm
1/3' 4.8x3.6	1.2×0.9mm

XF-T8X65D

Optical Structure	Object telecentric
Magnification	8
Object FOV	Φ1.0mm
Image FOV	Φ8mm
WD	65mm±3%
Telecentricity	<0.1°
DOF	0.07mm
Aperture	F52
Resolution	4.3μm
MTF	>0.3@17lp/mm
Distortion	<0.03%
FOV for different sensor size	
1/2' 6.4x4.8	0.8×0.6mm
1/3' 4.8x3.6	0.6×0.5mm

Support 0.5Mega pixels industry cameras, sensor size up to 2/3'



The DOF value is calculated when the dispersive spot radius is less than 20um. DOF value under specific resolution or contrast can be offered as request.

[illegible]

Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.24mm
Aperture	F44
Resolution	7.3μm
MTF	>0.3@22lp/mm
Distortion	<0.1%
FOV for different sensor size	
1/2" 6.4x4.8	1.6×1.2mm
1/3" 4.8x3.6	1.2×0.9mm

[illegible]

Optical Structure	Object telecentric
Magnification	4
Object FOV	Φ2mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.24mm
Aperture	F44
Resolution	7.3μm
MTF	>0.3@22lp/mm
Distortion	<0.1%

FOV for different sensor size

1/2' 6.4x4.8	1.6×1.2mm
1/3' 4.8x3.6	1.2×0.9mm

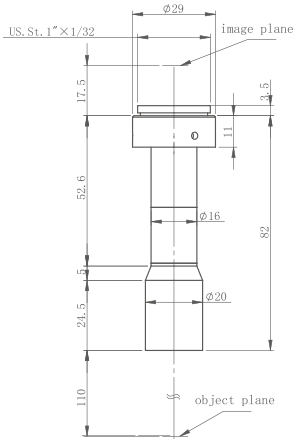
Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.33mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.18mm
Aperture	F66
Resolution	7.3μm
MTF	>0.3@14lp/mm
Distortion	<0.045%
FOV for different sensor size	
1/2" 6.4x4.8	1.07×0.8mm
1/3" 4.8x3.6	0.8×0.6mm

Optical Structure	Object telecentric
Magnification	6
Object FOV	Φ1.33mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.18mm
Aperture	F66
Resolution	7.3μm
MTF	>0.3@14lp/mm
Distortion	<0.045%

FOV for different sensor size

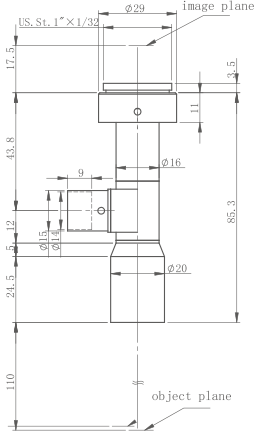
1/2" 6.4x4.8	1.07×0.8mm
1/3" 4.8x3.6	0.8×0.6mm

XF-T2X110



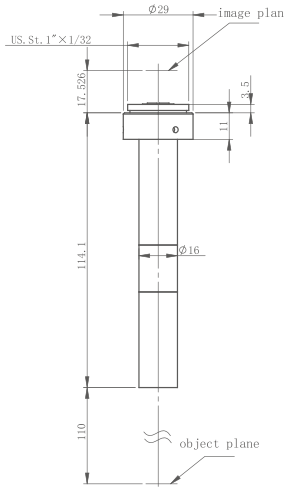
Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.5mm
Aperture	F22
Resolution	7.3μm
MTF	>0.3@40lp/mm
Distortion	<0.3%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T2X110D



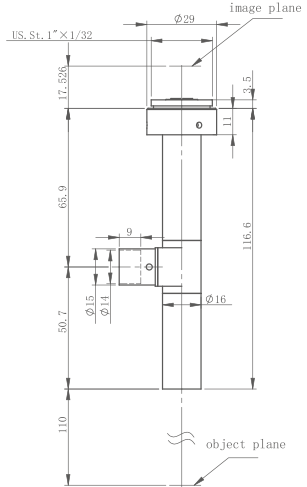
Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.5mm
Aperture	F22
Resolution	7.3μm
MTF	>0.3@40lp/mm
Distortion	<0.2%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T2X110-Y11



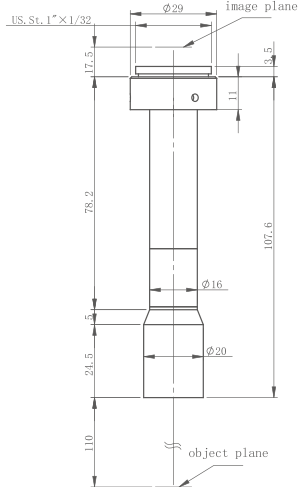
Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.2°
DOF	0.64mm
Aperture	F31.2
Resolution	10.3μm
MTF	>0.3@35lp/mm
Distortion	<0.27%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T2X110D-Y11



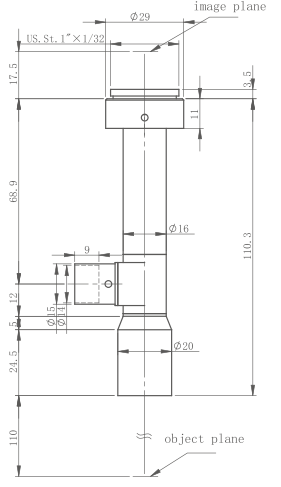
Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.2°
DOF	0.66mm
Aperture	F31.2
Resolution	10.3μm
MTF	>0.3@35lp/mm
Distortion	<0.27%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T3X110



Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ2.67mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.27mm
Aperture	F27
Resolution	6μm
MTF	>0.3@30lp/mm
Distortion	<0.13%
FOV for different sensor size	
1/2' 6.4x4.8	2.13×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

XF-T3X110D



Optical Structure	Object telecentric
Magnification	3
Object FOV	Φ2.67mm
Image FOV	Φ8mm
WD	110mm±3%
Telecentricity	<0.1°
DOF	0.27mm
Aperture	F27
Resolution	6μm
MTF	>0.3@30lp/mm
Distortion	<0.13%
FOV for different sensor size	
1/2' 6.4x4.8	2.13×1.6mm
1/3' 4.8x3.6	1.6×1.2mm

LONG WORKING DISTANCE
TELECENTRIC LENS.



2/3

Support 0.45mega to 1.3mega pixels
industry camera, sensor size up to 2/3'

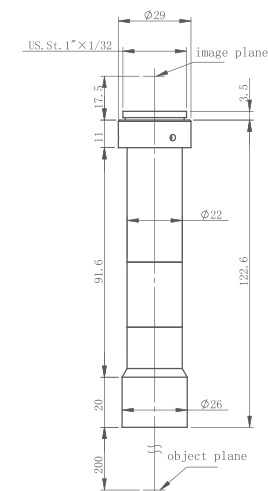


Long working distance, ranging
from150mm to 530mm

Model	Type of illumination	Mag	WD (mm)	Telecentricity	Distortion	DOF (mm)	Mount	Fov for different Sensor Size (mmxmm)		
								1/3" 4.8X3.6	1/2" 6.5X4.9	2/3" 8.4X7.1
XF-T05X150	non-coaxial	0.5	150	0.11	0.200%	7	C	9.6X7.2	13X9.8	
XF-T05X150D	coaxial	0.5	150	0.16	0.160%	7	C	9.6X7.2	13X9.8	
XF-T05X200	non-coaxial	0.5	200	0.16	0.360%	7	C	9.6X7.2	13X9.8	
XF-T05X200D	coaxial	0.5	200	0.16	0.300%	7	C	9.6X7.2	13X9.8	
XF-T1X150	non-coaxial	1	150	0.1	0.180%	2.2	C	4.8X3.6	6.5X4.9	
XF-T1X150D	coaxial	1	150	0.1	0.180%	2.2	C	4.8X3.6	6.5X4.9	
XF-T1X250	non-coaxial	1	250	0.1	0.120%	1.2	C	4.8X3.6	6.5X4.9	
XF-T1X250D	coaxial	1	250	0.1	0.120%	1.2	C	4.8X3.6	6.5X4.9	
XF-T1X300	non-coaxial	1	300	0.1	0.100%	2.2	C	4.8X3.6	6.5X4.9	
XF-T1X300D	coaxial	1	300	0.1	0.110%	2.2	C	4.8X3.6	6.5X4.9	
XF-T1X420	non-coaxial	1	420	0.1	0.200%	2.6	C	4.8X3.6		
XF-T1X420D	coaxial	1	420	0.1	0.200%	2.6	C	4.8X3.6		
XF-T2X150B	non-coaxial	2	150	0.2	0.036%	0.76	C	2.4X1.8	3.25X2.45	
XF-T2X150BD	coaxial	2	150	0.2	0.036%	0.76	C	2.4X1.8	3.25X2.45	
XF-T2X200B	non-coaxial	2	200	0.2	0.035%	0.66	C	2.4X1.8	3.25X2.45	
XF-T2X200BD	coaxial	2	200	0.2	0.035%	0.66	C	2.4X1.8	3.25X2.45	
XF-T2X250	non-coaxial	2	250	0.2	0.200%	0.77	C	2.4X1.8	3.25X2.45	
XF-T2X250D	coaxial	2	250	0.2	0.200%	0.77	C	2.4X1.8	3.25X2.45	
XF-T2X300	non-coaxial	2	300	0.1	0.160%	0.8	C	2.4X1.8	3.25X2.45	
XF-T2X300D	coaxial	2	300	0.1	0.170%	0.8	C	2.4X1.8	3.25X2.45	
XF-MT027X510	non-coaxial	0.27	510	0.2	0.300%	23	C	17.78X3.33	24.07X18.15	31.11X26.3
XF-MT033X530	non-coaxial	0.33	530	0.2	0.080%	14.8	C	14.55X10.91	19.7X14.85	25.45X21.52
XF-MT036X530	non-coaxial	0.36	530	0.2	0.150%	13	C	13.33X10	18.06X13.61	23.33X19.72
XF-MT042X530	non-coaxial	0.42	530	0.2	0.100%	9	C	11.43X8.57	15.48X11.67	20X16.9
XF-MT048X530	non-coaxial	0.48	530	0.2	0.040%	7.5	C	10X7.5	13.54X10.21	17.5X14.79
XF-MT048X530D	coaxial	0.48	530	0.2	0.070%	6.8	C	10X7.5	13.54X10.21	17.5X14.79
XF-MT06X530	non-coaxial	0.6	530	0.2	0.150%	4	C	8X6	10.83X8.17	14X11.83
XF-MT06X530D	coaxial	0.6	530	0.2	0.160%	5	C	8X6	10.83X8.17	14X11.83
XF-MT07X530	non-coaxial	0.7	530	0.2	0.090%	3	C	6.86X5.14	9.29X7	12X10.14
XF-MT08X530	non-coaxial	0.8	530	0.2	0.055%	2.5	C	6X4.5	8.13X6.13	10.5X8.88
XF-MT08X530D	coaxial	0.8	530	0.2	0.055%	2.5	C	6X4.5	8.13X6.13	10.5X8.88
XF-MT1X200	non-coaxial	1	200	0.2	0.070%	1.42	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1X200D	coaxial	1	200	0.2	0.070%	1.42	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1X350	non-coaxial	1	350	0.15	0.080%	1.5	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1X350D	coaxial	1	350	0.15	0.080%	1.5	C	4.8X3.6	6.5X4.9	8.4X7.1
XF-MT1.2X350	non-coaxial	1.2	350	0.15	0.150%	1.16	C	4X3	5.42X4.08	7X5.92
XF-MT1.2X350D	coaxial	1.2	350	0.15	0.150%	1.16	C	4X3	5.42X4.08	7X5.92

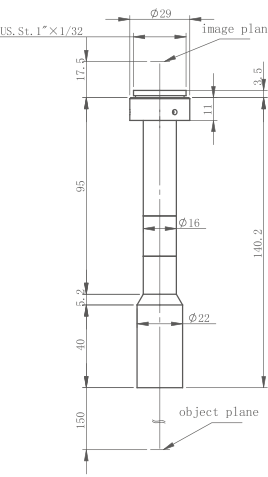
The DOF value is calculated when the dispersive spot radius is less than 20um. DOF value under specific resolution or contrast can be offered as request.

XF-T2X200B



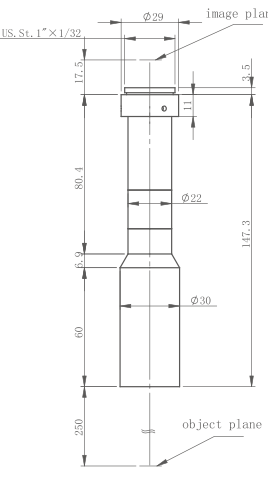
Optical Structure	Object telecentric
Magnification	2
FOV	Φ4mm
FOV	Φ8mm
WD	200mm±3%
Telecentricity	<0.2°
DOF	0.66mm
Aperture	F29.2
Resolution	9.4μm
MTF	>0.3@35lp/mm
Distortion	<0.035%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T1X150



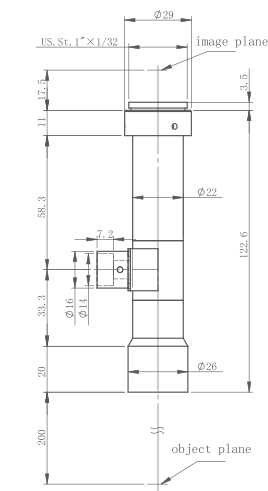
Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	150mm±3%
Telecentricity	<0.1°
DOF	2.2mm
Aperture	F21
Resolution	13.75μm
MTF	>0.3@50lp/mm
Distortion	<0.18%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T1X250



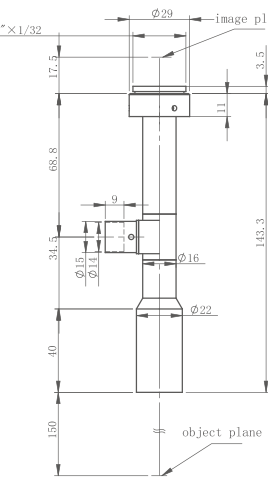
Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	250mm±3%
Telecentricity	<0.1°
DOF	1.2mm
Aperture	F21
Resolution	14.3μm
MTF	>0.3@40lp/mm
Distortion	<0.12%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T2X200BD



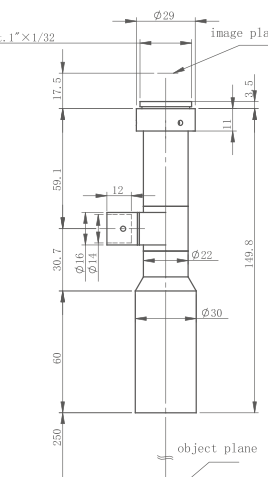
Optical Structure	Object telecentric
Magnification	2
FOV	Φ4mm
FOV	Φ8mm
WD	200mm±3%
Telecentricity	<0.2°
DOF	0.66mm
Aperture	F29.2
Resolution	9.4μm
MTF	>0.3@35lp/mm
Distortion	<0.035%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T1X150D



Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	150mm±3%
Telecentricity	<0.1°
DOF	2.2mm
Aperture	F21
Resolution	13.75μm
MTF	>0.3@50lp/mm
Distortion	<0.18%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T1X250D



Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	250mm±3%
Telecentricity	<0.1°
DOF	1.2mm
Aperture	F21
Resolution	14.3μm
MTF	>0.3@40lp/mm
Distortion	<0.12%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

LONG WORKING DISTANCE
TELECENTRIC LENS

XF-T1X300

Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	300mm±3%
Telecentricity	<0.1°
DOF	2.2mm
Aperture	F21
Resolution	13.75μm
MTF	>0.3@42lp/mm
Distortion	<0.1%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T1X300D

Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ8mm
Image FOV	Φ8mm
WD	300mm±3%
Telecentricity	<0.1°
DOF	2.2mm
Aperture	F21
Resolution	13.75μm
MTF	>0.3@42lp/mm
Distortion	<0.1%
FOV for different sensor size	
1/2' 6.4x4.8	6.4×4.8mm
1/3' 4.8x3.6	4.8×3.6mm

XF-T1X420

Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ6mm
Image FOV	Φ6mm
WD	420mm±3%
Telecentricity	<0.1°
DOF	2.6mm
Aperture	F27
Resolution	18.3μm
MTF	>0.3@30lp/mm
Distortion	<0.2%
FOV for different sensor size	
1/3' 4.8x3.6	4.8×3.6mm

XF-T1X420D

Optical Structure	Object telecentric
Magnification	1
Object FOV	Φ6mm
Image FOV	Φ6mm
WD	420mm±3%
Telecentricity	<0.1°
DOF	2.6mm
Aperture	F27
Resolution	18.3μm
MTF	>0.3@30lp/mm
Distortion	<0.2%
FOV for different sensor size	
1/3' 4.8x3.6	4.8×3.6mm

XF-T2X150B

Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	150mm±3%
Telecentricity	<0.2°
DOF	0.76mm
Aperture	F29
Resolution	9.4μm
MTF	>0.3@35lp/mm
Distortion	<0.036%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T2X150BD

Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	150mm±3%
Telecentricity	<0.2°
DOF	0.76mm
Aperture	F29
Resolution	9.4μm
MTF	>0.3@35lp/mm
Distortion	<0.036%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T05X200

Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ16mm
Image FOV	Φ8mm
WD	200mm±3%
Telecentricity	<0.16°
DOF	7mm
Aperture	F18.8
Resolution	25.4μm
MTF	>0.3@50lp/mm
Distortion	<0.36%
FOV for different sensor size	
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-T05X200D

Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ16mm
Image FOV	Φ8mm
WD	200mm±3%
Telecentricity	<0.16°
DOF	7mm
Aperture	F18.8
Resolution	25.4μm
MTF	>0.3@50lp/mm
Distortion	<0.36%
FOV for different sensor size	
1/2' 6.4x4.8	12.8×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-T2X300

Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	300mm±3%
Telecentricity	<0.1°
DOF	0.8mm
Aperture	F33
Resolution	11μm
MTF	>0.3@28lp/mm
Distortion	<0.16%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T2X300D

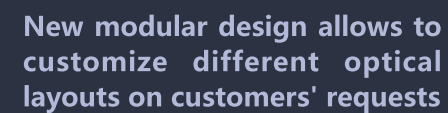
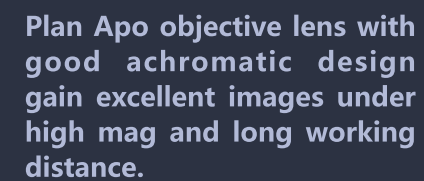
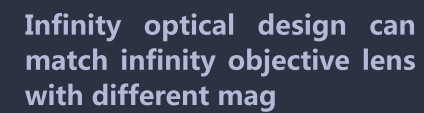
Optical Structure	Object telecentric
Magnification	2
Object FOV	Φ4mm
Image FOV	Φ8mm
WD	300mm±3%
Telecentricity	<0.1°
DOF	0.8mm
Aperture	F33
Resolution	11μm
MTF	>0.3@28lp/mm
Distortion	<0.17%
FOV for different sensor size	
1/2' 6.4x4.8	3.2×2.4mm
1/3' 4.8x3.6	2.4×1.8mm

XF-T05X150

Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ16mm
Image FOV	Φ8mm
WD	150mm±3%
Telecentricity	<0.11°
DOF	7mm
Aperture	F17.5
Resolution	23.5μm
MTF	>0.3@55lp/mm
Distortion	<0.2%
FOV for different sensor size	
1/2' 6.4x4.8	12.4×9.6mm
1/3' 4.8x3.6	9.6×7.2mm

XF-T05X150D

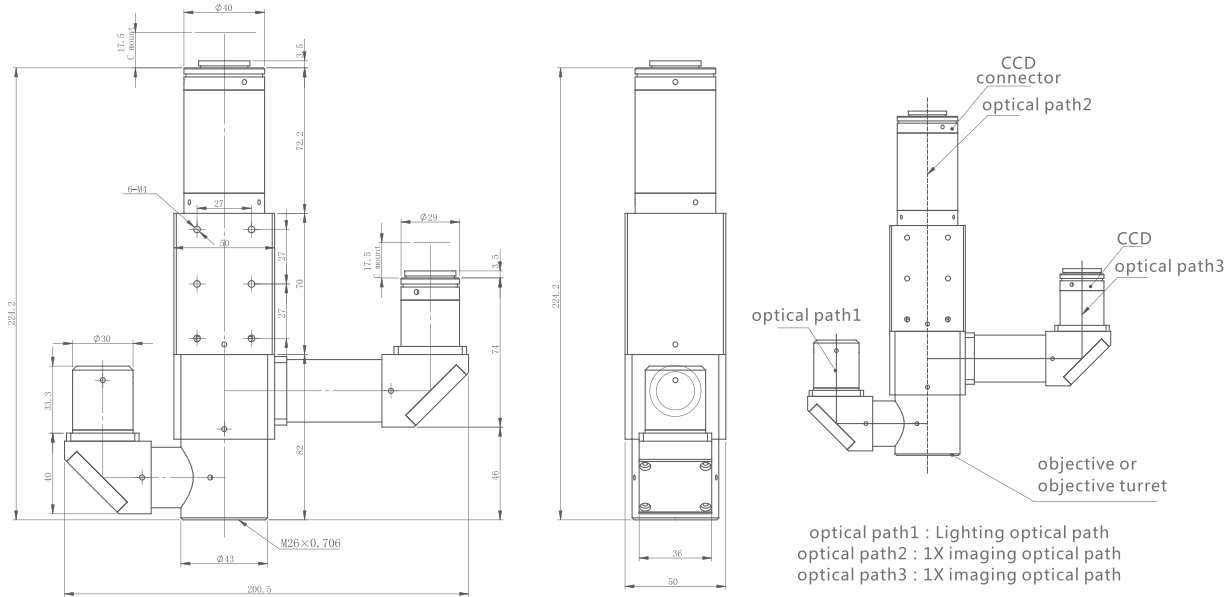
Optical Structure	Object telecentric
Magnification	0.5
Object FOV	Φ16mm
Image FOV	Φ8mm
WD	150mm±3%
Telecentricity	<0.16°
DOF	7mm
Aperture	F17.5
Resolution	23.5μm
MTF	>0.3@55lp/mm
Distortion	<0.16%
FOV for different sensor size	
1/2' 6.4x4.8	12.4×9.6mm
1/3' 4.8x3.6	9.6×7.2mm



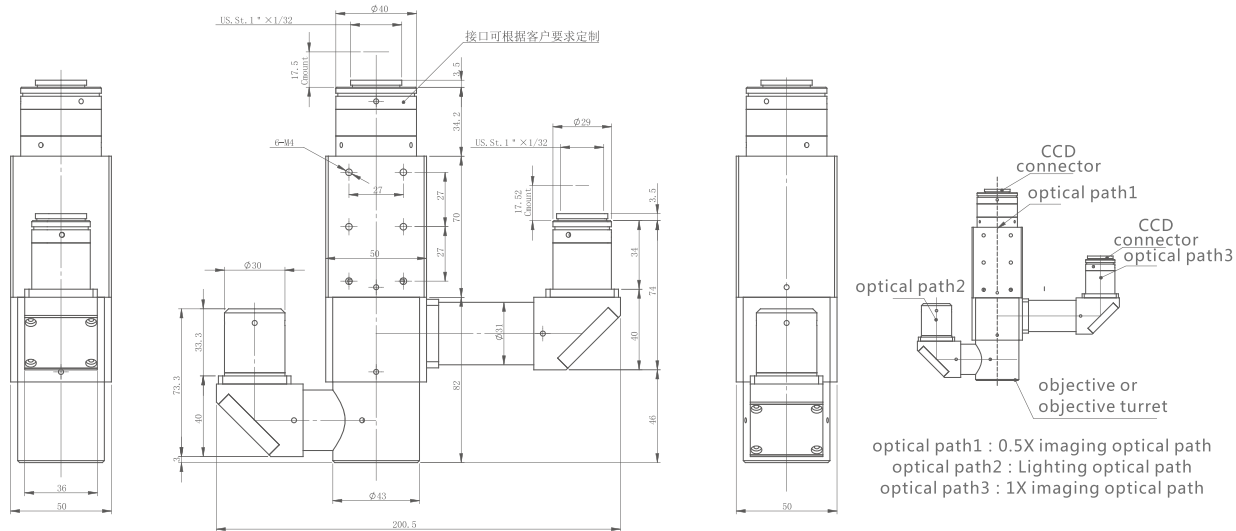
Model	Objective magnification	Illumination type	Objective lens operating wavelength	lens mount	CCD supported max size
XF-VM3-1X-DIC	1X	LED	visible light	C/F/M58/M72 Custom	4/3
XF-VM3-1X-N	1X	non-coaxial	visible light	C or F-mount	4/3
XF-VM3-1X-C	1X	coaxial	visible light	C or F-mount	4/3
XF-VM3-0.5x-N	0.5X	non-coaxial	visible light	C or F-mount	2/3
XF-VM3-0.5x-C	0.5X	coaxial	visible light	C or F-mount	2/3
XF-VM3-D1010	1X	coaxial	visible light	C or F-mount	2/3
XF-VM3-D0510	0.5X, 1X	coaxial	visible light	C or F-mount	2/3, 4/3

Model	Magnification	NA	WD	Resolution	DOF (mm)	CCD max size	Parfocal distance (mm)	Mount
M Plan APO L 2X	2X	0.055	34.3	5	91	4/3'(24mm)	95	M26×0.706
M Plan APO HL 5X	5X	0.13	45	2	14	4/3'(24mm)	95	M26×0.706
M Plan APO L 10X	10X	0.28	33.8	1	3.5	4/3'(24mm)	95	M26×0.706
M Plan APO SL 20X	20X	0.29	31.1	1	3.3	4/3'(24mm)	95	M26×0.706
M Plan APO SL 50X	50X	0.42	20.2	0.7	1.6	4/3'(24mm)	95	M26×0.706

XF-VM3-D1010



XF-VM3-D0510



LASER FOCUSING IMAGING MODULE



Separate design of lighting, laser & imaging optical paths maximizes the high efficiency of laser and imaging maximally.



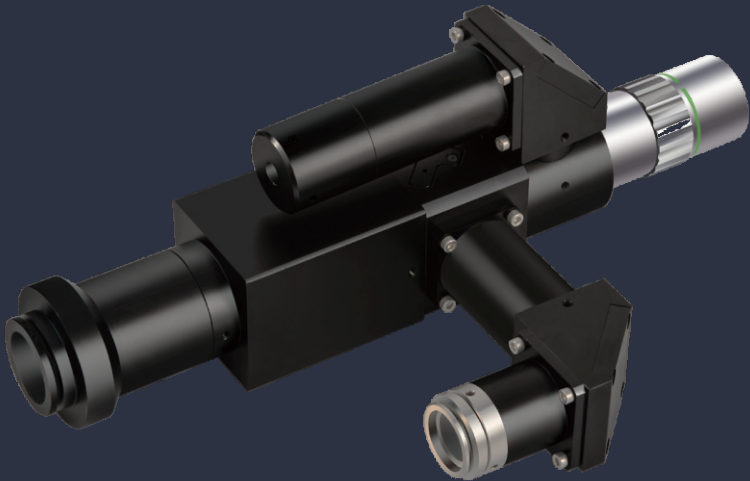
Various parallel objective lens can be matched (VIS-Visible lights objective lens, NUV- NUV objective lens, NIR- NIR objective lens)



Imaging optical path can support sensor size up to 2/3' inch



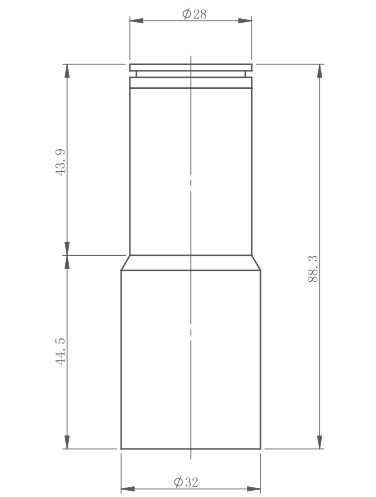
Coaxial illumination is adopted, focus of illumination optical axis and laser optical axis will converge.



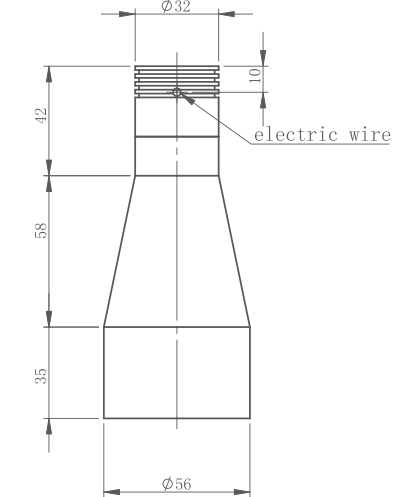
Model	Objective magnification	Illumination type	Objective lens operating wavelength	lens mount	CCD supported max size
XF-VM3-LA-VIS	1X	coaxial	400-700nm	C-Mount	2/3
XF-VM3-LA-NUV	1X	coaxial	355-620nm	C-Mount	2/3
XF-VM3-LA-NIR	1X	coaxial	480-1800nm	C-Mount	2/3

Model	Output light spot diameter	Color				LED rated power
		/W(white430-680nm)	/R(red630nm)	/G(green520nm)	/B(blue460nm)	
XF-TD20III	20	√	√	√	√	1W/3W (standard 1W)
XF-TD50B	50	√	√	√	√	1W/3W (standard 1W)
XF-TD70-III	70	√	√	√	√	1W/3W (standard 1W)
XF-TD100	100	√	√	√	√	1W/3W (standard 1W)
XF-TD120	120	√	√	√	√	1W/3W (standard 1W)
XF-TD120-L90	120	√	√	√	√	1W/3W (standard 1W)
XF-TD140	140	√	√	√	√	1W/3W (standard 1W)
XF-TD200-III-WRGB	200	√	√	√	√	1W/3W (standard 1W)
XF-TD200-IIIS	200	√	√	√	√	1W/3W (standard 1W)
XF-TD200-IIIS-L90	200	√	√	√	√	1W/3W (standard 1W)
XF-TD280S-L90	272	√	×	×	×	1W/3W (standard 1W)

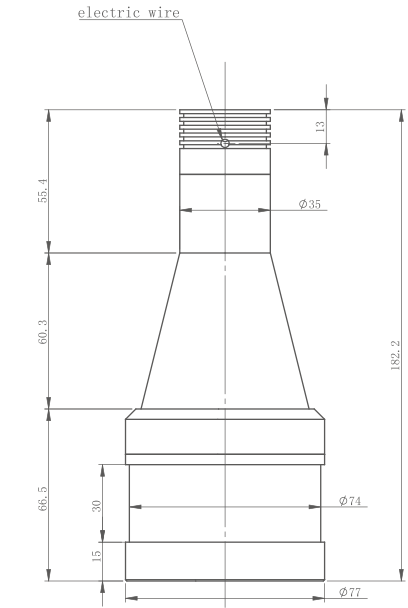
XF-TD20III



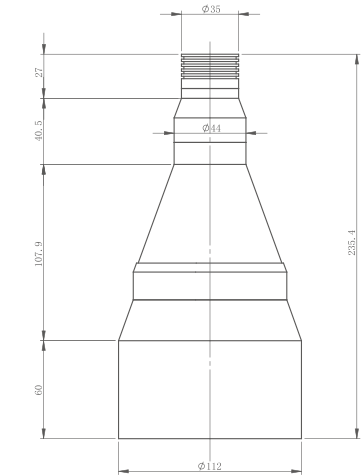
XF-TD50B



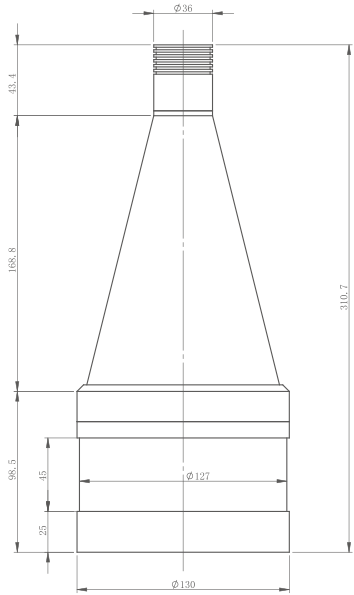
XF-TD70-III



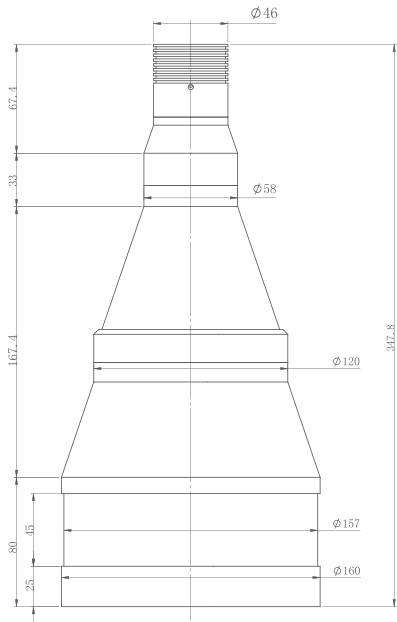
XF-TD100



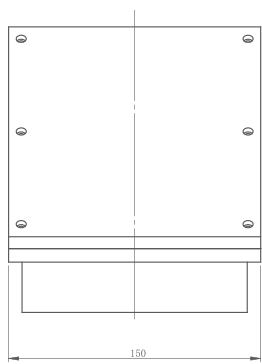
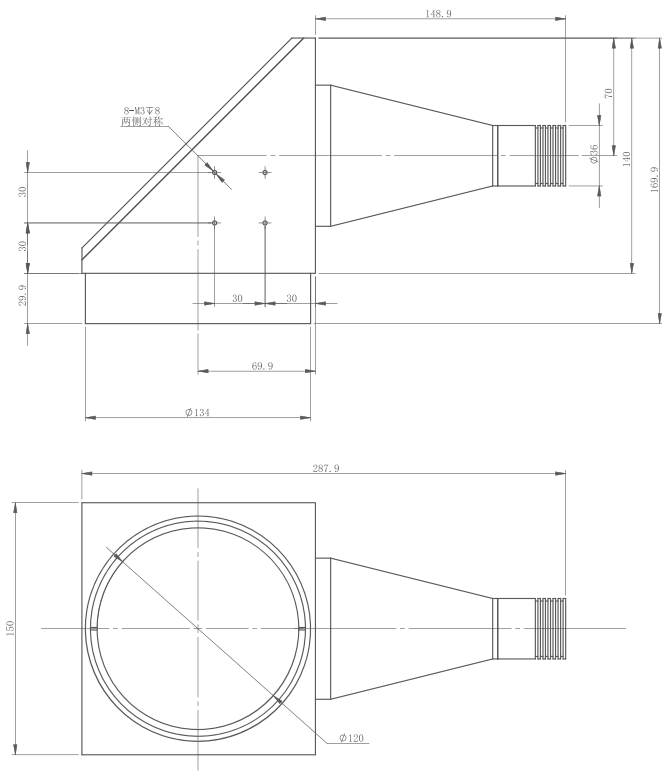
XF-TD120



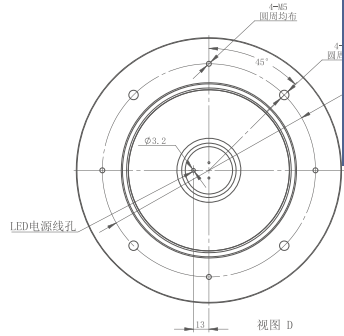
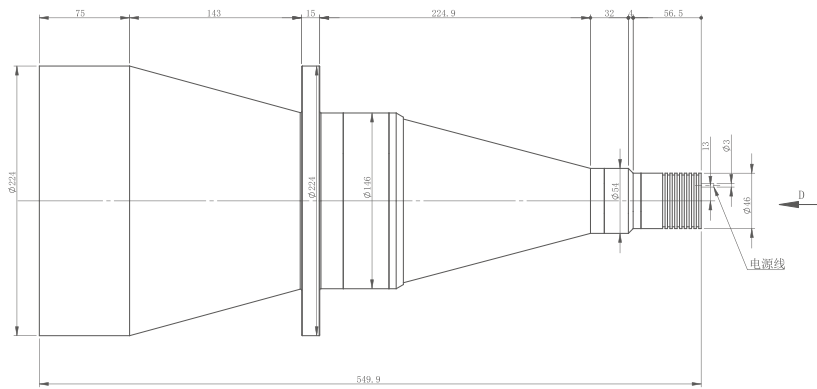
XF-TD140



XF-TD120-L90



XF-TD200-III-WRGB



XF-TD200-IIIS

