GU OPTICS

Design / Development / Manufacturing

Ultra Zoom Lens
Sensor size:1/2"(8mm)
Focal Length: 10-330mm

SWIR Lens
Sensor size:25.6mm
Focal length: 50mm
Wavelength range: 800-1800nm

Large FOV and Low
Magnification Double
Telecentric Lens
Sensor Size: 1"
Magnification: 0.255X
Working distance: 211mm

Grand Unified Optics (Beijing)Co., Ltd.
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www.ga-optics.com

GU OPTICS
2019 Machine Vision Lens Products Catalog
WWW.GA-OPTICS.COM
GI003

GU OPTICS

Machine Vision Lens Products Catalog

IMAGING OPTICS

WWW.GA-OPTICS.COM
Grand Unified Optics (Beijing)Co., Ltd. 2019

Lens Design & Development

GAOPTICS

Lens Design/Develop/Manufacture

Capability

Grand Unified Optics (Beijing)Co., Ltd engaged in the design and development of imaging optics and provided the imaging solution to customers. We hope we can provide the professional、quick 、high cost performance service to all of you based on our professional technical ability so that the imaging optics can be used to different field widely.

The machine vision can be applied to more field based on the development of artificial intelligence technology and the policy of industry 4.0 was pushed in China .Such as the testing of semiconductor chips、medical testing equipment、unmanned technology、biophoton imaging etc.

Grand Unified Optics set up the professional R&D team 、technical support team and sales & marketing team in order to provide high quality service to customers and push out new product & new imaging solution to customers based on the feedback from marketing.

Custom

Optical System Analysis

Analyzed the parameters of optical system and provided the overall design scheme based on the customers' requirements.

Optical system design

Completed the optical system design、tolerance analysis etc. based on the optical system parameters' requirements

Optical-mechanical structure design

Completed the optical-mechanical structure design 、mechanical simulation analysis、optical-mechanical thermal integrated analysis etc. based on the optical system designed requirements.

Custom optical system

Completed the manufacture、assembly、test of the optical system based on the result of optical design.

Mass customization service of optical system

Provided the unique、exclusive、mass customization of optical system for customers and can sign the only supply agreement with customers as well.

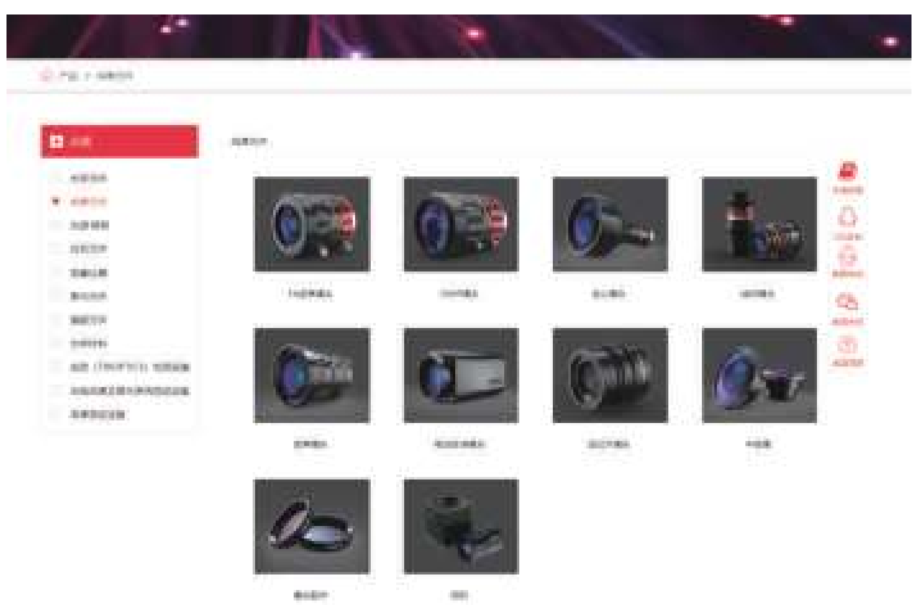
Assessment service of optical system

Conducted the professional analysis and gave feasible evaluation and modified suggestion for customers' design.

Sales

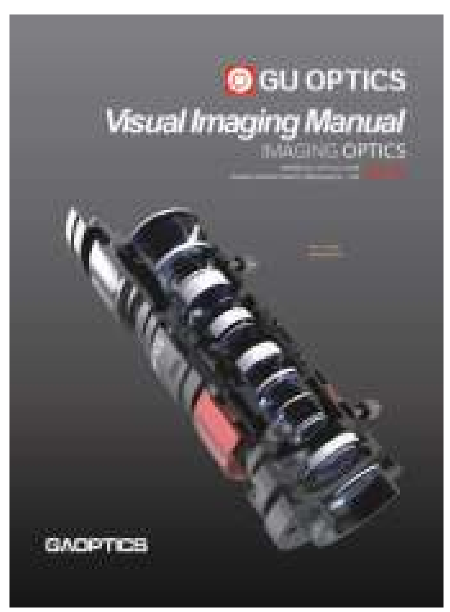
www.gu-optics.com

Searched by product name or stock No.



Visual Imaging Manual

Request by e-mail or by phone



Customer service：010-62112301 Technical support：techsup@gu-optics.com sales：sales@gu-optics.com

DIRECTORY

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Fixed Focal Length Lens

Stock No.	Focal Length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance(Min)	Filter Thread(mm)	FOV	Distrotion	Page
2/3" 5M Series										
600007	8	1.6	2/3"	C	5MP	0.1m ~ ∞	M40.5x0.5	66.8 ° ×55.8 ° ×43.3 °	-0.73%@y=5.5mm	05
600008	12	1.6	2/3"	C	5MP	0.1m ~ ∞	M37.5x0.5	48.6 ° ×39.8 ° ×30.4 °	-0.35%@y=5.5mm	06
600009	16	1.6	2/3"	C	5MP	0.2m ~ ∞	M37.5x0.5	38.0 ° ×30.8 ° ×23.4 °	0.07%@y=5.5mm	07
600010	25	1.4	2/3"	C	5MP	0.2m ~ ∞	M37.5 × 0.5	24.8 ° ×20.0 ° ×15.0 °	-0.19%@y=5.5mm	08
600011	35	1.4	2/3"	C	5MP	0.3m ~ ∞	M37.5 × 0.5	17.9 ° ×14.3 ° ×10.8 °	-0.06%@y=5.5mm	09
600012	50	1.8	2/3"	C	5MP	0.4m ~ ∞	M37.5x0.5	12.6 ° ×10.1 ° ×7.6 °	0.03%@y=5.5mm	10
600013	75	2.0	2/3"	C	5MP	0.9m ~ ∞	M40.5x0.5	8.4 ° ×6.7 ° ×5.0 °	0.02%@y=5.5mm	11

Stock No.	Focal Length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance(Min)	Filter Thread(mm)	FOV	Distrotion	Page
GA 1/1.8" 6M Series										
600038	12	1.8	1/1.8"	C	6MP	0.1m ~ ∞	M27.5X0.5	41.56 ° ×33.52 ° ×25.29 °	-2.39%@y=4.5mm	12
600039	16	1.8	1/1.8"	C	6MP	0.15m ~ ∞	M27.5X0.5	31.30 ° ×25.21 ° ×19.00 °	-0.73%@y=4.5mm	13
600040	25	1.8	1/1.8"	C	6MP	0.3m ~ ∞	M27.5X0.5	20.42 ° ×16.4 ° ×12.33 °	-0.11%@y=4.5mm	14
600041	35	2.0	1/1.8"	C	6MP	0.3m ~ ∞	M27.5X0.5	14.73 ° ×11.79 ° ×8.84 °	-0.52%@y=4.5mm	15

Stock No.	Focal Length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance(Min)	Filter Thread(mm)	FOV	Distrotion	Page
GA 1" 8M Series										
600021	8	1.8	1"	C	8MP	0.3m~∞	/	90.06 ° x 77.16 ° x 61.30 °	-4.12%@y=8.0mm	16
600022	12	2.0	1"	C	8MP	0.1m~∞	M35.5x0.5	69.63 ° x 60.71 ° x 44.33 °	-4.10%@y=8.0mm	17
600023	16	2.0	1"	C	8MP	0.1m~∞	M34x0.5	53.7 ° x 43.9 ° x 33.4 °	-2.22%@y=8.0mm	18
600024	25	1.8	1"	C	8MP	0.15m~∞	M30.5x0.5	36.0 ° x 29.0 ° x 21.9 °	-1.53%@y=8.0mm	19
600025	35	1.8	1"	C	8MP	0.2m~∞	M30.5x0.5	25.7 ° x 20.7 ° x 15.6 °	0.33%@y=8.0mm	20
600026	50	2.0	1"	C	8MP	0.25m~∞	M37x0.5	18.18 ° x 14.60 ° x 10.96 °	-0.011%@y=8.0mm	21
600033	75	2.8	1"	C	8MP	0.5m ~ ∞	M39 × 0.5	12.2 ° ×9.8 ° ×7.3 °	0.75%@y=8.0mm	22

Stock No.	Focal Length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance(Min)	Filter Thread(mm)	FOV	Distrotion	Page
GA 4/3" 10M Series										
600016	12	2.0	4/3"	C	10MP	0.15m ~ ∞	M77.0X0.75	89.0 ° ×75.5 ° ×61.1 °	-2.40%@y=11.5mm	23
600017	16	2.0	4/3"	C	10MP	0.1m ~ ∞	M58.0 × 0.75	72.9 ° ×60.9 ° ×47.3 °	-2.81%@y=11.5mm	24
600018	25	2.0	4/3"	C	10MP	0.15m ~ ∞	M46.0X0.75	49.7 ° ×40.6 ° ×31.0 °	-0.66%@y=11.5mm	25
600019	35	2.0	4/3"	C	10MP	0.2m ~ ∞	M40.5X0.5	36.6 ° ×29.6 ° ×22.4 °	-0.56%@y=11.5mm	26
600020	50	2.0	4/3"	C	10MP	0.3m ~ ∞	M40.5X0.5	25.9 ° ×20.9 ° ×15.7 °	-0.14%@y=11.5mm	27
600035	85	2.0	4/3"	C	10MP	1.2m~∞	M77.0 × 0.75	15.41 ° ×12.09 ° ×9.28 °	0.04%@y=11.5mm	28
600037	8.5	2.8	4/3"	C	10MP	0.5m ~ ∞	/	107.4 ° ×94.9 ° ×77.9 °	-4.54%@y=11.5mm	29

Stock No.	Focal Length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance(Min)	Filter Thread(mm)	FOV	Distrotion	Page
2/3" 2M Series										
600000	12	1.4	2/3"	C	2MP	0.15m ~ ∞	M30.5 × 0.5	49.0 ° ×40.0 ° × 30.3 °	-1.8%@y=5.5mm	30
600001	16	1.4	2/3"	C	2MP	0.3m ~ ∞	M30.5 × 0.5	37.6 ° ×30.4 ° ×22.9 °	-1.00%@y=5.5mm	31
600002	25	1.4	2/3"	C	2MP	0.25m ~ ∞	M30.5 × 0.5	24.7 ° ×19.9 ° ×15.0 °	0.27%@y=5.5mm	32
600003	35	1.4	2/3"	C	2MP	0.3m ~ ∞	M30.5 × 0.5	17.7 ° ×14.2 ° ×10.7 °	-0.33%@y=5.5mm	33
600004	50	1.8	2/3"	C	2MP	0.5m ~ ∞	M30.5 × 0.5	12.5 ° ×9.1 ° ×7.5 °	-0.22%@y=5.5mm	34
600005	75	2.8	2/3"	C	2MP	1.1m ~ ∞	M30.5 × 0.5	8.4 ° ×6.7 ° ×5.0 °	0.36%@y=5.5mm	35
600036	8	1.4	2/3"	C	2MP	0.1m~∞	M34 × 0.5	68.63 ° ×56.97 ° ×43.98 °	-2.81%@y=5.5mm	36

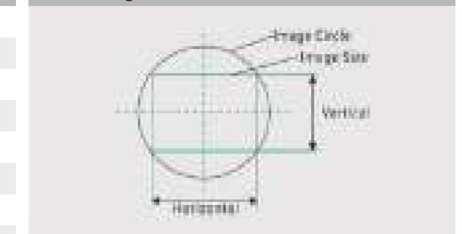
Stock No.	Focal Length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance(Min)	Filter Thread(mm)	FOV	Distrotion	Page
1" 5M Series										
600027	12	1.6	1"	C	5MP	1m ~ ∞	M52 × 0.75	68.84 ° ×57.12 ° ×44.08 °	-2.88%@y=8.0mm	37
600028	16	1.6	1"	C	5MP	1m ~ ∞	M37.5x0.5	54.38 ° ×44.20 ° ×33.54 °	-3.73%@y=8.0mm	38
600029	20	1.6	1"	C	5MP	1m ~ ∞	M39x0.5	44.74 ° ×36.08 ° ×27.24 °	-2.87%@y=8.0mm	39
600030	25	1.6	1"	C	5MP	1m ~ ∞	M39x0.5	36.12 ° ×29.04 ° ×21.86 °	-2.06%@y=8.0mm	40
600031	35	1.4	1"	C	5MP	0.4m ~ ∞	M39x0.5	25.68 ° ×20.72 ° ×15.62 °	0.26%@y=8.0mm	41

Lens Specification

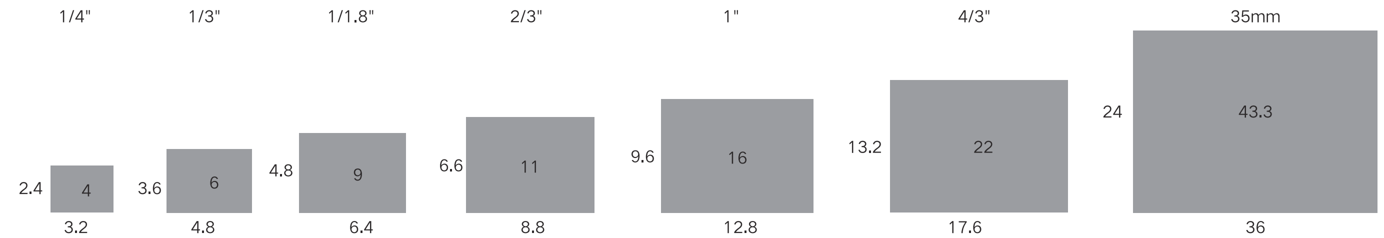
Sensor Size

Image Sensor	Image Circle	Horizontal	Vertical
1/4"	Ø4.0mm	3.2mm	2.4mm
1/3"	Ø6.0mm	4.8mm	3.6mm
1/1.8"	Ø9.0mm	7.1mm	5.3mm
2/3"	Ø11.0mm	8.8mm	6.6mm
1"	Ø16.0mm	12.8mm	9.6mm
4/3"	Ø22.0mm	17.6mm	13.2mm
35mm	Ø43.3mm	36mm	24mm

Area diagram



Size proportion of photoreceptor



SWIR Lens

Stock No.	Focal Length (mm)	F/#	Max. sensor size	Mount	Working Distance	Working wavelength (nm)	FOV	Distrotion	Page
GA SWIR									
680000	50	F2.15	25.6mm	C	275mm-∞	800-1800	28.9 °	< 1.0%	43
680001	25	F2.1	25.6mm	C	200mm-∞	800-1800	54.52 °	< 2.4%	44
680003	25	F1.4	1"	C	300mm~∞	700-1700	36.66 ° ×29.35 ° ×22.04 °	-3.09%@y=8mm	45
680004	35	F1.4	1"	C	300mm~∞	700-1700	26.54 ° ×21.23 ° ×15.92 °	-1.94%@y=8mm	46

Telecentric Lens

Image Plane(Max)：9mm — GA Large FOV Double Telecentric Lens

				Max. sensor size 1/1.8" 7.2×5.4×9			Optical Parameters					Mechnical Parameters						
Stock No.	FOV (mm)	Magnification (x)	Working Distance (mm)	H 7.2	V 5.4	D 9.0	F/#	Distortion (%)	Telecentricity (deg.)	DOV (mm)	MTF	Illumination Port(mm)	Lens Mount	Weight (g)	Length (mm)	Diameter (mm)	Note	Page
610006	65	0.138	211	52.17	39.13	65.22	4.7	<0.05%	<0.06°	±9.87	>30%@195lp/mm	None	C-Mount	756	147.9	87.4		47
610007	65	0.138	211	52.17	39.13	65.22	4.7	<0.05%	<0.06°	±9.87	>30%@195lp/mm	Φ8mm	C-Mount In-line illumination	/	147.8	88.4	Custom Product	47
610008	100	0.09	282	80.00	60.00	100.00	4.7	<0.06%	<0.05°	±23.21	>30%@195lp/mm	None	C-Mount	2262	223.5	125		47
610009	100	0.09	282	80.00	60.00	100.00	4.7	<0.06%	<0.05°	±23.21	>30%@195lp/mm	Φ8mm	C-Mount In-line illumination	/	223.5	125	Custom Product	47
610039	150	0.06	324	120.00	90.00	150.00	4.7	<0.05%	<0.03°	±52.22	>30%@195lp/mm	None	C-Mount	5482	293.15	176.5		48
610044	150	0.06	324	120.00	90.00	150.00	4.7	<0.05%	<0.03°	±52.22	>30%@195lp/mm	Φ8mm	C-Mount In-line illumination	/	293.15	176.5	Custom Product	48
610010	250	0.036	431	200.00	150.00	250.00	4.7	<0.04%	<0.02°	±145.06	>30%@195lp/mm	None	C-Mount	/	508.3	280		48
610011	250	0.036	431	200.00	150.00	250.00	4.7	<0.04%	<0.02°	±145.06	>30%@195lp/mm	Φ8mm	C-Mount In-line illumination	/	508.3	280	Custom Product	48

Image Plane(Max)：11mm — GA Large FOV Double Telecentric Lens

				Max. sensor size 2/3" 8.8×6.6×11			Optical Parameters					Mechnical Parameters						
Stock No.	FOV (mm)	Magnification (x)	Working Distance (mm)	H 8.8	V 6.6	D 11.0	F/#	Distortion (%)	Telecentricity (deg.)	DOV (mm)	MTF	Illumination Port(mm)	Lens Mount	Weight (g)	Length (mm)	Diameter (mm)	Note	Page
610012	65	0.176	211	50.00	37.50	62.50	5.3	<0.03%	<0.06°	±6.85	>30%@175lp/mm	None	C-Mount	776	160.8	87.4		49
610013	65	0.176	211	50.00	37.50	62.50	5.3	<0.03%	<0.06°	±6.85	>30%@175lp/mm	Φ8mm	C-Mount In-line illumination	/	160.8	88.4	Custom Product	49
610014	100	0.114	282	77.19	57.89	96.49	5.3	<0.05%	<0.05°	±16.32	>30%@175lp/mm	None	C-Mount	2288	236.5	125		49
610015	100	0.114	282	77.19	57.89	96.49	5.3	<0.05%	<0.05°	±16.32	>30%@175lp/mm	Φ8mm	C-Mount In-line illumination	/	236.5	125	Custom Product	49
610040	150	0.076	324	115.79	86.84	144.74	5.3	<0.03%	<0.03°	±36.71	>30%@175lp/mm	None	C-Mount	5508	306.06	176.5		50
610045	150	0.076	324	115.79	86.84	144.74	5.3	<0.03%	<0.03°	±36.71	>30%@175lp/mm	Φ8mm	C-Mount In-line illumination	5508	306.06	176.5	Custom Product	50
610016	250	0.0456	431	192.98	144.74	241.23	5.3	<0.02%	<0.02°	±101.96	>30%@170lp/mm	None	C-Mount	/	521.3	280		50
610017	250	0.046	431	192.98	144.74	241.23	5.3	<0.02%	<0.02°	±101.96	>30%@170lp/mm	Φ8mm	C-Mount In-line illumination	/	521.3	280	Custom Product	50

Image Plane(Max)：16mm — GA Large FOV Double Telecentric Lens

				Max. sensor size 1" 12.8×9.6×16			Optical Parameters					Mechnical Parameters						
Stock No.	FOV (mm)	Magnification (x)	Working Distance (mm)	H 12.5	V 9.6	D 16.0	F/#	Distortion (%)	Telecentricity (deg.)	DOV (mm)	MTF	Illumination Port(mm)	Lens Mount	Weight (g)	Length (mm)	Diameter (mm)	Note	Page
610018	65	0.255	211	50.20	37.65	62.75	6.4	<0.03%	<0.06°	±3.94	>30%@135lp/mm	None	C-Mount	817	181.9	87.4		51
610019	65	0.255	211	50.20	37.65	62.75	6.4	<0.03%	<0.06°	±3.94	>30%@135lp/mm	Φ8mm	C-Mount In-line illumination	/	181.9	88.4	Custom Product	51
610020	100	0.166	282	77.11	57.83	96.39	6.4	<0.05%	<0.05°	±9.29	>30%@135lp/mm	None	C-Mount	2314	257.5	125		51
610021	100	0.166	282	77.11	57.83	96.39	6.4	<0.05%	<0.05°	±9.29	>30%@135lp/mm	Φ8mm	C-Mount In-line illumination	/	257.5	125	Custom Product	51
610041	150	0.11	324	116.36	87.27	145.45	6.4	<0.03%	<0.03°	±21.16	>30%@140lp/mm	None	C-Mount	5534	327.09	176.5		52
610046	150	0.11	324	116.36	87.27	145.45	6.4	<0.03%	<0.03°	±21.16	>30%@140lp/mm	Φ8mm	C-Mount In-line illumination	5534	327.09	176.5	Custom Product	52
610022	250	0.066	431	192.77	144.58	240.96	6.4	<0.02%	<0.02°	±58.07	>30%@140lp/mm	None	C-Mount	/	542.3	280		52
610023	250	0.066	431	192.77	144.58	240.96	6.4	<0.02%	<0.02°	±58.07	>30%@140lp/mm	Φ8mm	C-Mount In-line illumination	/	542.3	280	Custom Product	52

Image Plane(Max)：24mm — GA Large FOV Double Telecentric Lens

				Max. sensor size 4/3" 18.8×13.5×22.5			Optical Parameters					Mechnical Parameters						
Stock No.	FOV (mm)	Magnification (x)	Working Distance (mm)	H 18.8	V 13.5	D 22.5	F/#	Distortion (%)	Telecentricity (deg.)	DOV (mm)	MTF	Illumination Port(mm)	Lens Mount	Weight (g)	Length (mm)	Diameter (mm)	Note	Page
610024	65	0.369	211	50.95	36.59	62.72	8	<0.04%	<0.1°	±2.35	>30%@105lp/mm	None	F-Mount	957	183.9	87.4		53
610025	65	0.369	211	50.95	36.59	62.72	8	<0.04%	<0.1°	±2.35	>30%@105lp/mm	Φ8mm	F-Mount In-line illumination	/	183.9	88.4	Custom Product	53
610026	100	0.24	282	78.33	56.25	96.44	8	<0.05%	<0.05°	±5.56	>30%@100lp/mm	None	F-Mount	2471	259.55	125		53
610027	100	0.24	282	78.33	56.25	96.44	8	<0.05%	<0.05°	±5.56	>30%@100lp/mm	Φ8mm	F-Mount In-line illumination	/	259.55	125	Custom Product	53
610042	150	0.16	324	117.50	84.38	144.66	8	<0.04%	<0.03°	±12.5	>30%@110lp/mm	None	F-Mount	5691	329.11	176.5		54
610047	150	0.16	324	117.50	84.38	144.66	8	<0.04%	<0.03°	±12.5	>30%@110lp/mm	Φ8mm	F-Mount In-line illumination	5691	329.11	176.5	Custom Product	54
610028	250	0.096	431	195.83	140.63	241.09	8	<0.02%	<0.02°	±34.72	>30%@110lp/mm	None	F-Mount	/	545.3	280		54
610029	250	0.096	431	195.83	140.63	241.09	8	<0.02%	<0.02°	±34.72	>30%@110lp/mm	Φ8mm	F-Mount In-line illumination	/	545.3	280	Custom Product	54

Image Plane(Max)：11mm — Compact High Magnification Double Telecentric Lens

				Max. sensor size 2/3" 8.8×6.6×11			Optical Parameters					Mechnical Parameters						
Stock No.	FOV (mm)	Magnification (x)	Working Distance (mm)	H 8.8	V 6.6	D 11.0	F/#	Distortion (%)	Telecentricity (deg.)	DOV (mm)	MTF	Illumination Port(mm)	Lens Mount	Weight (g)	Length (mm)	Diameter (mm)	Note	Page
610030	22	0.5	130	17.6	13.2	22	12	<0.03%	<0.03°	±1.92	>30%@70lp/mm	Φ8mm	C-Mount In-line illumination	181	121.35	33	Custom Product	55
610031	22	0.5	130	17.6	13.2	22	12	<0.03%	<0.03°	±1.92	>30%@70lp/mm	None	C-Mount	172	117.42	33		55
610032	11	1	130	8.8	6.6	11	12	<0.03%	<0.03°	±0.48	>30%@75lp/mm	Φ8mm	C-Mount In-line illumination	202	134.85	33	Custom Product	56
610033	11	1	130	8.8	6.6	11	12	<0.03%	<0.03°	±0.48	>30%@75lp/mm	None	C-Mount	195	130.9	33		56
610034	5.5	2	130	4.4	3.3	5.5	16	<0.05%	<0.04°	±0.16	>30%@55lp/mm	Φ8mm	C-Mount In-line illumination	223	155.79	33	Custom Product	57
610035	5.5	2	130	4.4	3.3	5.5	16	<0.05%	<0.04°	±0.16	>30%@55lp/mm	None	C-Mount	213	150.8	33		57
610036	3.14	3.5	130	2.5	1.8	3.1	24	<0.05%	<0.06°	±0.08	>30%@40lp/mm	Φ8mm	C-Mount In-line illumination	278	183.8	33	Custom Product	58
610037	3.14	3.5	130	2.5	1.8	3.1	24	<0.05%	<0.06°	±0.08	>30%@40lp/mm	None	C-Mount	268	167.9	33		58

Manual Zoom Lens

Stock No.	Focal length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance	Filter Thread	FOV	Distortion	Page
640000	12-36	2.8-C	2/3"	C	2MP	W：0.15m～∞ T：0.45m～∞	M35.5×0.5	W：50.8°×41.3°×31.2° T：17.0°×13.8°×10.4°	W：-3.43%@y=5.5mm T：2.3%@y=5.5mm	59
640001	12-36	2.8-16C	2/3"	C	5MP	W：0.15m～∞ T：0.45m～∞	M40.5x0.5	W：50.8°×41.2°×31.2° T：17.2°×13.8°×10.5°	W：-3.4%@y=5.5mm T：1.4%@y=5.5mm	61

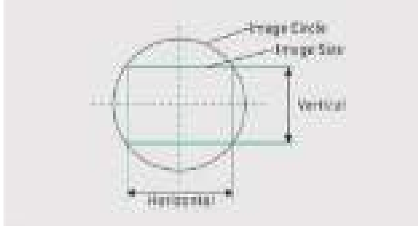
Motorized Zoom Lens

Stock No.	Focal length(mm)	F/#	Max. sensor size	Mount	Resolution	Working Distance	Filter Thread	FOV	Distortion	Page
640004	10-330	1.5-360C	1/2"	C	2MP	W：2.8m～∞ T：2.8m～∞	M100x1	W:43.2° × 34.8° × 26.2 T:1.36° ×1.10° ×0.82°	W:-3.33%@y=4.0mm T:2.2%@y=4.0mm	63
640006	12.5-750.0	3.5-360C	1/1.8"	C	3MP	W：5m~∞ T：5m~∞	M114×0.75	W：38.80°×33.82°×19.02° T：0.71°×0.62°×0.35°	W：-1.64%@y=4.5㎜ T：1.36%@y=4.5㎜	65

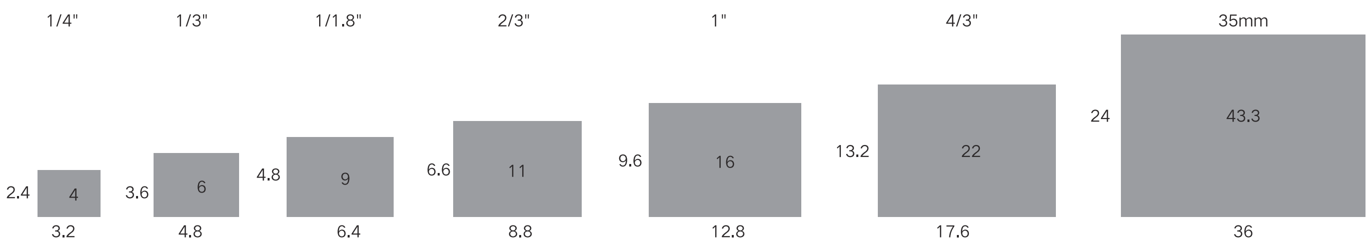
Lens Specification

Sensor Size			
Image Sensor	Image Circle	Horizontal	Vertical
1/4"	∅4.0mm	3.2mm	2.4mm
1/3"	∅6.0mm	4.8mm	3.6mm
1/1.8"	∅9.0mm	7.1mm	5.3mm
2/3"	∅11.0mm	8.8mm	6.6mm
1"	∅16.0mm	12.8mm	9.6mm
4/3"	∅22.0mm	17.6mm	13.2mm
35mm	∅43.3mm	36mm	24mm

Area diagram



Size proportion of photoreceptor



Stock No.	EFL(mm)	Sensor	F/#	FOV (HxV)	wavelength (μm)	Transmittance	Focus Distance (m)	Page
680200	13	384×288 17μm	1.0	28.8°×21.6°	8-12	>88%	0.5-∞	67
680201	19	384×288 17μm	1.0	19.68°×14.78°	8-12	>88%	0.5-∞	67
680202	50	640×512 17μm	1.0	12.42°×9.95°	8-12	>88%	3-∞	68
680203	35	640×512 17μm	1.0	17.67°×14.18°	8-12	>88%	5-∞	68
680204	3.7	256×192 12μm	1.1	45.6°×34.4°	8-12	>88%	0.1-∞	69
680205	3.5	256×192 12μm	1.0	49.1°×36.7°	8-12	>88%	0.1-∞	69
680206	7	256×192 12μm	1.0	24.8°×18.7°	8-12	>88%	0.2-∞	70
680207	36-180	640×512 17μm	1.2	3.5°×2.8° 17.4°×13.9°	8-12	/	2-∞	70

Stock No.	Focal Length	F/#	Max.sensor size	Magnification	Working wavelength	Mount	Page
620000	60mm	4~22	60mm	0.2x~0.75x	400~700nm	F-mount	71
620001	60mm	4~22	60mm	0.2x~0.75x	400~700nm	M58×0.75	73
620002	60mm	4~22	60mm	0.2x~0.75x	400~700nm	M72x0.75	75
620006	60mm	4~22	60mm	0.2x~0.75x	400~700nm	M42x1.0	77
620003	60mm	4~22	60mm	0.04x~0.2x	400~700nm	F-mount	79
620004	60mm	4~22	60mm	0.04x~0.2x	400~700nm	M58x0.75	81
620005	60mm	4~22	60mm	0.04x~0.2x	400~700nm	M72x0.75	83
620007	60mm	4~22	60mm	0.04x~0.2x	400~700nm	M42x1.0	85

Stock No.	Standard Angle	D-Stop	-0.01/-0.04 Located Outside Diamter (mm)	Outer Diameter (Max) (mm)	Distortion(Max)	Apply to	Page
630000	70 °	24	72	89	0.50%	5M Module	87
630001	70 °	17.5	72	89	0.15%	13M Module	87
630002	88 °	20	72	80	0.20%	21M Module	87
630003	90 °	20	72	89	0.50%	21M Module	88
630004	90 °	21	72	89	0.20%	21M Module	88
630005	88 °	17.5	72	89	0.20%	21M Module	88
630006	108 °	19	105	122	0.48%	21M Module	89
630007	120 °	6	72	87	0.56%	21M Module	89
630008	130 °	17	133	161	24.60%	21M Module	89
630009	88 °	20.67	80	89	0.23%	-	90
630010	88 °	20.72	80	85	0.36%	-	90
630011	90 °	19.46	110	130	0.17%	-	90

Custom Service	
We can provide quick custom service for imaging lens	91

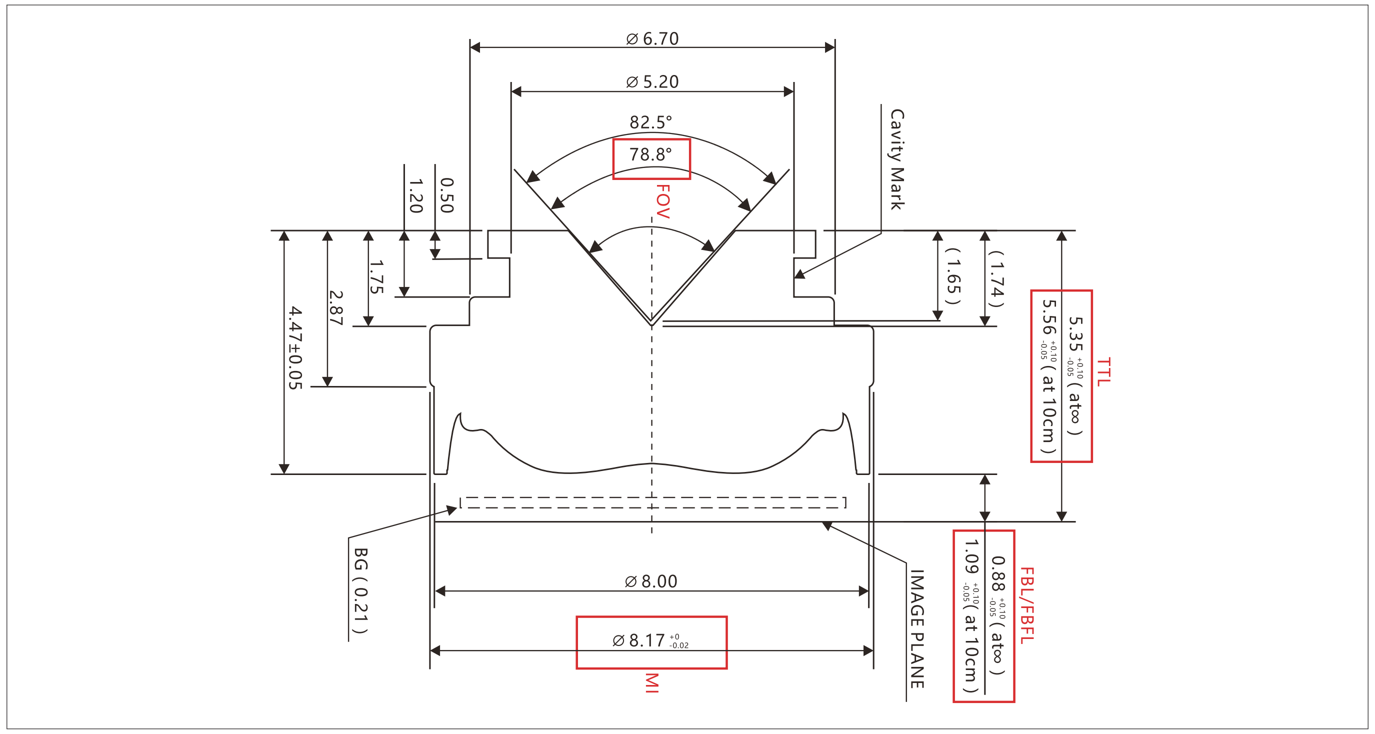
Stock No	Diameter(mm)	CWL(nm)	Stock No	Diameter(mm)	CWL(nm)	Stock No	Diameter(mm)	CWL(nm)
670000	30.5	880	670009	30.5	590	670018	30.5	518
670001	37.5	880	670010	37.5	590	670019	37.5	518
670002	40.5	880	670011	40.5	590	670020	40.5	518
670003	30.5	634	670012	30.5	524	670021	30.5	470
670004	37.5	634	670013	37.5	524	670022	37.5	470
670005	40.5	634	670014	40.5	524	670023	40.5	470
670006	30.5	660	670015	30.5	548	670024	30.5	330
670007	37.5	660	670016	37.5	548	670025	37.5	330
670008	40.5	660	670017	40.5	548	670026	40.5	330

Number	Filter	CWL(nm)	FWHM(nm)	Transmission(%)	Blocking Range(nm)/ (左OD≥3.0	右OD≥4.0)
1	NUV	330	95	74	400-650	200-250
2	BLUE	470	85	95	200-400	550-1200
3	CYAN	518	95	89	600-1000	200-450
4	GREEN	524	92	94	200-450	600-1000
5	UV/IR CUT-OFF	548	290	95	200-370	750-1100
6	ORANGE	590	79	89	700-1050	200-500
7	LIGHT RED	634	70	93	200-550	700-1050
8	DARK RED	660	66	94	200-550	720-1120
9	UV/VIS CUT-OFF	880	135	96	200-750	1000-1200
Page						92

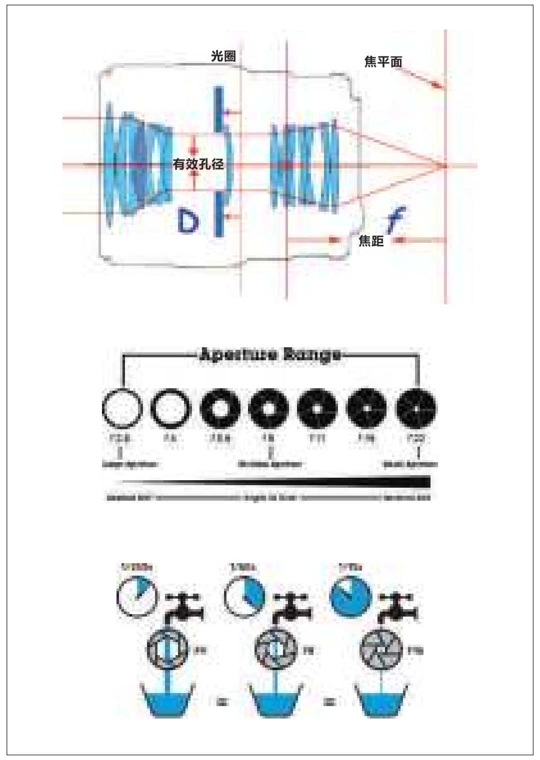
Stock No.	Working Wavelength (nm)	Resolution	Pixel Size (μm)	Sensor Size (mm)	Frame Rate (Hz)	Size (mm)	Mount	Page
680100	400 ~ 1700	640X512	15	9.6X7.68	50 / 100	65X58X64.5	C	93
680101	900 ~ 1700	640X512	15	9.6X7.68	50 / 100	65X58X64.5	C	93
680102	900 ~ 1700	320X256	30	9.6X7.68	50 / 100	65X58X64.5	C	93
680103	400 ~ 1700	640X512	15	9.6X7.68	50 / 100	67X70X60	C	94
680104	900 ~ 1700	640X512	15	9.6X7.68	50 / 100	67X70X60	C	94
680105	900 ~ 1700	320X256	30	9.6X7.68	50 / 100	67X70X60	C	94
680106	400 ~ 1700	640X512	15	9.6X7.68	50 / 100	67X70X60	C	95
680107	900 ~ 1700	640X512	15	9.6X7.68	50 / 100	67X70X60	C	95

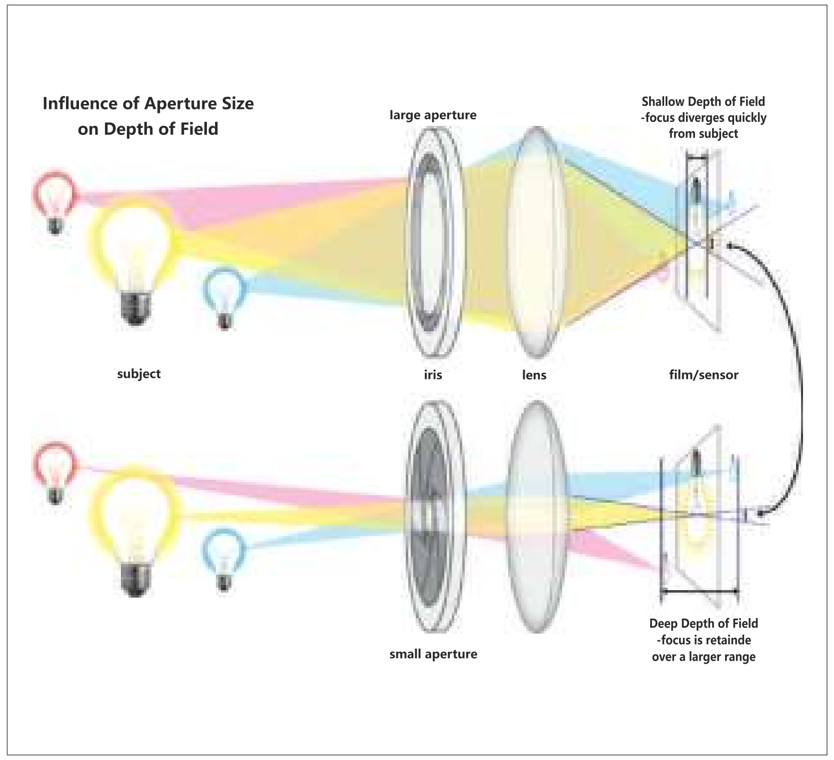
LENS SPECIFICATION

Technical Term	Term Description
Total Track Length	The distance from the front end to the image plane of the lens
Flange Back Focal Length	The distance from the reference surface to the image plane
Field Of View	The maximum angle of view that a lens can shoot
Mechanical Interface	The mechanism interface with the camera module e.g：M6xP0.25、∮8.17

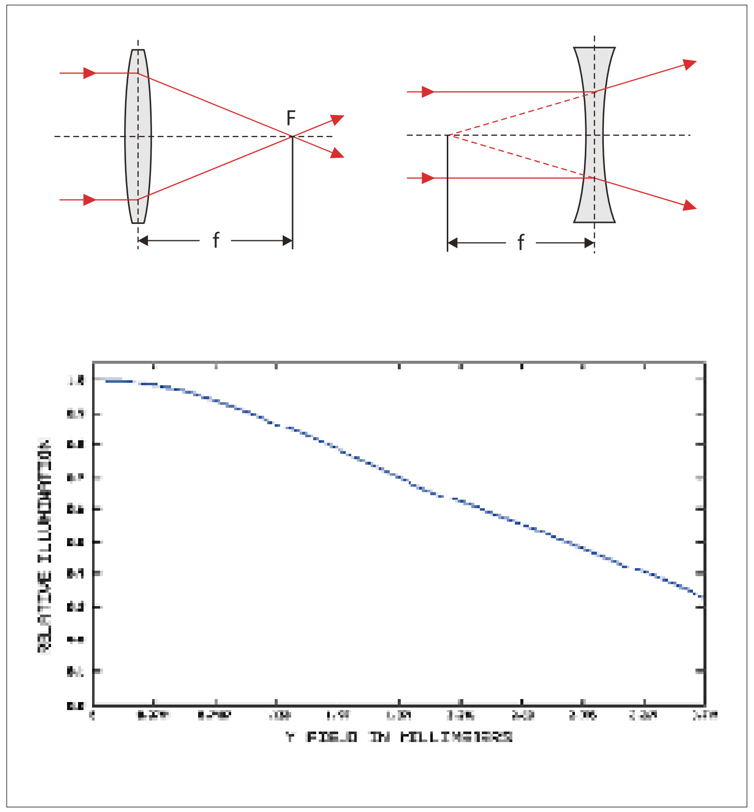


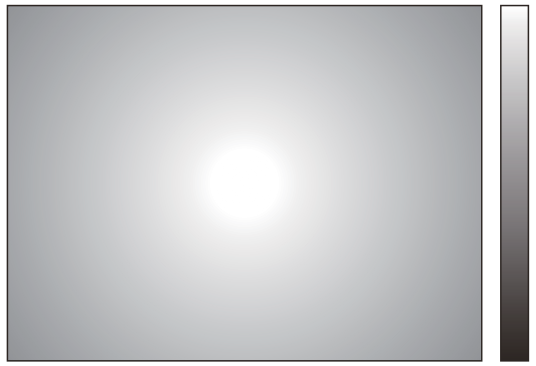
F/No（The amount of light go through the lens）F/No.=f/D





LENS SPECIFICATION





Fixed Focal Lens

Effective Focal Length

The distance from the lens center to focal point

Relative Illumination

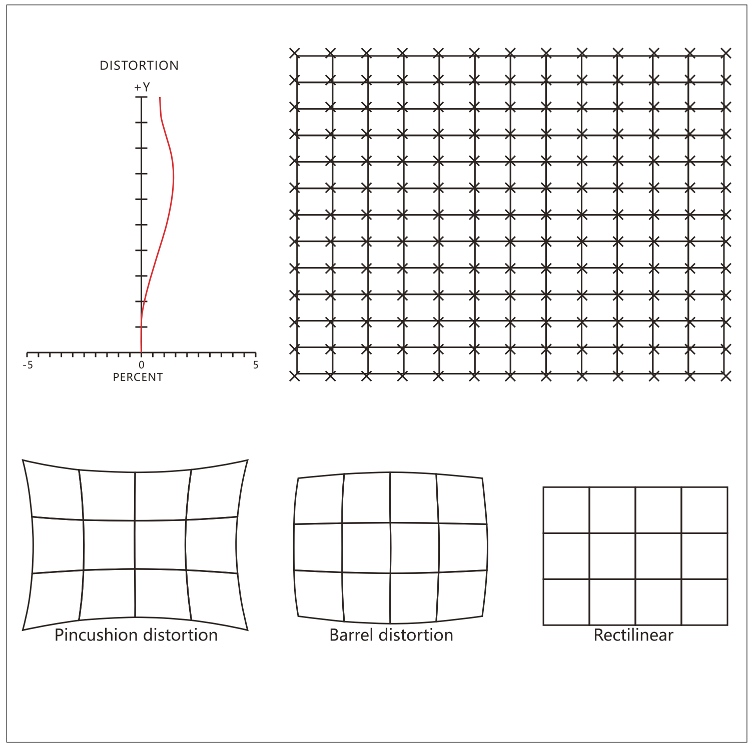
Illumination:The level of brightness of an object or illuminated by a light source

Relative Illumination:The ration of central illumination and peripheral illumination

Distortion

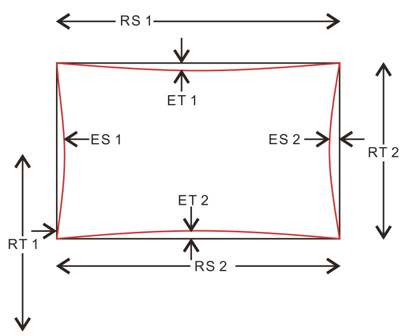
Optical Distortion

TV Distortion



Fixed Focal Lens

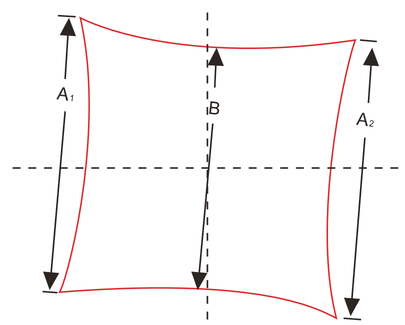
LENS SPECIFICATION



$$\text{Optical Distortion} = \frac{|\text{Actual Image Height} - \text{Ideal Image Height}|}{\text{Ideal Image Height}} \times 100\%$$

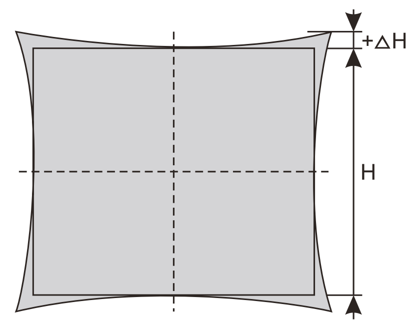
$$\text{水平视讯畸变} = \frac{|ES1| + |ES2|}{RS1 + RS2} \times 100\%$$

$$\text{垂直视讯畸变} = \frac{|ET1| + |ET2|}{RT1 + RT2} \times 100\%$$



$$TV\_Dist(\%) = \frac{(A1+A2)/2 - B}{B} \times 100\%$$

SMIA TV Distortion

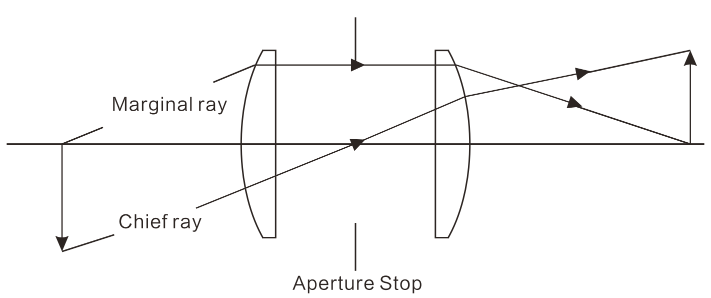


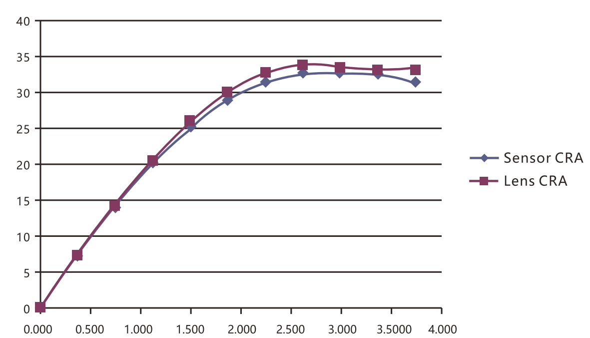
Picture height distortion=ΔH/H

H=height of final image

The TV Distortion meaurement as descnbed in the EBU specification

Traditional definition





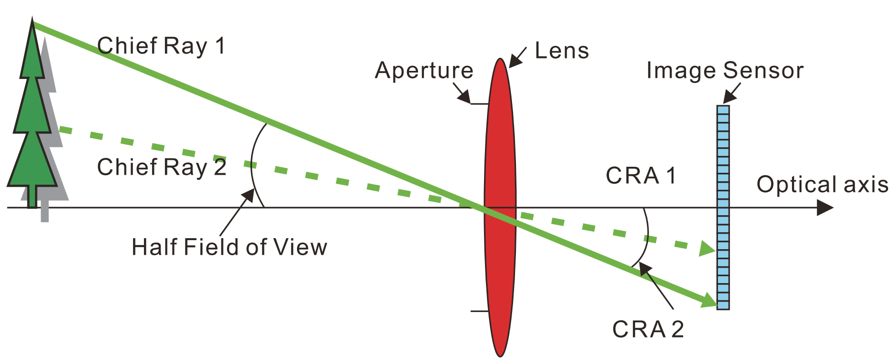
Chief Ray Angle

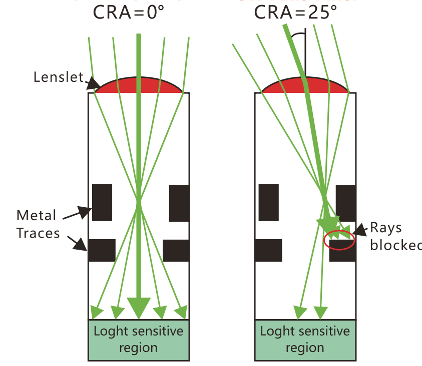
Chief ray :

The ray that off-axis object emits and passes through the A.S central point

Marginal ray:

The ray that off-axis object emits and passes through A.S edge

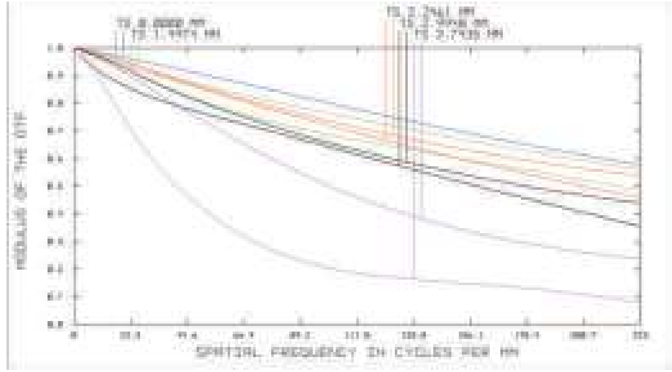


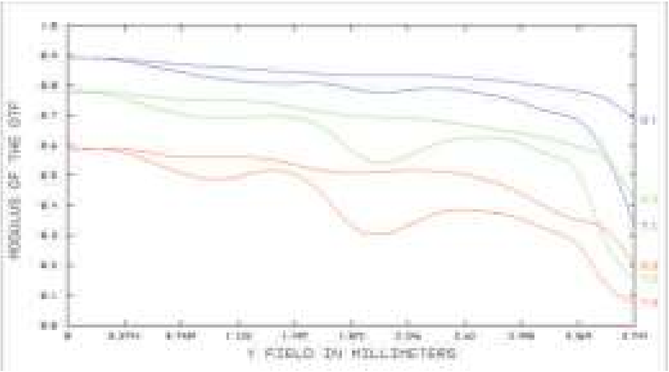


LENS SPECIFICATION

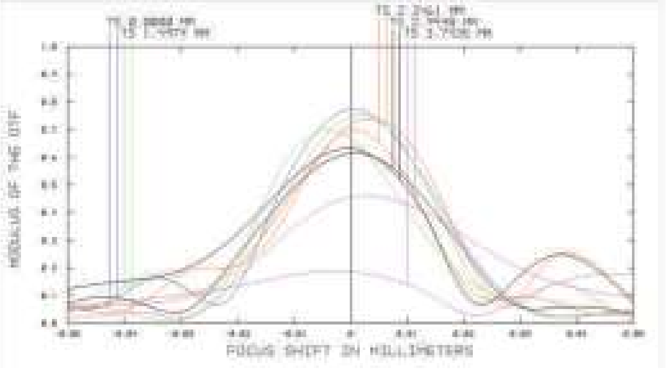
Fixed Focal Lens

Modulation Transfer Function

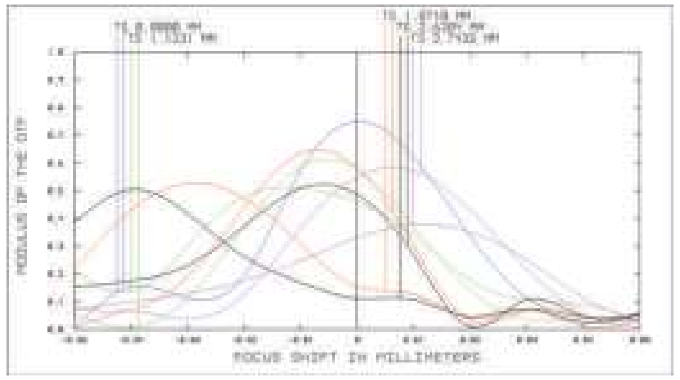




@Infinity



@10cm



Fixed Focal Lens

Fixed Focal Length Lenses

FIXED FOCAL LENGTH LENSES

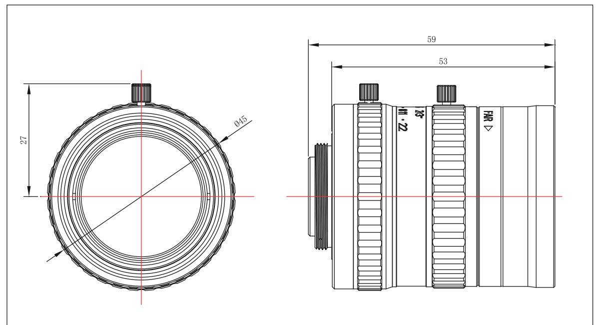
GAOPTICS® HAVE 6 SERIES FIXED FOCAL LENGTH LENSES WHICH COVER 1/1.8″ 、2/3″ 、1″ 、4/3″ SENSOR SIZE, THEY ARE DESIGNED WITH STANDARD C MOUNT AND DIFFERENT FOCAL LENGTH. GAOPTICS® FIXED FOCAL LENGTH LENSES CAN MEET MOST REQUIREMENTS OF FACTORY AUTOMATION.

2/3" 5M Series 600007

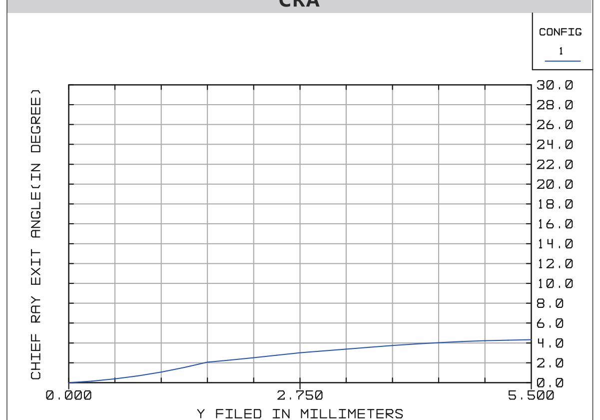
2/3" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		8mm
3	Mount		C-Mount
4	F/#		F1.6-F22
5	Working Distance		0.1m ~ ∞
6	FOV(Diagonal x H xV)	2/3"	66.8° ×55.8° ×43.3°
		1/2"	51.4° ×42.1° ×32.1°
		1/3"	39.6° ×32.1° ×24.3°
7	Object Size (at the minimum focus distance)	2/3"	159.0×126.0×93.6mm
		1/2"	114.1×90.7×67.6mm
		1/3"	84.8×67.6×50.5mm
8	BFL(in air)		12.44mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-0.73%@y=5.5mm
		1/2"	-1.00%@y=4.0mm
		1/3"	-0.77%@y=3.0mm
11	Filter thread		M40.5×0.5mm
12	Lens Size(W x L)		49.5×58.7mm
13	Weight		170g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		17.61mm
16	Diameter of entrance pupil		5.25mm
17	Distance of exit pupil		-141.59mm
18	Diameter of exit pupil		88.60mm
19	Total optical length		67.29mm
20	Magnification		-0.0719

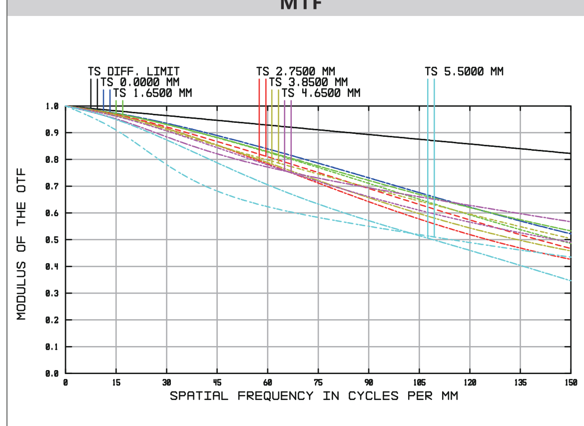
Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
100mm	-0.07185	1.0191	1.0661
150mm	-0.05029	2.3921	2.5522
200mm	-0.03869	6.3657	6.9842
250mm	-0.03144	12.9813	16.0255
300mm	-0.02648	26.2665	14.5533
350mm	-0.02287	17.9241	21.9720
400mm	-0.02013	23.2414	29.2971
500mm	-0.01623	35.2035	50.5580
750mm	-0.01094	70.7951	81.7762
1000mm	-0.00825	160.0044	160.9750



CRA



MTF

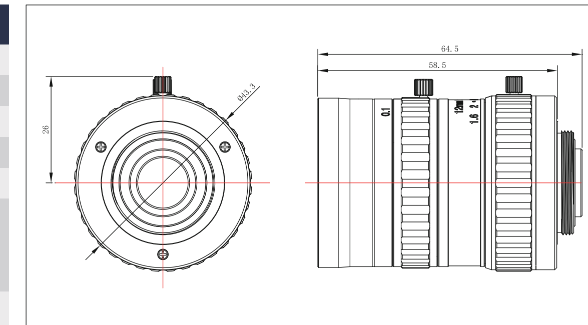


2/3" 5M Series 600008

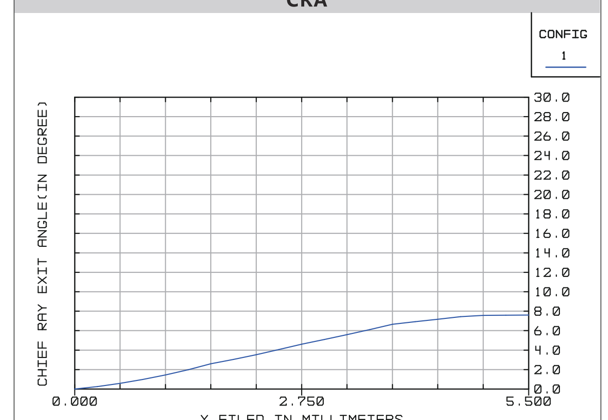
2/3" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F1.6-F22
5	Working Distance		0.1m ~ ∞
6	FOV(Diagonal x H xV)	2/3"	48.6° ×39.8° ×30.4°
		1/2"	36.4° ×29.5° ×22.3°
		1/3"	27.7° ×22.3° ×16.8°
7	Object Size (at the minimum focus distance)	2/3"	104.0×82.9×61.9mm
		1/2"	75.2×60.6×44.9mm
		1/3"	56.2×44.9×33.6mm
8	BFL(in air)		12.42mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-0.35%@y=5.5mm
		1/2"	-0.53%@y=4.0mm
		1/3"	-0.38%@y=3.0mm
11	Filter thread		M37.5×0.5mm
12	Lens Size(W x L)		47.7×64.5mm
13	Weight		178g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		23.49mm
16	Diameter of entrance pupil		7.5mm
17	Distance of exit pupil		-71.71mm
18	Diameter of exit pupil		44.04mm
19	Total optical length		74.77mm
20	Magnification		-0.107

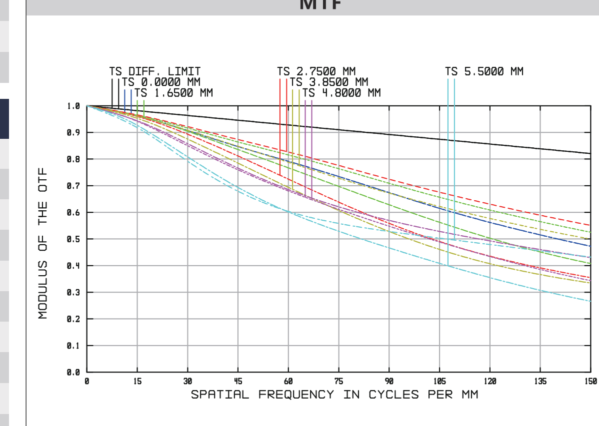
Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
100mm	-0.10733	0.5371	0.8481
150mm	-0.07435	1.6522	1.6891
200mm	-0.05692	2.9261	3.0142
250mm	-0.04613	4.5552	4.7271
300mm	-0.03879	6.5351	6.8331
350mm	-0.03347	8.8636	9.3364
400mm	-0.02943	11.5351	12.2420
450mm	-0.02626	14.5462	15.5514
500mm	-0.02371	17.8944	19.2730
550mm	-0.02161	21.5741	23.4112



CRA



MTF

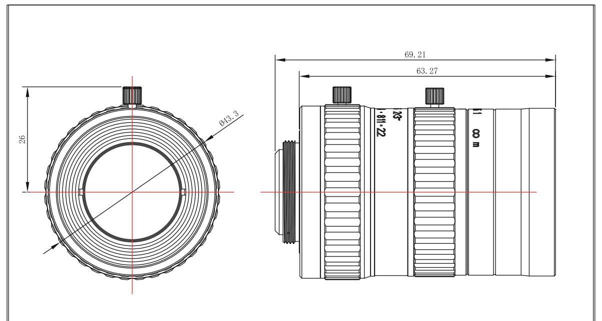


2/3" 5M Series 600009

2/3" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		16mm
3	Mount		C-Mount
4	F/#		F1.6-F22
5	Working Distance		0.2m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	38.0°×30.8°×23.4°
		1/2"	28.1°×22.7°×17.1°
		1/3"	21.3°×17.1°×12.9°
7	Object Size (at the minimum focus distance)	2/3"	145.6×116.5×87.3mm
		1/2"	105.9×84.6×63.5mm
		1/3"	79.4×63.5×47.6mm
8	BFL(in air)		12.36mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	0.07%@y=5.5mm
		1/2"	-0.06%@y=4.0mm
		1/3"	-0.06%@y=3.0mm
11	Filter thread		M37.5×0.5mm
12	Lens Size(W X L)		47.7×69.2mm
13	Weight		181g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		20.76mm
16	Diameter of entrance pupil		9.98mm
17	Distance of exit pupil		-138.99mm
18	Diameter of exit pupil		86.80mm
19	Total optical length		74.92mm
20	Magnification		-0.0757

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
200mm	-0.07572	1.6921	1.7212
250mm	-0.06118	2.6382	2.6953
300mm	-0.05131	3.7911	4.3891
350mm	-0.04421	5.1493	5.3051
400mm	-0.03882	6.0122	6.9450
450mm	-0.03462	8.4772	8.8082
500mm	-0.03123	10.4431	10.8982
550mm	-0.02845	12.6141	13.2163
600mm	-0.02612	14.9755	15.7624
650mm	-0.02415	17.5391	18.5391



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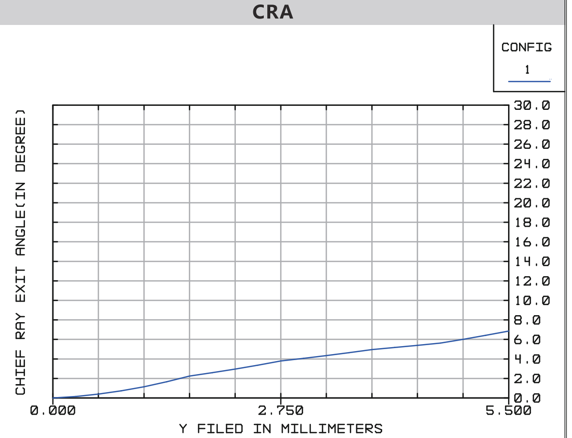

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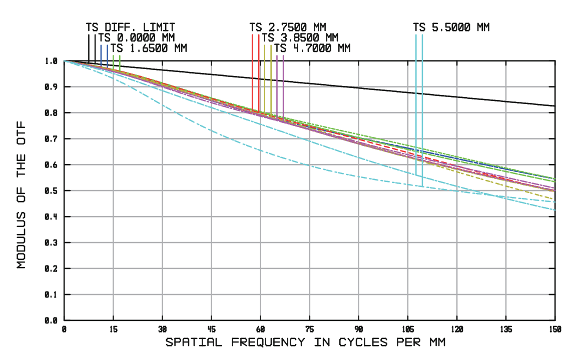


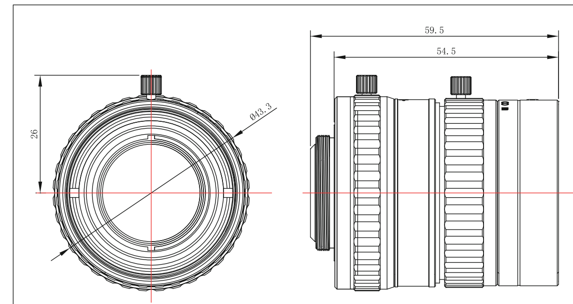
Fixed Focal Lens

2/3" 5M Series 600010

2/3" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		25mm
3	Mount		C-Mount
4	F/#		F1.4-F22
5	Working Distance		0.2m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	24.8°×20.0°×15.0°
		1/2"	18.2°×14.6°×10.9°
		1/3"	13.7°×10.9°×8.2°
7	Object Size (at the minimum focus distance)	2/3"	86.1×69.0×51.7mm
		1/2"	62.7×50.2×37.6mm
		1/3"	47.0×37.6×28.2mm
8	BFL(in air)		12.78mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-0.19%@y=5.5mm
		1/2"	-0.17%@y=4.0mm
		1/3"	-0.12%@y=3.0mm
11	Filter thread		M37.5×0.5mm
12	Lens Size(W X L)		47.5×59.7mm
13	Weight		148g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		38.08mm
16	Diameter of entrance pupil		17.89mm
17	Distance of exit pupil		-18.64mm
18	Diameter of exit pupil		13.30mm
19	Total optical length		55.54mm
20	Magnification		-0.1265

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
200mm	-0.12646	0.4536	0.4557
250mm	-0.10079	1.2084	1.2124
300mm	-0.08381	2.0195	2.0265
350mm	-0.07176	2.8869	3.1979
400mm	-0.06275	3.8104	3.8269
450mm	-0.05574	4.2901	4.3135
500mm	-0.05015	4.8255	4.8578
550mm	-0.04559	5.4171	5.4621
750mm	-0.03342	9.0642	9.1203
1000mm	-0.02505	24.7671	24.8381



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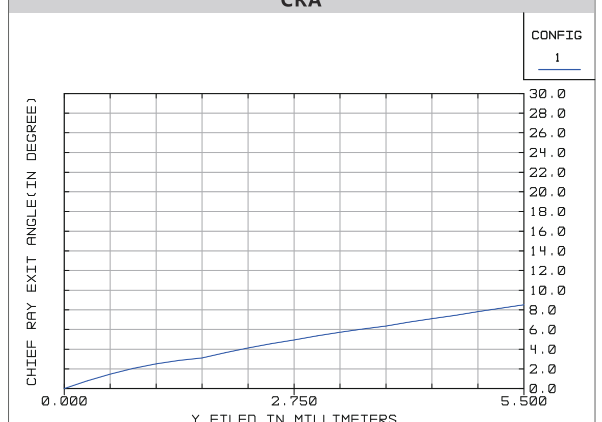

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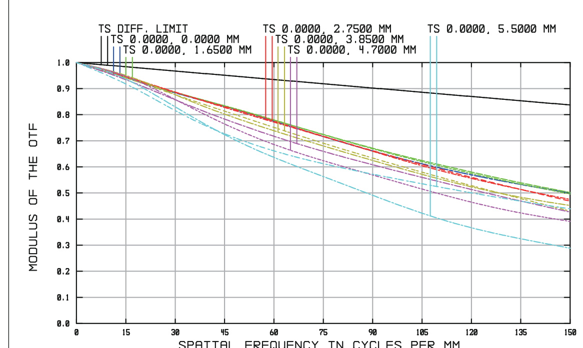


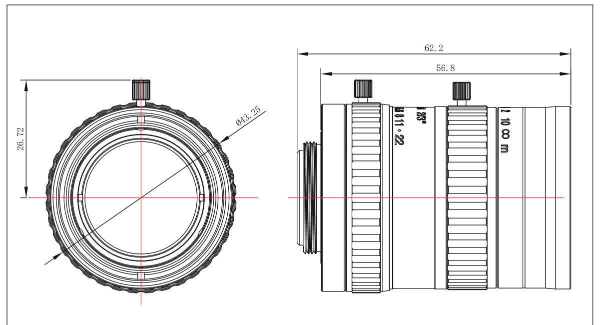
Fixed Focal Lens

2/3" 5M Series 600011

2/3" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		35mm
3	Mount		C-Mount
4	F/#		F1.4-F22
5	Working Distance		0.3m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	17.9° × 14.3° × 10.8°
		1/2"	13.0° × 10.5° × 7.8°
		1/3"	9.8° × 7.8° × 5.9°
7	Object Size (at the minimum focus distance)	2/3"	90.1 × 72.1 × 54.1mm
		1/2"	65.6 × 52.5 × 39.4mm
		1/3"	49.2 × 39.4 × 29.5mm
8	BFL(in air)		12.82mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-0.06%@y=5.5mm
		1/2"	-0.07%@y=4.0mm
		1/3"	-0.05%@y=3.0mm
11	Filter thread		M37.5 × 0.5mm
12	Lens Size(W X L)		48.3 × 62.2mm
13	Weight		156g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		32.28mm
16	Diameter of entrance pupil		23.50mm
17	Distance of exit pupil		-40.40mm
18	Diameter of exit pupil		27.12mm
19	Total optical length		62.72mm
20	Magnification		-0.1220

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
300mm	-0.12197	0.5237	0.5255
350mm	-0.10377	0.7125	0.7155
400mm	-0.09028	0.9304	0.9348
450mm	-0.07992	1.1772	1.1834
500mm	-0.07169	1.4529	1.4614
550mm	-0.06502	1.7575	1.7688
600mm	-0.05948	2.0910	2.1056
650mm	-0.05481	2.4533	2.4719
700mm	-0.05082	2.8444	2.8677
750mm	-0.04737	3.2643	3.2930



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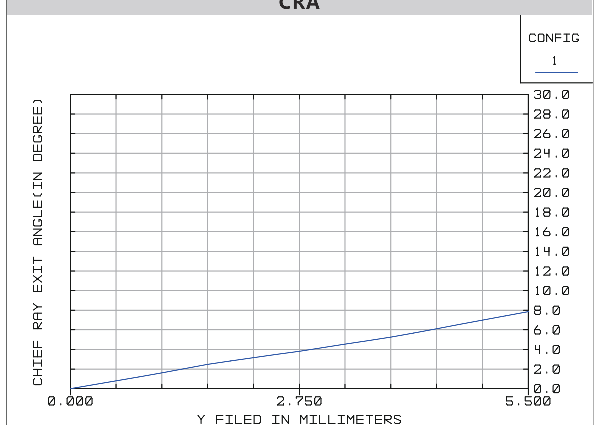

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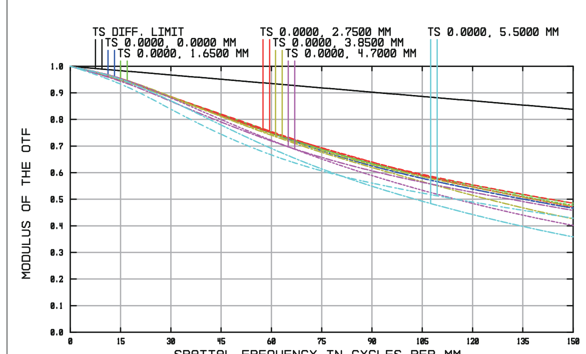
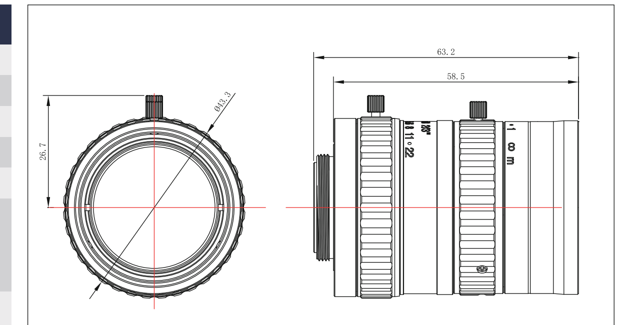


2/3" 5M Series 600012

2/3" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		50mm
3	Mount		C-Mount
4	F/#		F1.8-F22
5	Working Distance		0.4m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	12.6° × 10.1° × 7.6°
		1/2"	9.1° × 7.3° × 5.5°
		1/3"	6.9° × 5.5° × 4.1°
7	Object Size (at the minimum focus distance)	2/3"	83.8 × 66.9 × 50.2mm
		1/2"	60.9 × 48.7 × 36.7mm
		1/3"	45.7 × 36.5 × 27.4mm
8	BFL(in air)		13.63mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	0.03%@y=5.5mm
		1/2"	0.02%@y=4.0mm
		1/3"	0.01%@y=3.0mm
11	Filter thread		M37.5 × 0.5mm
12	Lens Size(W X L)		48.3 × 62.5mm
13	Weight		173g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		46.00mm
16	Diameter of entrance pupil		27.91mm
17	Distance of exit pupil		-43.20mm
18	Diameter of exit pupil		24.12mm
19	Total optical length		65.53mm
20	Magnification		-0.1315

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
400mm	-0.13152	0.5839	0.6856
450mm	-0.11620	1.2389	1.2413
500mm	-0.10409	1.4121	1.4154
600mm	-0.08620	1.7129	1.7187
750mm	-0.06846	2.0503	2.0615
1000mm	-0.05099	3.6416	3.6683
1500mm	-0.03376	8.1787	8.2689
2000mm	-0.02523	14.5148	14.7274
3000mm	-0.01677	32.5376	33.2595
5000mm	-0.01003	89.7337	93.0741



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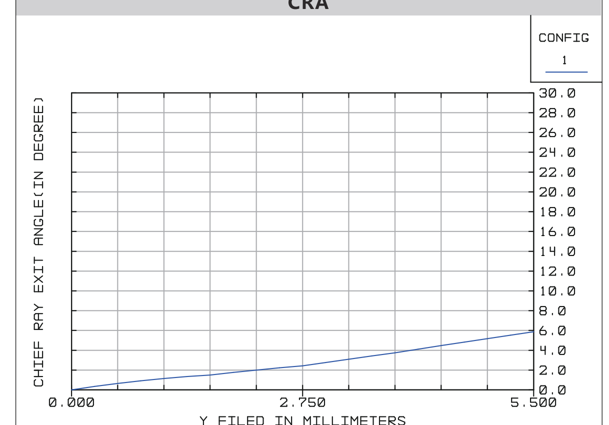

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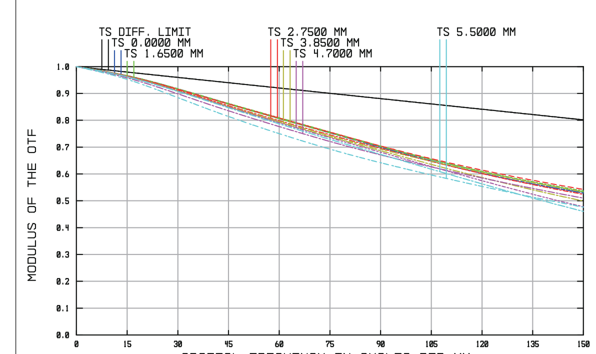
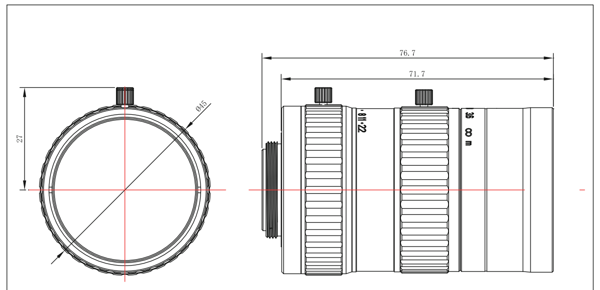


2/3" 5M Series 600013

2/3" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		75mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.9m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	8.4 ° × 6.7 ° × 5.0 °
		1/2"	6.1 ° × 4.9 ° × 3.7 °
		1/3"	4.6 ° × 3.7 ° × 2.7 °
7	Object Size (at the minimum focus distance)	2/3"	123.2 × 98.5 × 73.9mm
		1/2"	89.6 × 71.7 × 53.8mm
		1/3"	67.2 × 53.8 × 40.3mm
8	BFL(in air)		13.76mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	0.02%@y=5.5mm
		1/2"	0.04%@y=4.0mm
		1/3"	0.03%@y=3.0mm
11	Filter thread		M40.5 × 0.5mm
12	Lens Size(W X L)		49.5 × 76.7mm
13	Weight		223g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		98.72mm
16	Diameter of entrance pupil		37.50mm
17	Distance of exit pupil		-37.94mm
18	Diameter of exit pupil		18.97mm
19	Total optical length		85.73mm
20	Magnification		-0.0893

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
900mm	-0.08930	1.4664	1.4712
950mm	-0.08427	1.6337	1.6394
1000mm	-0.07978	1.8101	1.8166
1050mm	-0.07574	1.9954	2.0030
1100mm	-0.07210	2.1898	2.1985
1150mm	-0.06879	2.3931	2.4031
1200mm	-0.06577	2.6055	2.6169
1250mm	-0.06300	2.8269	2.8398
1300mm	-0.06046	3.0573	3.0718
1350mm	-0.05811	3.2967	3.3129



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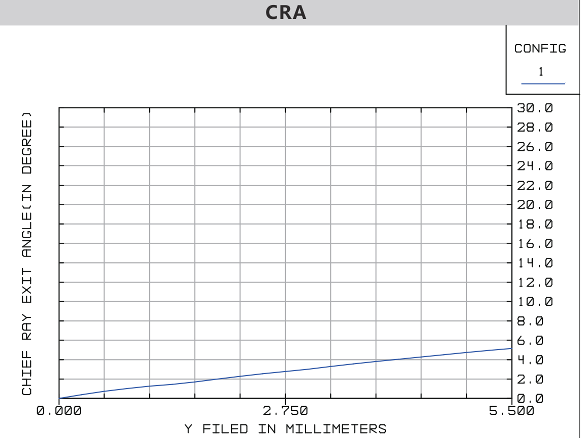

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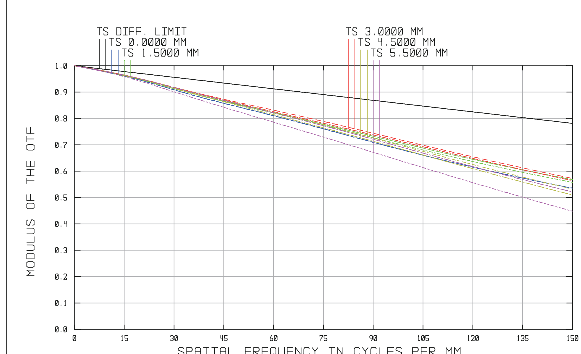


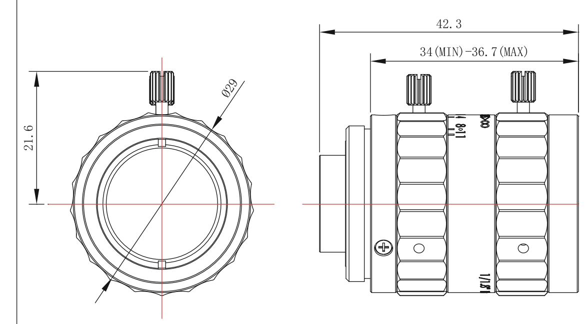
Fixed Focal Lens

GA 1/1.8" 6M Series 600038

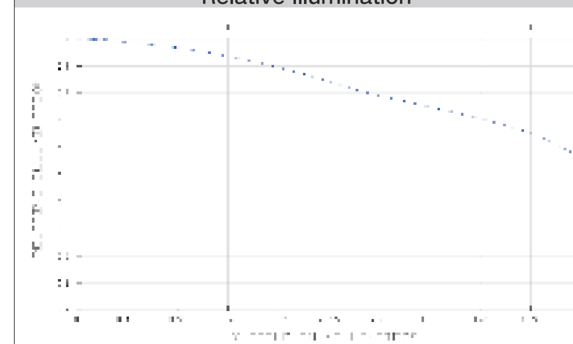
1/1.8" 6MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1/1.8"(9.0mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F1.8-F11
5	Working Distance		0.1m~∞
6	FOV(Diagonal X H X V)	1/1.8"	41.56 ° × 33.52 ° × 25.29 °
		1/2.3"	36.61 ° × 29.47 ° × 22.20 °
		1/2.5"	33.52 ° × 27.25 ° × 20.51 °
7	Object Size (at the minimum focus distance)	1/1.8"	86.82 × 69.46 × 52.092mm
		1/2.3"	75.49 × 60.39 × 45.29mm
		1/2.5"	69.43 × 55.54 × 41.66mm
8	BFL(in air)		10.033mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1/1.8"	-2.39%@y=4.5mm
		1/2.3"	-1.85%@y=3.9mm
		1/2.5"	-1.59%@y=3.6mm
11	Filter thread		M27.5 × 0.5mm
12	Lens Size(W X L)		36.6 × 42.3mm
13	Weight		51.1g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		22.299mm
16	Diameter of entrance pupil		6.675mm
17	Distance of exit pupil		-35.586mm
18	Diameter of exit pupil		19.780mm
19	Total optical length		54.533mm
20	Magnification		-0.10607

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
100mm	-0.10607	0.448	0.452
150mm	-0.07358	1.0057	1.0194
200mm	-0.05633	1.7939	1.8163
250mm	-0.04563	2.7812	2.8445
300mm	-0.03834	3.966	4.1054
350mm	-0.03307	5.427	5.6007
400mm	-0.02906	7.0727	7.3319
450mm	-0.02593	8.9316	9.3008
500mm	-0.0234	11.0024	11.5089
550mm	-0.02132	13.2837	13.9579



Relative Illumination



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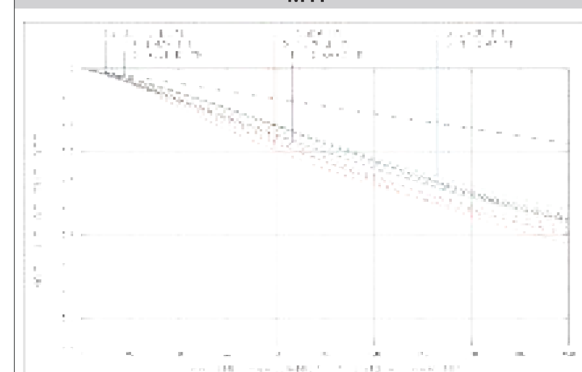


Fixed Focal Lens

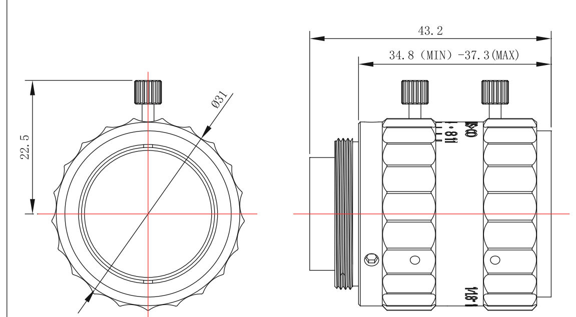
GA 1/1.8" 6M Series 600039

1/1.8" 6MP C M-Iris

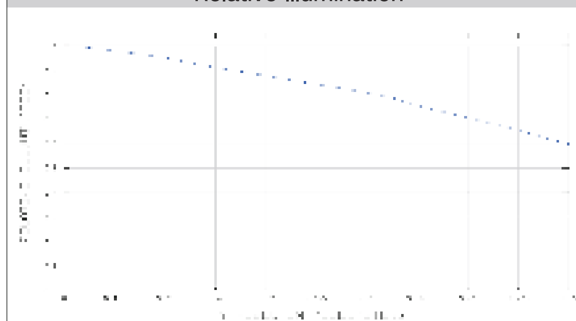
Max.sensor Size 1/1.8"
Matching 2.2μm and 2.4μm small pixels
Compact design

No	Item		Specifications
1	Max. sensor size		1/1.8"(9.0mm)
2	Focal Length		16mm
3	Mount		C-Mount
4	F/#		F1.8-F22
5	Working Distance		0.15m~∞
6	FOV(Diagonal X H X V)	1/1.8"	31.30° × 25.21° × 19.00°
		1/2.3"	27.55° × 22.15° × 16.68°
		1/2.5"	25.21° × 20.47° × 15.4°
7	Object Size (at the minimum focus distance)	1/1.8"	122.71 × 98.17 × 73.63mm
		1/2.3"	107.18 × 85.74 × 64.30mm
		1/2.5"	98.78 × 79.02 × 59.26mm
8	BFL(in air)		9.707mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1/1.8"	-0.73%@y=4.5mm
		1/2.3"	-0.57%@y=3.9mm
		1/2.5"	-0.49%@y=3.6mm
11	Filter thread		M27.5 × 0.5mm
12	Lens Size(W X L)		38.2x43.2mm
13	Weight		/
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		30.249mm
16	Diameter of entrance pupil		8.891mm
17	Distance of exit pupil		-32.3831mm
18	Diameter of exit pupil		17.99361mm
19	Total optical length		54.204mm
20	Magnification		-0.09563

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
150mm	-0.09563	0.5674	0.5717
200mm	-0.07363	1.0074	1.0176
250mm	-0.05986	1.5721	1.5921
300mm	-0.05043	2.2609	2.2955
350mm	-0.04356	3.0735	3.1285
400mm	-0.03834	4.0094	4.0914
450mm	-0.03424	5.068	5.1848
500mm	-0.03093	6.249	6.4092
550mm	-0.0282	7.5519	7.7651
750mm	-0.02085	13.9731	14.5138



Relative Illumination



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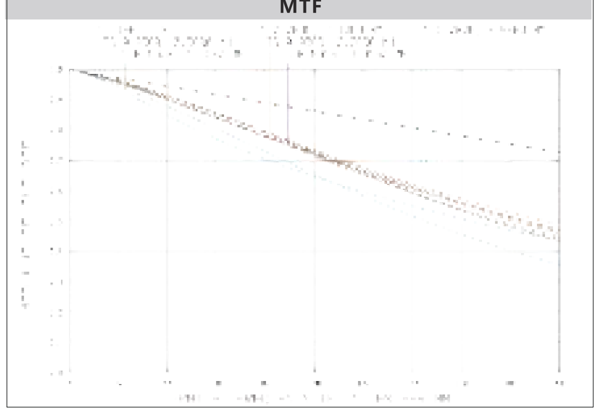


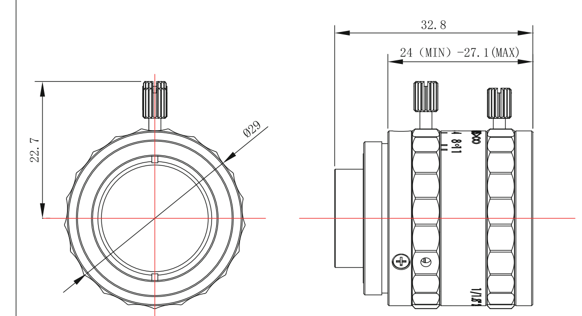
GA 1/1.8" 6M Series 600040

1/1.8" 6MP C M-Iris

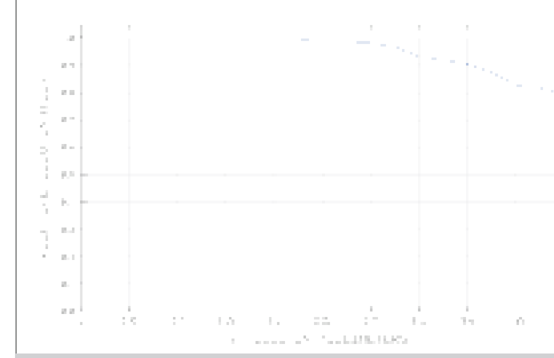
Max.sensor Size 1/1.8"
Matching 2.2μm and 2.4μm small pixels
Compact design

No	Item		Specifications
1	Max. sensor size		1/1.8"(9.0mm)
2	Focal Length		25mm
3	Mount		C-Mount
4	F/#		F1.8-F11
5	Working Distance		0.3m~∞
6	FOV(Diagonal X H X V)	1/1.8"	20.42° × 16.4° × 12.33°
		1/2.3"	17.74° × 14.23° × 10.69°
		1/2.5"	16.39° × 13.14° × 9.87°
7	Object Size (at the minimum focus distance)	1/1.8"	110.93 × 88.52 × 66.26mm
		1/2.3"	95.97 × 76.63 × 57.39mm
		1/2.5"	88.52 × 70.70 × 52.96mm
8	BFL(in air)		9.723mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1/1.8"	-0.11%@y=4.5mm
		1/2.3"	-0.09%@y=3.9mm
		1/2.5"	-0.08%@y=3.6mm
11	Filter thread		M27.5 × 0.5mm
12	Lens Size(W X L)		37.7 × 32.8mm
13	Weight		38.9g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		18.215mm
16	Diameter of entrance pupil		13.587mm
17	Distance of exit pupil		-50.154mm
18	Diameter of exit pupil		27.106mm
19	Total optical length		40.00mm
20	Magnification		-0.08176

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
300mm	-0.08176	0.9302	0.9360
350mm	-0.07027	1.2655	1.2747
400mm	-0.06161	1.6520	1.6658
450mm	-0.05485	2.0898	2.1094
500mm	-0.04943	2.5786	2.6055
550mm	-0.04498	3.1185	3.1543
600mm	-0.04127	3.7094	3.7558
650mm	-0.03812	4.3512	4.4102
700mm	-0.03542	5.0437	5.1175
750mm	-0.03308	5.7870	5.8777



Relative Illumination



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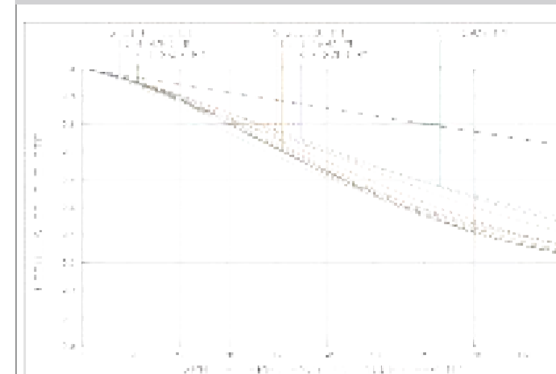
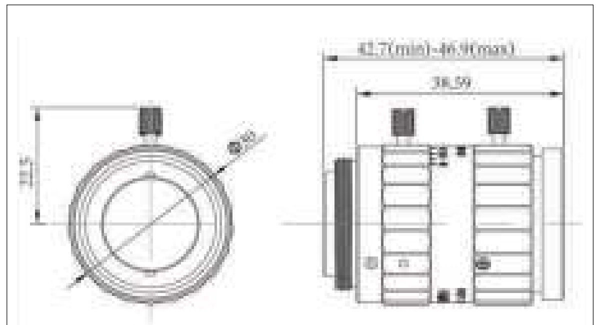


GA 1/1.8" 6M Series 600041

1/1.8" 6MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1/1.8"(9mm)
2	Focal Length		35mm
3	Mount		C-Mount
4	F/#		F2.0
5	Working Distance		0.3~∞
6	FOV(Diagonal X H X V)	1/1.8"	14.73° ×11.79° ×8.84°
		1/2.3"	12.75° ×10.2° ×7.65°
		1/2.5"	11.78° ×9.42° ×7.07°
7	Object Size (at the minimum focus distance)	1/1.8"	79.01×63.21×47.41mm
		1/2.3"	68.08×54.47×40.85mm
		1/2.5"	62.81×50.25×37.36mm
8	BFL(in air)		12.2mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1/1.8"	-0.52%@y=4.5mm
		1/2.3"	-0.4%@y=3.9mm
		1/2.5"	-0.33%@y=3.59mm
11	Filter thread		M27.5×0.5mm
12	Lens Size(W X L)		38X46.9mm
13	Weight		/
14	Work Temperature		-10℃~+50℃
15	Distance of entrance pupil		32.497
16	Diameter of entrance pupil		18.7
17	Distance of exit pupil		-57.05
18	Diameter of exit pupil		28.38
19	Total optical length		49.82mm
20	Magnification		-0.112

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
300mm	-0.112	0.528	0.53
350mm	-0.098	0.7185	0.7215
400mm	-0.085	0.9382	0.9426
450mm	-0.077	1.1871	1.1934
500mm	-0.068	1.4651	1.4737
550mm	-0.062	1.74	1.751
600mm	-0.057	2.07	2.084
650mm	-0.053	4.429	2.447
750mm	-0.046	3.232	3.26
1000mm	-0.034	5.737	5.804



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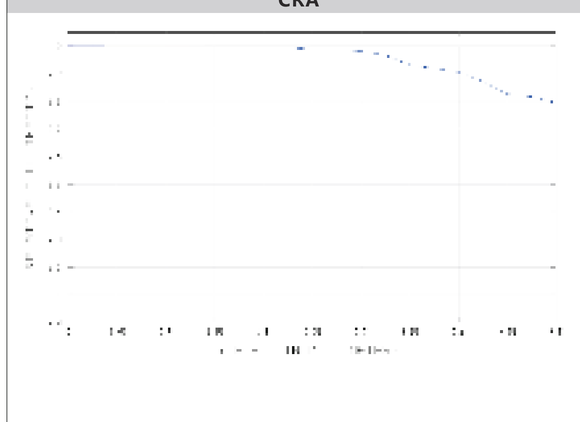

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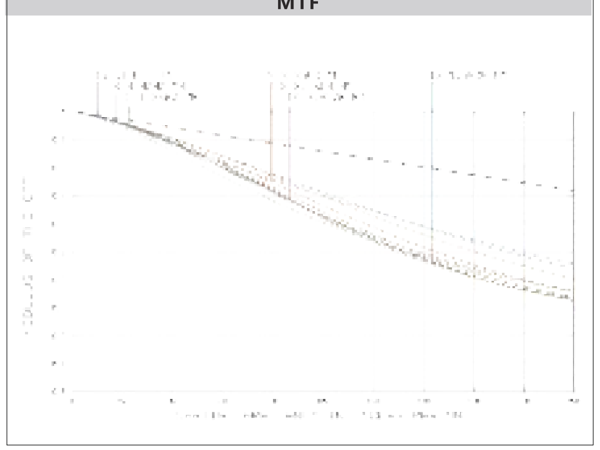


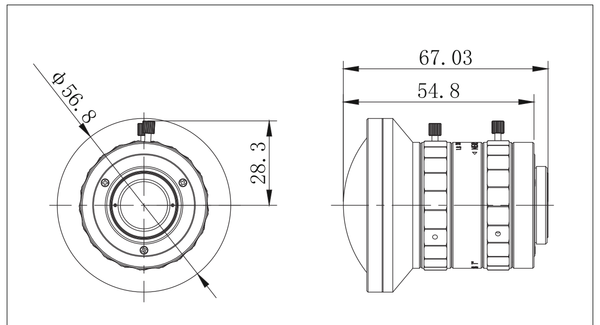
Fixed Focal Lens

GA 1" 8M Series 600021

1" 8MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		8mm
3	Mount		C-Mount
4	F/#		F1.8-F11C
5	Working Distance		0.3m~∞
6	FOV(Diagona X H X V)	1"	90.06° ×77.16° ×61.30°
		1/2"	52.26° ×42.58° ×32.40°
		1/3"	40.08° ×32.40° ×24.48°
7	Object Size (at the minimum focus distance)	1"	665.02×523.52×385.92mm
		1/2"	318.64×252.68×188.08mm
		1/3"	236.42×188.08×140.42mm
8	BFL(in air)		12.7mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-4.12%@y=8.0mm
		1/2"	-2.14%@y=4.0mm
		1/3"	-1.34%@y=3.0mm
11	Filter thread		/
12	Lens Size(W X L)		56.8×67.03mm
13	Weight		76.6g
14	Work Temperature		-10℃~+50℃
15	Distance of entrance pupil		22.92mm
16	Diameter of entrance pupil		4.51mm
17	Distance of exit pupil		-36.72mm
18	Diameter of exit pupil		20.49mm
19	Total optical length		80.26mm
20	Magnification		-0.02581

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
300mm	-0.02581	11.8397	12.8543
350mm	-0.02235	16.0099	17.6220
400mm	-0.01971	20.7751	23.1832
450mm	-0.01763	26.1239	29.5554
500mm	-0.01595	32.0450	36.7564
550mm	-0.01456	38.5275	44.8046
600mm	-0.01339	45.5608	53.7190
650mm	-0.01240	53.1344	63.5192
700mm	-0.01154	61.2382	74.2251
750mm	-0.01079	69.8624	85.8577



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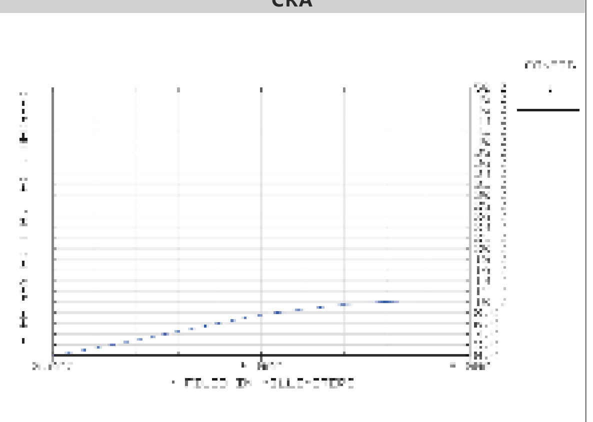

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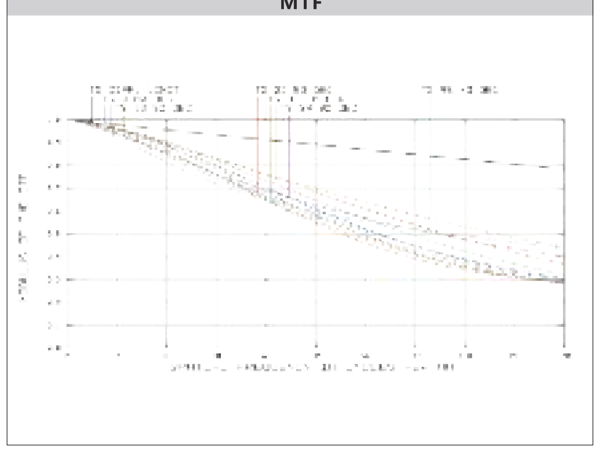


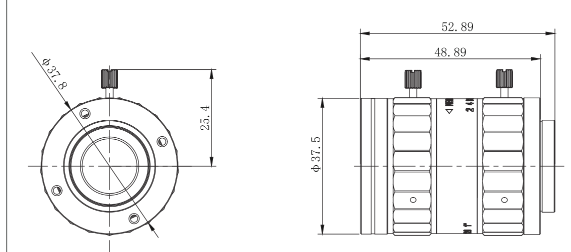
Fixed Focal Lens

GA 1" 8M Series 600022

1" 8MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.1m~∞
6	FOV(Diagonal X H X V)	1"	69.63 ° ×60.71 ° ×44.33 °
		1/2"	37.32 ° ×30.11 ° ×22.74 °
		1/3"	28.28 ° ×22.74 ° ×17.12 °
7	Object Size (at the minimum focus distance)	1"	155.01×130.05×90.30mm
		1/2"	74.93×59.76×44.73mm
		1/3"	55.99×44.73×33.51mm
8	BFL(in air)		15.07mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-4.10%@y=8.0mm
		1/2"	-1.27%@y=4.0mm
		1/3"	-0.74%@y=3.0mm
11	Filter thread		M35.5×0.5mm
12	Lens Size(W X L)		44.2×52.9mm
13	Weight		/
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		14.08mm
16	Diameter of entrance pupil		5.85mm
17	Distance of exit pupil		-50.64mm
18	Diameter of exit pupil		24.71mm
19	Total optical length		65.34mm
20	Magnification		-0.1079

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
100mm	-0.10793	0.7034	0.7134
150mm	-0.07439	1.5770	1.6109
200mm	-0.05677	2.7938	2.8740
250mm	-0.04590	4.3501	4.5069
300mm	-0.03853	6.2424	6.5134
350mm	-0.03320	8.4672	8.8977
400mm	-0.02916	11.0211	11.6638
450mm	-0.02600	13.9007	14.8160
500mm	-0.02346	17.1026	18.3585
550mm	-0.02137	20.6236	22.2957



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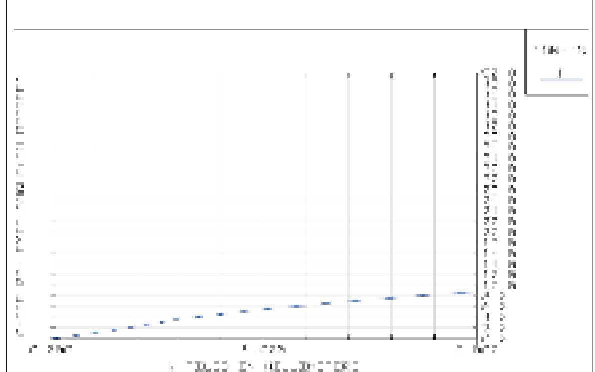

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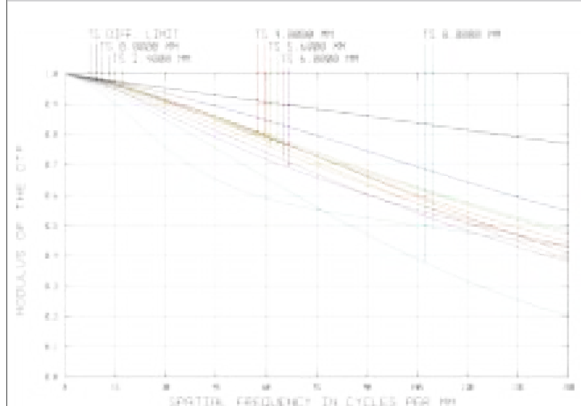
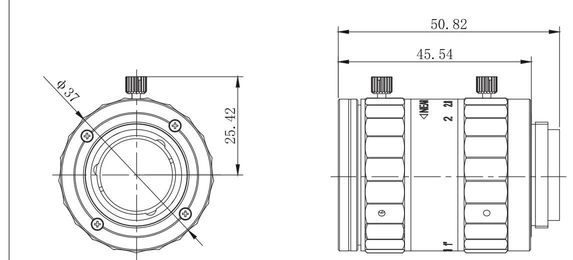


GA 1" 8M Series 600023

1" 8MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		16mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.1m~∞
6	FOV(Diagonal X H X V)	1"	53.7 ° ×43.9 ° ×33.4 °
		1/2"	28.0 ° ×22.5 ° ×17.0 °
		1/3"	21.1 ° ×17.0 ° ×12.7 °
7	Object Size (at the minimum focus distance)	1"	112.45×89.08×66.23mm
		1/2"	54.99×43.86×32.82mm
		1/3"	41.09×33.22×24.58mm
8	BFL(in air)		11.19mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-2.22%@y=8.0mm
		1/2"	-0.72%@y=4.0mm
		1/3"	-0.42%@y=3.0mm
11	Filter thread		M34×0.5mm
12	Lens Size(W X L)		43.92×50.8mm
13	Weight		151g
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		11.21mm
16	Diameter of entrance pupil		8.08mm
17	Distance of exit pupil		-83.37mm
18	Diameter of exit pupil		41.70mm
19	Total optical length		59.78mm
20	Magnification		-0.1468

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
100mm	-0.14682	0.3969	0.4000
150mm	-0.10070	0.8912	0.9019
200mm	-0.07669	1.5812	1.6066
250mm	-0.06194	2.4657	2.5153
300mm	-0.05196	3.5436	3.6293
350mm	-0.04475	4.8137	4.9499
400mm	-0.03930	6.2750	6.4782
450mm	-0.03503	7.9262	8.2157
500mm	-0.03161	9.7664	10.1634
550mm	-0.02879	11.7943	12.3228



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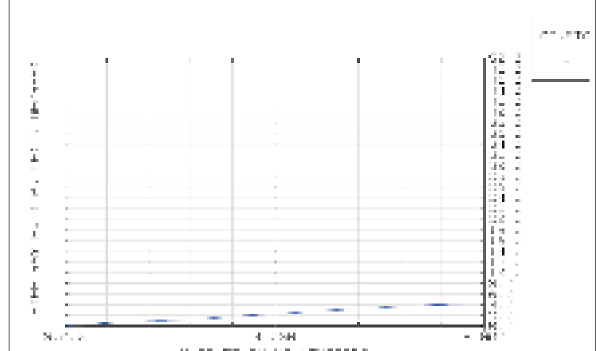

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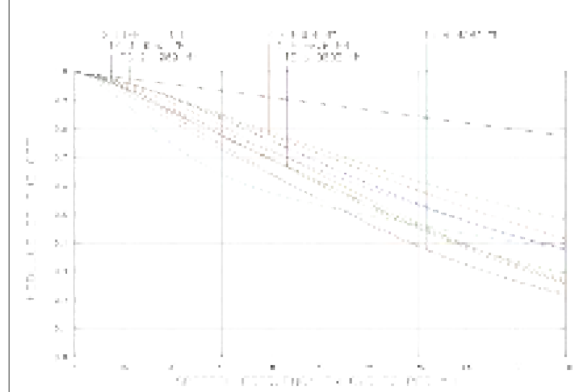
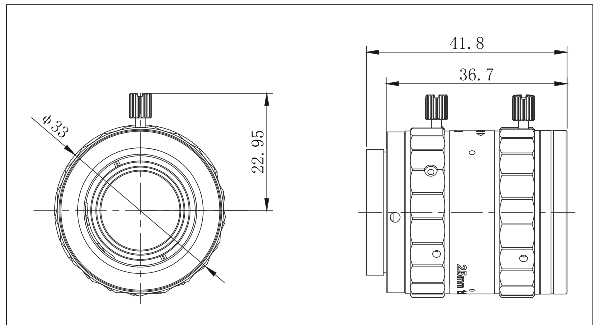


GA 1" 8M Series 600024

1" 8MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		25mm
3	Mount		C-Mount
4	F/#		F1.8-F16C
5	Working Distance		0.15m~∞
6	FOV(Diagonal X H X V)	1"	36.0° × 29.0° × 21.9°
		1/2"	18.3° × 14.6° × 11.0°
		1/3"	13.7° × 11.0° × 8.2°
7	Object Size (at the minimum focus distance)	1"	92.1 × 73.2 × 54.6mm
		1/2"	45.4 × 36.3 × 27.2mm
		1/3"	34.0 × 27.2 × 20.4mm
8	BFL(in air)		12.68mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-1.53%@y=8.0mm
		1/2"	-0.38%@y=4.0mm
		1/3"	-0.22%@y=3.0mm
11	Filter thread		M30.5 × 0.5mm
12	Lens Size(W X L)		39.25 × 41.8mm
13	Weight		87.02g
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		17.80mm
16	Diameter of entrance pupil		13.89mm
17	Distance of exit pupil		-34.97mm
18	Diameter of exit pupil		19.43mm
19	Total optical length		48.94mm
20	Magnification		-0.1769

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
150mm	-0.17694	0.3298	0.3312
200mm	-0.13091	0.5858	0.5893
250mm	-0.10351	0.9146	0.9214
300mm	-0.08582	1.3161	1.3278
350mm	-0.07318	1.7901	1.8086
400mm	-0.06394	2.3364	2.3640
450mm	-0.05678	2.9548	2.9941
500mm	-0.05086	3.6452	3.6992
550mm	-0.04624	4.4075	4.4793
600mm	-0.04222	5.2415	5.3347



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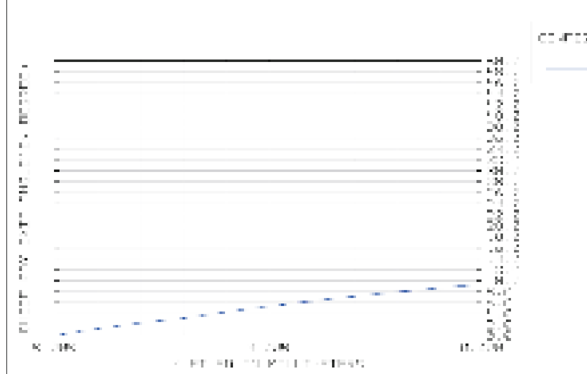

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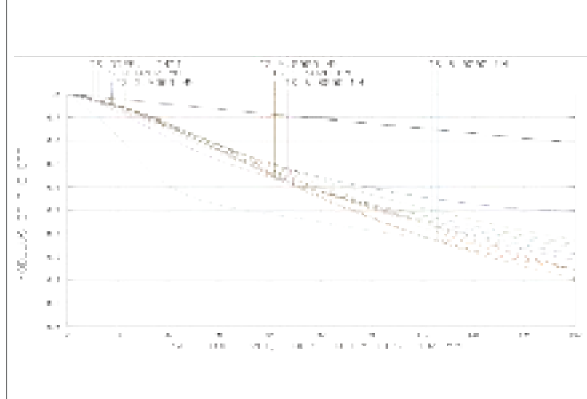
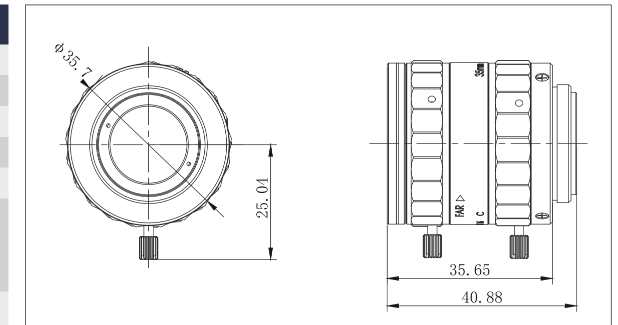


GA 1" 8M Series 600025

1" 8MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		35mm
3	Mount		C-Mount
4	F/#		F2.0-F11C
5	Working Distance		0.2m~∞
6	FOV(Diagonal X H X V)	1"	25.7° × 20.7° × 15.6°
		1/2"	13.1° × 10.5° × 7.9°
		1/3"	9.8° × 7.9° × 5.9°
7	Object Size (at the minimum focus distance)	1"	81.0 × 64.8 × 48.5mm
		1/2"	40.4 × 32.4 × 24.3mm
		1/3"	30.3 × 24.3 × 18.2mm
8	BFL(in air)		12.96mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	0.33%@y=8.0mm
		1/2"	0.08%@y=4.0mm
		1/3"	0.05%@y=3.0mm
11	Filter thread		M30.5 × 0.5mm
12	Lens Size(W X L)		40.88 × 42.4mm
13	Weight		/
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		20.42mm
16	Diameter of entrance pupil		17.46mm
17	Distance of exit pupil		-39.65mm
18	Diameter of exit pupil		19.83mm
19	Total optical length		49.58mm
20	Magnification		-0.1982

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
200mm	-0.19823	0.3325	0.3336
250mm	-0.15440	0.5193	0.5215
300mm	-0.12644	0.7475	0.7513
350mm	-0.10706	1.0170	1.0230
400mm	-0.09283	1.3278	1.3367
450mm	-0.08194	1.6798	1.6925
500mm	-0.07333	2.0730	2.0903
550mm	-0.06636	2.5073	2.5304
600mm	-0.06060	2.9826	3.0126
650mm	-0.05576	3.4990	3.5371



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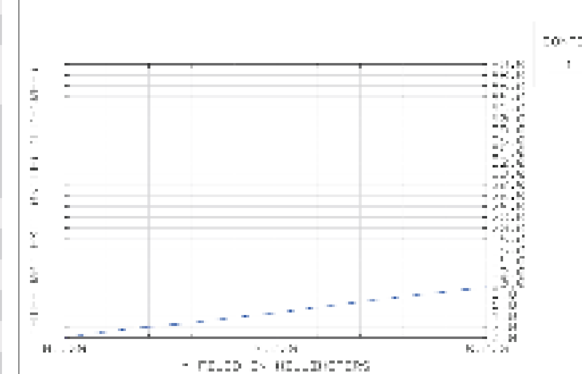

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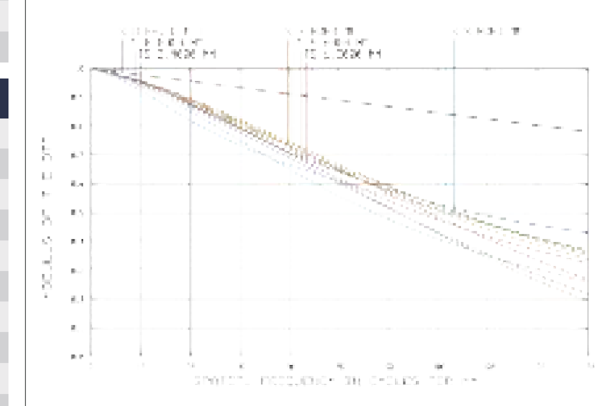
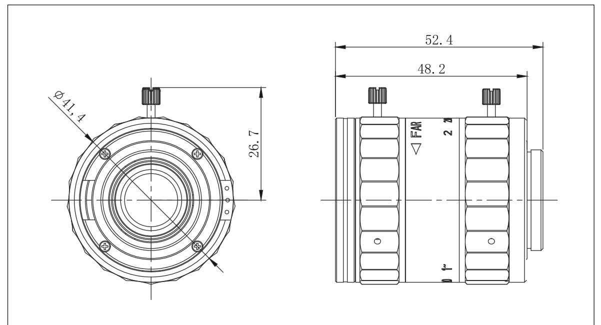


GA 1" 8M Series 600026

1" 8MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		50mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.25m~∞
6	FOV(Diagonal X H X V)	1"	18.18° ×14.60° ×10.96°
		1/2"	9.14° ×7.32° ×5.5°
		1/3"	6.86° ×5.5° ×4.12°
7	Object Size (at the minimum focus distance)	1"	72.40×57.84×43.34mm
		1/2"	36.10×28.74×21.66mm
		1/3"	27.06×21.64×16.24mm
8	BFL(in air)		21.35mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-0.011%@y=8.0mm
		1/2"	0.012%@y=4.0mm
		1/3"	0.008%@y=3.0mm
11	Filter thread		M37×0.5
12	Lens Size(W X L)		47.7×52.4mm
13	Weight		120.4g
14	Work Temperature		-10℃~+50℃
15	Distance of entrance pupil		35.64mm
16	Diameter of entrance pupil		22.22mm
17	Distance of exit pupil		-37.95mm
18	Diameter of exit pupil		16.84mm
19	Total optical length		54.56mm
20	Magnification		-0.2219

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
250mm	-0.2219487	0.2908	0.2914
300mm	-0.1812797	0.4186	0.4198
350mm	-0.153268	0.5696	0.5715
400mm	-0.1327858	0.7438	0.7466
450mm	-0.117156	0.9412	0.9451
500mm	-0.1048327	1.1617	1.1671
550mm	-0.09486211	1.4053	1.4125
600mm	-0.08662802	1.6720	1.6814
650mm	-0.07971303	1.9619	1.9738
700mm	-0.07382332	2.2748	2.2896



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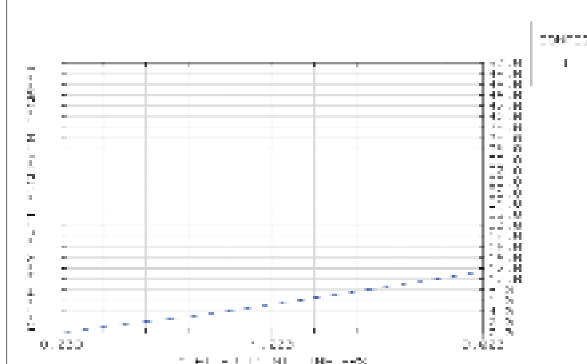

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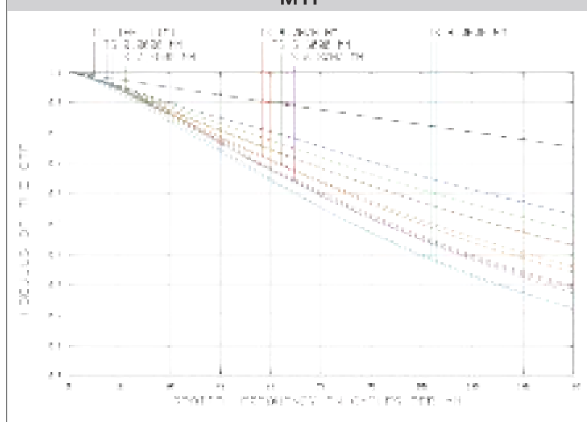
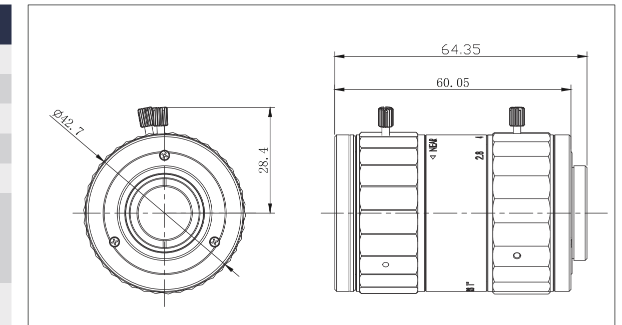


GA 1" 8M Series 600033

1" 8MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		75mm
3	Mount		C-Mount
4	F/#		F2.8-F22
5	Working Distance		0.5m~∞
6	FOV(Diagonal X H X V)	1"	12.2° ×9.8° ×7.3°
		1/2"	6.1° ×4.9° ×3.7°
		1/3"	4.6° ×3.7° ×2.8°
7	Object Size (at the minimum focus distance)	1"	89.2×71.36×53.5mm
		1/2"	44.8×35.8×26.9mm
		1/3"	33.6×26.9×20.2mm
8	BFL(in air)		23.15mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	0.75%@y=8.0mm
		2/3"	0.35%@y=5.5mm
		1/2"	0.18%@y=4.0mm
		1/3"	0.11%@y=3.0mm
11	Filter thread		M39×0.5
12	Lens Size(W X L)		49.75×64.35
13	Weight		187g
14	Work Temperature		-20℃~+60℃
15	Distance of entrance pupil		33.48mm
16	Diameter of entrance pupil		26.65mm
17	Distance of exit pupil		-48.22mm
18	Diameter of exit pupil		17.42mm
19	Total optical length		76.75mm
20	Magnification		-0.1781

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
500mm	-0.17806	0.6339	0.6355
550mm	-0.15908	0.7669	0.7690
600mm	-0.14376	0.9125	0.9153
650mm	-0.13112	1.0708	1.0744
700mm	-0.12054	1.2417	1.2462
750mm	-0.11153	1.4253	1.4307
800mm	-0.10377	1.6215	1.6281
850mm	-0.09703	1.8302	1.8382
900mm	-0.09110	2.0516	2.0610
950mm	-0.08586	2.2856	2.2967



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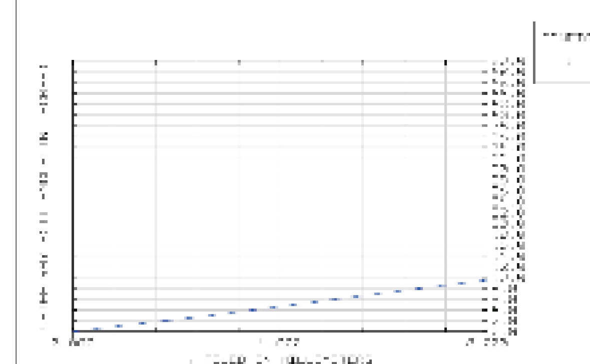

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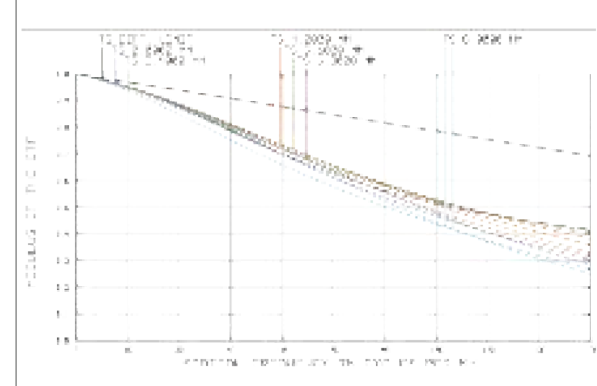
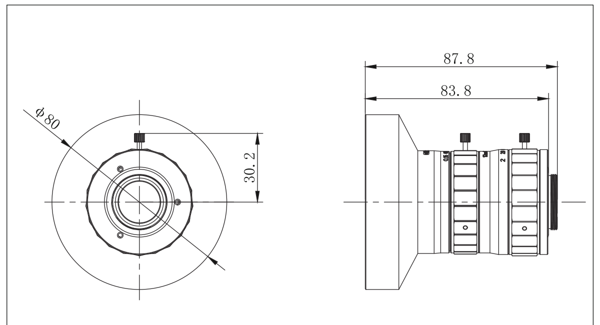


GA 4/3" 10M Series 600016

4/3" 10MP C M-Iris

No	Item		Specifications
1	Max. sensor size		4/3"(23mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.15m ~ ∞
6	FOV(Diagonal X H X V)	4/3"	89.0° × 75.5° × 61.1°
		1"	68.9° × 57.3° × 44.2°
		1/2"	37.3° × 30.1° × 22.7°
		1/3"	28.3° × 22.7° × 17.1°
7	Object Size (at the minimum focus distance)	4/3"	319.0 × 262.6 × 204.3mm
		1"	235.5 × 189.9 × 143.2mm
		1/2"	119.6 × 95.8 × 72.0mm
		1/3"	89.9 × 72.0 × 54.0mm
8	BFL(in air)		18.93mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	4/3"	-2.40%@y=11.5mm
		1"	-1.78%@y=8.0mm
		1/2"	-1.04%@y=4.0mm
		1/3"	-0.62%@y=3.0mm
11	Filter thread		M77.0 × 0.75mm
12	Lens Size(W X L)		80.0 × 87.8mm
13	Weight		447g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		24.00mm
16	Diameter of entrance pupil		6.00mm
17	Distance of exit pupil		-53.51mm
18	Diameter of exit pupil		26.76mm
19	Total optical length		95.34mm
20	Magnification		-0.0692

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
150mm	-0.06917	2.2798	2.3513
200mm	-0.05367	4.0325	4.2020
250mm	-0.04385	6.2692	6.6002
300mm	-0.03701	8.9826	9.5548
350mm	-0.03210	12.1660	13.0750
400mm	-0.02831	15.8110	17.1690
450mm	-0.02532	19.9130	21.8460
500mm	-0.02290	24.4630	27.1170
550mm	-0.02090	29.4570	32.9900
600mm	-0.01923	34.8860	39.4760



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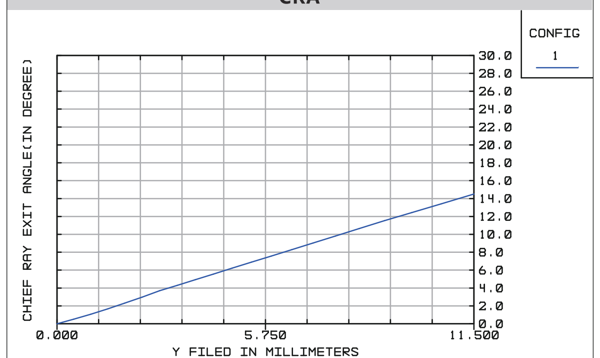

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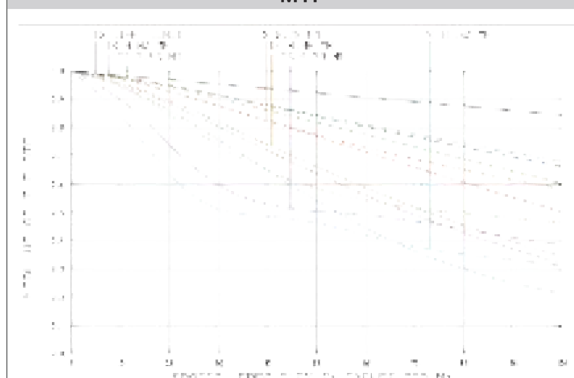


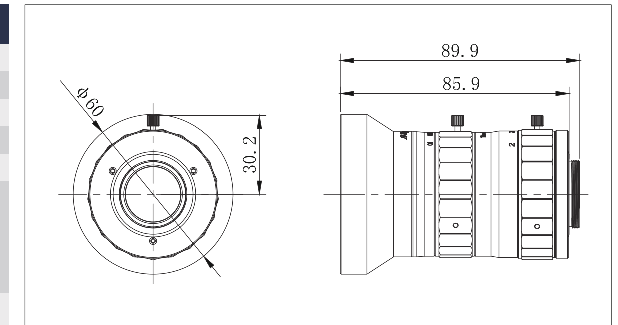
Fixed Focal Lens

GA 4/3" 10M Series 600017

4/3" 10MP C M-Iris

No	Item		Specifications
1	Max. sensor size		4/3"(23mm)
2	Focal Length		16mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.1m ~ ∞
6	FOV(Diagonal X H X V)	4/3"	72.9° × 60.9° × 47.3°
		1"	54.0° × 44.2° × 33.6°
		1/2"	28.2° × 22.70° × 17.1°
		1/3"	21.3° × 17.1° × 12.8°
7	Object Size (at the minimum focus distance)	4/3"	195.5 × 145.5 × 107.3mm
		1"	125.4 × 99.2 × 73.8mm
		1/2"	61.2 × 48.8 × 36.5mm
		1/3"	45.7 × 36.5 × 27.4mm
8	BFL(in air)		21.00mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	4/3"	-2.81%@y=11.5mm
		1"	-1.92%@y=8.0mm
		1/2"	-0.59%@y=4.0mm
		1/3"	-0.34%@y=3.0mm
11	Filter thread		M58.0 × 0.75mm
12	Lens Size(W X L)		60.2 × 89.9mm
13	Weight		338g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		23.83mm
16	Diameter of entrance pupil		8.01mm
17	Distance of exit pupil		-67.17mm
18	Diameter of exit pupil		34.78mm
19	Total optical length		99.94mm
20	Magnification		-0.132

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
100mm	-0.13198	0.5709	0.5775
150mm	-0.09333	1.2810	1.3032
200mm	-0.07224	2.2708	2.3236
250mm	-0.05892	3.5381	3.6411
300mm	-0.04973	5.0805	5.2586
350mm	-0.04307	6.8956	7.1784
400mm	-0.03796	8.9812	9.4035
450mm	-0.03393	11.3350	11.9364
500mm	-0.03068	13.9548	14.7798
550mm	-0.02800	16.8383	17.9366



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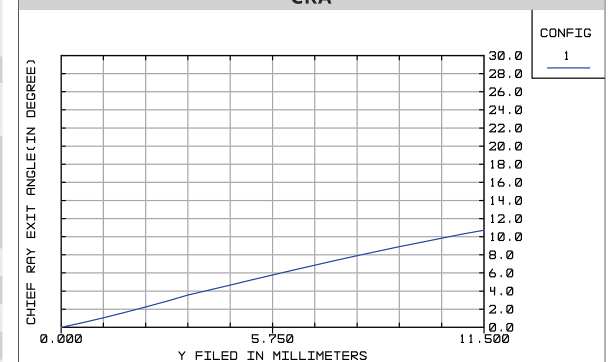

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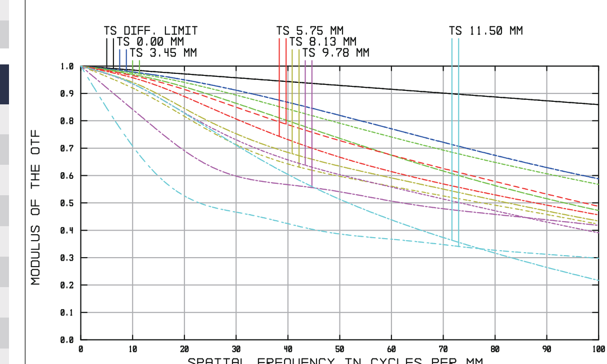
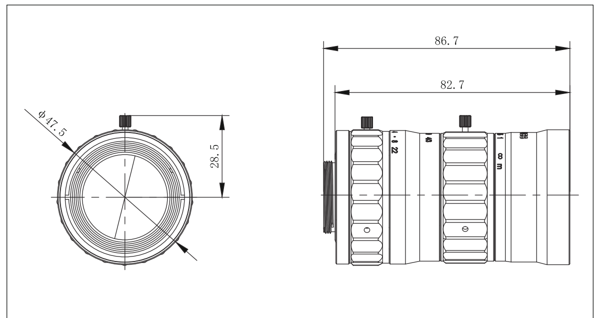


GA 4/3" 10M Series 600018

4/3" 10MP C M-Iris

No	Item		Specifications
1	Max. sensor size		4/3"(23mm)
2	Focal Length		25mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.15m ~ ∞
6	FOV(Diagonal X H X V)	4/3"	49.7° × 40.6° × 31.0°
		1"	35.7° × 28.8° × 21.8°
		1/2"	18.2° × 14.6 × 11.0°
		1/3"	13.7° × 11.0° × 8.2°
7	Object Size (at the minimum focus distance)	4/3"	157.7 × 125.7 × 93.9mm
		1"	109.1 × 87.1 × 65.2mm
		1/2"	54.3 × 43.4 × 32.5mm
		1/3"	40.8 × 32.6 × 24.5mm
8	BFL(in air)		22.43mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	4/3"	-0.66%@y=11.5mm
		1"	-0.50%@y=8.0mm
		1/2"	-0.16%@y=4.0mm
		1/3"	-0.09%@y=3.0mm
11	Filter thread		M46.0 × 0.75mm
12	Lens Size(W X L)		51.8 × 86.7mm
13	Weight		251g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		25.29mm
16	Diameter of entrance pupil		12.58mm
17	Distance of exit pupil		-74.35mm
18	Diameter of exit pupil		37.42mm
19	Total optical length		96.85mm
20	Magnification		-0.1479

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
150mm	-0.14790	0.5275	0.5313
200mm	-0.11394	0.9367	0.9456
250mm	-0.09271	1.4619	1.4792
300mm	-0.07817	2.1027	2.1326
350mm	-0.06758	2.8586	2.9061
400mm	-0.05952	3.7294	3.8003
450mm	-0.05318	4.7145	4.8154
500mm	-0.04806	5.8136	5.9520
550mm	-0.04385	7.0263	7.2105
600mm	-0.04031	8.3522	8.5914



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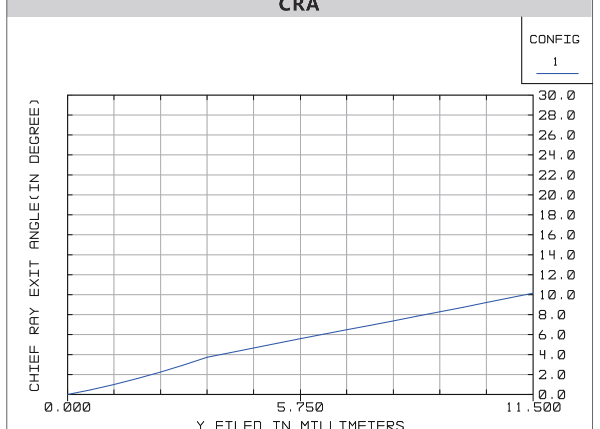

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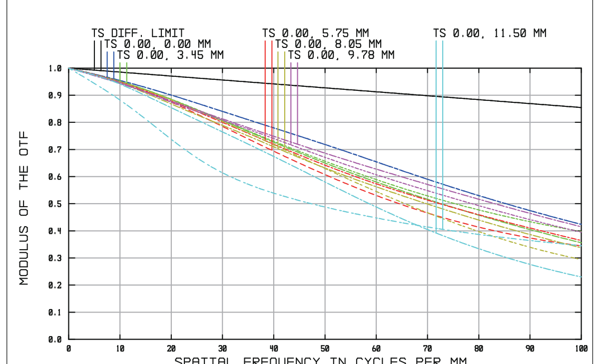
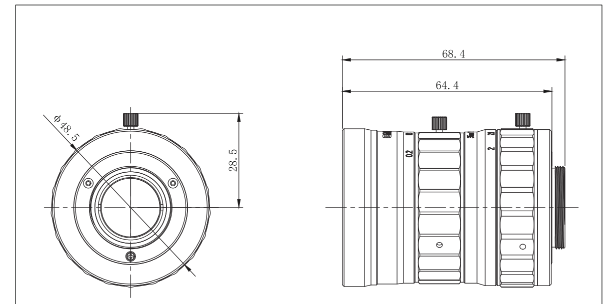


GA 4/3" 10M Series 600019

4/3" 10MP C M-Iris

No	Item		Specifications
1	Max. sensor size		4/3"(23mm)
2	Focal Length		35mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.2m ~ ∞
6	FOV(Diagonal X H X V)	4/3"	36.6° × 29.6° × 22.4°
		1"	25.9° × 20.8° × 15.7°
		1/2"	13.1° × 10.5° × 7.9°
		1/3"	9.8° × 7.9° × 5.9°
7	Object Size (at the minimum focus distance)	4/3"	120.9 × 96.7 × 72.4mm
		1"	84.0 × 67.2 × 50.3mm
		1/2"	41.9 × 33.5 × 25.1mm
		1/3"	31.5 × 25.2 × 18.9mm
8	BFL(in air)		18.65mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	4/3"	-0.56%@y=11.5mm
		1"	-0.43%@y=8.0mm
		1/2"	-0.13%@y=4.0mm
		1/3"	-0.07%@y=3.0mm
11	Filter thread		M40.5 × 0.5mm
12	Lens Size(W X L)		52.5 × 72.3mm
13	Weight		173g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		19.82mm
16	Diameter of entrance pupil		17.50mm
17	Distance of exit pupil		-42.34mm
18	Diameter of exit pupil		21.17mm
19	Total optical length		64.67mm
20	Magnification		-0.1914

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
200mm	-0.19138	0.4789	0.4812
250mm	-0.15030	0.7478	0.7523
300mm	-0.12374	1.0761	1.0839
350mm	-0.10516	1.4639	1.4762
400mm	-0.09143	1.9108	1.9293
450mm	-0.08087	2.4169	2.4432
500mm	-0.07250	2.9821	3.0181
550mm	-0.06569	3.6062	3.6541
600mm	-0.06006	4.2891	4.3513
650mm	-0.05532	5.0308	5.1099



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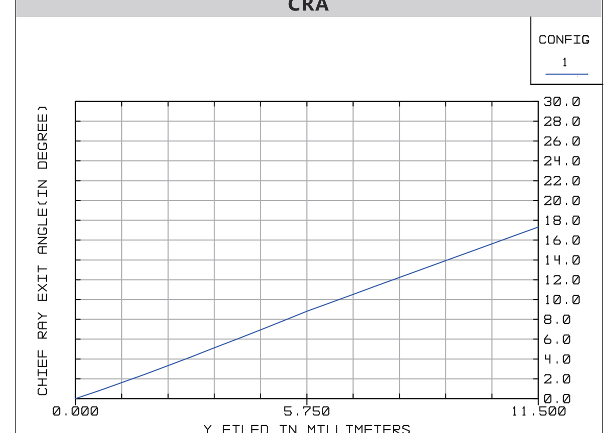

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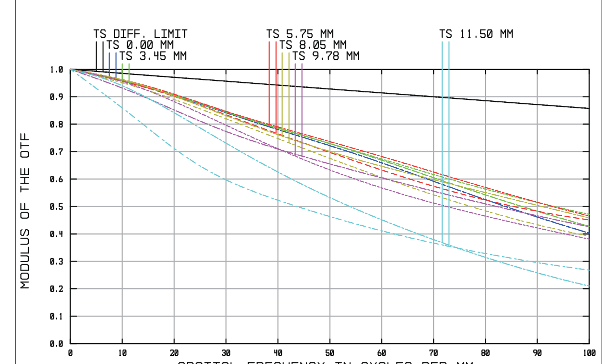
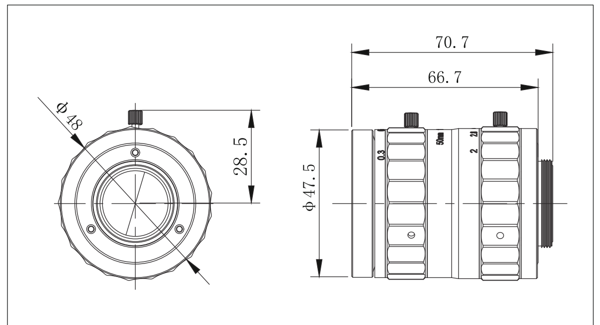


GA 4/3" 10M Series 600020

4/3" 10MP C M-Iris

No	Item		Specifications
1	Max. sensor size		4/3"(23mm)
2	Focal Length		50mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		0.3m~∞
6	FOV(Diagonal X H X V)	4/3"	25.9°×20.9°×15.7°
		1"	18.2°×14.6°×11.0°
		1/2"	9.1°×7.3°×5.5°
		1/3"	6.9°×5.5°×4.1°
7	Object Size (at the minimum focus distance)	4/3"	118.8×95.0×71.2mm
		1"	82.6×66.0×49.5mm
		1/2"	41.3×33.0×24.8mm
		1/3"	31.0×24.8×18.6mm
8	BFL(in air)		20.29mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	4/3"	-0.14%@y=11.5mm
		1"	-0.05%@y=8.0mm
		1/2"	-0.01%@y=4.0mm
		1/3"	-0.005%@y=3.0mm
11	Filter thread		M40.5×0.5mm
12	Lens Size(W X L)		51.9×70.7mm
13	Weight		170g
14	Work Temperature		-10℃~+50℃
15	Distance of entrance pupil		33.38mm
16	Diameter of entrance pupil		25.03mm
17	Distance of exit pupil		-40.77mm
18	Diameter of exit pupil		20.41mm
19	Total optical length		66.30mm
20	Magnification		-0.1942

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
300mm	-0.19420	0.5283	0.5301
350mm	-0.16262	0.7188	0.7218
400mm	-0.13988	0.9386	0.9430
450mm	-0.12271	1.1876	1.1939
500mm	-0.10930	1.4657	1.4743
550mm	-0.09852	1.7730	1.7845
600mm	-0.08969	2.1094	2.1243
650mm	-0.08231	2.4748	2.4938
700mm	-0.07604	2.8694	2.8931
750mm	-0.07067	3.2930	3.3222



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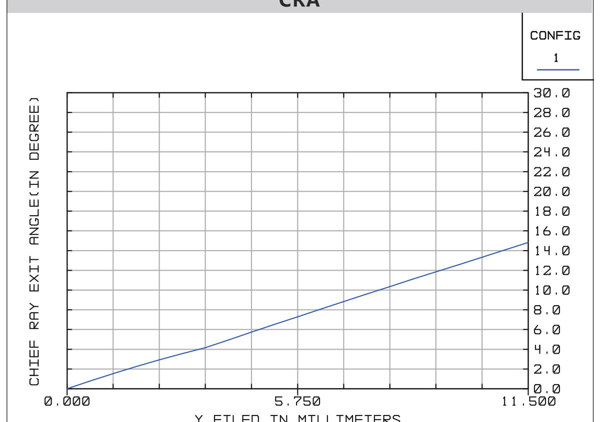

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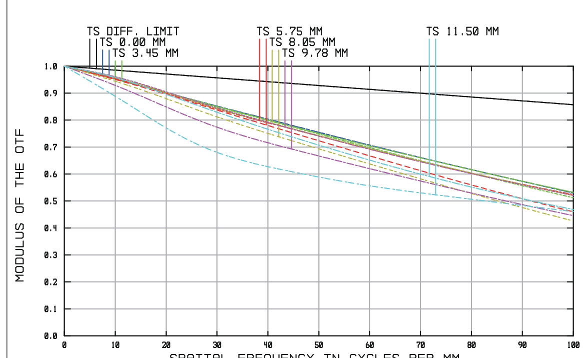


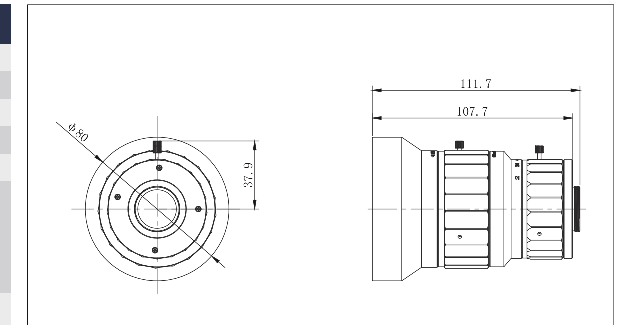
Fixed Focal Lens

GA 4/3" 10M Series 600035

4/3" 10MP C M-Iris

No	Item		Specifications
1	Max. sensor size		4/3"(23mm)
2	Focal Length		85mm
3	Mount		C-Mount
4	F/#		F2.0-F22
5	Working Distance		1.2m~∞
6	FOV(Diagonal X H X V)	4/3"	15.41°×12.09°×9.28°
		1"	10.75°×8.61°×6.46°
		1/2"	5.39°×4.31°×3.24°
		1/3"	4.04°×3.24°×2.43°
7	Object Size (at the minimum focus distance)	4/3"	309.7×241.98×185.43mm
		1"	215.23×171.94×128.82mm
		1/2"	107.31×85.82×64.35mm
		1/3"	80.45×64.35×48.26mm
8	BFL(in air)		24.5mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	4/3"	0.04%@y=11.5mm
		1"	0.05%@y=8.0mm
		1/2"	0.02%@y=4.0mm
		1/3"	0.01%@y=3.0mm
11	Filter thread		M77.0×0.75mm
12	Lens Size(W X L)		Φ80×115.7mm
13	Weight		687g
14	Work Temperature		-10℃~+50℃
15	Distance of entrance pupil		115.09mm
16	Diameter of entrance pupil		42.49mm
17	Distance of exit pupil		-60.98mm
18	Diameter of exit pupil		30.37mm
19	Total optical length		113.90mm
20	Magnification		-0.0746

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
1200mm	-0.07463	2.9227	2.9370
1250mm	-0.07150	3.1710	3.1872
1300mm	-0.06861	3.4294	3.4476
1350mm	-0.06595	3.6979	3.7183
1400mm	-0.06348	3.9765	3.9992
1450mm	-0.06120	4.2652	4.2904
1500mm	-0.05907	4.5639	4.5919
1550mm	-0.05709	4.8728	4.9036
1600mm	-0.05523	5.1917	5.2256
1650mm	-0.05349	5.5207	5.5579



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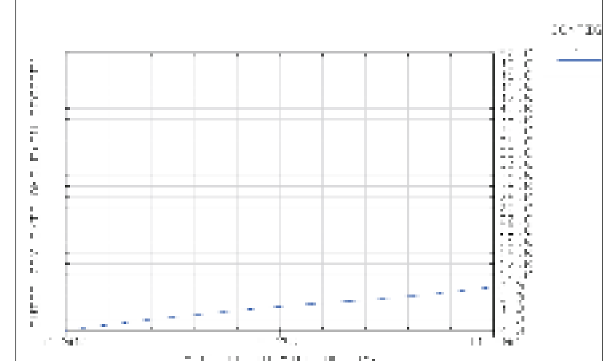

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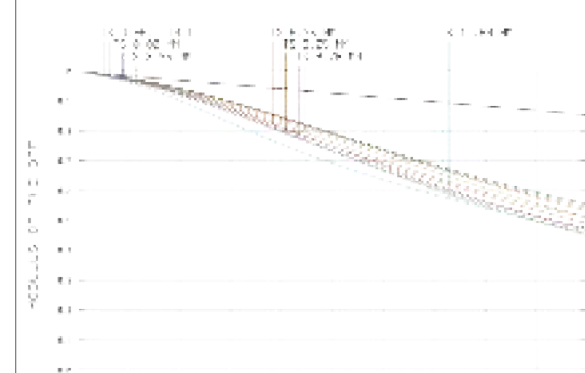


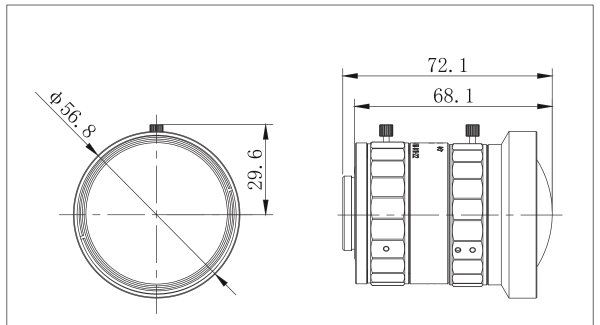
Fixed Focal Lens

GA 4/3" 10M Series 600037

4/3" 10MP C M-Iris

No	Item		Specifications
1	Max. sensor size		4/3"(23mm)
2	Focal Length		8.5mm
3	Mount		C-Mount
4	F/#		F2.8-F22
5	Working Distance		0.5m~∞
6	FOV(Diagonal X H X V)	4/3"	107.4° ×94.9° ×77.9°
		1"	86.7° ×73.6° ×58.0°
		1/2"	49.4° ×40.2° ×30.5°
		1/3"	37.8° ×30.5° ×23.7°
7	Object Size (at the minimum focus distance)	4/3"	1436.8×1145.9×848.6mm
		1"	990.8×784.1×580.7mm
		1/2"	480.9×382.6×285.6mm
		1/3"	358.2×285.6×213.6mm
8	BFL(in air)		18.87mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	4/3"	-4.54%@y=11.5mm
		1"	-4.22%@y=8.0mm
		1/2"	-1.63%@y=4.0mm
		1/3"	-0.97%@y=3.0mm
11	Filter thread		/
12	Lens Size(W X L)		58.0×72.1mm
13	Weight		317g
14	Work Temperature		-10℃~+50℃
15	Distance of entrance pupil		3.16mm
16	Diameter of entrance pupil		19.14mm
17	Distance of exit pupil		-70.27mm
18	Diameter of exit pupil		25.65mm
19	Total optical length		85.64mm
20	Magnification		-0.0171

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
500mm	-0.01709	58.6458	76.6195
550mm	-0.01558	70.1388	94.1524
600mm	-0.01432	82.5144	113.8204
650mm	-0.01325	95.7425	135.7266
700mm	-0.01233	109.7947	159.9803
750mm	-0.01153	124.6433	186.6987
800mm	-0.01082	140.2624	216.0063
850mm	-0.01020	156.6268	248.0366
900mm	-0.00964	173.7125	282.9322
950mm	-0.00915	191.4966	320.8459



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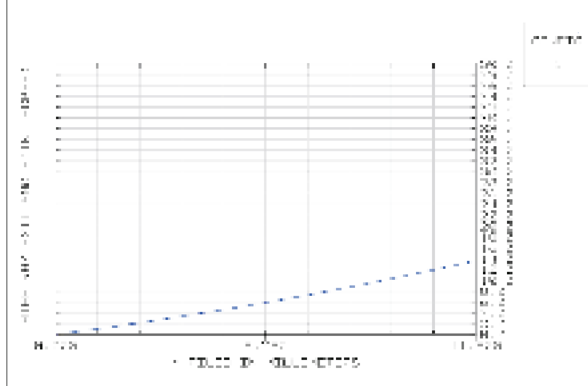

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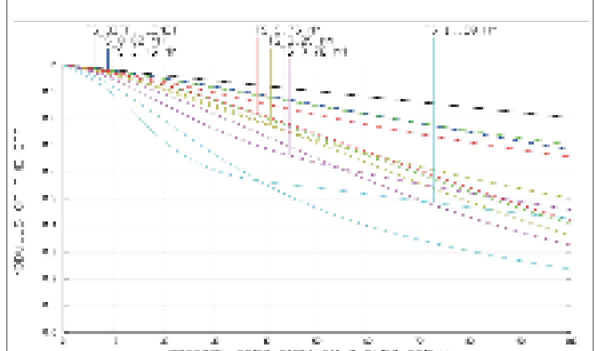


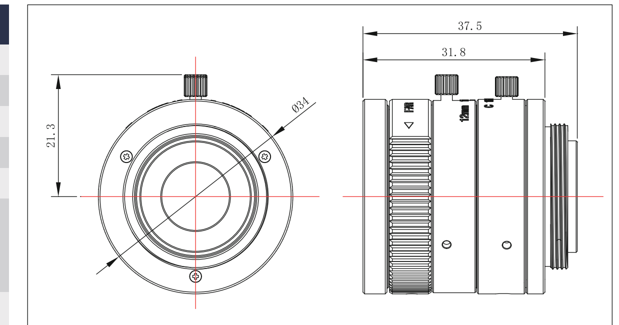
Fixed Focal Lens

2/3" 2M Series 600000

2/3" 2MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F1.4-C
5	Working Distance		0.15m~∞
6	FOV(Diagonal x H xV)	2/3"	49.0° ×40.0° ×30.3°
		1/2"	36.5° ×29.4° ×22.2°
		1/3"	27.6° ×22.2° ×16.7°
7	Object Size (at the minimum focus distance)	2/3"	152.1×120.3×89.3mm
		1/2"	108.9×86.6×64.6mm
		1/3"	81.0×64.6×48.3mm
8	BFL(in air)		12.70mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-1.8%@y=5.5mm
		1/2"	-1.25%@y=4.0mm
		1/3"	-0.78%@y=3.0mm
11	Filter thread		M30.5×0.5mm
12	Lens Size(W x L)		38.3×37.5mm
13	Weight		71g
14	Work Temperature		-10℃~+50℃
15	Distance of entrance pupil		17.87mm
16	Diameter of entrance pupil		8.60mm
17	Distance of exit pupil		-40.98mm
18	Diameter of exit pupil		28.39mm
19	Total optical length		46.20mm
20	Magnification		-0.075

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
150mm	-0.07489	1.3850	1.4634
200mm	-0.05747	4.2177	4.4034
250mm	-0.04659	6.5556	6.9184
300mm	-0.03918	9.3908	10.0180
350mm	-0.03380	12.7160	13.7120
400mm	-0.02972	16.5220	18.0100
450mm	-0.02651	20.8040	22.9230
500mm	-0.02394	25.5520	28.6410
550mm	-0.02181	30.7610	34.6350
600mm	-0.02004	36.4230	41.4560



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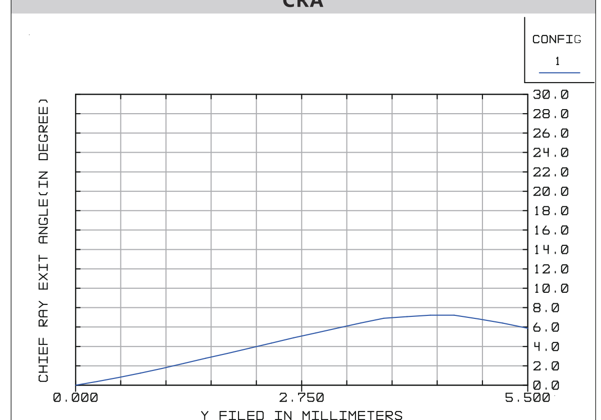

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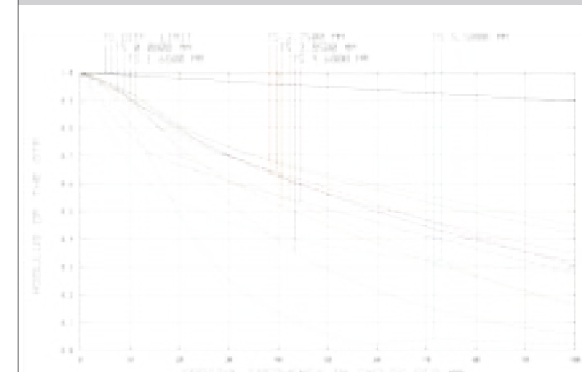


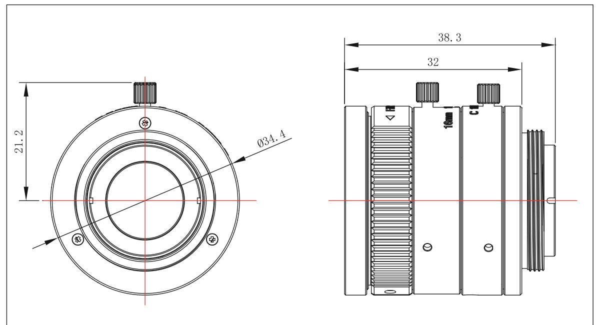
Fixed Focal Lens

2/3" 2M Series 600001

2/3" 2MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		16mm
3	Mount		C-Mount
4	F/#		F1.4-C
5	Working Distance		0.3m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	37.6° × 30.4° × 22.9°
		1/2"	27.7° × 22.3° × 16.8°
		1/3"	20.9° × 16.8° × 12.6°
7	Object Size (at the minimum focus distance)	2/3"	215.2 × 170.9 × 127.5mm
		1/2"	155.1 × 123.6 × 92.4mm
		1/3"	115.8 × 92.4 × 69.2mm
8	BFL(in air)		12.67mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-1.00%@y=5.5mm
		1/2"	-0.65%@y=4.0mm
		1/3"	-0.39%@y=3.0mm
11	Filter thread		M30.5 × 0.5mm
12	Lens Size(W X L)		38.2 × 38.5mm
13	Weight		76g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		16.09mm
16	Diameter of entrance pupil		11.43mm
17	Distance of exit pupil		-85.83mm
18	Diameter of exit pupil		60.59mm
19	Total optical length		46.10mm
20	Magnification		-0.0522

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
300mm	-0.05219	5.3965	5.5979
350mm	-0.04500	7.3232	7.6431
400mm	-0.03955	9.5365	10.0140
450mm	-0.03528	12.0340	12.7140
500mm	-0.03184	14.8130	15.7450
550mm	-0.02901	17.8700	19.1120
600mm	-0.02665	21.2040	22.8170
650mm	-0.02463	24.8130	26.8640
700mm	-0.0229	28.6930	31.2550
750mm	-0.02141	32.8420	35.9940



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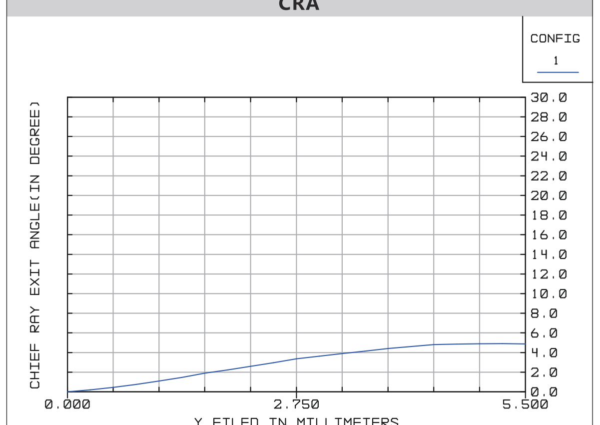

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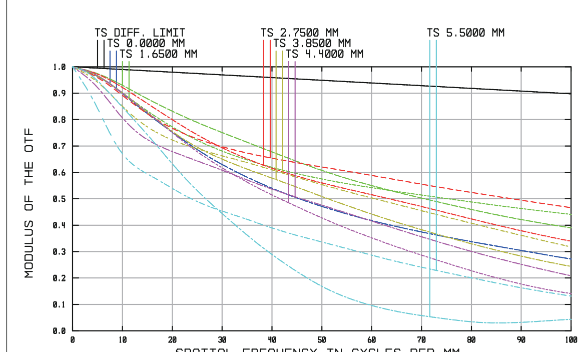
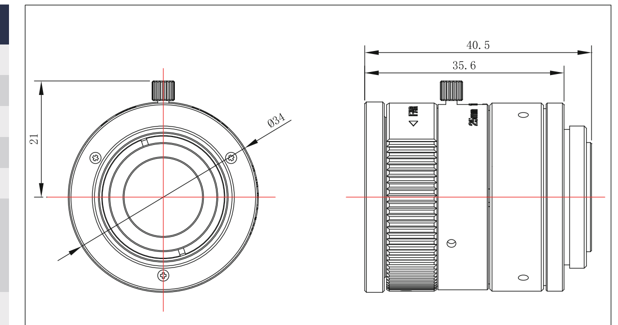


2/3" 2M Series 600002

2/3" 2MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		25mm
3	Mount		C-Mount
4	F/#		F1.4-C
5	Working Distance		0.25m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	24.7° × 19.9° × 15.0°
		1/2"	18.1° × 14.6° × 11.0°
		1/3"	13.7° × 11.0° × 8.2°
7	Object Size (at the minimum focus distance)	2/3"	117.9 × 94.1 × 70.4mm
		1/2"	85.5 × 68.3 × 51.1mm
		1/3"	64.0 × 51.1 × 38.3mm
8	BFL(in air)		13.60mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	0.27%@y=5.5mm
		1/2"	0.1%@y=4.0mm
		1/3"	0.04%@y=3.0mm
11	Filter thread		M30.5 × 0.5mm
12	Lens Size(W X L)		38 × 40.5mm
13	Weight		83g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		32.27mm
16	Diameter of entrance pupil		17.88mm
17	Distance of exit pupil		-40.30mm
18	Diameter of exit pupil		28.79mm
19	Total optical length		53.76mm
20	Magnification		-0.0939

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
250mm	-0.09387	1.5813	1.6015
300mm	-0.07905	2.2742	2.0392
350mm	-0.06827	3.0915	3.1471
400mm	-0.06008	4.0328	4.1157
450mm	-0.05364	5.0975	5.2157
500mm	-0.04845	6.2853	6.4474
550mm	-0.04418	7.5957	7.8115
600mm	-0.04060	9.0282	9.3083
650mm	-0.03755	10.5820	10.9380
700mm	-0.03493	12.2580	12.7020



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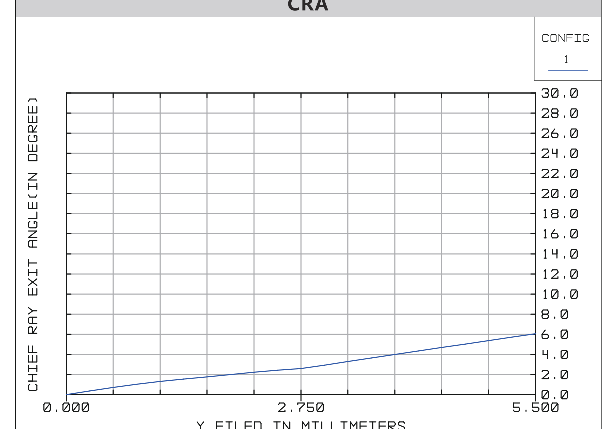

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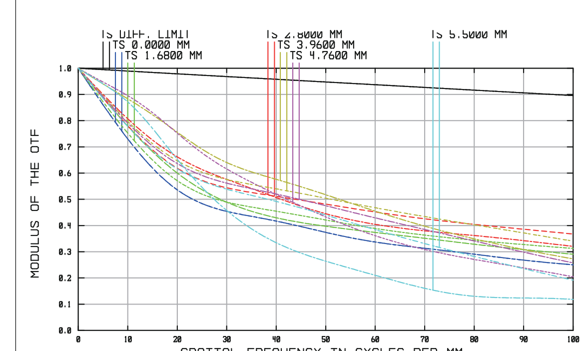


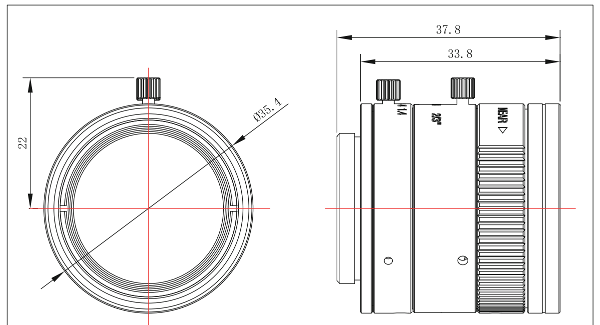
Fixed Focal Lens

2/3" 2M Series 600003

2/3" 2MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		35mm
3	Mount		C-Mount
4	F/#		F1.4-C
5	Working Distance		0.3m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	17.7° × 14.2° × 10.7°
		1/2"	12.9° × 10.4° × 7.8°
		1/3"	9.7° × 7.8° × 5.8°
7	Object Size (at the minimum focus distance)	2/3"	94.4 × 75.2 × 56.2mm
		1/2"	68.3 × 54.5 × 40.8mm
		1/3"	51.1 × 40.8 × 30.6mm
8	BFL(in air)		14.70mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-0.33%@y=5.5mm
		1/2"	-0.17%@y=4.0mm
		1/3"	-0.09%@y=3.0mm
11	Filter thread		M30.5 × 0.5mm
12	Lens Size(W X L)		39.8 × 37.8mm
13	Weight		90g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		34.20mm
16	Diameter of entrance pupil		25mm
17	Distance of exit pupil		-35.79mm
18	Diameter of exit pupil		25.30mm
19	Total optical length		49.24mm
20	Magnification		-0.118

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
300mm	-0.11804	1.1571	1.1661
350mm	-0.10115	1.5740	1.5882
400mm	-0.08845	2.0545	2.0758
450mm	-0.07864	2.5985	2.6289
500mm	-0.07076	3.2060	3.2476
550mm	-0.06432	3.8768	3.9322
600mm	-0.05895	4.6107	4.6827
650mm	-0.05441	5.0477	5.4992
700mm	-0.05052	6.2677	6.3819
750mm	-0.04715	7.1904	7.3310



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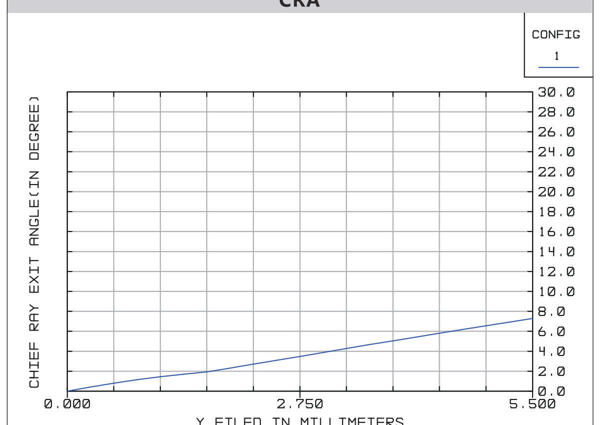

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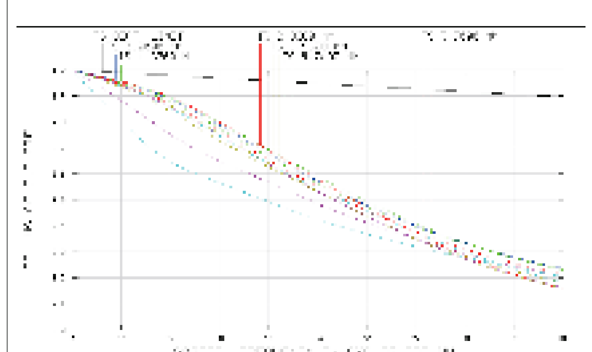
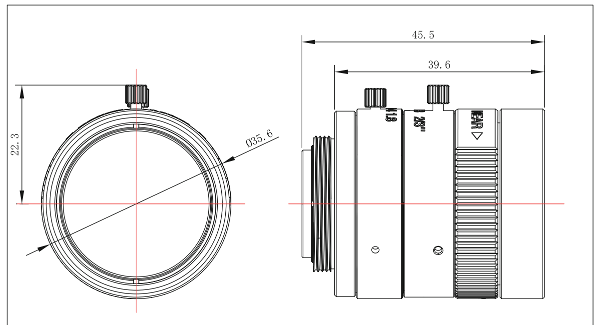


2/3" 2M Series 600004

2/3" 2MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		50mm
3	Mount		C-Mount
4	F/#		F1.8-C
5	Working Distance		0.5m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	12.5° × 9.1° × 7.5°
		1/2"	10.0° × 7.3° × 5.5°
		1/3"	7.5° × 5.5° × 4.1°
7	Object Size (at the minimum focus distance)	2/3"	101.4 × 81.0 × 60.6mm
		1/2"	73.6 × 58.8 × 44.1mm
		1/3"	55.1 × 44.1 × 33.0mm
8	BFL(in air)		12.94mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-0.22%@y=5.5mm
		1/2"	-0.1%@y=4.0mm
		1/3"	-0.05%@y=3.0mm
11	Filter thread		M30.5 × 0.5mm
12	Lens Size(W X L)		40.1 × 45.5mm
13	Weight		98g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		44.29mm
16	Diameter of entrance pupil		27.74mm
17	Distance of exit pupil		-31.00mm
18	Diameter of exit pupil		16.22mm
19	Total optical length		54.70mm
20	Magnification		-0.1092

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
500mm	-0.10918	2.0432	2.0601
550mm	-0.09845	2.4713	2.4937
600mm	-0.08963	2.9398	2.9689
650mm	-0.08227	3.4488	3.8458
700mm	-0.07603	3.9982	4.0444
750mm	-0.07066	4.5879	4.6447
800mm	-0.06601	5.2178	5.2868
850mm	-0.06192	5.8880	5.9708
900mm	-0.05832	6.5984	6.6966
950mm	-0.05511	7.3490	7.4645



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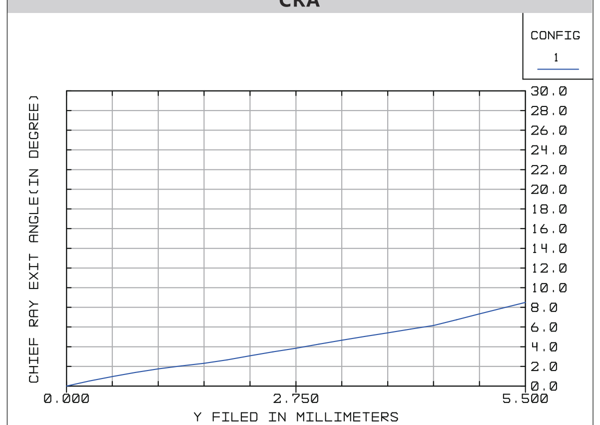

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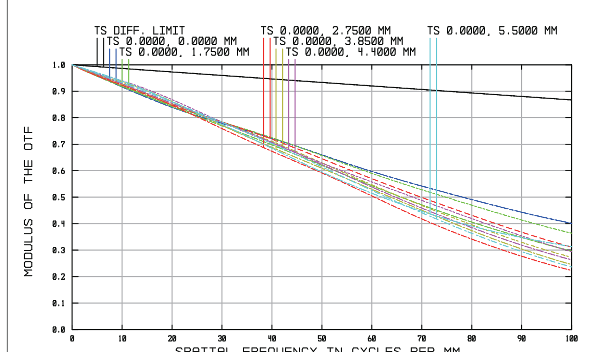


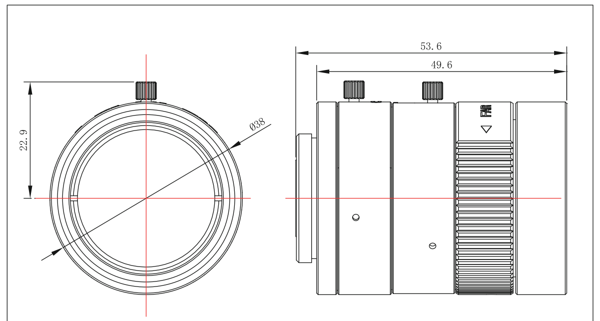
Fixed Focal Lens

2/3" 2M Series 600005

2/3" 2MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		75mm
3	Mount		C-Mount
4	F/#		F2.8-C
5	Working Distance		1.1m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	8.4 ° × 6.7 ° × 5.0 °
		1/2"	6.1 ° × 4.9 ° × 3.7 °
		1/3"	4.6 ° × 3.7 ° × 2.8 °
7	Object Size (at the minimum focus distance)	2/3"	140.7 × 112.6 × 84.5mm
		1/2"	102.4 × 81.9 × 61.5mm
		1/3"	76.8 × 61.5 × 46.1mm
8	BFL(in air)		14.35mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	0.36%@y=5.5mm
		1/2"	0.2%@y=4.0mm
		1/3"	0.11%@y=3.0mm
11	Filter thread		M30.5 × 0.5mm
12	Lens Size(W X L)		42 × 53.6mm
13	Weight		140g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		55.28mm
16	Diameter of entrance pupil		26.72mm
17	Distance of exit pupil		-28.30mm
18	Diameter of exit pupil		10.10mm
19	Total optical length		64.43mm
20	Magnification		-0.0781

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
1100mm	-0.07814	6.8583	6.9449
1150mm	-0.07426	7.4938	7.5927
1200mm	-0.07075	8.1573	8.2697
1250mm	-0.06756	8.8487	8.9758
1300mm	-0.06464	9.5680	9.7110
1350mm	-0.06196	10.3150	10.4750
1400mm	-0.05950	11.0900	11.2690
1450mm	-0.05722	11.8930	12.0920
1500mm	-0.05511	12.7240	12.9440
1550mm	-0.05316	13.5830	13.8250



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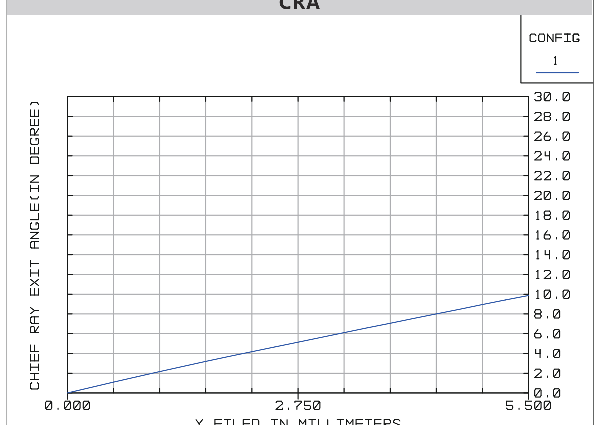

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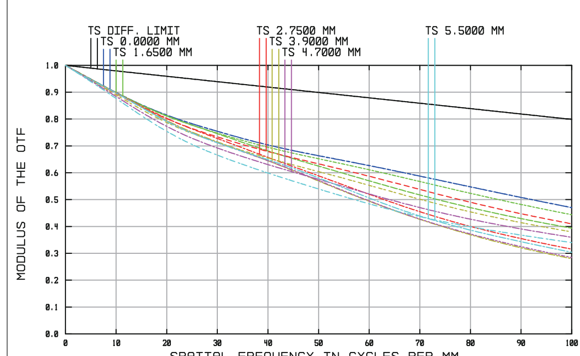
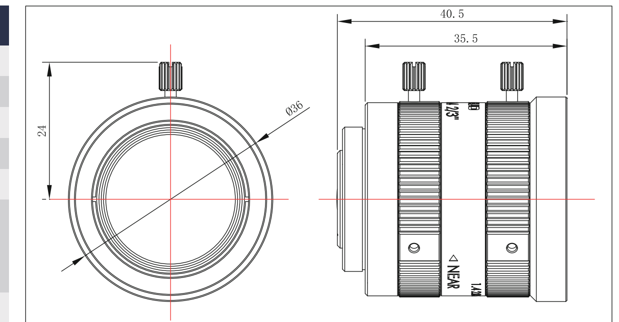


2/3" 2M Series 600036

2/3" 2MP C M-Iris

No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		8mm
3	Mount		C-Mount
4	F/#		F1.4-C
5	Working Distance		0.1m~∞
6	FOV(Diagonal X H X V)	2/3"	68.63 ° × 56.97 ° × 43.98 °
		1/2"	52.39 ° × 42.74 ° × 32.55 °
		1/3"	40.24 ° × 32.55 ° × 24.62 °
7	Object Size (at the minimum focus distance)	2/3"	160.96 × 123.93 × 91.70mm
		1/2"	111.90 × 88.88 × 66.53mm
		1/3"	83.25 × 66.53 × 49.92mm
8	BFL(in air)		11.76mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-2.81%@y=5.5mm
		1/2"	-1.93%@y=4.0mm
		1/3"	-1.23%@y=3.0mm
11	Filter thread		M34 × 0.5mm
12	Lens Size(W X L)		40.9 × 40.5mm
13	Weight		/
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		13.48mm
16	Diameter of entrance pupil		5.60mm
17	Distance of exit pupil		-49.13mm
18	Diameter of exit pupil		35.19mm
19	Total optical length		50.07mm
20	Magnification		-0.0737

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
100mm	-0.07370	2.4019	2.5231
150mm	-0.05100	5.3401	5.7494
200mm	-0.03900	9.3821	10.3535
250mm	-0.03158	14.4896	16.3894
300mm	-0.02653	20.6259	23.9143
350mm	-0.02287	27.7561	32.9883
400mm	-0.02010	35.8468	43.6748
450mm	-0.01793	44.8660	56.0407
500mm	-0.01618	54.7832	70.1569



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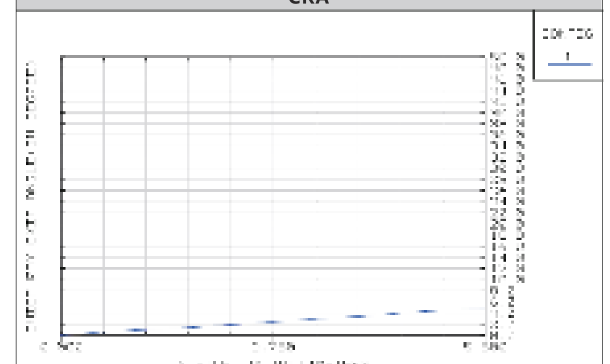

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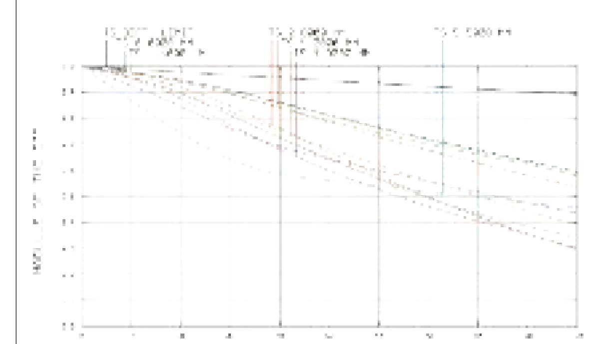
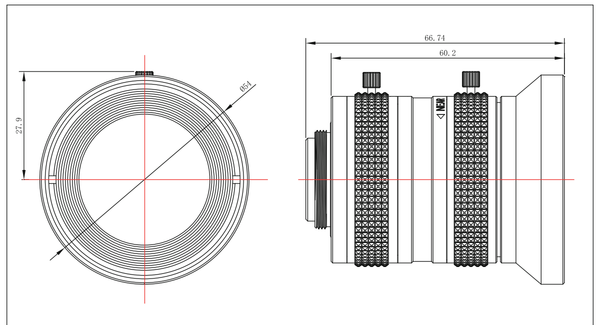


1" 5M Series 600027

1" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F1.6-F22
5	Working Distance		1m ~ ∞
6	FOV(Diagonal X H X V)	1"	68.84° × 57.12° × 44.08°
		1/2"	37.15° × 29.99° × 22.64°
		1/3"	28.16° × 22.64° × 17.04°
7	Object Size (at the minimum focus distance)	1"	1874.12 × 1106.10 × 751.06mm
		1/2"	614.10 × 486.54 × 368.80mm
		1/3"	471.75 × 369.88 × 273.76mm
8	BFL(in air)		13.53mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-2.88%@y=8.0mm
		1/2"	-1.06%@y=4.0mm
		1/3"	-0.63%@y=3.0mm
11	Filter thread		M52 × 0.75
12	Lens Size(W X L)		54 × 66.39mm
13	Weight		183g
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		23.34mm
16	Diameter of entrance pupil		7.52mm
17	Distance of exit pupil		-33.40mm
18	Diameter of exit pupil		20.80mm
19	Total optical length		74.47mm
20	Magnification		-0.012

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
1000mm	-0.01181	71.1663	82.9766
1050mm	-0.01126	78.1827	91.8628
1100mm	-0.01076	85.5028	101.2418
1150mm	-0.01030	93.1234	111.1196
1200mm	-0.00988	101.0414	121.5027
1250mm	-0.00949	130.2261	164.5020
1300mm	-0.00913	140.268	178.8669
1350mm	-0.00879	150.6402	193.9167
1400mm	-0.00848	171.3386	209.6623
1450mm	-0.00820	202.36	226.1100



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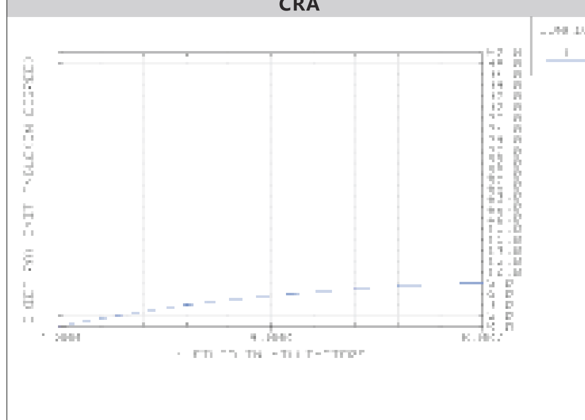

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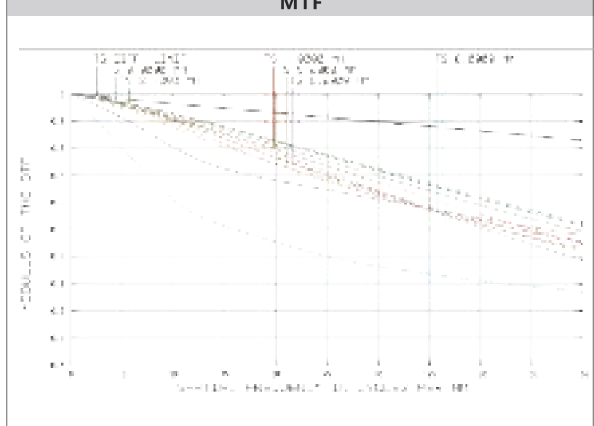
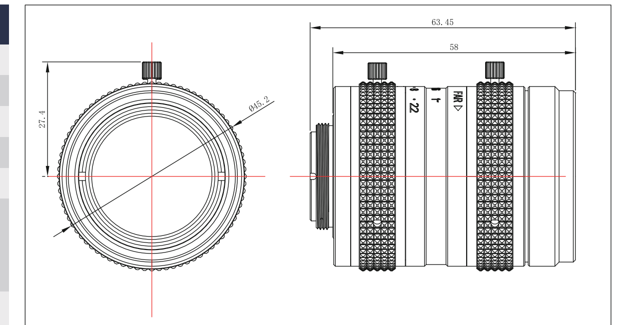


1" 5M Series 600028

1" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		16mm
3	Mount		C-Mount
4	F/#		F1.6-F22
5	Working Distance		1m ~ ∞
6	FOV(Diagonal X H X V)	1"	54.38° × 44.20° × 33.54°
		1/2"	28.12° × 22.54° × 16.91°
		1/3"	21.14° × 16.94° × 12.72°
7	Object Size (at the minimum focus distance)	1"	1043.34 × 824.12 × 611.12mm
		1/2"	506.90 × 403.93 × 302.01mm
		1/3"	378.32 × 301.96 × 226.06mm
8	BFL(in air)		12.17mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-3.73%@y=8.0mm
		1/2"	-1.09%@y=4.0mm
		1/3"	-0.63%@y=3.0mm
11	Filter thread		M37.5 × 0.5mm
12	Lens Size(W X L)		43 × 64.06mm
13	Weight		202g
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		24.39mm
16	Diameter of entrance pupil		10.11mm
17	Distance of exit pupil		-24.16mm
18	Diameter of exit pupil		15.10mm
19	Total optical length		72.21mm
20	Magnification		-0.016

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
1000mm	-0.01596	83.3273	99.9919
1050mm	-0.01521	91.4872	109.7943
1100mm	-0.01453	99.9928	120.2115
1150mm	-0.01390	108.8399	130.2521
1200mm	-0.01333	126.0244	138.9257
1250mm	-0.01280	135.542	145.2421
1300mm	-0.01232	150.3886	159.2112
1350mm	-0.01187	166.5604	174.8431
1400mm	-0.01145	178.0534	178.1481
1450mm	-0.01105	198.8637	200.137



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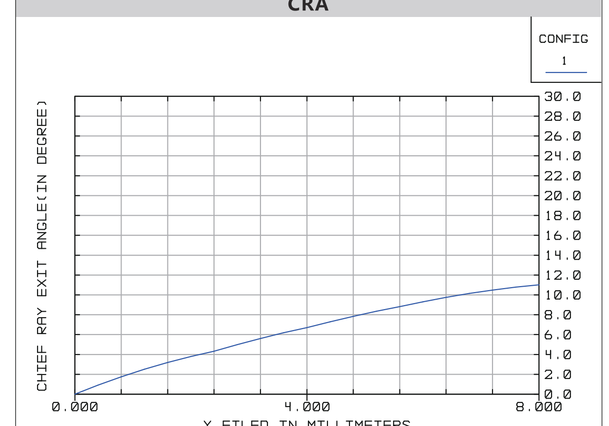
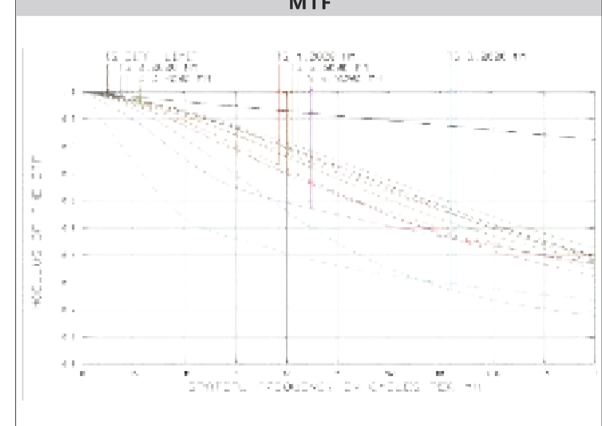


MTF



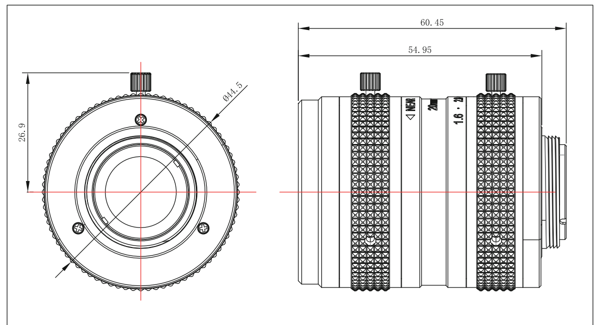
Fixed Focal Lens

1" 5M Series 600029

1" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		20mm
3	Mount		C-Mount
4	F/#		F1.6-F22
5	Working Distance		1m ~ ∞
6	FOV(Diagonal X H X V)	1"	44.74° × 36.08° × 27.24°
		1/2"	22.82° × 18.19° × 13.83°
		1/3"	17.12° × 13.72° × 10.30°
7	Object Size (at the minimum focus distance)	1"	830.48 × 657.00 × 488.54mm
		1/2"	405.80 × 323.69 × 242.30mm
		1/3"	303.32 × 246.44 × 184.54mm
8	BFL(in air)		12.20mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-2.87%@y=8.0mm
		1/2"	-0.72%@y=4.0mm
		1/3"	-0.41%@y=3.0mm
11	Filter thread		M39 × 0.5mm
12	Lens Size(W X L)		43 × 60.4mm
13	Weight		169g
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		26.58mm
16	Diameter of entrance pupil		12.50mm
17	Distance of exit pupil		-33.84mm
18	Diameter of exit pupil		21.14mm
19	Total optical length		69.44mm
20	Magnification		-0.020

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
1000mm	-0.01986	28.8653	30.6338
1050mm	-0.01892	44.7781	45.8256
1100mm	-0.01807	58.8265	59.1808
1150mm	-0.01728	62.0098	62.7002
1200mm	-0.01657	65.3274	68.3846
1250mm	-0.01591	68.7789	69.2347
1300mm	-0.01530	68.3635	71.2513
1350mm	-0.01474	72.0808	73.4352
1400mm	-0.01422	74.9302	76.7871
1450mm	-0.01373	82.9111	83.3079



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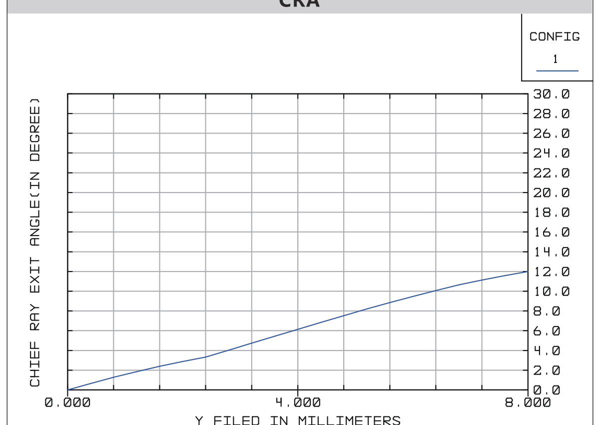

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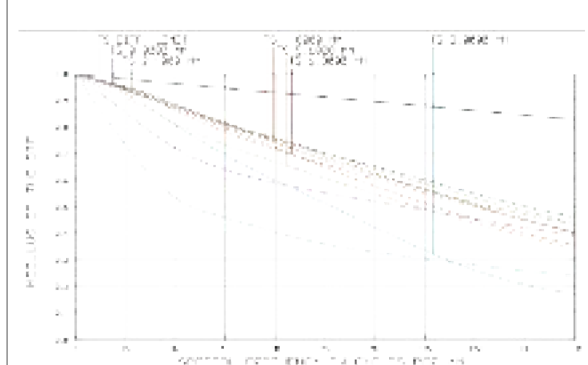
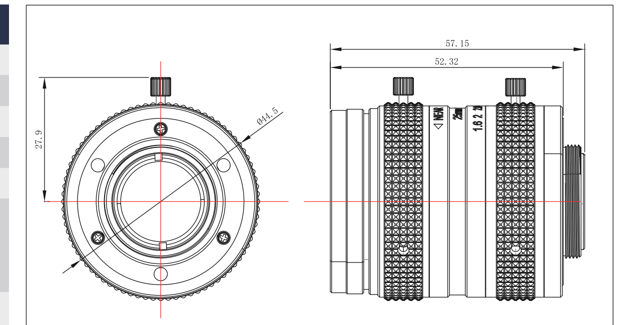


1" 5M Series 600030

1" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		25mm
3	Mount		C-Mount
4	F/#		F1.6-F22
5	Working Distance		1m ~ ∞
6	FOV(Diagonal X H X V)	1"	36.12° × 29.04° × 21.86°
		1/2"	18.20° × 14.63° × 11.02°
		1/3"	13.70° × 10.96° × 8.24°
7	Object Size (at the minimum focus distance)	1"	662.10 × 525.12 × 391.24mm
		1/2"	325.22 × 259.61 × 194.43mm
		1/3"	243.28 × 194.40 × 145.66mm
8	BFL(in air)		12.69mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-2.06%@y=8.0mm
		1/2"	-0.52%@y=4.0mm
		1/3"	-0.29%@y=3.0mm
11	Filter thread		M39 × 0.5mm
12	Lens Size(W X L)		41.5 × 57.15mm
13	Weight		157g
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		27.15mm
16	Diameter of entrance pupil		15.65mm
17	Distance of exit pupil		-42.03mm
18	Diameter of exit pupil		26.27mm
19	Total optical length		63.52mm
20	Magnification		-0.025

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
1000mm	-0.02474	18.5918	19.3098
1050mm	-0.02358	20.4784	21.3096
1100mm	-0.02252	22.4543	23.4101
1150mm	-0.02155	24.5193	25.6114
1200mm	-0.02066	26.6730	27.9139
1250mm	-0.01984	28.9153	30.3179
1300mm	-0.01909	31.2459	32.8237
1350mm	-0.01839	33.6645	35.4316
1400mm	-0.01773	36.1709	38.1418
1450mm	-0.01713	38.7649	40.9547



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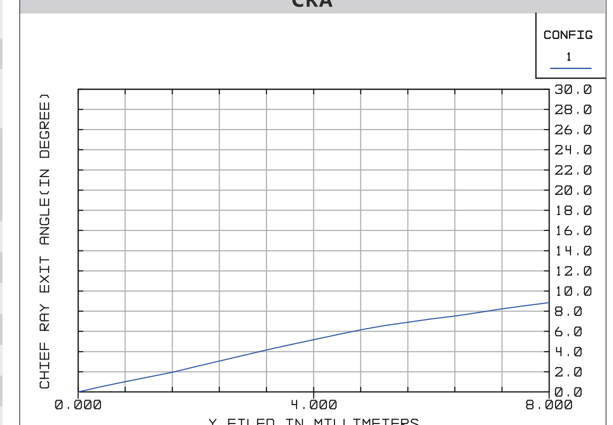

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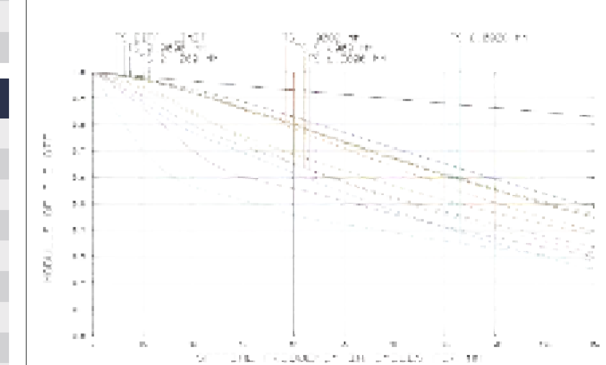
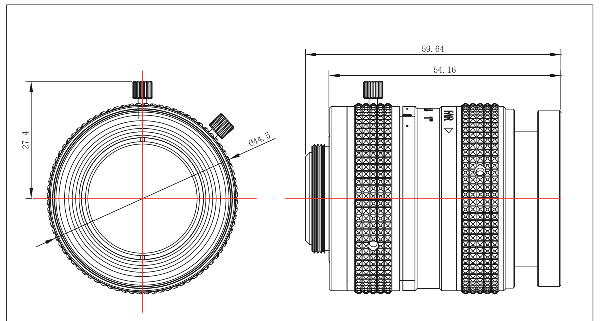


1" 5M Series 600031

1" 5MP C M-Iris

No	Item		Specifications
1	Max. sensor size		1"(16mm)
2	Focal Length		35mm
3	Mount		C-Mount
4	F/#		F1.4-F22
5	Working Distance		0.4m ~ ∞
6	FOV(Diagonal X H X V)	1"	25.68° × 20.72° × 15.62°
		1/2"	13.04° × 10.44° × 7.79°
		1/3"	9.80° × 7.84° × 5.88°
7	Object Size (at the minimum focus distance)	1"	176.46 × 141.64 × 106.34mm
		1/2"	88.63 × 70.86 × 53.24mm
		1/3"	66.46 × 53.18 × 39.88mm
8	BFL(in air)		12.82mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	0.26%@y=8mm
		1/2"	-0.07%@y=4.0mm
		1/3"	-0.05%@y=3.0mm
11	Filter thread		M39 × 0.5mm
12	Lens Size(W X L)		41 × 56.28mm
13	Weight		155g
14	Work Temperature		-20℃ ~ +60℃
15	Distance of entrance pupil		32.14mm
16	Diameter of entrance pupil		24.17mm
17	Distance of exit pupil		-40.48mm
18	Diameter of exit pupil		27.83mm
19	Total optical length		62.73mm
20	Magnification		-0.090

Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
400mm	-0.09029	1.5479	1.5599
450mm	-0.07992	1.9581	1.9752
500mm	-0.07170	2.4162	2.4398
550mm	-0.06504	2.9222	2.9536
600mm	-0.05947	3.4759	3.5167
650mm	-0.05479	4.0774	4.1292
700mm	-0.05082	4.7266	4.7913
750mm	-0.04737	5.4233	5.5029
800mm	-0.04437	6.1676	6.2641
850mm	-0.04172	6.9592	7.0751



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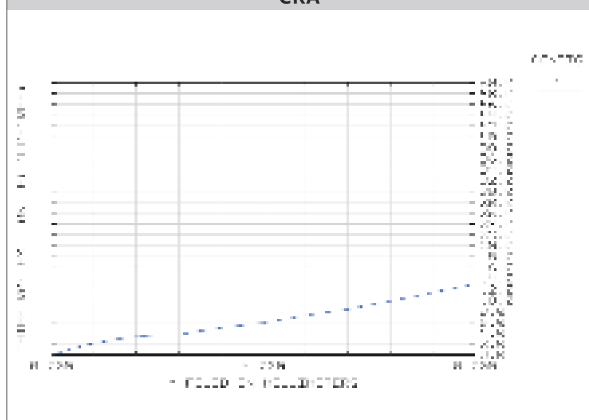

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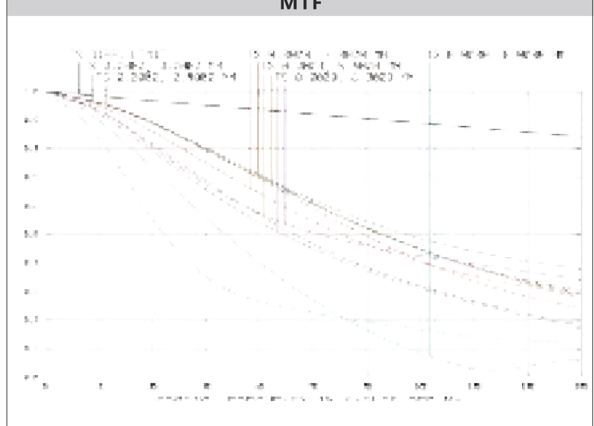


Grand Unified Optics (Beijing)Co., Ltd has launched the GAOPTICS®of machine vision lens for the automation industry, committed to providing customers with high-quality products and services.

GAOPTICS® includes 1/1.8 "6M Series, 1" 8M Series, 4/3 "10M Series, SWIR Series, Large field double telecentric lens Series.

GA Fixed Focal Lens

GA 1/1.8" 6M fixed focal length lens
For small pixel design, matching small image plane high resolution chip
Can be used in logistics industry, AOI testing,
electronic parts testing industry, etc.

GA 1" 8M fixed focal length lens
1" compact design,high resolution, C-mount
Can be use in in electronic component testing,
packaging testing, etc.

GA 4/3" 10M fixed focal length lens
C-mount, Max.sensor Size 4/3"
Can be used in electronic component testing,
printing testing, railway testing, etc.

GA SWIR Lens
C-mount, Large aperture design,
working wavelength is 800-1800nm or 700-1700nm
Can be used for silicon wafer detection and food detection

GA Large field double telecentric lens

Double telecentric design, Large field design, C-mount,
Can be used in semiconductor testing, industrial testing, etc.

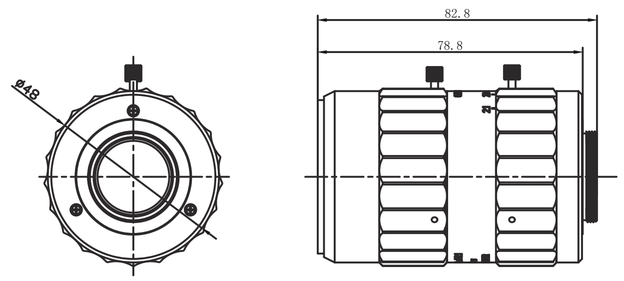
Swir

SWIR

GAOPTICS® SWIR LENSES ARE DESIGNED WITH HIGH TRANSMISSION AND HIGH RESOLUTION. THERE ARE 1" AND 25.6MM SENSOR SIZE FOR THIS LENS, AND THE 25.6MM SWIR LENS IS SPECIAL DEIGN FOR SWIR LINE SCAN CAMERA.

GA 25.6mm SWIR f=50mm 680000

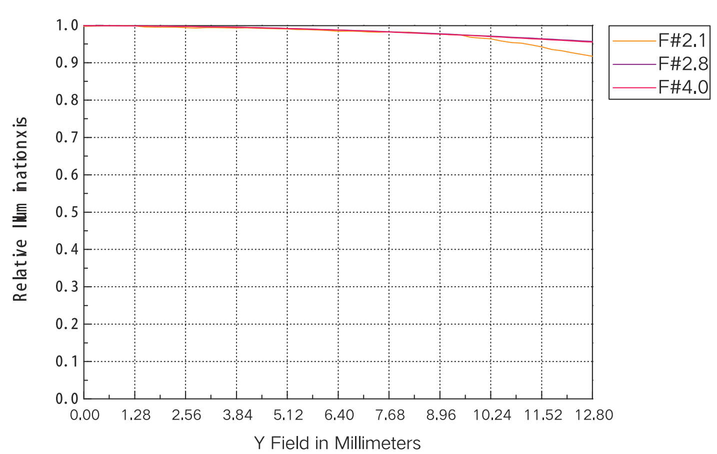
Max. sensor size25.6mm | C | 800-1800nm



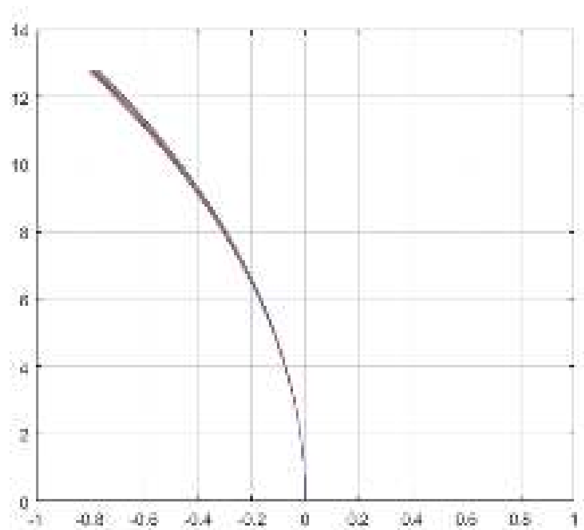
Large sensor format and high resolution SWIR Lens
High resolution
Large aperture design
Compact design
800-1800nm

No	Item	Specifications
1	Focal Length	50mm
2	Working Distance(Min.)	275mm
3	Focus Range	275mm-∞
4	The total length of lens(TTL)	82.8mm
5	FOV	28.9 °
6	Filter Thread	M43x0.75
7	Camera Mount	C -Mount
8	F/#	F/2.15 － F/16
9	Magnification	0X － 0.185X
10	Distortion	< 1.0%
11	Max. sensor size	25.6mm
12	Lens QTY（Group）	9（6）
13	Working wavelength	800-1800nm
14	Weight	250g

Relative Illumination



Distortion



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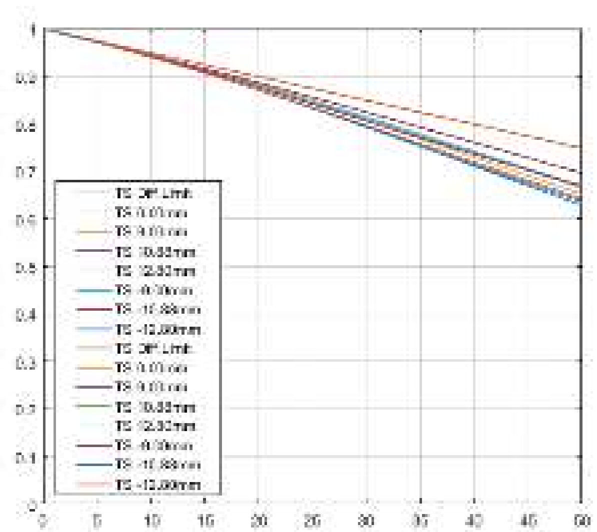
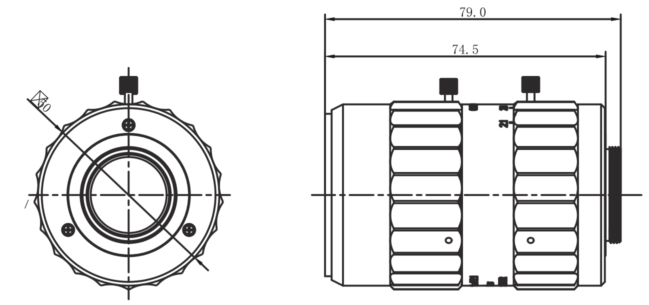


GA 25.6mm SWIR f=25mm 680001

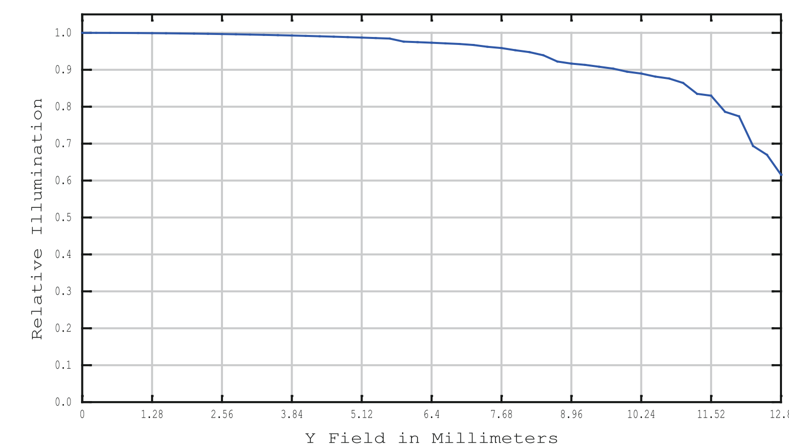
Max. sensor size25.6mm | C | 800-1800nm



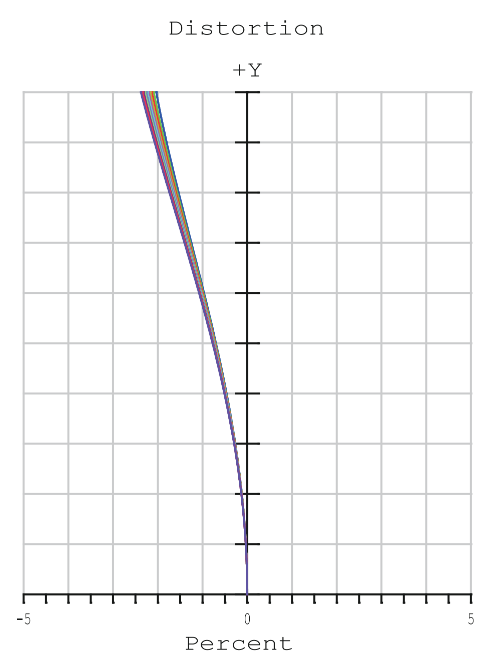
Large sensor format and high resolution SWIR Lens
High resolution
Large aperture design
Compact design
800-1800nm

No	Item	Specifications
1	Focal Length	25mm
2	Working Distance(Min.)	200mm
3	Focus Range	200mm-∞
4	The total length of lens(TTL)	79mm
5	FOV	54.52 °
6	Filter Thread	M43x0.75
7	Camera Mount	C -Mount
8	F/#	F/2.1 － F/16
9	Magnification	0 x － 0.113 x
10	Distortion	< 2.4%
11	Max. sensor size	25.6mm
12	Lens QTY（Group）	9（6）
13	Working wavelength	800-1800nm
14	Weight	/

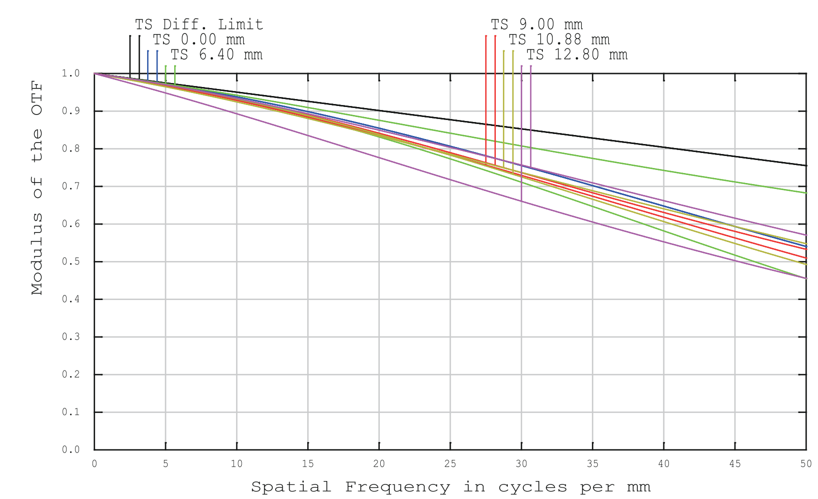
Relative Illumination



Distortion



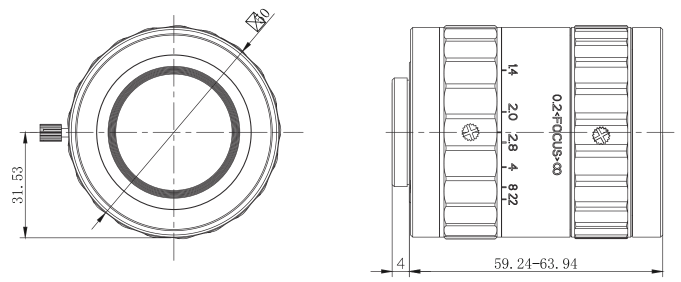
MTF



SWIR

GA 1" SWIR f=25mm 680003

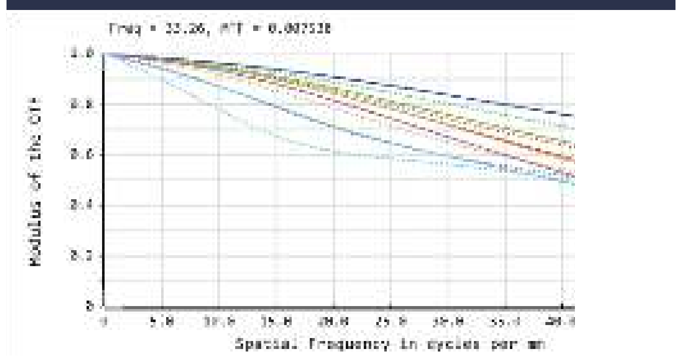
Max. sensor size1 " | C | 700-1700nm



Large sensor format and high resolution SWIR Lens
High resolution
Large aperture design
Compact design
700-1700nm

No	Item		Specifications
1	Max. Sensor size		1"(16.2mm)
2	Focal Length		25mm
3	Mount		C-Mount
4	F/#		F1.4-F22
5	Focusing Range		0.3m~∞
6	FOV (Diagonal x H xV)	1"	36.46 ° ×29.24 ° ×21.97 °
		2/3"	25.15 ° ×20.15 ° ×15.13 °
		1/2"	18.32 ° ×14.67 ° ×11.01 °
7	Object Size (at the minimum focus distance)	1"	198.59×156.1×116.22mm
		2/3"	133.56x106.37x79.51mm
		1/2"	96.57×77.08×57.71mm
8	BFL（in air）		20.73mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-2.69%@y=8mm
		2/3"	-1.24%@y=5.5mm
		1/2"	-0.65%@y=4.0mm
11	Working Distance		700~1700nm
12	Lens Size(W x L)		64×56.6mm
13	Weight		<200g
14	Work Temperature		-10℃~+50℃

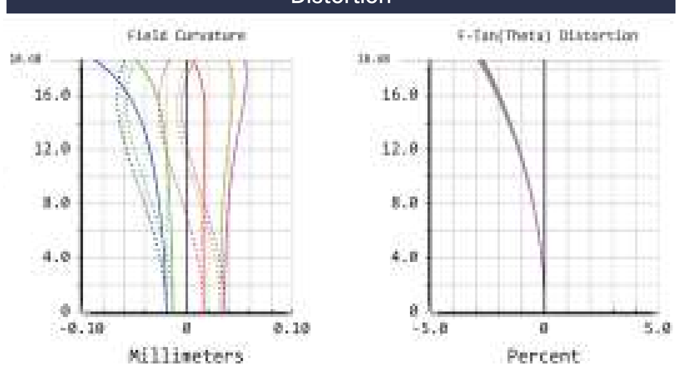
MTF



CRA

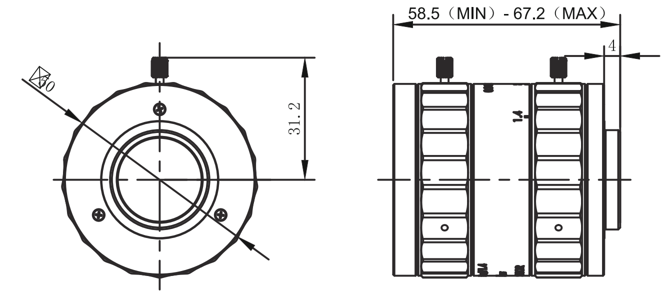
Relative Illumination

Distortion



GA 1" SWIR f=35mm 680004

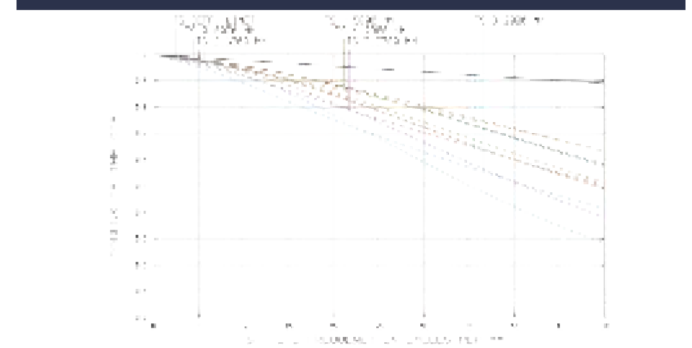
Max. sensor size1 " | C | 700-1700nm



Large sensor format and high resolution SWIR Lens
High resolution
Large aperture design
Compact design
700-1700nm

No	Item		Specifications
1	Max. Sensor size		1"(16.4mm)
2	Focal Length		35mm
3	Mount		C-Mount
4	F/#		F1.4-F22
5	Focusing Range		0.3m~∞
6	Object Size (at the minimum focus distance)	1"	26.54 ° ×21.23 ° ×15.92 °
		2/3"	18.03 ° ×14.43 ° 10.82 °
		1/2"	13.19 ° ×10.55 ° ×7.91 °
7	FOV (Diagonal x H xV)	1"	135.934×108.747×81.56mm
		2/3"	91.748×73.399×55.05mm
		1/2"	66.93×53.55×40.16mm
8	BFL（in air）		21.49mm
9	Operation	Focus	Manual
		Aperture	M-Iris
10	Distortion	1"	-1.94%@y=8mm
		1/2"	-0.84%@y=4.4mm
		1/3"	-0.49%@y=4.0mm
11	Working Distance		700-1700nm
12	Lens Size(W x L)		56.2×58.5mm
13	Weight		189g
14	Work Temperature		-10℃~+50℃

MTF



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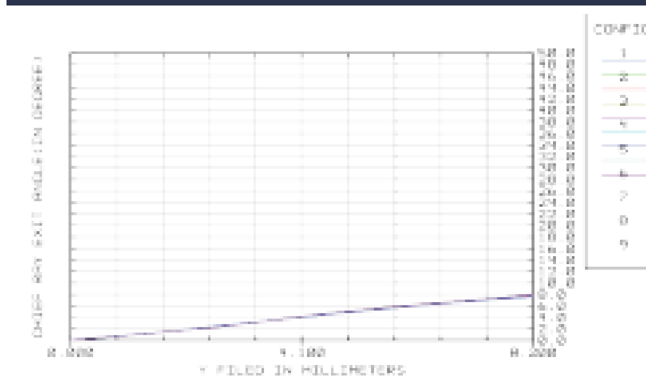
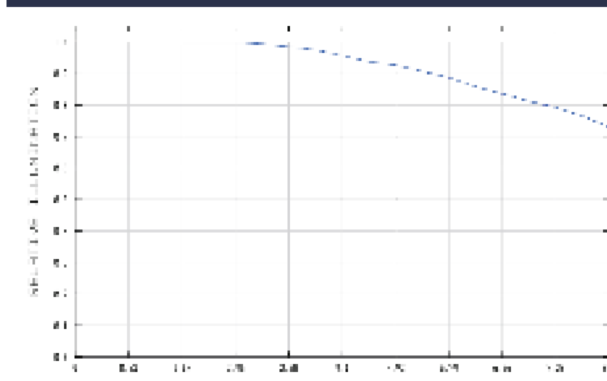
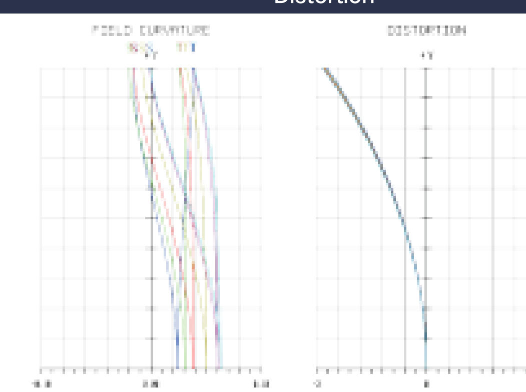


Relative Illumination



Distortion



SWIR

3

Telecentric Lens

THE MAGNIFICATION IS FIXED WITHIN THE WORKING DISTANCE FOR TELECENTRIC LENS , SO IT CAN BE USED WIDELY IN INDUSTRIAL MEASURING FIELD. GAOPTICS ® LARGE FIELD DOUBLE TELECENTRIC LENS CAN COVER FOV OF 65MM、100MM、150MM 、250MM AND THE SENSOR SIZE OF 1/1.8″ 、2/3″ 、1″ 、4/3″ 。

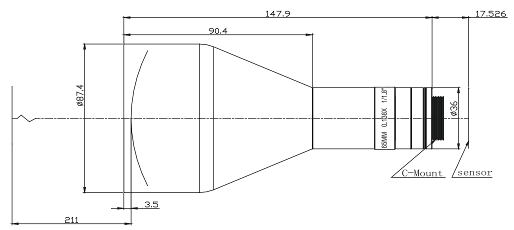
GA Large field double telecentric lens

Compact double telecentric lens

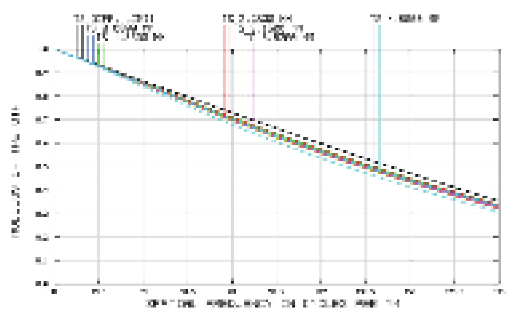
GA Large Field Double Telecentric Lens 610006/610007 (In-Line Illumination)

0.138X 1/1.8" C





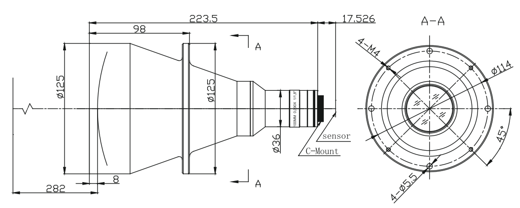
Stock No.: 610006/610007（In-Line Illumination）			
NO	Item	Specifications	
1	Optical Configuration	Double Telecentric	
2	Magnification	0.138X	
3	Working Distance	211mm	
4	Object Space DOV	±9.87mm	
5	Telecentricity	<0.06 °	
6	Distortion	<0.05%	
7	F/#	F4.7	
8	Resolution/MTF @F4.7	>30%@195lp/mm	
9	Object Space FOV	Φ65mm	
10	Image Space FOV	Φ9mm	
11	Sensor Size Range（H×V）	1/1.8"	52.2X39.1mm
		1/2.5"	42X31.2mm
12	Camera Mount	C-Mount	
13	Lens Size（Dia.×Length）	Φ87.4×147.9mm	
14	The distance from the front end of imaging lens to the first surface of the first glass lens	3.5mm	



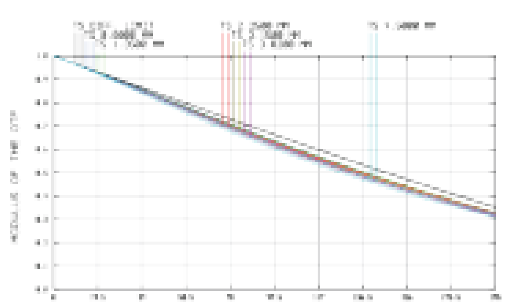
GA Large Field Double Telecentric Lens 610008/610009 (In-Line Illumination)

0.090X 1/1.8" C





Stock No.: 610008/610009（In-Line Illumination）			
NO	Item	Specifications	
1	Optical Configuration	Double Telecentric	
2	Magnification	0.090X	
3	Working Distance	282.00mm	
4	Object Space DOV	±23.21mm	
5	Telecentricity	<0.05 °	
6	Distortion	<0.06%	
7	F/#	F4.7	
8	Resolution/MTF @F4.7	>30%@195lp/mm	
9	Object Space FOV	Φ100mm	
10	Image Space FOV	Φ9mm	
11	Sensor Size Range（H×V）	1/1.8"	80.0×60.0mm
		1/2.5"	64.4×47.8mm
12	Camera Mount	C-Mount	
13	Lens Size（Dia.×Length）	Φ125.0×223.5mm	
14	The distance from the front end of imaging lens to the first surface of the first glass lens	8.0mm	

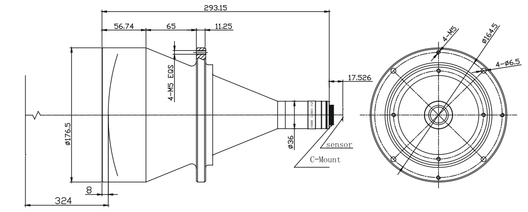


Telecentric Lens

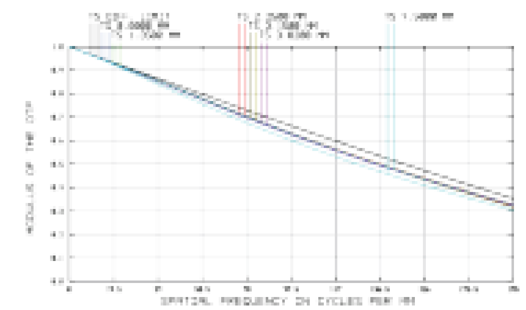
GA Large Field Double Telecentric Lens 610039/610044 (In-Line Illumination)

0.060X 1/1.8" C





Stock No.: 610039/610044（In-Line Illumination）			
NO	Item	Specifications	
1	Optical Configuration	Double Telecentric	
2	Magnification	0.060X	
3	Working Distance	324mm	
4	Object Space DOV	±52.22mm	
5	Telecentricity	<0.03 °	
6	Distortion	<0.05%	
7	F/#	F4.7	
8	Resolution/MTF @F4.7	>30%@195lp/mm	
9	Object Space FOV	Φ9mm	
10	Image Space FOV	Φ150mm	
11	Sensor Size Range（H×V）	1/1.8"	120×90mm
		1/2.5"	96.7×71.7mm
12	Camera Mount	C-Mount	
13	Lens Size（Dia.×Length）	Φ176.5×293.15mm	
14	The distance from the front end of imaging lens to the first surface of the first glass lens	8mm	

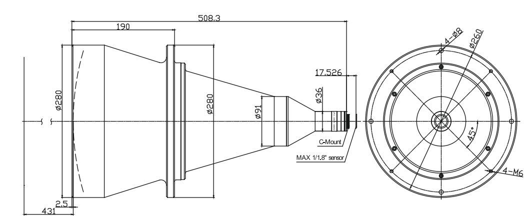


Telecentric Lens

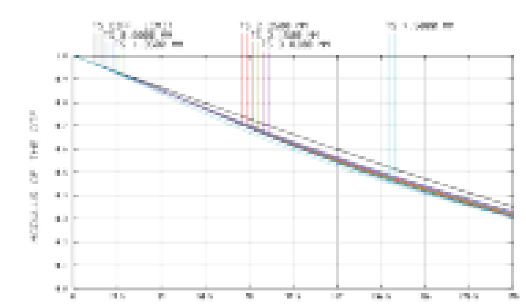
GA Large Field Double Telecentric Lens 610010/610011 (In-Line Illumination)

0.036X 1/1.8" C





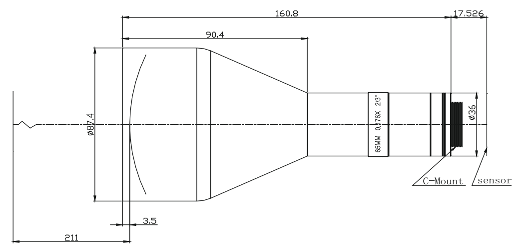
Stock No.: 610010/610011（In-Line Illumination）			
NO	Item	Specifications	
1	Optical Configuration	Double Telecentric	
2	Magnification	0.036X	
3	Working Distance	431mm	
4	Object Space DOV	±145.06mm	
5	Telecentricity	<0.02 °	
6	Distortion	<0.04%	
7	F/#	F4.7	
8	Resolution/MTF @F4.7	>30%@195lp/mm	
9	Object Space FOV	Φ9mm	
10	Image Space FOV	Φ250mm	
11	Sensor Size Range（H×V）	1/1.8"	200×150mm
		1/2.5"	161.1×119.4mm
12	Camera Mount	C-Mount	
13	Lens Size（Dia.×Length）	Φ280×508.3mm	
14	The distance from the front end of imaging lens to the first surface of the first glass lens	2.5mm	



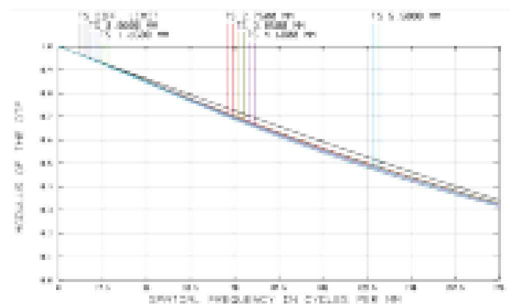
GA Large Field Double Telecentric Lens 610012/610013 (In-Line Illumination)

0.176X 2/3" C





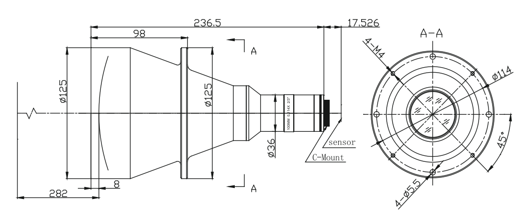
NO	Item		Specifications
	Stock No.: 610012/610013 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.176X
3	Working Distance		211.00mm
4	Object Space DOV		±6.85mm
5	Telecentricity		<0.06°
6	Distortion		<0.03%
7	F/#		F5.3
8	Resolution/MTF @F5.3		>30%@175lp/mm
9	Object Space FOV		Φ62.5mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range (H×V)	2/3"	50.0×37.5mm
		1/1.8"	41×31mm
		1/2.5"	33×24mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ87.4×160.8mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		3.5mm



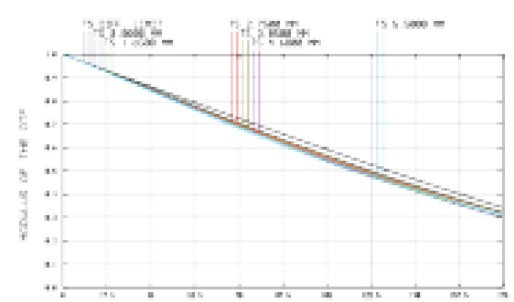
GA Large Field Double Telecentric Lens 610014/610015 (In-Line Illumination)

0.114X 2/3" C





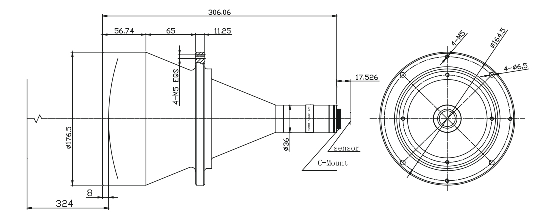
NO	Item		Specifications
	Stock No.: 610014/610015 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.114X
3	Working Distance		282.00mm
4	Object Space DOV		±16.32mm
5	Telecentricity		<0.1°
6	Distortion		<0.05%
7	F/#		F5.3
8	Resolution/MTF @F5.3		>30%@175lp/mm
9	Object Space FOV		Φ96.49mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range (H×V)	2/3"	77.2×57.9mm
		1/1.8"	63.2×47.4mm
		1/2.5"	50.9×37.7mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ125.0×236.5mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		8.0mm



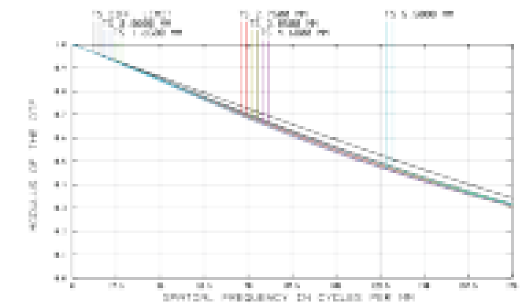
GA Large Field Double Telecentric Lens 610040/610045 (In-Line Illumination)

0.076X 2/3" C





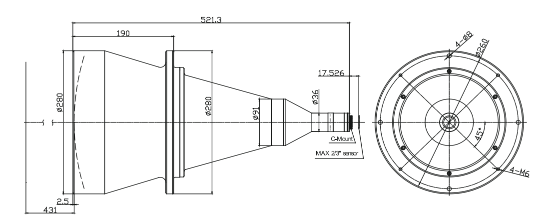
NO	Item		Specifications
	Stock No.: 610040/610045 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.076X
3	Working Distance		324mm
4	Object Space DOV		±36.71mm
5	Telecentricity		<0.03°
6	Distortion		<0.03%
7	F/#		F5.3
8	Resolution/MTF @F5.3		>30%@175lp/mm
9	Object Space FOV		Φ11mm
10	Image Space FOV		Φ144mm
11	Sensor Size Range (H×V)	2/3"	116×87mm
		1/1.8"	95×71mm
		1/2.5"	76.3×56.6mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ176.5×306.06mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		8mm



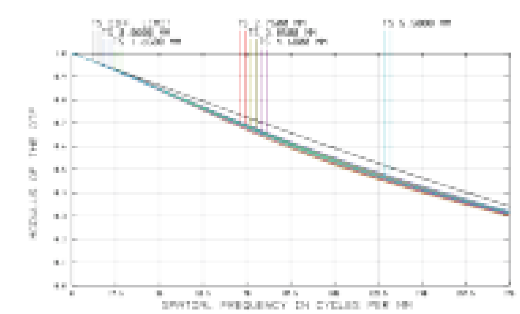
GA Large Field Double Telecentric Lens 610016/610017 (In-Line Illumination)

0.046X 2/3" C



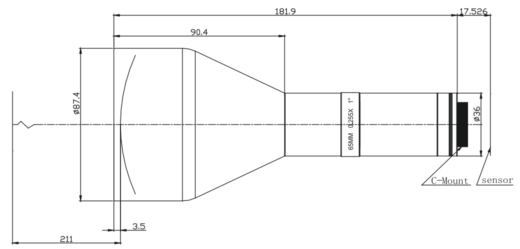


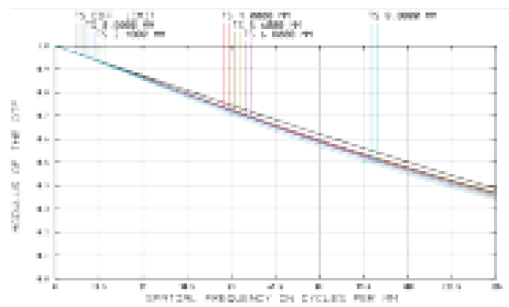
NO	Item		Specifications
	Stock No.: 610016/610017 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.0456X
3	Working Distance		431mm
4	Object Space DOV		±101.96mm
5	Telecentricity		<0.02°
6	Distortion		<0.02%
7	F/#		F5.3
8	Resolution/MTF @F5.3		>30%@170lp/mm
9	Object Space FOV		Φ11mm
10	Image Space FOV		Φ241.2mm
11	Sensor Size Range (H×V)	2/3"	193×145mm
		1/1.8"	158×118mm
		1/2.5"	127.2×94.3mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ280×521.3mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		2.5mm



GA Large Field Double Telecentric Lens 610018/610019 (In-Line Illumination)

0.255X 1" C

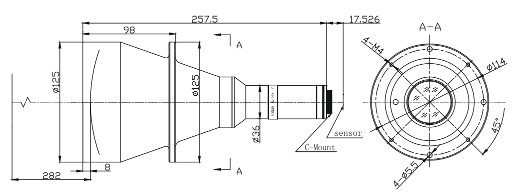


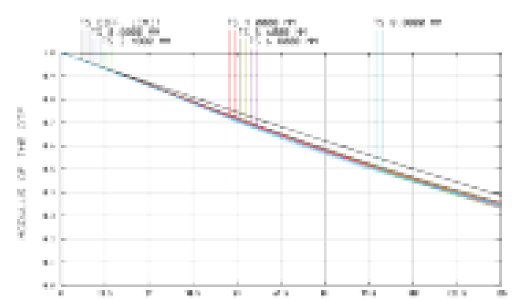


NO	Item		Specifications
	Stock No.: 610018/610019 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.255X
3	Working Distance		211.00mm
4	Object Space DOV		±3.94mm
5	Telecentricity		< 0.06 °
6	Distortion		< 0.03%
7	F/#		F6.4
8	Resolution/MTF @F6.4		> 30%@135lp/mm
9	Object Space FOV		Φ62.7mm
10	Image Space FOV		Φ16mm
11	Sensor Size Range (H×V)	1"	50×38mm
		2/3"	35×26mm
		1/1.8"	28×21mm
		1/2.5"	22.7×16.9mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ87.4×181.9mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		3.5mm

GA Large Field Double Telecentric Lens 610020/610021 (In-Line Illumination)

0.166X 1" C

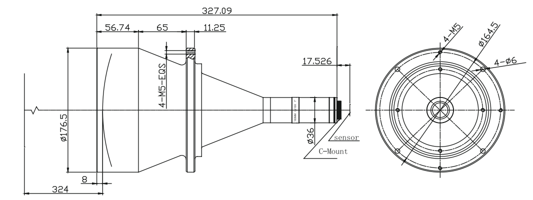


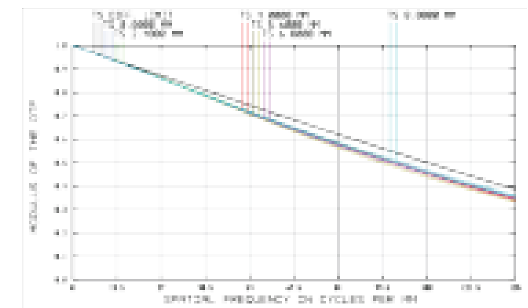


NO	Item		Specifications
	Stock No.: 610020/610021 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.166X
3	Working Distance		282.00mm
4	Object Space DOV		±9.29mm
5	Telecentricity		< 0.05 °
6	Distortion		< 0.05%
7	F/#		F6.4
8	Resolution/MTF @F6.4		> 30%@135lp/mm
9	Object Space FOV		Φ96.38mm
10	Image Space FOV		Φ16mm
11	Sensor Size Range (H×V)	1"	77×58mm
		2/3"	53×40mm
		1/1.8"	43×33mm
		1/2.5"	34.9×25.9mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ125.0×257.5mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		8.0mm

GA Large Field Double Telecentric Lens 610041/610046 (In-Line Illumination)

0.110X 1" C

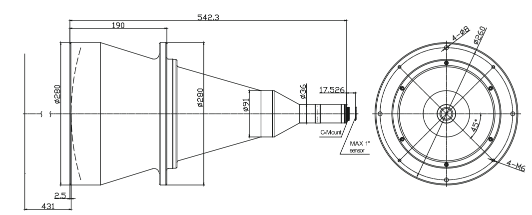


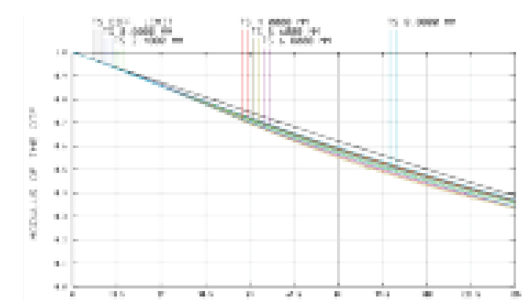


NO	Item		Specifications
	Stock No.: 610041/610046 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.110X
3	Working Distance		324mm
4	Object Space DOV		±21.16mm
5	Telecentricity		< 0.03 °
6	Distortion		< 0.03%
7	F/#		F6.4
8	Resolution/MTF @F6.4		>30%@140lp/mm
9	Object Space FOV		Φ16mm
10	Image Space FOV		Φ145.45mm
11	Sensor Size Range (H×V)	1"	116×87mm
		2/3"	80×60mm
		1/1.8"	65×49mm
		1/2.5"	52.7×39.1mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ176.5×327.09mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		8mm

GA Large Field Double Telecentric Lens 610022/610023 (In-Line Illumination)

0.066X 1" C



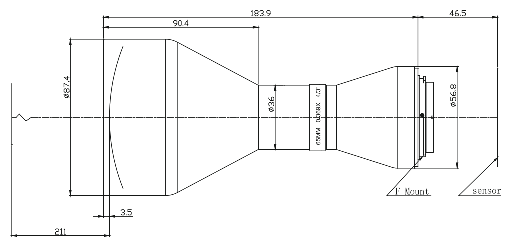


NO	Item		Specifications
	Stock No.: 610022/610023 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.0664X
3	Working Distance		431mm
4	Object Space DOV		±58.07mm
5	Telecentricity		< 0.02 °
6	Distortion		< 0.02%
7	F/#		F6.4
8	Resolution/MTF @F6.4		>30%@140lp/mm
9	Object Space FOV		Φ16mm
10	Image Space FOV		Φ240.9mm
11	Sensor Size Range (H×V)	1"	193×145mm
		2/3"	133×99mm
		1/1.8"	108×81mm
		1/2.5"	87.3×64.8mm
12	Camera Mount		C-Mount
13	Lens Size (Dia.×Length)		Φ280×542.3mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		2.5mm

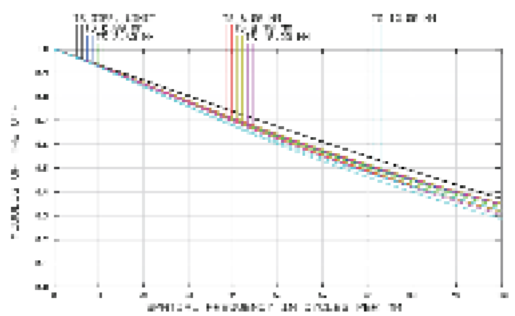
GA Large Field Double Telecentric Lens 610024/610025 (In-Line Illumination)

0.369X 4/3" F





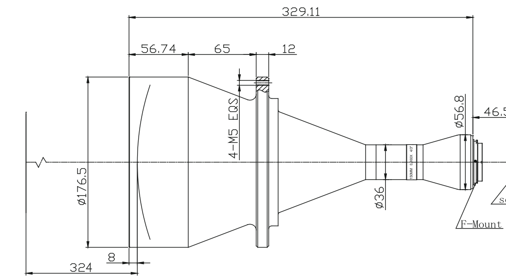
NO	Item		Specifications
	Stock No.: 610024/610025 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.369X
3	Working Distance		211.00mm
4	Object Space DOV		± 2.35mm
5	Telecentricity		< 0.1 °
6	Distortion		< 0.04%
7	F/#		F8
8	Resolution/MTF @F8		> 30%@105lp/mm
9	Object Space FOV		Φ65mm
10	Image Space FOV		Φ24mm
11	Sensor Size Range (H × V)	4/3"	51 × 37mm
		1"	35 × 26mm
		2/3"	24 × 18mm
		1/1.8"	20 × 15mm
		1/2.5"	15.7 × 11.7mm
12	Camera Mount		F-Mount
13	Lens Size (Dia. × Length)		Φ87.4 × 183.9mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		3.5mm



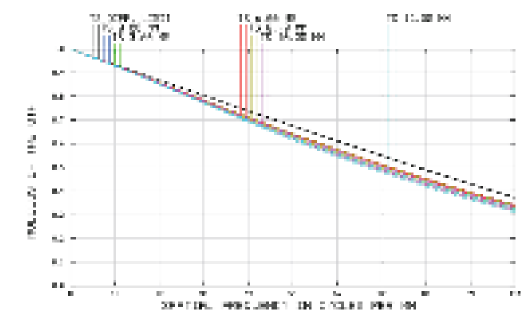
GA Large Field Double Telecentric Lens 610042/610047 (In-Line Illumination)

0.160X 4/3" F





NO	Item		Specifications
	Stock No.: 610042/610047 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.160X
3	Working Distance		324mm
4	Object Space DOV		± 12.5mm
5	Telecentricity		< 0.03 °
6	Distortion		< 0.04%
7	F/#		F8
8	Resolution/MTF @F8		>30%@110lp/mm
9	Object Space FOV		Φ24mm
10	Image Space FOV		Φ150mm
11	Sensor Size Range (H × V)	4/3"	118 × 84mm
		1"	80 × 60mm
		2/3"	55 × 41mm
		1/1.8"	45 × 34mm
		1/2.5"	36.3 × 26.9mm
12	Camera Mount		F-Mount
13	Lens Size (Dia. × Length)		Φ176.5 × 329.1mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		8mm

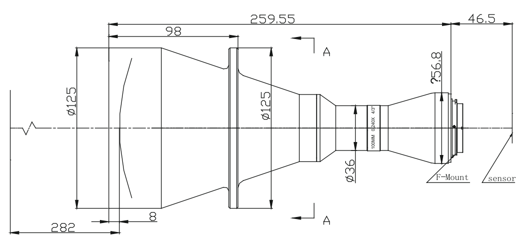


Telecentric Lens

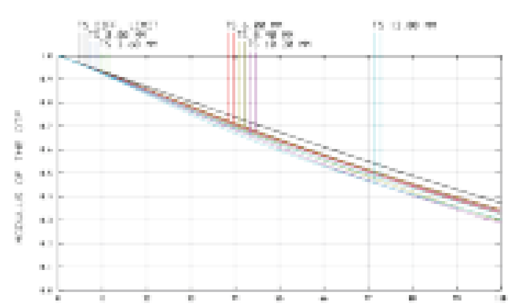
GA Large Field Double Telecentric Lens 610026/610027 (In-Line Illumination)

0.240X 4/3" F





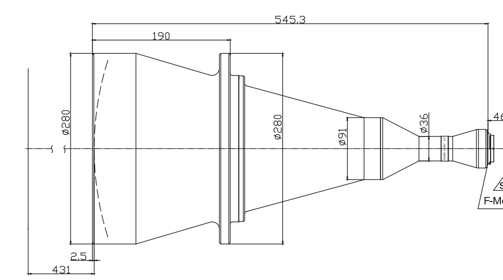
NO	Item		Specifications
	Stock No.: 610026/610027 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.240X
3	Working Distance		282.00mm
4	Object Space DOV		± 5.56mm
5	Telecentricity		< 0.05 °
6	Distortion		< 0.05%
7	F/#		F8
8	Resolution/MTF @F8		> 30%@100lp/mm
9	Object Space FOV		Φ100mm
10	Image Space FOV		Φ24mm
11	Sensor Size Range (H × V)	4/3"	78 × 56mm
		1"	53 × 40.0mm
		2/3"	37 × 28mm
		1/1.8"	30 × 23mm
		1/2.5"	24.2 × 17.9mm
12	Camera Mount		F-Mount
13	Lens Size (Dia. × Length)		Φ125.0 × 259.55mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		8.0mm



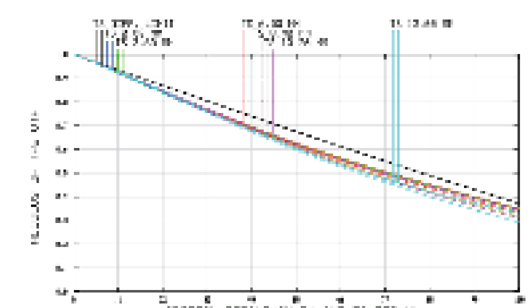
GA Large Field Double Telecentric Lens 610028/610029 (In-Line Illumination)

0.096X 4/3" F



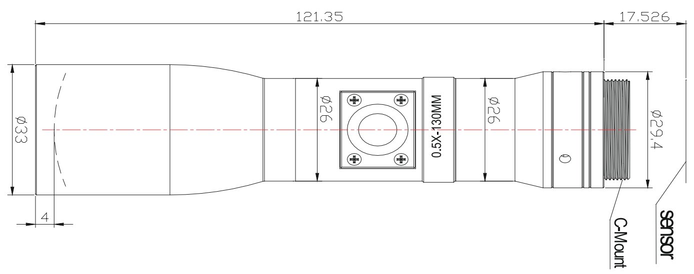


NO	Item		Specifications
	Stock No.: 610028/610029 (In-Line Illumination)		
1	Optical Configuration		Double Telecentric
2	Magnification		0.096X
3	Working Distance		431mm
4	Object Space DOV		± 34.72mm
5	Telecentricity		< 0.02 °
6	Distortion		< 0.02%
7	F/#		F8
8	Resolution/MTF @F8		>30%@110lp/mm
9	Object Space FOV		Φ24mm
10	Image Space FOV		Φ250mm
11	Sensor Size Range (H × V)	4/3"	196 × 141mm
		1"	133 × 100.0mm
		2/3"	92 × 69mm
		1/1.8"	75 × 56mm
		1/2.5"	60.4 × 44.8mm
12	Camera Mount		F-Mount
13	Lens Size (Dia. × Length)		Φ280 × 545.3mm
14	The distance from the front end of imaging lens to the first surface of the first glass lens		2.5mm



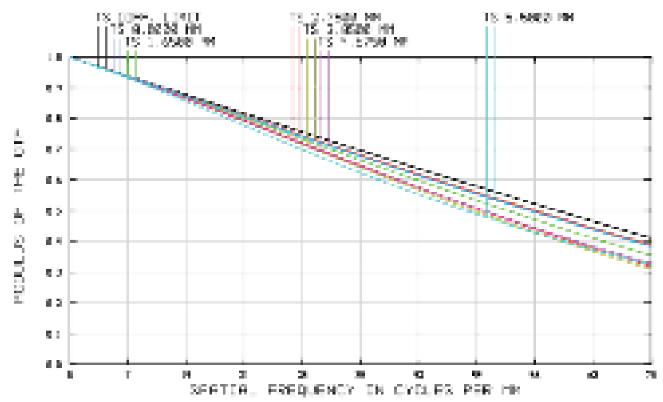
Compact Double Telecentric Lens 610030

0.5X | 2/3" | C



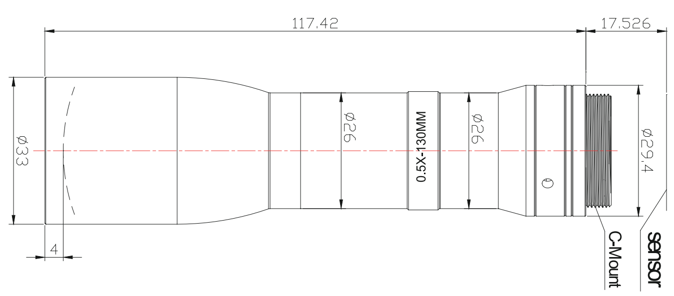
Stock No.: 610030

NO	Item		Specifications
1	Optical Configuration		Double Telecentric
2	Magnification		0.5X
3	Working Distance		130.00mm
4	Object Space DOV		± 1.92mm
5	Telecentricity		< 0.03 °
6	Distortion		< 0.03%
7	F/#		F12
8	Resolution/MTF @F12		> 30%@70lp/mm
9	Object Space FOV		Φ22mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	17.6 × 13.2mm
		1/2"	12.8 × 9.6mm
12	Filter thread		M30.5 × 0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.× Length）		Φ33.0 × 121.35mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.0mm



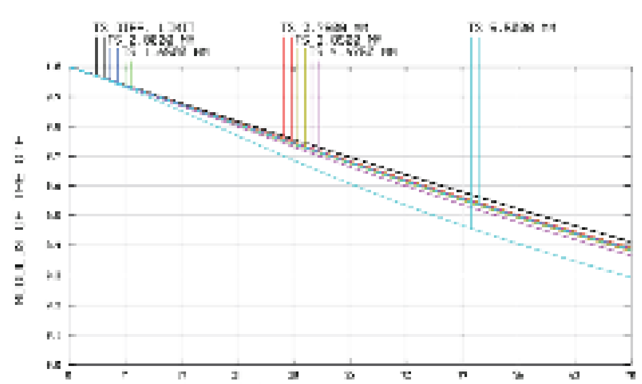
Compact Double Telecentric Lens 610031

0.5X | 2/3" | C



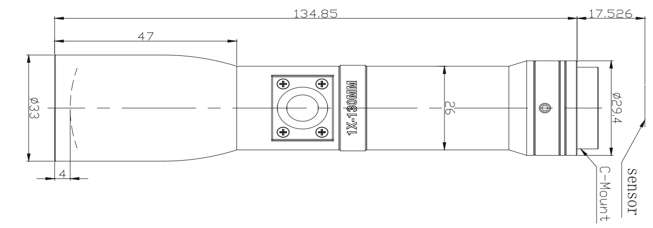
Stock No.: 610031

NO	Item		Specifications
1	Optical Configuration		Double Telecentric
2	Magnification		0.5X
3	Working Distance		130.00mm
4	Object Space DOV		± 1.92mm
5	Telecentricity		< 0.03 °
6	Distortion		< 0.03%
7	F/#		F12
8	Resolution/MTF @F12		> 30%@70lp/mm
9	Object Space FOV		Φ22mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	17.6 × 13.2mm
		1/2"	12.8 × 9.6mm
12	Filter thread		M30.5 × 0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.× Length）		Φ33.0 × 117.42mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.0mm



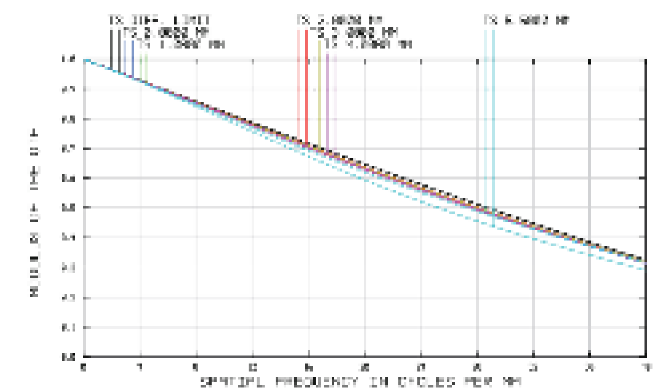
Compact Double Telecentric Lens 610032

1.0X | 2/3" | C



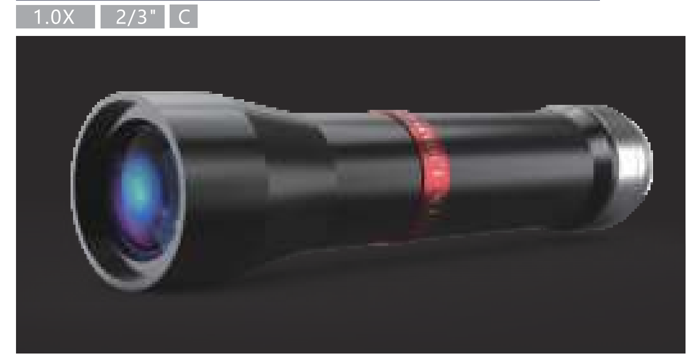
Stock No.: 610032

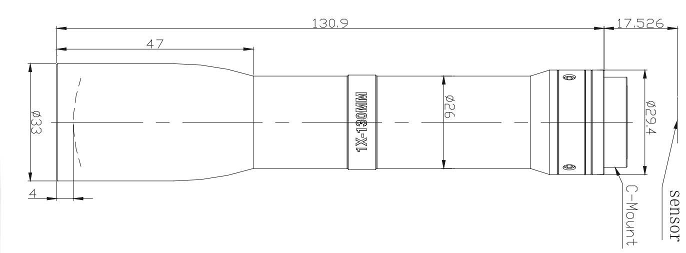
NO	Item		Specifications
1	Optical Configuration		Double Telecentric
2	Magnification		1.0X
3	Working Distance		130.00mm
4	Object Space DOV		± 0.48mm
5	Telecentricity		< 0.03 °
6	Distortion		< 0.03%
7	F/#		F12
8	Resolution/MTF @F12		>30%@75lp/mm
9	Object Space FOV		Φ11mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	8.8 × 6.6mm
		1/2"	6.4 × 4.8mm
12	Filter thread		M30.5 × 0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.× Length）		Φ33.0 × 134.85mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.0mm



Compact Double Telecentric Lens 610033

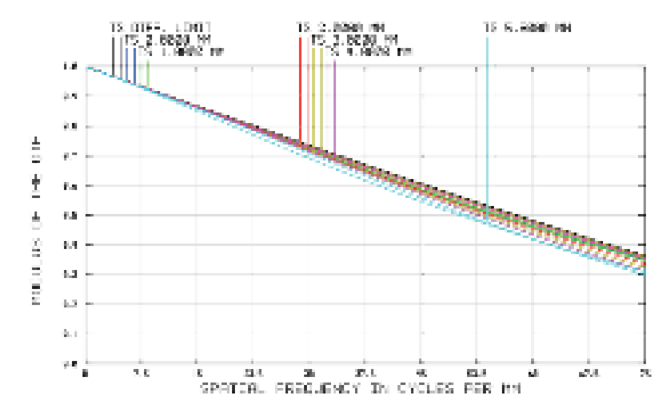
1.0X | 2/3" | C





Stock No.: 610033

NO	Item		Specifications
1	Optical Configuration		Double Telecentric
2	Magnification		1.0X
3	Working Distance		130.00mm
4	Object Space DOV		± 0.48mm
5	Telecentricity		< 0.03 °
6	Distortion		< 0.03%
7	F/#		F12
8	Resolution/MTF @F12		>30%@75lp/mm
9	Object Space FOV		Φ11mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	8.8 × 6.6mm
		1/2"	6.4 × 4.8mm
12	Filter thread		M30.5 × 0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.× Length）		Φ33.0 × 130.9mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.0mm

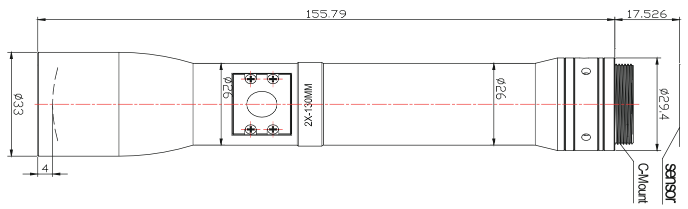


Telecentric Lens

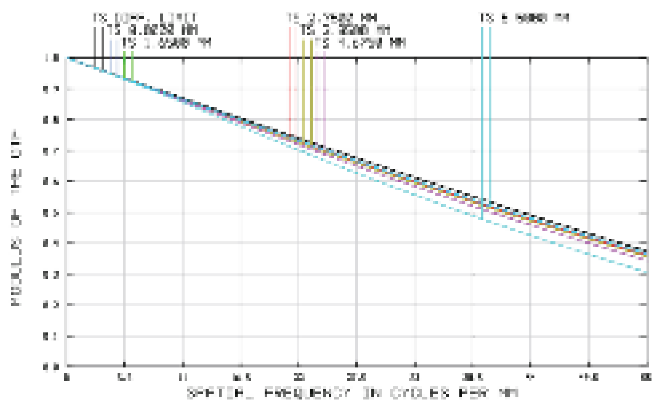
Telecentric Lens

Compact Double Telecentric Lens 610034

2.0X | 2/3" | C

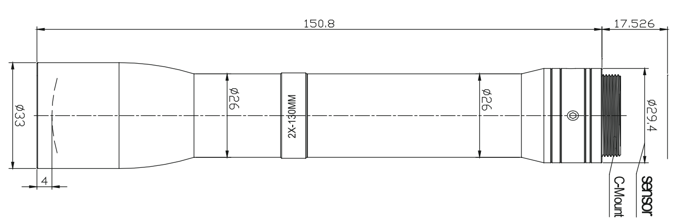


NO	Item		Specifications
Stock No.: 610034			
1	Optical Configuration		Double Telecentric
2	Magnification		2.0X
3	Working Distance		130.00mm
4	Object Space DOV		±0.16mm
5	Telecentricity		<0.04°
6	Distortion		<0.05%
7	F/#		F16
8	Resolution/MTF @F16		>30%@55lp/mm
9	Object Space FOV		Φ5.5mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	4.4 × 3.3mm
		1/2"	3.2 × 2.4mm
12	Filter thread		M30.5 × 0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.×Length）		Φ33.0 × 155.79mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.0mm

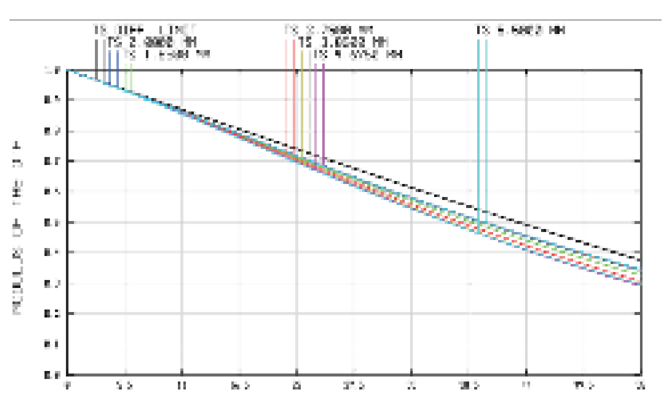


Compact Double Telecentric Lens 610035

2.0X | 2/3" | C



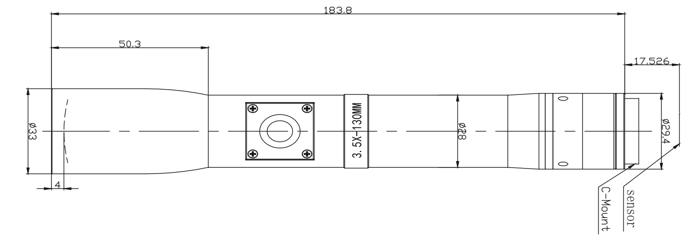
NO	Item		Specifications
Stock No.: 610035			
1	Optical Configuration		Double Telecentric
2	Magnification		2.0X
3	Working Distance		130.00mm
4	Object Space DOV		±0.16mm
5	Telecentricity		<0.04°
6	Distortion		<0.05%
7	F/#		F16
8	Resolution/MTF @F16		>30%@55lp/mm
9	Object Space FOV		Φ5.5mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	4.4×3.3mm
		1/2"	3.2×2.4mm
12	Filter thread		M30.5×0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.×Length）		Φ33.0×150.8mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.5mm



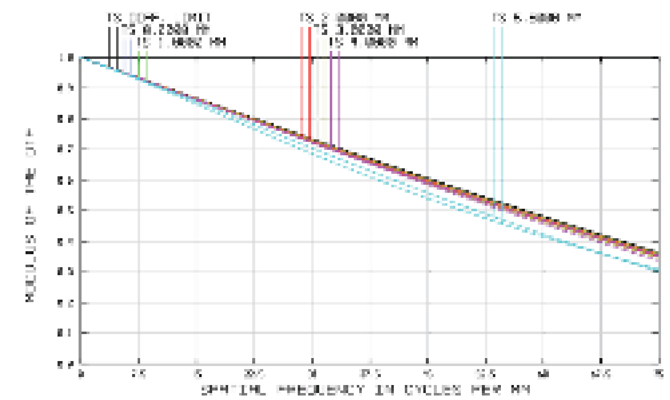
Telecentric Lens

Compact Double Telecentric Lens 610036

3.5X | 2/3" | C

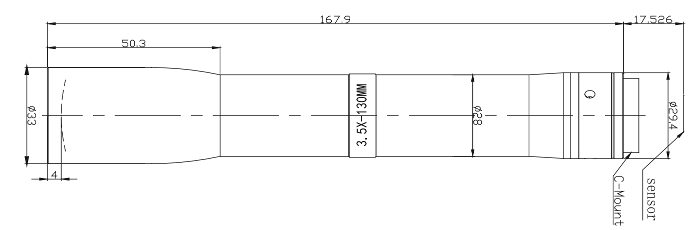


NO	Item		Specifications
Stock No.: 610036			
1	Optical Configuration		Double Telecentric
2	Magnification		3.5X
3	Working Distance		130.00mm
4	Object Space DOV		±0.08mm
5	Telecentricity		<0.06°
6	Distortion		<0.05%
7	F/#		F24
8	Resolution/MTF @F24		>30%@40lp/mm
9	Object Space FOV		Φ3.1mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	2.5×1.8mm
		1/2"	1.8×1.3mm
12	Filter thread		M30.5×0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.×Length）		Φ33.0×183.8mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.0mm

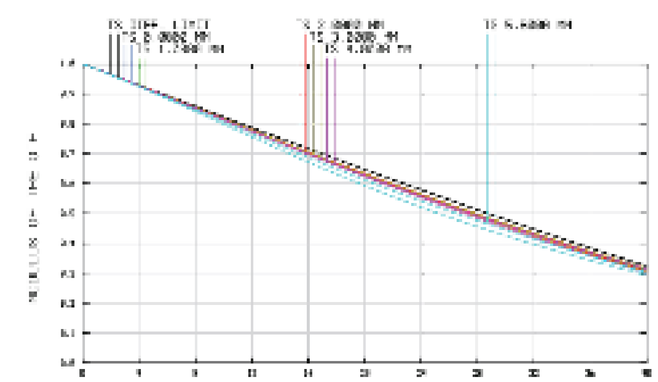


Compact Double Telecentric Lens 610037

3.5X | 2/3" | C



NO	Item		Specifications
Stock No.: 610037			
1	Optical Configuration		Double Telecentric
2	Magnification		3.5X
3	Working Distance		130.00mm
4	Object Space DOV		±0.08mm
5	Telecentricity		<0.06°
6	Distortion		<0.05%
7	F/#		F24
8	Resolution/MTF @F24		>30%@40lp/mm
9	Object Space FOV		Φ3.1mm
10	Image Space FOV		Φ11mm
11	Sensor Size Range（H×V）	2/3"	2.5×1.8mm
		1/2"	1.8×1.3mm
12	Filter thread		M30.5×0.5mm
13	Camera Mount		C-Mount
14	Lens Size（Dia.×Length）		Φ33.0×167.9mm
15	The distance from the front end of imaging lens to the first surface of the first glass lens		4.0mm



Telecentric Lens

4

Manual Zoom Lens

ZOOM LENS IS THE LENS WITH VARIABLE FOCAL LENGTH, WE CAN OFFER 12-36MM FL RANGE ZOOM LENS OF 2M PIXEL AND 5M PIXEL FOR YOUR APPLICATION.

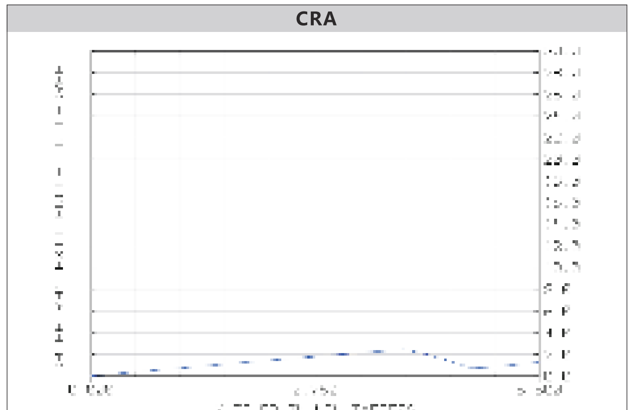
2/3" Manual Zoom Lens

2/3" Manual Zoom Lens 640000

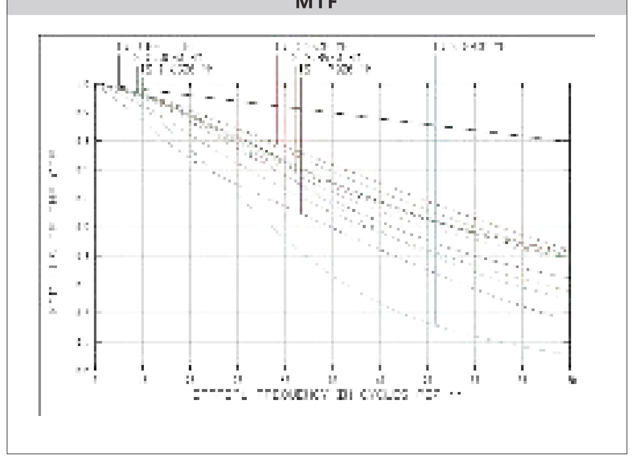
2/3" 2MP C M-Iris

W			
No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F2.8-C
5	Working Distance		0.15m-∞
6	FOV(Diagonal X H X V)	2/3"	50.8° × 41.3° × 31.2°
		1/2"	37.6° × 30.3° × 22.8°
		1/3"	28.5° × 22.8° × 17.2°
7	Object Size (at the minimum focus distance)	2/3"	167.8 × 132.0 × 97.5mm
		1/2"	119.3 × 94.4 × 70.1mm
		1/3"	88.3 × 70.1 × 52.3mm
8	BFL(in air)		14.36mm
9	Operation	Focus	Manual
10	Operation	Focus	Manual
		Aperture	M-Iris
11	Distortion	2/3"	-3.43%@y=5.5mm
		1/2"	-2.33%@y=4.0mm
		1/3"	-1.42%@y=3.0mm
12	Filter thread		M35.5 × 0.5mm
13	Lens Size(W X L)		40.3 × 58mm
14	Weight		105g
15	Work Temperature		-10℃ ~ +50℃
16	Distance of entrance pupil		25.35mm
17	Diameter of entrance pupil		4.30mm
18	Distance of exit pupil		-84.90mm
19	Diameter of exit pupil		30.38mm
20	Total optical length		65.92mm
21	Magnification		-0.0684

CRA



MTF



Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
150mm	-0.06840	4.8000	5.1282
200mm	-0.05324	8.4433	9.2220
250mm	-0.04359	13.0550	14.5770
300mm	-0.03690	18.6050	21.2390
350mm	-0.03199	25.0640	29.2540

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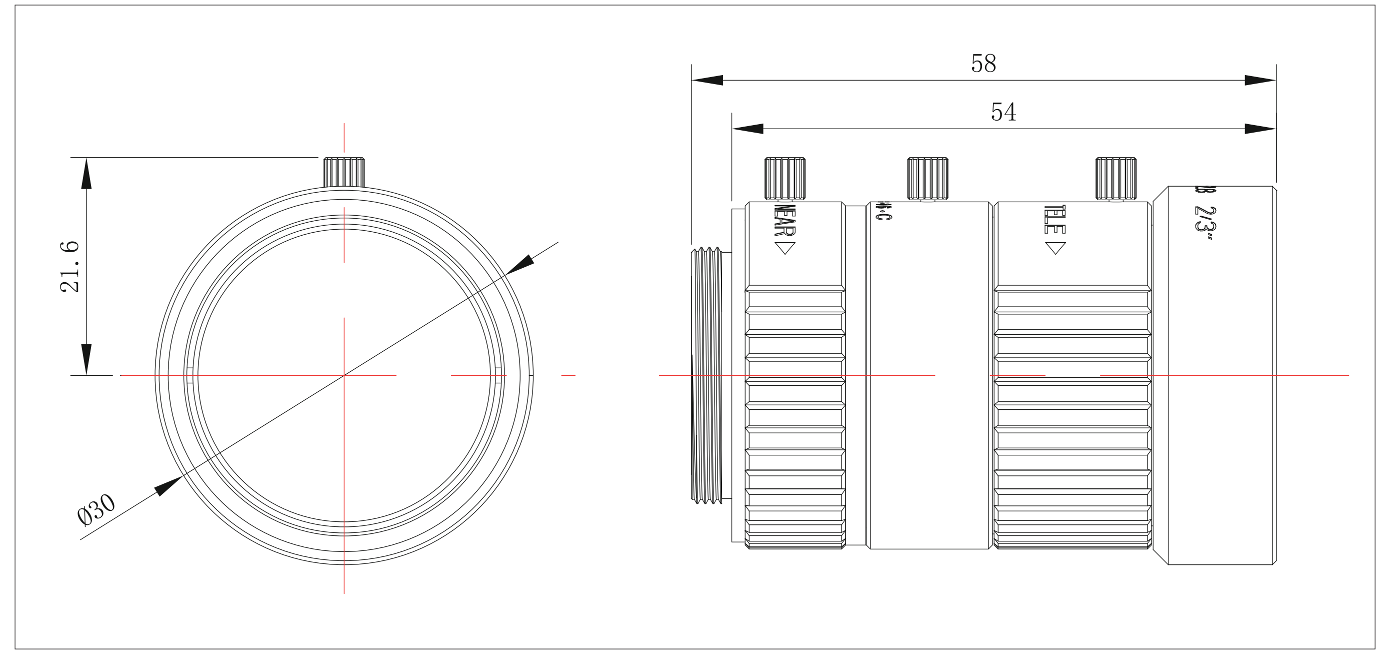
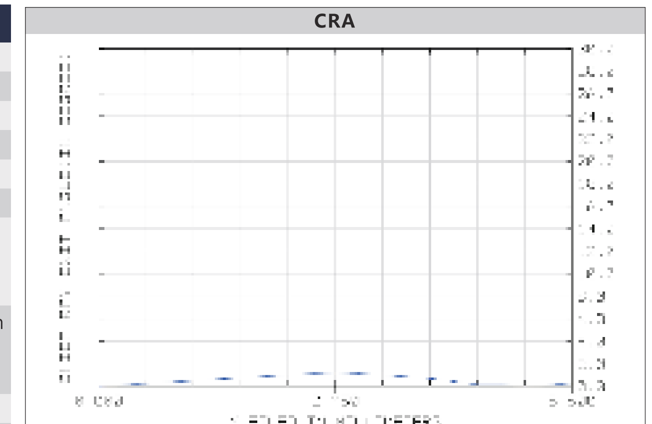
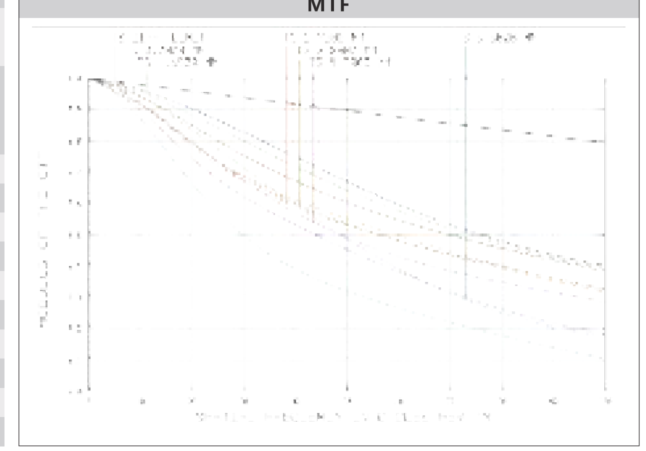


T			
No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		36mm
3	Mount		C-Mount
4	F/#		F2.8-C
5	Working Distance		0.45m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	17.0° × 13.8° × 10.4°
		1/2"	12.6° × 10.1° × 7.6°
		1/3"	9.5° × 7.6° × 5.7°
7	Object Size (at the minimum focus distance)	2/3"	168.3 × 135.3 × 101.8mm
		1/2"	123.2 × 98.7 × 74.2mm
		1/3"	92.6 × 74.2 × 55.7mm
8	BFL(in air)		12.62mm
9	Operation	Focus	Manual
10	Operation	Focus	Manual
		Aperture	M-Iris
11	Distortion	2/3"	2.30%@y=5.5mm
		1/2"	1.14%@y=4.0mm
		1/3"	0.62%@y=3.0mm
12	Filter thread		M35.5 × 0.5mm
13	Lens Size(W X L)		40.3 × 58mm
14	Weight		105g
15	Work Temperature		-10℃ ~ +50℃
16	Distance of entrance pupil		67.7mm
17	Diameter of entrance pupil		12.67mm
18	Distance of exit pupil		-121.24mm
19	Diameter of exit pupil		42.72mm
20	Total optical length		70.28mm
21	Magnification		-0.0682

CRA



MTF



Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
450mm	-0.06820	5.0087	5.1227
500mm	-0.06221	6.1760	6.3324
550mm	-0.05720	7.4637	9.6719
600mm	-0.05294	8.8715	9.1418
650mm	-0.04917	10.3990	10.7430

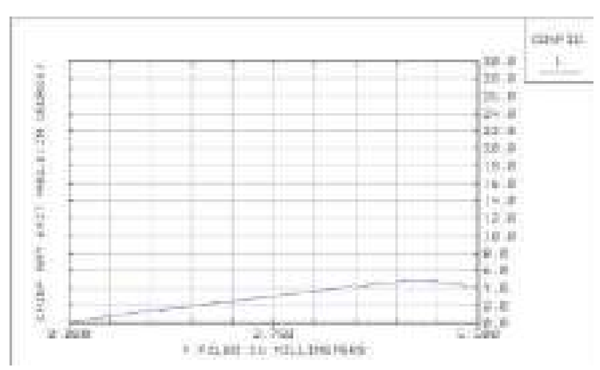
Email: sales@gu-optics.com Wechat or Taobao scan can directly enter Alibaba

2/3” Manual Zoom Lens 640001

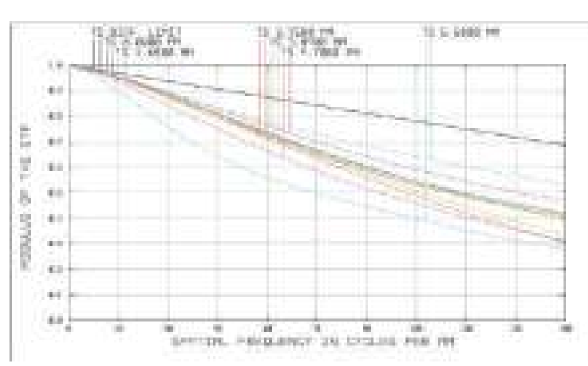
2/3" 5MP C M-Iris

No	Item		Specifications
W			
No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		12mm
3	Mount		C-Mount
4	F/#		F2.8-F16
5	Working Distance		0.15m ~ ∞
6	FOV(Diagonal X H X V)	2/3"	50.8° × 41.3° × 31.3°
		1/2"	37.7° × 30.3° × 22.8°
		1/3"	28.5° × 22.8° × 17.2°
7	Object Size (at the minimum focus distance)	2/3"	173.2 × 135.8 × 100.2mm
		1/2"	122.7 × 97.1 × 72.2mm
		1/3"	90.8 × 72.2 × 53.8mm
8	BFL(in air)		18.93mm
9	Operation	Focus	Manual
		Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	-3.45%@y=5.5mm
		1/2"	-2.22%@y=4.0mm
		1/3"	-1.34%@y=3.0mm
11	Filter thread		M40.5 × 0.5mm
12	Lens Size(W X L)		50.3 × 67.9mm
13	Weight		188g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		31.34mm
16	Diameter of entrance pupil		4.22mm
17	Distance of exit pupil		-37.88mm
18	Diameter of exit pupil		13.34mm
19	Total optical length		78.69mm
20	Magnification		-0.0673

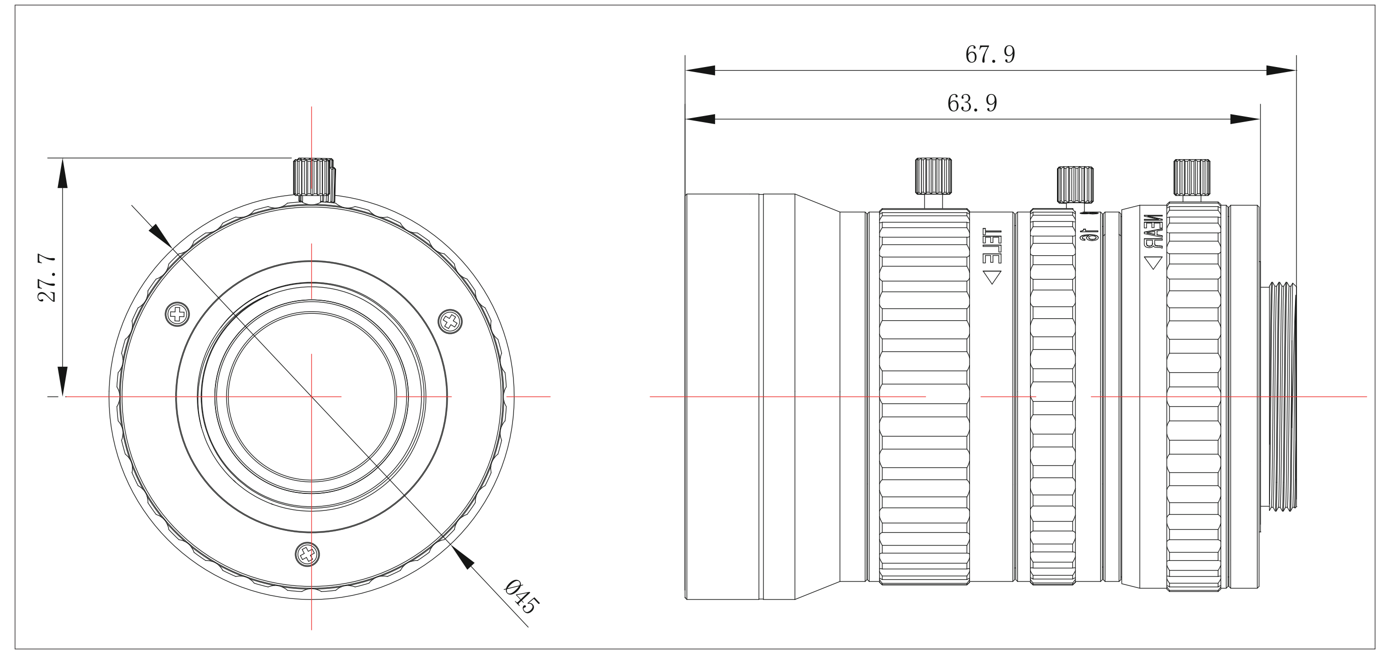
CRA



MTF

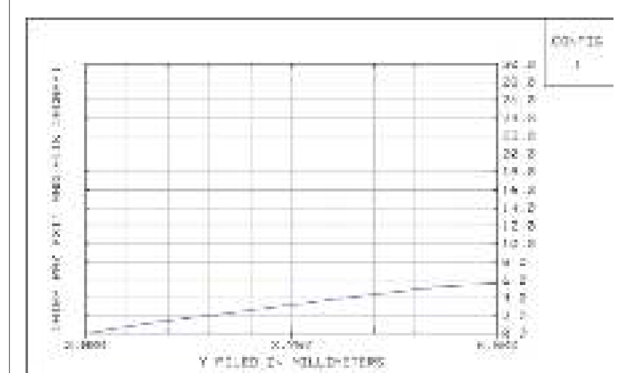


Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
150mm	-0.06732	2.2324	2.3009
200mm	-0.05255	3.9491	4.1115
250mm	-0.04310	6.1401	6.4573
300mm	-0.03654	8.7986	9.3468
350mm	-0.03170	11.9180	12.7880

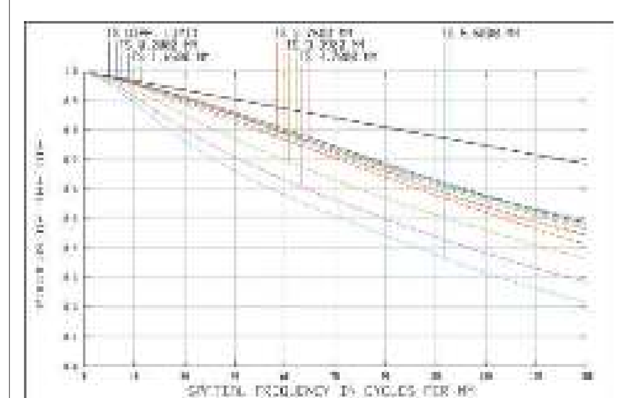


No	Item		Specifications
T			
No	Item		Specifications
1	Max. sensor size		2/3"(11mm)
2	Focal Length		36mm
3	Mount		C-Mount
4	F/#		F2.8-F16
5	Working Distance		0.45m ~ ∞
6	FOV(Diagonal x H xV)	2/3"	17.2° × 13.8° × 10.5°
		1/2"	12.6° × 10.1° × 7.6°
		1/3"	9.5° × 7.6° × 5.7°
7	Object Size (at the minimum focus distance)	2/3"	157.4 × 125.9 × 94.5mm
		1/2"	144.5 × 91.6 × 68.7mm
		1/3"	85.9 × 68.7 × 51.5mm
8	BFL(in air)		18.87mm
9	Operation	Focus	Manual
		Focus	Manual
		Aperture	M-Iris
10	Distortion	2/3"	1.45%@y=5.5mm
		1/2"	0.69%@y=4.0mm
		1/3"	0.37%@y=3.0mm
11	Filter thread		M40.5 × 0.5mm
12	Lens Size(W x L)		49 × 67.9mm
13	Weight		188g
14	Work Temperature		-10℃ ~ +50℃
15	Distance of entrance pupil		96.36mm
16	Diameter of entrance pupil		12.66mm
17	Distance of exit pupil		-37.95mm
18	Diameter of exit pupil		13.38mm
19	Total optical length		78.67mm
20	Magnification		-0.0699

CRA



MTF



Focus Distance	Magnification	Front DOV(mm)	Back DOV(mm)
450mm	-0.06986	2.2584	2.2813
500mm	-0.06361	2.7866	2.8180
550mm	-0.05840	3.3699	3.4118
600mm	-0.05398	4.0083	4.0626
650mm	-0.05019	4.7015	4.7706

5

Motorized Zoom Lens

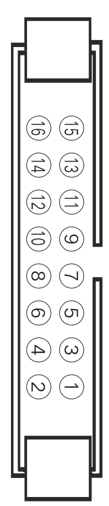
AND NOW , WE HAVE TWO SERIES MOTORIZED ZOOM LENSES ,WHICH ARE THE 33X (1/2″ 10-330MM FL RANGE)AND 60X (1/1.8″ 12.5-750MM FL RANGE) FOR YOUR CHOICE.

HD&Through Fog Motorized Zoom Lens

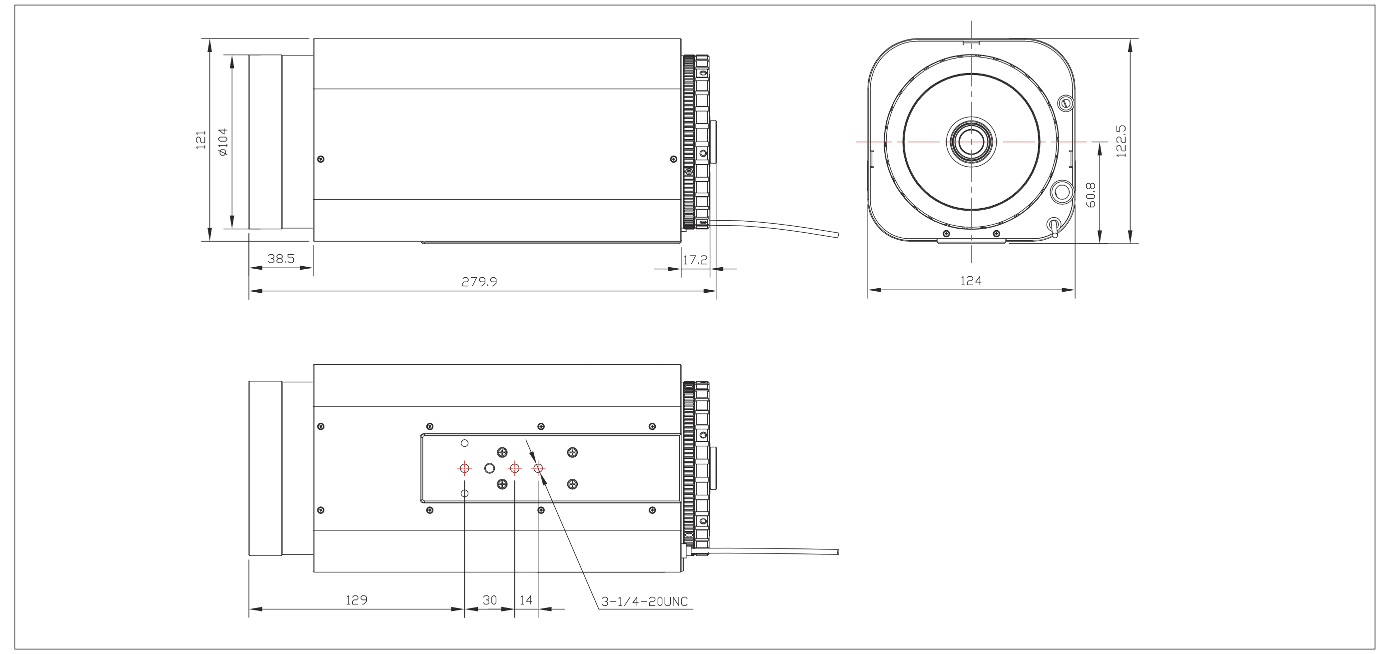
Motorized Zoom Lens 640004 640004

C 2MP DC MOTO

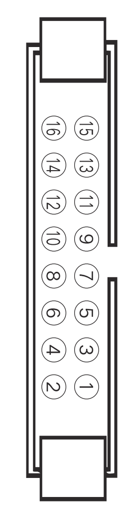
W			
No.	Item		Specification
1	Max. sensor size		1/2"(8mm)
2	Focal Length		10-330
3	Mount		C-Mount
4	F/#		F1.5-F360C
5	Working Distance		2.8m~∞
6	FOV(Diagonal X H X V)	1/2"	43.2° × 34.8° × 26.2°
		1/3"	32.6° × 26.2° × 19.7°
		1/4"	24.6° × 19.7° × 14.8°
7	BFL(in air)		14.67mm
8	Operation	Focus	Motorized
		Zoom	Motorized
		Iris	DC Auto
9	Distortion	1/2"	-3.33%@y=4.0mm
		1/3"	-2.0%@y=3.0mm
		1/4"	-1.16%@y=2.25mm
10	Filter thread		M100×1
11	Lens Size(W X H X L)		124×122.5×275.7mm
12	Weight		3.15kg
13	Ambient Temperature		-10℃~+50℃
14	Control Connector		16 Pin Connector



16 Pin Connector		
1		DC12V+
2		GND
3	Zoom	Wild+
		Tele-
4		Voltage
5	Focus	Far+
		Near-
6		Voltage
7		Potentiometer Power(input)
8		Poteniometer GND
9		Focus Potentiomete(output)
10		Zoom Potentiomete(output)
11		GND
12		NC
13		Manual B
14		Manual A
15		RS485B
16		RS485A



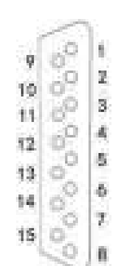
T			
No.	Item		Specification
1	Max. sensor size		1/2"(8mm)
2	Focal Length		10-330
3	Mount		C-Mount
4	F/#		F1.5-F360C
5	Working Distance		2.8m~∞
6	FOV(Diagonal X H X V)	1/2"	1.36° × 1.10° × 0.82°
		1/3"	1.04° × 0.82° × 0.62°
		1/4"	0.78° × 0.62° × 0.46°
7	BFL(in air)		14.67㎜
8	Operation	Focus	Motorized
		Zoom	Motorized
		Iris	DC Auto
9	Distortion	1/2"	2.20%@y=4.0mm
		1/3"	1.22%@y=3.0mm
		1/4"	0.68%@y=2.25mm
10	Filter thread		M100×1
11	Lens Size(W X H X L)		124×122.5×275.7mm
12	Weight		3.15kg
13	Ambient Temperature		-10℃~+50℃
14	Control Connector		16 Pin Connector

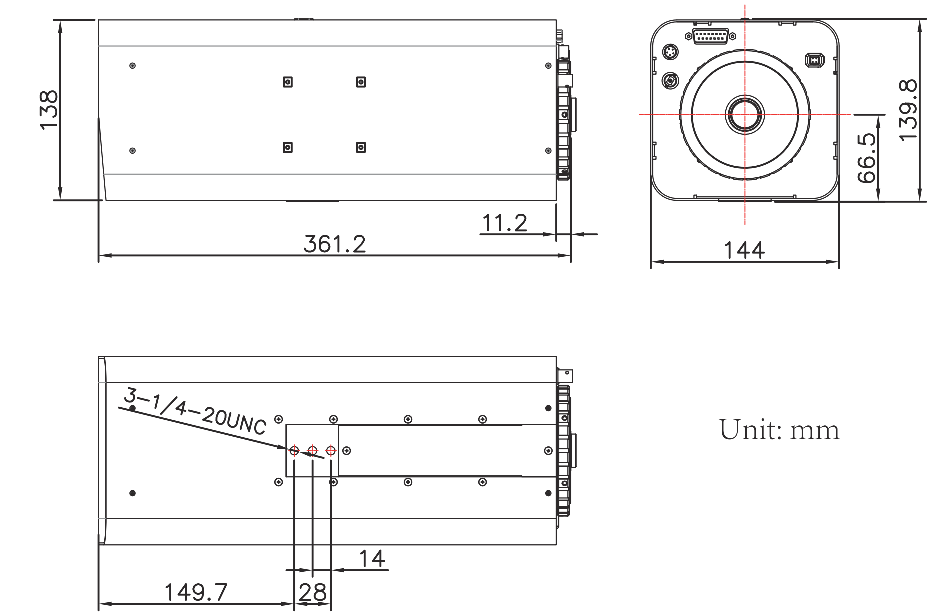


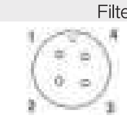
16 Pin Connector		
1		DC12V+
2		GND
3	Zoom	Wild+
		Tele-
4		Voltage
5	Focus	Far+
		Near-
6		Voltage
7		Potentiometer Power(input)
8		Poteniometer GND
9		Focus Potentiomete(output)
10		Zoom Potentiomete(output)
11		GND
12		NC
13		Manual B
14		Manual A
15		RS485B
16		RS485A

Motorized Zoom Lens 640004 640006

C 3MP DC MOTO

W				
No.	item			Specification
1	Max. sensor size			1/1.8"(9mm)
2	Focal Length			12.5-750.0mm
3	Mount			C-Mount
4	F/#			F3.5-F360C
5	Working Distance			5m~∞
6	FOV(Diagonal X H X V)		1/1.8"	38.80°×33.82°×19.02°
			1/2"	34.70°×30.24°×17.01°
			1/3"	26.30°×22.92°×12.89°
7	BFL(in air)			29.17mm
8	Operation		Focus	Motorized
			Zoom	Motorized
			Iris	DC Auto
9	Distortion		1/1.8"	-1.64%@y=4.5mm
			1/2"	-1.50%@y=4.0mm
			1/3"	-1.01%@y=3.0mm
10	Filter thread			M114×0.75
11	Lens Size(W X H X L)			144.0×139.8×361.2mm
12	NDFilter			1/8,1/64
13	Weight			5.79kg
14	Ambient Temperature			-10℃~+50℃
15	Control Socket			15Pin Connector
			1	Focus+
			2	Focus-
			3	Zoom+
			4	Zoom-
			5	Filter+
			6	Filter-
			7	Aperture+
			8	Aperture-
			9	PRESET_ VCC
			10	PRESET_FOCUS
			11	PRESET_ZOOM
			12	PRESET_GND
			13	NC
			14	RS485+
			15	RS485-
16	Filter Control	5	Filter -	No Filter(Energizing Position)
		6	Filter +	→Infrared Filter→NDFilter1/8→NDFilter1/64
		5	Filter +	No Filter(Energizing Position)
		6	Filter -	←Infrared Filter←NDFilter1/8←NDFilter1/64
17	Electric Socket			4 Pin Socket
			1	NC
			2	GND
			3	NC
			4	DC12V+



T				
No.	item			Specification
1	Max. sensor size			1/1.8"(9mm)
2	Focal Length			12.5-750.0mm
3	Mount			C-Mount
4	F/#			F3.5-F360C
5	Working Distance			5m~∞
6	FOV(Diagonal X H X V)		1/1.8"	0.71°×0.62°×0.35°
			1/2"	0.63°×0.55°×0.31°
			1/3"	0.47°×0.41°×0.23°
7	BFL(in air)			29.17mm
8	Operation		Focus	Motorized
			Zoom	Motorized
			Iris	DC Auto
9	Distortion		1/1.8"	1.36%@y=4.5mm
			1/2"	1.14%@y=4.0mm
			1/3"	0.68%@y=3.0mm
10	Filter thread			M114×0.75
11	Lens Size(W X H X L)			144.0×139.8×361.2mm
12	NDFilter			1/8,1/64
13	Weight			5.79kg
14	Ambient Temperature			-10℃~+50℃
15	Control Socket			15Pin Connector
			1	Focus+
			2	Focus-
			3	Zoom+
			4	Zoom-
			5	Filter+
			6	Filter-
			7	Aperture+
			8	Aperture-
			9	PRESET_ VCC
			10	PRESET_FOCUS
			11	PRESET_ZOOM
			12	PRESET_GND
			13	NC
			14	RS485+
			15	RS485-
16	Filter Control	5	Filter -	No Filter(Energizing Position)
		6	Filter +	→Infrared Filter→NDFilter1/8→NDFilter1/64
		5	Filter +	No Filter(Energizing Position)
		6	Filter -	←Infrared Filter←NDFilter1/8←NDFilter1/64
17	Electric Socket			4 Pin Socket
			1	NC
			2	GND
			3	NC
			4	DC12V+

6

Infrared Lens

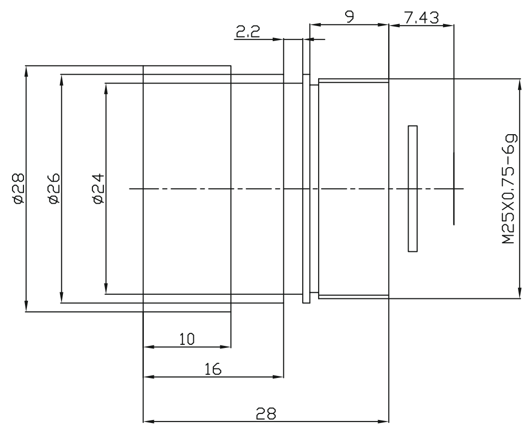
INFRARED LENS IS DESIGNED WITH THE WAVELENGTH RANGE IS 8-12MM，WHICH IS USED WIDELY IN DEFENSE FIELD 、MILITARY FIELD AND OTHER RELATED FIELD.

GA Long wavelength Infrared lens

GA Long Wavelength Infrared lens 680200

8-12μm Customizable interface

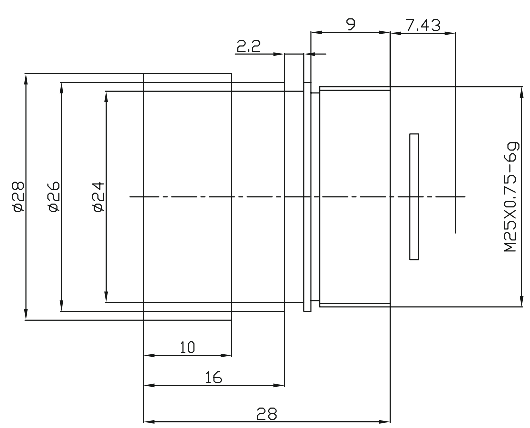
NO	Item	Specification
1	EFL	13mm
2	Sensor	384x288 17μm
3	F/#	1.0
4	FOV (HxV)	28.8°x21.6°
5	Wavelength	8-12μm
6	Transmittance	>88%
7	Front Lens Coating	HD
8	Focus	Fixed
9	Focus distance	0.5m~∞
10	Athermalizing	Optical athermalization
11	Sealing	IP67
12	Operation Temperature	-40~80°C
13	Weight	<28g
14	Appearance Grade	60-40



GA Long Wavelength Infrared lens 680201

8-12μm Customizable interface

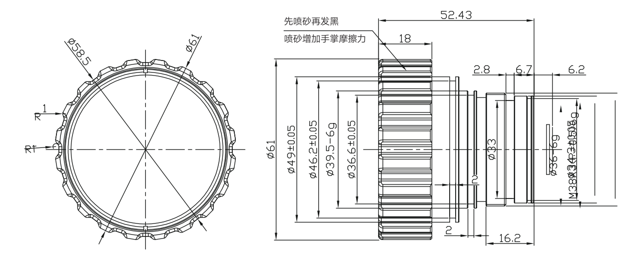
NO	Item	Specification
1	EFL	19mm
2	Sensor	384x288 17μm
3	F/#	1.0
4	FOV (HxV)	19.68°x14.78°
5	Wavelength	8-12μm
6	Transmittance	>88%
7	Front Lens Coating	HD
8	Focus	Fixed
9	Focus distance	0.5m~∞
10	Athermalizing	Optical athermalization
11	Sealing	IP67
12	Operation Temperature	-40~80°C
13	Weight	<30g
14	Appearance Grade	60-40



GA Long Wavelength Infrared lens 680202

8-12μm Customizable interface

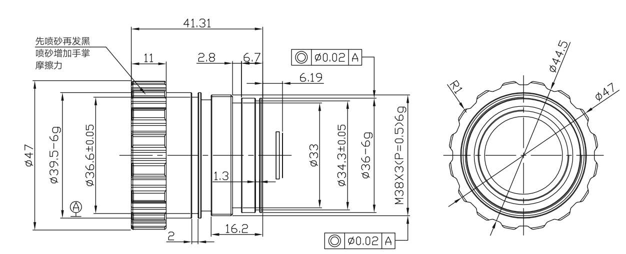
NO	Item	Specification
1	EFL	50mm
2	Sensor	640x512 17μm
3	F/#	1.0
4	FOV (HxV)	12.42°x9.95°
5	Wavelength	8-12μm
6	Transmittance	>88%
7	Front Lens Coating	HD
8	Focus	Fixed
9	Focus distance	3m~∞
10	Athermalizing	Optical athermalization
11	Sealing	IP67
12	Operation Temperature	-40~80°C
13	Weight	<170g
14	Appearance Grade	60-40



GA Long Wavelength Infrared lens 680203

8-12μm Customizable interface

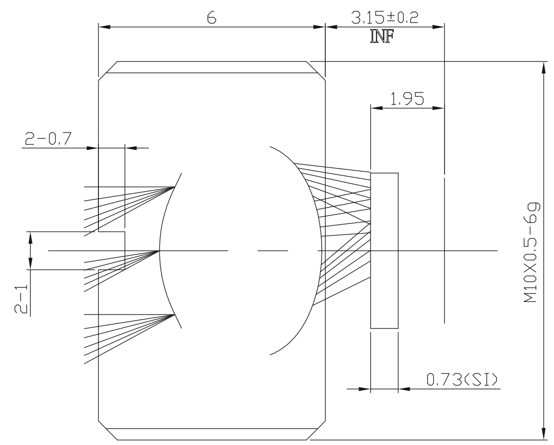
NO	Item	Specification
1	EFL	35mm
2	Sensor	640x512 17μm
3	F/#	1.0
4	FOV (HxV)	17.67°x14.18°
5	Wavelength	8-12μm
6	Transmittance	>88%
7	Front Lens Coating	HD
8	Focus	Fixed
9	Focus distance	5m~∞
10	Athermalizing	Optical athermalization
11	Sealing	IP67
12	Operation Temperature	-40~80°C
13	Weight	<135g
14	Appearance Grade	60-40



GA Long Wavelength Infrared lens 680204

8-12μm Customizable interface

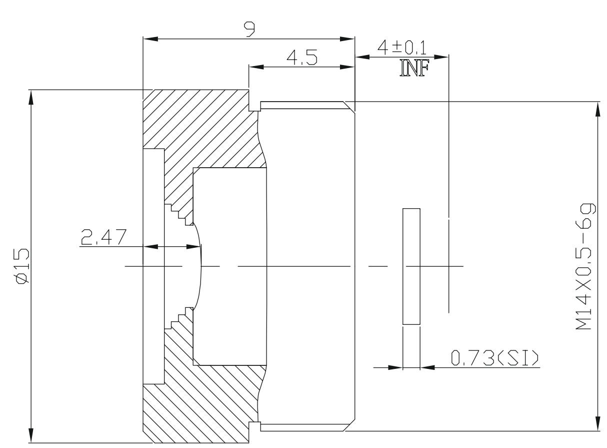
NO	Item	Specification
1	EFL	3.7mm
2	Sensor	256x192 12μm
3	F/#	1.1
4	FOV (HxV)	45.6° x34.4°
5	Wavelength	8-12μm
6	Transmittance	>88%
7	Front Lens Coating	HD
8	Focus	Fixed
9	Focus distance	0.1m~∞
10	Athermalizing	Optical athermalization
11	Sealing	/
12	Operation Temperature	-40~80°C
13	Weight	<5g
14	Appearance Grade	60-40



GA Long Wavelength Infrared lens 680205

8-12μm Customizable interface

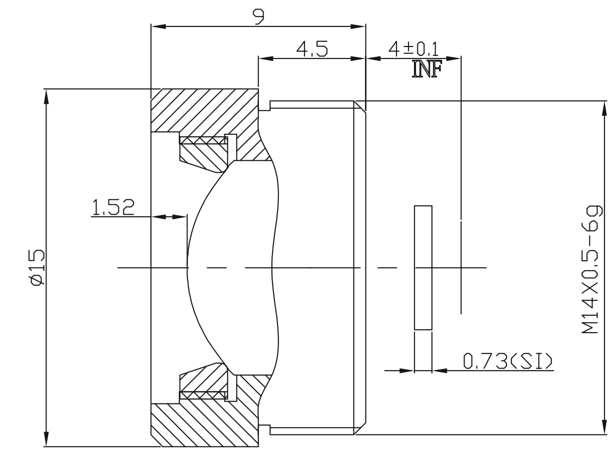
NO	Item	Specification
1	EFL	3.5mm
2	Sensor	256x192 12μm
3	F/#	1.0
4	FOV (HxV)	49.1° x36.7°
5	Wavelength	8-12μm
6	Transmittance	>88%
7	Front Lens Coating	HD
8	Focus	Fixed
9	Focus distance	0.1m~∞
10	Athermalizing	Optical athermalization
11	Sealing	/
12	Operation Temperature	-40~80°C
13	Weight	<10g
14	Appearance Grade	60-40
15	Distortion	10%
16	Number of lenses	1



GA Long Wavelength Infrared lens 680206

8-12μm Customizable interface

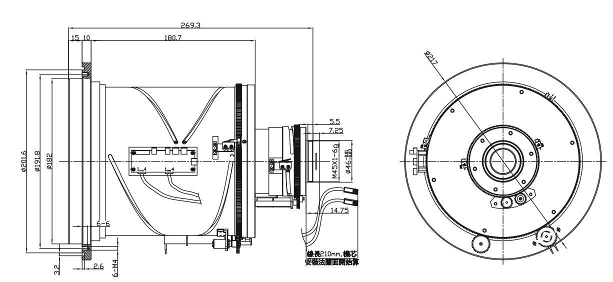
NO	Item	Specification
1	EFL	7mm
2	Sensor	256x192 12μm
3	F/#	1.0
4	FOV (HxV)	24.8° x18.7°
5	Wavelength	8-12μm
6	Transmittance	>88%
7	Front Lens Coating	HD
8	Focus	Fixed
9	Focus distance	0.2m~∞
10	Athermalizing	Optical athermalization
11	Sealing	/
12	Operation Temperature	-40~80°C
13	Weight	<10g
14	Appearance Grade	60-40
15	Number of lenses	2



GA Long Wavelength Infrared lens 680207

8-12μm Customizable interface

NO	Item		Specification
1	EFL		36-180mm
2	Sensor		640x512 17μm
3	F/#		1.2
4	FOV (HxV)	Min FOV	3.5° x2.8°
		Max FOV	17.4° x13.9°
5	Wavelength		8-12μm
6	Transmittance		/
7	Front Lens Coating		HD
8	Focus		Motorized
9	Zoom		Motorized
10	Focus distance		2m~∞
11	Athermalizing		Optical athermalization
12	Sealing		/
13	Operation Temperature		-40~80°C
14	Weight		<5.5kg
15	Appearance Grade		60-40



Line Scan Lens

LINE SCAN LENS ALSO CALLED LINEAR ARRAY LENS, IT CAN BE USED WITH LINEAR SCAN CAMERAS WHOSE PHOTOSENSITIVE CHIPS ARE ARRANGED LINEARLY. THE LENS IS USED WIDELY IN INDUSTRIAL QUICK DETECTION BASED ON ITS LARGE SENSOR SIZE .

GAOPTICS® PUSH OUT A SERIES OF CONTINUOUS VARIABLE LINE SCAN LENS WITH HIGH RESOLUTION AND LOW DISTORTION IN ORDER TO MEET THE REQUIREMENT FROM QUICK DETECTION MARKET, THE OPTICAL DESIGN IS UNIQUE FOR THIS LENS AND THEY ARE MANY MOUNTS CAN BE CHOOSED ACCORDING TO DIFFERENT APPLICATION, SUCH AS M42、M58、M72……

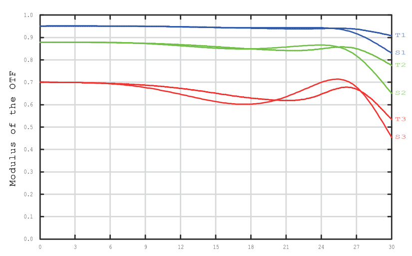
Line Scan Lens 620000

F | 0.2X-0.75X | Φ60mm

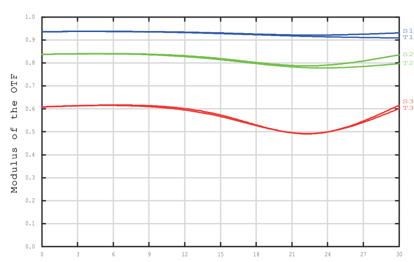
MTF with reference to image height for visible spectrum					
Wavelength λ [nm]:	656	587	546	486	435
Spectral weighting [%]:	15	20	30	25	10
Spatial frequency R [1/mm]:	10	20	40		
Image circle [mm]:	60				

10 20 40

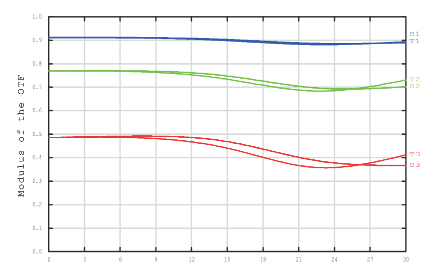
F4.0 0.2x WD=328mm



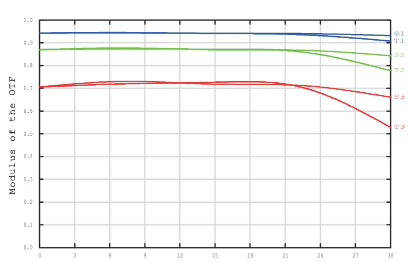
0.5x WD=148mm



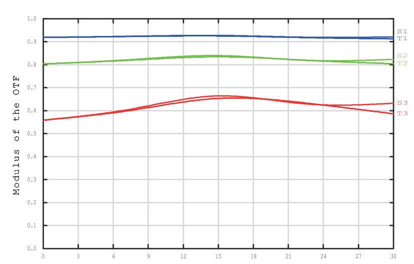
0.75x WD=108mm



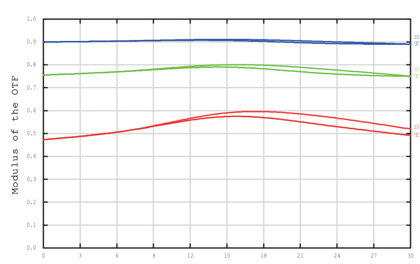
F5.6 0.2x WD=328mm



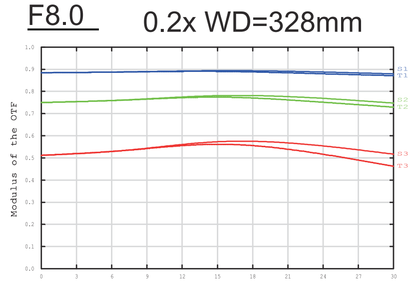
0.5x WD=148mm



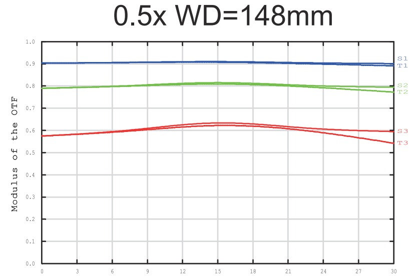
0.75x WD=108mm



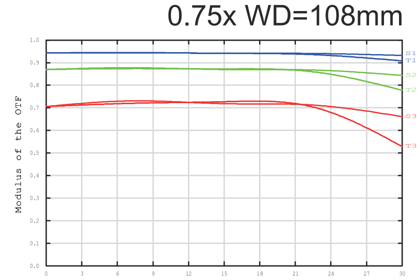
F8.0 0.2x WD=328mm

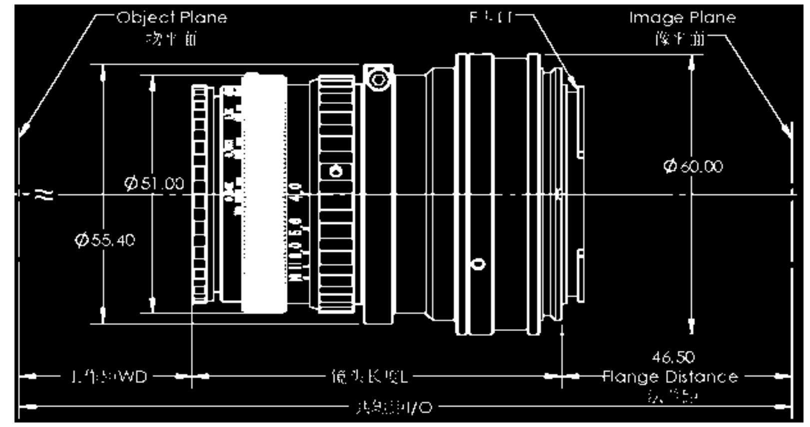


0.5x WD=148mm



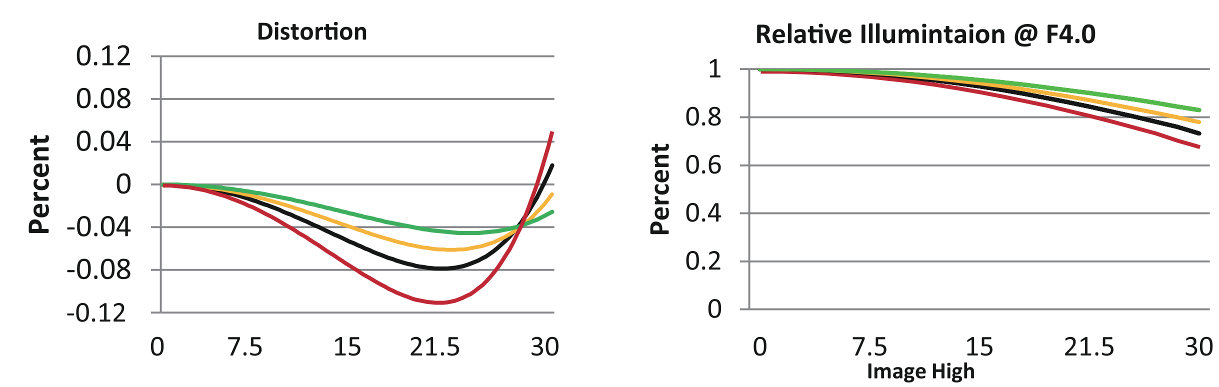
0.75x WD=108mm





Technical Specifications	
Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.2x ~ 0.75x
Trasmission	400 ~ 700nm
Mount	F - mount
Weight	312g/351g Without Extension ring/With Extension ring

0.20x 0.33x 0.50x 0.75x



Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)	Φ57FOV(mm)	Φ60FOV(mm)
0.20x	437	328	62	216.4	285.0	300.0
0.25x	380	269	65	173.1	228.0	240.0
0.28x	356	243	67	154.5	203.6	214.3
0.33x	323	206	71	131.1	172.7	181.8
0.39x	303	182	74	110.9	146.2	153.8
0.45x	287	163	78	96.2	126.7	133.3
0.50x	276	148	81	86.5	114.0	120.0
0.60x	262	128	88	72.1	95.0	100.0
0.65x	257	120	90	66.6	87.7	92.3
0.75x	251	108	97	57.7	76.0	80.0

Introduction for the use of lens

1. The magnification can be calculated based on the object size and sensor size, magnifaction=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.
2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.
3. Please make sure the lens be installed into the camera.
4. Rotated the focusing ring to get the clear image.
5. When the magnification is greater than 0.45x, the extension ring should be used.
6. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

Line Scan Lens
Line Scan Lens

Line Scan Lens 620001

M58x0.75 | 0.15X-0.75X | Φ60mm

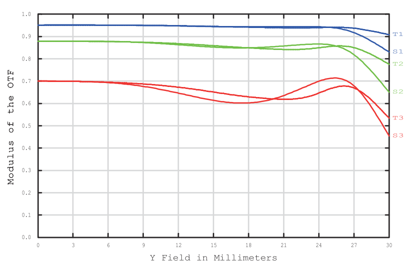
MTF with reference to image height for visible spectrum

Wavelength λ	[nm]:	656	587	546	486	435
Spectral weighting	[%]:	15	20	30	25	10
Spatial frequency R	[1/mm]:	10	20	40		
Image circle	[mm]:	60				

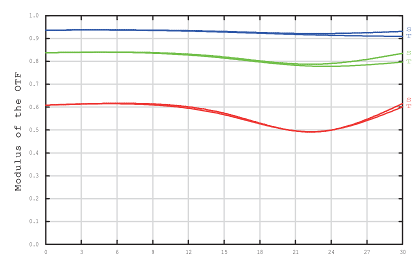
10 20 40

F4.0

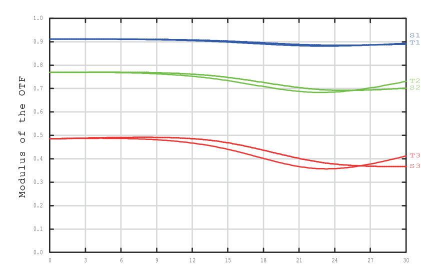
0.2x WD=328mm



0.5x WD=148mm

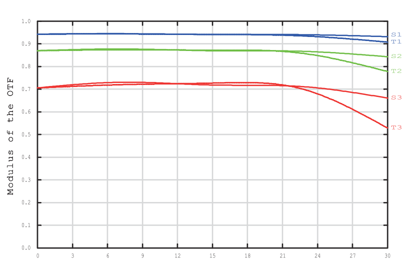


0.75x WD=108mm

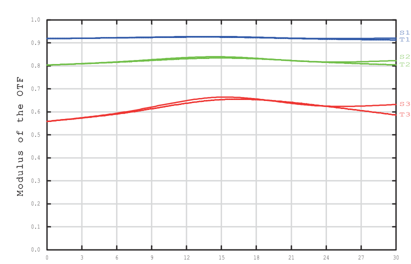


F5.6

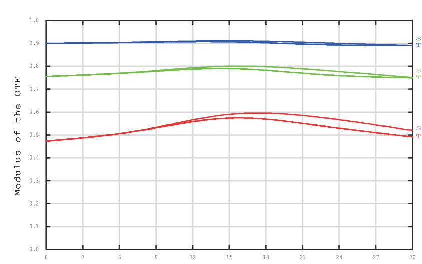
0.2x WD=328mm



0.5x WD=148mm

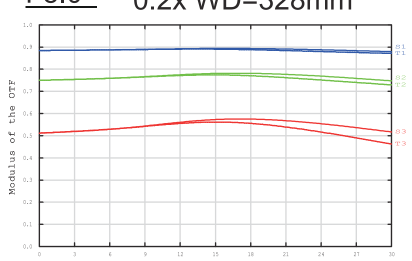


0.75x WD=108mm

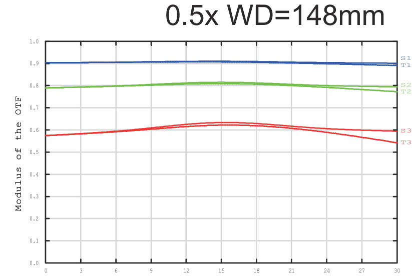


F8.0

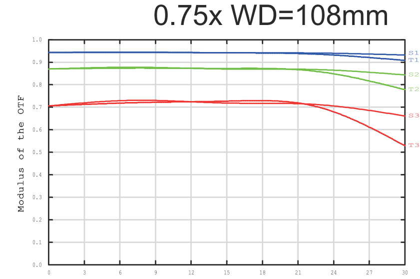
0.2x WD=328mm

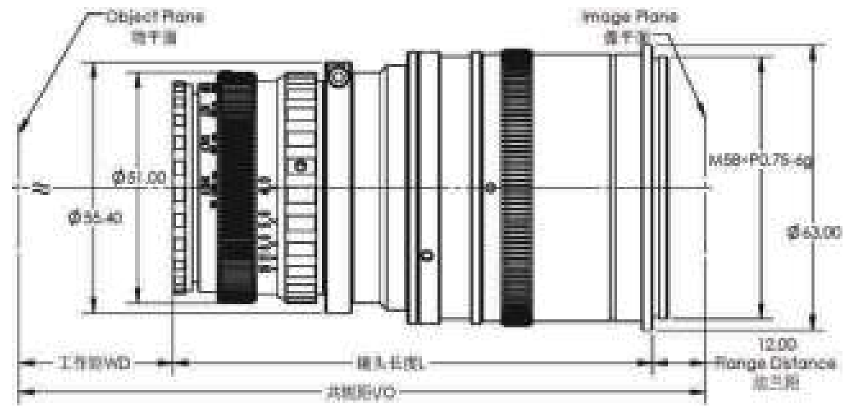


0.5x WD=148mm

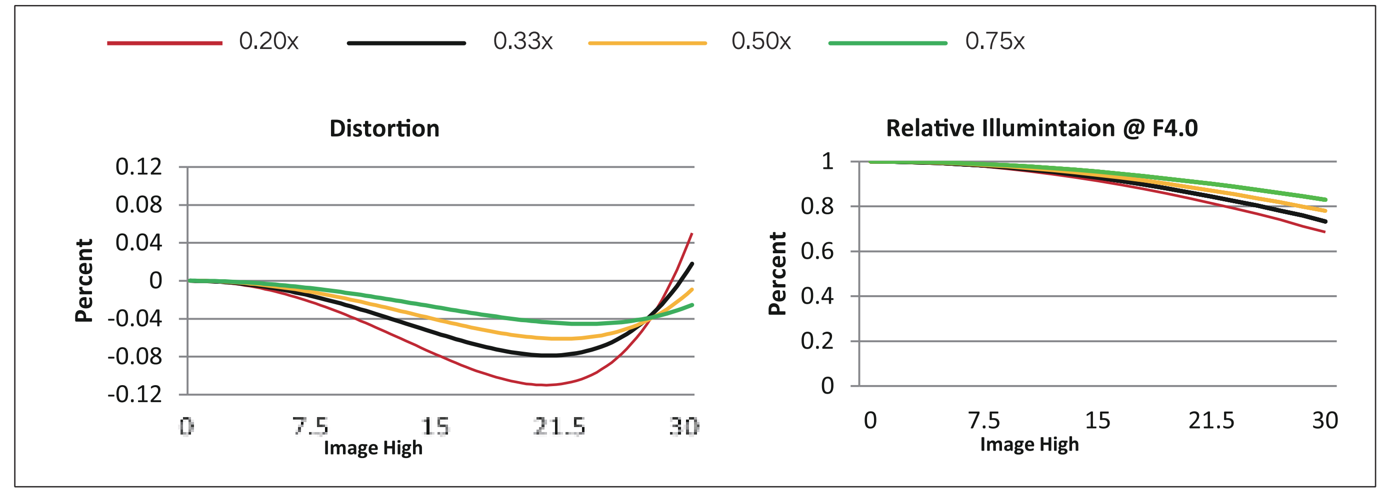


0.75x WD=108mm





Technical Specifications	
Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.2x ~ 0.75x
Trasmission	400 ~ 700nm
Mount	M58 × 0.75
Weight	385g/424g Without Extension ring/With Extension ring



Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)	Φ57FOV(mm)	Φ60FOV(mm)
0.20x	437	328	97	216.4	285.0	300.0
0.25x	380	269	99	173.1	228.0	240.0
0.28x	356	243	101	154.5	203.6	214.3
0.33x	323	206	105	131.1	172.7	181.8
0.39x	303	182	109	110.9	146.2	153.8
0.45x	287	163	112	96.2	126.7	133.3
0.50x	276	148	116	86.5	114.0	120.0
0.60x	262	128	122	72.1	95.0	100.0
0.65x	257	120	125	66.6	87.7	92.3
0.75x	251	108	131	57.7	76.0	80.0

Introduction for the use of lens

1. The magnification can be calculated based on the object size and sensor size, magnifcation=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.
2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.
3. Please make sure the lens be installed into the camera.
4. Rotated the focusing ring to get the clear image.
5. When the magnification is greater than 0.45x, the extension ring should be used.
6. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

Line Scan Lens 620002

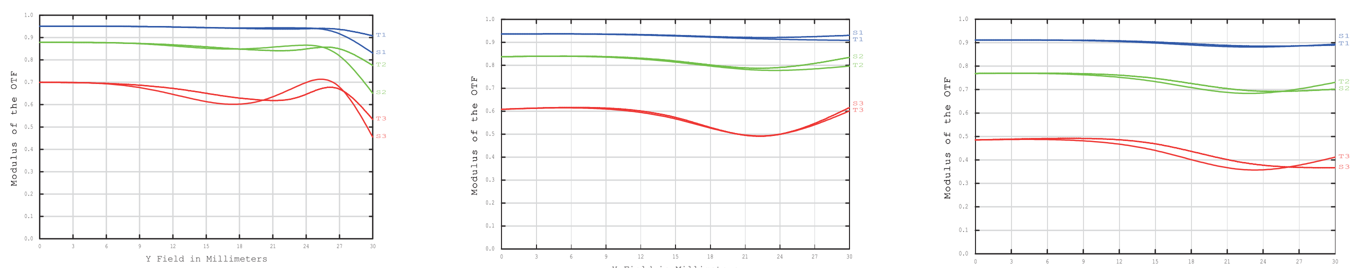
M72x0.75 | 0.2X-0.75X | Φ60mm

MTF with reference to image height for visible spectrum

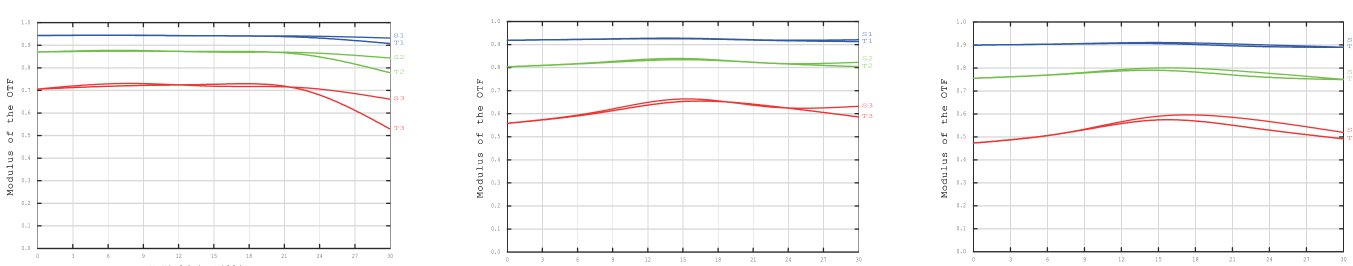
Wavelength λ [nm]:	656	587	546	486	435
Spectral weighting [%]:	15	20	30	25	10
Spatial frequency R [1/mm]:	10	20	40		
Image circle [mm]:	60				

10 20 40

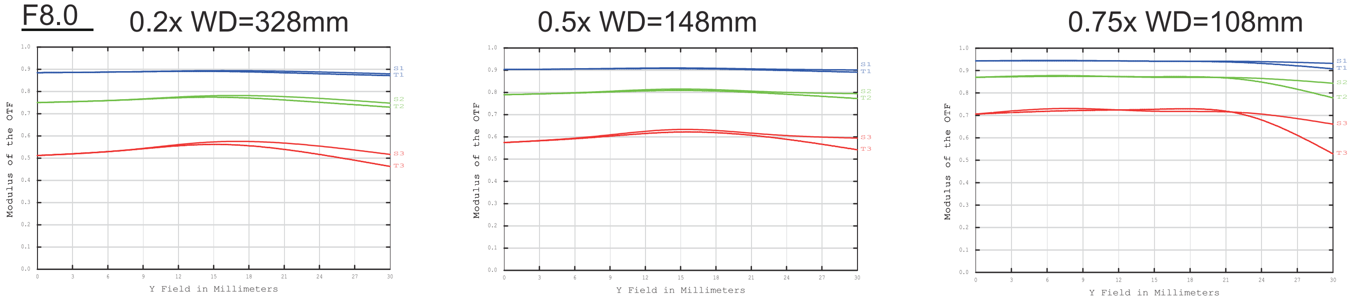
F4.0 0.2x WD=328mm 0.5x WD=148mm 0.75x WD=108mm



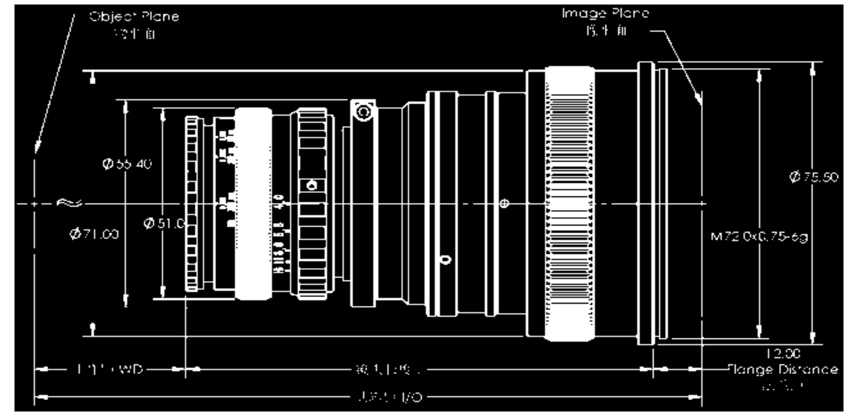
F5.6 0.2x WD=328mm 0.5x WD=148mm 0.75x WD=108mm



F8.0 0.2x WD=328mm 0.5x WD=148mm 0.75x WD=108mm



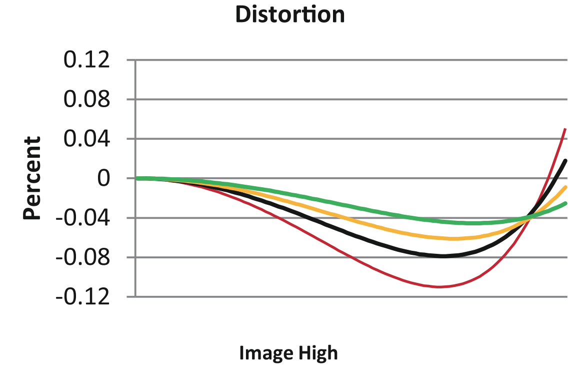
Line Scan Lens

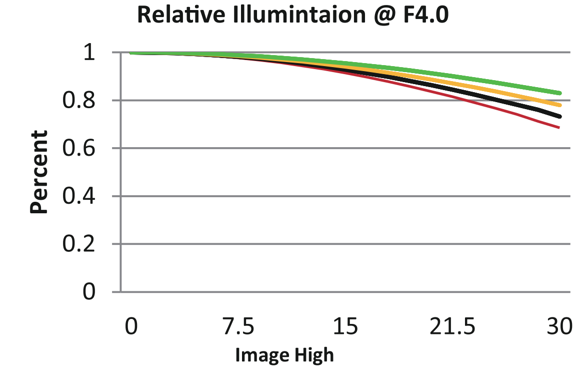


Technical Specifications

Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.2x ~ 0.75x
Trasmission	400 ~ 700nm
Mount	M72 × 0.75
Weight	401g/440g Without Extension ring/With Extension ring

0.20x 0.33x 0.50x 0.75x





Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)	Φ57FOV(mm)	Φ60FOV(mm)
0.20x	437	328	97	216.4	285.0	300.0
0.25x	380	269	99	173.1	228.0	240.0
0.28x	356	243	101	154.5	203.6	214.3
0.33x	323	206	105	131.1	172.7	181.8
0.39x	303	182	109	110.9	146.2	153.8
0.45x	287	163	112	96.2	126.7	133.3
0.50x	276	148	116	86.5	114.0	120.0
0.60x	262	128	122	72.1	95.0	100.0
0.65x	257	120	125	66.6	87.7	92.3
0.75x	251	108	131	57.7	76.0	80.0

Introduction for the use of lens

1. The magnification can be calculated based on the object size and sensor size, magnifcation=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.
2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.
3. Please make sure the lens be installed into the camera.
4. Rotated the focusing ring to get the clear image.
5. When the magnification is greater than 0.45x, the extension ring should be used.
6. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

Line Scan Lens

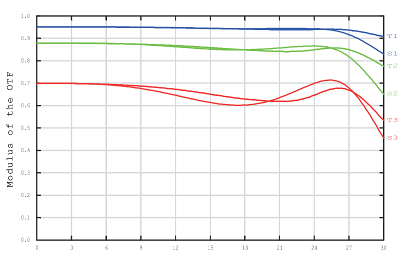
Line Scan Lens 620006

M42x1.0 | 0.2X-0.75X | Φ60mm

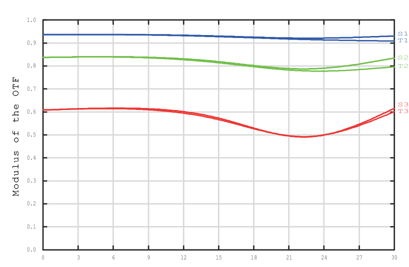
MTF with reference to image height for visible spectrum						
Wavelength λ	[nm]:	656	587	546	486	435
Spectral weighting	[%]:	15	20	30	25	10
Spatial frequency R	[1/mm]:	10	20	40		
Image circle	[mm]:	60				

10 20 40

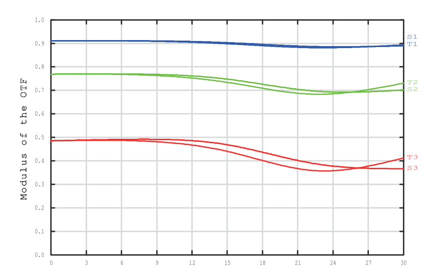
F4.0 0.2x WD=328mm



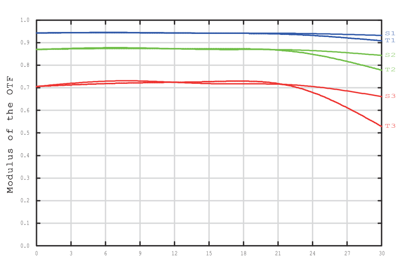
0.5x WD=148mm



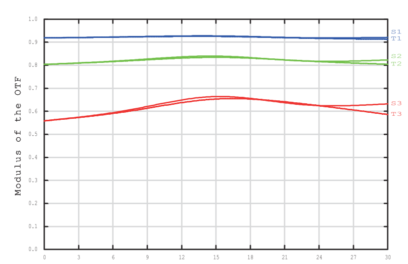
0.75x WD=108mm



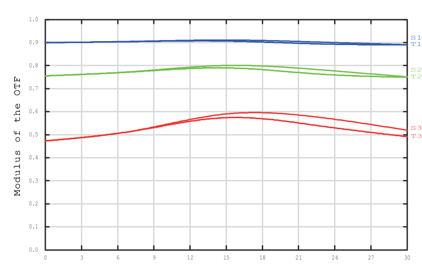
F5.6 0.2x WD=328mm



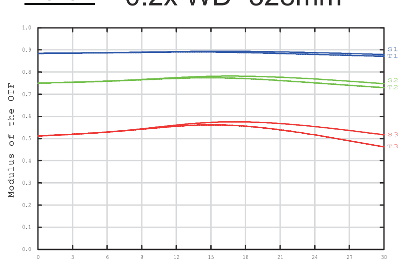
0.5x WD=148mm



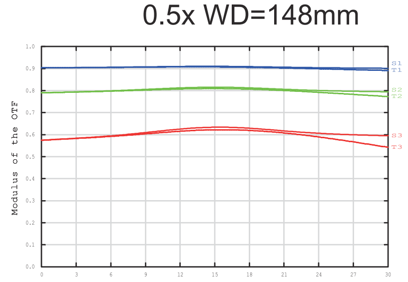
0.75x WD=108mm



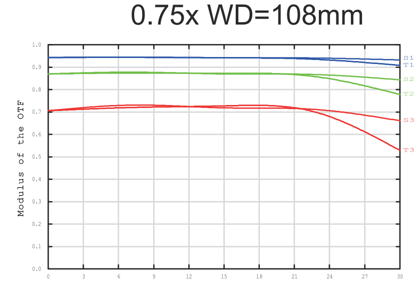
F8.0 0.2x WD=328mm

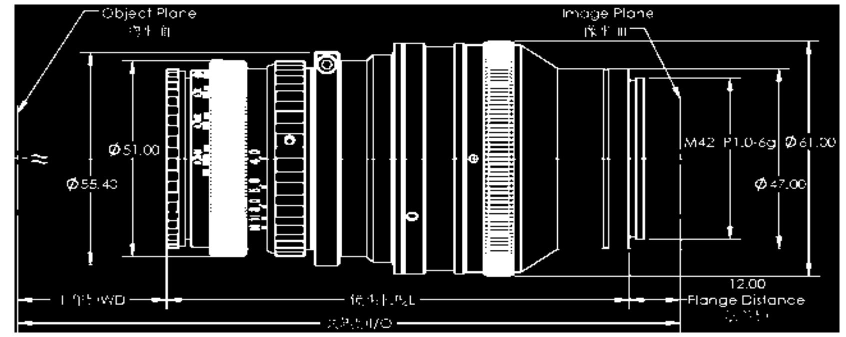


0.5x WD=148mm

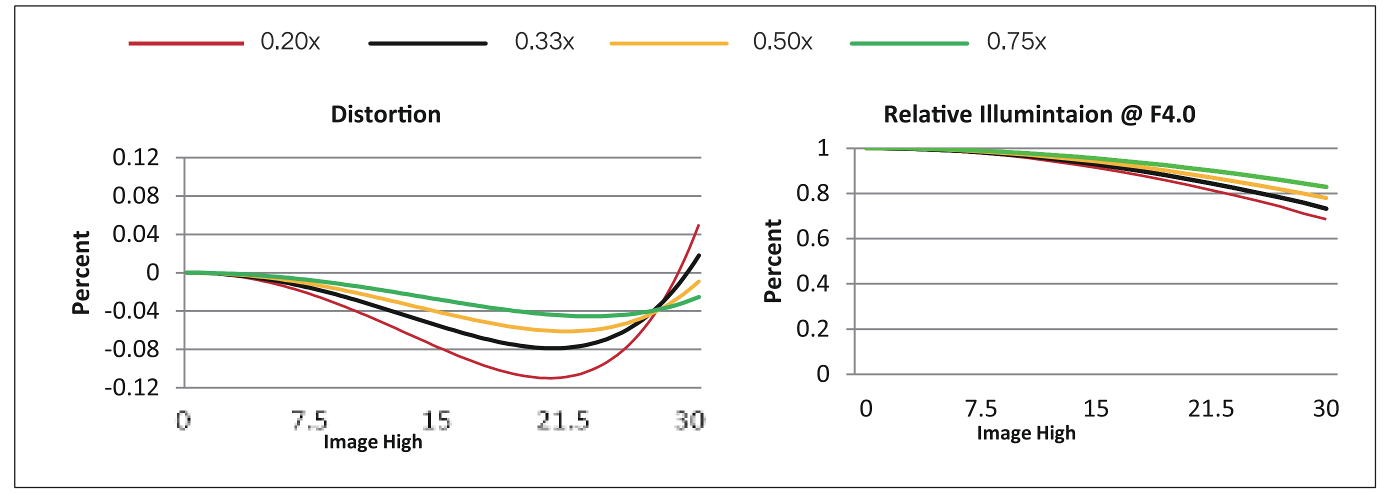


0.75x WD=108mm





Technical Specifications	
Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.2x ~ 0.75x
Trasmission	400 ~ 700nm
Mount	M42 × 1.0
Weight	379g/418g Without Extension ring/With Extension ring



Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)	Φ57FOV(mm)	Φ60FOV(mm)
0.20x	437	328	97	216.4	285.0	300.0
0.25x	380	269	99	173.1	228.0	240.0
0.28x	356	243	101	154.5	203.6	214.3
0.33x	323	206	105	131.1	172.7	181.8
0.39x	303	182	109	110.9	146.2	153.8
0.45x	287	163	112	96.2	126.7	133.3
0.50x	276	148	116	86.5	114.0	120.0
0.60x	262	128	122	72.1	95.0	100.0
0.65x	257	120	125	66.6	87.7	92.3
0.75x	251	108	131	57.7	76.0	80.0

Introduction for the use of lens

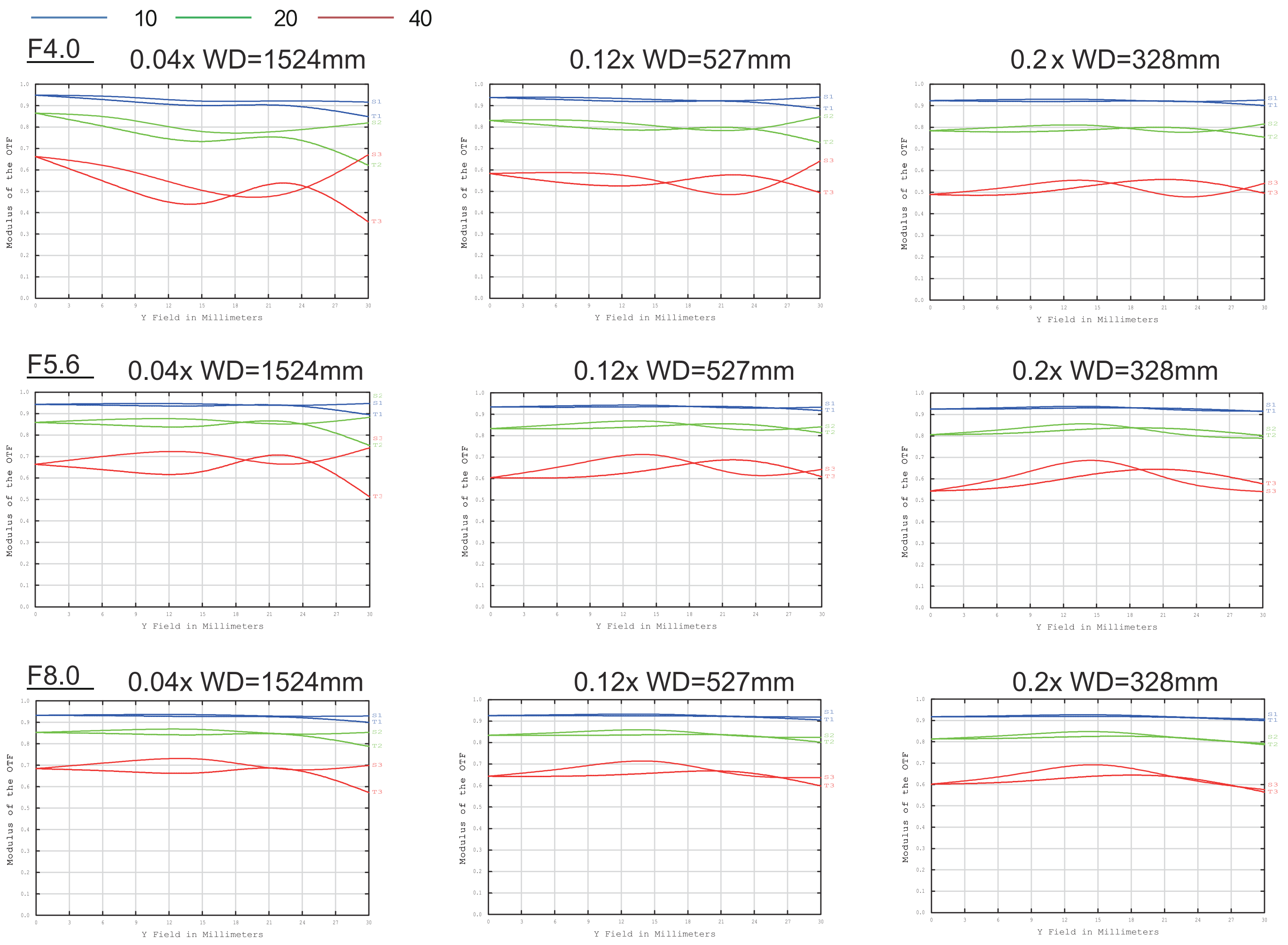
1. The magnification can be calculated based on the object size and sensor size, magnifaction=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.
2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.
3. Please make sure the lens be installed into the camera.
4. Rotated the focusing ring to get the clear image.
5. When the magnification is greater than 0.45x, the extension ring should be used.
6. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

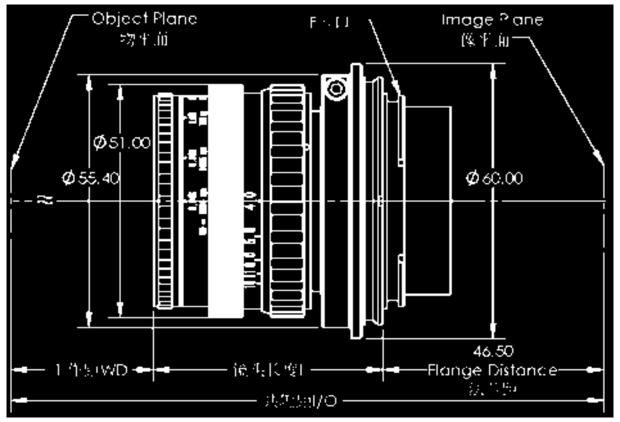
Line Scan Lens

Line Scan Lens 620003

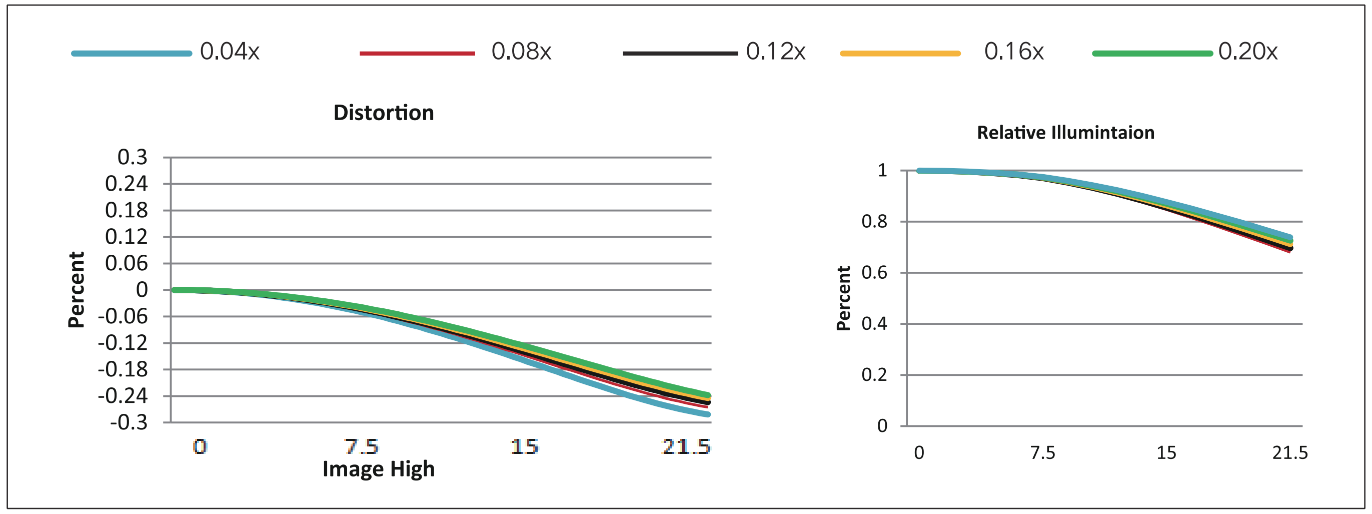
F | 0.04X-0.2X | Φ60mm

MTF with reference to image height for visible spectrum						
Wavelength λ	[nm]:	656	587	546	486	435
Spectral weighting	[%]:	15	20	30	25	10
Spatial frequency R	[1/mm]:	10	20	40		
Image circle	[mm]:	60				





Technical Specifications	
Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.04x ~ 0.2x
Trasmission	400 ~ 700nm
Mount	F - mount
Weight	323g



Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)
0.04x	1619	1524	49	1081.8
0.06x	1121	1025	50	721.2
0.08x	874	776	51	540.9
0.10x	726	627	52	432.7
0.12x	628	527	54	360.6
0.14x	558	456	55	309.1
0.16x	505	403	56	270.4
0.18x	465	361	57	240.4
0.20x	433	328	59	216.4

Introduction for the use of lens

1. The magnification can be calculated based on the object size and sensor size, magnifaction=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.
2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.
3. Please make sure the lens be installed into the camera.
4. Rotated the focusing ring to get the clear image.
5. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

Line Scan Lens 620004

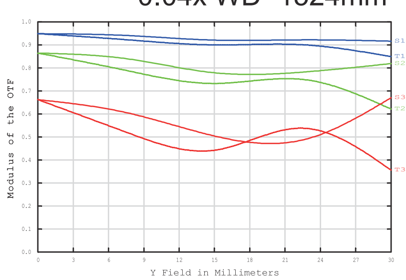
M58x0.75 | 0.04X-0.2X | Φ60mm

MTF with reference to image height for visible spectrum					
Wavelength λ [nm]:	656	587	546	486	435
Spectral weighting [%]:	15	20	30	25	10
Spatial frequency R [1/mm]:	10	20	40		
Image circle [mm]:	60				

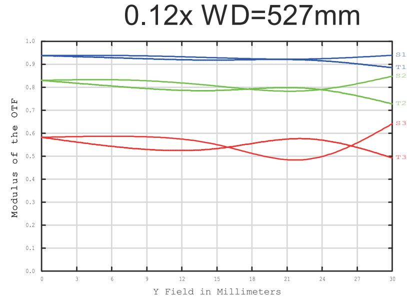
10 20 40

F4.0

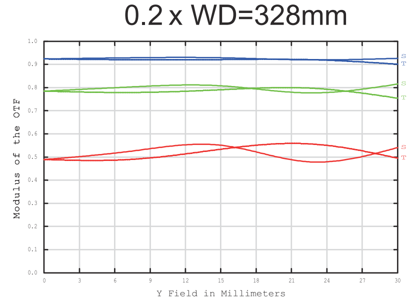
0.04x WD=1524mm



0.12x WD=527mm

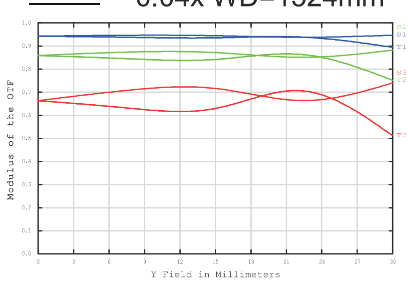


0.2 x WD=328mm

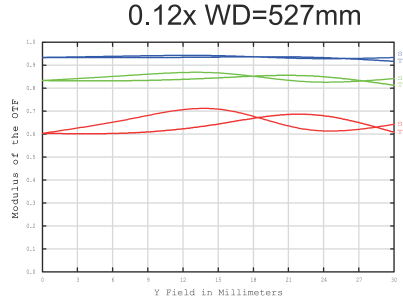


F5.6

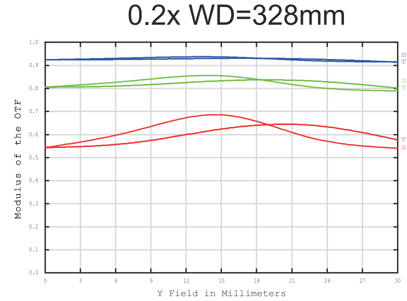
0.04x WD=1524mm



0.12x WD=527mm

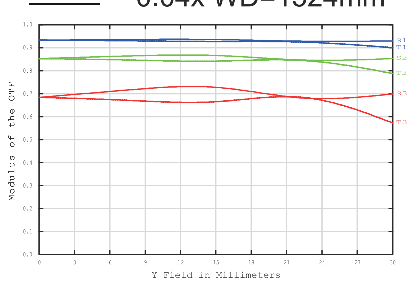


0.2x WD=328mm

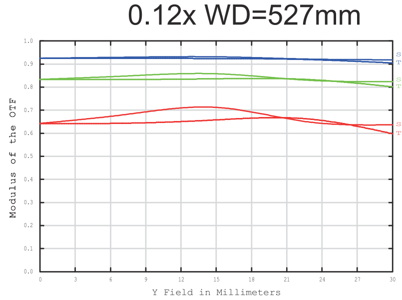


F8.0

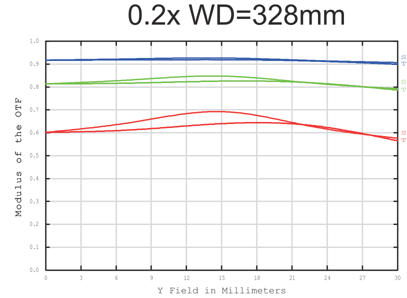
0.04x WD=1524mm

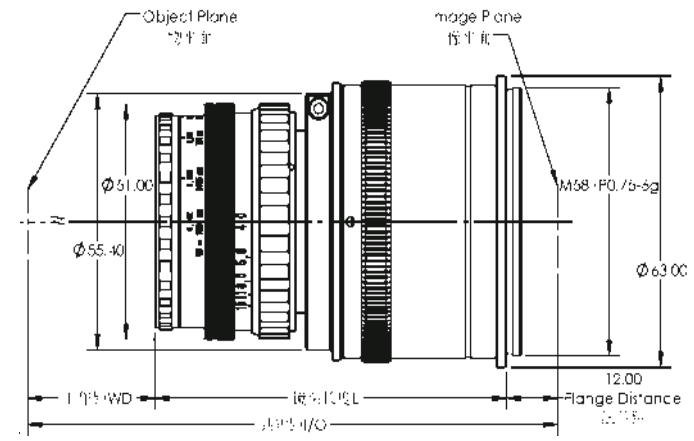


0.12x WD=527mm



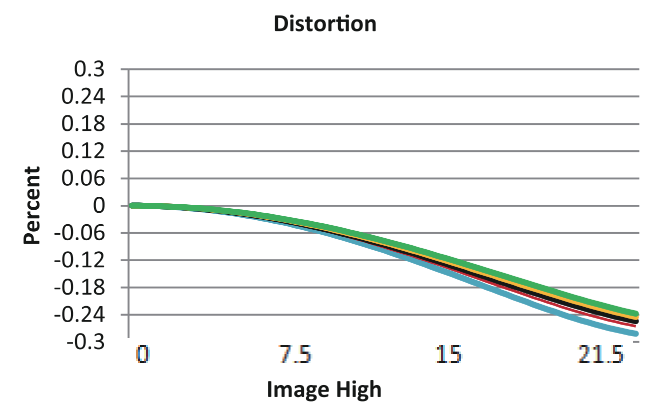
0.2x WD=328mm

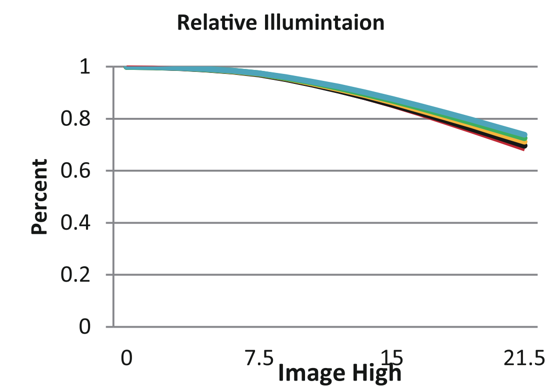




Technical Specifications	
Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.04x ~ 0.2x
Trasmission	400 ~ 700nm
Mount	M58 × 0.75
Weight	407g

0.04x 0.08x 0.12x 0.16x 0.20x





Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)
0.04x	1619	1524	83	1081.8
0.06x	1121	1025	84	721.2
0.08x	874	776	86	540.9
0.10x	726	627	87	432.7
0.12x	628	527	88	360.6
0.14x	558	456	89	309.1
0.16x	505	403	91	270.4
0.18x	465	361	92	240.4
0.20x	433	328	93	216.4

Introduction for the use of lens

1. The magnification can be calculated based on the object size and sensor size, magnifaction=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.
2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.
3. Please make sure the lens be installed into the camera.
4. Rotated the focusing ring to get the clear image.
5. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

Line Scan Lens 620005

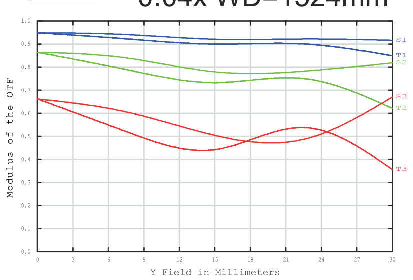
M72x0.75 | 0.04X-0.2X | Φ60mm

MTF with reference to image height for visible spectrum					
Wavelength λ [nm]:	656	587	546	486	435
Spectral weighting [%]:	15	20	30	25	10
Spatial frequency R [1/mm]:	10	20	40		
Image circle [mm]:	60				

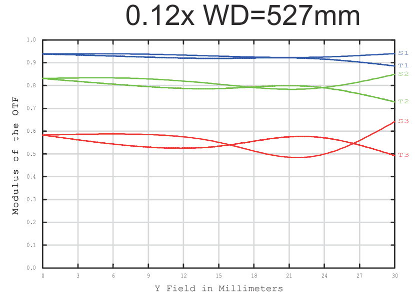
10 20 40

F4.0

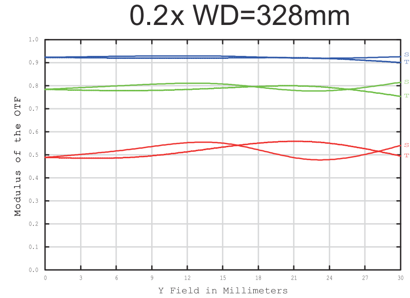
0.04x WD=1524mm



0.12x WD=527mm

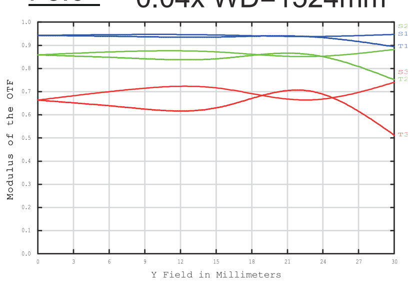


0.2x WD=328mm



F5.6

0.04x WD=1524mm



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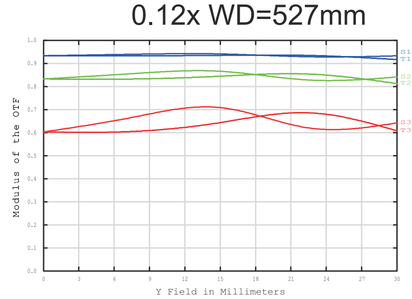
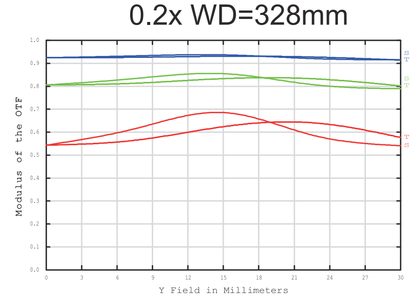
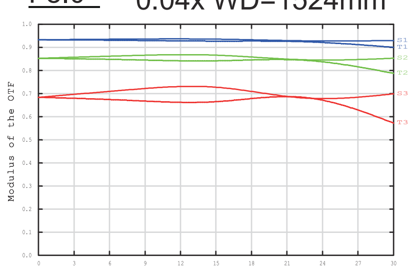


0.2x WD=328mm

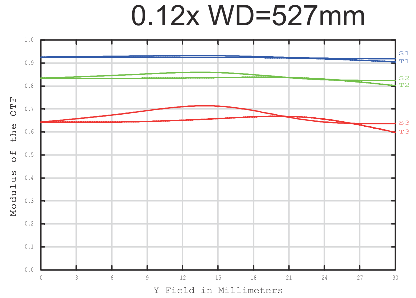


F8.0

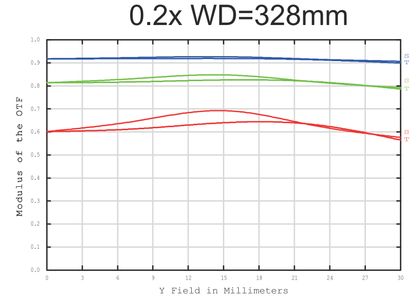
0.04x WD=1524mm

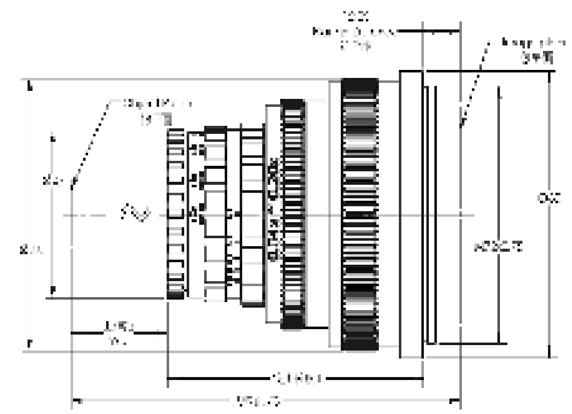


0.12x WD=527mm



0.2x WD=328mm

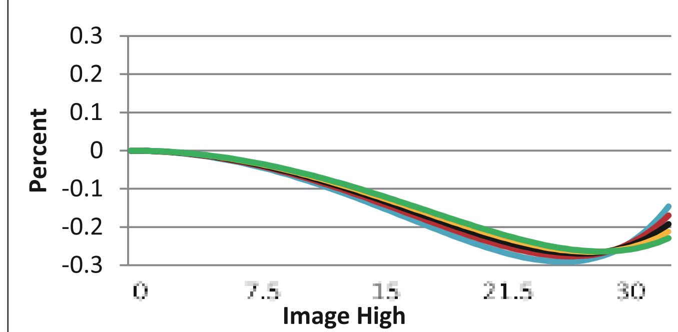




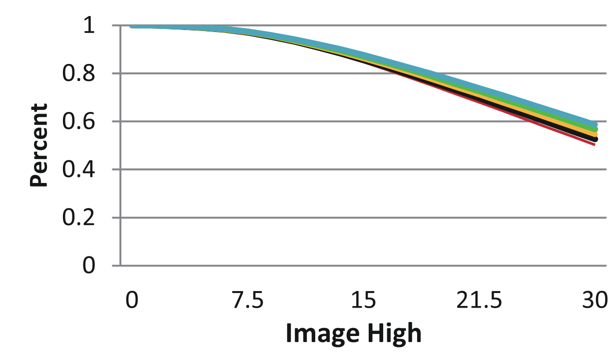
Technical Specifications	
Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.04x ~ 0.2x
Trasmission	400 ~ 700nm
Mount	M72 × 0.75
Weight	432g

0.04x 0.08x 0.12x 0.16x 0.20x

Distortion



Relative Illumintaion @ F4.0



Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)	Φ57FOV(mm)	Φ60FOV(mm)
0.04x	1619	1524	83	1081.8	1425.0	1500.0
0.06x	1121	1025	84	721.2	950.0	1000.0
0.08x	874	776	86	540.9	712.5	750.0
0.10x	726	627	87	432.7	570.0	600.0
0.12x	628	527	88	360.6	475.0	500.0
0.14x	558	456	89	309.1	407.1	428.6
0.16x	505	403	91	270.4	356.3	365.0
0.18x	465	361	92	240.4	316.7	333.3
0.20x	433	328	93	216.4	285.0	300.0

Introduction for the use of lens

1. The magnification can be calculated based on the object size and sensor size, magnifaction=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.

2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.

3. Please make sure the lens be installed into the camera.

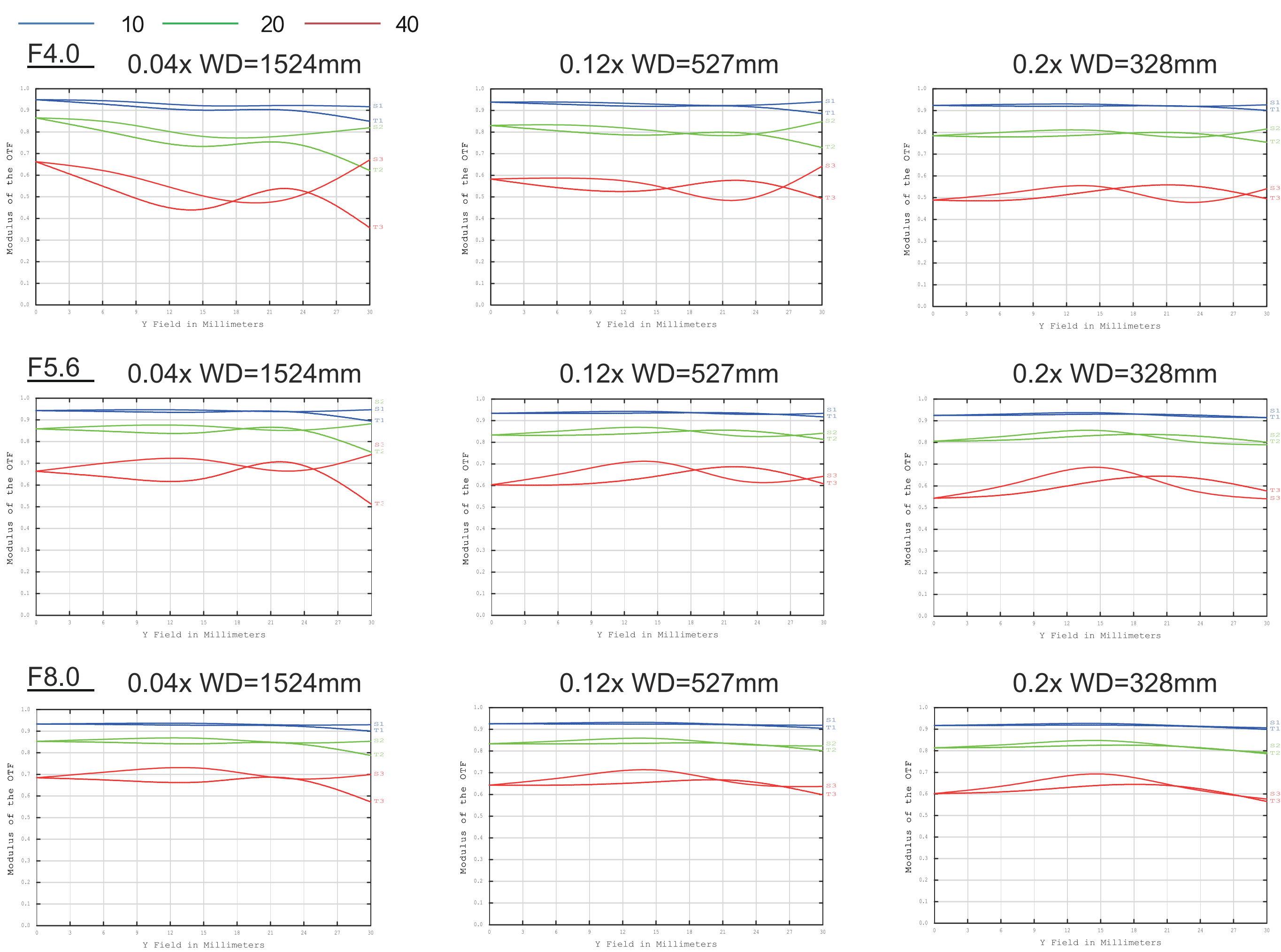
4. Rotated the focusing ring to get the clear image.

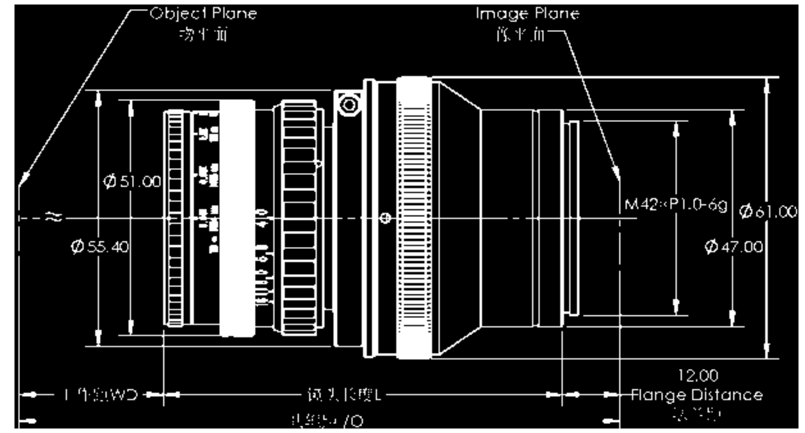
5. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

Line Scan Lens 620007

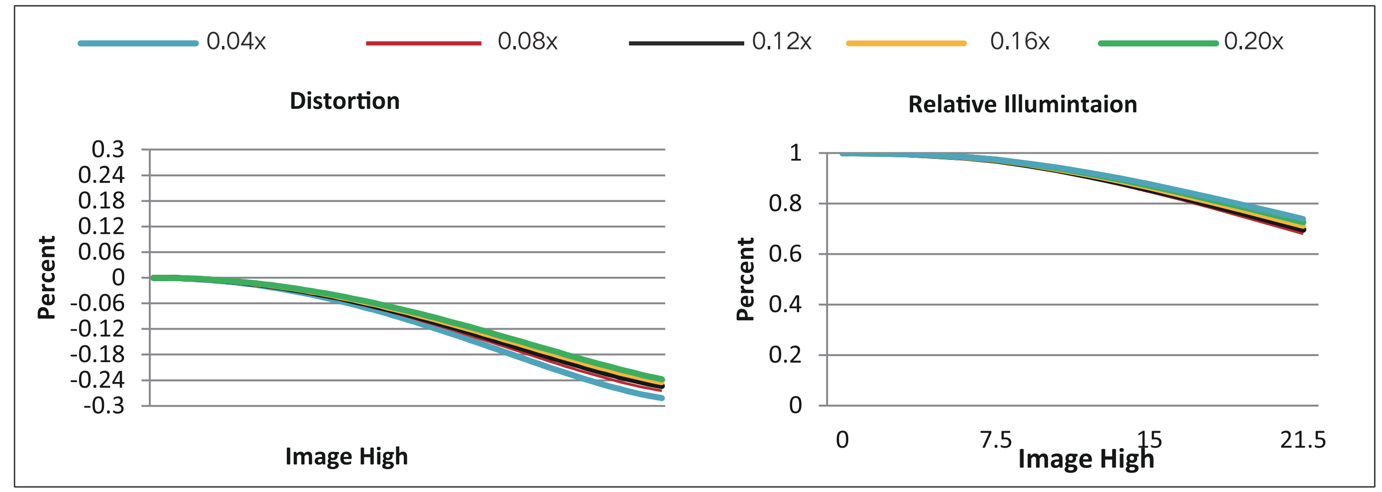
M42x1.0 | 0.04X-0.2X | Φ60mm

MTF with reference to image height for visible spectrum					
Wavelength λ [nm]:	656	587	546	486	435
Spectral weighting [%]:	15	20	30	25	10
Spatial frequency R [1/mm]:	10	20	40		
Image circle [mm]:	60				





Technical Specifications	
Focal Length	60mm
F/#	4 ~ 22
Max. sensor size	60mm
Magnification	0.04x ~ 0.2x
Trasmission	400 ~ 700nm
Mount	M42 × 1.0
Weight	385g



Magnification (β)	I/O (mm)	Working Distance (mm)	Lens Length (mm)	Φ43.27FOV(mm)
0.04x	1619	1524	83	1081.8
0.06x	1121	1025	84	721.2
0.08x	874	776	86	540.9
0.10x	726	627	87	432.7
0.12x	628	527	88	360.6
0.14x	558	456	89	309.1
0.16x	505	403	91	270.4
0.18x	465	361	92	240.4
0.20x	433	328	93	216.4

Introduction for the use of lens

1. The magnification can be calculated based on the object size and sensor size, magnifaction=sensor width/object length. We need to notice the allowance when calculated, such as we can calculate the magnification based on the object size 110mm when the object size 100mm, it depends.
2. Please make sure the ratio adjusting ring to the suitable position based on the calculated magnification, please adjust to approximate position and lock the ration adjusting ring if it is not the magnification in above data sheet.
3. Please make sure the lens be installed into the camera.
4. Rotated the focusing ring to get the clear image.
5. Please make the aperture to suitable position based on the light or deepth of field. We can get the clear image as well when we reduce the aperture.

8

Relay Lens

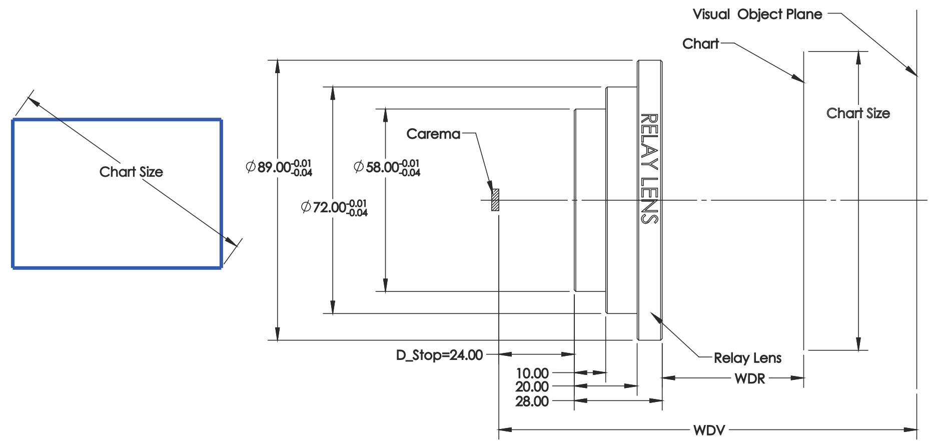
RELAY LENS IS ALSO CALLED EXTENDER LENS. THE HIGH LEVEL IMAGING QUALITY IS NEEDED BASED ON THE QUICK DEVELOPMENT OF HIGH PIXELS MOBILE CAMERA , THE TRADITIONAL TESTING METHOD CAN' T MEET THE TESTING REQUIREMENT DUE TO IT NEED HUGE TESTING SPACE , THE HUGE TESTING SPACE IS NOT NEEDED FOR THE GAOPTICS⊠ RELAY LENS DETECTION SYSTEM TO MEET CURRENT DEVELOPMENT REQUIREMENT , IT IS USED WIDELY IN MOBILE CAMERA MODULE DETECTION FIELD 、LAPTOP CAMERA MODULE DETECTION FIELD AND OTHER RELATED FIELD.

Relay lens

630000/630001/630002

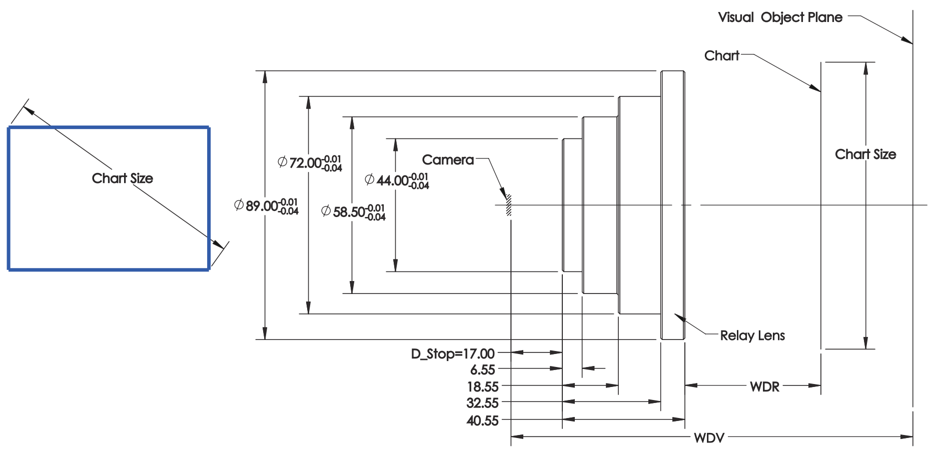
630000

SPECIFICATIONS		
MAX FOV		70 °
DISTORTION		0.5%
D_STOP		24
WDV	WDR	Chart Size
1000	300.4	459.1
2000	365.2	544.5
3000	392.4	580.5
4000	407.5	600.3
5000	417.0	612.9
8000	432.1	632.7
10000	437.3	639.6
20000	448.1	653.9



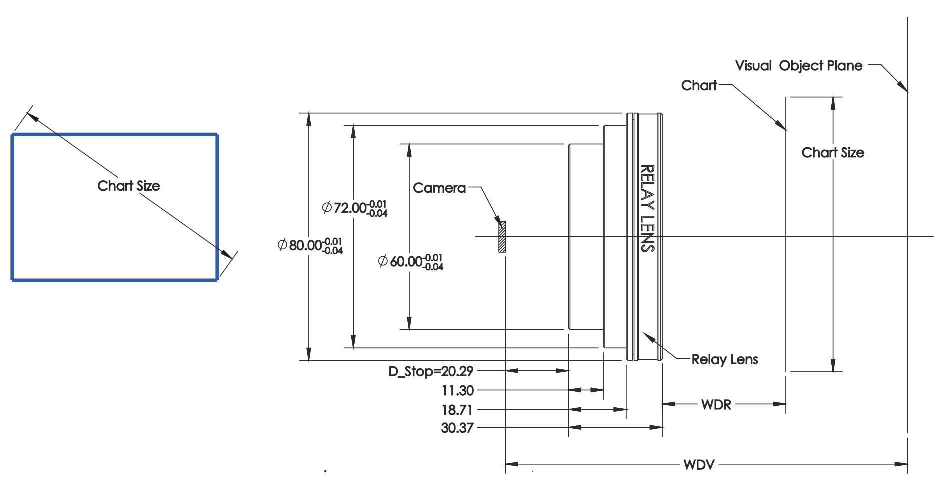
630001

SPECIFICATIONS		
MAX FOV		70 °
DISTORTION		0.15%
D_STOP		17
WDV	WDR	Chart Size
1000	215.5	387.5
2000	259.7	454.0
3000	278.0	481.5
4000	288.0	496.5
5000	294.3	506.0
8000	304.2	520.9
10000	307.6	526.1
20000	314.7	536.8



630002

SPECIFICATIONS		
MAX FOV		88 °
DISTORTION		0.18%
D_STOP		20.29
WDV	WDR	Chart Size
600	187.753	427.3
1000	226.233	500.7
3000	280.45	604.1
4000	288.83	620.0
5000	294.07	630.0
6000	297.66	636.9
10000	305.08	651.0
20000	310.85	662.0

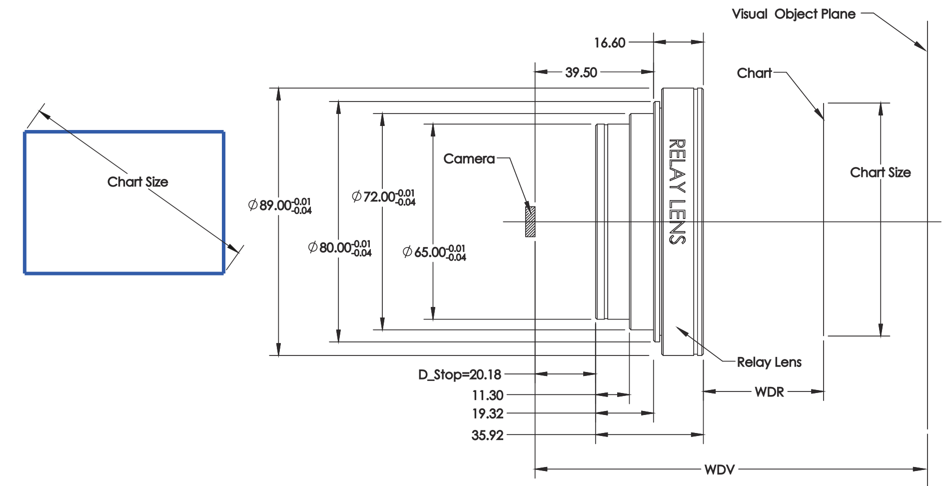


Relay lens

630003/630004/630005

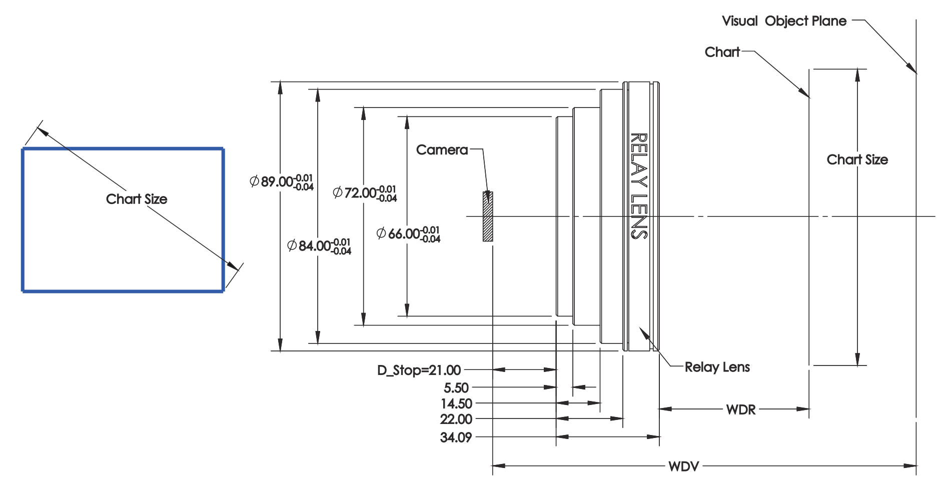
630003

SPECIFICATIONS		
MAX FOV		90 °
DISTORTION		0.6%
D_STOP		20.18
WDV	WDR	Chart Size
300	118.0	321.9
400	142.9	372.4
500	161.8	411.0
600	176.8	441.4
1000	214.9	517.7
5000	281.0	652.7



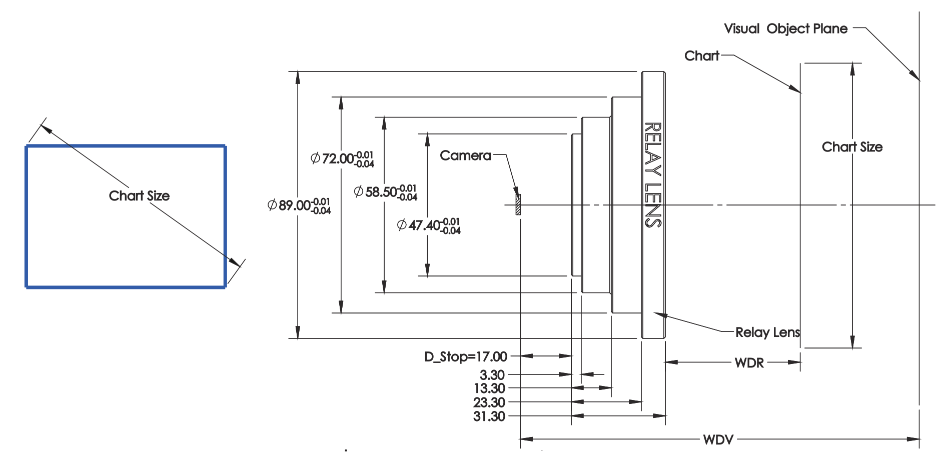
630004

SPECIFICATIONS		
MAX FOV		88 °
DISTORTION		0.2%
D_STOP		20
WDV	WDR	Chart Size
1000	230.1	517.4
2000	271.4	596.4
3000	288.3	628.5
4000	297.3	646.4
5000	303.0	657.3
8000	312.0	674.3
10000	314.9	680.2
20000	321.2	692.3



630005

SPECIFICATIONS		
MAX FOV		88 °
DISTORTION		0.26%
D_STOP		17
WDV	WDR	Chart Size
1000	276.6	569.2
2000	327.2	662.4
3000	348.6	700.6
4000	360.0	722.1
5000	366.7	734.4
8000	378.0	754.9
10000	381.9	762.0
20000	389.9	776.6



Relay lens

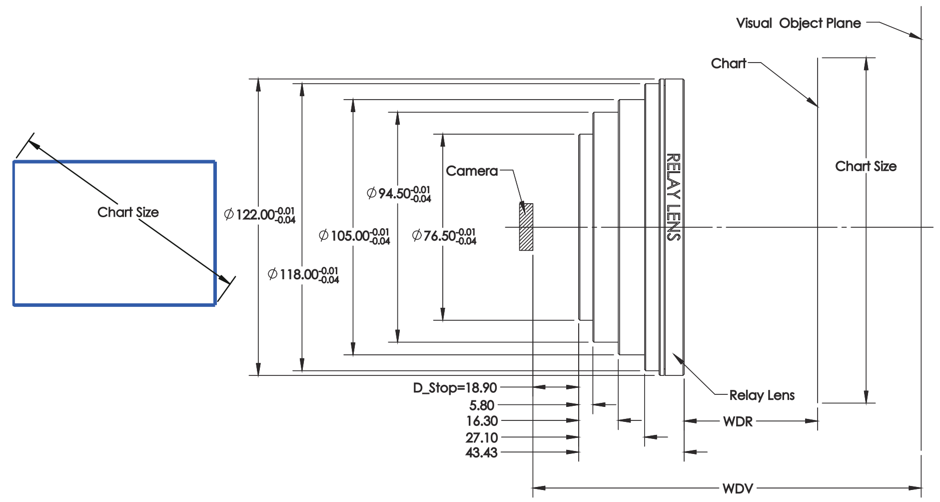
Relay lens

630006/630007/630008

630006

SPECIFICATIONS

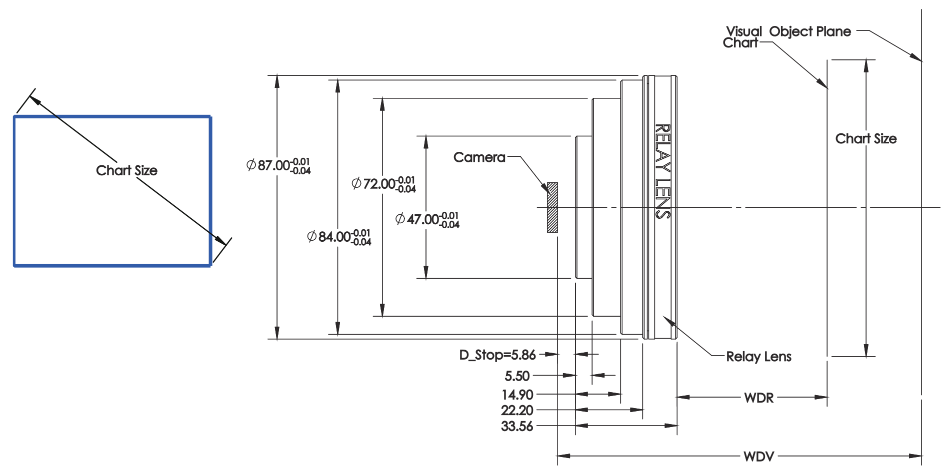
MAX FOV		108 °
DISTORTION		0.5%
D_STOP		18.9
WDV	WDR	Chart SIze
1000	400.1	1210.1
2000	525.1	1553.2
3000	584.0	1714.6
4000	618.2	1808.5
5000	640.5	1869.9
8000	677.0	1970.1
10000	690.1	2005.9
20000	717.6	2081.6



630007

SPECIFICATIONS

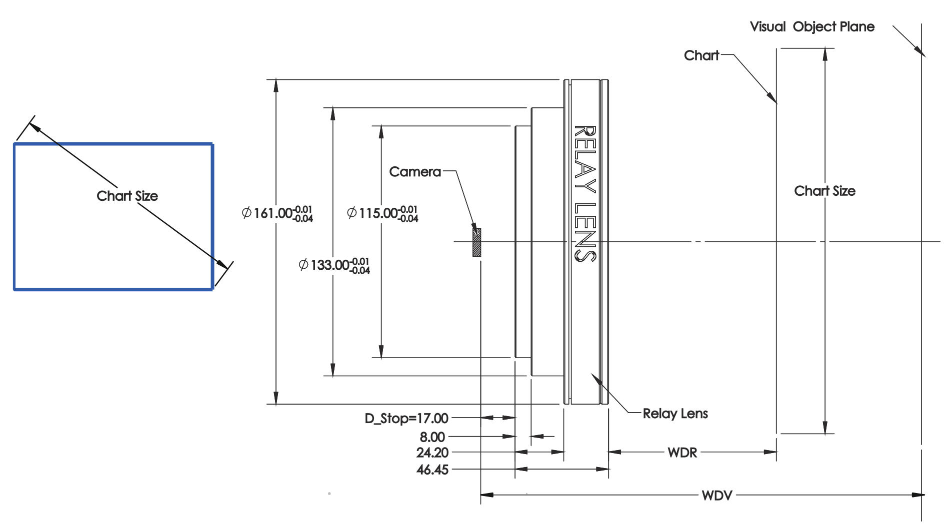
MAX FOV		120 °
DISTORTION		1%
D_STOP		5.86
WDV	WDR	Chart SIze
300	88.1	406.3
400	100.8	453.8
500	109.9	487.6
600	116.7	513.0
800	126.2	548.6
1000	132.6	572.3
1500	141.9	607.2
5000	157.0	663.5
10000	160.6	676.9
20000	162.5	683.8



630008

SPECIFICATIONS

MAX FOV		130 °
DISTORTION		24.7%
D_STOP		17
WDV	WDR	Chart SIze
1000	260.1	956.9
2000	305.5	1097.7
3000	323.8	1154.5
4000	333.7	1185.2
5000	339.9	1204.3
8000	349.6	1234.3
10000	352.9	1244.7
20000	359.8	1265.9



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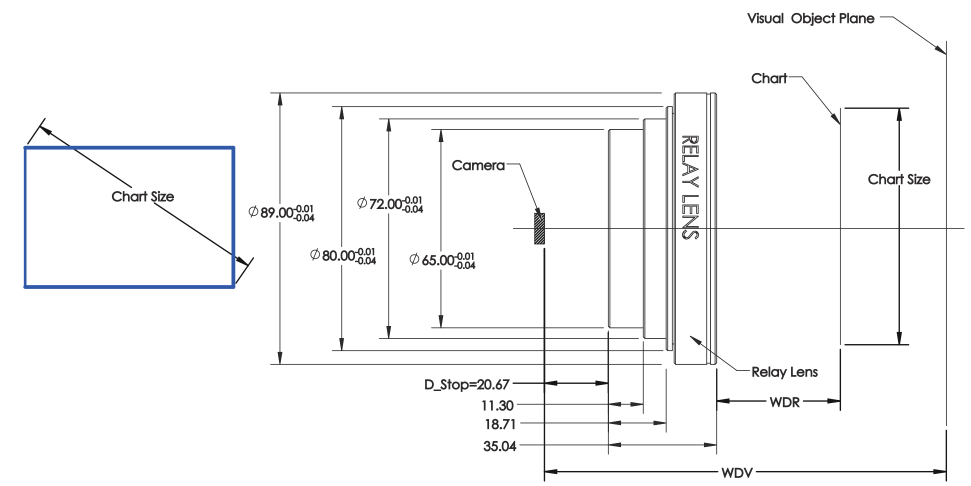
Relay lens

630009/630010/630011

630009

SPECIFICATIONS

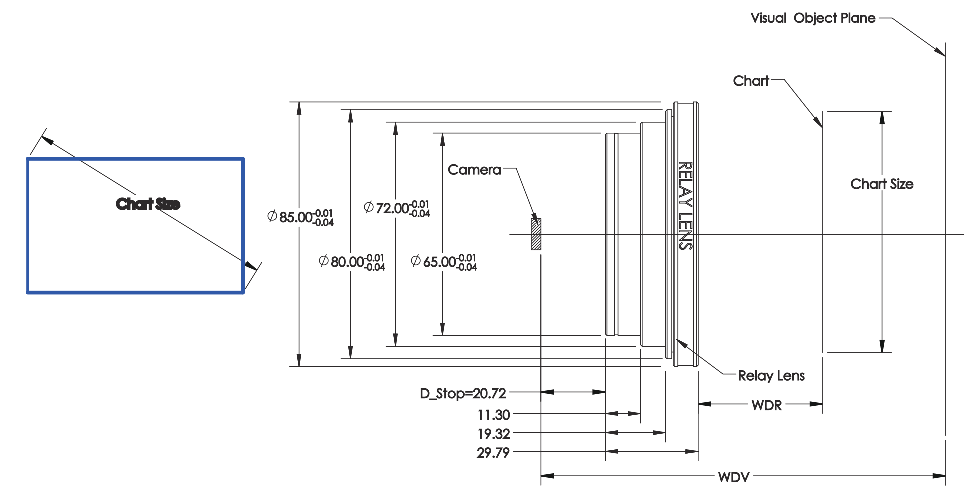
MAX FOV		88 °
DISTORTION		0.23%
D_STOP		20.67
WDV	WDR	Chart SIze
1000	221.6	500.0
2000	260.3	574.3
3000	275.8	603.9
4000	284.2	619.9
5000	289.4	629.9
8000	297.6	645.5
10000	300.4	650.3
20000	306.2	661.2



630010

SPECIFICATIONS

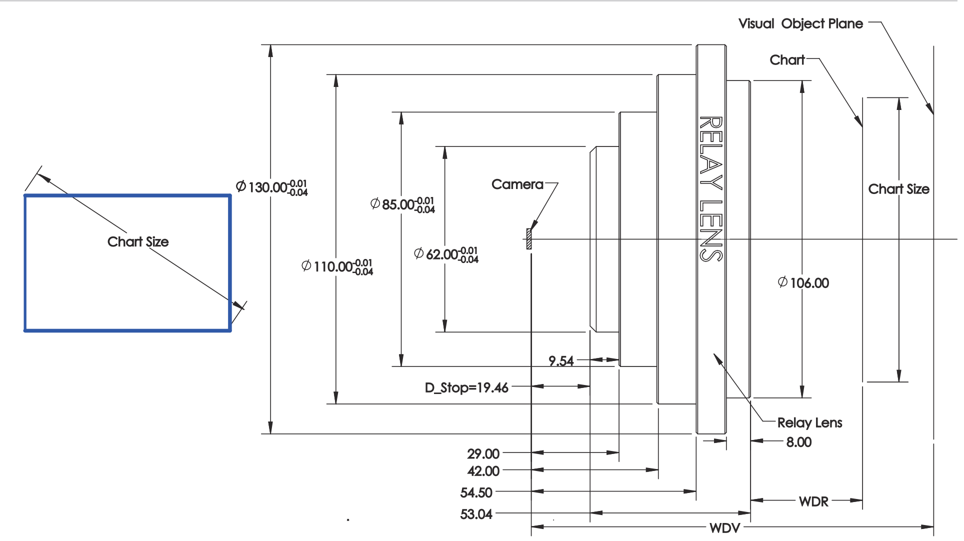
MAX FOV		88 °
DISTORTION		0.38
D_STOP		20.72
WDV	WDR	Chart SIze
300	124.4	310.6
400	149.3	359.2
500	168.4	396.3
600	183.4	425.6
800	205.5	469.0



630011

SPECIFICATIONS

MAX FOV		90 °
DISTORTION		0.17%
D_STOP		19.46
WDV	WDR	Chart SIze
600	82.5	286.7
1500	105.3	339.4
3000	114.9	361.5
5000	119.1	371.2
8000	121.6	376.9
10000	122.4	378.8
20000	124.1	382.7
Infinity	125.8	386.8



Email: sales@gu-optics.com Wechat or Taobao scan can directly enter Alibaba

9

Custom Service

Custom Service

We can provide quick custom service for imaging lens if you understand below parameters fully .

Optical System Analysis: Analyzed the parameters of optical system and provided the overall design scheme based on the customers' requirements.
Optical system design: Completed the optical system design、tolerance analysis etc. based on the optical system parameters' requirements.
Optical-mechanical structure design: Completed the optical-mechanical structure design 、mechanical simulation analysis、optical-mechanical thermal integrated analysis etc. based on the optical system designed requirements.
Custom optical system: Completed the manufacture、assembly、test of the optical system based on the result of optical design.
Mass customization service of optical system: Provided the unique、exclusive、mass customization of optical system for customers and can sign the only supply agreement with customers as well.
Assessment service of optical system: Conducted the professional analysis and gave feasible evaluation and modified suggestion for customers' design.

Technical parameters list for imaging lens

Number	Parameter name	Reference	Note
	Basic System Parameters		
1	Working Distance(mm)		The distance from the front end of lens to object.
2	Back focal length(mm)		The distance from the back mechanical end surface of lens to sensor.
3	I/O (mm)		The distance between the image and object.
4	Focal length of system(mm)		
5	Diameter of Entrance pupil(mm)		Effective clear aperture when imaged
6	Working wavelength range(nm)		The spectrum range when imaging lens worked
7*1	Full angle of field(°)		The viewing angle that can view the whole object.
8*2	Full field of view(mm)		The viewing area that can view the whole object.
9	Sensor size(mm)		The target size of detector.
10	Primary magnification		The ratio between sensor size and FOV.
11	Zoom Ratio		The ratio between the sensor size and FOV when the working focal length is different for zoom lens.
	Optical Performance		
12	Transmission(%)		Attenuation rate of lens to image beam intensity.
13	Relative illumination(%)		The ratio of outer illumination and central illumination.
14	MTF（%@lp/mm）		The stripe contrast under distinguishable line pair per millimeter.
15	Distortion(%)		The ratio of the height difference between off-axis beam imaging point and ideal imaging point and the height of ideal imaging point.
	Detector Parameters		
16	Sensor size (mm x mm)		The target size of detector
17	Horizontal/Vertical resolution(px x px)		The horizontal pixel QTY of detector and vertical pixel QTY of detector
18	Horizontal/Vertical pixel size (µm x µm)		
	Port Requirement		
19	The total length of lens (mm)		
20	The position of entrance pupil(mm)		The distance between the entrance pupil of lens and the front mechanical end surface of lens
21	Size of entrance pupil(mm)		The diameter of entrance pupil for lens
22	The maximum diameter(mm)		
23	Weight(kg)		
	Illumination *3		
24	The object luminous characteristic function		The changes in the function between the emitted intensity of object and angle of emission.
25	Lighting characteristic function		The changes in the function between emitted intensity of light source and angle of emission.
26	The reflective character of object		The function of reflective character for object to lighting light.
	Environment		
27	Work temperature（℃）		The environmental temperature range when the lens worked normally.
28	Storage temperature（℃）		The environmental temperature range when the lens is stored
29	Vibration(g)		The maximum vibratory acceleration when the lens worked normally.
30	Impact(g)		Maximum impact acceleration that the lens can be allowed.
31	Others		Humidity、Acid and alkali、Sealing etc.

*1: It is ok that you choose one of item7 or item 8. *2: It is ok that you choose one of item7 or item 8. *3: The customers can describe your requirements qualitatively if you don't have the function.

10

Filter

Filter

Filter

FILTER IS THE OPTICAL COMPONENT CAN BE USED TO CHOOSE THE RADIANT WAVELENGTH ,THE GA OPTICS ® FILTER WITH STANDARD SCREW THREAD CAN BE FIXED ON THE FRONT OF IMAGING LENS EASILY.

No	Diameter(mm)	CWL(nm)
670000	30.5	880
670001	37.5	880
670002	40.5	880
670003	30.5	634
670004	37.5	634
670005	40.5	634
670006	30.5	660
670007	37.5	660
670008	40.5	660

No	Diameter(mm)	CWL(nm)
670009	30.5	590
670010	37.5	590
670011	40.5	590
670012	30.5	524
670013	37.5	524
670014	40.5	524
670015	30.5	548
670016	37.5	548
670017	40.5	548

No	Diameter(mm)	CWL(nm)
670018	30.5	518
670019	37.5	518
670020	40.5	518
670021	30.5	470
670022	37.5	470
670023	40.5	470
670024	30.5	330
670025	37.5	330
670026	40.5	330

Number	Filter	CWL(nm)	FWHM(nm)	Transmission(%)	Blocking Range(nm)/ OD≥ 3.0	Blocking Range(nm)/ OD≥ 4.0
1	NUV	330	95	74	400-650	200-250
2	BLUE	470	85	95	200-400	550-1200
3	CYAN	518	95	89	600-1000	200-450
4	GREEN	524	92	94	200-450	600-1000
5	VISIBLE	548	290	95	200-370	750-1100
6	ORANGE	590	79	89	700-1050	200-500
7	PINK	634	70	93	200-550	700-1050
8	RED	660	66	94	200-550	720-1120
9	NIR	880	135	96	200-750	1000-1200

Short Wavelength Infrared Camera

Camera is an image acquisition equipment, which is composed of image sensor as the core component, as well as image signal processing circuit and power supply.

There are many kinds of cameras, which can be divided into ultraviolet camera, visible camera, near infrared camera and so on according to spectral characteristics; C-mount camera, F-mount camera, CS-mount camera and so on according to lens interface; USB camera, mesh camera, CamLink camera and so on according to data interface.

SWIR Camera

SWIR camera, also known as near-infrared camera, short-wave near-infrared camera, is an imaging element that can image near-infrared light.

This series SWIR camera has a working band of 900-1700nm and a resolution of 640X512 or 320X256. For different applications, it is equipped with different data interface series such as USB, Gigabit Network and Camera Link.

USB SWIR Camera

Compact size, light weight and low power consumption

USB interface, easy to operate

Supporting PAL/NTSC Analog Video Synchronization Output

Stock No.	680100	680101	680102
Detector		InGaAs Focal Plane Detector	
Working Wavelength	400 ~ 1700 nm	900 ~ 1700 nm	900 ~ 1700 nm
Resolution	640 x 512	640 x 512	320 x 256
Pixel Size	15 µm	15 µm	30 µm
Sensor Size	9.6mm x 7.68mm	9.6mm x 7.68mm	9.6mm x 7.68mm
Quantum Efficiency		> 70 % (1.0 ~ 1.6 um)	
Frame Rate		50 Hz/ 100 Hz	
Integral Type		snapshot	
Integration Time		50 µs ~ 20 ms	
On-Board Image Processing		Correction of bad points / Image smoothing / Image denoising / Controllable shutter compensation	
ADC		14 bit	
Analog Video Output		PAL / NTSC，SMA connector	
Digital Onput		USB	
Power Input		12V DC	
Power		2.5W（25℃）	
Size		65 mm x 58 mm x 64.5 mm	
Weight		300 g（Not includ lens）	
Lens Mount		C-Mount	
Installation Thread		1/4-20	
Ambient Temperature		-20 ℃ ~ +50 ℃	
Storage Temperature		-40 ℃ ~ +80 ℃	

Gigabit Network SWIR camera

High frame rate and high sensitivity
On-board Image Processing Function
Supporting PAL Analog Video Synchronization Output
Gigabit Network interface, suitable for long-distance control

Stock No.	680103	680104	680105
Detector	InGaAs Focal Plane Detector		
Working Wavelength	400 ~ 1700 nm	900 ~ 1700 nm	900 ~ 1700 nm
Resolution	640 x 512	640 x 512	320 x 256
Pixel Size	15 µm	15 µm	30µm
Sensor Size	9.6mm x 7.68mm	9.6mm x 7.68mm	9.6mm x 7.68mm
Quantum Efficiency	> 70 % (1.0 ~ 1.6 um)		
Frame Rate	50 Hz/ 100 Hz		
Integral Type	snapshot		
Integration Time	50 µs ~ 20 ms, 100Hz Max Time of exposure 9ms		
On-Board Image Processing	Correction of bad points / Image smoothing / Image denoising / Controllable shutter compensation		
ADC	14 bit		
Analog Video Output	PAL		
Digital Onput	1000M GiGE		
Power Input	DC 8-12V		
Power	< 4W （no TEC）		
Size	67 mm x 70 mm x 60 mm		
Weight	175 g（Not includ lens）		
Lens Mount	C-Mount		
Ambient Temperature	-20 ℃ ~ +50 ℃		
Storage Temperature	-40 ℃ ~ + 70 ℃		

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Camera Link SWIR Camera

Trigger synchronization function
100 Hz frame rate at full resolution
Supporting PAL Analog Video Synchronization Output Equipment
Camera Link interface, good communication stability

Stock No.	680106	680107
Detector	InGaAs Focal Plane Detector	
Working Wavelength	400 ~ 1700 nm	900 ~ 1700 nm
Resolution	640 x 512	640 x 512
Pixel Size	15 µm	15 µm
Sensor Size	9.6mm x 7.68mm	9.6mm x 7.68mm
Quantum Efficiency	> 70 % (1.0 ~ 1.6 um)	
Frame Rate	50 Hz/ 100 Hz	
Integral Type	snapshot	
Integration Time	50 µs ~ 20 ms, 100Hz Max Time of exposure 9ms	
On-Board Image Processing	Correction of bad points / Image smoothing / Image denoising / Controllable shutter compensation	
ADC	14 bit	
Analog Video Output	PAL	
Digital output	SDR 26 pin connector，Base Camera Link	
External synchronization	Camelink CC1	
Control serial port	Camelink SerTC，SerTFG，115200 bps	
External synchronization delay	< 1us	
Power input	DC 8-24V	
power	< 3W （no TEC）	
Size	67 mm x 70 mm x 60 mm	
Weight	175 g（Not includ lens）	
Lens Mount	C-Mount	
Ambient Temperature	-20 ℃ ~ +50 ℃	
Storage Temperature	-40 ℃ ~ + 70 ℃	

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