DZO
东正光学

INDUSTRIAL CAMERA LENS PRODUCT MANUALS

工业镜头产品手册

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深圳市东正光学技术有限公司
SHENZHEN DONGZHENG OPTICAL TECHNOLOGY CO.,LTD.

2020.11

ABOUT DZO

关于东正光学

MORE THAN 1000 TYPES
OF LENSES

深圳市东正光学技术有限公司（以下简称“东正光学”），是一家专注于工业自动化行业各类光学镜头的研究、设计、生产及销售的专业型公司，是“中国机器视觉产业联盟（CMVU）”行业标准发起及起草单位之一。

公司主要由一群热爱光学事业、并具有多年光学研产销经验的骨干人员组成，致力于为客户提供品质优良的光学镜头产品。自2013年成立以来，应市场的需求，东正光学逐渐形成了具有特色的产品线，并与来自欧洲、美国和亚洲的集成与分销伙伴为国际客户提供服务。

东正光学在光学领域及机器视觉领域具有专业经验及领先技术，主要面向半导体生产装置及液晶制造设备，电子零件安装机器，工厂生产线监测及生产线成像处理等行业的客户生产，销售机器视觉系统相关的产品，元件及设备。现有产品包括：线扫描及大靶面工业镜头、远心镜头、微距镜头等常规镜头，以及斜像、VR、红外等特种应用镜头。此外，我们也为我们的客户提供定制镜头方案。

At Shenzhen Dongzheng Optical technology Co., LTD. (DZO for short), a group of experienced people are passionate about pushing the boundaries of optical technologies.

As a proven designer and supplier of optical lens in automation industry, we deliver both off-the-shelf and fully-customized optical solutions since year 2013. By cooperate with channel customers, DZO has successfully established the connections with Europe, the United States and Asia with its distinctive product lines.

As an experienced professional manufacturer in the field of Optics and machine vision, DZO keep focusing on optics in semiconductor production equipment and LCD manufacturing equipment, electronic parts installation machine, factory production line monitoring and production line imaging processing. Our product line ranges from the main products like line scan lens, telecentric lens, macro lens to some lens for special applications, such as the infrared lens and UV lens.

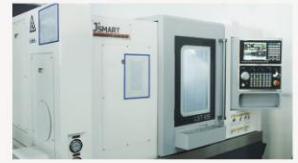
SATISFACTORY PERSONALIZED
PRODUCT DESIGN (ODM)
AND SOLUTIONS

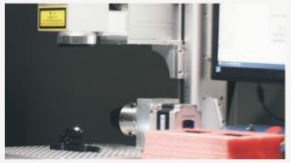
▌办公大楼

DZO OFFICE BUILDING
COMFORTABLE
OFFICE ENVIRONMENT

▌机加车间

MACHINING WORKSHOP
A COMPLETE SET OF EQUIPMENT
WITH LENS PRODUCTION





▌无尘车间

DUST FREE WORKSHOP
FINE MANUFACTURING
AND MANAGEMENT

目录 CONTENTS

光学倍率
OPTICAL MAGNIFICATION

放大倍数是视场和摄像机传感器尺寸之间的比率。

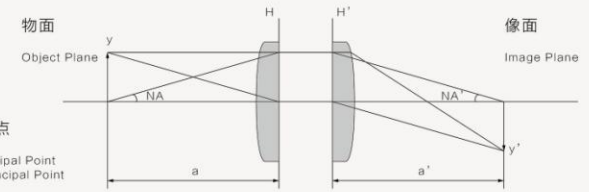
$$光学倍率 = \frac{传感器尺寸\ (H)\ 或\ (V)}{视场\ (H)\ 或\ (V)}$$

例如：
传感器尺寸 =6.8x4.8mm
视场 =12.8x9.6mm
光学倍率 =6.8/12.8=0.5x

Magnification is a ratio between FOV and Camera sensor size.

$$Opt.Mag = \frac{Sensor\ size(H)or(V)}{FOV(H)or(V)}$$

ex.
Sensor size=6.8x4.8mm
FOV=12.8x9.6mm
Opt.Mag=6.8/12.9=0.5x



相机靶面规格参考表
OPTICAL MAGNIFICATION

相机类型 Type of Cameras	相机靶面 Camera Format	CCD尺寸(mm) CCD Size(mm) 水平：H Horizontal:H	垂直：V Vertical:V	对角：D Diagonal:D	相机接口 Mount	备注 Remarks
面阵相机 Area Format Cameras	1/3"	4.8	3.6	6	C	
	1/2.7"	5.371	4.035	6.718	C	
	1/2"	6.4	4.8	8	C	
	1/1.8"	7.176	5.319	8.933	C	
	2/3"	8.8	6.6	11	C	
	1"	12.8	9.6	16	C	
	1.1"	14.08	10.56	17.6	C	
	4/3"	17.307	12.98	21.633	C/M42	
	1.75"	22.53	16.9	28.16	M42	
	APS-C	23.4	15.6	28.12	M42/F	
	全画幅F口 Full-frame F Mount	36	24	43.3	M58/F	

相机类型 Type of Cameras	相机靶面 Camera Format	像元大小(μm) Pixel Sizes(μm)	最大像面(mm) Max Image(mm)	相机接口 Mount	备注 Remarks
线扫描相机 Line Scan Cameras	2K	10	21.626	F	
	4K	5/10	43.25	M58/M52	JAI相机接口为M52 JAI Camera: M52 Mount
	8K	5/7/10	57.344	M72	
	7.3K	10	73	V88/M95	我司提供M95专用底板 M95 Plate Board Is Available
	12K	5	61.4	M72	
	15K	5.6	86.016	M95	
	16K	3.5/5	81.32	M72/M95	

LARGE FORMAT LINE SCAN LENS

大靶面线扫描镜头

针对大靶面面阵相机及线扫描相机的镜头应用开发

Lens for large-format area scan cameras and line scan cameras

四十余种镜头选择

More than 40 products for your option

推出支持高倍率及复消色差的8K、16K线扫镜头

Newly launched high mag. 8K and 16K APO line scan lenses

支持1.5亿像素面阵相机及16K线扫描相机

Lens for 150M Parea scan cameras and 16k line scan cameras

应市场需求，DZO 推出 40 多款可匹配(全画幅)面阵相机，8K、16K 线扫描相机的高品质镜头。产品超低畸变，分辨率高达 200LP/mm，倍率覆盖 0.04 倍到 6.2 倍。

相比欧美和日本的镜头，DZO 线扫产品具有极高的性价比。而持续提升产品的成像的一致性和品质的稳定性是 DZO 区别于其他厂商的最主要标识。

Based on the market demand, DZO has launched more than 40 types of high-quality lenses for (full frame) area scan cameras and the 8K, 16K line scan cameras. They are with: ultra-low distortion, up to 200lp/mm resolution, ranges from 0.04x to 6.2x magnification.

Compared with the European and Japanese lenses, DZO line scan products are with higher cost performance. The continuous improvement of imaging consistency and quality stability of products is the key distinguish between DZO and other optical manufacturers.

16K APO LINE SCAN LENS

16K APO线扫描镜头

参数选型 SPECIFICATION

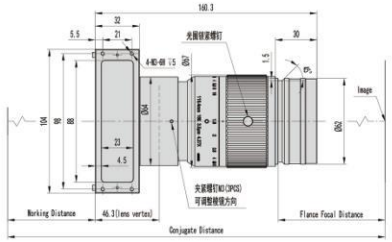
型号名	中心倍率	焦距 (mm)	倍率范围	传感器尺寸 (mm)	光圈 F#	支持接口
Model	Central Magnification	Focal Length	Magnification Range	Senser Size	Iris	Mount
PLS16437APO-C	4.37	116.40	3.80-4.80	⌀88	1.56-16	M58、M72、M90、M95
PLS16500APO-C	5.00	116.80	4.5-5.6	⌀88	1.57-16	M58、M72、M90、M95
PLS16620APO-C	6.20	117.00	5.6-6.9	⌀88	1.57-16	M58、M72、M90、M95
PLS16437APO	4.37	116.66	3.80-4.80	⌀88	1.6-16	M72、M90、M95
PLS16620APO	6.20	116.66	5.60-6.90	⌀88	1.6-16	M72、M90、M95
LS16020APO	0.20	115.00	0.15-0.25	⌀62	3.8-16	M58、M72、M90
LS16026APO	0.26	114.00	0.23-0.29	⌀64	3.9-16	M58、M72、M90
LS16030APO	0.30	115.00	0.25-0.35	⌀62	3.8-16	M58、M72、M90
LS16041APO	0.41	115.00	0.35-0.45	⌀62	3.8-16	M58、M72、M90
LS16050APO	0.50	115.00	0.45-0.54	⌀70	3.8-16	M58、M72、M90
LS16063APO	0.63	115.00	0.55-0.67	⌀62	3.8-16	M58、M72、M90

16K APO线扫描镜头

16K APO LINE SCAN LENS

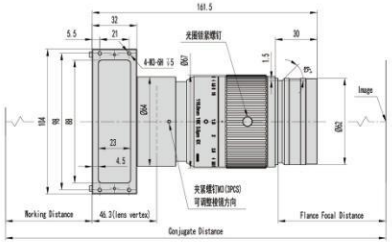
- 覆盖0.2-6.2倍
  Magnification ranges from 0.2x~6.2x
- 最大支持φ88mm像面
  Available for φ88mm image circle
- 全面支持复消色差APO
  APO design
- 支持16K3.5μ、16K5μ线扫描相机
  Lens for 16K 3.5μ,16K 5μ line scan cameras

型号名	中心倍率	焦距 (mm)	倍率范围	传感器尺寸 (mm)	光圈 F#	支持接口
Model	Central Magnification	Focal Length	Magnification Range	Senser Size	Iris	Mount
LS16070APO	0.70	115.00	0.66-0.76	φ80	3.8-16	M58、M72、M90
LS16078APO	0.78	115.00	0.75-0.82	φ62	3.8-16	M58、M72、M90
LS16083APO	0.83	115.00	0.81-0.92	φ62	3.8-16	M58、M72、M90
LS16100APO	1.00	115.00	0.93-1.20	φ62	3.8-16	M58、M72、M90
LS16130APO	1.30	115.00	1.20-1.45	φ62	3.8-16	M58、M72、M90
LS16150APO	1.50	115.00	1.40-1.65	φ62	3.8-16	M58、M72、M90
LS16170APO	1.70	115.00	1.64-1.92	φ62	3.8-16	M58、M72、M90
LS16200APO	2.00	115.00	1.95-2.30	φ82	3.8-16	M58、M72、M90
LS16350APO	3.50	115.00	3.00-4.00	φ82	3.8-16	M58、M72、M90
LS16500APO	5.00	115.00	4.50-5.50	φ82	3.8-16	M58、M72、M90



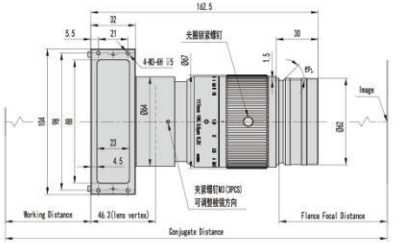
PLS16437APO-C

倍率	Mag.	3.8	4.37	4.8
工作距离	WD	51.33mm	47.30mm	44.95mm
共轭距离	Conjugate Distance	636.81mm	699mm	746.78mm
法兰焦距	Flange Focal Distance	455.20mm	521.75mm	571.55mm
畸变	Distortion	<0.02%	<0.02%	<0.02%
焦距	EFL	116.4mm		
光圈	Iris	F1.56-F16		
传感器尺寸	Senser Size	φ88mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-62		



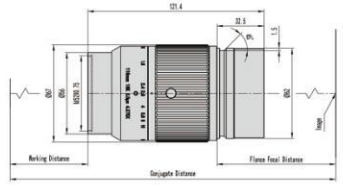
PLS16500APO-C

倍率	Mag.	4.5	5.0	5.6
工作距离	WD	46.60mm	44mm	41.50mm
共轭距离	Conjugate Distance	717.29mm	772mm	840.67mm
法兰焦距	Flange Focal Distance	539.21mm	597.28mm	667.69mm
畸变	Distortion	<0.02%	<0.02%	<0.02%
焦距	EFL	116.8mm		
光圈	Iris	F1.57-F16		
传感器尺寸	Senser Size	φ88mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-62		



PLS16620APO-C

倍率	Mag.	5.6	6.2	6.9
工作距离	WD	41.22mm	39.20mm	37.29mm
共轭距离	Conjugate Distance	844.30mm	912mm	992.46mm
法兰焦距	Flange Focal Distance	670.50mm	740.46mm	822.60mm
畸变	Distortion	<0.02%	<0.02%	<0.02%
焦距	EFL	117mm		
光圈	Iris	F1.57-F16		
传感器尺寸	Senser Size	φ88mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-62		

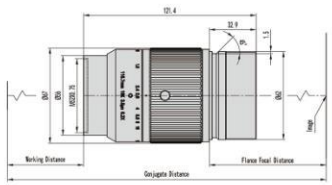


PLS16437APO

倍率	Mag.	3.8	4.37	4.8
工作距离	WD	89mm	85mm	83mm
共轭距离	Conjugate Distance	637mm	699mm	746mm
法兰焦距	Flange Focal Distance	459mm	525mm	575mm
畸变	Distortion	<0.05%	<0.05%	<0.05%
焦距	EFL	116.66mm		
光圈	Iris	F1.56-F16		
传感器尺寸	Senser Size	φ88mm		
像素尺寸	Pixel Size	3.5/5μm		
接口	Mount	V-62		

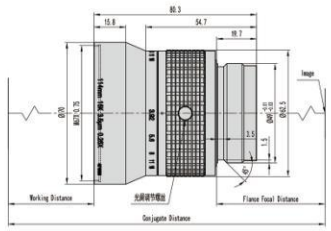
16K APO线扫描镜头

16K APO LINE SCAN LENS



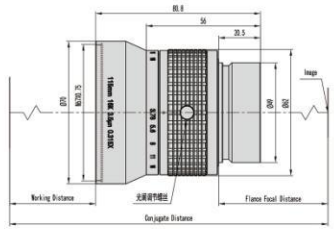
PLS16620APO

倍率	Mag.	5.6	6.2	6.9
工作距离	WD	81mm	79mm	77mm
共轭距离	Conjugate Distance	842mm	910mm	990mm
法兰焦距	Flange Focal Distance	672mm	742mm	824mm
畸变	Distortion	<0.014%	<0.014%	<0.014%
焦距	EFL	116.66mm		
光圈	Iris	F1.6-F16		
传感器尺寸	Senser Size	ϕ88mm		
像素尺寸	Pixel Size	3.5/5μm		
接口	Mount	V-62		



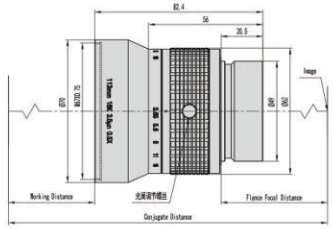
LS16026APO

倍率	Mag.	0.23	0.26	0.29
工作距离	WD	560mm	502mm	457mm
共轭距离	Conjugate Distance	726mm	672mm	630mm
法兰焦距	Flange Focal Distance	105mm	109mm	112mm
畸变	Distortion	<0.14%	<0.14%	<0.14%
焦距	EFL	114mm		
光圈	Iris	F3.92-F16		
传感器尺寸	Senser Size	ϕ64mm		
像素尺寸	Pixel Size	3.5μm		
接口	Mount	V-62		



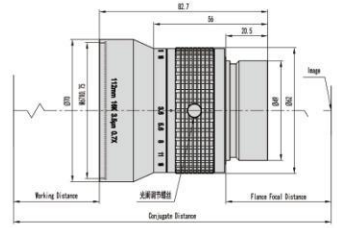
LS16030APO

倍率	Mag.	0.25	0.3	0.33
工作距离	WD	1557mm	495mm	446mm
共轭距离	Conjugate Distance	739mm	675mm	630mm
法兰焦距	Flange Focal Distance	124.6mm	129.6mm	134.3mm
畸变	Distortion	<0.03%	<0.03%	<0.03%
焦距	EFL	121mm		
光圈	Iris	F4-F16		
传感器尺寸	Senser Size	ϕ62.00mm		
像素尺寸	Pixel Size	3.5μm		
接口	Mount	V-62		



LS16050APO

倍率	Mag.	0.45	0.5	0.55
工作距离	WD	339mm	313mm	292mm
共轭距离	Conjugate Distance	530mm	510mm	494mm
法兰焦距	Flange Focal Distance	142.35mm	148.35mm	154.16mm
畸变	Distortion	<0.06%	<0.06%	<0.06%
焦距	EFL	118mm		
光圈	Iris	F4-F16		
传感器尺寸	Senser Size	ϕ70.00mm		
像素尺寸	Pixel Size	3.5μm		
接口	Mount	V-62		



LS16070APO

倍率	Mag.	0.65	0.7	0.75
工作距离	WD	135mm	129mm	123mm
共轭距离	Conjugate Distance	494mm	510mm	533mm
法兰焦距	Flange Focal Distance	310mm	331mm	361mm
畸变	Distortion	<0.03%	<0.03%	<0.03%
焦距	EFL	118mm		
光圈	Iris	F3.8-F16		
传感器尺寸	Senser Size	ϕ80.00mm		
像素尺寸	Pixel Size	3.5μm		
接口	Mount	V-62		

什么是APO

WHAT APO MEANS

色差是一种描述不同波长成像差异的像差，在可见光范围内，用F光(紫光)和C光(红光)的差异表示色差。

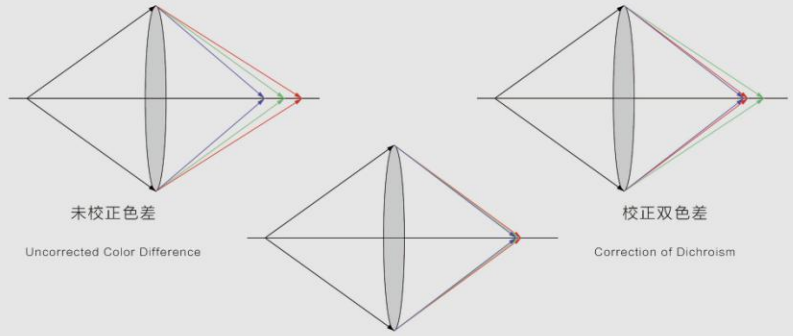
通过选取特定玻璃材料和曲率半径的透镜组可以平衡掉色差，使得F光和C光的色差为0，此时剩余的D光色差称为二级光谱。进一步消除二级光谱后就称为复消色差镜头，即APO镜头，要求不同色光引起的焦距变化必须小于焦距的千分之二。

APO镜头具有更高的分辨率，更低的颜色敏感度，对比度也大幅度增强。

Chromatic aberration is a kind of aberration that describes the imaging difference of different wavelengths. In the visible light range, the chromatic aberration is represented by the difference between F (violet light) and C (red light).

By selecting a specific optical glass and a group of lens with specific radius, the chromatic aberration will be balanced, then the chromatic aberration of F light and C light to be 0. The remaining chromatic aberration of D light is named the Secondary Spectrum. Lens with further eliminating the Secondary Spectrum is called APO lens. The varies of focal length that caused by different sort of light must be less than0.2% of the focal length.

Generally speaking, APO lens is with higher resolution, higher contrast. and less color sensitivity.



8K APO LINE SCAN LENS

8K APO线扫描镜头

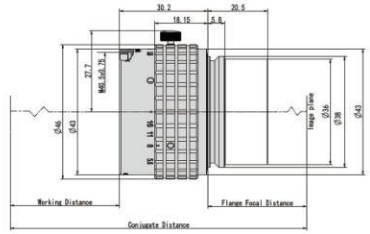
- 支持φ62mm像面
  Available for φ62mm image circle
- 全面支持复消色差APO
  APO design
- 覆盖0.1-0.3倍
  Magnification ranges from 0.1x-0.3x
- 支持8K5μ、8K7μ线扫描相机
  Lens for 8K5μ, 8K7μ line scan cameras

参数选型 SPECIFICATION

型号名	中心倍率	焦距 (mm)	倍率范围	传感器尺寸 (mm)	光圈 F#	支持接口
Model	Central Magnification	Focal Length	Magnification Range	Senser Size	Iris	Mount
LS60017APO	0.17	60	0.04-0.33	φ44	2.8-11	M42、M58、M72
LS80014APO	0.14	78	0.13-0.16	φ64	5.6-22	M58、M72、M90
LS80021APO	0.21	78	0.18-0.24	φ64	5.6-22	M58、M72、M90
LS80714APO	7.10	78	6.25-7.69	φ82	5.6-22	M58、M72、M90
LS80476APO	4.70	78	4.17-5.55	φ82	5.6-22	M58、M72、M90

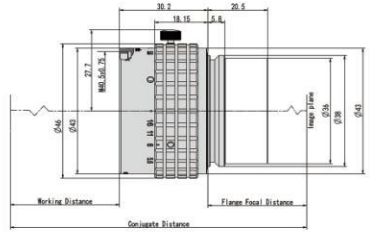
8K APO线扫描镜头

8K APO LINE SCAN LENS



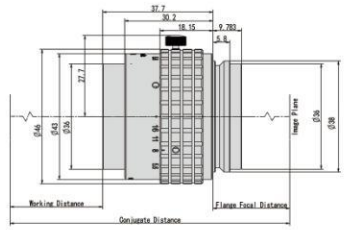
LS80014APO

倍率	Mag.	0.13	0.14	0.16
工作距离	WD	659mm	594mm	545mm
共轭距离	Conjugate Distance	762mm	698mm	650mm
法兰焦距	Flange Focal Distance	93.56mm	101.5mm	109.44mm
畸变	Distortion	<0.02%	<0.01%	<0.05%
焦距	EFL	78mm		
光圈	Iris	F5.6-F16		
传感器尺寸	Senser Size	φ64mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-38		



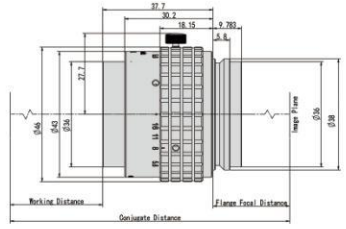
LS80021APO

倍率	Mag.	0.18	0.21	0.24
工作距离	WD	493mm	434mm	391mm
共轭距离	Conjugate Distance	600mm	543mm	502mm
法兰焦距	Flange Focal Distance	93.56mm	101.5mm	109.44mm
畸变	Distortion	<0.04%	<0.08%	<0.12%
焦距	EFL	78mm		
光圈	Iris	F5.6-F16		
传感器尺寸	Senser Size	φ64mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-38		



LS80714APO

倍率	Mag.	6.25	7.14	7.69
工作距离	WD	57.8mm	56.2mm	55.4mm
共轭距离	Conjugate Distance	758mm	716mm	758mm
法兰焦距	Flange Focal Distance	554mm	623mm	665mm
畸变	Distortion	<0.02%	<0.01%	<0.05%
焦距	EFL	78mm		
光圈	Iris	F5.6-F16		
传感器尺寸	Senser Size	φ82mm		
像素尺寸	Pixel Size	10μm		
接口	Mount	V-38		



LS80476APO

倍率	Mag.	4.17	4.70	5.55
工作距离	WD	63.7mm	61.7mm	59.1mm
共轭距离	Conjugate Distance	495mm	534mm	597mm
法兰焦距	Flange Focal Distance	391mm	432mm	498mm
畸变	Distortion	<0.02%	<0.01%	<0.05%
焦距	EFL	78mm		
光圈	Iris	F5.6-F16		
传感器尺寸	Senser Size	φ82mm		
像素尺寸	Pixel Size	10μm		
接口	Mount	V-38		

8K LINE SCAN LENS

8K线扫描镜头

支持 ϕ62mm、ϕ82mm 像面

Available for ϕ62mm and ϕ82mm image circle

覆盖0.04-0.65倍

Magnification ranges from 0.04x~0.65x

支持4K7μ、8K5μ、8K7μ线扫描相机

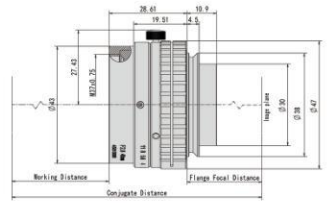
Lens for 4K7μ, 8K5μ and 8K7μ line scan cameras

参数选型 SPECIFICATION

型号名	中心倍率	焦距 (mm)	倍率范围	传感器尺寸 (mm)	光圈 F#	支持接口
Model	Central Magnification	Focal Length	Magnification Range	Senser Size	Iris	Mount
LS4028A	0.10	41	0.04-0.33	ϕ44	2.8-11	M42、M58、M72
LS4056A	0.17	41	0.04-0.33	ϕ60	5.6-22	M58、M72、M90
LS6040A	0.17	60	0.04-0.33	ϕ64	4.0-22	M42、M58、M72
LS6056A	0.17	61	0.04-0.33	ϕ82	5.6-22	M58、M72、M90
LS8056A	0.30	80	0.20-0.40	ϕ64	5.6-22	M58、M72、M90
LS9056A	0.20	90	0.15-0.30	ϕ86	5.6-22	M58、M72、M90
LS10056A	0.17	100	0.08-0.33	ϕ108	5.6-16	M72、M90、M95
LS12056A	0.50	120	0.37-0.65	ϕ86	5.6-16	M72、M90、M95

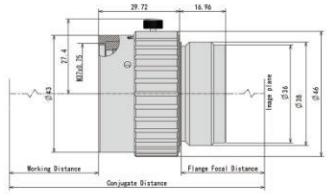
8K线扫描镜头

8K LINE SCAN LENS



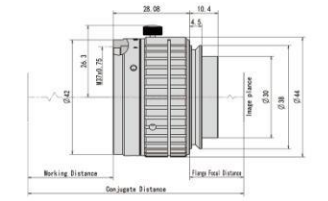
LS4028A

倍率	Mag.	0.04	0.10	0.33
工作距离	WD	1058mm	420mm	148mm
共轭距离	Conjugate Distance	1117mm	486mm	219mm
法兰焦距	Flange Focal Distance	38.91mm	41.49mm	50.76mm
畸变	Distortion	<0.5%	<0.2%	<0.5%
焦距	EFL	41.5mm		
光圈	Iris	F2.8-F11		
传感器尺寸	Senser Size	ϕ44.00mm		
像素尺寸	Pixel Size	7μm		
接口	Mount	V-38		



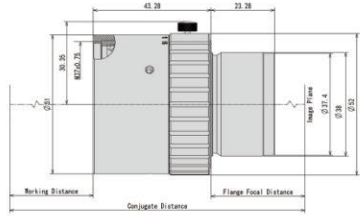
LS4056A

倍率	Mag.	0.04	0.17	0.33
工作距离	WD	1044mm	265mm	144mm
共轭距离	Conjugate Distance	1119mm	345mm	231mm
法兰焦距	Flange Focal Distance	45.15mm	50.37mm	56.96mm
畸变	Distortion	<0.64%	<0.55%	<0.47%
焦距	EFL	41mm		
光圈	Iris	F5.6-F22		
传感器尺寸	Senser Size	ϕ60.00mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	V-38		



LS6040A

倍率	Mag.	0.04	0.17	0.33
工作距离	WD	1557mm	404mm	219mm
共轭距离	Conjugate Distance	1642mm	496mm	321mm
法兰焦距	Flange Focal Distance	55.73mm	63.31mm	73.48mm
畸变	Distortion	<0.6%	<0.19%	<0.12%
焦距	EFL	60mm		
光圈	Iris	F4-F22		
传感器尺寸	Senser Size	ϕ64.00mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	V-38		

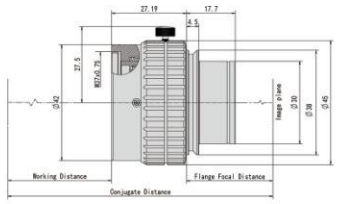


LS6056A

倍率	Mag.	0.04	0.17	0.33
工作距离	WD	1550mm	359mm	215mm
共轭距离	Conjugate Distance	1659mm	512mm	342mm
法兰焦距	Flange Focal Distance	65.91mm	73.60mm	83.51mm
畸变	Distortion	<0.64%	<0.55%	<0.37%
焦距	EFL	61mm		
光圈	Iris	F5.6-F22		
传感器尺寸	Senser Size	ϕ82.00mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	V-38		

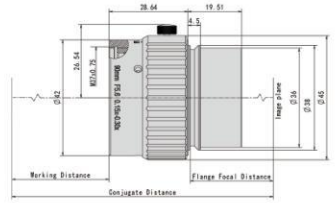
8K线扫描镜头

8K LINE SCAN LENS



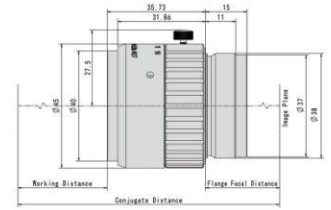
LS8056A

倍率	Mag.	0.20	0.30	0.40
工作距离	WD	455mm	322mm	255mm
共轭距离	Conjugate Distance	576mm	451mm	392mm
法兰焦距	Flange Focal Distance	93.56mm	101.5mm	109.44mm
畸变	Distortion	<0.03%	<0.01%	<0.03%
焦距	EFL	80mm		
光圈	Iris	F5.6-F22		
传感器尺寸	Senser Size	ϕ64.00mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-38		



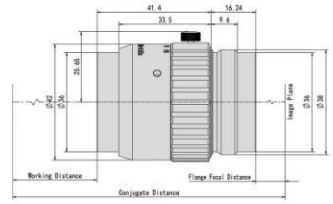
LS9056A

倍率	Mag.	0.15	0.20	0.30
工作距离	WD	669mm	516mm	367mm
共轭距离	Conjugate Distance	798mm	650mm	509mm
法兰焦距	Flange Focal Distance	100.38mm	104.98mm	113.94mm
畸变	Distortion	<0.07%	<0.03%	<0.06%
焦距	EFL	90.00mm		
光圈	Iris	F5.6-F22		
传感器尺寸	Senser Size	ϕ86.00mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-38		



LS10056A

倍率	Mag.	0.08	0.17	0.33
工作距离	WD	1320mm	681mm	382mm
共轭距离	Conjugate Distance	1453mm	822mm	540mm
法兰焦距	Flange Focal Distance	97.11mm	105.88mm	122.51mm
畸变	Distortion	<0.43%	<0.22%	<0.05%
焦距	EFL	100mm		
光圈	Iris	F5.6-F16		
传感器尺寸	Senser Size	ϕ108.00mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-38		



LS12056A

倍率	Mag.	0.37	0.50	0.65
工作距离	WD	416mm	335mm	279mm
共轭距离	Conjugate Distance	609mm	543mm	505mm
法兰焦距	Flange Focal Distance	153.51mm	168.55mm	186.88mm
畸变	Distortion	<0.09%	<0.06%	<0.03%
焦距	EFL	120mm		
光圈	Iris	F5.6-F16		
传感器尺寸	Senser Size	ϕ86.00mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	V-38		

FULL-FRAME F MOUNT LENS

全画幅F口镜头

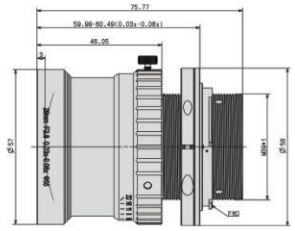
- F口全画幅小型化设计
  F mount full-frame compact design
- 螺纹口设计，法兰距可调节
  Thread mount , flange adjustable
- 像面覆盖ϕ43.2mm
  Available for ϕ43.2mm image circle
- 支持5.5μm像元，2900万全画幅面阵相机
  Lens for 5.5μ, 29MP full-frame area scan cameras

参数选型 SPECIFICATION

型号名	中心倍率	焦距 (mm)	倍率范围	传感器尺寸 (mm)	光圈 F#	支持接口
Model	Central Magnification	Focal Length	Magnification Range	Senser Size	Iris	Mount
LM2828A	0.05	28.79	0.03-0.08	ϕ44	2.8-22	M58、F
LM3528A	0.05	35.04	0.00-0.18	ϕ44	2.8-22	M58、F
LM5022A	0.10	51.41	0.05-0.17	ϕ44	2.2-16	M58、F
LM6040A	0.17	60.78	0.04-0.33	ϕ44	4.0-22	M58、F
LM8056AS	0.10	79.99	0.00-0.20	ϕ44	5.6-22	M58、F
LM8056AL	0.30	79.99	0.20-0.50	ϕ44	5.6-22	M58、F
LM10028A	0.10	100.15	0.00-0.17	ϕ44	2.8-22	M58、F

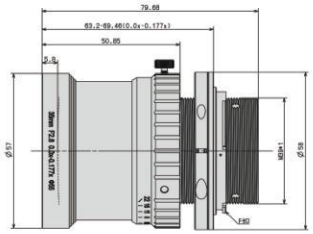
全画幅F口镜头

FULL-FRAME F MOUNT LENS



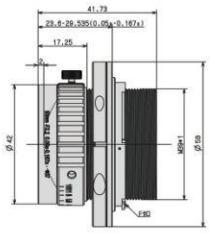
LM2828A

倍率	Mag.	0.03	0.05	0.08
工作距离	WD	967mm	565mm	350mm
共轭距离	Conjugate Distance	1074mm	672mm	458mm
法兰焦距	Flange Focal Distance	46.5mm	46.5mm	46.5mm
畸变	Distortion	<3.2%	<3.1%	<3.1%
焦距	EFL	28.79mm		
光圈	Iris	F2.8-F22		
传感器尺寸	Senser Size	ϕ44mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	F		



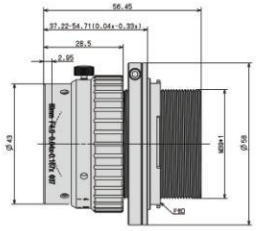
LM3528A

倍率	Mag.	0	0.05	0.177
工作距离	WD	∞	696mm	194mm
共轭距离	Conjugate Distance	∞	807mm	310mm
法兰焦距	Flange Focal Distance	46.5mm	46.5mm	46.5mm
畸变	Distortion	<1.23%	<0.95%	<0.63%
焦距	EFL	35.04mm		
光圈	Iris	F2.8-F22		
传感器尺寸	Senser Size	ϕ44mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	F		



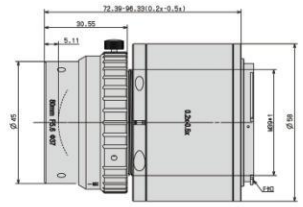
LM5022A

倍率	Mag.	0.05	0.1	0.167
工作距离	WD	1046mm	534mm	328mm
共轭距离	Conjugate Distance	1118mm	609mm	406mm
法兰焦距	Flange Focal Distance	46.5mm	46.5mm	46.5mm
畸变	Distortion	<0.61%	<0.04%	<0.67%
焦距	EFL	51.41mm		
光圈	Iris	F2.2-F16		
传感器尺寸	Senser Size	ϕ44mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	F		



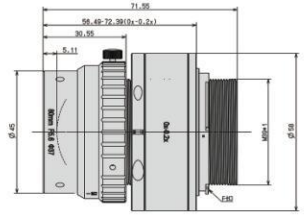
LM6040A

倍率	Mag.	0.04	0.167	0.33
工作距离	WD	1559mm	403mm	224mm
共轭距离	Conjugate Distance	1643mm	494mm	325mm
法兰焦距	Flange Focal Distance	46.5mm	46.5mm	46.5mm
畸变	Distortion	<0.32%	<0.01%	<0.17%
焦距	EFL	60.78mm		
光圈	Iris	F4-F22		
传感器尺寸	Senser Size	ϕ44mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	F		



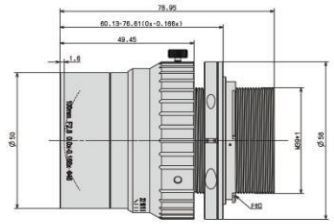
LM8056AL

倍率	Mag.	0.2	0.3	0.4
工作距离	WD	457mm	324mm	257mm
共轭距离	Conjugate Distance	576mm	451mm	392mm
法兰焦距	Flange Focal Distance	46.5mm	46.5mm	46.5mm
畸变	Distortion	<0.05%	<0.01%	<0.05%
焦距	EFL	79.99mm		
光圈	Iris	F5.6-F22		
传感器尺寸	Senser Size	ϕ44mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	F		



LM8056AS

倍率	Mag.	0	0.1	0.2
工作距离	WD	∞	857mm	457mm
共轭距离	Conjugate Distance	∞	968mm	576mm
法兰焦距	Flange Focal Distance	46.5mm	46.5mm	46.5mm
畸变	Distortion	<0.03%	<0.12%	<0.05%
焦距	EFL	79.99mm		
光圈	Iris	F5.6-F22		
传感器尺寸	Senser Size	ϕ44mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	F		



LM10028A

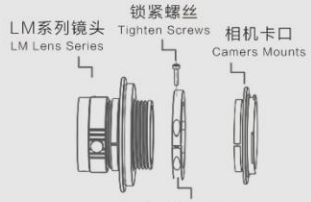
倍率	Mag.	0	0.1	0.166
工作距离	WD	∞	1073mm	674mm
共轭距离	Conjugate Distance	∞	1190mm	797mm
法兰焦距	Flange Focal Distance	46.5mm	46.5mm	46.5mm
畸变	Distortion	<0.5%	<0.3%	<0.5%
焦距	EFL	100.15mm		
光圈	Iris	F2.8-F22		
传感器尺寸	Senser Size	ϕ44mm		
像素尺寸	Pixel Size	5.5μm		
接口	Mount	F		

卡口设计

SOMETHING ABOUT THE MOUNT

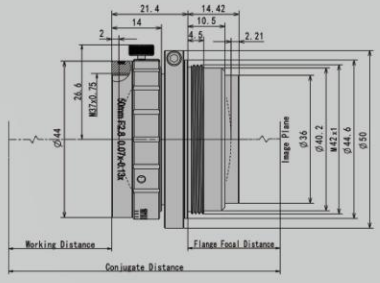
F口螺纹抱死结构设计具有较强的耐用性及稳定性，避免镜头晃动。卡口更换灵活，无需调焦环转接，可直接调节法兰距。

F mount thread-locking design has strong durability and stability and it is able to avoid lens shaking during use. The bayonet is changable, and the flange distance can be adjusted freetly without focusing ring transfer.



OPTICAL SORTING LENS
色选镜头

- 50mm焦距，F2.8光圈
  EFL 50mm & F2.8
- 严格校正色差
  Perfect chromatism correction
- 支持2K、4K线扫描相机
  Lens for 2K and 4K line scan cameras
- 针对色选行业开发
  Design for optical sorting industry
- M42螺纹口，可转F卡口和M58口
  M42 threaded mount, adjustable to F & M58



LM5028A				
倍率	Mag.	0.07	0.10	0.13
工作距离	WD	772mm	567mm	433mm
共轭距离	Conjugate Distance	836mm	633mm	500mm
法兰焦距	Flange Focal Distance	42.5mm	42.5mm	42.5mm
畸变	Distortion	<0.23%	<0.18%	<0.32%
焦距	EFL	50mm		
光圈	Iris	F2.8-F16		
传感器尺寸	Senser Size	ϕ30mm		
像素尺寸	Pixel Size	5μm		
接口	Mount	M42×1		
相对照度	RI	>95%		

FOCUSING RINGS, EXTENSION TUBE & ADAPTERS
调焦环&转接圈

品类 Items	型号名 Model	规格 Description	长度 (mm) Length	备注 Remarks
转接圈 Adapters	ADV495420	V49 to M54	20	例：V49 to M54 V49-镜头接口 M54-相机接口 E.g.V49 to M54 V49 - lens mount M54 - Camera mount
	ADV495430	V49 to M54	30	
	AD584210	M58 to M42	10	
	AD585810	M58 to M58	10	
	AD585825	M58 to M58	25	
	AD585850	M58 to M58	50	
	AD5858110	M58 to M58	110	
	AD587202	M58 to M72	2	
	AD587250	M58 to M72	50	
	AD727210	M72 to M72	10	
	AD58F19	M58 to F	19	
	AD729555	M72 to M95	55	
	AD959530	M95 to M95	30	
	ADMF5809	M58 to F	9	
	AD727235	M72 to M72	35	
	ADV38V3815	V38 to V38	15	
	AD587212	M58 to M72	12	
	AD727225	M72 to M72	25	
	AD727250	M72 to M72	50	
	AD729025	M72 to M90	25	
	AD729050	M72 to M90	50	
	AD909010	M90 to M90	10	M58x0.75 M72x0.75 M42x1 M95x1 M90x1
	AD909025	M90 to M90	25	
	AD729503	M72 to M95	3	
	AD959537	M95 to M95	37	
	ADV38V3806	V38 to V38	6	
	ADV387206	V38 to M72	6	
	ADV3842065	V38 to M42	6.5	
	ADV38V5202	V38 to M52	2	
	ADV566006	V56 to M60	6	
	ADV586006	V58 to M60	6	
调焦环 Focus Ring	UNIFOC29A	V38 to M58	24-34	
	UNIFOC23A	Unifoc V to V	17.4-29.4	
	UNIFOC34A	V38 to M58	24-45	
	UNIFOC34B	V38 to M72	24-45	

TELECENTRIC LENS

远心镜头

支持1/3~1.75英寸靶面相机

Lens for 1/3" ~ 1.75" cameras

行业领先的远心度和低畸变

The advantaged Telecentricity and untra-low distortion

1.75英寸系列全面升级，支持RGB共焦

The 1.75" telecentric lens series, upgrading for RGB confocal

光圈可调，景深可控

Adjustable iris, controllable depth of field

DZO 针对高端用户的需求优化设计了独特的远心镜头，用户在使用时可以得到更加高清和超低畸变的视觉处理图像。DZO 的远心镜头产品支持 500 万 -1200 万分辨率，产品涵盖 2/3 英寸到 1.75 英寸的所有相机的应用，实现检测精度 5um、8um、10um、12um、15um、18um 等多种规格，并且现货库存品可以快速满足不同客户的不同视觉检测需求。利用独有的技术，我们为客户提供“ 辅助 ”同轴补光照明方案，却不影响其他光源打光，方便客户更加准确快速地抓取 Mark 点。

Users get sharper image and lower distortion, while using DZO’s unique telecentric lens designed for high-end application. DZO telecentric products are applicable for 5MP to 12MP, 1" to 1.75" cameras. The accuracy are 5um, 8um, 10um, 12um, 15um and 18um. All telecentric products are in stock and ready for your urgent requirement. We also offer illuminance solutions to the usage of telecentric series without interference to other light source, which enable a more easier way for the users to catch the "Mark".

>>>

STANDARD TELECENTRIC LENS

标准远心镜头

- 支持倍率：2.0X、1.5X、1.0X、0.8X、0.5X

  Available Magnification: 2.0X, 1.5X, 1.0X, 0.8X, 0.5X

- 16mm外径，外形小巧，适应狭窄空间

  16mm diameter, compact design

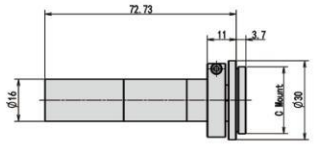
- 超低畸变<0.02%

  Ultra-low distortion <0.02%

参数选型 SPECIFICATION

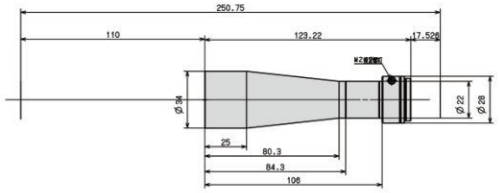
型号名	倍率	工作距 (mm)	像圈 (mm)	视野 (mm)	光圈 F#	像方分辨率 (μm)	支持接口
Model	Magnification	Working Distance	Image Circle	FOV	Iris	Image Resolution	Mount
TL08065C	0.80	65	⌀6.0	⌀7.5	11.0	6.3	C
TL030110S	0.30	110	⌀7.4	⌀24.6	8.0	4.2	C
TL200040A	2.00	40	⌀11.0	⌀5.5	6.5	5.0	C
TL050110C	0.50	110	⌀11.0	⌀22.0	9.6	5.5	C
TL080110B	0.80	110	⌀11.0	⌀13.8	11.0	5.0	C
TL100110B	1.00	110	⌀11.0	⌀11.0	11.0	5.0	C

标准远心镜头
STANDARD TELECENTRIC LENS



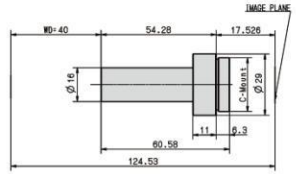
TL08065C

倍率	Mag.	0.8
工作距离	WD	65mm
畸变	Distortion	<0.05%
光圈	Iris	F11
像圈	Image Circle	ϕ6mm
视野	FOV	ϕ7.5mm
像方分辨率	Image Resolution	6.25μm
物方分辨率	Object Resolution	7.81μm
接口	Mount	C



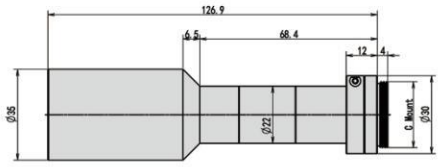
TL030110S

倍率	Mag.	0.301
工作距离	WD	110mm
畸变	Distortion	<0.04%
光圈	Iris	F8
像圈	Image Circle	ϕ7.39mm
视野	FOV	ϕ24.6mm
像方分辨率	Image Resolution	4.17μm
物方分辨率	Object Resolution	13.84μm
接口	Mount	C



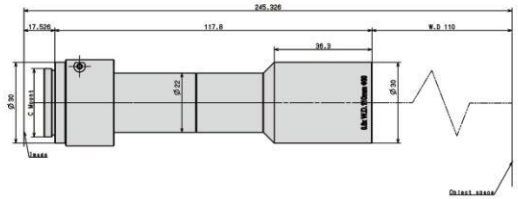
TL200040A

倍率	Mag.	2
工作距离	WD	40mm
畸变	Distortion	<0.03%
光圈	Iris	F6.5
像圈	Image Circle	ϕ11.00mm
视野	FOV	ϕ5.5mm
像方分辨率	Image Resolution	5.00μm
物方分辨率	Object Resolution	2.50μm
接口	Mount	C



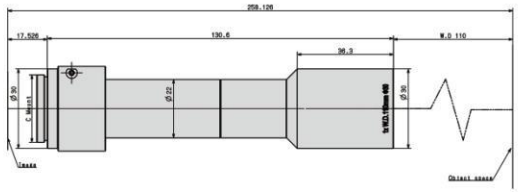
TL050110C

倍率	Mag.	0.5
工作距离	WD	110mm
畸变	Distortion	<0.05%
光圈	Iris	F9.6
像圈	Image Circle	ϕ11.00mm
视野	FOV	ϕ22mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	11.00μm
接口	Mount	C



TL080110B

倍率	Mag.	0.8
工作距离	WD	65mm
畸变	Distortion	<0.05%
光圈	Iris	F11
像圈	Image Circle	ϕ6mm
视野	FOV	ϕ7.5mm
像方分辨率	Image Resolution	6.25μm
物方分辨率	Object Resolution	7.81μm
接口	Mount	C



TL100110B

倍率	Mag.	0.301
工作距离	WD	110mm
畸变	Distortion	<0.04%
光圈	Iris	F11
像圈	Image Circle	ϕ7.39mm
视野	FOV	ϕ24.6mm
像方分辨率	Image Resolution	4.17μm
物方分辨率	Object Resolution	13.84μm
接口	Mount	C

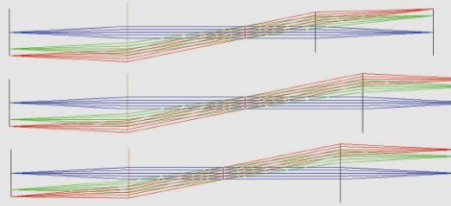
远心镜头原理
PRINCIPLE OF TELECENTRIC LENS

远心镜头是一种性能十分优异的镜头，它通常具有超高的中心边缘一致性、极低的畸变、接近衍射极限的光学分辨率。远心镜头一般分为三类：物方远心、像方远心、双远心。物方远心镜头的入瞳位于无限远，像方远心的出瞳位于无限远，而双远心的入瞳和出瞳都位于无限远。

这样设计的好处：高景深，消除视差，低畸变。由于视场角接近零度，在拍摄时不会出现工作距远近倍率不一致的情况，保证了景深范围内倍率恒定。优异的畸变表现也使得远心镜头能够在精密测量领域一枝独秀。

Telecentric lens is a kind of lens with excellent performance, it is with advantages like: ultra-high image consistency in center and the edge, super low distortion and the resolution is highly approaching to the Diffraction Limit. The telecentric lenses are generally divided into three categories: object telecentric, image telecentric and bi-telecentric lens. The entrance pupil of object telecentric lens is at infinity, the exit pupil of image telecentric lens is at infinity, while both the entrance pupil and exit pupil of bi-telecentric lens are at infinity.

The advantages is: Deep DOF, Untra low parallax and super low distortion. As the angle of field of view is almost zero, the magnification is highly consistent under different working distance, which ensures the constant magnification within the depth of field. telecentric lens plays an important role in precise measurement due to its excellent distortion performance.



物方远心
Object Telecentric

双远心
Double Telecentric

像方远心
Image Telecentric

1.1" TELECENTRIC LENS

1.1英寸远心镜头

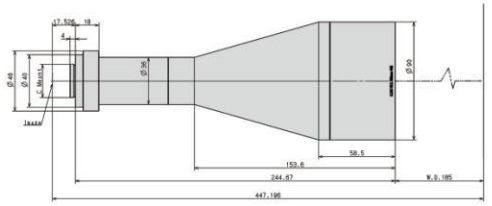
- 高分辨率 High resolution
- 超低畸变 Ultra-low distortion
- 光圈可调，景深可控 Adjustable iris and controllable DOF
- 重量轻于市场同类产品，适合运动拍摄检测，减轻马达负载 A lighter lens design for inspecting moving objects, effectively reducing the load of motor

参数选型 SPECIFICATION

型号名	倍率	工作距 (mm)	像圈 (mm)	视野 (mm)	光圈 F#	像方分辨率 (μm)	支持接口
Model	Magnification	Working Distance	Image Circle	FOV	Iris	Image Resolution	Mount
TL024185D	0.24	185	ϕ18.4	ϕ76.7	10.0	5.5	C
TL032185D	0.32	185	ϕ18.4	ϕ57.5	10.0	5.5	C
TL060185D	0.60	185	ϕ18.4	ϕ30.7	10.0	5.5	C
TC025150F	0.25	150	ϕ18.4	ϕ73.6	8-22	5.0	C
TC031150F	0.31	150	ϕ18.4	ϕ59.4	8-22	5.0	C
TC037150F	0.37	150	ϕ18.4	ϕ49.7	8-22	5.0	C

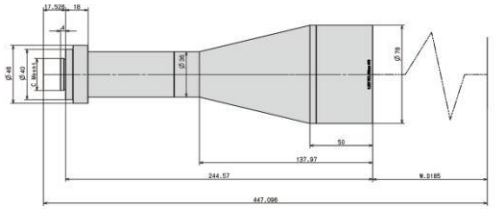
1.1英寸远心镜头

1.1" TELECENTRIC LENS



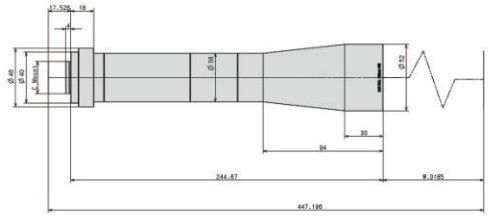
TL024185D

倍率	Mag.	0.24
工作距离	WD	185mm
畸变	Distortion	<0.03%
光圈	Iris	F10
像圈	Image Circle	ϕ18.4mm
视野	FOV	ϕ76.7mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	22.91μm
接口	Mount	C



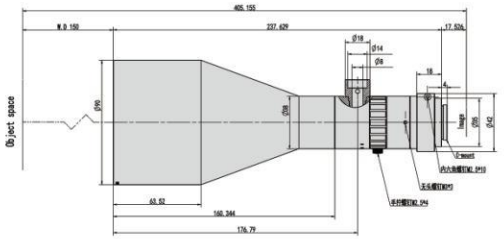
TL032185D

倍率	Mag.	0.32
工作距离	WD	185mm
畸变	Distortion	<0.04%
光圈	Iris	F10
像圈	Image Circle	ϕ18.4mm
视野	FOV	ϕ57.5mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	17.18μm
接口	Mount	C



TL060185D

倍率	Mag.	0.6
工作距离	WD	185mm
畸变	Distortion	<0.04%
光圈	Iris	F10
像圈	Image Circle	ϕ18.4mm
视野	FOV	ϕ30.7mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	9.17μm
接口	Mount	C

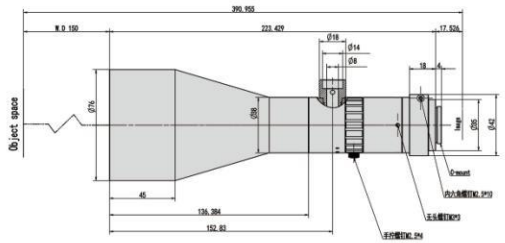


TC025150F

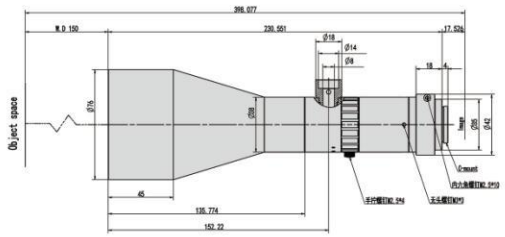
倍率	Mag.	0.25
工作距离	WD	150mm
畸变	Distortion	<0.03%
光圈	Iris	F8-F22
像圈	Image Circle	ϕ18.4mm
视野	FOV	ϕ73.6mm
像方分辨率	Image Resolution	5.00μm
物方分辨率	Object Resolution	20.00μm
接口	Mount	C

1.1英寸远心镜头

1.1" TELECENTRIC LENS



TC031150F		
倍率	Mag.	0.31
工作距离	WD	150mm
畸变	Distortion	<0.05%
光圈	Iris	F8-F22
像圈	Image Circle	ϕ18.4mm
视野	FOV	ϕ59.5mm
像方分辨率	Image Resolution	5.00μm
物方分辨率	Object Resolution	16.12μm
接口	Mount	C



TC037150F		
倍率	Mag.	0.37
工作距离	WD	150mm
畸变	Distortion	<0.05%
光圈	Iris	F8-F22
像圈	Image Circle	ϕ18.4mm
视野	FOV	ϕ49.7mm
像方分辨率	Image Resolution	5.00μm
物方分辨率	Object Resolution	13.51μm
接口	Mount	C

远心镜头应用

TELECENTRIC LENS APPLICATION

齿轮外观检测

需求：精确测量齿轮外观尺寸，测量齿宽、槽宽，要求精度达到20μm

解决方案：TC025150F+1.1”面阵相机+背光源

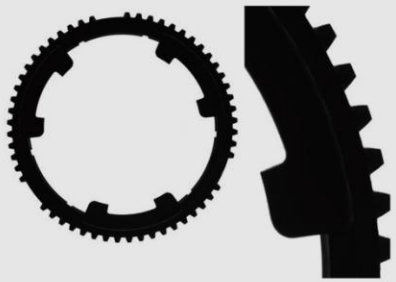
测试结果：测量精度达到20μm，畸变小于0.01%，搭配平行背光源，可以有效减小边缘过渡像素数量，图像的对比度更强，进行图像处理时可以更加流畅。

Gear appearance inspection

Descriptions: accurately measure the gear dimension, such as the width of tooth and width of groove, and 15 μm accuracy is required.

Solution: tTC025150F + 1.1 " area scan camera + backlight.

Feedbacks: the accuracy of system is up to 10μm, and the distortion of lens is less than 0.01%. Under the parallel backlight, the image contrast of system are enhanced effectively , which higher the inspection efficiency.



1.75" TELECENTRIC LENS

1.75英寸远心镜头

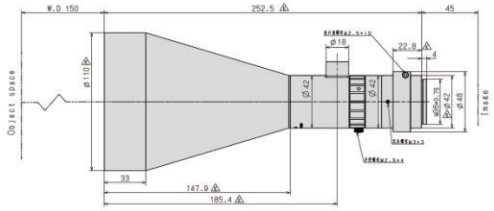
- 全面升级RGB共焦
  The version with RGB confocal
- 超低畸变<0.02%
  Ultra-low distortion <0.02%
- 完美的SPI、AOI光学解决方案
  Perfect optical resolution for SPI and AOI
- 支持1200万1.75英寸高分辨率工业相机
  Lens for 12MP 1.75" industrial cameras

参数选型 SPECIFICATION

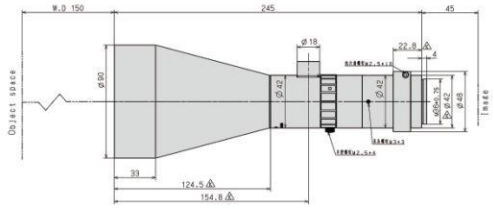
型号名	倍率	工作距 (mm)	像圈 (mm)	视野 (mm)	光圈 F#	像方分辨率 (μm)	支持接口
Model	Magnification	Working Distance	Image Circle	FOV	Iris	Image Resolution	Mount
TC037150K	0.37	150	ϕ30.0	ϕ81.1	8-22	5.5	M36
TC046150K	0.46	150	ϕ30.0	ϕ65.2	9-22	5.5	M36
TC055150K	0.55	150	ϕ30.0	ϕ54.6	9-22	5.5	M36
TC068150K	0.68	150	ϕ30.0	ϕ43.6	10-32	5.5	M36
TC079150K	0.79	150	ϕ30.0	ϕ37.9	11-32	5.5	M36
TC110150K	1.10	150	ϕ30.0	ϕ27.2	12-44	5.5	M36
TC031250W	0.31	250	ϕ30.0	ϕ96.8	8-22	5.5	M36
TC037250W	0.37	250	ϕ30.0	ϕ81.1	8-22	5.5	M36
TC046250W	0.46	250	ϕ30.0	ϕ65.2	9-22	5.5	M36
TC079250W	0.79	250	ϕ30.0	ϕ38.0	11-32	5.5	M36
TC150110W	1.50	110	ϕ30.0	ϕ20.0	8-22	5.5	M36
TC200110W	2.00	110	ϕ30.0	ϕ15.0	8-22	5.5	M36

1.75英寸远心镜头

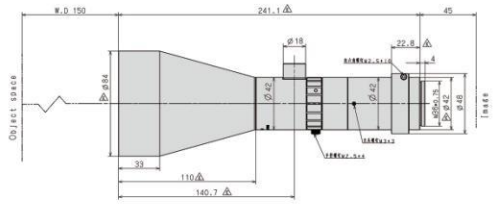
1.75" TELECENTRIC LENS



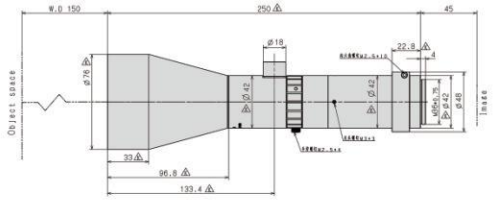
TC037150K		
倍率	Mag.	0.37
工作距离	WD	150mm
畸变	Distortion	<0.03%
光圈	Iris	F8-F22
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ81.1mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	14.86μm
接口	Mount	M36x0.75



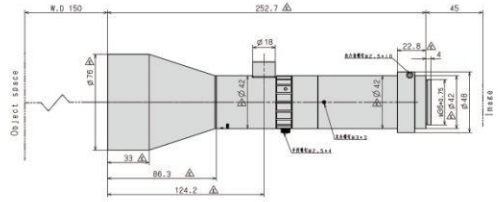
TC046150K		
倍率	Mag.	0.46
工作距离	WD	150mm
畸变	Distortion	<0.03%
光圈	Iris	F9-F22
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ65.2mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	11.96μm
接口	Mount	M36x0.75



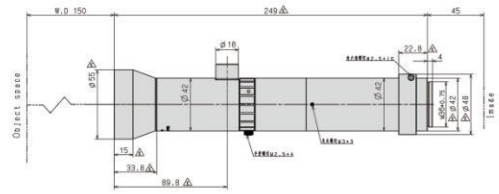
TC055150K		
倍率	Mag.	0.55
工作距离	WD	150mm
畸变	Distortion	<0.03%
光圈	Iris	F9-F22
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ54.6mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	10.00μm
接口	Mount	M36x0.75



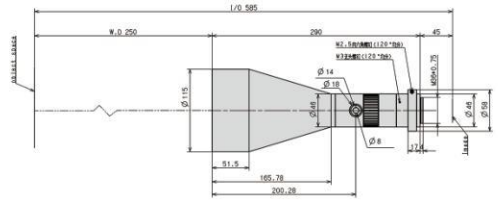
TC068150K		
倍率	Mag.	0.688
工作距离	WD	150mm
畸变	Distortion	<0.05%
光圈	Iris	F10-F32
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ45.4mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	8.00μm
接口	Mount	M36x0.75



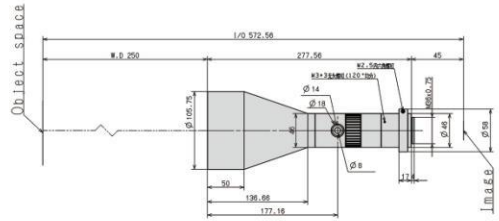
TC079150K		
倍率	Mag.	0.79
工作距离	WD	150mm
畸变	Distortion	<0.05%
光圈	Iris	F11-F32
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ39.5mm
像方分辨率	Image Resolution	5.53μm
物方分辨率	Object Resolution	7.00μm
接口	Mount	M36x0.75



TC110150K		
倍率	Mag.	1.1
工作距离	WD	150mm
畸变	Distortion	<0.05%
光圈	Iris	F12-F44
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ28.4mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	5.00μm
接口	Mount	M36x0.75



TC031250W		
倍率	Mag.	0.31
工作距离	WD	250mm
畸变	Distortion	<0.05%
光圈	Iris	F8-F22
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ96.5 mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	17.74μm
接口	Mount	M36x0.75



TC037250W		
倍率	Mag.	0.37
工作距离	WD	250mm
畸变	Distortion	<0.05%
光圈	Iris	F8-F22
像圈	Image Circle	ϕ30.0mm
视野	FOV	ϕ81.2mm
像方分辨率	Image Resolution	5.50μm
物方分辨率	Object Resolution	14.86μm
接口	Mount	M36x0.75

4/3" FA LENS

4/3英寸FA镜头

- 分辨率高达3.45μ
  Available for 3.45 μ sensor
- 最大支持4/3英寸靶面相机
  Lens for 4/3" camera
- 重量更轻，尺寸更小
  Much lighter, more compact
- 更全面的焦段覆盖
  Much full range

参数选型 SPECIFICATION

型号名	中心倍率	焦距 (mm)	倍率范围	传感器尺寸 (mm)	光圈 F#	支持接口
Model	Central Magnification	Focal Length	Magnification Range	Senser Size	Iris	Mount
HLF1628A	0.17	16.00	0.25-0.70	φ22.0	1.6-16	C
HLF2514A	0.20	25.00	0.10-0.40	φ22.0	1.6-16	C
HLF3514A	0.40	35.00	0.25-0.70	φ22.0	1.6-16	C
HLF5014A	0.59	50.00	0.46-0.82	φ22.0	1.6-16	C
HLF7514A	0.37	75.00	0.24-0.48	φ22.0	1.6-16	C

MACRO LENS

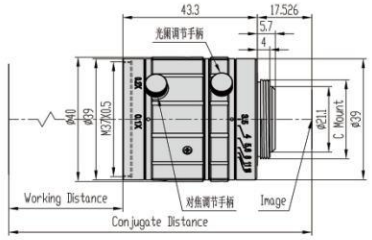
微距镜头

- 光学畸变低至0.05%，平面检测媲美远心
  Optical distortion 0.05%, rivals telecentric lens in plane detection
- 倍率覆盖0.1-0.8倍
  Magnification range 0.1x-0.8x
- 高精度检测，光圈可变
  Applied in high-precision detection, adjustable iris
- 支持1.1英寸3.45μm C口相机
  Lens for 1.1" 3.45μm C-mount camera

参数选型 SPECIFICATION

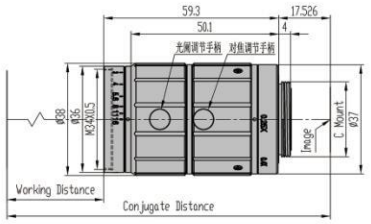
型号名	中心倍率	焦距 (mm)	倍率范围	传感器尺寸 (mm)	光圈 F#	支持接口
Model	Central Magnification	Focal Length	Magnification Range	Senser Size	Iris	Mount
MC1230B	0.15	12.43	0.12-0.20	φ19.0	3.0-16	C
MC1630B	0.17	16.25	0.13-0.30	φ19.0	3.0-16	C
MC2535B	0.20	26.29	0.10-0.40	φ19.0	3.5-16	C
MC3530B	0.40	34.65	0.25-0.70	φ19.0	3.0-16	C
MC5028B	0.59	49.97	0.46-0.82	φ19.0	2.8-16	C
MC7528B	0.37	76.78	0.24-0.48	φ19.0	2.8-16	C

微距镜头
MACRO LENS



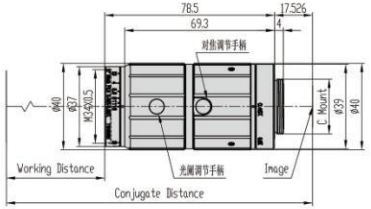
MC2535B

倍率	Mag.	0.10	0.20	0.40
工作距离	WD	251mm	122mm	62mm
畸变	Distortion	<0.81%	<0.05%	<0.74%
焦距	EFL	26.29mm	26.29mm	26.29mm
光圈	Iris	F3.5-F16		
像圈	Image Circle	ϕ19.0mm		
像方分辨率	Image Resolution	3.45μm		
接口	Mount	C		



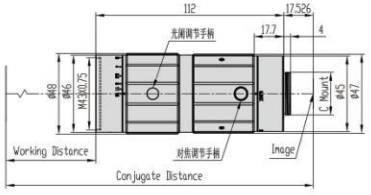
MC3530B

倍率	Mag.	0.25	0.40	0.70
工作距离	WD	130mm	83mm	56mm
畸变	Distortion	<0.4%	<0.03%	<0.34%
焦距	EFL	34.65mm	34.65mm	34.65mm
光圈	Iris	F3.0-F16		
像圈	Image Circle	ϕ19.0mm		
像方分辨率	Image Resolution	3.45μm		
接口	Mount	C		



MC5028B

倍率	Mag.	0.46	0.59	0.82
工作距离	WD	127mm	110mm	97mm
畸变	Distortion	<0.17%	<0.04%	<0.08%
焦距	EFL	49.97mm	49.97mm	49.97mm
光圈	Iris	F2.8-F16		
像圈	Image Circle	ϕ19.0mm		
像方分辨率	Image Resolution	3.45μm		
接口	Mount	C		



MC7528B

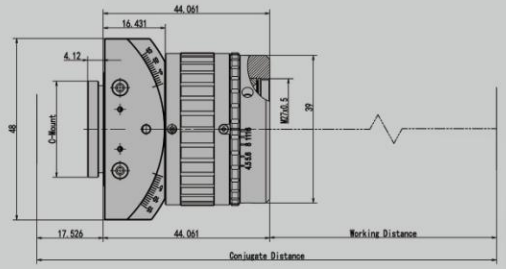
倍率	Mag.	0.24	0.37	0.48
工作距离	WD	344mm	242mm	203mm
畸变	Distortion	<0.04%	<0.03%	<0.06%
焦距	EFL	76.78mm	76.78mm	76.78mm
光圈	Iris	F2.8-F16		
像圈	Image Circle	ϕ19.0mm		
像方分辨率	Image Resolution	3.45μm		
接口	Mount	C		

3D LENS
WITH SCHEIMPFLUG ACCESSORY
3D斜像镜头

- 应用于3D投影检测
  Application in Structured light 3D imaging and Laser triangulation
- 支持1英寸面阵相机
  Available for 1" area scan camera
- 光轴与像面可调±15°
  ±15° adjustable of the schimpflug accessory

参数选型 SPECIFICATION

型号名	焦距 (mm)	倍率 (x)	光圈 F#	工作距离 (mm)	共轭距离 (mm)	支持卡口	支持像面	倾斜角度
Model	Flange Distance	Mag.	Iris	WD	Conjecture Distance	Mount	Supporting Image Resolution	Tilting Angle
SM3545A	35	0.25	4.5	180.5	245.7	C	1"	±15°
SM1636A	16	1-1.14	3.6	14.2-16.2	85.11-85.49	C	1"	±15°
SM2535A	25	0.73-1.01	3.5	26-36	98.37-101.13	C	1"	±15°
SM3530A	35	0.73-1.07	3.0	42-57	128.53-131.96	C	1"	±15°
SM5028A	50	0.78-1.15	2.8	80.8-101	192.06-194.13	C	1"	±15°
SM7528A	75	0.49-0.69	2.8	159-216	299.39-340.63	C	1"	±15°



VR LENS
VR镜头

畸变低至0.3%

Distortion 0.3%

视场角190°、220°

DFOV 190° and 220° in respectively

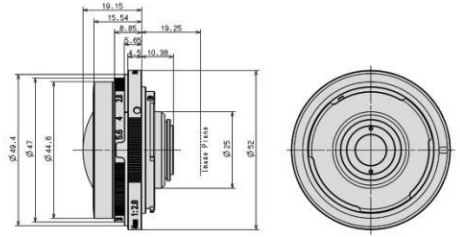
支持M4/3接口

M4/3 mount lens

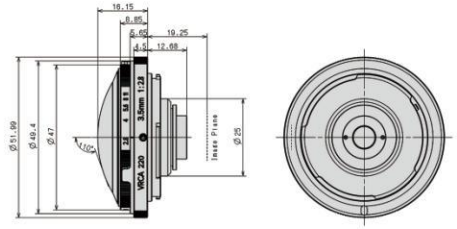
参数选型 SPECIFICATION

型号名	视场角	焦距 (mm)	光圈 F#	畸变	像圈 (mm)	支持接口
Model	FOV	Focal Length	Iris	F-Theta Distortion	Image Circle	Mount
VR190	190°	4.37	2.8	<0.3%	ϕ14.2	M4/3
VR220	220°	3.54	2.8	<26%	ϕ10	M4/3

VR镜头
VR LENS



VR190		
畸变	F-Theta Distortion	<0.3%
焦距	EFL	4.37mm
光圈	Iris	2.8
像圈	Image Circle	ϕ14.2mm
接口	Mount	M4/3



VR220		
畸变	F-Theta Distortion	<26%
焦距	EFL	3.54mm
光圈	Iris	2.8
像圈	Image Circle	ϕ10mm
接口	Mount	M4/3

产品命名规则

HOW WE NAMING DZO PRODUCTS

16K APO线扫描镜头 16K APO LINE SCAN LENS

示例 e.g.	LS	16	050	APO
LS16050APO	线扫描镜头 Line Scan Lens	支持16K support 16K	中心倍率0.5 Central Magnification 0.5	支持复消色差 Apochromatic

8K APO线扫描镜头 8K APO LINE SCAN LENS

示例 e.g.	LS	80	014	APO
LS80014APO	线扫描镜头 Line Scan Lens	80mm焦距 Focal Length 80mm	中心倍率0.14 Central Magnification 0.14	支持复消色差 Apochromatic

8K线扫描镜头 8K LINE SCAN LENS

示例 e.g.	LS	80	56	A
LS8056A	线扫描镜头 Line Scan Lens	80mm焦距 Focal Length 80mm	最大光圈F5.6 Maximum Iris Aperture F5.6	系列号 Serial Number

全画幅F口镜头 FULL-FRAME F MOUNT LENS

示例 e.g.	LM	35	28	A
LM3528A	全画幅F口镜头 Full-Frame F Mount Lens	35mm焦距 Focal Length 35mm	最大光圈F2.8 Maximum Iris Aperture F2.8	系列号 Serial Number

远心镜头 TELECENTRIC LENS

示例 e.g.	TL/TC	055	150	A
TL055150A	非同轴/带同轴光接口 Non-Coaxial Illumination/ Coaxial Illumination	放大率0.55倍 Magnification 0.55 Times	工作距150mm WD 150mm	系列号 Serial Number

4/3英寸FA镜头 4/3-INCH FA LENS

示例 e.g.	HLF	16	28	A
HLF1628A	FA镜头 FA LENS	16mm焦距 Focal Length 16mm	最大光圈F2.8 Maximum Iris Aperture F2.8	系列号 Serial Number

微距镜头 MACRO LENS

示例 e.g.	MC	75	28	B
MC7528B	微距镜头 Macro Lens	75mm焦距 Focal Length 75mm	最大光圈F2.8 Maximum Iris Aperture F2.8	系列号 Serial Number

定制案例

INTRODUCTION ABOUT CUSTOMIZATION

大米颜色检测

RICE OPTICAL SORTING

需求：检测连续出料的大米中的杂质，利用良品与杂质在颜色上明显的区别分离出大米，要求达到较高的检出率和工作效率

解决方案：采用色选镜头 LM5028A+4K 线扫相机 + 线光源

测试结果：检出率符合要求，进料速度加快，效率大幅提高，边缘中心亮度和分辨率高度一致，色彩表现锐利

Descriptions: Detecting the impurities in the rice moving in high-speed, distinguish the rice from impurities by the color difference. In this case, efficiency and accuracy is necessary.

Solution: LM5028A + 4K line scan camera + Linear light source.

Feedbacks: The system complies to customer requirement, both inspection speed and efficiency is greatly improved, lens image performance highly consistent from edge to center , and with high contrast in color.

手机屏幕检测

OLED DEFECT DETECTION

需求：检测自发光屏幕色彩一致性，是否存在偏色、坏点等缺陷

解决方案：TC037150K+1.75" 面阵相机

测试结果：检测精度达到要求且高频对比度较高，对颜色不敏感，色彩还原度极高，图像边缘中心亮度一致

Descriptions: Defect detection of the OLED screen(Mainly checking the color consistency, and avoid color deviation and dead pixels.

Solution: TC037150K + 1.75 " aera scan camera.

Feedbacks: The system complies to customer requirement and with high contrast in high-frequency. This system is non-color-sensitive and with high color restoration. Lens image performance highly consistent from edge to center.