

# HERCULUX Chengdu HercuLux Photoelectric 恒坤光电 Technology Co.,Ltd

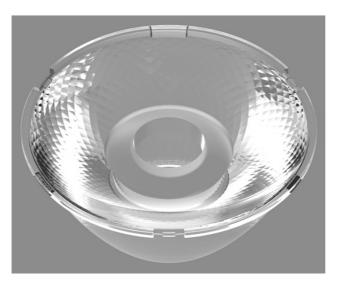
# **Product Approval**

Approval number:

Customer:

Manufacturer: Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-HG-83@40-15-D19-21-1g-1	1. 01. 02480	HK Dark 83@40-15° lens
HK-HG-83@40-24-D19-21-1g-1	1. 01. 02441	HK Dark 83@40-24° lens
HK-HG-83@40-36-D19-21-1g-1	1. 01. 02481	HK Dark 83@40-36° lens
HK-HG-83@40-50-D19-21-1g-1	1. 01. 02491	HK Dark 83@40-50° lens



	Supplier confirmation			Client cor	nfirmation	
Proposed	DATE	Qı	ualified□			
Project manager	DATE	Und	qualified□		DATE	
Audit	DATE		Audit		DATE	
Approved	DATE	А	Approved		DATE	
Stamp	DATE		Stamp		DATE	

( Confirmation of acceptance by both parties must be signed and sealed )

Factory: Chengdu Shuangliu District, Iot industrial park 2 road HercuLux Photoelectric Park

Phone: 028-85887727 (801) 028-85887990 (801) Fax: 028-85887730 http://www.herculux.cn/ Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building, 501-

TEL: 0755-2937 1541 FAX: 0755-2907 5140

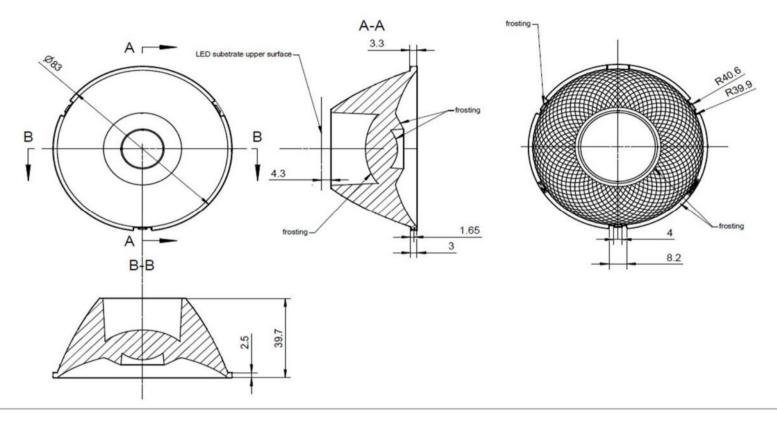
\*Approval In duplicate, for both supplier and customer.



TEL: 0755-2937 1541 FAX: 0755-2907 5140 http://www.herculux.cn/ Date updated: 2021/3/17

Product Picture:	
PN:	HK-HG-83@40-xx-Dxx-21-1g-1
Size(L*W*H/Φ*H):	Ф83mm*H39.7mm
Material:	PMMA
Effiency:	\
Temperature(Topr):	-40°C to +80°C
FWHM:	15°、24°、36°、50°
Matched LES:	D14、D19



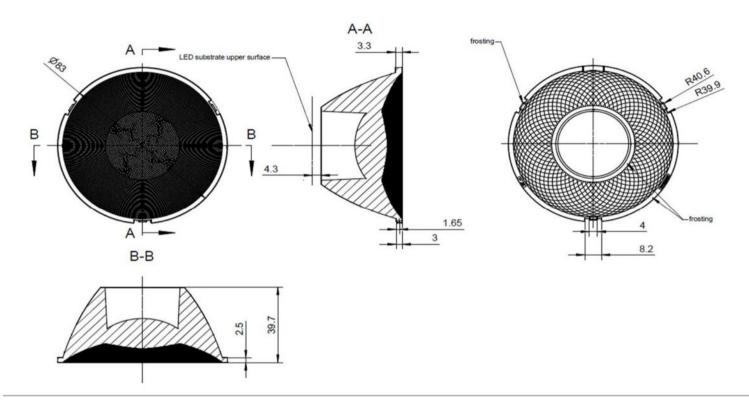


- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.

	Optical design structure desig Review Validation						HK-HG-8	33@40-15-D19	-21-1g-1	1		
	tructur	e desig					HK Dark	83@40-15°lens		1.01.02480		
	Rev	iew							umber of drawin	qty	wei	ight
	Valid	ation					Material:	РММА		CDHK		
ገ~	~250	250~	~450	>/	<b>450</b>							

MT5 Tolerance	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450
	olerance valu	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0



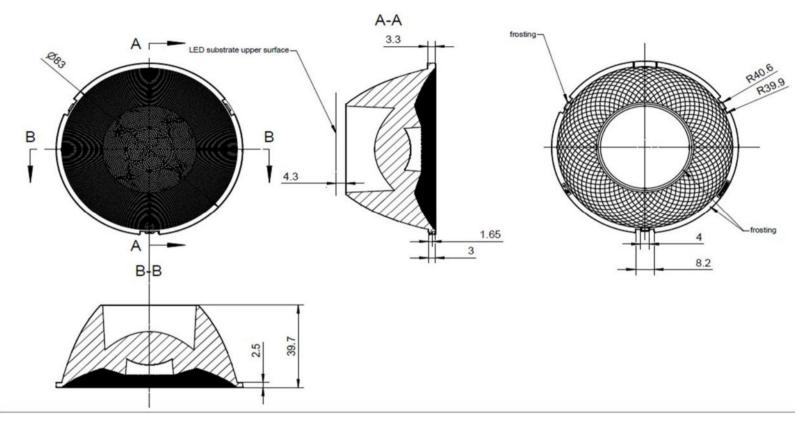


- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.

	Optical	optical design ructure desig							HK-HG-8	HK-HG-83@40-24-D19-21-1g-1				
	tructur	e desig					HK Dark	83@40-24°lens	1.01.02441					
	Review								umber of drawin	qty	weight			
	Validation					Material:	PMMA		CDHK					
n-	~250	250~	~450	>/	45O									

MT5 Tolerance	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450
	olerance valu	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0



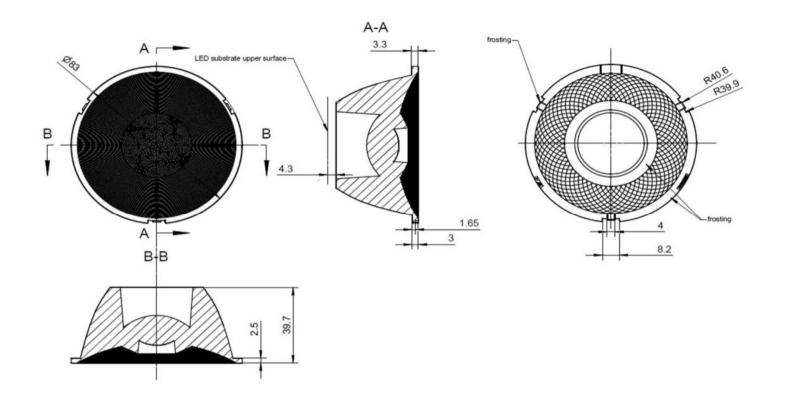


- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.

	Optical	Optical design tructure desig							HK-HG-8	HK-HG-83@40-36-D19-21-1g-1				
	tructure desig		5				HK Dark	83@40-36°lens	1.01.02481					
	Review								umber of drawin	qty	weight			
	Valid	ation					Material:	PMMA		CDHK				
<u>n</u> -	~250	250~	~450	>4	450									

MT5 Tolerance	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450
	olerance valu	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0

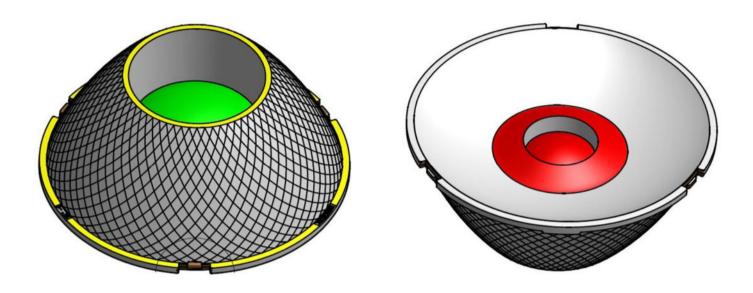




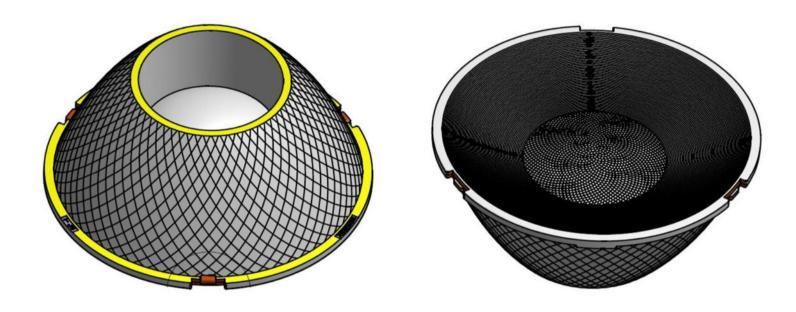
- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.

	Optical	design						HK-HG-	HK-HG-83@40-50-D19-21-1g-1					
	tructur	e desig	J			HK Dark	83@40-50°lens	1.01.02491						
	Review							umber of drawir	qty	weig	ght			
	Valida	ation				Material:	PMMA		CDHK					
<u></u>	~250	250~	~450	>4	450	-		•						

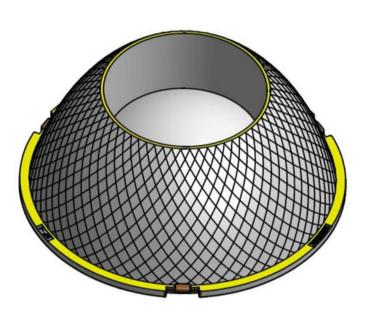






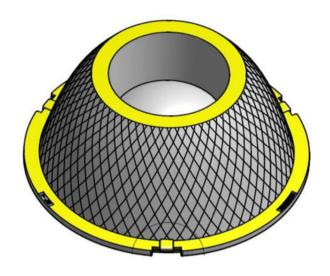






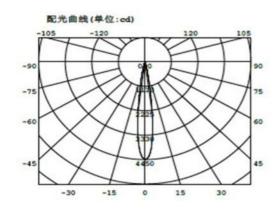


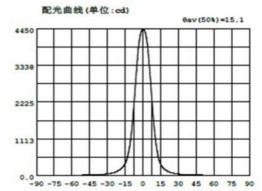






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光强分布数据:(角度°,光强cd) C0-180

角度	光强	角度	光强	角度	光强	角度	光强	角度	光强	角度	光强
-90.0	1.175	-58.5	14.93	-27.0	70.38	4.5	2749	36.0	33.62	67.5	9.622
-88.5	1.197	-57.0	15.68	-25.5	82.12	6.0	3124	27.5	31.02	69.0	8.814
-87.0	1.255	-55.5	16.63	-24.0	98.72	7.5	2388	39.0	28.86	70.5	7.988
-85.5	1.506	-54.0	17.27	-22.5	119.4	9.0	1696	40.5	27.07	72.0	7.142
-84.0	1.802	-52.5	18.01	-21.0	146.0	10.5	1150	42.0	25.48	73.5	6.345
-82.5	2.190	-51.0	18.96	-19.5	179.2	12.0	761.8	43.5	24.09	75.0	5.680
-81.0	2.680	-49.5	19.97	-18.0	222.3	13.5	508.1	45.0	22.86	76.5	5.084
-79.5	3.716	-48.0	21.04	-16.5	282.4	15.0	361.2	46.5	21.77	78.0	4.554
-78.0	4.528	-46.5	22.22	-15.0	367.6	16.5	263.2	48.0	20.72	79.5	3.639
-76.5	5.110	-45.0	23.47	-13.5	497.8	18.0	206.7	49.5	19.74	81.0	2.797
-75.0	5.724	-42.5	24.83	-12.0	709.7	19.5	165.5	51.0	18.76	82.5	2.318
-73.5	6.408	-42.0	26.36	-10.5	1040	21.0	124.5	52.5	17.78	84.0	1.928
-72.0	7.154	-40.5	28.08	-9.0	1520	22.5	110.4	54.0	17.02	85.5	1.597
-70.5	7.978	-29.0	30.08	-7.5	2162	24.0	91.46	55.5	16.29	87.0	1.319
-69.0	8.786	-27.5	32.45	-6.0	2892	25.5	76.85	57.0	15.49	88.5	1.232
-67.5	9.567	-36.0	35.28	-4.5	3574	27.0	65.74	58.5	14.61	90.0	1.031
-66.0	10.25	-24.5	28.65	-3.0	4060	28.5	56.99	60.0	12.84		
-64.5	11.30	-22.0	42.63	-1.5	4337	30.0	50.04	61.5	13.09		
-63.0	12.58	-31.5	47.50	0.0	4442	31.5	44.61	63.0	12.26		
-61.5	13.45	-20.0	53.46	1.5	4385	33.0	40.26	64.5	11.63		
-60.0	14.14	-28.5	60.87	3.0	4169	34.5	26.65	66.0	10.41		

# 电学参数:

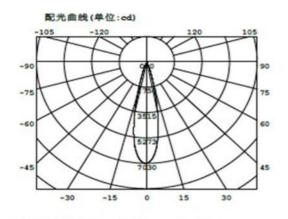
电流: 0.1000A 功率: 3.450W 电压: 34.50V 功率因数: 1.000

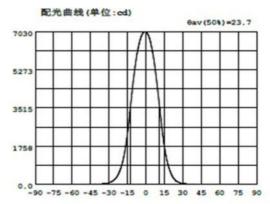
# 光学参数(测试距离2.410m):

等效光通量: +eff = 485.91m 光效: Eff=140.861m/W

CO-180平面IO= 4442cd







光强分布数据:(角度°,光强cd) C0-180

角度	光强	角度	光强	角度	光强	角度	光强	角度	光强	角度	光强
-90.0	0.4586	-58.5	12.78	-27.0	152.1	4.5	6276	36.0	20.82	67.5	5.499
-88.5	0.6246	-57.0	12.66	-25.5	221.2	6.0	5932	27.5	18.54	69.0	4.703
-87.0	0.9164	-55.5	14.41	-24.0	314.2	7.5	5249	39.0	16.55	70.5	3.940
-85.5	1.018	-54.0	15.00	-22.5	452.5	9.0	4656	40.5	15.20	72.0	3.231
-84.0	1.045	-52.5	15.45	-21.0	639.6	10.5	2897	42.0	14.40	72.5	2.551
-82.5	1.107	-51.0	15.48	-19.5	893.3	12.0	3130	43.5	13.82	75.0	1.879
-81.0	1.152	-49.5	15.65	-18.0	1243	13.5	2402	45.0	13.63	76.5	1.326
-79.5	1.256	-48.0	15.59	-16.5	1721	15.0	1781	46.5	13.62	78.0	1.207
-78.0	1.390	-46.5	15.56	-15.0	2331	16.5	1288	48.0	13.72	79.5	1.100
-76.5	2.029	-45.0	15.76	-12.5	3028	18.0	914.6	49.5	13.78	81.0	0.9227
-75.0	2.727	-42.5	16.61	-12.0	2816	19.5	640.2	51.0	13.74	82.5	0.8759
-72.5	3.464	-42.0	17.60	-10.5	4605	21.0	440.3	52.5	13.39	84.0	0.8568
-72.0	4.182	-40.5	19.12	-9.0	5205	22.5	287.8	54.0	12.89	85.5	0.7883
-70.5	5.014	-29.0	21.42	-7.5	5892	24.0	194.4	55.5	12.33	87.0	0.4927
-69.0	5.852	-27.5	24.15	-6.0	6342	25.5	120.0	57.0	11.67	88.5	0.4412
-67.5	6.740	-26.0	28.16	-4.5	6674	27.0	88.72	58.5	10.84	90.0	0.2253
-66.0	7.669	-24.5	34.19	-3.0	6898	28.5	62.46	60.0	9.964		
-64.5	8.681	-22.0	41.87	-1.5	7011	30.0	46.11	61.5	9.064		
-63.0	9.690	-21.5	54.03	0.0	7018	31.5	25.95	63.0	8.124		
-61.5	10.74	-20.0	74.23	1.5	6917	33.0	29.22	64.5	7.210		
-60.0	11.75	-28.5	104.4	3.0	6708	34.5	24.21	66.0	6.328		

# 电学参数:

电流: 0.3000A 功率: 9.600W 电压: 32.00V 功率因数: 1.000

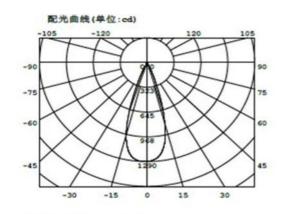
# 光学参数(测试距离2.559m):

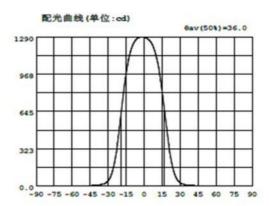
等效光通量: +eff = 12921m 光效: Eff=134.551m/W

最大光强扩散角:  $\theta(25\%)$ : 31.4°  $\theta(50\%)$ : 23.7°  $\theta(75\%)$ : 16.6°  $\theta(50\%)$ : 23.7° 中心光强扩散角:  $\theta(25\%)$ : 31.4°  $\theta(50\%)$ : 23.7°  $\theta(75\%)$ : 16.6°  $\theta(50\%)$ : 23.7°

C0-180平面I0= 7018cd







光强分布数据:(角度\*,光强cd) C0-180

角度	光强	角度	光强	角度	光强	角度	光强	角度	光强	角度	光强
-90.0	0.2548	-58.5	2.105	-27.0	106.6	4.5	1261	36.0	9.808	67.5	1.721
-88.5	0.3448	-57.0	2.203	-25.5	162.5	6.0	1241	37.5	8.249	69.0	1.320
-87.0	0.4210	-55.5	2.445	-24.0	239.1	7.5	1210	39.0	6.990	70.5	0.9750
-85.5	0.4957	-54.0	2.589	-22.5	227.1	9.0	1164	40.5	5.991	72.0	0.7158
-84.0	0.5220	-52.5	2.820	-21.0	460.2	10.5	1106	42.0	5.274	72.5	0.6440
-82.5	0.5557	-51.0	3.120	-19.5	595.1	12.0	1032	43.5	4.725	75.0	0.6299
-81.0	0.5432	-49.5	3.419	-18.0	731.9	13.5	926.8	45.0	4.233	76.5	0.5988
-79.5	0.5337	-48.0	3.754	-16.5	861.9	15.0	823.6	46.5	3.982	78.0	0.5478
-78.0	0.5269	-46.5	4.147	-15.0	973.2	16.5	698.5	48.0	3.445	79.5	0.4828
-76.5	0.5523	-45.0	4.453	-12.5	1063	18.0	571.3	49.5	3.081	81.0	0.4277
-75.0	0.6102	-42.5	5.202	-12.0	1135	19.5	445.6	51.0	2.738	82.5	0.2774
-73.5	0.7313	-42.0	6.136	-10.5	1190	21.0	321.7	52.5	2.456	84.0	0.3697
-72.0	1.122	-40.5	7.180	-9.0	1230	22.5	229.6	54.0	2.237	85.5	0.3582
-70.5	1.528	-29.0	8.534	-7.5	1256	24.0	157.0	55.5	2.102	87.0	0.3622
-69.0	1.922	-27.5	10.26	-6.0	1273	25.5	102.0	57.0	2.014	88.5	0.3419
-67.5	2.193	-26.0	12.59	-4.5	1282	27.0	66.62	58.5	2.050	90.0	0.1374
-66.0	2.258	-34.5	15.89	-3.0	1286	28.5	42.35	60.0	2.111		
-64.5	2.260	-33.0	20.85	-1.5	1286	30.0	28.88	61.5	2.144		
-62.0	2.205	-21.5	29.14	0.0	1286	31.5	20.35	63.0	2.152		
-61.5	2.127	-30.0	43.40	1.5	1281	33.0	15.27	64.5	2.080		
-60.0	2.080	-28.5	67.80	3.0	1274	34.5	12.07	66.0	1.952		

# 电学参数:

电流: 功率: 3.358₩ 0.1000A 电压: 33.59V 功率因数: 1.000

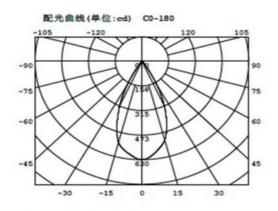
# 光学参数(测试距离2.559m):

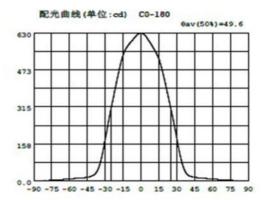
等效光通量: +eff = 452.81m 光效: Eff=134.871m/W

最大光强扩散角: θ(25%): 43.7° θ(50%): 36.0° θ(75%): 28.1° θ(50%): 36.0° 0(25%): 43.7° 0(50%): 36.0° 0(75%): 28.2° 0(50%): 36.0° 中心光强扩散角:

最大光强Imax= 1286cd (C=0.0°,G=-2.5°) CO-180平面Imax= 1286cd(G=-2.5°)

C0-180平面I0= 1286cd





光强分布数据:(角度\*,光强cd) C0-180

角度	光强	角度	光强	角度	光强	角度	光强	角度	光强	角度	光强
-90.0	0.2712	-58.5	9.117	-27.0	258.0	4.5	612.5	36.0	53.64	67.5	5.561
-88.5	0.2272	-57.0	9.718	-25.5	297.3	6.0	601.8	37.5	37.11	69.0	4.965
-87.0	0.3650	-55.5	10.41	-24.0	224.2	7.5	590.4	39.0	27.33	70.5	4.473
-85.5	0.6145	-54.0	11.05	-22.5	270.8	9.0	578.2	40.5	22.00	72.0	4.071
-84.0	0.9408	-52.5	11.69	-21.0	406.5	10.5	565.2	42.0	18.96	72.5	3.647
-82.5	1.255	-51.0	12.32	-19.5	442.8	12.0	552.1	43.5	17.04	75.0	3.237
-81.0	1.602	-49.5	12.99	-18.0	476.6	12.5	528.2	45.0	15.64	76.5	2.847
-79.5	1.943	-48.0	13.62	-16.5	509.4	15.0	520.6	46.5	14.61	78.0	2.348
-78.0	2.221	-46.5	14.63	-15.0	524.6	16.5	496.8	48.0	13.71	79.5	1.888
-76.5	2.754	-45.0	15.74	-13.5	552.9	18.0	467.9	49.5	12.90	81.0	1.462
-75.0	3.123	-43.5	17.36	-12.0	567.0	19.5	426.4	51.0	12.11	82.5	1.137
-73.5	3.524	-42.0	19.50	-10.5	578.0	21.0	403.3	52.5	11.40	84.0	0.9238
-72.0	3.993	-40.5	22.63	-9.0	587.7	22.5	270.2	54.0	10.70	85.5	0.6481
-70.5	4.531	-29.0	27.54	-7.5	596.7	24.0	224.6	55.5	10.10	87.0	0.4456
-69.0	5.120	-27.5	35.70	-6.0	605.6	25.5	298.7	57.0	9.482	88.5	0.3889
-67.5	5.739	-26.0	49.31	-4.5	614.5	27.0	262.9	58.5	8.892	90.0	0.2927
-66.0	6.284	-24.5	70.79	-3.0	622.3	28.5	224.3	60.0	8.287		
-64.5	6.748	-22.0	99.97	-1.5	627.1	30.0	184.9	61.5	7.653		
-63.0	7.247	-31.5	135.9	0.0	628.9	31.5	144.8	63.0	7.086		
-61.5	7.792	-20.0	176.5	1.5	626.9	33.0	108.4	64.5	6.566		
-60.0	8.412	-28.5	215.5	3.0	621.9	34.5	77.54	66.0	6.045		

# 电学参数:

电流: 0.1000A 功率: 3.450W 电压: 34.50V 功率因数: 1.000

# 光学参数(测试距离2.410m):

等效光通量: #eff = 421.11m 光效: Eff=122.081m/W

最大光强扩散角:  $\theta(25\$)$ : 61.7°  $\theta(50\$)$ : 49.6°  $\theta(75\$)$ : 35.8°  $\theta(50\$)$ : 49.6° 中心光强扩散角:  $\theta(25\$)$ : 61.7°  $\theta(50\$)$ : 49.6°  $\theta(75\$)$ : 35.8°  $\theta(50\$)$ : 49.6°  $\theta(75\$)$ : 35.8°  $\theta(50\$)$ : 49.6° 最大光强Imax= 628.9cd (C=0.0°, G=-0.5°)

CO-180平面IO= 628.9cd



			1				1	1			T
			Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks
	diamet	er	83			82.97	82.88	82.87	82.9		
	heigh	t	39.7			39.65	39.63	39.63	39.66		
1.Size	thickne	ess	2.5			2.6	2.61	2.66	2.59		Test environment: In 20 ℃ -25 ℃ environment to
	Buckl thickne		1.65			1.5	1.51	1.49	1.52		achieve thermal equilibrium after the test.
	Buckle w	idth	4			3.99	3.94	3.95	4.01		
	snap g	ap	8. 2			8.3	8.27	8.18	8.25		
				Gate	shear can	not affect th	ne appearar	nce of the la	amp		
				See	attachmen	t "Appearar	ice Inspecti	on Standar	ds"		
2.Appear Quality	ance	"Ар	See achment pearance			No burr No burr N		No bu	rr	OK	
			spection andards"		١	lo stains	No stains	No stains	No stai	ns	
3.Materia	ıl			PMM	Ą		Color	Tra	nsparent		OK
	Testing I	ED					D14				
	to the so	urce	of the test,	if it is requ	ired to be	out of range	. According	to the hea	t dissipatio	n cap	uld be comparable ability of the lamp event the lens life.
4.Optica	FWH						ght distribut				
I index	angle	)		15° ±2°		15. 1°	15.4°	15. 2°	15.1°		OK
	K-val	ue				9. 13	8. 92	9. 07	9. 15		OK
	Efficie	ncy		_							
	Facula	See	the signatu	re sample							
	hensive ment					•	Q	ualified			
Jane											
					PMI	MA produc	t size cha	nges with	temperat	ure t	table
Remarks	:			Length							
	Number: V	/-Veri	nier	change (mm							Size: 50mm
	D-Quadra			CIIIII	0.6				<b>*</b> '		Size: 100mm
	auge M-To pe P-Neeo		.					-			Size: 150mm
Thick Ga	uge R-Ra				0.4						Size: 200mm
Gauge E					0.2						Size: 250mm
	ient tempe of the prod							-		9	Size: 300mm
to the table on the right					0 0	10	20	30	40		
									(°C)		

- 1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.

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  3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.).

  4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees.



Standard   Size   Size limit   Size limit   result1   result2   result3   result4   result4   result4   result4   result4   result5   result4   result6   result6   result6   result7   result8		1			I	I	1					T			
height 39.7 39.69 36.67 36.67 36.69  thickness 2.5 2.7 2.72 2.72 2.74 Test environment. In 20 °C .25 °C °C .25 °C											1-	Remarks			
thickness 2.5 2.7 2.72 2.72 2.74  Test environment. In 20 1.25 2.75 2.72 2.74  Buckle width 4 4 4.02 3.96 3.98  Buckle width 4 4 4.02 3.96 3.98  See attachment "Appearance of the lamp See attachment "Appearance Inspection Standards"  See attachment "Appearance Inspection Standards"  No burr Inspection Standards"  Testing LED D19  The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the lest, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life. FWHM See light distribution curve  Index FWHM See light distribution curve  Facula See the signature sample  Comprehensive Judgment  PMMA product size changes with temperature table  Remarks:  1. Tool Number: V-Vemier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right		diamet	er	83			82.95	82.89	82.88	82.85					
1. Size  Buckle thickness 1. 65		heigh	t	39.7			39.69	36.67	36.67	36.69					
Buckle thickness	1 Size	thickne	ess	2.5			2.7	2.72	2.72	2.74		20 ℃ -25 ℃ environment to			
Sale shear can not affect the appearance of the lamp  See attachment "Appearance Inspection Standards"  2. Appearance Quality    See attachment "Appearance Inspection Standards"   No burr   No bur	1.0120			1.65			1.45	1.43	1.44	1.45		equilibrium after the			
Gate shear can not affect the appearance of the lamp  See attachment "Appearance Inspection Standards"  See attachment "Appearance Inspection Standards"  Alphaerance Inspection Standards"  3.Material PMMA Color Transparent OK  Testing LED D19  The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.  FVHM See light distribution curve  I index angle 24° ±3° 23.7° 23.6° 24.2° 23.6° OK  K-value Efficiency  Facula See the signature sample  Comprehensive  Comprehensive  Qualified  PMMA product size changes with temperature table  Length changes 0.8 (mm)  0.6  PMMA product size changes with temperature table  Length changes 0.8 (mm)  2. Ambient temperature on the size of the product refer to the table on the right		Buckle w	idth	4			4	4.02	3.96	3.98					
See attachment "Appearance Inspection Standards"  2. Appearance Quality    See attachment "Appearance Inspection Standards"		snap g	ap	8. 2			8.23	8.21	8.18	8.19					
See attachment "Appearance Inspection Standards"   PMMA   Color   Transparent   OK					Gate shear can not affect the appearance of the lamp										
2. Appearance Quality attachment "Appearance Inspection Standards"   PMMA   Color   Transparent   OK					See	attachmen	t "Appearar	ice Inspecti	on Standar	ds"					
Standards"   No stains   No	2.Appear Quality	rance	"Ар	achment pearance	E							OK			
Testing LED The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.  FWHM See light distribution curve  I index  I							lo stains	No stains	No stains	No stai	ns				
The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.  4. Optica  FWHM  See light distribution curve  See light distribution curve  Facula  Index	3.Materia	al			PMM	A		Color	Tra	nsparent		OK			
to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.  FWHM  See light distribution curve    FWHM															
I index angle 24° ±3° 23.7° 23.6° 24.2° 23.6° 0K  K-value 5.44 5.51 5.35 5.51 0K  Efficiency Facula See the signature sample  Comprehensive judgment  PMMA product size changes with temperature table  Length changes 0.8 (mm)  Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  Ambient temperature on the size of the product refer to the table on the right		to the so	ource actual	of the test,	if it is requ	ired to be	out of range ent, the lens	. According should be	to the hea fully tested	t dissipatio	n cap	ability of the lamp			
Remarks: 1. Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2. Ambient temperature on the size of the product refer to the table on the right  A size: 25. 8					240 120		1	1		22.22		011			
Efficiency Facula See the signature sample  Comprehensive judgment  PMMA product size changes with temperature table  Length changes 0.8 (mm)  Length changes 0.8 (mm)  O.6  Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.  Ambient temperature on the size of the product refer to the table on the right  PMMA product size changes with temperature table  Length changes 0.8 (mm)  O.6  O.7  O.8  O.8  O.9  O.9  O.9  O.9  O.9  O.9	Tindox				24° ±3°										
Facula See the signature sample  Comprehensive judgment  PMMA product size changes with temperature table  Remarks:  1. Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  PMMA product size changes with temperature table  Length changes 0.8 (mm)  0.6  0.7  0.8  0.9  0.9  0.9  0.9  0.9  0.9  0.9							5. 44	5. 51	5. 35	5. 51	_	OK			
Comprehensive judgment  PMMA product size changes with temperature table  Remarks:  1. Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  PMMA product size changes with temperature table  Length changes 0.8 (mm)  0.6  0.7  0.7  0.8  0.8  0.9  0.9  0.9  0.9  0.9  0.9				the signatu	ro cample		<u> </u>								
Remarks: 1. Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2. Ambient temperature on the size of the product refer to the table on the right  PMMA product size changes with temperature table  Length changes 0.8 (mm)  0.6  0.7  0.8  0.9  0.9  0.9  0.9  0.9  0.9  0.9		ehensive	See	ine signatu	re sample			Qı	ualified						
Remarks:  1. Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  Length changes 0.8 (mm)  0.6  0.7  0.8  Size: 50mm  Size: 150mm  Size: 250mm  Size: 250mm  Size: 300mm	Juag	ment													
Remarks:  1. Tool Number: V-Vernier Caliper 2D-Quadratic H- Height Gauge M-Tool Microscope P-Needle T- Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  changes 0.8 (mm)  0.6  0.7  0.7  0.8  Size: 50mm  Size: 150mm  Size: 250mm  Size: 300mm  Size: 300mm						PMI	MA produc	t size char	nges with	temperat	ure t	table			
1. Tool Number: V-Vernier Caliper 2D-Quadratic H- Height Gauge M-Tool Microscope P-Needle T- Thick Gauge R-Radius Gauge E-Visual. 2. Ambient temperature on the size of the product refer to the table on the right  Changes 0.8  (mm)  0.6  0.7  0.8  Size: 50mm  Size: 150mm  Size: 250mm  Size: 250mm  Output  Outp	Remarks	ş.													
Caliper 2D-Quadratic H- Height Gauge M-Tool Microscope P-Needle T- Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  0.6  0.7  0.8  0.9  0.9  0.9  0.9  0.9  0.9  0.9			/-Verr	nier											
Microscope P-Needle T- Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  0.4  0.2  0.4  0.2  0.4  0.2  0.30  40					(11111					<b>*</b>					
Thick Gauge R-Radius Gauge E-Visual.  2. Ambient temperature on the size of the product refer to the table on the right  0.4  0.2  0.2  0.30  40				.					*						
2. Ambient temperature on the size of the product refer to the table on the right  0.2  Size: 300mm  10  20  30  40	Thick Ga	uge R-Ra				0.4		*	X						
the size of the product refer to the table on the right 0 10 20 30 40	_		eratur	e on		0.2									
to the table on the right 0 10 20 30 40	the size of	of the proc	luct re			0						DEC: JUUIIIII			
	to the tab	ole on the	right				10	20	30						

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								1			T.
			Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks
	diamet	er	83			82.97	83.06	83.02	82.97		
	heigh	t	39.7			39.6	39.58	39.62	39.59		
1.Size	thickne	ess	2.5			2.61	2.62	2.62	2.6		Test environment: In 20 ℃ -25 ℃ environment to
	Buckl thickne		1.65			1.44	1.48	1.4	1.46		achieve thermal equilibrium after the test.
	Buckle w	idth	4			3.9	3.92	3.95	3.96		
	snap g	ap	8. 2			8.1	8.09	8.12	8.11		
				Gate	shear can	not affect th	e appearar	nce of the la	amp		
				See	attachmen	t "Appearar	ce Inspecti	on Standar	ds"		
2.Appear Quality	ance	"Ар	See achment pearance	E		No burr	No burr	No burr	No burr		OK
			spection andards"		٨	lo stains	No stains	No stains	No stai	ns	
3.Materia	al			PMM	A		Color	Tra	nsparent		OK
	Testing I						D19				
	to the so	urce	of the test,	if it is requ	ired to be	out of range	. According	to the hea	t dissipatio	n cap	uld be comparable ability of the lamp event the lens life.
4.Optica	FWHI						ght distribut			- P	
l index	angle	9		36° ±4°		35. 2°	35.5°	35.7°	36.0°		OK
	K-val	ue				2. 95	2.92	2.87	2.85		OK
	Efficie	ncy									
	Facula	See	the signatu	re sample		, I					
	ehensive ment					· · ·	Q	ualified			
						_					
						MA produc	t size chai	nges with	temperat	ure t	table
Remarks	i:			Lengtl							
	Number: \			change (mm							Size: 50mm
	D-Quadra			ζ	0.6				<b>*</b>		Size: 100mm
	auge M-Tope P-Nee		.					<del>*</del>			Size: 150mm
Thick Ga	uge R-Ra				0.4			X			Size: 200mm
Gauge E	-Visual. ient tempe	ratu-	0 00		0.2						Size: 250mm
	of the proc				0						Size: 300mm
to the table on the right					0	10	20	30	40		
									(°C)		

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			Standard	Upper	Lower	Test	Test	Test	Test	Jud			
			size	Size limit	size limit	result1	result2	result3	result4	gme nt	Remarks		
	diamet	er	83			82.8	82.77	82.76	82.81				
	heigh	t	39.7			39.68	39.72	39.7	39.66				
1.Size	thickne	ess	2.5			2.6	2.7	2.75	2.69		Test environment: In 20 ℃ -25 ℃ environment to		
1.0120	Buckl thickne		1.65			1.5	1.59	1.6	1.57		achieve thermal equilibrium after the test.		
	Buckle w	idth	4			4	4.05	3.95	3.97				
	snap g	ap	8. 2			8.1	8.12	8.1	8.11				
				Gate shear can not affect the appearance of the lamp									
				See	attachmen	t "Appearar	nce Inspecti	on Standar	ds"				
2.Appeai Quality	ance	"Apı	See achment pearance spection	E		No burr	No burr	No burr	No burr		ок		
			andards"		N	lo stains	No stains	No stains	No stai	ns			
3.Materia	ıl			PMM	A		Color	Tra	nsparent		OK		
	Testing I						D19						
	to the so	urce actual	of the test,	if it is requ	ired to be	out of range ent, the lens	e. According should be	to the hea fully tested	t dissipatio	n cap	uld be comparable ability of the lamp event the lens life.		
4.Optica I index	FWHN			500 L 50		,	ght distribut		10.50	1	011		
Tilldex	angle			50° ±5°		49. 2°	49.6°	49.5°	49. 7°		OK		
	K-val					1.51	1. 49	1. 49	1. 47	_	OK_		
	Efficie Facula		the signatu	ro comple	_	<u> </u>							
	ehensive ment	See i	ine signatu	re sample			Q	ualified					
,,,,,					5.4								
						MA produc	t size char	nges with	temperat	ure 1	able		
Remarks	:			Lengt	h es <sub>0.8</sub> —								
	Number: V			(mm							Size: 50mm Size: 100mm		
	D-Quadra auge M-To				0.6				<b>*</b>		Size: 150mm		
Microsco	pe P-Need	dle T-	. [		0.4			*			Size: 150mm		
Thick Ga Gauge E	uge R-Ra	dius			J		*				Size: 250mm		
_	-visuai. ient tempe	eratur	e on		0.2						Size: 300mm		
the size	of the prod	luct re			0								
to the tal	ole on the i	right			0	10	20	30	40 (℃)				

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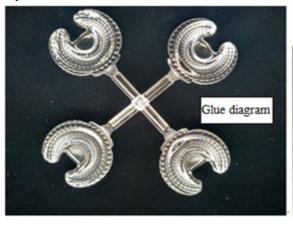
Р	N	HK-HG-83@40-15-D19-2	21-1g-1	Product Name	HK Dark 83@	40-15°le	ens
Product	material	PMMA		Customer			
Package	diagram	Single Va	cuum packa	age Bo	ox package		>
Product	packing	5	A/ Box	4	Box/Layer		
	J	8	Layer/Box	160	A/ Carton		
	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2. 07. 0093	Blister box	23cm*21cm	32	BAG	
Packagin	2	2. 08. 0001	PE film	25cm*27cm	32	PCS	
g Materials	3	2. 06. 0005	Reel label paper	62mm*42mm	32	PCS	
Materials	4	2. 06. 0005	Box label paper	62mm*70mm	1	PCS	
	5	2. 06. 0003	big plate	46cm*42cm	9	PCS	
	6	2. 06. 0011	big carton	48cm*44cm*37c	m 1	PCS	
Remarks		The loose packing is not subject	ct to this specif	fication. Customer's	s requirements shall	prevail	



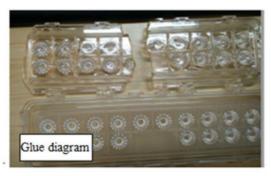
# Special notice

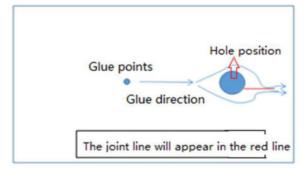
When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

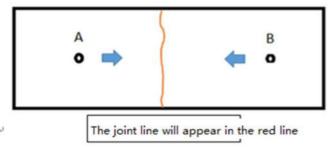
### Syntheti











# Please note:

The appearance of lines in the structure of the product as well as at the screw hole is a normal phenomenon, will not affect the actual use of the product, and can not be avoided at this stage.



# Appearance inspection standards

# 1 Operating procedures

1.1.1Sampling standards, sampling plan and AQL

Test level : GB/T2828.1-2012The first part is according to the acceptance quality limit (AQL) retrieval batch inspection sampling plan, general inspection level  $\Pi$  level, CR class defect coefficient 0, MA defect rejection level AQL = 0.65, MI class defect rejection level AQL = 1.0; defect level please see 5.4.

2 Code table

Code	Code	Unit	Code	Code	Unit
	description			description	
N	Amount/pcs	pcs	D	Diameter	mm
L	Length	mm	Н	Depth	mm
W	Width	mm	DS	Distance	mm
S	Proportion	mm²	SS	Offset	mm
	•				

### 3 Test conditions

- 3.1 Sight distance and working hours: Sight distance should be 30-35cm, each side of the inspection time does not exceed 12s, the visual angle of 45-135 degrees;
- 3.2 Light: 2x40w cool white fluorescent lamp, the light source is 500-550mm away from the lens surface; in order to make the appearance defect can be correctly recognized, the illumination should be 500-1000Lux, and the observation time is 10 seconds.
  - 3.3 Visual inspection staff should be 1.0 (including corrected visual acuity) above, no color blindness, color weakness.

# 4 Appearance inspection standards

Test items	ludging standard	Inspection equipment	Defec	t level	
restitems	Judging standard	Testing method	MI	MA	CR
	When start the machine and process, all products have to check the appearance of the sample, the appearance of the sample is divided into qualified samples and limited samples.				
Check the sample	1: Qualified sample refers to the appearance and structure standard of the product which recognized by the client, the sample size should be confirmed before mass production;	Sample comparison , visual			√

1		1	I .	İ	
	2: The limited sample refers to the limit of a particular exceptionally developed sample. Limit the sample only for its specific point of exception to confirm; The priority is higher than the other criteria in this table. When there is a limited sample, the limit sample shall prevail.				
Raw edge	Not allowed to affect the size and assembly	Visual, point card		√	
Scratch	1: Non-optical surface and non-exposed surface scratches should be visually insignificant and the length is less than 1/10 of the maximum surface size.	Visual, point card, calipers		<b>√</b>	
Fingerprint	Fingerprints are not allowed on all products	Visual		<b>√</b>	
Foreign objects, black spots, white spots	The product may not be attached to foreign objects, including oil, fiber, dregs of water gap and so on				<b>√</b>
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler			<b>√</b>
Poor ejection	Products may not appear bad ejection, including no convex top, thimble printed on the assembly surface shall not be higher than the product surface, non-assembled surface thimble height should not exceed the product size tolerances; thimble printing should be less than the product surface and no more than 0.3; thimble surface treatment should be consistent with the product side.  Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain,	Visual, point card		✓	
Insufficient filling	and the structural surface does not allow visual obvious strain.  Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces, The signature sample shall prevail.	Visual, point card		√	
Shrink	When the entire surface of the product shrinks, the optical properties and dimensions must meet the requirements, and the visual will not significantly affect the appearance.Part shrink reference point defects	Visual, point card		√	
Flow marks、Welding line	1 : Product does not allow the presence of flow marks and welding lines unless the structure can not be avoided;	Visual		√	
	2: The remaining flow marks shall not appear in the optical surface, a single L $\leq$ 10mm, no more than two				
Bubble	No bubbles are allowed	Visual		✓	

Foreign objects, black spots, white spots	Not obvious or D ≤ 0.3mm black spots and foreign bodies in the area of 100x100mm not more than 1; Exceeded foreign matter black spots is judged bad.	Visual, point card	V		
Damaged	No damage is allowed	Visual			✓
Cold glue	Optical surface may not have cold glue, non- optical surface cold glue should meet the visual is not obvious.	Visual	V		
	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;				
Bad incision	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation	Visual			√
	3: Three molds and hot runner gate shall not appear residue.				
Scrub	Scrub surface should be uniform, off the scrub phenomenon should not be obvious , A single off scrub imprint requires D $\leq$ 1 mm and no more than 1 area within a 50x50 mm area	Visual		√	