



HERCULUX
恒坤光电

Chengdu HercuLux Photoelectric
Technology Co.,Ltd
Product Approval

Approval number :

Customer :

Manufacturer : Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-DX-35@16-15-D6-21-1g-1	1. 01. 02556	HK Glareless 35@16-15° lens
HK-DX-35@16-24-D6-21-1g-1	1. 01. 02561	HK Glareless 35@16-24° lens
HK-DX-35@16-36-D6-21-1g-1	1. 01. 02571	HK Glareless 35@16-36° lens
HK-DX-35@16-60-D6-21-1g-1	1. 01. 12804	HK Glareless 35@16-60° lens



Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified <input type="checkbox"/>		DATE	
Project manager		DATE		Unqualified <input type="checkbox"/>		DATE	
Audit		DATE		Audit		DATE	
Approved		DATE		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.com/>

Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building,

TEL: 0755-2937 1541

FAX: 0755-2907 5140

*Approval In duplicate , for both supplier and customer.

Disclaimer

Please use this product within the permitted range and environment according to the structure and material of the product. If the usage exceeds the recommended value, please test and verify by yourself. If the product is damaged due to out-of-range use, our company will not be responsible for the warranty.

Product material:

Customized products: The specifications and models of materials used are subject to the agreement between the two parties.

Conventional products: As a product that we continuously research and improve, under the premise of ensuring the quality and availability of the product, our company reserves the right to change the material. If the material specification and model change, without prior notice.

product data:

The measurement data and dimensional tolerances of the 2D drawings in the product data sheet of this acknowledgement are for reference only, and the final size shall prevail in kind.

The measurement data presented in this acknowledgment is a performance test of the product based on our company's internal test conditions and quality requirements, and the reported data is a typical value of the average results of multiple measurements. Therefore, in some cases, the actual product may deviate from the data provided. We reserve the right to notify you in advance of this data.

Product changes and improvements:

Changes and improvements of customized products are subject to the agreement between the two parties in the contract or technical documents.

As the conventional products that we continue to research and improve, our company reserves the right to make technical changes to its products, and reserves the right to make changes to data resulting from improvements without prior notice.

Operation cautions:

1. Please wear clean gloves during product assembly to prevent product surface contamination.
2. Try to avoid touching the optical surface of the lens when taking the lens.
3. When the surface of the product is polluted, please wipe it gently with a soft cotton cloth dipped in analytically pure neutral solvent. It is forbidden to use industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA monomer, etc.) wipe.

asic product information

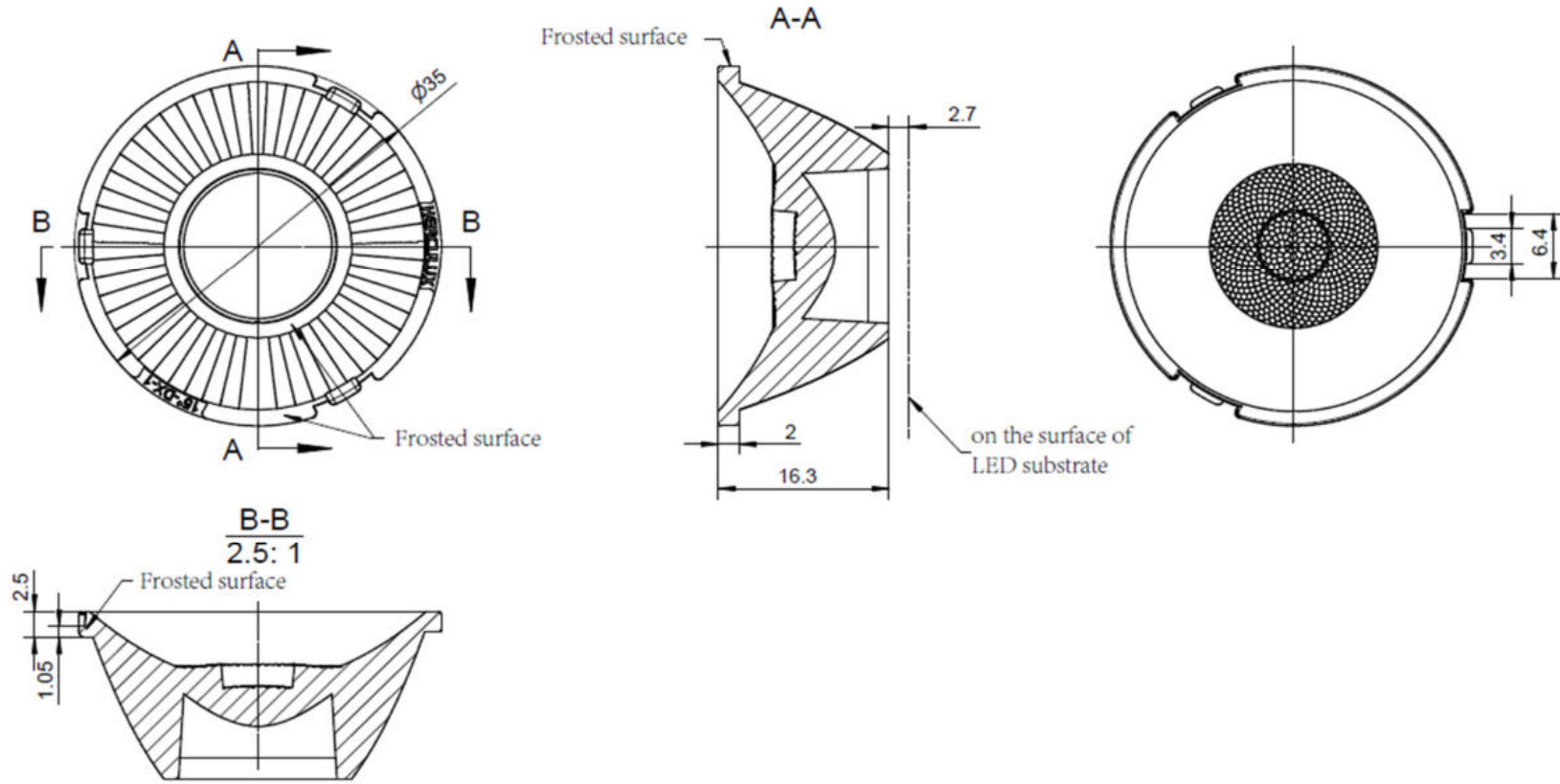
TEL: 0755-2937 1541

FAX: 0755-2907 5140

<http://www.herculux.cn/>

Date updated: 2022/12/23

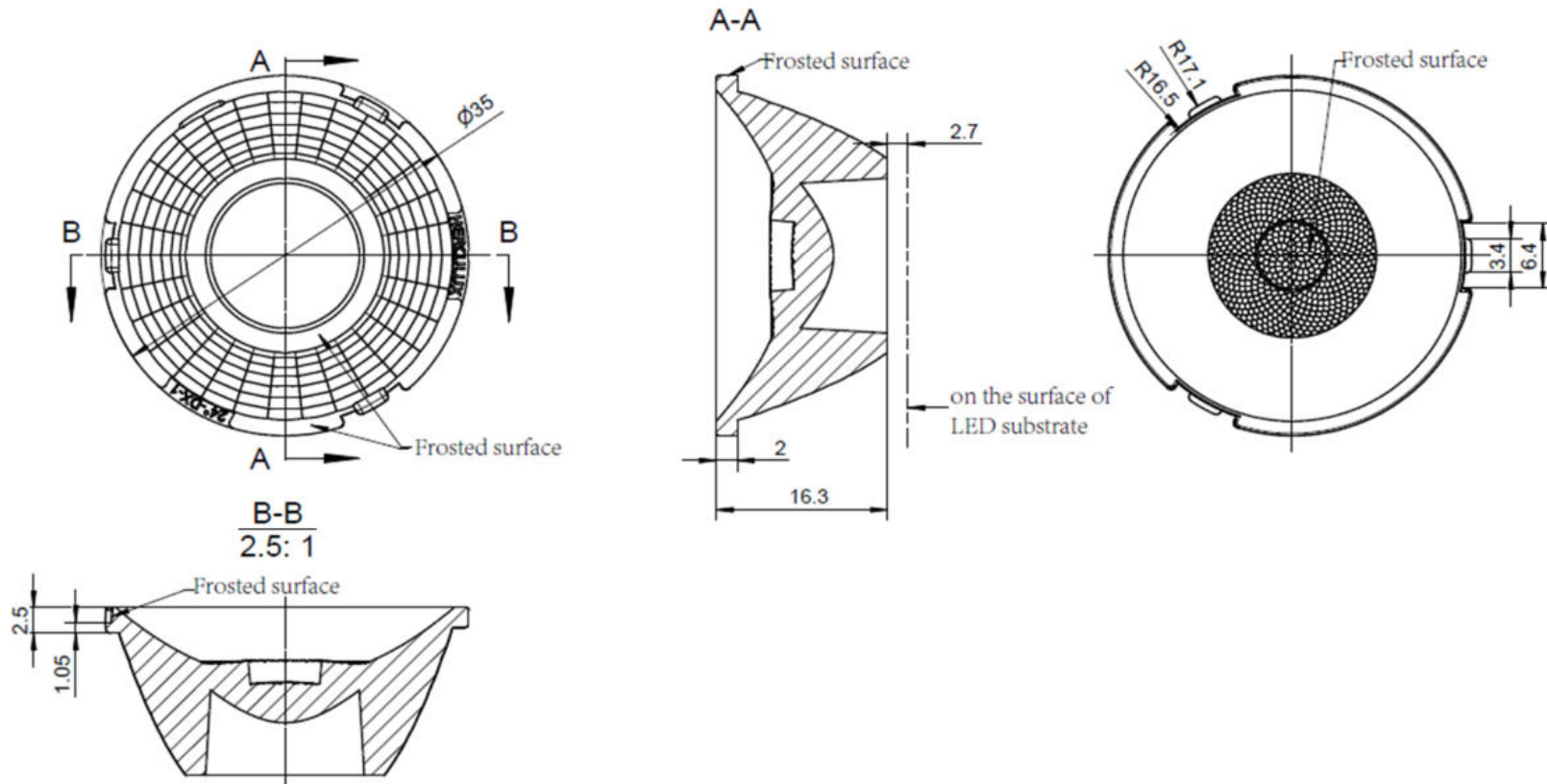
Product Picture:	
Size(L*W*H/Φ*H):	Φ:35mm; H:16.3mm
Material:	PC
Efficiency:	\
Temperature(Topr):	Material extreme temperature resistance : -40°C to +120°C long-term use temperature : -40°C to +90°C
FWHM:	15°、24°、36°、60°
Matched LES:	D6
Recommended MAX power:	Not more than 15W



- Techn**
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.
 - *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK-DX-35@16-15-D6-21-1g-1		
Structure design			HK Glareless 35@16-15 ^g lens		
Review			number of drawing	qty	weight
Validation			Material: PC		CDHK

MT5 Tolerance table (mm)	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
	tolerance value	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0

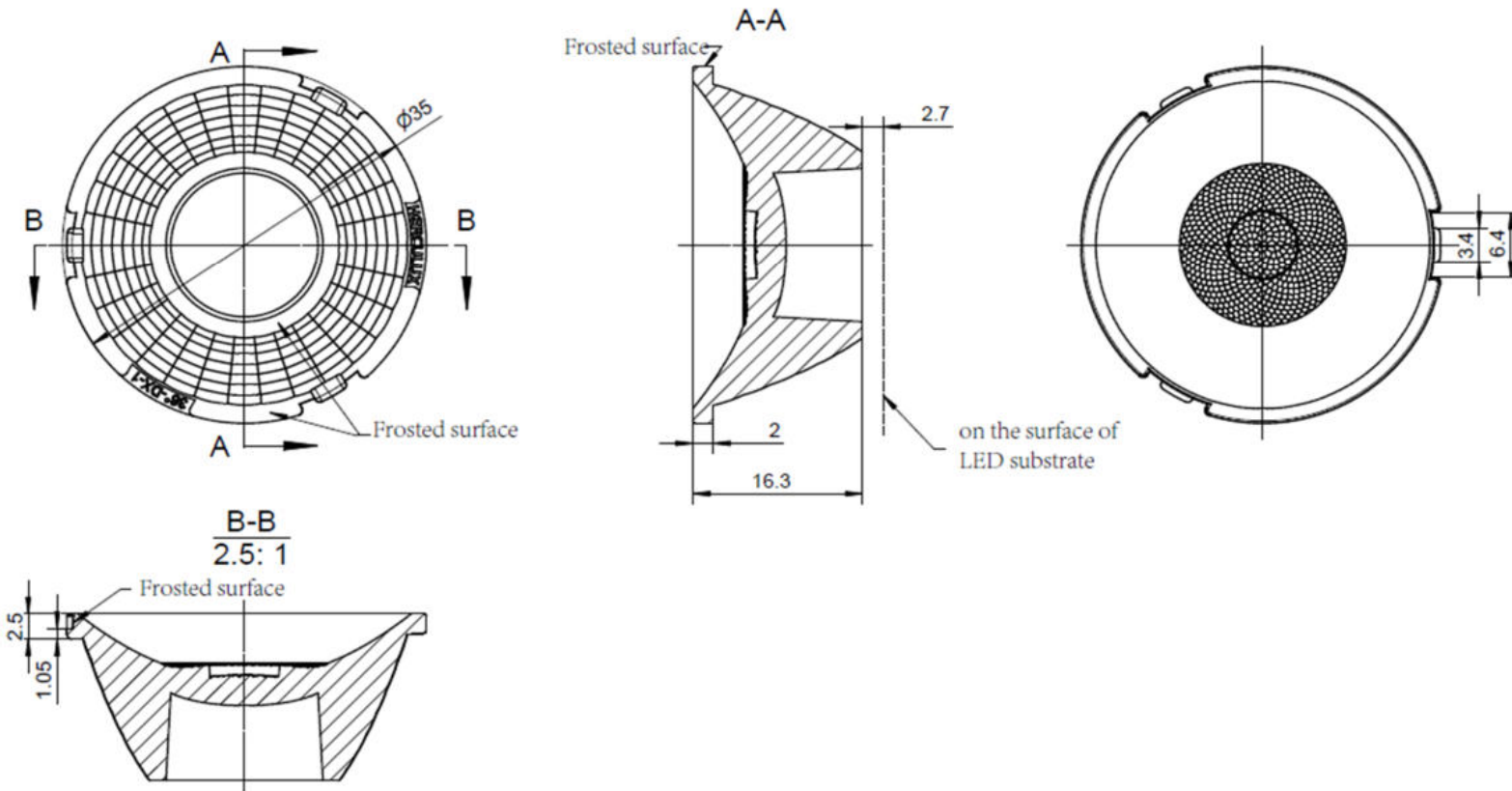


Technical remark:

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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2μm

Optical design			HK-DX-35@16-24-D6-21-1g-1	
Structure design			1.01.02561	
Review			number of drawing	qty
Validation			weight	
			Material:	PC
				CDHK

MT5 Tolerance table (mm)	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
	olerance valu	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0

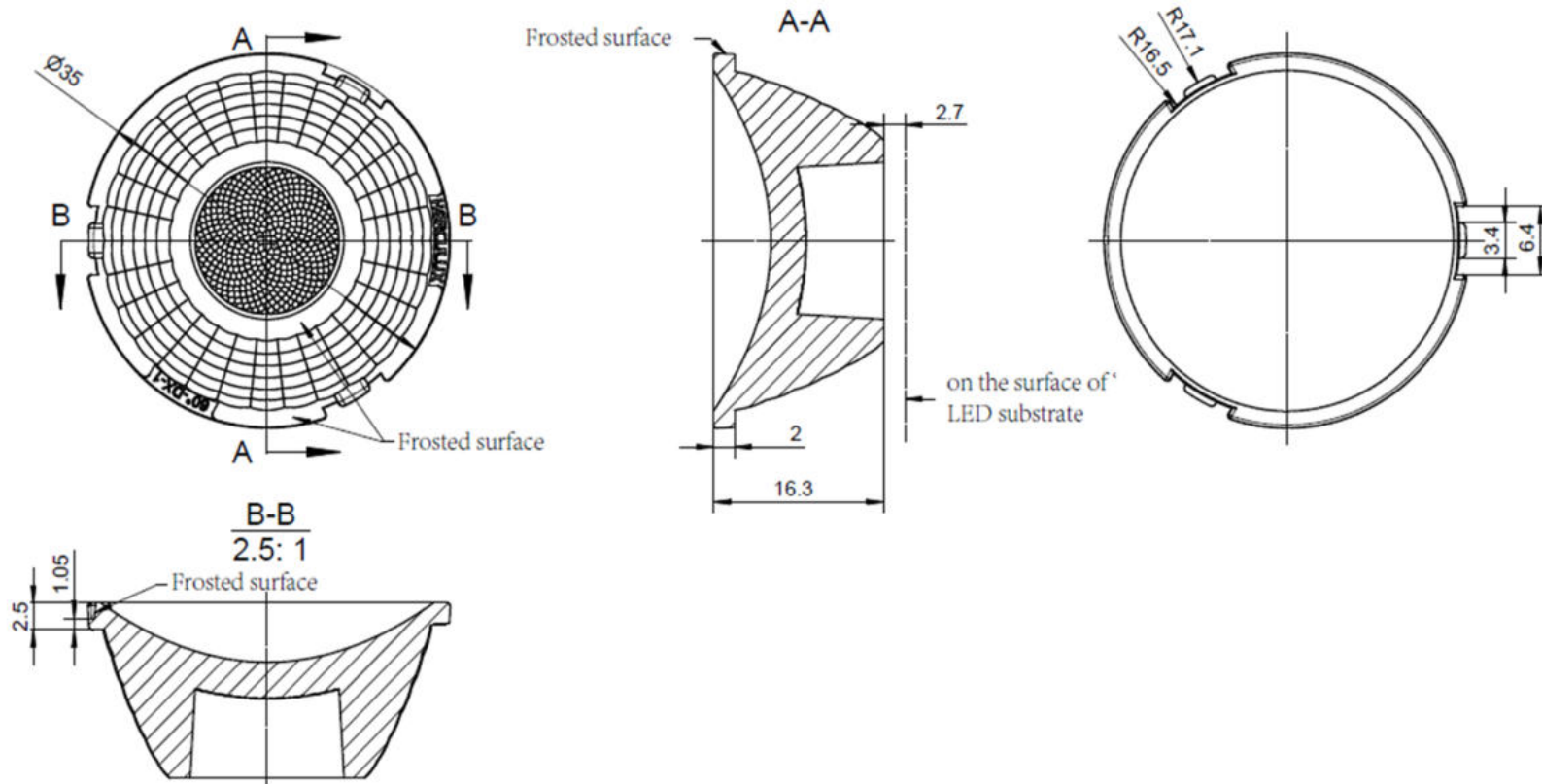


Technical remark:

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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK-DX-35@16-36-D6-21-1g-1		
Structure design			HK Glareless 35@16-36 ^g lens		
Review			number of drawing	qty	weight
Validation			Material: PC		CDHK

MT5 Tolerance table (mm)	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
	tolerance value	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0

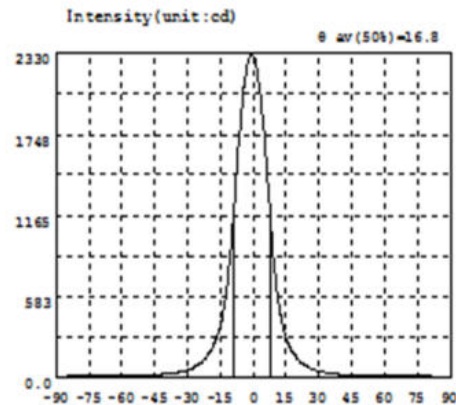
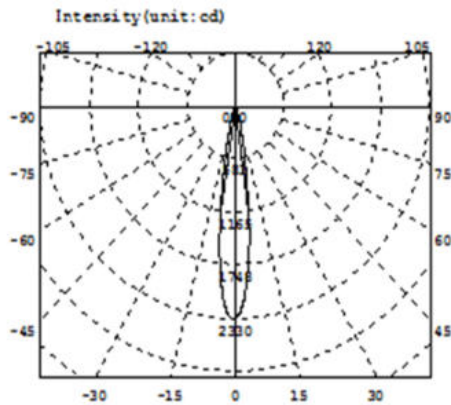


Technical remark:

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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK-DX-35@16-60-D6-21-1g-1		
Structure design			HK Glareless 35@16-60 ^g lens		
Review			number of drawing	qty	weight
Validation			1.01.12804		
			Material: #N/A		
			CDHK		

MT5 Tolerance table (mm)	Basic size tolerance value	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
		± 0.1	± 0.15	± 0.20	± 0.35	± 0.50	± 0.80	± 1.2	± 2.0



Intensity data:(deg , cd) C0-180

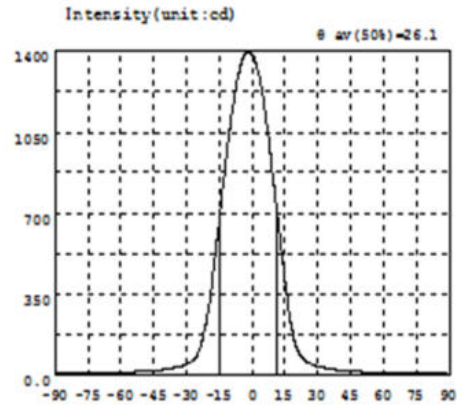
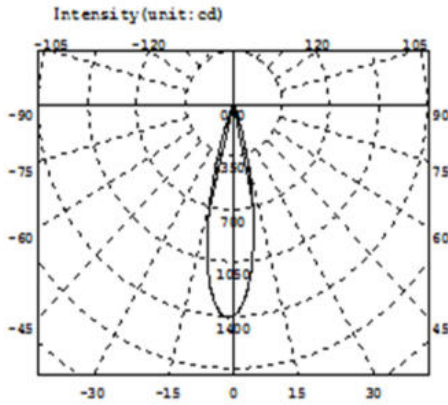
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	2.948	-58.5	9.411	-27.0	70.64	4.5	1835	36.0	25.30	67.5	6.303
-88.5	3.379	-57.0	9.816	-25.5	84.71	6.0	1557	37.5	22.96	69.0	6.006
-87.0	3.573	-55.5	10.42	-24.0	101.8	7.5	1241	39.0	20.63	70.5	5.693
-85.5	3.857	-54.0	11.09	-22.5	123.9	9.0	924.4	40.5	19.17	72.0	5.407
-84.0	4.138	-52.5	11.84	-21.0	151.7	10.5	671.7	42.0	17.82	73.5	5.132
-82.5	4.373	-51.0	12.62	-19.5	186.0	12.0	496.9	43.5	16.60	75.0	4.831
-81.0	4.608	-49.5	13.47	-18.0	230.1	13.5	375.5	45.0	15.62	76.5	4.617
-79.5	4.810	-48.0	14.34	-16.5	289.7	15.0	282.9	46.5	14.74	78.0	4.437
-78.0	4.979	-46.5	15.35	-15.0	369.4	16.5	224.5	48.0	13.97	79.5	4.478
-76.5	5.094	-45.0	16.53	-13.5	481.1	18.0	180.5	49.5	13.25	81.0	4.031
-75.0	5.283	-43.5	18.05	-12.0	642.2	19.5	146.4	51.0	12.54	82.5	0.4073
-73.5	5.456	-42.0	19.73	-10.5	875.3	21.0	119.8	52.5	11.77	84.0	0.0607
-72.0	5.723	-40.5	21.51	-9.0	1178	22.5	99.35	54.0	11.03	85.5	0.3988
-70.5	5.981	-39.0	23.57	-7.5	1500	24.0	83.09	55.5	10.20	87.0	0.1773
-69.0	6.244	-37.5	25.92	-6.0	1792	25.5	68.96	57.0	9.562	88.5	0.3128
-67.5	6.670	-36.0	28.80	-4.5	2040	27.0	57.70	58.5	9.014	90.0	0.9242
-66.0	7.062	-34.5	32.27	-3.0	2218	28.5	48.85	60.0	8.563		
-64.5	7.627	-33.0	36.69	-1.5	2309	30.0	41.59	61.5	8.153		
-63.0	8.056	-31.5	42.58	0.0	2315	31.5	35.79	63.0	7.765		
-61.5	7.787	-30.0	49.94	1.5	2238	33.0	31.59	64.5	7.240		
-60.0	9.010	-28.5	59.10	3.0	2072	34.5	28.12	66.0	6.805		

Electricity Parameter:

Current I: 0.1000A Power: 3.279W
Voltage V: 32.79V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: ϕ eff= 337.9lm Efficiency: Eff=103.06lm/W
Diffuse angle: @ (25%) : 23.7deg@ (50%) : 16.8deg@ (75%) : 11.2deg@ (50%) : 16.8deg
Diffuse angle: @ (25%) : 23.7deg@ (50%) : 16.8deg@ (75%) : 11.3deg@ (50%) : 16.8deg
Imax=2322cd (C=0.0deg,G=-0.5deg) C0-180Plane Imax= 2322cd(G=-0.5deg)
C0-180Plane IO= 2315cd



Intensity data:(deg , cd) C0-180

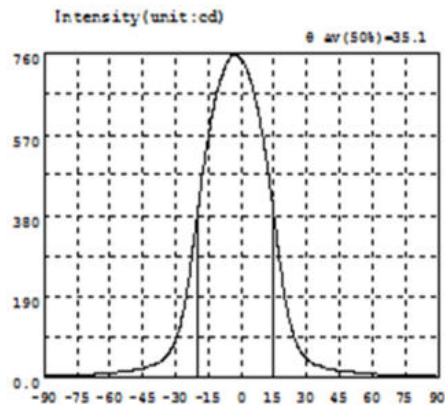
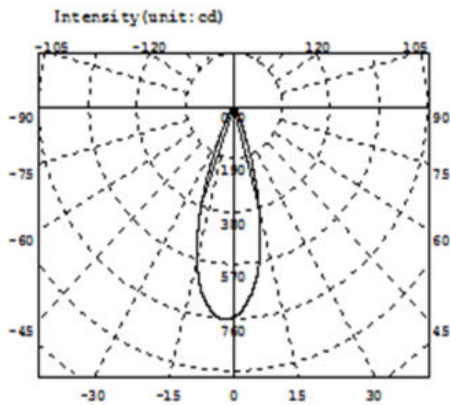
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	3.333	-58.5	9.928	-27.0	61.68	4.5	1230	36.0	22.53	67.5	5.866
-88.5	3.231	-57.0	10.51	-25.5	77.68	6.0	1137	37.5	20.17	69.0	5.624
-87.0	3.424	-55.5	11.17	-24.0	109.5	7.5	1027	39.0	18.54	70.5	5.377
-85.5	3.583	-54.0	11.93	-22.5	158.7	9.0	906.5	40.5	16.99	72.0	5.111
-84.0	3.699	-52.5	12.72	-21.0	223.9	10.5	782.4	42.0	15.70	73.5	4.818
-82.5	3.871	-51.0	13.37	-19.5	310.1	12.0	657.1	43.5	14.67	75.0	4.435
-81.0	4.108	-49.5	13.93	-18.0	419.5	13.5	530.0	45.0	13.85	76.5	4.443
-79.5	4.388	-48.0	14.47	-16.5	545.4	15.0	411.5	46.5	13.37	78.0	4.317
-78.0	4.912	-46.5	15.27	-15.0	673.1	16.5	293.3	48.0	12.84	79.5	4.225
-76.5	5.004	-45.0	16.16	-13.5	798.0	18.0	208.1	49.5	12.11	81.0	4.186
-75.0	5.284	-43.5	17.22	-12.0	922.3	19.5	143.7	51.0	11.42	82.5	4.187
-73.5	5.526	-42.0	18.42	-10.5	1044	21.0	100.0	52.5	10.66	84.0	4.190
-72.0	5.779	-40.5	20.18	-9.0	1150	22.5	75.09	54.0	10.07	85.5	3.912
-70.5	6.041	-39.0	22.68	-7.5	1239	24.0	61.85	55.5	9.514	87.0	3.672
-69.0	6.468	-37.5	25.64	-6.0	1309	25.5	52.62	57.0	8.974	88.5	3.419
-67.5	6.994	-36.0	28.43	-4.5	1361	27.0	45.49	58.5	8.509	90.0	3.370
-66.0	7.530	-34.5	31.01	-3.0	1391	28.5	39.57	60.0	8.103		
-64.5	8.039	-33.0	34.61	-1.5	1397	30.0	35.01	61.5	7.655		
-63.0	8.505	-31.5	39.37	0.0	1386	31.5	31.56	63.0	7.172		
-61.5	8.964	-30.0	45.12	1.5	1357	33.0	28.54	64.5	6.780		
-60.0	9.374	-28.5	52.37	3.0	1304	34.5	25.13	66.0	6.230		

Electricity Parameter:

Current I: 0.1000A Power: 3.279W
Voltage V: 32.79V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ_{eff} = 349.3lm Efficiency: Eff=106.55lm/W
Diffuse angle: @ (25%): 34.6deg@ (50%): 26.1deg@ (75%): 17.6deg@ (50%): 26.1deg
Diffuse angle: @ (25%): 34.6deg@ (50%): 26.2deg@ (75%): 17.8deg@ (50%): 26.2deg
Imax=1397cd (C=0.0deg,G=-2.0deg) C0-180Plane Imax= 1397cd(G=-2.0deg)
C0-180Plane I0= 1386cd



Intensity data:(deg , cd) C0-180

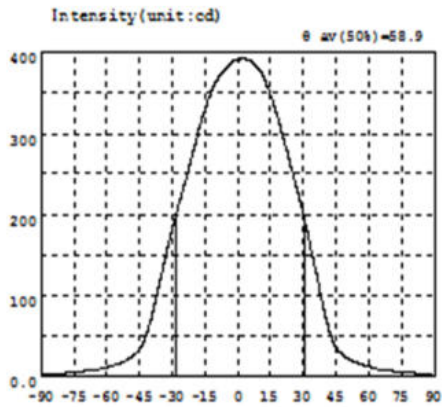
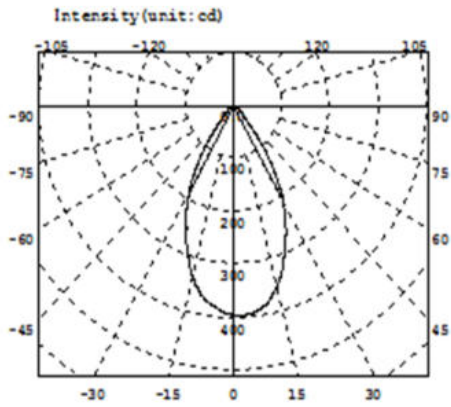
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	3.118	-58.5	9.479	-27.0	138.6	4.5	693.7	36.0	25.19	67.5	5.165
-88.5	3.231	-57.0	10.27	-25.5	176.9	6.0	666.1	37.5	22.68	69.0	4.901
-87.0	3.488	-55.5	11.14	-24.0	224.2	7.5	633.1	39.0	20.49	70.5	4.670
-85.5	3.466	-54.0	12.03	-22.5	281.3	9.0	594.6	40.5	18.57	72.0	4.439
-84.0	3.545	-52.5	12.97	-21.0	341.8	10.5	549.6	42.0	16.93	73.5	4.195
-82.5	3.637	-51.0	14.08	-19.5	403.0	12.0	497.7	43.5	15.56	75.0	4.006
-81.0	3.776	-49.5	15.35	-18.0	460.1	13.5	441.9	45.0	14.34	76.5	3.562
-79.5	3.939	-48.0	16.78	-16.5	515.9	15.0	382.5	46.5	13.24	78.0	3.625
-78.0	4.136	-46.5	18.44	-15.0	565.0	16.5	318.0	48.0	12.29	79.5	3.499
-76.5	4.280	-45.0	20.35	-13.5	609.2	18.0	260.1	49.5	11.41	81.0	3.441
-75.0	4.632	-43.5	22.56	-12.0	648.5	19.5	206.6	51.0	10.63	82.5	3.461
-73.5	4.931	-42.0	24.96	-10.5	680.2	21.0	161.2	52.5	9.924	84.0	3.376
-72.0	5.253	-40.5	27.64	-9.0	705.3	22.5	125.1	54.0	9.280	85.5	3.299
-70.5	5.580	-39.0	30.71	-7.5	726.8	24.0	98.01	55.5	8.715	87.0	3.276
-69.0	5.978	-37.5	34.65	-6.0	743.1	25.5	77.62	57.0	8.156	88.5	3.254
-67.5	6.337	-36.0	39.90	-4.5	753.2	27.0	62.45	58.5	7.644	90.0	3.434
-66.0	6.724	-34.5	46.82	-3.0	757.5	28.5	51.30	60.0	7.142		
-64.5	7.162	-33.0	56.06	-1.5	756.4	30.0	42.87	61.5	6.703		
-63.0	7.669	-31.5	68.73	0.0	748.4	31.5	36.46	63.0	6.357		
-61.5	8.199	-30.0	85.57	1.5	737.6	33.0	31.77	64.5	5.828		
-60.0	8.837	-28.5	108.5	3.0	718.7	34.5	28.21	66.0	5.504		

Electricity Parameter:

Current I: 0.1000A Power: 3.279W
Voltage V: 32.79V PF: 1.000

Optical Parameter(Distance=2.410m) :

Equivalent Luminous flux: $\Phi_{eff} = 320.5lm$ Efficiency: $Eff = 97.77lm/W$
Diffuse angle: @ (25%) : 45.0deg@ (50%) : 35.1deg@ (75%) : 24.7deg@ (50%) : 35.1deg
Diffuse angle: @ (25%) : 45.2deg@ (50%) : 35.4deg@ (75%) : 25.2deg@ (50%) : 35.4deg
 $I_{max} = 757.7cd$ (C=0.0deg,G=-2.5deg) C0-180Plane $I_{max} = 757.7cd$ (G=-2.5deg)
C0-180Plane $I_0 = 748.4cd$



Intensity data:(deg , cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	2.509	-58.5	11.55	-27.0	212.4	4.5	391.8	36.0	127.4	67.5	6.623
-88.5	2.497	-57.0	12.74	-25.5	226.6	6.0	390.3	37.5	108.2	69.0	6.130
-87.0	2.523	-55.5	14.01	-24.0	241.1	7.5	387.1	39.0	89.04	70.5	5.655
-85.5	2.612	-54.0	15.49	-22.5	254.0	9.0	382.5	40.5	71.11	72.0	5.154
-84.0	2.752	-52.5	17.18	-21.0	271.6	10.5	377.5	42.0	55.46	73.5	4.725
-82.5	2.892	-51.0	19.13	-19.5	286.9	12.0	369.1	43.5	43.43	75.0	4.433
-81.0	3.085	-49.5	21.39	-18.0	302.3	13.5	359.3	45.0	35.43	76.5	4.208
-79.5	3.329	-48.0	24.09	-16.5	317.1	15.0	348.8	46.5	29.90	78.0	3.995
-78.0	3.614	-46.5	27.53	-15.0	330.0	16.5	336.9	48.0	26.13	79.5	3.689
-76.5	3.955	-45.0	32.42	-13.5	341.8	18.0	323.8	49.5	23.31	81.0	3.470
-75.0	4.212	-43.5	39.37	-12.0	352.2	19.5	309.2	51.0	20.84	82.5	3.244
-73.5	4.523	-42.0	49.31	-10.5	361.7	21.0	293.9	52.5	18.80	84.0	3.039
-72.0	4.907	-40.5	62.75	-9.0	368.5	22.5	278.7	54.0	16.98	85.5	2.806
-70.5	5.440	-39.0	78.15	-7.5	374.6	24.0	263.8	55.5	15.28	87.0	2.632
-69.0	5.925	-37.5	94.81	-6.0	379.2	25.5	248.8	57.0	13.87	88.5	2.574
-67.5	6.410	-36.0	112.0	-4.5	383.5	27.0	233.8	58.5	12.59	90.0	2.662
-66.0	6.922	-34.5	129.5	-3.0	387.4	28.5	218.3	60.0	11.37		
-64.5	7.551	-33.0	147.2	-1.5	390.6	30.0	201.7	61.5	10.32		
-63.0	8.393	-31.5	164.5	0.0	392.1	31.5	183.6	63.0	9.103		
-61.5	9.590	-30.0	181.2	1.5	392.7	33.0	165.0	64.5	7.894		
-60.0	10.47	-28.5	197.3	3.0	392.8	34.5	146.1	66.0	7.170		

Electricity Parameter:

Current I: 0.1000A Power: 3.230W
Voltage V: 32.29V PF: 1.000

Optical Parameter(Distance=2.559m):

Equivalent Luminous flux: $\phi_{eff}=381.3lm$ Efficiency: $Eff=118.07lm/W$
Diffuse angle: @ (25%): 75.4deg@ (50%): 58.9deg@ (75%): 39.6deg@ (50%): 58.9deg
Diffuse angle: @ (25%): 75.4deg@ (50%): 59.0deg@ (75%): 39.7deg@ (50%): 59.0deg
Imax=392.9cd (C=0.0deg,G=2.0deg) C0-180Plane Imax= 392.9cd(G=2.0deg)
C0-180Plane I0= 392.1cd

	Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
1.Size	diameter	35		34.92	34.92	34.92	34.92		Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.
	height	16.3		16.41	16.35	16.41	16.35		
	thickness	2		2	1.99	2	1.99		
Gate shear can not affect the appearance of the lamp									
See attachment "Appearance Inspection Standards"									

2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr	No burr	No burr	No burr	OK
			No stains	No stains	No stains	No stains	

3.Material	PC	Color	Transparent	OK
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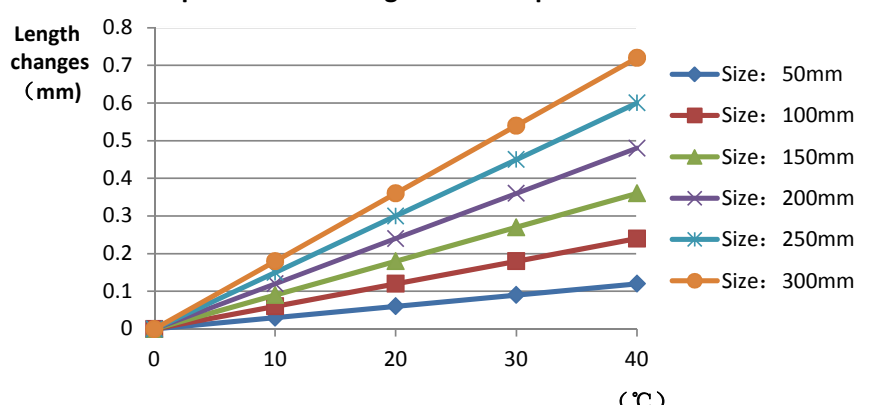
4.Optical index	Testing LED	D6							
	The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.								
	FWHM	See light distribution curve							
	angle		16.8	17.1	17	16.7			
	K-value		6.89	6.86	6.81	6.84			
	Efficiency		90.35%	90.88%	90.35%	90.35%			
Facula	See the signature sample								

Comprehensive judgment	Qualified							
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Remarks:

- Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool 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

PC product size changes with temperature table



Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.02	0.05	0.08	0.12	0.15	0.18
20	0.04	0.10	0.16	0.24	0.30	0.36
30	0.06	0.15	0.24	0.36	0.45	0.54
40	0.08	0.20	0.32	0.48	0.60	0.72

- Precautions:
- Wear clean gloves during lens assembly to prevent contamination of the lens surface.
 - Take the lens try to avoid touching the total reflection surface.
 - When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.
 - The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens.

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Test result5	Test result6	Test result7	Test result8	Judgment	Remarks
1.Size	diameter	35			34.94	34.94	34.99	34.98	34.94	34.88	34.87	34.95		Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.
	height	16.3			16.36	16.37	16.38	16.35	16.36	16.33	16.33	20.88		
	thickness	2			2.00	2.06	2.06	1.99	2.05	2.01	1.99	2.02		
Gate shear can not affect the appearance of the lamp														
See attachment "Appearance Inspection Standards"														

2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr		No burr		No burr		No burr		OK
			No stains		No stains		No stains		No stains		

3.Material	PC		Color		Transparent		OK	
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4.Optical index	Testing Light	D6										
	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										
	angle		26.1	26	25.9	25.7	26	25.9	25.6	26		
	K-value		4.00	3.98	4.01	4.05	3.99	4.00	4.02	4.00		
Efficiency		92.82%	93.62%	93.62%	94.41%	94.15%	94.15%	93.88%	93.09%			
Accuracy	See the signature sample											

Comprehensive judgment	Qualified										
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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

PC product size changes with temperature table

Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.02	0.05	0.08	0.12	0.15	0.18
20	0.04	0.10	0.16	0.24	0.30	0.36
30	0.06	0.15	0.24	0.36	0.45	0.54
40	0.08	0.20	0.32	0.48	0.60	0.72

- Precautions:
- 1、 Wear clean gloves during lens assembly to prevent contamination of the lens surface.
 - 2、 Take the lens try to avoid touching the total reflection surface.
 - 3、 When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.
 - 4、 The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens.

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Test result5	Test result6	Test result7	Test result8	Judgment	Remarks
1.Size	diameter	35			34.93	34.88	34.87	34.85	34.82	34.84	34.82	34.82		Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.
	height	16.3			16.27	16.29	16.34	16.33	16.33	16.26	16.31	16.34		
	thickness	2			1.97	2.00	2.04	2.00	1.99	1.98	2.00	2.04		
Gate shear can not affect the appearance of the lamp														
See attachment "Appearance Inspection Standards"														

2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr	No burr	No burr	No burr	OK
			No stains	No stains	No stains	No stains	

3.Material	PC	Color	Transparent	OK
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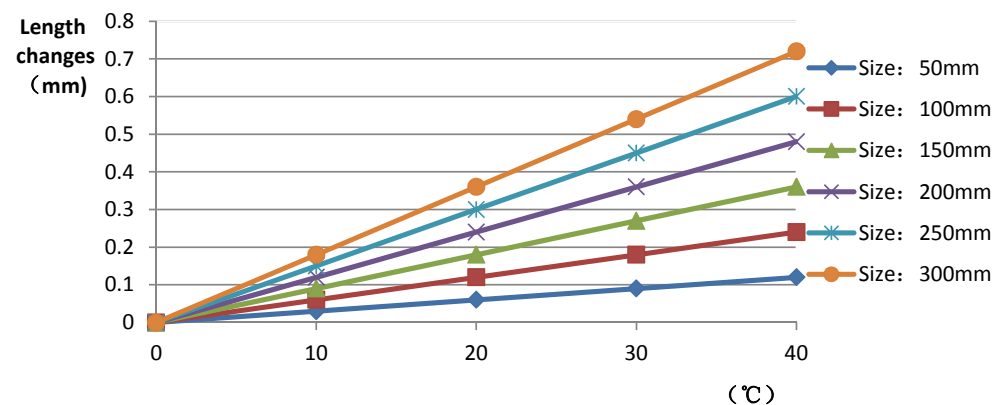
4.Optical index	Testing LED	cree: 1304												
	The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.													
	FWHM	See light distribution curve												
	angle		35.10	33.50	34.80	34.50	34.00	34.70	34.70	33.90				
	K-value		2.37	2.56	2.41	2.41	2.49	2.40	2.42	2.50				
Efficiency		90.40%	91.24%	90.96%	90.11%	89.55%	89.55%	88.14%	90.68%					
Accuracy	See the signature sample													

Comprehensive judgment	Qualified													
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Remarks:

- Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool 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

PC product size changes with temperature table



Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.05	0.08	0.10	0.12	0.15	0.18
20	0.08	0.12	0.15	0.20	0.25	0.30
30	0.10	0.15	0.20	0.25	0.35	0.45
40	0.12	0.18	0.25	0.35	0.50	0.65

- Precautions:
- Wear clean gloves during lens assembly to prevent contamination of the lens surface.
 - Take the lens try to avoid touching the total reflection surface.
 - When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.
 - The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens.

	Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
1.Size	diameter	35			34.99	34.98	34.99	34.98	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.
	height	16.3			16.37	16.34	16.37	16.34	
	thickness	2			2.08	2.1	2.08	2.1	
Gate shear can not affect the appearance of the lamp									
See attachment "Appearance Inspection Standards"									

2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr	No burr	No burr	No burr	OK
			No stains	No stains	No stains	No stains	

3.Material	PC	Color	Transparent	OK
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4.Optical index	Testing LED	cree: 1304						
	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						
	angle		58.9	60	61.7	60.9		
	K-value							
	Efficiency		89.23%	89.70%	88.76%	89.23%		
Facula	See the signature sample							

Comprehensive judgment	Qualified
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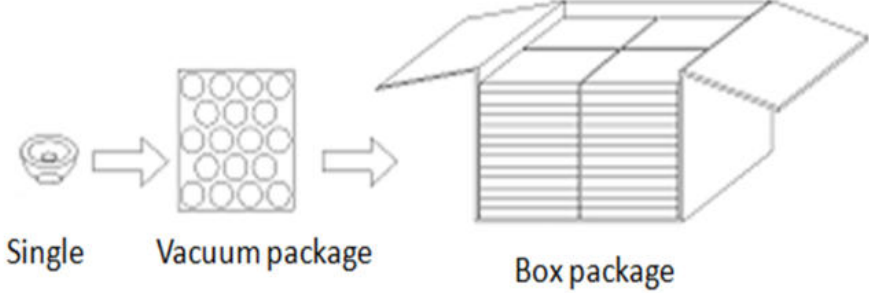
Remarks:

- Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool 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

PC product size changes with temperature table

Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.05	0.08	0.12	0.15	0.18	0.22
20	0.08	0.12	0.18	0.25	0.32	0.40
30	0.10	0.18	0.28	0.38	0.48	0.58
40	0.12	0.25	0.38	0.50	0.62	0.72

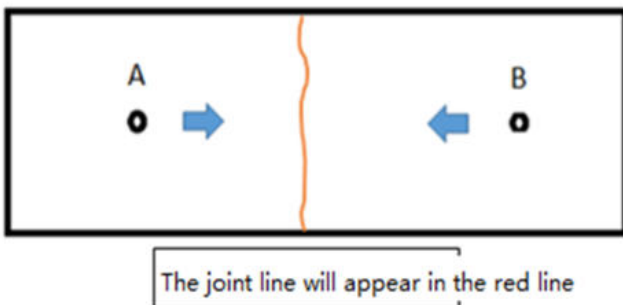
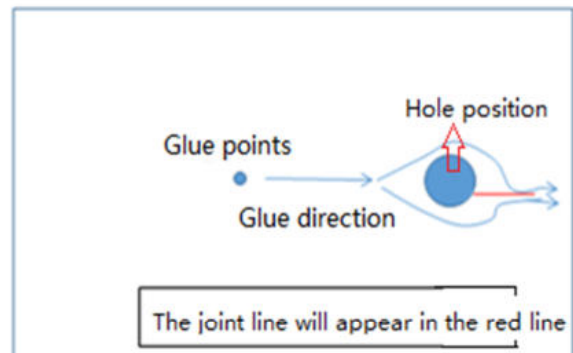
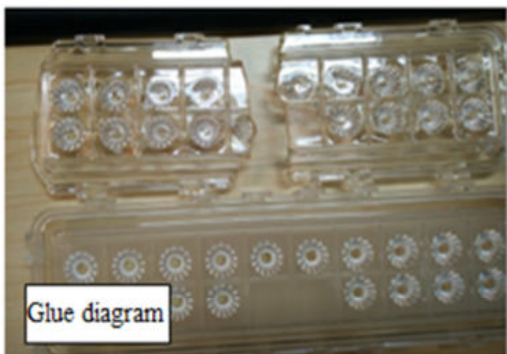
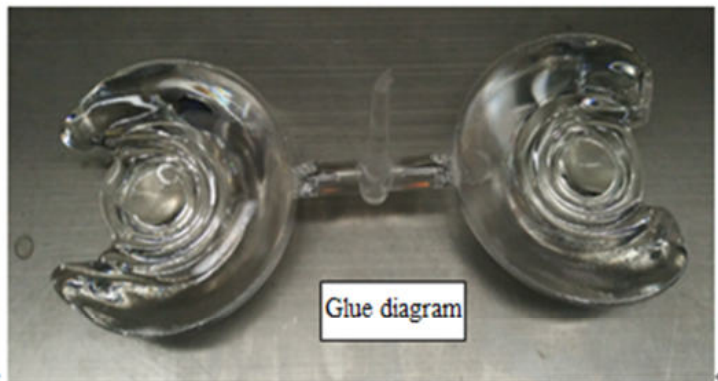
- Precautions:
- Wear clean gloves during lens assembly to prevent contamination of the lens surface.
 - Take the lens try to avoid touching the total reflection surface.
 - When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.
 - The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens.

PN	HK-DX-35@16-15-D6-21-1g-1		Product Name	HK Glareless 35@16-15° lens			
Product material	PC		Customer				
Package diagram	 <p style="text-align: center;"> Single Vacuum package Box package </p>						
Product packing	23	A/ Box	4	pcs/Layer			
	13	Layer/Box	1196	A/ Carton			
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0075	Blister box	23cm*21cm	52	BAG	
	2	2.08.0001	PE film	25cm*27cm	52	PCS	
	3	2.06.0005	Reel label paper	62mm*42mm	52	PCS	
	4	2.06.0005	Box label paper	62mm*70mm	1	PCS	
	5	2.06.0003	big plate	46cm*42cm	14	PCS	
	6	2.06.0011	big flat carton	48cm*44cm*37cm	1	PCS	
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail						

Special notice

When glue 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:

Syntner



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

1.1.1 Sampling standards, sampling plan and AQL

Test level : GB/T2828.1-2012 The first part is according to the acceptance quality limit (AQL) retrieval batch inspection sampling plan, general inspection level II 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 description	Unit	Code		Code description	Unit
N	Amount/pcs	pcs	D		Diameter	mm
L	Length	mm	H		Depth	mm
W	Width	mm	DS		Distance	mm
S	Proportion	mm ²	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	Judging standard	Inspection equipment	Defect level		
		Testing method	MI	MA	CR
Check the sample	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.	Sample comparison , visual			
	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;				

	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		√	
Fingerprint	Fingerprints are not allowed on all products	Visual		√	
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				√
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler			√
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.	Visual, point card		√	
	Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, and the structural surface does not allow visual obvious strain.				
Insufficient filling	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 ≤ 10mm, no more than two				

Bubble	No bubbles are allowed	Visual		√	
Foreign objects, black spots, white spots	Not obvious or $D \leq 0.3\text{mm}$ 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	√		
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	√		
Bad incision	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;	Visual			√
	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation				
	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 $D \leq 1\text{ mm}$ and no more than 1 area within a 50x50 mm area	Visual		√	



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Chengdu HercuLux Photoelectric
Technology Co.,Ltd
Product Approval

Approval number:

Customer:

Manufacturer: Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-DX-35@16-15-D6-21-1g-1_PMMA	1. 01. 02556_PMMA	HK Glareless 35@16-15° lens
HK-DX-35@16-24-D6-21-1g-1_PMMA	1. 01. 02561_PMMA	HK Glareless 35@16-24° lens
HK-DX-35@16-36-D6-21-1g-1_PMMA	1. 01. 02571_PMMA	HK Glareless 35@16-36° lens
HK-DX-35@16-60-D6-21-1g-1_PMMA	1. 01. 12804_PMMA	HK Glareless 35@16-60° lens



Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified <input type="checkbox"/>		DATE	
Project manager		DATE		Unqualified <input type="checkbox"/>			
Audit		DATE		Audit		DATE	
Approved		DATE		Approved		DATE	
Stamp		DATE		Stamp		DATE	

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

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

Phone: 028-85887727 (801) 028-85887990 (801)

Fax: 028-85887730

<http://www.herculux.co>

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.

Disclaimer

Please use this product within the permitted range and environment according to the structure and material of the product. If the usage exceeds the recommended value, please test and verify by yourself. If the product is damaged due to out-of-range use, our company will not be responsible for the warranty.

Product material:

Customized products: The specifications and models of materials used are subject to the agreement between the two parties.

Conventional products: As a product that we continuously research and improve, under the premise of ensuring the quality and availability of the product, our company reserves the right to change the material. If the material specification and model change, without prior notice.

product data:

The measurement data and dimensional tolerances of the 2D drawings in the product data sheet of this acknowledgement are for reference only, and the final size shall prevail in kind.

The measurement data presented in this acknowledgment is a performance test of the product based on our company's internal test conditions and quality requirements, and the reported data is a typical value of the average results of multiple measurements. Therefore, in some cases, the actual product may deviate from the data provided. We reserve the right to notify you in advance of this data.


Product changes and improvements:

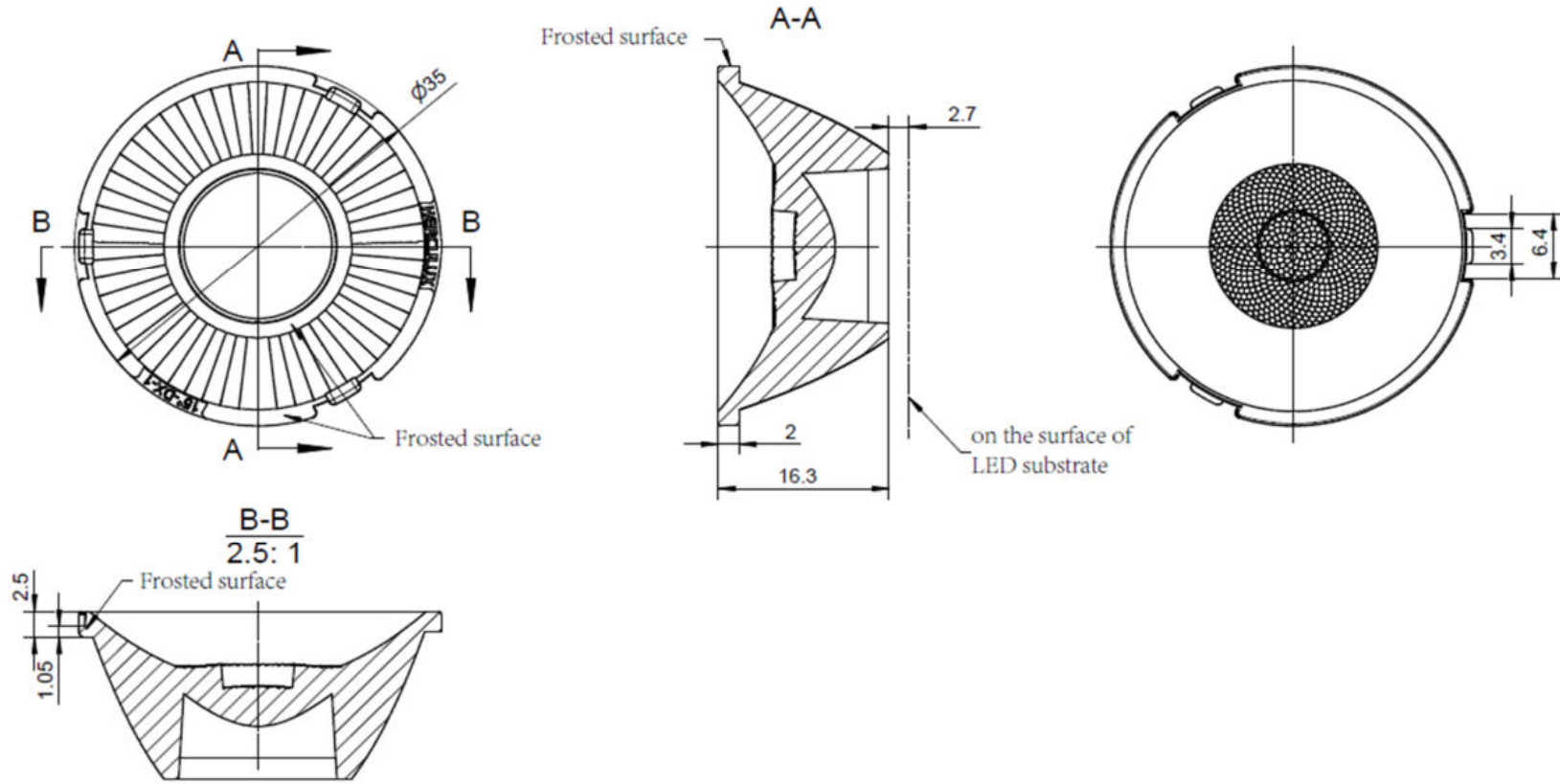
Changes and improvements of customized products are subject to the agreement between the two parties in the contract or technical documents.

As the conventional products that we continue to research and improve, our company reserves the right to make technical changes to its products, and reserves the right to make changes to data resulting from improvements without prior notice.

Operation cautions:

1. Please wear clean gloves during product assembly to prevent product surface contamination.
2. Try to avoid touching the optical surface of the lens when taking the lens.
3. When the surface of the product is polluted, please wipe it gently with a soft cotton cloth dipped in analytically pure neutral solvent. It is forbidden to use industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA monomerm,etc.) wipe.
- 4.The lens made of PC should not be exposed to direct sunlight in the storage and use environment. If the lens turns yellow or cracks due to long-term sunlight exposure, our company will not be responsible for the warranty.

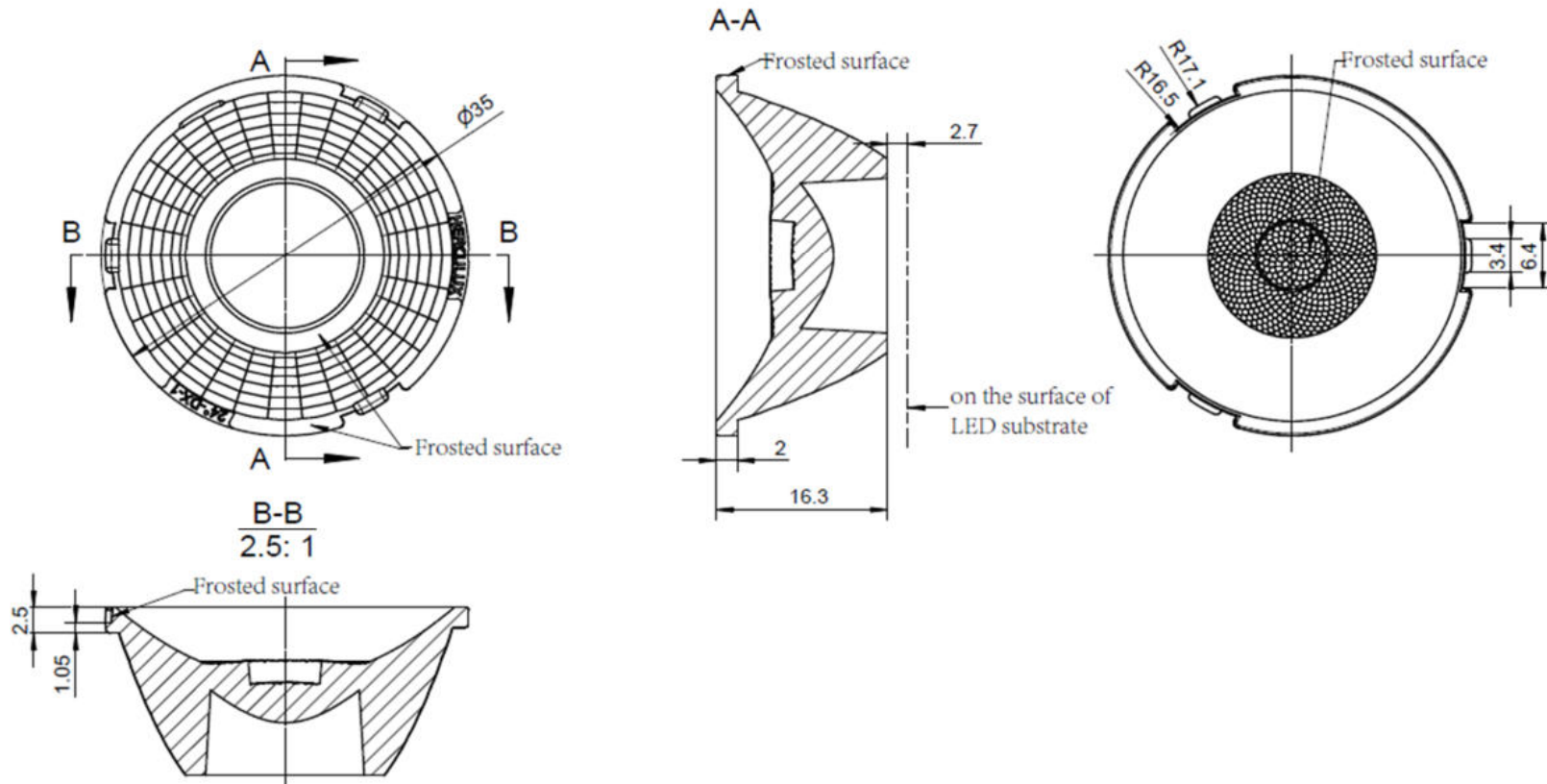
Product Picture:	
Size(L*W*H/Φ*H):	Φ:35mm; H:16.3mm
Material:	PMMA
Efficiency:	\
Temperature(Topr):	Material extreme temperature resistance: -40°C to +100°C long-term use temperature: -40°C to +80°C
FWHM:	15°、24°、36°、60°
Matched LES:	D6
Recommended MAX power:	Not more than 15W



- Techn**
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.
 - *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK-DX-35@16-15-D6-21-1g-1_PMMA	
Structure design			HK Glareless 35@16-15 ^g lens	
Review			number of drawing	qty
Validation			weight	
			Material:	PMMA
				CDHK

MT5 Tolerance table (mm)	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
	olerance valu	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0

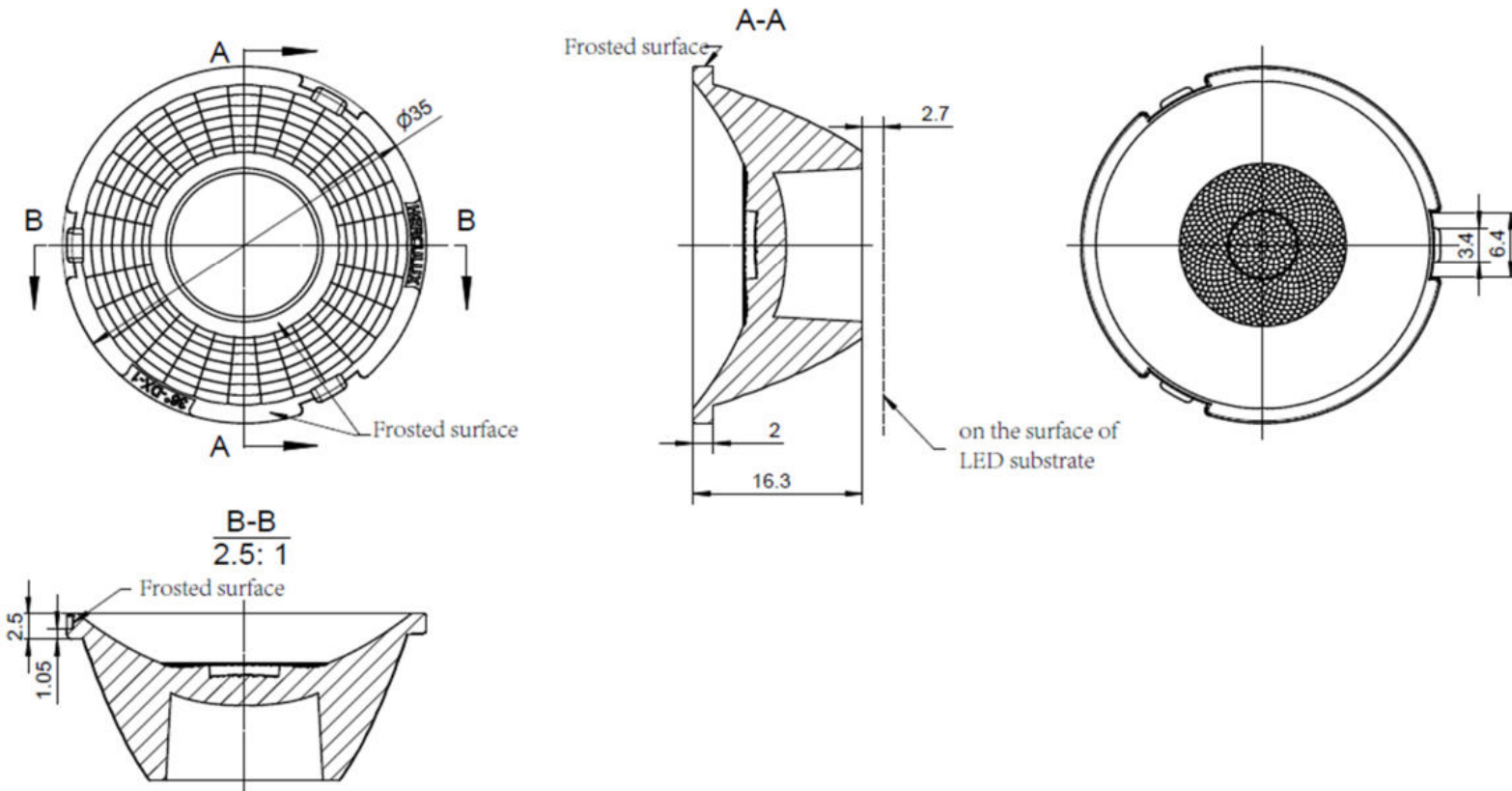


Technical remark:

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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK-DX-35@16-24-D6-21-1g-1_PMMA	
Structure design			HK Glareless 35@16-24 ^g lens	
Review			Number of drawing	qty
Validation			weight	
			Material:	PMMA
				CDHK

MT5 Tolerance table (mm)	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
	olerance valu	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0

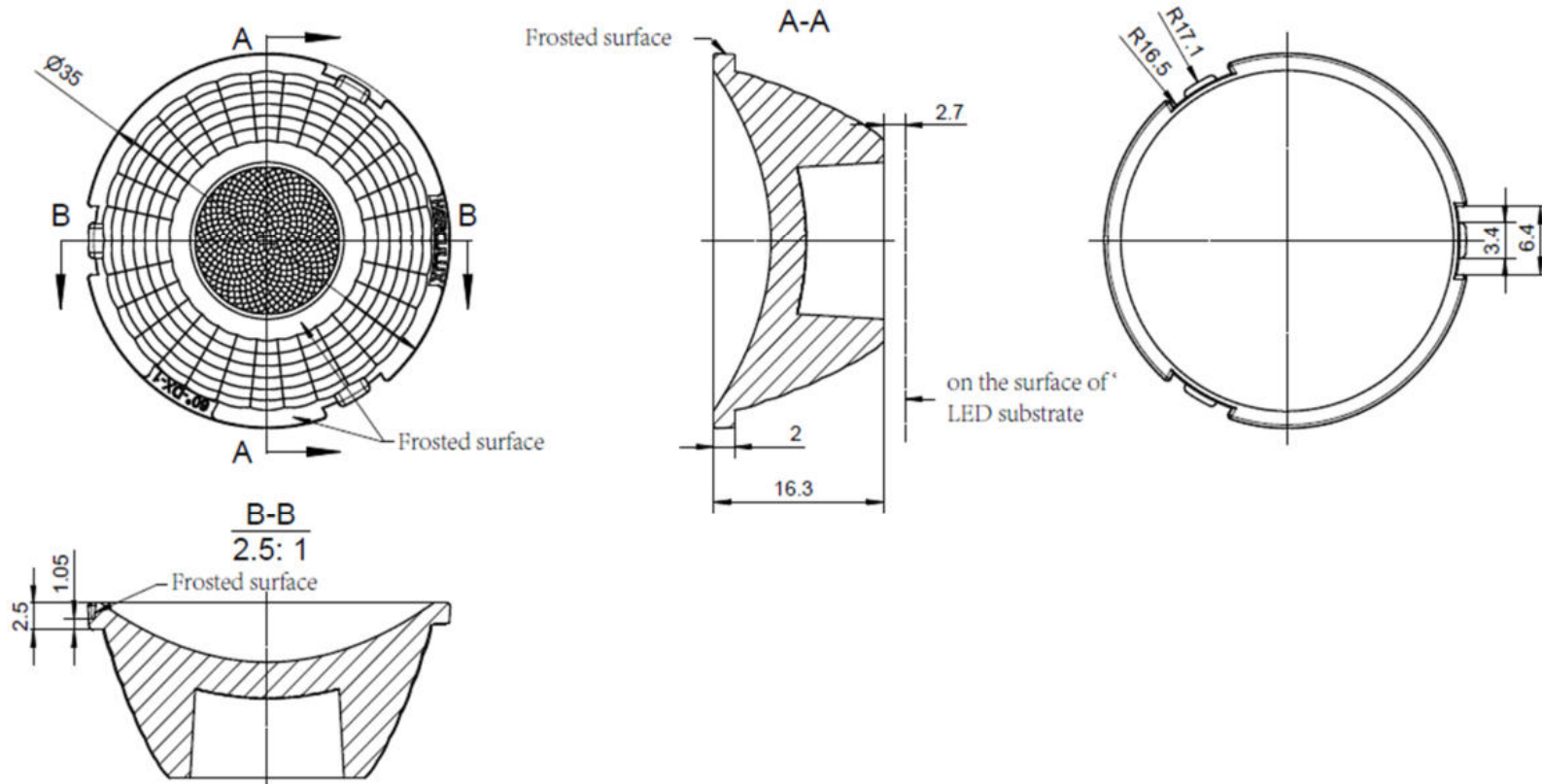


Technical remark:

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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK-DX-35@16-36-D6-21-1g-1_PMMA	
Structure design			HK Glareless 35@16-36 ^g lens	
Review			Number of drawing	qty
Validation			weight	
			Material:	PMMA
				CDHK

MT5 Tolerance table (mm)	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
	tolerance value	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0

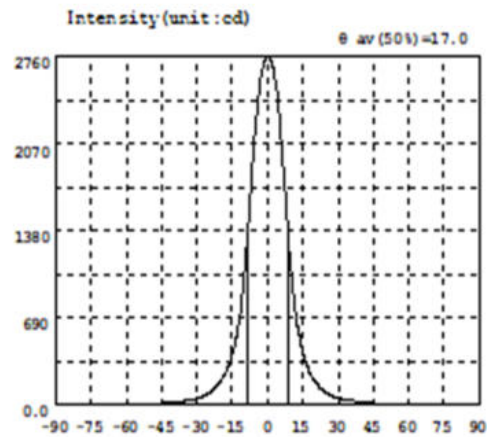
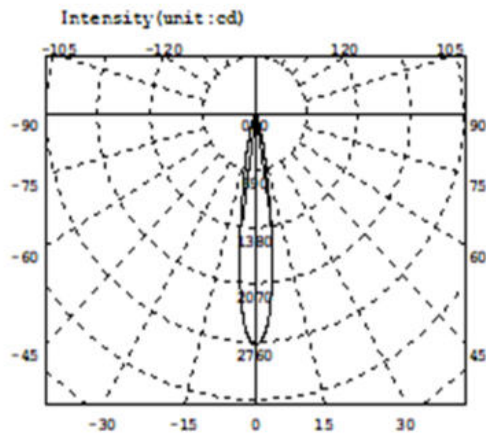


Technical remark:

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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2μm

Optical design			HK-DX-35@16-60-D6-21-1g-1_PMMA	
Structure design			HK Glareless 35@16-60 ^g lens	
Review			1.01.12804_PMMA	
Validation			Number of drawing	qty weight
			Material:	#N/A
				CDHK

MT5 Tolerance table (mm)	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
	olerance valu	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0



Intensity data:(deg , cd) C0-180

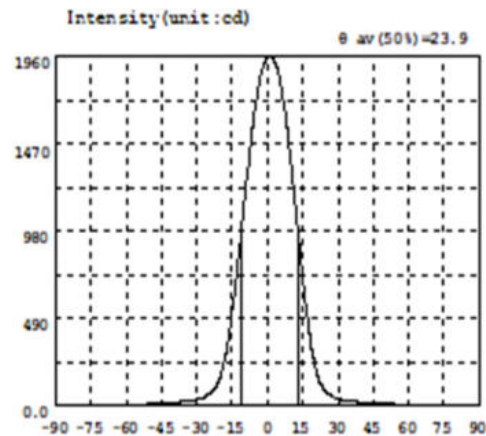
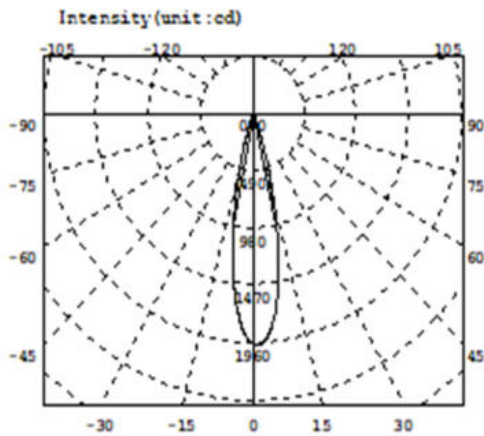
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	4.560	-58.5	11.28	-27.0	74.56	4.5	2391	36.0	36.02	67.5	7.459
-88.5	4.776	-57.0	12.09	-25.5	90.10	6.0	2071	37.5	31.42	69.0	7.006
-87.0	4.738	-55.5	12.97	-24.0	109.4	7.5	1688	39.0	27.08	70.5	6.723
-85.5	4.751	-54.0	13.78	-22.5	134.3	9.0	1305	40.5	23.99	72.0	6.472
-84.0	4.865	-52.5	14.58	-21.0	165.7	10.5	970.2	42.0	21.93	73.5	6.263
-82.5	5.020	-51.0	15.29	-19.5	204.0	12.0	722.6	43.5	20.36	75.0	6.140
-81.0	5.174	-49.5	16.08	-18.0	252.5	13.5	548.1	45.0	19.05	76.5	6.095
-79.5	5.354	-48.0	16.94	-16.5	316.9	15.0	422.3	46.5	17.86	78.0	6.012
-78.0	5.599	-46.5	17.88	-15.0	401.9	16.5	324.4	48.0	16.71	79.5	5.875
-76.5	5.868	-45.0	18.99	-13.5	515.4	18.0	259.4	49.5	15.61	81.0	5.825
-75.0	6.174	-43.5	20.32	-12.0	673.7	19.5	208.1	51.0	14.62	82.5	6.155
-73.5	6.517	-42.0	21.81	-10.5	903.8	21.0	168.2	52.5	13.76	84.0	6.079
-72.0	6.836	-40.5	23.64	-9.0	1222	22.5	136.9	54.0	12.96	85.5	5.760
-70.5	7.152	-39.0	25.76	-7.5	1605	24.0	112.4	55.5	12.25	87.0	5.367
-69.0	7.464	-37.5	28.18	-6.0	1989	25.5	92.84	57.0	11.67	88.5	4.998
-67.5	7.908	-36.0	31.18	-4.5	2323	27.0	78.07	58.5	11.21	90.0	4.402
-66.0	8.534	-34.5	34.82	-3.0	2569	28.5	66.74	60.0	10.59		
-64.5	9.163	-33.0	39.25	-1.5	2714	30.0	58.06	61.5	9.982		
-63.0	9.707	-31.5	45.04	0.0	2759	31.5	51.09	63.0	9.420		
-61.5	10.16	-30.0	52.30	1.5	2730	33.0	45.48	64.5	8.790		
-60.0	10.63	-28.5	62.14	3.0	2615	34.5	40.47	66.0	8.116		

Electricity Parameter:

Current I: 0.1000A Power: 3.200W
Voltage V: 32.00V PF: 1.000

Optical Parameter (Distance=2.559m) :

Equivalent Luminous flux: $\Phi_{eff}=413.4lm$ Efficiency: $Eff=129.20lm/W$
Diffuse angle: @ (25%): 24.0deg@ (50%): 17.0deg@ (75%): 11.6deg@ (50%): 17.0deg
Diffuse angle: @ (25%): 24.0deg@ (50%): 17.0deg@ (75%): 11.6deg@ (50%): 17.0deg
 $I_{max}=2759cd$ (C=0.0deg, G=0.0deg) C0-180Plane $I_{max}=2759cd$ (G=0.0deg)
C0-180Plane $I_0=2759cd$



Intensity data:(deg , cd) C0-180

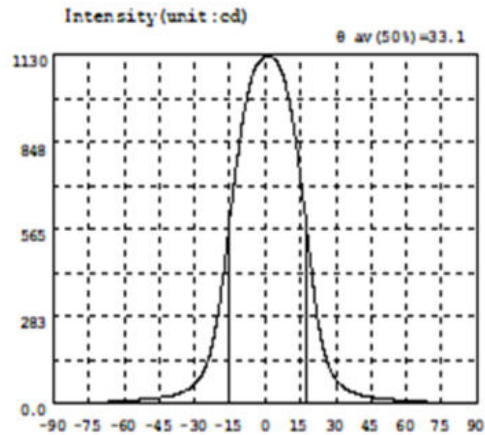
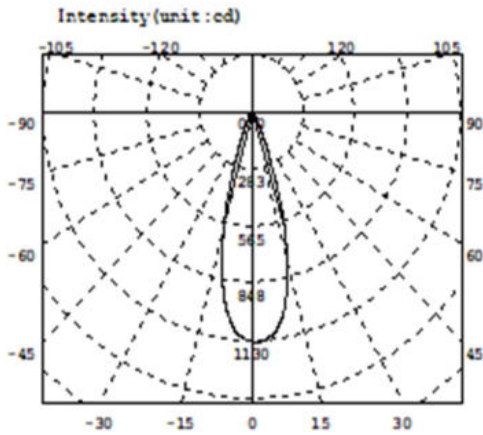
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	3.706	-58.5	10.63	-27.0	51.29	4.5	1878	36.0	26.28	67.5	7.795
-88.5	4.000	-57.0	11.12	-25.5	61.14	6.0	1783	37.5	24.17	69.0	7.292
-87.0	4.229	-55.5	11.63	-24.0	74.48	7.5	1651	39.0	22.70	70.5	6.875
-85.5	4.356	-54.0	12.12	-22.5	96.08	9.0	1487	40.5	21.22	72.0	6.489
-84.0	4.523	-52.5	12.72	-21.0	132.4	10.5	1302	42.0	19.82	73.5	6.109
-82.5	4.609	-51.0	13.36	-19.5	190.5	12.0	1109	43.5	18.68	75.0	5.724
-81.0	4.613	-49.5	14.24	-18.0	272.2	13.5	912.0	45.0	17.72	76.5	5.377
-79.5	4.704	-48.0	15.40	-16.5	383.5	15.0	724.7	46.5	16.87	78.0	5.114
-78.0	4.897	-46.5	16.15	-15.0	523.8	16.5	553.3	48.0	16.14	79.5	4.848
-76.5	5.127	-45.0	16.75	-13.5	687.8	18.0	402.5	49.5	15.47	81.0	4.609
-75.0	5.384	-43.5	17.68	-12.0	866.4	19.5	273.9	51.0	14.80	82.5	4.401
-73.5	5.702	-42.0	18.78	-10.5	1055	21.0	186.2	52.5	14.14	84.0	4.176
-72.0	5.994	-40.5	20.07	-9.0	1243	22.5	129.1	54.0	13.32	85.5	3.903
-70.5	6.314	-39.0	21.68	-7.5	1423	24.0	92.85	55.5	12.42	87.0	3.616
-69.0	6.683	-37.5	23.34	-6.0	1587	25.5	71.83	57.0	11.60	88.5	3.552
-67.5	7.071	-36.0	24.74	-4.5	1732	27.0	58.94	58.5	10.88	90.0	3.566
-66.0	7.699	-34.5	26.84	-3.0	1843	28.5	49.49	60.0	10.29		
-64.5	8.365	-33.0	29.93	-1.5	1916	30.0	42.25	61.5	9.813		
-63.0	8.981	-31.5	33.60	0.0	1954	31.5	36.91	63.0	9.377		
-61.5	9.524	-30.0	37.98	1.5	1957	33.0	32.76	64.5	8.883		
-60.0	10.08	-28.5	43.76	3.0	1935	34.5	29.26	66.0	8.370		

Electricity Parameter:

Current I: 0.1000A Power: 3.200W
Voltage V: 32.00V PF: 1.000

Optical Parameter (Distance=2.559m) :

Equivalent Luminous flux: $\phi_{eff}=421.1lm$ Efficiency: $Eff=131.61lm/W$
Diffuse angle: @ (25%): 32.4deg @ (50%): 23.9deg @ (75%): 16.1deg @ (50%): 23.9deg
Diffuse angle: @ (25%): 32.4deg @ (50%): 24.1deg @ (75%): 16.2deg @ (50%): 24.1deg
Imax=1959cd (C=0.0deg, G=1.0deg) C0-180Plane Imax= 1959cd (G=1.0deg)
C0-180Plane I0= 1954cd



Intensity data:(deg , cd) C0-180

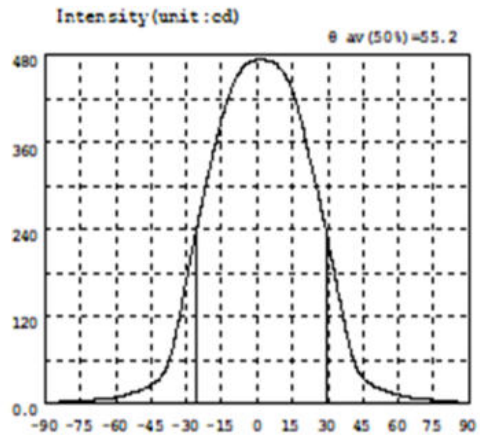
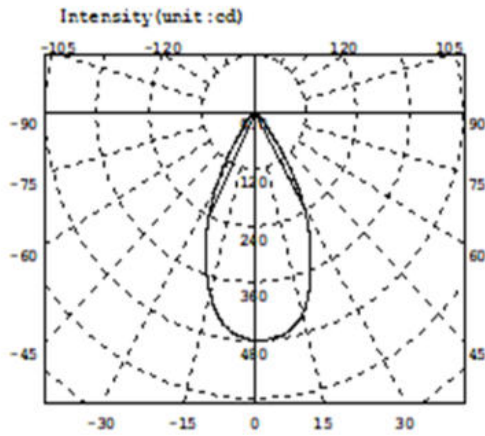
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	4.382	-58.5	10.89	-27.0	93.27	4.5	1112	36.0	41.46	67.5	8.328
-88.5	4.331	-57.0	11.57	-25.5	116.2	6.0	1093	37.5	36.69	69.0	7.768
-87.0	4.356	-55.5	12.30	-24.0	147.7	7.5	1066	39.0	32.73	70.5	7.308
-85.5	4.408	-54.0	13.16	-22.5	192.3	9.0	1025	40.5	29.53	72.0	6.875
-84.0	4.535	-52.5	14.22	-21.0	247.7	10.5	971.1	42.0	26.94	73.5	6.534
-82.5	4.585	-51.0	15.22	-19.5	319.0	12.0	903.3	43.5	24.51	75.0	6.195
-81.0	4.550	-49.5	16.34	-18.0	404.7	13.5	823.5	45.0	22.37	76.5	5.815
-79.5	4.743	-48.0	17.58	-16.5	499.3	15.0	733.9	46.5	20.61	78.0	5.489
-78.0	4.948	-46.5	19.01	-15.0	597.5	16.5	640.4	48.0	19.15	79.5	5.206
-76.5	5.177	-45.0	20.73	-13.5	695.3	18.0	543.9	49.5	17.89	81.0	4.791
-75.0	5.447	-43.5	22.47	-12.0	786.4	19.5	445.6	51.0	16.51	82.5	4.488
-73.5	5.739	-42.0	24.33	-10.5	870.9	21.0	343.9	52.5	15.22	84.0	4.350
-72.0	6.033	-40.5	26.45	-9.0	941.8	22.5	266.1	54.0	14.10	85.5	4.203
-70.5	6.416	-39.0	29.02	-7.5	1001	24.0	204.7	55.5	13.03	87.0	3.983
-69.0	6.814	-37.5	32.29	-6.0	1047	25.5	157.5	57.0	12.26	88.5	3.951
-67.5	7.255	-36.0	36.39	-4.5	1083	27.0	123.5	58.5	11.62	90.0	3.863
-66.0	7.898	-34.5	41.02	-3.0	1103	28.5	98.92	60.0	10.97		
-64.5	8.484	-33.0	46.37	-1.5	1116	30.0	80.66	61.5	10.28		
-63.0	9.024	-31.5	53.40	0.0	1124	31.5	66.72	63.0	9.614		
-61.5	9.676	-30.0	63.53	1.5	1127	33.0	55.82	64.5	9.101		
-60.0	10.30	-28.5	76.57	3.0	1124	34.5	47.63	66.0	8.872		

Electricity Parameter:

Current I: 0.1000A Power: 3.200W
Voltage V: 32.00V PF: 1.000

Optical Parameter (Distance=2.559m) :

Equivalent Luminous flux: $\Phi_{eff} = 427.9lm$ Efficiency: $Eff = 133.75lm/W$
Diffuse angle: @ (25%) : 42.3deg @ (50%) : 33.1deg @ (75%) : 24.0deg @ (50%) : 33.1deg
Diffuse angle: @ (25%) : 42.3deg @ (50%) : 33.2deg @ (75%) : 24.1deg @ (50%) : 33.2deg
Imax=1127cd (C=0.0deg, G=1.5deg) C0-180Plane Imax= 1127cd (G=1.5deg)
C0-180Plane I0= 1124cd



Intensity data:(deg , cd) C0-180

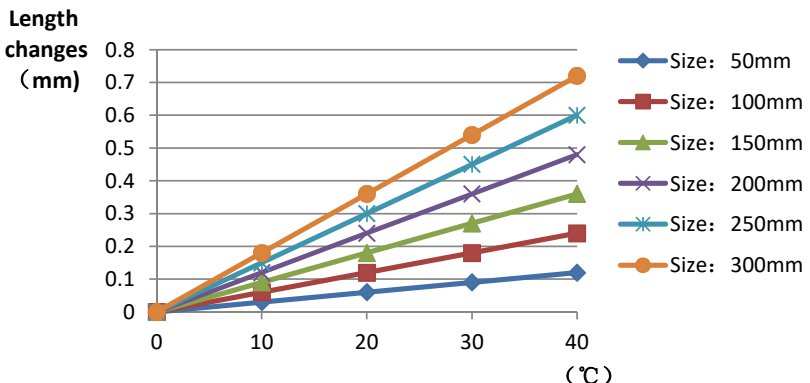
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	3.120	-58.5	10.66	-27.0	221.4	4.5	472.7	36.0	128.9	67.5	7.703
-88.5	3.044	-57.0	11.70	-25.5	241.4	6.0	471.2	37.5	106.0	69.0	7.174
-87.0	3.045	-55.5	12.84	-24.0	267.4	7.5	469.0	39.0	84.61	70.5	6.786
-85.5	3.084	-54.0	14.09	-22.5	290.0	9.0	465.1	40.5	66.23	72.0	6.257
-84.0	3.314	-52.5	15.55	-21.0	311.6	10.5	459.4	42.0	51.99	73.5	5.739
-82.5	3.505	-51.0	17.22	-19.5	332.6	12.0	451.9	43.5	42.20	75.0	5.325
-81.0	3.757	-49.5	19.05	-18.0	353.1	13.5	443.2	45.0	35.76	76.5	4.999
-79.5	3.936	-48.0	21.36	-16.5	373.1	15.0	431.7	46.5	31.38	78.0	4.671
-78.0	4.053	-46.5	23.81	-15.0	391.7	16.5	416.8	48.0	28.01	79.5	4.350
-76.5	4.324	-45.0	26.41	-13.5	408.9	18.0	399.6	49.5	25.13	81.0	4.045
-75.0	4.603	-43.5	29.42	-12.0	424.2	19.5	380.7	51.0	22.64	82.5	3.753
-73.5	4.838	-42.0	33.12	-10.5	437.3	21.0	356.3	52.5	20.44	84.0	3.484
-72.0	5.062	-40.5	38.17	-9.0	447.8	22.5	336.2	54.0	18.50	85.5	3.265
-70.5	5.440	-39.0	45.74	-7.5	455.9	24.0	315.8	55.5	16.76	87.0	3.088
-69.0	5.802	-37.5	57.81	-6.0	462.7	25.5	294.9	57.0	15.24	88.5	2.913
-67.5	6.311	-36.0	74.54	-4.5	467.5	27.0	273.4	58.5	13.85	90.0	2.817
-66.0	6.792	-34.5	95.50	-3.0	470.4	28.5	251.3	60.0	12.67		
-64.5	7.277	-33.0	118.8	-1.5	472.4	30.0	228.1	61.5	11.61		
-63.0	7.771	-31.5	144.0	0.0	474.0	31.5	203.3	63.0	10.61		
-61.5	8.469	-30.0	170.5	1.5	474.4	33.0	178.3	64.5	9.319		
-60.0	9.566	-28.5	196.9	3.0	474.7	34.5	153.1	66.0	8.352		

Electricity Parameter:

Current I: 0.1000A Power: 3.200W
Voltage V: 32.00V PF: 1.000

Optical Parameter (Distance=2.559m):

Equivalent Luminous flux: Φ_{eff} = 414.1lm Efficiency: Eff=129.43lm/W
Diffuse angle: @ (25%): 69.6deg@ (50%): 55.2deg@ (75%): 38.7deg@ (50%): 55.2deg
Diffuse angle: @ (25%): 69.6deg@ (50%): 55.2deg@ (75%): 38.8deg@ (50%): 55.2deg
Imax=474.7cd (C=0.0deg,G=3.0deg) C0-180Plane Imax= 474.7cd(G=3.0deg)
C0-180Plane I0= 474.0cd

	Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks																																										
1.Size	diameter	35			35.03	35.03	35.03	35.03	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.																																										
	height	16.3			16.38	16.4	16.38	16.4																																											
	thickness	2			2.06	2.02	2.06	2.02																																											
	Gate shear can not affect the appearance of the lamp																																																		
See attachment "Appearance Inspection Standards"																																																			
2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr	No burr	No burr	No burr	No burr	OK																																											
			No stains	No stains	No stains	No stains	No stains																																												
3.Material	PMMA			Color	Transparent			OK																																											
4.Optical index	Testing LED	BRIDGELUX: V6																																																	
	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																																																	
	angle				17	16.8	17.2	17.3																																											
	K-value				6.68	6.70	6.70	6.70																																											
	Efficiency				92.00%	92.00%	92.00%	92.00%																																											
Facula	See the signature sample																																																		
Comprehensive judgment	Qualified																																																		
Remarks:	<p>1、 Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.</p> <p>2、 Ambient temperature on the size of the product refer to the table on the right</p>																																																		
	<p style="text-align: center;">PMMA product size changes with temperature table</p>  <table border="1"> <caption>PMMA product size changes with temperature table</caption> <thead> <tr> <th>Temperature (°C)</th> <th>50mm</th> <th>100mm</th> <th>150mm</th> <th>200mm</th> <th>250mm</th> <th>300mm</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> </tr> <tr> <td>10</td> <td>0.05</td> <td>0.08</td> <td>0.10</td> <td>0.12</td> <td>0.15</td> <td>0.18</td> </tr> <tr> <td>20</td> <td>0.08</td> <td>0.12</td> <td>0.15</td> <td>0.18</td> <td>0.22</td> <td>0.28</td> </tr> <tr> <td>30</td> <td>0.10</td> <td>0.15</td> <td>0.20</td> <td>0.25</td> <td>0.30</td> <td>0.38</td> </tr> <tr> <td>40</td> <td>0.12</td> <td>0.18</td> <td>0.25</td> <td>0.32</td> <td>0.40</td> <td>0.50</td> </tr> </tbody> </table>									Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm	0	0.00	0.00	0.00	0.00	0.00	0.00	10	0.05	0.08	0.10	0.12	0.15	0.18	20	0.08	0.12	0.15	0.18	0.22	0.28	30	0.10	0.15	0.20	0.25	0.30	0.38	40	0.12	0.18	0.25	0.32	0.40	0.50
Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm																																													
0	0.00	0.00	0.00	0.00	0.00	0.00																																													
10	0.05	0.08	0.10	0.12	0.15	0.18																																													
20	0.08	0.12	0.15	0.18	0.22	0.28																																													
30	0.10	0.15	0.20	0.25	0.30	0.38																																													
40	0.12	0.18	0.25	0.32	0.40	0.50																																													
Precautions:	<ol style="list-style-type: none"> 1、 Wear clean gloves during lens assembly to prevent contamination of the lens surface. 2、 Take the lens try to avoid touching the total reflection surface. 3、 When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents. 4、 The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens. 																																																		

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Test result5	Test result6	Test result7	Test result8	Judgment	Remarks
1.Size	diameter	35			35.03	35.03	35.07	35.03	35.03	35.00	35.04	35.03		Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.
	height	16.3			16.42	16.43	16.42	16.41	16.41	16.38	16.39	16.41		
	thickness	2			2.06	2.05	2.04	2.05	2.05	2.04	2.02	2.06		
Gate shear can not affect the appearance of the lamp														
See attachment "Appearance Inspection Standards"														

2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr		No burr		No burr		No burr		OK
			No stains		No stains		No stains		No stains		

3.Material	PMMA		Color		Transparent		OK	
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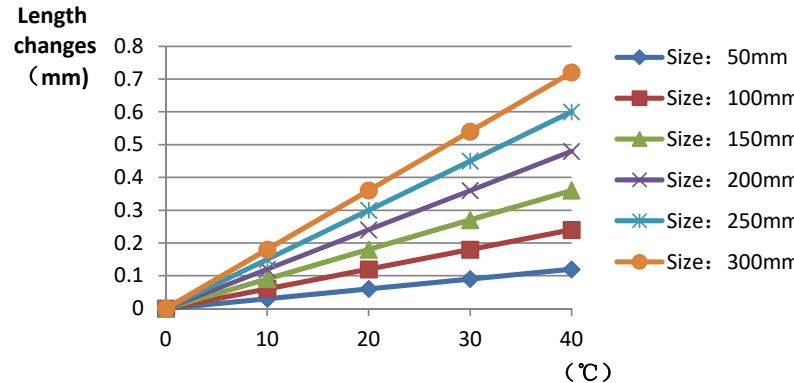
4.Optical index	Testing LED	BRIDGELUX: V6										
	The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.											
	FWHM	See light distribution curve										
	angle		24	24	24.5	23.9	23.8	24.1	24.2	23.5		
	K-value		4.65	4.60	4.30	4.90	4.90	4.60	4.61	4.95		
Efficiency		92.00%	92.00%	92.00%	92.00%	92.00%	92.00%	92.00%	92.00%	92.00%		
Accuracy	See the signature sample											

Comprehensive judgment	Qualified										
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Remarks:

- Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool 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

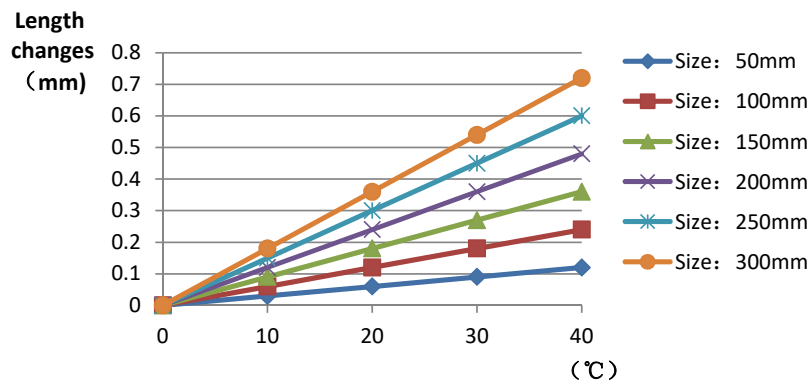


Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.02	0.05	0.08	0.12	0.15	0.18
20	0.04	0.10	0.18	0.28	0.35	0.42
30	0.06	0.15	0.28	0.42	0.52	0.60
40	0.08	0.22	0.38	0.55	0.68	0.78

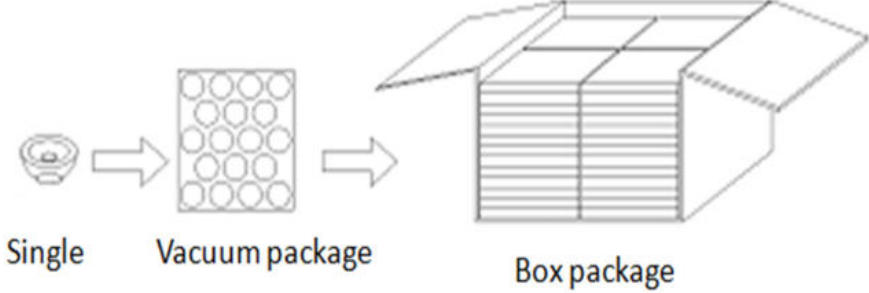
- Precautions:
- Wear clean gloves during lens assembly to prevent contamination of the lens surface.
 - Take the lens try to avoid touching the total reflection surface.
 - When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.
 - The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens.

	Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Test result5	Test result6	Test result7	Test result8	Judgment	Remarks
1.Size	diameter	35			35.00	34.97	34.93	34.98	35.06	34.93	34.97	34.93	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.
	height	16.3			16.28	16.31	16.33	16.33	16.30	16.29	16.31	16.33	
	thickness	2			2.06	2.06	2.07	2.07	2.03	2.02	2.06	2.07	
	Gate shear can not affect the appearance of the lamp												
See attachment "Appearance Inspection Standards"													
2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr		No burr		No burr		No burr		No burr		OK
			No stains		No stains		No stains		No stains		No stains		
3.Material	PMMA			Color			Transparent			OK			
4.Optical index	Testing LED	BRIDGELUX: V6											
	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											
	angle				33.00	34.00	33.00	32.80	33.60	33.30	33.80	34.10	
	K-value				2.63	2.20	2.60	2.60	2.32	2.40	2.30	2.20	
Efficiency				92.00%	92.00%	92.00%	92.00%	92.00%	92.00%	92.00%	92.00%		
Accuracy	See the signature sample												
Comprehensive judgment	Qualified												
Remarks:	<p>1、 Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.</p> <p>2、 Ambient temperature on the size of the product refer to the table on the right</p>												
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PMMA product size changes with temperature table



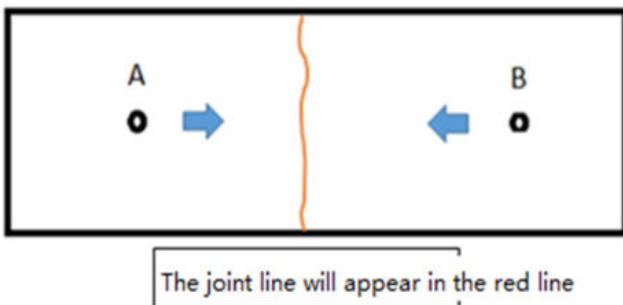
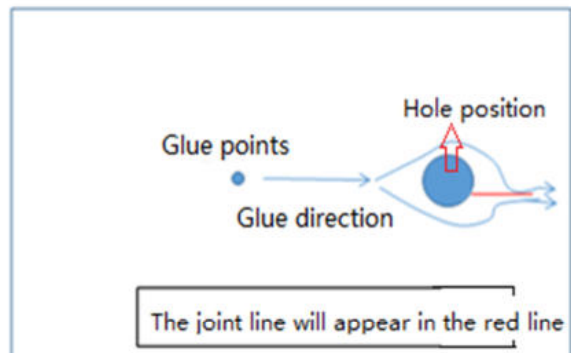
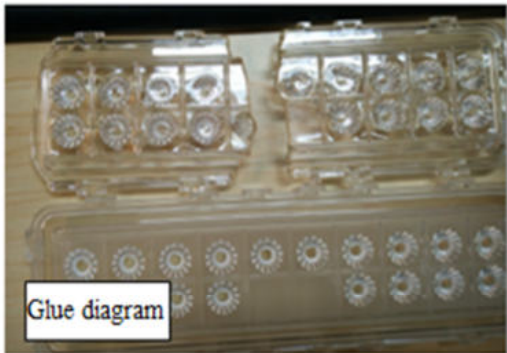
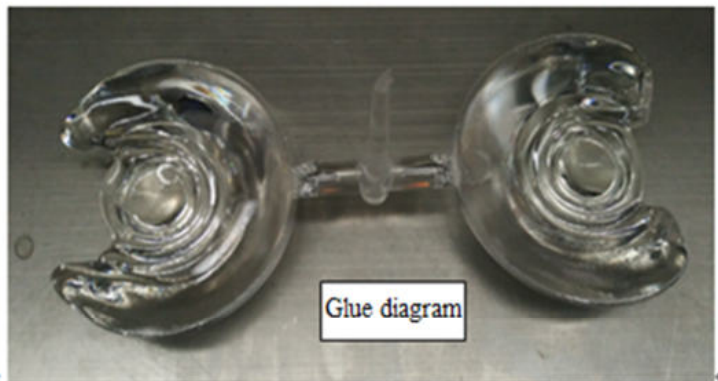
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1.Size	diameter	35			35.09	35.07	35.09	35.07	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.																																										
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	thickness	2			2.11	2.07	2.11	2.07																																											
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	<p style="text-align: center;">PMMA product size changes with temperature table</p> <table border="1"> <caption>PMMA product size changes with temperature table</caption> <thead> <tr> <th>Temperature (°C)</th> <th>Size: 50mm</th> <th>Size: 100mm</th> <th>Size: 150mm</th> <th>Size: 200mm</th> <th>Size: 250mm</th> <th>Size: 300mm</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> </tr> <tr> <td>10</td> <td>0.02</td> <td>0.05</td> <td>0.08</td> <td>0.12</td> <td>0.18</td> <td>0.25</td> </tr> <tr> <td>20</td> <td>0.04</td> <td>0.10</td> <td>0.15</td> <td>0.22</td> <td>0.32</td> <td>0.45</td> </tr> <tr> <td>30</td> <td>0.06</td> <td>0.15</td> <td>0.22</td> <td>0.32</td> <td>0.45</td> <td>0.60</td> </tr> <tr> <td>40</td> <td>0.08</td> <td>0.20</td> <td>0.30</td> <td>0.45</td> <td>0.60</td> <td>0.75</td> </tr> </tbody> </table>									Temperature (°C)	Size: 50mm	Size: 100mm	Size: 150mm	Size: 200mm	Size: 250mm	Size: 300mm	0	0.00	0.00	0.00	0.00	0.00	0.00	10	0.02	0.05	0.08	0.12	0.18	0.25	20	0.04	0.10	0.15	0.22	0.32	0.45	30	0.06	0.15	0.22	0.32	0.45	0.60	40	0.08	0.20	0.30	0.45	0.60	0.75
Temperature (°C)	Size: 50mm	Size: 100mm	Size: 150mm	Size: 200mm	Size: 250mm	Size: 300mm																																													
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PN	HK-DX-35@16-15-D6-21-1g-1_PMMA		Product Name	HK Glareless 35@16-15° lens			
Product material	PMMA		Customer				
Package diagram	 <p style="text-align: center;"> Single Vacuum package Box package </p>						
Product packing	23	A/ Box	4	pcs/Layer			
	13	Layer/Box	1196	A/ Carton			
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0075	Blister box	23cm*21cm	52	BAG	
	2	2.08.0001	PE film	25cm*27cm	52	PCS	
	3	2.06.0005	Reel label paper	62mm*42mm	52	PCS	
	4	2.06.0005	Box label paper	62mm*70mm	1	PCS	
	5	2.06.0003	big plate	46cm*42cm	14	PCS	
	6	2.06.0011	big flat carton	48cm*44cm*37cm	1	PCS	
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail						

Special notice

When glue 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:

Syntner



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

1.1.1 Sampling standards, sampling plan and AQL

Test level: GB/T2828.1-2012 The first part is according to the acceptance quality limit (AQL) retrieval batch inspection sampling plan, general inspection level II 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 description	Unit	Code		Code description	Unit
N	Amount/pcs	pcs	D		Diameter	mm
L	Length	mm	H		Depth	mm
W	Width	mm	DS		Distance	mm
S	Proportion	mm ²	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	Judging standard	Inspection equipment	Defect level		
		Testing method	MI	MA	CR
Check the sample	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.	Sample comparison , visual			
	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;				

	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		√	
Fingerprint	Fingerprints are not allowed on all products	Visual		√	
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				√
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler			√
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.	Visual, point card		√	
	Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, and the structural surface does not allow visual obvious strain.				
Insufficient filling	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 $L \leq 10\text{mm}$, no more than two				

Bubble	No bubbles are allowed	Visual		√	
Foreign objects, black spots, white spots	Not obvious or $D \leq 0.3\text{mm}$ 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	√		
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	√		
Bad incision	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;	Visual			√
	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation				
	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 $D \leq 1\text{ mm}$ and no more than 1 area within a 50x50 mm area	Visual		√	