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-HG-35@16-10-D3.5-20-1g-1_ASM	1.01.12624.10	HK Dark 35@16-10 Degree lens
HK-HG-35@16-10-D3.5-20-1g-1	1.01.12624_01	HK Dark 35@16-10 degree lens_01
HK-HG-14@10-0610-S	1.01.12624_02.10	HK Dark 35@16-10 Degree Awl_02
HK-HG-14@06-0611-S	1.01.12624_03.10	HK Dark 35@16-10 Degree Cover_03

Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified☐		DATE	
Project manager		DATE		Unqualified☐			
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, 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.

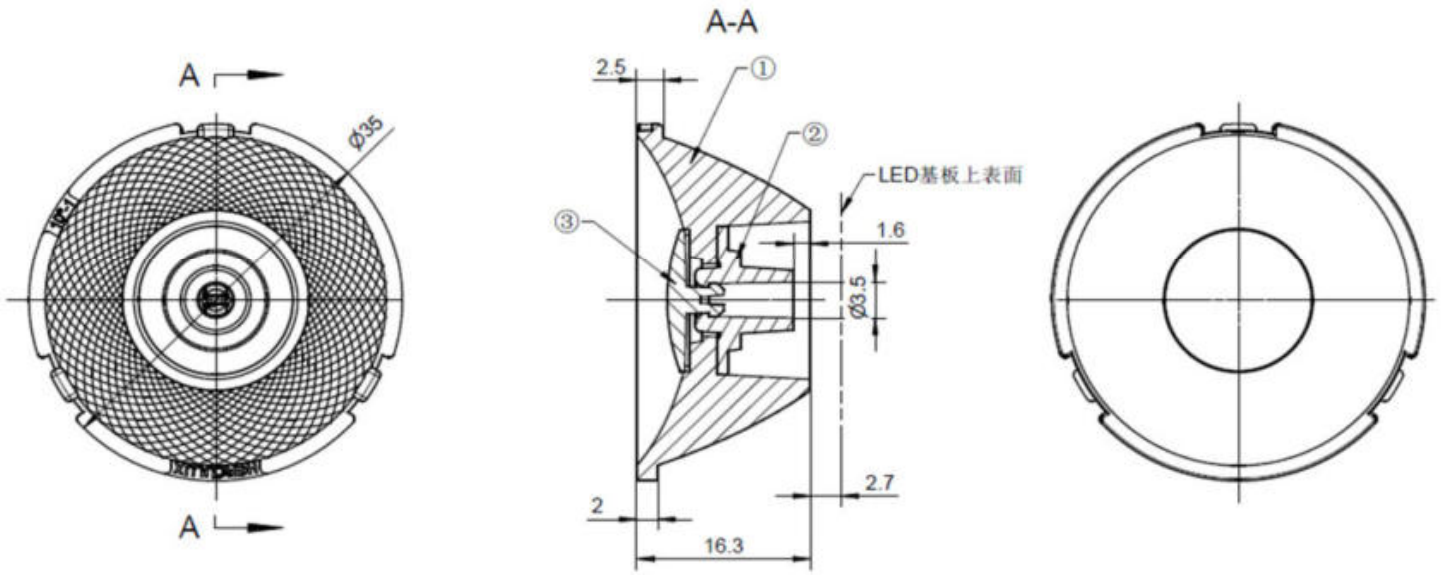
Operation cautions:

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.

HERCULUX 恒坤光电 Basic product information

TEL: 0755-2937 1541 FAX: 0755-2907 5140 http://www.herculux.cn/ Date updated: 2023/4/14

Product Picture:	 
PN:	HK-HG-35@16-10-D3.5-20-1g-1_ASM
Size(L*W*H/Φ*H):	Φ:35mm; H:16.3mm
Material:	Components (PMMA, ceramic, PC (black))
Effiency:	\
Temperature(Topr):	Material extreme temperature resistance：-40℃ to +120℃ long-term use temperature：-40℃ to +90℃
Matched LES:	LUMINUS: CXM-3 (black lens backing)
FWHM:	10°
Recommended power Usage:	No more than 10W



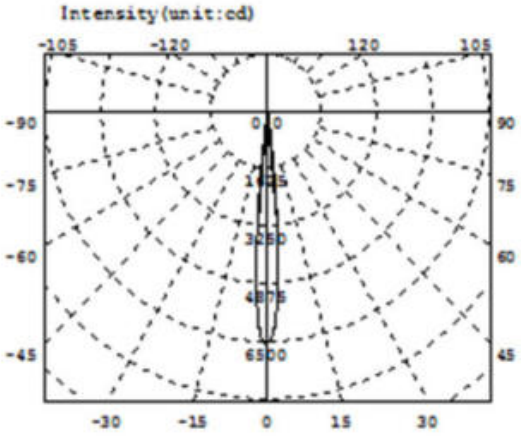
NO.	Code	Product Name	PN	Product material
①	1.01.12624_01	HK Dark 35@16-10 degree lens_(	HK-HG-35@16-10-D3.5-20-1g-1	PMMA
②	.01.12624_02.1(	HK Dark 35@16-10 Degree Awl_0	HK-HG-14@10-0610-S	ceramic
③	.01.12624_03.1(	HK Dark 35@16-10 Degree Cover	HK-HG-14@06-0611-S	PC (black))

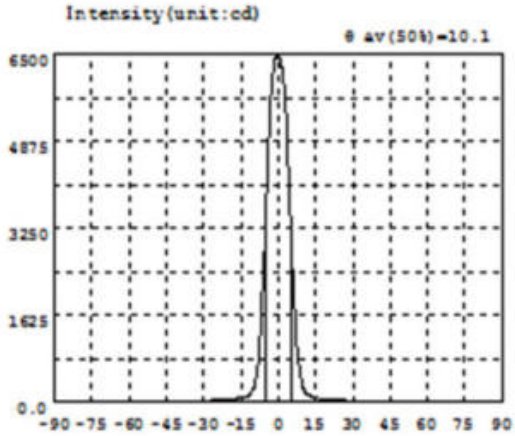
Optical design			HK Dark 35@16-10 Degree lens	HK-HG-35@16-10-D3.5-20-1g-1_ASM	
Structure design				1.01.12624.10	
Review				umber of drawin	qty / weight
Validation			Material:	CDHK	

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.

MT5 Tolerance table（mm）	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





Intensity data:(deg , cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.2803	-58.5	0.9185	-27.0	23.01	4.5	3788	36.0	9.157	67.5	0.5645
-88.5	0.2556	-57.0	1.046	-25.5	26.82	6.0	2148	37.5	6.953	69.0	0.5277
-87.0	0.3320	-55.5	1.168	-24.0	30.91	7.5	1003	39.0	5.800	70.5	0.5223
-85.5	0.3066	-54.0	1.314	-22.5	35.56	9.0	443.1	40.5	4.870	72.0	0.5103
-84.0	0.3555	-52.5	1.551	-21.0	40.16	10.5	207.4	42.0	4.136	73.5	0.4912
-82.5	0.3793	-51.0	1.796	-19.5	45.52	12.0	122.0	43.5	3.511	75.0	0.4814
-81.0	0.4030	-49.5	2.094	-18.0	52.54	13.5	87.32	45.0	2.984	76.5	0.4820
-79.5	0.4291	-48.0	2.427	-16.5	61.27	15.0	71.41	46.5	2.542	78.0	0.3969
-78.0	0.4211	-46.5	2.953	-15.0	71.74	16.5	60.60	48.0	2.167	79.5	0.3427
-76.5	0.2804	-45.0	3.521	-13.5	86.30	18.0	52.56	49.5	1.774	81.0	0.3057
-75.0	0.4545	-43.5	4.425	-12.0	116.7	19.5	45.54	51.0	1.444	82.5	0.2796
-73.5	0.4925	-42.0	6.116	-10.5	212.3	21.0	40.04	52.5	1.175	84.0	0.2740
-72.0	0.5535	-40.5	7.180	-9.0	437.7	22.5	35.12	54.0	1.009	85.5	0.2818
-70.5	0.6000	-39.0	8.214	-7.5	1114	24.0	30.29	55.5	0.9427	87.0	0.3053
-69.0	0.6752	-37.5	9.303	-6.0	2460	25.5	26.07	57.0	0.9071	88.5	0.3473
-67.5	0.7062	-36.0	10.41	-4.5	4205	27.0	22.67	58.5	0.8911	90.0	0.2215
-66.0	0.7536	-34.5	11.83	-3.0	5693	28.5	19.52	60.0	0.8664		
-64.5	0.7451	-33.0	13.43	-1.5	6380	30.0	16.91	61.5	0.8219		
-63.0	0.7406	-31.5	15.28	0.0	6474	31.5	14.58	63.0	0.7898		
-61.5	0.7843	-30.0	17.36	1.5	6213	33.0	12.65	64.5	0.7179		
-60.0	0.8090	-28.5	19.97	3.0	5368	34.5	10.87	66.0	0.5070		

Electricity Parameter:

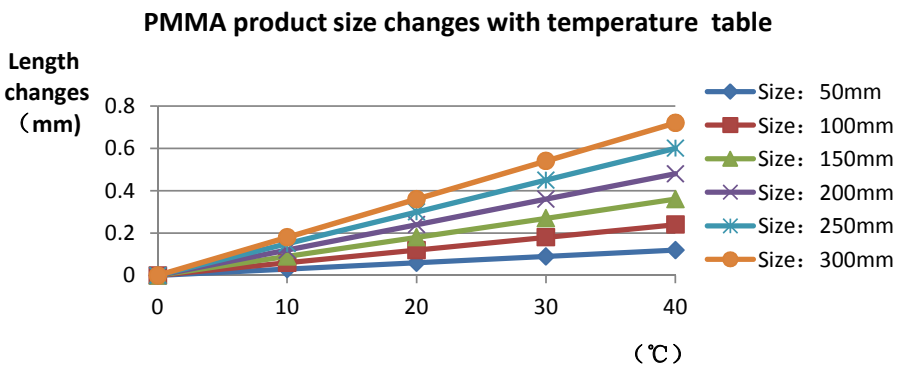
Current I: 0.1000A Power: 3.670W
Voltage V: 36.70V PF: 1.000

Optical Parameter(Distance=2.559m):

Equivalent Luminous flux: Φ eff= 252.2lm Efficiency: Eff=68.73lm/W
Diffuse angle: @(25%): 13.3deg @(50%): 10.1deg @(75%): 7.4deg @(50%): 10.1deg
Diffuse angle: @(25%): 13.4deg @(50%): 10.1deg @(75%): 7.4deg @(50%): 10.1deg
Imax=6491cd (C=0.0deg,G=-0.5deg) C0-180Plane Imax= 6491cd(G=-0.5deg)
C0-180Plane I0= 6474cd

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
1.Size	diameter	35			34.14	35.12	35.12	35.11		Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16.34	16.33	16.31	16.33		
	thickness	2			2.08	2.09	2.09	2.09		
	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	Components (PMMA, ceramic, PC (black))				Color	Transparent			OK	
4.Optical index	Testing LED	LUMINUS: CXM-3 (black lens backing)								
	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				10.1	10.2	10.2	10.4		
	K-value				25.76	22.56	22.82	22.55		
	Efficiency				69.83%	69.27%	68.99%	69.27%		
	Facula	See the signature sample								
Comprehensive judgment	Qualified									

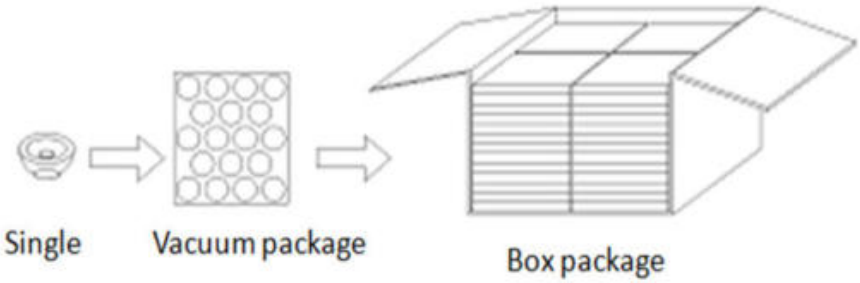
Remarks:
1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.
2、 Ambient temperature on the size of the product refer to the table on the right



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.

PN	HK-HG-35@16-10-D3.5-20-1g-1_ASM	Product Name	HK Dark 35@16-10 Degree lens
Product material	Components (PMMA, ceramic, PC (black))	Customer	

Package diagram



Product packing							
	23	A/ Box	4	pcs/Layer		
	13	Layer/Box	1196	A/ Carton		

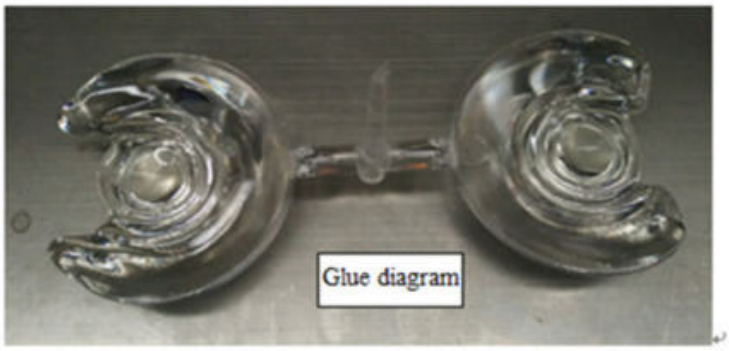
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0075	Blister box	23cm*21cm	52	BAG	
	2	2.08.0001	PE film	30cm*30cm	52	PCS	
	3	2.06.0005	Reel label paper	6.2cm*8cm	52	PCS	
	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	14	PCS	
	6	2.06.0015	big flat carton	48cm*44cm*19cm	1	PCS	

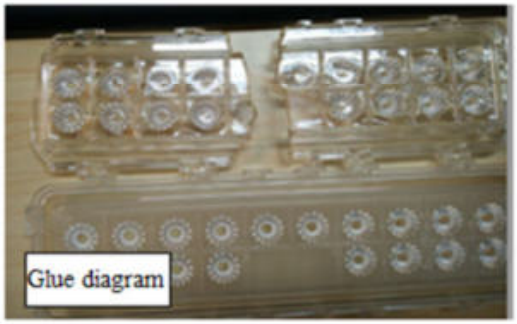
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail

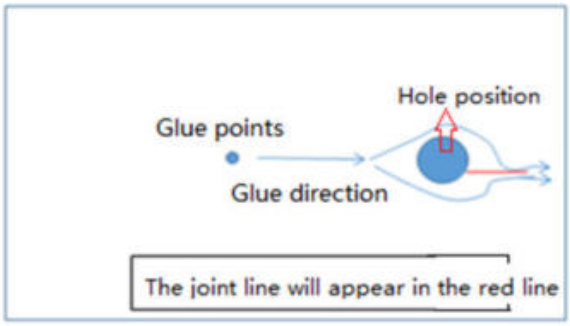
Special notice

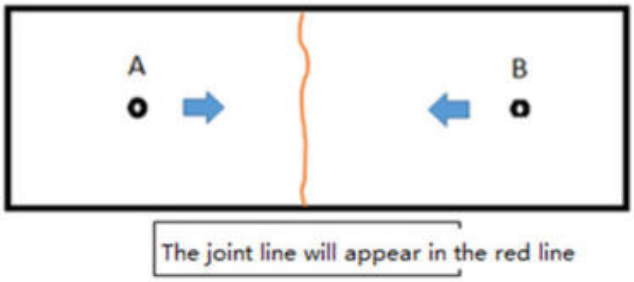
When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

Synthetl









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 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	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	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. 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			√

	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. 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.	Visual, point card		√	
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; 2: The remaining flow marks shall not appear in the optical surface, a single L ≤ 10mm, no more than two	Visual		√	
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	√		
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 ≤ 1 mm and no more than 1 area within a 50x50 mm area	Visual		√	

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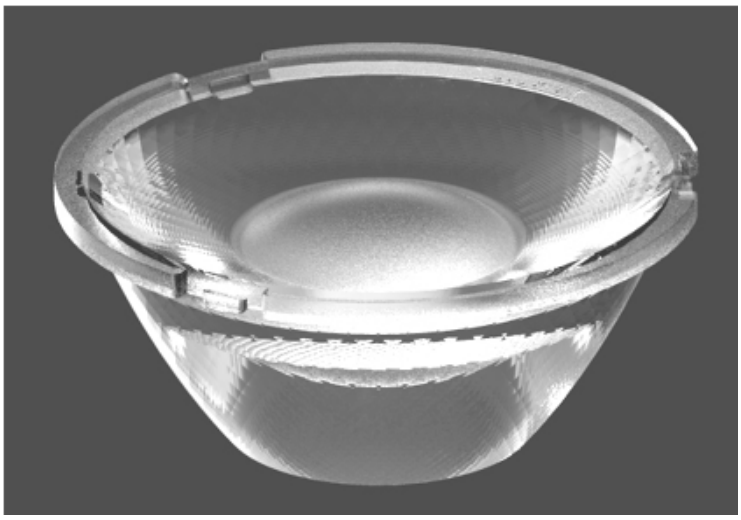
Product Approval

Approval number：

Customer：

Manufacturer：Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-HG-35@16-15-D6-21-1g-1_M	1.01.91997_M	HK Dark 35@16-15° lens_M



Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified☐		DATE	
Project manager		DATE		Unqualified☐			
Audit		DATE		Audit		DATE	
Approved		DATE		Approved		DATE	
Stamp		DATE		Stamp		DATE	

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Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building,
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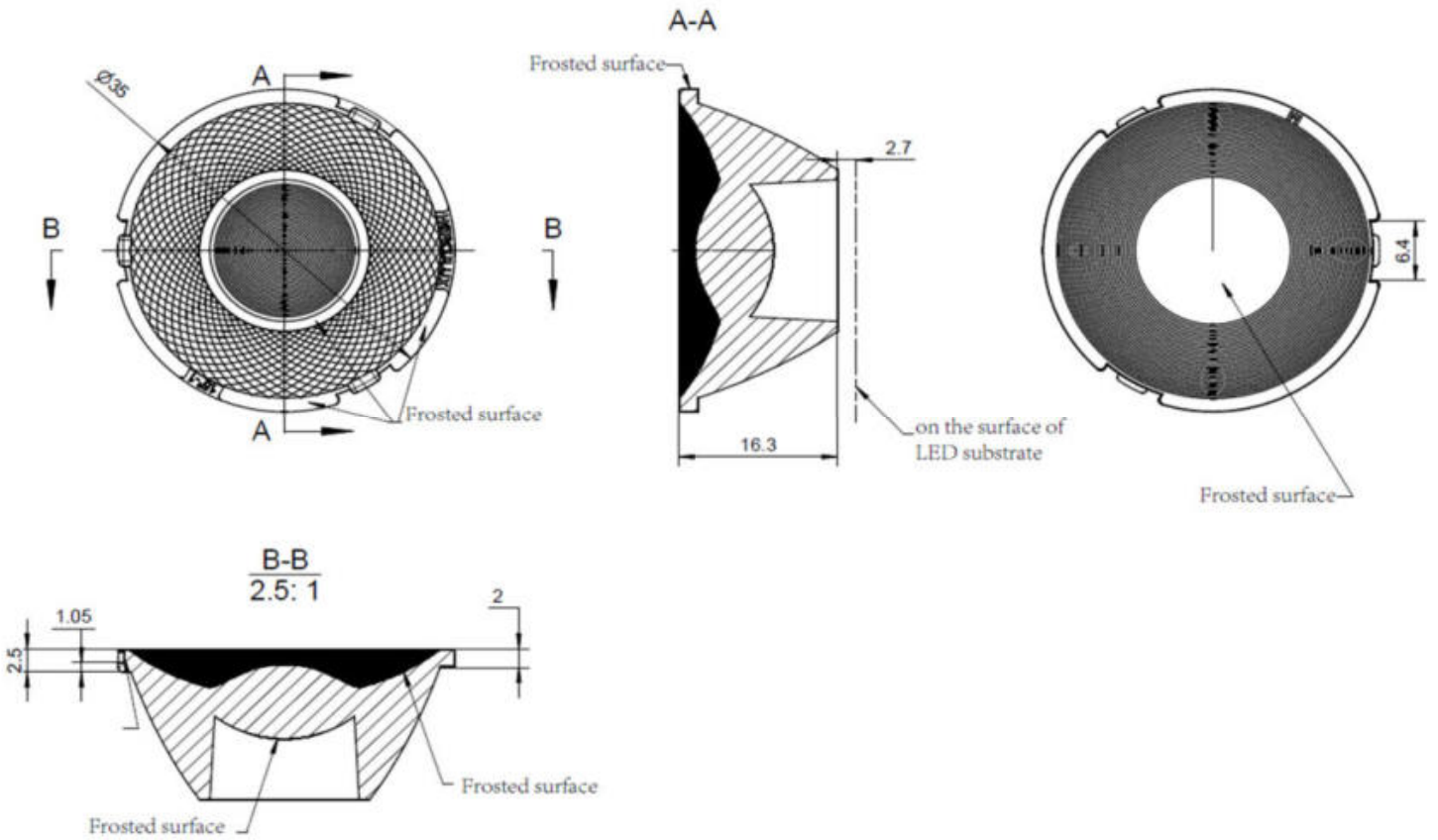
2. Try to avoid touching the optical surface of the lens when taking the lens.
3. When the surface of the product is polluted, please wipe it gently with a soft cotton cloth dipped in analytically pure neutral solvent. It is forbidden to use industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA monomerm,etc.) wipe.

HERCULUX 恒坤光电

asic product information

http://www.herculux.cn/ Date updated: 2022/12/19

Product Picture:	
PN:	HK-HG-35@16-15-D6-21-1g-1_M
Size(L*W*H/Φ*H):	Φ:35mm; H:16.3mm
Material:	PMMA
Effiency:	\
Temperature(Topr):	Material extreme temperature resistance：-40℃ to +100℃ long-term use temperature：-40℃ to +80℃
FWHM:	15°
Matched LES:	D6
Recommended MAX power:	Not more than 15W

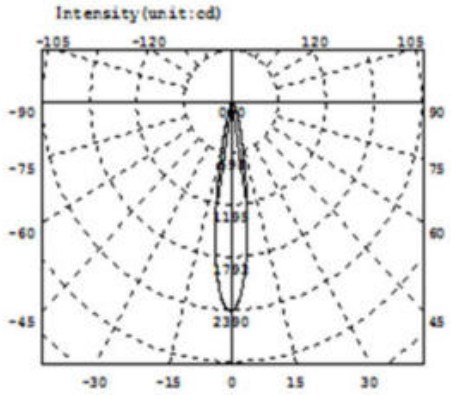


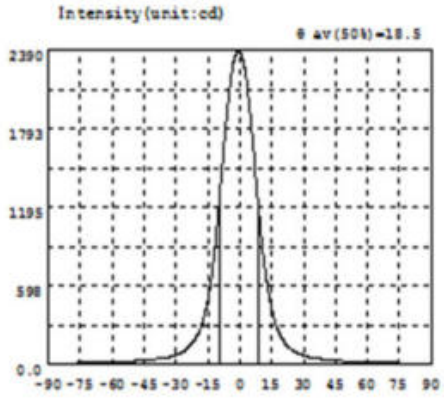
Technical remark:

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 Dark 35@16-15º lens_M	HK-HG-35@16-15-D6-21-1g-1_M	
Structure design				1.01.91997_M	
Review				mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK

MT5 Tolerance table	Basic size	＜3	3～10	10～24	24～65	65～140	140～250	250～450	＞450
	lerance val	±0.1	±0.15	±0.2	±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	3.694	-58.5	16.38	-27.0	93.38	4.5	1954	36.0	43.82	67.5	11.17
-88.5	3.943	-57.0	17.31	-25.5	109.3	6.0	1697	37.5	40.16	69.0	10.57
-87.0	4.284	-55.5	18.30	-24.0	129.8	7.5	1413	39.0	36.81	70.5	9.993
-85.5	4.726	-54.0	19.35	-22.5	157.1	9.0	1137	40.5	33.77	72.0	9.398
-84.0	5.223	-52.5	20.49	-21.0	191.6	10.5	892.9	42.0	31.01	73.5	8.773
-82.5	5.779	-51.0	21.75	-19.5	237.6	12.0	693.0	43.5	28.69	75.0	8.154
-81.0	6.357	-49.5	23.10	-18.0	298.9	13.5	535.4	45.0	26.74	76.5	7.554
-79.5	6.959	-48.0	24.57	-16.5	384.2	15.0	416.8	46.5	25.01	78.0	6.935
-78.0	7.582	-46.5	26.24	-15.0	497.9	16.5	319.4	48.0	23.46	79.5	6.298
-76.5	8.207	-45.0	28.12	-13.5	650.8	18.0	251.4	49.5	22.01	81.0	5.749
-75.0	8.831	-43.5	30.31	-12.0	848.8	19.5	201.7	51.0	20.69	82.5	5.199
-73.5	9.443	-42.0	32.79	-10.5	1096	21.0	164.5	52.5	19.48	84.0	4.733
-72.0	10.08	-40.5	35.74	-9.0	1375	22.5	136.3	54.0	18.40	85.5	4.288
-70.5	10.70	-39.0	38.91	-7.5	1662	24.0	114.9	55.5	17.34	87.0	3.940
-69.0	11.31	-37.5	42.35	-6.0	1925	25.5	98.23	57.0	16.37	88.5	3.720
-67.5	11.93	-36.0	46.23	-4.5	2142	27.0	85.22	58.5	15.50	90.0	3.509
-66.0	12.54	-34.5	50.79	-3.0	2294	28.5	74.82	60.0	14.66		
-64.5	13.20	-33.0	56.19	-1.5	2374	30.0	66.35	61.5	13.85		
-63.0	13.94	-31.5	62.76	0.0	2378	31.5	59.13	63.0	13.10		
-61.5	14.73	-30.0	70.75	1.5	2307	33.0	53.08	64.5	12.43		
-60.0	15.54	-28.5	80.86	3.0	2163	34.5	48.03	66.0	11.79		

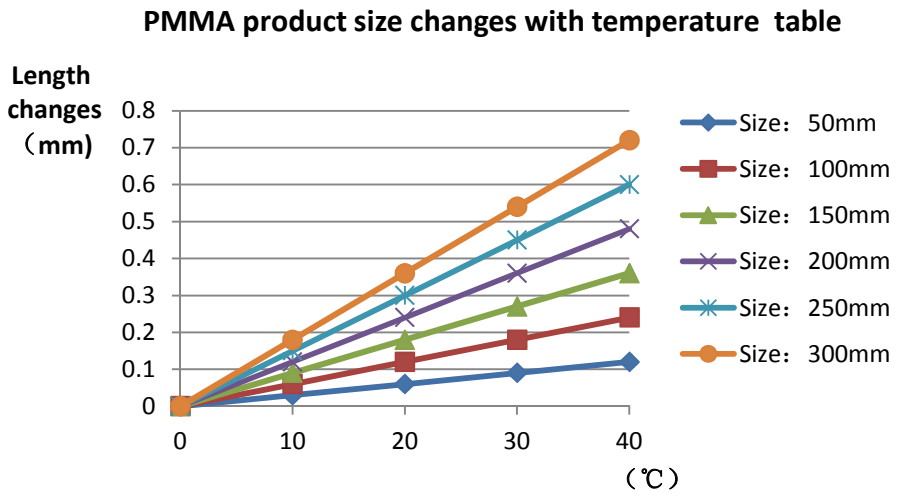
Electricity Parameter:

Current I: 0.1000A Power: 3.358W
Voltage V: 33.59V PF: 1.000

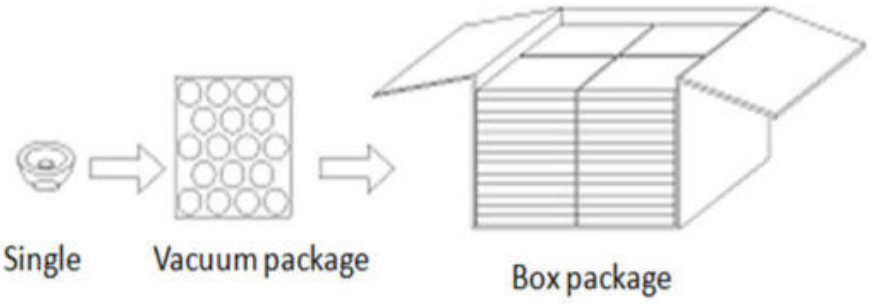
Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 440.1lm Efficiency: Eff=131.08lm/W
Diffuse angle: @(25%): 26.7deg @(50%): 18.5deg @(75%): 12.2deg @(50%): 18.5deg
Diffuse angle: @(25%): 26.8deg @(50%): 18.6deg @(75%): 12.3deg @(50%): 18.6deg
Imax=2385cd (C=0.0deg,G=-0.5deg) C0-180Plane Imax= 2385cd(G=-0.5deg)
C0-180Plane I0= 2378cd

1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
	diameter	35			35.05	35.04	34.97	34.95		Test environment: In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16.3	16.3	16.3	16.35		
	thickness	2			2.04	1.99	2	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
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				18.5	18.9	18.6	18.5		
	K-value (CD/LM				5.42	5.12	5.31	5.41		
	Efficiency				82.44%	82.23%	82.23%	82.86%		
	Facula	See the signature sample								
Comprehensive judgment		Qualified								

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	

Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
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.

PN	HK-HG-35@16-15-D6-21-1g-1_M	Product Name	HK Dark 35@16-15º lens_M
Product material	PMMA	Customer	
Package diagram			

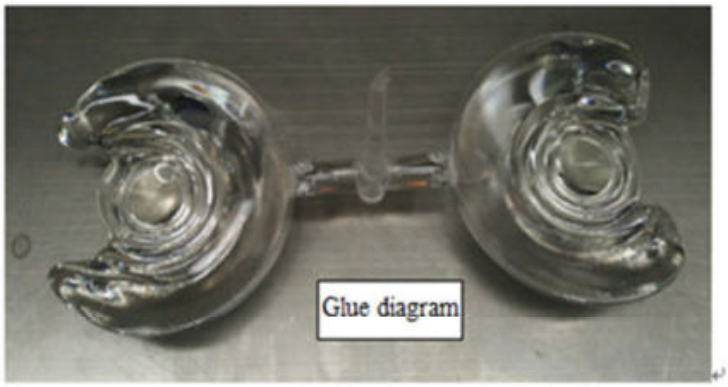
Product packing	23	A/ Box	4	pcs/Layer		
	13	Layer/Box	1196	A/ Carton		

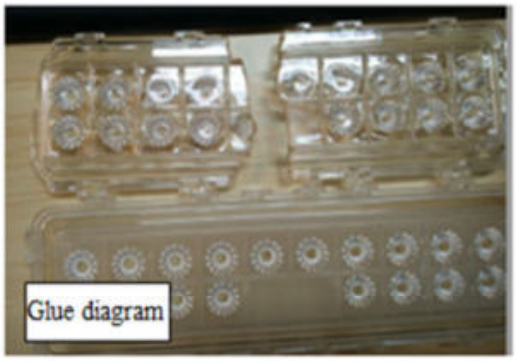
	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
Packaging Materials	1	2. 07. 0075	Blister box	23cm*21cm	52	BAG	
	2	2.08.0001	PE film	30cm*30cm	52	PCS	
	3	2.06.0005	Reel label paper	6.2cm*8cm	52	PCS	
	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	14	PCS	
	6	2.06.0015	big flat carton	48cm*44cm*19cm	1	PCS	
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail						

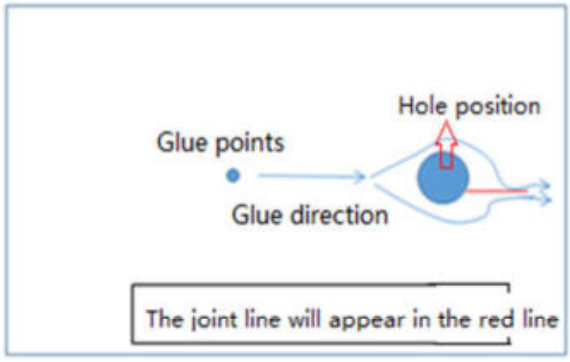
Special notice

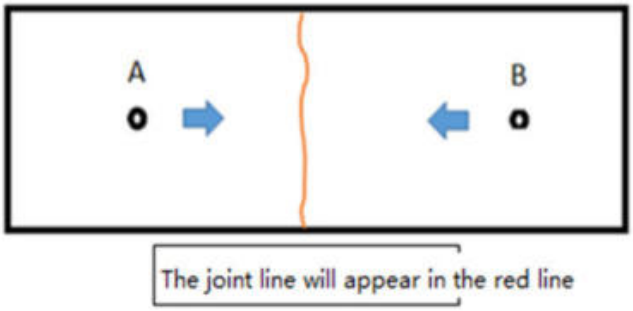
When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

Synthetl









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 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	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	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. 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			√

	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 ≤ 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	√		
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 ≤ 1 mm and no more than 1 area within a 50x50 mm area	Visual		√	

HERCULUX 恒坤光电

Chengdu HercuLux Photoelectric Technology Co.,Ltd

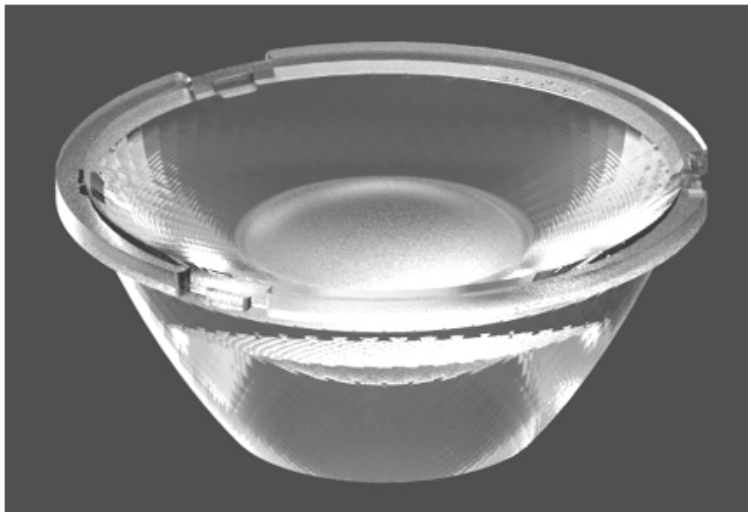
Product Approval

Approval number:

Customer:

Manufacturer: Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-HG-35@16-15-D6-21-1g-1	1.01.91997	HK Dark 35@16-15° lens
HK-HG-35@16-24-D6-21-1g-1	1.01.92002	HK Dark 35@16-24° lens
HK-HG-35@16-36-D6-21-1g-1	1.01.92041	HK Dark 35@16-36° lens
HK-HG-35@16-50-D6-21-1g-1	1.01.92182	HK Dark 35@16-50° lens



Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified☐		DATE	
Project manager		DATE		Unqualified☐			
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, 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.

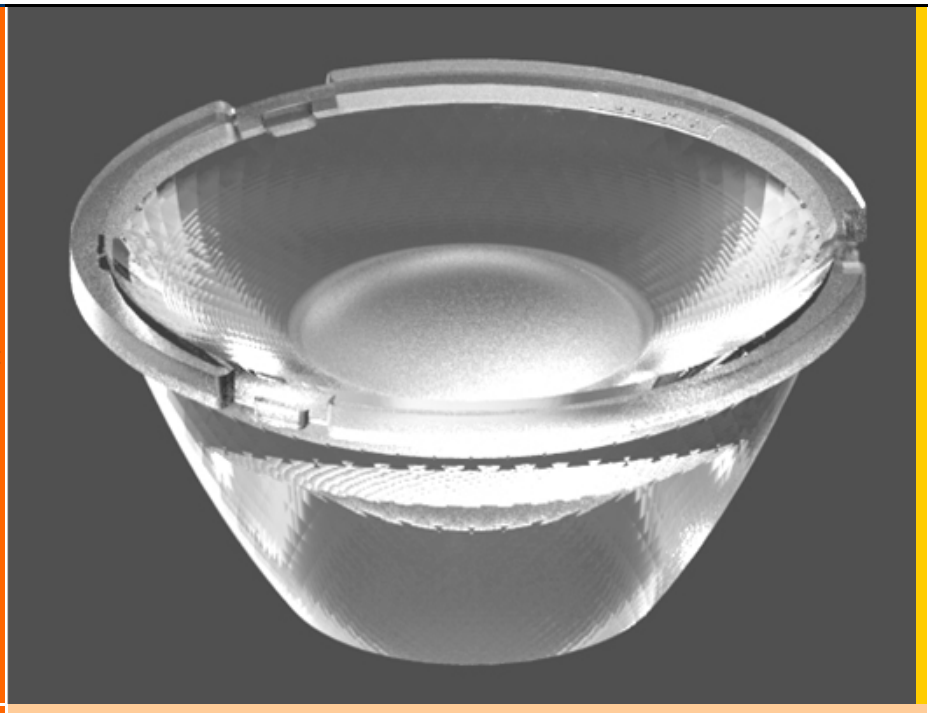
As the conventional products that we continue to research and improve, our company reserves the right to make technical changes to its products, and reserves the right to make changes to data resulting from improvements without prior notice.

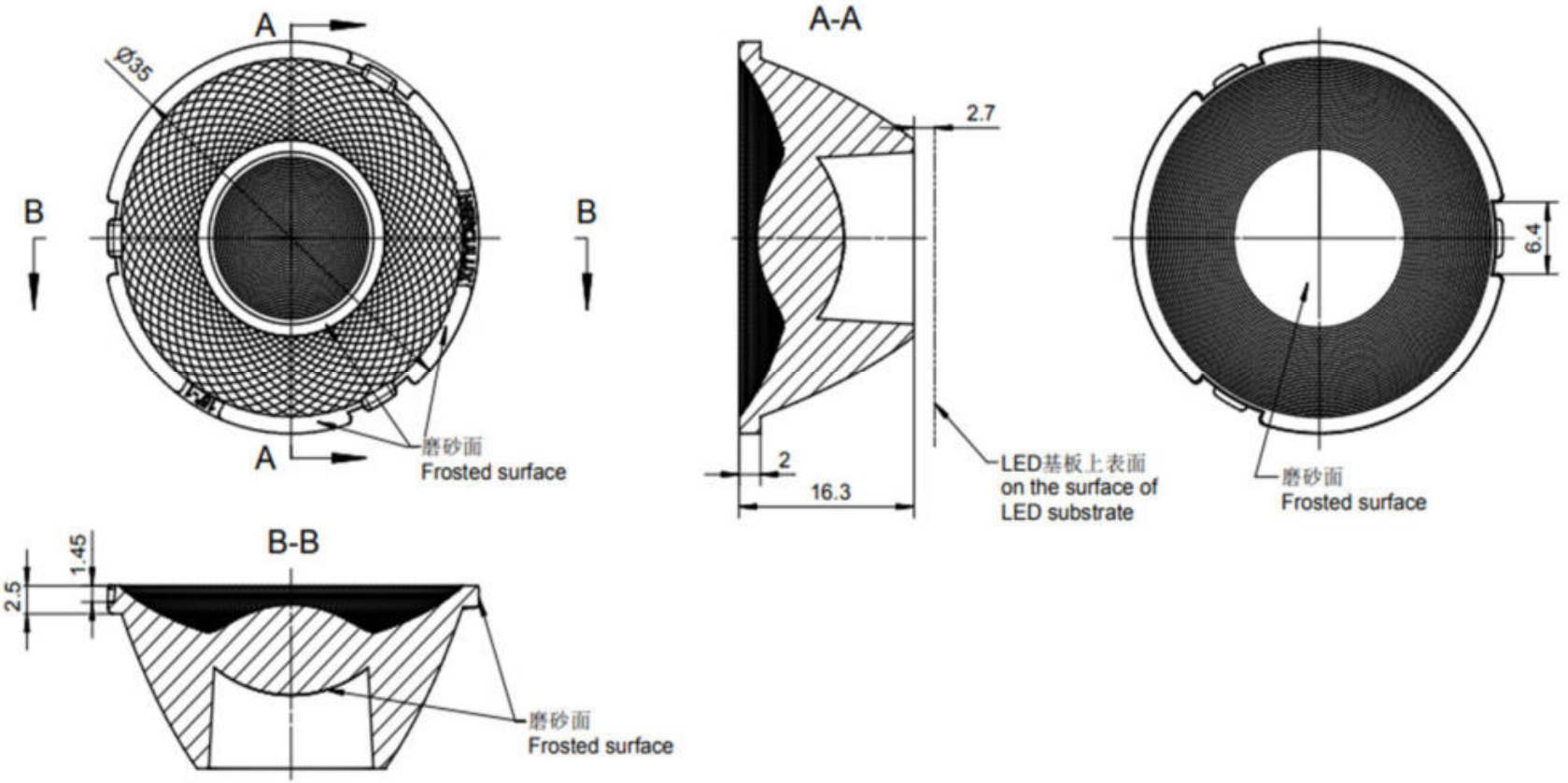
Operation cautions:

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.

Basic product information

http://www.herculux.com/ Date updated: 2023/5/18

Product Picture:	
Size(L*W*H/Φ*H):	Φ:35mm; H:16.3mm
Material:	PMMA
Effiency:	\
Temperature(Topr):	Material extreme temperature resistance：-40℃ to +100℃ long-term use temperature：-40℃ to +80℃
FWHM:	15°、24°、36°、50°
Matched LES:	D6
Recommended MAX power:	Not more than 15W

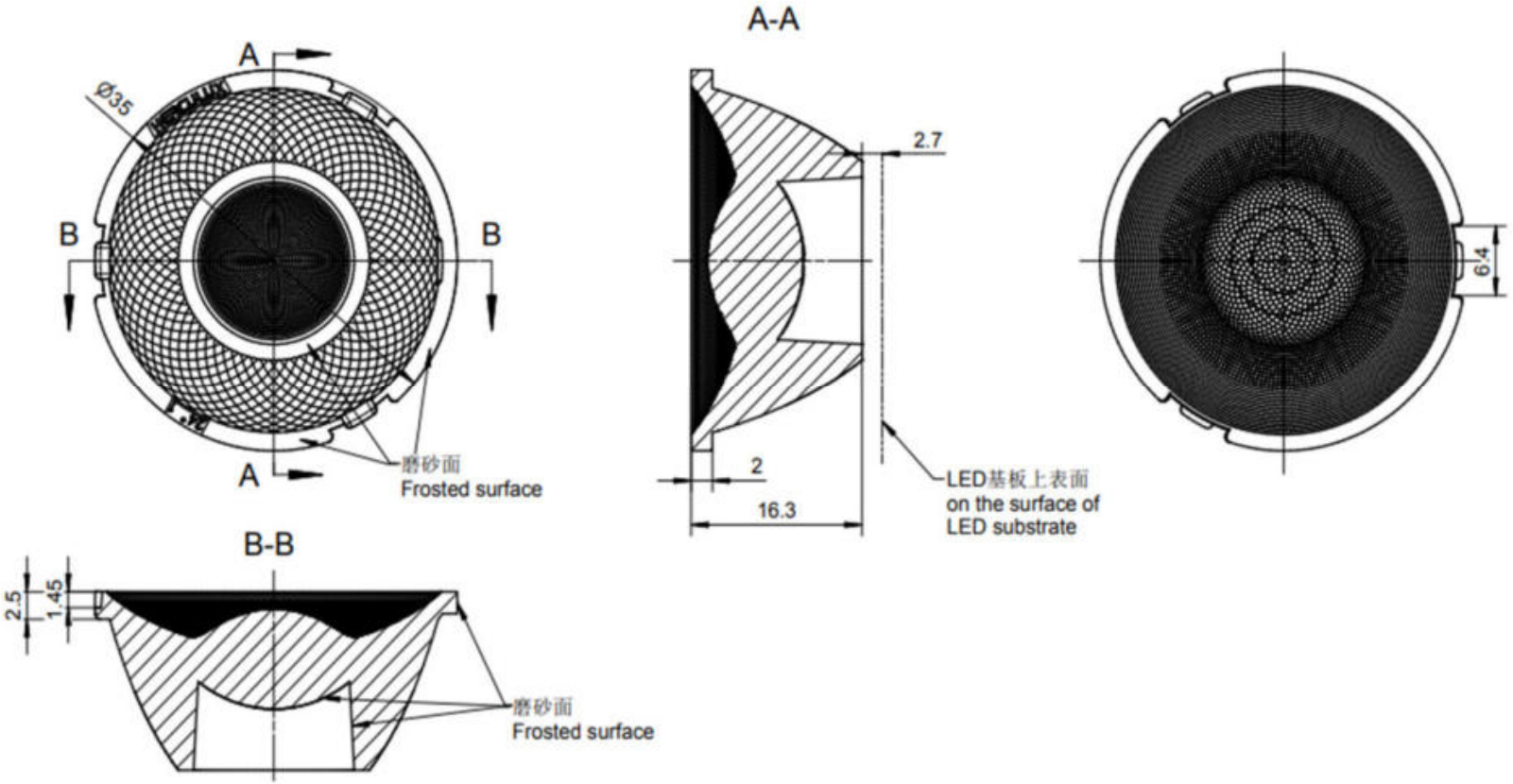


Technical remark:

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 Dark 35@16-15º lens		HK-HG-35@16-15-D6-21-1g-1	
Structure design					1.01.91997	
Review					mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK	

MT5 Tolerance table	Basic size	＜3	3～10	10～24	24～65	65～140	140～250	250～450	＞450
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0

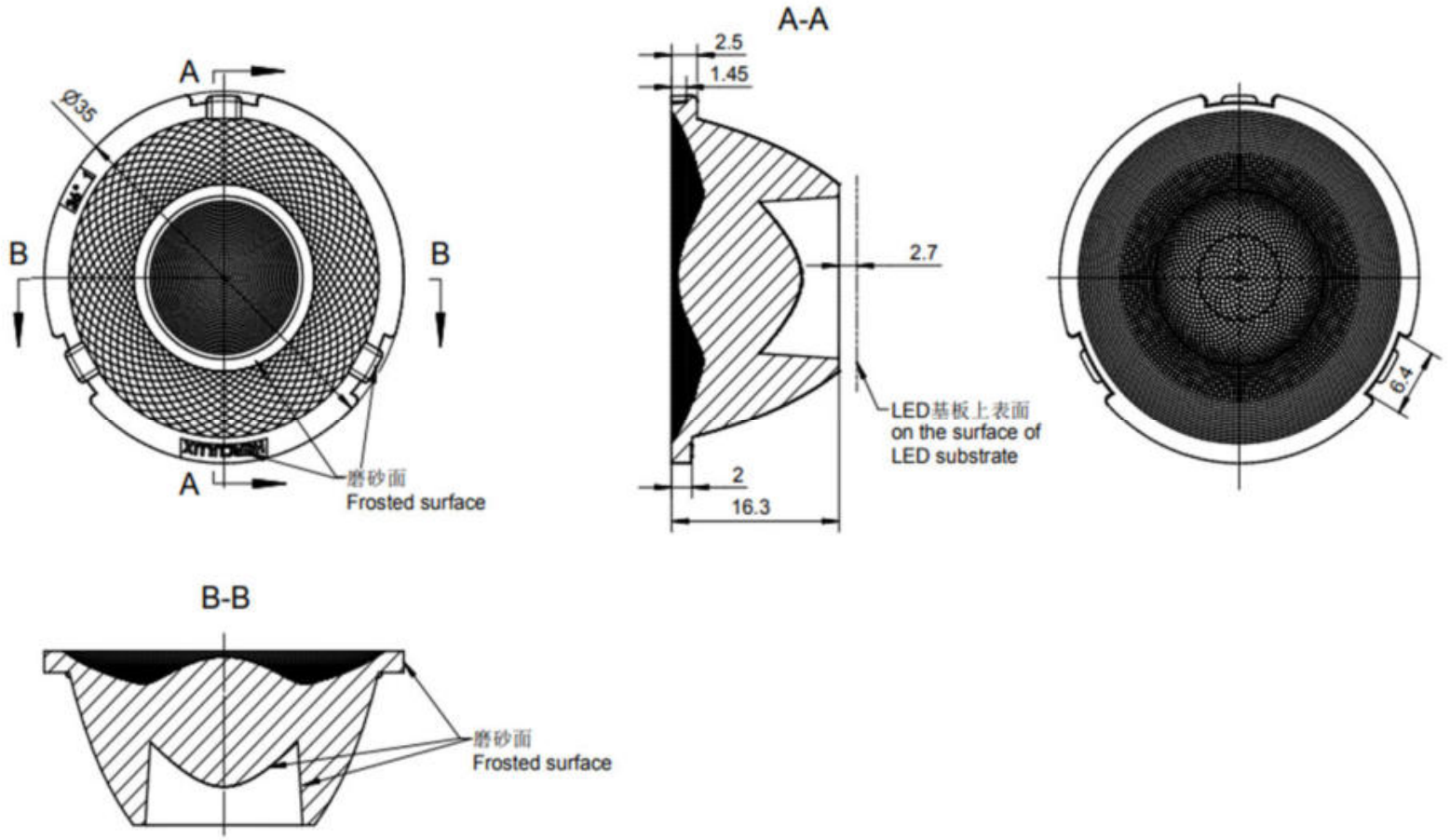


Technical remark:

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 Dark 35@16-24º lens		HK-HG-35@16-24-D6-21-1g-1	
Structure design					1.01.92002	
Review					mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK	

MT5 Tolerance table	Basic size	＜3	3～10	10～24	24～65	65～140	140～250	250～450	＞450
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0

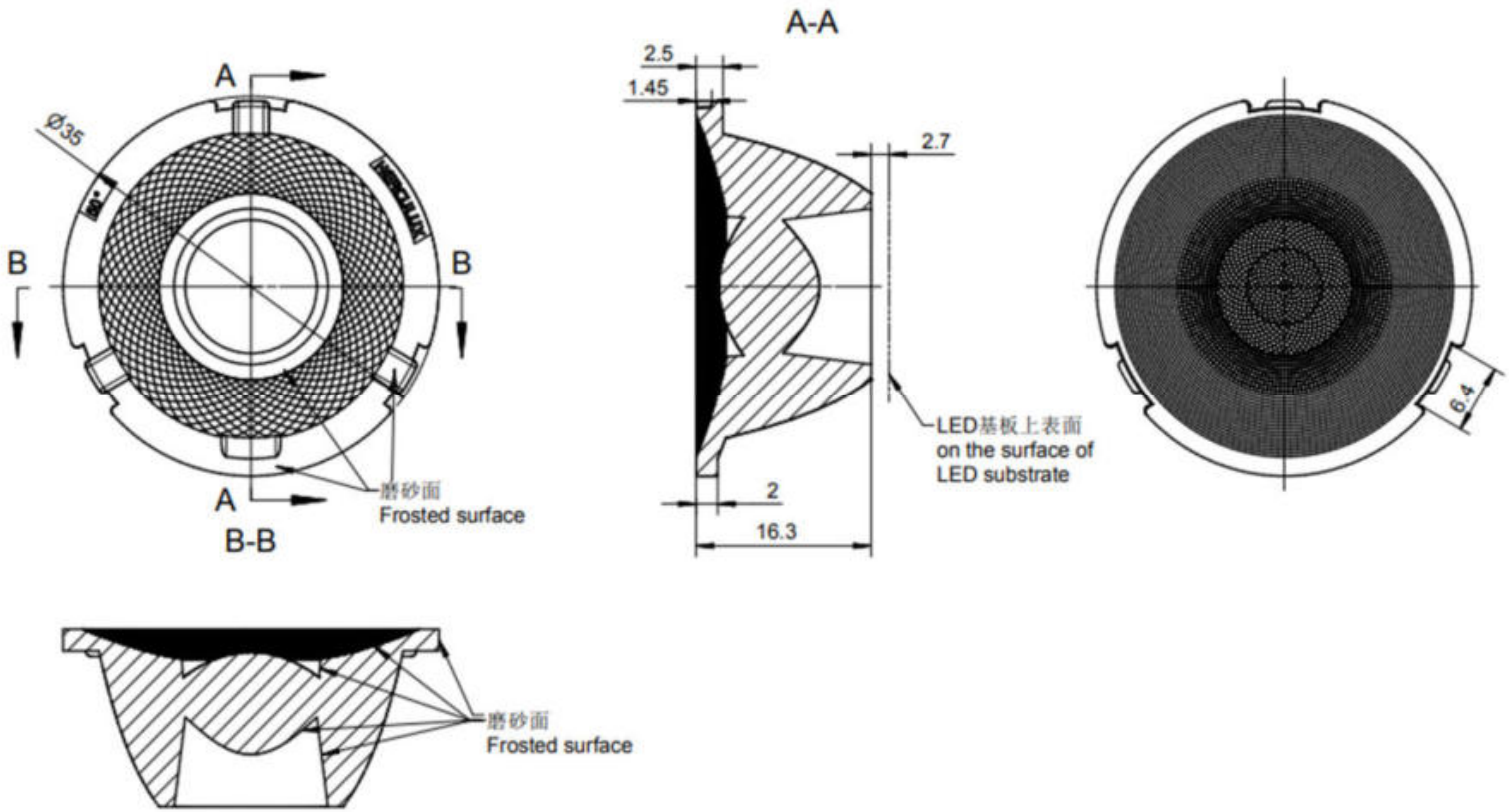


Technical remark:

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 Dark 35@16-36º lens		HK-HG-35@16-36-D6-21-1g-1	
Structure design					1.01.92041	
Review					mber of drawi	qty / weight
Validation			Material:	PMMA	CDHK	

MT5 Tolerance table	Basic size	＜3	3～10	10～24	24～65	65～140	140～250	250～450	＞450
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0

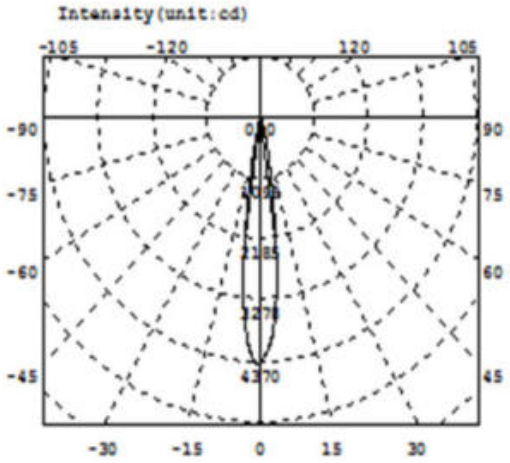


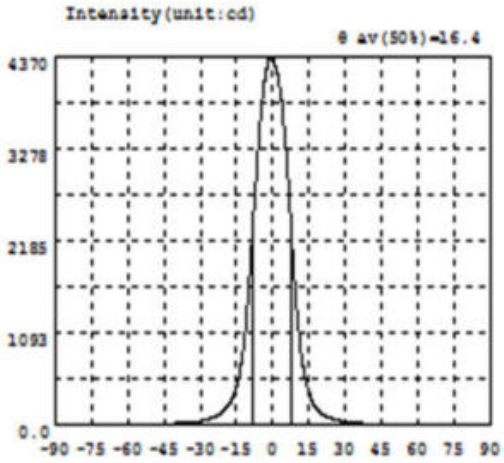
Technical remark:

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 Dark 35@16-50º lens		HK-HG-35@16-50-D6-21-1g-1
Structure design					1.01.92182
Review					mber of drawi / qty / weight
Validation			Material:	PMMA	CDHK

MT5 Tolerance table	Basic size	＜3	3～10	10～24	24～65	65～140	140～250	250～450	＞450
	lerance val	±0.1	±0.15	±0.2	±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	1.321	-58.5	10.98	-27.0	74.54	4.5	3574	36.0	29.57	67.5	3.940
-88.5	1.276	-57.0	11.90	-25.5	88.47	6.0	3032	37.5	26.75	69.0	3.313
-87.0	1.231	-55.5	12.90	-24.0	105.5	7.5	2357	39.0	24.63	70.5	2.808
-85.5	1.197	-54.0	13.92	-22.5	127.6	9.0	1708	40.5	22.86	72.0	2.395
-84.0	1.163	-52.5	15.17	-21.0	157.6	10.5	1173	42.0	21.18	73.5	2.052
-82.5	1.154	-51.0	16.36	-19.5	196.9	12.0	792.3	43.5	19.65	75.0	1.810
-81.0	1.358	-49.5	17.48	-18.0	254.0	13.5	540.7	45.0	17.94	76.5	1.591
-79.5	1.621	-48.0	18.60	-16.5	341.1	15.0	381.5	46.5	16.51	78.0	1.398
-78.0	1.950	-46.5	19.88	-15.0	469.5	16.5	267.4	48.0	15.38	79.5	1.240
-76.5	2.336	-45.0	21.24	-13.5	668.0	18.0	201.4	49.5	14.33	81.0	1.123
-75.0	2.793	-43.5	22.82	-12.0	975.4	19.5	156.3	51.0	13.35	82.5	1.141
-73.5	3.430	-42.0	24.59	-10.5	1435	21.0	125.7	52.5	12.35	84.0	1.153
-72.0	4.101	-40.5	26.61	-9.0	2033	22.5	103.4	54.0	11.43	85.5	1.226
-70.5	4.803	-39.0	28.85	-7.5	2681	24.0	86.18	55.5	10.48	87.0	1.265
-69.0	5.503	-37.5	31.41	-6.0	3318	25.5	72.23	57.0	9.590	88.5	1.299
-67.5	6.210	-36.0	34.40	-4.5	3825	27.0	61.40	58.5	8.752	90.0	1.266
-66.0	6.988	-34.5	38.13	-3.0	4165	28.5	52.94	60.0	7.905		
-64.5	7.750	-33.0	42.53	-1.5	4349	30.0	46.45	61.5	7.041		
-63.0	8.494	-31.5	47.85	0.0	4339	31.5	41.07	63.0	6.198		
-61.5	9.235	-30.0	54.53	1.5	4188	33.0	36.67	64.5	5.445		
-60.0	10.05	-28.5	63.33	3.0	3966	34.5	32.90	66.0	4.666		

Electricity Parameter:

Current I: 0.1000A Power: 3.900W

Voltage V: 39.00V PF: 1.000

Optical Parameter(Distance=2.410m):

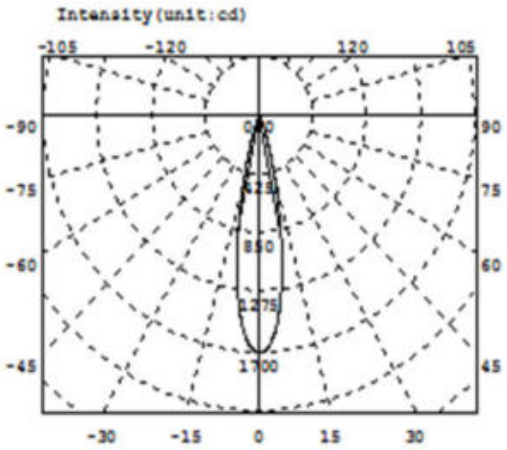
Equivalent Luminous flux: Φ eff= 503.6lm Efficiency: Eff=129.15lm/W

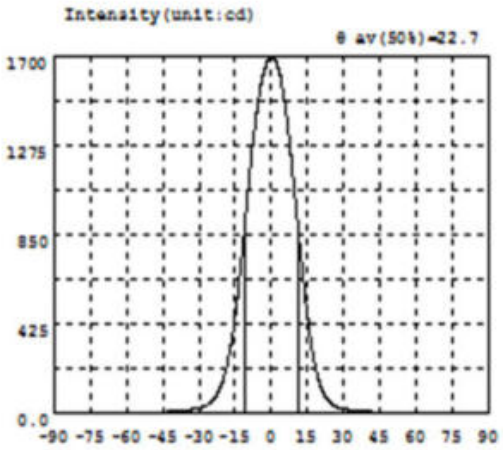
Diffuse angle: @(25%): 22.2deg @(50%): 16.4deg @(75%): 11.4deg @(50%): 16.4deg

Diffuse angle: @(25%): 22.2deg @(50%): 16.5deg @(75%): 11.5deg @(50%): 16.5deg

Imax=4368cd (C=0.0deg,G=-1.0deg) C0-180Plane Imax= 4368cd(G=-1.0deg)

C0-180Plane I0= 4339cd





Intensity data:(deg , cd) C0-180

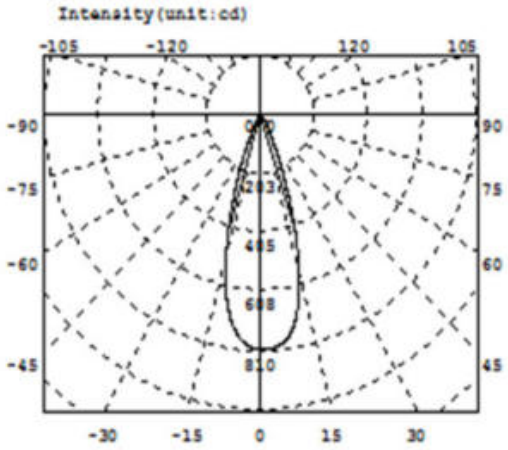
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.9152	-58.5	5.536	-27.0	40.15	4.5	1550	36.0	14.44	67.5	2.141
-88.5	0.9151	-57.0	5.959	-25.5	51.57	6.0	1434	37.5	12.99	69.0	1.774
-87.0	0.8813	-55.5	6.433	-24.0	68.24	7.5	1288	39.0	11.85	70.5	1.525
-85.5	0.8587	-54.0	6.898	-22.5	94.24	9.0	1122	40.5	10.95	72.0	1.332
-84.0	0.8474	-52.5	7.394	-21.0	131.5	10.5	945.0	42.0	10.23	73.5	1.160
-82.5	0.8587	-51.0	7.881	-19.5	182.9	12.0	769.0	43.5	9.591	75.0	1.026
-81.0	0.9280	-49.5	8.336	-18.0	251.3	13.5	601.7	45.0	8.987	76.5	0.9302
-79.5	1.043	-48.0	8.796	-16.5	347.3	15.0	455.5	46.5	8.474	78.0	0.8492
-78.0	1.224	-46.5	9.245	-15.0	469.1	16.5	325.4	48.0	7.995	79.5	0.7864
-76.5	1.450	-45.0	9.805	-13.5	616.4	18.0	230.4	49.5	7.531	81.0	0.7554
-75.0	1.713	-43.5	10.43	-12.0	781.9	19.5	161.0	51.0	7.082	82.5	0.7781
-73.5	2.043	-42.0	11.18	-10.5	961.6	21.0	112.1	52.5	6.603	84.0	0.7810
-72.0	2.380	-40.5	12.13	-9.0	1139	22.5	78.59	54.0	6.124	85.5	0.8036
-70.5	2.667	-39.0	13.31	-7.5	1301	24.0	56.46	55.5	5.624	87.0	0.8248
-69.0	2.998	-37.5	14.72	-6.0	1442	25.5	42.54	57.0	5.137	88.5	0.8462
-67.5	3.365	-36.0	16.44	-4.5	1555	27.0	34.18	58.5	4.653	90.0	0.8689
-66.0	3.675	-34.5	18.44	-3.0	1632	28.5	28.59	60.0	4.174		
-64.5	4.014	-33.0	20.77	-1.5	1679	30.0	24.53	61.5	3.738		
-63.0	4.376	-31.5	23.53	0.0	1694	31.5	21.28	63.0	3.302		
-61.5	4.734	-30.0	27.16	1.5	1678	33.0	18.51	64.5	2.886		
-60.0	5.127	-28.5	32.33	3.0	1632	34.5	16.20	66.0	2.510		

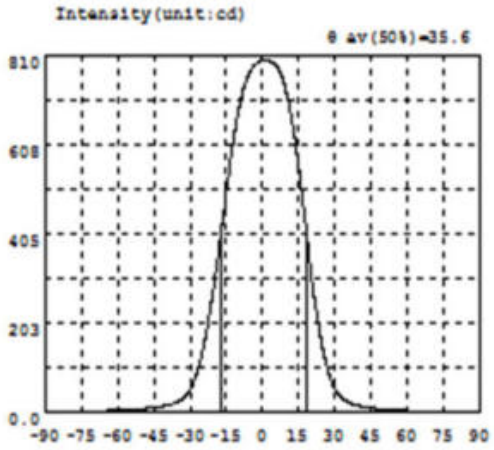
Electricity Parameter:

Current I: 0.1000A Power: 3.420W
Voltage V: 34.20V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 315.0lm Efficiency: Eff=92.12lm/W
Diffuse angle: @(25%): 30.8deg @(50%): 22.7deg @(75%): 15.3deg @(50%): 22.7deg
Diffuse angle: @(25%): 30.8deg @(50%): 22.7deg @(75%): 15.3deg @(50%): 22.7deg
Imax=1694cd (C=0.0deg,G=0.0deg) C0-180Plane Imax= 1694cd(G=0.0deg)
C0-180Plane I0= 1694cd





Intensity data:(deg , cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.7005	-58.5	6.731	-27.0	93.68	4.5	791.1	36.0	22.79	67.5	2.487
-88.5	0.7452	-57.0	7.093	-25.5	124.6	6.0	782.3	37.5	19.65	69.0	2.036
-87.0	0.7111	-55.5	7.380	-24.0	162.8	7.5	767.3	39.0	17.27	70.5	1.653
-85.5	0.6666	-54.0	7.754	-22.5	205.9	9.0	743.1	40.5	15.37	72.0	1.368
-84.0	0.6447	-52.5	8.171	-21.0	256.2	10.5	709.5	42.0	13.87	73.5	1.164
-82.5	0.6992	-51.0	8.656	-19.5	312.0	12.0	667.0	43.5	12.52	75.0	1.024
-81.0	0.6918	-49.5	9.177	-18.0	373.1	13.5	613.2	45.0	11.32	76.5	0.8756
-79.5	0.7921	-48.0	9.930	-16.5	437.5	15.0	551.5	46.5	10.23	78.0	0.7493
-78.0	0.9857	-46.5	10.88	-15.0	500.6	16.5	484.7	48.0	9.304	79.5	0.6700
-76.5	1.144	-45.0	12.00	-13.5	561.9	18.0	416.5	49.5	8.538	81.0	0.6440
-75.0	1.439	-43.5	13.19	-12.0	620.3	19.5	344.3	51.0	7.958	82.5	0.6538
-73.5	1.729	-42.0	14.51	-10.5	669.3	21.0	276.0	52.5	7.479	84.0	0.6779
-72.0	2.227	-40.5	16.01	-9.0	708.3	22.5	219.2	54.0	7.042	85.5	0.6978
-70.5	2.573	-39.0	17.81	-7.5	739.8	24.0	170.9	55.5	6.638	87.0	0.6992
-69.0	3.077	-37.5	20.09	-6.0	763.2	25.5	129.5	57.0	6.182	88.5	0.7017
-67.5	3.570	-36.0	23.02	-4.5	778.7	27.0	96.97	58.5	5.692	90.0	0.7129
-66.0	4.206	-34.5	27.28	-3.0	788.5	28.5	72.11	60.0	5.151		
-64.5	4.846	-33.0	33.05	-1.5	796.0	30.0	54.95	61.5	4.582		
-63.0	5.412	-31.5	41.65	0.0	799.9	31.5	42.04	63.0	4.025		
-61.5	5.838	-30.0	53.64	1.5	800.2	33.0	33.21	64.5	3.464		
-60.0	6.307	-28.5	70.47	3.0	796.4	34.5	27.05	66.0	2.951		

Electricity Parameter:

Current I: 0.1000A Power: 3.578W

Voltage V: 35.79V PF: 1.000

Optical Parameter(Distance=2.410m):

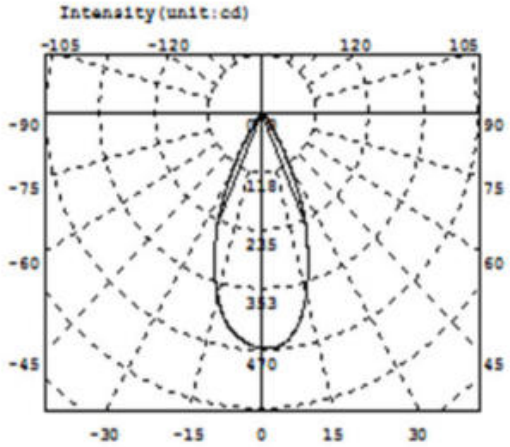
Equivalent Luminous flux: Φ eff= 319.5lm Efficiency: Eff=89.30lm/W

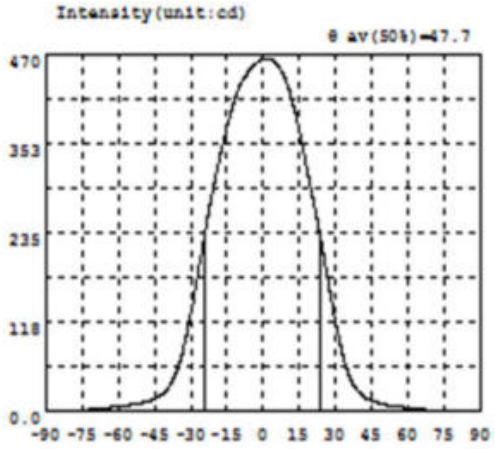
Diffuse angle: @(25%): 45.6deg @(50%): 35.6deg @(75%): 26.3deg @(50%): 35.6deg

Diffuse angle: @(25%): 45.6deg @(50%): 35.6deg @(75%): 26.3deg @(50%): 35.6deg

Imax=800.3cd (C=0.0deg,G=1.0deg) C0-180Plane Imax= 800.3cd(G=1.0deg)

C0-180Plane I0= 799.9cd





Intensity data: (deg , cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.8474	-58.5	7.760	-27.0	183.6	4.5	460.3	36.0	44.00	67.5	2.647
-88.5	0.8361	-57.0	8.396	-25.5	208.4	6.0	455.4	37.5	34.45	69.0	2.336
-87.0	0.8135	-55.5	9.023	-24.0	238.0	7.5	447.6	39.0	27.62	70.5	2.053
-85.5	0.8019	-54.0	9.736	-22.5	264.5	9.0	437.3	40.5	22.86	72.0	1.788
-84.0	0.7919	-52.5	10.53	-21.0	289.2	10.5	424.3	42.0	19.38	73.5	1.505
-82.5	0.8495	-51.0	11.45	-19.5	312.3	12.0	408.0	43.5	16.65	75.0	1.265
-81.0	1.009	-49.5	12.48	-18.0	333.9	13.5	388.4	45.0	14.59	76.5	1.039
-79.5	1.258	-48.0	13.74	-16.5	354.8	15.0	367.7	46.5	12.93	78.0	0.8771
-78.0	1.553	-46.5	15.27	-15.0	374.2	16.5	345.2	48.0	11.55	79.5	0.7734
-76.5	1.859	-45.0	17.24	-13.5	392.0	18.0	318.8	49.5	10.31	81.0	0.7457
-75.0	2.179	-43.5	19.74	-12.0	408.6	19.5	295.9	51.0	9.331	82.5	0.7668
-73.5	2.588	-42.0	22.98	-10.5	422.4	21.0	272.5	52.5	8.530	84.0	0.7782
-72.0	3.041	-40.5	27.28	-9.0	432.9	22.5	248.1	54.0	7.805	85.5	0.7810
-70.5	3.505	-39.0	33.12	-7.5	440.7	24.0	222.4	55.5	7.088	87.0	0.8022
-69.0	3.971	-37.5	41.07	-6.0	447.1	25.5	195.2	57.0	6.391	88.5	0.8349
-67.5	4.449	-36.0	51.87	-4.5	452.7	27.0	167.9	58.5	5.769	90.0	0.8146
-66.0	4.969	-34.5	66.26	-3.0	457.7	28.5	141.3	60.0	5.160		
-64.5	5.502	-33.0	84.22	-1.5	461.4	30.0	116.2	61.5	4.599		
-63.0	6.022	-31.5	105.5	0.0	464.0	31.5	93.21	63.0	4.050		
-61.5	6.569	-30.0	129.4	1.5	464.0	33.0	73.10	64.5	3.552		
-60.0	7.158	-28.5	155.9	3.0	463.2	34.5	56.65	66.0	3.071		

Electricity Parameter:

Current I: 0.1000A Power: 3.420W

Voltage V: 34.20V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 305.7lm Efficiency: Eff=89.41lm/W

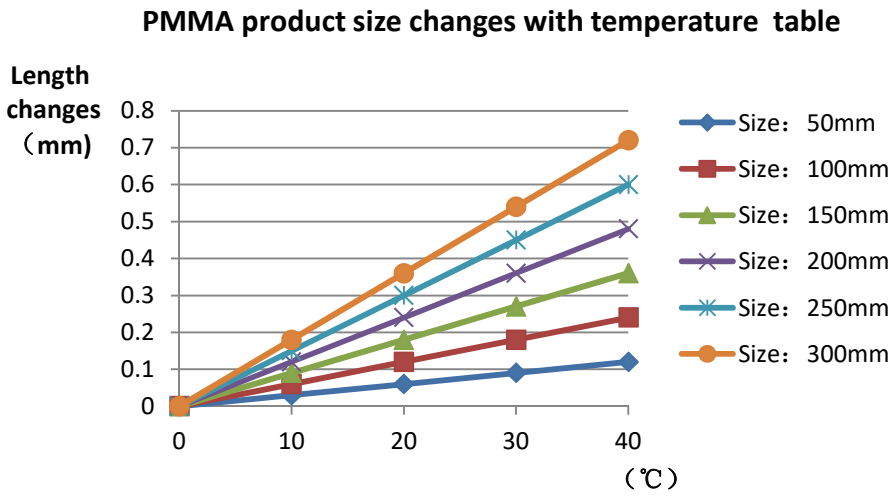
Diffuse angle: @(25%): 60.8deg @(50%): 47.7deg @(75%): 33.2deg @(50%): 47.7deg

Diffuse angle: @(25%): 60.8deg @(50%): 47.7deg @(75%): 33.3deg @(50%): 47.7deg

Imax=464.3cd (C=0.0deg,G=0.5deg) C0-180Plane Imax= 464.3cd(G=0.5deg)

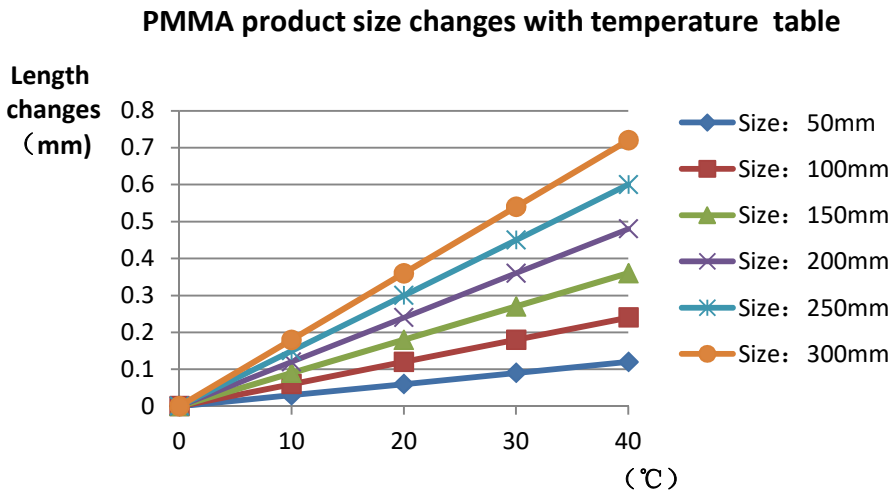
C0-180Plane I0= 464.0cd

1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
	diameter	35			34.96	34.92	34.95	34.98		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16.35	16.29	16.28	16.24		
	thickness	2			2.01	1.96	1.99	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	PMMA				Color	Transparent			OK	
4.Optical index	Testing LED	D6								
	The size and rated power of the light-emitting surface（LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. 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				16.4	16.5	16.7	16.5		
	K-value (CD/LM				8.68	8.83	8.52	8.92		
	Efficiency				83.83%	84.50%	85.17%	85.00%		
	Facula	See the signature sample								
Comprehensive judgment	Qualified									

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	

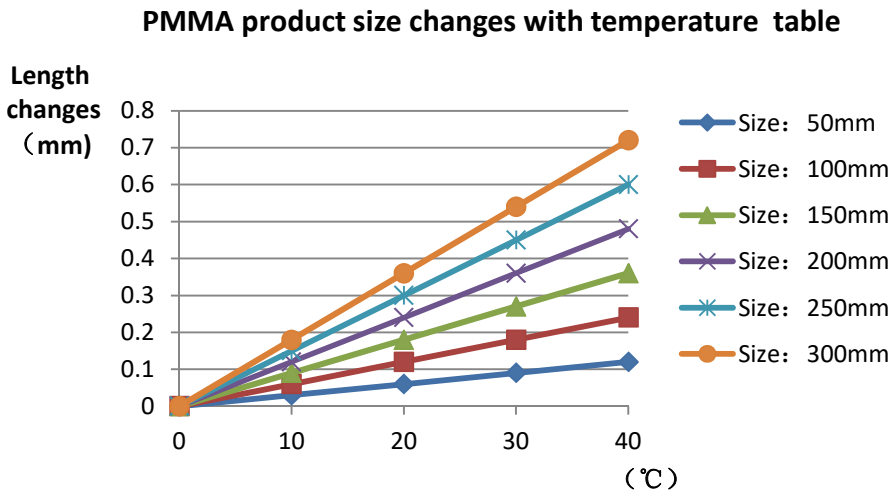
Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral 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.

1.Size		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
	diameter	35			35	35	35	35	35	35	35	35		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16	16	16	16	16	16	16	16		
	thickness	2			2.1	2.1	2.1	2.1	2	2.1	2.1	2		
	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
4.Optical index	Testing LED	D6												
	The size and rated power of the light-emitting surface（LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. 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				22.7		23.2		23.3		22.8			
	K-value (CD/LM				5.38		5.30		5.16		5.36			
	Efficiency				89.01%		88.73%		88.17%		89.01%			
	Facula	See the signature sample												
Comprehensive judgment		Qualified												

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	

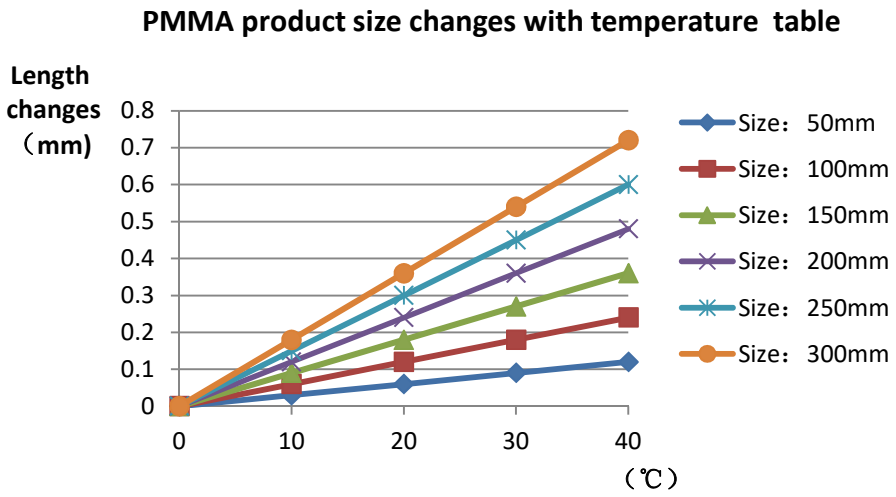
Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral 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.

1.Size		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
	diameter	35			34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2		
	thickness	2			2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0		
	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
4.Optical index	Testing LED	D6												
	The size and rated power of the light-emitting surface（LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. 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				35.6		35.7		36.2		35.2			
	K-value (CD/LM				2.51		2.52		2.46		2.55			
	Efficiency				89.61%		89.89%		89.86%		89.30%			
	Facula	See the signature sample												
Comprehensive judgment		Qualified												

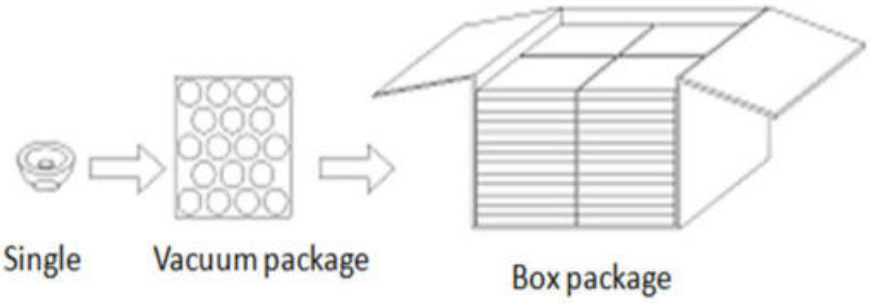
Remarks： 1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2、 Ambient temperature on the size of the product refer to the table on the right	

Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
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.

1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
	diameter	35			34.96	34.9	34.97	34.97		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16.28	16.28	16.26	16.22		
	thickness	2			2.05	1.99	2.08	2.03		
	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
4.Optical index	Testing LED	D6								
	The size and rated power of the light-emitting surface（LES) of the COB recommended by this lens should conform to the parameters in the product basic information table. 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				47.7	46.7	47.6	47.9		
	K-value (CD/LM									
	Efficiency				85.43%	85.43%	85.43%	85.71%		
	Facula	See the signature sample								
Comprehensive judgment	Qualified									

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	

Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
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.

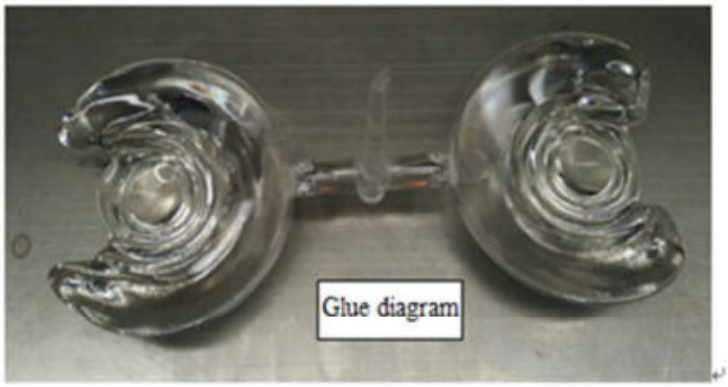
PN	HK-HG-35@16-15-D6-21-1g-1	Product Name	HK Dark 35@16-15º lens
Product material	PMMA		
Package diagram			

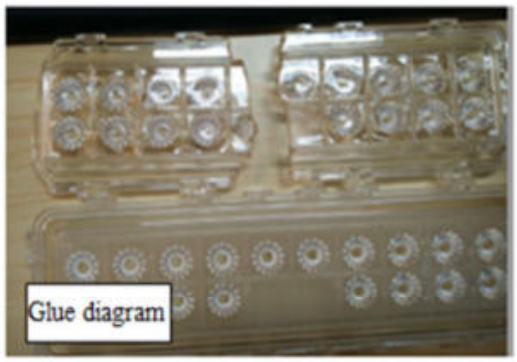
Product packing							
	23	A/ Box	4	pcs/Layer		
	13	Layer/Box	1196	A/ Carton		
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2. 07. 0075	Blister box	23cm*21cm	52	BAG	
	2	2.08.0001	PE film	30cm*30cm	52	PCS	
	3	2.06.0005	Reel label paper	6.2cm*8cm	52	PCS	
	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	14	PCS	
	6	2.06.0015	big flat carton	48cm*44cm*19cm	1	PCS	
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail						

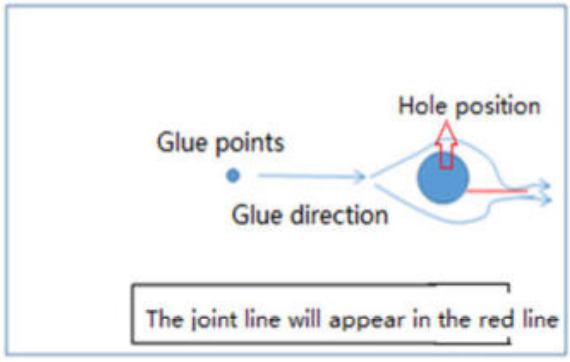
Special notice

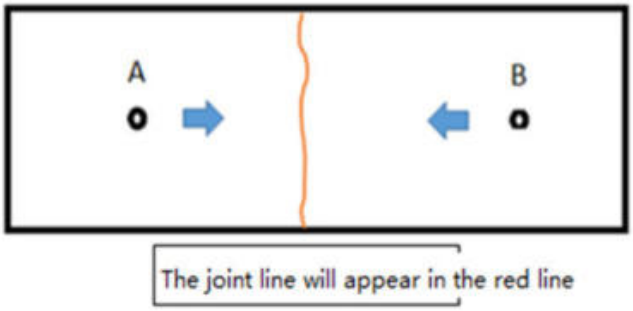
When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

Synthetl









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 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	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	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 ≤ 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	√		
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 ≤ 1 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-HG-35@16-17-D6-21-1g-1_JC	1.01.12806	HK Dark 35@16-17° lens（JC)
HK-HG-35@16-50-D6-21-1g-1_JC	1.01.12950	HK Dark 35@16-50° lens（JC)

Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified☐		DATE	
Project manager		DATE		Unqualified☐			
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, 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 withou t 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.

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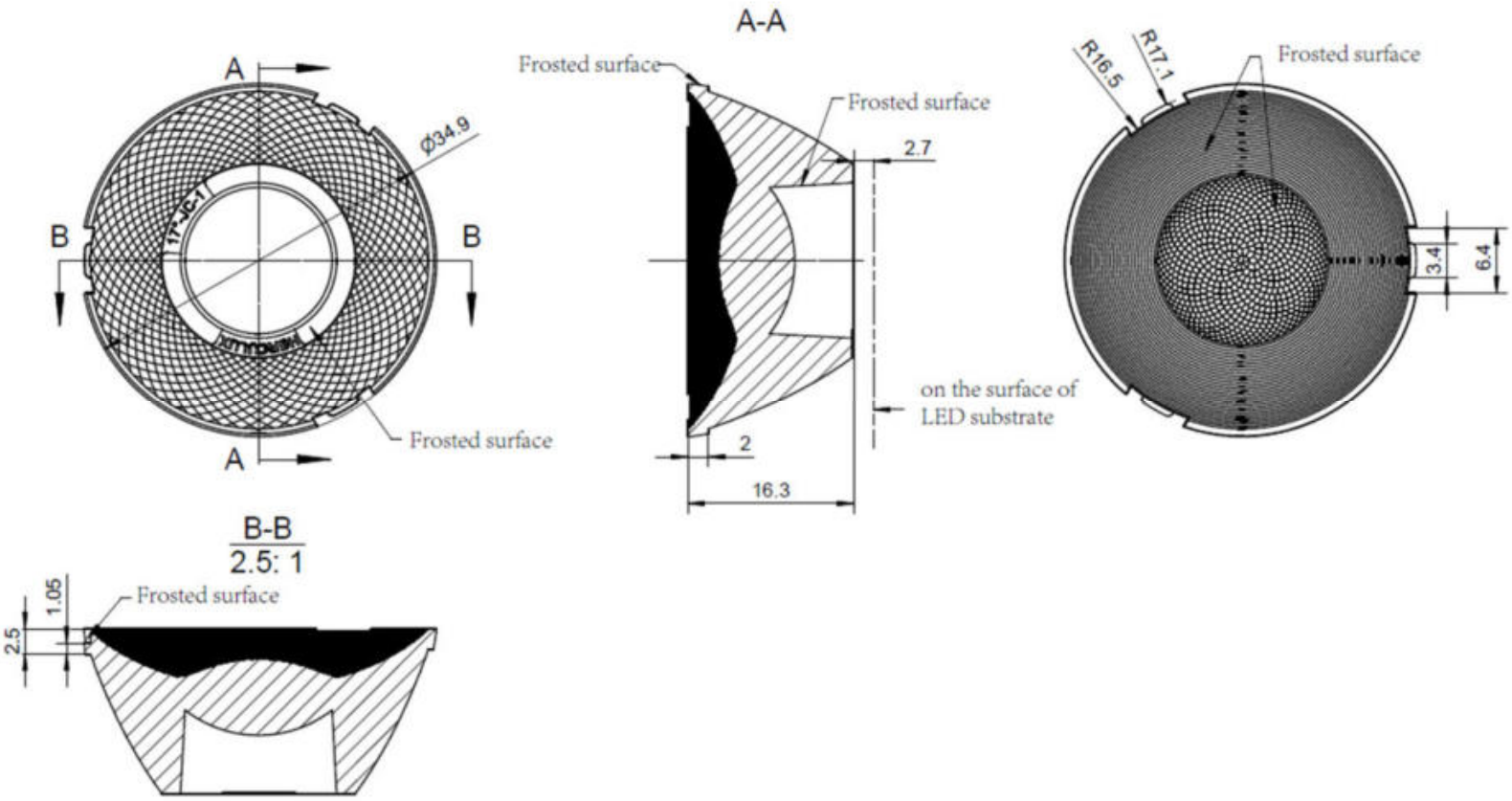
Basic product information

http://www.herculux.com/ Date updated: 2022/12/19

Product Picture:	
Size(L*W*H/Φ*H):	Φ:35mm; H:16.3mm
Material:	PMMA
Effiency:	\
Temperature(Topr):	Material extreme temperature resistance : -40℃ to +100℃ long-term use temperature : -40℃ to +80℃
FWHM:	17°、50°
Matched LES:	D6
Recommended MAX power:	Not more than 15W

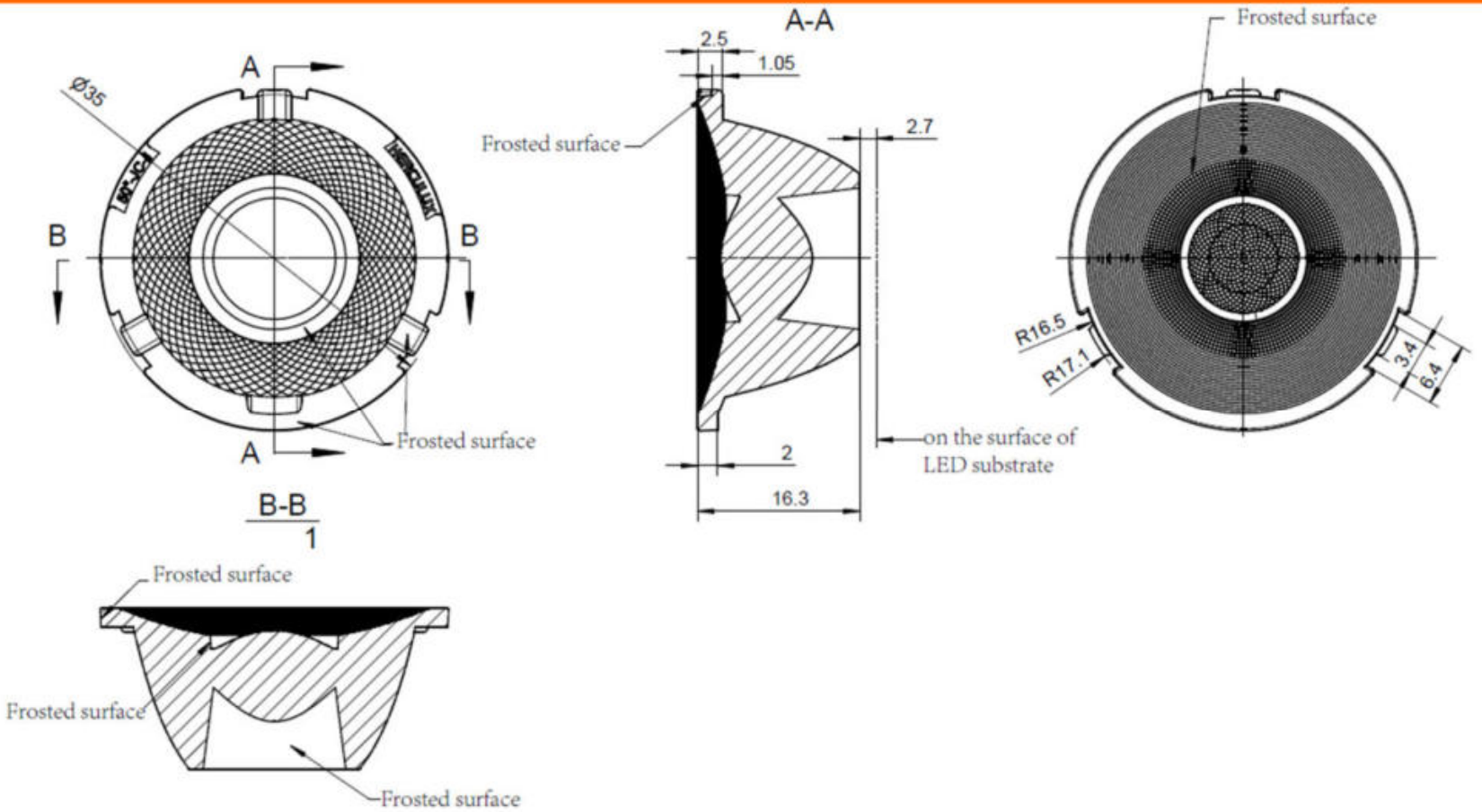


Technical remark:

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 Dark 35@16-17º lens（JC）	HK-HG-35@16-17-D6-21-1g-1_JC	
Structure design				1.01.12806	
Review				mber of drawi	qty / weight
Validation			Material：	PMMA	CDHK

MT5 Tolerance table	Basic size	＜3	3～10	10～24	24～65	65～140	140～250	250～450	＞450
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0

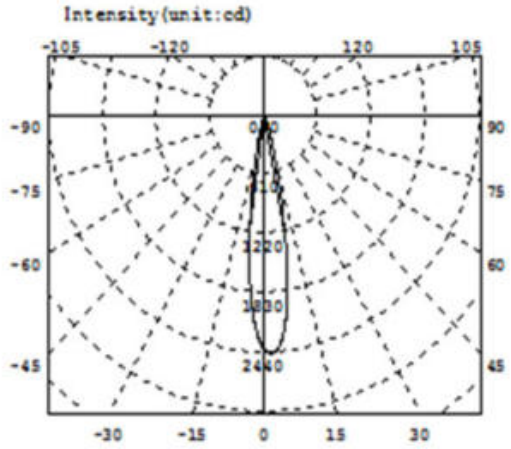


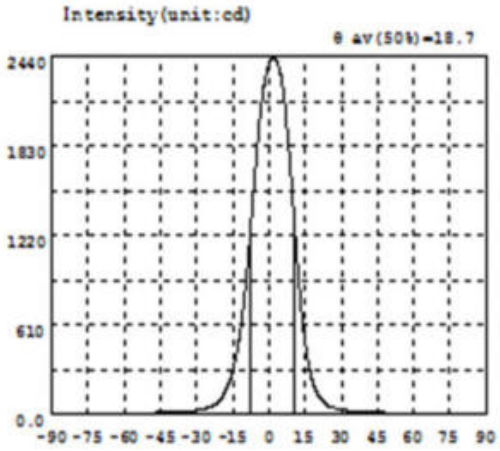
Technical remark:

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 Dark 35@16-50º lens（JC）		HK-HG-35@16-50-D6-21-1g-1_JC	
Structure design					1.01.12950	
Review					mber of drawi	qty / weight
Validation			Material：	PMMA	CDHK	

MT5 Tolerance table	Basic size	＜3	3～10	10～24	24～65	65～140	140～250	250～450	＞450
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0





Intensity data:(deg , cd) C0-180

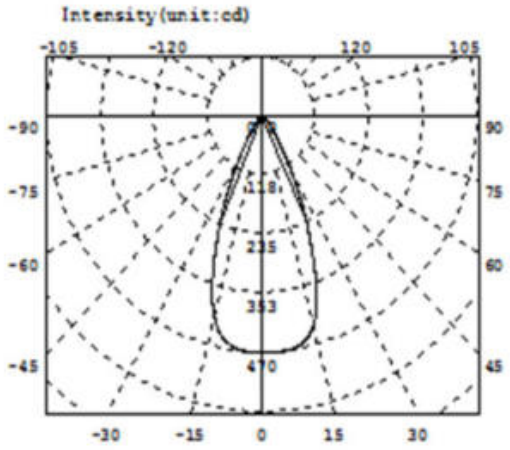
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.4971	-58.5	5.446	-27.0	33.35	4.5	2335	36.0	17.51	67.5	3.522
-88.5	0.4748	-57.0	5.810	-25.5	40.09	6.0	2183	37.5	15.81	69.0	3.215
-87.0	0.4076	-55.5	6.224	-24.0	49.62	7.5	1948	39.0	14.20	70.5	2.866
-85.5	0.3518	-54.0	6.558	-22.5	63.99	9.0	1642	40.5	12.87	72.0	2.547
-84.0	0.4293	-52.5	6.942	-21.0	85.11	10.5	1301	42.0	11.63	73.5	2.212
-82.5	0.5884	-51.0	7.445	-19.5	116.2	12.0	971.4	43.5	10.51	75.0	1.945
-81.0	0.7457	-49.5	7.828	-18.0	159.7	13.5	690.3	45.0	9.695	76.5	1.604
-79.5	1.006	-48.0	8.241	-16.5	219.1	15.0	482.5	46.5	9.001	78.0	1.424
-78.0	1.192	-46.5	8.698	-15.0	300.1	16.5	325.6	48.0	8.421	79.5	1.186
-76.5	1.332	-45.0	9.212	-13.5	411.0	18.0	223.6	49.5	7.959	81.0	1.024
-75.0	1.552	-43.5	9.758	-12.0	557.3	19.5	157.0	51.0	7.532	82.5	0.8792
-73.5	1.751	-42.0	10.42	-10.5	753.9	21.0	112.3	52.5	7.064	84.0	0.7361
-72.0	2.098	-40.5	11.28	-9.0	1005	22.5	82.71	54.0	6.676	85.5	0.5772
-70.5	2.372	-39.0	12.28	-7.5	1301	24.0	62.94	55.5	6.302	87.0	0.4244
-69.0	2.819	-37.5	13.64	-6.0	1612	25.5	49.32	57.0	5.991	88.5	0.3853
-67.5	3.181	-36.0	15.21	-4.5	1903	27.0	40.02	58.5	5.649	90.0	0.3175
-66.0	3.468	-34.5	17.04	-3.0	2136	28.5	33.42	60.0	5.304		
-64.5	3.925	-33.0	19.21	-1.5	2299	30.0	28.51	61.5	4.907		
-63.0	4.290	-31.5	21.70	0.0	2398	31.5	24.77	63.0	4.616		
-61.5	4.666	-30.0	24.64	1.5	2435	33.0	21.87	64.5	4.199		
-60.0	4.974	-28.5	28.41	3.0	2415	34.5	19.50	66.0	3.854		

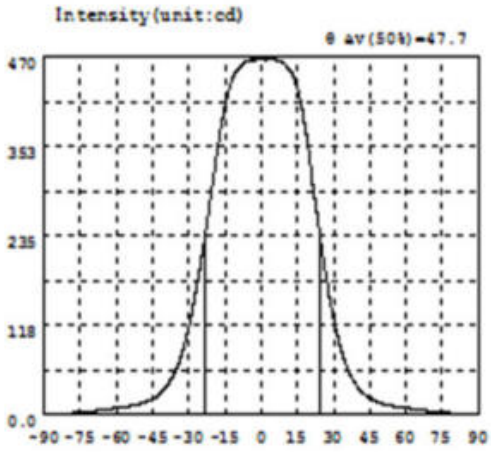
Electricity Parameter:

Current I: 0.1000A Power: 3.598W
Voltage V: 36.00V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 339.01lm Efficiency: Eff=94.22lm/W
Diffuse angle: @(25%): 25.5deg @(50%): 18.7deg @(75%): 13.0deg @(50%): 18.7deg
Diffuse angle: @(25%): 25.6deg @(50%): 18.8deg @(75%): 13.2deg @(50%): 18.8deg
Imax=2435cd (C=0.0deg,G=1.5deg) C0-180Plane Imax= 2435cd(G=1.5deg)
C0-180Plane I0= 2398cd





Intensity data:(deg , cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.3841	-58.5	8.816	-27.0	164.5	4.5	466.3	36.0	57.76	67.5	5.000
-88.5	0.3621	-57.0	9.578	-25.5	193.2	6.0	466.1	37.5	47.76	69.0	4.400
-87.0	0.3511	-55.5	10.34	-24.0	220.9	7.5	464.9	39.0	39.78	70.5	3.863
-85.5	0.4876	-54.0	11.16	-22.5	253.1	9.0	462.4	40.5	33.46	72.0	3.360
-84.0	0.6019	-52.5	12.01	-21.0	286.2	10.5	458.2	42.0	28.42	73.5	2.900
-82.5	0.8399	-51.0	13.04	-19.5	319.8	12.0	451.8	43.5	24.24	75.0	2.477
-81.0	1.121	-49.5	14.29	-18.0	352.5	13.5	442.5	45.0	20.90	76.5	2.073
-79.5	1.469	-48.0	15.81	-16.5	382.0	15.0	428.1	46.5	18.27	78.0	1.783
-78.0	1.756	-46.5	17.79	-15.0	406.3	16.5	407.1	48.0	16.09	79.5	1.429
-76.5	2.048	-45.0	20.24	-13.5	425.9	18.0	380.7	49.5	14.41	81.0	1.058
-75.0	2.441	-43.5	23.41	-12.0	440.3	19.5	348.6	51.0	13.09	82.5	0.8221
-73.5	2.848	-42.0	27.26	-10.5	450.1	21.0	309.9	52.5	12.06	84.0	0.5414
-72.0	3.283	-40.5	31.99	-9.0	456.8	22.5	275.4	54.0	11.22	85.5	0.4519
-70.5	3.791	-39.0	37.92	-7.5	461.0	24.0	241.8	55.5	10.40	87.0	0.4494
-69.0	4.308	-37.5	45.24	-6.0	464.1	25.5	209.0	57.0	9.682	88.5	0.4020
-67.5	4.912	-36.0	54.22	-4.5	465.4	27.0	178.1	58.5	8.991	90.0	0.3762
-66.0	5.545	-34.5	65.37	-3.0	465.5	28.5	149.6	60.0	8.239		
-64.5	6.115	-33.0	78.90	-1.5	465.8	30.0	124.7	61.5	7.605		
-63.0	6.740	-31.5	95.33	0.0	466.0	31.5	102.8	63.0	6.929		
-61.5	7.421	-30.0	114.9	1.5	465.8	33.0	84.76	64.5	6.262		
-60.0	8.053	-28.5	138.2	3.0	465.9	34.5	69.87	66.0	5.590		

Electricity Parameter:

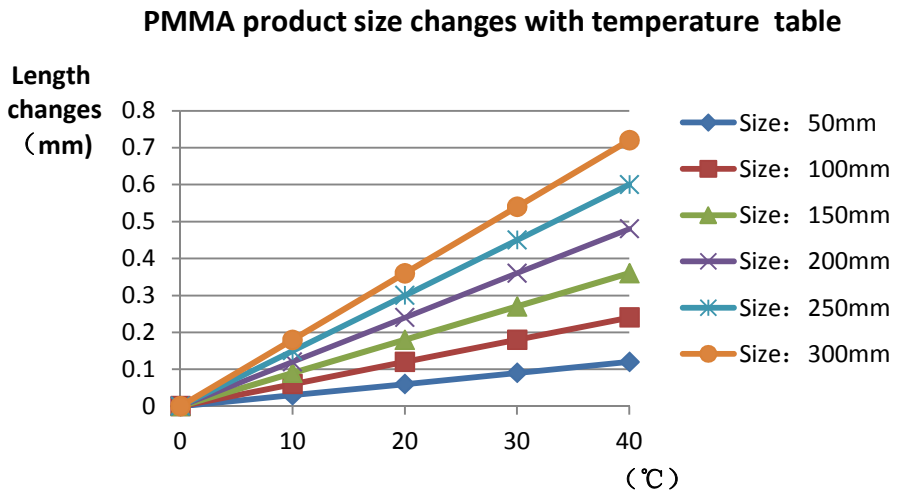
Current I: 0.1000A Power: 3.598W
Voltage V: 36.00V PF: 1.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ eff= 330.9lm Efficiency: Eff=91.99lm/W
Diffuse angle: @(25%): 60.3deg @(50%): 47.7deg @(75%): 37.5deg @(50%): 47.7deg
Diffuse angle: @(25%): 60.3deg @(50%): 47.8deg @(75%): 37.5deg @(50%): 47.8deg
Imax=466.5cd (C=0.0deg,G=5.0deg) C0-180Plane Imax= 466.5cd(G=5.0deg)
C0-180Plane I0= 466.0cd

1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
	diameter	34.9			34.97	35.01	34.97	35.04		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16.3	16.33	16.3	16.29		
	thickness	2			2.04	2.04	2.04	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		PMMA				Color	Transparent			OK
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				18.4	18.7	18.5	18.5		
	K-value (CD/LM				7.44	7.18	7.59	7.39		
	Efficiency				86.08%	87.37%	87.63%	87.89%		
	Facula	See the signature sample								
Comprehensive judgment		Qualified								

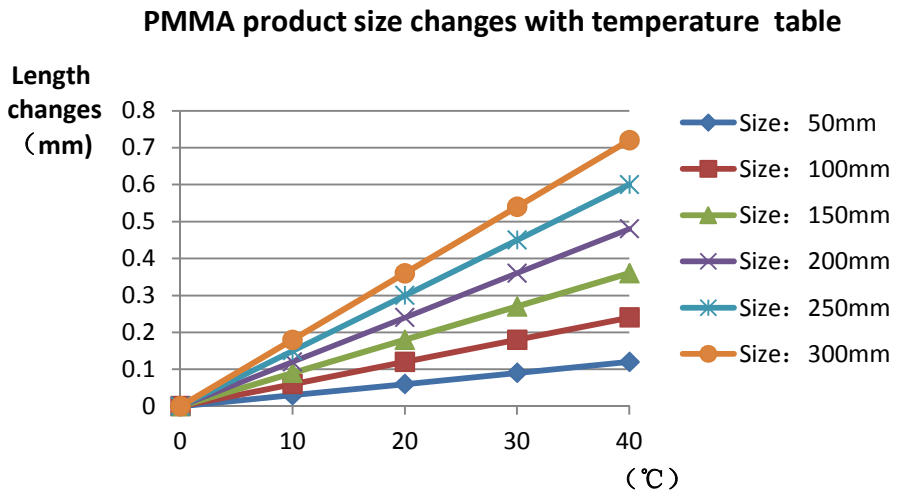
Remarks：
1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.
2、 Ambient temperature on the size of the product refer to the table on the right



Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
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.

1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
	diameter	34.9			35	34.94	35	34.94		Test environment : In 20 ℃ - 25 ℃ environment to achieve thermal equilibrium after the test.
	height	16.3			16.21	16.26	16.21	16.26		
	thickness	2			1.99	2.01	1.99	2.01		
	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
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				47.7	46.7	47	47.4		
	K-value (CD/LM									
	Efficiency				85.05%	84.02%	84.02%	83.51%		
	Facula	See the signature sample								
Comprehensive judgment	Qualified									

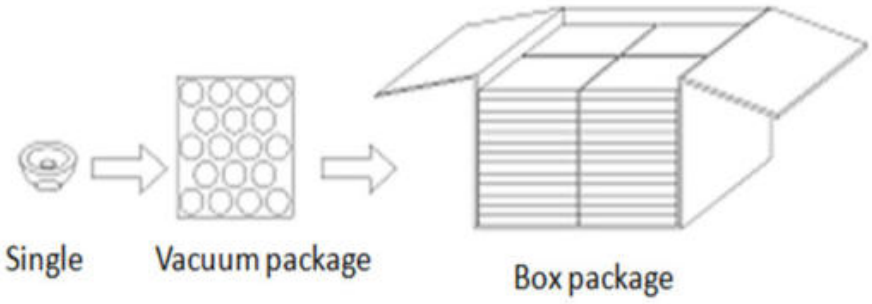
Remarks：
1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.
2、 Ambient temperature on the size of the product refer to the table on the right



Precautions:
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
2. Try to avoid touching the total reflection surface when taking the lens.
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.

PN	HK-HG-35@16-17-D6-21-1g-1_JC	Product Name	HK Dark 35@16-17° lens（JC)
Product material	PMMA	Customer	

Package diagram



Product packing							
	23	A/ Box	4	pcs/Layer		
	13	Layer/Box	1196	A/ Carton		

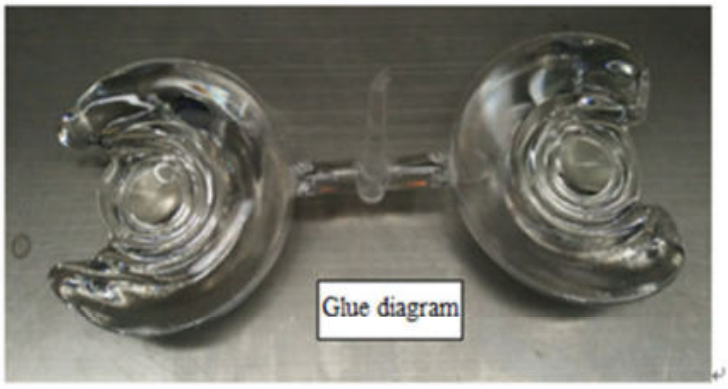
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0075	Blister box	23cm*21cm	52	BAG	
	2	2.08.0001	PE film	30cm*30cm	52	PCS	
	3	2.06.0005	Reel label paper	6.2cm*8cm	52	PCS	
	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	14	PCS	
	6	2.06.0015	big flat carton	48cm*44cm*19cm	1	PCS	

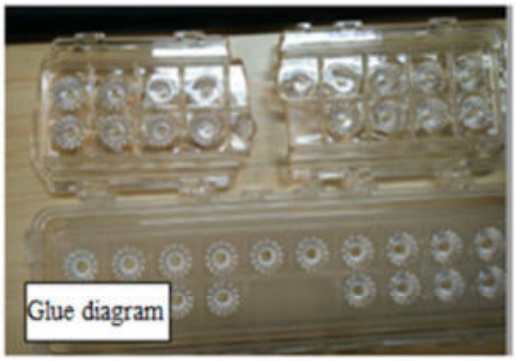
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail

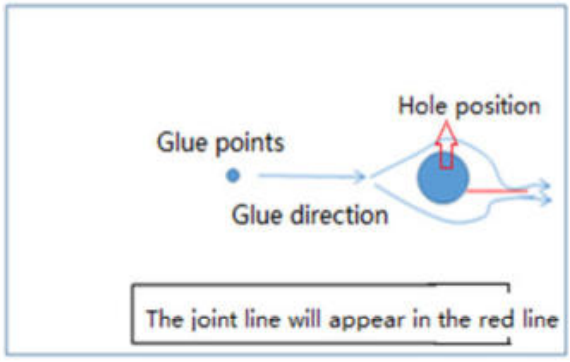
Special notice

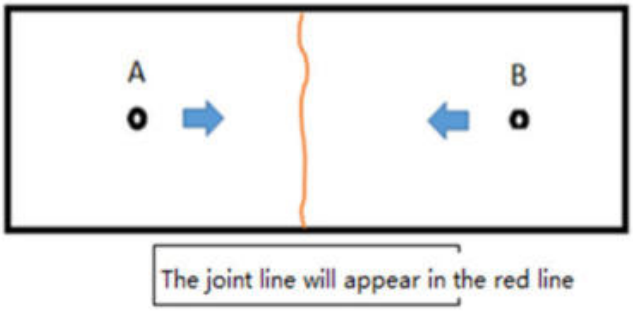
When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

Synthetl









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 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	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	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. 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			√

	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 ≤ 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	√		
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 ≤ 1 mm and no more than 1 area within a 50x50 mm area	Visual		√	