

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

### **Product Approval**

Approval number:

Customer:

Manufacturer: Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-HG-20@12-15-3030-21-1g-1	1. 01. 12621	HK Dark 20@12-15 degree lens
HK-HG-20@12-24-3030-21-1g-1	1. 01. 12622	HK Dark 20@12-24 degree lens
HK-HG-20@12-36-3030-21-1g-1	1. 01. 12623	HK Dark 20@12-36 degree lens
HK-HG-20@12-50-3030-21-1g-1	1.01.12681 Experiment al model	HK Dark 20@12-50 degree lens



	Supplier co	onfirmation		Client cor	nfirmation	
Proposed		DATE	Qualified□		5.475	
Project manager		DATE	Unqualified□		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: 028-8588730 http://www.herculux.cn/Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building, 501-

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

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

### HERCULUX 恒坤光电

#### 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.
- 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.

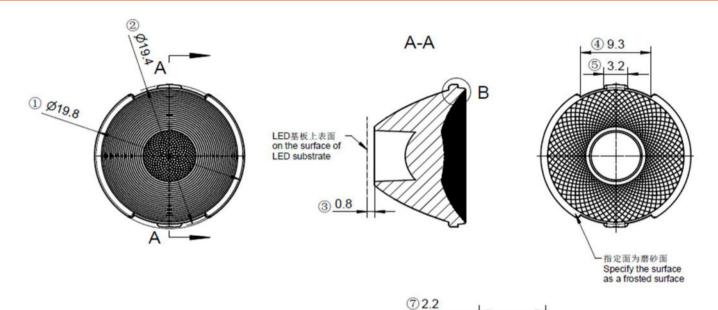


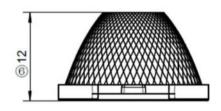
## HERCULUX 恒坤光电 Basic product information

TEL: 0755-2937 1541 FAX: 0755-2907 5140 http://www.herculux.cn/ Date updated: 2023/5/17

Product Picture:	
Size(L*W*H/Φ*H):	Ф:20mm; H:12mm
Material:	PMMA
Effiency:	\
Temperature(Topr):	Material extreme temperature resistance : -40°C to +100°C long-term use temperature : -40°C to +80°C
FWHM:	15°、24°、36°、50°
Matched LES:	3030







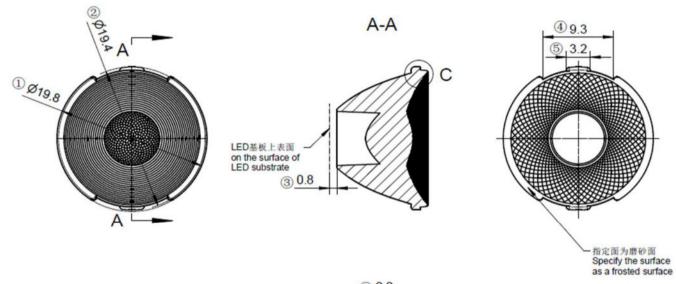
# ® 1.2

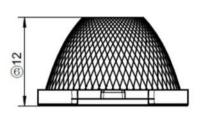
- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2µm

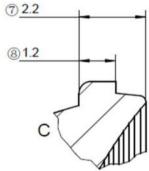
		*	1					1		
Optical design						HK-I	HG-20	@12-15-303	0-21-1	.g-1
Structure desigr				HK Dark 2	0@12-15 degree lens			1.01.12621		
Review						mber of	drawi	qty	wei	ght
Validation				Material:	PMMA		-	CDHK		
				-						

MT5 Tolerance	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>45
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0







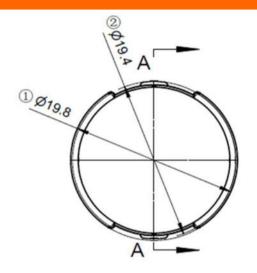


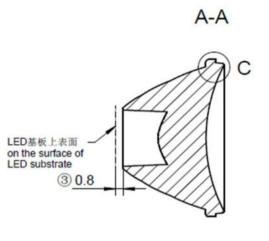
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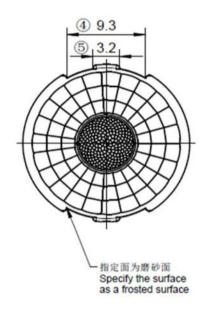
Optical design				НК-НС	G-20	@12-24-303	0-21-1	lg-1
Structure desigr		HK Dark 2	0@12-24 degree lens			1.01.12622		
Review				mber of d	rawi	qty	we	ight
Validation		Material:	PMMA		•	CDHK		
		•	-	-				

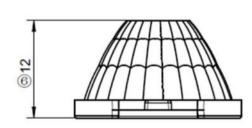
MT5	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~4	50	>450
Tolerance table	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	:	±2.0

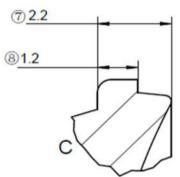










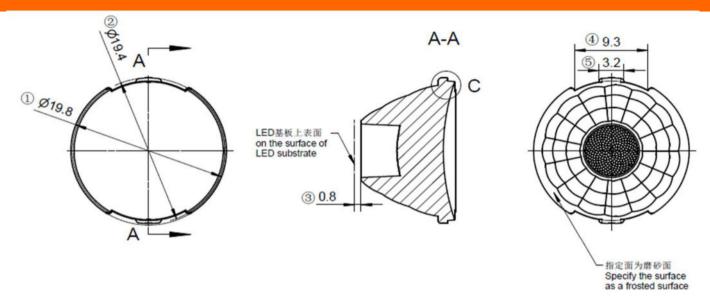


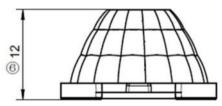
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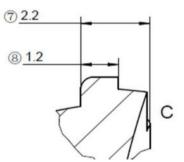
Optical design					HK-HG	6-20	@12-36-303	0-21-1	lg-1
Structure design			HK Dark 2	0@12-36 degree lens			1.01.12623		
Review			1		mber of dr	rawi	qty	we	ight
Keview									
Validation			Material:	PMMA			CDHK		
250 250	 ,	4=0	-	='	_				

MT5	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~45	) >2	450	-	
Tolerance table	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2	2.0		









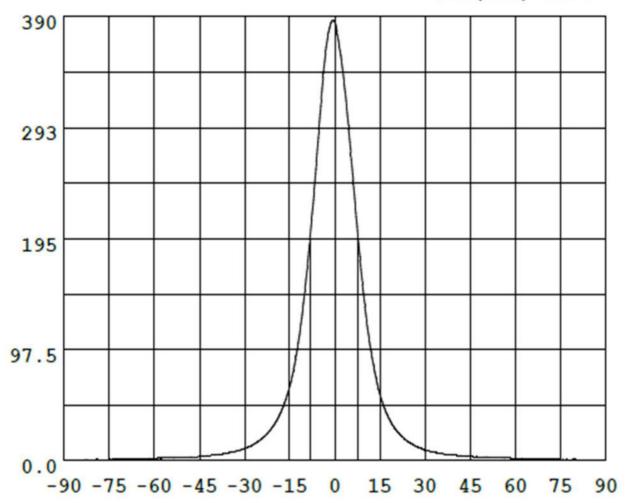
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- 3, The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2 $\mu$ m

Optical	design						HK-HG-20	0@12-50-303	30-21-1g-1
Structur	e desigr				HK Dark 20	0@12-50 degree lens	1.126	81Experimer	ntal mo
Rev	iew						mber of draw	qty	weight
Valid	ation				Material:	PMMA		CDHK	•
~ 2EO	2500	~ 1EO	_	45O					

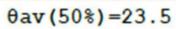
MT5 Tolerance	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>45
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0

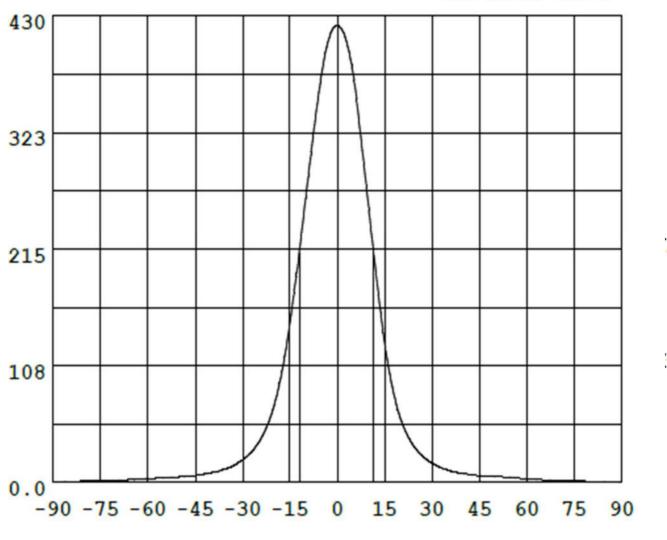


## $\theta$ av (50%) = 16.0

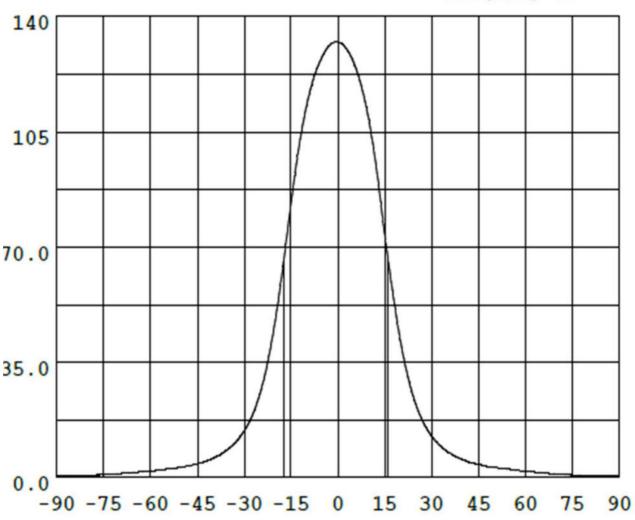




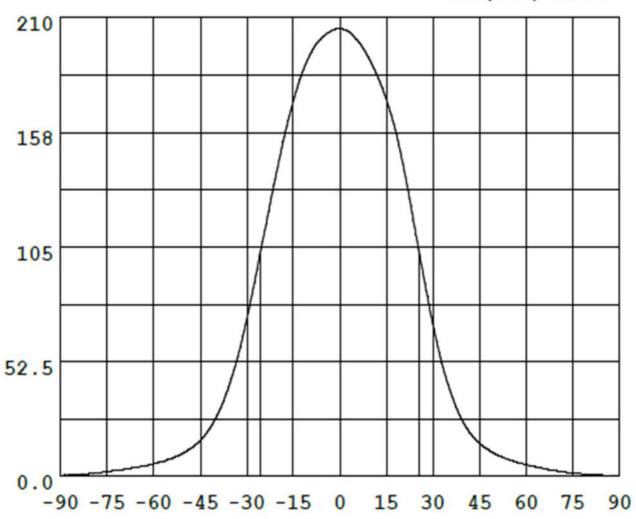














		;	Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks
	high	nly	1.2			1. 32	1. 22	1. 26	1.25		Test environmer
1.Size	The diame	eter	19.8			19. 92	19. 9	19. 93	19. 96		: In 20 °C · 25 °C environmer to achieve
	The thickn	ness	2. 2			2. 22	2. 2	2. 22	2. 26		thermal equilibriun after the test.
				Gate sh	near can n	ot affect the	appearanc	e of the lan	np		
				See at	tachment '	'Appearanc	e Inspection	n Standards	s"		
2.Appeara	nce	atta	See chment earance	E		No burr	No burr	No burr	No bu	ırr	OK
Quality		Insp	pection ndards"	L	N	lo stains	No stains	No stains	No sta	ins	OK.
3.Material				PMM	A		Color	Tra	nsparent		ОК
			ĒD				3030				1
	sho	size a	and rated onform to to	he parame the heat	eters in the dissipation	itting surfact product base capability of the fully tester	sic informat of the lamp	ion table. if and the act	it is requir ual conditi	red to ons of	be out of
4.Optical index	The sho ran	size a uld co ige. Ad	and rated on form to to coording to environm	he parame the heat	eters in the dissipation ns should	product base capability of the fully tester	sic informat of the lamp	ion table. if and the act	it is requir ual conditi	red to ons of	be out of
•	The sho ran	size a uld co ge. Ad WHM	and rated on form to to coording to environm	he parame the heat on the heat onent, the lea	eters in the dissipation ns should	product base capability cope fully teste	sic informat of the lamp ed and teste	ion table. if and the act ed to preve	it is requir ual conditi nt the lens	red to ons of	be out of
index	The sho ran	size a uld co uld co ige. Ad	and rated on form to to coording to environm	he parame to the heat of nent, the lead ight distribution	eters in the dissipation ns should	product bas capability cope fully teste	sic information in the lamp and teste and teste 6. 22	ion table. if and the act ed to prevented for the second formula of the second formula of the second formula of the second for	it is requir ual conditi nt the lens 6. 21	red to ons of	be out of
index	The sho ran  F'  K-va (CD/) ang	size a uld co uld co ige. Ad	and rated on form to to coording to environm	he parame to the heat of nent, the lead ight distribution	eters in the dissipation ns should	product bas capability cope fully tested as the capability of the fully tested as the capability of the fully tested as the capability of	sic information in the lamp and teste and teste 6. 22	ion table. if and the act to prevent the following the fol	it is requir ual conditi nt the lens 6. 21	red to ons of	be out of
index	The sho ran  F'  K-va (CD/)  ang	size a uld conge. An white LM)	and rated onform to to occording to environm	he parame to the heat of nent, the lead ight distribution	eters in the dissipation ns should	product bas capability cope fully tested as the capability of the fully tested as the capability of the fully tested as the capability of	sic information in the lamp and tester for the lamp and the lamp	ion table. if and the act to prevent the following the fol	it is requir ual conditi nt the lens 6. 21	red to ons of	be out of

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



									Jud			
			Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4		Remarks		
highly	/ 1.	2			1.26	1.25	1. 21	1.2		Test		
The diamete of	er 19	. 8			19. 91	19. 92	19. 88	19. 94		environment : In 20 °C - 25 °C environment to achieve		
		2			2. 19	1. 18	2. 17	2. 2		thermal equilibrium after the test.		
	Gate shear can not affect the appearance of the lamp											
		See attachment "Appearance Inspection Standards"										
ince I			F	١	No burr	No burr	No burr	No bu	ırr	OK		
Quality App		on			o stains	No stains	No stains	No stains		OK		
			PMMA	Ą		Color	Tra	nsparent		OK		
Testin	g LED		3030									
K-valı	<b>/HM</b>		ee light distribution curve  3. 88 3. 68 3. 75 3. 78									
		24° ±3°		23. 5°	24.5°	24. 3°	23. 9°		$\overline{}$			
Efficie	nc								$\overline{}$			
Fac	cula				See the	e signature	sample					
ensive ju	dgment					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			change	n es 0.8 —	IA produc	t size chan	nges with t	* •	Size:	50mm 100mm 150mm		
	The diamet of The thickne of the thickness of	highly 1.  The diameter of The thickness of the See attachm "Appeara Inspecti Standard Testing LED  The size and is should confor range. According According Ephagon Ephagon According Ephagon Ephagon According Ephagon Ephagon According Ephagon According Ephagon Ephagon According Ephagon Ephagon According Ephagon Ephag	The diameter of 19.8 of The thickness of the 2.2 of the 2.2 of the 2.2 of the 2.2 of the 2.3 of the 2.3 of the 2.4 of the 2.5 of the	size Size limit  highly 1. 2  The diameter of 19. 8  of The thickness of the  See attachment "Appearance Inspection Standards"  Testing LED  The size and rated power of the should conform to the parame range. According to the heat cenvironment, the left of the standards and the sta	size Size limit size limit  highly 1. 2  The diameter of 19. 8  of The thickness of the light-emit "Appearance Inspection Standards"  The size and rated power of the light-emit should conform to the parameters in the range. According to the heat dissipation environment, the lens should be rewised to the light emit should conform to the parameters in the range. According to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment, the lens should be rewised to the heat dissipation environment.	size Size limit size limit result1  highly 1. 2 1. 26  The diameter of 19. 8 19. 91  The thickness of the See attachment "Appearance Inspection Standards"  The size and rated power of the light-emitting surface should conform to the parameters in the product barrange. According to the heat dissipation capability of environment, the lens should be fully tested.  FWHM See light distribution curve  K-value (CD/LM) 3. 88  Efficienc Facula See the ensive judgment  PMMA productions of the light-emitting surface should conform to the parameters in the product barrange. According to the heat dissipation capability of environment, the lens should be fully tested.  FWHM See light distribution curve  K-value (CD/LM) 3. 88  Efficienc Facula See the ensive judgment  PMMA productions of the light-emitting surface should conform to the parameters in the product barrange. According to the heat dissipation capability of environment, the lens should be fully tested.  FWHM See light distribution curve  K-value (CD/LM) 3. 88  Efficienc See the ensive judgment	highly 1. 2	size Size limit size limit result1 result2 result3  highly 1. 2	highly 1. 2	highly 1. 2		

- 1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated.
- Try to avoid touching the total reflection surface when taking the lens.
   The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon
- tetrachloride, MMA Body, etc.).

  4. The working temperature of the lens should be within the temperature resistance limit of the lens material.

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



		Standard	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks			
	highly	1. 2			1.2	1.3	1. 28	1.3		Test			
1.Size	The diamete of	er 19.8			20. 06	20. 04	20. 02	19. 98		environment : In 20 °C - 25 °C environment to achieve			
	The thickness of the	2. 2			2. 18	2.2	2. 18	2. 2		thermal equilibrium after the test.			
		Gate shear can not affect the appearance of the lamp											
			See attachment "Appearance Inspection Standards"										
2 Annearance atta		See attachment Appearance	E	ı	No burr	No burr	No burr	No bu	rr	OK			
Quality	Quality "App Ins Sta			N	o stains	No stains	No stains	No stains		O.K			
3.Material			PMM	A		Color	Tra	Transparent Or					
	Testing	J LED	3030										
4.Optical index	FWI K-valu	enviror	to the heat ment, the le e light distrib	ns should b	pe fully test	ed and test	ed to preve			the use			
	(CD/LM)	1	000 140		2. 24	2. 24	2. 27			$\overline{}$			
	angle		36° ±4°		33. 2°	33. 6°	32. 6°	33. 5°		$\overline{}$			
	Efficier Fac	1	_	_	Soo th	o oignoturo	cample						
C = == == == == == == == == == == == ==					366 til	e signature	Sample						
Comprehe	ensive jud	igment				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			Lengti chang (mm	h es 0.8 —	10	t size chan	ages with t	**************************************	Size: Size: Size: Size:	50mm 100mm 150mm 200mm 250mm 300mm			

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		Stand		Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks		
	highly	y 1.	2			1. 25	1.24	1. 24	1. 25		Test		
1.Size	The diamet of		8			19. 98	19. 95	20. 02	19. 98		environment : In 20 °C - 25 °C environment to achieve		
	The thickne of the	ess 2.	2			2. 13	2. 14	2. 16	2. 15	$\setminus$	thermal equilibrium after the test.		
		l .		Gate shear can not affect the appearance of the lamp									
			See attachment "Appearance Inspection Standards"										
2 Annearance attac		See attachme		E		No burr	No burr	No burr	No bu	rr	OK		
Quality	Quality "Appo Insp Star		on		١	lo stains	No stains	No stains	No stai	ins	<b></b>		
3.Material				PMMA	A		Color	Transparent OK					
	Testir	ng LED		3030									
4.Optical index	FW	envi	excording to the heat dissipation capability of the lamp and the actual conditions of the underwire environment, the lens should be fully tested and tested to prevent the lens life.  See light distribution curve								the use		
	K-val (CD/LM				1.21								
	angle	е	50° ±5°			51.1°							
	Efficie	enc:											
	Fa	cula				See the	e signature	sample					
Comprehe	ensive ju	udgment					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				Length change (mm	n es 0.8 —	AA produc	t size char	ages with t	**************************************	Size: Size: Size: Size:	50mm 100mm 150mm 200mm 250mm 300mm		

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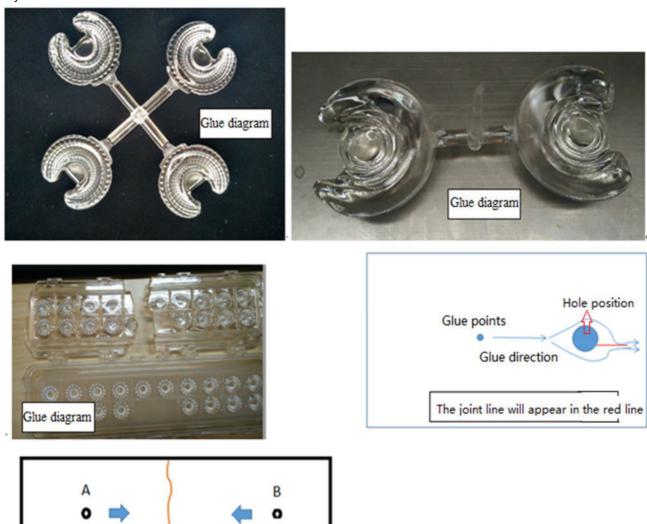
Р	N	HK-HG-20@12-15-3030-	21-1g-1	Product Name	HK Dark 20@12-	15 degre	ee lens					
Product	material		PMMA									
Package diagram		Single Vac	Single Vacuum package Box package									
Product packing		60	A/ Box	4	pcs/Layer							
		21	Layer/Box	5040	A/ Carton							
	NO.	Part No	Part name	Size	Dosage	Unit	Remarks					
	1	2. 07. 0105	Blister box	23cm*21cm	84	BAG						
Dookogin	2	2. 08. 0001	PE film	25cm*27cm	84	PCS						
Packagin g Materials	3	2. 06. 0005	Reel label paper	62mm*42mm	84	PCS						
Materials	4	2. 06. 0005	Box label paper	62mm*70mm	1	PCS						
	5	2. 06. 0003	big plate	46cm*42cm	22	PCS						
	6	2. 06. 0011	big flat carton	48cm*44cm*37c	em 1	PCS						
Remarks		The loose packing is not subject	ct to this specif	ication. Customer's	s requirements shall	prevail						



#### Special notice

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

#### Syntneti



#### 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.

The joint line will appear in the red line



#### Appearance inspection standards

#### 1 Operating procedures

1.1.1Sampling standards, sampling plan and AQL

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

2 Code table

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

#### 3 Test conditions

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

#### 4 Appearance inspection standards

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

1		Ī	Ī	
	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	<b>√</b>	
Scratch	1: Non-optical surface and non-exposed surface scratches should be visually insignificant and the length is less than 1/10 of the maximum surface size.	Visual, point card, calipers	<b>√</b>	
Fingerprint	Fingerprints are not allowed on all products	Visual	√	
Foreign objects, black spots, white spots	The product may not be attached to foreign objects, including oil, fiber, dregs of water gap and so on			<b>√</b>
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler		<b>√</b>
Poor ejection	Products may not appear bad ejection, including no convex top, thimble printed on the assembly surface shall not be higher than the product surface, non-assembled surface thimble height should not exceed the product size tolerances; thimble printing should be less than the product surface and no more than 0.3; thimble surface treatment should be consistent with the product side.  Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, 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	<ol> <li>1 : Product does not allow the presence of flow marks and welding lines unless the structure can not be avoided;</li> <li>2: The remaining flow marks shall not appear in the optical surface, a single L ≤ 10mm, no more than two</li> </ol>	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	V		
Damaged	No damage is allowed	Visual			√
Cold glue	Optical surface may not have cold glue, non- optical surface cold glue should meet the visual is not obvious.	Visual	<b>√</b>		
	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;				
Bad incision	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation	Visual			√
	3: Three molds and hot runner gate shall not appear residue.				
Scrub	Scrub surface should be uniform, off the scrub phenomenon should not be obvious , A single off scrub imprint requires D $\leq$ 1 mm and no more than 1 area within a 50x50 mm area	Visual		<b>√</b>	



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

### **Product Approval**

Approval number:

Customer:

Manufacturer: Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-HG-19@11-15-XPG2-22-1g-1	1. 01. 12754	HK Dark 20@11-15 degree lens
HK-HG-19@11-24-XPG2-21-1g-1	1. 01. 12755	HK Dark 20@11-24 degree lens
HK-HG-19@11-36-XPG2-22-1g-1	1. 01. 12756	HK Dark 20@11-36 degree lens
HK-HG-19@11-50-XPG2-22-1g-1	1. 01. 12757	HK Dark 20@11-50 degree lens





	Supplier co	onfirmation	Client confirmation				
Proposed		DATE	Qualified□				
Project manager		DATE	Unqualified□		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.cn/Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building, 501-

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

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

### HERCULUX 恒坤光电

#### 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.
- 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.

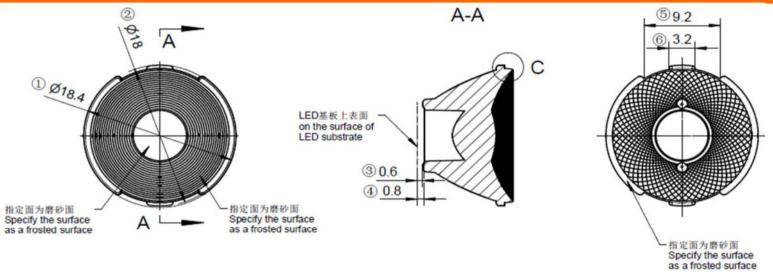


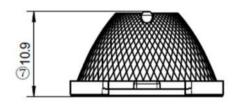
# HERCULUX Basic product information

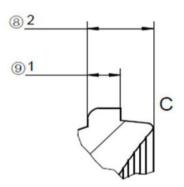
TEL: 0755-2937 1541 FAX: 0755-2907 5140 http://www.herculux.cn/ Date updated: 2023/5/17

Product Picture:	
Size(L*W*H/Φ*H):	Ф:19mm; H:11mm
Material:	РММА
Effiency:	\
Temperature(Topr):	Material extreme temperature resistance : -40°C to +100°C long-term use temperature : -40°C to +80°C
FWHM:	15°、24°、36°、50°
Matched LES:	XPG2
Recommended MAX power:	5W







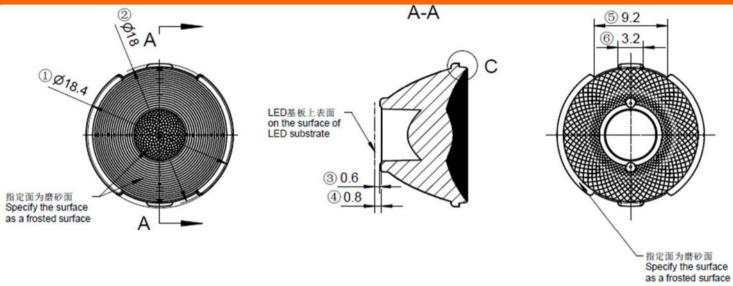


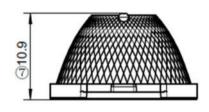
- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2µm

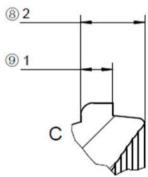
Optical	design							HK-HG-19@11-15-XPG2-22-1g-1					
Structur	e desigr					HK Dark 2	ark 20@11-15 degree						
Review							mber of drawi		qty	wei	ight		
Valid	Validation			Material:	PMMA	CDHK							
~250	250~	~450	>/	150									

MT5 Tolerance	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>45
	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2.0







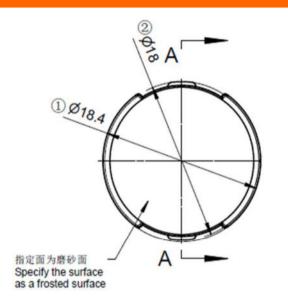


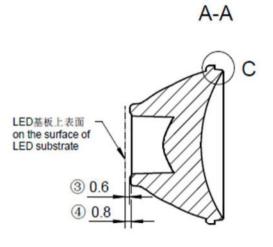
- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2µm

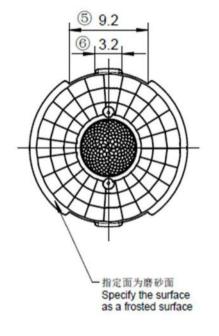
Optical design					HK-	HG-19(	@11-24-XPG	2-21-2	lg-1
Structure design			HK Dark 20@11-24 degree lens				1.01.12755		
Review					mber o	f drawi	qty	we	ight
Validation			Material:	PMMA			CDHK		

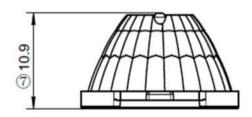
MT5	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~	450	>450		<del>-</del>	<u>.</u>
Tolerance table	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	2	±2.0			

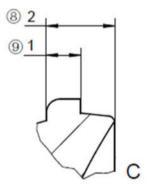










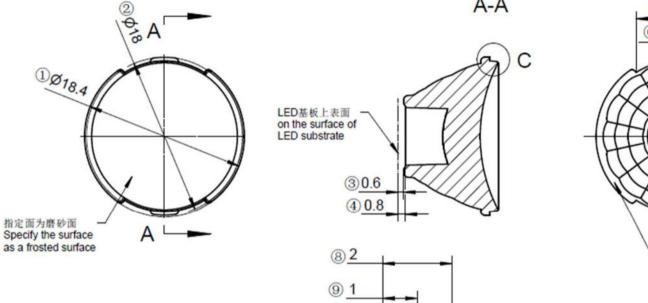


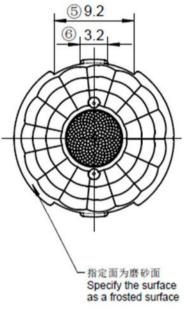
- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2µm

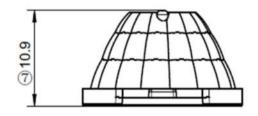
Optical design				HK-HG	-19(	@11-36-XPG	62-22-1	lg-1
Structure desigr		HK Dark 2	0@11-36 degree lens			1.01.12756		
Review				mber of drawi qty weigh				ight
Validation		Material:	PMMA		•	CDHK		
		•						

MT5	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~45	) >2	450	-	
Tolerance table	lerance val	±0.1	±0.15	±0.2	±0.35	±0.50	±0.80	±1.2	±2	2.0		









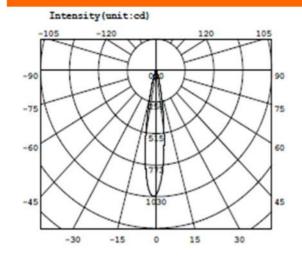
- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3, The surface has no flash, shrinkage, bubbles and other defects.
- \*4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: Ra<3.2µm

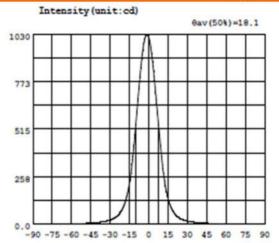
Optical	design						HK-	HG-19	@11-50-XPG	2-22-1	lg-1
Structur	e desigr				HK Dark 2	0@11-50 degree lens			1.01.12757		
Rev	iew						1.01.12/5/				ght
								ber of drawi qty weight			
Valid	ation				Material:	PMMA			CDHK		
~250	250~	~450	>/	150							

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

C







Intensity data: (deg , cd) C0-180

A	I	A	I	A	I	A	I	λ	I	A	I
-90.0	0.2599	-58.5	1.759	-27.0	30.91	4.5	778.6	36.0	9.540	67.5	0.4329
-88.5	0.2261	-57.0	2.048	-25.5	37.63	6.0	665.3	37.5	8.470	69.0	0.3886
-87.0	0.1378	-55.5	2.347	-24.0	46.43	7.5	548.4	39.0	7.477	70.5	0.3525
-85.5	0.2280	-54.0	2.669	-22.5	58.34	9.0	437.8	40.5	6.609	72.0	0.3108
-84.0	0.2393	-52.5	3.066	-21.0	74.13	10.5	330.2	42.0	5.895	73.5	0.2504
-82.5	0.2616	-51.0	3.531	-19.5	95.45	12.0	248.6	43.5	5.260	75.0	0.2249
-81.0	0.2933	-49.5	4.027	-18.0	124.6	13.5	186.4	45.0	4.667	76.5	0.1109
-79.5	0.3015	-48.0	4.513	-16.5	165.5	15.0	139.8	46.5	4.135	78.0	0.2355
-78.0	0.3102	-46.5	5.048	-15.0	219.0	16.5	105.9	48.0	3.630	79.5	0.2723
-76.5	0.3840	-45.0	5.628	-13.5	289.5	18.0	81.39	49.5	3.145	81.0	0.2905
-75.0	0.3147	-43.5	6.283	-12.0	383.7	19.5	63.19	51.0	2.766	82.5	0.3124
-73.5	0.3277	-42.0	7.080	-10.5	497.0	21.0	49.88	52.5	2.432	84.0	0.3077
-72.0	0.3358	-40.5	8.088	-9.0	620.4	22.5	39.90	54.0	2.136	85.5	0.2739
-70.5	0.3635	-39.0	9.236	-7.5	743.0	24.0	32.56	55.5	1.833	87.0	0.2639
-69.0	0.4210	-37.5	10.58	-6.0	854.7	25.5	26.87	57.0	1.538	88.5	0.2355
-67.5	0.5500	-36.0	12.09	-4.5	946.6	27.0	22.44	58.5	1.269	90.0	0.3458
-66.0	0.7032	-34.5	13.87	-3.0	1005	28.5	19.04	60.0	1.022		
-64.5	0.8671	-33.0	15.96	-1.5	1027	30.0	16.40	61.5	0.8181		
-63.0	1.060	-31.5	18.51	0.0	1012	31.5	14.20	63.0	0.6632		
-61.5	1.286	-20.0	21.67	1.5	961.3	33.0	12.40	64.5	0.5347		
-60.0	1.526	-28.5	25.73	3.0	880.5	34.5	10.89	66.0	0.5191		

#### Electricity Parameter:

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

#### Optical Parameter (Distance=2.410m):

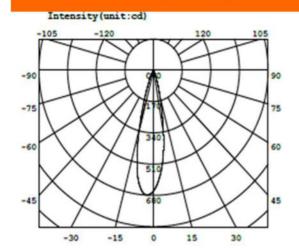
Equivalent Luminous flux: #eff = 151.51m Efficiency: Eff=46.231m/W

C0-180Plane I0= 1012cd

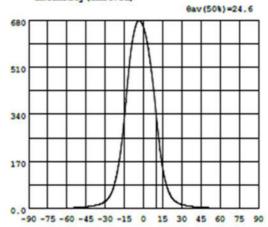


#### IES—— HK Dark 20@11-24 degree lens





#### Intensity (unit:cd)



Intensity data: (deg , cd) C0-180

A	I	λ	I	A	I	A	I	A	I	λ	I
-90.0	0.3051	-58.5	2.046	-27.0	40.54	4.5	556.6	36.0	8.657	67.5	0.3770
-88.5	0.3382	-57.0	2.376	-25.5	52.13	6.0	507.0	37.5	7.697	69.0	0.3884
-87.0	0.3263	-55.5	2.713	-24.0	68.52	7.5	449.1	39.0	6.861	70.5	0.3778
-85.5	0.3138	-54.0	3.053	-22.5	91.02	9.0	385.1	40.5	6.293	72.0	0.3650
-84.0	0.2695	-52.5	3.482	-21.0	119.7	10.5	312.6	42.0	5.939	72.5	0.3573
-82.5	0.2155	-51.0	3.982	-19.5	157.3	12.0	251.4	43.5	5.392	75.0	0.2809
-81.0	0.1967	-49.5	4.484	-18.0	201.7	12.5	195.7	45.0	4.875	76.5	0.2522
-79.5	0.2212	-48.0	4.983	-16.5	258.3	15.0	148.6	46.5	4.367	78.0	0.2307
-78.0	0.2434	-46.5	5.565	-15.0	326.4	16.5	112.1	48.0	3.814	79.5	0.2266
-76.5	0.2765	-45.0	6.174	-13.5	400.8	18.0	84.78	49.5	3.299	81.0	0.2131
-75.0	0.3624	-42.5	6.950	-12.0	474.0	19.5	64.04	51.0	2.896	82.5	0.2470
-73.5	0.4228	-42.0	7.847	-10.5	541.1	21.0	48.71	52.5	2.601	84.0	0.2808
-72.0	0.4520	-40.5	8.922	-9.0	594.4	22.5	27.66	54.0	2.235	85.5	0.3226
-70.5	0.4409	-29.0	10.04	-7.5	633.0	24.0	29.97	55.5	1.928	87.0	0.3074
-69.0	0.4745	-27.5	11.53	-6.0	660.5	25.5	24.41	57.0	1.638	88.5	0.3015
-67.5	0.5728	-36.0	13.19	-4.5	676.1	27.0	20.22	58.5	1.367	90.0	0.3753
-66.0	0.7055	-24.5	15.29	-3.0	678.4	28.5	17.15	60.0	1.104		
-64.5	0.8832	-22.0	17.97	-1.5	670.6	20.0	14.68	61.5	0.8773		
-63.0	1.121	-31.5	21.21	0.0	655.2	31.5	12.72	63.0	0.6722		
-61.5	1.407	-20.0	25.72	1.5	630.6	33.0	11.11	64.5	0.4953		
-60.0	1.706	-28.5	32.01	3.0	597.1	34.5	9.779	66.0	0.3876		

#### Electricity Parameter:

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

#### Optical Parameter (Distance=2.410m):

Equivalent Luminous flux: #eff = 155.31m Efficiency: Eff=47.371m/W

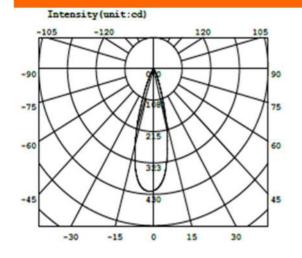
Diffuse angle: @(25%): 33.2deg @(50%): 24.6deg @(75%): 17.1deg @(50%): 24.6deg

Diffuse angle: @(25%): 33.6deg @(50%): 25.0deg @(75%): 18.0deg @(50%): 25.0deg

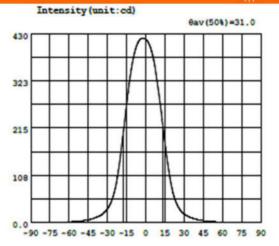
Imax=679.3cd (C=0.0deg,G=-3.5deg)

C0-180Plane Imax= 679.3cd (G=-3.5deg)

C0-180Plane I0= 655.3cd



IES---



Intensity data: (deg , cd) C0-180

A	I	A	I	A	I	A	I	λ	I	A	I
-90.0	0.2147	-58.5	1.630	-27.0	47.16	4.5	391.4	36.0	10.73	67.5	0.3128
-88.5	0.1930	-57.0	1.975	-25.5	59.61	6.0	272.9	37.5	9.355	69.0	0.3119
-87.0	0.1832	-55.5	2.334	-24.0	75.92	7.5	250.4	39.0	7.905	70.5	0.3279
-85.5	0.2391	-54.0	2.707	-22.5	97.54	9.0	219.0	40.5	6.655	72.0	0.5083
-84.0	0.2718	-52.5	3.102	-21.0	124.5	10.5	288.5	42.0	5.714	72.5	0.3299
-82.5	0.3142	-51.0	3.597	-19.5	157.3	12.0	254.9	43.5	5.052	75.0	0.3066
-81.0	0.5162	-49.5	4.078	-18.0	193.3	13.5	219.1	45.0	4.518	76.5	0.2843
-79.5	0.3098	-48.0	4.539	-16.5	229.9	15.0	182.7	46.5	4.035	78.0	0.2575
-78.0	0.2770	-46.5	5.123	-15.0	268.0	16.5	149.0	48.0	3.523	79.5	0.2283
-76.5	0.2606	-45.0	5.910	-13.5	303.6	18.0	119.1	49.5	3.047	81.0	0.2001
-75.0	0.2667	-43.5	7.074	-12.0	334.5	19.5	92.96	51.0	2.658	82.5	0.1890
-73.5	0.2927	-42.0	8.524	-10.5	361.6	21.0	72.29	52.5	2.309	84.0	0.2457
-72.0	0.3409	-40.5	9.981	-9.0	383.1	22.5	56.60	54.0	1.966	85.5	0.2603
-70.5	0.4054	-39.0	11.50	-7.5	399.2	24.0	44.63	55.5	1.676	87.0	0.2823
-69.0	0.4757	-27.5	13.30	-6.0	410.1	25.5	25.46	57.0	1.412	88.5	0.3146
-67.5	0.5786	-36.0	15.41	-4.5	416.5	27.0	28.67	58.5	1.186	90.0	0.2893
-66.0	0.6698	-24.5	18.04	-3.0	419.3	28.5	23.63	60.0	0.9633		
-64.5	0.7950	-22.0	21.26	-1.5	419.5	20.0	19.74	61.5	0.7110		
-63.0	0.9619	-31.5	25.38	0.0	417.2	31.5	16.70	63.0	0.5626		
-61.5	1.141	-30.0	30.62	1.5	412.2	33.0	14.29	64.5	0.4198		
-60.0	1.229	-28.5	37.74	3.0	403.7	34.5	12.34	66.0	0.3548		

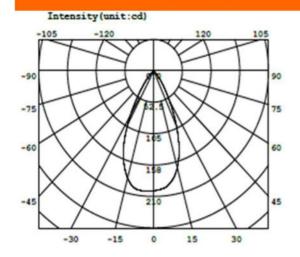
#### Electricity Parameter:

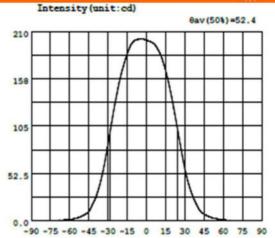
Current I: 0.1000A Power: 3.279W Voltage V: 32.79V PF: 1.000

#### Optical Parameter (Distance=2.410m):

C0-180Plane IO= 417.2cd







Intensity data: (deg , cd) C0-180

A	I	A	I	A	I	λ	I	λ	I	λ	I
-90.0	0.3277	-58.5	1.841	-27.0	109.9	4.5	197.7	36.0	28.02	67.5	0.4127
-88.5	0.3156	-57.0	2.122	-25.5	122.5	6.0	196.3	27.5	23.05	69.0	0.4110
-87.0	0.2926	-55.5	2.602	-24.0	134.0	7.5	193.7	39.0	18.74	70.5	0.3982
-85.5	0.2591	-54.0	3.047	-22.5	144.6	9.0	190.1	40.5	14.39	72.0	0.3714
-84.0	0.2376	-52.5	3.687	-21.0	154.7	10.5	186.0	42.0	11.14	72.5	0.3410
-82.5	0.2063	-51.0	4.682	-19.5	163.6	12.0	180.8	43.5	8.980	75.0	0.2755
-81.0	0.2090	-49.5	5.718	-18.0	171.3	13.5	174.3	45.0	7.292	76.5	0.2447
-79.5	0.2325	-48.0	6.842	-16.5	178.7	15.0	167.1	46.5	6.248	78.0	0.2194
-78.0	0.2828	-46.5	8.425	-15.0	185.0	16.5	158.4	48.0	5.272	79.5	0.2232
-76.5	0.3374	-45.0	10.34	-13.5	190.6	18.0	148.9	49.5	4.315	81.0	0.2276
-75.0	0.3904	-43.5	13.80	-12.0	195.4	19.5	138.6	51.0	3.463	82.5	0.2635
-73.5	0.4228	-42.0	18.59	-10.5	198.3	21.0	128.0	52.5	2.940	84.0	0.3005
-72.0	0.4428	-40.5	22.91	-9.0	200.2	22.5	116.5	54.0	2.506	85.5	0.3226
-70.5	0.4464	-29.0	28.06	-7.5	201.0	24.0	104.5	55.5	2.130	87.0	0.3000
-69.0	0.4353	-27.5	34.48	-6.0	201.4	25.5	92.35	57.0	1.782	88.5	0.2837
-67.5	0.4989	-36.0	42.16	-4.5	201.6	27.0	80.30	58.5	1.460	90.0	0.3968
-66.0	0.6264	-24.5	51.12	-3.0	201.5	28.5	68.84	60.0	1.180		
-64.5	0.7998	-33.0	61.25	-1.5	201.1	30.0	58.28	61.5	0.9532		
-63.0	1.020	-31.5	72.88	0.0	200.4	21.5	48.85	63.0	0.7174		
-61.5	1.263	-20.0	84.83	1.5	199.7	33.0	40.91	64.5	0.5591		
-60.0	1.557	-28.5	97.41	3.0	198.8	34.5	34.03	66.0	0.4062		

#### Electricity Parameter:

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

#### Optical Parameter (Distance=2.410m):

C0-180Plane I0= 200.4cd



	Standard		Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks
highly	1			1.08	1. 09	1. 07	1.09		Test
The diamete of	er 18.4			18. 7	18. 54	18. 62	18. 64		environment : In 20 °C - 25 °C environment to achieve
				1. 99	1. 98	1. 97	1. 98		thermal equilibrium after the test.
		Gate sh	near can no	t affect the	appearanc	ce of the lan	np		
		See at	tachment ".	Appearanc	e Inspection	n Standards	s"		
ince I		F	1	No burr	No burr	No burr	No bu	ırr	OK
	Inspection		N	o stains	No stains	No stains	No sta	ins	OI.
		PMM	A		Color	Tra	nsparent		OK
Testing	g LED				XPG2				
range	e. According environ	to the heat ment, the le	dissipation ns should b	capability o	of the lamp	and the act	ual conditi	ons of	
			$\overline{}$	18. 1°					$\overline{}$
Efficier	ne		$\overline{}$						$\overline{}$
Fac	ula			See the	e signature	sample		4	
ensive jud	dgment				Qualified				
umber: Valiper 2D- H-Height Tool ee P-Need ge R-Rad Visual. ent tempe	dle T-dius	change	h es 0.8	IA produc		ages with t	* * *	Size: Size: Size: Size:	50mm 100mm 150mm 200mm
	The diamete of The thickness of the thickness of the Testing Testing Testing The sis should range FW K-valu (CD/LM angle Efficien Face the period of the period of the period testing testing the period testing testi	highly 1  The diameter of 18. 4  of The thickness of the 18. 4  The size and rated should conform to range. According environ  FWHM See K-value (CD/LM)  angle Efficienc Facula  ensive judgment  umber: V-aliper 2D-H-Height Tool ee P-Readius Visual.  en of the product	size Size limit highly 1  The diameter of 18. 4 of The thickness of the See at	size Size limit size limit  highly 1  The diameter of 18. 4  of The thickness of the 19  See attachment "Appearance Inspection Standards"  The size and rated power of the light-emishould conform to the parameters in the range. According to the heat dissipation environment, the lens should to FWHM See light distribution curve (CD/LM)  angle Efficienc  Facula  ensive judgment  PMM  Length changes 0.8 (mm) 0.7 Height Tool ee P-Needle T-ge R-Radius visual.  entitemperature of the product 19 control of the produ	size   Size   limit   result1	highly 1 1.08 1.09  The diameter of 18.4 18.7 18.54  The thickness of the 2 1.99 1.98  Gate shear can not affect the appearance Inspection Standards"  No burr No burr No burr No stains  PMMA Color  Testing LED XPG2  The size and rated power of the light-emitting surface (LES) of should conform to the parameters in the product basic informal range. According to the heat dissipation capability of the lamp environment, the lens should be fully tested and test  FWHM See light distribution curve  K-value (CD/LM)  angle Sefficienc  Facula See the signature  PMMA product size char and the signature of the product basic informal range. According to the heat dissipation capability of the lamp environment, the lens should be fully tested and test  FWHM See light distribution curve  K-value (CD/LM)  angle See the signature Qualified  PMMA product size char changes 0.8 (mm) 0.7 (mm) 0	highly 1 1 1.08 1.09 1.07  The diameter of 18.4 18.4 18.7 18.54 18.62  The thickness 2 1.99 1.98 1.97  Gate shear can not affect the appearance of the lar See attachment "Appearance Inspection Standards"  No burr No burr No burr No burr No stains	highly 1	Standard   Size   Siz

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



5			Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks
highl	ly	1			1.07	1.08	1.02	1.03		Test
		3. 4			18. 55	18. 52	18. 54	18. 5		environment : In 20 °C - 25 °C environment to achieve
thickne	ess	2			1. 98	1. 98	2. 05	1. 97		thermal equilibrium after the test.
			Gate sh	near can no	ot affect the	appearanc	e of the lan	np		
			See at	tachment '	'Appearanc	e Inspection	n Standards	s"		
ance	attachm	ent	F		No burr	No burr	No burr	No bu	ırr	OK
	Inspect	ion	on		lo stains	No stains	No stains	No sta	ins	Oit
			PMM	4		Color	Tra	insparent		OK
Testi	ng LED					XPG2				
rang	ge. Accor en	ding to	o the heat onent, the le	dissipation ns should l	capability on the fully tester	of the lamp	and the act	ual conditi	ons of	
		_								
	_	_		_	24. 6°					$\overline{}$
Efficie	enc	_								$\overline{}$
Fa	acula				See the	e signature	sample		J	
ensive ju	udgment		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			change	0.8 0.8 0.7 0.6 0.5 0.4 0.4 0.5	1A produc		nges with t		Size: Size:	50mm 100mm 150mm 200mm
	The diame of The thicknown of the thickn	highly  The diameter of  The thickness of the  See attachm "Appeara Inspect Standar  Testing LED  The size and should confor range. According angle  Efficienc Facula  ensive judgment  Testing LED  The size and should confor range. According angle  Efficienc Facula  ensive judgment  Tool Pep-Needle Tage R-Radius	The diameter of 18.4 of The thickness of the 2 2 of the 2 of t	size Size limit  highly 1  The diameter of 18.4 of  The thickness of the 2  Gate st See attachment "Appearance Inspection Standards"  PMM/  Testing LED  The size and rated power of the should conform to the paramerange. According to the heat environment, the le FWHM See light distribution of the paramerange. According to the heat environment, the le FWHM See light distribution of the paramerange. According to the heat environment, the le FWHM See light distribution of the paramerange. According to the heat environment, the le FWHM See light distribution of the paramerange. According to the heat environment, the le FWHM See light distribution of the paramerange. According to the paramerange (The parameters of the paramerange) and the paramerange (The parameters of the paramerange) and the paramerange (The parameters of the paramerange (The parameters of the paramet	size Size limit size limit highly 1  The diameter of 18. 4 of The thickness of the 18. 4 of the thickness of the 2  Gate shear can not see attachment "Appearance Inspection Standards"  PMMA  Testing LED  The size and rated power of the light-em should conform to the parameters in the range. According to the heat dissipation environment, the lens should I FWHM See light distribution curve (CD/LM) angle  Efficienc  Facula  ensive judgment  PMN  Length changes 0.8 (mm) 0.7 of the light-em should light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment, the lens should I light of the heat dissipation environment in the light of the heat dis	size   Size limit   size limit   result1	size   Size   limit   size   limit   result1   result2	highly 1 1.07 1.08 1.02  The diameter 18.4 of 18.55 18.52 18.54  The thickness 2 1.98 1.98 2.05  Gate shear can not affect the appearance of the lar See attachment "Appearance Inspection Standard: "Appearance Inspection Standards"  No burr No burr No burr No burr Standards No stains Standards the product basic information table. If range. According to the heat dissipation capability of the lamp and the act environment, the lens should be fully tested and tested to prevere the product basic information table. If range. According to the heat dissipation capability of the lamp and the act environment, the lens should be fully tested and tested to prevere the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the product basic information table. If sample the product basic information table in the	Size   Size   Imit   size   Imit   result1   result2   result3   result4	Standard Size Size limit size limit result1 result1 result3 result3 result4 result4 result1 result1 result2 result3 result4 result4 result1 result2 result3 result4 result4 result5 result6 result7 result7 result6 result6 result6 result6 result6 result7 result7 result7 result8 result8 result8 result8 result8 result8 result8 result9 re

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



			Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks	
	high	ly	1			1.04	1.05	1.04	1.06		Test	
1.Size	The diame	eter	18. 4			18. 56	18. 55	18. 53	18. 55		environment : In 20 °C - 25 °C environment to achieve	
	The thickn of th	ess	2			1. 95	1.96	1.95	1. 96		thermal equilibrium after the test.	
				Gate sh	near can no	ot affect the	appearanc	e of the lan	np			
				See at	tachment '	Appearanc	e Inspection	n Standards	s"			
2.Appeara	ince		See achment pearance	E		No burr	No burr	No burr	No bu	ırr	OK	
Quality		Ins	spection andards"		N	lo stains	No stains	No stains	No stai	ins	OK	
3.Material				PMM	4		Color	Tra	nsparent		OK	
	Test	ing L	.ED				XPG2					
4.Optical index				o the heat	dissipation ns should l	capability one fully test	f the lamp	and the act	ual conditi	ons of		
	K-va (CD/I									] `		
	ang	Le				31°						
	Effici	enc										
	F	acula	a		See the signature sample							
Comprehe	ensive j	udgr	ment	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			ture	Length change (mm	n es 0.8 —	1A produc	t size chan	ages with t	**************************************	Size: Size: Size: Size:	50mm 100mm 150mm 200mm 250mm 300mm	

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		S	tandard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Jud gme nt	Remarks
	high	ıly	1			1.06	1.07	1. 04	1. 05		Test
1.Size	The diame	eter	18. 4			18. 6	18. 56	18. 56	18. 57		environmer : In 20 °C - 25 °C environmer to achieve
	The thicknof th	ess	2			1.96	1. 97	1. 98	1. 98		thermal equilibrium after the test.
				Gate sh	near can n	ot affect the	appearance	e of the lan	np		
				See at	tachment '	'Appearanc	e Inspection	n Standards	s"		
2.Appeara	nce	attac	ee nment arance	E		No burr No burr No burr		No bu	ırr	ОК	
Quality		Inspe	ection lards"	_	N	lo stains	No stains	No stains	No sta	ins	OK
3.Material				PMM	4		Color	Tra	insparent		ОК
	Testi	ing LEI	)				XPG2				
	shou	uld cor ge. Ac	form to to cording to	he parame the heat	ters in the dissipation	product bas	e (LES) of sic informat of the lamp and teste	ion table. if and the act	it is requirual conditi	red to ons of	be out of
4.Optical index	shou rang	whm	form to to to cording to environm	he parame the heat	eters in the dissipation ns should	product bate capability of the fully test	sic informat	ion table. if and the act	it is requirual conditi	red to ons of	be out of
•	shou rang FV K-va	whm	form to to to cording to environm	he parame the heat on the heat onent, the lea	eters in the dissipation ns should	product bate capability of the fully test	sic informat of the lamp	ion table. if and the act	it is requirual conditi	red to ons of	be out of
index	shou rang FV K-va (CD/L	whm lue	form to to to cording to environm	he parame the heat on the heat onent, the lea	eters in the dissipation ns should	product ba capability of be fully teste	sic informat of the lamp	ion table. if and the act	it is requirual conditi	red to ons of	be out of
index	shou rang  FV  K-va (CD/I  angl	whm lue	form to to to cording to environm	he parame the heat on the heat onent, the lea	eters in the dissipation ns should	product bacapability of be fully tested	sic informat of the lamp	ion table. if	it is requirual conditi	red to ons of	be out of
index	shou rang FV K-va (CD/L angl Offici	whm lue M) le enc:	form to to cording to environm	he parame the heat on the heat onent, the lea	eters in the dissipation ns should	product bacapability of be fully tested	sic informat of the lamp ed and teste	ion table. if	it is requirual conditi	red to ons of	be out of

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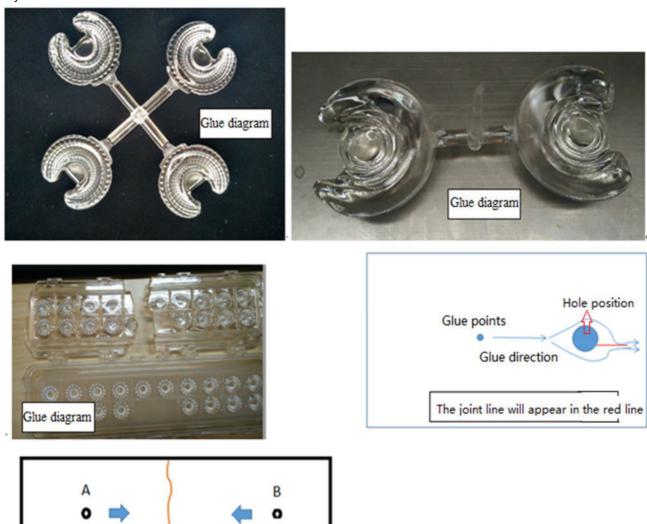
Pl	N	HK-HG-19@11-15-XPG2-22-1g-1 Product Name HK Dark 20@11-					ee lens
Product	material	PMMA					
Package	diagram	Single Va	cuum packa	⇒ Bo	ox package		>
Product	packing	60	A/ Box	4	pcs/Layer		
		21	Layer/Box	5040	A/ Carton		
	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2. 07. 0105	Blister box	23cm*21cm	84	BAG	
Dookogin	2	2. 08. 0001	PE film	25cm*27cm	84	PCS	
Packagin g Materials	3	2. 06. 0005	Reel label paper	62mm*42mm	84	PCS	
Materials	4	2. 06. 0005	Box label paper	62mm*70mm	1	PCS	
	5	2. 06. 0003	big plate	46cm*42cm	22	PCS	
	6	2. 06. 0011	big flat carton	48cm*44cm*37c	cm 1	PCS	
Remarks		The loose packing is not subject	ct to this specif	ication. Customer's	s requirements shall	prevail	



#### Special notice

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

#### Syntneti



#### 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.

The joint line will appear in the red line



#### Appearance inspection standards

#### 1 Operating procedures

1.1.1Sampling standards, sampling plan and AQL

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

2 Code table

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

#### 3 Test conditions

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

#### 4 Appearance inspection standards

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

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	2: The limited sample refers to the limit of a particular exceptionally developed sample. Limit the sample only for its specific point of exception to confirm; The priority is higher than the other criteria in this table. When there is a limited sample, the limit sample shall prevail.				
Raw edge	Not allowed to affect the size and assembly	Visual, point card		√	
Scratch	1: Non-optical surface and non-exposed surface scratches should be visually insignificant and the length is less than 1/10 of the maximum surface size.	Visual, point card, calipers		<b>√</b>	
Fingerprint	Fingerprints are not allowed on all products	Visual		√	
Foreign objects, black spots, white spots	The product may not be attached to foreign objects, including oil, fiber, dregs of water gap and so on				<b>√</b>
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler			<b>√</b>
Poor ejection	Products may not appear bad ejection, including no convex top, thimble printed on the assembly surface shall not be higher than the product surface, non-assembled surface thimble height should not exceed the product size tolerances; thimble printing should be less than the product surface and no more than 0.3; thimble surface treatment should be consistent with the product side.  Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, 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	<ol> <li>1 : Product does not allow the presence of flow marks and welding lines unless the structure can not be avoided;</li> <li>2: The remaining flow marks shall not appear in the optical surface, a single L ≤ 10mm, no more than two</li> </ol>	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	V		
Damaged	No damage is allowed	Visual			√
Cold glue	Optical surface may not have cold glue, non- optical surface cold glue should meet the visual is not obvious.	Visual	<b>√</b>		
	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;				
Bad incision	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation	Visual			√
	3: Three molds and hot runner gate shall not appear residue.				
Scrub	Scrub surface should be uniform, off the scrub phenomenon should not be obvious , A single off scrub imprint requires D $\leq$ 1 mm and no more than 1 area within a 50x50 mm area	Visual		<b>√</b>	