

# OPTICAL ENERGY DESIGN & DEVICES

HercuLux Optics focuses on the design and manufacture of optics for LED lighting, LED Automotive headlamp, UV LED precision light distribution, laser ultra-short-throw projector matching screen who is a modern high-tech enterprise that provides professional secondary light distribution solutions

Autumn 2025 Edition

**Chengdu HercuLux Photoelectric Technology Co., Ltd.**



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Website: <http://www.herculux.com>





**HercuLux Optics** is a high-tech Specialized and Sophisticated SMEs dedicated to providing system solutions for applications such as LED lighting, UV curing, laser projection, and AOI machine vision inspection.

We have a R&D team with the background in the Institute of Optics and Electronics, Chinese Academy of Sciences, consisting of experts who have been working for decades in the fields of optics, precision optical molds and precision optical injection molding, fine chemicals and electronic control, as well as a highly efficient and passionate marketing team, which ensures fast product innovation, stable and reliable quality of the products, and fast and considerate service.

Since the start of our company, in order to address the secondary light distribution problems in many LED applications, the company has introduced products such as calculus anti-glare lens, nearly 100% efficiency of the adaptive colloidal street lamp lens, very small angle (less than 3 deg) outdoor spotlight lens, ultra-thin (thickness of less than 8mm) triple total reflection lens, the angle and spot shape of the optical lens module can be changed, efficiency of more than 90% of the zoom series, CCT changing COB can be matched full stroke high efficiency (greater than 80%) high center light intensity of the zoom optical module, MOS film, high temperature-resistant silicone materials and lens, anti-glare firefly series.

For the AOI machine vision inspection field, the introduction of photolithography plate plane shadowless light source, to fill the gaps in the domestic market; for the

printing curing field, the world's first introduction of full UV (A \ B \ C) LED direct contact with the large-scale printing press curing modules and systems, not only for the printing industry to save energy, but also for the printing industry to save energy, and the printing industry to save energy. system, not only for the printing industry energy saving and environmental protection to provide a perfect solution and further enhance the printing overprint accuracy and significantly reduce the odor of printed materials due to ozone.

**National High tech Enterprise** - Established in 2013; Obtained the national high-tech enterprise qualification in 2014; Obtaining the national high-tech enterprise qualification in 2014 was the first enterprise in Sichuan to obtain the national high-tech enterprise qualification the following year after its establishment.

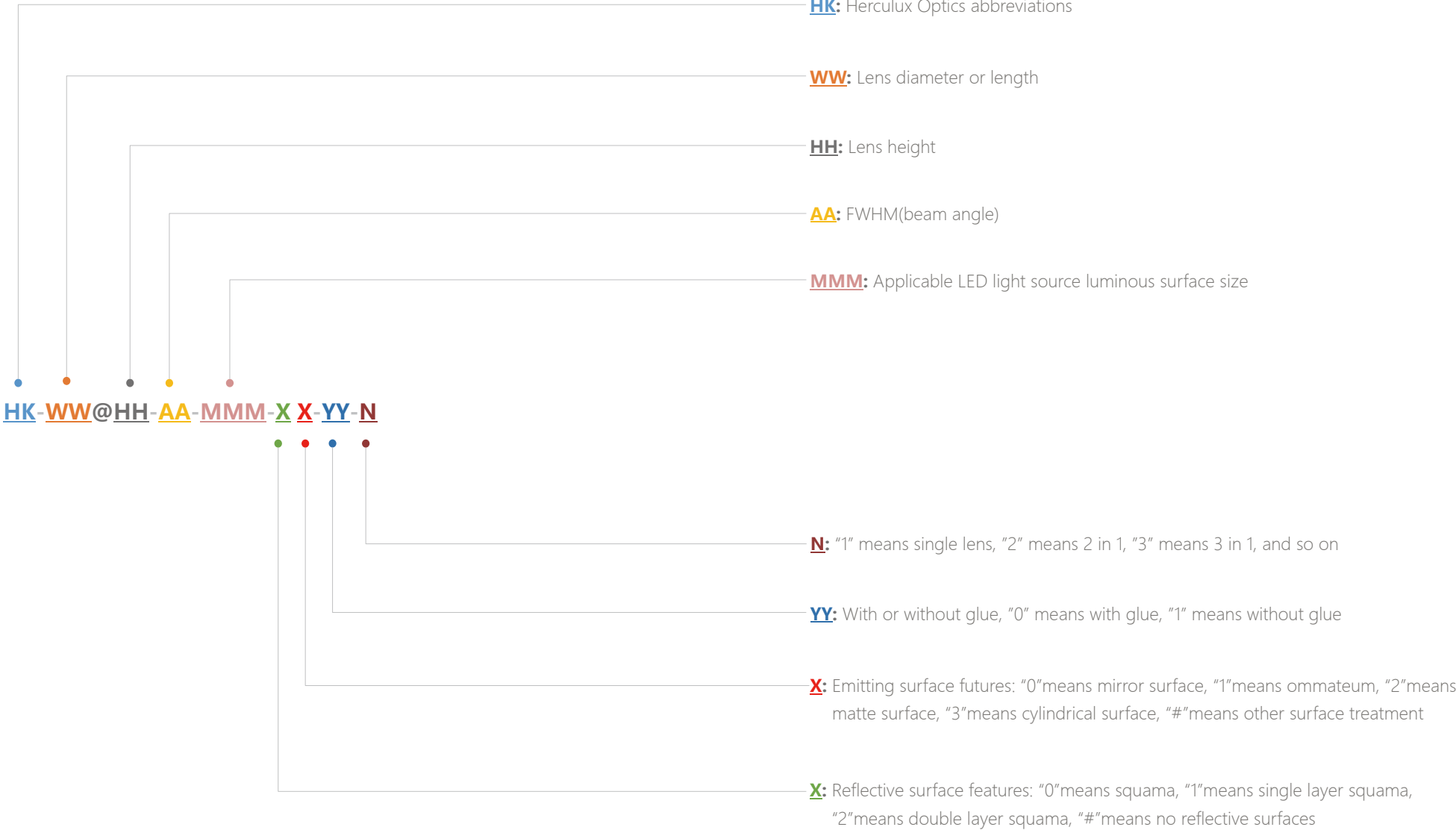
**Computer Software Copyright** - To ensure the perfect presentation of design theoretical values on actual products, HercuLux has independently developed specialized optical conversion software and injection molding analysis precision compensation software.

**Patents** - The company has applied for more than 330 patents and has obtained 222 patent authorizations, including 11 authorized invention patents, 106 utility model patents, 105 appearance patents, and is currently applying for 3 PCT patents.

**R & D capabilities** - The R&D team of the company is composed of a team of experts with a background in the Institute of Optoelectronics, Chinese Academy of Sciences. There are 32 R&D personnel, accounting for 26.45% of the total number of employees. Among them, there are 8 full-time optical design engineers, including one senior engineer, three master's, and four undergraduate students.



# Products Code Rule



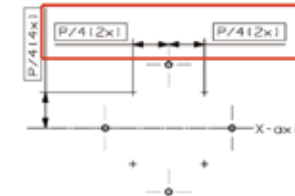
# Why develop a matrix optical platform?



Standardized module, which flexible selection of the number of modules according to the luminaire power. The same luminaire can be adapted to different application scenarios by selecting different light distribution.

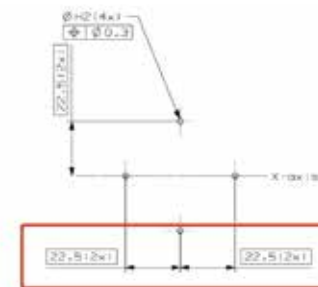
## 3.3.1.1.3 Position of light emitting elements

The LED Module have 4 light emitting elements. The centers of the LEDs of these light emitting elements should be positions indicated by the crosses in Figure 3-4 with values of dimensions defined in Table 3-1. The shape and size of the light emitting elements is not restricted.



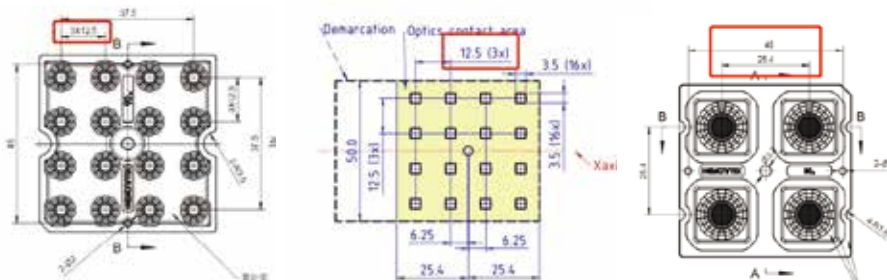
## 3.3.1.1.1 Optics alignment features

The LED Modules shall have 4 holes for Optics alignment and positions and sizes of holes shall comply with the definitions in Figure 3-2 with values of dimensions defined in Table 3-1.



(\*Figure 3-2 × Positioning holes on Class 2-DA LED modules)

The LED, as well as the position of the positioning columns need to meet the **EU ZHAGA standard**



## Matrix optical platform



Over 100 types of light distributions, Uniform overall dimensions: 50mm\*50mm

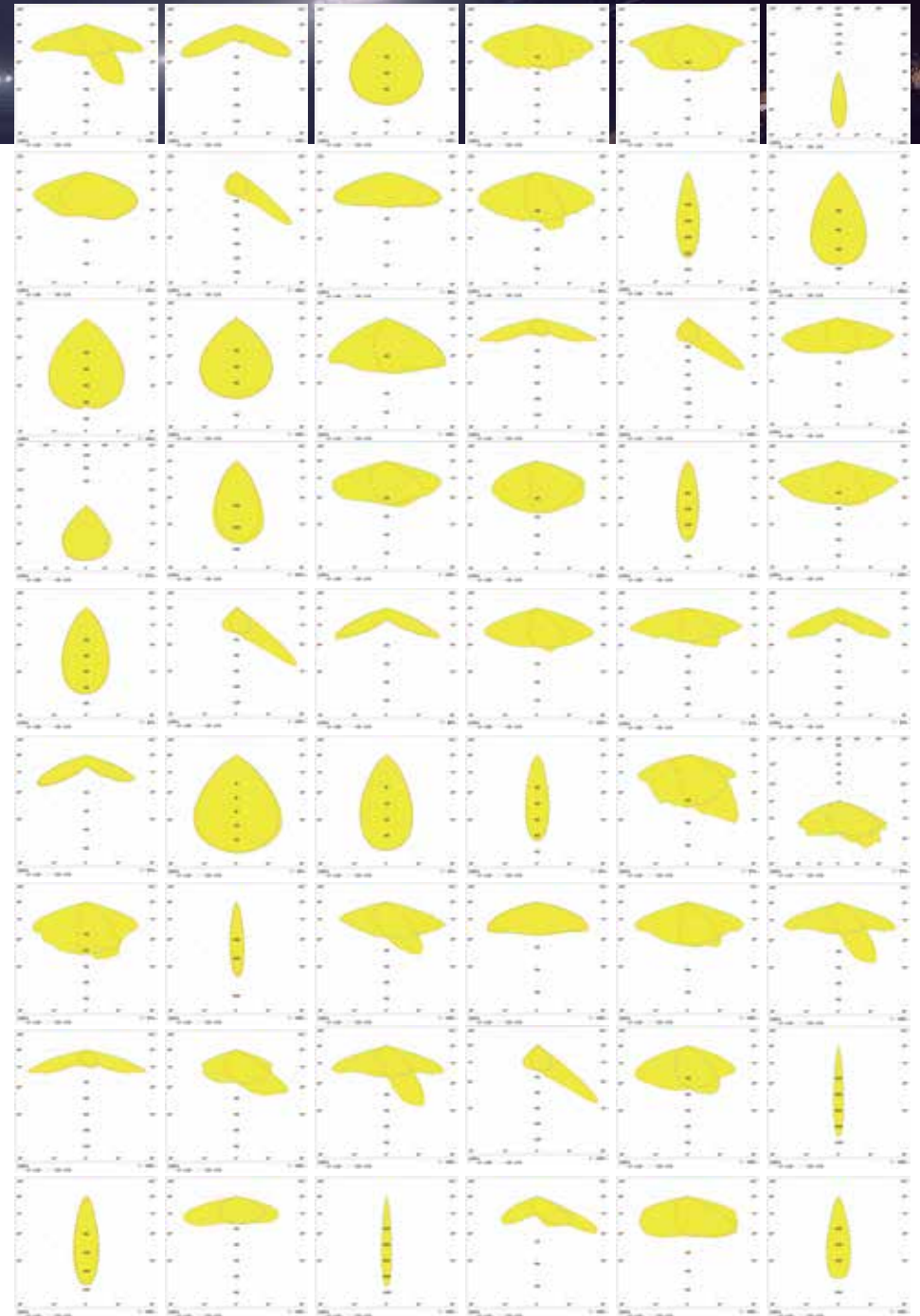
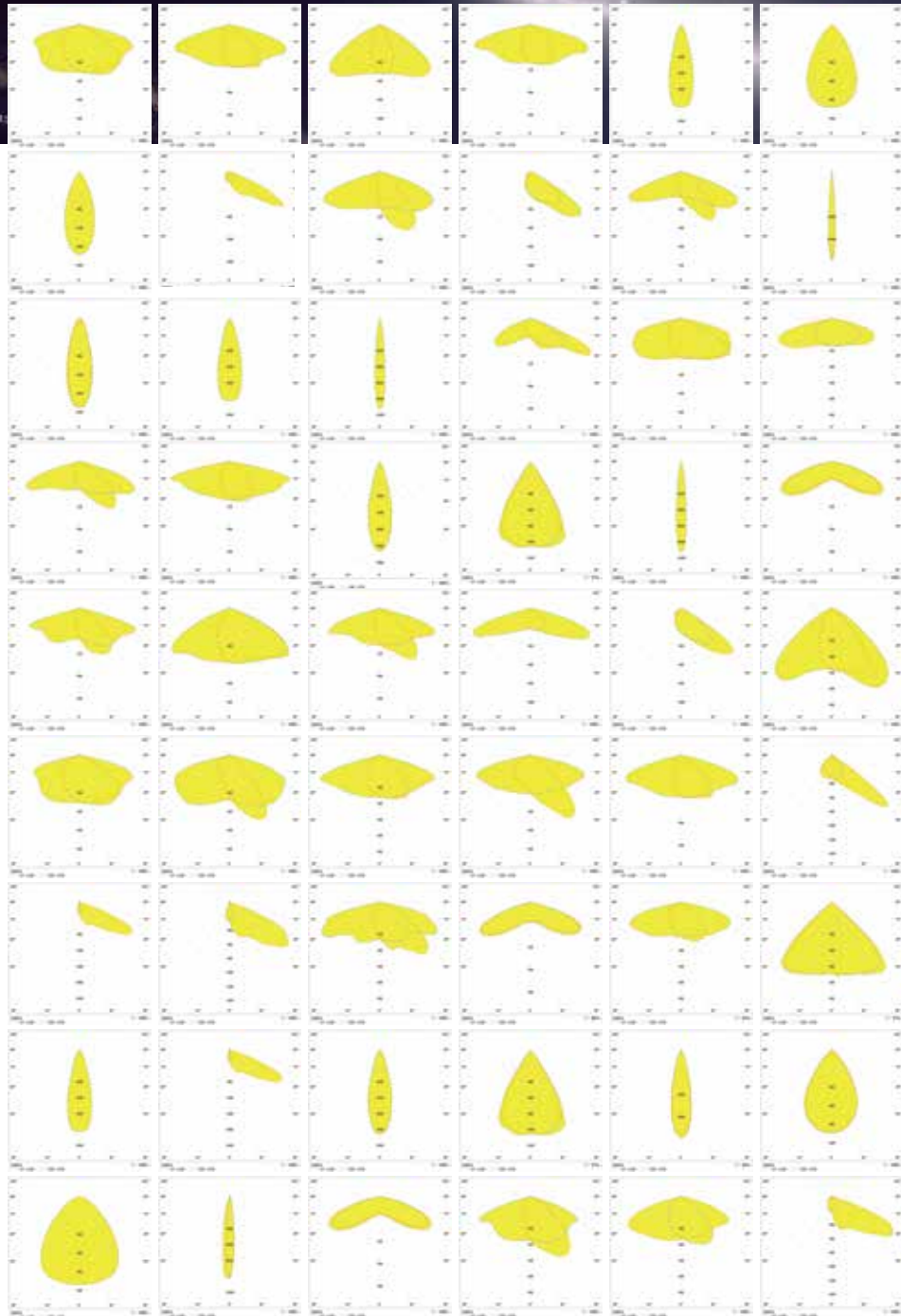
Uniform installation size: 45mm

The position of the LED and the positioning column meet the ZHAGA standard.

LED Compatibility: 3535 LED / 5050 LED / 7070 LED

Applications: Roads, Tunnels, Stadiums, Docks, Industrial workshop, etc.

# Matrix Optical Platform Light Distribution Diagram



# MATRIX 4 in 1 Lens



Light distribution type:


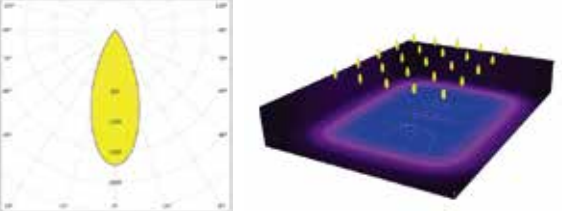
10°	25°	30°	45°
50°	60°	90°	TYPE I
TYPE II	TYPE II M C	TYPE III	TYPE IV
TYPE V	22×100°	JKR	TYPE II M
TYPE II S	9°	40×60°	TYPE II M BRA


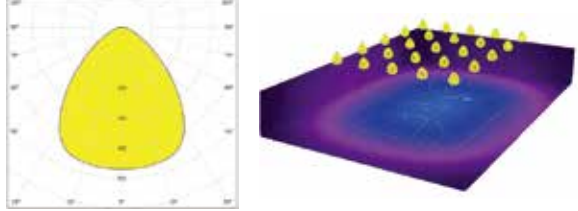



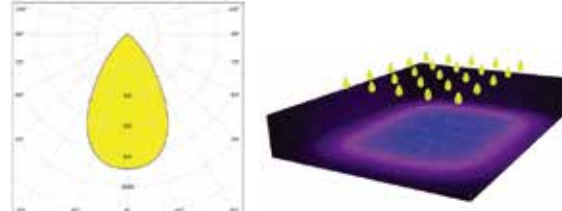
MN	1.01.81540							
PN	HK-50@12-10-3535-02-1g-4_PC HK-50@12-10-3535-02-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535 LED							
Light distribution type	10°							
		<table border="1"> <tr> <td>Height</td> <td>25m</td> </tr> <tr> <td>Mode</td> <td>Four corner arrangement lights</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	25m	Mode	Four corner arrangement lights	Court uniformity	0.7
Height	25m							
Mode	Four corner arrangement lights							
Court uniformity	0.7							


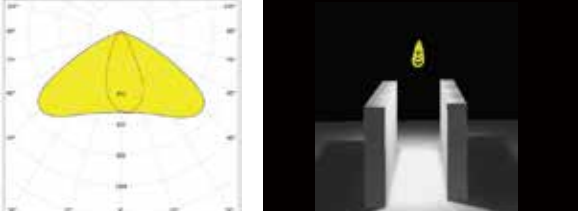
MN	1.01.44093	
PN	HK-JZ-50@15-T4-VS-5050-#0-1g-4_PC HK-JZ-50@15-T4-VS-5050-#0-1g-4_PMMA	
Material	PC/PMMA	
Efficiency	85% (PC) /88% (PMMA) without glass	
LED	5050/3535 LED	
Light distribution type	TYPE II	

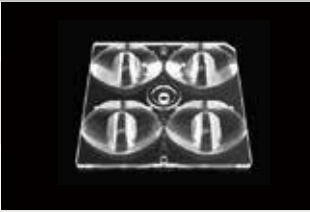
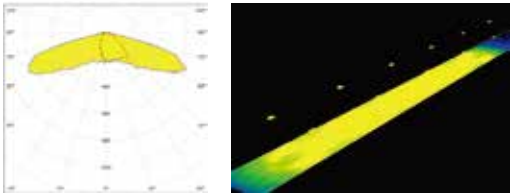
MN	1.01.6866							
PN	HK-50@10-30-5050-20-1g-4_PC HK-50@10-30-5050-20-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/5050 LED							
Light distribution type	30°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							

MN	1.01.23105						
PN	HK-50@10-45-5050-20-1g-4_PC HK-50@10-45-5050-20-1g-4_PMMA						
Material	PC/PMMA						
Efficiency	90% (PC) /93% (PMMA) without glass						
LED	3535/5050 LED						
Light distribution type	45°						
 <table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>			Height	12m	Mode	Lighting on top	Court uniformity
Height	12m						
Mode	Lighting on top						
Court uniformity	0.7						

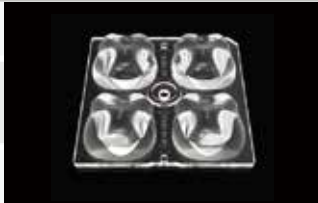
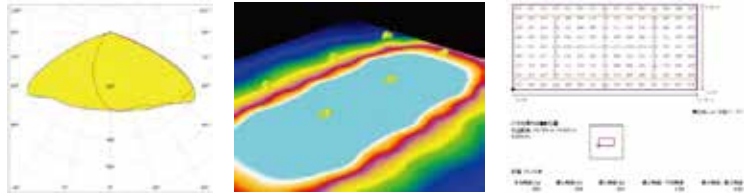
MN	1.01.6868						
PN	HK-50@10-90-5050-20-1g-4_PC HK-50@10-90-5050-20-1g-4_PMMA						
Material	PC/PMMA						
Efficiency	90% (PC) /93% (PMMA) without glass						
LED	3535/5050 LED						
Light distribution type	90°						
 <table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>			Height	12m	Mode	Lighting on top	Court uniformity
Height	12m						
Mode	Lighting on top						
Court uniformity	0.7						

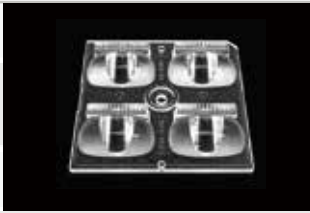
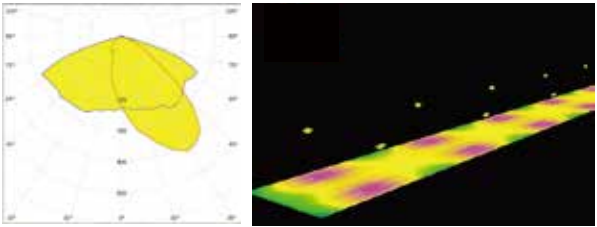
MN	1.01.6867						
PN	HK-50@10-60-5050-20-1g-4_PC HK-50@10-60-5050-20-1g-4_PMMA						
Material	PC/PMMA						
Efficiency	90% (PC) /93% (PMMA) without glass						
LED	3535/5050 LED						
Light distribution type	60°						
 <table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.75</td> </tr> </table>			Height	12m	Mode	Lighting on top	Court uniformity
Height	12m						
Mode	Lighting on top						
Court uniformity	0.75						


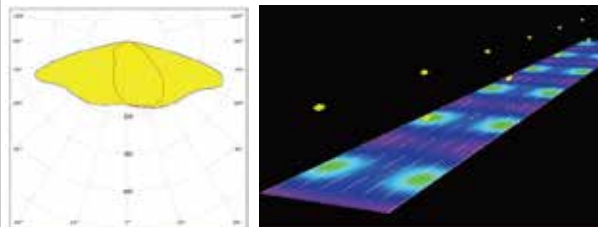
MN	1.02.6860						
PN	HK-50@09-120X50-5050-#0-1g-4_PC HK-50@09-120X50-5050-#0-1g-4_PMMA						
Material	PC/PMMA						
Efficiency	90% (PC) /93% (PMMA) without glass						
LED	3535/5050 LED						
Light distribution type	TYPE I 120X50°						
 <table border="1"> <tr> <td>Height</td> <td>7m</td> </tr> <tr> <td>Mode</td> <td>Top cloth lamp</td> </tr> <tr> <td>Court uniformity</td> <td>0.6</td> </tr> </table>			Height	7m	Mode	Top cloth lamp	Court uniformity
Height	7m						
Mode	Top cloth lamp						
Court uniformity	0.6						

MN	1.02.23259								
PN	HK-JZ-50@09-150X73-5050-00-1g-4-PMMA HK-JZ-50@09-150X73-5050-00-1g-4-PC								
Material	PC/PMMA								
Efficiency	90% (PC) /93% (PMMA) without glass								
LED	3535/5050 LED								
Light distribution type	XW TYPE I 150X73°								
 <table border="1"> <tr> <td>Proportion</td> <td>3:1</td> </tr> <tr> <td>Road width</td> <td>15m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME4a</td> </tr> </table>			Proportion	3:1	Road width	15m (6 lanes)	Mode	Double row symmetry	Lighting type
Proportion	3:1								
Road width	15m (6 lanes)								
Mode	Double row symmetry								
Lighting type	ME4a								


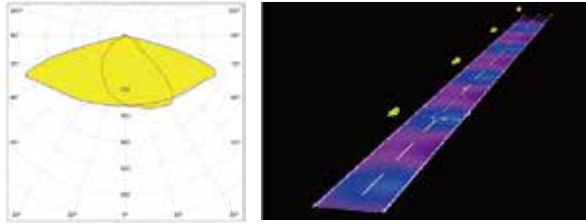
The illumination uniformity of the simulated road can reach more than 0.8


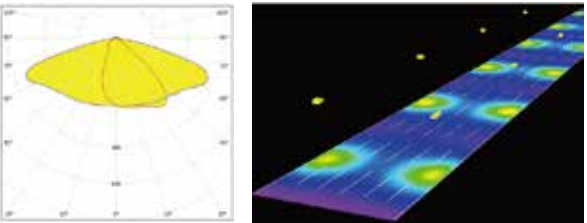
MN	1.02.23231	
PN	HK-JZ-50@10-130X84-5050-00-1g-4-PMMA HK-JZ-50@10-130X84-5050-00-1g-4-PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	TYPE III 130X84°	
 <p>The uniformity of simulated illumination of tennis court can reach above 0.8</p>		

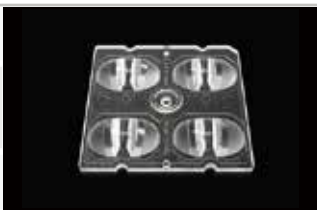
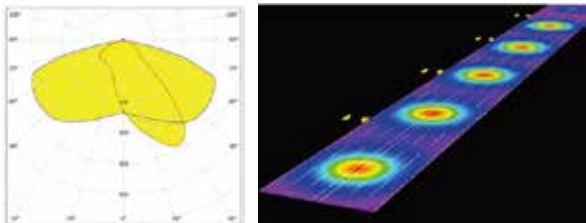
MN	1.02.23192								
PN	HK-JZ-50@09-175X53-5050-#0-1g-4-PMMA HK-JZ-50@09-175X53-5050-#0-1g-4-PC								
Material	PC/PMMA								
Efficiency	90% (PC) /93% (PMMA) without glass								
LED	3535/5050 LED								
Light distribution type	ME TYPE III 175X53°								
 <table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22.5m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME4a</td> </tr> </table>			Proportion	3.5:1	Road width	22.5m (6 lanes)	Mode	Double row symmetry	Lighting type
Proportion	3.5:1								
Road width	22.5m (6 lanes)								
Mode	Double row symmetry								
Lighting type	ME4a								


MN	1.02.6861								
PN	HK-50@09-150X65-5050-#0-1g-4_PC HK-50@09-150X65-5050-#0-1g-4_PMMA								
Material	PC/PMMA								
Efficiency	90% (PC) /93% (PMMA) without glass								
LED	3535/5050 LED								
Light distribution type	TYPE II 150X65°								
 <table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22.5m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME4a</td> </tr> </table>			Proportion	3.5:1	Road width	22.5m (6 lanes)	Mode	Double row symmetry	Lighting type
Proportion	3.5:1								
Road width	22.5m (6 lanes)								
Mode	Double row symmetry								
Lighting type	ME4a								

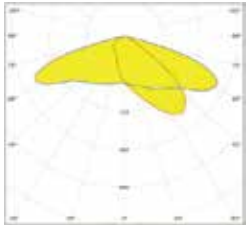
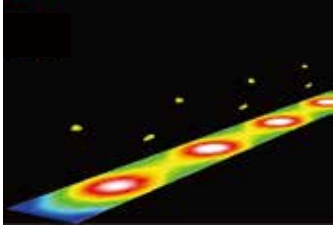
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PN	HK-JZ-50@09-163X76-5050-#0-1g-4_PMMA								
Material	PC/PMMA								
Efficiency	90% (PC) /93% (PMMA) without glass								
LED	3535/5050 LED								
Light distribution type	SCL TYPE III 163X76°								
 <table border="1"> <tr> <td>Proportion</td> <td>5.5:1</td> </tr> <tr> <td>Road width</td> <td>7m (2 lanes)</td> </tr> <tr> <td>Mode</td> <td>Single-sided lower arrangement</td> </tr> <tr> <td>Lighting type</td> <td>ME4</td> </tr> </table>			Proportion	5.5:1	Road width	7m (2 lanes)	Mode	Single-sided lower arrangement	Lighting type
Proportion	5.5:1								
Road width	7m (2 lanes)								
Mode	Single-sided lower arrangement								
Lighting type	ME4								


MN	1.01.91957								
PN	HK-50@08-150X70-5050-#0-1g-4_PMMA HK-50@08-150X70-5050-#0-1g-4_PC								
Material	PC/PMMA								
Efficiency	90% (PC) /93% (PMMA) without glass								
LED	3535/5050 LED								
Light distribution type	TYPEII-M-C 150X70°								
 <table border="1"> <tr> <td>Proportion</td> <td>4:1</td> </tr> <tr> <td>Road width</td> <td>7m (2 lanes)</td> </tr> <tr> <td>Mode</td> <td>Unilateral</td> </tr> <tr> <td>Lighting type</td> <td>ME4a</td> </tr> </table>			Proportion	4:1	Road width	7m (2 lanes)	Mode	Unilateral	Lighting type
Proportion	4:1								
Road width	7m (2 lanes)								
Mode	Unilateral								
Lighting type	ME4a								

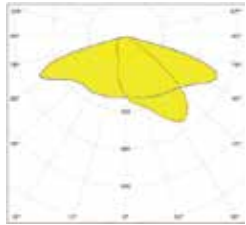
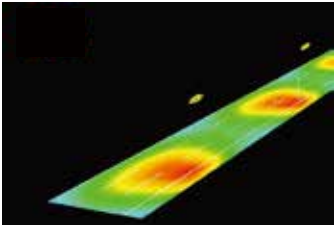
MN	1.01.92061								
PN	HK-50@09-150X65-5050-#0-1g-4_PMMA HK-50@09-150X65-5050-#0-1g-4_PC								
Material	PC/PMMA								
Efficiency	90% (PC) /93% (PMMA) without glass								
LED	3535/5050 LED								
Light distribution type	TYPE II -M-BRA 150X65°								
 <table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22.5m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Bidirectional symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME1</td> </tr> </table>			Proportion	3.5:1	Road width	22.5m (6 lanes)	Mode	Bidirectional symmetry	Lighting type
Proportion	3.5:1								
Road width	22.5m (6 lanes)								
Mode	Bidirectional symmetry								
Lighting type	ME1								


MN	1.02.81629								
PN	HK-50@08-150X50-5050-#0-1g-4_T2-2_PC HK-50@08-150X50-5050-#0-1g-4_T2-2_PMMA								
Material	PC/PMMA								
Efficiency	90% (PC) /93% (PMMA) without glass								
LED	3535/5050 LED								
Light distribution type	TYPEII-S-2 150X50°								
 <table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>21m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Medial strip</td> </tr> <tr> <td>Lighting type</td> <td>ME2</td> </tr> </table>			Proportion	3.5:1	Road width	21m (6 lanes)	Mode	Medial strip	Lighting type
Proportion	3.5:1								
Road width	21m (6 lanes)								
Mode	Medial strip								
Lighting type	ME2								

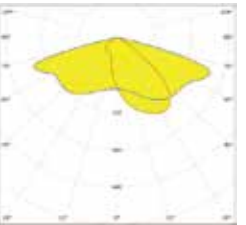
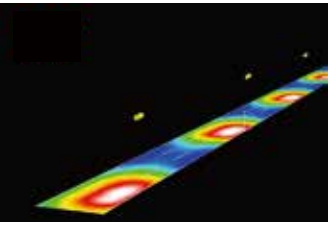
MN	1.02.23189	
PN	HK-JZ-50@10-60X148-5050-#0-1g-4_PMMA HK-JZ-50@10-60X148-5050-#0-1g-4_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	WIDE2 TYPE II 60X148°	

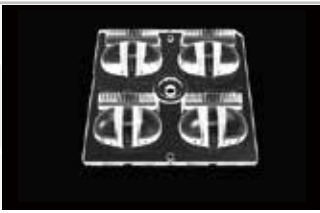
		Proportion	3.2:1
		Road width	14m (4 lanes)
		Mode	Double row symmetry
		Lighting type	ME2

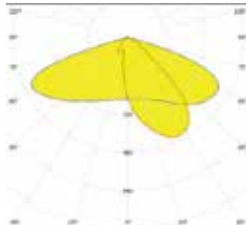
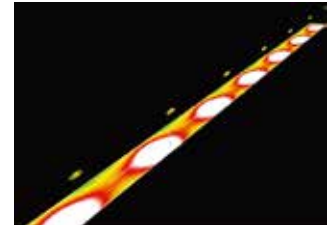
MN	1.02.23247	
PN	HK-JZ-50@08-55X148-5050-00-1g-4_PMMA HK-JZ-50@08-55X148-5050-00-1g-4_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	ME-WIDE1 TYPE II 55X148°	


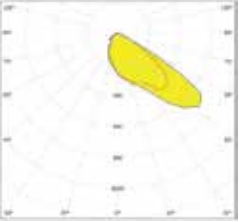
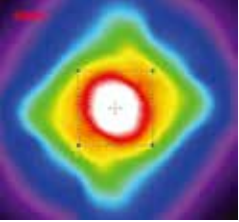
		Proportion	3.6:1
		Road width	10m (3 lanes)
		Mode	Unilateral
		Lighting type	ME3a


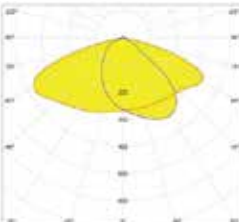
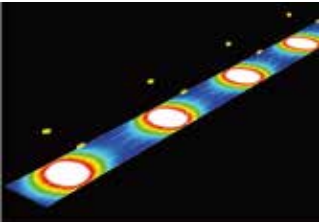
MN	1.02.23195	
PN	HK-JZ-50@08-56X150-5050-#0-1g-4_PMMA HK-JZ-50@08-56X150-5050-#0-1g-4_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	LM1 TYPE II 56X150°	


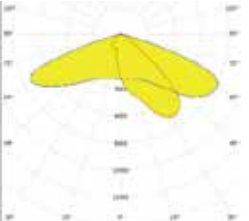

		Proportion	4:1
		Road width	10.5m (3 lanes)
		Mode	Unilateral
		Lighting type	ME3a


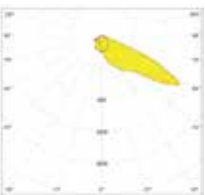
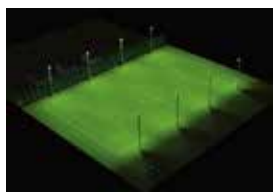
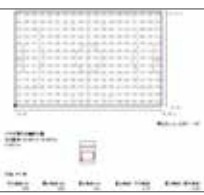
MN	1.02.23223	
PN	HK-JZ-50@09-148X59-5050-#0-1g-4_PMMA	
Material	PMMA	
Efficiency	96% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	TYPE II 148X59°	


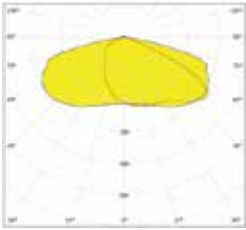
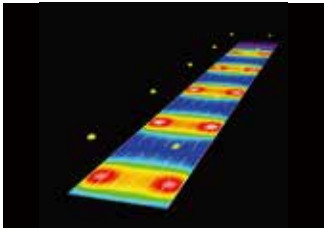
		Proportion	2.78:1
		Road width	7m (2 lanes)
		Mode	Single-sided lower arrangement
		Lighting type	ME4


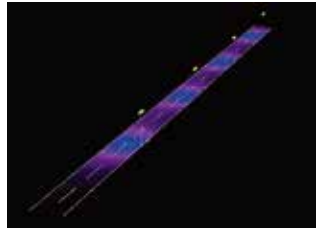
MN	1.02.23268							
PN	HK-JZ-50@09-40X60-5050-00-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	93% (PMMA) without glass							
LED	3535/5050 LED							
Light distribution type	PX 40X60°							
 		<table border="1"> <tr> <td>Height</td> <td>6m</td> </tr> <tr> <td>Mode</td> <td>Diagona arrangement oflights Height</td> </tr> <tr> <td>Uniformity of sidewalks</td> <td>0.65</td> </tr> </table>	Height	6m	Mode	Diagona arrangement oflights Height	Uniformity of sidewalks	0.65
Height	6m							
Mode	Diagona arrangement oflights Height							
Uniformity of sidewalks	0.65							


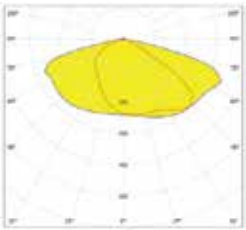
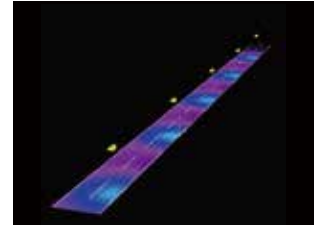
MN	1.02.71053									
PN	HK-50@09-150X60-5050-#0-1g-4 T2S_PC HK-50@09-150X60-5050-#0-1g-4 T2S_PMMA									
Material	PC/PMMA									
Efficiency	90% (PC) /93% (PMMA) without glass									
LED	3535/5050 LED									
Light distribution type	TYPEII-S 150X60°									
 		<table border="1"> <tr> <td>Proportion</td> <td>3.75:1</td> </tr> <tr> <td>Road width</td> <td>14m (4 lanes)</td> </tr> <tr> <td>Mode</td> <td>Symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME1</td> </tr> </table>	Proportion	3.75:1	Road width	14m (4 lanes)	Mode	Symmetry	Lighting type	ME1
Proportion	3.75:1									
Road width	14m (4 lanes)									
Mode	Symmetry									
Lighting type	ME1									


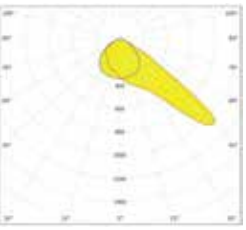
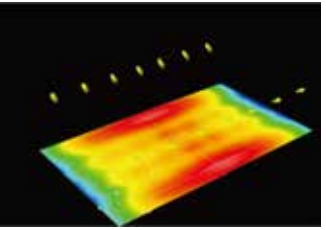
MN	1.02.23281									
PN	HK-JZ-50@10-144X54-5050-00-1g-4_PMMA									
Material	PMMA									
Efficiency	96% (PMMA) without glass									
LED	3535/5050 LED									
Light distribution type	TYPE II -S 144×54°									
 		<table border="1"> <tr> <td>Proportion</td> <td>2.78:1</td> </tr> <tr> <td>Road width</td> <td>7m (2 lanes)</td> </tr> <tr> <td>Mode</td> <td>Single-sided lower arrangement</td> </tr> <tr> <td>Lighting type</td> <td>ME4</td> </tr> </table>	Proportion	2.78:1	Road width	7m (2 lanes)	Mode	Single-sided lower arrangement	Lighting type	ME4
Proportion	2.78:1									
Road width	7m (2 lanes)									
Mode	Single-sided lower arrangement									
Lighting type	ME4									

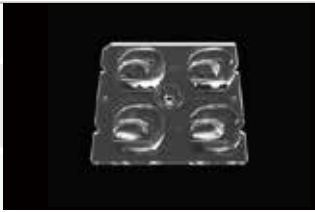
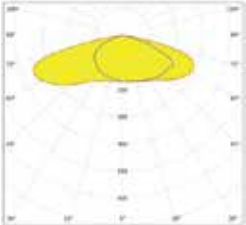

MN	1.02.23126	
PN	HK-JZ-50@11-90X25-5050-00-1g-4-PMMA HK-JZ-50@11-90X25-5050-00-1g-4-PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	FS3/FN TYPE III 90X25°	
  		<p>The illumination uniformity of the simulated scene can reach 0.7</p>


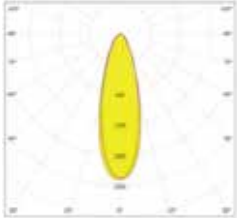

MN	1.02.6862		
PN	HK-50@09-150X60-5050-#0-1g-4_PC HK-50@09-150X60-5050-#0-1g-4_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3535/5050 LED		
Light distribution type	TYPEIII 150X60°		
		Proportion	4:1
		Road width	22.5m (6 lanes)
		Mode	Double row symmetry
		Lighting type	ME1


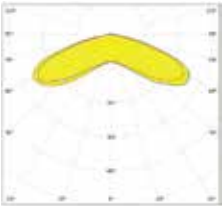
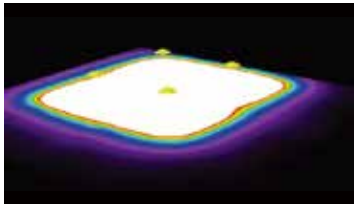
MN	1.02.92017		
PN	HK-50@09-150X50-5050-#0-1g-4_PC HK-50@09-150X50-5050-#0-1g-4_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3535/5050 LED		
Light distribution type	TNB TYPE III-M 150X50°		
		Proportion	5:1
		Road width	7m (4 lanes)
		Mode	Unilateral
		Lighting type	ME4a


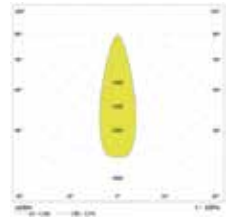
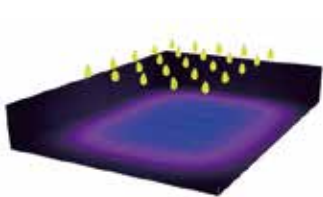
MN	1.02.71229		
PN	HK-50@09-150X70-5050-#0-1g-4_T3M_PC HK-50@09-150X70-5050-#0-1g-4_T3M_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3535/5050 LED		
Light distribution type	TYPEIII_M 150X70°		
		Proportion	4.5:1
		Road width	7m (2 lanes)
		Mode	Unilateral
		Lighting type	ME4a



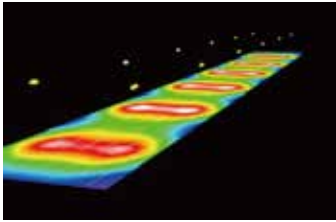
MN	1.02.92148		
PN	HK-50@10-22X100-5050-#0-1g-4		
Material	PC		
Efficiency	90% (PC) without glass		
LED	3535/5050 LED		
Light distribution type	22x100°		
		Height	7m
		Mode	Bilateral symmetry
		Uniformity of sidewalks	0.7


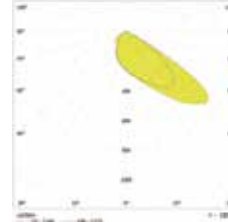

MN	1.02.6863									
PN	HK-50@09-140X30-5050-#0-1g-4_PC HK-50@09-140X30-5050-#0-1g-4_PMMA									
Material	PC/PMMA									
Efficiency	89% (PC) /92% (PMMA) without glass									
LED	3535/5050 LED									
Light distribution type	TYPEIV 140X30°									
 		<table border="1"> <tr> <td>Proportion</td> <td>8.75:1</td> </tr> <tr> <td>Road width</td> <td>11.25m (3 lanes)</td> </tr> <tr> <td>Mode</td> <td>Unilateral</td> </tr> <tr> <td>Lighting type</td> <td>DKE3</td> </tr> </table>	Proportion	8.75:1	Road width	11.25m (3 lanes)	Mode	Unilateral	Lighting type	DKE3
Proportion	8.75:1									
Road width	11.25m (3 lanes)									
Mode	Unilateral									
Lighting type	DKE3									


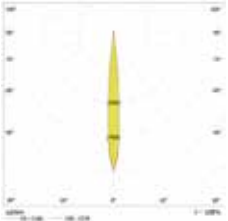
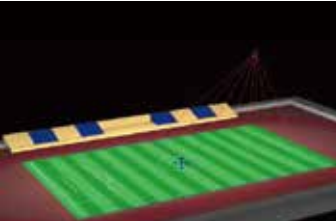
MN	1.02.71066							
PN	HK-50@10-25-3535-20-1g-4_PC HK-50@10-25-3535-20-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535 LED							
Light distribution type	25°							
 		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Uniformity of sidewalks</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Uniformity of sidewalks	0.7
Height	12m							
Mode	Lighting on top							
Uniformity of sidewalks	0.7							

MN	1.02.6864					
PN	HK-50@09-148-5050-#0-1g-4_PC HK-50@09-148-5050-#0-1g-4_PMMA					
Material	PC/PMMA					
Efficiency	89% (PC) /92% (PMMA) without glass					
LED	3535/5050 LED					
Light distribution type	VSM TYPE V 148°					
 		<table border="1"> <tr> <td>Proportion</td> <td>3:1</td> </tr> <tr> <td>Illumination uniformity</td> <td>0.7</td> </tr> </table>	Proportion	3:1	Illumination uniformity	0.7
Proportion	3:1					
Illumination uniformity	0.7					


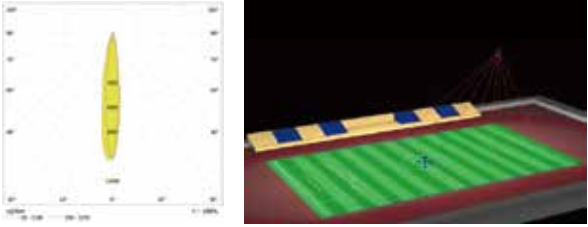
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PN	HK-50@09-50-3535-20-1g-4-PC HK-50@09-50-3535-20-1g-4-PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	50°							
 		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Uniformity of sidewalks</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Uniformity of sidewalks	0.7
Height	12m							
Mode	Lighting on top							
Uniformity of sidewalks	0.7							


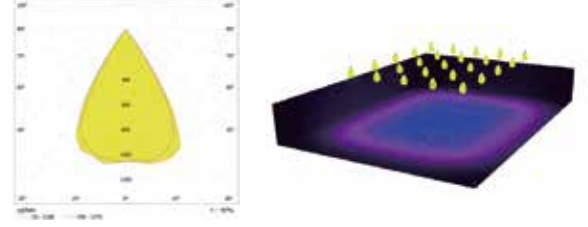
MN	1.02.33550																															
PN	HK-JZ-50@10-100X60-5050-#0-1g-4-PC HK-JZ-50@10-100X60-5050-#0-1g-4-PMMA																															
Material	PC																															
Efficiency	90% (PC) /93% (PMMA) without glass																															
LED	5050 LED																															
Light distribution type	TYPE II																															
  <table border="1" data-bbox="698 640 1061 752"> <thead> <tr> <th colspan="5">Key 1.</th> </tr> <tr> <th colspan="5">(All lighting performance requirements are met.)</th> </tr> <tr> <th>L<sub>min</sub> [cd/m<sup>2</sup>]</th> <th>UG</th> <th>UI</th> <th>TI [%]</th> <th>SR</th> </tr> </thead> <tbody> <tr> <td>1.35</td> <td>0.53</td> <td>0.90</td> <td>10</td> <td>0.83</td> </tr> <tr> <td>≥ 1.30</td> <td>≤ 0.40</td> <td>≥ 0.70</td> <td>≤ 10</td> <td>≥ 0.50</td> </tr> <tr> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> </tbody> </table>			Key 1.					(All lighting performance requirements are met.)					L <sub>min</sub> [cd/m <sup>2</sup> ]	UG	UI	TI [%]	SR	1.35	0.53	0.90	10	0.83	≥ 1.30	≤ 0.40	≥ 0.70	≤ 10	≥ 0.50		✓	✓	✓	✓
Key 1.																																
(All lighting performance requirements are met.)																																
L <sub>min</sub> [cd/m <sup>2</sup> ]	UG	UI	TI [%]	SR																												
1.35	0.53	0.90	10	0.83																												
≥ 1.30	≤ 0.40	≥ 0.70	≤ 10	≥ 0.50																												
	✓	✓	✓	✓																												

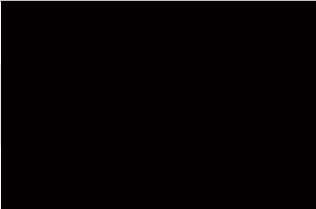
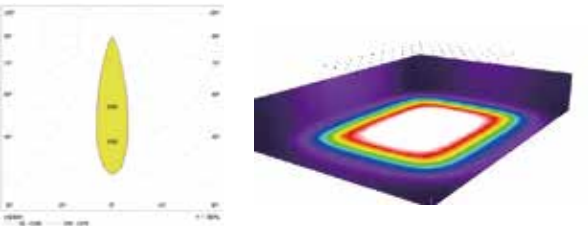
MN	1.02.23422							
PN	HK-JZ-50@09-40X60-5050-00-1g-4-R-PC HK-JZ-50@09-40X60-5050-00-1g-4-R-PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	40X60°							
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Height	5m							
Mode	Lights on the same side of the sidewalk							
Uniformity of sidewalks	0.65							


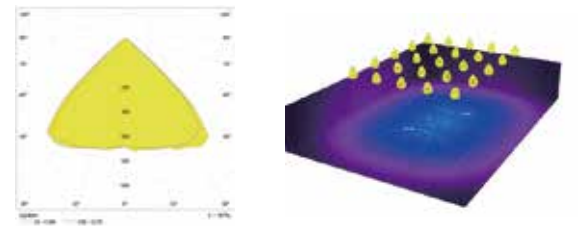
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PN	HK-JZ-50@16-10-3535-02-1g-4-A-PC HK-JZ-50@16-10-3535-02-1g-4-A-PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535 LED							
Light distribution type	9°							
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Height	25m							
Mode	Four corner arrangement lights							
Uniformity of sidewalks	0.7							

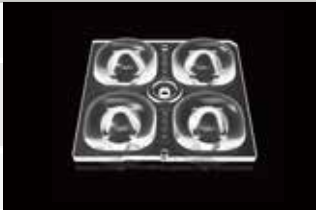
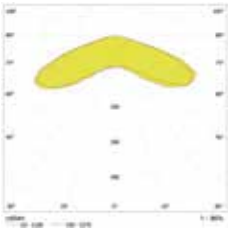
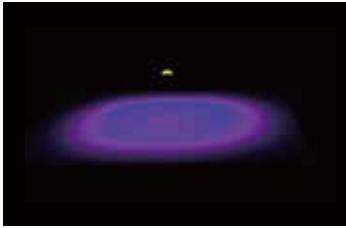


MN	1.01.23447							
PN	HK--JZ-50@14-SA10-3535-03-1g-4-PC HK--JZ-50@14-SA10-3535-03-1g-4-PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535 LED							
Light distribution type	10°							
		<table border="1"> <tr> <td>Height</td> <td>25m</td> </tr> <tr> <td>Mode</td> <td>Four corner arrangement lights</td> </tr> <tr> <td>Uniformity of sidewalks</td> <td>0.7</td> </tr> </table>	Height	25m	Mode	Four corner arrangement lights	Uniformity of sidewalks	0.7
Height	25m							
Mode	Four corner arrangement lights							
Uniformity of sidewalks	0.7							


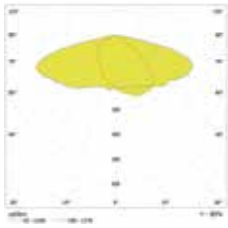
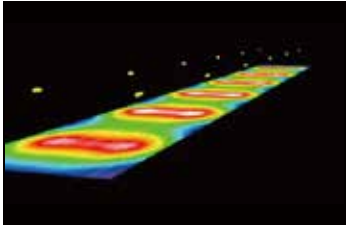
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PN	HK-JZ-50@14-60-7070-#0-1g-4_PC HK-JZ-50@14-60-7070-#0-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	7070 LED							
Light distribution type	60°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Upper cloth lamp</td> </tr> <tr> <td>Uniformity of sidewalks</td> <td>0.75</td> </tr> </table>	Height	12m	Mode	Upper cloth lamp	Uniformity of sidewalks	0.75
Height	12m							
Mode	Upper cloth lamp							
Uniformity of sidewalks	0.75							


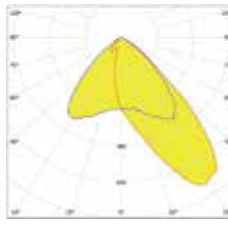
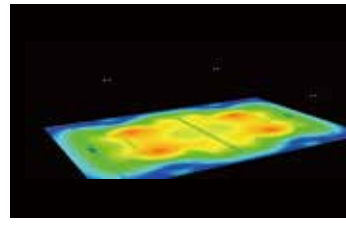
MN	1.01.33585							
PN	HK-JZ-50@16-25-7070-00-1g-4_PC HK-JZ-50@16-25-7070-00-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	7070 LED							
Light distribution type	25°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Uniformity of sidewalks</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Uniformity of sidewalks	0.7
Height	12m							
Mode	Lighting on top							
Uniformity of sidewalks	0.7							


MN	1.02.33583							
PN	HK-JZ-50@10-90-7070-#0-1g-4_PC HK-JZ-50@10-90-7070-#0-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	7070 LED							
Light distribution type	90°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Upper cloth lamp</td> </tr> <tr> <td>Uniformity of sidewalks</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Upper cloth lamp	Uniformity of sidewalks	0.7
Height	12m							
Mode	Upper cloth lamp							
Uniformity of sidewalks	0.7							

MN	1.02.33579							
PN	HK-JZ-50@09-145X145-7070-#0-1g-4_PC HK-JZ-50@09-145X145-7070-#0-1g-4_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	7070 LED							
Light distribution type	TYPE V							
  <table border="1" data-bbox="707 584 1061 809"> <tr> <td>Scenario application</td> <td>high-pole lamp</td> </tr> <tr> <td>Height</td> <td>15m</td> </tr> <tr> <td>Uniformity</td> <td>0.5</td> </tr> </table>			Scenario application	high-pole lamp	Height	15m	Uniformity	0.5
Scenario application	high-pole lamp							
Height	15m							
Uniformity	0.5							

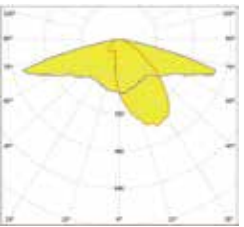
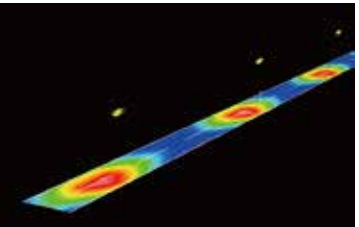



MN	1.02.33552																																					
PN	HK-JZ-50@08-150X80-7070-#0-1g-4_PC HK-JZ-50@08-150X80-7070-#0-1g-4_PMMA																																					
Material	PC/PMMA																																					
Efficiency	90% (PC) /93% (PMMA) without glass																																					
LED	7070 LED																																					
Light distribution type	TYPE II																																					
  <table border="1" data-bbox="707 1280 1061 1505"> <tr> <td colspan="6">way 1.</td> </tr> <tr> <td colspan="6">(All lighting performance requirements are met.)</td> </tr> <tr> <td><math>E_{av}</math> (cd/m<sup>2</sup>)</td> <td>UG</td> <td>UI</td> <td>TI (%)</td> <td colspan="2">SR</td> </tr> <tr> <td>1.55</td> <td>0.53</td> <td>0.60</td> <td>10</td> <td colspan="2">0.63</td> </tr> <tr> <td>≥ 1.50</td> <td>≥ 0.40</td> <td>≥ 0.70</td> <td>≤ 10</td> <td colspan="2">≥ 0.80</td> </tr> <tr> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> <td colspan="2">✓</td> </tr> </table>			way 1.						(All lighting performance requirements are met.)						$E_{av}$ (cd/m <sup>2</sup> )	UG	UI	TI (%)	SR		1.55	0.53	0.60	10	0.63		≥ 1.50	≥ 0.40	≥ 0.70	≤ 10	≥ 0.80			✓	✓	✓	✓	
way 1.																																						
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	✓	✓	✓	✓																																		

MN	1.02.54634			
PN	HK-JZ-50@10-40X92-5050-#0-1g-4_PMMA HK-JZ-50@10-40X92-5050-#0-1g-4_PC			
Material	PC/PMMA			
Efficiency	90% (PC) /93% (PMMA) without glass			
LED	5050 LED			
Light distribution type	TYPE II-VS			
  <table border="1" data-bbox="1814 1377 2168 1505"> <tr> <td>Application scenarios</td> </tr> <tr> <td>Stadium lighting</td> </tr> </table>			Application scenarios	Stadium lighting
Application scenarios				
Stadium lighting				

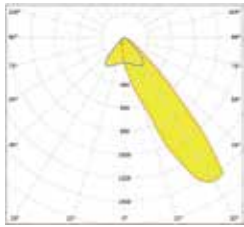
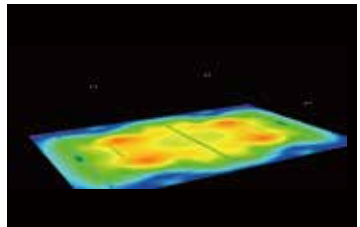
MN	1.02.54591	
PN	HK-JZ-50@10-50X152-5050-#0-1g-4_PMMA HK-JZ-50@10-50X152-5050-#0-1g-4_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE II -M	


  

		Proportion	4:1
		Road width	7.5m (2 lanes)
		Mode	Single-sided cloth light
		Lighting type	ME2

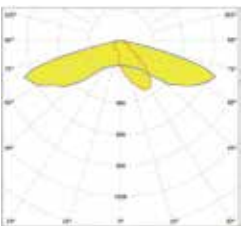
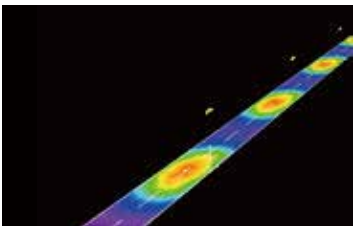
MN	1.02.54539	
PN	HK-JZ-50@12-24X88-5050-#0-1g-4_PMMA HK-JZ-50@12-24X88-5050-#0-1g-4_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE I -VS	


  

		Application scenarios

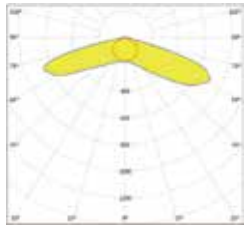
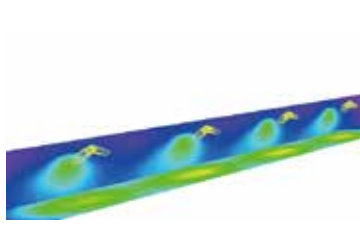
MN	1.02.54572	
PN	HK-JZ-50@10-42X150-5050-#0-1g-4_PMMA HK-JZ-50@10-42X150-5050-#0-1g-4_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE II -M	

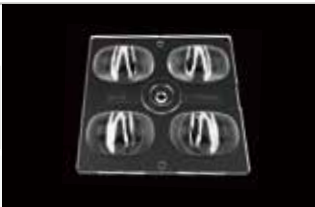
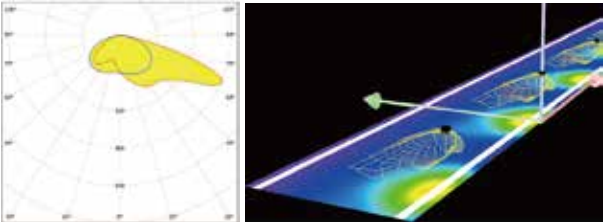
  


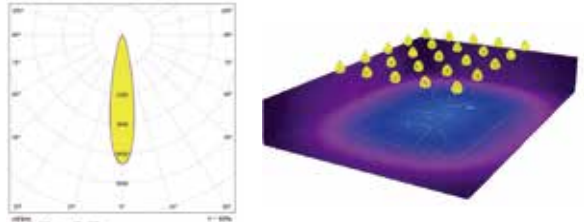
		Proportion	5.5:1
		Road width	7.5m (2 lanes)
		Mode	Single-sided cloth light
		Lighting type	Equal illuminance light distribution


MN	1.02.54499	
PN	HK-JZ-50@09-124X150-5050-#0-1g-4_PMMA HK-JZ-50@09-124X150-5050-#0-1g-4_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE I -S	


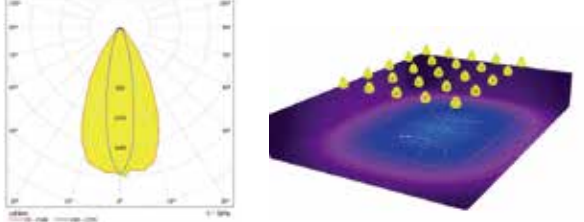
  


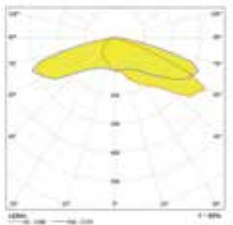
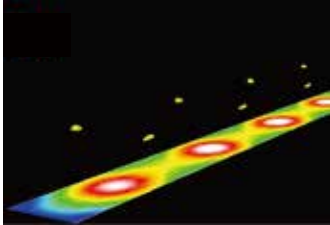
		Height	3m
		Spacing	10m
		Application scenarios	Aisles, hanging line lights, etc


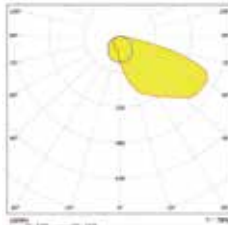
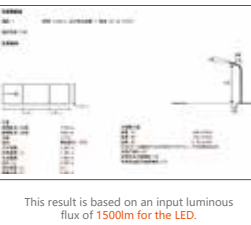
MN	1.02.54494													
PN	HK-JZ-50@10-144X42-5050-00-1g-4_PMMA HK-JZ-50@10-144X42-5050-00-1g-4_PC													
Material	PC/PMMA													
Efficiency	90% (PC) /93% (PMMA) without glass													
LED	5050 LED													
Light distribution type	TYPE IV-S													
		<table border="1"> <tr> <td>Height</td> <td>1m</td> </tr> <tr> <td>Spacing</td> <td>4m</td> </tr> <tr> <td>Road width</td> <td>3m</td> </tr> <tr> <td>Mode</td> <td>Single-sided cloth light</td> </tr> <tr> <td>Lighting type</td> <td>ME1</td> </tr> <tr> <td>Application scenarios</td> <td>Low-level lighting, courtyard</td> </tr> </table>	Height	1m	Spacing	4m	Road width	3m	Mode	Single-sided cloth light	Lighting type	ME1	Application scenarios	Low-level lighting, courtyard
Height	1m													
Spacing	4m													
Road width	3m													
Mode	Single-sided cloth light													
Lighting type	ME1													
Application scenarios	Low-level lighting, courtyard													


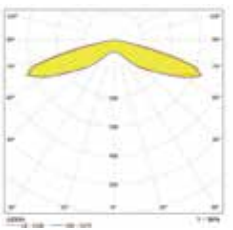
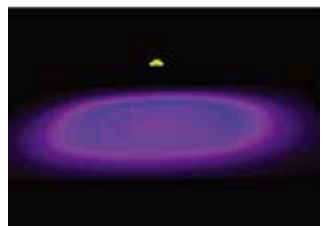
MN	1.01.54506							
PN	HK-JZ-50@11-20-5050-20-1g-4_PMMA HK-JZ-50@11-20-5050-20-1g-4_PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	20°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							


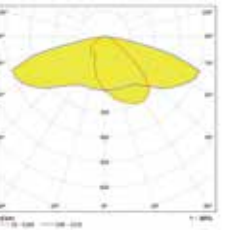
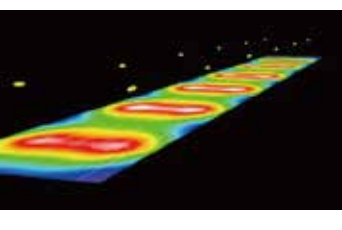
MN	1.01.54544							
PN	HK-JZ-50@16-18-5050-00-1g-4_PMMA HK-JZ-50@16-18-5050-00-1g-4_PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	18°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							

MN	1.01.54497							
PN	HK-JZ-50@11-20X50-5050-23-1g-4_PMMA HK-JZ-50@11-20X50-5050-23-1g-4_PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	20×50°							
		<table border="1"> <tr> <td>Height</td> <td>7m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	7m	Mode	Lighting on top	Court uniformity	0.7
Height	7m							
Mode	Lighting on top							
Court uniformity	0.7							

MN	1.02.54575		
PN	HK-JZ-50@09-152X40-5050-00-1g-4_PMMA HK-JZ-50@09-152X40-5050-00-1g-4_PC		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	5050 LED		
Light distribution type	TYPE III		
		Proportion	3.2:1
		Road width	14m (4 lanes)
		Mode	Double row symmetry
		Lighting type	ME2

MN	1.02.54490																																
PN	HK-JZ-50@10-112X62-5050-00-1g-4_PMMA HK-JZ-50@10-112X62-5050-00-1g-4_PC																																
Material	PC/PMMA																																
Efficiency	90% (PC) /93% (PMMA) without glass																																
LED	5050 LED																																
Light distribution type	112×62°																																
		<table border="1"> <thead> <tr> <th colspan="5">Illuminance Output</th> </tr> </thead> <tbody> <tr> <td>平均照度 [lx]</td> <td>0.37</td> <td>0.75</td> <td>T1 [%]</td> <td>具均照度差</td> </tr> <tr> <td>±0.15</td> <td>±0.48</td> <td>±0.60</td> <td>±15</td> <td>±0.58</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>平均照度 [lx]</td> <td>0.37</td> <td>0.75</td> <td>T1 [%]</td> <td>具均照度差</td> </tr> <tr> <td>±0.15</td> <td>±0.48</td> <td>±0.60</td> <td>±15</td> <td>±0.58</td> </tr> </tbody> </table> <p>Road utilisation rate: 68% (Calculation formula: Average illuminance × Road width × Lighting spacing / Maintenance factor / Total LED luminous flux)</p>		Illuminance Output					平均照度 [lx]	0.37	0.75	T1 [%]	具均照度差	±0.15	±0.48	±0.60	±15	±0.58						平均照度 [lx]	0.37	0.75	T1 [%]	具均照度差	±0.15	±0.48	±0.60	±15	±0.58
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		<p>This result is based on an input luminous flux of 1500lm for the LED.</p>																															

MN	1.02.54520		
PN	HK-JZ-50@08-150X150-5050-#0-1g-4_PMMA HK-JZ-50@08-150X150-5050-#0-1g-4_PC		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	5050 LED		
Light distribution type	TYPE V		
		Application	high-pole lamp
		Height	15m
		Uniformity	0.5

MN	1.02.54495																																					
PN	HK-JZ-50@09-154X64-5050-00-1g-6_PMMA HK-JZ-50@09-154X64-5050-00-1g-6_PC																																					
Material	PC/PMMA																																					
Efficiency	90% (PC) /93% (PMMA) without glass																																					
LED	5050 LED																																					
Light distribution type	154×64°																																					
		<table border="1"> <thead> <tr> <th colspan="5">Way 1.</th> </tr> </thead> <tbody> <tr> <td colspan="5">(All lighting performance requirements are met.)</td> </tr> <tr> <td>L<sub>av</sub> [cd/m<sup>2</sup>]</td> <td>0.0</td> <td>0.90</td> <td>T1 [%]</td> <td>SFI</td> </tr> <tr> <td>±1.50</td> <td>±0.43</td> <td>±0.70</td> <td>±10</td> <td>±0.63</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>L<sub>av</sub> [cd/m<sup>2</sup>]</td> <td>0.0</td> <td>0.90</td> <td>T1 [%]</td> <td>SFI</td> </tr> <tr> <td>±1.50</td> <td>±0.43</td> <td>±0.70</td> <td>±10</td> <td>±0.63</td> </tr> </tbody> </table>		Way 1.					(All lighting performance requirements are met.)					L <sub>av</sub> [cd/m <sup>2</sup> ]	0.0	0.90	T1 [%]	SFI	±1.50	±0.43	±0.70	±10	±0.63						L <sub>av</sub> [cd/m <sup>2</sup> ]	0.0	0.90	T1 [%]	SFI	±1.50	±0.43	±0.70	±10	±0.63
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# MATRIX 4 in 1 Reflector

The Matrix lens has the following features:

2x2 reflector design, with low glare performance, excellent control of backward light.

1. ZHAGA Standard: The position of the LED and the positioning column meet the EU ZHAGA standard.
2. Lens Overall size: 50X50mm; Positioning column distance: 45mm
3. LED Compatibility: 3535 LED / 5050 LED
4. Light Distribution Type: More than 4 light distribution types have been developed, and will continue to develop new type in depth for different application scenarios.
5. Application: Suitable for sports lighting and stadium lighting.


Light distribution type:

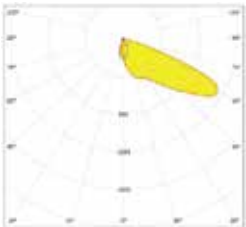
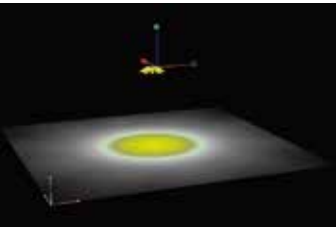
40X70°	50X40°	30X40°
TYPE II		




MN	1.08.13012		
PN	HK-50@11-30X40-5050-00-1g-4		
Material	Vaccum Aluminum Plating PC		
Efficiency	87% without glass		
LED	3535/5050 LED		
Light distribution type	30°X40°		
		Height	15m
		U0 TA (min/Ave)	0.8
		U0 TA (min/max)	0.63
		U0 PA (min/Ave)	0.86
		U0 PA (min/max)	0.72

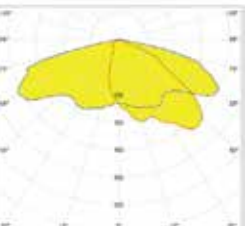
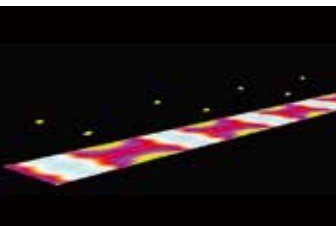
MN	1.08.13008		
PN	HK-50@11-40X70-5050-00-1g-4		
Material	Vaccum Aluminum Plating PC		
Efficiency	88% without glass		
LED	3535/5050 LED		
Light distribution type	40°X70°		
		Height	20m
		U0 TA (min/Ave)	0.73
		U0 TA (min/max)	0.53

MN	1.08.13011	
PN	HK-50@11-50X40-5050-00-1g-4	
Material	Vaccum Aluminum Plating PC	
Efficiency	88% without glass	
LED	3535/5050 LED	
Light distribution type	50°X40°	

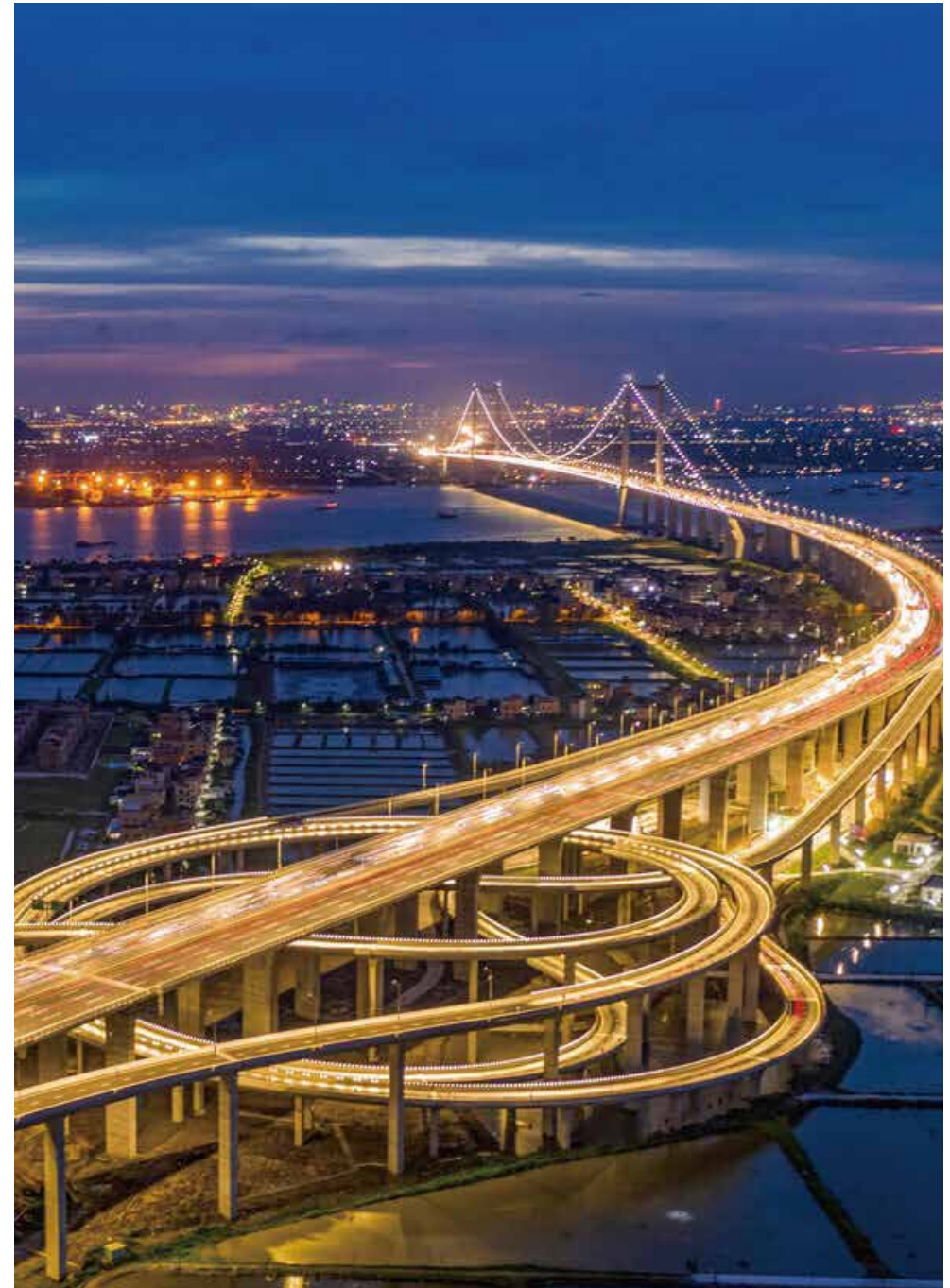



Height	15m
UO	0.6

MN	1.08.13031	
PN	HK-50@11-150X60-5050-00-1g-4	
Material	Vaccum Aluminum Plating PC	
Efficiency	86% without glass	
LED	3535/5050 LED	
Light distribution type	TYPE3 150°X60°	

Proportion	4:1
Road width	22.5m (6 lanes)
Mode	Symmetry
Illumination level	ME2



# MATRIX 6 in 1

Lens Overall size: 50X50mm; Positioning column distance: 45mm

LED Compatibility: 3535 LED / 5050 LED


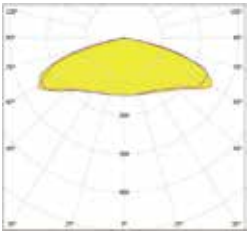
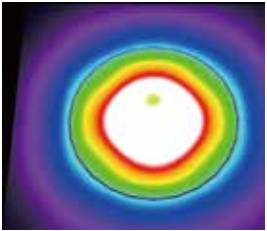
Light Distribution Type: 15 light distribution types have been developed, and will continue to develop new type in depth for different application scenarios.


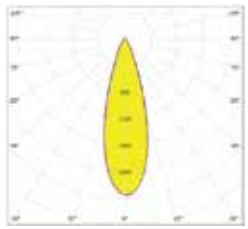
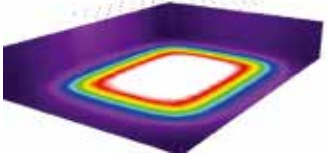
Applications: Roads, Tunnels, Stadiums, Docks, Industrial workshop, etc.


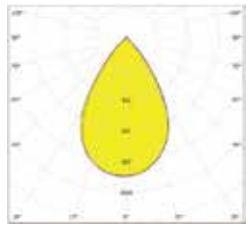
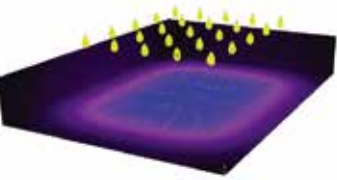
Light distribution type:


30°	60°	90°	TYPE II M
TYPE IV S	22×100°	TYPE III M	TYPE I
TYPE V	TYPE II S	TYPE III S	80×150°
120×48°			

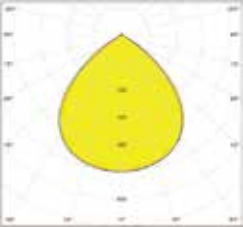


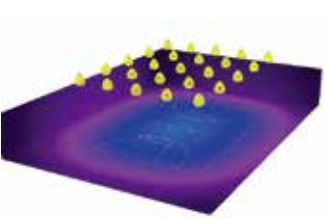
MN	1.02.23078							
PN	HK-JZ-50@06-150-5050-#0-1g-6_PC HK-JZ-50@06-150-5050-#0-1g-6_PMMA							
Material	PC/PMMA							
Efficiency	85% (PC) /88% (PMMA) without glass							
LED	5050 LED							
Light distribution type	TYPE V							
		<table border="1"> <tr> <td>Height</td> <td>10M</td> </tr> <tr> <td>Mode</td> <td>Upper cloth lamp</td> </tr> <tr> <td>Court uniformity</td> <td>0.5</td> </tr> </table>	Height	10M	Mode	Upper cloth lamp	Court uniformity	0.5
Height	10M							
Mode	Upper cloth lamp							
Court uniformity	0.5							

MN	1.01.91890							
PN	HK-50@10-30-5050-20-1g-6_PC HK-50@10-30-5050-20-1g-6_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/5050 LED							
Light distribution type	30°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Upper cloth lamp</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Upper cloth lamp	Court uniformity	0.7
Height	12m							
Mode	Upper cloth lamp							
Court uniformity	0.7							


MN	1.02.91812							
PN	HK-50@08-60-5050-#0-1g-6_PC HK-50@08-60-5050-#0-1g-6_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/5050 LED							
Light distribution type	60°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Upper cloth lamp</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Upper cloth lamp	Court uniformity	0.7
Height	12m							
Mode	Upper cloth lamp							
Court uniformity	0.7							

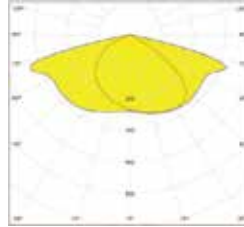
MN	1.02.91813	
PN	HK-50@07-90-5050-#0-1g-6_PC HK-50@07-90-5050-#0-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	90°	

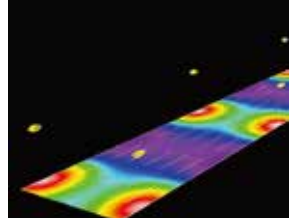





Height	12m
Mode	Lighting on top
Court uniformity	0.7

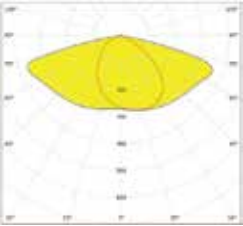
MN	1.02.91827	
PN	HK-50@07-96X155-5050-#0-1g-6_PC HK-50@07-96X155-5050-#0-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	TYPEIII_M 96X155°	

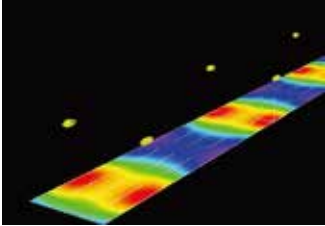





Proportion	4.5:1
Road width	22.5m (6 lanes)
Mode	Double row symmetry
Lighting type	ME3a

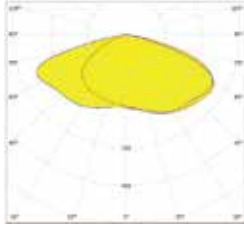
MN	1.02.91815	
PN	HK-50@07-80X156-5050-#0-1g-6_PC HK-50@07-80X156-5050-#0-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	TYPEII-M 80X156°	

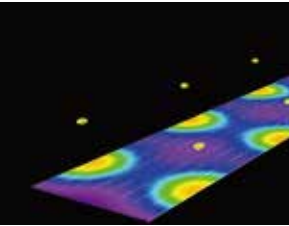





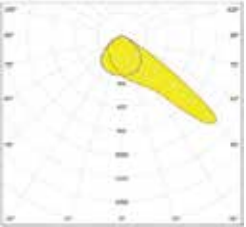
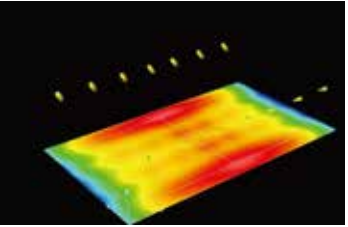
Proportion	4:1
Road width	15m (4 lanes)
Mode	Double row symmetry
Lighting type	ME2

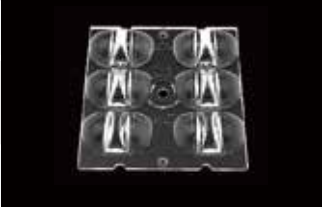
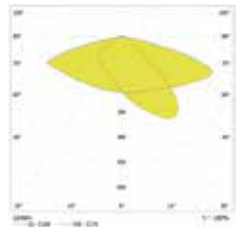
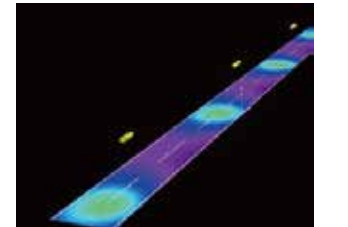
MN	1.02.91891	
PN	HK-50@07-120X148-5050-#0-1g-6_PC HK-50@07-120X148-5050-#0-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	TYPEIV 120X148°	

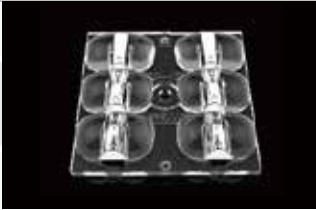
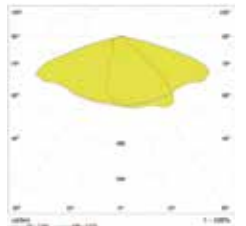
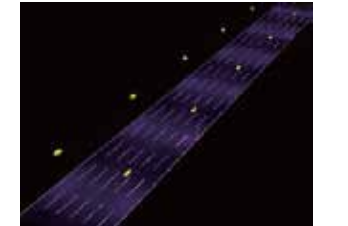



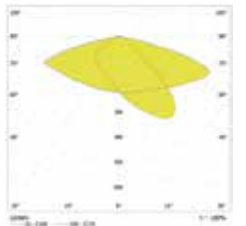
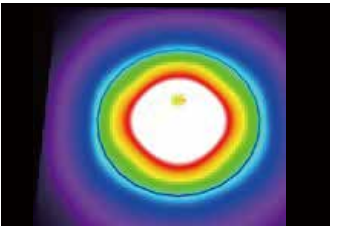


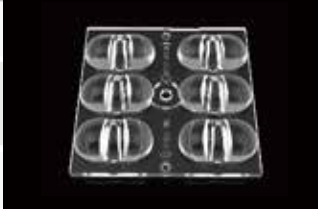
Proportion	3.5:1
Road width	30m (8 lanes)
Mode	Double row symmetry
Lighting type	ME3a

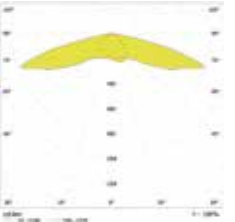
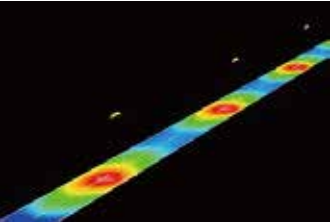
MN	1.02.91911							
PN	HK-50@09-20X100-5050-#0-1g-6_PC							
Material	PC							
Efficiency	90% (PMMA) without glass							
LED	3535/5050 LED							
Light distribution type	20X100°							
		<table border="1"> <tr> <td>Height</td> <td>7m</td> </tr> <tr> <td>Mode</td> <td>Bilateral symmetry</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	7m	Mode	Bilateral symmetry	Court uniformity	0.7
Height	7m							
Mode	Bilateral symmetry							
Court uniformity	0.7							

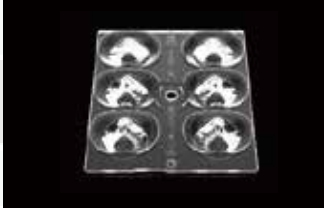
MN	1.02.12725									
PN	HK-50@09-150x50-5050-#0-1g-6_PC HK-50@09-150x50-5050-#0-1g-6_PMMA									
Material	PC/PMMA									
Efficiency	90% (PC) /93% (PMMA) without glass									
LED	5050 LED									
Light distribution type	TYPE III-M									
		<table border="1"> <tr> <td>Proportion</td> <td>4.375: 1</td> </tr> <tr> <td>Road width</td> <td>7m (2 lanes)</td> </tr> <tr> <td>Mode</td> <td>Unilateral cloth lamp</td> </tr> <tr> <td>Lighting type</td> <td>ME4a</td> </tr> </table>	Proportion	4.375: 1	Road width	7m (2 lanes)	Mode	Unilateral cloth lamp	Lighting type	ME4a
Proportion	4.375: 1									
Road width	7m (2 lanes)									
Mode	Unilateral cloth lamp									
Lighting type	ME4a									

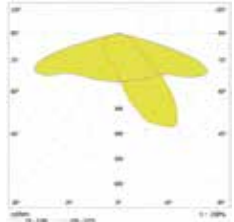
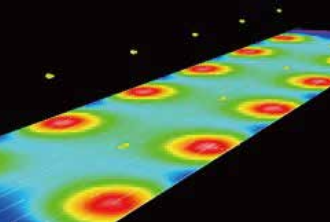
MN	1.02.23094									
PN	HK-JZ-50@09-70X150-5050-#0-1g-6_PC HK-JZ-50@09-70X150-5050-#0-1g-6_PMMA									
Material	PC/PMMA									
Efficiency	90% (PC) /93% (PMMA) without glass									
LED	5050 LED									
Light distribution type	TYPEII-M-CUTOFF									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22.5m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME2</td> </tr> </table>	Proportion	3.5:1	Road width	22.5m (6 lanes)	Mode	Double row symmetry	Lighting type	ME2
Proportion	3.5:1									
Road width	22.5m (6 lanes)									
Mode	Double row symmetry									
Lighting type	ME2									


MN	1.02.23078							
PN	HK-JZ-50@06-150-5050-#0-1g-6_PC HK-JZ-50@06-150-5050-#0-1g-6_PMMA							
Material	PC/PMMA							
Efficiency	85% (PC) /88% (PMMA) without glass							
LED	5050 LED							
Light distribution type	TYPE V							
		<table border="1"> <tr> <td>Height</td> <td>10m</td> </tr> <tr> <td>Mode</td> <td>middle arrangement lights</td> </tr> <tr> <td>Court uniformity</td> <td>0.5</td> </tr> </table>	Height	10m	Mode	middle arrangement lights	Court uniformity	0.5
Height	10m							
Mode	middle arrangement lights							
Court uniformity	0.5							

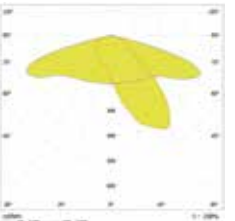
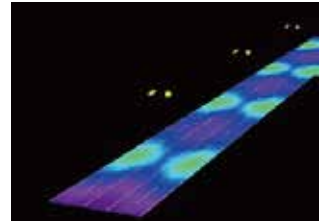
MN	1.02.33511	
PN	HK-JZ-50@09-100X152-5050-#0-1g-6_PC HK-JZ-50@09-100X152-5050-#0-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE II -M	


		Proportion	5: 1
		Road width	7m (2 lanes)
		Mode	Unilateral cloth lamp
		Lighting type	Temporarily no illumination distribution

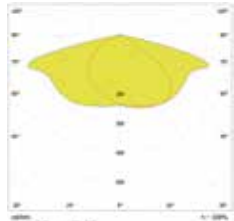
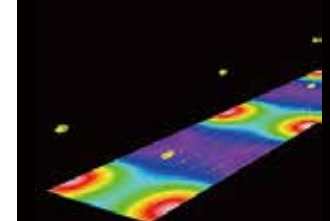
MN	1.02.33514	
PN	HK-JZ-50@08-50X142-5050-#0-1g-6_PC HK-JZ-50@08-50X142-5050-#0-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE III - S	


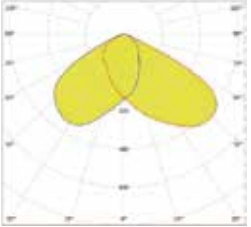
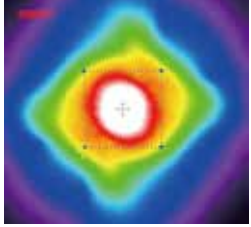
		Proportion	3.2:1
		Road width	42m (10 lanes)
		Mode	Bilateral symmetry
		Lighting type	ME1

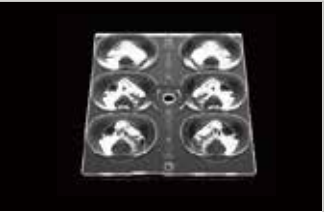
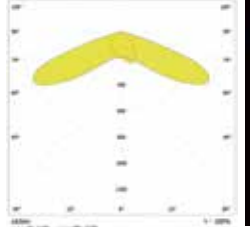
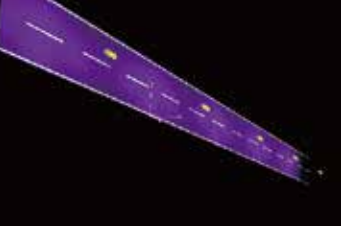
MN	1.02.33512	
PN	HK-JZ-50@08-45X150-5050-00-1g-6_PC HK-JZ-50@08-45X150-5050-00-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE II -S	


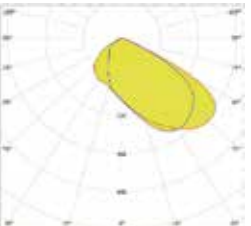
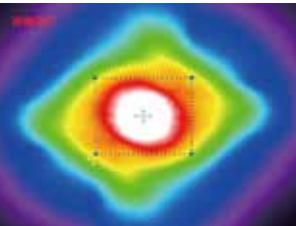
		Proportion	3.5: 1
		Road width	14.4m (4 lanes)
		Mode	Medial strip
		Lighting type	ME2


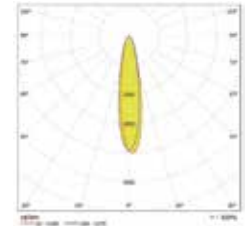

MN	1.02.91827	
PN	HK-50@07-96X155-5050-#0-1g-6_PC HK-50@07-96X155-5050-#0-1g-6_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE III -M	

		Proportion	4.5:1
		Road width	22.5m (6 lanes)
		Mode	Bilateral symmetry
		Lighting type	ME3a

MN	1.02.33696							
PN	HK-JZ-50@07-65X72-5050-#0-1g-6-R							
Material	PMMA							
Efficiency	93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	TYPE II S							
		<table border="1"> <tr> <td>Height</td> <td>5M</td> </tr> <tr> <td>Mode</td> <td>sidewalks, squares</td> </tr> <tr> <td>Court uniformity</td> <td>0.65</td> </tr> </table>	Height	5M	Mode	sidewalks, squares	Court uniformity	0.65
Height	5M							
Mode	sidewalks, squares							
Court uniformity	0.65							

MN	1.02.12705									
PN	HK-50@09-75X140-5050-#0-1g-6									
Material	PC									
Efficiency	90% (PC) without glass									
LED	5050 LED									
Light distribution type	TYPE I									
		<table border="1"> <tr> <td>Proportion</td> <td>4: 1</td> </tr> <tr> <td>Road width</td> <td>15m (4 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME2</td> </tr> </table>	Proportion	4: 1	Road width	15m (4 lanes)	Mode	Double row symmetry	Lighting type	ME2
Proportion	4: 1									
Road width	15m (4 lanes)									
Mode	Double row symmetry									
Lighting type	ME2									

MN	1.02.33697							
PN	HK-JZ-50@07-65X72-5050-#0-1g-6-L							
Material	PMMA							
Efficiency	93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	TYPE III S							
		<table border="1"> <tr> <td>Height</td> <td>5M</td> </tr> <tr> <td>Mode</td> <td>sidewalks, squares</td> </tr> <tr> <td>Court uniformity</td> <td>0.65</td> </tr> </table>	Height	5M	Mode	sidewalks, squares	Court uniformity	0.65
Height	5M							
Mode	sidewalks, squares							
Court uniformity	0.65							

MN	1.01.33713	
PN	HK-JZ-50@16-20-5050-01-1g-6	
Material	PC	
Efficiency	88% (PC) without glass	
LED	5050 LED	
Light distribution type	20°	
		<p>Application:</p> <ol style="list-style-type: none"> <li>1. Outdoor stadium lighting</li> <li>2. Indoor high bay lighting</li> <li>3. Flood lighting</li> </ol>

# MATRIX 8 in 1

The Matrix lens has the following features:

Lens Overall size: 50X50mm; Positioning column distance: 45mm

LED Compatibility: 3535 LED / 5050 LED


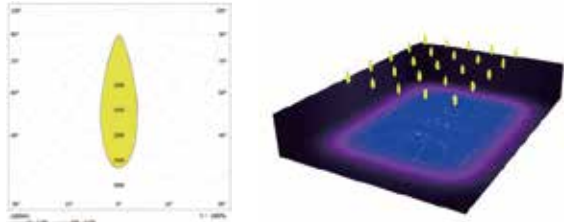
Light Distribution Type: 5 light distribution types have been developed, and will continue to develop new type in depth for different application scenarios.

Application occasions: roads, tunnels, stadiums, docks, industrial factories.

Light distribution type:

30°	60°	90°	TYPE II
TYPE II M	TYPE III S	TYPE IV S	TYPE V



MN	1.01.33516							
PN	HK-JZ-50@10-30-5050-20-1g-8_PC HK-JZ-50@10-30-5050-20-1g-8_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	30°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.75</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.75
Height	12m							
Mode	Lighting on top							
Court uniformity	0.75							

MN	1.02.33517							
PN	HK-JZ-50@08-60-5050-#0-1g-8_PC HK-JZ-50@08-60-5050-#0-1g-8_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	5050 LED							
Light distribution type	60°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.75</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.75
Height	12m							
Mode	Lighting on top							
Court uniformity	0.75							

MN	1.02.33518	
PN	HK-JZ-50@07-90-5050-#0-1g-8_PC HK-JZ-50@07-90-5050-#0-1g-8_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	90°	

Height	12m
Mode	Lighting on top
Court uniformity	0.75

MN	1.02.33479	
PN	HK-JZ-50@06-150-5050-#0-1g-8_PC HK-JZ-50@06-150-5050-#0-1g-8_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE V	

Way 1 (All lighting performance requirements are met.)				
$L_{avg}$ [lx/m <sup>2</sup> ]	UG	UR	Ti [%]	SR
1.55	0.53	0.90	10	0.63
≥ 1.50	≥ 0.45	≥ 0.70	≤ 10	≥ 0.50
✓	✓	✓	✓	✓

MN	1.02.33484	
PN	HK-JZ-50@07-70X150-5050-#0-1g-8_PC HK-JZ-50@07-70X150-5050-#0-1g-8_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) / 93% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE II	

Way 1 (All lighting performance requirements are met.)				
$L_{avg}$ [lx/m <sup>2</sup> ]	UG	UR	Ti [%]	SR
1.55	0.53	0.90	10	0.63
≥ 1.50	≥ 0.45	≥ 0.70	≤ 10	≥ 0.50
✓	✓	✓	✓	✓

MN	1.02.43957	
PN	HK-JZ-50@09-25X100-5050-#0-1g-8_PC HK-JZ-50@09-25X100-5050-#0-1g-8_PMMA	
Material	PC/PMMA	
Efficiency	85% (PC) /88% (PMMA) without glass	
LED	5050 LED	
Light distribution type	TYPE II S	

Height	7M
Mode	Bilateral symmetry
Court uniformity	0.5

# MATRIX 12 in 1


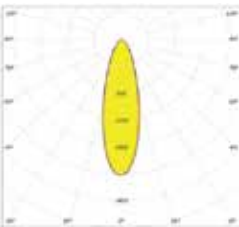
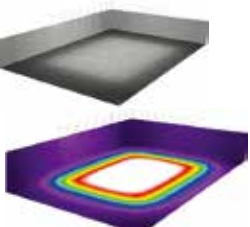
The Matrix lens has the following features:


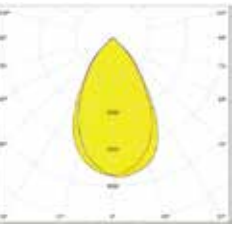
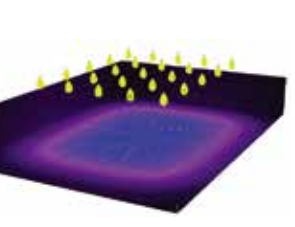
1. Lens Overall size: 50X50mm; Positioning column distance: 45mm
2. LED Compatibility: 3030 LED / 3535 LED
3. Light Distribution Type: 10 light distribution types have been developed, and will continue to develop new type in depth for different application scenarios.
4. Application occasions: roads, tunnels, stadiums, docks, industrial factories .

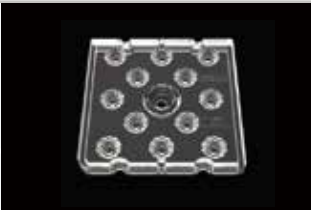
Light distribution type:

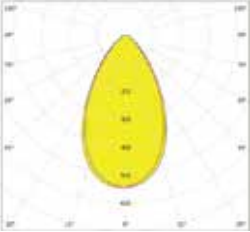
30°	60°	90°	TYPE III
TYPE II M	TYPE III S	TYPE IV S	TYPE II M COTTOFF
TYPE V	22×100°	TYPE II	50×140°

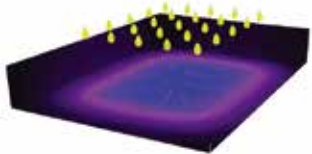


MN	1.02.91804							
PN	HK-50@06-30-3030-20-1g-12_PC HK-50@06-30-3030-20-1g-12_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3030/3535 LED							
Light distribution type	30°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							


MN	1.02.91748							
PN	HK-50@05-60-3030-#0-1g-12_PC HK-50@05-60-3030-#0-1g-12_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3030/3535 LED							
Light distribution type	60°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.75</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.75
Height	12m							
Mode	Lighting on top							
Court uniformity	0.75							

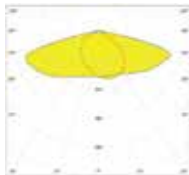
MN	1.01.91964	
PN	HK-50@05-60-3030-#0-1g-12_PC HK-50@05-60-3030-#0-1g-12_PMMA	
Material	PMMA	
Efficiency	93% (PMMA) without glass	
LED	3030/3535 LED	
Light distribution type	60°	

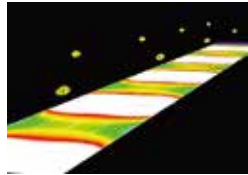




Height	12m
Mode	Lighting on top
Court uniformity	0.75


MN	1.02.91669	
PN	HK-50@04-160X90-3030-#0-1g-12_PC HK-50@04-160X90-3030-#0-1g-12_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3030/3535 LED	
Light distribution type	TYPE II 160X90°	

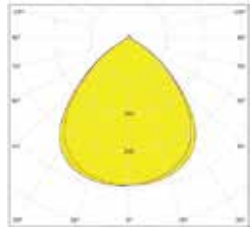


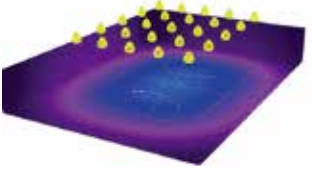


Proportion	3:1
Road width	24m (6 lanes)
Mode	Double row symmetry
Lighting type	ME4a


The light distribution has strong versatility, and is suitable for many roads with bilateral lights (symmetric lights or cross lights). The pole height is 8m~15m, The distance to height ratio is 1:3 to 1:4.5, which can meet the requirements of the road

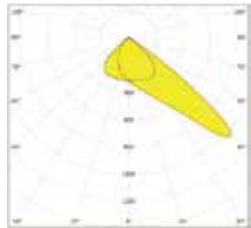
MN	1.02.91741	
PN	HK-50@05-90-3030-#0-1g-12_PC HK-50@05-90-3030-#0-1g-12_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) / 93% (PMMA) without glass	
LED	3030/3535 LED	
Light distribution type	90°	

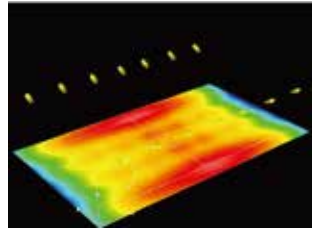





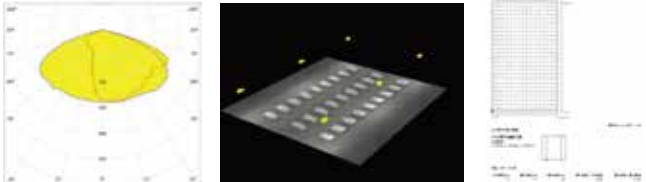
Height	7m
Mode	Lighting on top
Court uniformity	0.7


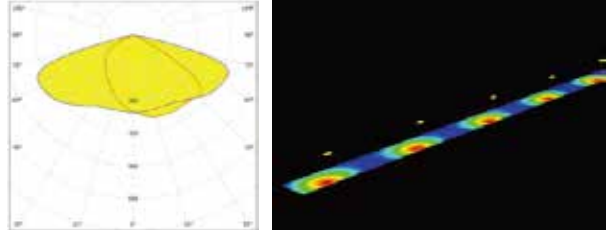
MN	1.02.92105	
PN	HK-50@07-22X100-3030-#0-1g-12_PC HK-50@07-22X100-3030-#0-1g-12_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) / 93% (PMMA) without glass	
LED	3030/3535 LED	
Light distribution type	22X100°	


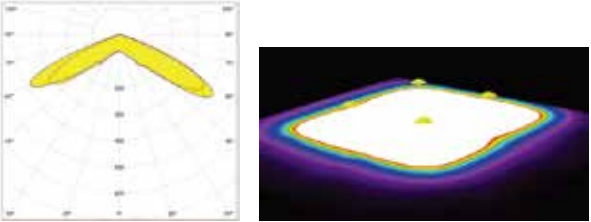




Height	7m
Mode	Bilateral symmetry
Court uniformity	0.7

MN	1.02.91793	
PN	HK-50@05-90-3030-#0-1g-12_PC HK-50@05-90-3030-#0-1g-12_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3030/3535 LED	
Light distribution type	TYPEIV 50X140°	
		
It can be used as a large-scale parking lot lamp, and the illumination uniformity can reach more than 0.6		

MN	1.02.91756		
PN	HK-50@05-156X75-3030-#0-1g-12_PC HK-50@05-156X75-3030-#0-1g-12_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3030/3535 LED		
Light distribution type	TYPEIII 156X75°		
			
		Proportion	4:1
		Road width	12m (4 lanes)
		Mode	Bilateral symmetry
		Lighting type	ME5

MN	1.02.92172		
PN	HK-50@05-135-3030-#0-1g-12_PC HK-50@05-135-3030-#0-1g-12_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3030/3535 LED		
Light distribution type	TYPE V 135°		
			
		Proportion	3:1
		Illumination uniformity	0.5

MN	1.02.91859		
PN	HK-50@05-150X75-3030-#0-1g-12_PC HK-50@05-150X75-3030-#0-1g-12_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3030 LED		
Light distribution type	lumileds 3030		
			
		Proportion	4:1
		Road width	7m (2 lanes)
		Mode	Single Row
		Lighting type	ME4a

# MATRIX 16 in 1



The Matrix lens has the following features:

1. ZHAGA Standard: The position of the LED and the positioning column meet the ZHAGA standard.
2. Lens Overall size: 50X50mm; Positioning column distance: 45mm
3. LED Compatibility: 3030 LED / 3535 LED
4. Light Distribution Type: More than 10 light distribution types have been developed, and will continue to develop new type in depth for different application scenarios.

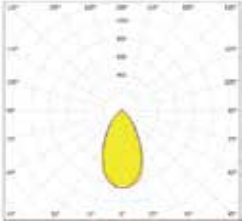
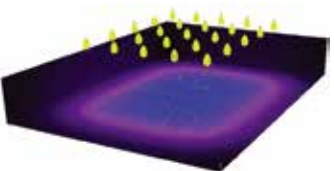
Light distribution type:

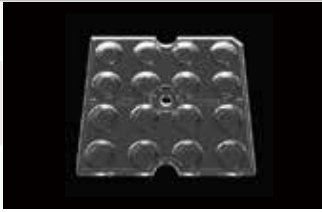
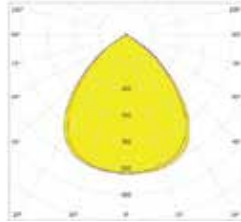
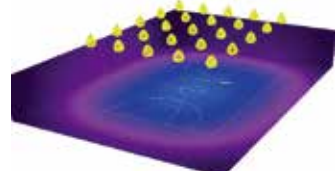
20°	30°	60°
90°	22×100°	TYPE II S
TYPE III S	TYPE IV S	TYPE V


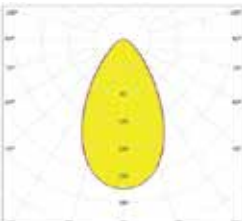
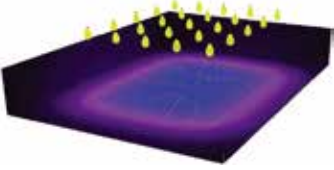



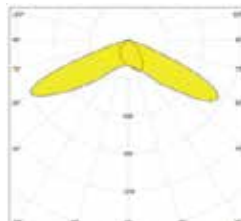

MN	1.02.91931							
PN	HK-50@07-20-3030-20-1g-16-PMMA HK-50@07-20-3030-20-1g-16-PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3030/3535 LED							
Light distribution type	20°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							


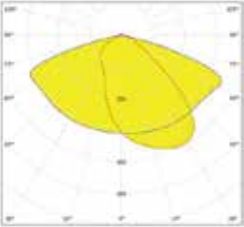
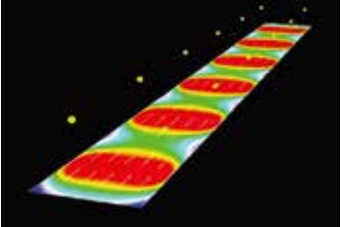
MN	1.02.81539							
PN	HK-50@06-30-3030-#1-1g-16_PMMA HK-50@06-30-3030-#1-1g-16_PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3030/3535 LED							
Light distribution type	30°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							


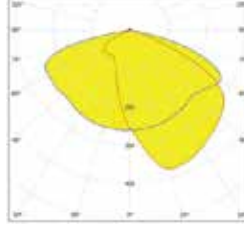
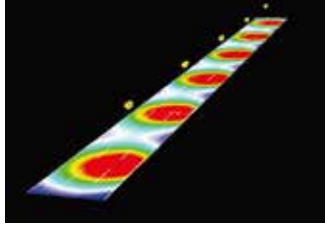
MN	1.02.81532							
PN	HK-50@05-60-3030-#0-1g-16_PMMA HK-50@05-60-3030-#0-1g-16_PC							
Material	PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/3030 LED							
Light distribution type	60°							
  <table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.75</td> </tr> </table>		Height	12m	Mode	Lighting on top	Court uniformity	0.75	
Height	12m							
Mode	Lighting on top							
Court uniformity	0.75							


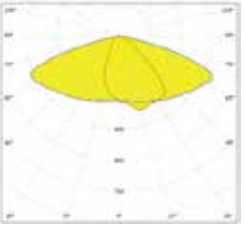
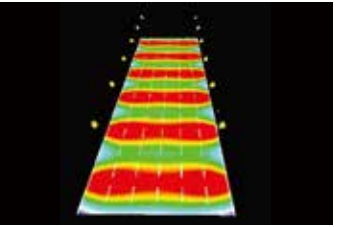
MN	1.02.81531							
PN	HK-50@04-90-3030-#0-1g-16_PMMA HK-50@04-90-3030-#0-1g-16_PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/3030 LED							
Light distribution type	90°							
  <table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>		Height	12m	Mode	Lighting on top	Court uniformity	0.7	
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							


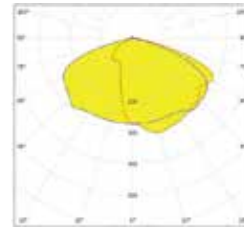
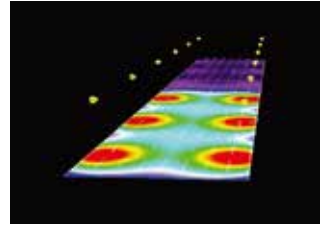
MN	1.01.91965							
PN	HK-50@06-60-3030-20-1g-16-PMMA HK-50@06-60-3030-20-1g-16-PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/3030 LED							
Light distribution type	60°							
  <table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.75</td> </tr> </table>		Height	12m	Mode	Lighting on top	Court uniformity	0.75	
Height	12m							
Mode	Lighting on top							
Court uniformity	0.75							

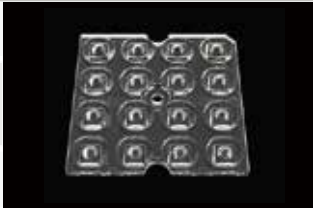
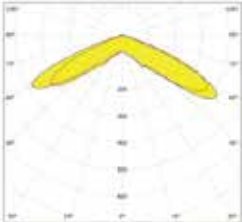
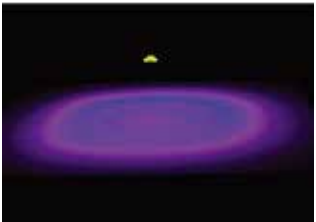
MN	1.02.81524									
PN	HK-50@05-140X70-3030-#0-1g-16_PC HK-50@05-140X70-3030-#0-1g-16_PMMA									
Material	PC/PMMA									
Efficiency	90% (PC) / 92% (PMMA) without glass									
LED	3030 LED									
Light distribution type	TYPE I 140X70°									
  <table border="1"> <tr> <td>Proportion</td> <td>3:1</td> </tr> <tr> <td>Road width</td> <td>7m (2 lanes)</td> </tr> <tr> <td>Mode</td> <td>Single-sided lower arrangement</td> </tr> <tr> <td>Lighting type</td> <td>Can meet high lighting uniformity</td> </tr> </table>		Proportion	3:1	Road width	7m (2 lanes)	Mode	Single-sided lower arrangement	Lighting type	Can meet high lighting uniformity	
Proportion	3:1									
Road width	7m (2 lanes)									
Mode	Single-sided lower arrangement									
Lighting type	Can meet high lighting uniformity									

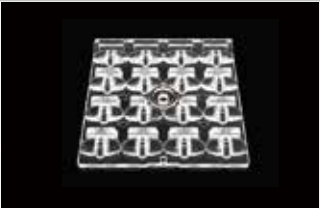
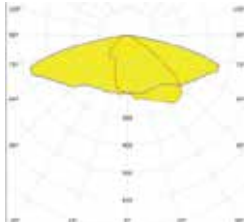

MN	1.02.81599									
PN	HK-50@05-70X150-3030-#0-1g-16_PC HK-50@05-70X150-3030-#0-1g-16_PMMA									
Material	PC/PMMA									
Efficiency	90% (PC) /92% (PMMA) without glass									
LED	3535/3030 LED									
Light distribution type	TYPE II 70X150°									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22m (5 lanes)</td> </tr> <tr> <td>Mode</td> <td>Symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME1</td> </tr> </table>	Proportion	3.5:1	Road width	22m (5 lanes)	Mode	Symmetry	Lighting type	ME1
Proportion	3.5:1									
Road width	22m (5 lanes)									
Mode	Symmetry									
Lighting type	ME1									


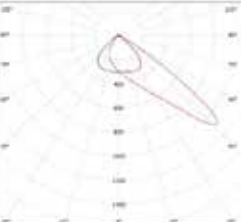
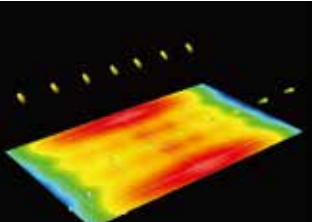
MN	1.02.81542									
PN	HK-50@04-150X80-3030-#0-1g-16_PC HK-50@04-150X80-3030-#0-1g-16_PMMA									
Material	PC/PMMA									
Efficiency	9%(PC)/92% (PMMA) without glass									
LED	3535/3030 LED									
Light distribution type	TYPE I 140X70°									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>11.25m (3 lanes)</td> </tr> <tr> <td>Mode</td> <td>Unilateral</td> </tr> <tr> <td>Lighting type</td> <td>ME2</td> </tr> </table>	Proportion	3.5:1	Road width	11.25m (3 lanes)	Mode	Unilateral	Lighting type	ME2
Proportion	3.5:1									
Road width	11.25m (3 lanes)									
Mode	Unilateral									
Lighting type	ME2									


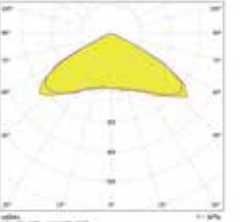
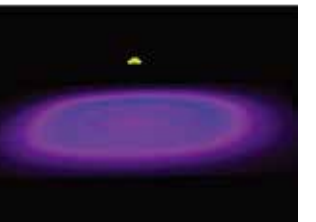
MN	1.02.23252									
PN	HK-JZ-50@07-150X70-3030-#0-1g-16									
Material	PMMA									
Efficiency	92% (PMMA) without glass									
LED	3535/3030 LED									
Light distribution type	ME TYPE II 150X70°									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME1</td> </tr> </table>	Proportion	3.5:1	Road width	22m (6 lanes)	Mode	Symmetry	Lighting type	ME1
Proportion	3.5:1									
Road width	22m (6 lanes)									
Mode	Symmetry									
Lighting type	ME1									

MN	1.02.81598									
PN	HK-50@04-50X140-3030-#0-1g-16_PC HK-50@04-50X140-3030-#0-1g-16_PMMA									
Material	PC/PMMA									
Efficiency	89%(PC) /90% (PMMA) without glass									
LED	3535/3030 LED									
Light distribution type	TYPE IV 50X140°									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>28m (8 lanes)</td> </tr> <tr> <td>Mode</td> <td>Symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME1</td> </tr> </table>	Proportion	3.5:1	Road width	28m (8 lanes)	Mode	Symmetry	Lighting type	ME1
Proportion	3.5:1									
Road width	28m (8 lanes)									
Mode	Symmetry									
Lighting type	ME1									

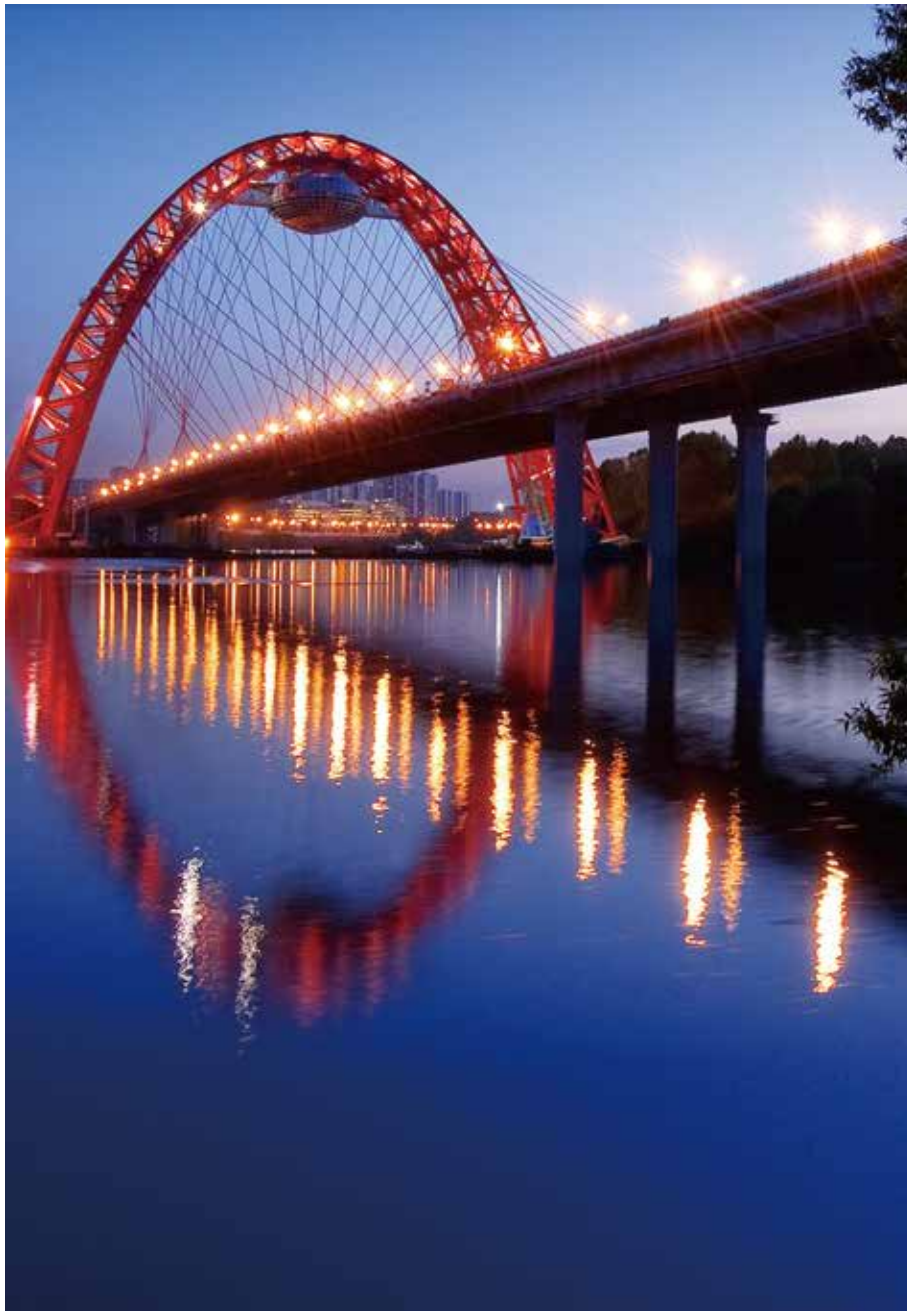
MN	1.02.81525							
PN	HK-50@04-140X140-3030-#0-1g-16_PC HK-50@04-140X140-3030-#0-1g-16_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) / 92% (PMMA) without glass							
LED	3030/3535 LED							
Light distribution type	TYPE V 140X140°							
		<table border="1"> <tr> <td>Height</td> <td>high-pole lamp</td> </tr> <tr> <td>Height</td> <td>15m</td> </tr> <tr> <td>Uniformity</td> <td>0.5</td> </tr> </table>	Height	high-pole lamp	Height	15m	Uniformity	0.5
Height	high-pole lamp							
Height	15m							
Uniformity	0.5							

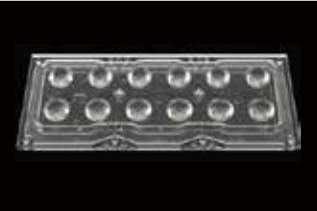
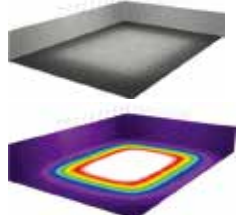
MN	1.02.23271									
PN	HK-JZ-50@05-157X70-3030-00-1g-16_PMMA									
Material	PC/PMMA									
Efficiency	92% (PMMA) without glass									
LED	3030/3535 LED									
Light distribution type	SCL TYPE II-M 157X70°									
		<table border="1"> <tr> <td>Proportion</td> <td>5.5:1</td> </tr> <tr> <td>Road width</td> <td>7m (2 lanes)</td> </tr> <tr> <td>Mode</td> <td>Single-sided lower arrangement</td> </tr> <tr> <td>Lighting type</td> <td>ME4</td> </tr> </table>	Proportion	5.5:1	Road width	7m (2 lanes)	Mode	Single-sided lower arrangement	Lighting type	ME4
Proportion	5.5:1									
Road width	7m (2 lanes)									
Mode	Single-sided lower arrangement									
Lighting type	ME4									


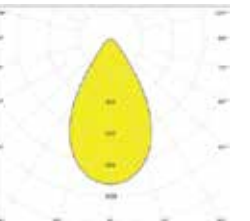
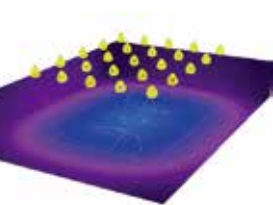
MN	1.02.92106							
PN	HK-50@06-22X100-3030-#0-1g-16_PC HK-50@06-22X100-3030-#0-1g-16_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) / 93% (PMMA) without glass							
LED	3030/3535 LED							
Light distribution type	22X100°							
		<table border="1"> <tr> <td>Height</td> <td>7m</td> </tr> <tr> <td>Mode</td> <td>Bilateral symmetry</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	7m	Mode	Bilateral symmetry	Court uniformity	0.7
Height	7m							
Mode	Bilateral symmetry							
Court uniformity	0.7							


MN	1.02.54471							
PN	HK-JZ-50@03-120-3030-00-1g-16_PMMA HK-JZ-50@03-120-3030-00-1g-16_PC							
Material	PC/PMMA							
Efficiency	90% (PC) / 93% (PMMA) without glass							
LED	3030 LED							
Light distribution type	LUXEON 3030 ROUND							
		<table border="1"> <tr> <td>Application</td> <td>high-pole lamp</td> </tr> <tr> <td>Height</td> <td>15m</td> </tr> <tr> <td>Uniformity</td> <td>0.5</td> </tr> </table>	Application	high-pole lamp	Height	15m	Uniformity	0.5
Application	high-pole lamp							
Height	15m							
Uniformity	0.5							

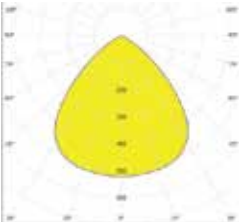
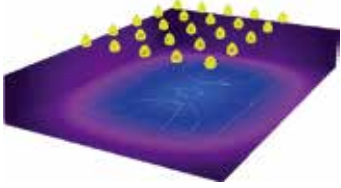
# GALAXY 12 in 1




MN	1.01.81454							
PN	HK-173@12-30-5050-20-1g-12_PC HK-173@12-30-5050-20-1g-12_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/5050 LED							
Light distribution type	30°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							

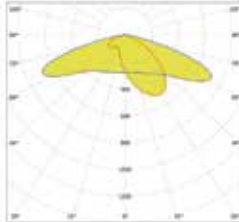
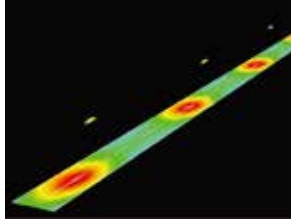
MN	1.01.81455							
PN	HK-173@10-60-5050-#0-1g-12_PC HK-173@10-60-5050-#0-1g-12_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA) without glass							
LED	3535/5050 LED							
Light distribution type	60°							
		<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>	Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							

MN	1.01.81456	
PN	HK-173@09-90-5050-#0-1g-12_PC HK-173@09-90-5050-#0-1g-12_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	90°	





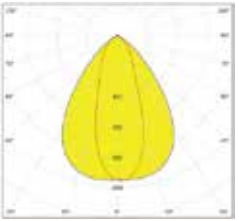
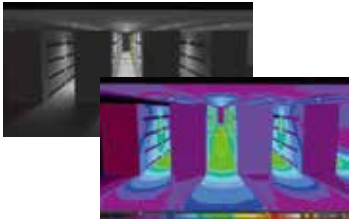
Height	12m
Mode	Lighting on top
Court uniformity	0.7

MN	1.02.44022	
PN	HK-YH-173@11-50X145-5050-#0-1g-12_PMMA HK-YH-173@11-30X140-5050-#0-1g-12_PC	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA)	
LED	3535/5050 LED	
Light distribution type	TYPE II 50°x145°	





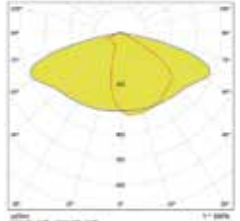
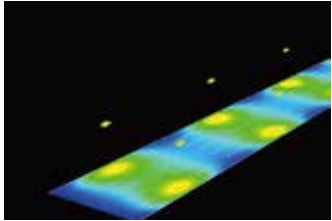
Proportion	4:1
Road width	7m (2 lanes)
Mode	Unilateral
Lighting type	0.6

MN	1.02.81467	
PN	HK-173@10-40X80-5050-#0-1g-12_PC HK-173@10-40X80-5050-#0-1g-12_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA)	
LED	3535/5050 LED	
Light distribution type	TYPE I 40°X80°	


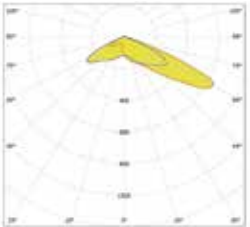
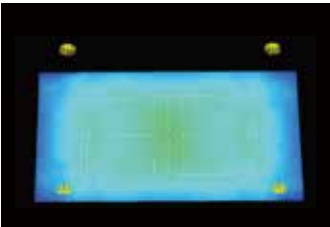



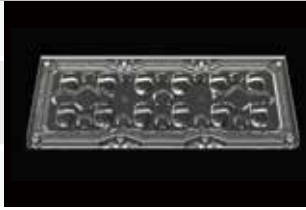
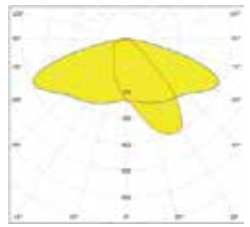
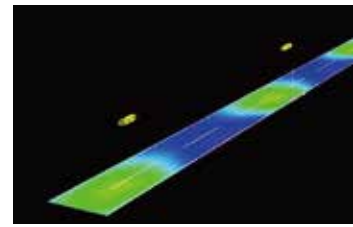
Height	2.2m
Mode	Light distribution in the middle of the aisle
Ground uniformity	0.9

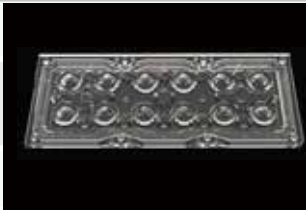
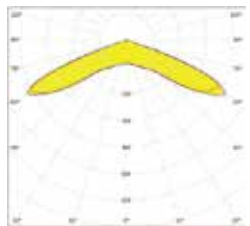
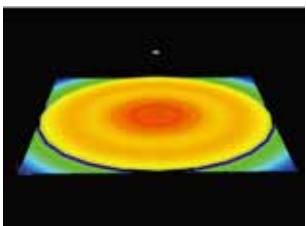
MN	1.02.44020	
PN	HK-YH-173@11-72X150-5050-#0-1g-12_PC HK-YH-173@11-72X150-5050-#0-1g-12_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) / 93% (PMMA)	
LED	3535/5050 LED	
Light distribution type	TYPE II 72x150°	

Proportion	4:1
Road width	22.5m (6 lanes)
Mode	Bidirectional symmetry
Lighting type	ME3a

MN	1.02.44021							
PN	HK-YH-173@11-30X140-5050-#0-1g-12_PMMA HK-YH-173@11-72X150-5050-#0-1g-12_PC							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA)							
LED	3535/5050 LED							
Light distribution type	TYPE IV 30x140°							
		<table border="1"> <tr> <td>Height</td> <td>11m</td> </tr> <tr> <td>Mode</td> <td>Four corner arrangement lights</td> </tr> <tr> <td>Court uniformity</td> <td>0.95</td> </tr> </table>	Height	11m	Mode	Four corner arrangement lights	Court uniformity	0.95
Height	11m							
Mode	Four corner arrangement lights							
Court uniformity	0.95							

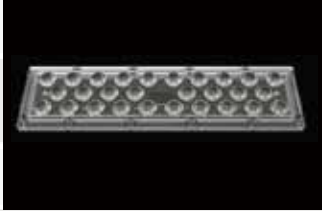
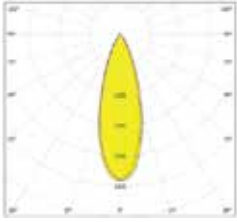
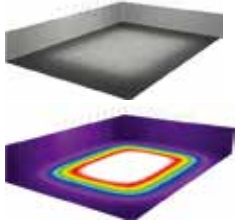
MN	1.02.91696	
PN	HK-173@09-42X150-5050-#0-1g-12_PC	
Material	PC	
Efficiency	90%	
LED	3535/5050 LED	
Light distribution type	TYPE II 42°X150°	
		TNB Road


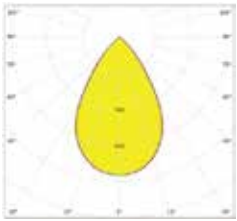
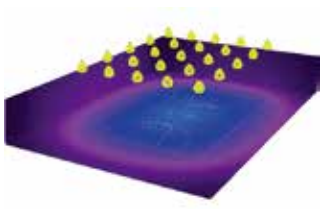
MN	1.02.81453							
PN	HK-173@08-140-5050-#0-1g-12_PC HK-173@08-140-5050-#0-1g-12_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA)							
LED	3535/5050 LED							
Light distribution type	TYPE V 140°							
		<table border="1"> <tr> <td>Height</td> <td>25m</td> </tr> <tr> <td>Mode</td> <td>Center layout light</td> </tr> <tr> <td>Square uniformity</td> <td>0.8</td> </tr> </table>	Height	25m	Mode	Center layout light	Square uniformity	0.8
Height	25m							
Mode	Center layout light							
Square uniformity	0.8							




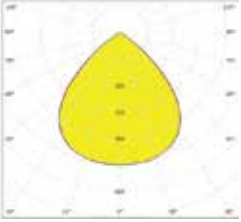
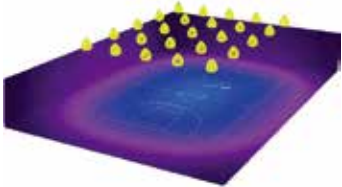
# GALAXY 28 in 1



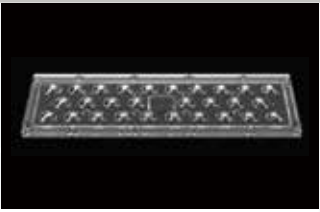
MN	1.01.81472		
PN	HK-260@11-30-5050-20-1g-28_PC HK-260@11-30-5050-20-1g-28_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3535/5050 LED		
Light distribution type	30°		
		Height	12m
		Mode	Lighting on top
		Court uniformity	0.7

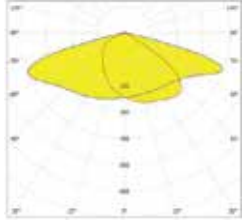
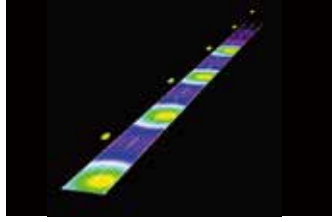
MN	1.01.81448		
PN	HK-260@09-60-5050-#0-1g-28_PC HK-260@09-60-5050-#0-1g-28_PMMA		
Material	PC/PMMA		
Efficiency	90% (PC) /93% (PMMA) without glass		
LED	3535/5050 LED		
Light distribution type	60°		
		Height	12m
		Mode	Lighting on top
		Court uniformity	0.7

MN	1.01.81447	
PN	HK-260@07-90-5050-#0-1g-28_PC HK-260@07-90-5050-#0-1g-28_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA) without glass	
LED	3535/5050 LED	
Light distribution type	90°	





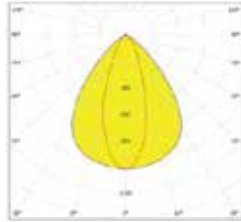
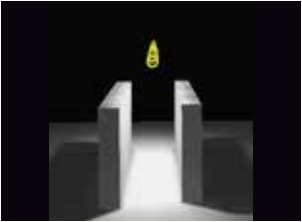
Height	12m
Mode	Lighting on top
Court uniformity	0.7

MN	1.02.81420	
PN	HK-260@08-150X80-5050-#0-1g-28_PC HK-260@08-150X80-5050-#0-1g-28_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA)	
LED	3535/5050 LED	
Light distribution type	TYPE II_M 150°X80°	

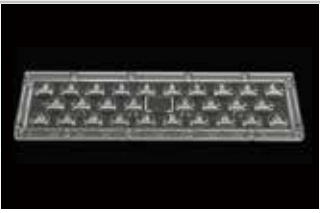



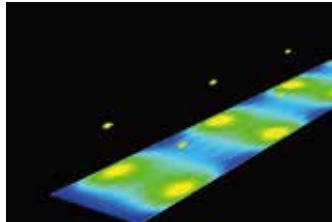
Proportion	4.5:1
Road width	7m (2 lanes)
Mode	Unilateral
Lighting type	ME3a

MN	1.02.81480	
PN	HK-260@10-40X80-5050-00-1g-28_PC HK-260@10-40X80-5050-00-1g-28_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) /93% (PMMA)	
LED	3535/5050 LED	
Light distribution type	TYPE I 40°X80°	

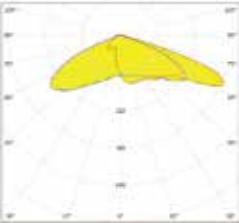




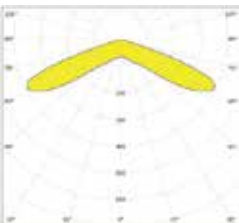
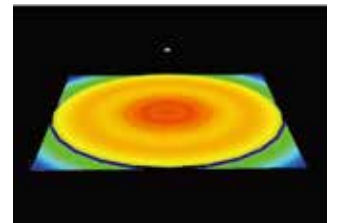
Height	7m
Mode	Top cloth lamp
Corridor uniformity	0.9

MN	1.02.81498	
PN	HK-260@10-65X152-5050-#0-1g-28_PC HK-260@10-65X152-5050-#0-1g-28_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) / 93% (PMMA)	
LED	3535/5050 LED	
Light distribution type	TYPE III 65°X152°	

Proportion	4:1
Road width	22.5m (6 lanes)
Mode	Bidirectional symmetry
Lighting type	ME3a

MN	1.02.81492							
PN	HK-260@10-30X140-5050-#0-1g-28_PC HK-260@10-30X140-5050-#0-1g-28_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA)							
LED	3535/5050 LED							
Light distribution type	TYPE IV 30°X140°							
		<table border="1"> <tr> <td>Height</td> <td>11m</td> </tr> <tr> <td>Mode</td> <td>Four corner arrangement lights</td> </tr> <tr> <td>Court uniformity</td> <td>0.9</td> </tr> </table>	Height	11m	Mode	Four corner arrangement lights	Court uniformity	0.9
Height	11m							
Mode	Four corner arrangement lights							
Court uniformity	0.9							

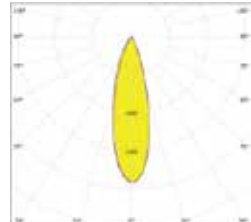
MN	1.02.81465							
PN	HK-260@08-140-5050-#0-1g-28_PC HK-260@08-140-5050-#0-1g-28_PMMA							
Material	PC/PMMA							
Efficiency	90% (PC) /93% (PMMA)							
LED	3535/5050 LED							
Light distribution type	TYPE V 140°							
		<table border="1"> <tr> <td>Height</td> <td>25m</td> </tr> <tr> <td>Mode</td> <td>Center layout light</td> </tr> <tr> <td>Square uniformity</td> <td>0.8</td> </tr> </table>	Height	25m	Mode	Center layout light	Square uniformity	0.8
Height	25m							
Mode	Center layout light							
Square uniformity	0.8							



# GALAXY 56 in 1




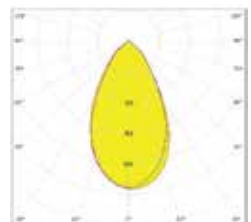
MN	1.01.81428	
PN	HK-260@09-30-3030-20-1g-56	
Material	PC	
Efficiency	90% (PC) without glass	
LED	3030/3535 LED	
Light distribution type	30°	

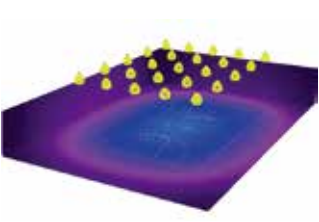





Height	12m
Mode	Lighting on top
Court uniformity	0.7

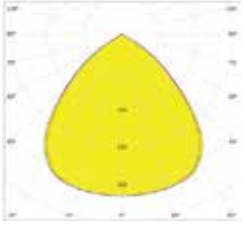
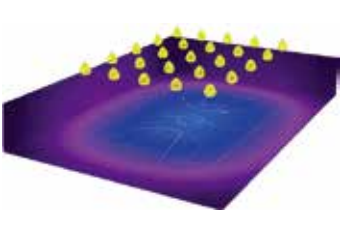
MN	1.01.81425	
PN	HK-260@07-60-3030-#0-1g-56	
Material	PC	
Efficiency	90% (PC) without glass	
LED	3030/3535 LED	
Light distribution type	60°	






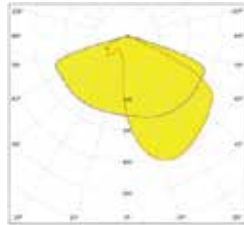
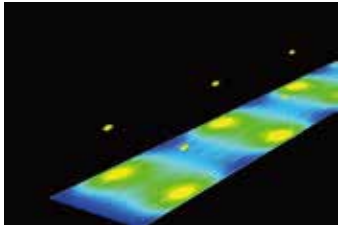
Height	12m
Mode	Lighting on top
Court uniformity	0.7

MN	1.02.81426	
PN	HK-260@07-90-3030-#0-1g-56	
Material	PC	
Efficiency	90% (PC) without glass	
LED	3030/3535 LED	
Light distribution type	90°	





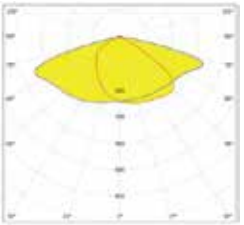
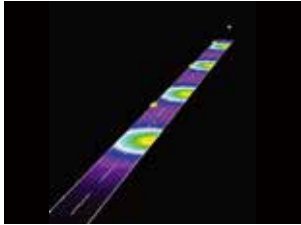
Height	12m
Mode	Lighting on top
Court uniformity	0.7

MN	1.02.81574	
PN	HK-260@07-63X150-3030-20-1g-56_PC	
Material	PC	
Efficiency	90%	
LED	3030/3535 LED	
Light distribution type	TYPE III 63°X150°	





Proportion	3.5:1
Road width	22.5m (6 lanes)
Mode	Bidirectional symmetry
Lighting type	ME2

MN	1.02.81419	
PN	HK-260@07-150X80-3030-#0-1g-56	
Material	PC	
Efficiency	90%	
LED	3030/3535 LED	
Light distribution type	TYPE II 150°X80°	

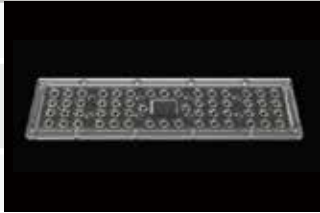
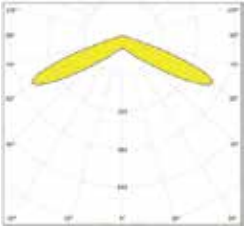
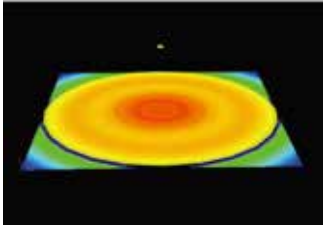



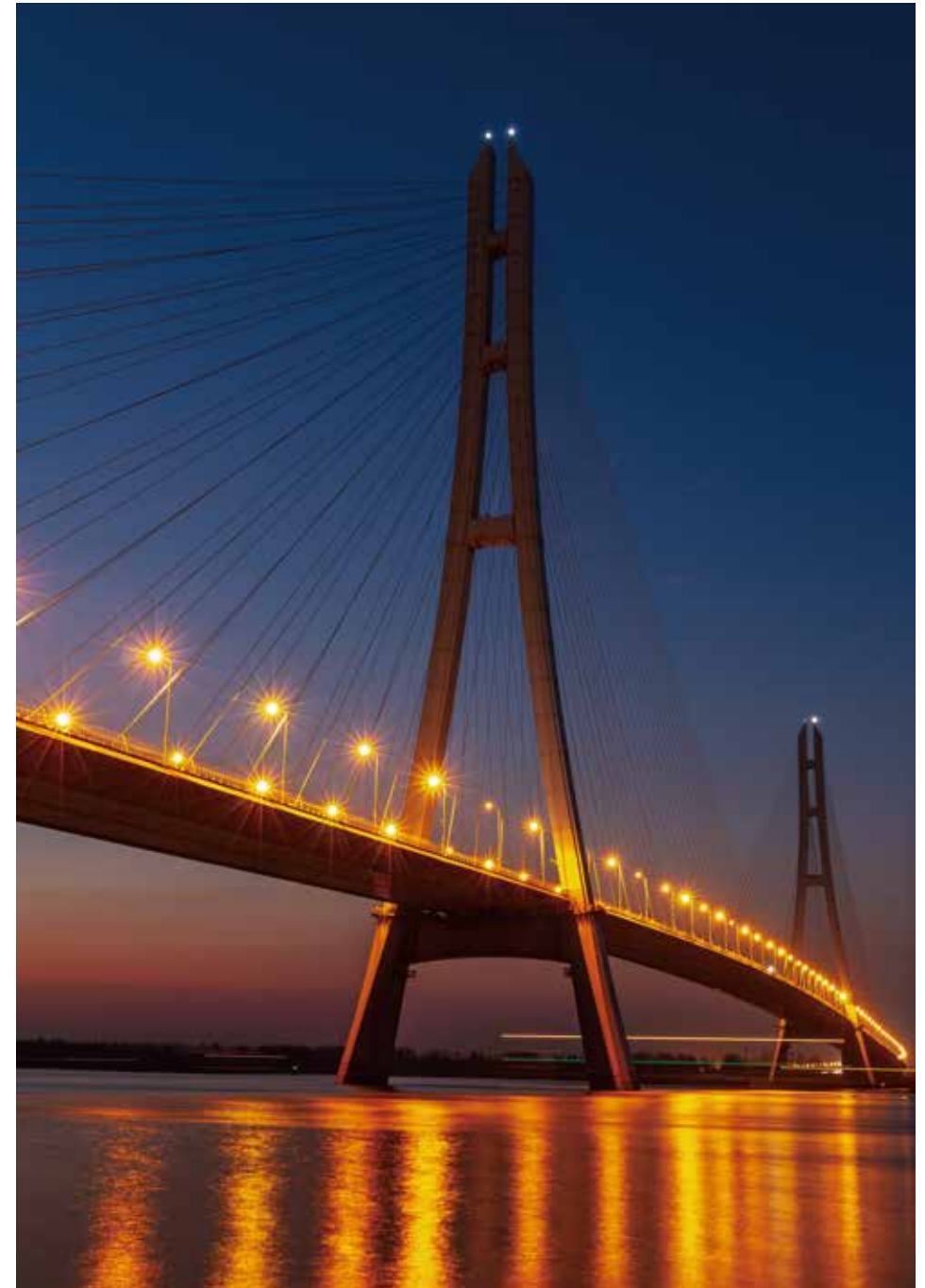
Proportion	5:1
Road width	7m (2 lanes)
Mode	Unilateral
Lighting type	ME4b

MN	1.02.81633	
PN	HK-260@07-13X138-3030-#0-1g-56_PC	
Material	PC	
Efficiency	90%	
LED	3030/3535 LED	
Light distribution type	TYPE IV 13°X138°	



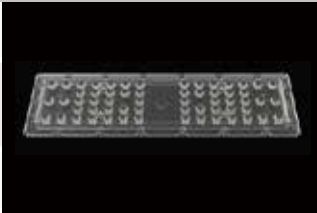

Height	11m
Mode	Four corner arrangement lights
Court uniformity	0.9

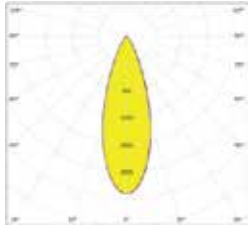
MN	1.02.81424		
PN	HK-260@07-138-3030-#0-1g-56_PC		
Material	PC		
Efficiency	90%		
LED	3030/3535 LED		
Light distribution type	TYPE V 138°		
		Height	25m
		Mode	Center layout light
		Square uniformity	0.8

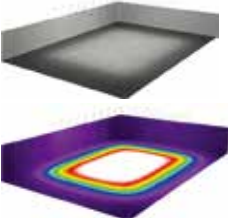


# GALAXY 60 in 1

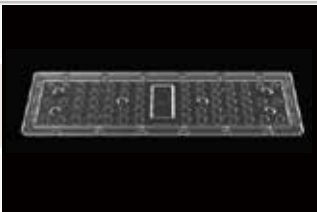


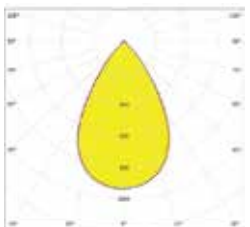
MN	1.01.91883	
PN	HK-252@09-36-3030-20-1g-60	
Material	PC	
Efficiency	90% (PC) without glass	
LED	3030/3535 LED	
Light distribution type	36°	

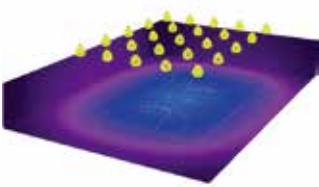




Height	12m
Mode	Lighting on top
Court uniformity	0.7

MN	1.01.91884	
PN	HK-252@07-60-3030-#0-1g-60	
Material	PC	
Efficiency	90% (PC) without glass	
LED	3030/3535 LED	
Light distribution type	60°	





Height	12m
Mode	Lighting on top
Court uniformity	0.7

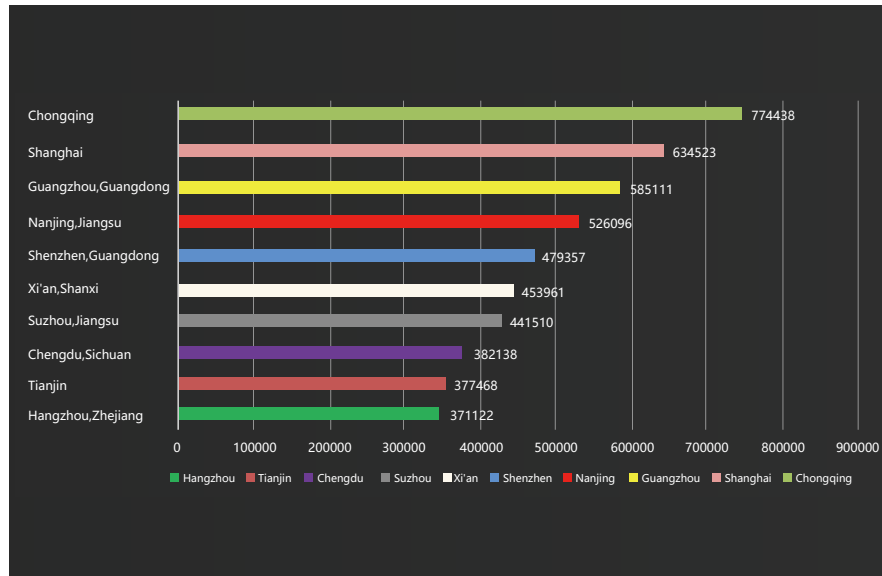
MN	1.01.91882	
PN	HK-252@09-24-3030-20-1g-60	
Material	PC	
Efficiency	90% (PC) without glass	
LED	3030/3535 LED	
Light distribution type	24°	
<p>It can be used for stadium lighting, plaza lighting, wharf lighting, etc</p>		

MN	1.02.91803									
PN	HK-252@07-150X70-3030-#0-1g-60									
Material	PC									
Efficiency	90% (PC) without glass									
LED	3030/3535 LED									
Light distribution type	TYPE II 150°X70°									
<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22.5m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME4a</td> </tr> </table>			Proportion	3.5:1	Road width	22.5m (6 lanes)	Mode	Double row symmetry	Lighting type	ME4a
Proportion	3.5:1									
Road width	22.5m (6 lanes)									
Mode	Double row symmetry									
Lighting type	ME4a									

MN	1.01.91885							
PN	HK-252@07-90-3030-#0-1g-60							
Material	PC							
Efficiency	90% (PC) without glass							
LED	3030/3535 LED							
Light distribution type	90°							
<table border="1"> <tr> <td>Height</td> <td>12m</td> </tr> <tr> <td>Mode</td> <td>Lighting on top</td> </tr> <tr> <td>Court uniformity</td> <td>0.7</td> </tr> </table>			Height	12m	Mode	Lighting on top	Court uniformity	0.7
Height	12m							
Mode	Lighting on top							
Court uniformity	0.7							

MN	1.01.91886	
PN	HK-252@07-135X100-3030-#0-1g-60_PC HK-252@07-135X100-3030-#0-1g-60_PMMA	
Material	PC/PMMA	
Efficiency	90% (PC) / 93% (PMMA)	
LED	5050/3535 LED	
Light distribution type	135°X100°	
<p>Used for tunnel lighting, which can achieve high uniformity requirements</p>		

# Let's start with some data



According to the information from the Ministry of Housing and Urban-Rural Development, if we add up the street lights in the 10 largest cities in China, there are a total of 5 million street lights, each of which is calculated at 150W and lights up for 12 hours a day.

The annual electricity consumption is

$$5000000 * 0.15 * 12 * 365 = 3285000000 \text{ KW/h}$$

In the case of thermal power generation, it needs to consume 1095000 tons of anthracite, and the corresponding carbon dioxide emission is

$$3413115 \text{ tons.}$$

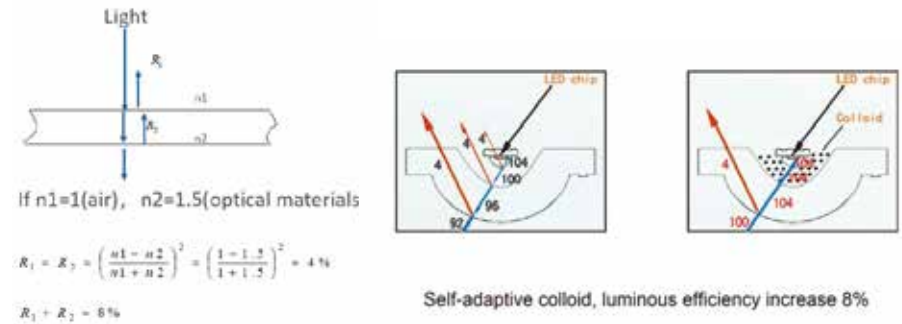
After using the Hengkun adaptive colloid technology, the carbon dioxide

$$\text{emission can be reduced to } 3413115 * 0.08 = 273049 \text{ tons}$$

(excluding the carbon dioxide produced by the saved 8 points of lighting materials)

# Air zero interval-Adaptive colloid technology

When light passes through two materials with different reflectivity, different reflections will occur, resulting in loss of light energy. This loss is about 8%, so the efficiency of a common lens is 90-92%



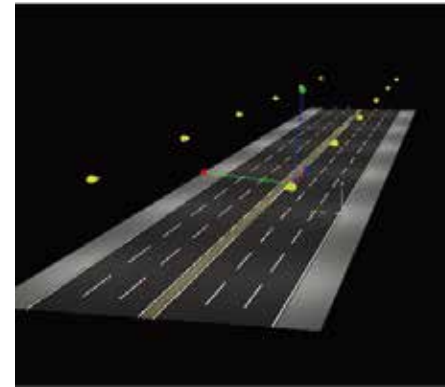
# Conventional optical VS Dispensing optical

According to the calculation of lighting 12 hours a day, the annual power saving of a single lamp is 35KW/h. Assuming that there are 100,000 lamps in the city, the total electricity saving is 3,500,000 KW/h. If one kilogram of standard coal generates 3 kWh of electricity, It can save 1,166 tons of coal every year. According to the best anthracite 95% efficiency standard, the carbon emissions of 3,117kg per ton can save 3,634 tons of carbon emissions.

	Constant light flux	Power	consumption/year
Using dispensing technology	17000	100W	438KW/h
Not using dispensing technology	17000	108W	473.04KW/h

# Real road data

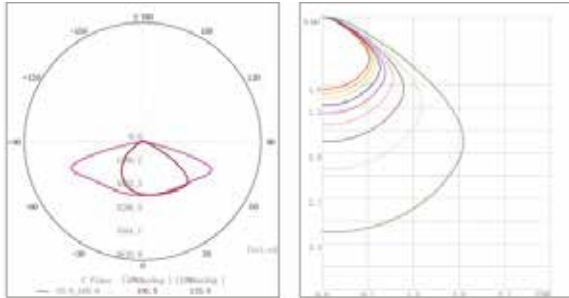
Light source parameters		Lamp parameters	
Nominal luminous flux of light source (lm) : 17092.0001m	Nominal luminous flux of lamp (lm) : 17092.248	Downward luminous flux and proportion: 16817.738m 98.39%	Luminaire energy efficiency ratio(1m/w): 169.903
Nominal power of light source (W) :	Nominal power of lamp (%) : 100.00	Upward luminous flux and proportion: 274.5101m 1.61%	
Light source rated voltage (V) :	Luminaire energy efficiency ratio (1m/w) : 169.903	76°Flashing area (m2) :	Maximum Strong Light(cd): 8830.859
Measured power of light source (w) : 100.600	Maximum bright light (cd) : 8830.859	Not suitable for glare: 0.000	
Number of light sources in the lamp: 1	Maximum light intensity (°) : C = 295.0 Y = 72.0	IES classification: Type IV	
Measured electrical parameters of light source (VAPP) : 22.318.465	Rate peak angle (50% lmax) : L = 35.5, R = 78.1	Long axis classification: Very Short	
Light source size (w*L*H) : 0.05a*0.05b*0.000m	Diffusion angle (10% lmax) : 156.4 (°)	Cutoff light classification: Cutoff	



In urban road lighting, most roads have wider sidewalks or side roads. We simulate and compare a practical case of Liyang Optoelectronics. The road is a two-way 6-lane with an isolation belt, and there are 4M sidewalks on each side. It is a typical urban expressway. In this road, we use 100W lamps to meet the road ME2 illuminance standard, the sidewalk S1 level.

C plane light distribution curve

Isoilluminance curve in CO space



The light efficiency of Liyang street lamp using HercuLux photoelectric dispensing technology is actually 170LM /W, and the light flux reaches 17000LM at 100W.

## List of Assessment Scopes

### 2 Evaluation area Road 2

Length: 35.000m, Width: 11.250m

Grid: 12x9

Appurtenant street environment factors: Road 2

Tar: R3, Q0: 0.070

Selected Illumination Level: ME2

(All photometric requirements have been met)

Calculated actual data:	Average brightness [cd/m²]	U0	U1	T1 [%]	Peripheral illuminance coefficient
Data set by level:	1.54	0.73	0.88	10	0.84
Satisfied/ not satisfied:	≥1.50	≥0.40	≥0.70	≤10	≥0.50

### 3 Evaluation area Sidewalk 1

Length: 35.000m, Width: 4.000m

Grid: 12x3

Appurtenant street environment factors: Sidewalk1

Selected Illumination Level: S1

Additional ES illumination level (hemispheric illumination): ES4

(All photometric requirements have been met)  
(Some photometric requirements are not met)

Calculated actual data:	Minimum illumination [lx]	Minimum illuminance [lx]	Minimum illuminance (half-cylindrical illuminance)
Data set by level:	18.03	8.64	3.19
Satisfied/ not satisfied:	≥15.00	≥5.00	≥3.00

### 4 Evaluation area Sidewalk 1

Length: 35.000m, Width: 4.000m

Grid: 12x3

Appurtenant street environment factors: Sidewalk1

Selected Illumination Level: S1

Additional ES illumination level (hemispheric illumination): ES4

(All photometric requirements have been met)  
(Some photometric requirements are not met)

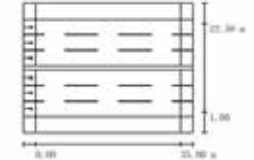
Calculated actual data:	Minimum illumination [lx]	Minimum illuminance [lx]	Minimum illuminance (half-cylindrical illuminance)
Data set by level:	18.03	8.64	3.17
Satisfied/ not satisfied:	≥15.00	≥5.00	≥3.00

## Street cross-section

Sidewalk 2	(width: 4.000m)
road 2	(width: 11.250m, Number of running paths: 3, 柏油: R3, q0: 0.070)
Island of separation 1	(width: 1.000m, height: 0.000m)
road 1	(width: 11.250m, Number of running paths: 3, 柏油: R3, q0: 0.070)
Sidewalk 1	(width: 4.000m)

Maintenance factor: 0.90


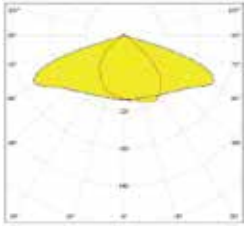
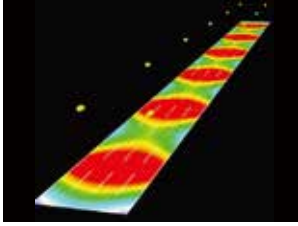
## Lamp arrangement

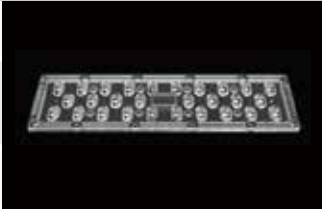
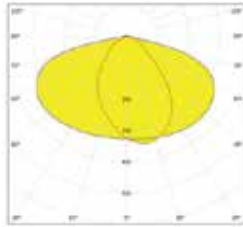
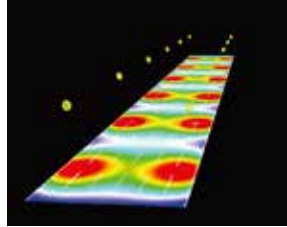


If we use a non-dispensing lamp in the same situation, the required power is 108W. In this case, we not only need to increase the energy consumption by 8%, but also need to match a higher drive power for the 8% luminous flux, larger heat dissipation area and corresponding lamp weight. Therefore, we not only reduce energy consumption by 8%, but also save 8% in lighting materials, achieving a 16% reduction in energy consumption and in line with the concept of sustainable development.

# TURBINE



MN	1.02.92130									
PN	HK-173@08-150X100-5050-#0-0g-12									
Material	PC									
Efficiency	98% (PC) without glass									
LED	5050 LED									
Light distribution type	LUXEON 5050 ROUND									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>14m (4 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME4b</td> </tr> </table>	Proportion	3.5:1	Road width	14m (4 lanes)	Mode	Double row symmetry	Lighting type	ME4b
Proportion	3.5:1									
Road width	14m (4 lanes)									
Mode	Double row symmetry									
Lighting type	ME4b									

MN	1.02.02514									
PN	HK-260@09-150X70-5050-#0-0g-28-V									
Material	PC									
Efficiency	98% (PC) without glass									
LED	5050 LED									
Light distribution type	LUXEON 5050 ROUND									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>22.5m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME2</td> </tr> </table>	Proportion	3.5:1	Road width	22.5m (6 lanes)	Mode	Double row symmetry	Lighting type	ME2
Proportion	3.5:1									
Road width	22.5m (6 lanes)									
Mode	Double row symmetry									
Lighting type	ME2									

MN	1.02.71179									
PN	HK-260@09-150X70-5050-#0-0g-28									
Material	PC									
Efficiency	98% (PC) without glass									
LED	5050 LED									
Light distribution type	LUXEON 5050 ROUND									
		<table border="1"> <tr> <td>Proportion</td> <td>3.5:1</td> </tr> <tr> <td>Road width</td> <td>20m (6 lanes)</td> </tr> <tr> <td>Mode</td> <td>Double row symmetry</td> </tr> <tr> <td>Lighting type</td> <td>ME2</td> </tr> </table>	Proportion	3.5:1	Road width	20m (6 lanes)	Mode	Double row symmetry	Lighting type	ME2
Proportion	3.5:1									
Road width	20m (6 lanes)									
Mode	Double row symmetry									
Lighting type	ME2									

# CUSTOMIZED SOLUTIONS

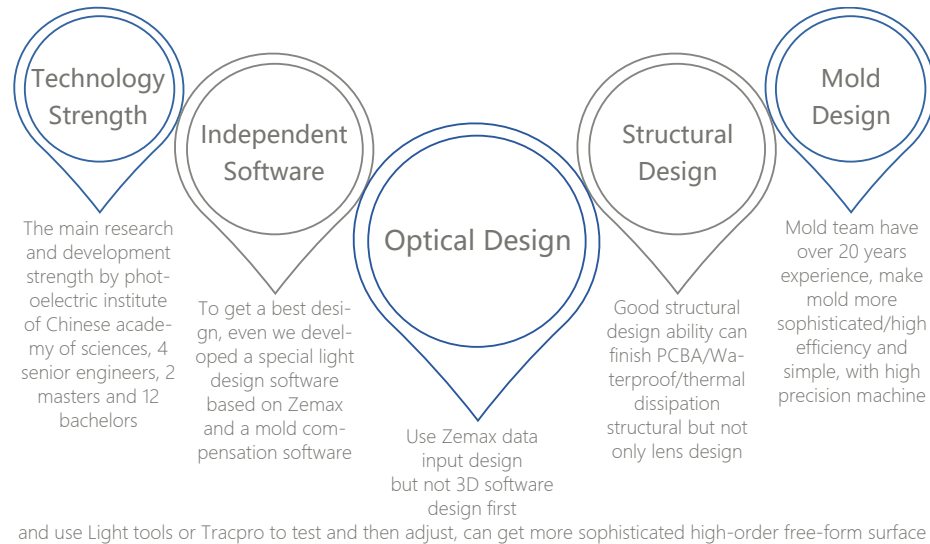
In addition to the standard mold products introduced in the catalogue, HercuLux can also provide customized solution services. With a professional design team and a complete industrial chain, tailor-made for customers, seeking the best solution for the project.

## Extended Polynomial Lens

The Extended Polynomial surface shape is defined by:

$$z = \frac{cr^2}{1 + \sqrt{1 - (1+k)c^2r^2}} + \sum_{i=1}^N A_i E_i(x, y).$$

HercuLux adopts imaging optical design software: Zemax to do data input level design to achieve more accurate chip level design.



**Quick response for Design: Optical design → Structural design → Optical simulation → Mold assess → Injection molding analysis**

Optical design, structural design, mold design, injection molding production, quality inspection, HercuLux has a complete industrial chain to ensure that optical products can be independently controlled in each link, so that product quality, appearance, performance and other aspects are the best state!

## Custom Process

### Kindly provide detail requirements:

1. Lens size requirement;
2. Optical requirement(FWHM),Target IES will be better;
3. Lens Efficiency;
4. Assembly drawing sharing;
5. LED;
6. Material: PC or PMMA;
7. Application;
8. Other special information.

### Optical Design Report:

Our R&D will process to optical designing according to your optical requirement, designing in 2-5 days and we will share you the design report.

### Structure Design:

If you are satisfied with the optical report, we could process to structure designing. Please kindly provide the assembly drawing, structure drawing and any file is helpful for us to design structure.

### Structure Confirm:

Confirm the structure (Step file): 1. Whether the lens structure conflict with the PCB; 2. Whether the lens structure conflict with the Lamp's structure; 3. Whether the lens structure conflict with the component location; 4. etc.

### Quotation:

Quotation for Mold and product: 1. It depends on the mold size and its complexity; 2. Quotation includes Test Mold fee and Final Mold fee and price for unit product. (Test Mold is not absolutely necessary, it is according to the complexity of the mold.)

### Customer PO Arrangement:

After you confirm the quotation, please kindly share your PO.

### PI and Payment Arrangement:

We will arrange PI and we process to payment issue. After payment is done, we will process to mold production.

### Mold Production:

We need 30-35 working days to produce the mold, then will send you the samples which mold produce when the mold finished.

### Confirm The Samples:

Whether the samples is same with the optical design and structure design.

**Mass Production:** If the samples checking is OK, Procedure as below, 1. Your mass order; 2. Our PI arrangement; 3. Your payment arrangement; 4. Mass production.

Self-built 20000 m<sup>2</sup> HercuLux park



More than 100 precision injection machines



Complete mold processing chain with a constant temp precision processing area



Self-built PC Vacuum Aluminum Plating workshop, One Spraying Production Line, Two Vacuum Plating Machine, 100000 Level Purification Workshop

