

## SP90 LED Street Light Brief Introduction



**LED Street Light, shocked appeared in front of us, 3 major revolutionary and innovative technologies have created a new Times of LED lighting!**

- I. Super-rate high-power LED to replace the traditional light source, green, energy efficient, it is green, environmental protection and energy efficiency;**
- II. Rectangular beam pattern design, realized high intensity, high uniformity and eliminate glare;**
- III. 360-degree Rotation Lamp Holder Design, replace the conventional lamp directly, save cost, maintains easily.**

With generous appearance, novel and unique, SP90 was designed for the road lighting demand, fully meet the special requirements of road lighting. This product adopt the High Power LED as the light source, using dozens of high power 1W LED. With the world's leading optical allocation, advanced thermal, structural and circuit design, it is a highly cost-effective product.

BBE LED adopt the high reliability eutectic welding LED packaging process, the thermal conductivity, electrical conductivity, thermal expansion and mechanical soundness standard is higher than the ordinary silver plastic packaging. Excellent heat dissipation design, LED junction temperature can be controlled in an ideal temperature ( $T_J < 70^\circ \text{C}$ ). Fully guarantee the long life of the LED. High power factor and low harmonic distortion reduce the power loss on transmission lines, avoid the high frequency interference contamination for the power network. Lampshade (lens) using engineering plastics PC, with resisting acid corrosion, smoke corrosion, ultraviolet aging characteristics.

### High Power LED Street Light-SP90

**Apply to Replace:** High-pressure mercury lamp, high pressure sodium lamp, metal halide lamps, energy-saving lamps

**Apply to Install:** Expressway, highway, roads, sub-roads, sidewalks, square sports ground, industrial plants and other advertises lighting



## SP90, High Power LED Street Light Functions and Features

- 1 **Revolutionary Photometric Design** - The world's first dedicated optical system (rectangular beam focusing lens). Reasonable control of the light distribution, spot rectangular beam pattern, and ensure an ideal uniformity of brightness on the road surface;
- 2 **Unique Integrated Lens and Lampshade Design** - Array Lens play a protective and spot light role, avoid wasteful duplication of light and reduce the loss of light, also reduce the weight of the product and enable simplified structure;
- 3 **Creative Design of the Radiator and Lampholder Integration** - Fully protect LED life and heat dissipation requirements, satisfied with the structure and design of LED Lights fundamentally, with the most distinctive features of LED Lights(see attached picture);
- 4 **Standard E40, 360-degree Rotation Lamp Holder** - It can still rotate after full tightening the lamp holder arbitrarily, adjust to ensure the best direction face to the ground.
- 5 **Direct Replacement Light Source Design** - Direct replace the existing high-pressure mercury lamp, high pressure sodium lamp, metal halide lamps, no need to change the original lamp shell.
- 6 **Intelligent Current Control** - Intelligent current control, whatever any deviant situation, it is able to achieve the precision constant current, ensure the LED can work under the secure current
- 7 **No Adverse Glare** - Eliminate the glare caused by the adverse ordinary lights glare and visual fatigue sight interference, improve driving safety, reduce the incidence of traffic accidents, fully embodies the spirit of "People-oriented Technology" in this product;.
- 8 **No Light Pollution** - Light Distribution designed for road lighting, in addition to illuminate the path and will not illuminate the road outside the region. Eliminate the interference signal by the residents of the light into the rest room;
- 9 **No High-voltage, No Dust Adsorption** - Eliminate the high-voltage adsorb the dust cause the lampshade become dark, reduce the brightness;
- 10 **No High-temperature, No Aging Yellow Lampshade** - Eliminate baking the traditional lampshade which cause aging yellow, shortened life expectancy and decrease the brightness;
- 11 **Start Without Delay** - Reach the normal brightness and do not have to wait when switch on, eliminate a long process of starting of the traditional street lights;
- 12 **No Strobe** - Eliminate the visual fatigue which caused by the strobe lights of the traditional street lamps;
- 13 **Impact Resistance, Shock-proof, Without Ultraviolet (UV) and Infrared (IR) Radiation** - No filament and glass frames, avoid break of the traditional lamp, without harm to the human body;
- 14 **High Color Index, Nice Coloration** - To show the true colors and more brighter;
- 15 **Multiple Color Temperature Options** - Color temperature to meet the needs of different occasions, eliminated the low color temperature of the sodium lamp which cause the hypnotic mood and high color temperature of the mercury lamp which cause the depressed mood, observers will feel more comfortable;
- 16 **Tremendous Energy Saving** - Used the ultra high power, high brightness LED light source, together with the high power efficiency power supply, which can save energy 80% than the conventional sodium and mercury lamps;

# High Power LED Street Light-SP90

- 17 **Long Life, Up To 50,000 Hours** - (Working for 10 hours a day, can be used for more than 13 years), is 5-10 times working life than a traditional sodium or mercury lamp;
- 18 **Green and Environmental Protection** - no lead, no mercury, no environmental pollution;
- 19 **Universal Input Voltage** - 85-264VAC full voltage range constant, constant-current PWM technology, high efficiency, low-heat, high-precision constant current;
- 20 **No Pollution to Power Network** - Power factor $\geq 0.9$ , THD $\leq 20\%$ , EMI apply with the global universal index, reduce the power loss and transmission lines to avoid contamination of the network of high frequency interference;
- 21 **Work Under Low-voltage and Low-Heat**, Safe and Reliable - LED junction temperature can be controlled under an ideal temperature ( $T_J < 60^\circ\text{C}$ ,  $T_a = 25^\circ\text{C}$  ambient temperature);
- 22 **Perfect Combination With Solar Energy** - Fully exert the advantage of the LED work under low voltage and environmental work, according to the local solar energy resources, electricity and solar power can also be combined. To achieve the best cost performance and high reliability customers
- 23 **High Luminous Efficiency** - LED luminous efficiency of the existing conditions is  $\geq 65\text{lm/w}$ , with the rapid increase LED brightness, when the luminous efficiency reach  $150\text{lm/w}$ , the 400W sodium lamp will be replace by the 100W LED lamp, the luminous efficiency will reach  $300\text{lm/w}$  eventually;
- 24 **Have a number of patents for inventions and utility model patents;**



## SP90, High Power LED Street Light Main Technical Parameters

Item \ Model	SP90
Input Voltage	AC 85 ~ 264 V (*)
Frequency Range	47 ~ 63 Hz
Power Factor(PF)	>0.9
Total Harmonic Distortion(THD)	<20% (*)
Power Factor	83 %
Working Voltage	24V DC
LED Consumption	32 W
System Consumption	38 W
LED Luminous Efficiency	≥80 lm/w
LED Initial Flux	2,500 lm ( Tj=25℃ )
LED Maintain Flux	2,300 lm ( Tj=70℃, Ta=25℃ )
Lamp's Flux	2,100 lm ( Tj=70℃, Ta=25℃ )
Lamp's Efficiency ( % )	>90 %
Illumination ( E )	≥13 lux (Height=6 m ) ≥7.5 lux (Height=8 m ) ≥4.5 lux (Height=10 m ) ≥3 lux (Height=12 m )
Effective Illuminated Area	20×8 m (Height=6 m ) 26×10 m (Height=8 m ) 33×13 m (Height=10 m ) 40×16 m (Height=12 m )
(*) When the THD<15%, the input working voltage must be 110VAC(85-135VAC) or 220VA(175-265VAC)	

# High Power LED Street Light-SP90

Color Temperature	Pure White: 5,000 ~ 7,000 K. Warm White: 3,000 ~ 4,000K
Color Index(CRI)	Ra>75
Light Source	High Power LED ( 1 Watt )
Light Distribution Curve / Beam Pattern	Asymmetric (Bat Wing) / Rectangular Beam
The Highest Light Intensity Angle	The Horizontal Axis: 110°, The Vertical Axis : 45°
Beam Angle	The Horizontal Axis: 120°, The Vertical Axis : 60°
Junction Temperature ( Tj )	70 ° C ± 1 0% ( Ta= 25 ° C )
System Resistance ( Rja )	1.4 ° C / W
Working Temperature	- 30 ° C ~ 40 ° C
Working Humidity	10 % ~ 90 % RH
Storage Temperature	10 ° C ~ 85 ° C
Working Life	> 50,000 Hrs
Light Body & Lampshade Material	Aluminum Alloy and PC
Lamp Base	E40
The Dimensions(Units : mm)	90 ( Ø ) X 275 ( L )
Net Weight (g)	1 kg
IP Rating	IP 60

## ProductPackagingInformation:

Item Model	Inner Packing		Outer Packing				
	Q'ty (pc)	N.W. (G)	Q'ty (pc)	N.W. (Kg)	G.W. (Kg)	Dimension (mm)	Volume (m3)
SP90	1	1,125	20	22.5	24.0	555x445x285	0.08

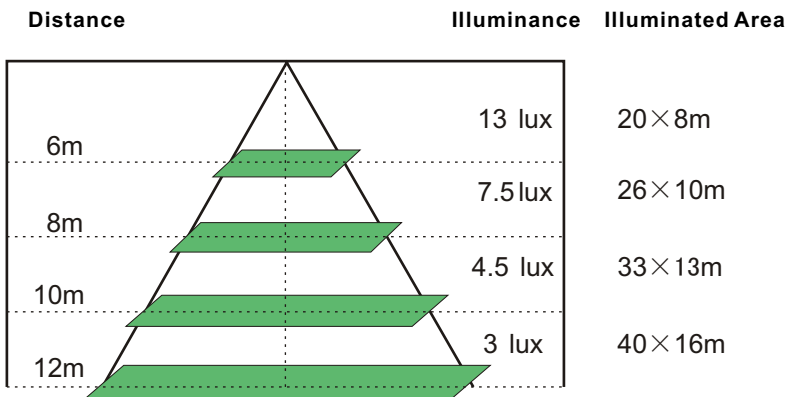




## SP90 - High Power LED Street Light Lamp Source Photometric Performance

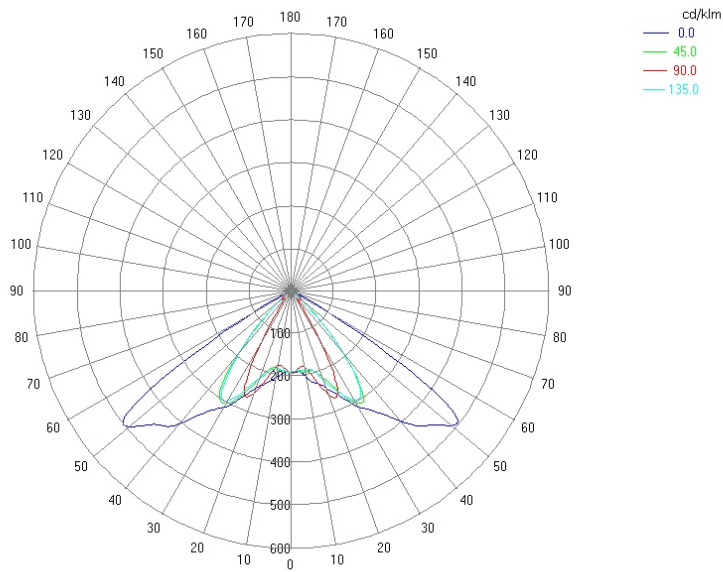
Bat-Wing beam Pattern of the distribution curve, also can be changed by different section's demand. Rationally control the distribution to be a rectangular beam pattern. When the installation height = 6m, the beam pattern is 20x8m rectangular, and the radiation efficiency is more than 70% in the effective region, the total transmittance is more than 90%, the greatest extent possible to reduce the loss of light, the LED light has been fully utilized. The illumination uniformity is very good in the effective irradiation region, even better than 0.5, higher than the highest grades of 0.4 of the state road's standards. The edge of the beam pattern is very clear and slide, no adverse glare out of the effective radiation region, will not cause any light pollution, it is an idea cut-lighting lamp. Satisfy the requirements of the road lighting or other special lighting, which can be widely used in the special requirements such as street lighting, advertising lighting, etc., it is a green, energy-saving, environmentally friendly lighting product.

### I. SP90, LED Street Light Lamp Source illuminance Distribution at Various Altitudes

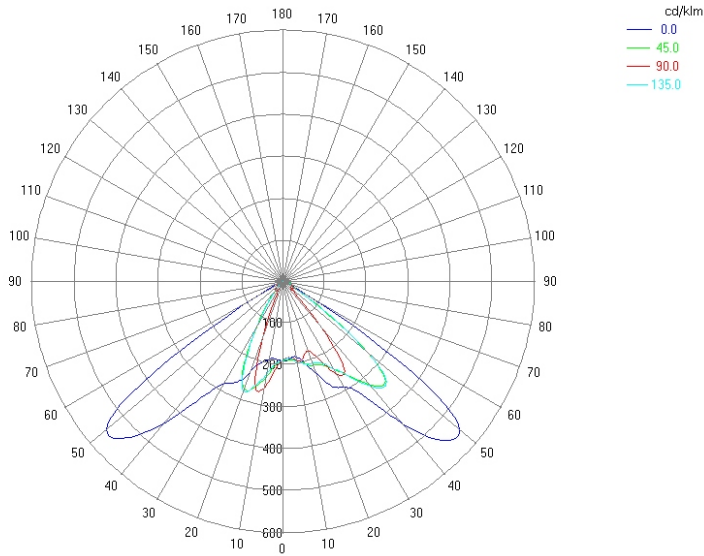


II. Distribution Curve

1 Lamp's Plane Installation

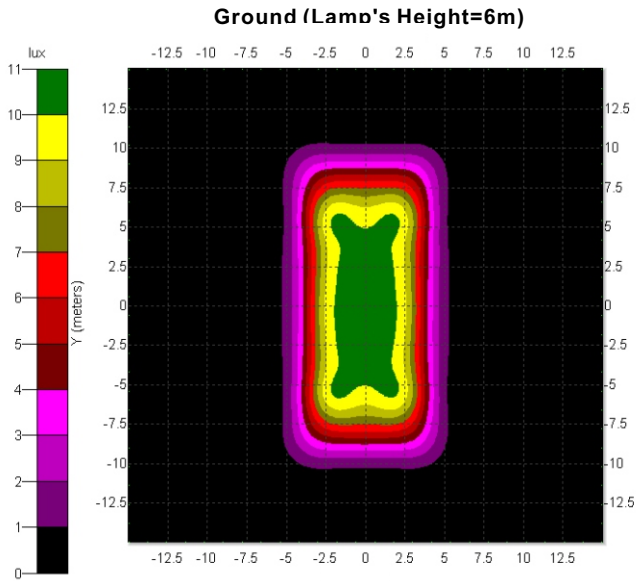


2 Lamp's Inclined Installation

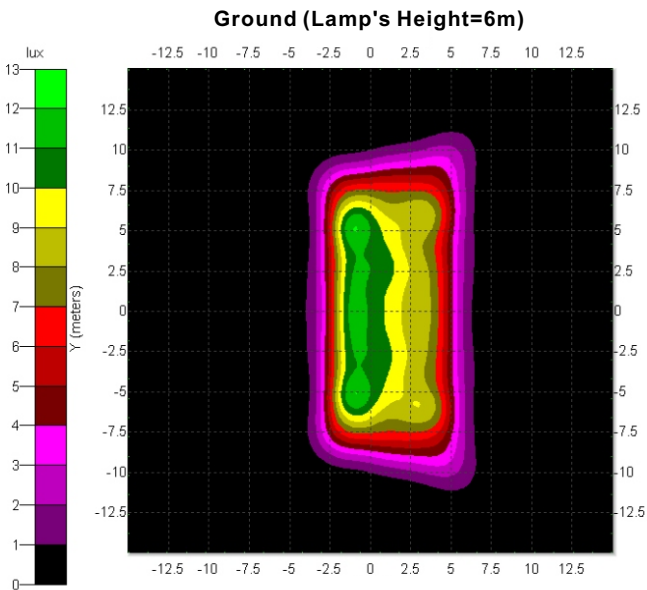


## III. Plane Equal Illuminance Distribution

### 1 Lamp's Plane Installation



### 2 Lamp's Inclined Installation





## IV. Actual Lighting Effects (Beam Pattern)

### 1 Lamp's Plane Installation



### 2 Lamp's Inclined Installation



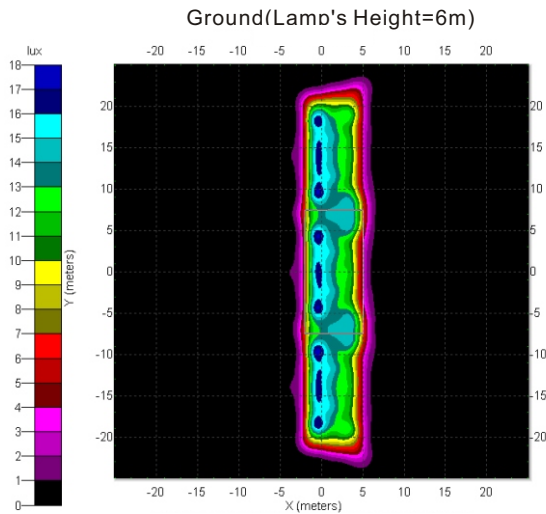
The Beam Pattern is rectangular (rectangle), good illumination uniformity, the brightness difference is very little between the spot of center and periphery. Almost no difference in the direction of extending the road completely with the continuous extension of the road, it is the ideal lighting lamps for road lighting.

## V. Actual Effects On the Road:

### 1 Unilateral Road Layout

Below picture is we install the lamps on one side of the road, 3 lamps' illumination map and beam pattern, in a single lamp's effective covered regional(plane area) is very uniform illumination, 7M (2 lanes) width intensity values: 18 lux maximum, 7 lux minimum, Uniformity Value > 0.5. The brightness difference is very little between the center of the beam pattern and edge, almost no difference in the direction of the road extension, fully consistent with the road for the extended, reached the ideal road lighting effects.

#### Plane Equal Illuminance Distribution



#### Actual Lighting Effects (Beam Pattern)

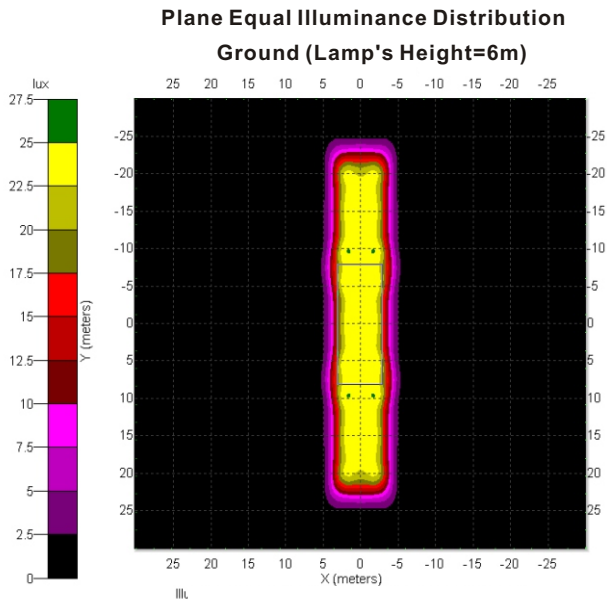


#### Unilateral Road Layout Related Parameters

- 1.Lamp Model: SP90
- 2.Lamp Power Consumption: 38W
- 3.Lamp Height: 6m
- 4.Lamp Pole Space: 15m
- 5.Lamp Elevation: 10°~ 15°
- 6.Road Width: 7m (two-way 2 lanes)
- 7.Lamp Pole Arm Length: 1.5-2m

2 Symmetrically On Both Sides of the Road:

Below picture is we install the lamps on each sides of the road symmetrically, each 3 lamps' illumination map and beam pattern, in a single lamp's effective covered regional(plane area) is very uniform illumination, 7M (2 lanes) width intensity values: 25 lux maximum, 15 lux minimum, Uniformity Value>0.7. The brightness difference is very little between the center of the beam pattern and edge, almost no difference in the direction of the road extension, fully consistent with the road for the extended, reached the ideal road lighting effects.



Actual Lighting Effects (Beam Pattern)

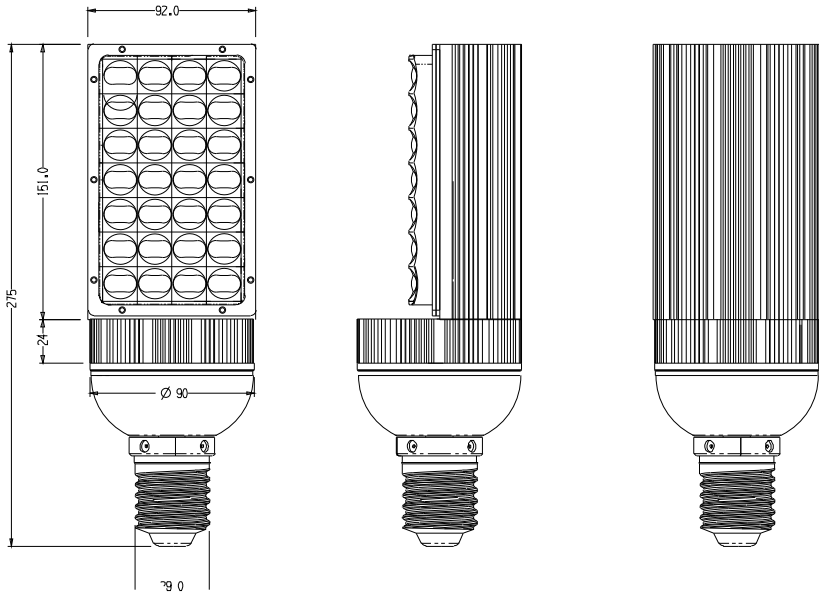


Symmetrical Road Layout  
Related Parameters

- 1.Lamp Model: SP90
- 2.Lamp Power Consumption: 38W
- 3.Lamp Height: 6m
- 4.Lamp Pole Space: 15m
- 5.Lamp Elevation: 10°~ 15°
- 6.Road Width: 74m (two-way 2 lanes)
- 7.Lamp Pole Arm Length: 1.5-2m

## SP90, High Power LED Street Lamp Light Source Installation Method

### I. SP90 High Power LED Street Lamp Light Source Figure



The right picture is the effect which we use the high power led street lamp to replace the conventional high pressure sodium lamp in the existing lamp shade.

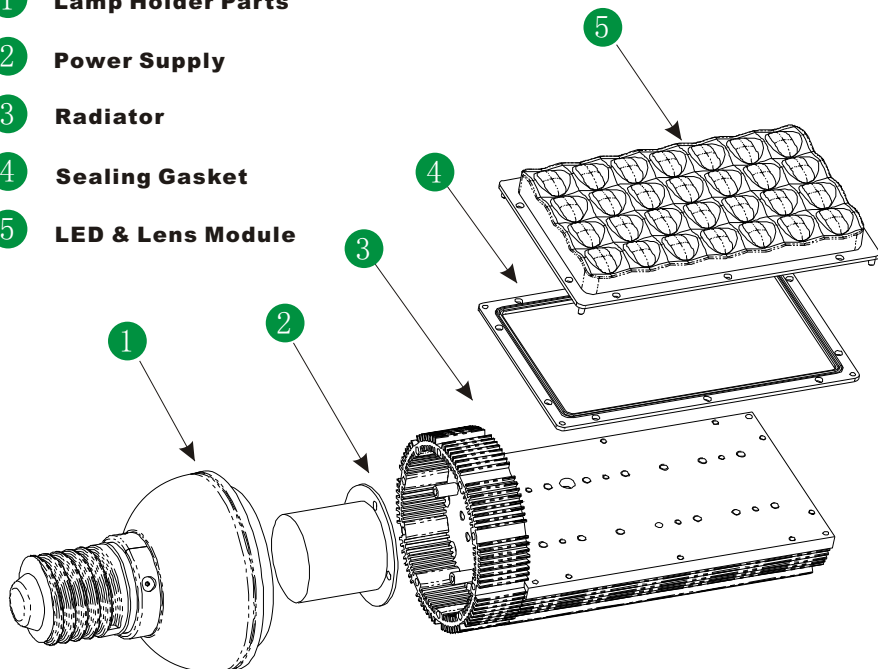
Remove the existing light source, connect the 220VAC or 110VAC input terminal direct with the lampholders. **Do not use the original rectifier, otherwise, the high voltage will burn the LED.**



## II. SP90, LED street light lamp source anatomical drawings

### SP90 street lamp light source components names

- ① Lamp Holder Parts
- ② Power Supply
- ③ Radiator
- ④ Sealing Gasket
- ⑤ LED & Lens Module



## LED Street Light Projects

**SP90, High Power LED Street Light Installation Scene-lights - The State Street Light Replacement Project (Photo Taken in Guadalajara, Mexico)**



**Integrated LED Street Light Installation Scene-lights - The Street Light Replacement Project from Nanshan District, Shenzhen City (Photo Taken in Shenzhen, China.)**





**Integrated LED Street Light Real Scene - Taken From The Street Light Replacement Project of Nashan District, Shenzhen City (Photo Taken in Shenzhen, China.)**



SP90 - High Power LED Street Light lamp Source  
Maintenance and Troubleshooting Methods

I. Troubleshooting Methods

Fault	Possible Reasons	Troubleshooting Methods
All the LED can not light up	The lamp holder is not be tightened enough.	Put the lamp into the socket, then turn and tighten it.
	Malfunction of the power supply.	Please change the power supply.
LED Flashing Or Darker	Malfunction of the power supply.	Please change the power supply.
Few individual LED is not light up or dark	LED was damaged	Please replace the same type of LED

II. Maintenance and Repairing

In order to ensure the normal use of lights, enhance light flux rate, you should develop the maintain plans, clean the lamp regularly, cleaning cycle should be determined according to the local environment and climate.

## LED Street Light Projects

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**Integrated LED Street Light Installation Scene-lights - The Street Light Replacement Project from Nanshan District, Shenzhen City (Photo Taken in Shenzhen, China.)**





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Comparison of LED with Other Light Sources

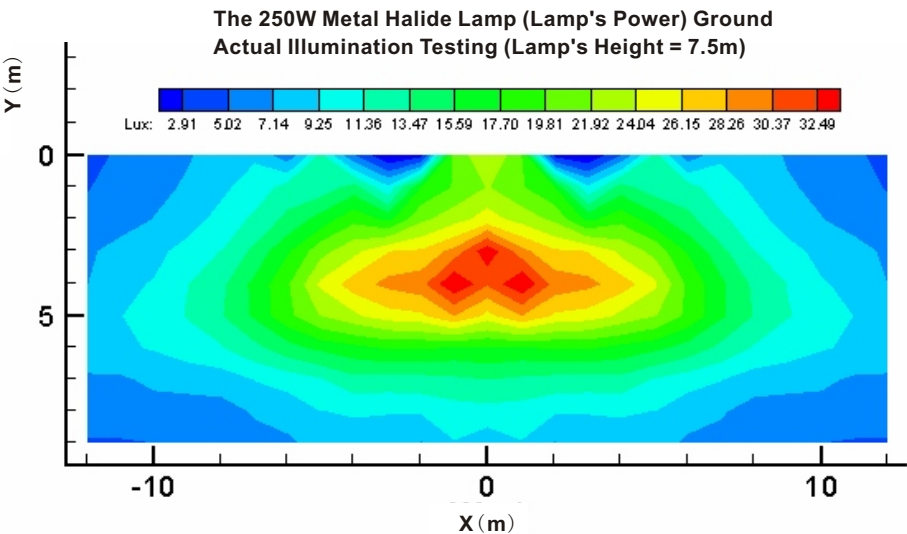
I. Comparison of LED with Conventional Light Sources

Comparison List of LED with Conventional Light Sources

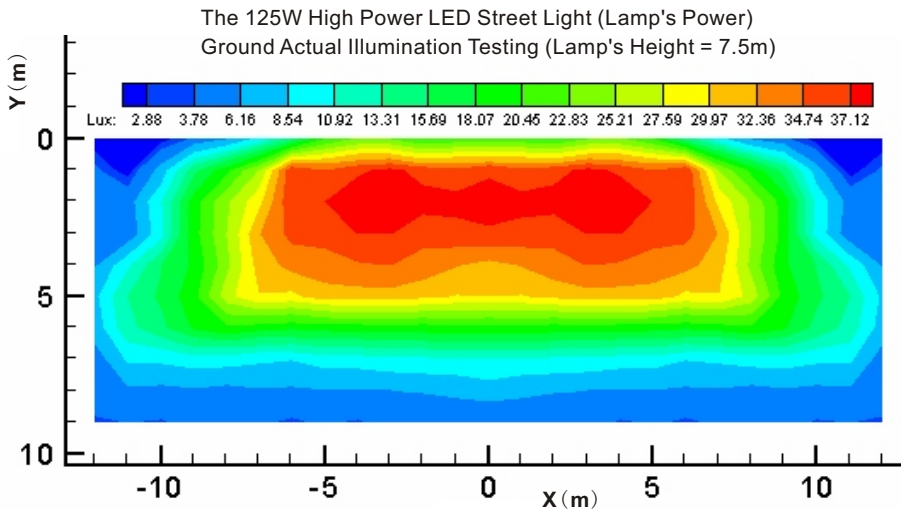
Road Class	Average Intensity			Uniformity Value		
	GB	LED Lamp	Metal Halide Lamps	GB	LED Lamp	Metal Halide Lamps
A Grade Expressway, Highway	20 / 30	30	15	0.4	0.75	0.44

GB means country standard

II. The Real Lighting Effects Contrast of the SPLU4 (125W) and 250W Metal Halide Lamp (Measured Data)



Remark: As there is an additional lamp on the back of 4m space which increased the brightness, the real brightness should be lower (see attached picture)



7.5-meter-high 250W Metal Halide Lamp

Rear 4-meter-high 250W Metal Halide Lamp (increased ground illumination)

7.5-meter-high 125W LED street lights

## 250W Metal Halide Lamp

Lamp Power: 250W, Rectifier Power: 60W,  
**Actual Total Power: 310W**

- 1: The brightness is lower than the next LED street light significantly
- 2: Highest intensity: 34 lux, average intensity: 15 lux (There is another metal halide lamp, otherwise, the brightness will be lower)
- 3: When the lamp is on 7.5m high, the beam pattern is a 18x9m oval and fuzzy.
- 4: The illumination uniformity is not good, the center of the beam pattern is high and edge is low, which does not conform to the road lighting extension.

## LED Street Light: SPLU4, Actual Total Power: 150W

1. The brightness is higher than the next metal halide lamp significantly
2. Highest intensity: 40 lux, average intensity: 30 lux
3. When the lamp is on 8m high, the beam pattern is a 26x10 rectangle and very clear;
4. The brightness difference is very little between the enter of the beam pattern and edge, almost no difference in the direction of the road extension, fully conform to the road lighting extension

**Conclusion:** Our 150W SPLU4 High Power LED Street Light can save energy 60% than the 250W Metal Halide Lamp, the average brightness is more than double, then under the same brightness, it can save 80% energy than the metal halide lamp.



# High Power LED Street Light

## III. The comparison of the Glare, Color Temperature and Color Index for High Power LED Street Light and the conventional street lights



A

### High Power LED Street Light

No glare, the color temperature is comfortable, the objects were irradiated is colorful and true, people feels more comfortable;

B

### Metal Halide Lamp

Strong glare, the color temperature is too high (close to cyan), the objects were irradiated is untrue, people feels irritable, depressed.

C

### Sodium Lamp

Strong glare, the color temperature is too low (very yellow or orange), the objects were irradiated is untrue, people feels boring, hypnosis.

## LED Street Light Use Benefit Analysis

### I. LED Street Light Use Benefit Analysis List

Contrast Items	Contrast Contents	High Pressure Sodium Lamp	High Power LED Street Light
<b>The electricity fee which can be saved in 50,000 hours</b>	Power (w)	250	125
	The entire lamp system test current (A)	3.05	0.69
	The entire lamp system actual power (w)	671	152
	The entire lamp system actual consumption (kw/h)	33,550	7,600
	Energy saving (kw/h)	/	25,950
	Saving electricity fee (USD\$ 0.09/kw/h)	/	\$2359
<b>The cables purchase spending which can be saved for each lamp (1,000 lamp sharing)</b>	The lines total current	3,050	690
	Cable acquisition cost savings (USD)	\$7090	\$1402
	Save money (USD)	/	\$5610
<b>The maintenance expenditure savings for each lamp in 50,000 hours</b>	Replace 10 pcs lamps (USD\$6.5/pcs)	\$65	/
	Replace 1 pc transformer (USD : \$26/pc)	\$26	/
	Machinery & labor costs (USD)	\$26	/
	Save money (USD)	/	\$117
<b>Total</b>	Cost-saving for each lamp in 50,000 hours (USD)	/	\$8086
<b>If we estimate a provincial city has 100,000 street lamps, then it can save USD\$8086 in 50,000 hours. If each lamp lit 10 hours a day, 50,000 hours is equivalent to 14 years, then the annual cost saving is about USD\$58441500.</b>			

### **The Contributions of the LED Street Light for reduce energy consumption and protect the environment**

Assuming a provincial city has 100,000 street light, if we replace the 250w high pressure sodium to 125w high power LED street light, we can save not only nearly 200,000,000 kw/h electricity, but also reduce to release 30,000 tons of carbon dioxide emissions, nearly 2,000 tons of sulfur dioxide and other pollutants, 4,000 billion calories to the atmosphere, they can be converted into 80,000 tons of standard coal. Just think, an independent city combusted 80,000 tones of coal, the released heat and pollutants which can take how many environmental disasters to the people?! Not really we do not know, we just have not calculated it. Once we do it, we will be shocked.

The traditional light sources also contain lead, mercury and other pollutants that directly threaten the environment and human health.

Therefore, replace the traditional high-energy street light to the advanced energy-saving LED Street Light, is the need to safeguard the survival of mankind, is the need to protect nature, is the need for sustained development of the national economy and is the need for the benefits to the future generations!



**We have only one Earth!**

## **Lighting Experts**

**Challenge Edison, we will fight a revolutionary war to destroy the high energy consumption, heavy pollution traditional sources dynasty.**

**Let green LED light source to illuminate the world, brighten the future, and bring you a new lighting experience!**



**RoHS**