

**满坤电子有限公司**  
MANKUN ELECTRONIC CO., LTD.

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[WWW.MANKUN.NET](http://WWW.MANKUN.NET)



[WWW.MANKUN.NET.CN](http://WWW.MANKUN.NET.CN)

**满坤电子有限公司**  
MANKUN ELECTRONIC CO., LTD.

LED 照明方案·制·造·商  
Manufacturer Of LED Lighting Solution

## ABOUT US

Mankun electronics co., ltd. was founded in August 2005, is a collection of LED lighting PCB circuit board research and development, production, sales in one of the highModern enterprise with new technology. Has a number of imported automatic production lines, strict management system and excellent technology research and development and managementTalent, and in February 2008 established Taiwan man kun electronics co., LTD.

Professional PCB PCB is engaged in the production of single and double aluminum substrate, copper substrate, FR4 fiberboard, multilayer PCB and flexible PCB.A complete set of imported advanced circuit board production equipment and electronic mounting equipment. The products are mainly used in LED lighting (LED commercial lighting,LED indoor and outdoor lighting, LED industrial lighting, LED vehicle lighting) electronics, machinery, communications, medical and other areas with high heat dissipation requirements;The company has passed UL certification (certificate number: E334090) excellent quality circuit board manufacturers.

The company is the "quality first, keep improving" quality policy, strong research and development capacity, has a number of patents to lay a solid foundationOur products are widely exported to Europe, Russia, South Korea and other countries and regions. Companies adhering to the Customer-oriented, with better quality, better efficiency, better service, to create higher value for customers at home and abroad.

滿坤電子有限公司創立於2005年8月，是集LED燈具PCB線路板研發、生產、銷售於一體的高新技術現代化企業。擁有多條進口全自動生產線，嚴格的管理體系和優秀的技術研發及管理人才，并于2008年2月成立臺灣滿坤電子有限公司。

專業PCB線路板從事生產單雙面鋁基板、銅基板、FR4玻纖板、多層線路板及軟性電路板等。全套引進先進的線路板生產設備及電子貼裝設備。產品主要應用於LED照明（LED商業照明、LED室內外照明、LED工業照明、LED車燈照明）電子、機械、通訊、醫療等高散熱需求領域；公司通過了UL認證（證號：E334090）品質卓越的線路板廠家。

公司本著“質量第一、精益求精”的質量方針，強大的研發能力，擁有多項發明專利奠定了雄厚的技術實力及豐富的生產經驗，產品廣泛出口到歐洲、俄羅斯、韓國等國家和地區。公司秉承以客戶為中心，用更好的質量、更好的效率、更好的服務、為國內外客戶創造更高的價值。





## MANKUN ELECTRONICS

MANKUN Electronics is a GuangZhou company established in 2005, focused on development of solid state lighting solutions (LEDs).

We continually enrich our product portfolio with state of the art LED solutions, enabling our customers to rapidly develop and deploy new fixtures with the latest technology.

We believe in each customer's unique needs. For this reason we count On our team's experience to deliver the right project.

## EXPERTISE

With our background and experience in the lighting industry we are able to create and offer customized products.

## INNOVATION

We invest in research, development and use of the latest technologies, leading us to innovative solutions.

## ENVIRONMENT

We develop products focused on conservation of energy resources.



## Overview & Technology

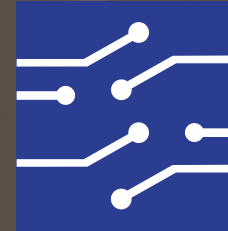
**Mankun Electronics Co.,LTD is a global leader in LED Professional Lighting Program Provider.**

With 15 year's PCB manufacturer experience,Mankun professional technical team is constantly improving the PCB technical level and production capacity. As a PCB vendor, We are not only provide one-stop service including PCB design, PCB manufacturer PCB assembly service. but also the LED technology enterprises which main in LED Commercial lighting, office light with design, development,production and marketing.



# LED Module Design

Mankun designs and develops custom LED modules according to your exact needs to enable your unique LED lighting products.



## Layout

PCB is designed to meet safety standards, while considering reliable electrical and thermal characteristics.



## Conceptual Design

Key aspects the LED module are determined in close communication with customers. Such conceptual design includes PCB material and LED selection, and calculation of required number of LEDs.



## Optics

Some LED modules are supplied with integrated optics. When there is no standard lens available, custom lens is development to meet customer's unique requirements. Our experience includes.

- Street light applications based on high power LED
- Wide beam angle lens for mid power LED



## Driver Design

MANKUN currently has DMX dual-color temperature dimming controller and driver, product research and development based on "high compatibility, no flicker" for dimming, toning temperature, zoning networking, scene storage and other lighting control functions.



## Packaging

Reliable and ESD-safe export packaging is designed for each model and applied to protect LED modules during transportation.



Mechanical drawing is also finalized during this stage defining external dimension, component and hole positions etc.



## Wire Harness

For some applications, wire harness is developed and supplied together with LED modules to ensure convenient and reliable electrical connection.



## 现有产品方案 / PROTOTYPES

供货方式 / WE OFFER


-  数量不限  
No MOQ
-  2个星期交货  
Shipment in 2 weeks

所享服务 / YOU GET

-  定制要求设计生产  
Customized design
-  订货数量大价便  
Rebate on high VOLUME ORDERS

## 小批量订货方案 / SMALL VOLUME

供货方式 / WE OFFER

-  数量不限  
No MOQ
-  4个星期交货  
Shipment in 4 weeks

所享服务 / YOU GET

-  定制要求设计生产  
Customized design
-  减少库存或试验性经营批量  
Reduced inventory or pilot run lots

## 大批量订货方案 / HIGH VOLUME

供货方式 / WE OFFER

-  1000套起批量起订  
Orders over 1,000pcs
-  4个星期交货  
Shipment in 4 weeks

所享服务 / YOU GET

-  按客户需求定制及行业前景  
Customized design and Competitiveness
-  减少库存、周转时间短、降低产品报废风险  
Reduced inventory due to short lead time  
and lower risk of product obsolescence

## Dk286 20x280/560mm

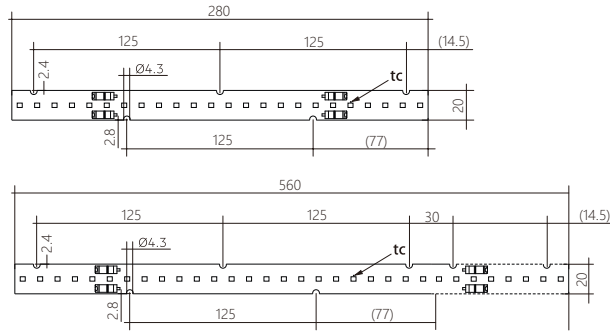
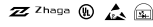
- 15868-20x280mm-1000lm-24LED
- 15885-20x280mm-2000lm-24LED
- 15869-20x280mm-2200lm-24LED
- 16521-20x560mm-1400lm-32LED
- 15865-20x560mm-2000lm-48LED
- 15887-20x560mm-2400lm-48LED
- 15866-20x560mm-4400lm-48LED
- 16156-20x280mm-2000lm-48LED

### Product description

- Linear LED modules for application in linear and area lighting
- Slim design with 20 x 280/560 mm (ZHAGA compliant), Ideal for linear and panel luminaires
- Choice of color temperatures (3000 K ~ 6500 K)
- luminous flux of 2200/4400lm @ 200mA, Tc=65 °C
- High efficacy of the module up to 166 lm/W @150mA
- High color rendering (CRI >80)
- Excellent color consistency of 5 SDCM
- Beam characteristic 120°
- Ambient temperature ta -25 ... +55 °C
- Wide temperature (Tc) range from -40 °C to +85 °C
- Small luminous flux tolerances
- Push terminals for quick and simple wiring of LED module to LED module
- Long life-time: 50,000 hours
- 5-year guarantee
- For product data sheet go to [www.mankun.net](http://www.mankun.net), or available on request

For standards see data sheet

For colour temperatures and tolerances see data sheet



### Specific technical data

Type	Typ. luminous flux at tp = 25 °C	Typ. luminous flux at tp = 65 °C	Typ. Colour temperature (CCT)	Colour rendering index CRI	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. forward current at tp = 65 °C	Typ. power consumption at tp = 65 °C	Max. forward current	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C
DK286-15868	800lm	750lm	3,000K	>80	33.5V	38.4V	150mA	5.0W	320mA	160lm/W	150lm/W
	1,026lm	958lm					200mA	6.8W		151lm/W	141lm/W
	1,229lm	1,143lm					250mA	8.6W		143lm/W	133lm/W
DK286-15865	1,600lm	1500lm	3,000K	>80	33.5V	38.4V	150mA	10.0W	320mA	160lm/W	150lm/W
	2,052lm	1,916lm					200mA	16.0W		151lm/W	141lm/W
	2,458lm	2,286lm					250mA	17.2W		143lm/W	133lm/W
DK286-15885	792lm	740lm	3,000K	>80	67.0V	76.8V	75mA	5.0W	160mA	160lm/W	150lm/W
	1,006lm	938lm					100mA	6.8W		151lm/W	141lm/W
	1,221lm	1,135lm					125mA	8.6W		143lm/W	133lm/W
DK286-15887	1,600lm	1,500lm	3,000K	>80	67.0V	76.8V	75mA	10.0W	160mA	160lm/W	150lm/W
	2,461lm	2,256lm					100mA	16.0W		151lm/W	141lm/W
	2,459lm	2,287lm					125mA	17.2W		143lm/W	133lm/W
DK286-15869	1,743lm	1,638lm	3,000K	>80	69.7V	75.6V	150mA	10.5W	480mA	166lm/W	156lm/W
	2,230lm	2,087lm					200mA	14.3W		156lm/W	146lm/W
	2,723lm	2,539lm					250mA	18.4W		148lm/W	138lm/W
DK286-15866	3,486lm	3,276lm	3,000K	>80	81.2V	88.2V	150mA	21.0W	480mA	166lm/W	156lm/W
	4,460lm	4,174lm					200mA	28.6W		156lm/W	146lm/W
	5,446lm	5,078lm					250mA	36.8W		148lm/W	138lm/W
DK286-16521	1,072lm	1,005lm	3,000K	>80	44.8V	51.2V	150mA	6.7W	320mA	160lm/W	150lm/W
	1,359lm	1,269lm					200mA	9.0W		151lm/W	141lm/W
	1,644lm	1,529lm					250mA	11.5W		143lm/W	133lm/W
DK286-16156	1,600lm	1,500lm	3,000K	>80	33.5V	38.4V	150mA	10.0W	320mA	160lm/W	150lm/W
	2,052lm	1,916lm					200mA	16.0W		151lm/W	141lm/W
	2,458lm	2,286lm					250mA	17.2W		143lm/W	133lm/W

Tolerance for flux data is ±10%.  
 Tolerance for efficacy data is ±10%.  
 Tolerance range for optical data over the CCT range: ±5 %  
 Measurement tolerance is ± 2.5% for the flux data and 5% for the efficacy data.

## Dk280 40X280/560mm

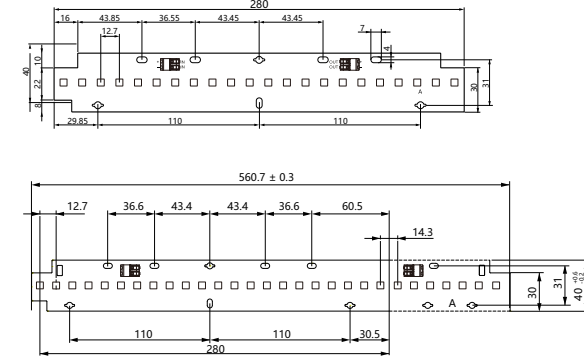
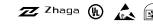
- 15845-40x280mm-1100lm-22LED
- 15848-40x280mm-2000lm-22LED
- 15846-40x280mm-1200lm-28LED
- 15849-40x280mm-2500lm-28LED
- 15844-40x280mm-1400lm-30LED
- 15847-40x280mm-2700lm-30LED
- 16466-40x280mm-2700lm-30LED
- 15853-40x560mm-2200lm-44LED
- 15854-40x560mm-4000lm-44LED

### Product description

- Linear LED modules for application in linear and area lighting
- Slim design with 40 x 280/560 mm (ZHAGA compliant), Ideal for linear and panel luminaires
- Choice of color temperatures (3000 K ~ 6500 K)
- luminous flux of 2000/4000lm @ 200mA, Tc=65 °C
- High efficacy of the module up to 169 lm/W @150mA
- High color rendering (CRI >80)
- Excellent color consistency of 5 SDCM
- Beam characteristic 120°
- Ambient temperature ta -25 ... +55 °C
- Wide temperature (Tc) range from -40 °C to +85 °C
- Small luminous flux tolerances
- Push terminals for quick and simple wiring of LED module to LED module
- Long life-time: 50,000 hours
- 5-year guarantee
- For product data sheet go to [www.mankun.net](http://www.mankun.net), or available on request

For standards see data sheet

For colour temperatures and tolerances see data sheet



### Specific technical data

Type	Typ. luminous flux at tp = 25 °C	Typ. luminous flux at tp = 65 °C	Typ. Colour temperature (CCT)	Colour rendering index CRI	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. forward current at tp = 65 °C	Typ. power consumption at tp = 65 °C	Max. forward current	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C
DK280-15845	783lm	652lm	4,000K	>80	30.8V	37.4V	150mA	4.6W	300mA	169lm/W	159lm/W
	1,015lm	951lm					200mA	6.3W		161lm/W	151lm/W
	1,230lm	1,144lm					250mA	8.0W		153lm/W	143lm/W
DK280-15846	967lm	908lm	4,000K	>80	39.2V	47.5V	150mA	5.9W	300mA	164lm/W	154lm/W
	1,248lm	1,168lm					200mA	8.0W		156lm/W	146lm/W
	1,519lm	1,417lm					250mA	10.2W		149lm/W	139lm/W
DK280-15844	1,141lm	1,071lm	4,000K	>80	28.0V	34.0V	150mA	7.0W	450mA	163lm/W	153lm/W
	1,350lm	1,264lm					200mA	8.6W		157lm/W	147lm/W
	1,550lm	1,448lm					250mA	10.2W		152lm/W	142lm/W
DK280-15853	1,554lm	1,462lm	4,000K	>80	61.6V	74.8V	150mA	9.2W	300mA	169lm/W	159lm/W
	2,028lm	1,902lm					200mA	12.6W		161lm/W	151lm/W
	2,448lm	2,288lm					250mA	16.0W		153lm/W	143lm/W
DK280-15848	1,588lm	1,494lm	4,000K	>80	63.8V	69.3V	150mA	9.4W	350mA	169lm/W	159lm/W
	2,035lm	1,907lm					200mA	12.8W		159lm/W	149lm/W
	2,445lm	2,282lm					250mA	16.3W		150lm/W	140lm/W
DK280-15849	1,987lm	1,868lm	4,000K	>80	81.2V	88.2V	150mA	11.9W	350mA	167lm/W	157lm/W
	2,559lm	2,396lm					200mA	16.3W		157lm/W	147lm/W
	3,001lm	2,794lm					250mA	20.7W		145lm/W	135lm/W
DK280-15847	2,316lm	2,173lm	4,000K	>80	58.0V	63.0V	150mA	14.3W	450mA	162lm/W	152lm/W
	2,714lm	2,523lm					200mA	17.4W		155lm/W	145lm/W
	3,037lm	2,822lm					250mA	20.6W		147lm/W	137lm/W
DK280-16466	2,233lm	2,096lm	4,000K	>80	34.8V	37.8V	150mA	13.7W	850mA	163lm/W	153lm/W
	2,714lm	2,523lm					200mA	17.4W		155lm/W	145lm/W
	3,037lm	2,822lm					250mA	20.6W		147lm/W	137lm/W
DK280-15854	3,177lm	2,989lm	4,000K	>80	127.6V	138.6V	150mA	18.8W	350mA	169lm/W	159lm/W
	4,070lm	3,814lm					200mA	25.6W		159lm/W	149lm/W
	4,890lm	4,564lm					250mA	32.6W		150lm/W	140lm/W

Tolerance for flux data is ±10%. Tolerance for efficacy data is ±10%.  
 Tolerance range for optical data over the CCT range: ±5 %  
 Measurement tolerance is ± 2.5% for the flux data and 5% for the efficacy data.



## Dk286 55x280/560mm

- 15859-55x280mm-1600lm-33LED
- 15862-55x565mm-3200lm-66LED
- 15860-55x280mm-2700lm-33LED
- 15863-55x560mm-5500lm-66LED
- 15861-55x280mm-1700lm-33LED
- 15864-55x560mm-3400lm-66LED
- 16165-55x275mm-1600lm-33LED
- 16167-55x275mm-1700lm-33LED

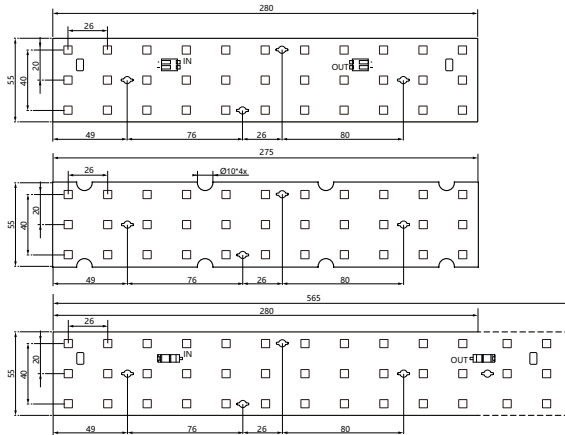


### Product description

- Linear LED modules for application in linear and area lighting
- Slim design with 55 x 280/560 mm (ZHAGA compliant), Ideal for linear and panel luminaires
- Choice of color temperatures (3000 K ~ 6500 K)
- luminous flux of 2200/4400lm @ 200mA, Tc=65 °C
- High efficacy of the module up to 166 lm/W @150mA
- High color rendering (CRI >80)
- Excellent color consistency of 5 SDCM
- Beam characteristic 120°
- Ambient temperature ta -25 ... +55 °C
- Wide temperature (Tc) range from -40 °C to +85 °C
- Small luminous flux tolerances
- Push terminals for quick and simple wiring of LED module to LED module
- Long life-time: 50,000 hours
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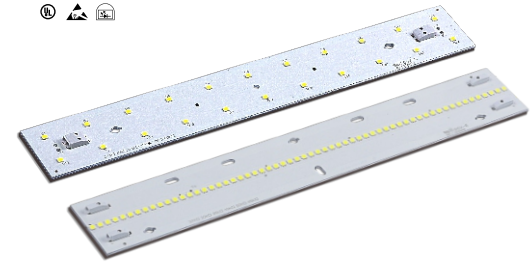
### Specific technical data

Type	Typ. luminous flux at tp = 25 °C	Typ. luminous flux at tp = 65 °C	Typ. Colour temperature (CCT)	Colour rendering index CRI	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. forward current at tp = 65 °C	Typ. power consumption at tp = 65 °C	Max. forward current at tp = 25 °C	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C
DK286-15859	1,242lm	1,162lm	3,000K	>80	30.8V	37.4V	250mA	7.7W	570mA	161lm/W	151lm/W
	1,660lm	1,551lm					350mA	11.0W	151lm/W	141lm/W	
	2,028lm	1,886lm					450mA	14.4W	141lm/W	131lm/W	
	2,484lm	2,324lm					250mA	15.4W	161lm/W	151lm/W	
DK286-15862	3,320lm	3,102lm	3,000K	>80	61.6V	74.8V	350mA	22.0W	570mA	151lm/W	141lm/W
	4,056lm	4,572lm					450mA	28.8W	141lm/W	131lm/W	
	2,284lm	2,143lm					250mA	14.1W	162lm/W	152lm/W	
	2,788lm	2,597lm					350mA	19.1W	720mA	146lm/W	136lm/W
DK280-15860	3,245lm	3,001lm	3,000K	>80	63.8V	69.3V	450mA	24.4W	720mA	133lm/W	123lm/W
	4,568lm	4,286lm					250mA	28.2W	160lm/W	152lm/W	
	5,576lm	5,194lm					350mA	38.2W	720mA	146lm/W	136lm/W
	6,490lm	6,002lm					450mA	48.8W	133lm/W	123lm/W	
DK286-15861	1,259lm	1,177lm	3,000K	>80	30.8V	35.2V	250mA	7.9W	570mA	159lm/W	149lm/W
	1,698lm	1,584lm					350mA	11.4W	149lm/W	139lm/W	
	2,128lm	1,963lm					450mA	15.1W	140lm/W	130lm/W	
	2,518lm	2,354lm					250mA	15.8W	159lm/W	149lm/W	
DK286-15864	3,396lm	3,168lm	3,000K	>80	61.6V	70.4V	350mA	22.8W	570mA	149lm/W	139lm/W
	4,256lm	3,926lm					450mA	30.2W	140lm/W	130lm/W	
	1,242lm	1,162lm					250mA	7.7W	161lm/W	151lm/W	
	1,660lm	1,551lm					350mA	11.0W	570mA	151lm/W	141lm/W
DK286-16165	2,028lm	1,886lm	3,000K	>80	30.8V	37.4V	450mA	14.4W	570mA	141lm/W	131lm/W
	1,259lm	1,177lm					250mA	7.9W	159lm/W	149lm/W	
	1,698lm	1,584lm					350mA	11.4W	570mA	149lm/W	139lm/W
	2,128lm	1,963lm					450mA	15.1W	140lm/W	130lm/W	
DK286-16167	1,259lm	1,177lm	3,000K	>80	30.8V	35.2V	250mA	7.9W	570mA	159lm/W	149lm/W
	1,698lm	1,584lm					350mA	11.4W	570mA	149lm/W	139lm/W
	2,128lm	1,963lm					450mA	15.1W	140lm/W	130lm/W	

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## Dk286 280x40/55mm

- 16163-40x280mm-1000lm-22LED
- 16162-40x280mm-2000lm-22LED
- 16164-40x280mm-1100lm-28LED
- 16311-40x280mm-2400lm-60LED
- 16778-40x286mm-4000lm-96LED
- 15804-55x280mm-4000lm-96LED

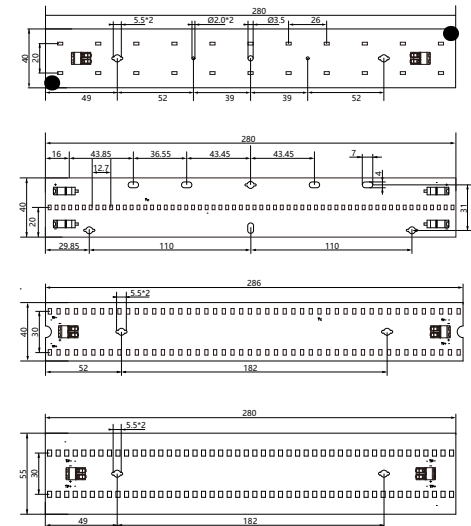


### Product description

- Linear LED modules for application in linear and area lighting
- Slim design with 280 x 40/55 mm (ZHAGA compliant), Ideal for linear and panel luminaires
- Choice of color temperatures (3000 K ~ 6500 K)
- luminous flux of 1000/2000lm @ 200mA, Tc=65 °C
- High efficacy of the module up to 169 lm/W @150mA
- High color rendering (CRI >80)
- Excellent color consistency of 5 SDCM
- Beam characteristic 120°
- Ambient temperature ta -25 ... +55 °C
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For colour temperatures and tolerances see data sheet



### Specific technical data

Type	Typ. luminous flux at tp = 25 °C	Typ. luminous flux at tp = 65 °C	Typ. Colour temperature (CCT)	Colour rendering index CRI	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. forward current at tp = 65 °C	Typ. power consumption at tp = 65 °C	Max. forward current at tp = 25 °C	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C
DK286-16163	783lm	652lm	4,000K	>80	30.8V	37.4V	150mA	4.6W	300mA	169lm/W	159lm/W
	1,015lm	951lm					200mA	6.3W	161lm/W	151lm/W	
	1,230lm	1,144lm					250mA	8.0W	153lm/W	143lm/W	
	1,588lm	1,494lm					150mA	9.4W	169lm/W	159lm/W	
DK286-16162	2,035lm	1,907lm	4,000K	>80	63.8V	69.3V	200mA	12.8W	350mA	159lm/W	149lm/W
	2,445lm	2,282lm					250mA	16.3W	150lm/W	140lm/W	
	855lm	808lm					150mA	4.7W	182lm/W	172lm/W	
	1,124lm	1,059lm					200mA	6.5W	173lm/W	163lm/W	
DK286-16164	1,369lm	1,286lm	4,000K	>80	30.8V	35.2V	250mA	8.3W	350mA	165lm/W	155lm/W
	1,930lm	1,813lm					350mA	11.7W	165lm/W	155lm/W	
	2,402lm	2,249lm					400mA	15.3W	157lm/W	147lm/W	
	2,980lm	2,773lm					600mA	20.7W	144lm/W	134lm/W	
DK286-16311	3,232lm	3,030lm	4,000K	>80	33.6V	38.4V	450mA	20.2W	800mA	160lm/W	150lm/W
	4,164lm	3,890lm					800mA	27.4W	152lm/W	142lm/W	
	5,011lm	4,663lm					1000mA	34.8W	144lm/W	134lm/W	
	3,232lm	3,030lm					300mA	20.2W	160lm/W	150lm/W	
DK286-16778	4,164lm	3,890lm	4,000K	>80	33.6V	38.4V	400mA	27.4W	1250mA	152lm/W	142lm/W
	5,011lm	4,663lm					1000mA	34.8W	144lm/W	134lm/W	
	3,232lm	3,030lm					300mA	20.2W	160lm/W	150lm/W	
	4,164lm	3,890lm					400mA	27.4W	152lm/W	142lm/W	
DK286-15804	5,011lm	4,663lm	4,000K	>80	67.2V	76.8V	500mA	34.8W	800mA	144lm/W	134lm/W

Tolerance for flux data is ±10%.  
 Tolerance for efficacy data is ±10%.  
 Tolerance range for optical data over the CCT range: ±5 %  
 Measurement tolerance is ± 2.5% for the flux data and 5% for the efficacy data.

# OUTDOOR LIGHT

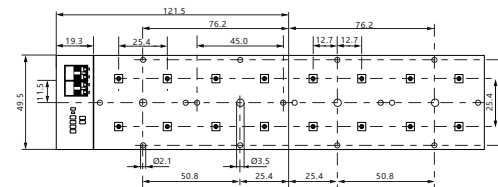
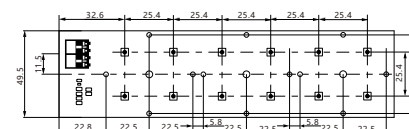
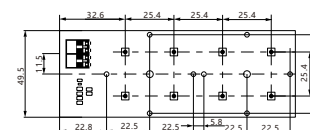
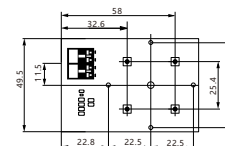
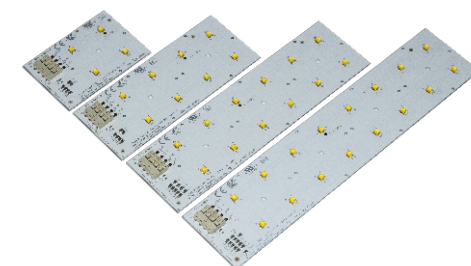
户外照明

FOCUS ON OUTDOOR HIGH POWER LIGHTING



## Dk5050 49x72/223mm

- 15547-49x72 mm- 1000lm- 4x1 LED
- 15548-49x120mm- 2000lm- 8x1 LED
- 15549-49x172mm-3000lm-12x1 LED
- 15550-49x223mm-4000lm-16x1 LED



### Product description

- Linear LED modules for application in linear and area lighting
- Slim design with 49 mm (ZHAGA compliant), Ideal for linear and panel luminaires
- Choice of color temperatures (3000 K ~ 6500 K)
- luminous flux of 1000 ~ 4000lm @ 700mA, Tc=65 ° C
- High efficacy of the module up to 140 lm/W @350mA
- High color rendering (CRI >80)
- Excellent color consistency of 5 SDCM
- Beam characteristic 120°
- Ambient temperature ta -25 ... +55 °C
- Wide temperature (Tc) range from -40 °C to +85 °C
- Small luminous flux tolerances
- For use with standard 2x2 lenses
- Installation of the module together with lens in the luminaire by means of an M3 screw
- Push-in terminals for simple and quick wiring
- Long life-time: 50,000 hours
- 5-year guarantee
- For product data sheet go to [www.mankun.net](http://www.mankun.net), or available on request

For standards see data sheet

For colour temperatures and tolerances see data sheet

### Specific technical data

Type	Typ. Colour temperature (CCT)	Typ. luminous flux at tp = 25 °C	Typ. luminous flux at tp = 65 °C	Typ. forward current	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. power consumption at tp = 65 °C	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C	Colour rendering index CRI	
DK5050-15547	595lm	553lm	4,000K	>80	11.2V	12.0V	350mA	4.1W	145lm/W	135lm/W	
	1,011lm	926lm					700mA	8.5W	1500mA	119lm/W	109lm/W
	1,320lm	1,188lm					1050mA	13.2W	100lm/W	90lm/W	
	1,189lm	1,107lm					350mA	8.2W	145lm/W	135lm/W	
DK5050-15548	2,023lm	1,853lm	4,000K	>80	22.4V	24.0V	700mA	17.0W	1500mA	119lm/W	109lm/W
	2,640lm	2,376lm					1050mA	26.4W	100lm/W	90lm/W	
	1,785lm	1,659lm					350mA	12.3W	145lm/W	135lm/W	
	3,033lm	2,778lm					700mA	25.5W	1500mA	119lm/W	109lm/W
DK5050-15549	3,960lm	3,564lm	4,000K	>80	33.6V	36.0V	1050mA	39.6W	1500mA	100lm/W	90lm/W
	2,380lm	2,212lm					350mA	16.4W	149lm/W	139lm/W	
	4,044lm	3,704lm					700mA	34.0W	1500mA	119lm/W	109lm/W
	5,280lm	4,752lm					1050mA	52.8W	100lm/W	90lm/W	

1) Integral measurement over the complete module.

2) If mounted with M3 screws.

3) Measured at I = 1,800 mA.

4) HE ... high efficiency, NM ... nominal mode, HO ... high output.

5) Tolerance range for optical and electrical data: ±10 %.





## Dk5050 49x223mm

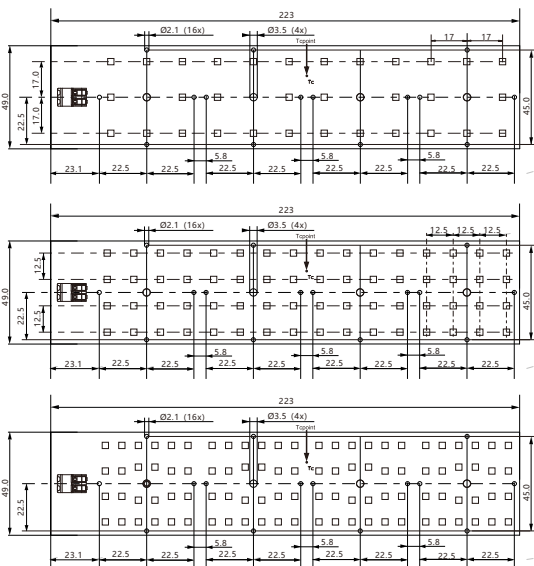
- 16111-49x223mm-64LED
- 16112-49x223mm-96LED
- 16113-49x223mm-32LED
- 16533-49x223mm-64LED
- 15723-49x223mm-48LED
- 15727-49x223mm-16LED

### Product description

- Linear LED modules for application in linear and area lighting
- Slim design with 49 x 223 mm (ZHAGA compliant), Ideal for linear and panel luminaires
- Choice of color temperatures (3000 K ~ 6500 K)
- luminous flux of 4000 ~ 7000 lm @ 1000mA, Tc=65 °C
- High efficacy of the module up to 155 lm/W @700mA
- High color rendering (CRI >80)
- Excellent color consistency of 5 SDCM
- Beam characteristic 120°
- Ambient temperature ta -25 ... +55 °C
- Wide temperature (Tc) range from -40 °C to +85 °C
- Small luminous flux tolerances
- Push terminals for quick and simple wiring of LED module to LED module
- Long life-time: 50,000 hours
- 5-year guarantee
- For product data sheet go to [www.mankun.net](http://www.mankun.net), or available on request

For standards see data sheet

For colour temperatures and tolerances see data sheet



### Specific technical data

Type	Typ. luminous flux at tp = 25 °C	Typ. luminous flux at tp = 65 °C	Typ. Colour temperature (CCT)	Colour rendering index CRI	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. forward current	Typ. power consumption at tp = 65 °C	Max. forward current	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C
DK5050-16111	4,741lm	4,414lm	4,000K	>80	45.6V	49.6V	700mA	32.7W	1920mA	145lm/W	135lm/W
	6,415lm	5,929lm					1000mA	48.6W	132lm/W	122lm/W	
	7,126lm	6,537lm					1200mA	58.9W	121lm/W	111lm/W	
DK5050-16112	5,179lm	4,836lm	3,000K	>80	34.3V	37.8V	1000mA	34.3W	2880mA	151lm/W	141lm/W
	7,408lm	6,875lm					1500mA	53.3W	139lm/W	129lm/W	
	9,356lm	8,625lm					2000mA	73.1W	128lm/W	118lm/W	
DK5050-16113	2,656lm	2,492lm	3,000K	>80	33.6V	36.0V	350mA	16.4W	960mA	162lm/W	152lm/W
	3,566lm	3,325lm					500mA	24.1W	148lm/W	138lm/W	
	4,681lm	4,329lm					700mA	35.2W	133lm/W	123lm/W	
DK5050-16533	4,741lm	4,414lm	4,000K	>80	45.6V	49.6V	700mA	32.7W	1920mA	145lm/W	135lm/W
	6,415lm	5,929lm					1000mA	48.6W	132lm/W	122lm/W	
	7,126lm	6,537lm					1200mA	58.9W	121lm/W	111lm/W	
DK5050-15723	2,873lm	2,703lm	3,000K	>80	34.8V	37.8V	500mA	17.0W	1920mA	169lm/W	159lm/W
	3,895lm	3,650lm					700mA	24.5W	159lm/W	149lm/W	
	5,278lm	4,914lm					1000mA	36.4W	145lm/W	135lm/W	
DK5050-15727	6,804lm	6,365lm	5,000K	>80	72.0V	96.0V	700mA	43.9W	1440mA	155lm/W	145lm/W
	9,076lm	8,423lm					1000mA	65.3W	139lm/W	129lm/W	
	11,460lm	10,549lm					1400mA	95.9W	120lm/W	110lm/W	

- 1) Integral measurement over the complete module.
- 2) If mounted with M3 screws.
- 3) Measured at l = 1,800 mA.
- 4) HE ... high efficiency, NM ... nominal mode, HO ... high output.
- 5) Tolerance range for optical and electrical data: ±10 %.

## Dk252 44x225mm

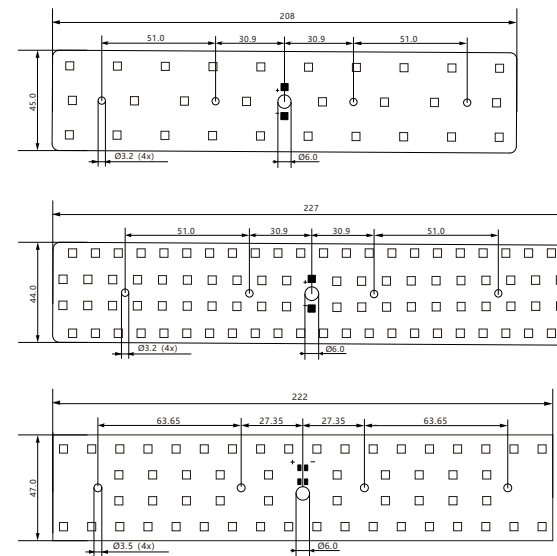
- 16306-45x208mm-28LED
- 16307-44x227mm-84LED
- 16308-45x215mm-40LED
- 16309-44x225mm-64LED
- 15662-47x222mm-56LED
- 15663-47x222mm-56LED

### Product description

- Linear LED modules for application in linear and area lighting
- Slim design with 44 ~ 47 mm Ideal for linear and panel luminaires
- Choice of color temperatures (3000 K ~ 6500 K)
- luminous flux of 4000 ~ 7000 lm @ 1000mA, Tc=65 °C
- High efficacy of the module up to 155 lm/W @700mA
- High color rendering (CRI >80)
- Excellent color consistency of 5 SDCM
- Beam characteristic 120°
- Ambient temperature ta -25 ... +55 °C
- Wide temperature (Tc) range from -40 °C to +85 °C
- Small luminous flux tolerances
- Push terminals for quick and simple wiring of LED module to LED module
- Long life-time: 50,000 hours
- 5-year guarantee
- For product data sheet go to [www.mankun.net](http://www.mankun.net), or available on request

For standards see data sheet

For colour temperatures and tolerances see data sheet



### Specific technical data

Type	Typ. luminous flux at tp = 25 °C	Typ. luminous flux at tp = 65 °C	Typ. Colour temperature (CCT)	Colour rendering index CRI	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Typ. forward current	Typ. power consumption at tp = 65 °C	Max. forward current	Efficacy of the module at tp = 25 °C	Efficacy of the module at tp = 65 °C
DK252-16306	2,332lm	2,188lm	3,000K	>80	32.9V	40.0V	350mA	14.4W	960mA	162lm/W	152lm/W
	3,122lm	2,911lm					500mA	21.1W	148lm/W	138lm/W	
	4,096lm	3,788lm					700mA	30.8W	133lm/W	123lm/W	
DK252-16307	5,870lm	5,476lm	4,000K	>80	32.9V	40.0V	1,150mA	39.4W	2100mA	149lm/W	139lm/W
	7,213lm	6,705lm					1,450mA	50.8W	142lm/W	132lm/W	
	8,167lm	7,562lm					1,700mA	60.5W	135lm/W	125lm/W	
DK252-16308	2,982lm	2,799lm	4,000K	>80	45.6V	49.6V	400mA	18.3W	1200mA	163lm/W	153lm/W
	3,596lm	3,364lm					500mA	23.2W	155lm/W	145lm/W	
	4,042lm	3,676lm					600mA	27.5W	147lm/W	137lm/W	
DK252-16309	4,741lm	4,414lm	4,000K	>80	45.6V	49.6V	700mA	32.7W	1920mA	145lm/W	135lm/W
	6,415lm	5,929lm					1000mA	48.6W	132lm/W	122lm/W	
	7,126lm	6,537lm					1200mA	58.9W	121lm/W	111lm/W	
DK252-15562	4,147lm	3,861lm	4,000K	>80	32.9V	40.0V	500mA	18.3W	1920mA	145lm/W	135lm/W
	5,610lm	5,185lm					700mA	28.6W	145lm/W	135lm/W	
	6,231lm	5,716lm					1000mA	42.5W	132lm/W	122lm/W	

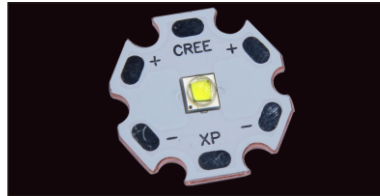
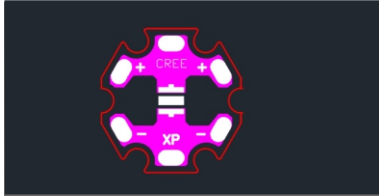
- 1) Integral measurement over the complete module.
- 2) If mounted with M3 screws.
- 3) Measured at l = 1,800 mA.
- 4) HE ... high efficiency, NM ... nominal mode, HO ... high output.
- 5) Tolerance range for optical and electrical data: ±10 %.



**Design of custom LED modules**

LED technology allows us to create increasingly complex designs. The barriers imposed by the lamps and their shapes are no longer an impediment for the luminaires to achieve differentiated and modern designs.

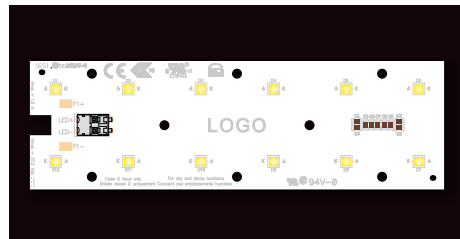
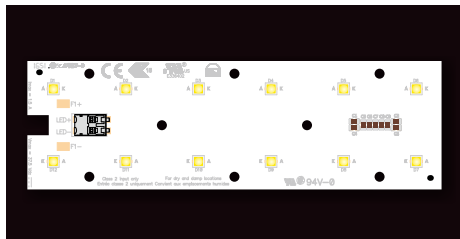
Our engineering will be able to develop customized LED modules that meet the new design demands. This brings flexibility to our customers so they can make new ideas viable.



**Produtos OEM**

Mankun LED Solutions has a product portfolio that meets virtually all market demands. In some cases we know that our customer wants something personalized, but does not want to have an exclusive product .

We can customize our products with your company logo. With this you will have a differentiated product without having to have high development, stock and logistics costs.



**Administration of raw materials**

We basically work with 3 modes of raw material administration.

- The customer manages all purchases of raw materials.
- Mankun participates in the purchase of part of the materials.
- Mankun manages all purchases.

This allows you to optimize costs of the final product. We know that depending on the type of raw material, the customer or Mankun may have a better negotiating condition with suppliers. In this way, we do not add unnecessary costs, facilitating the solution's feasibility.

**Industrialization**

Our goal is to work with the customer so that product feasibility is possible.

That's why we offer the industrialization service to the market, where we only assemble the LED module. Thus, we were able to optimize the final costs of the solution, bringing great flexibility to our customers.

**Product Integration**

Working with electronic components requires a large investment in adapting the manufacturing environment. One of the main problems found in unsuitable environments is the occurrence of electrostatic discharges. This type of aggressor damages electronic components and your product may have its useful life compromised or even suffer damages that make its operation unfeasible.

Mankun offers its customers the product integration, where we can carry out the total or partial assembly of the luminaire so that the recommendations regarding the protection of the components are met.

**Assembly of General Electronics**

Mankun Layout has over 15 years of experience in assembling electronic products in general. This allows that, in addition to LED modules, we can offer our customers the assembly of other electronic products that make up the final product.

An example of these products is the LED Driver. Some of our customers have their own LED Driver designs and we assemble, test and package them.

**Short release**

Our main launch for the first half of 2020 will be our full-module lineup.

They will be dissipator (own tool), LED module, thermal interface and lens (various options of photometry).

Main applications:

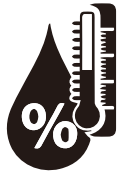
- Public lighting
- Commercial lighting
- High Bays
- Parking lots
- Industrial
- Reflectors
- Among others

Like all our products, we will use Nichia LEDs and have color temperature options of 2700K, 3000K, 4000K and 5000K.

Contact us



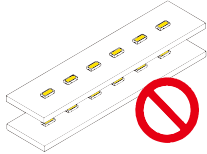
**Storage and Handling**



**Temperature and Humidity**

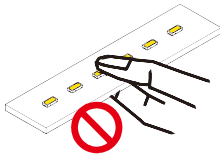
- Store in dark places.
- Do not expose to direct sunlight.
- Storage temperature should be between -40°C to +75°C
- Relative humidity should be between 5 to 85%
- During transport or short term storage, do not exceed temperatures of 100°C

**Stacking LED Modules**



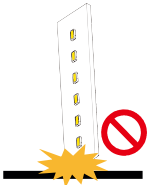
- Do not stack one module on top of another.
- We advise to keep the modules in their original packaging until the moment of integrating them in the luminaires.
- Never support objects on the modules. Even light objects can physically damage electronic components or the PCB.

**Manipulation**



- Always use the edges of the PCB to manipulate the LED modules.
- Avoid contact of fingers (even with gloves) or any tools with the module LEDs .
- Use gloves and other ESD components.
- Take great care so that during the process no impurities are deposited on the LEDs. (dust, oils, etc.)

**Drop**



- Do not drop the module.
- Do not let objects fall on the modules.

If the module falls, we recommend that these modules are no longer used, even without visible signs of damage.

**Stacking and opening the cartons**



- Respect the stacking recommendations present in each package.
- When stacking the boxes, always keep the stacking balanced so as not to overload the lower boxes or cause them to fall.
- Never use sharp tools to open boxes or separate blisters and trays. (Stiletos, pocket knives, etc).
- When removing modules from their packaging, consider the topic "Manipulation".

**Fixation**

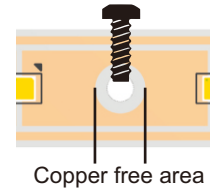


**Luminaire drilling or mechanical changes to LED modules**

Never use the LED module as a guide for drilling the luminaire. Residues from the process may reach the LEDs causing permanent damage to the component. Mankun has mechanical drawings of its modules containing all details about the fixing holes . We will also be able to provide 3D files for import into CAD software for correct mechanical simulation of LED modules integrated into the luminaire.

The same applies to mechanical changes to the modules, such as increasing the diameter of the fastening holes. This process can expose the copper on the board and cause, among other problems, short circuits. These short circuits may cause the module or LED Driver to burn out . The same applies to changes in module dimensions.

**Screws and Rivets**



Screws and rivets represent one of the best costs x benefits, but they require some care for their use.

As shown in the image to the side, some modules have a copper- free region around the fixing holes. This way, if the screw or rivet damages the protection layer of the PCB, there will be no electrical contact that could cause short circuits or malfunction of the modules. However, it is not always possible to predict this region without copper. For this reason, we always recommend the use of an insulator (plastic washers for example) so that there is no electrical contact between the module and the fixing solution . Some of our modules present in this catalog have notices about the mandatory use of insulating solutions.

Another important point is the tool used to apply this type of solution. During screw tightening, the tool used may "escape" from the operator's hand reaching the LED module components. In cases where rivets are used, when breaking the rivet stem, the tool tends to move in random directions, and at this time, it may reach components of the LED module causing permanent damage.



**Fixation by adhesives, glues, silicones and other chemical components**

On the market it is possible to find several solutions for mechanical fixing of LED modules in luminaires, but not all of these solutions are compatible with the use of LEDs. Below we describe some necessary precautions so that the solution used does not cause damage to the components.

- Chemical composition: Some products, when heated or during the curing stage, can give off toxic gases that attack internal LED components. These gases can cause, for example, the oxidation of terminals or metal parts and this will shorten the life of the component.
- Thermal transfer: Always give preference to products with thermal conduction characteristics. Although many modules do not need heatsinks, using the luminaire housing as a heatsink will help maintain the life of the product.
- Application of the products: Take care that the product used in the fixation is not deposited on the LED. Like we advise above, it is not recommended to contact any object with the LED, it is not possible to clean the component and leave it free of residues.

**Complementation**

**Welding wires and cables**



Mankun will be able to supply you with the modules with soldered wires in the dimensions necessary for your project. If you choose to solder the wires, use soldering stations and not common soldering irons.

Common soldering irons do not have temperature control. Thus, when using this type of solution, you can expose the LED to temperatures that are not recommended, thus affecting the component's integrity. Aluminum modules will quickly dissipate the temperature of the soldering iron and as they do not have systems to regulate the temperature, cold soldering may occur .

A very important point is the stripping of the wire or cable to be soldered to the module. Stripping must never exceed the size of the PAD to which the wire or cable will be soldered. The insulation jacket must always end exactly where the solder pad ends, so in case of twisting or bending, there will be no contact between the copper wire/cable and other regions of the LED module.



Note that the wire/cable insulation cover does not allow copper contact with other regions of the module.



In the image above The cover was removed in excess, exceeding the limit of the PAD where the wire/cable was soldered.

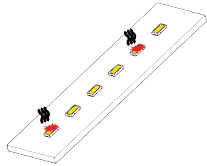


In case of cable bending, copper may come in contact with the LED module. In cases of modules with aluminum plates, this contact may lead to short circuits, causing damage to the module and the LED Driver.

Even following the above recommendations, take great care so that, when integrating the modules into the luminaire, there is no traction on the wires and cables used. This pull may dislodge the wire/cable cover and expose the copper.

**Drive and thermal of LED modules**

**Activation of LED modules**

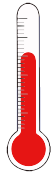


Our projects take into account the luminotechnical demand necessary for each application. Various technical data are considered so that our projects meet the nominal operating characteristics recommended by the manufacturers of the components used.

Never exceed the technical recommendations for operating voltage and current of our modules. In addition to reducing the life of the solution, use outside the nominal operating characteristics may cause the product to burn.

Our catalogs and folders have the necessary information so that you can use our products safely, maintaining the warranty and useful life of each solution. Common soldering irons do not have temperature control. Thus, when using this type of solution, you can expose the LED to temperatures that are not recommended, thus affecting the component's integrity. Aluminum modules will quickly dissipate the temperature of the soldering iron and as they do not have systems to regulate the temperature, cold soldering may occur.

**Activation of LED modules**

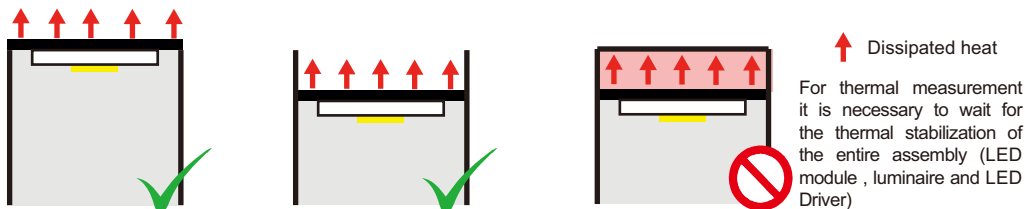


One of the factors that directly affect LED life is the operating temperature.

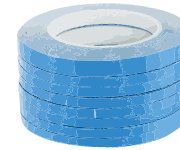
Normally most LED modules work properly using the luminaire body as a heatsink. However, in some cases the addition of specific heatsinks is necessary so that the LED junction temperature remains within the manufacturer's recommendations. It is important that the entire surface of the module is in direct contact with the heatsink (light fixture body). If any region is uncovered, it may heat up in an unwanted way causing the components in this region to have their useful life reduced.

It is important that the region where the LED module will be fixed is free of impurities and, if possible, not covered by paint. The presence of impurities and other coatings can hinder the thermal transfer between the module and the luminaire.

Mankun offers all the necessary support to our customers so that the thermal operating conditions of the modules are met. It is very important that we can understand in detail the application of our modules in order, together with the customer, to define which solution fits the desired application.



**Use of additional components for thermal transfer**



In some cases, the use of auxiliaries for thermal transfer between the LED module and the luminaire is necessary. As mentioned in the case of fixation, there are specific products to use with LEDs. Some of them providing mechanical fixation and thermal transfer.

Avoid using poor quality thermal pastes. In addition to causing damage to LEDs (toxic components), some products harden and lose their characteristics over time. This will compromise the life of your product.

If you use any liquid solution, be careful not to deposit material on the LEDs. In case of oven curing, contact us to find out if curing conditions do not affect the LED modules.

**Product return**

**Keep the original packaging**



As we demonstrate in this white paper, LEDs are sensitive components.

We maintain strict control at all stages of manufacturing our products and also develop the packaging that best suits each type of product.



We advise you not to discard the original packaging of our products until their integration into the luminaires is completed. In this way, if there is a need to return any product, it can be sent in its original packaging and thus there will be no damage to the product that could compromise the warranty.

**Warranty term**



It establishes the limits for guaranteeing the quality, functioning and efficiency of our products.



## Certificate & Honor

Mankun strive to continuous innovation of quality products and services to the society.



Mankun aspires to create new technologies and innovative products that inspire the world, while delivering new value to enhance the lives of customers, partners and employees.

Honorary qualification  
Partial patent demonstration

