



EDGE LIGHT SYSTEM



Tunable white
1,800K - 16,000K



Brightness dimmable
1% - 100%



RGB/CIE-xy adjustable
Colour points and sequences



Biorhythmic lighting
Vitalisation and recreation



2 Control modes
DALI DT8, ZigBee 3.0



Excellent CRI
CRI > 90



TECHNICAL DATA

	1 LED module	2 LED modules	3 LED modules
Luminous source	SMD LED modules		
Supply voltage	48V DC		
Typ. power	19.6W	39.1W	58.7W
Luminous flux	2,600lm	5,200lm	7,800lm
Efficiency	typ. 133lm/W	typ. 132lm/W	typ. 132lm/W
Control mode	ZigBee 3.0, DALI DT8		
Dimmable	1% - 100% Modular Dimming: no effects caused by Flicker*		
CCT and colour control	1,800 - 16,000K / adjustable CIE-xy-colours and RGB colours		
Ambient / storage temperature	+10°C ... +45°C / -20°C ... +80°C		
t _{c,max} LED module / t _{c,max} LMU	+75°C / +85°C		
Lifetime	50,000h L80B10		
Additional features	Low tolerance for colour temperature MacAdam 1 (typical/initial) Integrated overtemperature protection		

min. 1 LED module
max. 3 LED modules



*According to IEEE 1789-2015 (valid for all dimming levels, CCT and colour settings)

EDGE LIGHT SYSTEM

III ORDERING DATA AND TECHNICAL DATA - PI-LED EDGE LIGHT SYSTEM

Type	Description*	Control mode	Cable [mm]	Lum. flux [lm]	Voltage [V DC]	Power [W]	Energy Efficiency Class
LTS-02520-15-EL	PI-LED Edge 2600LM / 1x560mm / 19,6W / DALI DT8 / 700mm	DALI DT8	700	2,600	48	19.6	E
LTS-02520-16-EL	PI-LED Edge 2600LM / 1x560mm / 19,6W / ZigBee 3.0 / 700mm	ZigBee 3.0	700	2,600	48	19.6	E
LTS-05020-15-EL	PI-LED Edge 5200LM / 2x560mm / 39,1W / DALI DT8 / 700mm	DALI DT8	700	5,200	48	39.1	E
LTS-05020-16-EL	PI-LED Edge 5200LM / 2x560mm / 39,1W / ZigBee 3.0 / 700mm	ZigBee 3.0	700	5,200	48	39.1	E
LTS-07520-15-EL	PI-LED Edge 7800LM / 3x560mm / 58,7W / DALI DT8 / 700mm	DALI DT8	700	7,800	48	58.7	E
LTS-07520-16-EL	PI-LED Edge 7800LM / 3x560mm / 58,7W / ZigBee 3.0 / 700mm	ZigBee 3.0	700	7,800	48	58.7	E
LTS-02521-15-EL	PI-LED Edge TP 2600LM / 1x560mm / 19,6W / DALI DT8 / 700mm	DALI DT8	700	2,600	48	19.6	E
LTS-02521-16-EL	PI-LED Edge TP 2600LM / 1x560mm / 19,6W / ZigBee 3.0 / 700mm	ZigBee 3.0	700	2,600	48	19.6	E
LTS-05021-15-EL	PI-LED Edge TP 5200LM / 2x560mm / 39,1W / DALI DT8 / 700mm	DALI DT8	700	5,200	48	39.1	E
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LTS-07521-15-EL	PI-LED Edge TP 7800LM / 3x560mm / 58,7W / DALI DT8 / 700mm	DALI DT8	700	7,800	48	58.7	E
LTS-07521-16-EL	PI-LED Edge TP 7800LM / 3x560mm / 58,7W / ZigBee 3.0 / 700mm	ZigBee 3.0	700	7,800	48	58.7	E

*TP means „Thermal Pad“: The LED modules belonging to the corresponding article are covered with a thermally conductive foil.

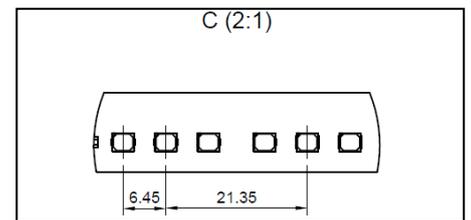
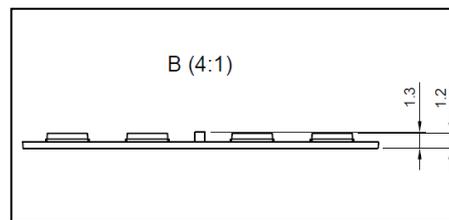
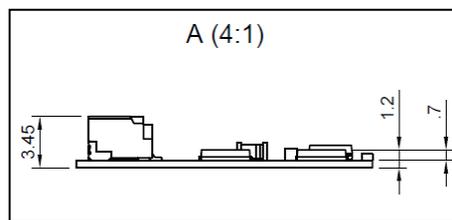
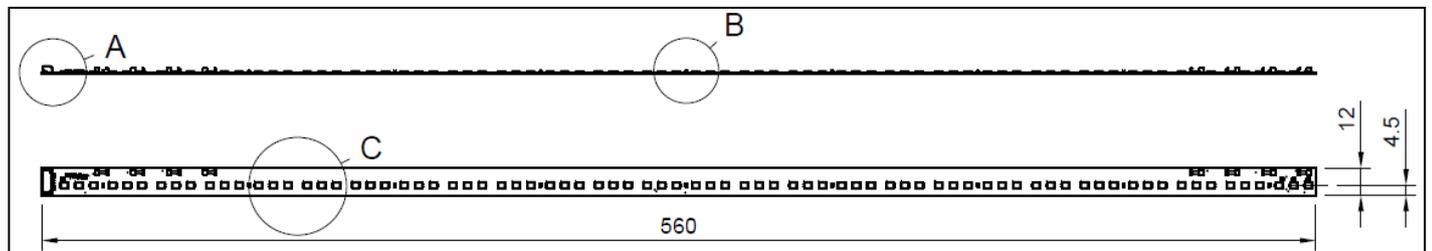
III TECHNICAL DRAWINGS AND DATA - LED MODULES

Dimension/Features of the LED modules			
L/W [mm]	Design type	Light spots P / B / R	Assembly of light spots
560 x 12	for Edge Light applications	26 / 26 / 26	vertically shifted (-1.5mm from center)
<p>! The PI-LED Edge Light System must be operated only after complete configuration and cabling.</p> <p>The PI-LED Edge Light System must not be operated with less or more LED modules than provided for the system. Operation with a wrong number of LED modules can lead to destruction of the LED modules.</p>			

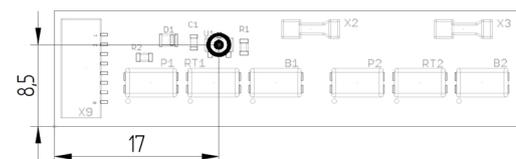
LED module Master: direct connection to the LMU / connection to the first Slave module

LED module Slave: connection to the Master module / connection to one further Slave module or end of module chain

Size in mm



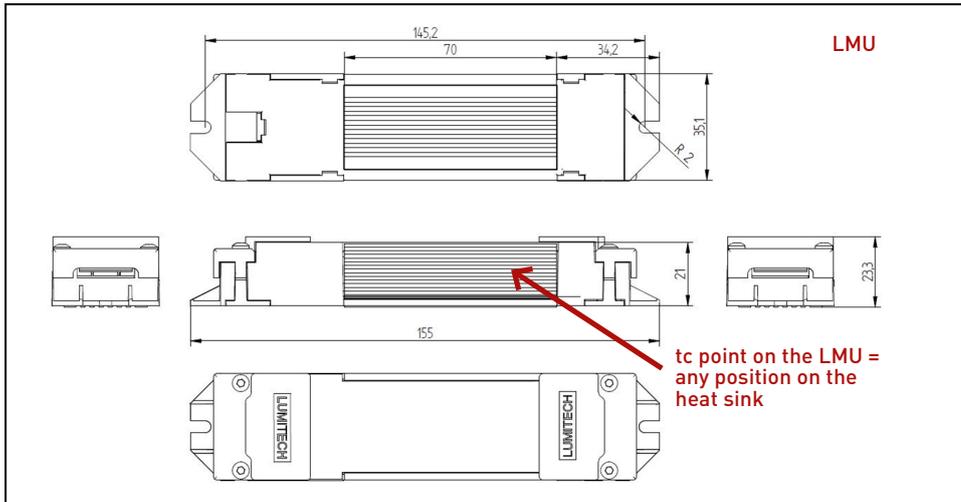
tc point - LED module Master/Slave



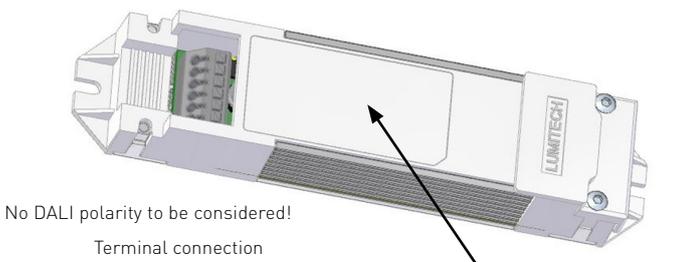
- Notes:**
- All values apply at $t_a=25^\circ\text{C}$, $t_c=45^\circ\text{C}$ and 4000K
 - Tolerance ranges: illumination data +/- 15% | electrical data +/- 15% | supply voltage 48V DC +/- 5%
 - Illumination specifications in accordance with CIE1931
 - If the supply voltage exceeds the max. permitted operating voltage, the PI-LED system will be overstressed. This will result in a highly reduced service life.
 - If the maximum temperature limits are exceeded, the lifetime of the PI-LED system will be greatly reduced or the system may be damaged. Temperature measurements of the LED modules or PI-LED system have to be taken in the thermally stable state by means of a temperature sensor as per EN60598-1.
 - The maximum system power of the PI-LED Edge Light System is limited to 21W (1 LED module) / 42W (2 LED modules) / 63W (3 LED modules) due to its software.
 - According to colour temperature and temperature of the PI-LED system, the Mac Adam tolerance takes on values < 4.
 - All diagrams inside this document show typical curves and not the exact behaviour of single LED modules.

EDGE LIGHT SYSTEM

TECHNICAL DRAWINGS AND DATA - LMU



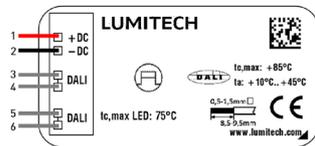
CONNECTION - DALI DT8



No DALI polarity to be considered!

Terminal connection

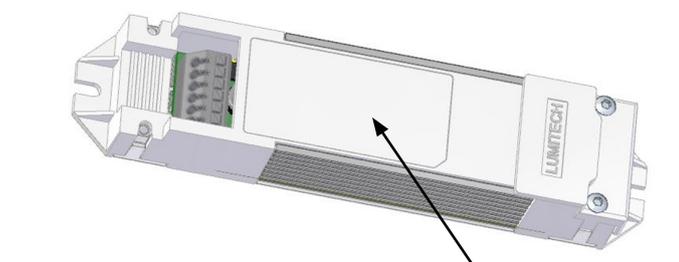
Terminal No.	Function
1	+ 48V DC
2	- 0V DC
3	DALI IN
4	DALI OUT
5	DALI IN
6	DALI OUT



*PI-LED systems with DALI interface are DALI1 / DALI Device Type 8 registered where colour control with regard to DALI Device Type 8 is fully implemented according to the underlying DALI standard. Since there is currently no possibility for testing products for compliance with the DALI Device Type 8 standard (no official DALI tester existing or available), a formal verification can not be provided.

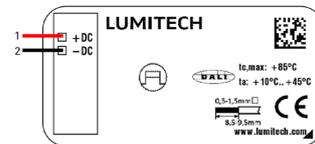
"The DALI colour control functionality (part 209/Device Type 8) of this product has not been verified."

CONNECTION - ZIGBEE 3.0



Terminal connection

Terminal No.	Function
1	+ 48V DC
2	- 0V DC



FUNCTIONAL DESCRIPTION - DALI DT8*

Mode	CCT	RGB	CIE
Colour	1,800K-16,000K	Channels separately controllable	PI-LED colour space
Brightness	1% - 100%		

Information:

Colour accuracy in the colour mode is given only for CIE-xy points.

Possible assignment to a maximum of 16 groups and 16 light scenes

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Brightness	1% - 100%		

Information:

Colour accuracy in the colour mode is given only for CIE-xy points.

Possible assignment to groups and light scenes depending on control unit

Possible control units:

- LTP-1026 (NeoLink Box) together with the myPI-LED App for Android/iOS
- K-ZWALLY-x.2

Information:

Depending on the assembly situation of the LMU, the range of the ZigBee module can vary. Mounting the LMU inside of a sealed metal case can dramatically reduce the ZigBee range!

EDGE LIGHT SYSTEM

ASSEMBLY AND POSSIBLE APPLICATIONS OF THE PI-LED EDGE LIGHT SYSTEM

Configuration example

LMU, 700mm connection cable, 1 x Master module, 1 x Slave module

Recommended cable lengths between the LED modules	
Terminal marking	Length [mm]
-B	60.5
-R	100
-P	135
+	170

The connection cables between two LED modules connect two associated terminals.

NOTE: Before operating the PI-LED EDGE LIGHT SYSTEM, all connection cables must be mounted correctly! Wrong or missing cabling of the LED modules can lead to damage or destruction of the LED modules!

System type	Number of LED modules	
	Master	Slave
LTS-0252y-1x-EL	1	-
LTS-0502y-1x-EL	1	1
LTS-0752y-1x-EL	1	2

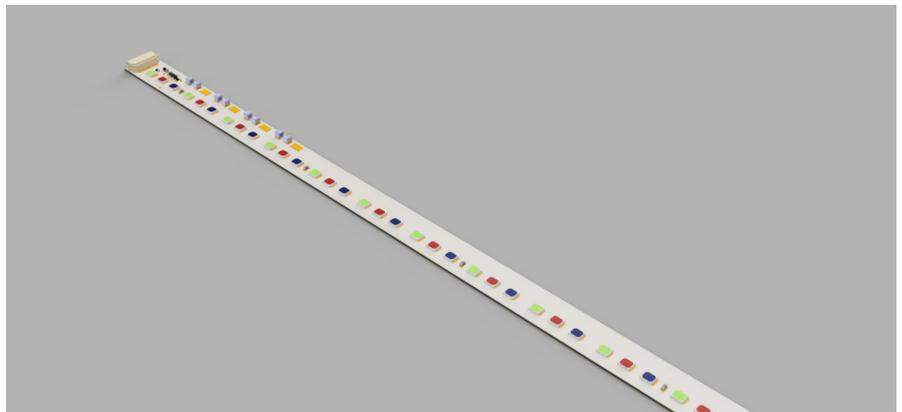
The connection of the LED modules within the PI-LED Edge Light System has to be always in the order "1 x Master - 0-2 x Slave".

Other combinations are not possible.

The PI-LED Edge Light System is delivered in a not prewired state.

PI-LED Edge Light Systems are suitable for the following applications:

- Area luminaires with edge lighting
- Linear luminaires



ACCESSORIES: RECOMMENDED LED DRIVERS

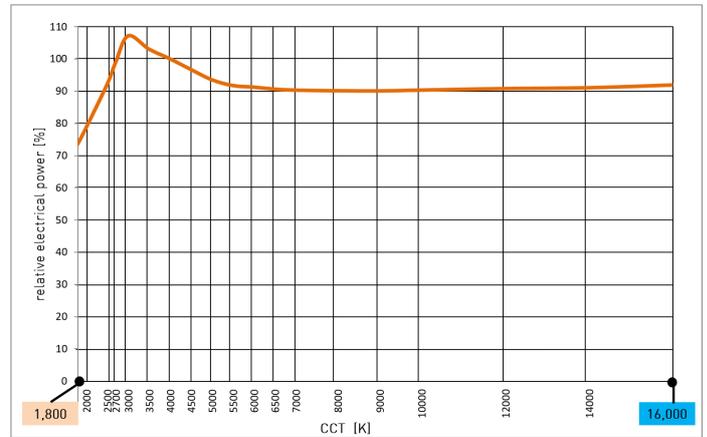
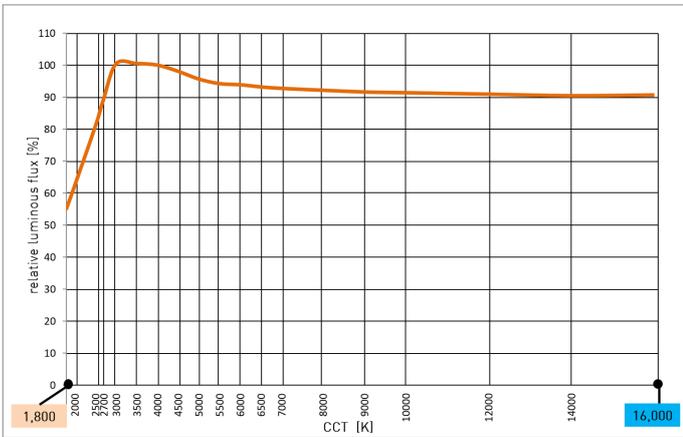
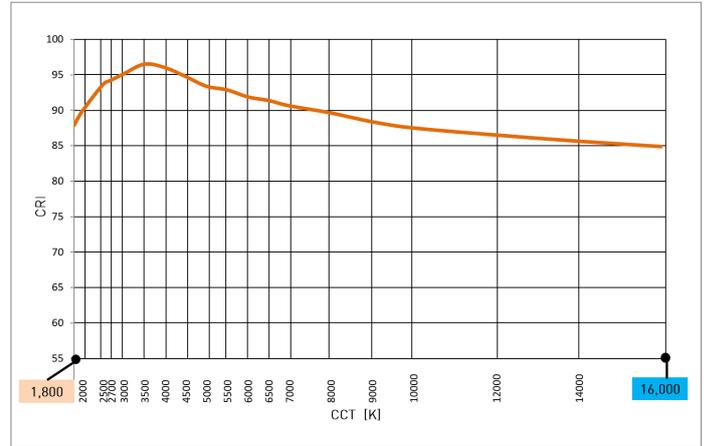
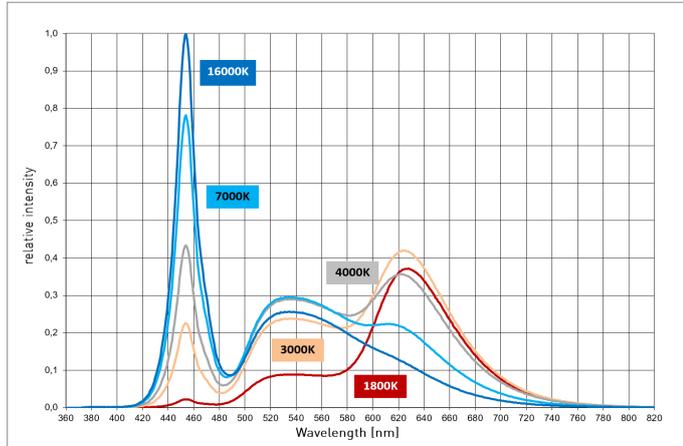
PI-LED system data			LED drivers	
Type	typ. power [W]	max. power [W]	LTP-1067 60W 48V IP20 LT 123x80x22,5mm	LTP-1116 100W 48V IP20 LT 350x30x18mm
LTS-0252x-1x-EL	19.6	21	 recommended	 suitable
LTS-0502x-1x-EL	39.1	42	recommended	suitable
LTS-0752x-1x-EL	58.7	63		recommended

NOTES ON STANDARDS AND SECURITY POLICIES

EOS/ESD security police	The PI-LED EDGE LIGHT SYSTEM contains components that are sensitive to electrostatic discharge. It may only be installed if appropriate EOS/ESD protection in manufacturing and in application is applied.
CE - marking of the luminaire	The PI-LED EDGE LIGHT SYSTEM is tested according to the applicable standards (see Standards). Corresponding standard tests of the final product must be carried out separately.
Fulfilled standards	EN62031 EN62471 EN61347-2-13
Underlying standards	LED modules for general lighting - Safety specifications Photobiological safety of lamps and lamp systems Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules ETSI EN 300 328 V2.1.1 Wideband transmission systems - Data transmission equipment operating in the 2,4 GHz ISM band EN 301 489-3 Electromagnetic compatibility and Radio spectrum Matters (ERM) IEEE 1789-2015 IEEE Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers

EDGE LIGHT SYSTEM

PHOTOMETRICAL PROPERTIES



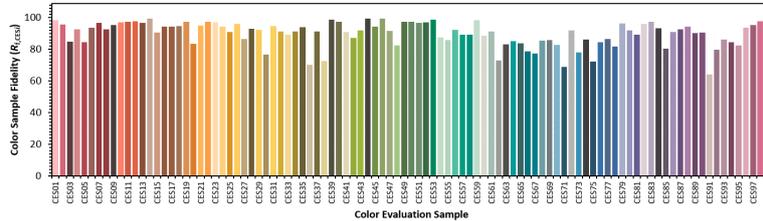
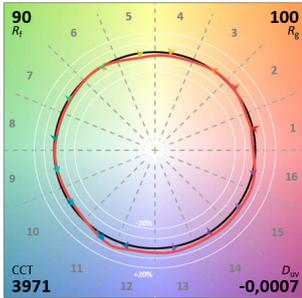
CCT [K]	general data			visual data (exemplary for a PI-LED EDGE LIGHT SYSTEM with 2 LED modules)		melanopic factors (relevant for melanopic light design)			
	CRI	CIE-x	CIE-y	Luminous flux [lm]	Efficiency [lm/W]	alpha (smel)	alpha (smel) x correction factor 1.103	Luminous flux (smel, d65) in %	Efficiency (smel, d65) in lm/W
1,800	87.9	0.5492	0.4082	2,870	100	0.242	0.267	15	27
2,000	89.9	0.5268	0.4133	3,246	106	0.283	0.312	19	33
2,500	93.6	0.4770	0.4137	4,211	117	0.377	0.416	34	49
2,700	94.3	0.4599	0.4106	4,654	120	0.412	0.454	41	55
3,000	95.1	0.4369	0.4041	5,223	125	0.462	0.509	51	63
3,500	96.5	0.4053	0.3907	5,226	130	0.538	0.593	60	77
4,000	96.0	0.3804	0.3767	5,200	133	0.606	0.668	67	89
4,500	94.8	0.3608	0.3635	5,099	135	0.666	0.735	72	99
5,000	93.4	0.3451	0.3516	4,973	136	0.721	0.795	76	108
5,500	92.9	0.3324	0.3410	4,900	137	0.769	0.848	80	116
6,000	91.9	0.3221	0.3318	4,881	137	0.812	0.896	84	123
6,500	91.4	0.3135	0.3236	4,846	137	0.851	0.939	87	128
7,000	90.6	0.3064	0.3165	4,823	137	0.886	0.977	91	133
8,000	89.6	0.2952	0.3048	4,792	136	0.945	1.042	96	142
9,000	88.4	0.2869	0.2956	4,764	135	0.993	1.095	100	148
10,000	87.5	0.2806	0.2883	4,752	135	1.033	1.139	104	153
12,000	86.5	0.2718	0.2776	4,728	133	1.094	1.206	110	161
14,000	85.6	0.2659	0.2702	4,703	132	1.138	1.255	114	166
16,000	84.9	0.2618	0.2648	4,716	131	1.172	1.292	117	170

Remark: The coefficient alpha(smel) describes the melanopic effectiveness of the light source on humans and their circadian rhythm. To give the natural human biorhythm the best possible support, the melatonin production can be minimized by higher values of alpha(smel) throughout the day and stimulated by lower values in the evening.

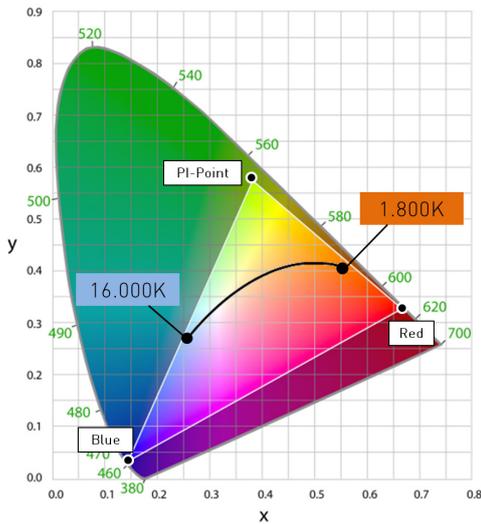
PI-LED enables the implementation of an illumination that is not only visual but also biological/melanopic effective. For a standard-conforming lighting design, Lumitech recommends the document DIN SPEC 5031-100 to be taken as a basis.

EDGE LIGHT SYSTEM

IES TM-30



COORDINATES AND TOLERANCES ACCORDING TO CIE 1931



Representable PI-LED colour space in the CIE 1931 system
If a colour point outside of the triangle (PI-LED colour space) is set, the closest colour point within the triangle is referenced.

LIFETIME

tp [°C]	L80B10 [h]
75°C	50,000

Notes:

- Value L is a statistical value, the actual drop in the luminous flux can vary across the delivered LED modules.
- tp-position = tc-position LED module

THERMAL CHARACTERISTICS

Ambient temperature	+10°C ... +45°C
Storage temperature	-20°C.. +80°C
t _{c,max} LED Module	+75°C
t _{c,max} LMU	+85°C

