

OLED-Lighting

OLEDWorks

passion.experience.reliability.



Essential criteria

As a long established and owner-operated company, we always act according to the features reliability and liability, honesty and transparency as well as flexibility and discretion. Customer satisfaction confidence and commercial added value are basis for successful cooperation.

Reliable and strong partnership

We put the strength in working together exclusively with well-respected and leading manufacturers and suppliers. We achieve confidence and consistency in the market for more than 60 years. We do implement your demand on product quality and availability.

All-over processes and significant quality

The certification according to DIN EN ISO 9001:2008 proves the continuous representation of our processes. All procedures and workflows are location and department-overall recorded. This guarantees you, as our valued customer a maximum of safety and transparency in the complete process chain.

High advisory skills and solution

We confirm the confidence of our customers by fulfilling and exceeding their expectations. Our competence of individual consulting and target-oriented solutions are reflected in our custom-fit products. Have a look by yourself!

Market knowledge from A to Z

Besides our specialized product portfolio we distinguish ourselves with profound branch knowledge. We use this know-how in order to give an optimum of product support. You can always rely on our extensive technical expertise from A like Acrich High Voltage Technology to Z like Zhaga LED modules. Our experts are always beyond one's nose and give you full support during your complete project realization and do also consider alternative solution approaches, if necessary.

SOLUTION
PARTNER



Onwards with sophisticated steps

Neumüller Elektronik has been a successful electronics distributor of electronic components and systems for more than 60 years. With its expertise in the fields of optoelectronics, lighting, sensors, power supply, electromechanics, hi-rel, alarm & acoustics, RFID and circuit breakers, Neumüller Elektronik is a valued partner in the development of customer-specific applications.



Pioneers of OLED Lighting Technology

OLEDWorks' mission is to empower our inspired customers through pioneering development and manufacture of the world's best and most affordable OLED lighting devices.

Creating world-class, cost-effective solutions requires an entirely new approach that breaks from traditional OLED manufacturing paradigms. With production in Aachen, Germany and in Rochester, New York, OLEDWorks boasts two innovative and complementary manufacturing platforms that deliver affordable OLED solid state lighting panels. OLEDWorks is uniquely positioned to offer volume production while expanding product portfolio to enhance design inspiration.

With a focus on performance excellence, flexibility and responsiveness, OLEDWorks enables our customers to adapt quickly to market demands. OLEDWorks is singularly positioned to deliver OLED lighting engines to our integration partners – the creative collaborators in the luminaire, design, architecture and adjacent markets.

Our team is comprised of global OLED pioneers and manufacturing experts. As key inventors, innovators, and implementers for the processes and equipment that manufactured the world's first active matrix OLED display and the highest brightness light panel, OLEDWorks has significant OLED production experience and unique insight into manufacturing strategies specifically tailored to lighting.



What is OLED Lighting?

What are the differences between OLED Lighting vs. LED Lighting?

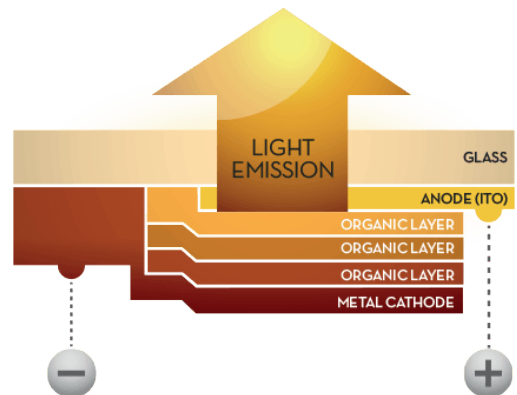
OLED, like LED, is a solid state lighting (SSL) technology. OLED lighting is composed of thin organic layers (carbon based) sandwiched between two electrodes. When DC current is applied, charge carriers from the anode and cathode are injected into the organic layers, electroluminescence occurs and visible light is emitted.

An OLED lighting panel starts with a transparent substrate that provides mechanical structure as well as desired optical properties. The substrate includes a patterned transparent conductor layer, usually Indium Tin Oxide (ITO) which serves as the bottom electrode, or anode. Very thin layers of organic materials are deposited onto the anode surface followed by a metallic cathode, or second electrode. These layers are very thin and each layer may contain several materials.

The choice of organic dopants determines the wavelength, or color, of the emitted light. The organic layers are unordered, which means, unlike LED, they do not require a crystalline substrate. Therefore, OLED lighting can be built on a wide variety of low cost substrates and across wide areas, making them ideal for large-area light sources. When complete, the OLED is actually thinner than a human hair!

Benefits of OLED Lighting

- OLED lighting will introduce a paradigm shift in the way we think about lighting and the way we use it. For the first time, light will be generated naturally as areas of uniform soft emission rather than piercing points or tubes of light.
- OLED lights will light your world without shades, reflectors or diffusers. Bulky fixtures to hide light sources will become passé. The new OLED lighting will emphasize the architecture rather than clutter it.
- As a solid-state lighting technology, OLED technology is readily compatible with control, dimming and sensor systems
- OLED lighting consume significantly less energy than standard lights.
- OLED white lights have a naturally broad spectrum and excellent light quality
- OLED lighting devices emit light from the surface. The lighting panel may be flexible and, potentially, even transparent like a window or a reflective mirror.
- OLED lighting is thin, durable and lightweight. The technology provides fast switch-on times, wide operating temperatures and no noise.
- OLED lighting contains no mercury, eliminating the disposal and pollution problems associated with fluorescent lighting.



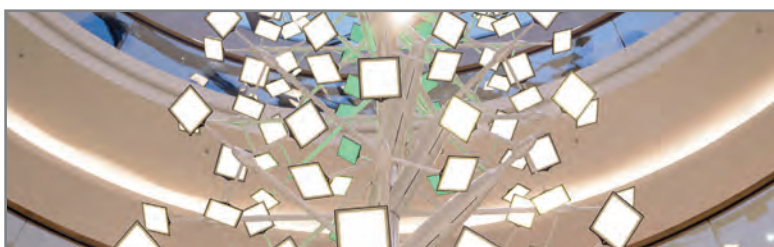
OLED Panel Brite 2

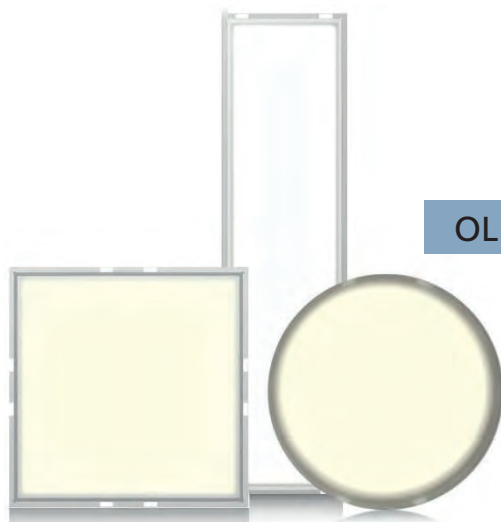
lifetime 10 000h @ 300lm/250lm 50000h @ 100lm

- CRI of >90 and R9 >70
- Dimmung with: pulse width modulation (PWM) and amplitude modulation (AM)
- CE and UL certified
- TM30 Rf/Rg 84/96

Part No.	Uf [V]	If [mA]	CCT [K]	Luminous Flux [lm]	Dimensions [mm]	Luminance Area [mm]	Thickness [mm]	Connection
LPB2300S1WWL101	20,5	260	3.000	300	120,5 x 120,5	102,2 x 102,2	1,4	solder pad
LPB2300S1WWL201	20,5	260	3.000	300	127 x 127	102,2 x 102,2	2,1	wire + plug
LPB2300R1WWL101	20,5	260	3.000	300	62,7 x 240,6	46 x 221,3	1,4	solder pad
LPB2300R1WWL201	20,5	260	3.000	300	70,2 x 248,1	46 x 221,3	2,1	wire + plug
LPB2300S1NWL101	20,8	260	4.000	250	120,5 x 120,5	102,2 x 102,2	1,4	solder pad
LPB2300S1NWL201	20,8	260	4.000	250	127 x 127	102,2 x 102,2	2,1	wire + plug
LPB2300R1NWL101	20,8	260	4.000	250	62,7 x 240,6	46 x 221,3	1,4	solder pad
LPB2300R1WWL201	20,8	260	4.000	250	70,2 x 248,1	46 x 221,3	2,1	wire + plug

Application examples





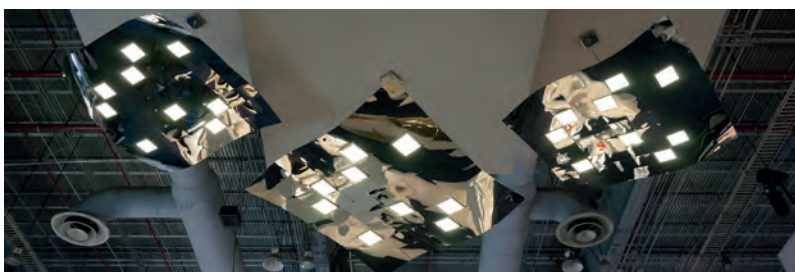
OLED Panel Brite 3

lifetime 30 000h @ 300lm/250lm 100 000h @ 100lm

- CRI of >90 and a R9 >50
- Dimming with: pulse width modulation (PWM) and amplitude modulation (AM)
- CE und UL certified
- TM30 Rf/Rg 85/98

Part No.	Uf [V]	If [mA]	CCT [K]	Luminous Flux [lm]	Dimensions [mm]	Luminance area [mm]	Thickness [mm]	Connection
LPB3300S1WWL101	18,7	215	3.000	300	120,5 x 120,5	102,4 x 102,4	1,4	solder pad
LPB3300S1WWL201	18,7	215	3.000	300	127 x 127	102,4 x 102,4	2,1	wire + plug
LPB3300R1WWL101	18,7	215	3.000	300	62,7 x 240,6	46 x 222	1,4	solder pad
LPB3300R1WWL201	18,7	215	3.000	300	70,2 x 248,1	46 x 222	2,1	wire + plug
LPB3200C1WWL101	18,7	145	3.000	200	Ø 113	Ø 94	1,4	solder pad
LPB3200C1WWL201	18,7	145	3.000	200	Ø 119	Ø 94	2,1	wire + plug
LPB3300S1NWL101	19,6	215	4.000	250	120,5 x 120,5	102,4 x 102,4	1,4	solder pad
LPB3300S1NWL201	19,6	215	4.000	250	127 x 127	102,4 x 102,4	2,1	wire + plug
LPB3300R1NWL101	19,6	215	4.000	250	62,7 x 240,6	46 x 222	1,4	solder pad
LPB3300R1NWL201	19,6	215	4.000	250	70,2 x 248,1	46 x 222	2,1	wire + plug
LPB3200C1NWL101	19,6	145	4.000	165	Ø 113	Ø 94	1,4	solder pad
LPB3200C1NWL201	19,6	145	4.000	165	Ø 119	Ø 94	2,1	wire + plug

Application examples



Brite3

with further improvements
in efficacy and lifetime

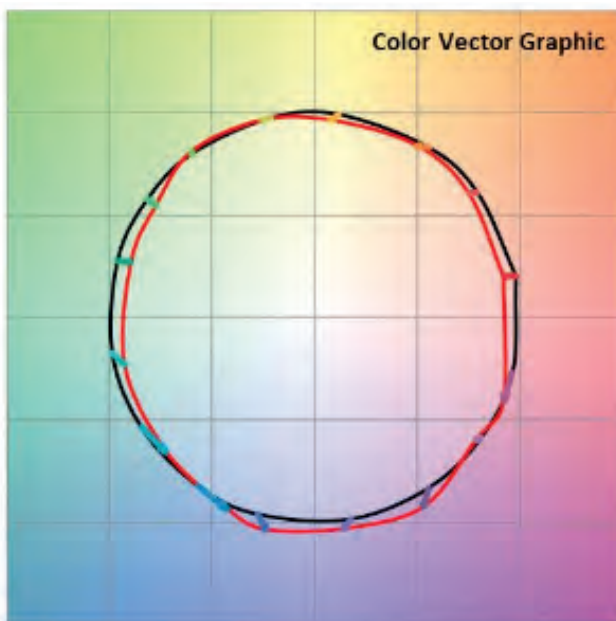
The next generation of OLED lighting panels.

Brite 3 products come in 3 different sizes: square, rectangular and now as well in round. In addition, we offer for the first time ever a rectangular panel which is bendable up to a radius of less than 10cm while still providing the high brightness and high reliability of all Brite panels!

With an efficacy of more than 80lm/W for the square, rectangular and round panel and a lifetime of up to 100,000 hours, we bring OLED lighting again further into functional lighting applications.

Color vector graphic

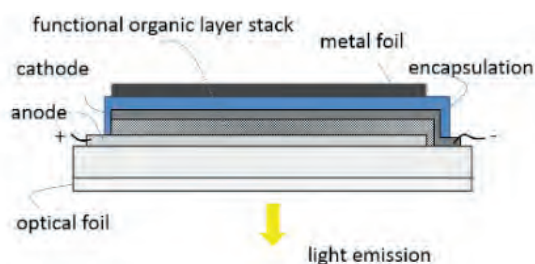
based on TM-30 metrics for Brite 3 FL300 ww



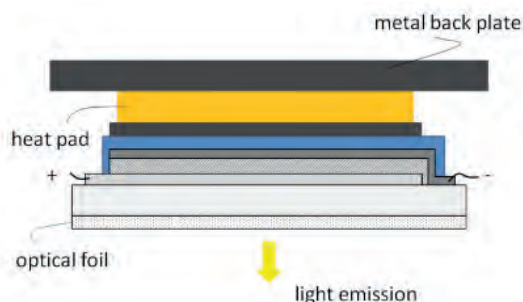
TM-30 metrics: Rf/Rg = 85/ 98

Three interfaces need to be considered:

- **Thermal/mechanical interface:** the back of the OLED acts as a thermal and mechanical interface.
- The back of integration level 1 is made of a thin metal foil which acts as a heat spreader the backs of integration levels 2 consist of a metal back-plate (see Figure 1).
- **Optical interface:** the OLED glass front acts as an emission 'window' and performs the function of the substrate on which the OLED is built. It provides a certain (limited) stability to the module but must not be used as a mechanical interface. An optical foil is attached to the glass front of the Brite 3 FL300 to improve the extraction of light and the color over angle stability.



Level 1:
OLED panel with thermal interface, without wires.



Level 2:
OLED panel with thermal interface, mounting plate, wires



Gewerbegebiet Ost 7
91085 Weisendorf

Tel.: +49 9135 73666-0
Fax: +49 9135 73666-60

E-Mail: info@neumueller.com
www.neumueller.com

Niederlassung Nord

Beimoorkamp 3
22926 Ahrensburg

Tel.: +49 4102 66601-0
Fax: +49 4102 66601-66

E-Mail: info@neumueller.com
www.neumueller.com