Opsytec Dr. Gröbel

High-Power UV-LED spot P

LEDControl S

new 1.6 x higher irradiance

UVLED Spot P

UVLED Spot P short

The very high irradiances of up to 39,000 mW/cm² and the compact dimensions characterize the UV-LED Spots and allow extremely short process times. For this purpose, the UV-LED is focused at the desired working distance.

The UV-LED Spot P is suitable for automated and manual bonding. For applications such as bonding, potting or fluorescence excitation, the wavelengths 365, 385, 395, 405 and 450 nm are available. With the variety of wavelengths as well as the exchangeable optics, you remain particularly flexible and can upgrade and change over at any time.

For controlling the UV-LED Spot P, we offer the LedControl S as a table top device or the LedControl DC for DIN rail mounting.

With the LedControl S and DC UV LED controllers, the ultraviolet LED output can be set between 2% and 100%.

A timer for irradiation times between 0.01 s and 9999 s is already integrated. Optionally, continuous operation or externally triggered operation are available.

Both LEDControl systems can be controlled via RS485, USB or RS232. Additional digital and analog PLC inputs are also available as an option.

Due to the operation with safety extra-low voltage the LedControl DC is easy and safe to integrate into PLC systems.

APPLICATIONS

- Industrial UV curing and bonding
- IC Encapsulation
- UV sealing
- Hairline / leak detection using fluorescence markers
- Fluorescence Spectroscopy
- Surface Inspection

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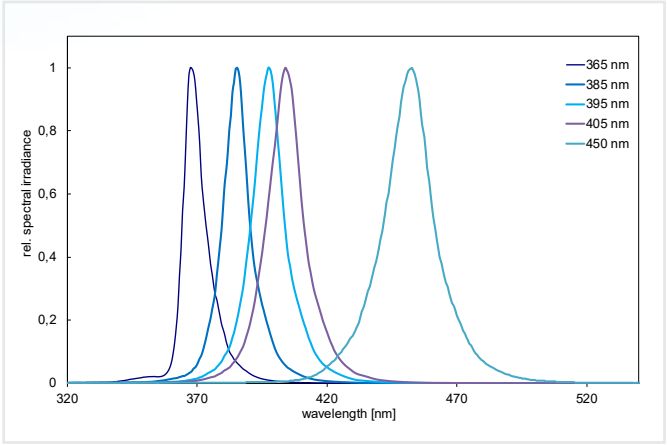
certified according
DIN EN ISO 9001:2015

TECHNICAL DATA UVLED SPOTS

Wavelength	365, 385, 395, 405 o. 450nm
Emission, peak tolerance	+/- 5 nm
Emission, FWHM	10 - 20 nm
Max. irradiance	> 39000 mW/cm²
Lifetime	20.000 h, typical
Dimensions, Spot P	Ø 15 x 143 mm
Dimensions, Spot P short	Ø 15 x 60 mm
Cable length	1,5 m; optional up to 5 m
Weight	~130 g
Classification	risk group 3 according
	DIN EN 62471:2009-03
Operating temperature	5 to 40 °C
Surface temperature	max 60°C, ED >0,5 and short
	version require add. cooling



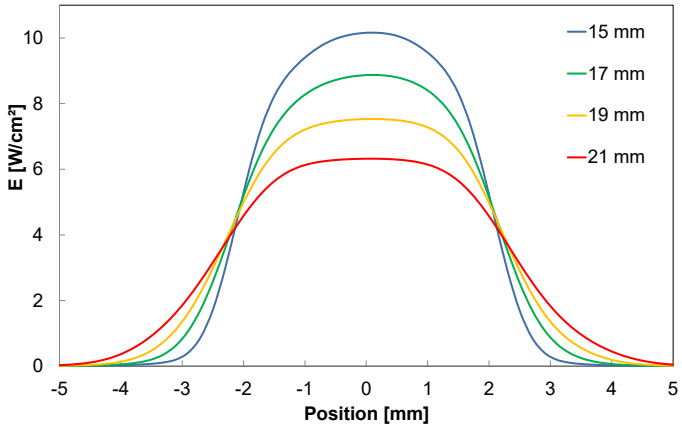
Typical UV-LED spectra

Typical UV LED spectra are illustrated.

Tip: At the LedControl you can operate several wavelengths simultaneously.

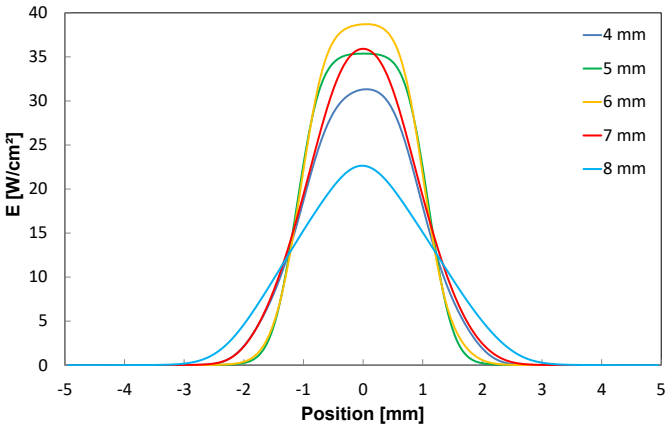
BEAM PROFILES AND OPTICS

For small spot diameters, we recommend the optics “Standard” and “High Power”.

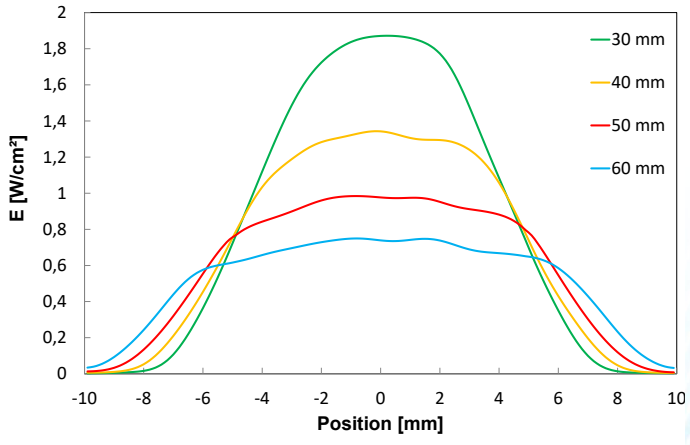


Irradiance profile vs. distance for 385 nm and optic „Standard“

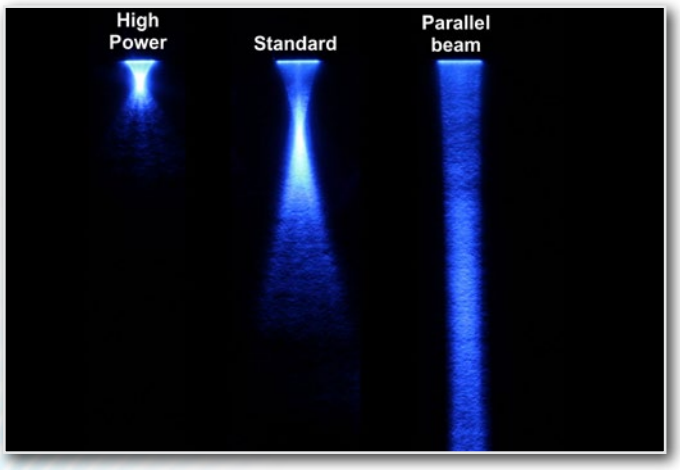
Larger distances and spot diameters are reached by the optic “Parallel Beam”.



Irradiance profile vs. distance for 385 nm and optic „High Power“



Irradiance profile vs. distance for 385 nm and optic „Parallel Beam“



Beam profiles

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LEDCONTROL S WITH SAFETY OPTION PL-READY

In order to design machines safely and to meet the requirements of the Machinery Directive 2006/42/EC, safety functions are required in the control systems. Typically, the required Performance Level PLr is determined for each safety function. This is where the first difficulty begins during the planning and commissioning of UV systems, namely determining the severity of the injury, the frequency and duration of exposure, and how to avoid the uv hazard.

In the short term, UV exposure of the skin leads to erythema, elastosis and/or skin cancer. In contrast, UV exposure of the eye can lead to photokeratitis, conjunctivitis and cataractogenesis. If e.g. skin cancer is considered, it is a severe, usually irreversible injury.

In this context, Directive 2006/25/EC „Artificial Optical Radiation“ allows regular exposure up to a daily exposure limit of 30 J/m². It is therefore possible to minimize the severity of the injury by the duration and intensity of exposure without having to comply with an absolute zero exposure. If the exposure limit is maintained, it is expected that healthy adult individuals can be exposed repeatedly without acute adverse effects. For example, short-term exposure may result in reversible injury such as mild erythema, i.e., sunburn, in the event of an error.

However, the delimitation is not certain and measures / safety functions are necessary in any case. For this purpose, e.g. measurements on existing installations are possible and useful.

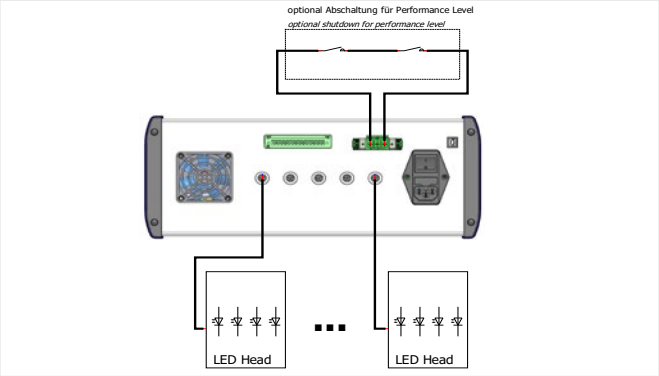
During the planning phase, however, measurements are not possible, or can only be estimated with additional effort. Therefore, a higher, required Performance Level PLr is often demanded.

The PLready safety option works with a safety extra-low voltage (SELV) of 48 VDC, which is safely isolated by an external circuit and can switch off the LED modules completely in the event of a fault.

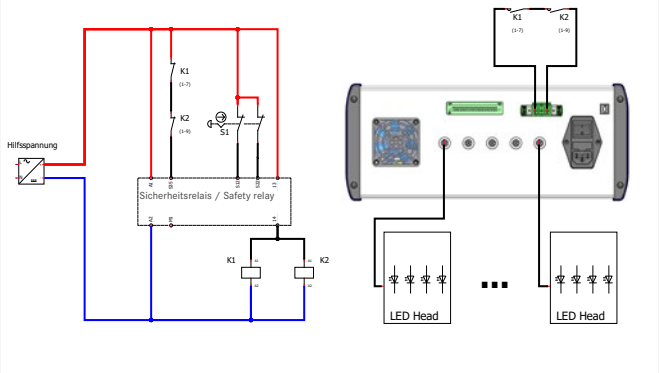
If the specification of a performance level is desired, this can be realized by the extension PL+. PL+ is suitable up to PL category 4, according to EN ISO 13849-1 and SIL 3 according to EN 62061, if cross-circuits in the control to the LED module as well as in the sensor circuit can be excluded.

A two-channel safety door monitoring with automatic start is shown as an example.

The advantage over the simple isolation of the DC voltages is the monitoring of the external contactors. The connection example is suitable up to category 4, PL e (EN ISO 13849-1) or SIL 3 (EN 62061), if cross-connections in the control to the actuator as well as in the sensor circuit can be excluded.



Connection example



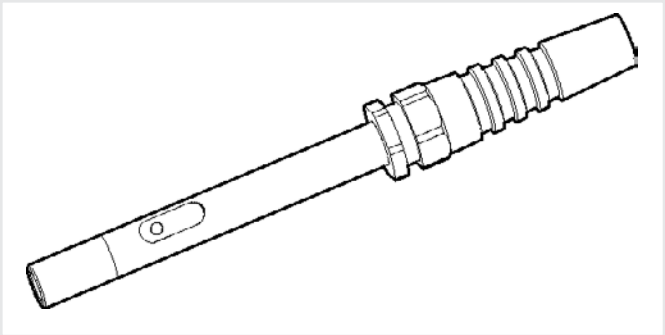
Connection example for PL KAT 4

TECHNICAL DATA

Compatible LedControl	LedControl S, 5S or 16S
	LedControl DC
Functions	2 to 100%, each spot separate
	timer, continuous operation
	Master /slave mode

EASY-TO-USE-TIPS

For the easy-to-use operation we recommend to order the optional footswitch. A extension cable with bend protection is available for work on hard-to-reach places.



Bend protection for cable, includes extension cable

MAX IRRADIANCE

High-Power optic	39 W/cm²
Standard optic	9,0 W/cm²
Parallel beam optic	1,8 W/cm²

Within focus, wavelength 395 nm, power 100%

PART NUMBERS

UV-LED Spot P	860608
UV-LED Spot P short	860608SH
Foot switch	860611
Additional optic	860605
Clamping mount	860604k
Cooling mount	860605c
Bend protection & extension	860604V3 (cable 3 m)
Bend protection & extension	860604V5 (cable 5 m)
LEDCONTROL S	860610B1
LEDCONTROL 5S	860610B5
LEDCONTROL 16S	860610B16
LEDControl DC	860610DC
Safety option PLready PLready	860609PL
Interface option (I/O)	860609-CP
Programming interface RS485	860609-RS485 *
Programming interface RS232	860609-RS232 *
Programming interface USB	860609-USB *
Test and control software	860609-SW

* Includes Interface option (I/O)

SCOPE OF DELIVERY

UVLED Spot with optic, mains cable, manual

Please specify wavelength, optics and options.

SAFETY

The equipment contains LEDs that emit UV-A radiation and blue light. UV radiation is invisible. The light you see is just luminescence caused by the UV. Mostly, luminescence is much weaker than the exciting UV.

UV-A light may lead to cataract formation in the eye lens and to photo-retinitis. Always use proper UV protection goggles when operating the device. The UV-A also causes pigmentation and aging of the skin. Please use proper clothing, gloves, and/or other personal safety equipment depending on exposure. Avoid irradiating skin or eyes directly! UV irradiance in the spot is several hundred times higher than that of sunlight!

This device is classified to risk group 3 (High Risk) according to DIN EN 62471:2009-03 “Photobiological safety of lamps and lamp systems.”

For protection, the operating staff should not look into the LED and should not expose their skin continuously to UV/VIS radiation.

We will gladly assist you with UV job security and risk assessment according to EN 14255:2005.

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