

# DELO



Adhesive curing with the DELOLUX 50 LED lamp



## DELOLUX 50

LED Spot Lamp

High-intensity DELOLUX 50  
light source and DELO-UNIPRO  
Light control unit



## DELOLUX 50



DELOLUX 50:  
**Intensity**, directly at chip:  
365 nm: **50,000 mW/cm<sup>2</sup>**  
400 nm: **54,000 mW/cm<sup>2</sup>**

## LED curing lamps in industrial production

Short cycle times and fast, reliable series production processes are key criteria in industrial manufacturing. LED is today's leading adhesives curing lamp technology for industrial production, with decisive advantages over classic discharge lamps. LEDs ensure a curing process that is optimally adjusted to the adhesives used. In addition, LED lamps are more energy-efficient and have a significantly longer lifetime than discharge lamps. The lifetime of a conventional mercury discharge lamp is approx. 1,000 hours, whereas the service life of an LED can exceed 20,000 hours. This gives them long-term stable intensity for high process reliability.

Another benefit is the fact that emission spectrum is adjusted to the specific adhesive, allowing optimum curing. The long lifetime of LEDs, the possibility of individual switching, and their low energy consumption help make production processes highly cost-efficient.

DELO can adapt LED technology to create the ideal answer to bonding requirements. The DELOLUX 50 lamp enables fast curing of UV-curing and light-curing adhesives, while ensuring reliable processes.

## “Plug and produce”

The small dimensions of the LED heads allow easy integration into production lines. High intensities of up to 12,000 mW/cm<sup>2</sup> are possible. Continuous intensity control enables fast and reliable serial processes. Internal control and monitoring of safety-relevant parameters, such as the LED temperature, makes for high process reliability. DELOLUX 50 can be controlled by the DELO-UNIPRO or DELO-UNIPRO Light control units, or via PLC.



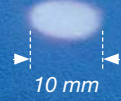
DELO supplies the most compact  
curing lamps on the market.



3 mm

DELOLUX 50 x1 with lens L3

typical working distance: 8 – 14 mm



10 mm

DELOLUX 50 x4 with lens L10

typical working distance: 9 – 15 mm

1 LED

DELOLUX 50 x1

4 LEDs

DELOLUX 50 x4

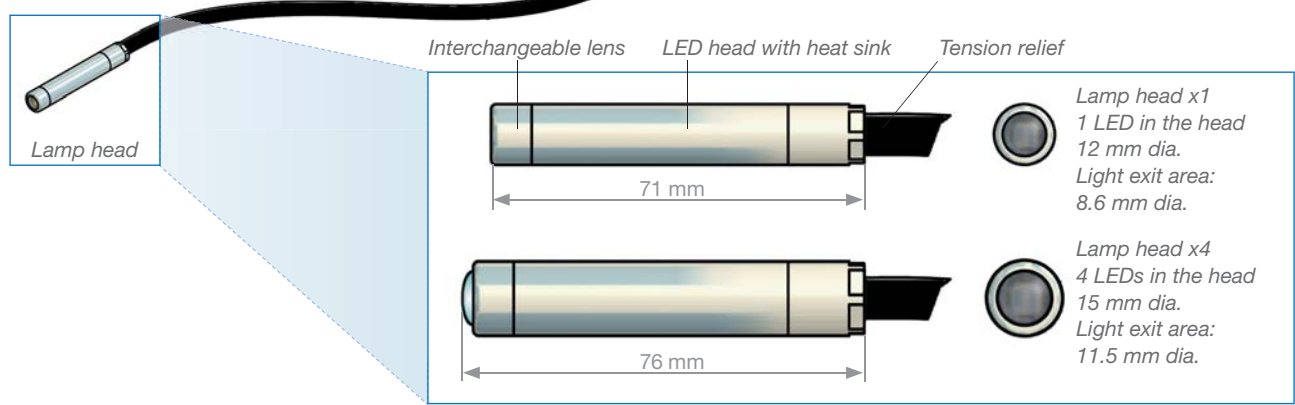
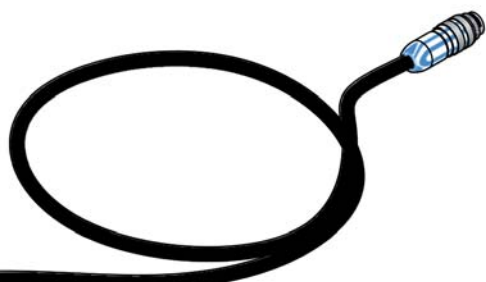
# Pinpoint curing

## Fast and pinpoint curing of UV- and light-curing adhesives

DELOLUX 50 is a high-intensity LED spot light source for fast curing of small drops of UV-curing and light-curing adhesives in seconds. Up to 4 LED heads can be connected to the base unit to enable independent irradiation of multiple bonding areas. The LED heads are available in two variants with an emission spectrum of 365 nm or 400 nm. Thus, the ideal lamp is always

available to cure UV- and light-curing adhesives. It does not matter if components must quickly be fixed in less than one second with 365 nm, or if excellent deep curing of the adhesive and transmission of the plastic material are required with 400 nm. With the new DELOLUX 50 x4 LED heads it is now also possible to intensively irradiate larger areas.

Powerguide with electrical supply and monitoring



## Application areas

DELOLUX 50	Typical application areas
<b>DELOLUX 50/365 x1</b> <ul style="list-style-type: none"> <li>Extremely fast curing of UV-curing adhesives</li> <li>Multi-purpose</li> </ul>	Short cycle times <ul style="list-style-type: none"> <li>→ Fast fixing</li> <li>→ Fixing of coil wires</li> <li>→ Securing of the position of individually adjusted components (for example optical applications)</li> <li>→ Fast bonding of decorative elements to glass</li> </ul>
<b>DELOLUX 50/400 x1</b> <ul style="list-style-type: none"> <li>Fast curing of UV- and light-curing adhesives</li> <li>Good transmission</li> <li>Very good deep curing</li> </ul>	Thicker adhesive layers <ul style="list-style-type: none"> <li>→ Casting of pins</li> <li>→ Sealing of housings</li> </ul>
<b>DELOLUX 50/365 x4</b> <ul style="list-style-type: none"> <li>Extremely fast curing of UV-curing adhesives</li> <li>High intensity on larger surfaces</li> </ul>	Larger bonding surfaces <ul style="list-style-type: none"> <li>→ Lens bonding</li> <li>→ Bonding of ferrites into magnet coils</li> </ul>
<b>DELOLUX 50/400 x4</b> <ul style="list-style-type: none"> <li>Extremely fast curing of light-curing adhesives</li> <li>High intensity on larger surfaces</li> <li>Excellent transmission</li> <li>Very good deep curing</li> </ul>	Larger bonding surfaces and thicker layers <ul style="list-style-type: none"> <li>→ Bonding of connection elements (ONSERT®)</li> <li>→ Bonding of plastic components</li> <li>→ Fixing of cables to PCBs</li> </ul>

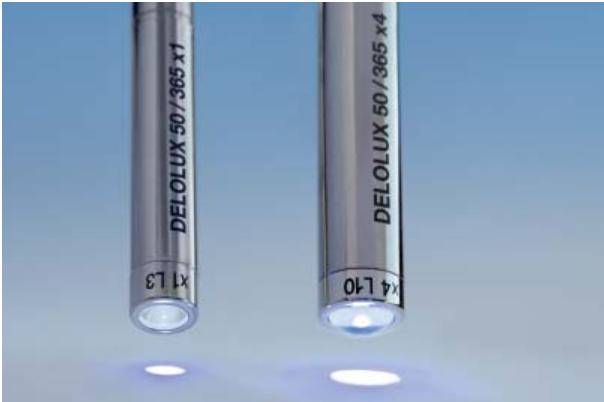
## Curing lamps for various photoinitiated-curing adhesives:

	DELOLUX 50 x1		DELOLUX 50 x4		Min. irradiation time [s] <sup>1</sup>	Typical application
	365	400	365	400		
<b>DELO-PHOTOBOND</b>					DELO Standard 43	
4436	+	++	+	++	4	Multi-purpose adhesive
4494	+	++	+	++	5	Multi-purpose adhesive; good for glass, metal, plastic
4497	+	++	+	++	3	Multi-purpose adhesive
AD494	+	++	+	++	14	Multi-purpose adhesive
GB310	+	-	+	-	5	Glass showcases, glass furniture, spot bonding
GB345	++	-	++	-	5	Glass showcases, glass furniture, hinges
PB437	+	++	+	++	1	Multi-purpose for glass, metal, plastic
<b>DELO-KATIOBOND</b>					DELO Standard 37 <sup>2</sup>	
4552	+	+	+	+	12	Bonding, sealing
4557	+	+	+	+	19	Bonding, sealing
4578	+	+	+	+	12	Bonding, sealing
4594	+	+	+	+	14	Bonding, sealing
4597	+	+	+	+	16	Bonding, sealing
AD610	++	-	++	-	4	Optoassembly
AD640	++	+	++	+	7	Optoassembly

++ Excellent adhesive – lamp combination  
 + Suitable adhesive – lamp combination  
 - Curing not possible

<sup>1</sup> At open adhesive drop; adhesive-specific adjustment of intensity and wavelength with ideal lamp; longer irradiation times might be beneficial in special applications

<sup>2</sup> Irradiation with 200 mW/cm<sup>2</sup>



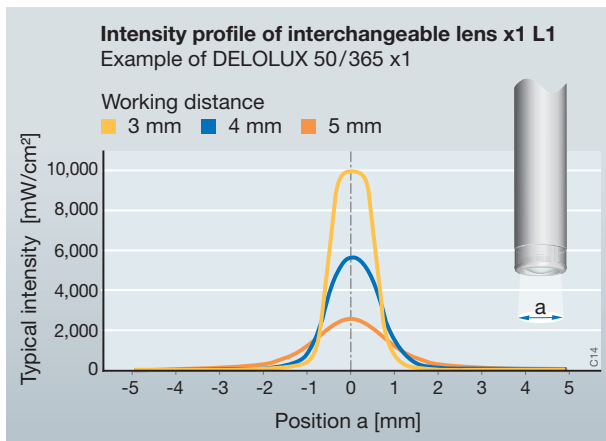
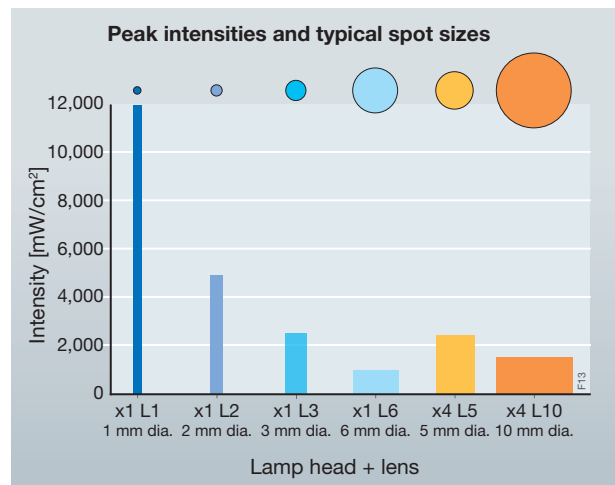
## Benefits overview

Technical properties	Your benefits
LED technology as a convincing improvement of conventional discharge lamps	<ul style="list-style-type: none"> <li>→ Reduction of operating costs (lower current consumption, low costs for maintenance and spare parts)</li> <li>→ 20 times longer lifetime can be achieved</li> <li>→ 10 times higher energy efficiency usable for the adhesive compared to discharge lamps</li> <li>→ Light generation directly in the lamp head</li> <li>→ No heating time</li> <li>→ Stable light power at a constantly high level</li> <li>→ Continuous intensity control via power supply, no mechanical shutter required</li> </ul>
Lamp heads x1 and x4	<ul style="list-style-type: none"> <li>→ Flexible irradiation of surfaces with varying size</li> <li>→ The right LED head for any application</li> </ul>
Up to four plug-in LED heads	<ul style="list-style-type: none"> <li>→ Flexible irradiation of multiple bonding areas</li> </ul>
Interchangeable lenses with screw fitting	<ul style="list-style-type: none"> <li>→ Specific light focusing (spot size, working distance)</li> </ul>
Intensities of up to 12,000 mW/cm <sup>2</sup>	<ul style="list-style-type: none"> <li>→ Fast adhesive curing in seconds</li> <li>→ Short cycle times</li> <li>→ Fast, reliable serial processes</li> </ul>
New generation of LED light sources: LEDs with optimized heat sink	<ul style="list-style-type: none"> <li>→ Achievable lifetime &gt; 20,000 h; "on" time = lifetime</li> <li>→ Constant light intensity</li> <li>→ Ultimate process reliability thanks to monitoring of LED temperature</li> <li>→ Steady (non-intermittent) irradiation is possible</li> </ul>
Emission spectrum of 365 nm and 400 nm optimized for the adhesive	<ul style="list-style-type: none"> <li>→ Optimal curing of photoinitiated-curing DELO-PHOTOBOND, DELO-KATIOBOND and DELO-DUALBOND adhesives</li> <li>→ Minimum heat development at the component (cold light source)</li> <li>→ No hazardous radiation in the UVB and UVC range; high occupational safety</li> </ul>
Easy-to-integrate lamp head	<ul style="list-style-type: none"> <li>→ Any installation position of the lamp heads adapted to the component</li> <li>→ Easy integration into systems thanks to compact design</li> </ul>

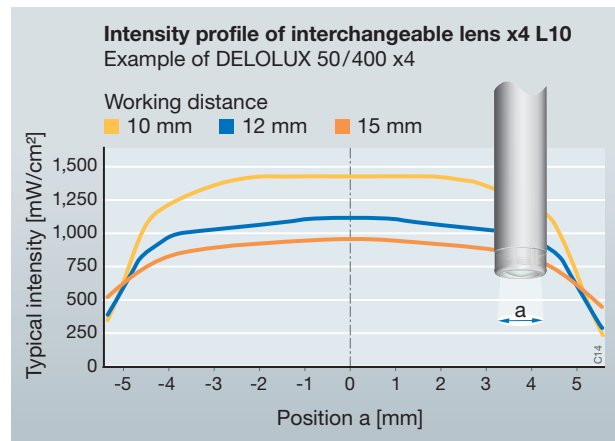
# Interchangeable lenses and LED heads for specific light focusing

Various interchangeable lenses can be attached to the two available LED heads in order to perfectly irradiate various component geometries in a wide variety of applications (see chart below and graphic on the right).

Lamp head	Lens	Dia. of irradiated area [mm]	Working distance [mm]	Peak intensity [mW/cm <sup>2</sup> ]
x1	L1	~ 0.6 – 1.1	3 – 5	12,000
	L2	~ 1.1 – 2.0	6 – 14	6,000
	L3	~ 2.0 – 3.2	8 – 14	2,500
	L6	~ 3.2 – 6.0	10 – 30	1,000
x4	L5	~ 5.0	7 – 8	2,500
	L10	~ 10.0	9 – 15	1,500



Lens x1 L1, optimized for maximum intensities up to 12,000 mW/cm<sup>2</sup>. The maximum intensity is achieved with a working distance of 3 mm.



Lens x4 L10, optimized for homogeneous irradiation of an adhesive drop at working distances of 10, 12 and 15 mm. At a distance of 10 mm, an intensity up to 1,350 mW/cm<sup>2</sup> is achieved on an area with a diameter of about 9 mm.

System components	Article number
DELOLUX 50 base unit	95 200 50
DELOLUX 50 LED head 365 x1	95 200 69
DELOLUX 50 LED head 400 x1	95 200 65
DELOLUX 50 LED head 460 x1	95 200 68
Lens L1 (-94), lens L2 (-95), lens L3 (-96), lens L6 (-97)	95 200 xx
DELOLUX 50 LED head 365 x4	95 200 70
DELOLUX 50 LED head 400 x4	95 200 77
Lens L5 (-86), lens L10 (-87)	95 200 xx
Control	Article number
DELO-UNIPRO, control unit for DELOLUX 50	95 200 01
Connection line between DELOLUX 20, 202, 50, 80 and DELO-UNIPRO	95 200 59
DELO-UNIPRO Light, control unit for DELOLUX 50	95 200 51
Connection line between DELOLUX 20, 202, 50 and DELO-UNIPRO Light	95 200 53
Accessories	Article number
DELO-RACK, housing for DELOLUX 50 and DELO-UNIPRO	95 200 13
DELOLUXcontrol light intensity meter without detector head, for area lamps and light guide lamps	95 201 08
DELOLUXcontrol LED detector head, 1 mm	95 201 06
UV safety glasses	95 200 43

## Optimized for increased process reliability



DELO-UNIPRO Light control unit



DELOLUXcontrol light intensity meter

### Easy control: DELO-UNIPRO

In order to be able to meet customer-specific demands, the control concept of DELOLUX is modular. Up to four lamps can be independently controlled with the external DELO-UNIPRO control unit. Irradiation time and intensity can be individually set for each lamp.

In addition, the status of all monitored lamp functions is displayed on the DELO-UNIPRO control unit – or alternatively via PLC. The control unit is also available as the DELO-UNIPRO Light version which – as the name suggests – is a “light” version with just the core functions.

Parameters	DELO-UNIPRO	DELO-UNIPRO Light
Core functions (irradiation time, intensity)	✓	✓
Controllable DELOLUX 50	4	1
Status and error display	✓	–

### Easy measurement: DELOLUXcontrol

Intensity measurements at regular intervals provide the customer with process reliability when operating DELOLUX lamps. Contaminations and slight distance changes, which might impair the intensity of the optical systems, are detected during checks with the light intensity meter.

DELOLUXcontrol optimally supports the users in their processes. The device can be equipped and operated with different detector heads.

MADE IN GERMANY



All DELO products are developed and produced in Germany, ensuring the highest quality of design and manufacture.



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The technical data are for informational purposes only. Specific values can be found in the user manual. It is the user's responsibility to test the suitability of the device for the intended purpose by considering all specific requirements. If you need support in using the devices, please feel free to ask your contacts in our Engineering Department.

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