

## Inert UV-LED chamber BSL-01i



BSL-01i

UV-MAT Touch

By modern UV LED technology, the chamber BSL-01 reaches a high irradiance of **up to 800 mW/cm<sup>2</sup>**. Despite its compact dimensions, the UV LED chamber BSL-01i reaches a 80-fold irradiance compared to our classical irradiation chambers. As a compact tabletop unit, the BSL-01i is perfectly suitable for laboratories and manufactory.

For different applications, the wavelengths 365 nm, 385 nm, 395 nm, 405 nm and 450 nm are available. Optionally, two wavelengths can be controlled separately. This means that the irradiation chamber can be perfectly adapted to the photoinitiator's requirements and is ideal for laboratory use or product changes.

A nearly airtight design with separate gas inlets and outlets allow irradiations under inert conditions. For this purpose, we recommend using nitrogen as a scavenging gas with a slight overpressure. The measurement of the O<sub>2</sub> concentration can be optionally performed at the rear gas outlet for this purpose.

The irradiance is adjustable from 1% to 100%. The integrated timer controls the irradiance precisely.

For even better results, we recommend one of our calibrated UVA+ sensors. The dose control is already integrated in the UV-MAT Touch and UV-MAT control units in the BSL-01i UV LED chamber. By means of an optional sensor, the UV-MAT measures the irradiance continuously, and stops the irradiance at the set target dose.

Due to the free adjustability of the irradiance and the exposure time, the optimum parameters can be determined reliably.

We offer the BSL-01i with three irradiances:

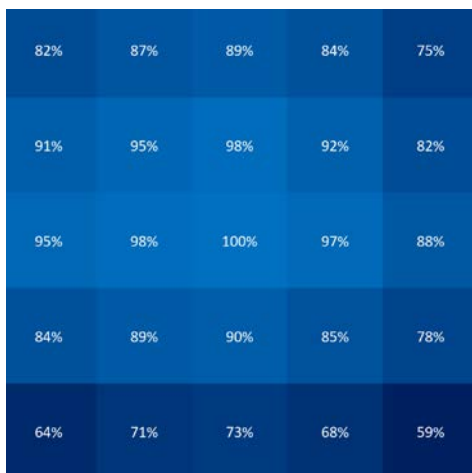
- 0 to 800 mW/cm<sup>2</sup> (version HO)
- 0 to 400 mW/cm<sup>2</sup> (version ECO)
- 0 to 200 mW/cm<sup>2</sup> (version ECO+)

Due to the low heat input of the UV LEDs, a thermal damage of the samples is minimized. A heating/cooling plate is optionally available for sample temperature control.

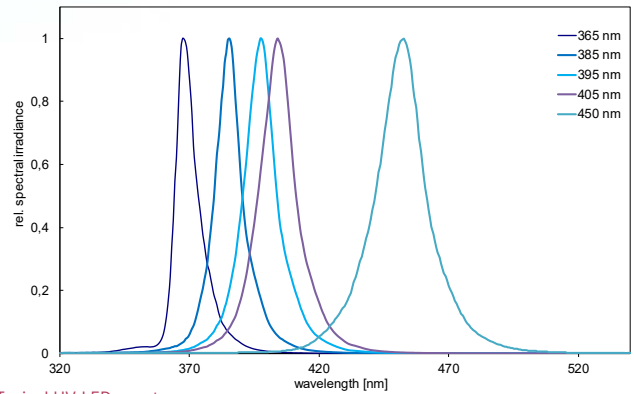
In the completely closed and monitored irradiation chamber, the operating personnel are fully protected from the UV radiation.

## TECHNICAL DATA BSL-01i

<b>Interior chamber</b>	20 x 20 x 20 cm
<b>Dimensions, chamber</b>	35 x 27 x 45 cm (B x T x H)
<b>Weight</b>	~ 20 kg
<b>Power consumption</b>	200 W - 650 W
<b>Mains</b>	100 - 240 V, 50/60 Hz
<b>Operation temperature</b>	10 to 40 °C
<b>Storage temperature</b>	-10 to 60 °C
<b>Humidity</b>	< 80% non-condensing
<b>Cooling</b>	air cooling
<b>Sample temperature</b>	~40 °C +/- 10 °C.
	Heating up by high UV irradiance
<b>Classification</b>	group 0 according DIN EN 12198:2000
<b>PC interface</b>	USB 2.0
<b>Timer</b>	0,01 s to 9999 h
<b>Resolution</b>	0,01 s
<b>Dose control</b>	with optional sensor
<b>Internal security circuit</b>	Over-temperature, door contact
<b>gas inlet and outlet</b>	Festo QSK-G1/4-10 for 10 mm hose diameter



Uniformity of irradiation (20 x 20 cm<sup>2</sup>)



Typical UV-LED spectra

## SPECIFICATIONS UV-LEDS

<b>Wavelength</b>	365, 385, 395, 405, 450 nm
<b>Emission, peak tolerance</b>	+/- 5 nm
<b>Emission, FWHM</b>	10 - 20 nm

## IRRADIANCES HO

365 nm	400 mW/cm <sup>2</sup>
385 nm, 395 nm, 405 nm	600 mW/cm <sup>2</sup>
450 nm	800 mW/cm <sup>2</sup>

## IRRADIANCES ECO

365 nm	200 mW/cm <sup>2</sup>
385 nm, 395 nm, 405 nm	300 mW/cm <sup>2</sup>
450 nm	400 mW/cm <sup>2</sup>

## IRRADIANCES ECO+

365 nm	100 mW/cm <sup>2</sup>
385 nm, 395 nm, 405 nm	150 mW/cm <sup>2</sup>
450 nm	200 mW/cm <sup>2</sup>

## APPLICATIONS

- Inert irradiations in nitrogen atmosphere
- UV curing and UV bonding
- Sealing and encapsulating
- Laboratory use
- Assembly of opto-electronical components

## NOTES

Given irradiances are measured at a internal height of 30 mm.

Irradiances can be increased even closer to the light source.

## INCLUDED ACCESSORIES

The irradiation chamber is modular expandable and thus optimal for different applications.

The following functions are always included:

## DOSE CONTROLLER



The irradiation controller UV-MAT continuously measures the irradiance and stops the irradiation at the set target dose.



The dose control UV-MAT Touch offers alternatively all functions of the UV-MAT, but simplifies the operation and documentation of the irradiations.

## TECHNICAL DATA UV-MAT TOUCH

<b>Display</b>	Capacitive touch display
	5" WVGA
<b>Display output</b>	Irradiance + dose
	Oscilloscope view
<b>Data recording rate</b>	adjustable: 1 s - 1 h
<b>Recording duration</b>	> 24000 h
<b>Memory interface</b>	1 USB flash drive (up to 32 GB)

## TECHNICAL DATA UV-MAT

<b>Display</b>	graphical, 128 x 64 px
	monochrom
<b>Display output</b>	Irradiance + dose
	-
<b>Data export</b>	via USB
<b>Recording duration</b>	-

## UV-MAT TOUCH

The UV-MAT Touch user interface is a high-resolution capacitive touchscreen. A powerful Cortex ARM processor ensures durability and updateability. This means that new functions can be installed directly on site. The UV-MAT Touch and the PC software are Windows 10 compatible.

Numerical and graphical single and multi-channel irradiations, oscillograms and the settings are clearly displayed. The parameterization is done intuitively directly on the UV-MAT Touch and is password protected.



## TIMER



Alternative to the dose control, we offer a settable timer. This timer is suitable for a simple irradiation between 0,01 s and 9999 h. Timer is included in the standard system.

## IRRADIATION LOGS

The irradiations can be recorded with a PC.

The UV-MAT Touch also records irradiations on a USB flash drive without a PC.

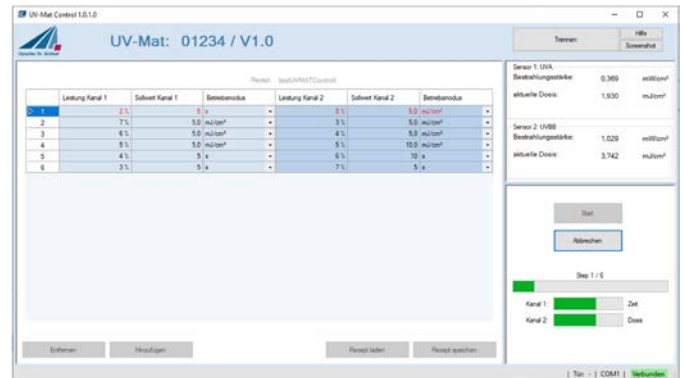
## COMMON TECHNICAL DATA UV-MAT

<b>Sensor connectors</b>	24 bit, fully digital	<b>PC interface</b>	USB 2.0
<b>Number of sensors</b>	1	<b>Sensor identification</b>	yes
<b>Dose range</b>	0 - 1.000.000 J/cm <sup>2</sup>	<b>Dimensions</b>	185 mm x 251 mm x 100 mm
<b>Dose resolution</b>	1 mJ/cm <sup>2</sup>	<b>Operation temperature</b>	5 - 60 °C
<b>Timer</b>	0,01 s to 9999 h		

## PC SOFTWARE FOR UV-MAT TOUCH

Complex, multi-stage irradiations, e.g. a pre-irradiation with UV-A at low irradiance and then a high-intensity UV-C irradiation can be easily and individually parameterized with the remote control option. Up to 30 dose- or time-controlled steps and pauses are possible.

At the same time the irradiation is logged and stored on the PC.



## FEATURES IN DETAIL

Did you know? The UV-MAT and the UV-MAT Touch use the same sensors. Therefore, these can be used on both devices.

The differences are:



UV-MAT Touch



UV-MAT

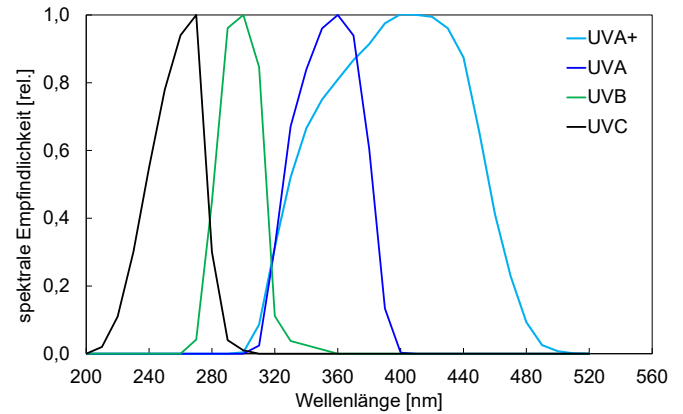
Display	Capacitive touch display	monochrom, 128 x 64 px
<b>Memory</b>	USB flash drive	-
<b>Number of channels</b>	2	2
<b>Irradiance, dose and temperature measurement</b>	✓	✓
<b>Time and dose controlled irradiations</b>	✓	✓
<b>Recordings of measurements</b>	✓	-
<b>Oscilloscope view</b>	✓	-
<b>Screenshots can be saved on USB flash drive</b>	✓	-
<b>Pause and restart of irradiations</b>	✓	-
<b>Add notes and comments to the irradiation</b>	✓	-
<b>Remote control from PC</b>	✓	-
<b>Irradiation logs</b>	USB flash drive	PC
<b>User control &amp; admin mode</b>	✓	-
<b>Easy firmware upgrades</b>	✓	✓

## TECHNICAL DATA SENSORS

The calibrated radiometer sensors are available for any LED wavelength. The integrated diffuser ensures the required cosine correction. Excellent long-term stability is achieved through the use of appropriate materials. The sensors are calibrated with traceability to PTB (the

German national test authority); after being calibrated, they are supplied with a factory calibration certificate. Opsytec Dr. Gröbel GmbH has an accredited calibration laboratory. As an option, calibration according to ISO 17025 with DAkkS calibration certificate is possible.

<b>Sensor type</b>	UVA+
<b>Spectral range</b>	330 - 455 nm
<b>Measuring range, typ.</b>	0 - 10 W/cm <sup>2</sup>
<b>Resolution</b>	1 µW/cm <sup>2</sup>
<b>Dose measuring range</b>	0 - 100 MJ/cm <sup>2</sup>
<b>Dynamic range</b>	up to zu 10 <sup>7</sup>
<b>AD conversion</b>	24 bit
<b>Temperature sensor</b>	integrated
<b>Dimensions</b>	Ø 40 mm, h 35 mm
<b>Optical surface</b>	Ø 6 mm
<b>Weight</b>	160 g
<b>Connection cable</b>	1,8 m
<b>Operating temperature</b>	0 to 40 °C
<b>Storage temperature</b>	-20 to 60 °C
<b>Humidity</b>	<80%, non-condensing



Spectral sensitivity UVA+ sensor

The specified measuring ranges are our recommended measuring ranges. These can be adapted on customer request. Please ask us or specify this when ordering.

## ATTACHMENTS & OPTIONS

The irradiance chamber is modular expandable and thus optimal for different applications.

We gladly support you with your individual configuration.

## DIMMING & SPECTRAL MATCHING

The LEDs are available for various applications. Optionally, two wavelengths are available so that mixing and switching are possible. The LEDs can be dimmed continuously from 2% to 100%.

## HEATING/COOLING PLATE

For products and processes that require a higher or lower temperature, the chamber base plate of the BSL-01i can be optionally tempered with a water flow heating/cooling plate.

Recommended application range: 10°C - 85 °C

## PART NUMBERS

<b>BSL-01i ECO+</b>	860901L-ECO+ xxx nm	<b>PC-Software UV-MAT TOUCH</b>	860901
<b>Upgrade to ECO version</b>	860901L1	<b>UVA+ Sensor</b>	814445
<b>Upgrade to HO version</b>	860901L2	<b>DAkkS calibration</b>	17025
<b>UV-MAT TOUCH</b>	820930L	<b>Option 2. wavelength</b>	860801X2
<b>UV-MAT</b>	820920L	<b>heating/cooling plate</b>	860901L-HC