

UV dose controller UV-MAT



UV-MAT Touch - dose control for uv irradiation

The UV-MAT is a dose and irradiation controller for irradiation chambers and UV systems. It measures the irradiance continuously with calibrated radiometric sensors and stops the irradiation as soon as the set target dose is reached. The applied dose therefore stays constant even when the lamp output drifts with ageing, contamination or temperature – experiments remain comparable over months. The setting range runs from 0 to 1,000,000 J/cm² at a resolution of 1 mJ/cm², and two spectral ranges can be set and controlled separately.

Calculate UV dose and exposure time

The measurements are made with calibrated radiometric sensors. The built-in diffusers ensure the cosine correction that is required for non-vertical irradiation.

The sensor contains an extremely precise analog-digital converter and a temperature sensor. The integrated diffuser ensures the required cosine correction. The sensors are calibrated with traceability to PTB (Physikalisch Technische Bundesanstalt, the German national test authority); after being calibrated, they are supplied with a factory calibration certificate; an ISO 17025 calibration certificate from our accredited calibration laboratory is available as an option. The memory in the sensor contains all sensor identifications and the calibration history.

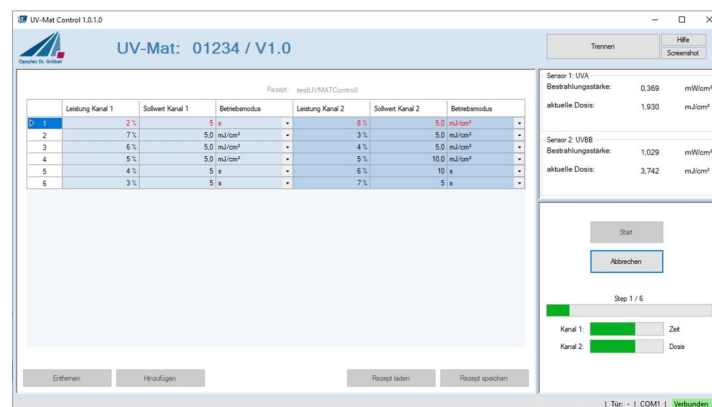
We offer two irradiation control systems for our irradiation chambers, the UV-MAT and the UV-MAT Touch.

The high-resolution capacitive touchscreen of the UV-MAT Touch enables simple operation. The powerful Cortex ARM processor ensures longevity and update capability, allowing new functions to be implemented on site. The device and the PC software are compatible with Windows 10/11. Numerical and graphical single and multi-channel irradiations, oscillograms and settings are clearly displayed. Parameterization is intuitive and password-protected directly on the UV-MAT Touch.

PC control of the UV-MAT Touch is available as an option, allowing multi-stage irradiations and complete documentation of the irradiation to be carried out.



Sensors for UV chambers and UV-MAT



UV-MAT CONTROL SOFTWARE

The UV-MAT dose control is available in two versions - the intuitive UV-MAT Touch and the more affordable UV-MAT. The UV-MAT and the UV-MAT Touch use the same sensors. Therefore, they can be used on both devices. The differences of the devices are:

HIGHLIGHTS OF UV DOSE CONTROLLER UV-MAT

- Optional for all irradiation chambers
- Controls two spectral ranges
- Precise radiometric sensors
- Built-in sensor identification
- Security functions to avoid doubled irradiation and password protections for important settings
- Integrated timer
- Function to calculate irradiance at sample position from sensor position data



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

Comparison UV Dose control via UV-MAT and UV-MAT Touch

TECHNICAL DATA UV DOSE CONTROLLER UV-MAT

Sensor connectors	24 bit, fully digital
Number of sensors	2 pcs (for BS series) / 1 pc (for BSL series)
Dose range	0–1,000,000 J/cm ²
Dose resolution	1 mJ/cm ²
Irradiation time	1 s to 999 days (BS series) / 0.01 s to 9999 h (BSL series)
PC interface	USB 2.0
Sensor identification	yes
Dimensions	185 mm x 251 mm x 100 mm
Operation temperature	5–60 °C
Spectral ranges	UVC, UVB, UVA, UVA+ or LUX
Calibration uncertainty (typ.)	4.5–6.0 % (k = 2)
Linearity error	below 1 %
Ageing per year	below 3 %

FUNCTIONS AND OPERATION

Functions of the UV-MAT

The UV-MAT controls the irradiation in all our irradiation chambers. It brings these functions:

Dose control



The UV-MAT measures the irradiance continuously and ends the irradiation once the set target dose is reached. The dose therefore stays independent of lamp ageing, soiling and temperature.

Timer



As an alternative to dose control the UV-MAT offers an adjustable timer for time-controlled irradiations between 1 s and 999 days (BS series) or 0.01 s and 9999 h (BSL series).

Irradiation records



Irradiations can be recorded with a PC. The UV-MAT Touch also records them to a USB stick without a PC.

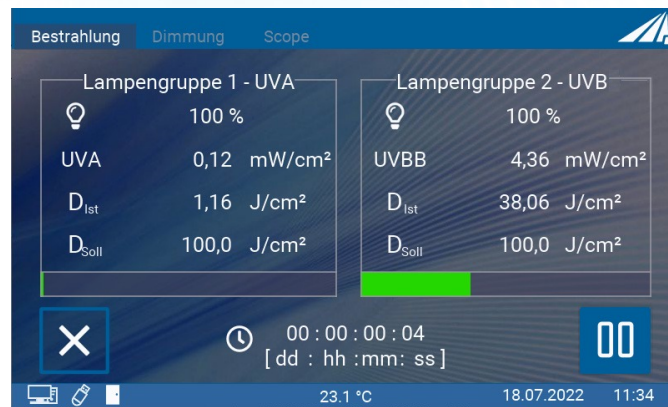
Sensor holder



The sensor holder fixes the radiometer sensors inside the irradiation chamber. For measurements on the sample the sensors can be removed; the UV-MAT can be adjusted to this by a factor.

The screen of the UV-MAT Touch

The screen shows the irradiance, the target and the actual dose per lamp group as well as the remaining time. The tabs lead to the dimming and the oscilloscope view.



THE TWO IRRADIATION CONTROLS COMPARED

UV-MAT Touch and UV-MAT side by side



UV-MAT Touch

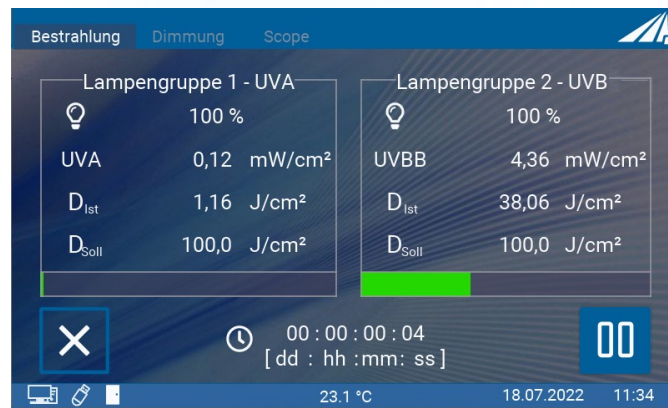


UV-MAT

Feature	UV-MAT Touch	UV-MAT
Display	capacitive touch display	monochrome, 128 x 64 px
Memory	USB stick	–
Number of channels	2 (BS) / 1 (BSL)	2 (BS) / 1 (BSL)
Irradiance, dose and temperature measurement	✓	✓
Time- and dose-controlled irradiations	✓	✓
Recording of measurements	✓	–
Oscilloscope view	✓	–
Screenshots can be saved to a USB stick	✓	–
Pausing and restarting irradiations	✓	–
Adding notes and comments to an irradiation	✓	–
Remote control from a PC	✓	–
Irradiation records	on a USB stick	on the PC
User management and admin mode	✓	–
Simple firmware upgrades	✓	✓

Both controls use the same sensors, so one sensor can be used with either device.

The UV-MAT Touch in detail



The UV-MAT Touch is operated through a high-resolution capacitive touchscreen. A Cortex ARM processor provides durability and the ability to update - new functions can be installed on site. The device and the PC software are compatible with Windows 10 and 11. Single- and multi-channel irradiations are shown numerically and graphically, together with oscillograms and the settings. Parameters are set directly on the device and are password protected.

Data common to both controls

Sensor inputs	24 bit, fully digital
Number of sensor inputs	2 (BS series) / 1 (BSL series)
Dose setting range	0 to 1,000,000 J/cm ²
Dose resolution	1 mJ/cm ²
Irradiation time	1 s to 999 days (BS series) / 0.01 s to 9999 h (BSL series)
PC interface	USB 2.0
Sensor recognition	yes
Dimensions	185 × 251 × 100 mm
Permissible operating temperature	5 to 60 °C

Display and recording compared

Feature	UV-MAT Touch	UV-MAT
Display	capacitive touch display, 5 WVGA	graphic, 128 × 64 px, monochrome
Display output	irradiance and dose, oscilloscope view	irradiance and dose
Data recording rate	adjustable: 1 s to 1 h	-
Recording period	> 24,000 h	-
Storage interface	1 × USB stick (up to 32 GB)	data export via USB

ORDER NUMBERS, SCOPE OF DELIVERY, ACCESSORIES AND VERSIONS

UV-MAT Touch

Order number	820930
Display	capacitive touch display, 5 WVGA
Display output	irradiance and dose, oscilloscope view
Data recording rate	adjustable: 1 s to 1 h
Recording period	over 24,000 h
Storage interface	1 x USB stick (up to 32 GB)

The touch version with a 5-inch capacitive display, oscilloscope view and recording to a USB stick - no PC needed.

UV-MAT

Order number	820920
Display	graphic, monochrome, 128 x 64 px
Display output	irradiance and dose
Data export	via USB

The basic version with a monochrome graphic display; the readings can be transferred to a PC via USB.

PC software for the UV-MAT Touch

Designation	Order number
PC software for the UV-MAT Touch	860901

Complex, multi-stage irradiations - for example a pre-irradiation with UVA at low irradiance followed by a high-intensity UVC irradiation - can be parameterised 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.