PHOTONIC SENSOR MONITOR
Laboratory Tabletop for Photonic Process Control

sglux
The UV Experts

The two channel **Photonic Sensor Monitor** is used in photonic laboratories. It reads sensor signals generated by photodiodes as well as signals from amplified probes (0...2.5V). The unit displays the calibrated intensity values and calculates radiation doses. The included PC software SensorView 1.2 allows data logging and computer based scientific data analysis. Accessories are two sensor cables and a power supply (110...220V). NIST or PTB calibrated sensor inputs are available on request.

The unit is also available as a compact OEM module for industrial use.

Photonic Sensor Monitor

Features Overview

Inputs	two channel input, all common photonic sensors and photodiodes, NIST or PTB traceable input calibration on request
Software	SensorView 1.2 for data logging and scientific data evaluation
Outputs	three programmable free floating relay terminals to control minimum and maximum intensity values and dose values; complex logic operations programmable (see page 4)

Specifications	Value	Unit
Numbers of input channels	2	-
Data interface	USB/RS232	-
Numbers of free floating relay	3	-
Dimensions (HxWxD)	234x95X197	*mm*
Degree of protection	IP40	-
Operating temperature	0….+70	$°C$
Storage temperature	-25… +85	$°C$
Power supply	12… 24	V_{DC}
Power consumption (24V)	0,4	*W*
Weight	1,22	*kg*

The Inputs and Outputs of the Photonic Sensor Monitors

Sensor Inputs

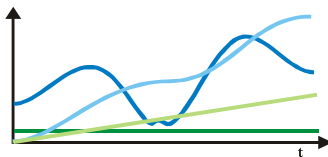The sensor input terminals can be connected to photodiodes or pre-amplified sensors

Value and status information display
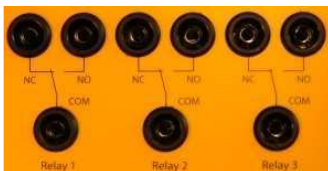
The full-programmable two row display shows e.g.

- Radiation, dose and status of the the relay
- error messages like overrange

Data evaluation

The software SensorView 1.2 allows a comfortable data evaluation. Alternatively a USB/RS232 data export to other scientific evaluation softwares such as Origin or Excel is possible.

Relay Outputs

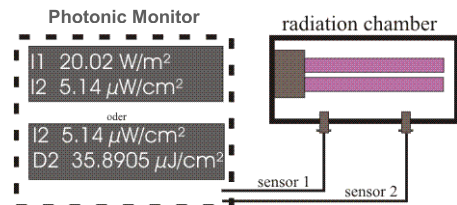The three free floating relay allow simple and complex process controll. Examples:

- activation if a programmable threshold is exceeded or undershot
- activation if a programmable dose is reached
- logic combination of the two sensor inputs such as controll of multi-step irradiation processes, e.g. swith off lamp #1 if dose #1 is reached and switch on lamp #2 and start of a conveyor belt

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Basic Functions

Radiation Measurement

Parallel measurements of two lamp outputs or radiation parts of one lamp can realized (e.g. UVA and UVB). In the first display example the intensity I1 at sensor 1 and the intensity I2 at sensor 2 is displayed. The second picture shows intensity and dose (time integration of the intensity).

If the data port is activated the complete relevant information (intensities, doses, error messages and state of relays and dose measurements) is transferred to a PC.

Photonic Monitor — radiation chamber

I1 20.02 W/m²
I2 5.14 µW/cm²
oder
I2 5.14 µW/cm²
D2 35.8905 µJ/cm²

sensor 1   sensor 2

Measurement and Lamp Control

At excessing or falling below a configurable intensity threshold or reaching an irradiation dose the lamp can be switched off or changed over to another lamp.

Photonic Monitor — radiation chamber

I1 5.1 mW/cm²
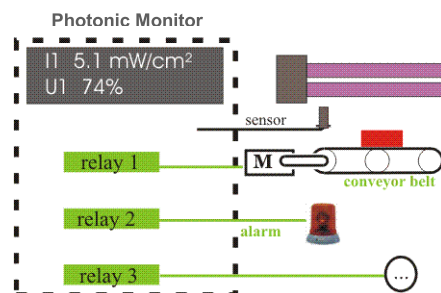D1 22.82 kJ/m²
relay

sensor
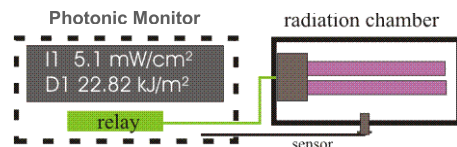
Measurement and Alarm

In the example an alarm is given if the percentaged lamp power falls below a configurable threshold. Further two relays can be used for other functions (switching of pumps, shutters etc.).

Photonic Monitor — radiation chamber

I1 5.1 mW/cm²
U1 74%

sensor
relay   alarm
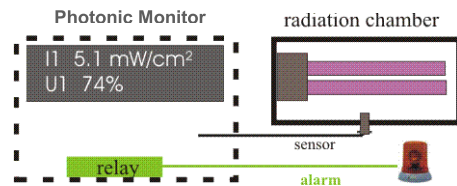
Transport Control of irradiated Goods

Measurement of the dose at irradiated goods and activation of the belt transport. The hold times of the relays are variable therefore the transport distance can be adjusted with the hold time. In the example a second relay is giving an alarm if the intensity falls below the threshold. The third relay can be used for information from a second sensor or for a logic combination with one of the other relays (e.g. transport if dose threshold is exceeded and intensity is higher than a minimum value at the same time).

Photonic Monitor

I1 5.1 mW/cm²
U1 74%

sensor
relay 1   M   conveyor belt
relay 2   alarm
relay 3   …

## Advanced Use in Process Automation

Automated Dose Measurement
The measurement of irradiation doses can be done manually or subjected to automation conditions.

In the first example the dose measurement is started at exceeding a critical intensity. If the intensity falls below the threshold the integration is interrupted and the dose stays constant. While exceeding the threshold again, the integration is continued.
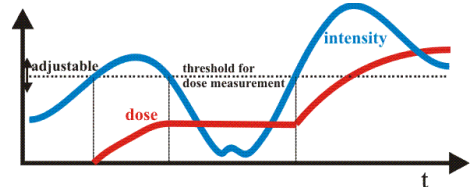
In the second example the dose measurement is finished with falling under the intensity threshold. The reset delay keeps the value on the display. At exceeding of the threshold a new dose is generated. The generation of single doses is used if the dose stop condition is activating a pump or a transport of a good (see below). For each irradiated good or segment a dose is calculated.
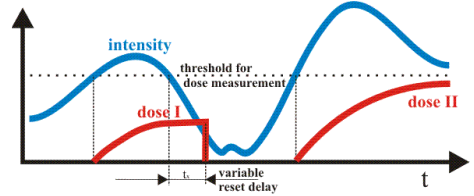
Relay Configuration
Three relays can be configured for controlling different functions activated by various configurable process conditions. In the simplest use the relays activate at falling under or exceeding a critical threshold of a selectable measure.

A warmup delay can be implemented to avoid false reports at the start-up process. Additionally it may be reasonable to ignore a short malfunction and only to consider a longer malfunction by using a relay activation delay. Hysteresis parameters can be set for values that are alternating around the threshold.
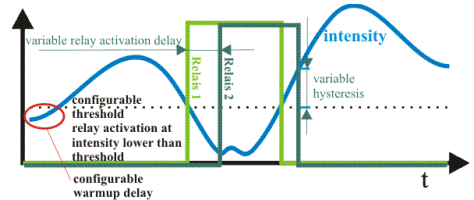
Dose Measurement Indication
Each relay can be associated with dose functions. Running dose measurements can be indicated by an activated relay. There is no difference if the dose measurement is operated manually or under automated conditions.
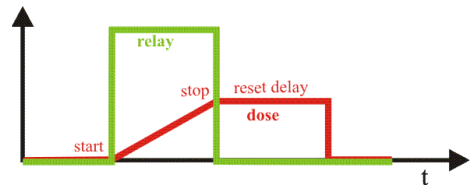
Dose Limit Indication
At the dose limit indication the relay is activated if the dose measurement is finished. With the hold time the time of the relay activation is set.