LUMI Series

► ## Luminescence Sensors

Luminescence sensors are applied where adhesives, sealing compounds, special liquids, or other materials are combined with fluorescent substances. When illuminated with UV-light, these fluorescent additives will light up and emit light in the visible spectrum (e.g. red, orange, yellow, green, blue).

In the LUMI Series sensors, modulated UV light is employed to suppress outside light sensitivity. The special optical arrangement of optical emitter and receiver (radial or linear emitter) allows operating distances of up to 100 mm. The sensors are equipped with an RS232 interface, the Windows® software is included in the delivery.
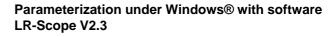

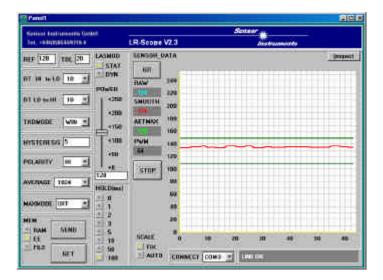## Characteristics

Functional principle of the sensor

In the LUMI Series luminescence sensors, modulated UV light is directed onto the object to be inspected. If there are fluorescent color particles on the object surface, the UV light, depending on the type of color particle, is converted into a color in the visible wavelength range. Different color filters can be used here to respond to the respective color range.

The output of the sensor provides an analog signal that informs about the intensity of the fluorescent color. Furthermore, a switching signal is provided at the sensor connector.

The UV transmission power can be adjusted by means of an integrated potentiometer.

Parameterization under Windows® with software LR-Scope V2.3

The sensors can easily be set with the help of a Windows® user interface in which the sensor signals are displayed in numerical and graphical form; the user interface also provides various software algorithms and setting parameters.

Parameters such as e.g.

- Threshold (sensitivity)
- Switching hysteresis
- Laser power mode (static or dynamic)
- Averaging
- Polarity

can be set with the software.

Sensor Instruments GmbH • D-94169 Thurmansbang • Schlinding 11
Tel. +49 (0)8544 9719-0 • Fax +49 (0)8544 9719-13

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info@sensorinstruments.de • www.sensorinstruments.de
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Product Overview

Luminescence sensor with a working range of typ. 20 mm ... 80 mm, light spot typ. Ø 15 mm at 30 mm distance

Product name	**LUMI-30**

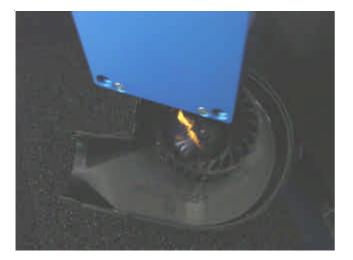|	
Light source	4x UV-LEDs, AC operation, $\lambda = 400$ nm ($\lambda > 400$ nm lopped by means of a black light filter)
Light spot size	at 30 mm distance: typ. Ø 15 mm (beam divergency typ. 5°)
Working range	typ. 20 mm ... 80 mm
Optical filters	Transmitter: Black light filter
	Receiver: Blue filter (B), Yellow filter (Y), or Red filter (R)
Voltage supply	+12VDC ... +32VDC
Operating mode	Pulsating light operation, 100 kHz
Ambient light	up to 5000 Lux
Enclosure rating	IP67 (optics), IP54 (electronics)
Switching frequency	typ. 1 kHz
Switching state indication	orange LED, integrated in the M8-connector
Interface	RS232, parameterisable under Windows®
Sensitivity (switching threshold)	parameterisable under Windows® (adjustable: threshold / tolerance window)
UV light power	parameterisable under Windows® , with type LUMI-30-...-P in addition adjustable with potentiometer
Pulse lengthening	0 ms ... 100 ms, parameterisable under Windows®
Averaging	up to 32000, parameterisable under Windows®
Output DIGITAL (1x)	Q or Qinv, parameterisable under Windows®
	Q = pnp bright-switching (pnp normally closed) / npn dark-switching (pnp normally open)
	Qinv = npn bright-switching (npn normally closed) / pnp dark-switching (pnp normally open)
Output ANALOG (1x)	0V ... +10V
Operating temperature range	-20°C ... +55°C
Housing material	Aluminum, anodized in blue
Housing dimensions	approx. 60 mm x 45 mm x 40 mm
Type of connector	Connection to PLC: 4-pin M8-connector
	Connection to PC (RS232 interface): 5-pin female connector Binder Series 702
Connecting cables	to PLC: cab-M8/4-g-2 (2m)
	to PC: cab-las5/PC (2m)
Max. switching current	100 mA, short-circuit-proof
EMC test acc. to	IEC - 801 ... CE

Product Overview

Luminescence sensor with a working range of typ. 10 ... 40 mm, light spot typ. 80 mm x 10 mm at 20 mm distance

Product name	**LUMI-20/90**

Light source	8x UV-LEDs, AC operation, $\lambda =$ 400 nm ($\lambda >$ 400 nm lopped by means of a black light filter)
Light spot size	at 20 mm distance: typ. 80 mm x 10 mm (beam divergency typ. 5°)
Working range	typ. 10 mm ... 40 mm
Optical filters	Transmitter: Black light filter
	Receiver: Blue filter (B), Yellow filter (Y), Red filter (R)
Voltage supply	+12VDC ... +32VDC
Operating mode	Pulsating light operation, 100 kHz
Ambient light	up to 5000 Lux
Enclosure rating	IP67 (optics), IP54 (electronics)
Switching frequency	typ. 1 kHz
Switching state indication	by means of a yellow LED (only with type LUMI-20/90 - without potentiometer)
Operating indication	by means of a green LED (only with type LUMI-20/90 - without potentiometer)
Interface	RS232, parameterisable under Windows®
Sensitivity (switching threshold)	parameterisable under Windows® (adjustable: threshold / tolerance window)
UV light power	parameterisable under Windows®, with type LUMI-20/90-P in addition with potentiometer
Pulse lengthening	0 ms ... 100 ms, parameterisable under Windows®
Averaging	up to 32000, parameterisable under Windows®
Output DIGITAL (1x)	Q or Qinv, parameterisable under Windows®
	Q = pnp bright-switching (pnp normally closed) / npn dark-switching (pnp normally open)
	Qinv = npn bright-switching (npn normally closed) / pnp dark-switching (pnp normally open)
Output ANALOG (1x)	0V ... +10V
Operating temperature range	-20°C ... +55°C
Housing material	Aluminum, anodized in blue
Housing dimensions	approx. 90 mm x 60 mm x 20 mm
Type of connector	Connection to PLC: 4-pin M12-connector
	Connection to PC (RS232-interface): 5-pin female connector Binder Series 702
Connecting cables	to PLC: cab-M12/4-g-2 (2m)
	to PC: cab-las5/PC (2m)
Max. switching current	100 mA, short-circuit-proof
EMC test acc. to	IEC - 801 ... $C\epsilon$

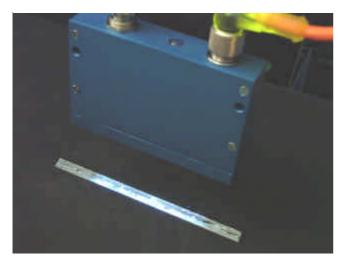Sensor Instruments

Application Examples

Detecting of speed of rotating parts

Position mark detection on labels

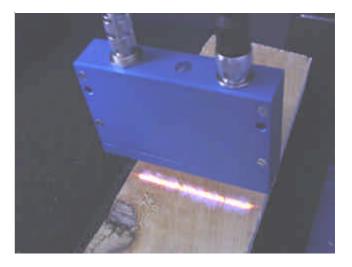**Detecting front and back side of a metal strip**

Checking if screw locking varnish was applied

Detection of fluorescent lines on ceramic tiles

Position detection of boards