

## SMALL, INTELLIGENT LUMINESCENCE SENSOR



### Product description

Enhanced performance for fluorescent materials: The new LUTM luminescence sensor from SICK features a novel miniature housing combined with an IO-Link function. The LUTM is ideal for all applications where fluorescent marks need to be reliably detected in confined spaces. Even when the level of luminescence is low, the LUTM detects the relevant marks using its enhanced system

sensitivity. This mini luminescence sensor can be set using a straightforward teach-in method. The innovative IO-Link function enables enhanced, intelligent diagnostics and visualization of sensor parameters, as well as provide quick and easy format changes. Thanks to an increased switching frequency of up to 6 kHz, the LUTM is also suitable for high machine production capacities.

### At a glance

- Luminescence sensor in a miniature housing
- Static and dynamic teach-in methods in a single variant
- Reliable detection even at a low level luminescence
- Switching frequency of 6 kHz
- Operating range 8 ... 20 mm
- Remote monitoring and rapid analysis using IO-Link function
- Compatibility with older LUT sensors thanks to cable with male connector M12

### Your benefits

- Miniature housing enables installation in small spaces
- Quick and easy commissioning saves time and money
- Increased switching frequency for improved machine productivity
- Enhanced, intelligent diagnostics and visualization of sensor parameters, as well as quick and easy format changes, thanks to IO-Link function



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→ [www.sick.com/de/en/LUTM](http://www.sick.com/de/en/LUTM)

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



## Detailed technical data

## Features

Dimensions (W x H x D)	31.5 mm x 21 mm x 12 mm
Sensing distance <sup>1)</sup>	12.5 mm
Housing design (light emission)	Rectangular
Operating range	8 mm, 20 mm
Light source <sup>2)</sup>	LED
Type of light	Ultraviolet light
Wave length	370 nm
Light emission	Long side
Light spot size <sup>3)</sup>	2 mm x 2.5 mm
Light spot direction	Vertical
Receiving range	450 nm ... 750 nm
Adjustment	2-point teach-in static/dynamic
Output function <sup>4)</sup>	Light/dark switching

<sup>1)</sup> From front edge of lens.

<sup>2)</sup> Average service life: 100,000 h at  $T_U = +25^\circ\text{C}$ .

<sup>3)</sup> At sensing distance.

<sup>4)</sup> L/D switching via teach-in.

## Mechanics/electronics

Supply voltage <sup>1)</sup>	12 V DC ... 24 V DC
Ripple <sup>2)</sup>	$\leq 5 V_{pp}$
Power consumption <sup>3)</sup>	$\leq 50 \text{ mA}$
Switching frequency <sup>4)</sup>	6 kHz
Response time <sup>5)</sup>	80 $\mu\text{s}$
Jitter	40 $\mu\text{s}$
Switching output	PNP: HIGH = $V_S - \leq 2 \text{ V}$ / LOW approx. 0 V / NPN: HIGH = approx. $V_S$ / LOW $\leq 2 \text{ V}$ ,
Output type	PNP / NPN
Output current $I_{max}$ <sup>6)</sup>	$< 100 \text{ mA}$
Input, teach-in (ET)	PNP Teach: $U = 10 \text{ V} \dots < U_V$ Run: $U < 2 \text{ V}$ NPN Teach: $U < 2 \text{ V}$ Run: $U = 10 \text{ V} \dots < U_V$ (depending on type)
Connection type	Cable with connector M12, 4-pin
Protection class	III
Circuit protection	$V_S$ connections reverse-polarity protected, Output Q short-circuit protected, Interference suppression
Fieldbus interface	- / IO-Link (depending on type)
Enclosure rating	IP 67
Weight	25 g
Housing material	Plastic, ABS

<sup>1)</sup> Limit values: DC 12 V ( $-10\%$ ) ... DC 24 V ( $+20\%$ ). Operation in short-circuit protected network max. 8 A.

<sup>2)</sup> May not exceed or fall below  $U_V$  tolerances.

<sup>3)</sup> Without load.

<sup>4)</sup> With light/dark ratio 1:1.

<sup>5)</sup> Signal transit time with resistive load.

<sup>6)</sup> At supply voltage  $> 24 \text{ V}$ ,  $I_{max} = 30 \text{ mA}$ .  $I_{max}$  is consumption count of all  $Q_n$ .

Ambient data

Ambient operating temperature	-10 °C ... +55 °C
Ambient storage temperature	-20 °C ... +75 °C
Shock load	According to IEC 60068
UL File No.	NRKH.E181493 & NRKH7.E181493

Ordering information

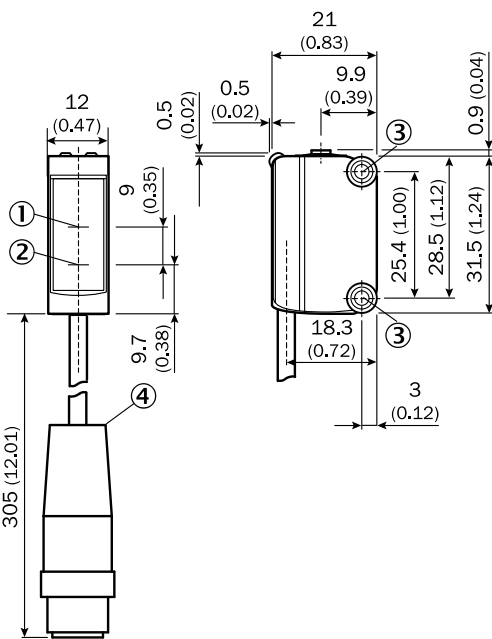
Other models → [www.sick.com/de/en/LUTM](http://www.sick.com/de/en/LUTM)

- **Light spot size:** 2 mm x 2.5 mm (At sensing distance.)
- **Receiving range:** 450 nm ... 750 nm
- **Connection type:** Cable with connector M12, 4-pin

Sensing distance <sup>1)</sup>	Operating range	Output type	Fieldbus interface	Connection diagram	Type	Part no.
12.5 mm	8 mm ... 20 mm	PNP	-	Cd-023	LUTM-UP81162P	1067295
			IO-Link	Cd-321	LUTM-UP817A2P	1067297
		NPN	-	Cd-023	LUTM-UN81162P	1067296

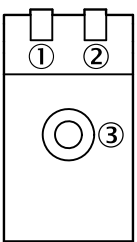
<sup>1)</sup> From front edge of lens.

Dimensional drawing (Dimensions in mm (inch))



- ① Optical axis receiver
- ② Optical axis sender
- ③ Fixing hole M3
- ④ Cable with male connector

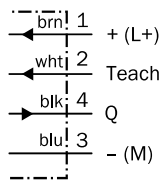
Adjustments



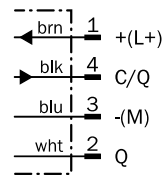
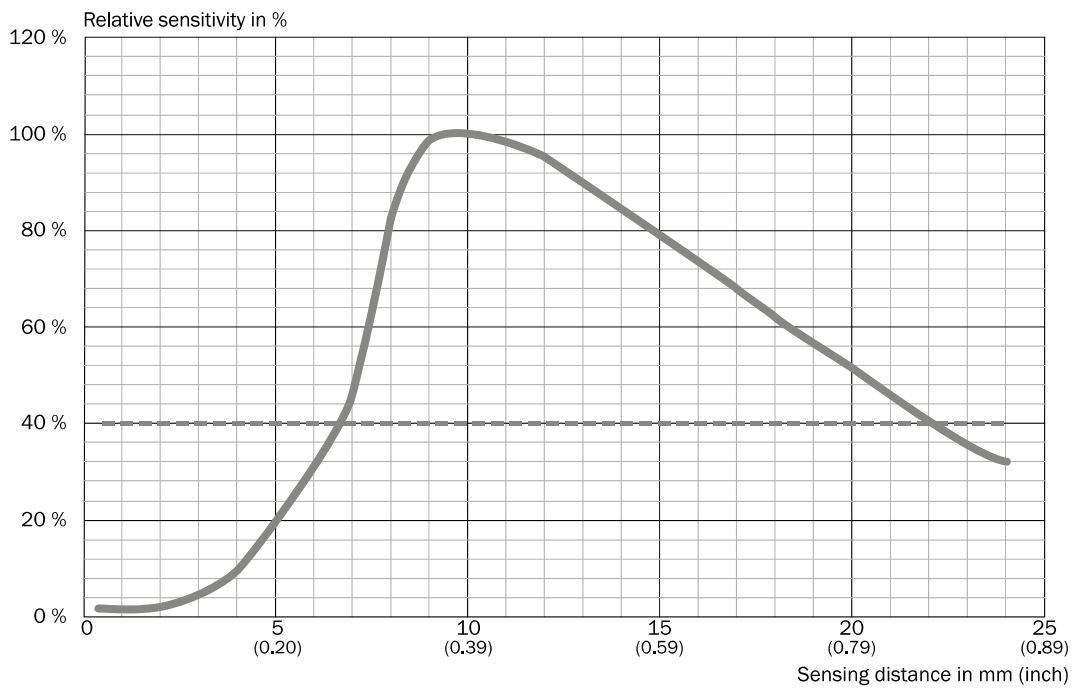
- ① Status indicator LED, yellow: Status switching output Q
- ② Status indicator LED green: supply voltage on
- ③ Teach-in button

**Connection diagram**

Cd-023



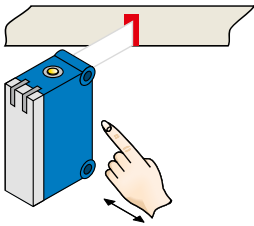
Cd-321

**Sensing distance****D**

## Setting the switching threshold

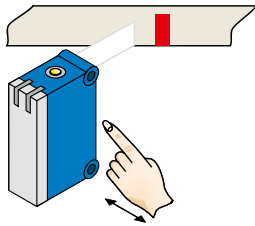
Setting the switching threshold (static)

### 1. Position fluorescent mark



Press and hold teach-in button  $> 1 < 3$  s.  
Yellow LED flashes slowly.

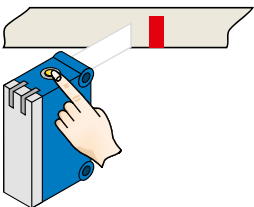
### 2. Position background



Press and hold teach-in button  $< 3$  s.  
Yellow LED goes out.

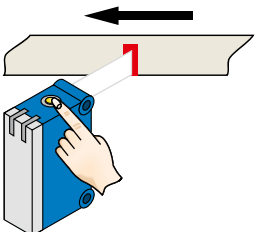
Setting the switching threshold (dynamic)

### 1. Position background

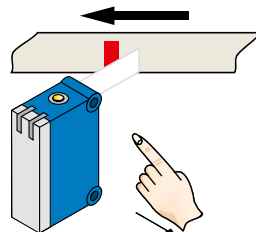


Press the teach-in button and keep it pressed. LED flashing slowly.

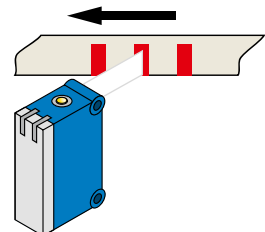
### 2. Move at least the fluorescent mark and background using the light spot.



Keep the teach-in button  $> 3 < 30$  s pressed.



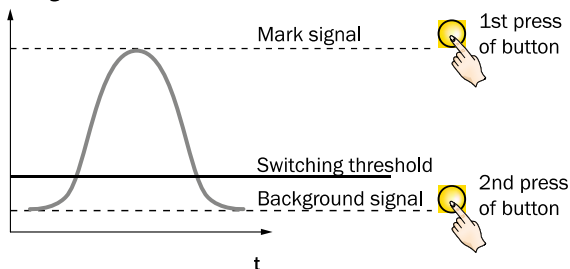
Release the teach-in button.



Yellow LED will illuminate, when emitted light is on the fluorescent mark.

## Sensitivity setting

Signal strength



## Switching characteristics

Static teach-in: light/dark setting is defined using teach-in sequence.

Dynamic teach-in: switching output active on fluorescent mark, if background is longer in the field of view during the teach-in. The switching threshold is set automatically between the background and the mark.

Teach-in can also be performed using an external control signal (only dynamic teach-in).



Keylock activation and deactivation: hold down teach-in button  $> 30$  s.

Teach-in failure: yellow LED indicator and the transmitted light of the sensor flashing quickly.  
For dynamic teach-in with ET signal (5 Hz) via switching output Q.




## Recommended accessories

### Modules and gateways

#### Connection modules



Figure	Description	Type	Part no.
	IO-Link version V1.1, Port class 2, PIN 2, 4, 5 galvanically connected, Supply voltage 18 V DC ... 32 V DC (limit values, operation in short-circuit protected network max. 8 A)	SICK Memory Stick	1064290
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A	SiLink2 Master	1061790

### Universal bar clamp systems


Figure	Material	Description	Type	Part no.
	Steel, zinc coated	Universal clamp bracket for rod mounting	BEF-KHS-KH1	2022726
		Plate L for universal clamp bracket	BEF-KHS-L01	2023057
	Zinc plated steel (sheet), Diecast zinc (clamp)	Plate N08 for universal clamp bracket	BEF-KHS-N08	2051607
	Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp)	Plate N08N for universal clamp bracket	BEF-KHS-N08N	2051616

### Mounting brackets and mounting plates

#### Mounting brackets

Figure	Material	Description	Type	Part no.
	Stainless steel	Mounting bracket for wall mounting	BEF-W100-A	5311520
	Steel, zinc coated	Mounting bracket for floor mounting	BEF-W100-B	5311521
			BEF-WN-W100-S01	4073866



#### Mounting plates

Figure	Material	Description	Type	Part no.
	Stainless steel	Adapter plate KT3 to KTM	BEF-AP-KTMS01	2068786

### Plug connectors and cables

#### Connecting cables with female connector

#### M12, 4-pin, PVC, chemical resistant

Figure	Connection type head A	Connection type head B	Connecting cable	Type	Part no.
	Female connector, M12, 4-pin, straight, unshielded	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02M	6009382
			5 m, 4-wire	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled, unshielded	Cable, open conductor heads	2 m, 4-wire	DOL-1204-W02M	6009383
			5 m, 4-wire	DOL-1204-W05M	6009867

→ For additional accessories, please see page K-240