THE NEW STANDARD FOR HIGH-PERFORMANCE LUMINESCENCE SENSORS

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Product description

The LUT9 luminescence sensor offers a long sensing distance and remote monitoring capabilities via IO-Link.
With a sensing distance of up to 250 mm, the LUT9 sets a new standard for luminescence sensors. Due to the long distances possible between the sensor and the object, marks on lumber with varying thicknesses, for example, can be reliably detected without mechanical adjustment of the sensors. In addition, the teach function and manual fine adjustment allow for maximum process reliability. The LUT9 version with IO-Link can actively be integrated into the machine control logic, configured/monitored from the controller, and used for process data collection. Especially helpful is a bar graph display on the device indicating the luminescence intensity.

At a glance

- Simple teach-in
- Operating range up to 250 mm
- Version with IO-Link for remote monitoring
- Bar graph display provides information about the luminescence intensity
- High speed (6.5 kHz), standard (2.5 kHz), high resolution (500 Hz) models
- Additional optical filters suppress background luminescence
- Fiber-optic cable connection (with 20 mm lens)
- Switching and analog output

Your benefits

- Simple sensitivity adjustment via teach-in for optimum adaptation to the application
- Long sensing distance tolerance leads to less mechanical height adjustments of the sensor on the machine
- Using IO-Link, the sensor can be configured and monitored by the central control system, enabling simple, cost-effective diagnostics and data collection
- Bar graph display provides continual process control through easy visualization of the luminescence intensity
- Filters ensure that background luminescence is reliably suppressed, ensuring greater process reliability
- Interchangeable lenses for different sensing distances and the second light exit provide flexibility
- High detection reliability ensures the process and reduces downtime
- Select speed or high resolution, making it ideal for any application.

IO-Link

CE ☐

Additional information

➜ www.sick.com/de/en/LUT9

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)	30.4 mm x 53 mm x 80 mm
Sensing distance [1]	10 mm / 20 mm / 50 mm / 90 mm / 150 mm (depending on type)
Housing design (light emission)	Rectangular
Light source [2]	LED
Type of light	UV / visible blue light (depending on type)
Wave length	470 nm / 375 nm (depending on type)
Light emission	Long side / Long and short side, exchangeable (depending on type)
Light spot direction	Vertical
Receiving range	450 nm ... 750 nm (depending on type)
Adjustment	Static 2-point teach-in with manual fine adjustment / IO-Link (optional) (depending on type)
Output function [3]	Light switching

[1] From front edge of lens.
[2] Average service life: 100,000 h at T_U = +25 °C.
[3] L/D switching via teach-in or IO-Link.

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Ripple [2]	< 5 V_{pp}
Power consumption [3]	< 100 mA
Switching frequency [4]	0.5 kHz / 2.5 kHz / 6.5 kHz, adjustable
Response time [5]	1 ms, 200 µs, 75 µs
Switching output	PNP: HIGH = V_S– ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output type	PNP / NPN
Analog output Q_A	0 mA ... 13 mA
Output current $I_{max.}$	100 mA
Time delay	0 ms / 10 ms / 20 ms, adjustable
Connection type	Connector M12, 5-pin / Connector M12, 4-pin (depending on type)
Protection class [6]	II
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	400 g
Housing material	Metal, zinc diecast

[1] Limit values; operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall below U_v tolerances.
[3] Without load.
[4] With light/dark ratio 1:1, no time delay.
[5] Signal transit time with resistive load.
[6] Reference voltage DC 50 V.

Ambient data

Ambient operating temperature	–10 °C ... +55 °C
Ambient storage temperature	–25 °C ... +75 °C
Shock load	According to IEC 60068

Ordering information

Other models ➜ www.sick.com/de/en/LUT9

Sensing distance: 10 mm

- **Light spot size:** 2 mm x 6 mm
- **Operating range:** 0 mm … 20 mm

Type of light	Light emission	Receiving range	Output type	Fieldbus interface	Connection	Connection diagram	Type	Part no.
Ultraviolet light	Long side	450 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11106	1047049

Sensing distance: 20 mm

- **Light spot size:** 3 mm x 9 mm
- **Operating range:** 10 mm … 40 mm

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| Type of light	Light emission	Receiving range	Output type	Fieldbus interface	Connection	Connection diagram	Type	Part no.
Ultraviolet light	Long side	450 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11206	1047050
	Long and short side, exchangeable	450 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-321	LUT9U-12206	1046749
	Long side	450 nm … 750 nm	PNP	IO-Link	Connector M12, 4-pin	Cd-321	LUT9U-P120L	1046188

Sensing distance: 50 mm

- **Light spot size:** 5 mm x 15 mm
- **Operating range:** 20 mm … 70 mm

Type of light	Light emission	Receiving range	Output type	Fieldbus interface	Connection	Connection diagram	Type	Part no.
Ultraviolet light	Long side	450 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11306	1046712
		570 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11316	1047052
		610 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11326	1047053
		670 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11336	1047054
	Long and short side, exchangeable	450 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-321	LUT9U-12306	1047055
	Long side	450 nm … 750 nm	PNP	IO-Link	Connector M12, 4-pin	Cd-321	LUT9U-P130L	1045606

Sensing distance: 90 mm

- **Light spot size:** 12 mm x 12 mm
- **Operating range:** 30 mm … 110 mm

Type of light	Light emission	Receiving range	Output type	Fieldbus interface	Connection	Connection diagram	Type	Part no.
Ultraviolet light	Long side	450 nm … 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11406	1047051

Sensing distance: 150 mm

- **Light spot size:** 5 mm x 12 mm
- **Operating range:** 50 mm ... 250 mm

Type of light	Light emission	Receiving range	Output type	Fieldbus interface	Connection	Connection diagram	Type	Part no.
Ultraviolet light	Long side	450 nm ... 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9U-11606	1047414
Visible blue light	Long side	610 nm ... 750 nm	PNP/NPN	-	Connector M12, 5-pin	Cd-312	LUT9B-11626	1047056

Dimensional drawings (Dimensions in mm (inch))

LUT9x-x1xxx, light Emission: Long side
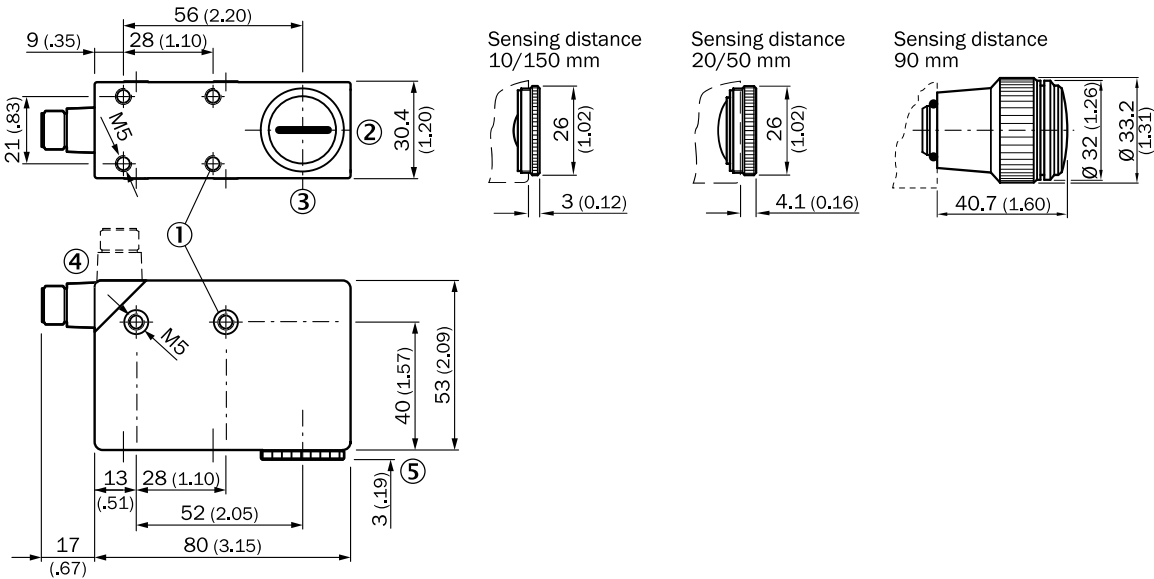
Sensing distance 10/150 mm

Sensing distance 20/50 mm

Sensing distance 90 mm

① M5 threaded mounting hole, 5.5 mm deep
② Lens (light transmission), can be replaced by blind screw
③ Center of optical axis
④ Connector M12 (rotatable up to 90°)
⑤ See dimensional drawing for lens
⑥ Blind screw can be replaced by lens

LUT9x-x2xxx, light emission: long and short side, exchangeable
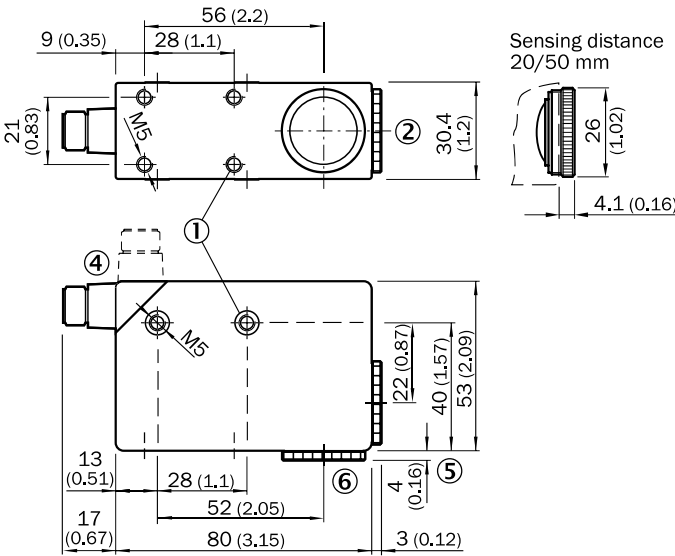
Sensing distance
20/50 mm

① M5 threaded mounting hole, 5.5 mm deep
② Lens (light transmission), can be replaced by blind screw
④ Connector M12 (rotatable up to 90°)
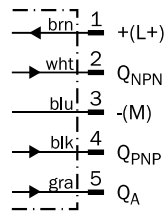⑤ See dimensional drawing for lens
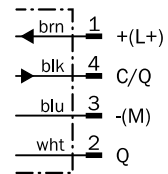⑥ Blind screw can be replaced by lens

Adjustments
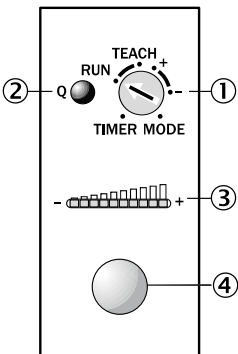
① Rotary selection switch
② Function signal indicator (yellow), switching output
③ Bar graph (green), Power on left LED
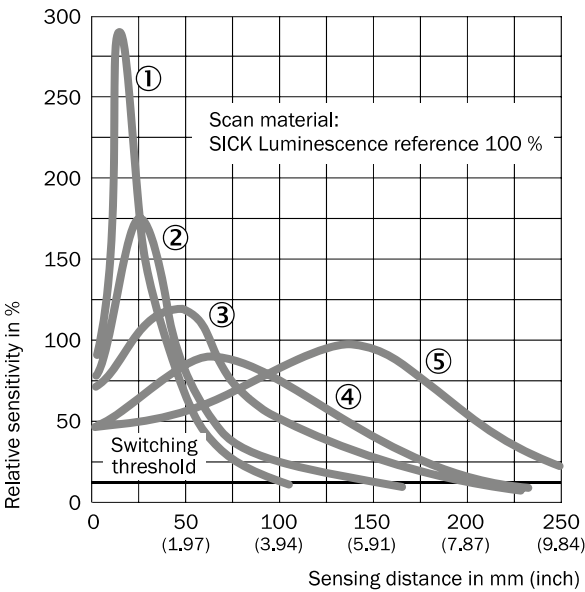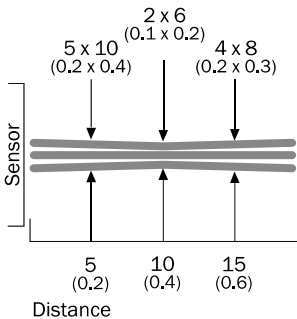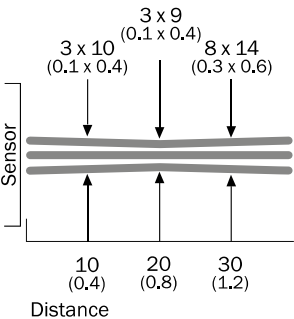④ Teach-in button

Connection diagram

Cd-312

brn	1	+(L+)
wht	2	Q_{NPN}
blu	3	-(M)
blk	4	Q_{PNP}
gra	5	Q_A

Cd-321

brn	1	+(L+)
blk	4	C/Q
blu	3	-(M)
wht	2	Q

Sensing distance

① Sensing distance 10 mm
② Sensing distance 20 mm
③ Sensing distance 50 mm
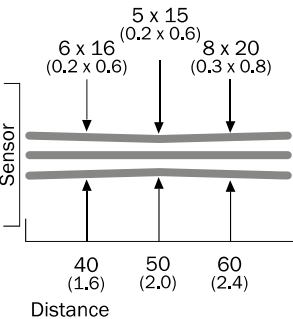④ Sensing distance 90 mm
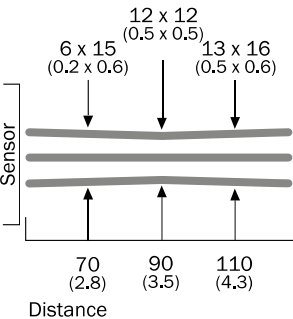⑤ Sensing distance 150 mm

Light spot size

Sensing distance 10 mm
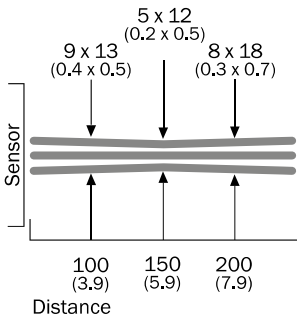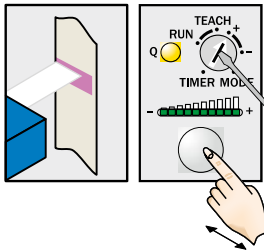

Sensing distance 20 mm

Sensing distance 50 mm

Sensing distance 90 mm

Sensing distance 150 mm

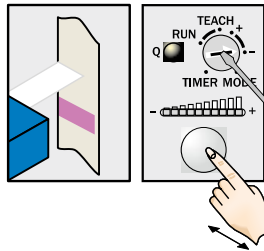All dimensions in mm (inch)

Setting the switching threshold

Button +/-

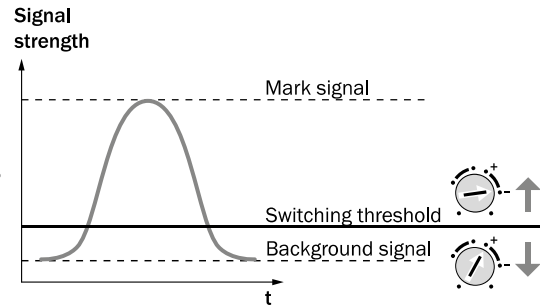| **1. Position mark**	**2. Position background**	**Sensitivity setting**

Turn rotary switch to "+" position and press and hold teach-in button until yellow light goes out (more green LEDs illuminate on the bar display).

If yellow LED illuminates, turn rotary switch to "–" position and press and hold teach-in button until yellow light just goes out (green LEDs go out on the bar display).
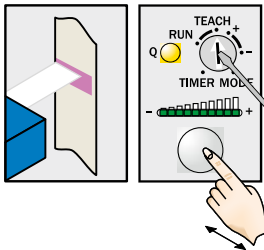
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Note for all settings
Once configuration is complete, turn the rotary switch to the "RUN" position. The bar display then shows the luminescence intensity (regardless of switching threshold setting).
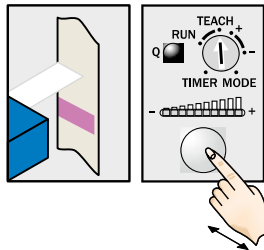Adjustments are intendend for luminescence background suppression.
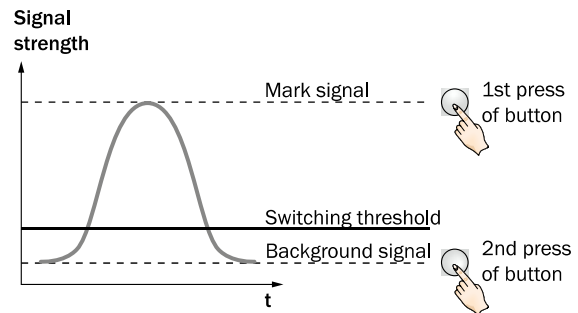
Teach-in static

1. Position mark	**2. Position background**	**Sensitivity setting**

Turn rotary switch to "TEACH" position and press and hold teach-in button > 1 s.
Yellow LED flashes slowly.

Press and hold teach-in button again > 1 s. Yellow LED goes out.

Note
The bar graph display shows detection reliability. The more LEDs that illuminate, the better the teach-in.

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

Lens and accessories

Description	Diameter	Type	Part no.
Lens, 10 mm sensing distance	26 mm	OBJ-LUT3-10	2016348
Lens, 20 mm sensing distance	26 mm	OBJ-LUT3-20	2016349
Lens, 50 mm sensing distance	26 mm	OBJ-LUT3-50	2016350

Reference materials

Material	Description	Type	Part no.
Crayon	Crayon, red fluorescence	LUM-FT	1004460
Writing chalk	Writing chalk, red fluorescence	LUM-KLK	1002959

Universal bar clamp systems

Figure	Material	Description	Type	Part no.
		Plate G for universal clamp bracket	BEF-KHS-G01	2022464
		Plate K for universal clamp bracket	BEF-KHS-K01	2022718
	Steel, zinc coated	Universal clamp bracket for rod mounting	BEF-KHS-KH1	2022726
		Mounting bar, straight, 200 mm, steel	BEF-MS12G-A	4056054
		Mounting bar, straight, 300 mm, steel	BEF-MS12G-B	4056055
		Mounting bar, L-shaped, 150 mm x 150 mm, steel	BEF-MS12L-A	4056052
		Mounting bar, L-shaped, 250 x 250 mm, steel	BEF-MS12L-B	4056053

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

M12, 5-pin, PVC, chemical resistant

Figure	Connection type head A	Connection type head B	Connecting cable	Type	Part no.
	Female connector, M12, 5-pin, straight, unshielded	Cable, open conductor heads	2 m, 5-wire	DOL-1205-G02M	6008899
			5 m, 5-wire	DOL-1205-G05M	6009868
	Female connector, M12, 5-pin, angled, unshielded	Cable, open conductor heads	2 m, 5-wire	DOL-1205-W02M	6008900
			5 m, 5-wire	DOL-1205-W05M	6009869

➜ For additional accessories, please see page K-240

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