

LONG SENSING DISTANCE – PRECISE DETECTION

B



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Product description

The KT3L Laser contrast sensor is ideally suited for detecting small contrast marks (1 x 1 mm²). The small, precise laser spot can detect objects at any distance, making the KT3L suitable for a wide range of contrast detection applications that require long sensing distances. The sensor, which is ideal for distances from 20 mm to 60 mm,

functions reliably even if the distance between the sensor and the object fluctuates during operation. The compact housing allows it to be installed in the tightest spaces. Plus, simple 2-point teach-in where the operator teaches the mark and the background enables quick setup.

At a glance

- Very small housing
- Precise, small laser spot
- Sensing distance up to 60 mm
- Simple 2-point teach-in
- Switching frequency of 1,5 kHz
- Reliable operation for jittering materials

Your benefits

- Compact design fits in applications with limited space
- Small, precise light spot detects the smallest contrast marks, e.g., 1 x 1 mm², using Class II laser technology
- Long sensing distances up to 60 mm enable flexible installation
- The sensor's long depth-of-field ensures that it can be used at various sensing distances
- Automatic adaptation for high-gloss objects ensures high throughput
- Reliable operation for jittering materials

→ www.sick.com/de/en/KT3

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)	12 mm x 40 mm x 22 mm
Sensing distance	40 mm
Housing design (light emission)	Rectangular
Sensing distance tolerance	± 20 mm
Light source ¹⁾	Laser
Type of light	Visible red light
Wave length	655 nm
Light spot size	1 mm x 2 mm
Light spot direction ²⁾	Vertical
Laser class	II
Operating distance	20 mm ... 60 mm
Teach-in mode	Static 2-point teach-in

¹⁾ Average service life 50,000 h at $T_A = +25\text{ °C}$.

²⁾ In relation to long side of housing.

Mechanics/electronics

Supply voltage ¹⁾	10 V DC ... 30 V DC
Ripple ²⁾	≤ 5 V _{pp}
Power consumption ³⁾	< 35 mA
Switching frequency ⁴⁾	1.5 kHz
Response time ⁵⁾	400 µs
Switching output	PNP: HIGH = $V_S - \leq 2\text{ V}$ / LOW approx. 0 V / NPN: HIGH = approx. V_S / LOW ≤ 2 V,
Output type	PNP / NPN (depending on type)
Output current I_{max}	100 mA
Input, teach-in (ET)	PNP: Teach $U > 8\text{ V}$; Run: $U < 2\text{ V}$ NPN: Teach: $U < 2\text{ V}$; Run: $U = U_V$
Retention time (ET)	25 ms, non-volatile memory
Connection type	Connector M12, 4-pin
Protection class ⁶⁾	II
Circuit protection	V_S connections reverse-polarity protected, Output Q short-circuit protected, Interference suppression
Enclosure rating	IP 67
Weight	11 g
Housing material	Plastic, ABS

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.

⁵⁾ Signal transit time with resistive load.

⁶⁾ Reference voltage DC 50 V.

Ambient data

Ambient operating temperature	-10 °C ... +45 °C
Ambient storage temperature	-20 °C ... +75 °C
Shock load	According to IEC 60068
UL File No.	NRKH.E181493 & NRKH7.E181493, CDRH-conform

Ordering information

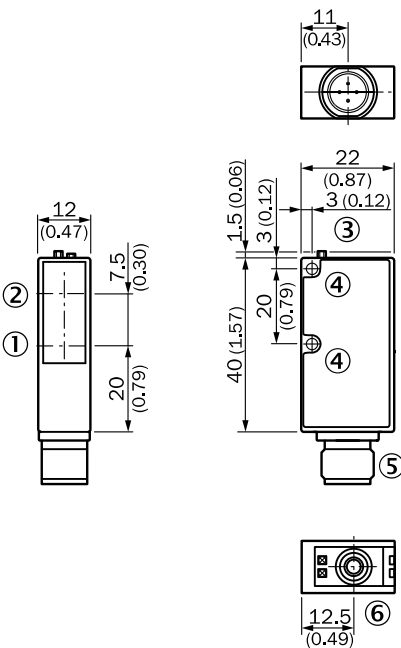
Other models → www.sick.com/de/en/KT3

KT3L Laser

Light spot size	Light spot direction ¹⁾	Adjustment	Output type	Type	Part no.
1 mm x 2 mm	Vertical	Static 2-point teach-in	PNP	KT3L-P3216	1026244
			NPN	KT3L-N3216	1026245

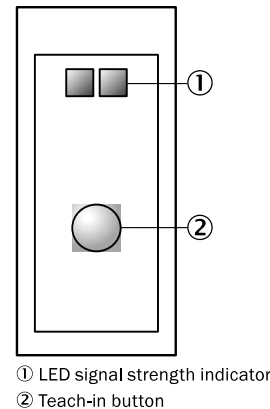
¹⁾ In relation to long side of housing.

Dimensional drawings



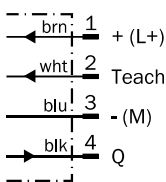
- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ LED signal strength indicator
- ④ Mounting hole, Ø 3 mm
- ⑤ Male connector M12
- ⑥ Teach-in button

Adjustments



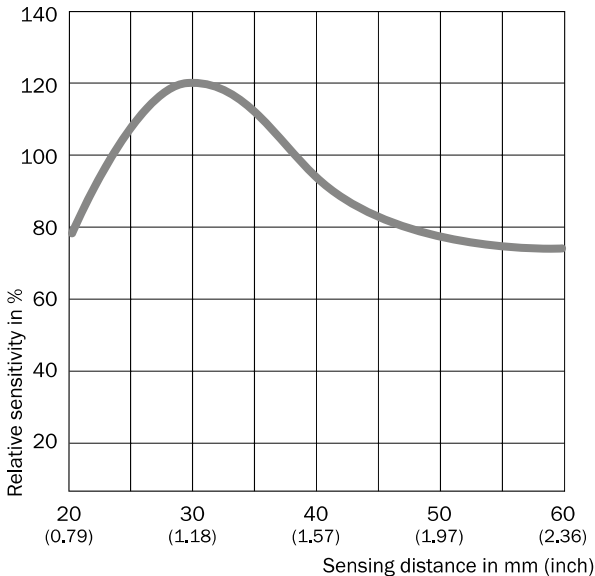
Connection diagram

Cd-092



Sensing distance

KT3L Laser

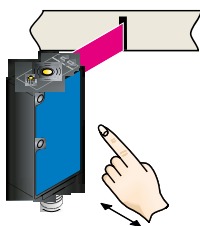


B

Setting the switching threshold

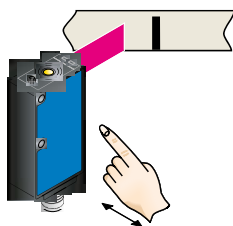
Teach-in static

1. Position mark



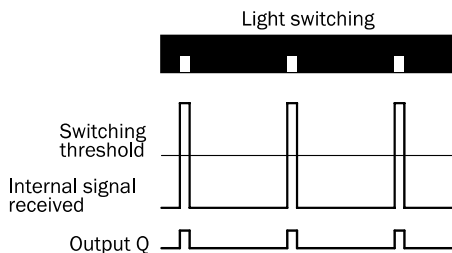
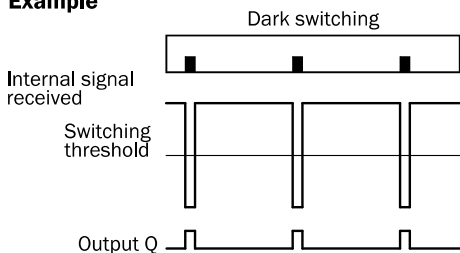
Press and hold teach-in button > 1 s.
Yellow LED flashes slowly.

2. Position background



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

Example



Switching characteristics

The optimum emitted light is selected automatically.
Light/dark setting is defined using teach-in sequence.
The switching threshold is set in the center between the background and the mark.
Teach-in can also be performed using an external control signal.


Recommended accessories

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
		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

Mounting brackets and mounting plates



Mounting brackets

Figure	Material	Description	Type	Part no.
	Steel, zinc coated	Mounting bracket	BEF-WN-W9-2	2022855

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

