PRODUCT INFORMATION

Contrast Sensors

SICK – The pioneer in contrast sensors for more than 60 years

SICK
Sensor Intelligence.

They put registration marks into a proper light

SICK contrast sensors detect minimum contrast levels at maximum speeds, for example print marks on foil or packaging. Based on the reflection principle, they detect small differences in grayscale values between the mark and the background on matte, glossy or transparent surfaces.

The best of the best – our top products

KT3

Small & compact

- Universal use due to 3-color LED technology
- Simple teach-in for setting transmission color, switch point and brightness
- Very small housing

Especially suitable for

- Poor contrast
- Space restrictions

KT5-2 Display

Robust & flexible

- Bar graph display for visualizing the contrast performance
- Variability via different detection distances and light spots
- Tough, multi-functional housing

Especially suitable for

- Packaging industry
- Highly variable contrast conditions

KT10-2

Fast & precise

- Precise detection at high production speeds
- Permanent display of recording quality

Especially suitable for

- Print and paper industry needs

KT3L Laser
KT8L Laser

Powerful & accurate

- Laser technology
- Long detection distance and highly precise small light spot

Especially suitable for

- Tiny marks, such as bar codes
- Distances up to 600 mm

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Nearly all packaged products have visible print marks that provide invaluable assistance to the production process. SICK contrast sensors employ a range of technologies to ensure all contrast marks are identified.

Teach-in

After the mark has been detected, the sensor teach-in is a simple process. Depending on the field of application, the teach-in can be triggered in various ways.

Dynamic teach-in
- Teach-in during operation
- No interruption of material flow
- Can also be triggered via external control wire

Static 2-point teach-in
- Extremely simple teach-in when machine is stopped

Manual adjustment via potentiometer
- Very precise adjustment when machine is stopped

The different teach-in options assist the operator in carrying out contrast sensor teach-in and adjusting the contrast sensors under harsh installation conditions.

3-color LED technology

Maximum detection reliability

- During the teach-in process, the sensor sends three different light sources (red, green and blue) to the object that will be detected, and then selects the transmission light that will achieve the highest contrast value
- This enables the contrast sensor to detect all color combinations, even low-contrast combinations such as yellow on white, thus ensuring universal applicability

Black marks on high-gloss targets

Colored marks on patterned backgrounds

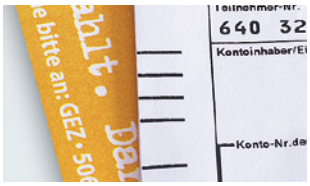
White LED technology

Neutral white transmission light is suited for:

- detecting very small marks
- reading colored mark codes
- reliably detecting printing on the background between marks (e.g., tubes)

Small black marks on white backgrounds

Light marks on dark backgrounds



OMR marks on paper

Colored pharmaceutical bar codes

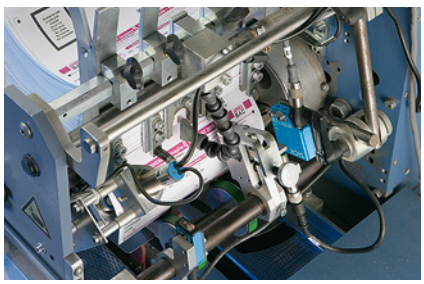
Unlimited possibilities – efficient control, sorting, positioning and counting

▲ **Print mark controlling**
SICK contrast sensors detect print marks to precisely control packaging processes on horizontal and vertical forming, filling and sealing machines in labeling and filling plants. SICK contrast sensors detect these marks reliably and precisely.

▼ **Controlling packaging processes**
SICK contrast sensors adapt effortlessly to the variable environmental conditions of automated processing in horizontal and vertical packaging machines.

▼ **Positioning cans and tubes**
SICK contrast sensors reliably detect print marks on glossy and transparent tubes – for optimal packaging quality.

▼ **Continuous format printing, folding, cutting and insertion**
SICK contrast sensors precisely detect printing and folding marks. This ensures reliable control of individual modules in the insertion machine and synchronization of the entire system.

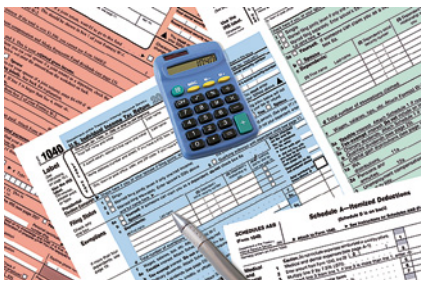


▼ Positioning labels

On filling lines, SICK contrast sensors control exact targeted positioning of bottle labels. The sensors are optimized to maximum detection performance without stopping the machine.

▼ Positioning EDP forms

SICK contrast sensors control exact alignment of forms and ensure their precise machine reading and writing.



▼ Overprinting control

With high-precision contrast detection, automatic brightness adjustment, fast switching frequency and individual assembly options, SICK contrast sensors ensure the quality of your products.

▼ Code identification

SICK contrast sensors quickly and reliably detect OMR print marks used to identify documents. Even the smallest differences in grayscale values are reliably detected.

Product family overview

	KT1M	**KT2**	
	Simple – small – outstanding	Contrast detection in tough metal housing	
Technical data overview			
Dimensions (L x W x H)	36.8 mm x M18x1 x 15 mm	41.5 mm x 15 mm x 49 mm	
Sensing distance	23.5 mm	13.5 mm	
Light source	LED white	LED red LED green	
Light spot size	Ø 2 mm	Ø 2 mm	
Switching frequency	400 Hz	10 kHz	
Response time	1.25 ms	50 µs	
Adjustment	Manual adjustment, potentiometer	Manual adjustment, potentiometer	
Connection type	Connector M12, 3-pin	Connector M12, 5-pin	
At a glance			
	• For detecting simple contrast differences, such as black marks on light backgrounds • Small round housing with mounting accessories • NPN and PNP models • Light or dark switching functions • Adjustment via potentiometer	• Small light spot • Tough and compact metal housing • Red or green emitted LED light versions • Adjustment via potentiometer • Light or dark switching can be selected via control cable • Switching frequency of 10 kHz • Two switching outputs (NPN and PNP) in one device	
Detailed information	→ 12	→ 18	

	KT3	**KT3L Laser**
	Compact and powerful contrast detection	Long sensing distance – precise detection
	22 mm x 12 mm x 40 mm	22 mm x 12 mm x 40 mm
	12.5 mm	40 mm
	LED red, green, blue LED green LED white	Laser diode red light
	1.5 mm x 3.5 mm 1.5 mm x 6.5 mm	1 mm x 2 mm
	10 kHz	1.5 kHz
	50 µs	400 µs
	Static 2-point teach-in Dynamic teach-in (min/max)	Static 2-point teach-in
	Connector M12, 4-pin	Connector M12, 4-pin
	• Very small housing • 3-color RGB technology or white LED • Simple teach-in (when machine is stopped or during operation) • Integrated switching threshold adjustment for high-gloss objects • Reliable operation for jittering materials • Switching frequency of 10 kHz	• 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
	→ 24	→ 30

Product family overview

	KT5-2 Potentiometer	**KT5-2 Teach-in**	
	Contrast sensors with potentiometer setting	Contrast sensors with easy teach-in	
Technical data overview			
Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm	80 mm x 30.4 mm x 53 mm	
Sensing distance	10 mm / 20 mm / 40 mm	10 mm / 20 mm / 40 mm	
Light source	LED green LED white	LED red, green, blue LED red, green	
Light spot size	1.2 mm x 4.2 mm 1.5 mm x 5.5 mm 1.1 mm x 4.2 mm	1.2 mm x 4.2 mm 1.5 mm x 5.5 mm 1.1 mm x 4.2 mm	
Switching frequency	10 kHz	10 kHz	
Response time	50 µs	50 µs	
Adjustment	Manual adjustment, potentiometer	Static 2-point teach-in Dynamic teach-in	
Connection type	Connector M12, 4-pin	Connector M12, 4-pin Connector M12, 5-pin	
At a glance			
	• Tough, metal housing • Manual switching threshold adjustment with optical adjustment indicator • Green or white LED technology • Models with analog output • Switching frequency of 10 kHz • Various sensing distances and light spot directions • M12 plug can be rotated 90°	• Tough, metal housing • Various teach-in methods via control panel or control cable • Maximum detection reliability due to 3-color RGB LED technology • Switching frequency of 10 kHz • Various sensing distances and light spot directions • M12 plug can be rotated 90°	
Detailed information	→ 36	→ 44	

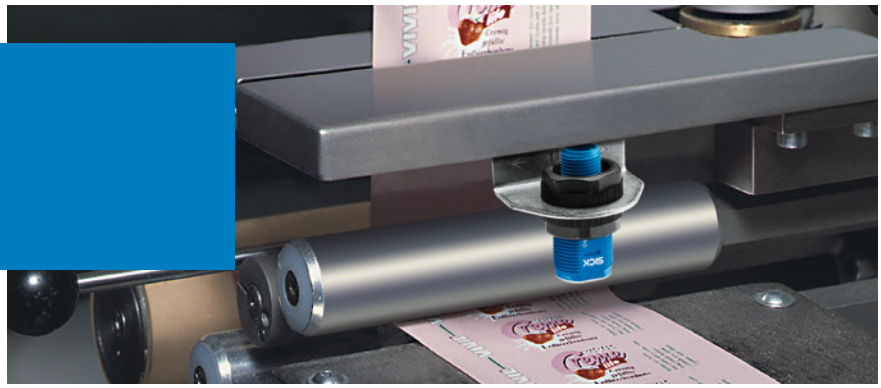
	KT5-2 Display	**KTL5-2 Fiber-optic**
	Contrast sensors with intelligent bar graph display	Contrast sensors with fiber-optic cables
	80 mm x 30.4 mm x 53 mm	80 mm x 30.4 mm x 53 mm
	10 mm / 20 mm / 40 mm	In relation to the fiber-optic cable
	LED red, green, blue	LED red, green, blue LED green
	1.2 mm x 4.2 mm 1.5 mm x 5.5 mm 1.1 mm x 4.2 mm	In relation to the fiber-optic cable
	10 kHz	10 kHz
	50 µs	50 µs
	Static 2-point teach-in with manual fine adjustment	Manual adjustment, potentiometer Dynamic teach-in Static 2-point teach-in
	Connector M12, 5-pin	Connector M12, 4-pin Connector M12, 5-pin
	• Intuitive 10-segment bar graph display indicates detection status • Static 2-point teach-in of mark and background via the control cable • Maximum detection reliability due to 3-color RGB LED technology • Switching frequency of 10 kHz • Automatic gloss adjustment for highly reflective materials • A range of sensing distances and light spots for numerous applications • M12 plug can be rotated 90°	• Various heat-resistant fiber-optic cable models are available • Various teach-in methods, including potentiometer • Analog output • Switching frequency of 10 kHz
	➜ 54	➜ 60

Product family overview

	KT6-2	**KT8 CAN**	
	High-performance in a tough metal housing for intelligent contrast detection	Contrast and communication without limits	
Technical data overview			
Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm	80 mm x 30.4 mm x 53 mm	
Sensing distance	10 mm	10 mm / 20 mm	
Light source	LED red, green, blue	LED red, green, blue	
Light spot size	1.5 mm x 6.5 mm	0.8 mm x 4 mm 1.5 mm x 5.5 mm	
Switching frequency	5 kHz	22.5 kHz	
Response time	100 µs	22 µs	
Adjustment	Static 2-point teach-in	Static 2-point teach-in Dynamic teach-in (min/max)	
Connection type	Connector M12, 4-pin	Connector M12, 8-pin	
At a glance			
	• 3-color RGB LED technology • 2-point teach-in (mark and background) • Tough, metal housing • Automatic gloss adjustment for highly reflective materials • 10 mm sensing distance • Light exits at end or side, based on model • Common mounting footprint	• The CAN interface helps set parameters, process documentation and adaptation • Automatic drift correction • Fast response time • Precise light spot • 3-color RGB LED technology • Two interchangeable light exits	
Detailed information	→ 68	→ 74	

	KT8L Laser	**KT10-2**
	Precise, flexible, quick	The industry choice for precise, high-speed mark detection
	80 mm x 30.4 mm x 53 mm	80 mm x 30.4 mm x 53 mm
	150 mm	10 mm
	Laser diode red light	LED red, green, blue
	Ø 0.3 mm Ø 3 mm	0.8 mm x 4 mm
	17 kHz	25 kHz
	30 µs	20 µs
	Static 2-point teach-in Dynamic teach-in (min/max)	Static 2-point teach-in Dynamic teach-in (min/max)
	Connector M12, 5-pin	Connector M12, 5-pin
	• Wide range of operating distances between 30 mm to 800 mm • Small, precise laser light spot (Class II) • Fast switching frequency of 17 kHz • Analog output • Simple teach-in • Detection reliability displayed in the bar graph display	• Very low jitter (< 10 µs) • Precise light spot • Maximum detection reliability due to 3-color RGB LED technology • Two interchangeable light exits • Five storage banks for settings • Automatic drift correction • Fast switching frequency of 25 kHz • Easy-to-read bar graph display
	→ 80	→ 86

Simple – small – outstanding



Product description

The KT1M contrast sensor is ideal for detecting a wide range of simple contrast combinations, such as black marks on a light background. It can easily be integrated into machines due to its round design and mounting accessories. The sensor features a very precise, highly visible white light spot.

At a glance

- For detecting simple contrast differences, such as black marks on light backgrounds
- Small round housing with mounting accessories
- NPN and PNP models
- Light or dark switching options
- Adjustment via potentiometer

Your benefits

- Cost-effective, application-specific sensor performance
- Quick and simple to integrate into machine designs
- LED indicator shows current operation status

→ www.mysick.com/en/KTM1

Additional information

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Detailed technical data

Features

Dimensions (L x W x H)	36.8 mm x M18x1 x 15 mm
Sensing distance	23.5 mm
Sensing distance tolerance	± 1.5 mm
Light source [1) 2)]	LED white
Light spot size	Ø 2 mm
Adjustment	Manual adjustment, potentiometer

[1)] Average service life of 100,000 h at T_A = +25 °C .
[2)] Wave length: 450 nm ... 650 nm.

Mechanics/electronics

Supply voltage V_S [1)]	DC 10 V ... 30 V
Ripple [2)]	≤ 5 V_{PP}
Power consumption [3)]	< 20 mA
Switching frequency [4)]	400 Hz
Response time [5)]	1.25 ms
Switching output voltage	PNP: HIGH = V_S – ≤ 3 V / LOW = approx. 0 V NPN: HIGH = approx. V_S / LOW = 3 V
Output current $I_{max.}$	100 mA
Connection type	Connector M12, 3-pin
Protection class [6)]	II
Circuit protection	V_S connections reverse-polarity protected Interference suppression Outputs overcurrent and short-circuit protected
Enclosure rating	IP 67
Weight	Approx. 7 g
Housing material	ABS (plastic), Optics: PMMA

[1)] Limit values. Operation in short-circuit protected network max. 8 A.
[2)] May not exceed or fall short of V_S tolerances.
[3)] Without load.
[4)] With light/dark ratio 1:1.
[5)] Signal transit time with resistive load.
[6)] Reference voltage 50 V DC.

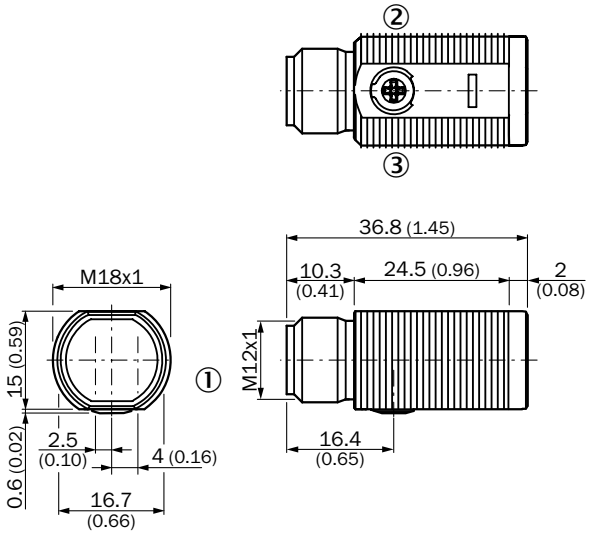
Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –25 °C ... +70 °C
Shock load	According to IEC 60068

Ordering information

Switching output	Switching function	Model name	Part no.
PNP	Light switching	KT1M-P1	1027306
	Dark switching	KT1M-P2	1027307
NPN	Light switching	KT1M-N1	1027304
	Dark switching	KT1M-N2	1027305

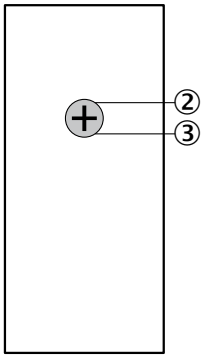
Dimensional drawing



All dimensions in mm (inch)

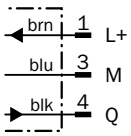
① Connector M12
② Sensitivity adjustment 270°
③ LED indicator yellow

Adjustments



Connection type and diagram

Connector
M12, 3-pin



Recommended accessories

Plug connectors and cables

Connector M12, 3-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 68	Straight	PUR	2 m	DOL-1203-G02MC	6039075
				5 m	DOL-1203-G05MC	6039076
				10 m	DOL-1203-G10MC	6039077
		Angled	PUR	2 m	DOL-1203-W02MC	6039078
				5 m	DOL-1203-W05MC	6039079
				10 m	DOL-1203-W10MC	6036752

Connector M12, 4-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
		Angled	PVC	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
		Straight	–	–	DOS-1204-G	6007302
		Angled	–	–	DOS-1204-W	6007303

Mounting brackets/plates

Mounting system type	Material	Model name	Part no.
Mounting ring	Plastic (PA12)	BEF-WN-MH15-1	4039533 [1]
Nuts M18	Plastic (PA12)	Mutter-M18-MH15	4040270 [1]
Mounting bracket	Steel, zinc coated	BEF-WG-M18	5321870
		BEF-WN-M18	5308446

[1] Supplied with KT1M.

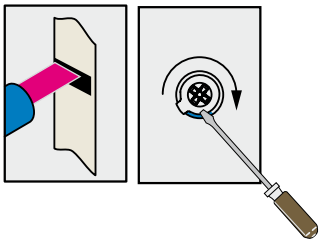
For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT1M

Setting the switching threshold via potentiometer

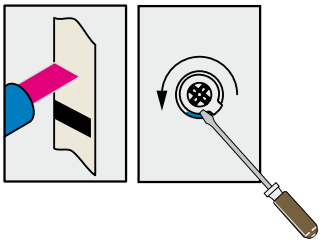
Dark switching (light/dark switching depends on the type of device)

1. Position mark



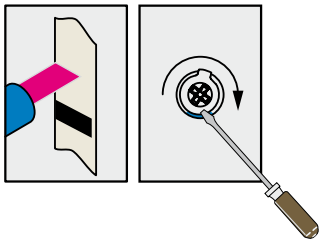
Start at 0° (left stop) (light sender off) and turn until the LED flashes or until you've reached a max. 270° (right stop).

2. Position background



Turn back until the display goes out.

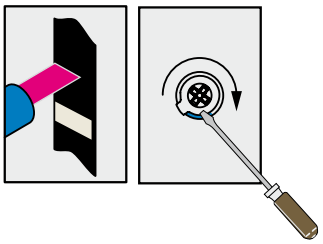
3. Set switching threshold



Turn between point 1 and 2 to ensure that the switching threshold is optimally set.

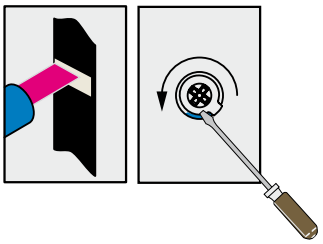
Light switching (light/dark switching depends on the type of device)

1. Position background



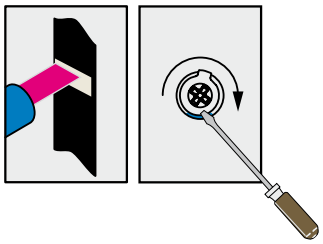
Start at 0° (left stop) (light sender off) and turn until the LED flashes or until you've reached a max. 270° (right stop).

2. Position mark



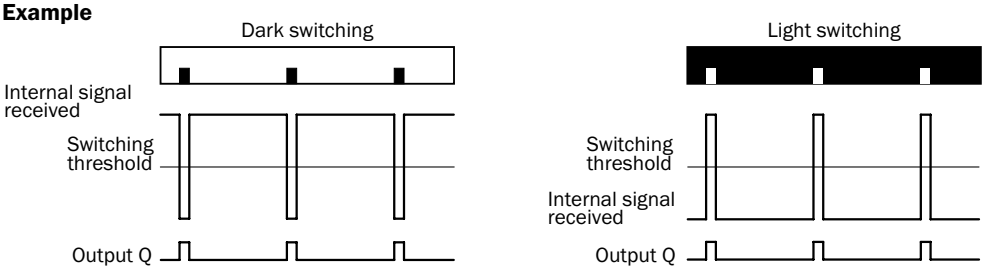
Turn back until the display goes out.

3. Set switching threshold



Turn between point 1 and 2 to ensure that the switching threshold is optimally set.

Example



Switching characteristics

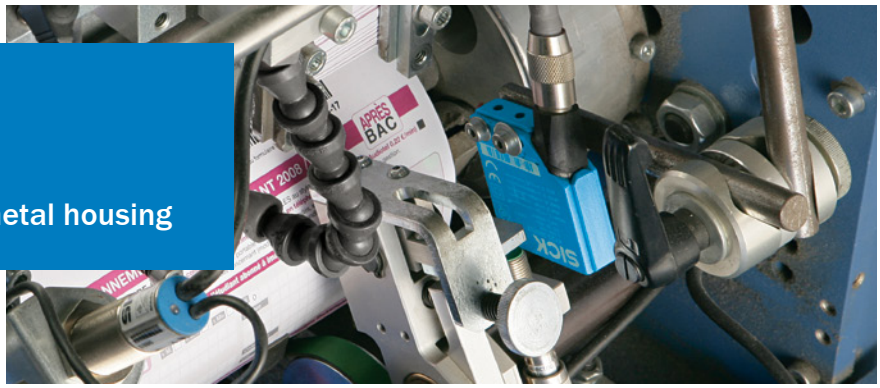
The switching threshold is set in the center between the background and the mark.

Selection

	Dark switching	Dark mark on a light background
Target	**Output**	**LED display**
Light	OFF	ON or flashing
Dark	ON	OFF

	Light switching	Light mark on a dark background
Target	**Output**	**LED display**
Light	ON	ON or flashing
Dark	OFF	OFF

Contrast detection in tough, metal housing



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Product description

The KT2 contrast sensor can be used in various industries where print marks control operating processes. The sturdy and compact metal housing is a cost-effective solution for applications in harsh environments. The primary application is contrast detection through colored print marks. Depending on the grayscale variation, sensors with either a red or green LED can be selected. Manual switching threshold adjustment ensures good functionality and high detection reliability. Using the control cable, adjusting the sensor from dark to light marks and back again is quick and uncomplicated. In addition to a 5-pin M12 standard plug, the KT2 contrast sensor features a dovetail mounting option and additional fixing holes for simple and flexible electrical and mechanical integration into various surroundings.

At a glance

- Small light spot
- Tough and compact metal housing
- Red or green emitted LED light versions
- Adjustment via potentiometer
- Light or dark switching can be selected via control cable
- Switching frequency of 10 kHz
- Two switching outputs (NPN and PNP) in one device

Your benefits

- Reliable detection of even the smallest print marks, ensuring high machine throughput
- Long service life due to tough metal housing
- The compact housing can be integrated quickly and simply into the existing machine design
- Maximum positioning accuracy ensures high production quality

→ www.mysick.com/en/KT2

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Detailed technical data

Features

Dimensions (L x W x H)	41.5 mm x 15 mm x 49 mm
Sensing distance	13.5 mm
Sensing distance tolerance	± 2 mm
Light spot size	Ø 2 mm
Adjustment	Manual adjustment, potentiometer
Switching function	Light/dark switching

Mechanics/electronics

Supply voltage V_S [1]	DC 10 V ... 30 V
Ripple [2]	≤ 5 V_{PP}
Power consumption [3]	< 80 mA
Switching frequency [4]	10 kHz
Response time [5]	50 µs
Switching output voltage	PNP: HIGH = V_S – ≤ 3 V / LOW = approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 1.5 V
Switching output	PNP, NPN
Output current $I_{max.}$	100 mA
Input, light/dark (L/D)	PNP: Light: U = 0 V Dark: U = 10 V ... < U_V NPN: Light: U = U_V Dark: U = 0 V
Connection type	Connector M12, 5-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	Approx. 120 g
Housing material	Die-cast zinc

[1] Limit values. Operation in short-circuit protected network max. 8 A.

[2] May not exceed or fall short of V_S tolerances.

[3] Without load.

[4] With light/dark ratio 1:1.

[5] Signal transit time with resistive load.

[6] Reference voltage 50 V DC.

Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –20 °C ... +75 °C
Shock load	According to IEC 60068

Ordering information

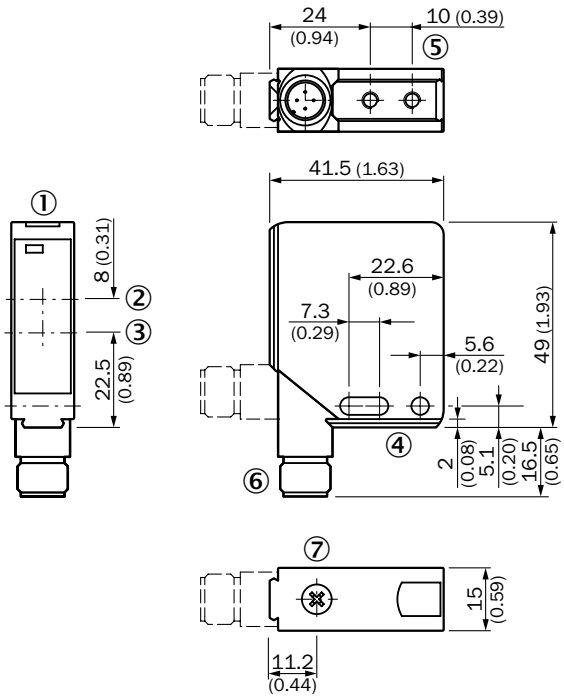
Light source [1]	Time delay	Model name	Part no.
LED green [2]	–	KT2G-2B3711	1016112
LED red [3]	–	KT2R-2B3711	1016115
	20 ms	KT2R-2B3721	1016114

[1] Average service life of 100,000 h at T_A = +25 °C .

[2] Wave length: 525 nm.

[3] Wave length: 660 nm.

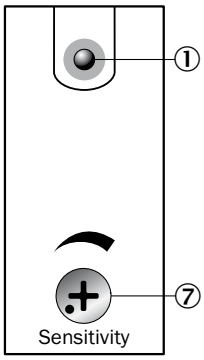
Dimensional drawing



All dimensions in mm (inch)

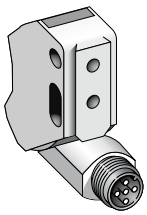
① LED signal strength indicator
② Center of receiver optical axis
③ Center of emitter optical axis
④ Mounting hole ø 4.2 mm
⑤ Screw thread M4
⑥ Connector M12 (rotatable up to 90°)
⑦ Sensitivity adjustment

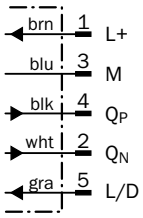
Adjustments



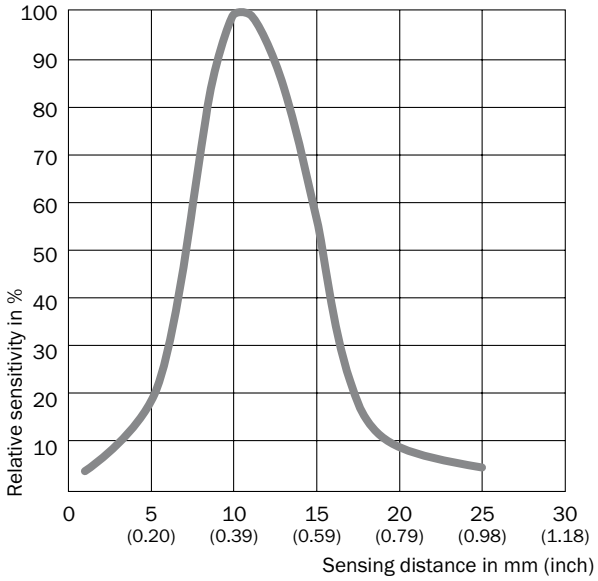
Connection type and diagram

Connector
M12, 5-pin





Sensing distance



Recommended accessories

Plug connectors and cables

Connector M12, 5-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1205-G02M	6008899
				5 m	DOL-1205-G05M	6009868
				10 m	DOL-1205-G10M	6010544
		Angled	PVC	2 m	DOL-1205-W02M	6008900
				5 m	DOL-1205-W05M	6009869
				10 m	DOL-1205-W10M	6010542
		Straight	–	–	DOS-1205-G	6009719
		Angled	–	–	DOS-1205-W	6009720

Mounting brackets/plates

Mounting system type	Material	Model name	Part no.
Mounting bracket	Stainless steel (1.4301)	BEF-WG-W12	2013942
		BEF-WK-W12	2012938

Terminal and alignment brackets

Mounting system type	Description	Material	Model name	Part no.
Clamps	Clamp for dovetail mounting	Steel, zinc coated	BEF-KH-W12	2013285 [1]
Universal bar clamps	Plate D for universal bar clamp	Steel, zinc coated	BEF-KHS-D01	2022461
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

[1] Supplied with KT2.

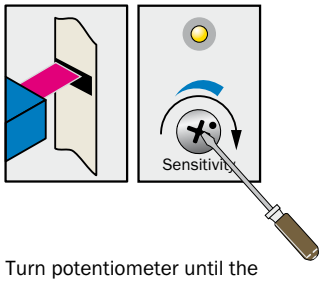
For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT2

Setting the switching threshold via potentiometer

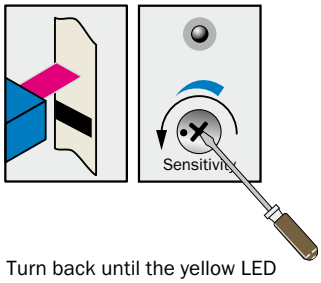
Select switching function (light/dark) using control cable.

1. Position mark



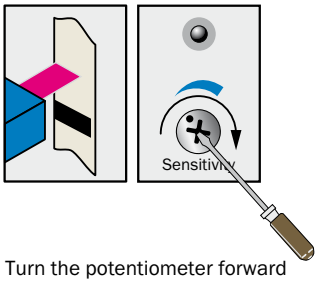
Turn potentiometer until the yellow LED illuminates:
To the right at the dark mark.
To the left at the light mark.

2. Position background



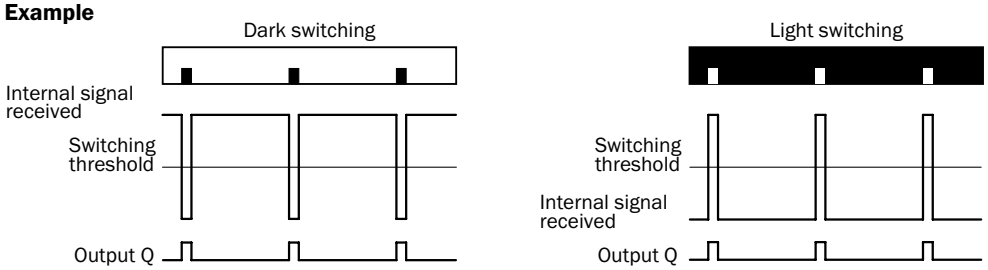
Turn back until the yellow LED goes out.

3. Set switching threshold



Turn the potentiometer forward by half, to ensure that the switching threshold is optimally set.

Example



Switching characteristics

The switching threshold is set in the center between the background and the mark.

Compact and powerful contrast detection

Product description

The KT3 contrast sensor may be small in size, but it provides big results when it comes to detecting contrasts. Due to 3-color LED technology which detects all contrast combinations, the sensor is ideal for use in packaging and document handling machines. Teach-in can be triggered automatically during operation via the external control signal. The sensor selects all necessary settings automatically, depending on the variation between the mark and the background. These features, along with the highly visible light spot, enable extremely simple commissioning. And, since there is no need to stop the machine, setup time is reduced. High-gloss materials are detected reliably due to automatic adjustment. In addition, the KT3 features 10 kHz technology and a fast 50 µs response time, which leads to high repeat accuracy and excellent results.

At a glance

- Very small housing
- 3-color RGB technology or white LED
- Simple teach-in (when machine is stopped or during operation)
- Integrated switching threshold adjustment for high-gloss objects
- Reliable operation for jittering materials
- Switching frequency of 10 kHz

Your benefits

- Compact design fits in applications with limited space
- 3-color RGB technology enables universal operation with an extremely wide range of weak contrast combinations
- White LED model detects several different marks
- Simple teach-in to optimally set transmission color, switching point and surface shine
- Very good contrast resolution for detecting print marks, even where the variation between the mark and the background is minimal
- Automatic adaptation for high-gloss objects ensures high throughput
- Reliable operation for jittering materials
- Accurate positioning in rapid production processes

Additional information

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Adjustments 27
Connection type and diagram 27
Sensing distance 27
Recommended accessories 28
Setting the switching threshold 29
Dimensional drawings accessories . 91

→ www.mysick.com/en/KT3

8014854/2011-12-31
Subject to change without notice

Detailed technical data

Features

Dimensions (L x W x H)	22 mm x 12 mm x 40 mm
Sensing distance	12.5 mm
Sensing distance tolerance	± 2 mm

Mechanics/electronics

Supply voltage V_S [1]	DC 12 V ... 24 V
Ripple [2]	≤ 5 V_{PP}
Power consumption [3]	< 35 mA
Switching frequency [4]	10 kHz
Response time [5]	50 µs
Switching output voltage	PNP: HIGH = V_S– ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	PNP: Teach: U = 10 V ... < U_V Run: U < 2 V NPN: Teach: U < 2 V Run: U = 10 V ... < 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	Approx. 11 g
Housing material	ABS (plastic)

[1] Extreme values: 12 V (–10 %) ... 24 V (+20 %).
Operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] With light/dark ratio 1:1.
[5] Signal transit time with resistive load.
[6] Reference voltage 50 V DC.

Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –20 °C ... +75 °C
Shock load	According to IEC 60068

Specific data

Light source [1]	Model name	Ordering information
LED white [2]	KT3M	26
LED red, green, blue [3]	KT3W	26
LED green [4]	KT3G	26

[1] Average service life of 100,000 h at T_A = +25 °C .
[2] Wave length: 400 nm ... 700 nm.
[3] Wave length: 470 nm, 525 nm, 640 nm.
[4] Wave length: 520 nm.

Ordering information

KT3M

- **Light source:** LED white

Light spot size	Light spot direction [1]	Adjustment	Time delay	Switching output	Model name	Part no.
1.5 mm x 3.5 mm	Vertical	Static 2-point teach-in	–	PNP	KT3M-P1116	1044235
				NPN	KT3M-N1116	1044593

[1] In relation to long side of housing.

KT3W

- **Light source:** LED red, green, blue

Light spot size	Light spot direction [1]	Adjustment	Time delay	Switching output	Model name	Part no.
1.5 mm x 6.5 mm	Vertical	Dynamic teach-in (min/max)	–	PNP	KT3W-P1115	1025326
				NPN	KT3W-N1115	1025325
		Static 2-point teach-in	–	PNP	KT3W-P1116	1019338
				NPN	KT3W-N1116	1019337
			20 ms	PNP	KT3W-P1126	1022933

[1] In relation to long side of housing.

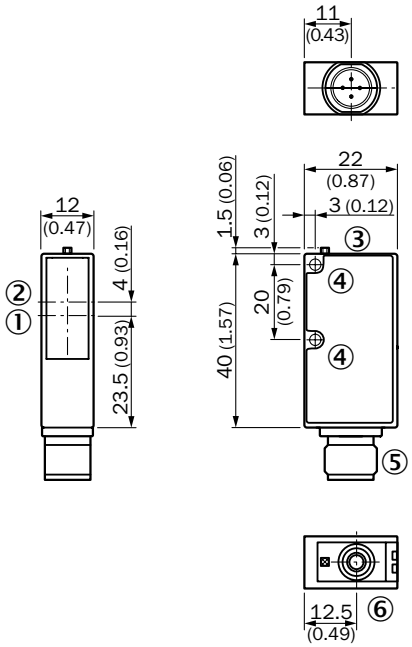
KT3G

- **Light source:** LED green

Light spot size	Light spot direction [1]	Adjustment	Time delay	Switching output	Model name	Part no.
1.5 mm x 3.5 mm	Vertical	Static 2-point teach-in	–	PNP	KT3G-P1116	1019446
				NPN	KT3G-N1116	1019445

[1] In relation to long side of housing.

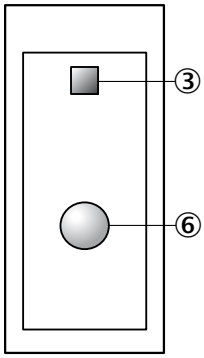
Dimensional drawing



All dimensions in mm (inch)

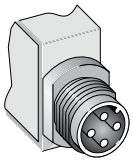
① Axis of the sender optics
② Axis of the receiver optics
③ LED signal strength indicator
④ Mounting hole, Ø 3 mm
⑤ Connector M12
⑥ Teach-in button

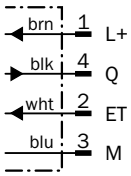
Adjustments



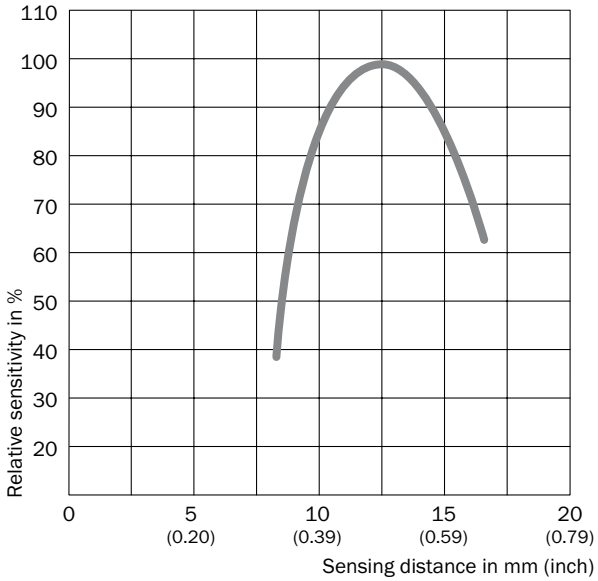
Connection type and diagram

Connector
M12, 4-pin





Sensing distance



Recommended accessories

Plug connectors and cables

Connector M12, 4-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
		Angled	PVC	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
		Straight	–	–	DOS-1204-G	6007302
		Angled	–	–	DOS-1204-W	6007303

Mounting brackets/plates

Mounting system type	Material	Model name	Part no.
Mounting bracket	Steel, zinc coated	BEF-WN-W9-2	2022855

Terminal and alignment brackets

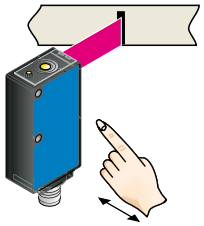
Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Plate L for universal bar clamp	Steel, zinc coated	BEF-KHS-L01	2023057
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT3

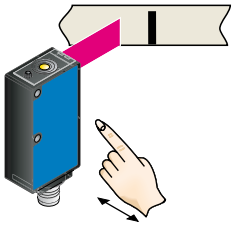
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark



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

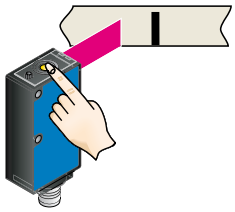
2. Position background



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

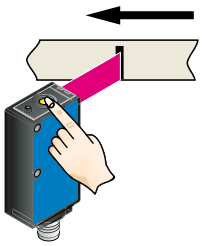
Setting the switching threshold via teach-in (dynamic)

1. Position background

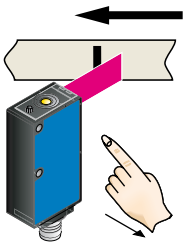


Press the teach-in button and keep it pressed.

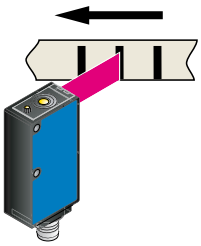
2. Move at least one mark using the light spot



Keep the teach-in button pressed.

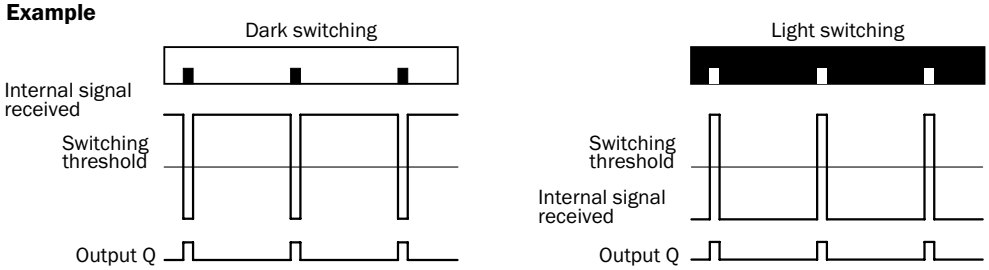


Release the teach-in button.



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

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.

Long sensing distance – precise detection

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

Additional information

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Sensing distance 32
Recommended accessories 33
Setting the switching threshold 34
Dimensional drawings accessories . 91

→ www.mysick.com/en/KT3L_Laser

Detailed technical data

Features

Dimensions (L x W x H)	22 mm x 12 mm x 40 mm
Sensing distance	40 mm
Sensing distance tolerance	± 20 mm
Light source [1) 2)]	Laser diode red light
Operating distance	20 mm ... 60 mm

[1)] Average service life of 50,000 h at T_A = +25 °C.
[2)] Wave length: 655 nm.

Mechanics/electronics

Supply voltage V_S [1)]	DC 10 V ... 30 V
Ripple [2)]	≤ 5 V_{PP}
Power consumption [3)]	< 35 mA
Switching frequency [4)]	1.5 kHz
Response time [5)]	400 µs
Switching output voltage	NPN: HIGH = approx. V_S / LOW ≤ 2 V PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	PNP: Teach U > 8 V Run: U < 2 V NPN: Teach: U < 2 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	Approx. 11 g
Housing material	ABS (plastic)

[1)] Limit values. Operation in short-circuit protected network max. 8 A.
[2)] May not exceed or fall short of V_S tolerances.
[3)] Without load.
[4)] With light/dark ratio 1:1.
[5)] Signal transit time with resistive load.
[6)] Reference voltage 50 V DC.

Ambient data

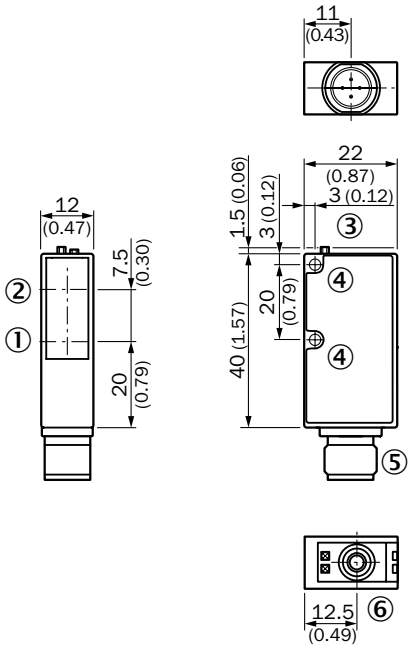
Ambient temperature	Operation: –10 °C ... +45 °C Storage: –20 °C ... +75 °C
Shock load	According to IEC 60068

Ordering information

Light spot size	Light spot direction [1)]	Adjustment	Switching output	Model name	Part no.
1 mm x 2 mm	Vertical	Static 2-point teach-in	NPN	KT3L-N3216	1026245
			PNP	KT3L-P3216	1026244

[1)] In relation to long side of housing.

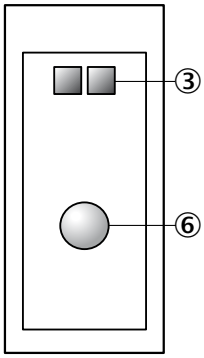
Dimensional drawing



All dimensions in mm (inch)

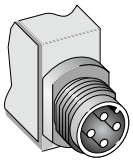
① Axis of the sender optics
② Axis of the receiver optics
③ LED signal strength indicator
④ Mounting hole, Ø 3 mm
⑤ Connector M12
⑥ Teach-in button

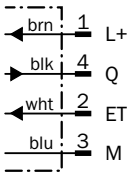
Adjustments



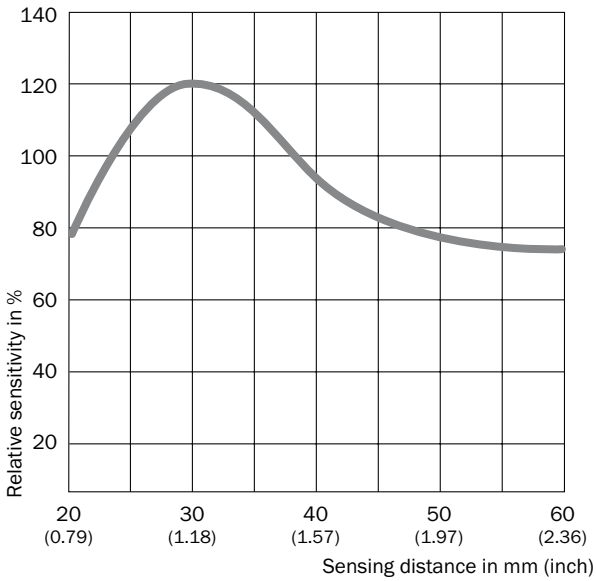
Connection type and diagram

Connector
M12, 4-pin





Sensing distance



Recommended accessories

Plug connectors and cables

Connector M12, 4-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
		Angled	PVC	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
		Straight	–	–	DOS-1204-G	6007302
		Angled	–	–	DOS-1204-W	6007303

Mounting brackets/plates

Mounting system type	Material	Model name	Part no.
Mounting bracket	Steel, zinc coated	BEF-WN-W9-2	2022855

Terminal and alignment brackets

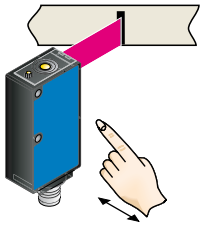
Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Plate L for universal bar clamp	Steel, zinc coated	BEF-KHS-L01	2023057
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT3L_Laser

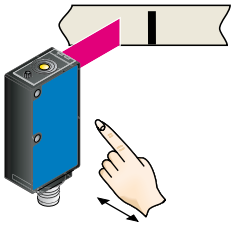
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark



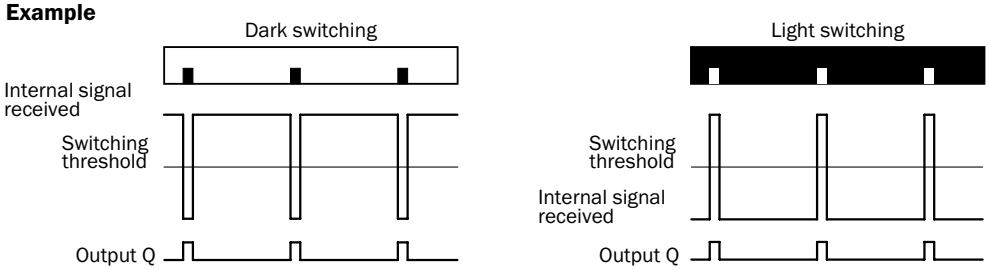
Press and hold teach-in button > 1 s.
Yellow LED flashes slowly.

2. Position background



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

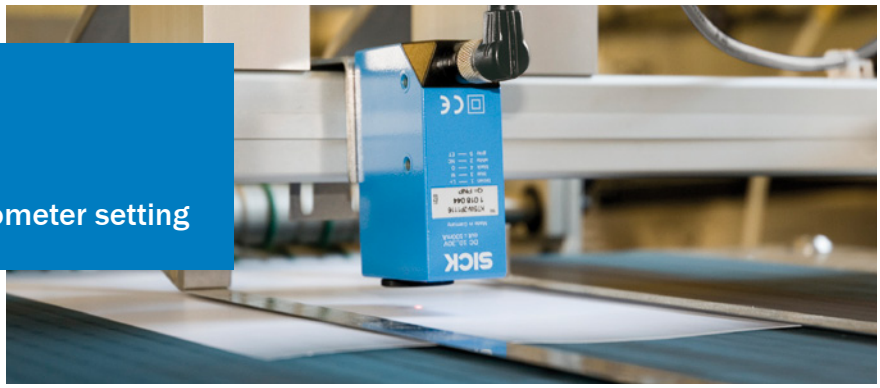
Example



Switching characteristics

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.

Contrast sensors with potentiometer setting



Additional information

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Ordering information 38
Dimensional drawing 40
Adjustments 40
Connection type and diagram 41
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Recommended accessories 42
Setting the switching threshold 43
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Product description

The KT5 contrast sensor quickly and reliably detects print marks on various foils, cardboard packaging and wrapping materials, which is critical in industrial packaging technology. Unlike other contrast sensor models, the KT5 is able to provide excellent grayscale differentiation due to its white or green lighting technology and a 10 kHz switching frequency. The switching threshold is set manually via a potentiometer – aided by the function indicator, which serves as an adjustment indicator. The selectable light spot geometry and various sensing distances of 10 mm, 20 mm and 40 mm make individual selection possible. Plus, an optional delay that extends the pulse duration optimizes detection reliability, while a 90° rotatable connection plug simplifies mounting. The extensive range of mounting accessories and a selectable light emission on the top or front of the housing simplifies integration.

At a glance

- Tough, metal housing
- Manual switching threshold adjustment with optical adjustment indicator
- Green or white LED technology
- Models with analog output
- Switching frequency of 10 kHz
- Various sensing distances and light spot directions
- M12 plug can be rotated 90°

Your benefits

- All standard print marks and contrasts are detected
- Reliable operation, even with jittering webs and high-gloss materials
- High positioning accuracy improves packaging quality
- Various sensing distances, light spot directions and light emissions make individual configuration and simple integration into the production process possible

→ www.mysick.com/en/KT5-2_Potentiometer

8014854/2011-12-31
Subject to change without notice

Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Light emission	Long and short side of housing, exchangeable
Adjustment	Manual adjustment, potentiometer
Switching function	Light/dark switching

Mechanics/electronics

Supply voltage V_S [1]	DC 10 V ... 30 V
Ripple [2]	≤ 5 V_{PP}
Power consumption [3]	< 80 mA
Switching frequency [4]	10 kHz
Response time [5]	50 µs
Switching output voltage	PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output current $I_{max.}$	100 mA
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	Approx. 400 g
Housing material	Die-cast zinc

[1] Limit values.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] With light/dark ratio 1:1.
[5] Signal transit time with resistive load.
[6] Reference voltage 50 V DC.

Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –25 °C ... +75 °C
Shock load	According to IEC 60068

Specific data

Light source [1]	Analog output Q_A	Time delay	Model name	Ordering information
LED green [2]	0.3 mA ... 10 mA	-	KT5G-2xxx51	38
	-	-	KT5G-2xxx11	38
	-	20 ms	KT5G-2xxx21	39
LED white [3]	0.3 mA ... 10 mA	-	KT5M-2xxx51	39
	-	-	KT5M-2xxx11	39

[1] Average service life of 100,000 h at T_A = +25 °C .
[2] Wave length: 520 nm.
[3] Wave length: 450 nm ... 650 nm.

Ordering information

KT5G-2xxx51

- **Light source:** LED green
- **Analog output Q_A:** 0.3 mA ... 10 mA
- **Time delay:** -

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	PNP	KT5G-2P1151	1016195
				NPN	KT5G-2N1151	1016385
			Horizontal	PNP	KT5G-2P2151	1017809
20 mm	± 3 mm	1.5 mm x 5.5 mm	Vertical	PNP	KT5G-2P1251	1016196
				NPN	KT5G-2N1251	1022582
40 mm	± 3 mm	1.1 mm x 4.2 mm	Vertical	PNP	KT5G-2P1351	1016197
				NPN	KT5G-2N1351	1016728
			Horizontal	PNP	KT5G-2P2351	1018067
				NPN	KT5G-2N2351	1018068

[1] From front edge of lens.

[2] In relation to long side of housing.

KT5G-2xxx11

- **Light source:** LED green
- **Analog output Q_A:** -
- **Time delay:** -

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	PNP	KT5G-2P1111	1015993
				NPN	KT5G-2N1111	1015981
			Horizontal	PNP	KT5G-2P2111	1016008
				NPN	KT5G-2N2111	1015990
20 mm	± 3 mm	1.5 mm x 5.5 mm	Vertical	PNP	KT5G-2P1211	1015999
				NPN	KT5G-2N1211	1015985
			Horizontal	PNP	KT5G-2P2211	1016010
				NPN	KT5G-2N2211	1015991
40 mm	± 3 mm	1.1 mm x 4.2 mm	Vertical	PNP	KT5G-2P1311	1016003
				NPN	KT5G-2N1311	1015988
			Horizontal	PNP	KT5G-2P2311	1016012
				NPN	KT5G-2N2311	1015992

[1] From front edge of lens.

[2] In relation to long side of housing.

KT5G-2xxx21

- **Light source:** LED green
- **Analog output Q_A: -**
- **Time delay:** 20 ms

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	PNP	KT5G-2P1121	1015997
				NPN	KT5G-2N1121	1015983
			Horizontal	PNP	KT5G-2P2121	1016009
20 mm	± 3 mm	1.5 mm x 5.5 mm	Vertical	PNP	KT5G-2P1221	1016001
			Horizontal	PNP	KT5G-2P2221	1016011
40 mm	± 3 mm	1.1 mm x 4.2 mm	Vertical	PNP	KT5G-2P1321	1016005
			Horizontal	PNP	KT5G-2P2321	1016013

[1] From front edge of lens.

[2] In relation to long side of housing.

KT5M-2xxx51

- **Light source:** LED white
- **Analog output Q_A:** 0.3 mA ... 10 mA
- **Time delay: -**

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	PNP	KT5M-2P1151	1044400

[1] From front edge of lens.

[2] In relation to long side of housing.

KT5M-2xxx11

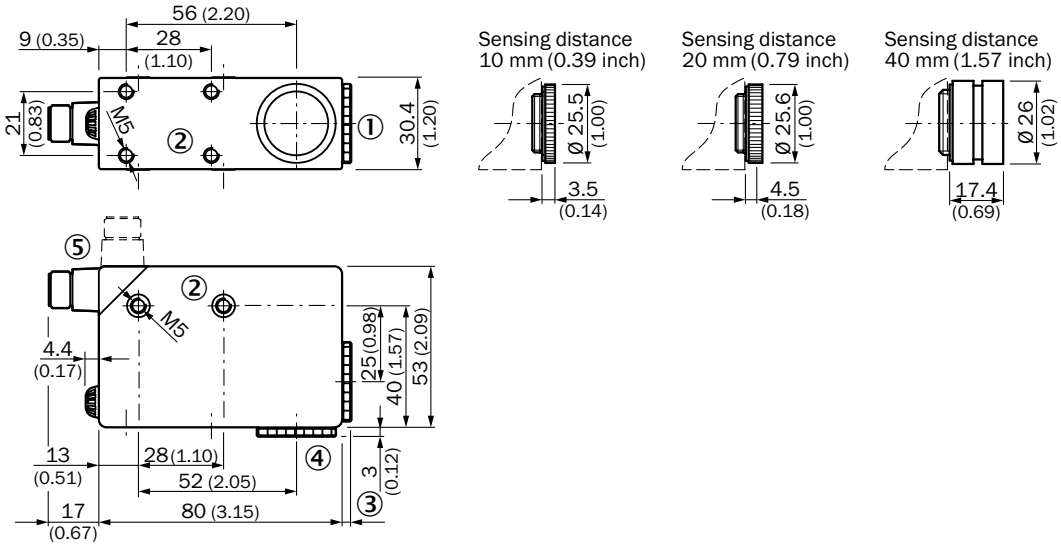
- **Light source:** LED white
- **Analog output Q_A: -**
- **Time delay: -**

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	NPN	KT5M-2N1111	1048489

[1] From front edge of lens.

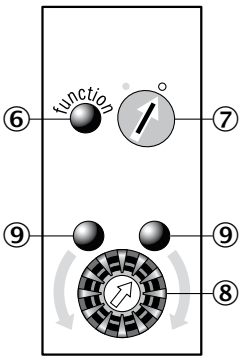
[2] In relation to long side of housing.

Dimensional drawing



All dimensions in mm (inch)

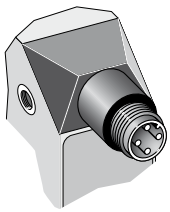
Adjustments

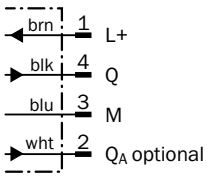


① Lens (light transmission), can be exchanged for pos. 4
② M5 threaded mounting hole, 5.5 mm deep
③ See dimensional drawing for lens
④ Blind screw can be replaced by pos. 1
⑤ Connector M12 (rotatable up to 90°)
⑥ Function signal indicator (yellow)
⑦ Pre-selection switch (light/dark switching)
⑧ Switching threshold adjustment
⑨ Adjustment indicators (green)

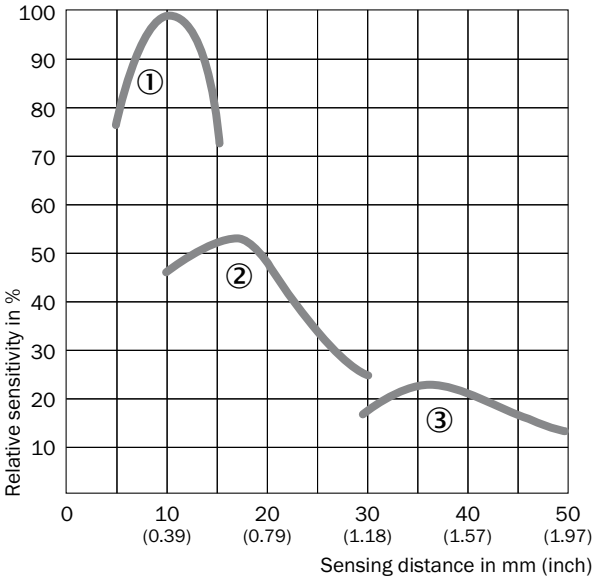
Connection type and diagram

Connector
M12, 4-pin





Sensing distance



① Sensing distance 10 mm
② Sensing distance 20 mm
③ Sensing distance 40 mm

Recommended accessories

Plug connectors and cables

Connector M12, 4-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
		Angled	PVC	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
		Straight	–	–	DOS-1204-G	6007302
		Angled	–	–	DOS-1204-W	6007303

Terminal and alignment brackets

Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate G for universal bar clamp	Steel, zinc coated	BEF-KHS-G01	2022464
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

Lenses (only replacement 1:1)

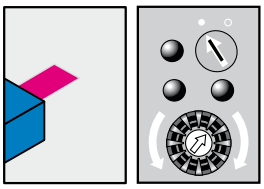
Sensing distance	Model name	Part no.
10 mm	OBJ-211	1004936
20 mm	OBJ-212	1011506
40 mm	OBJ-210	2010945

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT5-2_Potentiometer

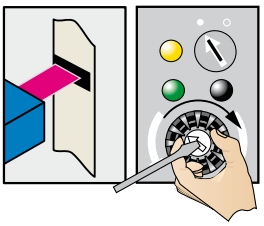
Setting the switching threshold via potentiometer

1. Select switching function (light/dark)



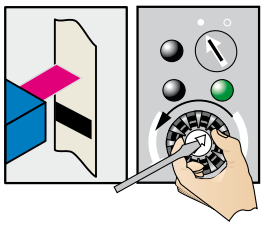
Turn the rotary switch to the desired position.
○ = light switching
● = dark switching

2. Position mark

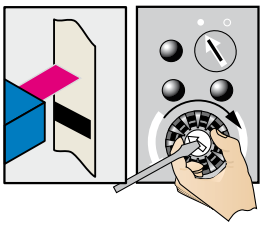


Turn potentiometer in the direction shown (green LED illuminates) until the yellow LED status changes and the green LED opposite illuminates.

3. Position background

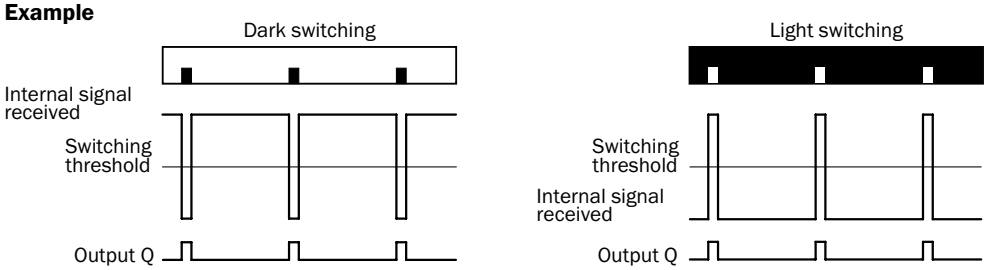


Gradually turn back the potentiometer (count the number of turns) until the yellow LED changes status again and illuminates.



Turn the potentiometer forward again by half the number of turns to ensure that the switching threshold is optimally set.

Example



Switching characteristics

The switching threshold is set in the center between the background and the mark.

Contrast sensors with easy teach-in

Product description

KT5-2 contrast sensors are ideal for high-precision contrast detection, such as for detecting marks on high-gloss materials. Due to the 3-color LED technology, the sensors activate the best possible emitted light source for each contrast. In addition, the sensors feature application-specific teach-in processes. The sensor defines all necessary parameters automatically – either via the teach-in button on the device or via an external control cable. The sensor then determines the ideal switching threshold from the two gray values detected. High-precision contrast detection; automatic adaptation for high-gloss objects; sensing distances of 10 mm, 20 mm and 40 mm; a switching frequency of 10 kHz; and individual alignment and mounting options make the device suitable for a wide range of tasks. Lastly, the 90° rotatable M12 plug provides simple mounting.

At a glance

- Tough, metal housing
- Various teach-in methods via control panel or control cable
- Maximum detection reliability due to 3-color RGB LED technology
- Switching frequency of 10 kHz
- Various sensing distances and light spot directions
- M12 plug can be rotated 90°

Your benefits

- All print marks and color combinations are reliably detected, ensuring high machine throughput
- Reliable operation, even with jittering webs and high-gloss materials
- High positioning accuracy improves packaging quality
- Various sensing distances, light spot directions and light emissions make individual configuration and simple integration into the production process possible

Additional information

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→ www.mysick.com/en/KT5-2_Teach-in

8014854/2011-12-31
Subject to change without notice

Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Light emission	Long and short side of housing, exchangeable

Mechanics/electronics

Supply voltage V_S [1]	DC 10 V ... 30 V
Ripple [2]	≤ 5 V_{PP}
Power consumption [3]	< 80 mA
Switching frequency [4]	10 kHz
Response time [5]	50 µs
Switching output voltage	PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	PNP: Teach: U = 10 V ... < U_V Run: U < 2 V NPN: Teach: U < 2 V Run: U = 10 V ... < U_V
Input, light/dark (L/D)	PNP: Light: U = 0 V Dark: U > 10 V ... < U_V NPN: Light: U = U_V Dark: U = 0 V
Retention time (ET)	25 ms, non-volatile memory
Protection class [6]	II III (KT5RG)
Circuit protection	V_S connections reverse-polarity protected Output Q short-circuit protected Interference suppression
Enclosure rating	IP 67
Weight	Approx. 400 g
Housing material	Die-cast zinc

[1] Limit values. Operation in short-circuit protected network max. 8 A.

[2] May not exceed or fall short of V_S tolerances.

[3] Without load.

[4] With light/dark ratio 1:1.

[5] Signal transit time with resistive load.

[6] Reference voltage 50 V DC.

Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –25 °C ... +75 °C
Shock load	According to IEC 60068

Specific data

Light source [1]	Connection type	Adjustment	Model name	Ordering information
LED red, green, blue [2]	Connector M12, 5-pin	Static 2-point teach-in	KT5W-xxx6	46
		Dynamic teach-in	KT5W-xxx3	46
LED red, green [3]	Connector M12, 4-pin	Static 2-point teach-in	KT5RG-xxx6	47

[1] Average service life of 100,000 h at T_A = +25 °C .

[2] Wave length: 470 nm, 525 nm, 640 nm.

[3] Wave length: 525 nm, 640 nm.

Ordering information

KT5W-xxx6

- **Light source:** LED red, green, blue
- **Connection type:** Connector M12, 5-pin
- **Adjustment:** Static 2-point teach-in

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Time delay	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	20 ms	PNP	KT5W-2P1126	1018587
				–	PNP	KT5W-2P1116	1018044
					NPN	KT5W-2N1116	1018045
			Horizontal	–	PNP	KT5W-2P2116	1022312
20 mm	± 3 mm	1.5 mm x 5.5 mm	Vertical	–	PNP	KT5W-2P1216	1018586
					NPN	KT5W-2N1216	1019022
			Horizontal	–	PNP	KT5W-2P2216	1019020
40 mm	± 3 mm	1.1 mm x 4.2 mm	Vertical	–	PNP	KT5W-2P1316	1018961
					NPN	KT5W-2N1316	1022678

[1] From front edge of lens.

[2] In relation to long side of housing.

KT5W-xxx3

- **Light source:** LED red, green, blue
- **Connection type:** Connector M12, 5-pin
- **Adjustment:** Dynamic teach-in

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Time delay	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	20 ms	PNP	KT5W-2P1123	1017810
				–	PNP	KT5W-2P1113	1016629
					NPN	KT5W-2N1113	1016630
			Horizontal	–	PNP	KT5W-2P2113	1018043
					NPN	KT5W-2N2113	1018042
20 mm	± 3 mm	1.5 mm x 5.5 mm	Vertical	–	PNP	KT5W-2P1213	1016715
					NPN	KT5W-2N1213	1016716
40 mm	± 3 mm	1.1 mm x 4.2 mm	Vertical	20 ms	PNP	KT5W-2P1323	1018808
			Horizontal	20 ms	PNP	KT5W-2P2323	1022165

[1] From front edge of lens.

[2] In relation to long side of housing.

KT5RG-xxx6

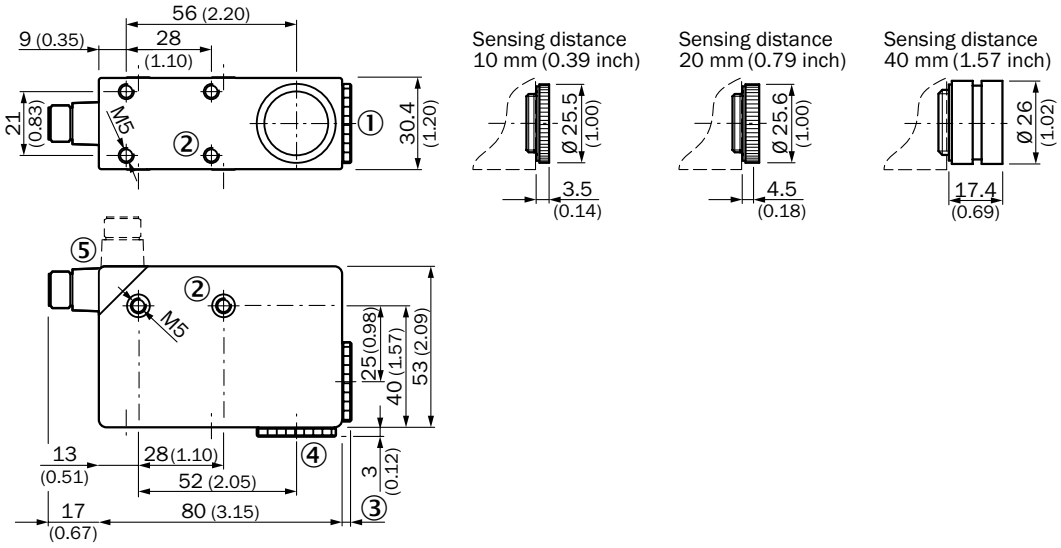
- **Light source:** LED red, green
- **Connection type:** Connector M12, 4-pin
- **Adjustment:** Static 2-point teach-in

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Time delay	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	20 ms	PNP	KT5RG-2P1126	1027396
				–	PNP	KT5RG-2P1116	1027393
					NPN	KT5RG-2N1116	1027394

[1] From front edge of lens.

[2] In relation to long side of housing.

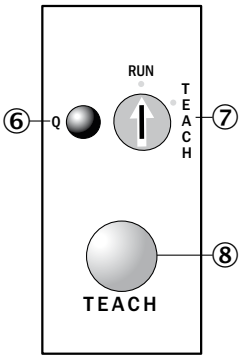
Dimensional drawing



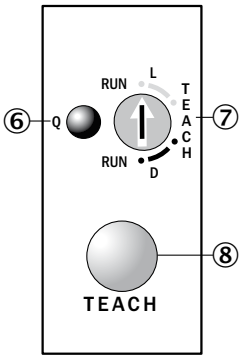
All dimensions in mm (inch)

Adjustments

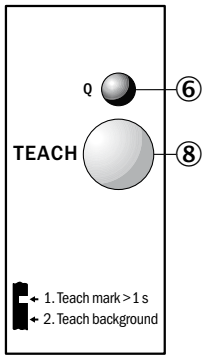
KT5-2 Teach-in
KT5W-xxx6



KT5-2 Teach-in
KT5W-xxx3



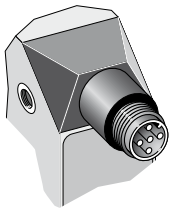
KT5-2 Teach-in
KT5RG-xxx6

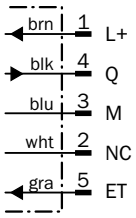


① Lens (light transmission), can be exchanged for pos. 4
② M5 threaded mounting hole, 5.5 mm deep
③ See dimensional drawing for lens
④ Blind screw can be replaced by pos. 1
⑤ Connector M12 (rotatable up to 90°)
⑥ Function signal indicator (yellow)
⑦ Pre-selection switch
⑧ Teach-in button

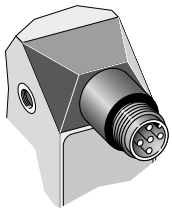
Connection type and diagram

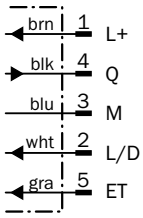
KT5W-xxx6
Connector
M12, 5-pin



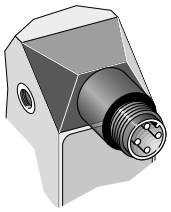


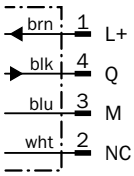
KT5W-xxx3
Connector
M12, 5-pin





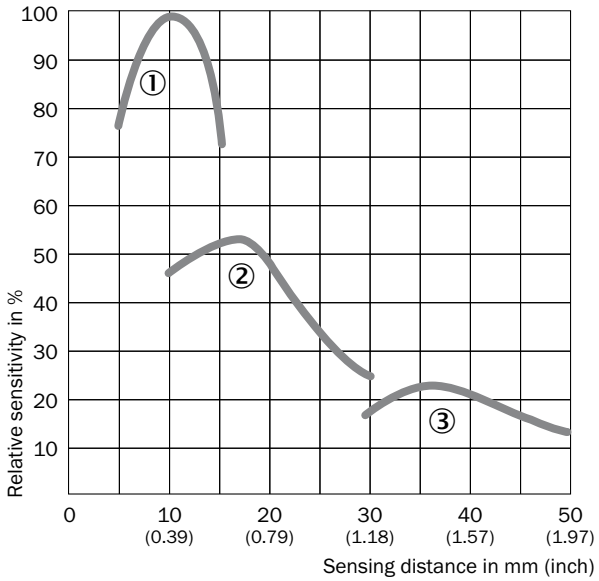
KT5RG-xxx6
Connector
M12, 4-pin





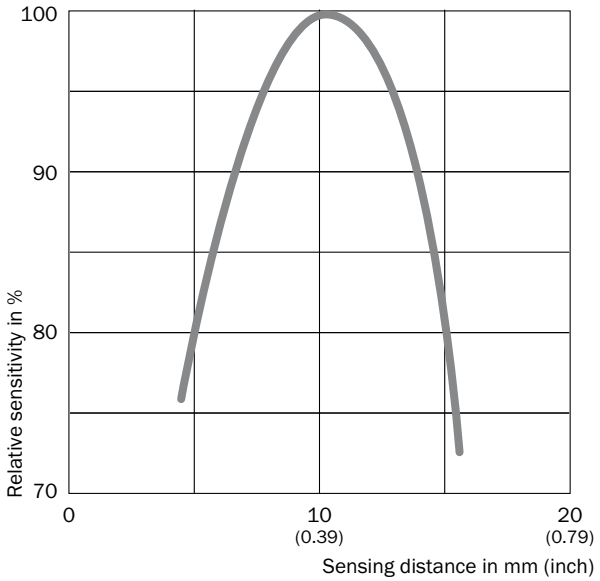
Sensing distance

KT5-2 Teach-in
KT5W



① Sensing distance 10 mm
② Sensing distance 20 mm
③ Sensing distance 40 mm

KT5-2 Teach-in
KT5RG



Recommended accessories

Plug connectors and cables

Connector M12, 4-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Type	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
		Angled	PVC	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
		Straight			DOS-1204-G	6007302
		Angled			DOS-1204-W	6007303

Connector M12, 5-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1205-G02M	6008899
				5 m	DOL-1205-G05M	6009868
				10 m	DOL-1205-G10M	6010544
		Angled	PVC	2 m	DOL-1205-W02M	6008900
				5 m	DOL-1205-W05M	6009869
				10 m	DOL-1205-W10M	6010542
		Straight	–	–	DOS-1205-G	6009719
		Angled	–	–	DOS-1205-W	6009720

Terminal and alignment brackets

Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate G for universal bar clamp	Steel, zinc coated	BEF-KHS-G01	2022464
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

Lenses (only replacement 1:1)

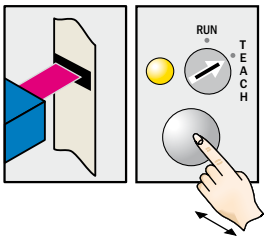
Sensing distance	Model name	Part no.
10 mm	OBJ-211	1004936
20 mm	OBJ-212	1011506
40 mm	OBJ-210	2010945

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT5-2_Teach-in

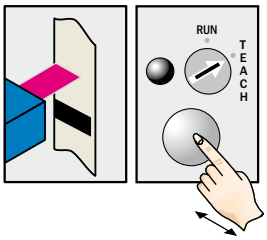
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark



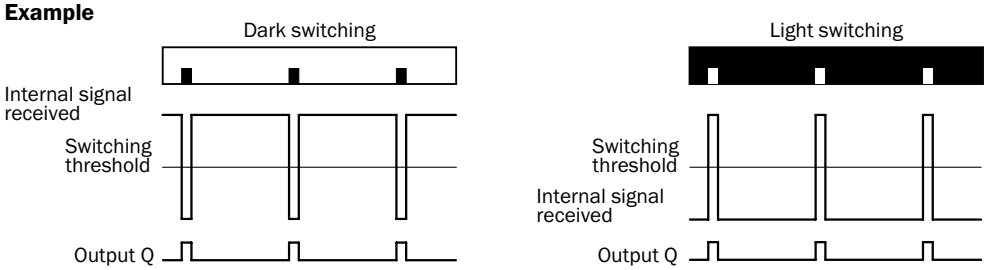
Turn rotary switch to “Teach” position. Press and hold teach-in button > 1 s.
Red emitted light and yellow LED flash.

2. Position background



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

Example

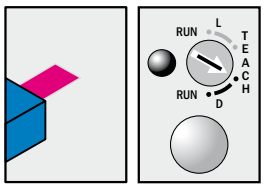


Switching characteristics

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.

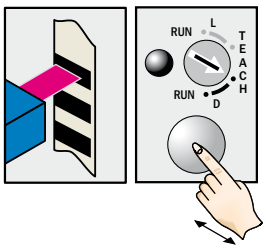
Setting the switching threshold via teach-in (dynamic)

1. Select switching function (light/dark)



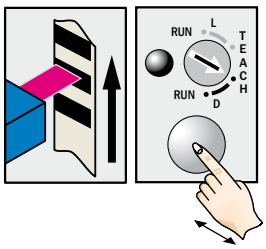
Turn rotary switch to desired teach position:
D = dark switching
L = light switching

2. Position mark or background

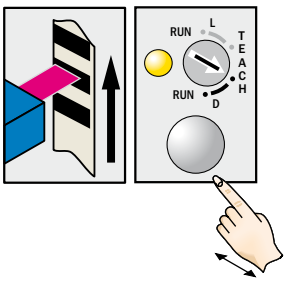


Press the teach-in button and keep it pressed.

3. Move at least one repeat length using the light spot

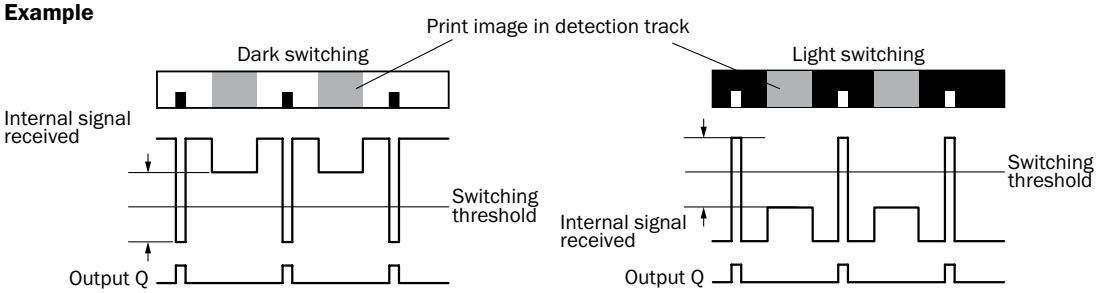


Keep the teach-in button pressed.



Release the teach-in button. Yellow LED will illuminate, when emitted light is on the mark.

Example



Switching characteristics

The optimum emitted light is selected automatically.
The switching threshold is set in the center between the lowest and the second-lowest reflectivity.
Teach-in can also be performed using an external control signal.
Light/dark setting can also be configured using an external control signal.
Observe the minimum speed (25 mm/s ... 300 mm/s).

Contrast sensors with intelligent bar graph display

Product description

Contrast sensors are used primarily for reading printed or control marks and stamps. The KT5-2 Display contrast sensor sets standards in performance and ease of use. The sensor's integrated bar graph display and unique threshold adjustments enable users to easily inspect and adjust parameters in the field. In addition, the operator is able to detect the current signal level, read the taught-in switching threshold, and manually adjust the switching threshold using the "+"/"–" button. If the quality of the print mark changes, for instance, the sensor can be easily readjusted "in process." The optimal emitted light color is selected automatically due to 3-color LED technology. The gray values of the mark and the background are taught-in during the 2-point teach-in process. The sensor, which is able to determine the optimal switching threshold automatically, has a switching frequency of 10 kHz – ensuring efficient machine production processes. A variety of sensing distances and individual alignment and mounting options make the device suitable for a wide range of tasks.

At a glance

- Intuitive 10-segment bar graph display indicates detection status
- Static 2-point teach-in of mark and background via the control cable
- Maximum detection reliability due to 3-color RGB LED technology
- Switching frequency of 10 kHz
- Automatic gloss adjustment for highly reflective materials
- A range of sensing distances and light spots for numerous applications
- M12 plug can be rotated 90°

Your benefits

- All print marks and color combinations are detected, ensuring high throughput
- Reliable operation, even with high-gloss materials
- Detects difficult marks, such as jittering and shiny materials
- High positioning accuracy improves packaging quality
- Application-specific teach-in processes reduce setup times
- Various sensing distances, light spot directions and light emissions make individual configuration and simple integration into the production system possible

→ www.mysick.com/en/KT5-2_Display

Additional information

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Sensing distance 57
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Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Light source [1) 2)]	LED red, green, blue
Light emission	Long and short side of housing, exchangeable
Adjustment	Static 2-point teach-in with manual fine adjustment

[1)] Average service life of 100,000 h at T_A = +25 °C .

[2)] Wave length: 470 nm, 525 nm, 640 nm.

Mechanics/electronics

Supply voltage V_S [1)]	DC 10 V ... 30 V
Ripple [2)]	≤ 5 V_{PP}
Power consumption [3)]	< 130 mA
Switching frequency [4)]	10 kHz
Response time [5)]	50 µs
Switching output voltage	PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output current $I_{max.}$ [6)]	100 mA
Input, teach-in (ET)	PNP: Teach: U = 10 V ... < U_V Run: U < 2 V NPN: Teach: U < 2 V Run: U = 10 V ... < U_V
Retention time (ET)	25 ms, non-volatile memory
Connection type	Connector M12, 5-pin
Protection class [7)]	II
Circuit protection	V_S connections reverse-polarity protected Output Q short-circuit protected Interference suppression
Enclosure rating	IP 67
Weight	Approx. 400 g
Housing material	Die-cast zinc

[1)] Limit values. Operation in short-circuit protected network max. 8 A.

[2)] May not exceed or fall short of V_S tolerances.

[3)] Without load.

[4)] With light/dark ratio 1:1.

[5)] Signal transit time with resistive load.

[6)] Short-circuit protected.

[7)] Reference voltage 50 V DC.

Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –25 °C ... +75 °C
Shock load	According to IEC 60068

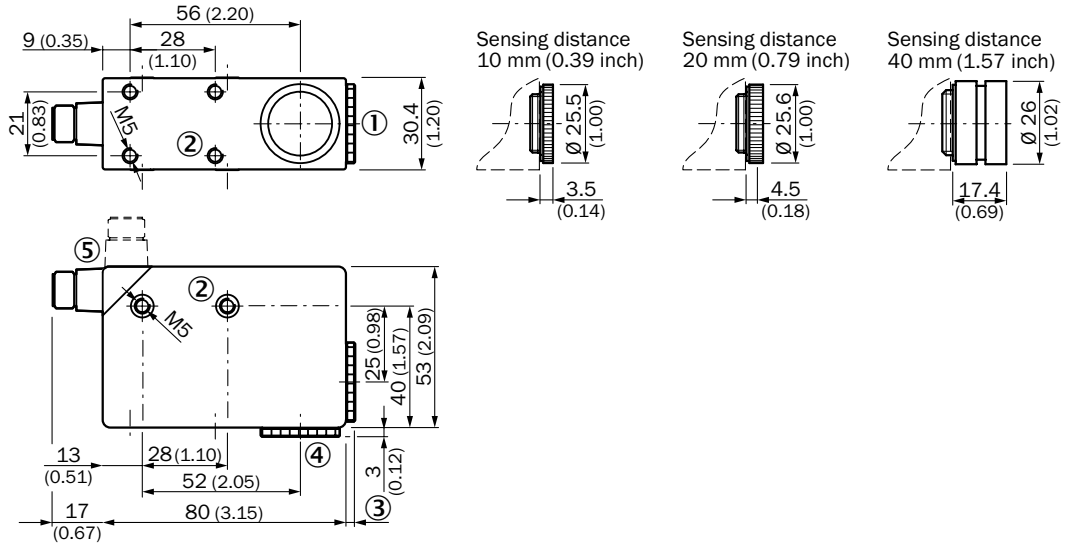
Ordering information

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Time delay	Switching output	Model name	Part no.
10 mm	± 3 mm	1.2 mm x 4.2 mm	Vertical	20 ms	PNP	KT5W-2P1126D	1026579
					NPN	KT5W-2N1126D	1026582
				–	PNP	KT5W-2P1116D	1026538
					NPN	KT5W-2N1116D	1026540
			Horizontal	–	PNP	KT5W-2P2116D	1026584
					NPN	KT5W-2N2116D	1026583
20 mm	± 3 mm	1.5 mm x 5.5 mm	Vertical	–	PNP	KT5W-2P1216D	1026577
					NPN	KT5W-2N1216D	1026580
40 mm	± 3 mm	1.1 mm x 4.2 mm	Vertical	–	PNP	KT5W-2P1316D	1026578
					NPN	KT5W-2N1316D	1026581

[1] From front edge of lens.

[2] In relation to long side of housing.

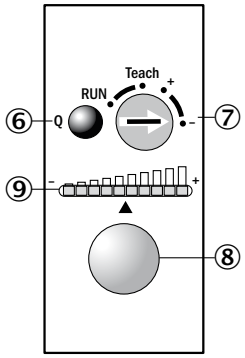
Dimensional drawing



All dimensions in mm (inch)

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

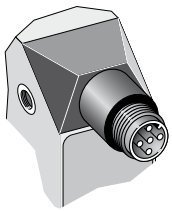
Adjustments

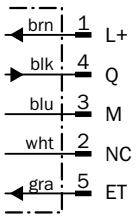


⑥ Function signal indicator (yellow)
⑦ Pre-selection switch
⑧ Teach-in button
⑨ Bar graph (green)

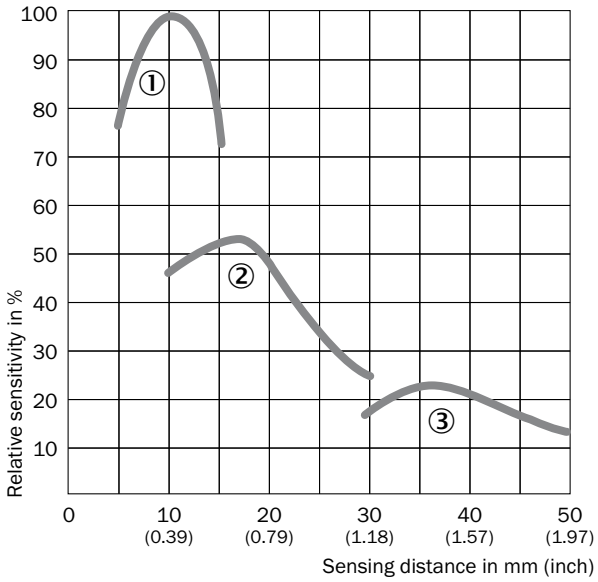
Connection type and diagram

Connector
M12, 5-pin





Sensing distance



① Sensing distance 10 mm
② Sensing distance 20 mm
③ Sensing distance 40 mm

Recommended accessories

Plug connectors and cables

Connector M12, 5-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1205-G02M	6008899
				5 m	DOL-1205-G05M	6009868
				10 m	DOL-1205-G10M	6010544
		Angled	PVC	2 m	DOL-1205-W02M	6008900
				5 m	DOL-1205-W05M	6009869
				10 m	DOL-1205-W10M	6010542
		Straight	–	–	DOS-1205-G	6009719
		Angled	–	–	DOS-1205-W	6009720

Terminal and alignment brackets

Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate G for universal bar clamp	Steel, zinc coated	BEF-KHS-G01	2022464
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

Lenses (only replacement 1:1)

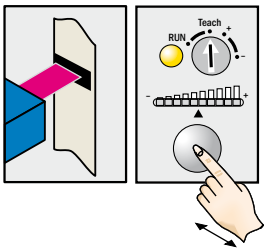
Sensing distance	Model name	Part no.
10 mm	OBJ-211	1004936
20 mm	OBJ-212	1011506
40 mm	OBJ-210	2010945

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT5-2_Display

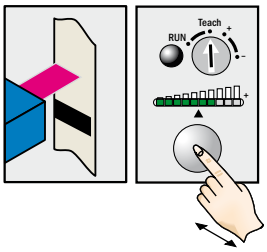
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark

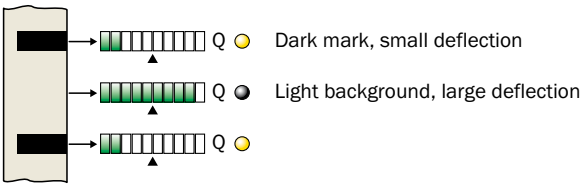


Turn rotary switch to “Teach” position. Press and hold teach-in button > 1 s.
Red emitted light and yellow LED flash.

2. Position background



Press and hold teach-in button > 1 s.
Yellow LED goes out.
Optimum emitted light is selected.

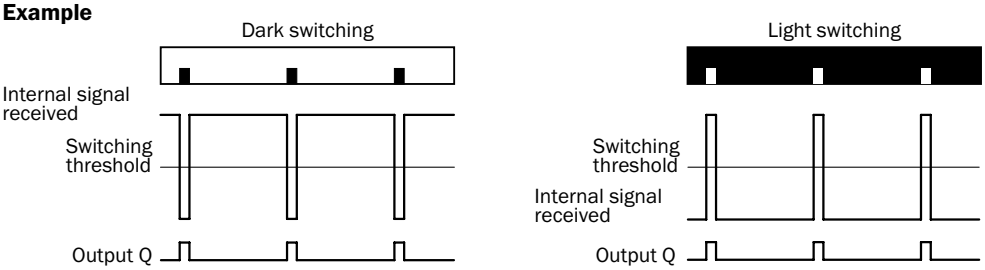


Fine adjustment possible using the “+”/“–” buttons.

Note

The bar display visualizes the detection reliability during teach-in. The more LEDs that illuminate, the better the teach-in:
1 LED illuminates = operation not reliable – contrast difference too low
≤ 4 LEDs illuminate = operation OK – sufficient contrast difference
> 4 LEDs illuminate = reliable operation – high contrast difference

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.

Contrast sensors with fiber-optic cables

Product description

When steam, heat or dust are present, the KTL5-2 family of contrast sensors with fiber-optic cables offers the ideal solution. Various straight or angled fiber-optics can be easily mounted on the sensor. Due to the 3-color RGB LED technology, the sensors are able to activate the best possible emitted light source for each contrast. In addition, the sensors feature application-specific teach-in processes. The sensor defines all necessary parameters automatically – either via the teach-in button on the device or via an external control cable. The sensor then determines the ideal switching threshold from the two gray values detected. High-precision contrast detection, automatic adaptation for high-gloss objects, a 10 kHz switching frequency, analog output, and individual alignment and mounting options make the device suitable for a wide range of tasks.

At a glance

- Various heat-resistant fiber-optic cable models are available
- Various teach-in methods, including potentiometer
- Analog output
- Switching frequency of 10 kHz

Your benefits

- Reliable contrast detection
- Flexible integration into machines due to minimal space requirements and various fiber-optic cable versions
- Durable, glass fiber-optic cables
- Reliable operation in adverse environmental conditions, such as extreme temperatures and moisture
- Resistant to aggressive cleaning agents
- Compact design fits in applications with limited space

→ www.mysick.com/en/KTL5-2_Fiber_Optic

Additional information

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Subject to change without notice

Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Sensing distance	Dependent on the fiber-optic cable
Light spot size	Dependent on the fiber-optic cable
Switching function	Light/dark switching

Mechanics/electronics

Supply voltage V_S [1]	DC 10 V ... 30 V
Ripple [2]	≤ 5 V_{PP}
Power consumption [3]	< 80 mA
Switching frequency [4]	10 kHz
Response time [5]	50 µs
Switching output voltage	PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	PNP: Teach: U = 10 V ... < U_V Run: U < 2 V NPN: Teach: U < 2 V Run: U = 10 V ... < U_V
Input, light/dark (L/D)	PNP: light: U = 0 V Dark: U > 10 V ... < U_V NPN: light: U = U_V Dark: U = 0 V
Retention time (ET)	25 ms, non-volatile memory
Protection class [6]	II
Circuit protection	V_S connections reverse-polarity protected Output Q short-circuit protected Interference suppression
Enclosure rating	IP 67
Weight	Approx. 400 g
Housing material	Die-cast zinc

[1] Limit values. Operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] With light/dark ratio 1:1.
[5] Signal transit time with resistive load.
[6] Reference voltage 50 V DC.

Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –25 °C ... +75 °C
Shock load	According to IEC 60068

Ordering information

Light source [1]	Connection type	Adjustment	Time delay	Switching output	Analog output Q_A	Model name	Part no. [2]
LED green [3]	Connector M12, 4-pin	Manual adjustment, potentiometer	–	PNP	–	KTL5G-2P11	1016294
					0.3 mA ... 10 mA	KTL5G-2P51	1016950
				NPN	–	KTL5G-2N11	1016295
					0.3 mA ... 10 mA	KTL5G-2N51	1016951
LED red, green, blue [4]	Connector M12, 5-pin	Dynamic teach-in	20 ms	PNP	–	KTL5W-2P23	1019551
			–	PNP	–	KTL5W-2P13	1027562
				NPN	–	KTL5W-2N13	1019661
		Static 2-point teach-in	–	PNP	–	KTL5W-2P16	1026006
				NPN	–	KTL5W-2N16	1025995

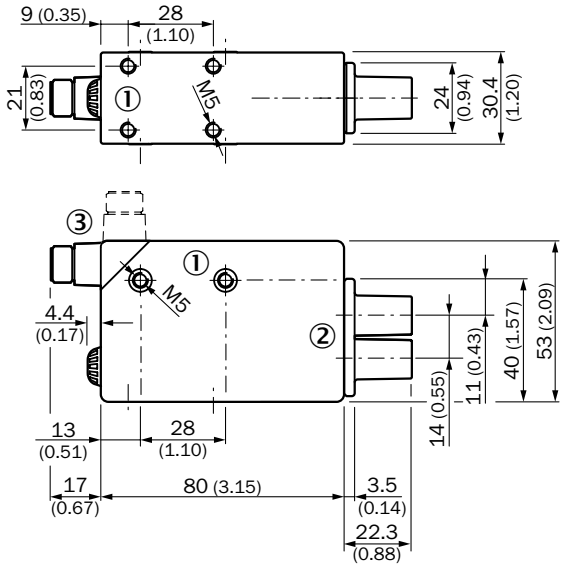
[1] Average service life of 100,000 h at T_A = +25 °C.

[2] Fiber-optic adapter supplied with the sensor.

[3] Wave length: 520 nm.

[4] Wave length: 470 nm, 525 nm, 640 nm.

Dimensional drawing

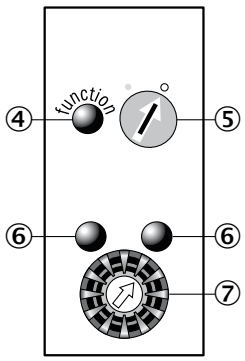


All dimensions in mm (inch)

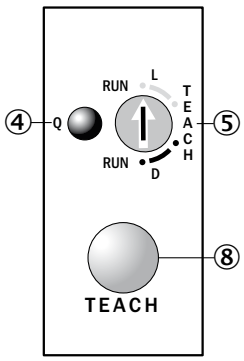
① M5 threaded mounting hole, 5.5 mm deep
② Fiber-optic adapter (M12 x 1 internal thread)
③ Connector M12 (rotatable up to 90°)

Adjustments

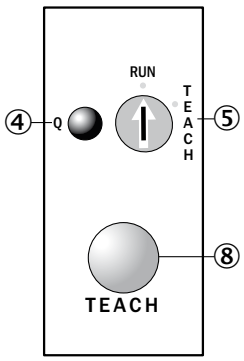
KTL5-2 Fiber-optic
KTL5G-xxx1



KTL5-2 Fiber-optic
KTL5W-xxx3



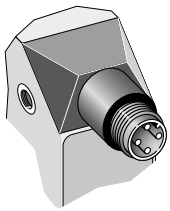
KTL5-2 Fiber-optic
KTL5W-xxx6

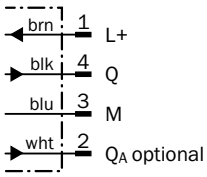


④ Function signal indicator (yellow)
⑤ Pre-selection switch
⑥ Adjustment indicators (green)
⑦ Switching threshold adjustment
⑧ Teach-in button

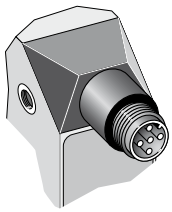
Connection type and diagram

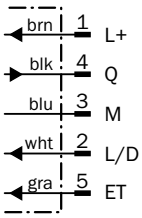
KTL5G-xxx1
Connector
M12, 4-pin



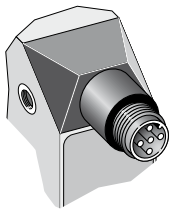


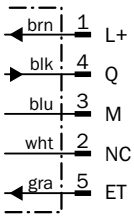
KTL5W-xxx3
Connector
M12, 5-pin



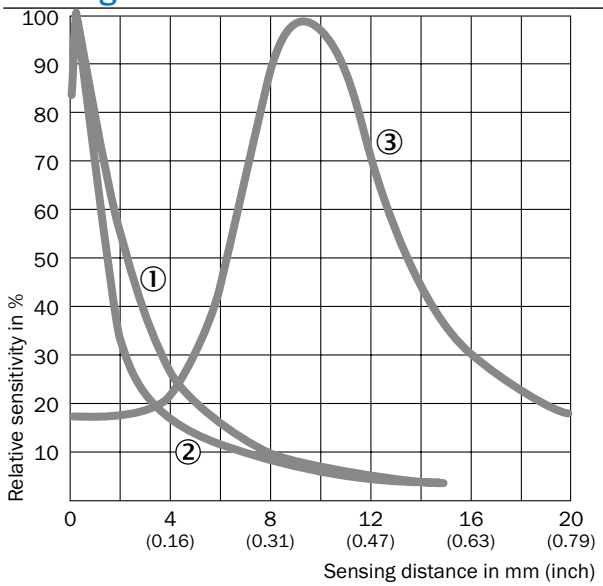


KTL5W-xxx6
Connector
M12, 5-pin





Sensing distance



① Fiber-optic cable LBST32900
② Fiber-optic cable LBSR32900
③ Fiber-optic cable OCSL

Recommended accessories

Plug connectors and cables

Connector M12, 4-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
		Angled	PVC	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
		Straight	–	–	DOS-1204-G	6007302
		Angled	–	–	DOS-1204-W	6007303

Connector M12, 5-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1205-G02M	6008899
				5 m	DOL-1205-G05M	6009868
				10 m	DOL-1205-G10M	6010544
		Angled	PVC	2 m	DOL-1205-W02M	6008900
				5 m	DOL-1205-W05M	6009869
				10 m	DOL-1205-W10M	6010542
		Straight	–	–	DOS-1205-G	6009719
		Angled	–	–	DOS-1205-W	6009720

Terminal and alignment brackets

Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate G for universal bar clamp	Steel, zinc coated	BEF-KHS-G01	2022464
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

Fiber-optic cables

Core material	Length, fiber-optic cable	Min. bend radius, fiber-optic cable	System	Max. sensing distance	Model name [1]	Part no.
Fiber glass	900 mm	19 mm	Proximity system	9 mm [2]	LBSA32900	7020040
					LBSAA23900	7020103
					LBSAT32900	7020036
					LBSF32900	7020038
					LBSM12900	7020054
					LBSP16900	7020044
					LBSR16900	7020050
					LBSR32900	7020042
					LBSR40900	7020052
					LBST32900	7020046
					LBSTA32900	7020048
				20 mm	OCSL	1016296
			Through-beam system	20 mm	LISA32900	7020039
					LISAA23900	7020102
					LISAT32900	7020035
					LISF32900	7020037
					LISM12900	7020053
					LISP16900	7020043
					LISR16900	7020049
					LISR32900	7020041
					LISR40900	7020051
					LIST32900	7020045
					LISTA32900	7020047

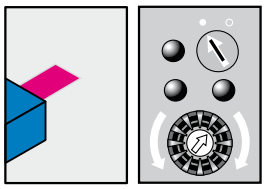
[1] For screwing.
[2] Material to be scanned with 90 % reflectance (DIN5033), Size of material to be scanned = light spot diameter (acceptance angle approx. 60°).

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KTL5-2_Fiber_Optic

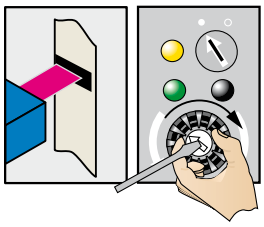
Setting the switching threshold via potentiometer

1. Select switching function (light/dark)



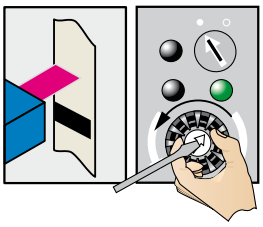
Turn the rotary switch to the desired position:
○ = light switching
● = dark switching

2. Position mark

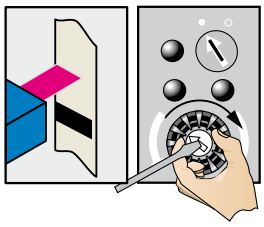


Turn potentiometer in the direction shown (green LED illuminates) until the yellow LED status changes and the green LED opposite illuminates.

3. Position background



Gradually turn back the potentiometer (count the number of turns) until the yellow LED changes status again and illuminates.

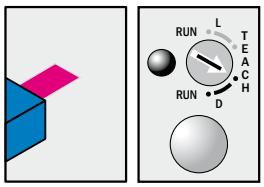


Turn the potentiometer forward again by half the number of turns to ensure that the switching threshold is optimally set.

Switching characteristics
The optimum emitted light is selected automatically.
The switching threshold is set in the center between the background and the mark.

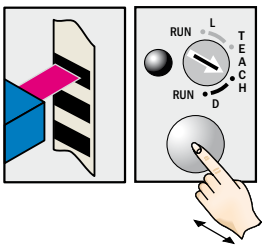
Setting the switching threshold via teach-in (dynamic)

1. Select switching function (light/dark)



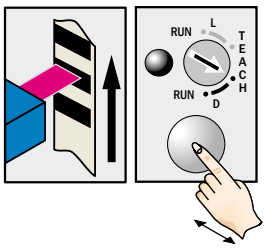
Turn the rotary switch to the desired teach position:
D = dark switching
L = light switching

2. Position mark or background

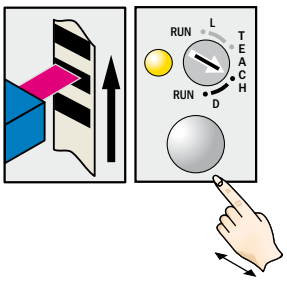


Press the teach-in button and keep it pressed.

3. Move at least one repeat length using the light spot

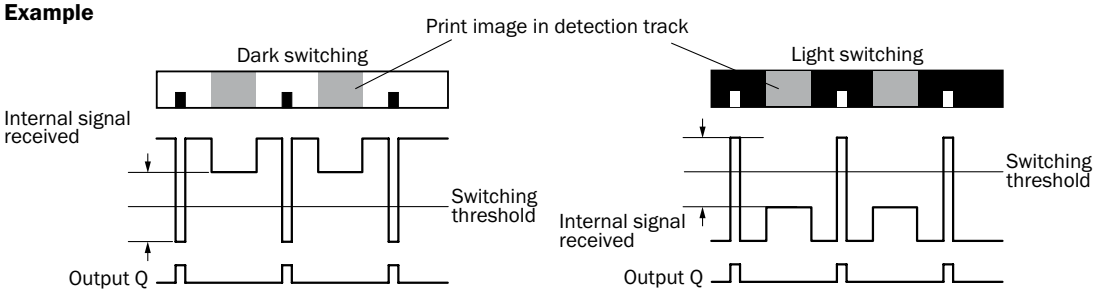


Keep the teach-in button pressed.



Release the teach-in button. Yellow LED will illuminate, when emitted light is on the mark.

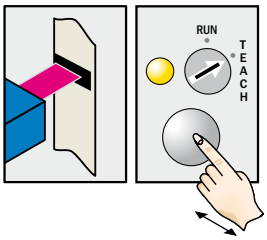
Example



Switching characteristics
The optimum emitted light is selected automatically.
The switching threshold is set in the center between the lowest and the second-lowest reflectivity.
Teach-in can also be performed using an external control signal.
Light/dark setting can also be configured using an external control signal.
Observe the minimum speed (25 mm/s ... 300 mm/s).

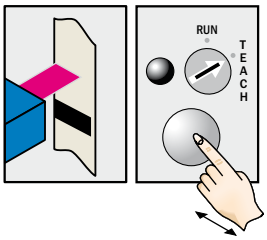
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark



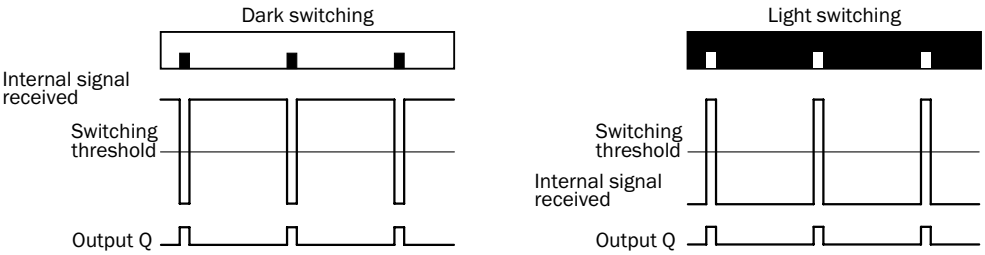
Turn rotary switch to “Teach” position. Press and hold teach-in button > 1 s.
Red emitted light and yellow LED flash.

2. Position background



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

Example (for both settings)



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.

High-performance in a tough metal housing for intelligent contrast detection

Product description

The KT6W-2 is a high-performance, cost-competitive contrast sensor with easy setup. The 3-color RGB LED technology allows even the smallest marks and contrasts to be reliably detected. High-gloss reflective marks are also detected due to the sensor's automatic gloss adjustment feature. A tough, metal housing ensures a long service life and high quality. The teach-in process is simple and easy all key parameters, such as transmission color and light/dark switching are detected automatically by the sensor. The KT6W-2 is available with the light emission located on the side of the device or on the end of the device. In addition to sturdy fixing holes, the KT6W-2 features two additional t-slots for even more mounting flexibility.

At a glance

- 3-color RGB LED technology
- 2-point teach-in (mark and background)
- Tough, metal housing
- Automatic gloss adjustment for highly reflective materials
- 10 mm sensing distance
- Light exits at end or side, based on model
- Common mounting footprint

Your benefits

- 3-color RGB LED for all registration mark applications – one sensor fits all
- Tough, metal housing for long service life
- Reliable operation, even with high-gloss reflective and jittering materials
- Easy setup – detect all marks with one sensor

Additional information

Detailed technical data 69
Ordering information 69
Dimensional drawing 70
Adjustments 70
Connection type and diagram 71
Sensing distance 71
Recommended accessories 71
Setting the switching threshold 72
Dimensional drawings accessories . 91

→ www.mysick.com/en/KT6-2

8014854/2011-12-31
Subject to change without notice

Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Sensing distance	10 mm
Sensing distance tolerance	± 3 mm
Light source [1) 2)]	LED red, green, blue
Light spot size	1.5 mm x 6.5 mm
Light spot direction [3)]	Vertical
Adjustment	Static 2-point teach-in

[1)] Average service life of 100,000 h at T_A = +25 °C .
[2)] Wave length: 470 nm, 525 nm, 640 nm.
[3)] In relation to long side of housing.

Mechanics/electronics

Supply voltage V_S [1)]	DC 10 V ... 30 V
Ripple [2)]	≤ 5 V_{PP}
Power consumption [3)]	< 40 mA
Switching frequency [4)]	5 kHz
Response time	100 µs
Switching output voltage	PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output current $I_{max.}$	100 mA
Retention time (ET)	25 ms, non-volatile memory
Connection type	Connector M12, 4-pin
Protection class [5)]	II
Circuit protection	V_S connections reverse-polarity protected Output Q short-circuit protected Interference suppression
Enclosure rating	IP 67
Weight	Approx. 400 g
Housing material	Die-cast zinc

[1)] Limit values. Operation in short-circuit protected network max. 8 A.
[2)] May not exceed or fall short of V_S tolerances.
[3)] Without load.
[4)] With light/dark ratio 1:1.
[5)] Reference voltage 50 V DC.

Ambient data

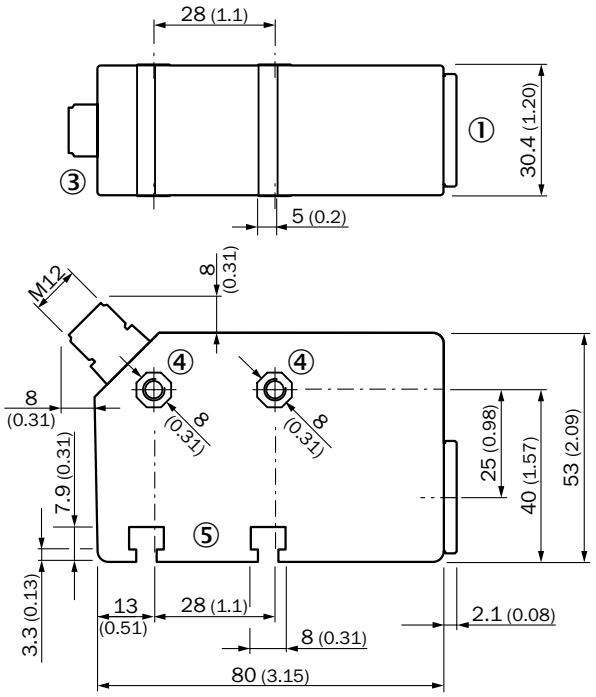
Ambient temperature	Operation: –10 °C ... +55 °C Storage: –25 °C ... +75 °C
Shock load	According to IEC 60068

Ordering information

Light emission	Switching output	Model name	Part no.
Short side of housing	PNP	KT6W-2P5116	1046013
	NPN	KT6W-2N5116	1046010
Long side of housing	PNP	KT6W-2P6116	1046014
	NPN	KT6W-2N6116	1046012

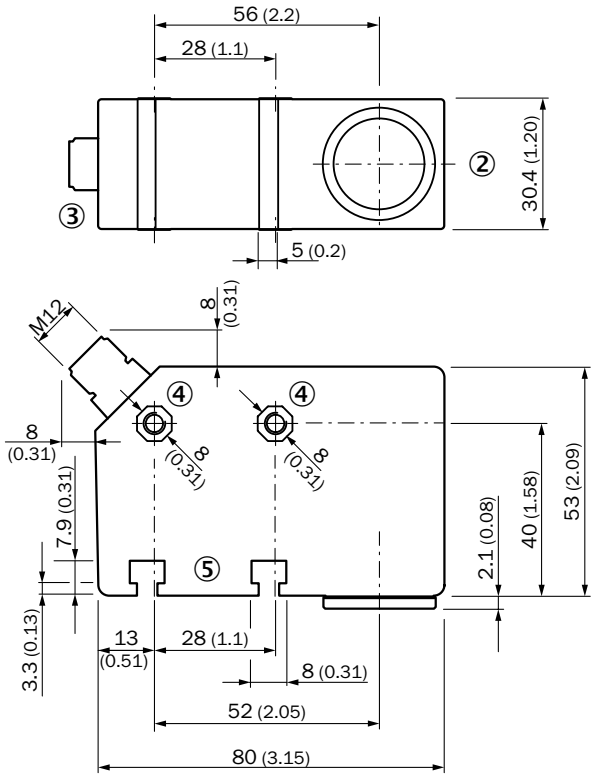
Dimensional drawing

KT6-2
KT6W-2x5xxx



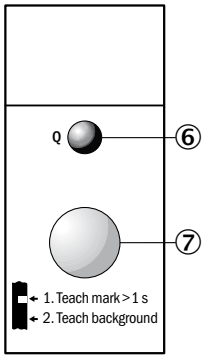
All dimensions in mm (inch)

KT6-2
KT6W-2x6xxx



All dimensions in mm (inch)

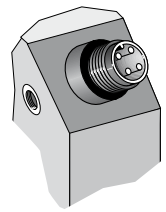
Adjustments

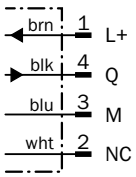


① Lens (light transmission), edge side
② Lens (light transmission), length side
③ Connector M12
④ SW8 mounting hole for M5 nut
⑤ SW8 T-slot for M5 nut
⑥ Function signal indicator
⑦ Teach-in button

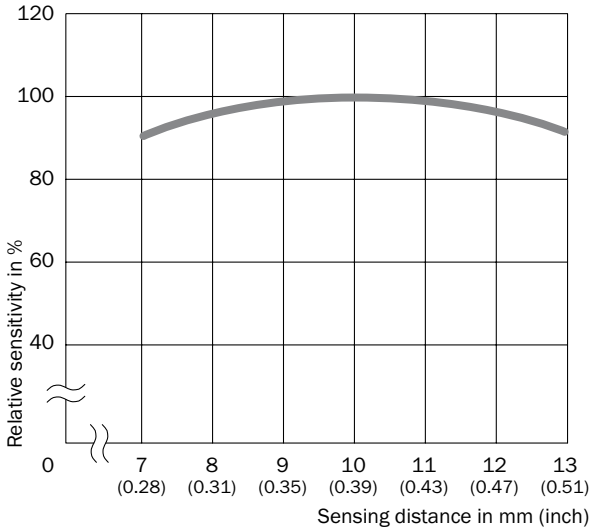
Connection type and diagram

Connector
M12, 4-pin





Sensing distance



Recommended accessories

Plug connectors and cables

Connector M12, 4-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
		Angled	PVC	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
		Straight	–	–	DOS-1204-G	6007302
		Angled	–	–	DOS-1204-W	6007303

Terminal and alignment brackets

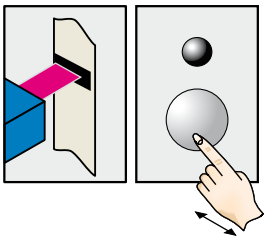
Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT6-2

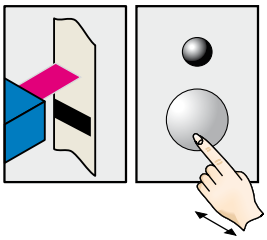
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark



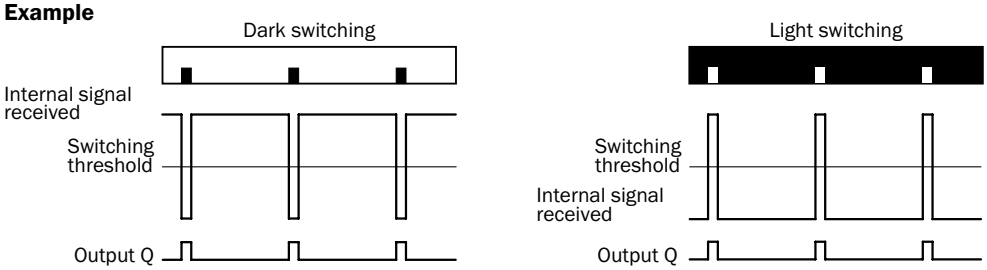
Press and hold teach-in button > 1 s.
Red emitted light flashes.

2. Position background



Press and hold teach-in button > 1 s.
Yellow LED will illuminate, when emitted light is on the mark.

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.

Contrast and communication without limits

Product description

The KT8 CAN contrast sensor communicates via CAN. The CAN interface makes adjusting the sensor and integrating additional functions into a machine easier. The CAN interface allows any number of parameter sets can be stored in the machine controller. In addition, important process data, like contamination or current switching thresholds can be queried via the CAN interface, reducing setup times and enabling timely prevention methods. An automatic switching threshold adjusts for high-gloss reflective materials.
The KT8 CAN also features 3-color RGB LED technology, automatic drift correction and fast response times.

At a glance

- The CAN interface helps set parameters, process documentation and adaptation
- Automatic drift correction
- Fast response time
- Precise light spot
- 3-color RGB LED technology
- Two interchangeable light exits

Your benefits

- Easy integration into machine designs due to standard CAN protocol
- Access to the sensor via the control system saves the machine operator time and effort during configuration
- Individual, application-specific configuration and settings
- Automatic drift correction ensures high production reliability with faded print marks and other difficult-to-detect marks
- Reliable operation, even with high-gloss reflective surfaces
- Long-lasting, tough metal housing

→ www.mysick.com/en/KT8_CAN

Additional information

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8014854/2011-12-31
Subject to change without notice

Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Light source [1] [2]	LED red, green, blue
Light emission	Long and short side of housing, exchangeable
Light spot direction [3]	Vertical
Adjustment	Static 2-point teach-in Dynamic teach-in (min/max)
Function	Automatic drift correction Deactivation delay, 10 ms / 20 ms / 40 ms Adjustable, CAN interface

[1] Average service life of 100,000 h at T_A = +25 °C .

[2] Wave length: 470 nm, 525 nm, 640 nm.

[3] In relation to long side of housing.

Mechanics/electronics

Supply voltage V_S [1]	DC 10 V ... 30 V
Ripple [2]	≤ 5 V_{PP}
Power consumption [3]	< 120 mA
Switching frequency [4]	22.5 kHz
Response time [5]	22 µs
Jitter	< 11 µs
Switching output voltage	PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. V_S / LOW ≤ 2 V
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	PNP: Teach: U = 10 V ... < U_V Run: U < 2 V NPN: Teach: U < 2 V Run: U = 10 V ... < U_V
Retention time (ET)	25 ms, non-volatile memory
Connection type	Connector M12, 8-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	Approx. 400 g
Housing material	Die-cast zinc

[1] Limit values. Operation in short-circuit protected network max. 8 A.

[2] May not exceed or fall short of V_S tolerances.

[3] Without load.

[4] With light/dark ratio 1:1.

[5] Signal transit time with resistive load.

[6] Reference voltage 32 V DC.

Ambient data

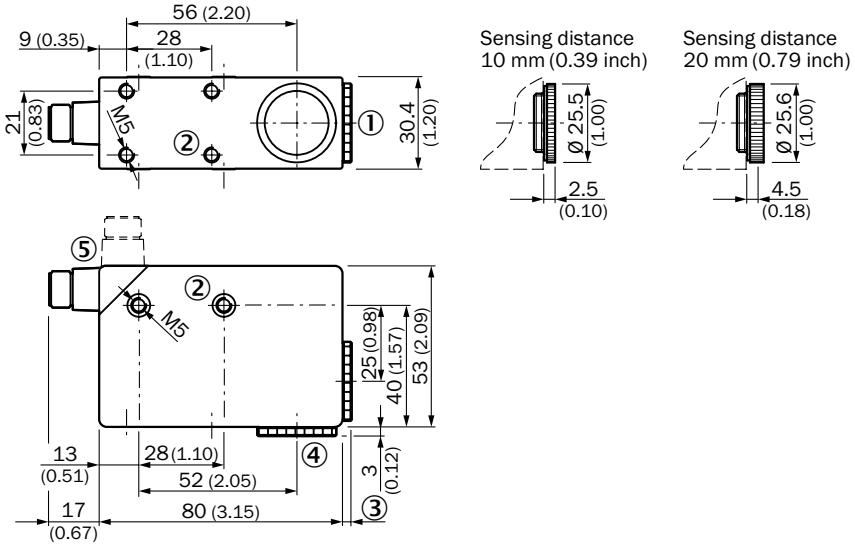
Ambient temperature	Operation: –10 °C ... +55 °C Storage: –10 °C ... +75 °C
Shock load	According to IEC 60068

Ordering information

Sensing distance [1]	Sensing distance tolerance	Light spot size	Switching output	Model name	Part no.
10 mm	± 3 mm	0.8 mm x 4 mm	PNP	KT8W-P111C	1027919
			NPN	KT8W-N111C	1028223
20 mm	± 3 mm	1.5 mm x 5.5 mm	PNP	KT8W-P121C	1043689

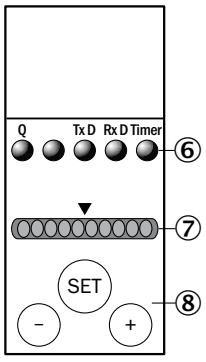
[1] From front edge of lens.

Dimensional drawing



All dimensions in mm (inch)

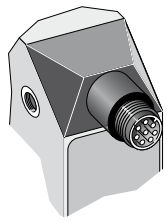
Adjustments

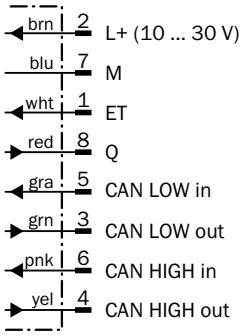


① Lens (light transmission), can be exchanged for pos. 4
② M5 threaded mounting hole, 5.5 mm deep
③ See dimensional drawing for lens
④ Blind screw can be replaced by pos. 1
⑤ Connector M12 (rotatable up to 90°)
⑥ Function signal indicators (yellow)
⑦ Bar graph (green)
⑧ Teach-in button/“+” and “–” button

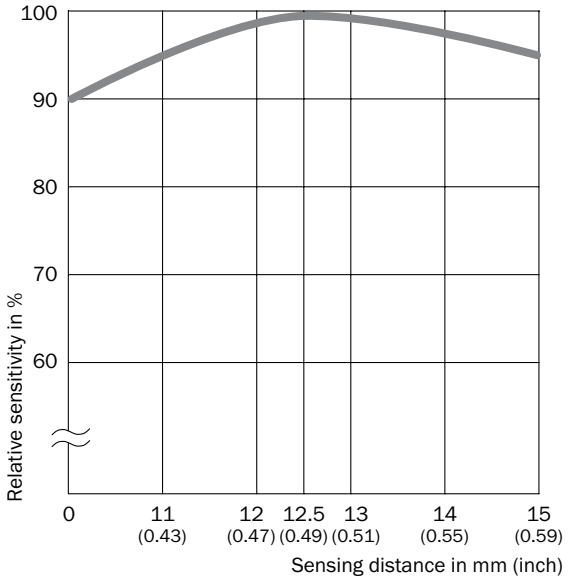
Connection type and diagram

Connector
M12, 8-pin





Sensing distance



Recommended accessories

Plug connectors and cables

Connector M12, 8-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name [1]	Part no.
Female connector	IP 67	Angled	PUR	2 m	DOL-1208-W02MAS01	6029224

[1] Shielded.

Terminal and alignment brackets

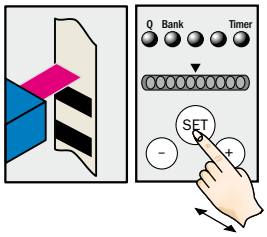
Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate G for universal bar clamp	Steel, zinc coated	BEF-KHS-G01	2022464
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT8_CAN

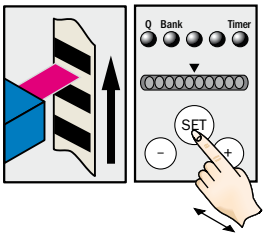
Setting the switching threshold via teach-in (dynamic, factory setting)

1. Position background

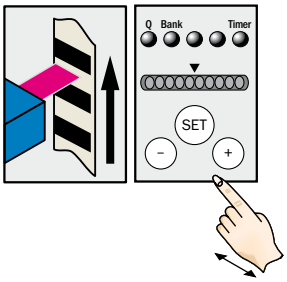


Press and hold SET button.
Emitted light turns white.

2. Move at least one repeat length using the light spot



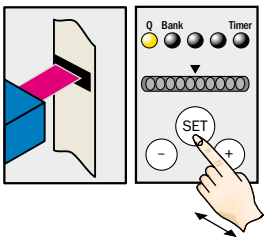
Hold down SET button.



Release SET button.

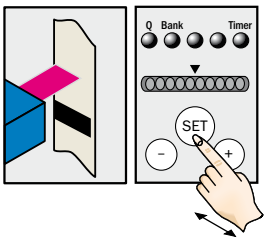
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark



Press and hold SET button > 1 s.
Yellow LED flashes.

2. Position background

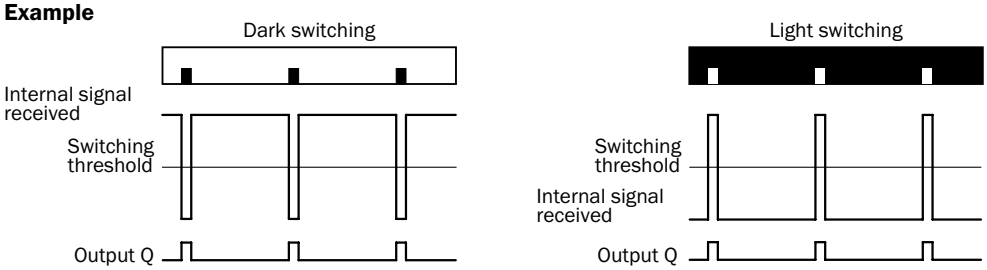


Press and hold SET button > 1 s.
Yellow LED goes out.

Note

The bar display visualizes the detection reliability during teach-in. The more LEDs that illuminate, the better the teach-in:
1 LED illuminates = operation not reliable – contrast difference too low
≤ 4 LEDs illuminate = operation OK – sufficient contrast difference
> 4 LEDs illuminate = reliable operation – high contrast difference

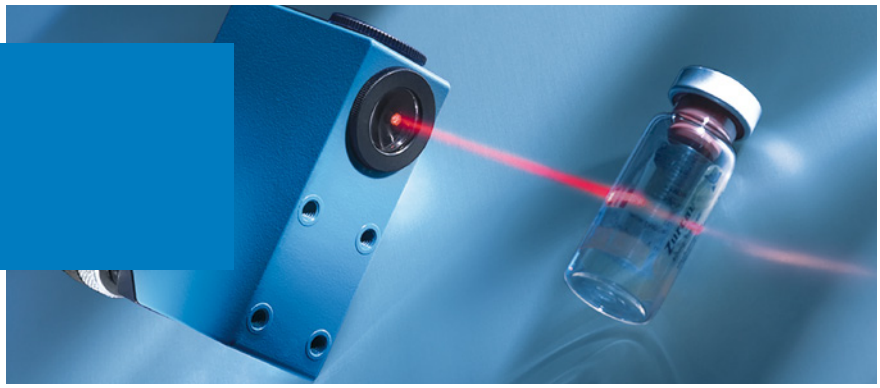
Example



Switching characteristics

Standard setting via control panel or CAN,
Device configuration only possible via CAN, cf. operating instructions.

Precise, flexible, quick



Product description

The KT8L Laser contrast sensor offers precise detection of the smallest marks and objects due to a long depth of field. With a sensing distance of up to 800 mm, the KT8L Laser provides more flexibility than sensors with shorter sensing distances. Two light spot sizes are available: one with a light spot < 0.3 mm for detecting small marks/targets and another light spot approx. 3 mm for detecting slightly larger objects and marks. In addition, a bar graph display showing detection reliability simplifies the teach-in process. And, since both dynamic and static teach-in are selectable, the user can adapt the sensor to suit individual requirements.

At a glance

- Wide range of operating distances between 30 mm and 800 mm
- Small and precise laser light spot (Class II)
- Fast switching frequency of 17 kHz
- Analog output
- Simple teach-in
- Detection reliability displayed in the bar graph display

Your benefits

- Wide range of applications with sensing distances up to 800 mm
- Precise detection of the smallest marks and objects, e.g., 1 x 1 mm²
- Adjusts itself to specific applications, opening up a wide range of uses
- Reliable operation, even with unsteady objects

Additional information

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→ www.mysick.com/en/KT8L_Laser

Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Light source [1) 2)]	Laser diode red light
Light emission	Long side of housing
Light spot direction	Round
Adjustment	Static 2-point teach-in, dynamic teach-in (min/max)
Switching function	Automatic drift correction
Time delay	20 ms, adjustable

1) Average service life of 50,000 h at T_A = +25 °C.

2) Wave length: 655 nm.

Mechanics/electronics

Supply voltage V_S [1)]	DC 10 V ... 30 V
Ripple [2)]	≤ 5 V_{PP}
Power consumption [3)]	< 80 mA
Switching frequency [4)]	17 kHz
Response time [5)]	30 µs
Jitter	< 15 µs
Switching output voltage	NPN: HIGH = approx. V_S / LOW ≤ 2 V PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V
Analog output Q_A	0.3 mA ... 10 mA
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	PNP: Teach: U = 10 V ... < U_V Run: U < 2 V NPN: Teach: U < 2 V Run: U = 10 V ... < U_V
Retention time (ET)	25 ms, non-volatile memory
Connection type	Connector M12, 5-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	Approx. 400 g
Housing material	Die-cast zinc

1) Limit values. Operation in short-circuit protected network max. 8 A.

2) May not exceed or fall short of V_S tolerances.

3) Without load.

4) With light/dark ratio 1:1.

5) Signal transit time with resistive load.

6) Reference voltage 50 V DC.

Ambient data

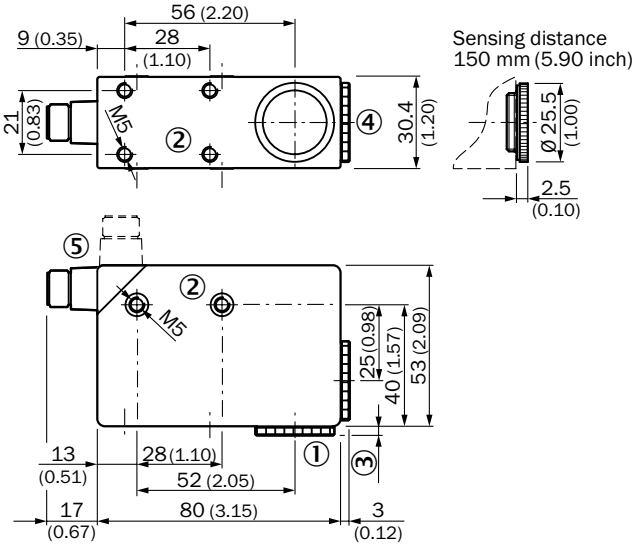
Ambient temperature	Operation: –10 °C ... +45 °C Storage: –10 °C ... +75 °C
Shock load	According to IEC 60068

Ordering information

Sensing distance [1]	Operating distance [2]	Light spot size [3]	Switching output	Model name	Part no.
150 mm	30 mm ... 800 mm	Ø 0.3 mm	NPN	KT8L-N3656	1041263
			PNP	KT8L-P3656	1041262
	30 mm ... 600 mm	Ø 3 mm	NPN	KT8L-N3756	1041352
			PNP	KT8L-P3756	1041351

[1] From front edge of lens.
[2] With respect to black-white contrast 6 % / 90 %.
[3] At focal point = sensing distance 150 mm.

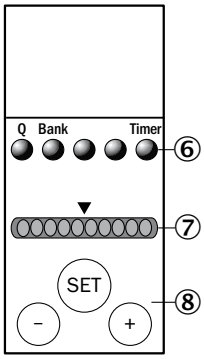
Dimensional drawing



All dimensions in mm (inch)

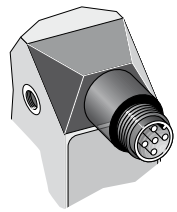
① Lens (light transmission), cannot be exchanged for pos. 4
② M5 threaded mounting hole, 5.5 mm deep
③ See dimensional drawing of lens
④ Blind screw cannot be replaced by pos. 1
⑤ Connector M12 (rotatable up to 90°)
⑥ Function signal indicators (yellow)
⑦ Bar graph (green)
⑧ Teach-in button/“+” and “–” button

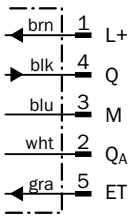
Adjustments



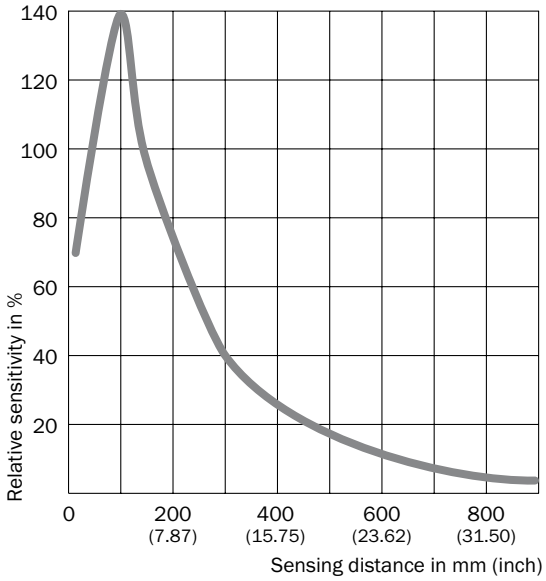
Connection type and diagram

Connector
M12, 5-pin





Sensing distance



Recommended accessories

Plug connectors and cables

Connector M12, 5-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1205-G02M	6008899
				5 m	DOL-1205-G05M	6009868
				10 m	DOL-1205-G10M	6010544
		Angled	PVC	2 m	DOL-1205-W02M	6008900
				5 m	DOL-1205-W05M	6009869
				10 m	DOL-1205-W10M	6010542
		Straight	–	–	DOS-1205-G	6009719
		Angled	–	–	DOS-1205-W	6009720

Terminal and alignment brackets

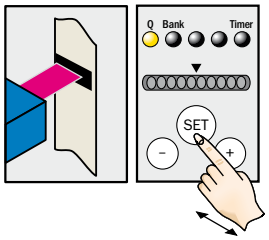
Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate G for universal bar clamp	Steel, zinc coated	BEF-KHS-G01	2022464
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT8L_Laser

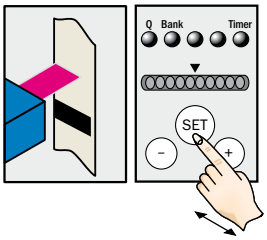
Setting the switching threshold via teach-in (static 2-point teach-in, factory setting)

1. Position mark



Press and hold SET button > 1 s.
Yellow LED flashes.

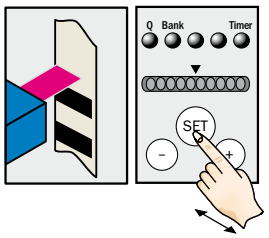
2. Position background



Press and hold SET button > 1 s.
Yellow LED goes out.

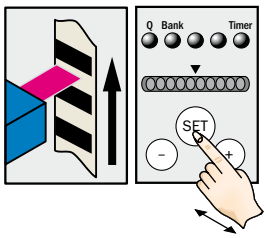
Setting the switching threshold via teach-in (dynamic)

1. Position background

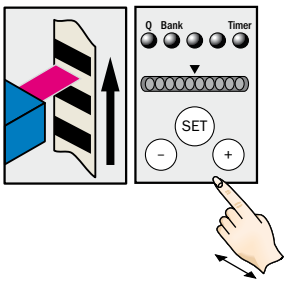


Press and hold SET button.

2. Move at least one repeat length using the light spot



Hold down SET button.

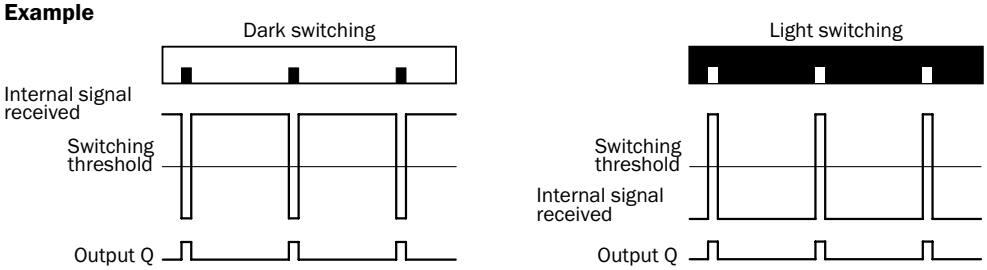


Release SET button.

Note

The bar display visualizes the detection reliability during teach-in. The more LEDs that illuminate, the better the teach-in:
1 LED illuminates = operation not reliable – contrast difference too low
≤ 4 LEDs illuminate = operation OK – sufficient contrast difference
> 4 LEDs illuminate = reliable operation – high contrast difference

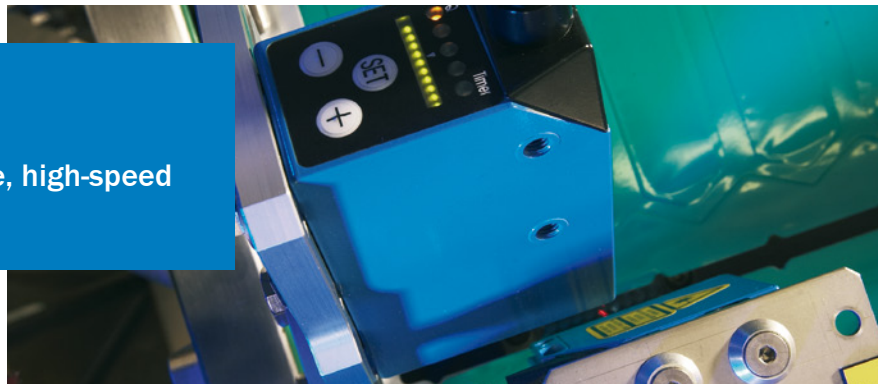
Example



Switching characteristics

Light/dark setting is defined using teach-in sequence or menu, cf. operating instructions.
The switching threshold is set in the center between the background and the mark.
Teach-in and the light/dark setting can also be configured using an external control signal.

The industry choice for precise, high-speed mark detection



Product description

The KT10-2 contrast sensor is ideal for high-speed applications with poor contrasts and reflective materials. This second generation KT10 contrast sensor is defined by its ease of use. Even during the teach-in phase, the sensor selects the transmission color that best matches the existing contrast. And, if marks need to be detected on glossy foils the sensor automatically adjusts according to the application. In addition, the sensor compensates for dirt build-up on lenses using automatic drift correction. The KT10-2 offers an exceptionally fast switching frequency, an easy-to-read bar graph display and two light exits. The bar graph display provides visible confirmation of the teach-in and can be used to monitor the sensor's status during operation. And, the sensor's two interchangeable light exits enable the KT10-2 to be mounted in more places.

At a glance

- Very low jitter (< 10 µs)
- Precise light spot
- Maximum detection reliability due to 3-color RGB LED technology
- Two interchangeable light exits
- Five storage banks for settings
- Automatic drift correction
- Fast switching frequency of 25 kHz
- Easy-to-read bar graph display

Your benefits

- Precise detection of print marks enables optimal results for packaging and printing applications
- All contrast marks, even pale yellow on white paper, can be reliably detected due to RGB LED technology
- Automatic drift correction helps detect difficult-to-see marks, such as faded print marks, enabling higher production reliability
- Reliable operation, even with high-gloss reflective surfaces, increases throughput
- Simple teach-in via an external signal can be performed while the material is moving, enabling shorter setup time
- Long-lasting, tough metal housing

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→ www.mysick.com/en/KT10-2

Detailed technical data

Features

Dimensions (L x W x H)	80 mm x 30.4 mm x 53 mm
Light source [1] [2]	LED red, green, blue
Light emission	Long and short side of housing, exchangeable
Adjustment	Static 2-point teach-in Dynamic teach-in (min/max)
Function	Automatic drift correction
Time delay	20 ms, adjustable

[1] Average service life of 100,000 h at T_A = +25 °C .

[2] Wave length: 470 nm, 525 nm, 640 nm.

Mechanics/electronics

Supply voltage V_S [1]	DC 10 V ... 30 V
Ripple [2]	≤ 5 V_{PP}
Power consumption [3]	< 120 mA
Switching frequency [4]	25 kHz
Response time [5]	20 µs
Jitter	< 10 µs
Switching output voltage	NPN: HIGH = approx. V_S / LOW ≤ 2 V PNP: HIGH = V_S – ≤ 2 V / LOW approx. 0 V
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	PNP: Teach: U = 10 V ... < U_V Run: U < 2 V NPN: Teach: U < 2 V Run: U = 10 V ... < U_V
Input, blanking input (AT) [6]	PNP: Blanked: U > 10 V ... < U_V Free-running: U < 2 V NPN: Blanked: U < 2 V Free-running: U > 10 V ... < U_V
Retention time (ET)	25 ms, non-volatile memory
Connection type	Connector M12, 5-pin
Protection class [7]	II
Circuit protection	V_S connections reverse-polarity protected Output Q short-circuit protected Interference suppression Outputs overcurrent and short-circuit protected
Enclosure rating	IP 67
Weight	Approx. 400 g
Housing material	Die-cast zinc

[1] Limit values. Operation in short-circuit protected network max. 8 A.

[2] May not exceed or fall short of V_S tolerances.

[3] Without load.

[4] With light/dark ratio 1:1.

[5] Signal transit time with resistive load.

[6] AT > 200 µs.

[7] Reference voltage 50 V DC.

Ambient data

Ambient temperature	Operation: –10 °C ... +55 °C Storage: –10 °C ... +75 °C
Shock load	According to IEC 60068

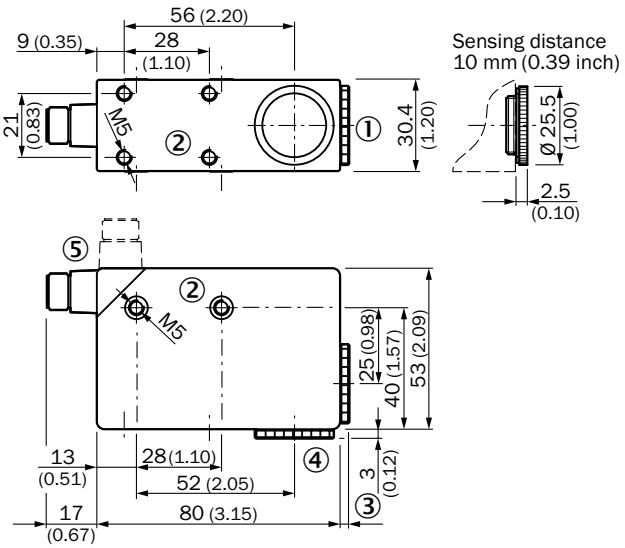
Ordering information

Sensing distance [1]	Sensing distance tolerance	Light spot size	Light spot direction [2]	Switching output	Model name	Part no.
10 mm	± 3 mm	0.8 mm x 4 mm	Vertical	NPN	KT10W-2N1115	1028233
				PNP	KT10W-2P1115	1028232
			Horizontal	NPN	KT10W-2N2115	1029071
				PNP	KT10W-2P2115	1029070

[1] From front edge of lens.

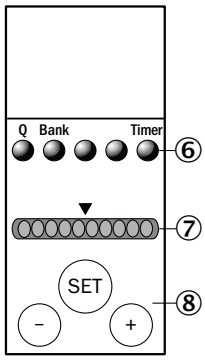
[2] In relation to long side of housing.

Dimensional drawing



All dimensions in mm (inch)

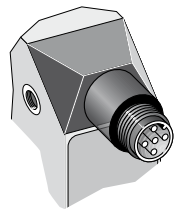
Adjustments

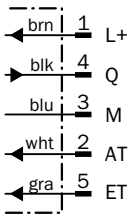


① Lens (light transmission)
② M5 threaded mounting hole, 5.5 mm deep
③ See dimensional drawing of lens
④ Blind screw can be replaced by pos. 1
⑤ Connector M12 (rotatable up to 90°)
⑥ Function signal indicators (yellow)
⑦ Bar graph (green)
⑧ Teach-in button / “+” and “–” button

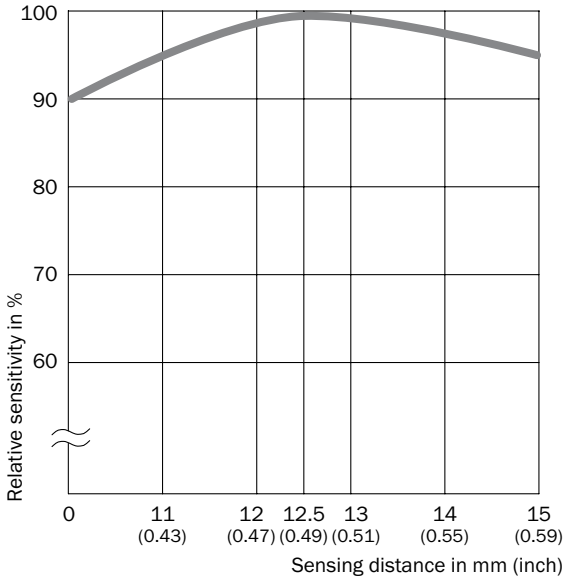
Connection type and diagram

Connector
M12, 5-pin





Sensing distance



Recommended accessories

Plug connectors and cables

Connector M12, 5-pin

Connector type	Enclosure rating	Flying leads	Sheath material	Cable length	Model name	Part no.
Female connector	IP 67	Straight	PVC	2 m	DOL-1205-G02M	6008899
				5 m	DOL-1205-G05M	6009868
				10 m	DOL-1205-G10M	6010544
		Angled	PVC	2 m	DOL-1205-W02M	6008900
				5 m	DOL-1205-W05M	6009869
				10 m	DOL-1205-W10M	6010542
		Straight	–	–	DOS-1205-G	6009719
		Angled	–	–	DOS-1205-W	6009720

Terminal and alignment brackets

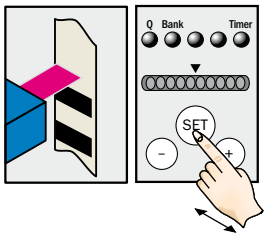
Mounting system type	Description	Material	Model name	Part no.
Universal bar clamps	Plate G for universal bar clamp	Steel, zinc coated	BEF-KHS-G01	2022464
	Plate K for universal bar clamp	Steel, zinc coated	BEF-KHS-K01	2022718
	Universal bar clamp	Die-cast zinc	BEF-KHS-KH1	2022726
	Mounting rod straight	Steel, zinc coated	BEF-MS12G-A	4056054
			BEF-MS12G-B	4056055
	Mounting rod L-shaped	Steel, zinc coated	BEF-MS12L-A	4056052
			BEF-MS12L-B	4056053

For dimensional drawings, please see page 91.

For additional accessories, please see www.mysick.com/en/KT10-2

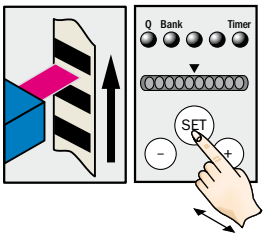
Setting the switching threshold via teach-in (dynamic, factory setting)

1. Position background

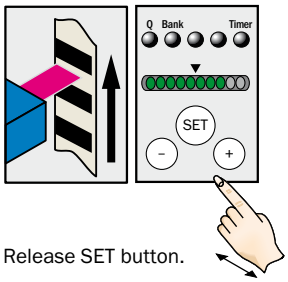


Press and hold SET button.
Emitted light turns white.

2. Move at least one repeat length using the light spot



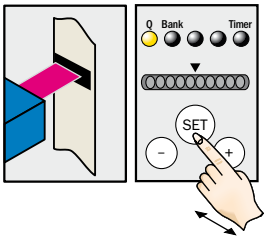
Hold down SET button.



Release SET button.

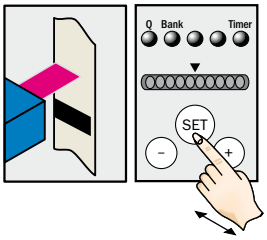
Setting the switching threshold via teach-in (static 2-point teach-in)

1. Position mark



Press and hold SET button > 1 s.
Red emitted light and yellow LED flash.

2. Position background

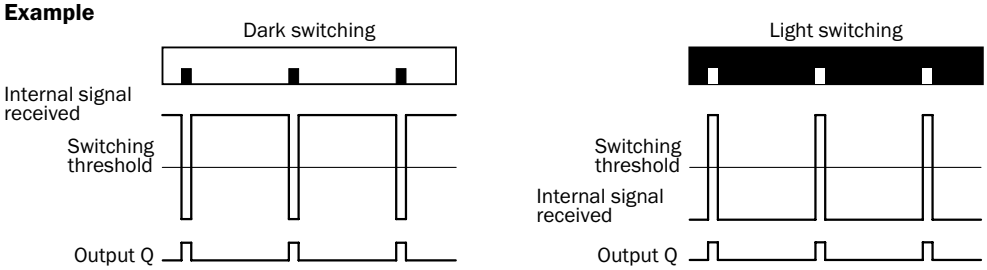


Press and hold SET button > 1 s.
Yellow LED goes out.
Optimum emitted light is selected.

Note

The bar display visualizes the detection reliability during teach-in. The more LEDs that illuminate, the better the teach-in:
1 LED illuminates = operation not reliable – lowest contrast difference
≤ 4 LEDs illuminate = operation OK – sufficient contrast difference
> 4 LEDs illuminate = reliable operation – high contrast difference

Example



Switching characteristics

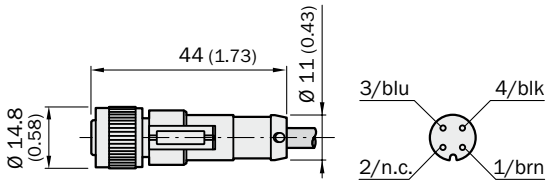
Light/dark setting is defined using teach-in sequence.
The switching threshold is set in the center between the background and the mark.
Teach-in can also be configured using an external control signal.

Dimensional drawings accessories

Plug connectors and cables

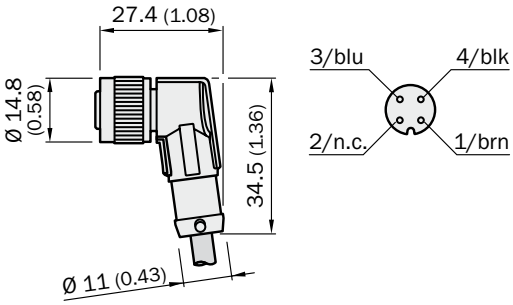
Connector M12, 3-pin

DOL-1203-G02MC
DOL-1203-G05MC
DOL-1203-G10MC



All dimensions in mm (inch)

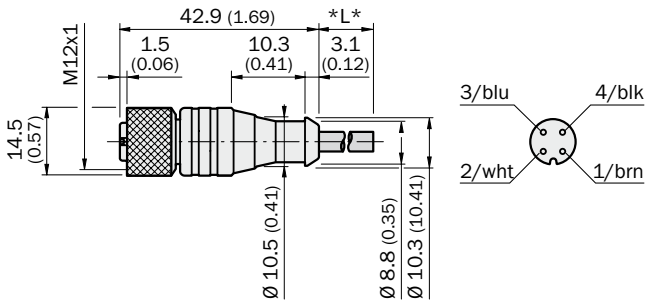
DOL-1203-W02MC
DOL-1203-W05MC
DOL-1203-W10MC



All dimensions in mm (inch)

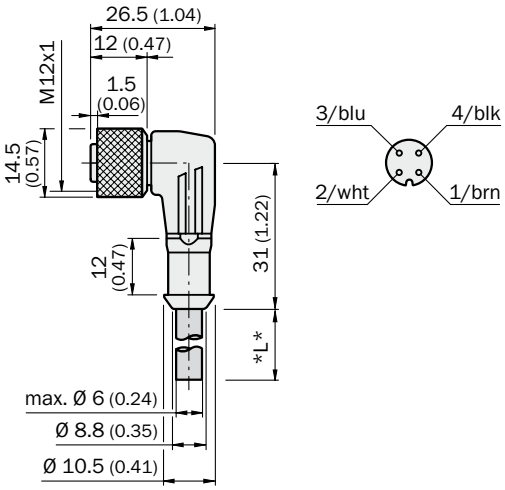
Connector M12, 4-pin

DOL-1204-G02M
DOL-1204-G05M
DOL-1204-G10M
DOL-1204-G15M



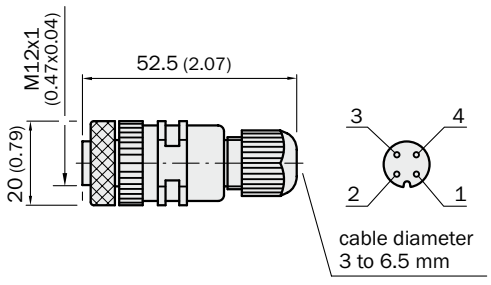
All dimensions in mm (inch)

DOL-1204-W02M
DOL-1204-W05M
DOL-1204-W10M



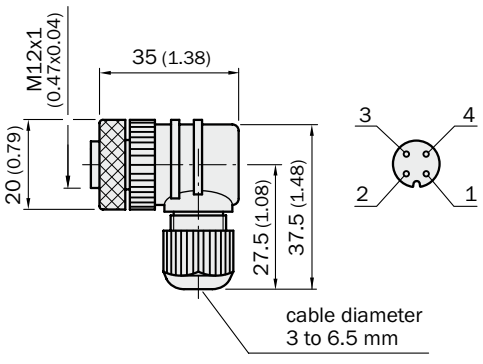
All dimensions in mm (inch)

DOS-1204-G



All dimensions in mm (inch)

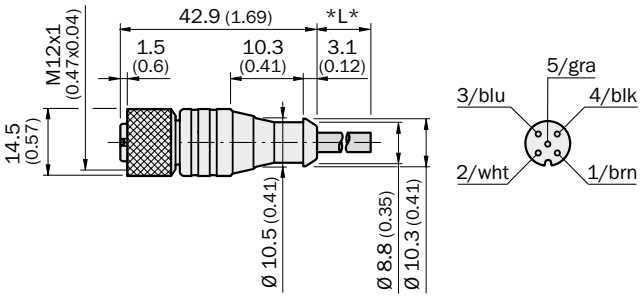
DOS-1204-W



All dimensions in mm (inch)

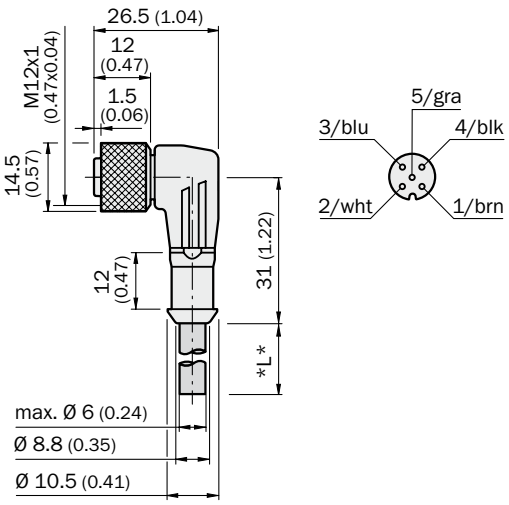
Connector M12, 5-pin

DOL-1205-G02M
DOL-1205-G05M
DOL-1205-G10M



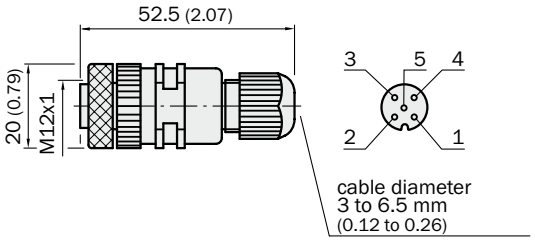
All dimensions in mm (inch)

DOL-1205-W02M
DOL-1205-W05M
DOL-1205-W10M



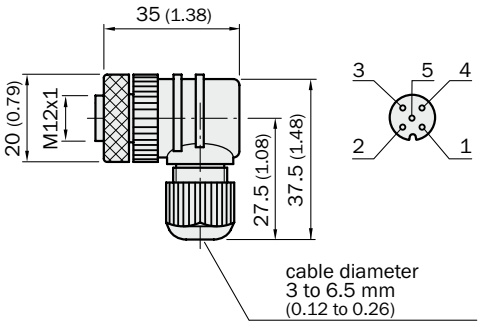
All dimensions in mm (inch)

DOS-1205-G



All dimensions in mm (inch)

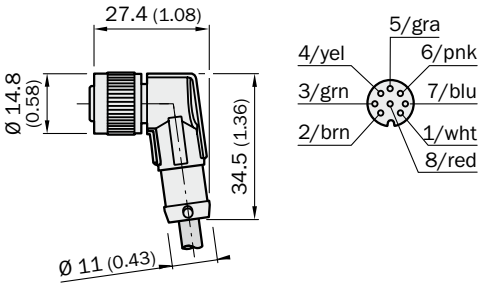
DOS-1205-W



All dimensions in mm (inch)

Connector M12, 8-pin

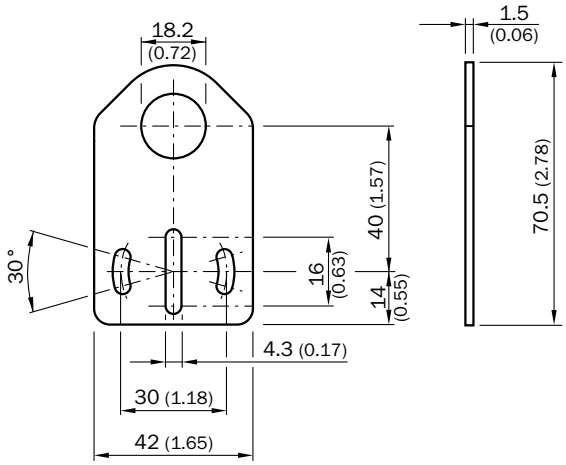
DOL-1208-W02MAS01



All dimensions in mm (inch)

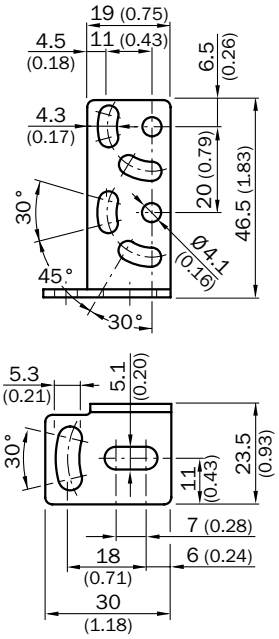
Mounting brackets/plates

BEF-WG-M18



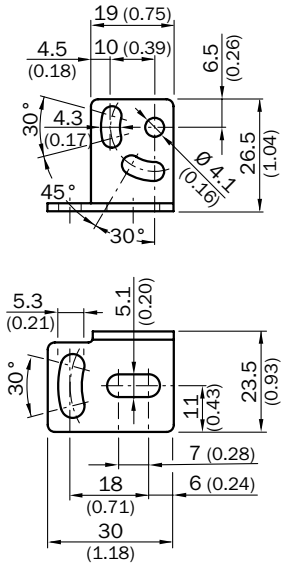
All dimensions in mm (inch)

BEF-WG-W12



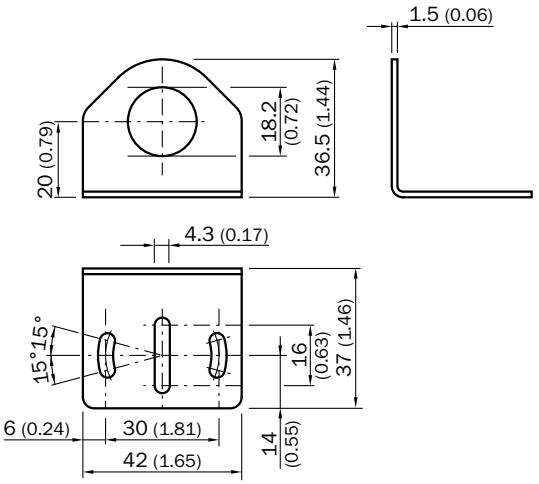
All dimensions in mm (inch)

BEF-WK-W12



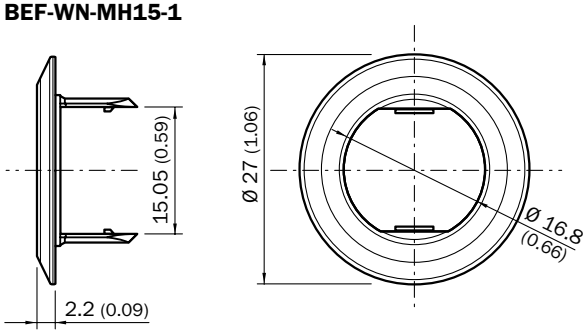
All dimensions in mm (inch)

BEF-WN-M18



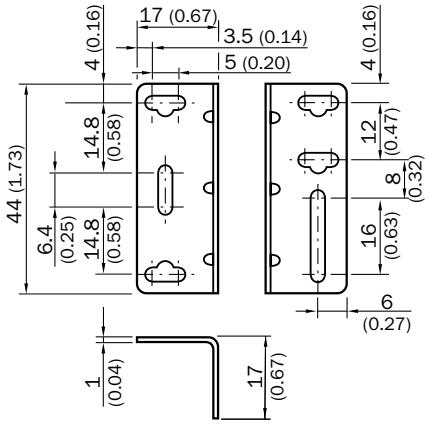
All dimensions in mm (inch)

BEF-WN-MH15-1



All dimensions in mm (inch)

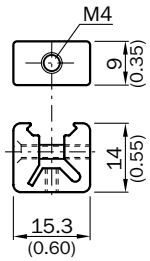
BEF-WN-W9-2



All dimensions in mm (inch)

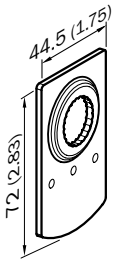
Terminal and alignment brackets

BEF-KH-W12



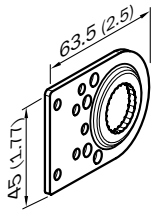
All dimensions in mm (inch)

BEF-KHS-D01



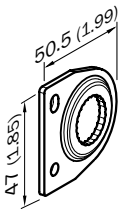
All dimensions in mm (inch)

BEF-KHS-L01



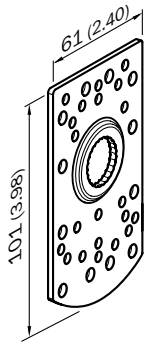
All dimensions in mm (inch)

BEF-KHS-G01



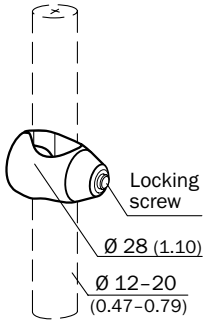
All dimensions in mm (inch)

BEF-KHS-K01



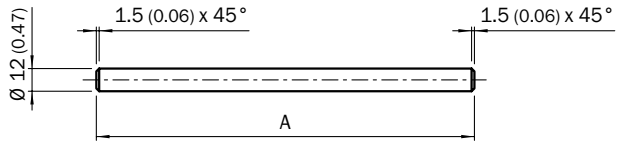
All dimensions in mm (inch)

BEF-KHS-KH1



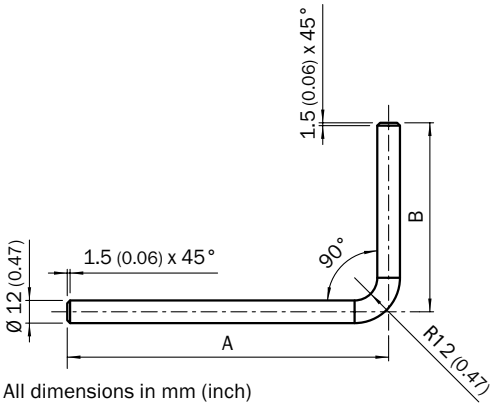
All dimensions in mm (inch)

BEF-MS12G-A (size A = 200 mm)
BEF-MS12G-B (size A = 300 mm)



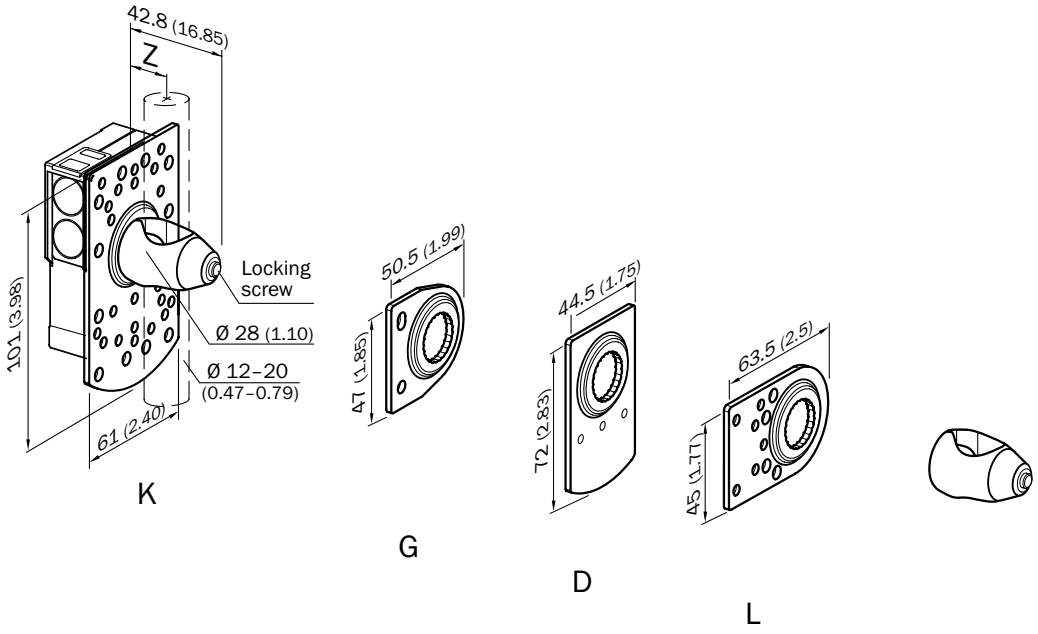
All dimensions in mm (inch)

BEF-MS12L-A (size A/B = 150 mm)
BEF-MS12L-B (size A/B = 250 mm)



All dimensions in mm (inch)

Principle of function – terminal and alignment brackets

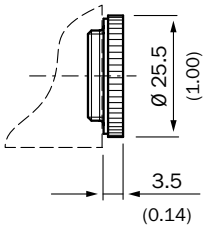


All dimensions in mm (inch)

Lenses

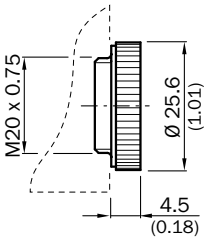
(only replacement 1:1)

OBJ-211



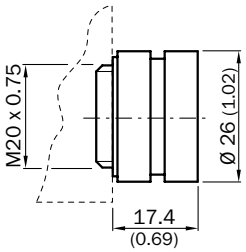
All dimensions in mm (inch)

OBJ-212



All dimensions in mm (inch)

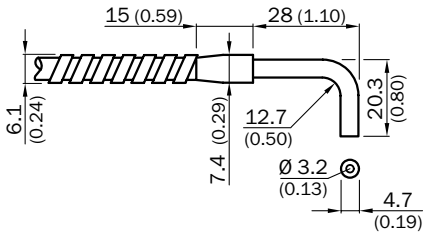
OBJ-210



All dimensions in mm (inch)

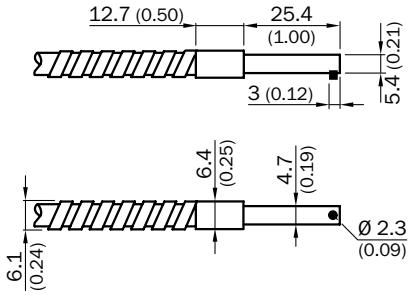
Fiber-optic cables

LBSA32900
LISA32900



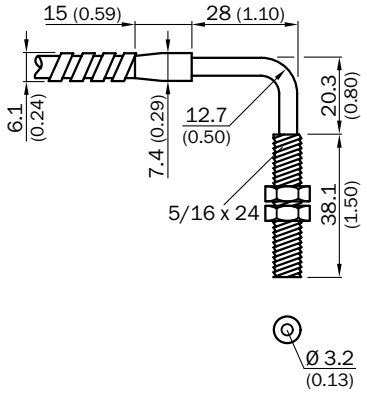
All dimensions in mm (inch)

LBSAA23900
LISAA23900



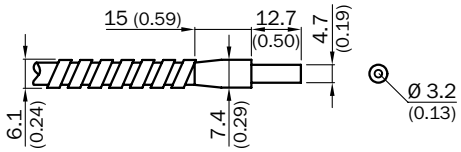
All dimensions in mm (inch)

LBSAT32900
LISAT32900



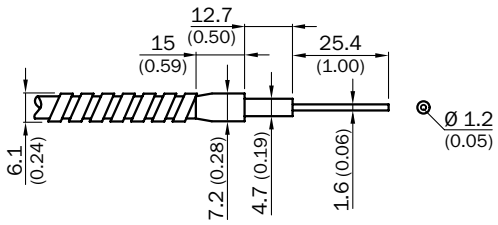
All dimensions in mm (inch)

LBSF32900
LISF32900



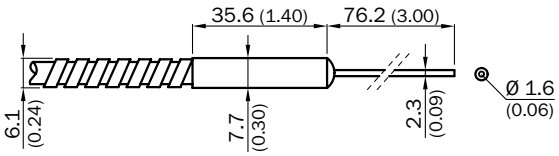
All dimensions in mm (inch)

LBSM12900
LISM12900



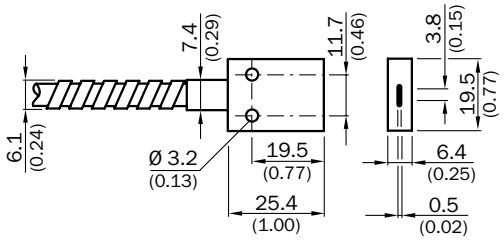
All dimensions in mm (inch)

LBSP16900
LISP16900



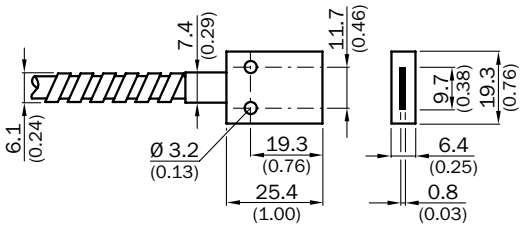
All dimensions in mm (inch)

LBSR16900
LISR16900



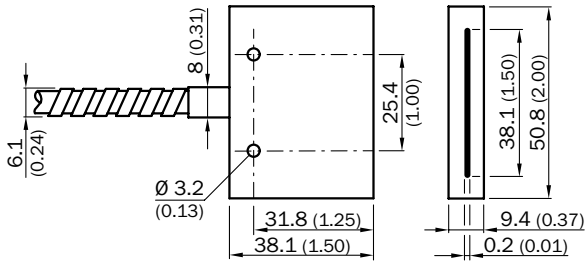
All dimensions in mm (inch)

LBSR32900
LISR32900



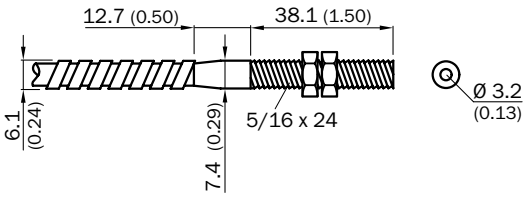
All dimensions in mm (inch)

LBSR40900
LISR40900



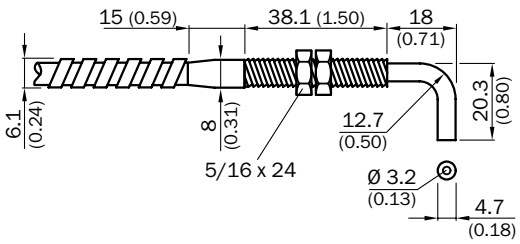
All dimensions in mm (inch)

LBST32900
LIST32900



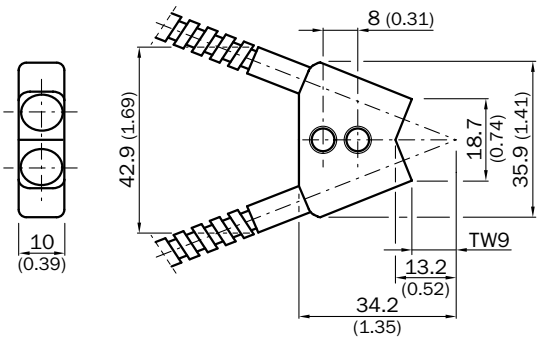
All dimensions in mm (inch)

LBSTA32900
LISTA32900



All dimensions in mm (inch)

OCSL



All dimensions in mm (inch)

Notes

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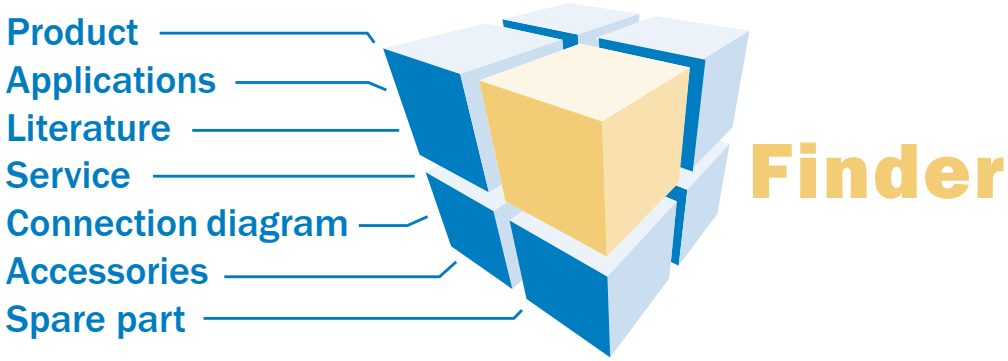

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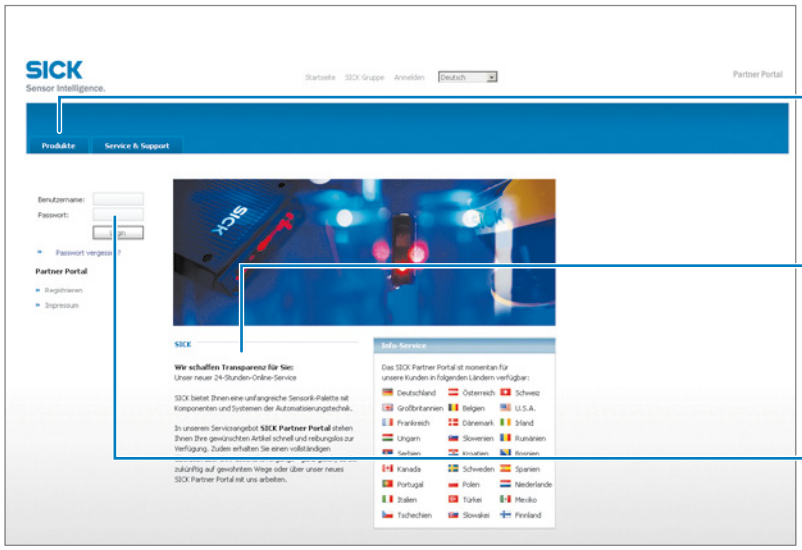

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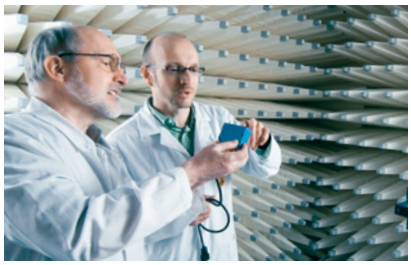
SICK at a glance



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