



## KTM-MB31111P

KTM

CONTRAST SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	part no.
KTM-MB31111P	1062202

Other models and accessories → [www.sick.com/KTM](http://www.sick.com/KTM)

Illustration may differ



## Detailed technical data

## Features

<b>Dimensions (W x H x D)</b>	12 mm x 31.5 mm x 21 mm
<b>Sensing distance</b>	≤ 12.5 mm
<b>Sensing distance tolerance</b>	± 3 mm
<b>Housing design</b>	Small
<b>Light source</b>	LED, white <sup>1)</sup>
<b>Light emission</b>	Long side of housing
<b>Light spot size</b>	Ø 2 mm (12.5 mm)
<b>Light spot direction</b>	Round
<b>Receiving filters</b>	None
<b>Adjustment</b>	Potentiometer, screw driver

<sup>1)</sup> Average service life: 100,000 h at  $T_U = +25^\circ\text{C}$ .

## Electronics

<b>Supply voltage</b>	12 V DC ... 24 V DC <sup>1)</sup>
<b>Ripple</b>	≤ 5 V <sub>pp</sub> <sup>2)</sup>
<b>Current consumption</b>	< 50 mA <sup>3)</sup>
<b>Switching frequency</b>	10 kHz <sup>4)</sup>
<b>Response time</b>	50 µs <sup>5)</sup>

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

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

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

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

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

<sup>6)</sup> Total current of all Outputs.

<b>Jitter</b>	25 µs
<b>Switching output</b>	PNP, NPN
<b>Switching output (voltage)</b>	PNP: HIGH = $U_V \leq 2$ V / LOW approx. 0 V, NPN: HIGH = approx. $U_V$ / LOW $\leq 2$ V
<b>Switching mode</b>	Light/dark switching
<b>Output current <math>I_{max}</math></b>	50 mA <sup>6)</sup>
<b>Time delay</b>	None
<b>Protection class</b>	III
<b>Circuit protection</b>	$U_V$ connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression

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

2) May not fall below or exceed  $U_V$  tolerances.

3) Without load.

4) With light/dark ratio 1:1.

5) Signal transit time with resistive load.

6) Total current of all Outputs.

## Mechanics

<b>Housing material</b>	ABS
<b>Display</b>	LED indicator green: power on LED indicator, yellow: Status switching output Q
<b>Optics material</b>	PMMA
<b>Connection type</b>	Male connector M8, 4-pin
<b>Weight</b>	20 g

## Ambient data

<b>Ambient operating temperature</b>	-10 °C ... +55 °C
<b>Ambient temperature, storage</b>	-20 °C ... +75 °C
<b>Shock load</b>	According to IEC 60068
<b>Enclosure rating</b>	IP67
<b>UL File No.</b>	NRKH.E348498 & NRKH7.E348498

## Connection type/pinouts

<b>Connection type</b>	Male connector M8, 4-pin
<b>Pinouts</b>	
	BN 1 + (L+)
	WH 2 Q <sub>NPN</sub>
	BU 3 - (M)
	BK 4 Q <sub>PNP</sub>

## Certificates

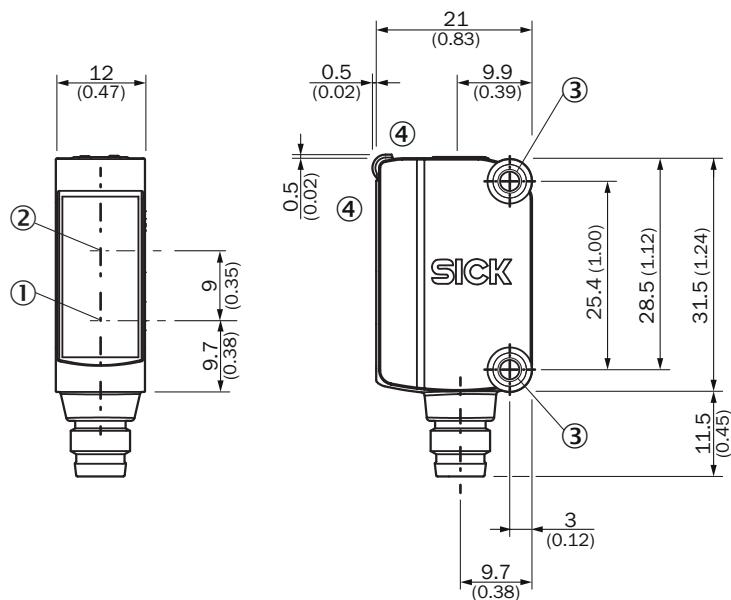
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China-RoHS</b>	✓

cULus certificate	✓
Photobiological safety (IEC EN 62471)	✓

## Classifications

<b>ECLASS 5.0</b>	27270906
<b>ECLASS 5.1.4</b>	27270906
<b>ECLASS 6.0</b>	27270906
<b>ECLASS 6.2</b>	27270906
<b>ECLASS 7.0</b>	27270906
<b>ECLASS 8.0</b>	27270906
<b>ECLASS 8.1</b>	27270906
<b>ECLASS 9.0</b>	27270906
<b>ECLASS 10.0</b>	27270906
<b>ECLASS 11.0</b>	27270906
<b>ECLASS 12.0</b>	27270906
<b>ETIM 5.0</b>	EC001820
<b>ETIM 6.0</b>	EC001820
<b>ETIM 7.0</b>	EC001820
<b>ETIM 8.0</b>	EC001820
<b>UNSPSC 16.0901</b>	39121528

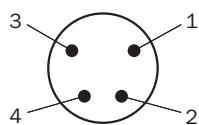
## Dimensional drawing



Dimensions in mm (inch)

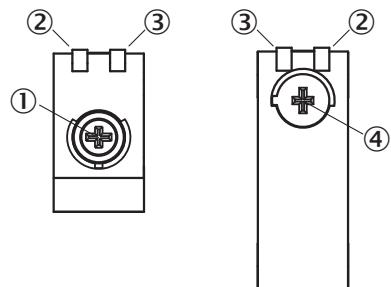
- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Mounting holes M3
- ④ display and adjustment elements

Pinouts, see table Technical data: Connection type/pinouts



Male connector, M8, 4-pin, uncoded

### display and adjustment elements

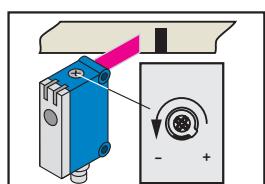


- ① potentiometer, adjustment of switching threshold
- ② LED yellow
- ③ LED green
- ④ Potentiometer, light/dark switching

### Setting the switching threshold

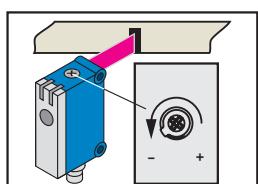
For example dark switching

#### 1. Position background



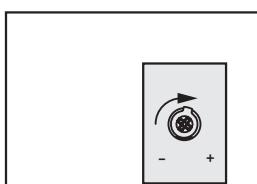
Start at "+" (right-hinged).  
Turn potentiometer in direction  
"–" until the yellow LED goes out.

#### 2. Position mark



Yellow LED lights up.  
Continue to turn the potentiometer  
in direction „–“ until the yellow LED  
goes out again.

#### 3. Set switching threshold



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

### Switching characteristics

Light switching: yellow LED ≠ switching output Q

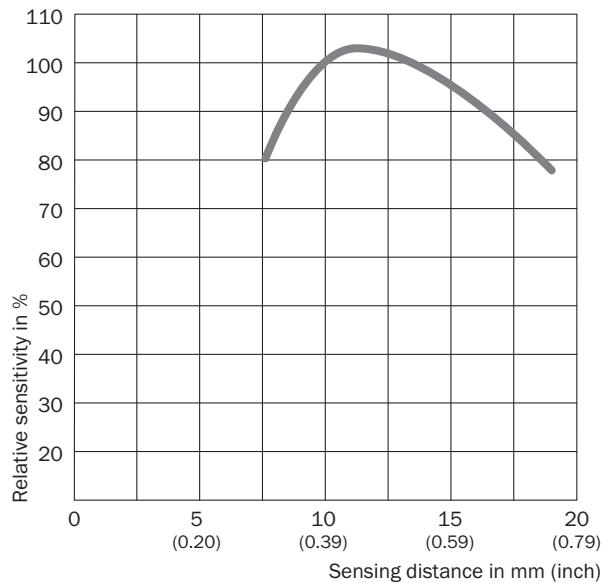
Dark switching: yellow LED = switching output Q

Light/dark switching selectable by means of rotary switch

KTM-xBxxx1xx: potentiometer can be adjusted with a screwdriver

KTM-xBxxx9xx: potentiometer can be adjusted with a screwdriver or by hand

## Sensing distance



## Recommended accessories

Other models and accessories → [www.sick.com/KTM](http://www.sick.com/KTM)

	<b>Brief description</b>	<b>Type</b>	<b>part no.</b>
device protection and care			
	<ul style="list-style-type: none"> <li><b>Description:</b> Stainless steel 1.4301 (SVS 304), 3 mm thick protective sleeve</li> <li><b>Material:</b> Stainless steel</li> <li><b>Items supplied:</b> Mounting hardware included</li> <li><b>Suitable for:</b> G6, KTM Core, KTM Prime, CSM, LUTM</li> </ul>	BEF-SG-G6-01	2069044
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF8U14-050VA3M2A14	2096609
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF8U14-050VA3XLEAX	2095889

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

**For us, that is "Sensor Intelligence."**

## WORLDWIDE PRESENCE:

Contacts and other locations [www.sick.com](http://www.sick.com)