



# KTM-MB31112P

KTM Core

**CONTRAST SENSORS**

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
KTM-MB31112P	1070053

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



### 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 (light emission)</b>	Rectangular
<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<sub>J</sub> = +25 °C.

#### Mechanics/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>
<b>Jitter</b>	25 μs
<b>Switching output</b>	PNP, NPN
<b>Switching output (voltage)</b>	PNP: HIGH = V <sub>S-</sub> ≤ 2 V / LOW approx. 0 V

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

<sup>2)</sup> May not exceed or fall below U<sub>V</sub> 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.

	NPN: HIGH = approx. $V_S$ / 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>Connection type</b>	Cable with M12 male connector, 4-pin, 0.2 m
<b>Protection class</b>	III
<b>Circuit protection</b>	$U_V$ connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression
<b>Enclosure rating</b>	IP67
<b>Weight</b>	20 g
<b>Housing material</b>	Plastic, ABS
<b>Optics material</b>	Plastic, PMMA
<b>Indication</b>	LED indicator green: power on LED indicator, yellow: Status switching output Q

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

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

3) Without load.

4) With light/dark ratio 1:1.

5) Signal transit time with resistive load.

6) Total current of all Outputs.

## Ambient data

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

## Classifications

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

## Connection/Pin assignment

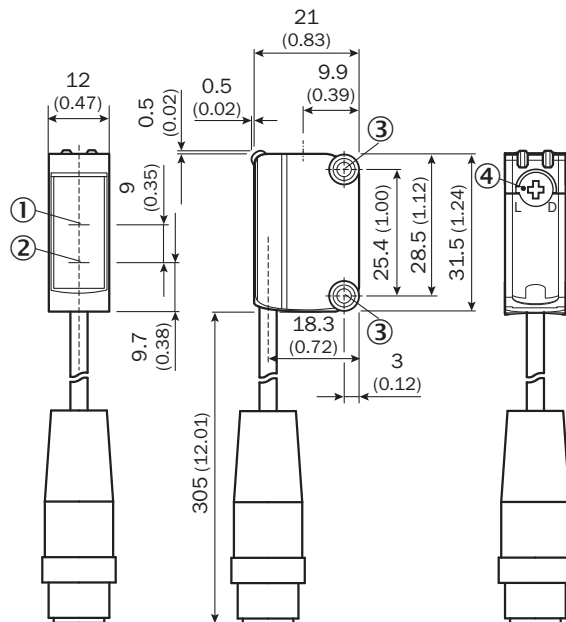
<b>Connection type</b>	Cable with M12 male connector, 4-pin, 0.2 m
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### Pin assignment

BN 1	+ (L+)
WH 2	Q NPN
BU 3	- (M)
BK 4	Q PNP

### Dimensional drawing (Dimensions in mm (inch))

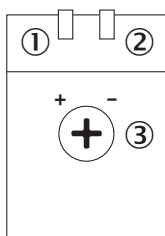
KTM-xBxxx12x



- ① Optical axis, receiver
- ② Optical axis, sender
- ③ M3 mounting hole
- ④ Light/ dark rotary switch: L = light switching, D = dark switching

### Adjustments

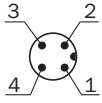
KTM Core



- ① Status indicator LED, yellow: Status switching output Q (dark switching)
- ② LED indicator green: Supply voltage active
- ③ Light/ dark rotary switch: L = light switching, D = dark switching

## Connection type

See table: **Connection/Pin assignment**

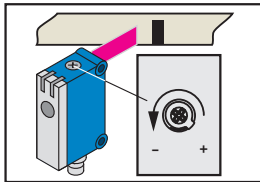


## Concept of operation

Setting the switching threshold

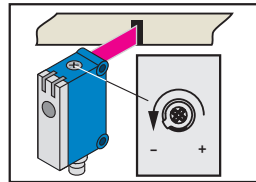
For example dark switching

### 1. Position background



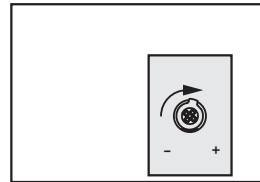
Start at "+" (right-hinged).  
 Turn potentiometer in direction  
 "-" until the yellow LED goes out.

### 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

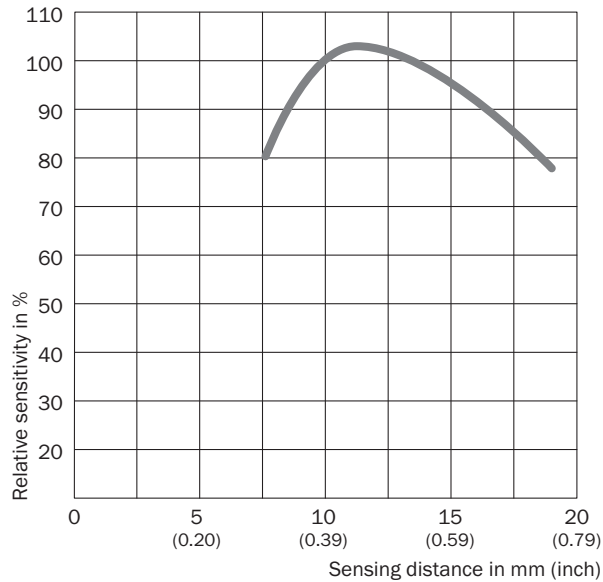
Light/dark switching selectable by means of rotary switch

KTM-xBxxx1xx: potentiometer can be adjusted with a screwdriver

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




### Sensing distance

Sensing distance



### Recommended accessories

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

	Brief description	Type	Part no.
<b>Device protection (mechanical)</b>			
	Stainless steel 1.4301 (SVS 304), 3 mm thick protective sleeve for G6, stainless steel 1.4301, mounting hardware included	BEF-SG-G6-01	2069044
<b>Plug connectors and cables</b>			
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A14-050VB3XLEAX	2096235
	Head A: male connector, M12, 4-pin, straight Head B: - Cable: unshielded	STE-1204-G	6009932

## 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)