



# KTM-MB31111P

KTM Core

**CONTRAST SENSORS**

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
KTM-MB31111P	1062202

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 spot size</b>	Ø 2 mm (12.5 mm)
<b>Light spot direction</b>	-
<b>Max. web speed</b>	1 m/s <sup>2)</sup>
<b>Adjustment</b>	Potentiometer, screw driver
<b>Output function</b>	Light/dark switching

<sup>1)</sup> Average service life: 100,000 h at T<sub>U</sub> = +25 °C.

<sup>2)</sup> At a mark size of 4 mm.

#### 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>Power 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

<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> At supply voltage > 24 V, I<sub>max</sub> = 30 mA. I<sub>max</sub> is consumption count of all Q<sub>N</sub>.

<b>Switching output (voltage)</b>	PNP: HIGH = $V_S - \leq 2 \text{ V}$ / LOW approx. 0 V NPN: HIGH = approx. $V_S$ / LOW $\leq 2 \text{ V}$
<b>Switching output</b>	Light/dark switching
<b>Output current <math>I_{\max}</math></b>	50 mA <sup>6)</sup>
<b>Retention time (ET)</b>	28 ms, non-volatile memory
<b>Connection type</b>	Male connector M8, 4-pin
<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>	ABS

<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  $U_V$  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> At supply voltage  $> 24 \text{ V}$ ,  $I_{\max} = 30 \text{ mA}$ .  $I_{\max}$  is consumption count of all  $Q_n$ .

#### Ambient data

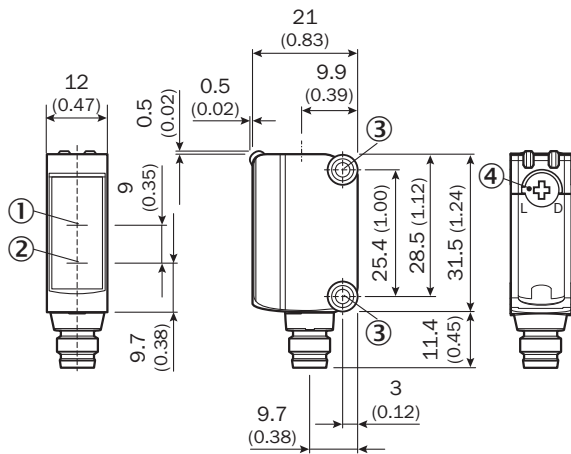
<b>Ambient operating temperature</b>	-10 °C ... +55 °C
<b>Ambient storage temperature</b>	-20 °C ... +75 °C
<b>Shock load</b>	According to IEC 60068
<b>UL File No.</b>	NRKH.E348498 & NRKH7.E348498

#### 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>ETIM 5.0</b>	EC001820
<b>ETIM 6.0</b>	EC001820
<b>UNSPSC 16.0901</b>	39121528

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

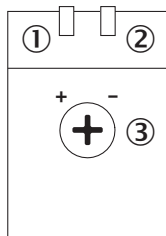
KTM-xBxxx11x



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

### Adjustments

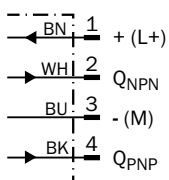
KTM Core



- ① Status indicator LED, yellow: Status switching output Q (dark switching)
- ② LED indicator green: Supply voltage active
- ③ Switching threshold adjustment

### Connection diagram

cd-086

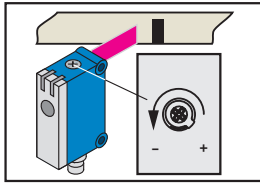


## Concept of operation

Setting the switching threshold

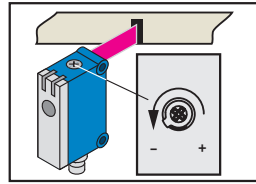
For example dark switching

### 1. Position background



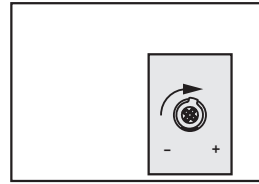
Start at "+" (right-hinged).  
Turn potentiometer in direction  
"-" until the yellow LED goes out.

### 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  $\neq$  switching output Q

Dark switching: yellow LED = switching output Q

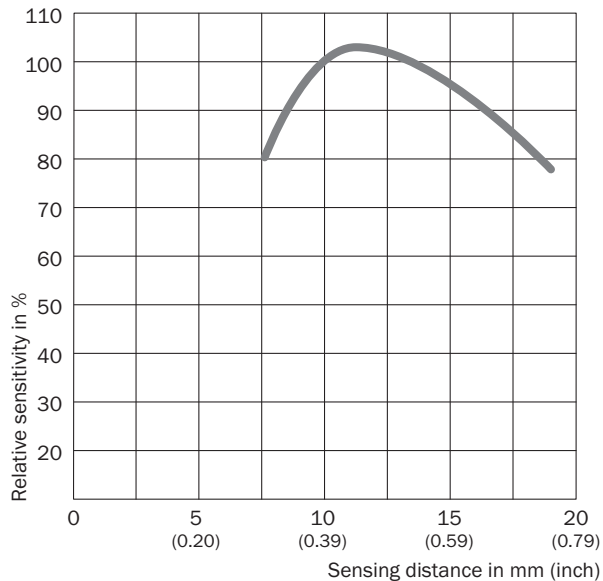
Light/dark switching selectable by means of rotary switch

KTM-xBxxx1xx: potentiometer can be adjusted with a screwdriver

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











## Characteristic curve






Sensing distance



**Recommended accessories**

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

	<b>Brief description</b>	<b>Type</b>	<b>Part no.</b>
<b>Universal bar clamp systems</b>			
	Universal clamp bracket for rod mounting, steel, zinc coated, without mounting hardware	BEF-KHS-KH1	2022726
	Plate L for universal clamp bracket, steel, zinc coated, Universal clamp (2022726), mounting hardware	BEF-KHS-L01	2023057
	Plate N08 for universal clamp bracket, Zinc plated steel (sheet), Zinc die cast (clamping bracket), Universal clamp (5322626), mounting hardware	BEF-KHS-N08	2051607
	Plate N08N for universal clamp bracket, Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp), Universal clamp (5322626), mounting hardware	BEF-KHS-N08N	2051616
	Mounting bar, straight, 200 mm, steel, steel, zinc coated, without mounting hardware	BEF-MS12G-A	4056054
	Mounting bar, straight, 300 mm, steel, steel, zinc coated, without mounting hardware	BEF-MS12G-B	4056055
	Mounting bar, L-shaped, 150 mm x 150 mm, steel, steel, zinc coated, without mounting hardware	BEF-MS12L-A	4056052
	Mounting bar, L-shaped, 250 x 250 mm, steel, steel, zinc coated, without mounting hardware	BEF-MS12L-B	4056053
<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>Mounting brackets and plates</b>			
	Mounting bracket for wall mounting, stainless steel, mounting hardware included	BEF-W100-A	5311520
	Mounting bracket for floor mounting, steel, zinc coated, mounting hardware included	BEF-W100-B	5311521
	Adapter plate KT3 to KTM, steel, zinc coated, fastening screws included	BEF-AP-KTMS01	2068786
<b>Plug connectors and cables</b>			
	Head A: female connector, M8, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 2 m	YF8U14-020VA3XLEAX	2095888
	Head A: female connector, M8, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF8U14-050VA3XLEAX	2095889
	Head A: female connector, M8, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 10 m	YF8U14-100VA3XLEAX	2095890
	Head A: female connector, M8, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 2 m	YG8U14-020VA3XLEAX	2095962
	Head A: female connector, M8, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YG8U14-050VA3XLEAX	2095963

	Brief description	Type	Part no.
	Head A: female connector, M8, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 10 m  Head A: female connector, M8, 4-pin, straight, A-coded Head B: male connector, M12, 4-pin, straight, A-coded Cable: Sensor/actuator cable, PVC, unshielded, 0.6 m	YG8U14-100VA3XLEAX   YF8U14-C60VA3M2A14	2095964   2096607
	Head A: female connector, M8, 4-pin, straight Head B: - Cable: unshielded	DOS-0804-G	6009974
	Head A: female connector, M8, 4-pin, angled Head B: - Cable: unshielded	DOS-0804-W	6009975
	Head A: female connector, M12, 4-pin, straight Head B: - Cable: unshielded	DOS-1204-G	6007302
	Head A: female connector, M12, 4-pin, angled Head B: - Cable: unshielded	DOS-1204-W	6007303

## 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)