



Contrast sensors
KTM Core, KTM Core

KTM-MB31112P



Model Name > [KTM-MB31112P](#)
Part No. > [1070053](#)



At a glance

- Small, tried-and-tested housing, also available in stainless steel
- High grayscale resolution
- Very large dynamic range means reliable detection of contrasts on glossy materials
- Static and dynamic teach-in
- Switching frequency: 15 kHz
- RGB light source
- Remote monitoring and rapid analysis thanks to IO-Link function (version 1.1)

Your benefits

- Small housing allows installation even where space is limited
- Powerful, fast contrast sensor ensures high machine throughput
- Three-color LED technology allows a reliable process, with contrast marks detected even in conditions with weak contrast ratios
- Good contrast resolution and a very large dynamic range ensure good detection performance on glossy materials, thus increasing the range of application possibilities
- Various teach-in methods enable more flexible commissioning
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Long service life, even in harsh environments, thanks to stainless steel housing; as a result, excellent system throughput and low spare parts costs



Features

Sensing distance:	12.5 mm
Sensing distance tolerance:	± 3 mm
Light source ¹⁾ :	LED
Light spot size:	2 mm x 2 mm
Light spot direction:	-
Output function:	Light/dark switching
Max. web speed tech-in (dynamic):	1 m/s ²⁾
Type of light:	Visible white light
Dimensions (W x H x D):	31.5 mm x 21 mm x 12 mm
Housing design (light emission):	Rectangular
Teach-in mode:	Potentiometer, screw driver

1) Average service life: 100,000 h at $T_U = +25\text{ °C}$ 2) At a mark size of 4 mm

Mechanics/electronics

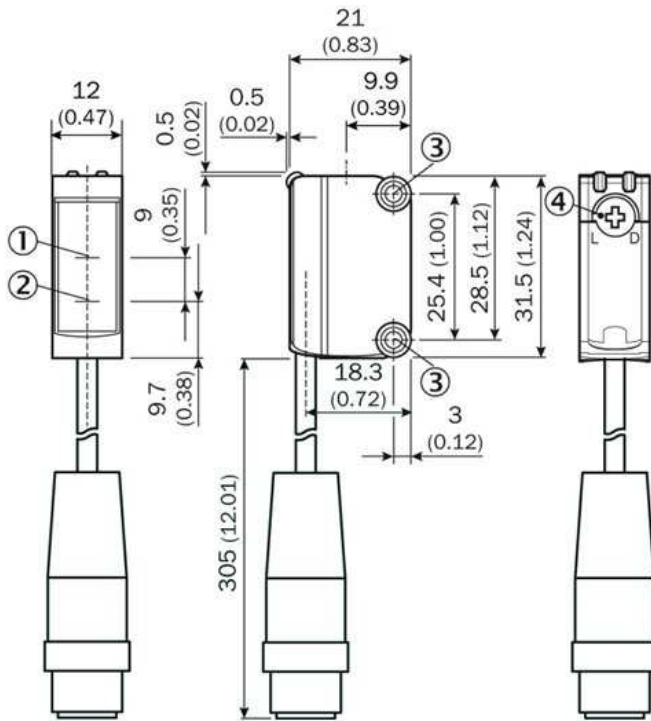
Residual ripple ¹⁾ :	≤ 5 Vpp
Power consumption ²⁾ :	< 50 mA
Switching frequency ³⁾ :	10 kHz
Response time ⁴⁾ :	50 μs
Jitter:	25 μs
Output type:	PNP: HIGH = VS- ≤ 2 V / LOW approx. 0 V NPN: HIGH = approx. VS / LOW ≤ 2 V
Switching mode:	PNP NPN
Retention time (ET):	28 ms, non-volatile memory
Electrical connection:	Cable with connector M12, 4-pin
Protection class:	III
Circuit protection:	Output Q short-circuit protected, Interference suppression, VS connections reverse-polarity protected
Enclosure rating:	IP 67, IP 67
Weight:	70 g
Housing material:	ABS, Plastic
Output current I _{max} ·:	50 mA ⁵⁾
Supply voltage:	12 V DC ... 24 V DC ⁶⁾
Fieldbus interface:	-

¹⁾ May not exceed or fall below U_V tolerances ²⁾ Without load ³⁾ With light/dark ratio 1:1 ⁴⁾ Signal transit time with resistive load ⁵⁾ At supply voltage > 24 V, $I_{max} = 30\text{ mA}$. I_{max} is consumption count of all Q_n ⁶⁾ Limit values: DC 12 V (-10 %) ... DC 24 V (+20 %). Operation in short-circuit protected network max. 8 A

Ambient data

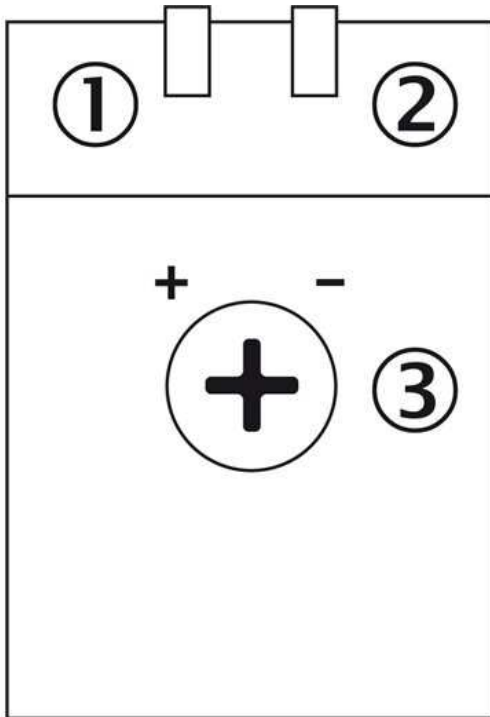
Shock load:	According to IEC 60068
UL File No.:	NRKH.E348498
Ambient operating temperature:	-10 °C ... +55 °C
Ambient storage temperature:	-20 °C ... +75 °C

Dimensional drawing



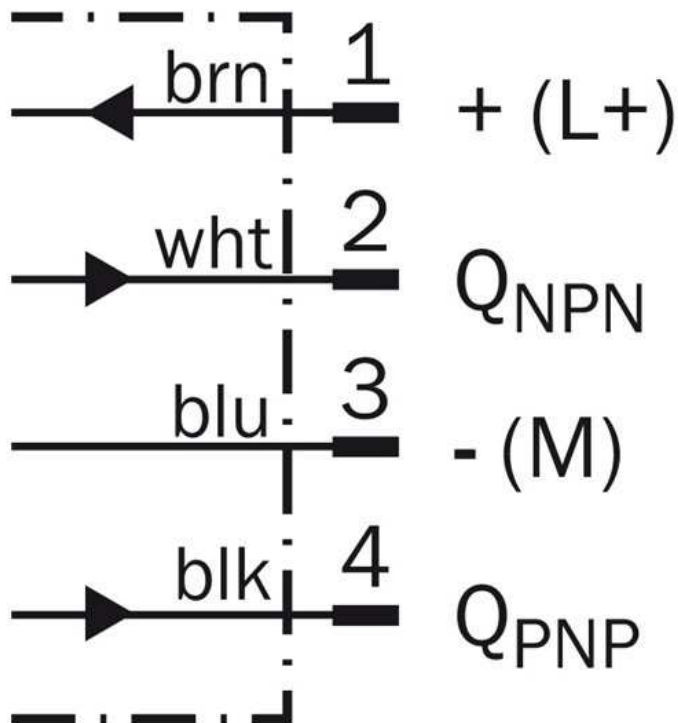
- |1| Optical axis receiver
- |2| Optical axis sender
- |3| Fixing hole M3
- |4| Light/ dark rotary switch: L = light switching, D = dark switching

Adjustments



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

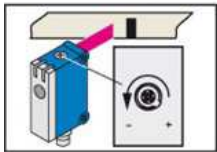
Connection diagram



Setting the switching threshold

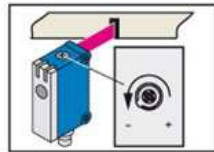
For example dark switching

1. Position background



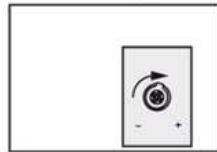
Start at "+" (right-hinged).
Turn potentiometer in direction "+" until the yellow LED goes out.

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

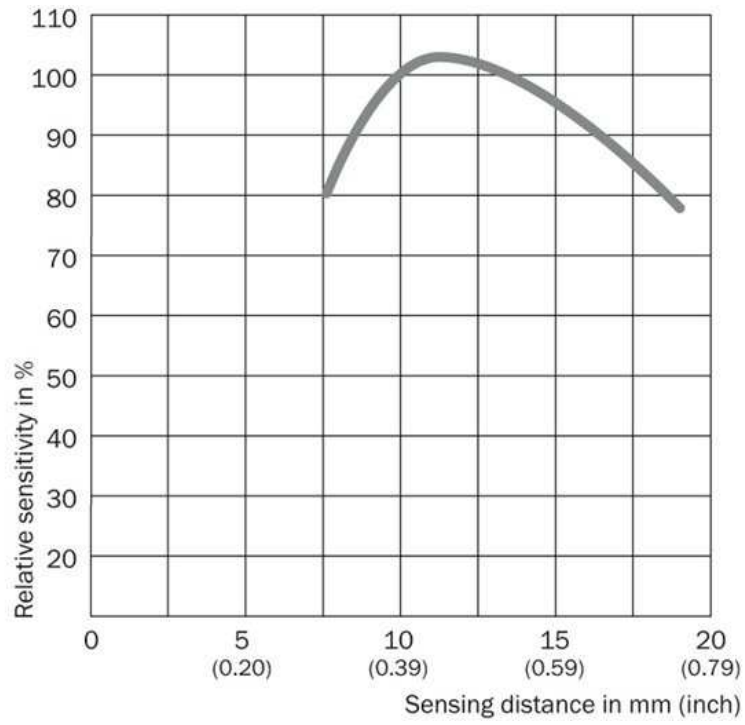
Dark switching: yellow LED = switching output Q

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



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