

ONLINE DATA SHEET
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Contrast sensors
KTM Core, KTM Core

KTM-MB31111P



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Model Name > KTM-MB31111P
Part No. > 1062202





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

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[1] Average service life: 100,000 h at T_U = +25 °C [2] At a mark size of 4 mm

Mechanics/electronics

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
Connection type:	Connector M8, 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:	20 g
Housing material:	ABS, Plastic
Output current Imax.:	50 mA [5]
Supply voltage:	12 V DC ... 24 V DC [6]
Fieldbus interface:	-

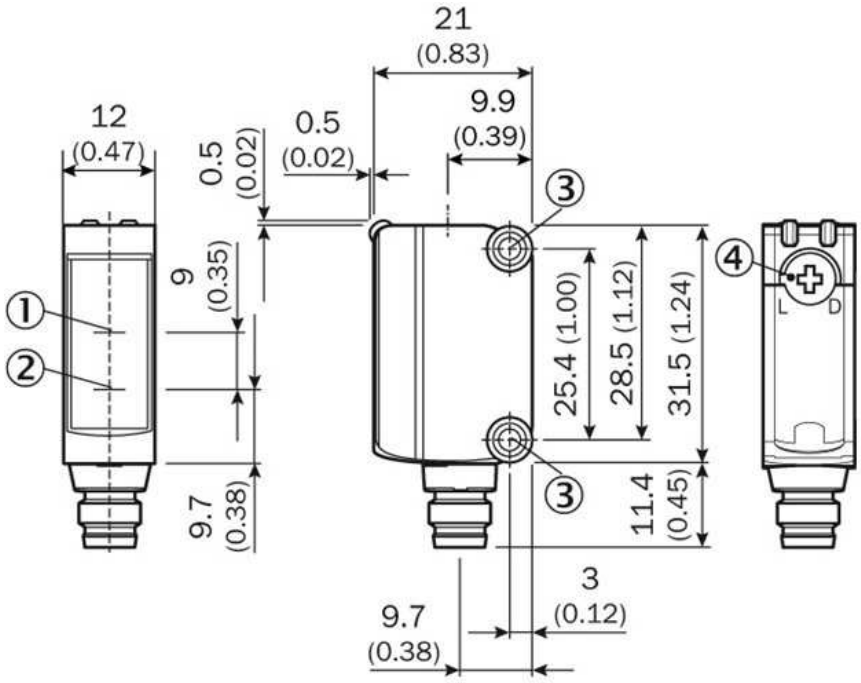
[1] May not exceed or fall below U_v tolerances [2] Without load [3] With light/dark ratio 1:1 [4] Signal transit time with resistive load [5] At supply voltage > 24 V, I_{max} = 30 mA. I_{max} is consumption count of all Q_n [6] Limit values: DC 12 V (-10 %) ... DC 24 V (+20 %). Operation in short-circuit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

Ambient data

Shock load:	According to IEC 60068
UL File No.:	NRKH.E348498 & NRKH7.E348498
Ambient temperature operation:	-10 °C ... +55 °C
Ambient storage temperature:	-20 °C ... +75 °C

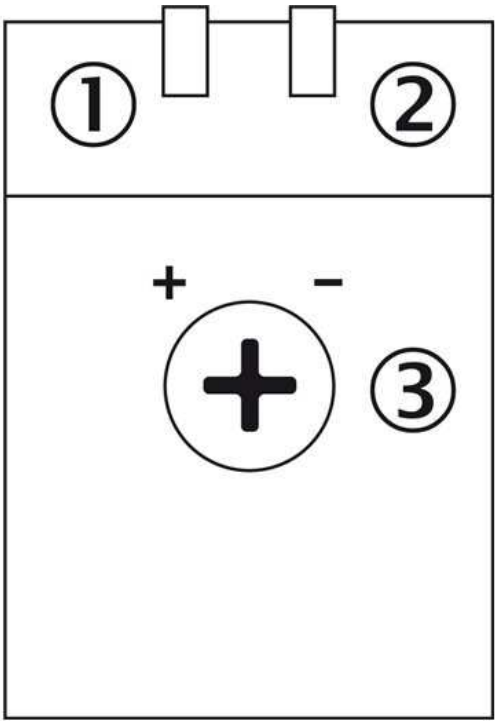
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Dimensional drawing



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

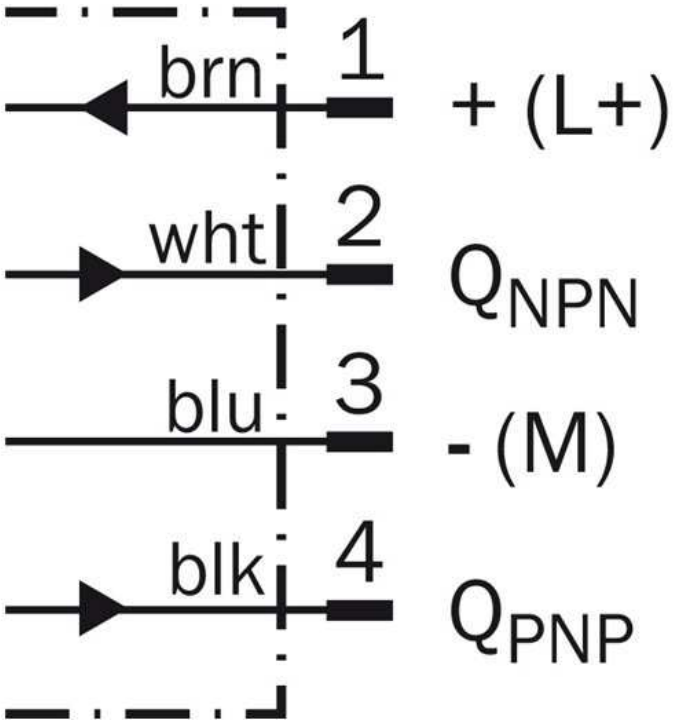
Adjustments



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

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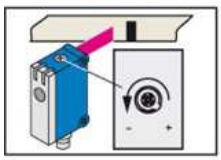
Connection diagram



Setting the switching threshold

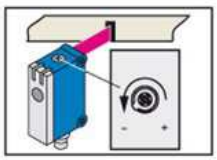
For example dark switching

1. Position background



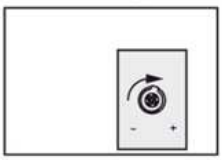
Start at "+" (right-hinged).
Turn potentiometer in direction "-" until the yellow LED goes out.

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.

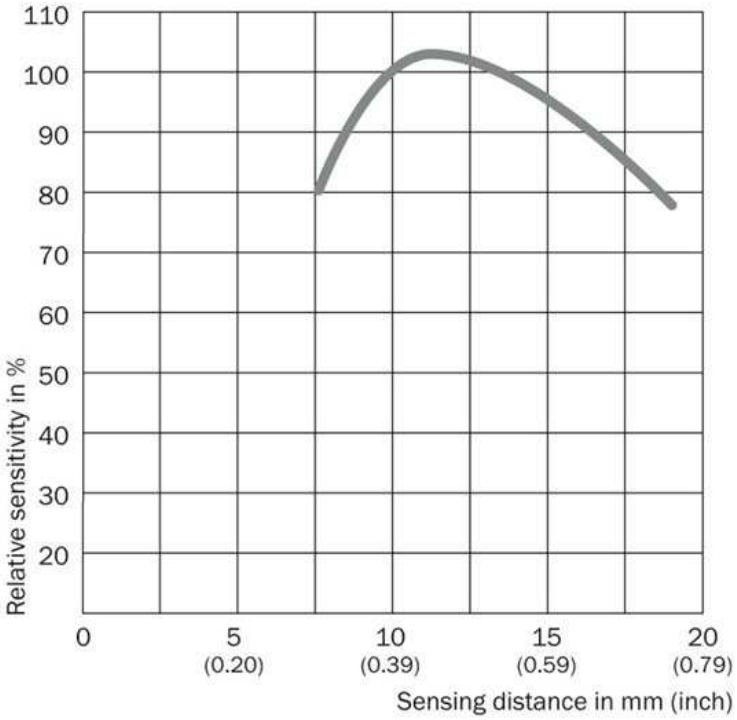
Switching characteristics

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

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Sensing distance



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