



Contrast sensors  
KTM Prime, KTM Prime

KTM-WP117A1P



**Model Name** > [KTM-WP117A1P](#)  
**Part No.** > [1061770](#)



**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 <sup>1)</sup> :	LED
Wave length:	470 nm, 525 nm, 625 nm
Light spot size:	1.5 mm x 6.5 mm
Light spot direction <sup>2)</sup> :	Vertical
Output function:	Light/dark switching
Max. web speed tech-in (dynamic):	1 m/s <sup>3)</sup>
Type of light:	Visible blue light, Visible green light, Visible red light
Dimensions (W x H x D):	31.5 mm x 21 mm x 12 mm
Housing design (light emission):	Rectangular
IO-Link functions:	Standard functions
Teach-in mode:	2-point teach-in static/dynamic + proximity to mark

1) Average service life: 100,000 h at  $T_U = +25\text{ °C}$  2) In relation to long side of housing 3) At a mark size of 4 mm

## Mechanics/electronics

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Ripple <sup>1)</sup> :	≤ 5 Vpp
Power consumption <sup>2)</sup> :	< 50 mA
Switching frequency <sup>3)</sup> :	15 kHz
Response time <sup>4)</sup> :	35 μs
Jitter:	15 μs
Output type:	PNP: HIGH = VS- ≤ 2 V / LOW approx. 0 V
Switching mode:	PNP
Input, teach-in (ET):	PNP: Teach: $U = 10,8\text{ V} \dots < U_V$ , Run: $U < 2\text{ V}$ or open
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 $I_{max}$ :	50 mA <sup>5)</sup>
Supply voltage:	12 V DC ... 24 V DC <sup>6)</sup>
Fieldbus interface:	IO-Link

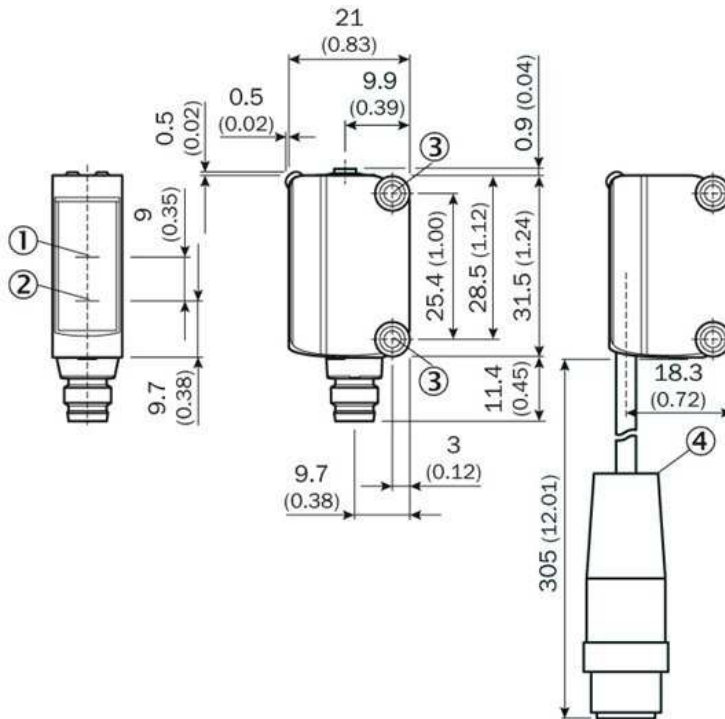
<sup>1)</sup> May not exceed or fall below  $U_V$  tolerances <sup>2)</sup> Without load <sup>3)</sup> With light/dark ratio 1:1 <sup>4)</sup> Signal transit time with resistive load <sup>5)</sup> At supply voltage > 24 V,  $I_{max} = 30\text{ mA}$ .  $I_{max}$  is consumption count of all  $Q_n$  <sup>6)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

## Ambient data

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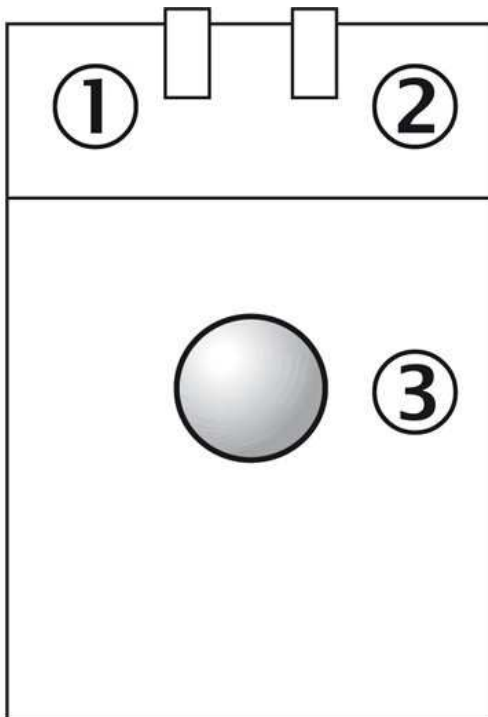
Shock load:	According to IEC 60068
UL File No.:	NRKH.E348498 & NRKH7.E348498
Ambient temperature operation:	-10 °C ... +55 °C
Ambient storage temperature:	-20 °C ... +75 °C

## Dimensional drawing



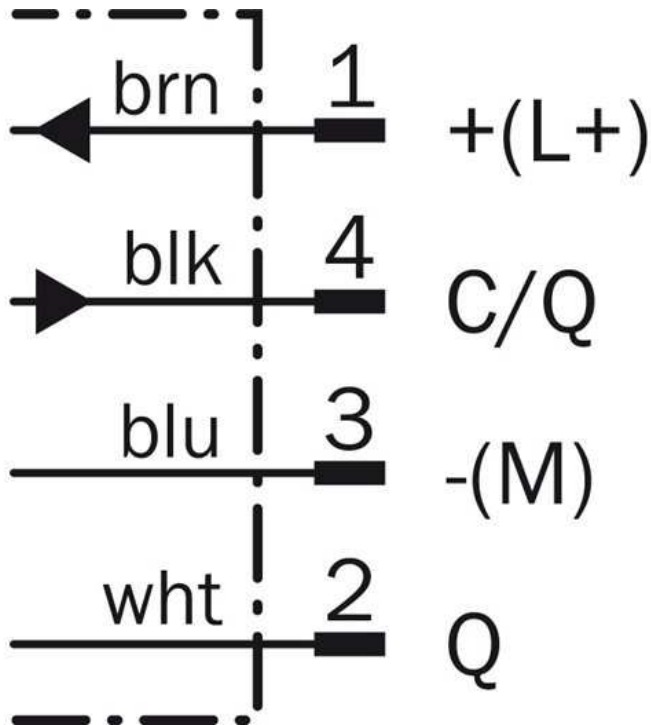
- |1| Optical axis receiver
- |2| Optical axis sender
- |3| Fixing hole M3
- |4| Cable with male connector M12 (only KTM-xxxxx2x)

## Adjustments

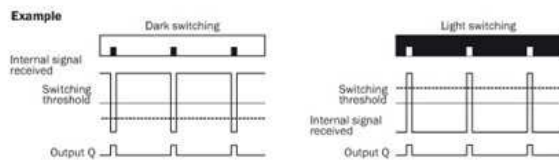
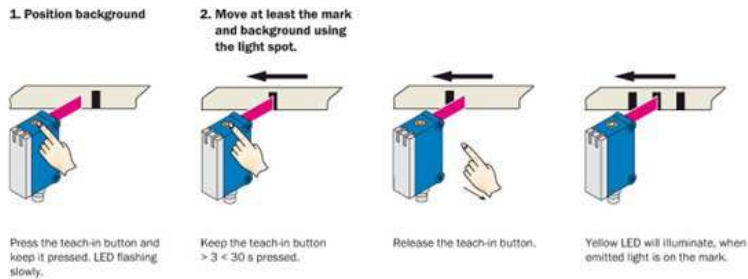


- |1| Status indicator LED, yellow:  
Status switching output Q (dark switching)
- |2| Status indicator LED green: supply voltage on
- |3| Teach-in button

## Connection diagram



## Setting the switching threshold (dynamic)



### Switching characteristics

The optimum emitted light is selected automatically (at RGB variants).  
 Static teach-in: light/dark setting is defined using teach-in sequence.  
 Dynamic teach-in: switching output active on mark, if background is longer in the field of view during the teach-in.  
 The switching threshold is set in the center between the background and the mark.

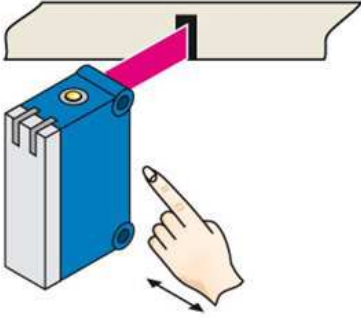
If the button is pressed again within 10 s of the teach ( $> 20$  ms  $< 10$  s), the relative switching threshold is placed 75 % between mark (100 %) and background (0 %) (dotted line in Figure).  
 Teach-in can also be performed using an external control signal (only dynamic teach-in).

Keylock activation and deactivation: hold down teach-in button  $> 30$  s.

Teach-in failure: yellow LED indicator and the transmitted light of the sensor flashing quickly.  
 For dynamic teach-in with ET signal (5 Hz) via switching output Q.

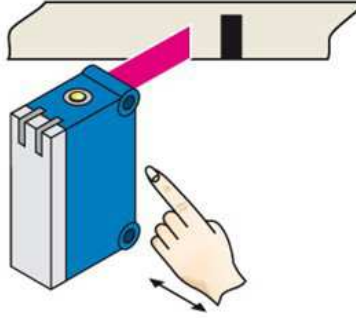
## Setting the switching threshold (static)

### 1. Position mark



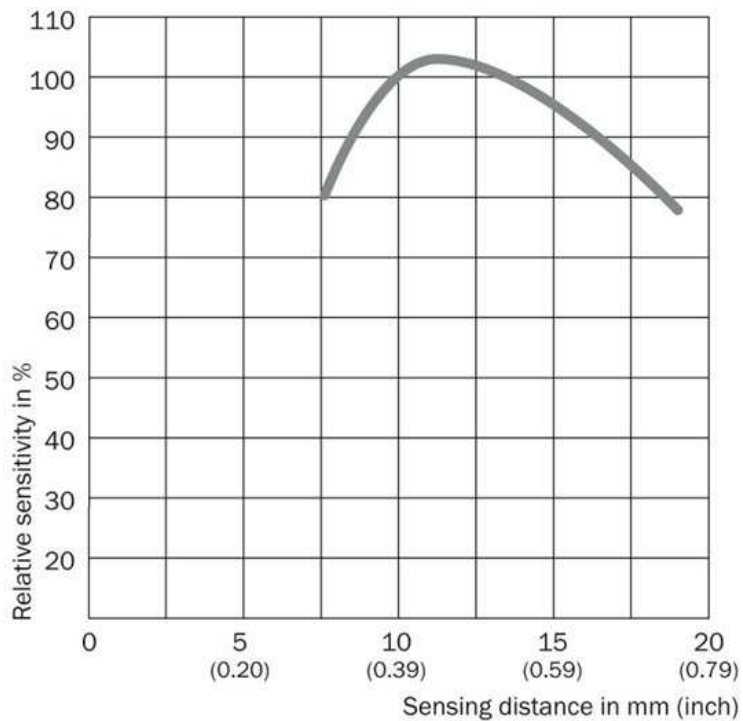
Press and hold teach-in button > 1 < 3 s.  
Yellow LED flashes slowly.

### 2. Position background



Press and hold teach-in button < 3 s.  
Yellow LED goes out.

## Sensing distance



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