Online data sheet



# KTM-MP31181P

## KTM Prime

**CONTRAST SENSORS**

SICK
Sensor Intelligence.



## Ordering information

| Type | Part no. |
|---|---|
| KTM-MP31181P | 1065756 |

Other models and accessories ➜ www.sick.com/KTM_Prime

## Detailed technical data

### Features

| | |
|---|---|
| **Dimensions (W x H x D)** | 12 mm x 31.5 mm x 21 mm |
| **Sensing distance** | 12.5 mm |
| **Sensing distance tolerance** | ± 3 mm |
| **Housing design (light emission)** | Rectangular |
| **Light source** | LED, White [1] |
| **Light spot size** | Ø 2 mm |
| **Light spot direction** | Vertical [2] |
| **Max. web speed** | 1 m/s [3] |
| **Adjustment** | Teach-in button |
| **Teach-in mode** | 2-point teach-in static/dynamic + proximity to mark |
| **Output function** | Light/dark switching |

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

### Mechanics/electronics

| | |
|---|---|
| **Supply voltage** | 12 V DC ... 24 V DC [1] |
| **Ripple** | ≤ 5 $V_{pp}$ [2] |
| **Power consumption** | < 50 mA [3] |
| **Switching frequency** | 15 kHz [4] |
| **Response time** | 32 µs [5] |

[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] At supply voltage > 24 V, $I_{max}$ = 30 mA. $I_{max}$ is consumption count of all $Q_n$.

| | |
|---|---|
| **Jitter** | 15 µs |
| **Switching output** | PNP |
| **Switching output (voltage)** | PNP: HIGH = $V_S$– ≤ 2 V / LOW approx. 0 V |
| **Switching output** | Light/dark switching |
| **Output current $I_{max.}$** | 50 mA [6] |
| **Input, dynamic teach-in (ET)** | PNP: Teach: U = 10,8 V ... < $U_V$<br>Run: U < 2 V or open |
| **Retention time (ET)** | 28 ms, non-volatile memory |
| **Connection type** | Male connector M8, 4-pin |
| **Protection class** | III |
| **Circuit protection** | $U_V$ connections, reverse polarity protected<br>Output Q short-circuit protected<br>Interference pulse suppression |
| **Enclosure rating** | IP67 |
| **Weight** | 20 g |
| **Housing material** | ABS |

[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] At supply voltage > 24 V, $I_{max}$ = 30 mA. $I_{max}$ is consumption count of all $Q_n$.

## Ambient data

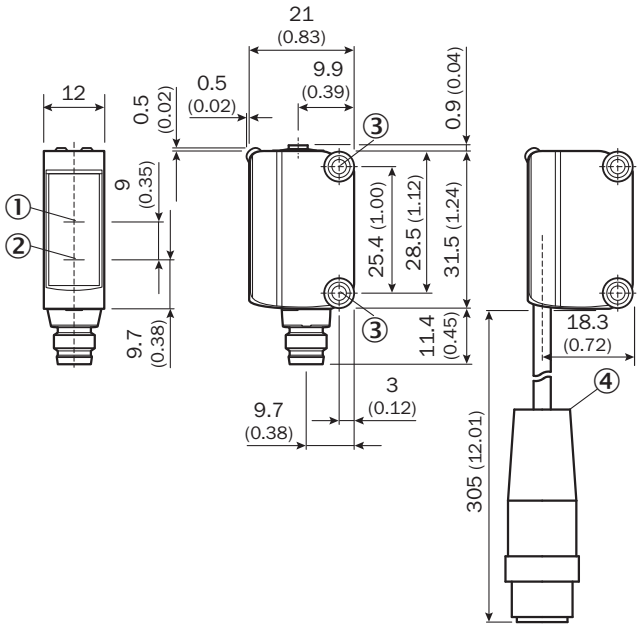
| | |
|---|---|
| **Ambient operating temperature** | –10 °C ... +55 °C |
| **Ambient storage temperature** | –20 °C ... +75 °C |
| **Shock load** | According to IEC 60068 |
| **UL File No.** | NRKH.E348498 & NRKH7.E348498 |

## Classifications

| | |
|---|---|
| **ECl@ss 5.0** | 27270906 |
| **ECl@ss 5.1.4** | 27270906 |
| **ECl@ss 6.0** | 27270906 |
| **ECl@ss 6.2** | 27270906 |
| **ECl@ss 7.0** | 27270906 |
| **ECl@ss 8.0** | 27270906 |
| **ECl@ss 8.1** | 27270906 |
| **ECl@ss 9.0** | 27270906 |
| **ETIM 5.0** | EC001820 |
| **ETIM 6.0** | EC001820 |
| **UNSPSC 16.0901** | 39121528 |

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

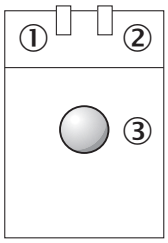
KTM Prime




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

## Adjustments

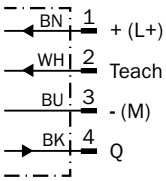
KTM Prime




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

## Connection diagram

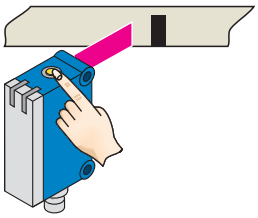
cd-092



## Concept of operation

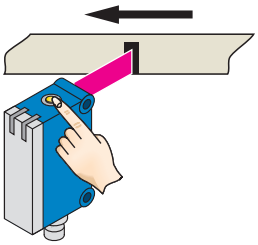
Teach-in dynamic

**1. Position background**

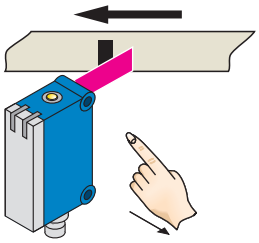


Press the teach-in button and keep it pressed. LED flashing slowly.

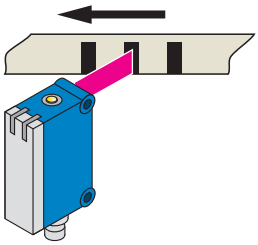
**2. Move at least the mark and background using the light spot.**



Keep the teach-in button > 3 < 30 s pressed.

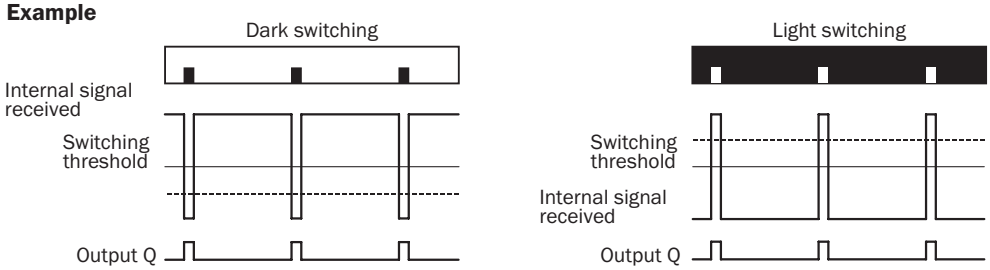


Release the teach-in button.



Yellow LED will illuminate, when emitted light is on the mark.

**Example**




**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.

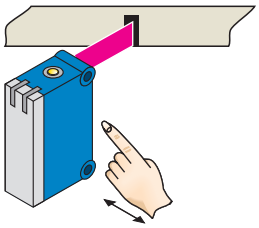
If the button is pressed again within 10 s of the teach (> 20 ms < 10 s), the relative switching threshold is placed 75 % between mark (100 %) and background (0 %) (dotted line in Figure).
Teach-in can also be performed using an external control signal.

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.

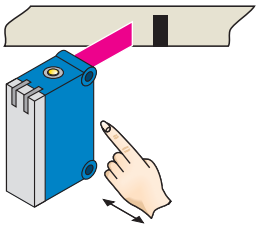
Teach-in static

**1. Position mark**



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

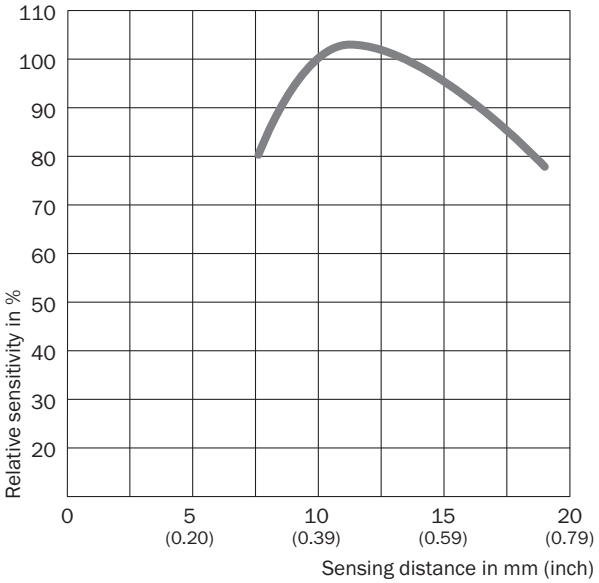
**2. Position background**



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

## Characteristic curve

Sensing distance




## Recommended accessories

Other models and accessories ➜ www.sick.com/KTM_Prime

| | Brief description | Type | Part no. |
|---|---|---|---|
| Device protection (mechanical) | | | |
|  | 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 |

| | Brief description | Type | Part no. |
|---|---|---|---|
| Mounting brackets and plates | | | |
|  | 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 |
| Plug connectors and cables | | | |
|  | Head A: female connector, M8, 4-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m | YF8U14-050VA3XLEAX | 2095889 |
|  | Head A: female connector, M8, 4-pin, straight, A-coded<br>Head B: male connector, M12, 4-pin, straight, A-coded<br>Cable: Sensor/actuator cable, PVC, unshielded, 0.6 m | YF8U14-C60VA3M2A14 | 2096607 |

# 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



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