Data sheet

KTM-WP1A7A2V

KTM

CONTRAST SENSORS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	part no.
KTM-WP1A7A2V	1062147

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

Detailed technical data

Features

Dimensions (W x H x D)	15.25 mm x 48.6 mm x 22.2 mm
Sensing distance	≤ 11 mm
Sensing distance tolerance	± 3 mm
Housing design	Small, stainless steel
Light source	LED, RGB [1]
Wave length	470 nm, 525 nm, 625 nm
Light emission	Long side of housing
Light spot size	1.6 mm x 9.5 mm
Light spot direction	Vertical [2]
Receiving filters	None
Adjustment	Cable, IO-Link, Teach-in button
Teach-in mode	2-point teach-in static/dynamic + proximity to mark

[1] Average service life: 100,000 h at T_U = +25 °C.

[2] In relation to long side of housing.

Interfaces

IO-Link	✓ , V1.1
Data transmission rate	38,4 kbit/s (COM2)
Cycle time	2.3 ms

Process data length	16 Bit
Process data structure A	Bit 0 ... 2 = Emission Color Bit 3 ... 12 = Measurment Value RGB Bit 13 ... 15 = empty
Process data structure B	Bit 0 = switching signal Q_{L1} Bit 1 ... 10 = Measurment Value Emission Color Bit 11 ... 15 = empty
Process data structure C	Bit 0 = switching signal Q_{L1} Bit 1 = Quality of Run Alarm Bit 2 = Teach successful Bit 3 = Teach busy Bit 4 ... 15 = empty
Digital output	Q_1, Q_2
Number	2

Electronics

Supply voltage	12 V DC ... 24 V DC [1]
Ripple	≤ 5 V_{pp} [2]
Current consumption	< 50 mA [3]
Switching frequency	15 kHz [4]
Response time	35 µs [5]
Jitter	15 µs
Switching output	PNP
Switching output (voltage)	PNP: HIGH = U_V ≤ 2 V / LOW approx. 0 V
Switching mode	Light/dark switching
Output current $I_{max.}$	50 mA [6]
Retention time (ET)	28 ms, non-volatile memory
Time delay	Switch-off delay, 520 ms (via IO-Link)
Protection class	III
Circuit protection	U_V connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression

[1] Limit values: DC 12 V (–10 %) ... DC 24 V (+20 %). Operation in short-circuit protected network max. 8 A.
[2] May not fall below or exceed U_V tolerances.
[3] Without load.
[4] With light/dark ratio 1:1.
[5] Signal transit time with resistive load.
[6] Total current of all Outputs.

Mechanics

Housing material	ABS
Display	LED indicator green: power on LED indicator, yellow: Status switching output Q
Optics material	PMMA
Connection type	Cable with M12 male connector, 4-pin, 0.2 m
Weight	40 g

Ambient data

Ambient operating temperature	–30 °C ... +70 °C

Ambient temperature, storage	–30 °C ... +75 °C
Shock load	According to IEC 60068
Enclosure rating	IP69K
UL File No.	NRKH.E348498 & NRKH7.E348498

Connection type/pinouts

Connection type	Cable with M12 male connector, 4-pin, 0.2 m
Pinouts	
BN 1	+ (L+)
WH 2	Q
BU 3	- (M)
BK 4	Q/C

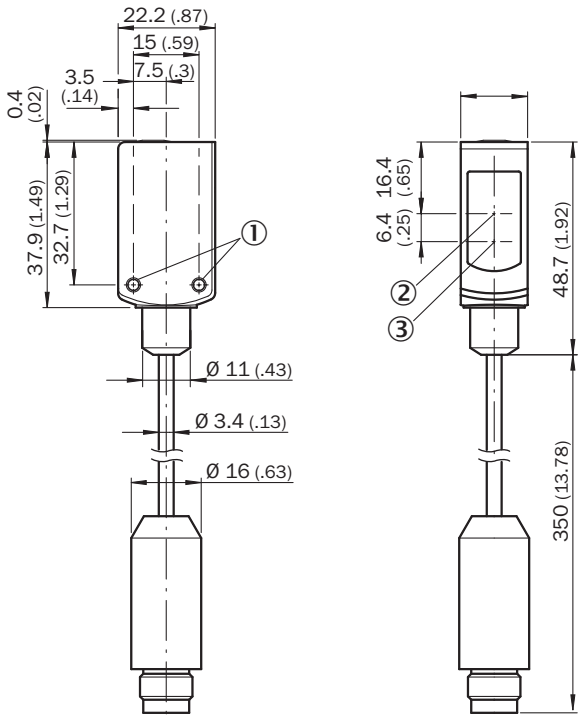
Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
ECOLAB certificate	✓
cULus certificate	✓
IO-Link certificate	✓
Photobiological safety (IEC EN 62471)	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

Classifications

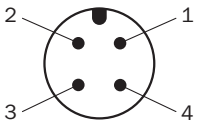
ECLASS 5.0	27270906
ECLASS 5.1.4	27270906
ECLASS 6.0	27270906
ECLASS 6.2	27270906
ECLASS 7.0	27270906
ECLASS 8.0	27270906
ECLASS 8.1	27270906
ECLASS 9.0	27270906
ECLASS 10.0	27270906
ECLASS 11.0	27270906
ECLASS 12.0	27270906
ETIM 5.0	EC001820
ETIM 6.0	EC001820
ETIM 7.0	EC001820
ETIM 8.0	EC001820
UNSPSC 16.0901	39121528

Dimensional drawing KTM-Wxxxxx2V



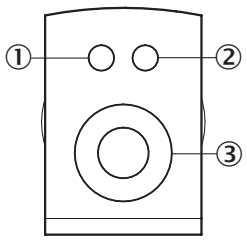
Dimensions in mm (inch)
① M3 mounting hole
② optical axis, receiver
③ optical axis, sender

Pinouts, see table Technical data: Connection type/pinouts



M12 male connector, 4-pin, A-coding

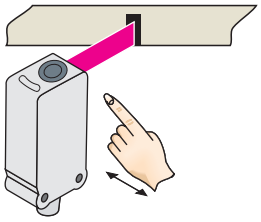
display and adjustment elements



① LED yellow
② LED green
③ Teach-in button

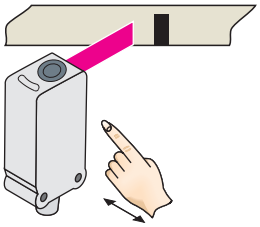
Concept of operation

1. Position mark



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

2. Position background

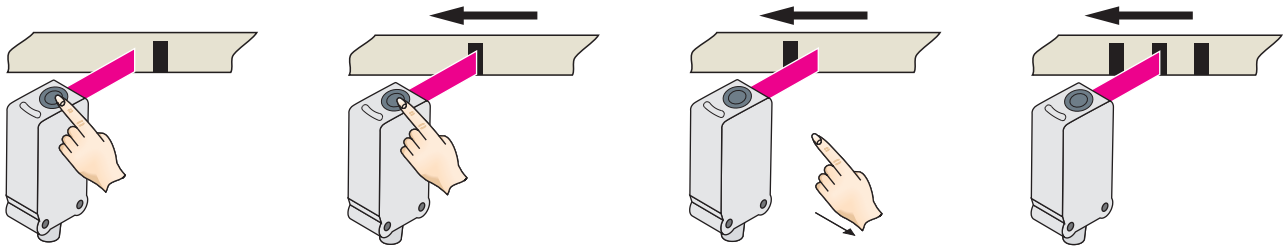


Press and hold teach-in button < 3 s.
Yellow LED goes out.

Concept of operation Teach-in dynamic

1. Position background

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



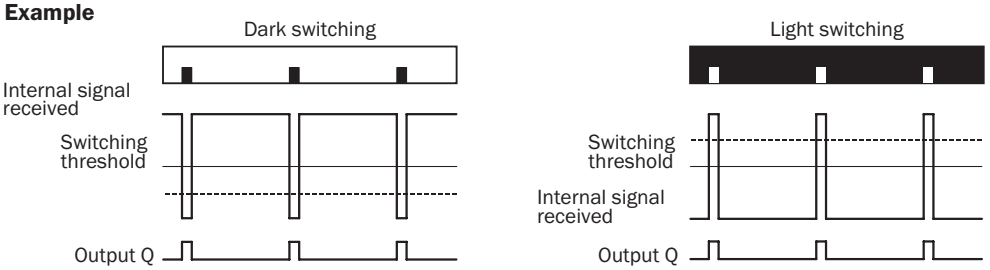
Press the teach-in button and keep it pressed. LED flashing slowly.

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

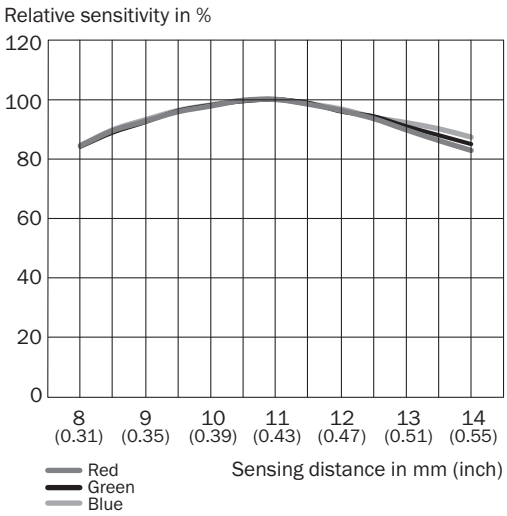
The optimum emitted light is selected automatically (at RGB variants).
Static teach-in: light/dark setting is defined using teach-in sequence.
Dynamic teach-in: switching output active on mark, if background is longer in the field of view during the teach-in.
The switching threshold is set in the center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

If the button is pressed again within 10 s of the teach (> 20 ms < 10 s),
the switching threshold is placed 25 % below the mark (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.

Sensing distance



Recommended accessories

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

	Brief description	Type	part no.
Mounting systems			
	• **Description:** Mounting bracket for wall mounting • **Material:** Stainless steel • **Details:** Stainless steel 1.4571 • **Items supplied:** Mounting hardware included • **Suitable for:** W4S, W4F, W4S	BEF-W4-A	2051628
connectors and cables			
	• **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded • **Connection type head B:** Male connector, M12, 4-pin, straight, A-coded • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 4-wire, PVC • **Description:** Sensor/actuator cable, unshielded • **Application:** Zones with chemicals, Uncontaminated zones	YF2A14-050VB3M2A14	2096600
	• **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 4-wire, PVC • **Description:** Sensor/actuator cable, unshielded • **Application:** Zones with chemicals, Uncontaminated zones	YF2A14-050VB3XLEAX	2096235

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