

# TTK70-AXA0-K02

TTK70

MAGNETIC LINEAR ENCODERS

**SICK**  
Sensor Intelligence.

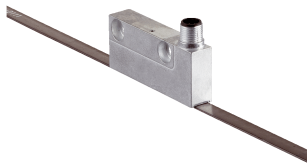


Illustration may differ

### Ordering information

Type	Part no.
TTK70-AXA0-K02	1038033

Magnetic tape not included with delivery

Other models and accessories → [www.sick.com/TTK70](http://www.sick.com/TTK70)



### Detailed technical data

#### Features

<b>Items supplied</b>	Magnetic tape not included with delivery
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#### Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	65 years (EN ISO 13849) <sup>1)</sup>
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<sup>1)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

#### Performance

<b>Measuring range</b>	0 mm ... 3,920 mm
<b>Resolution</b>	1 µm
<b>Length of period</b>	1 mm
<b>Traversing speed</b>	< 10 m/s, < 2 m/s dynamic operation (Sin/Cos), static operation (SSI)
<b>Repeatability</b>	≤ ± 2 µm

#### Interfaces

<b>Communication interface</b>	SSI <sup>1)</sup>
<b>Interface, digital serial</b>	SSI, 24 Bit, gray Sin/Cos 1.0 V <sub>PP</sub>

<sup>1)</sup> HIPERFACE<sup>®</sup> interface described in publication 8015021.

#### Electrical data

<b>Supply voltage</b>	4.5 V ... 30 V
<b>Operating current</b>	55 mA (without load)
<b>Power consumption</b>	≤ 1.2 W
<b>Connection type</b>	Male connector, M12, 12-pin
<b>MTTF<sub>D</sub>: mean time to dangerous failure</b>	65 years (EN ISO 13849) <sup>1)</sup>

<sup>1)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

#### Mechanical data

<b>Dimensions</b>	See dimensional drawing
<b>Scope of delivery</b>	Magnetic tape not included with delivery

<b>Weight</b>	0.08 kg
<b>Read head material</b>	Zinc diecast

#### Ambient data

<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3
<b>Enclosure rating</b>	IP67, with mating connector inserted (IEC 60529)
<b>Operating temperature range</b>	-30 °C ... +85 °C
<b>Storage temperature range</b>	-40 °C ... +85 °C
<b>Permissible relative humidity</b>	100 %, condensation permitted
<b>Resistance to shocks</b>	30 g, 6 ms (EN 60068-2-27)
<b>Resistance to vibration</b>	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)
<b>Maximum permitted ambient field strength</b>	< 3 kA/m ... 4 kA/m (3.8 mT ... 5 mT), to guarantee compliance with the quoted accuracy values <sup>1)</sup>
<b>Maximum permitted field strength</b>	< 150 kA/m (< 190 mT), to ensure that the magnetic tape is not permanently damaged

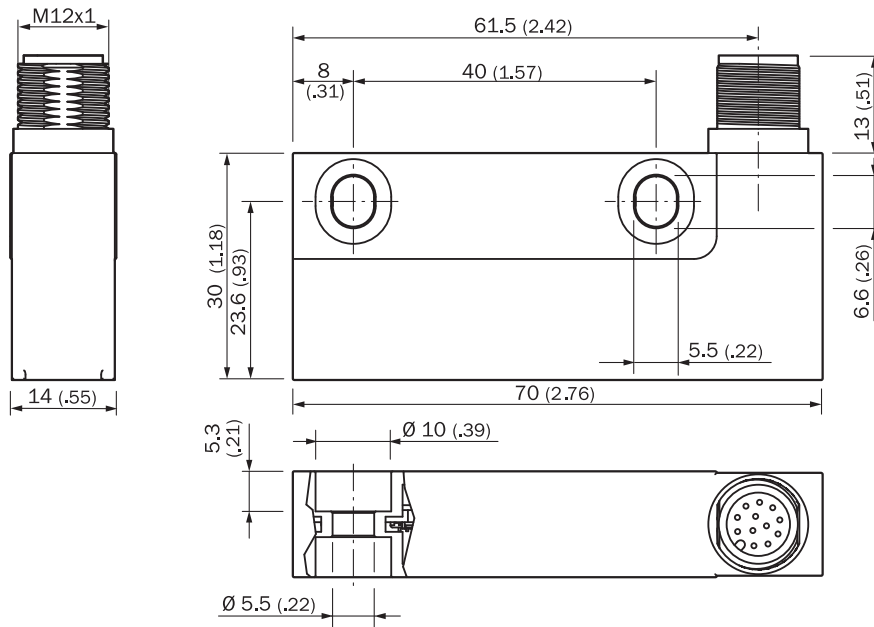
<sup>1)</sup> The maximum permitted external field influence is reached when the position value deviates from the original value (without external field influence) by more than 5 µm. This value is reached when, at the sensor location, a field strength of 3 kA/m to 4 kA/m (3.8 mT to 5 mT) occurs in addition to the field strength of the magnetic tape.

#### Classifications

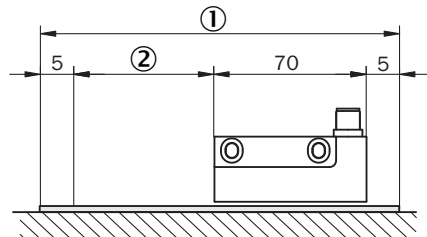
<b>ECLASS 5.0</b>	27270705
<b>ECLASS 5.1.4</b>	27270705
<b>ECLASS 6.0</b>	27270705
<b>ECLASS 6.2</b>	27270705
<b>ECLASS 7.0</b>	27270705
<b>ECLASS 8.0</b>	27270705
<b>ECLASS 8.1</b>	27270705
<b>ECLASS 9.0</b>	27270705
<b>ECLASS 10.0</b>	27270705
<b>ECLASS 11.0</b>	27270705
<b>ECLASS 12.0</b>	27274304
<b>ETIM 5.0</b>	EC002544
<b>ETIM 6.0</b>	EC002544
<b>ETIM 7.0</b>	EC002544
<b>ETIM 8.0</b>	EC002544
<b>UNSPSC 16.0901</b>	41111613

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

Read head, male connector

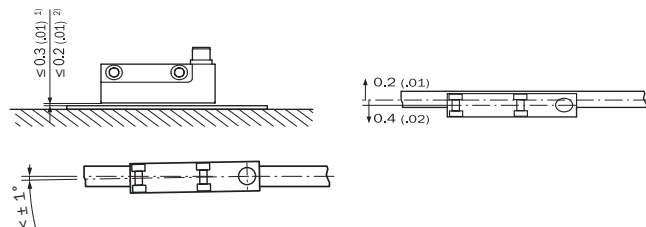


### Bedienhinweis



- ① Required band length = measurement path + 80 mm
- ② Measurement path

### Position tolerance

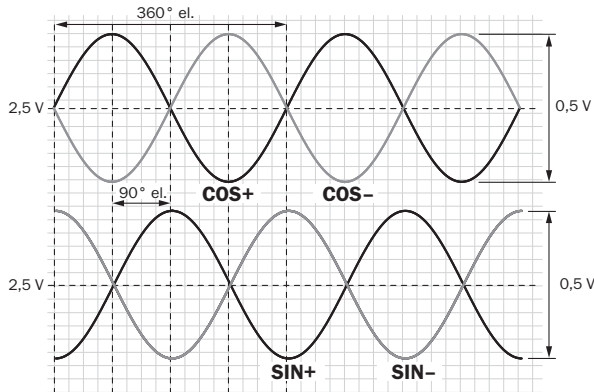


General tolerances according to DIN ISO 2768-mk

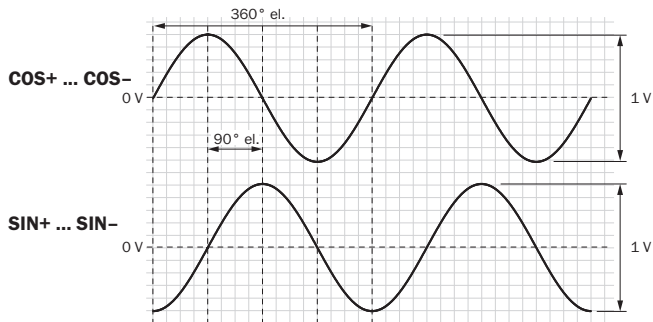
- ① Without cover strip
- ② With cover strip

## Signal outputs

Signal before differential generation



Signal diagram with read head moving in direction of arrow at 120 Ω load with  $U_S = 5\text{ V}$   
Signal SIN/COS after differential generation



Signal diagram with read head moving in direction of arrow at 120 Ω load with  $U_S = 5\text{ V}$

Signal	Interface signals	Signal before differential generation At load 120 Ω	Signal offset	Supply voltage	Output
+ SIN - SIN + COS - COS	Analog, differential	$0,5 U_{SS} \pm 10\%$	$2,5\text{ V} \pm 5\%$	4,5 V ... 30 V	Sinus 0.5 V <sub>pp</sub>

## Recommended accessories

Other models and accessories → [www.sick.com/TTK70](http://www.sick.com/TTK70)

	Brief description	Type	Part no.
Magnets	Magnetic tape length: 1 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: $(11 \pm 1) \mu\text{m/K/m}$	MVM-01M-2MC-MKLB	6037417
	Magnetic tape length: 2 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: $(11 \pm 1) \mu\text{m/K/m}$	MVM-02M-2MC-MKLB	6037419

	Brief description	Type	Part no.
	Magnetic tape length: 3 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: (11 ± 1) µm/K/m	MVM-03M-2MC-MKLB	6037421
	Magnetic tape length: 4 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: (11 ± 1) µm/K/m	MVM-04M-2MC-MKLB	6037423
	Magnetic tape length: 0.5 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: (11 ± 1) µm/K/m	MVM-0M5-2MC-MKLB	6037415
	Magnetic tape length: 1.5 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: stainless steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: (11 ± 1) µm/K/m	MVM-1M5-2MC-MKLB	6037418
	Magnetic tape length: 2.5 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: (11 ± 1) µm/K/m	MVM-2M5-2MC-MKLB	6037420
	Magnetic tape length: 3.5 m, magnetic tape width: 10 mm, weight: 0.18 kg/m, magnetic tape material: 17410 hard ferrite 9/28 P, substrate tape material: steel, period length 1 mm, operating temperature range: -20 °C ... 100 °C, storage temperature range: -30 °C ... 100 °C, temperature coefficient: (11 ± 1) µm/K/m	MVM-3M5-2MC-MKLB	6037422

## 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](http://www.sick.com)