

# TTK70S-HXA0-K02

TTK70

MOTOR FEEDBACK SYSTEMS LINEAR HIPERFACE®

**SICK**  
Sensor Intelligence.

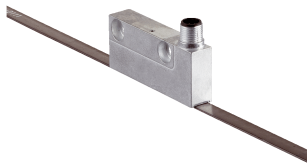


Illustration may differ

### Ordering information

Type	Part no.
TTK70S-HXA0-K02	1099700

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>Safety integrity level</b>	SIL2 (IEC 61508), SILCL2 (EN 62061) <sup>1)</sup>
<b>Category</b>	3 (EN ISO 13849)
<b>Maximum demand rate</b>	Continuous (analog signals)
<b>Performance level</b>	PL d (EN ISO 13849)
<b>PFH<sub>D</sub>: Probability of dangerous failure per hour</b>	2.02 x 10 <sup>-8 2)</sup>
<b>T<sub>M</sub> (mission time)</b>	20 years (EN ISO 13849)
<b>Safety-related accuracy</b>	± 25 mm, = ± 1/4 pin length
<b>Safety-related measuring step</b>	0.25 mm

<sup>1)</sup> For more detailed information on the exact configuration of your machine/unit, please consult your relevant SICK branch office.

<sup>2)</sup> The specified values apply to a diagnostic coverage rate of 90%, which must be achieved by the external drive system.

#### Performance

<b>Measuring step</b>	0.244 µm For interpolation of the sine/cosine signals with, e. g., 12 bits
<b>Measuring length</b>	≤ 3,920 mm
<b>Resolution</b>	1 µm
<b>Length of period</b>	1 mm
<b>Traversing speed</b>	≤ 10 m/s, up to which the absolute position can be reliably produced 1.3 m/s
<b>Repeatability</b>	< 5 µm
<b>System accuracy</b>	± 10 µm (+20 °C)
<b>Measured value backlash</b>	< 10 µm

#### Interfaces

<b>Communication interface</b>	HIPERFACE® <sup>1)</sup>
<b>Code type</b>	Binary
<b>Available memory area</b>	1,792 Byte (E <sup>2</sup> PROM 2048)

<sup>1)</sup> SSInterface described in publication 8013375.

## Electrical data

<b>Supply voltage</b>	7 V DC ... 12 V DC
<b>Recommended supply voltage</b>	8 V DC
<b>Operating current</b>	≤ 65 mA (without load) <sup>1)</sup>
<b>Connection type</b>	Male connector, M12, 8-pin

<sup>1)</sup> 100 mA approx. during adjustment.

## 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 <sup>1)</sup>
<b>Enclosure rating</b>	IP67, with mating connector inserted (according to IEC 60529)
<b>Operating temperature range</b>	-30 °C ... +80 °C
<b>Storage temperature range</b>	-40 °C ... +85 °C, without package
<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>2)</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> According to the listed standards, EMC is guaranteed if the motor feedback system is connected to the central grounding point of the motor controller via a cable shield and the encoder housing lays over a large area of the motor potential. If other shielding concepts are used, users must perform their own test.

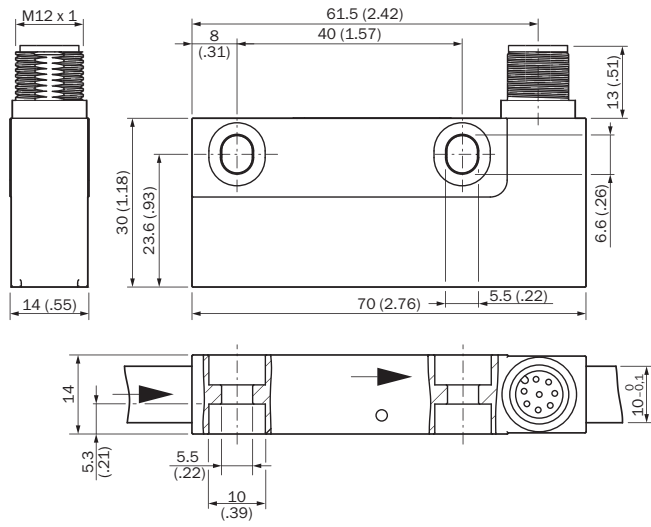
<sup>2)</sup> The maximum permitted external field influence is reached when the position value deviates from the original value (without external field influence) by more than 5 µm. This value is reached when, at the sensor location, a field strength of 3 kA/m to 4 kA/m (3.8 mT to 5 mT) occurs in addition to the field strength of the magnetic tape.

## Classifications

<b>ECl@ss 5.0</b>	27270705
<b>ECl@ss 5.1.4</b>	27270705
<b>ECl@ss 6.0</b>	27270705
<b>ECl@ss 6.2</b>	27270705
<b>ECl@ss 7.0</b>	27270705
<b>ECl@ss 8.0</b>	27270705
<b>ECl@ss 8.1</b>	27270705
<b>ECl@ss 9.0</b>	27270705
<b>ECl@ss 10.0</b>	27270705
<b>ECl@ss 11.0</b>	27270705
<b>ETIM 5.0</b>	EC002544
<b>ETIM 6.0</b>	EC002544
<b>ETIM 7.0</b>	EC002544
<b>UNSPSC 16.0901</b>	41111613

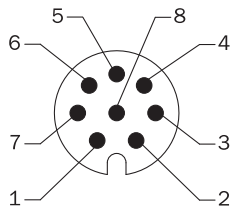
### Dimensional drawing (Dimensions in mm (inch))

Read head, male connector



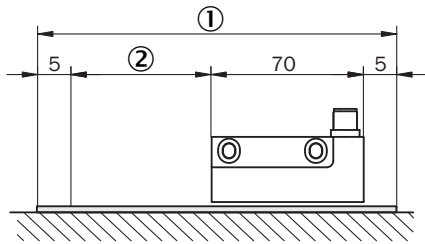
### PIN assignment

Cable, 8-wire



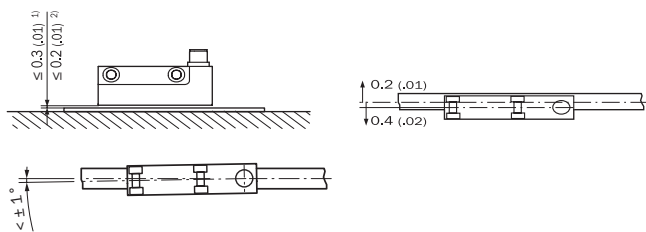
PIN	Wire colors (cable connection)	Signal	Explanation
1	Brown	REFSIN	Process data channel
2	White	+ SIN	Process data channel
3	Black	REFCOS	Process data channel
4	Pink	+ COS	Process data channel
5	Gray or yellow	Data +	Parameter channel RS 485
6	Green or purple	Data -	Parameter channel RS 485
7	Blue	GND	Ground connection
8	Red	U <sub>S</sub>	Supply voltage
	Screen		Housing

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

Recommended accessories

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

	Brief description	Type	Part no.
<b>Nuts and screws</b>			
	Mounting kit for SIL2 applications for safe and easy mounting of the TTK70S; 2x titan cylinder screws, 2x galvanized steel lock washers, 2x washers, 2x female connectors	BEF-MK-S12	2105618
<b>Magnets</b>			
	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: 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-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: 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-02M-2MC-MKLB	6037419
	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: 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-03M-2MC-MKLB	6037421

	Brief description	Type	Part no.
	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: 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-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: 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-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: 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-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: 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-3M5-2MC-MKLB	6037422
<b>Programming and configuration tools</b>			
	SVip® LAN programming tool for all motor feedback systems	PGT-11-S LAN	1057324
<b>Plug connectors and cables</b>			
	LTG-2708-MW	LTG-2708-MW	6028361
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 2 m	DOL-1208-G02MAC1	6032866
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 5 m	DOL-1208-G05MAC1	6032867
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 10 m	DOL-1208-G10MAC1	6032868
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 20 m	DOL-1208-G20MAC1	6032869
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 25 m	DOL-1208-G25MAC1	6067859
	Head A: female connector, M12, 8-pin, angled Head B: Flying leads Cable: HIPERFACE®, PUR, halogen-free, shielded, 2 m	DOL-1208-W02MAC1	6037724
	Head A: female connector, M12, 8-pin, angled Head B: Flying leads Cable: HIPERFACE®, PUR, halogen-free, shielded, 5 m	DOL-1208-W05MAC1	6037725
	Head A: female connector, M12, 8-pin, angled Head B: Flying leads Cable: HIPERFACE®, PUR, halogen-free, shielded, 10 m	DOL-1208-W10MAC1	6037726
	Head A: female connector, M12, 8-pin, angled Head B: Flying leads Cable: HIPERFACE®, PUR, shielded, 20 m	DOL-1208-W20MAC1	6037727

	Brief description	Type	Part no.
	Head A: female connector, M12, 8-pin, straight Head B: - Cable: shielded	DOS-1208-GA	6028369
	Head A: female connector, M12, 8-pin, straight, A-coded Head B: - Cable: Incremental, SSI, shielded	DOS-1208-GA01	6045001
	Head A: female connector, M12, 8-pin, angled, A-coded Head B: - Cable: Ethernet, shielded	DOS-1208-WA	6043358
	Head A: male connector, M12, 8-pin, straight Head B: - Cable: shielded	STE-1208-GA	6028370
	Head A: male connector, M12, 8-pin, straight, A-coded Head B: - Cable: Incremental, shielded	STE-1208-GA01	6044892

## 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)