KHK53-AXR01700

KH53

MAGNETIC LINEAR ENCODERS

SICK
Sensor Intelligence.

KHK53-AXR01700 | KH53
MAGNETIC LINEAR ENCODERS

Illustration may differ

CE

Ordering information

Type	Part no.
KHK53-AXR01700	1030078

Other models and accessories ➔ www.sick.com/KH53

Detailed technical data

Safety-related parameters

MTTF$_D$ (mean time to dangerous failure)	21 years (EN ISO 13849) [1]

[1] 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

Measuring range	0 m ... 1,700 m
Resolution	0.1 mm
Traversing speed	6.6 m/s [1]
Repeatability	0.3 mm
Measurement accuracy	± 1000 + ME (Tu-25 °C) Tk µm [2]

[1] If the max. traversing speed is exceeded or if the measuring elements are left, the corresponding error message is triggered (with SSI: FF FF FE hex).

[2] If a positional tolerance of ± 1 mm is observed relative to the nominal distance in the N and Y directions within a measuring element relative to the starting point of this element ME = length of measuring element Tu = ambient temperature in °C. Tk = coefficient of thermal expansion (28 µm/°C/m).

Interfaces

Communication interface	SSI
Position forming time	+ 0.8 ms
Interface, digital serial	SSI, 24 Bit, gray
Interface for parametrization	RS-422 Default OFF Four wire transmission, asynchrony, full duplex Data format: 1 start bit, 8 data bits, 1 stop bit, no parity Data protocol: ASCII, Baud rate 9600 RS-422

Electrical data

Initialization time	2 s
Supply voltage	10 V ... 32 V
Current consumption	250 mA
Connection type	Cable, 12-wire, 1.5 m
MTTFd: mean time to dangerous failure	21 years (EN ISO 13849) [1]

[1] 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

Weight	5.2 kg
Length of measuring element	See calculation example
Position tolerance	± 10 mm, see positional tolerances diagram
Read head material	AlMgSiPbF28

Ambient data

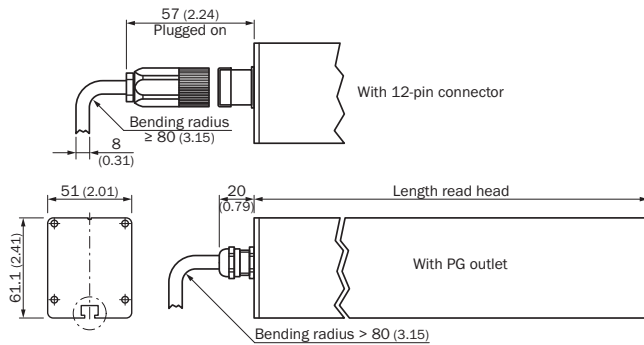|	
EMC	According to EN 61000-6-2 and EN 61000-6-4 [1]
Enclosure rating	IP66 (IEC 60529)
Operating temperature range	−20 °C ... +60 °C
Storage temperature range	−40 °C ... +85 °C
Resistance to shocks	30 g, 10 ms (DIN EN 60 068-2-27)
Resistance to vibration	10 g, 20 Hz ... 250 Hz (EN 60068-2-6)

[1] EMC according to the standards quoted is achieved if shielded cables are used.

Classifications

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

Dimensional drawing (Dimensions in mm (inch))

SSI read head

57 (2.24)
Plugged on

With 12-pin connector

Bending radius ≥ 80 (3.15)

8 (0.31)

51 (2.01)

61.1 (2.41)

20 (0.79)

Length read head

With PG outlet

Bending radius > 80 (3.15)

Position tolerance
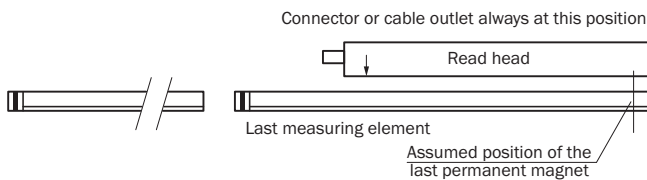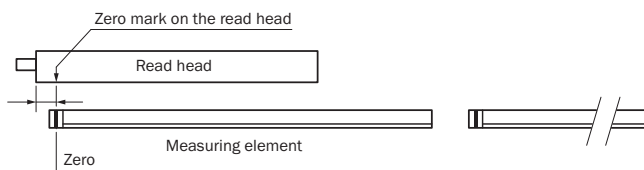
KH53

①

N = 25±10 (0.98±0.39)

②

①

±10 (0.39)   Y

②
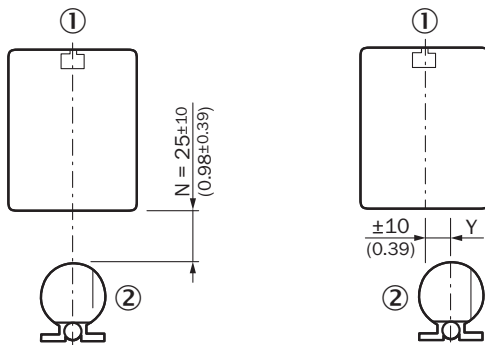
All dimensions in mm (inch)

The operating reliability and accuracy of the measuring system depends on (amongst other things) compliance with the position tolerances. Magnetic or magnetizable materials are not permitted within 80 mm of the encoder or the measuring element.
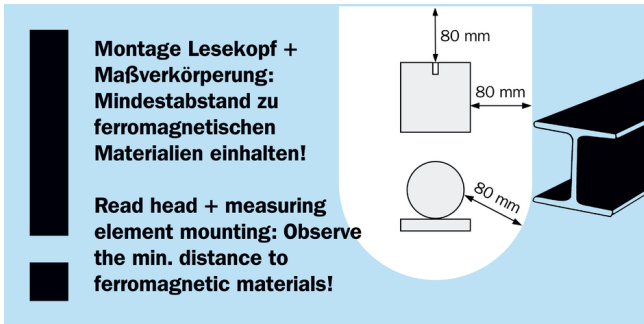① Read head
② Measuring element

End of measurement path

Connector or cable outlet always at this position

Read head

Last measuring element

Assumed position of the last permanent magnet

Start of measuring path

Zero mark on the read head

Read head

Measuring element

Zero

Assembly note

Montage Lesekopf + Maßverkörperung: Mindestabstand zu ferromagnetischen Materialien einhalten!

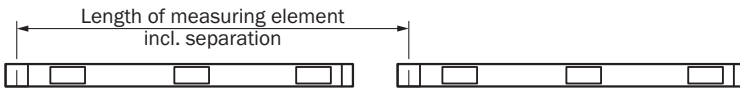Read head + measuring element mounting: Observe the min. distance to ferromagnetic materials!

Only use non ferro-magnetic materials for the assembly base of the read head. A separation distance of 80 mm must be observed for ferro-magnetic materials (e.g., iron).

Length of measuring element

KH53 SSI

Length of measuring element incl. separation

Measring range up to	Read head length	Length of measuring element including distance	Mounting systems per measuring element (suggestion)
39.90 m	0.866 m	2.304 m Identification letters A1 ... ≤ A18	4 clamp holders or 8 mounting brackets
107.40 m	1.051 m	1.8688 m Identification letters B1 ... ≤ B58	3 clamp holders or 6 mounting brackets
351.20 m	1.376 m	2.5088 m Identification letters C1 ... ≤ C141	4 clamp holders or 8 mounting brackets
1676.40 m	2.026 m	1.9072 m Identification letters D1 ... ≤ D880	3 clamp holders or 6 mounting brackets
The dimensions given are slightly rounded.			

Recommended accessories

Other models and accessories ➜ www.sick.com/KH53

Brief description		Type	Part no.
Programming and configuration tools			
	Programming tool for ATM60, ATM90, and KH53	PGT-01-S	1030111
Mounting brackets and plates			
	Mounting bracket for KH53 measuring elements, without mounting hardware for the background	BEF-WK-KHT53	2029159

	Brief description	Type	Part no.
Terminal and alignment brackets			
	Spacer for KHT53, without mounting hardware for the background	BEF-KHA-KHT53	2042468
Others			
	• **Connection type head A:** Female connector, M23, 12-pin, straight • **Connection type head B:** Flying leads • **Signal type:** SSI, RS-422, TTL, HTL • **Cable:** 1.5 m, 12-wire, PUR, halogen-free • **Description:** SSI, RS-422, TTL, HTL, shielded	DOL-2312-G1M5MA1	2029200
	• **Connection type head A:** Female connector, M23, 12-pin, straight • **Connection type head B:** Flying leads • **Signal type:** SSI, RS-422, TTL, HTL • **Cable:** 3 m, 12-wire, PUR, halogen-free • **Description:** SSI, RS-422, TTL, HTL, shielded	DOL-2312-G03MMA1	2029201
	• **Connection type head A:** Female connector, M23, 12-pin, straight • **Connection type head B:** Flying leads • **Signal type:** SSI, RS-422, TTL, HTL • **Cable:** 5 m, 12-wire, PUR, halogen-free • **Description:** SSI, RS-422, TTL, HTL, shielded	DOL-2312-G05MMA1	2029202
	• **Connection type head A:** Female connector, M23, 12-pin, straight • **Connection type head B:** Flying leads • **Signal type:** SSI, RS-422 • **Cable:** 20 m, 12-wire, PUR, halogen-free • **Description:** SSI, RS-422, shielded	DOL-2312-G20MMA1	2029204
	• **Connection type head A:** Female connector, M23, 12-pin, straight • **Connection type head B:** Flying leads • **Signal type:** SSI, RS-422 • **Cable:** 30 m, 12-wire, PUR, halogen-free • **Description:** SSI, RS-422, shielded	DOL-2312-G30MMA1	2029205
	• **Connection type head A:** Flying leads • **Connection type head B:** Flying leads • **Signal type:** SSI, Incremental • **Items supplied:** By the meter • **Cable:** 12-wire, PUR, halogen-free • **Description:** SSI, Incremental, shielded	LTG-2512-MW	6027531
	• **Connection type head A:** Flying leads • **Connection type head B:** Flying leads • **Signal type:** SSI, TTL, HTL, Incremental • **Items supplied:** By the meter • **Cable:** 12-wire, UV and saltwater-resistant, PUR, halogen-free • **Description:** SSI, TTL, HTL, Incremental, shielded, Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, UV and saltwater resistant, 4 x 2 x 0.25 mm² + 2 x 0.5 mm² + 2 x 0.14 mm², Ø 7.8 mm	LTG-2612-MW	6028516
	• **Connection type head A:** Female connector, M23, 12-pin, straight, A-coded • **Signal type:** HIPERFACE®, SSI, Incremental • **Description:** HIPERFACE®, SSI, Incremental, shielded, Head A: female connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: Operating temperature: –20 °C ... +130 °C • **Connection systems:** Solder connection	DOS-2312-G	6027538
	• **Connection type head A:** Male connector, M23, 12-pin, straight, A-coded • **Signal type:** HIPERFACE®, SSI, Incremental, RS-422 • **Description:** HIPERFACE®, SSI, Incremental, RS-422, shielded, M23 male connector • **Connection systems:** Solder connection	STE-2312-G	6027537

	Brief description	Type	Part no.
	• **Connection type head A:** Female connector, M23, 12-pin, angled, A-coded • **Signal type:** HIPERFACE®, SSI, Incremental • **Description:** HIPERFACE®, SSI, Incremental, shielded, Head A: female connector, M23, 12-pin, angled, shielded, for cable diameter 4.2 mm … 6.6 mm Head B: - Operating temperature: –20 °C … +130 °C • **Connection systems:** Solder connection	DOS-2312-W01	2072580
	• **Connection type head A:** Female connector, M23, 12-pin, straight • **Connection type head B:** Flying leads • **Signal type:** SSI, RS-422, TTL, HTL • **Cable:** 10 m, 12-wire, PUR, halogen-free • **Description:** SSI, RS-422, TTL, HTL, shielded	DOL-2312-G10MMA1	2029203
	• **Connection type head A:** Female connector, M23, 9-pin, straight, A-coded • **Signal type:** HIPERFACE®, SSI, Incremental • **Description:** HIPERFACE®, SSI, Incremental, shielded, Head A: female connector, M23, 9-pin, straight, shielded, for cable diameter 5.5 mm … 10.5 mm Head B: Operating temperature: –20 °C … +130 °C • **Connection systems:** Solder connection	DOS-2309-G	6028533

Magnetic linear encoders

	Brief description	Type	Part no.
	• **System part:** Mounting gauge • **Measuring range:** 0 m … 1,700 m	KHM53-XXX01700	1030087
	• **System part:** Measuring element • **Measuring range:** 0 m … 1,700 m • **Code type:** Coded	KHT53-XXX01700	1030085
	• **System part:** Measuring element • **Measuring range:** 0 m … 1,700 m • **Code type:** Universal configurable	KHU53-XXX01700	1030086

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."

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