Data sheet

KHK53-AXB00054

KH53

MAGNETIC LINEAR ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	part no.
KHK53-AXB00054	1035443

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

Detailed technical data

Safety-related parameters

$MTTF_D$ (mean time to dangerous failure)	34 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 ... 54 m
Resolution	0.1 mm
Traversing speed	6.6 m/s [1]
Repeatability	1 mm
Measurement accuracy	± 2000 + 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

Electronics

Initialization time	2 s
Supply voltage	10 V ... 32 V
Current consumption	250 mA
Connection type	Male connector, M23, 12-pin

Mechanics

Weight	4.4 kg
Length of measuring element	See calculation example

Position tolerance	± 20 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	IP65, with mating plug inserted (IEC 60529)
Operating temperature range	–30 °C ... +70 °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.

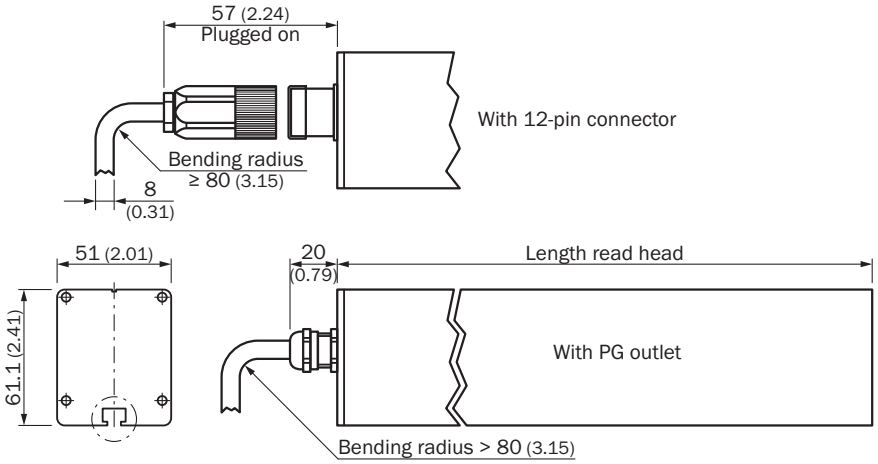
Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

Classifications

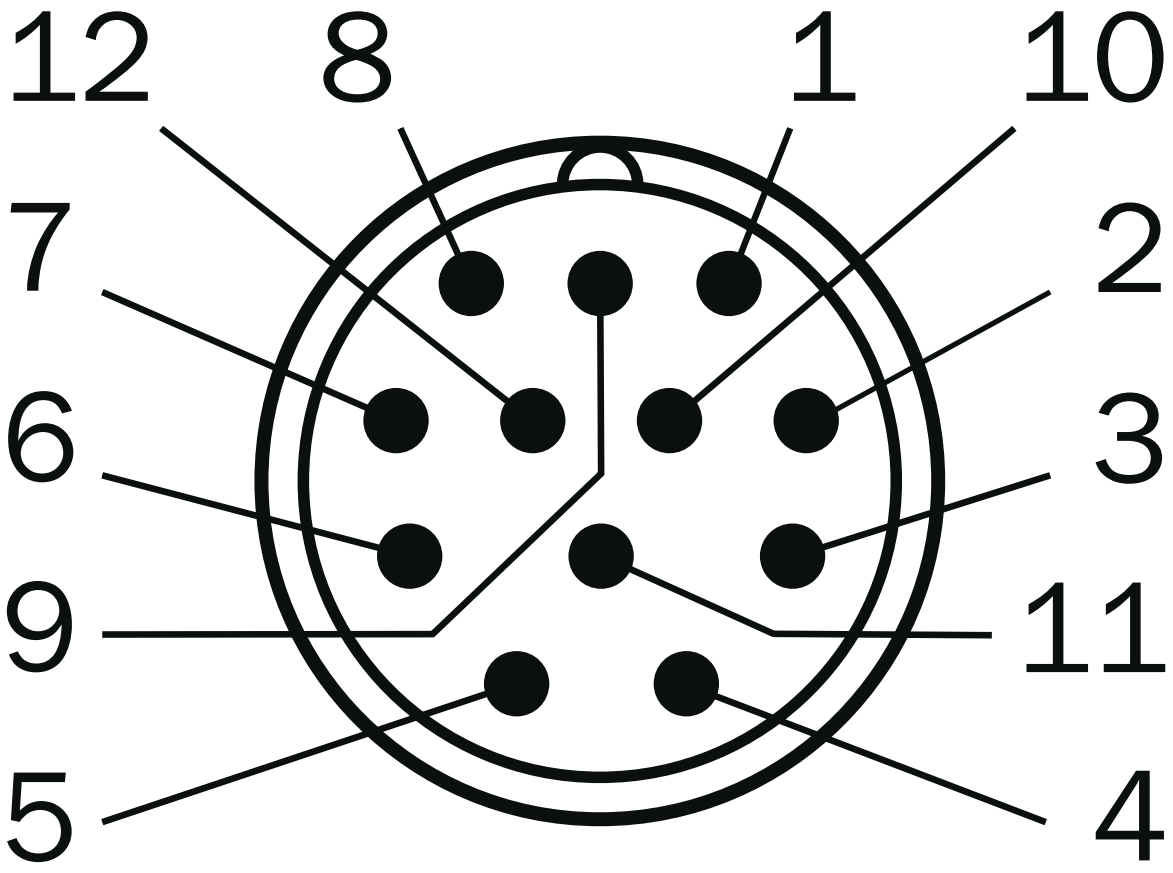
ECLASS 5.0	27270705
ECLASS 5.1.4	27270705
ECLASS 6.0	27270705
ECLASS 6.2	27270705
ECLASS 7.0	27270705
ECLASS 8.0	27270705
ECLASS 8.1	27270705
ECLASS 9.0	27270705
ECLASS 10.0	27270705
ECLASS 11.0	27270705
ECLASS 12.0	27274304
ETIM 5.0	EC002544
ETIM 6.0	EC002544
ETIM 7.0	EC002544
ETIM 8.0	EC002544
UNSPSC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

Dimensional drawing SSI read head



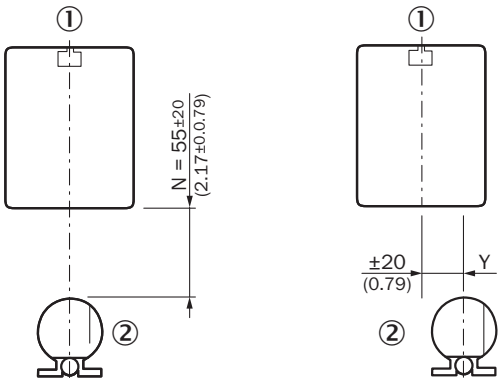
Dimensions in mm (inch)

PIN assignment SSI interface, view of M23 male device connector



PIN	Signal	Wire colors (cable connection)	Explanation
1	GND	Blue	Ground connection
2	Data +	White	Interface signals
3	Clock +	Yellow	Interface signals
4	R x D +	Gray	RS-422 programming lines
5	R x D -	Green	RS-422 programming lines
6	T x D +	Pink	RS-422 programming lines
7	T x D -	Black	RS-422 programming lines
8	U_S	Red	Supply voltage
9	N.C.	Orange	Not assigned
10	Data -	Brown	Interface signals
11	Clock -	Violet	Interface signals
12	N.C.	–	Not assigned

Position tolerance KH53 Advanced



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

Recommended accessories

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

	Brief description	Type	part no.
Mounting systems			
	• **Description:** Mounting bracket for KH53 measuring elements • **Items supplied:** Without mounting hardware for the background	BEF-WK-KHT53	2029159
	• **Description:** Spacer for KHT53 • **Items supplied:** Without mounting hardware for the background	BEF-KHA-KHT53	2042468

	Brief description	Type	part no.
connectors and cables			
	• **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, shielded, RS-422, TTL, HTL	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, shielded, RS-422, TTL, HTL	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, shielded, RS-422, TTL, HTL	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, shielded, RS-422	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, shielded, RS-422	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, shielded, Incremental	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, shielded, TTL, HTL, Incremental	LTG-2612-MW	6028516
	• **Connection type head A:** Female connector, M23, 12-pin, straight, A-coded • **Signal type:** HIPERFACE®, SSI, Incremental • **Description:** HIPERFACE®, shieldedSSIIncremental • **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®, shieldedSSIIncrementalRS-422 • **Connection systems:** Solder connection	STE-2312-G	6027537
	• **Connection type head A:** Female connector, M23, 12-pin, angled, A-coded • **Signal type:** HIPERFACE®, SSI, Incremental • **Description:** HIPERFACE®, shieldedSSIIncremental • **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, shielded, RS-422, TTL, HTL	DOL-2312-G10MMA1	2029203
	• **Connection type head A:** Female connector, M23, 9-pin, straight, A-coded • **Signal type:** HIPERFACE®, SSI, Incremental • **Description:** HIPERFACE®, shieldedSSIIncremental • **Connection systems:** Solder connection	DOS-2309-G	6028533
	• **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, shielded, RS-422, TTL, HTL	DOL-2312-G05MHA1	2059786

	Brief description	Type	part no.
programming devices			
	• **Product segment:** Programming devices • **Product family:** PGT-01-S • **Description:** Programming tool for ATM60, ATM90, and KH53 • **Items supplied:** Power supply, interface, link cable, encoder cable, and software	PGT-01-S	1030111
Linear encoders			
	• **System part:** Mounting gauge • **Measuring range:** 0 m ... 54 m	KHM53-XXX00054	1035447
	• **System part:** Measuring element • **Measuring range:** 0 m ... 54 m • **Code type:** Coded	KHT53-XXX00054	1035445
	• **System part:** Measuring element • **Measuring range:** 0 m ... 54 m • **Code type:** Universal configurable	KHU53-XXX00054	1035446

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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