



# KHK53-AXU00038

KH53

MAGNETIC LINEAR ENCODERS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	part no.
KHK53-AXU00038	1030051

Other models and accessories → [www.sick.com/KH53](http://www.sick.com/KH53)

### Detailed technical data

#### Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	45 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 m ... 38 m
<b>Resolution</b>	0.1 mm
<b>Traversing speed</b>	6.6 m/s <sup>1)</sup>
<b>Repeatability</b>	0.3 mm
<b>Measurement accuracy</b>	± 1000 + ME (Tu-25 °C) Tk μm <sup>2)</sup>

<sup>1)</sup> 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).

<sup>2)</sup> 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

<b>Communication interface</b>	SSI
<b>Position forming time</b>	+ 0.8 ms
<b>Interface, digital serial</b>	SSI, 24 Bit, gray
<b>Interface for parametrization</b>	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

<b>Initialization time</b>	2 s
<b>Supply voltage</b>	10 V ... 32 V
<b>Current consumption</b>	250 mA
<b>Connection type</b>	Cable, 12-wire, 10 m

#### Mechanics

<b>Weight</b>	2.4 kg
<b>Length of measuring element</b>	See calculation example

<b>Position tolerance</b>	± 10 mm, see positional tolerances diagram
<b>Read head material</b>	AlMgSiPbF28

#### Ambient data

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

<sup>1)</sup> EMC according to the standards quoted is achieved if shielded cables are used.

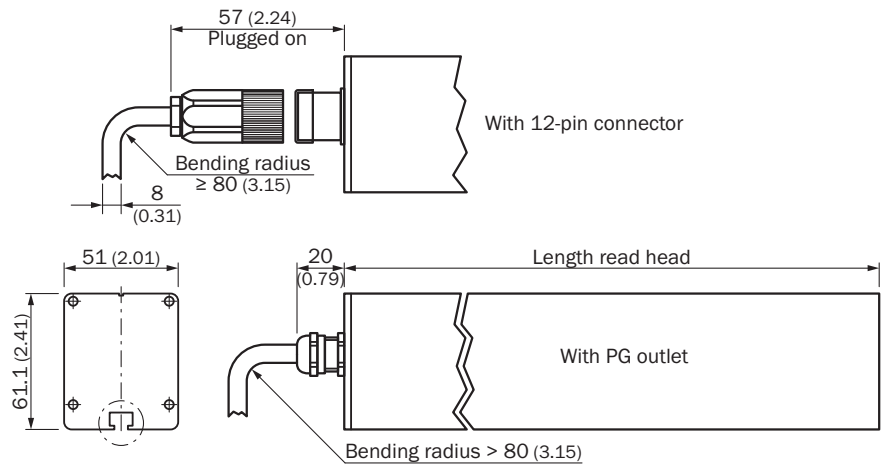
#### Certificates

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

#### Classifications

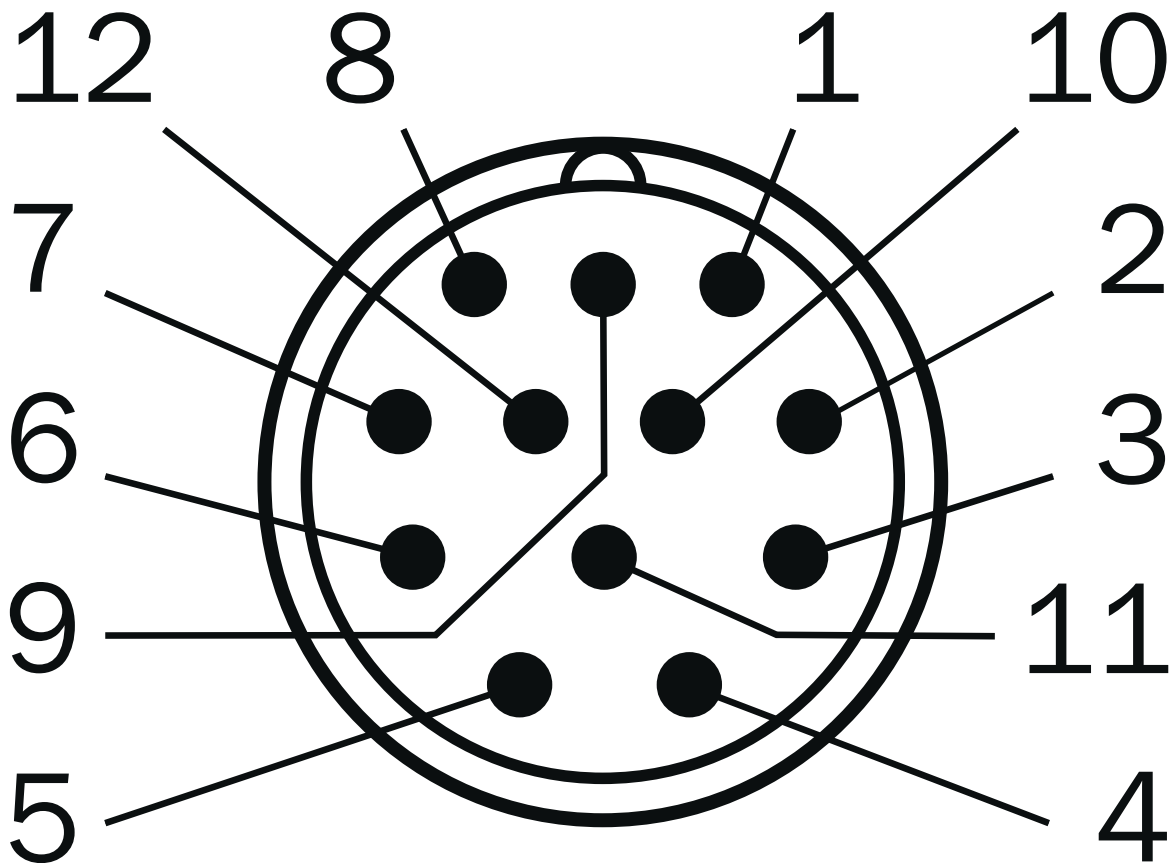
<b>ECLASS 5.0</b>	27270705
<b>ECLASS 5.1.4</b>	27270705
<b>ECLASS 6.0</b>	27270705
<b>ECLASS 6.2</b>	27270705
<b>ECLASS 7.0</b>	27270705
<b>ECLASS 8.0</b>	27270705
<b>ECLASS 8.1</b>	27270705
<b>ECLASS 9.0</b>	27270705
<b>ECLASS 10.0</b>	27270705
<b>ECLASS 11.0</b>	27270705
<b>ECLASS 12.0</b>	27274304
<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 SSI read head



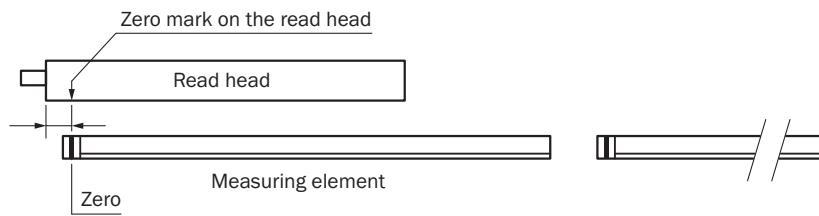
Dimensions in mm (inch)

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 <sub>s</sub>	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 Start of measuring path








### Recommended accessories

Other models and accessories → [www.sick.com/KH53](http://www.sick.com/KH53)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket for KH53 measuring elements</li> <li><b>Items supplied:</b> Without mounting hardware for the background</li> </ul>	BEF-WK-KHT53	2029159
	<ul style="list-style-type: none"> <li><b>Description:</b> Spacer for KHT53</li> <li><b>Items supplied:</b> Without mounting hardware for the background</li> </ul>	BEF-KHA-KHT53	2042468

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li><b>Cable:</b> 1.5 m, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G1M5MA1	2029200
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li><b>Cable:</b> 3 m, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G03MMA1	2029201
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li><b>Cable:</b> 5 m, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G05MMA1	2029202
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, RS-422</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, RS-422</li> <li><b>Cable:</b> 20 m, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G20MMA1	2029204
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, RS-422</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, RS-422</li> <li><b>Cable:</b> 30 m, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G30MMA1	2029205
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, Incremental</li> <li><b>Connection type head A:</b> Flying leads</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, Incremental</li> <li><b>Items supplied:</b> By the meter</li> <li><b>Cable:</b> 12-wire, PUR, halogen-free</li> </ul>	LTG-2512-MW	6027531
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, TTL, HTL, Incremental</li> <li><b>Connection type head A:</b> Flying leads</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, TTL, HTL, Incremental</li> <li><b>Items supplied:</b> By the meter</li> <li><b>Cable:</b> 12-wire, UV and saltwater-resistant, PUR, halogen-free</li> </ul>	LTG-2612-MW	6028516
	<ul style="list-style-type: none"> <li><b>Description:</b> HIPEFACE<sup>®</sup>, shielded, SSI, Incremental</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight, A-coded</li> <li><b>Signal type:</b> HIPEFACE<sup>®</sup>, SSI, Incremental</li> <li><b>Connection systems:</b> Solder connection</li> </ul>	DOS-2312-G	6027538
	<ul style="list-style-type: none"> <li><b>Description:</b> HIPEFACE<sup>®</sup>, shielded, SSI, Incremental, RS-422</li> <li><b>Connection type head A:</b> Male connector, M23, 12-pin, straight, A-coded</li> <li><b>Signal type:</b> HIPEFACE<sup>®</sup>, SSI, Incremental, RS-422</li> <li><b>Connection systems:</b> Solder connection</li> </ul>	STE-2312-G	6027537
	<ul style="list-style-type: none"> <li><b>Description:</b> HIPEFACE<sup>®</sup>, shielded, SSI, Incremental</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, angled, A-coded</li> <li><b>Signal type:</b> HIPEFACE<sup>®</sup>, SSI, Incremental</li> <li><b>Connection systems:</b> Solder connection</li> </ul>	DOS-2312-W01	2072580
	<ul style="list-style-type: none"> <li><b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li><b>Cable:</b> 10 m, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G10MMA1	2029203
	<ul style="list-style-type: none"> <li><b>Description:</b> HIPEFACE<sup>®</sup>, shielded, SSI, Incremental</li> <li><b>Connection type head A:</b> Female connector, M23, 9-pin, straight, A-coded</li> <li><b>Signal type:</b> HIPEFACE<sup>®</sup>, SSI, Incremental</li> </ul>	DOS-2309-G	6028533

	Brief description	Type	part no.
	<ul style="list-style-type: none"> <li><b>Connection systems:</b> Solder connection</li> <li><b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li><b>Cable:</b> 5 m, 12-wire, PUR, halogen-free</li> </ul>	DOL-2312-G05MHA1	2059786
programming devices			
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Programming devices</li> <li><b>Product:</b> PGT-01-S</li> <li><b>Description:</b> Programming tool for ATM60, ATM90, and KH53</li> <li><b>Items supplied:</b> Power supply, interface, link cable, encoder cable, and software</li> </ul>	PGT-01-S	1030111
Linear encoders			
	<ul style="list-style-type: none"> <li><b>System part:</b> Mounting gauge</li> <li><b>Measuring range:</b> 0 m ... 38 m</li> </ul>	KHM53-XXX00038	1030057
	<ul style="list-style-type: none"> <li><b>System part:</b> Measuring element</li> <li><b>Measuring range:</b> 0 m ... 38 m</li> <li><b>Code type:</b> Coded</li> </ul>	KHT53-XXX00038	1030055
	<ul style="list-style-type: none"> <li><b>System part:</b> Measuring element</li> <li><b>Measuring range:</b> 0 m ... 38 m</li> <li><b>Code type:</b> Universal configurable</li> </ul>	KHU53-XXX00038	1030056

## 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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