Product data sheet

KHK53-PXF00548

KH53

MAGNETIC LINEAR ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
KHK53-PXF00548	1036168

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

Detailed technical data

Performance

Measuring range	0 m ... 548 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	PROFIBUS DP [1]
Bus interface	RS-485, according to EN 50 170-2 (DIN 19245 Parts 1–3) electrically isolated by optocoupler
Position forming time	+ 1.1 ms
Address setting	0 ... 127, Hex switches or Protocol
Data protocol	PROFIBUS DP basic functions (DP-V0)
Bus termination	Via external switches
Set (electronic adjustment)	Via protocol
Encoder profile	Profile for encoders (07hex) – Class 2
Data transmission rate (baud rate)	9.6 kBaud ... 12 MBaud, Automatic detection
Status information	Operation (green LED) Bus activity (red LED)

[1] According to EN 50 170-2 (DIN 19245 Parts 1–3) electrically isolated by optocoupler.

Electrical data

Initialization time	2 s
Supply voltage	10 V ... 32 V
Power consumption	2.5 W
Connection type	Male connector, 3x, M12

[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.

MTTFd: mean time to dangerous failure	20 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	6.7 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	IP67, with mating connector 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)

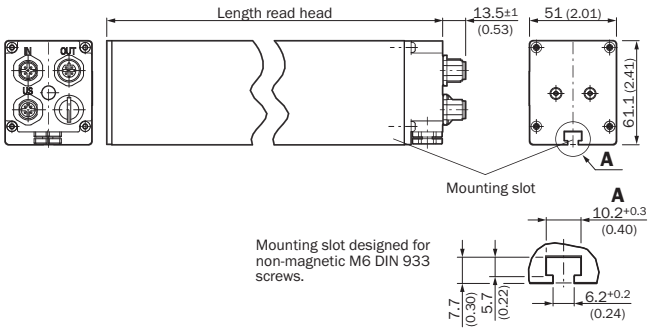
[1] EMC according to the standards quoted is achieved if shielded cables are used.

Classifications

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

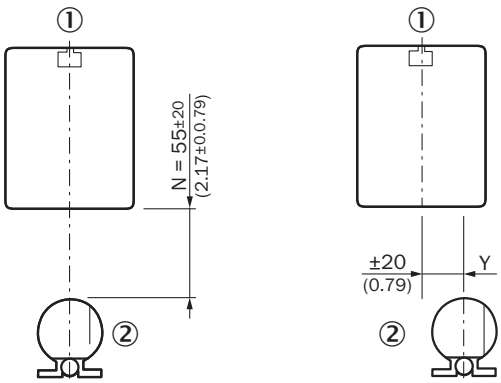
Dimensional drawing (Dimensions in mm (inch))

Read head PROFIBUS



Position tolerance

KH53 Advanced

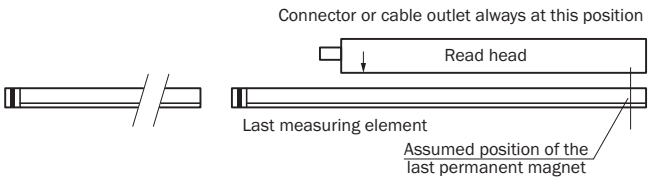


All dimensions in mm (inch)

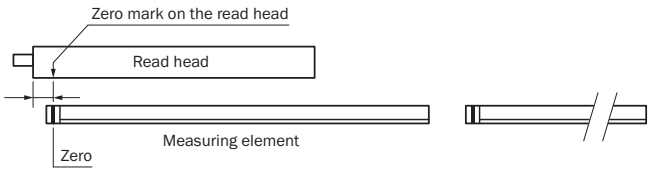
The operating reliability and accuracy of the measuring system depends on (amongst other things) compliance with the position tolerances. Magnetic or magnetizable materials are not permitted within 80 mm of the encoder or the measuring element.

① Read head
② Measuring element

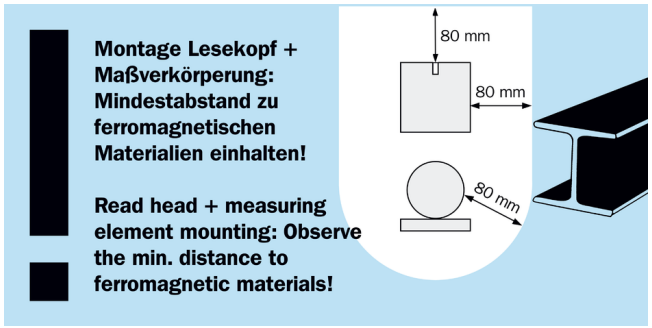
End of measurement path



Start of measuring path



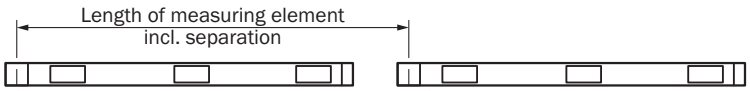
Assembly note



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 PROFIBUS Advanced



Measring range up to	Read head length	Length of measuring element including distance	Mounting systems per measuring element (suggestion)
53.50 m	1.599 m	1.408 m Identification letters F1 ... ≤ F39	3 clamp holders or 6 mounting brackets
546.40 m	2.525 m	2.3552 m Identification letters G1 ... ≤ G233	4 clamp holders or 8 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
Plug connectors and cables			
	Head A: Flying leads Head B: Flying leads Cable: PROFIBUS DP, PUR, shielded	LTG-2102-MW	6021355

	Brief description	Type	Part no.
	Head A: female connector, M12, 5-pin, straight, B-coded Head B: Flying leads Cable: PROFIBUS DP, twisted pair, PUR, halogen-free, shielded, 30 m	DOL-1205-G30MQ	6032639
	Head A: female connector, M12, 5-pin, straight, B-coded Head B: Flying leads Cable: PROFIBUS DP, twisted pair, PUR, halogen-free, shielded, 50 m	DOL-1205-G50MQ	6032861
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A14-050VB3XLEAX	2096235
	Head A: female connector, M12, 2-pin, straight, B-coded Head B: Flying leads Cable: Fieldbus, PROFIBUS DP, PUR, halogen-free, shielded, 5 m	YF2B22-050PB1XLEAX	2121936
	Head A: female connector, M12, 2-pin, straight, B-coded Head B: Flying leads Cable: Fieldbus, PROFIBUS DP, PUR, halogen-free, shielded, 10 m	YF2B22-100PB1XLEAX	2106269
	Head A: female connector, M12, 2-pin, straight, B-coded Head B: Flying leads Cable: Fieldbus, PROFIBUS DP, PUR, halogen-free, shielded, 15 m	YF2B22-150PB1XLEAX	2106272
	Head A: female connector, M12, 2-pin, straight, B-coded Head B: Flying leads Cable: Fieldbus, PROFIBUS DP, PUR, halogen-free, shielded, 20 m	YF2B22-200PB1XLEAX	2106273
	Head A: male connector, M12, 2-pin, straight, B-coded Head B: Flying leads Cable: Fieldbus, PROFIBUS DP, PUR, halogen-free, shielded, 5 m	YM2B22-050PB1XLEAX	2106270
	Head A: male connector, M12, 2-pin, straight, B-coded Head B: Flying leads Cable: Fieldbus, PROFIBUS DP, PUR, halogen-free, shielded, 10 m	YM2B22-100PB1XLEAX	2106271
	Head A: male connector, M12, 2-pin, straight, B-coded Head B: Flying leads Cable: Fieldbus, PROFIBUS DP, PUR, halogen-free, shielded, 15 m	YM2B22-150PB1XLEAX	2106276
	Head A: female connector, M12, 4-pin, straight Cable: unshielded	DOS-1204-G	6007302
	Head A: female connector, M12, 5-pin, straight, B-coded Cable: PROFIBUS DP, shielded	DOS-1205-GQ	6021353
	Head A: male connector, M12, 5-pin, straight, B-coded Cable: PROFIBUS DP, shielded	STE-1205-GQ	6021354
	Head A: male connector, M12, 4-pin, straight, B-coded Cable: PROFIBUS DP, terminal resistor	STE-END-Q	6021156
Terminal and alignment brackets			
	Spacer for KHT53, without mounting hardware for the background	BEF-KHA-KHT53	2042468
Magnetic linear encoders			
	• **System part:** Mounting gauge • **Measuring range:** 0 m ... 548 m	KHM53-XXX00548	1035453
	• **System part:** Measuring element • **Measuring range:** 0 m ... 548 m • **Code type:** Coded	KHT53-XXX00548	1035451

	Brief description	Type	Part no.
	• **System part:** Measuring element • **Measuring range:** 0 m ... 548 m • **Code type:** Universal configurable	KHU53-XXX00548	1035452

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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