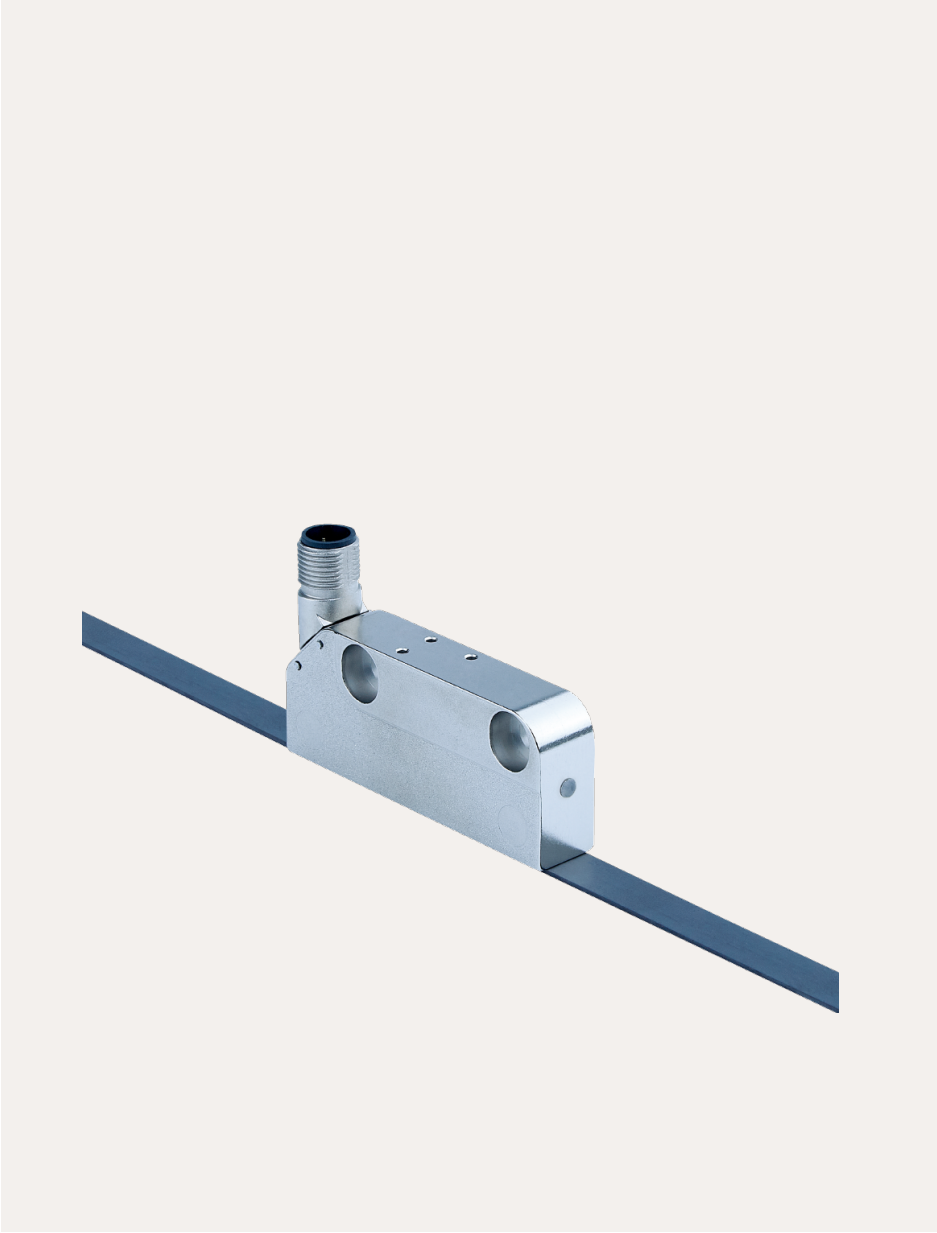
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DATA SHEET

STL70-2HA8

STL70-S
Safe motor feedback systems

SICK Sensor Intelligence

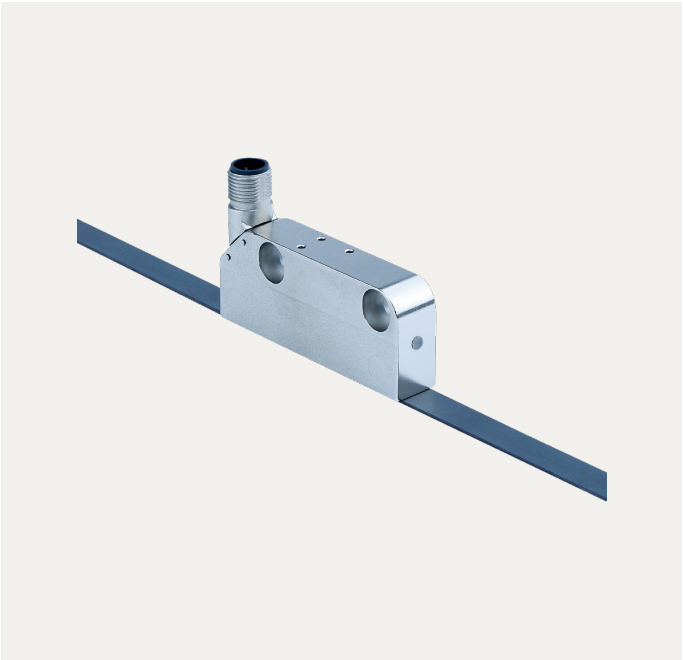


Illustration may differ

SAFE MOTOR FEEDBACK SYSTEMS

STL70-2HA8

ORDERING INFORMATION

Type	part no.
STL70-2HA8	1135012

Further device versions and accessories at www.sick.com/STL70-S

DETAILED TECHNICAL DATA

FEATURES

Items supplied	Magnetic tape not included with delivery

SAFETY-RELATED PARAMETERS

Safety integrity level	SIL 2 (IEC 61508), Max. SIL2 (EN 62061) [1]
Category	3 (EN ISO 13849)
Maximum demand rate	Continuous (analog signals)
Performance level	PL d (EN ISO 13849)
PFH (mean probability of a dangerous failure per hour)	1.94×10^{-8} [2]
T_M (mission time)	20 years (EN ISO 13849)
Safety-related accuracy	± 0.5 mm, = ± 1/4 pin length
Safety-related measuring step	0.25 mm

[1] For more detailed information on the exact configuration of your machine/unit, please consult your relevant SICK branch office.

[2] The specified values apply to a diagnostic coverage rate of 90%, which must be achieved by the external drive system.

PERFORMANCE

Measuring range	0 mm ... 16,384 mm
Resolution	0.488 µm, For interpolation of the sine/cosine signals with e.g. 12 bit
Length of period	2 mm
Traversing speed	4.5 m/s up to which the absolute position can be reliably produced ≤ 10 m/s Maximum traversing speed when switching on
Repeatability	< 1 µm
Max. reading distance	0.8 mm

INTERFACES

Communication interface	HIPERFACE®

ELECTRONICS

Supply voltage	7 V DC ... 12 V DC
Current consumption	< 200 mA
Connection type	Male connector, M12, 8-pin, universal [1]
Status display	RGB LED

[1] The universal connection is rotatable so that it is possible to position the conector in the radial or axial direction.

MECHANICS

Dimensions	See dimensional drawing
Scope of delivery	Magnetic tape not included with delivery
Read head material	Zinc diecast

AMBIENT DATA

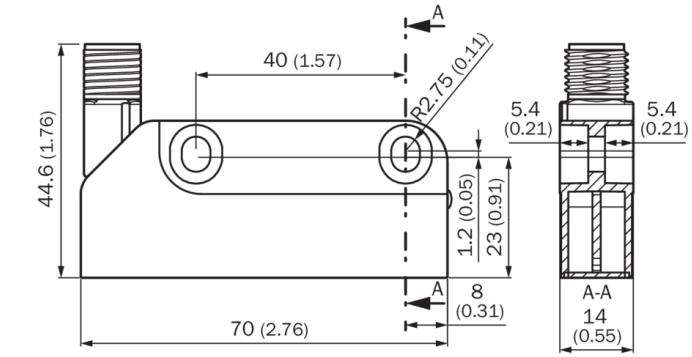
EMC	According to EN 61000-6-2, EN 61000-6-3 and IEC 61000-6-7 [1]
Enclosure rating	IP65, with mating plug inserted (IEC 60529)
Operating temperature range	–30 °C ... +85 °C
Storage temperature range	–40 °C ... +85 °C, without package
Permissible relative humidity	100 %, condensation permitted
Operating height (above sea level)	2,000 m
Resistance to shocks	500 m/s², 11 ms (EN 60068-2-27)
Resistance to vibration	100 m/s², 10 Hz ... 2,000 Hz (EN 60068-2-6)

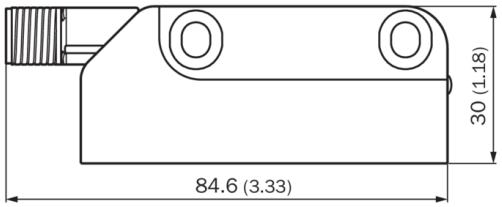
[1] According to the listed standards, EMC is guaranteed if the motor feedback system is connected to the central grounding point of the motor controller via a cable shield and the encoder housing lays over a large area of the motor potential. If other shielding concepts are used, users must perform their own test.

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
EC-Type-Examination approval	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

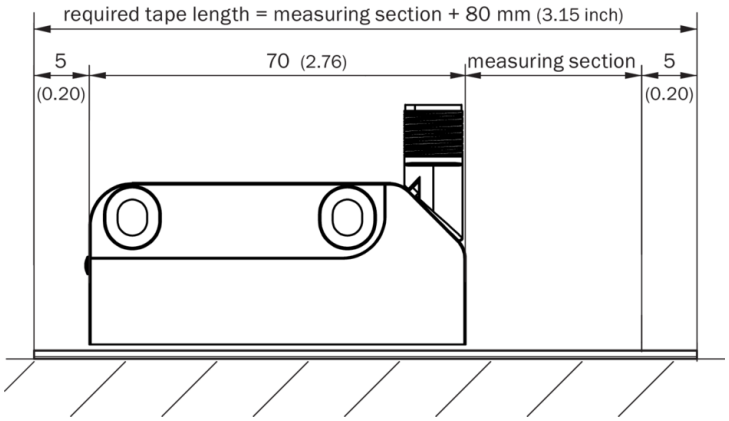
DIMENSIONAL DRAWING



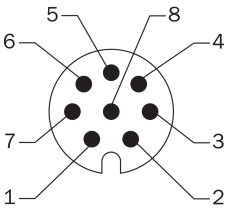


Dimensions in mm (inch)

ORDER NOTE FOR MAGNETIC TAPE LENGTH



ANSCHLUSSBELEGUNG HIPERFACE®

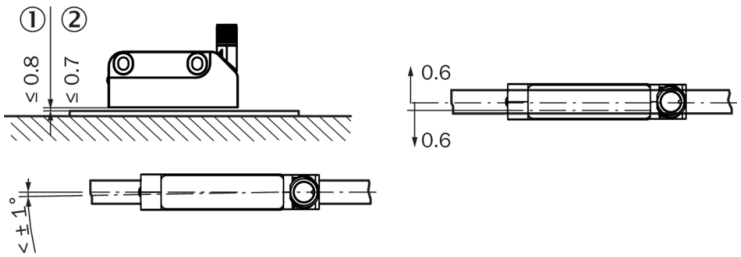


M12 male connector, 8-pin

PIN	Signal	Explanation
1	REFSIN	Process data channel
2	+ SIN	Process data channel
3	REFCOS	Process data channel
4	+ COS	Process data channel
5	Data +	Parameter channel RS 485
6	Data -	Parameter channel RS 485

PIN	Signal	Explanation
7	GND	Ground connection
8	U_s	Supply voltage
–	–	Housing

POSITION TOLERANCE



① Without cover strip
② With cover strip

OPERATION NOTE OVERVIEW OF SUPPORTED COMMANDS FOR HIPERFACE®

Overview of supported commands			STL70
Command byte	**Function**	**Code 0** [1]	**Comments**
42h	Read position (5 bits per sine/cosine period)		62.5 µm (2 mm system)
43h	Set position	■	
44h	Read analog value		Channel number 48h
			Temperature [°C] [2]
46h	Read counter		
47h	Increase counter		
49h	Reset counter	■	
4Ah	Read data		
4Bh	Save data		
4Ch	Determine status of a data field		
4Dh	Create data field		
4Eh	Determine available memory area		
4Fh	Change access code		
50h	Read encoder status		
52h	Read out name plate		Encoder type = FFh
53h	Encoder reset		
55h	Allocate encoder address	■	
56h	Read serial number and program version		
57h	Configure serial interface	■	
67h	Change serial interface temporary		
6Ah	Set position with interanal synchronization	■	
6Bh	Sensor adjustment (during commissioning)	■	

[1] The commands thus marked include the parameter "Code 0". Code 0 is a byte inserted into the protocol to provide additional protection of vital system parameters against accidental overwriting. When the device is supplied, "Code 0" = 55h.

[2] The temperature value will be reliably formed approx. 2 s after power on/reset or at command.

OPERATION NOTE OVERVIEW OF STATUS MESSAGES FOR HIPERFACE®

Error type	Status code	Description	STL70
	00h	The encoder has recognized no error	■
Initialization	01h	Adjustment data faulty	■
	02h	Faulty internal angular offset	■
	03h	Data field partitioning table destroyed	■
	04h	Analog limit values not available	■
	05h	Internal I^2C bus not operational	■
	06h	Internal checksum error	■
Protocol	09h	Parity error	■
	0Ah	Checksum of the data transmitted data is incorrect	■
	0Bh	Unknown command code	■
	0Ch	Number of data transmitted is incorrect	■
	0Dh	Command argument transmitted is not allowed	■
Data	0Eh	The selected data field may not be written to	■
	0Fh	Incorrect access code	■
	10h	Size of data field stated cannot be changed	■
	11h	Word address states, is outside data field	■
	12h	Access to non-existent data field	■
Position	20h	Sensor is not adjusted or is in adjustment mode	■
	21h	Distance magnetic tape/sensor too high	■
	23h	Positional error	■
Other	1Ch	Monitoring the value of analog signals (process data)	■
	1Eh	Encoder temperature critical	■
	08h	Counter overflow	

For more information on the interface see HIPERFACE® - description, part no. 8010701

OPERATION NOTE MODEL-SPECIFIC SETTINGS

Type-specific settings	STL70
Model ID (command 52h)	FFh
Free E^2PROM [bytes]	1.792
Address	40h
Mode_485[1)]	E4h
Codes 0 to 3	55h
Counter	0

1) The linear length measuring system STL/ETL70 supports the following baud rates: 600, 9200, 19200 und 38400.

OPERATION NOTE CHARACTERSITICS APPLICABLE TO ALL PERMISSIBLE ENVIRONMENTAL CONDITIONS

Signal	Values/unit
Signal peak, peak V_{SS} of SIN, COS	0.9 V ... 1.1 V
Signal offset REFSIN, REFCOS	2.2 V ... 2.8 V

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1135012

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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