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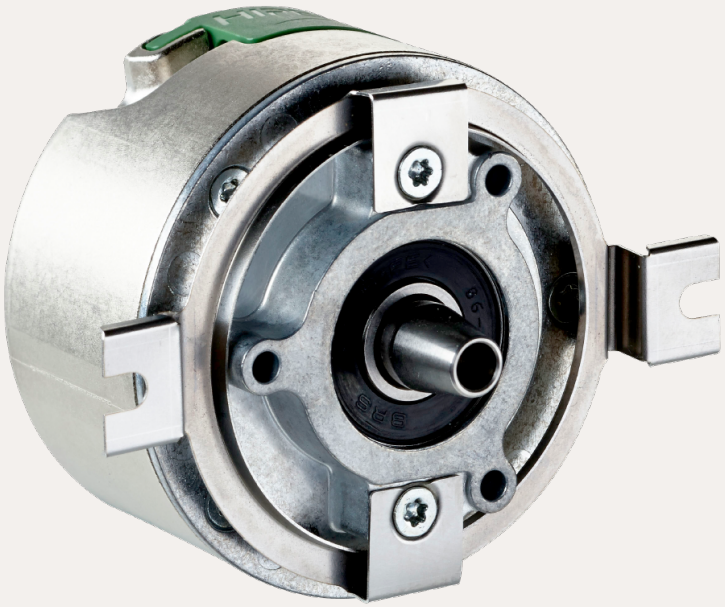


DATA SHEET

EFS50-0KF0A023A

EFS/EFM50
Motor feedback systems

SICK Sensor Intelligence

Illustration may differ

MOTOR FEEDBACK SYSTEMS

EFS50-0KF0A023A

ORDERING INFORMATION

Type	part no.
EFS50-0KF0A023A	1073501

Further device versions and accessories at www.sick.com/EFS_EFM50

DETAILED TECHNICAL DATA

SAFETY-RELATED PARAMETERS

Test rate	1 h

PERFORMANCE

Position	
Resolution per revolution	23 bit
System accuracy	± 50 ″
Signal noise (σ)	± 2 ″
Number of the absolute ascertainable revolutions	1
Available memory area	8,192 Byte
Measurement step per revolution	8,388,608
Measurement principle	Optical

INTERFACES

Code sequence	Increasing, when turning the shaft For clockwise rotation, looking in direction “A” (see dimensional drawing)
Communication interface	HIPERFACE DSL®
Initialization time	Max. 500 ms [1]
Measurement external temperature resistance	32-bit value, without prefix (1 Ω) 0 ... 209.600 Ω [2]

[1] From reaching a permitted operating voltage.

[2] Without sensor tolerance; at –17 °C ... +167 °C: NTC +-2K (103 GT); PTC+-3K (KTY84/130/PT1000).

ELECTRONICS

Connection type	Male connector, 4-pin
Supply voltage	7 V ... 12 V
Warm-up time voltage ramp	Max. 180 ms [1]
Current consumption	≤ 150 mA [2]
Output frequency for the digital positionvalue	0 kHz ... 75 kHz

[1] Duration of the voltage ramp between 0 and 7.0 V, see diagram “Current consumption” in the diagram section.

[2] Current rating applies when using interface circuit suggestions as shown in HIPERFACE DSL ® manual (8017595).

MECHANICS

Shaft version	Tapered shaft
Flange type / stator coupling	Stator coupling
Dimensions	See dimensional drawing
Weight	0.2 kg
Moment of inertia of the rotor	10 gcm²
Operating speed	≤ 12,000 min⁻¹
Angular acceleration	≤ 200,000 rad/s²
Start up torque	≤ 0.4 Ncm
Permissible radial shaft movement	± 0.2 mm [1]
Permissible axial shaft movement	± 0.95 mm
Permissible movement static	± 0.2 mm, radial ± 0.95 mm, axial
Permissible movement dynamic	± 0.025 mm, radial
Life of ball bearings	See diagram 3

[1] Permitted when using the elastomer stator coupling. When the spring plate stator coupling is being used, voltage-free mounting is assumed.

AMBIENT DATA

Operating temperature range	–30 °C ... +120 °C [1]
Storage temperature range	–40 °C ... +120 °C, without package
Relative humidity/condensation	90 %, Condensation not permitted
Resistance to shocks	100 g, 6 ms, 6 ms (according to EN 60068-2-27)
Frequency range of resistance to vibrations	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)
EMC	According to EN 61000-6-2, EN 61000-6-3 and IEC 61326-3-1 [2]
Enclosure rating	IP40, with mating plug inserted and closed cover (IEC 60529-1)

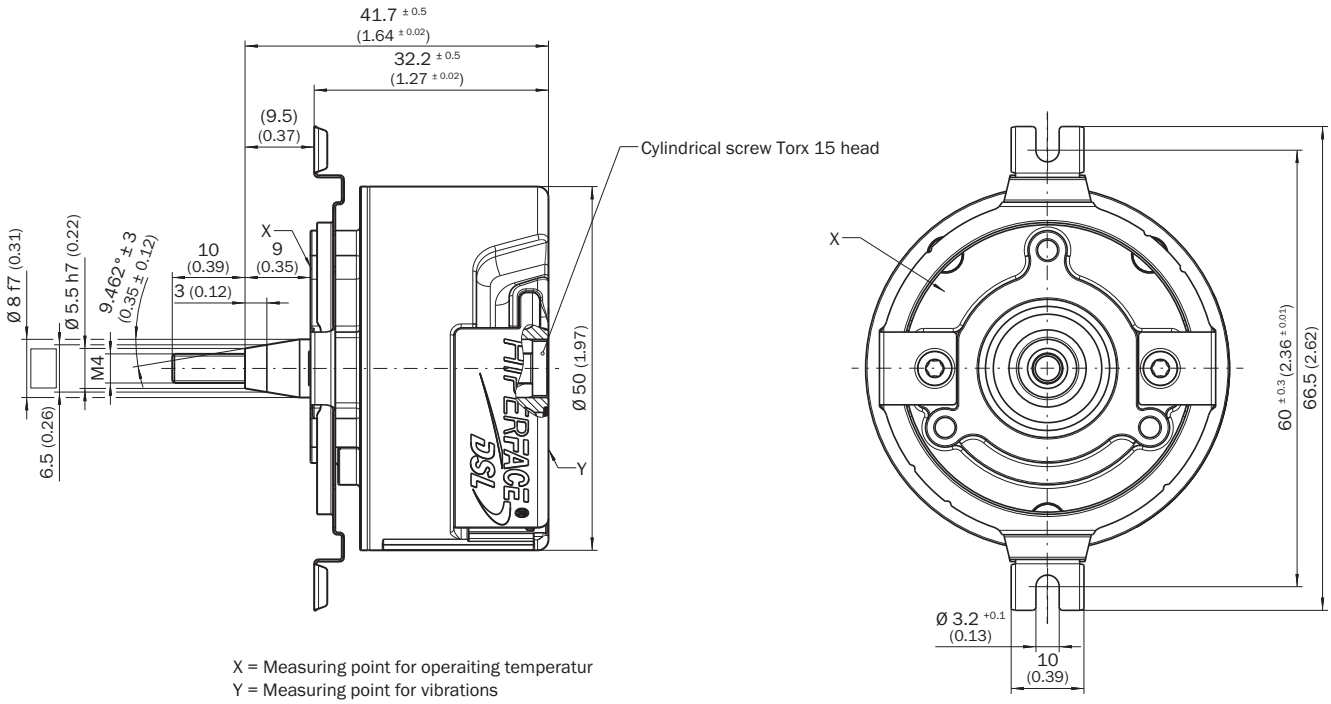
[1] The max. internal sensor temperature may not exceed 125 °C. The defined measuring point on the encoder (see dimensional drawing) must be used for measuring the operating temperature. For typical values for self-heating, see diagram 3 (electrical) and diagram 4 (mechanical).

[2] EMC according to the listed standards is guaranteed if the motor feedback system with mating plug inserted is connected to the central grounding point of the motor controller via a cable shield. If other screening concepts are used, users must perform their own tests.

CERTIFICATES

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

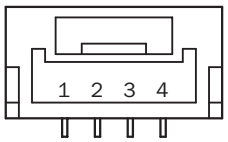
DIMENSIONAL DRAWING



X = Measuring point for operaiting temperatur
Y = Measuring point for vibrations

Dimensions in mm (inch)

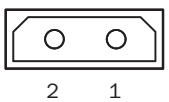
ANSCHLUSSBELEGUNG SUPPLY/COMMUNICATION PIN ASSIGNMENT



integrated in motor cable = J, K

PIN	Signal	Explanation
1	–	Not connected - no function
2	+U_s/DSL+	Supply 7 V ... 12 V
3	GND/DSL-	Ground connection
4	–	Not connected - no function
Recommended outer diameter of set of stranded wires: 4 mm +0/-0.3 mm		
Recommended mating connector: JST (GHR-04V-S)		

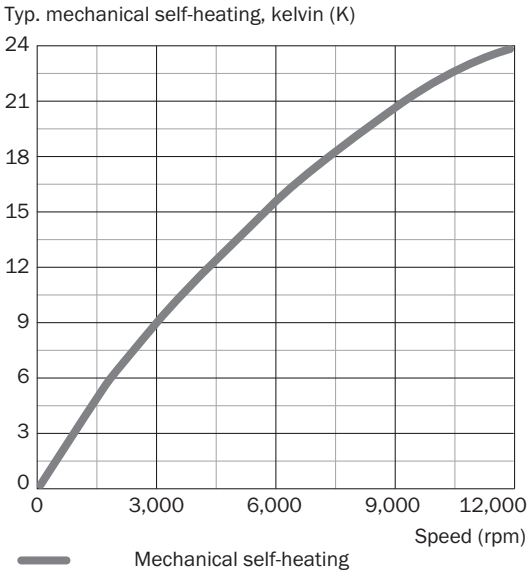
ANSCHLUSSBELEGUNG TEMPERATURE SENSOR PIN ASSIGNMENT



PIN	Signal	Explanation
1	T+	Thermistor connection
2	T-	Thermistor connection (to ground)
Recommended outer diameter of set of stranded wires: 2.2 mm ± 0.1 mm		
Recommended mating connector: Harwin M80-8990205		

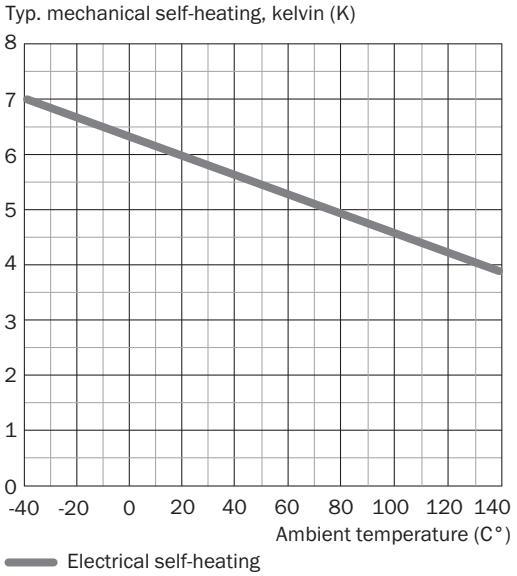
DIAGRAMS MECHANICAL SELF-HEATING

Diagram 4



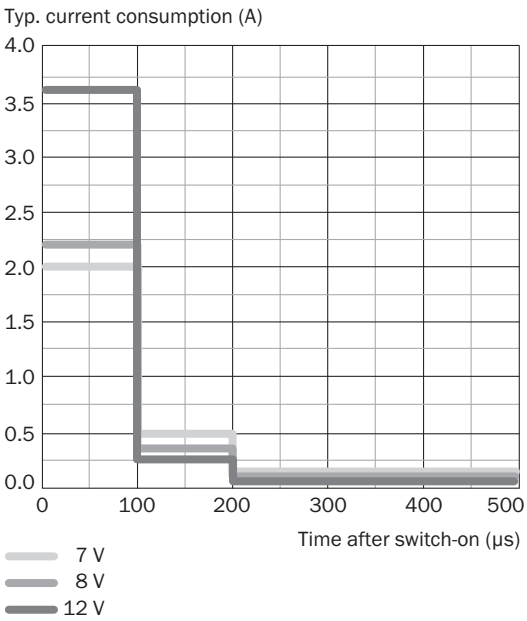
DIAGRAMS ELECTRICAL SELF-HEATING

Diagram 3



DIAGRAMS POWER CONSUMPTION

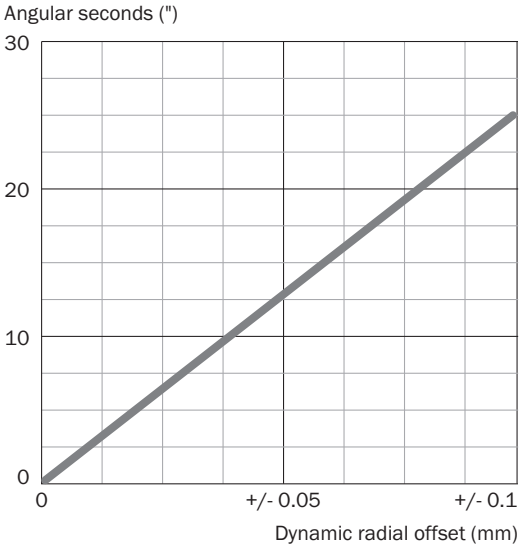
Diagram 2



This diagram shows the switch-on current

DIAGRAMS ERROR LIMITS

Diagram 1



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/1073501

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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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