EFS50-0KF0A023A

EFS/EFM50

MOTOR FEEDBACK SYSTEMS ROTARY HIPERFACE DSL®

SICK
Sensor Intelligence.
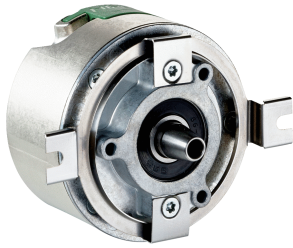
Ordering information

Type	Part no.
EFS50-0KF0A023A	1073501

Other models and accessories ➔ www.sick.com/EFS_EFM50

Detailed technical data

Safety-related parameters

Test rate	1 h

Performance

Resolution per revolution	23 bit 1 bit
Number of the absolute ascertainable revolutions	1
Measuring step per revolution	8,388,608
Signal noise (σ)	± 2
Error limits positional values integral non-linearity in angular seconds	± 45 [1]
Error limits positional values differential non-linearity in angular seconds	± 5 [1]
System accuracy	± 50
Max. speed when switching on and resetting the motor feedback system	≤ 6,000 min^{-1}
Available memory area	8,192 Byte

[1] See diagrams regarding the error limits.

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]
Available memory area	8,192 Byte

[1] From reaching a permitted operating voltage.
[2] Without sensor tolerance; at −17 °C ... +167 °C: NTC +-2K (103 GT); PTC+-3K (KTY84/130).

Electrical data

Supply voltage range	7 V … 12 V
Warm-up time voltage ramp	Max. 180 ms [1]
Operating current	Max. 150 mA [2]
Operating power consumption (no load)	≤ 150 mA
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).

Mechanical data

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 shaft movement, radial static, dynamic	± 0.2 mm, 0.1 mm
Permissible shaft movement, axial static, dynamic	± 0.95 mm, ± 0 mm
Permissible radial shaft movement	± 0.2 mm [1]
Permissible axial shaft movement	± 0.95 mm
Life of ball bearings	See diagram 3
Connection type	Connector, 4-pin

[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 (according to EN 60068-2-6)
EMC	According to EN 61000-6-2, EN 61000-6-3 and IEC61326-3-1 [2]
Enclosure rating	IP40, with mating connector inserted and closed cover (acc. to EN 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).
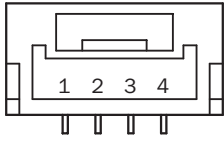
[2] EMC according to the listed standards is guaranteed if the motor feedback system with mating plug inserted is connected to the central grounding point of the motor controller via a cable shield. If other screening concepts are used, users must perform their own tests.

Classifications

ECl@ss 5.0	27270590
ECl@ss 5.1.4	27270590

ECI@ss 6.0	27270590
ECI@ss 6.2	27270590
ECI@ss 7.0	27270590
ECI@ss 8.0	27270590
ECI@ss 8.1	27270590
ECI@ss 9.0	27270590
ETIM 5.0	EC001486
ETIM 6.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing (Dimensions in mm (inch))

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

Proposed fitting

*) Size of tolerance reduce the allowed movement of the shaft, see data sheet.
Thread holes according DIN 13 with counterbore according DIN 76 min. 1.05 x diameter of thread.

PIN assignment

Supply / Communication pin assignment

Integrated in the motor cable = J, K

PIN	Signal	Explanation
1		not connected
2	+U_S/DSL+	Power supply/DSL-Data
3	GND/DSL−	Ground connection/DSL-Data
4		not connected

Recommended outer diameter of stranded cable: 4 mm +0/−0.3 mm
Recommended mating connector: JST (GHR-04V-S)

Temperature sensor pin assignment
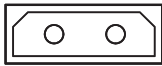
PIN	Signal	Explanation
1	T+	Thermistor connection
2	T−	Thermistor connection (Ground)

Recommended outer diameter of stranded cable: 2.2 mm ± 0.1 mm
Recommended mating connector: Harwin M80-8990205

Diagram

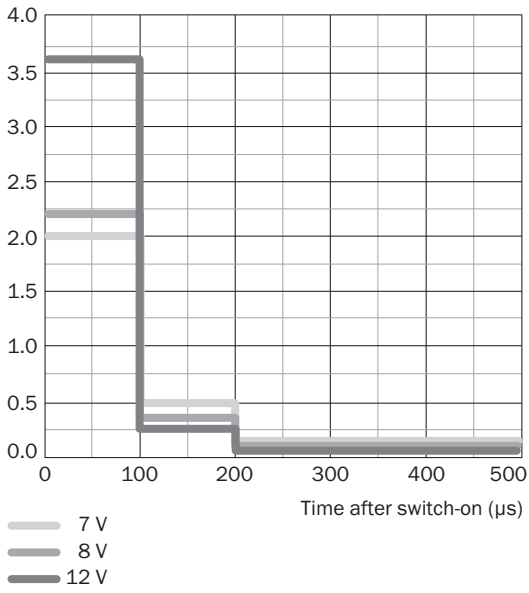Electrical self-heating

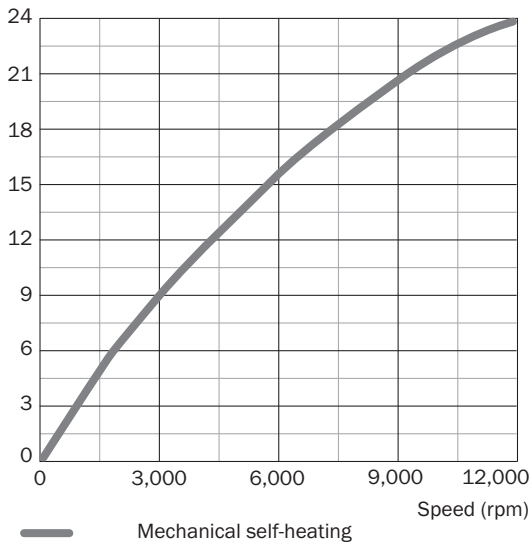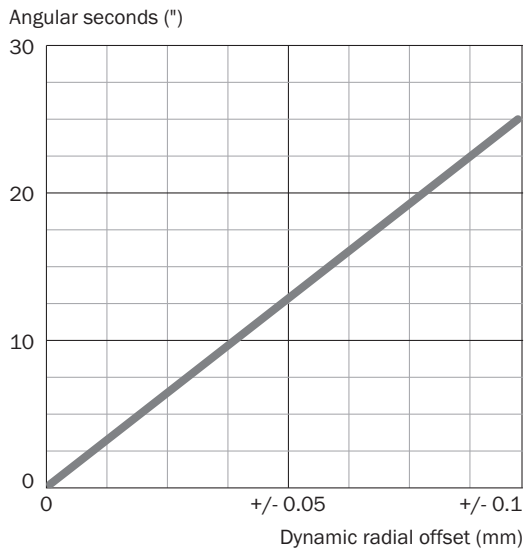Diagram 3

Typ. mechanical self-heating, kelvin (K)

Electrical self-heating
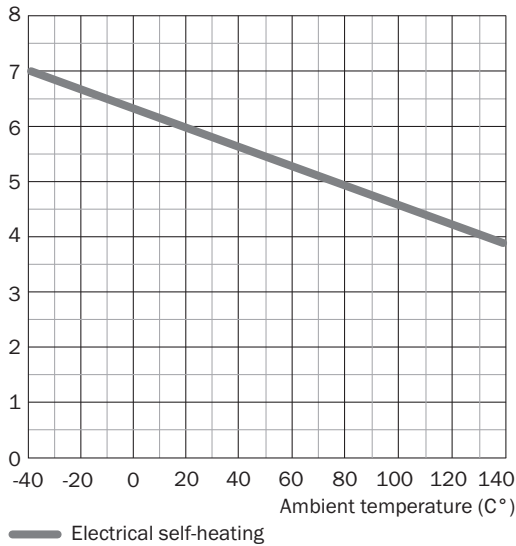
Power consumption

Diagram 2

Typ. current consumption (A)

Time after switch-on (µs)

- 7 V
- 8 V
- 12 V

This diagram shows the switch-on current
Mechanical self-heating

Diagram 4

Typ. mechanical self-heating, kelvin (K)

Speed (rpm)

Mechanical self-heating

Error limits

Diagram 1

Angular seconds (")

Recommended accessories

Other models and accessories → www.sick.com/EFS_EFM50

	Brief description	Type	Part no.
Other mounting accessories			
	Servo clamps, small, for servo flange (clamping claws, mounting eccentric), 3 pcs, without mounting hardware, without mounting hardware	BEF-WK-RESOL	2039082
Plug connectors and cables			
	Head A: female connector, stranded cable, 4-pin, straight Head B: cable Cable: HIPERFACE DSL®, unshielded, 0.2 m	DOL-0B02-G0M2XC2	2079920
	Head A: female connector, M12, 4-pin, straight Head B: female connector, JST, 4-pin, straight Cable: HIPERFACE DSL®, shielded, 1 m	DSL-1202-G01MA	2061361
Programming and configuration tools			
	SVip® LAN programming tool for all motor feedback systems	PGT-11-S LAN	1057324
	SVip® WLAN programming tool for all motor feedback systems	PGT-11-S WLAN	1067474

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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