

# EKM36-2KF0B0S14

EKS/EKM36

MOTOR FEEDBACK SYSTEMS ROTARY HIPERFACE DSL®

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	Part no.
EKM36-2KF0B0S14	1103060

Other models and accessories → [www.sick.com/EKS\\_EKM36](http://www.sick.com/EKS_EKM36)

### Detailed technical data

#### Features

<b>Special device</b>	✓
<b>Specialty</b>	Low-resistance connection cable between housing potential and mass <sup>1)</sup> Hybrid ball bearing
<b>Standard reference device</b>	EKM36-2KF0B020A,1084236

<sup>1)</sup> If encoders with hybrid bearings are exposed to high temperatures and high shock and vibration stresses, this could result in decreased availability. The user must perform suitable tests.

#### Safety-related parameters

<b>Safety integrity level</b>	SIL 2 (IEC 61508), SILCL2 (EN 62061) <sup>1)</sup>
<b>Category</b>	3 (EN ISO 13849)
<b>Test rate</b>	1 h
<b>Maximum demand rate</b>	200 µs
<b>Performance level</b>	PL d (EN ISO 13849)
<b>Safety-related resolution</b>	Channel 1 = 20 bit, channel 2 = 9 bit
<b>PFH<sub>D</sub>: Probability of dangerous failure per hour</b>	4 x 10 <sup>-8 2)</sup>
<b>T<sub>M</sub> (mission time)</b>	20 years (EN ISO 13849)
<b>MTTFd: mean time to dangerous failure</b>	500 years (EN ISO 13849)

<sup>1)</sup> For more detailed information on the exact configuration of your machine/unit, please consult your relevant SICK branch office.

<sup>2)</sup> The values displayed apply to a diagnostic degree of coverage of 90%, which must be achieved by the external drive system.

#### Performance

<b>Position</b>	
Resolution per revolution	20 bit
Signal noise (σ)	± 4 " (See "signal noise" and "attenuation" diagrams)
Number of the absolute ascertainable revolutions	4,096
Available memory area	8,192 Byte
Measurement step per revolution	1,048,576
<b>Vibration</b>	
Measurement principle	Optical

## Interfaces

<b>Type of code for the absolute value</b>	Binary
<b>Code sequence</b>	Increasing, when turning the shaft For clockwise rotation, looking in direction "A" (see dimensional drawing)
<b>Communication interface</b>	HIPERFACE DSL®
<b>Initialization time</b>	Max. 500 ms <sup>1)</sup>
<b>Measurement external temperature resistance</b>	32 bit value, without prefix (1 Ω) 0 ... 209.600 Ω At -40 °C ... +160 °C: NTC +-2K; PTC+-3K

<sup>1)</sup> From reaching a permitted operating voltage.

## Electrical data

<b>Connection type</b>	Male connector, 4-pin
<b>Supply voltage</b>	7 V ... 12 V
<b>Warm-up time voltage ramp</b>	Max. 180 ms <sup>1)</sup>
<b>Recommended supply voltage</b>	8 V
<b>Current consumption</b>	≤ 150 mA (See current consumption diagram) <sup>2)</sup>
<b>Output frequency for the digital position value</b>	0 kHz ... 75 kHz

<sup>1)</sup> Duration of voltage ramp between 0 and 7.0 V.

<sup>2)</sup> Current rating applies when using interface circuit suggestions as shown in HIPERFACE DSL® manual (8017595).

## Mechanical data

<b>Shaft version</b>	Tapered shaft
<b>Flange type / stator coupling</b>	Stator coupling
<b>Dimensions</b>	See dimensional drawing
<b>Weight</b>	0.1 kg
<b>Moment of inertia of the rotor</b>	4.5 gcm <sup>2</sup>
<b>Operating speed</b>	≤ 9,000 min <sup>-1</sup>
<b>Angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>
<b>Operating torque</b>	0.2 Ncm
<b>Start up torque</b>	0.3 Ncm
<b>Permissible movement static</b>	± 0.1 mm, ± 0.5 mm radial, axial
<b>Permissible movement dynamic</b>	± 0.05 mm radial ± 0.1 mm axial
<b>Life of ball bearings</b>	3.6 x 10 <sup>9</sup> revolutions

## Ambient data

<b>Operating temperature range</b>	-20 °C ... +115 °C <sup>1)</sup>
<b>Storage temperature range</b>	-40 °C ... +125 °C <sup>2)</sup>
<b>Relative humidity/condensation</b>	90 %, Condensation not permitted

<sup>1)</sup> Given typical thermal connection between motor flange and encoder stator coupling. The max. internal sensor temperature may not exceed 125 °C.

<sup>2)</sup> Without package.

<sup>3)</sup> The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the central earthing point of the motor controller via a cable screen. The GND-(0 V) connection of the supply voltage is also grounded here. If other shielding concepts are used, users must perform their own tests.

<sup>4)</sup> With mating connector inserted and closed cover.

<b>Resistance to shocks</b>	100 g, 6 ms (according to EN 60068-2-27)
<b>Frequency range of resistance to vibrations</b>	50 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)
<b>EMC</b>	According to EN 61000-6-2, EN 61000-6-4 and IEC 61326-3 <sup>3)</sup>
<b>Enclosure rating</b>	IP40, with mating connector inserted and closed cover (IEC 60529-1) <sup>4)</sup>

1) Given typical thermal connection between motor flange and encoder stator coupling. The max. internal sensor temperature may not exceed 125 °C.

2) Without package.

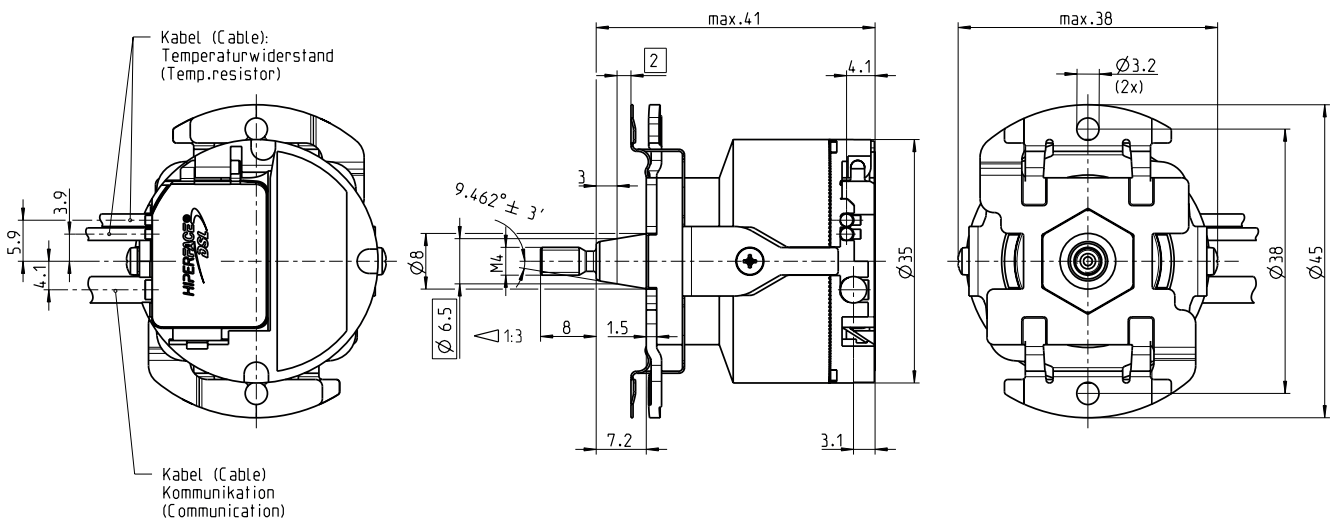
3) The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the central earthing point of the motor controller via a cable screen. The GND-(0 V) connection of the supply voltage is also grounded here. If other shielding concepts are used, users must perform their own tests.

4) With mating connector inserted and closed cover.

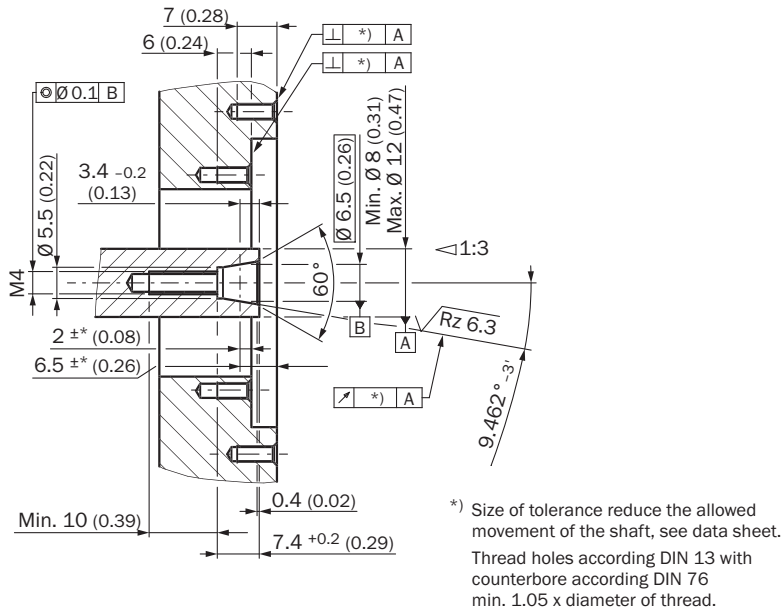
### Classifications

<b>ECLASS 5.0</b>	27270590
<b>ECLASS 5.1.4</b>	27270590
<b>ECLASS 6.0</b>	27270590
<b>ECLASS 6.2</b>	27270590
<b>ECLASS 7.0</b>	27270590
<b>ECLASS 8.0</b>	27270590
<b>ECLASS 8.1</b>	27270590
<b>ECLASS 9.0</b>	27270590
<b>ECLASS 10.0</b>	27273805
<b>ECLASS 11.0</b>	27273901
<b>ECLASS 12.0</b>	27273901
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>ETIM 8.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

### Dimensional drawing (Dimensions in mm (inch))



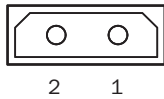
Attachment specifications



- ① Nominal position
- ② The size of the tolerance reduces the permissible wave movement, see data sheet
- ③ Threaded holes in accordance with DIN 13 with recesses in accordance with DIN 76 min. 1.05 x thread diameter

PIN assignment

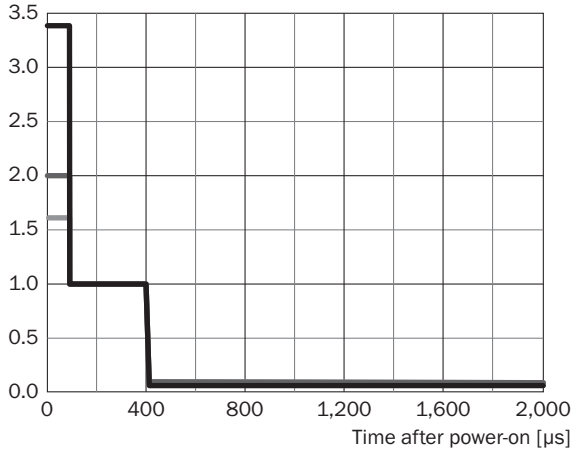
Temperature sensor pin assignment



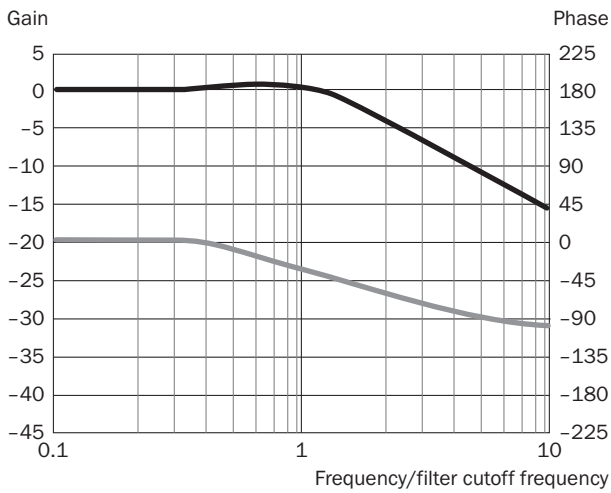
PIN	Signal	Explanation
1	T+	Thermistor connection
2	T-	Thermistor connection (to ground)
Recommended outer diameter of set of stranded wires: 2.2 mm ± 0.1 mm		
Recommended mating connector: Harwin M80-8990205		

### Diagrams

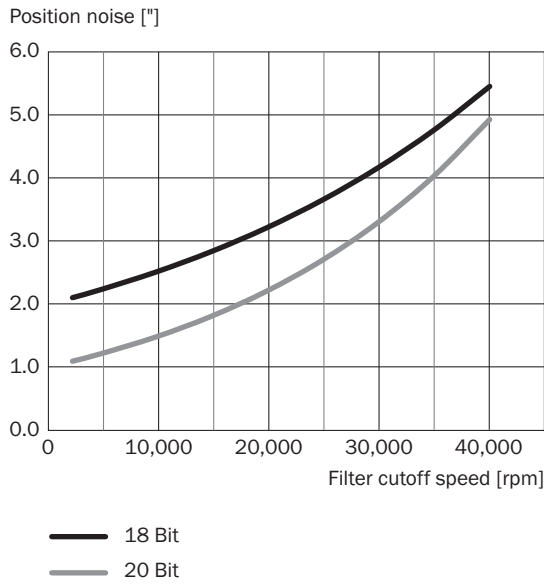
Typ. current consumption [A]



- 7 V
- 8 V
- 12 V











- Gain [dB]
- Phase [°]



Signal noise is measured as 1 standard deviation ( $\sigma$ ) of the value distribution. Position filter cutoff speed is set by resource 10Ah, see page 11.

### Recommended accessories

Other models and accessories → [www.sick.com/EKS\\_EKM36](http://www.sick.com/EKS_EKM36)

	Brief description	Type	Part no.
Other mounting accessories			
	Mounting tools	BEF-MW-EKX36	2060224
Plug connectors and cables			
		DOL-0B02-G0M2XC1	2062083
		DOL-0B02-G0M3AC2	2108944
		DOL-0B02-G0M3XC1	2091818
		DOL-0B02-G0M4XC1	2086286
		DOL-0B03-G0M4XC1	2087314

## 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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)