

# SFM60-HLKT4K02

SFS/SFM60

**MOTOR FEEDBACK SYSTEMS ROTARY HIPERFACE®**

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

Type	Part no.
SFM60-HLKT4K02	1052165

Other models and accessories → [www.sick.com/SFS\\_SFM60](http://www.sick.com/SFS_SFM60)

## Detailed technical data

### Performance

<b>Number of sine/cosine periods per revolution</b>	1,024
<b>Number of the absolute ascertainable revolutions</b>	4,096 (Multiturn) 4,096
<b>Total number of steps</b>	134,217,728
<b>Measuring step</b>	0.3 Winkelsekunden For interpolation of the sine/cosine signals with, e. g., 12 bits
<b>Error limits for the digital absolute value</b>	± 90 Winkelsekunden (via RS485)
<b>Integral non-linearity typ.</b>	± 45 Winkelsekunden (Error limits for evaluating sine/cosine period), without mechanical tension of the stator coupling
<b>Differential non-linearity</b>	± 7 Winkelsekunden (Non-linearity within a sine/cosine period)
<b>Operating speed</b>	6,000 /min, up to which the absolute position can be reliably produced
<b>Available memory area</b>	1,792 Byte (E <sup>2</sup> PROM 2048)

### 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),. for clockwise shaft rotation, looking in direction "A" (see dimensional drawing)
<b>Interface signals</b>	Process data channel SIN, REFSIN, COS, REFCOS: analog, differential Parameter channel RS 485: digital
<b>Available memory area</b>	1,792 Byte

### Electrical data

<b>Electrical interface</b>	HIPERFACE
<b>Operating voltage range/supply voltage</b>	7 V DC ... 12 V DC
<b>Recommended supply voltage</b>	8 V DC
<b>Operating power consumption (no load)</b>	< 80 mA <sup>1)</sup>
<b>Output frequency for sine/cosine signals</b>	0 kHz ... 200 kHz

<sup>1)</sup> Without load.

## Mechanical data

<b>Shaft version</b>	Through hollow shaft
<b>Shaft diameter</b>	10 mm
<b>Shaft plug-in length</b>	≥ 15 mm
<b>Flange type/stator coupling</b>	Version 4
<b>Dimensions</b>	See dimensional drawing
<b>Mass</b>	0.2 kg
<b>Moment of inertia of the rotor</b>	40 gcm <sup>2</sup>
<b>Maximum operating speed</b>	9,000 /min <sup>1)</sup>
<b>Maximum angular acceleration</b>	≤ 50,000 rad/s <sup>2</sup>
<b>Operating torque</b>	0.6 Ncm (+20 °C)
<b>Start up torque</b>	0.8 Ncm (+20 °C)
<b>Permissible shaft movement, radial, static</b>	± 0.3 mm
<b>Permissible shaft movement, radial, dynamic</b>	± 0.1 mm
<b>Permissible shaft movement, axial, static</b>	± 0.5 mm
<b>Permissible shaft movement, axial, dynamic</b>	± 0.2 mm
<b>Life of ball bearings</b>	3.6 x 10 <sup>9</sup> revolutions
<b>Connection type</b>	Cable, radial, 1.5 m

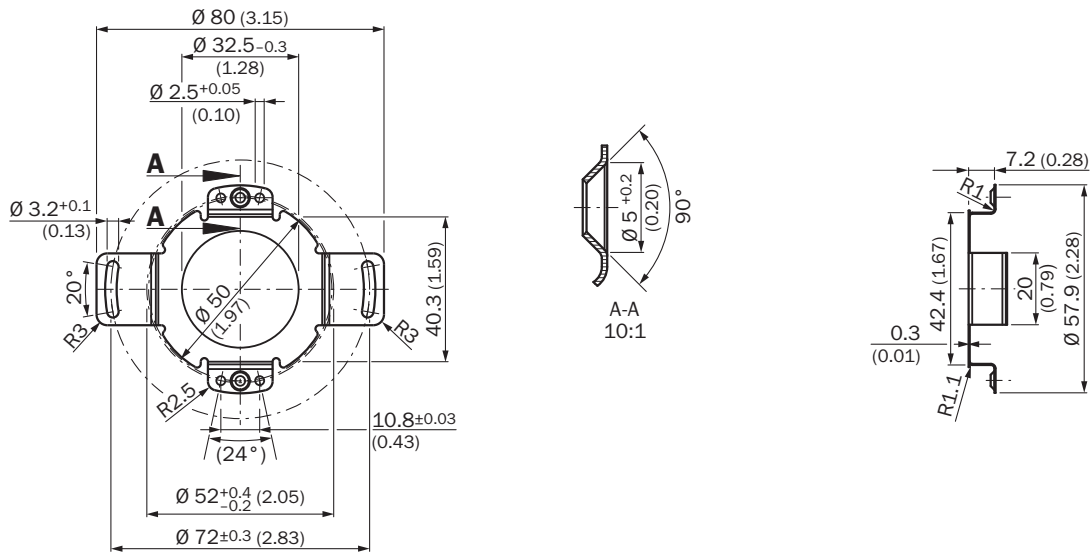
<sup>1)</sup> Self-warming 3.3 K per 1,000 rpm; when applying, note operating temperature range.

## Ambient conditions

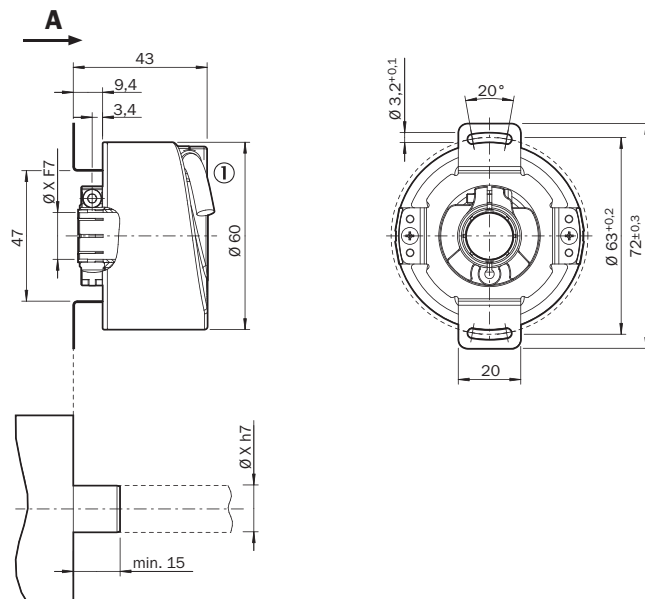
<b>Working temperature range</b>	-30 °C ... +115 °C
<b>Storage temperature range</b>	-40 °C ... +115 °C, without package
<b>Relative humidity/condensation</b>	90 %, Condensation not permitted
<b>Resistance to shocks</b>	100 g / 6 ms / according to EN 60068-2-27
<b>Resistance to vibration</b>	20 g / 10 Hz / 2,000 Hz / according to EN 60068-2-6
<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3 <sup>1)</sup>
<b>Enclosure rating</b>	IP 65, according to IEC 60529, with mating connector inserted

<sup>1)</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 (0V) connection of the supply voltage is also grounded here. If other screening concepts are used, users must perform their own tests.

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



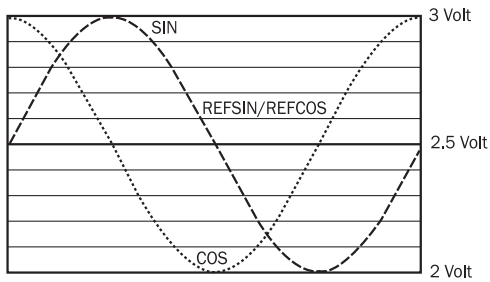
General tolerances as per ISO 2768-mk



① Cable diameter = 5.6 mm +/- 0.2 mm bend radius = 30 mm







## Signal outputs

Signal diagram for clockwise rotation of the shaft looking in direction "A" (see dimensional drawing) 1 period =  $360^\circ : 1024$



## Recommended accessories

Other models and accessories → [www.sick.com/SFS\\_SFM60](http://www.sick.com/SFS_SFM60)

	Brief description	Type	Part no.
Flanges			
	One-sided stator coupling, slot, slot radius 33 mm to 48.5 mm, slot width 5.1 mm	BEF-DS01DFS/VFS	2047428
	One-sided stator coupling, slot, slot radius 32.25 mm to 141.75 mm, slot width 5.1 mm	BEF-DS02DFS/VFS	2047430
	One-sided stator coupling, slot, slot radius 33 mm to 211.9 mm, slot width 5.1 mm	BEF-DS03DFS/VFS	2047431
	Torque support 16,5 mm high	BEF-DS05XFX	2057423
	Torque support with bolt circle diameter 63 mm	BEF-DS07XFX	2059368
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.”**

## WORLDWIDE PRESENCE:

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