

SFM60-HLKB1K02

SFS/SFM60

MOTOR FEEDBACK SYSTEMS





Ordering information

Туре	Part no.
SFM60-HLKB1K02	1113148

Other models and accessories → www.sick.com/SFS_SFM60

Illustration may differ



Detailed technical data

Safety-related parameters

MTTF _D (mean time to dangerous failure)	230 years (EN ISO 13849) ¹⁾
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¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 60°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Performance

Sine/cosine periods per revolution	1,024
Number of the absolute ascertainable revolutions	4,096
Total number of steps	134,217,728
Measuring step	$0.3{\rm ''}$ For interpolation of the sine/cosine signals with, e. g., 12 bits
Integral non-linearity	Typ. \pm 45 $^{\prime\prime}$, Error limits for evaluating sine/cosine period, without mechanical tension of the stator coupling
Differential non-linearity	± 7 ", Non-linearity within a sine/cosine period
Operating speed	\leq 6,000 min ⁻¹ , up to which the absolute position can be reliably produced
Available memory area	1,792 Byte
System accuracy	± 52 "

Interfaces

Type of code for the absolute value	Binary
Code sequence	Rising, For clockwise shaft rotation, looking in direction "A" (see dimensional drawing)
Communication interface	HIPERFACE [®]

Electrical data

Connection type	Cable, 8-wire (4 x 2 x 0.15 mm²), radial, 1.5 m	
Supply voltage	7 V DC 12 V DC	
Recommended supply voltage	8 V DC	
Current consumption	< 80 mA (without load)	
Output frequency for sine/cosine signals	≤ 200 kHz	

Mechanical data

Shaft version	Blind hollow shaft
Shaft diameter	10 mm
Shaft material	Stainless steel
Flange material	Zinc diecast
Housing material	Aluminum die cast
Flange type / stator coupling	Stator coupling (BEF-DS01DFS/VFS)
Dimensions	See dimensional drawing
Weight	≤ 0.25 kg
Moment of inertia of the rotor	40 gcm ²
Operating speed	≤ 9,000 min ^{-1 1)}
Angular acceleration	≤ 500,000 rad/s²
Operating torque	0.6 Ncm (+20 °C)
Start up torque	+ 0.8 Ncm (+20 °C)
Permissible movement static	\pm 0.3 mm, \pm 0.5 mm radial, axial
Permissible movement dynamic	± 0.1 mm radial ± 0.2 mm axial
Life of ball bearings	3.6 x 10 ⁹ revolutions

 $^{^{1)}}$ Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

Ambient data

Operating temperature range	-40 °C +115 °C
Storage temperature range	-40 °C +115 °C, without package
Relative humidity/condensation	90 %, Condensation not permitted
Resistance to shocks	100 g, 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 and EN 61000-6-3 1)
Enclosure rating	IP65, with mating connector inserted (IEC 60529)

¹⁾ 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.

Classifications

ECLASS 5.0	27270590
ECLASS 5.1.4	27270590
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270590
ECLASS 8.0	27270590
ECLASS 8.1	27270590
ECLASS 9.0	27270590
ECLASS 10.0	27273805
ECLASS 11.0	27273901

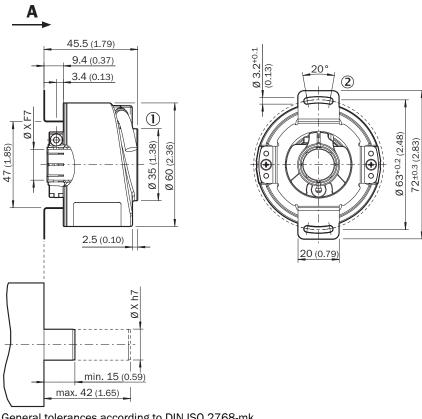
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MOTOR FEEDBACK SYSTEMS

ECLASS 12.0	27273901
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing (Dimensions in mm (inch))

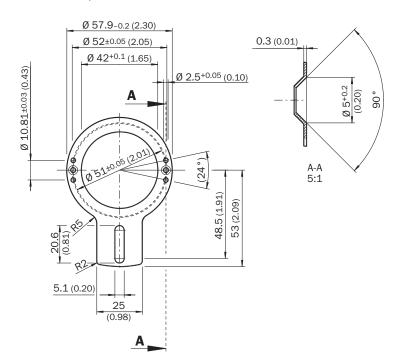
Blind hollow shaft, cable - standard system

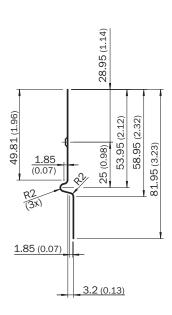


General tolerances according to DIN ISO 2768-mk

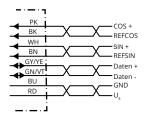
- ① Cable diameter = 5.6 mm + /-0.2 mm bend radius = 30 mm
- ② Dimensional drawing of the stator coupling may differ depending on the variant. Please also refer to the dimensional drawing of the stator coupling.

BEF-DS01DFS/VFS



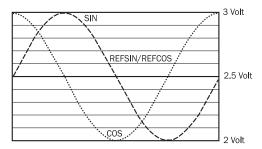


PIN assignment



Diagrams

Signal specification of the process channel



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

Recommended accessories

Other models and accessories → www.sick.com/SFS_SFM60

	Brief description	Туре	Part no.	
Programming	Programming and configuration tools			
	SVip® LAN programming tool for all motor feedback systems	PGT-11-S LAN	1057324	
Flanges				
	One-sided stator coupling, slot, slot radius 33 mm to 48.5 mm, slot width 5.1 mm	BEF-DS01DFS/VFS	2047428	
3	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	
	Stator coupling, 16.5 mm high	BEF-DS05XFX	2057423	
	Stator coupling with hole circle diameter Ø72 mm	BEF-DS07XFX	2059368	

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