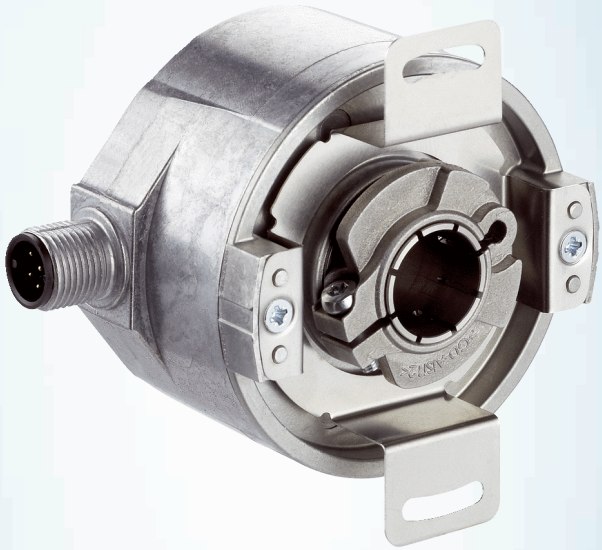
Online data sheet



SFS60-HMBB4K02

SFS/SFM60

MOTOR FEEDBACK SYSTEMS ROTARY HIPERFACE®

SICK
Sensor Intelligence.

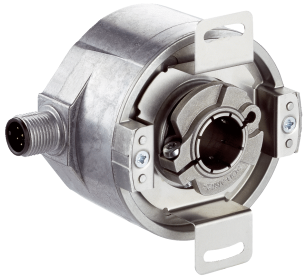


Illustration may differ

Ordering information

Type	Part no.
SFS60-HMBB4K02	On request

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

Detailed technical data

Performance

Number of sine/cosine periods per revolution	1,024
Number of the absolute ascertainable revolutions	1
Total number of steps	32,768
Measuring step	0.3 Winkelsekunden For interpolation of the sine/cosine signals with, e. g., 12 bits
Integral non-linearity	± 45 Winkelsekunden, Error limits for evaluating sine/cosine period, without mechanical tension of the stator coupling
Differential non-linearity	± 7 Winkelsekunden, Non-linearity within a sine/cosine period
Operating speed	6,000 min^{-1}, up to which the absolute position can be reliably produced

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®
Available memory area	1,792 Byte

Electrical data

Supply voltage range	7 V DC ... 12 V DC
Recommended supply voltage	8 V DC
Operating power consumption (no load)	< 80 mA [1]
Output frequency for sine/cosine signals	0 kHz ... 200 kHz

[1] Without load.

Mechanical data

Shaft version	Blind hollow shaft
Shaft diameter	12 mm
Shaft material	Stainless steel
Flange material	Zinc diecast

[1] Take into account self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

Housing material	Aluminum die cast
Flange type/stator coupling	Stator coupling
Dimensions	See dimensional drawing
Weight	≤ 0.25 kg
Moment of inertia of the rotor	40 gcm²
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 shaft movement, radial static/dynamic	± 0.3 mm / ± 0.1 mm
Permissible shaft movement, axial static/dynamic	± 0.5 mm / ± 0.2 mm
Life of ball bearings	3.6 x 10^9 revolutions
Connection type	Male connector M12, 8-pin, radial

[1] Take into account self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

Ambient data

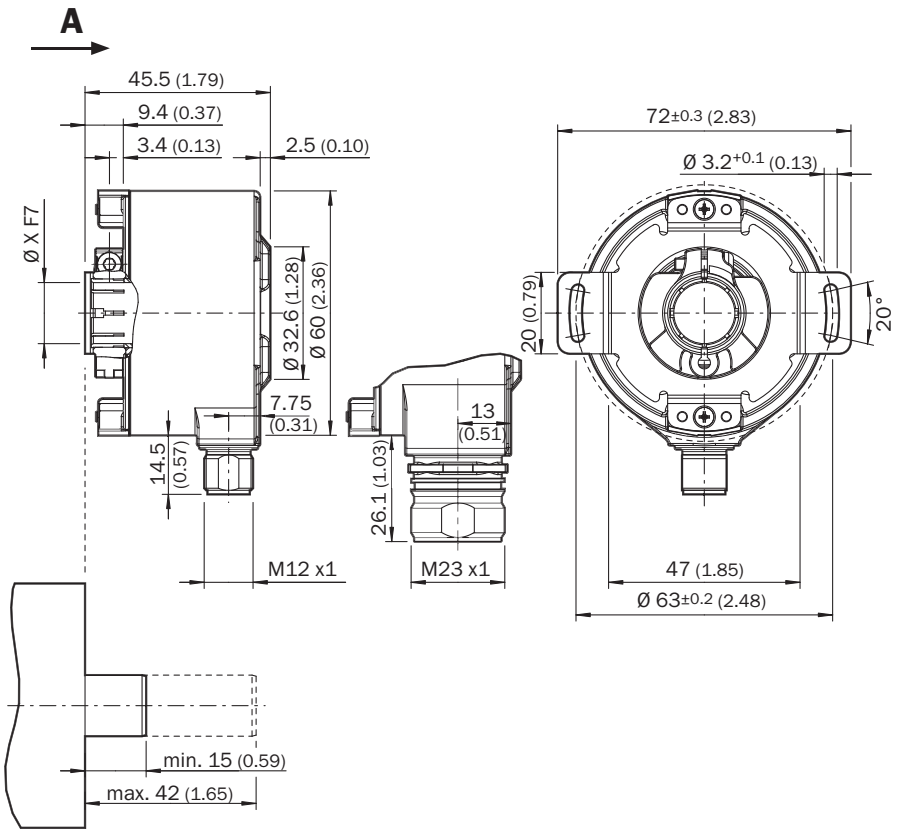
Operating temperature range	–40 °C ... +115 °C
Storage temperature range	–40 °C ... +115 °C, without package
Relative humidity/condensation	90 %, Condensation not permitted
Resistance to shocks	100 g, 6 ms, 6 ms (according to EN 60068-2-27)
Frequency range of resistance to vibrations	20 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)
EMC	According to EN 61000-6-2 and EN 61000-6-3 [1]
Enclosure rating	IP65, with mating connector inserted (according to 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 (0V) connection of the supply voltage is also grounded here. If other screening concepts are used, users must perform their own tests.

Classifications

ECl@ss 5.0	27270590
ECl@ss 5.1.4	27270590
ECl@ss 6.0	27270590
ECl@ss 6.2	27270590
ECl@ss 7.0	27270590
ECl@ss 8.0	27270590
ECl@ss 8.1	27270590
ECl@ss 9.0	27270590
ETIM 5.0	EC001486
ETIM 6.0	EC001486
UNSPSC 16.0901	41112113

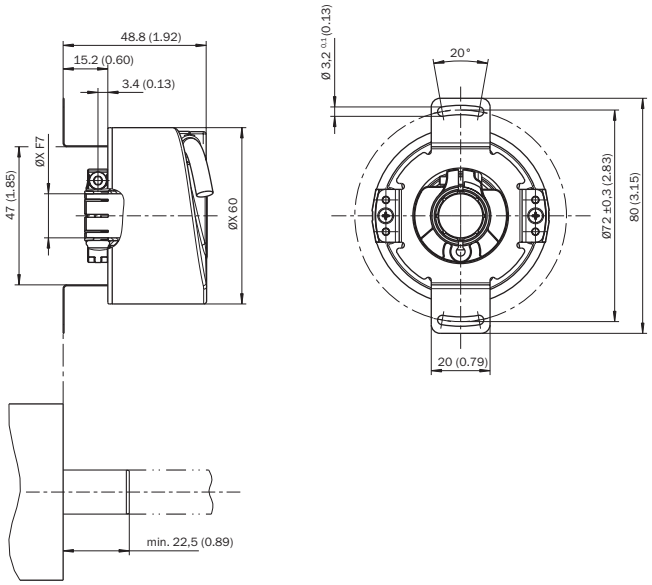
Dimensional drawing (Dimensions in mm (inch))



General tolerances according to DIN ISO 2768-mk

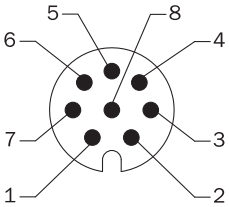
Proposed fitting

Version 4



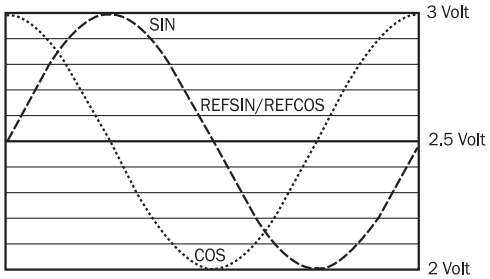
PIN assignment

View of the M12 male connector plug-in face



PIN	Signal	Explanation
1	REFSIN	Process data channel
2	+ SIN	Process data channel
3	REFCOS	Process data channel
4	+ COS	Process data channel
5	Data +	Parameter channel RS 485
6	Data -	Parameter channel RS 485
8	U_S	Supply voltage
Housing	Screen	Screen connected with encoder housing

Diagram



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

Recommended accessories

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

	Brief description	Type	Part no.
Flanges			
	Stator coupling, 16.5 mm high	BEF-DS05XFX	2057423
	Stator coupling with hole circle diameter 63 mm	BEF-DS07XFX	2059368

	Brief description	Type	Part no.
Plug connectors and cables			
	Head A: cable Head B: cable Cable: HIPERFACE®, HIPERFACE®, drag chain use, PUR, halogen-free, shielded	LTG-2708-MW	6028361
	Head A: female connector, M12, 8-pin, straight Head B: cable Cable: drag chain use, PUR, halogen-free, shielded, 2 m	DOL-1208-G02MAC1	6032866
	Head A: female connector, M12, 8-pin, straight Head B: cable Cable: drag chain use, PUR, halogen-free, shielded, 5 m	DOL-1208-G05MAC1	6032867
	Head A: female connector, M12, 8-pin, straight Head B: cable Cable: drag chain use, PUR, halogen-free, shielded, 10 m	DOL-1208-G10MAC1	6032868
	Head A: female connector, M12, 8-pin, straight Head B: cable Cable: drag chain use, PUR, halogen-free, shielded, 20 m	DOL-1208-G20MAC1	6032869
	Head A: female connector, M12, 8-pin, straight, A-coding Head B: - Cable: Incremental, SSI, shielded	DOS-1208-GA01	6045001
	Head A: male connector, M12, 8-pin, straight, A-coding Head B: - Cable: Incremental, shielded	STE-1208-GA01	6044892
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