DFS60B-S4PZ00S69

DFS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ
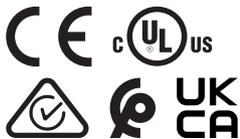
Ordering information

Type	part no.
DFS60B-S4PZ00S69	1078778

Other models and accessories ➔ www.sick.com/DFS60

Detailed technical data

Features

Special device	✓
Specialty	Customer-specific pin assignment 4.5 … 32 V, TTL/HTL programmable, preset HTL Resolution programmable, preset 7,500 pulses BEF-MR10300AK measuring wheel premounted
Standard reference device	DFS60B-S4PC10000, 1036721

Safety-related parameters

MTTF$_D$ (mean time to dangerous failure)	300 years (EN ISO 13849-1) [1]

[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 40°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

Performance

Pulses per revolution	7,500 [1]
Measuring step	90°, electric/pulses per revolution
Measuring step deviation at non binary number of lines	± 0.01°
Error limits	± 0.05°

[1] See maximum revolution range.

Interfaces

Communication interface	Incremental
Communication Interface detail	TTL / HTL
Factory setting	Factory setting output level HTL
Number of signal channels	6-channel
Programmable/configurable	✓

[1] With mechanical zero pulse width.

Initialization time	32 ms, 30 ms [1]
Output frequency	≤ 600 kHz
Load current	≤ 30 mA
Power consumption	≤ 0.7 W (without load)

[1] With mechanical zero pulse width.

Electronics

Connection type	Male connector, M12, 8-pin, radial, Customer-specific pin assignment
Supply voltage	4.5 ... 32 V
Reference signal, number	1
Reference signal, position	90°, electric, logically gated with A and B
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ [1] [2]

[1] Programming TTL with ≥ 5.5 V: short-circuit opposite to another channel or GND permissable for maximum 30 s.

[2] Programming HTL or TTL with < 5.5 V: short-circuit opposite to another channel, US or GND permissable for maximum 30 s.

Mechanics

Mechanical design	Solid shaft, face mount flange
Shaft diameter	10 mm With flat
Shaft length	19 mm
Weight	+ 0.3 kg
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum die cast
Start up torque	0.5 Ncm (+20 °C)
Operating torque	0.3 Ncm (+20 °C)
Permissible shaft loading	80 N (radial) 40 N (axial)
Operating speed	≤ 9,000 min^{-1} [1]
Moment of inertia of the rotor	6.2 gcm²
Bearing lifetime	3.6 x 10^10 revolutions
Angular acceleration	≤ 500,000 rad/s²

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

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP67, Housing side, male connector (IEC 60529) [1] IP65, shaft side (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	−40 °C ... +100 °C [2] −30 °C ... +100 °C [3]

[1] With mating connector fitted.

[2] Stationary position of the cable.

[3] Flexible position of the cable.

Storage temperature range	−40 °C … +100 °C, without package
Resistance to shocks	70 g, 6 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz … 2,000 Hz (EN 60068-2-6)

[1] With mating connector fitted.

[2] Stationary position of the cable.

[3] Flexible position of the cable.

Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

Classifications

| ECLASS 5.0	27270501
ECLASS 5.1.4	27270501
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270501
ECLASS 8.0	27270501
ECLASS 8.1	27270501
ECLASS 9.0	27270501
ECLASS 10.0	27270501
ECLASS 11.0	27270501
ECLASS 12.0	27270501
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing
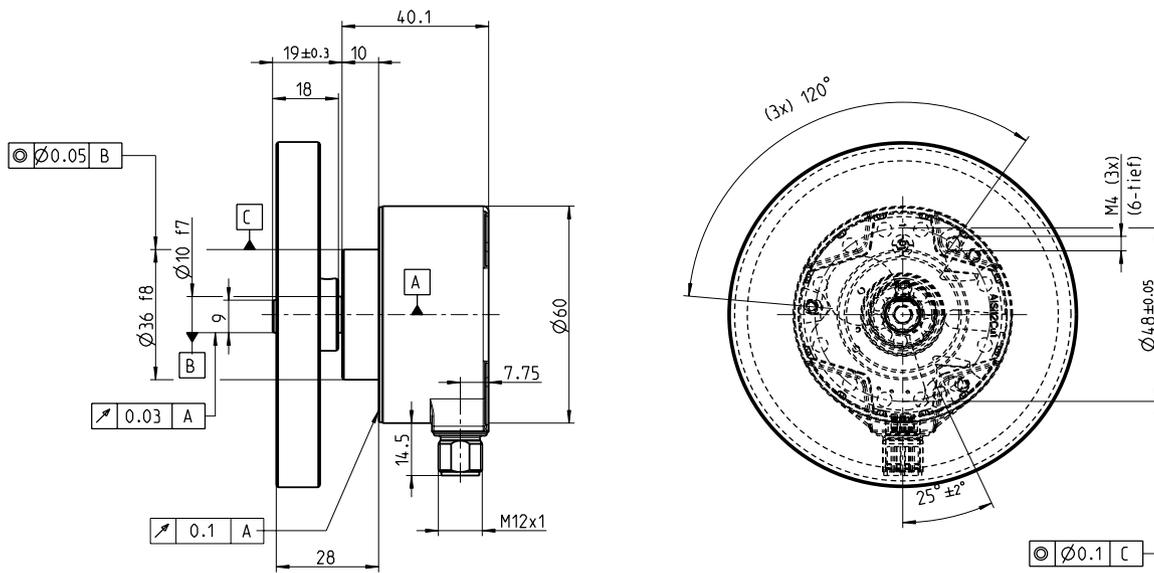
Dimensions in mm (inch)

PIN assignment

Ansicht Gerätestecker M12 am Encoder
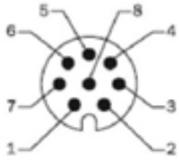
Stecker M12, 8-polig,	TTI/HTL signal	Erklärung
1	GND	Massenanschluss des Encoders
2	+U$_S$	Versorgungsspannung (Potentialfrei zum Gehäuse)
3	Z	Signalleitung
4	B	Signalleitung
5	$\bar{}$B	Signalleitung
6	A	Signalleitung
7	$\bar{}$A	Signalleitung
8	$\bar{}$Z	Signalleitung
Schirm	Schirm	Schirm encoderseitig mit Gehäuse verbunden. Steuerungsseitig mit Erde verbunden

maximum revolution range

Speed consideration (n)

Steps per revolution / Speed N [min^{-1}]
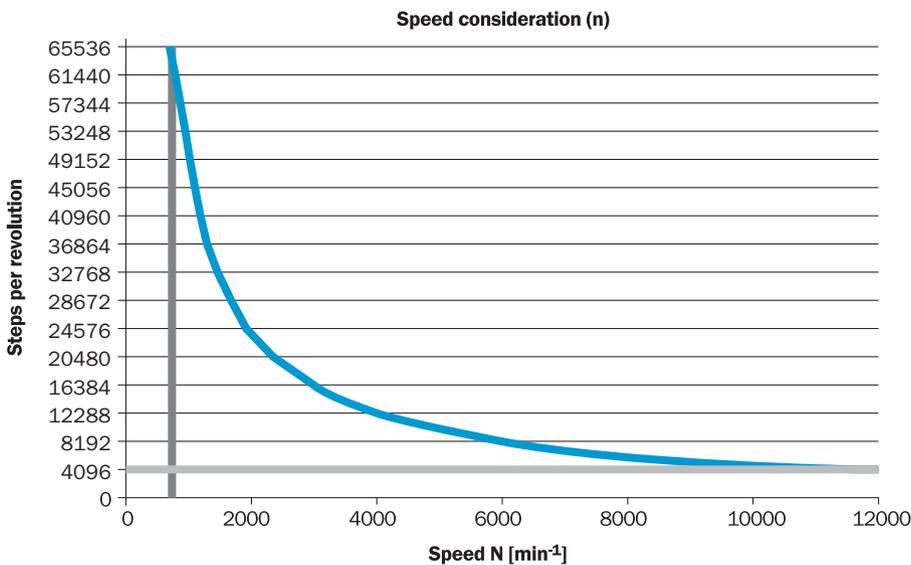
Recommended accessories

Other models and accessories ➜ www.sick.com/DFS60

Brief description	Type	part no.
programming devices		
• **Product segment:** Programming devices • **Product:** PGT-08-S • **Description:** USB programming unit, for programmable SICK encoders AFS60, AFM60, DFS60, VFS60, DFV60 and wire draw encoders with programmable encoders. Not compatible with the portable SOPAS ET versions.	PGT-08-S	1036616
• **Product segment:** Programming devices • **Product:** PGT-10 Pro • **Description:** Programming unit display for programmable SICK DFS60, DFV60, AFS/AFM60, AHS/AHM36 encoders, and wire draw encoder with DFS60, AFS/AFM60 and AHS/AHM36. Compact dimensions, low weight, and intuitive operation. • **Items supplied:** 1 x PGT-10-Pro stand-alone programming tool,4 x alkaline type batteries, 1.5 V Mignon (AA)	PGT-10-Pro	1072254

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**

SICK AG | Waldkirch | Germany | www.sick.com

SICK
Sensor Intelligence.