

DFS60B-TGPA00S10

DFS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
DFS60B-TGPA00S10	1051227

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



Detailed technical data

Features

Special device	✓
Specialty	Preset level of output signal HTL and 1,024 impulses Insulating sleeve included, inner diameter 12mm (2064573) Customer specific type label Female connector (6027538) included in delivery
Standard reference device	DFS60B-TGPA10000, 1036910

Performance

Pulses per revolution	10,000 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	HTL
Factory setting	Factory setting: output level TTL
Number of signal channels	6-channel
Programmable/configurable	✓
Initialization time	32 ms ¹⁾ 30 ms
Output frequency	≤ 600 kHz
Load current	≤ 30 mA
Power consumption	≤ 0.7 W (without load)

¹⁾ With mechanical zero pulse width.

Electrical data

Connection type	Male connector, M23, 12-pin, radial
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¹⁾ Programming TTL with ≥ 5.5 V: short-circuit opposite to another channel or GND permissible for maximum 30 s.

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

³⁾ 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.

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)}
MTTFd: mean time to dangerous failure	300 years (EN ISO 13849-1) ³⁾

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Mechanical data

Mechanical design	Through hollow shaft
Shaft diameter	14 mm
Weight	+ 0.2 kg
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum die cast
Start up torque	0.8 Ncm (+20 °C)
Operating torque	0.6 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial)
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial)
Operating speed	$\leq 6,000 \text{ min}^{-1}$ ¹⁾
Moment of inertia of the rotor	40 gcm ²
Bearing lifetime	3.6×10^{10} revolutions
Angular acceleration	$\leq 500,000 \text{ rad/s}^2$

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	IP65, 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⁾
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.

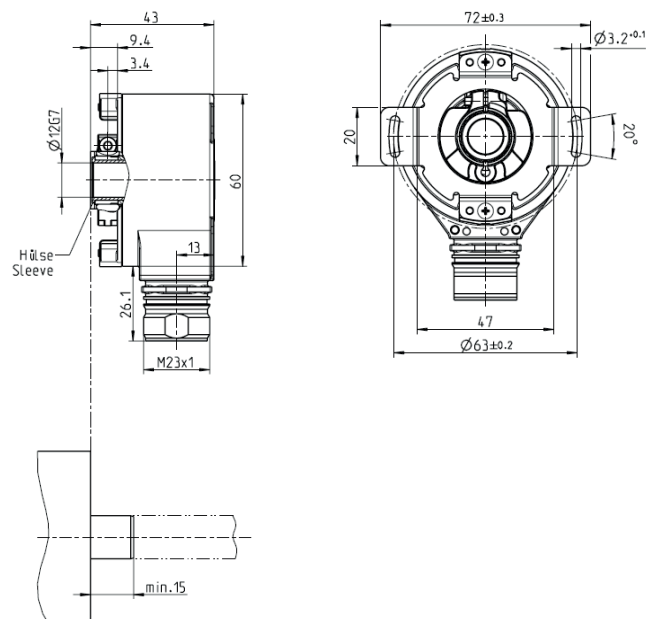
²⁾ Stationary position of the cable.

³⁾ Flexible position of the cable.

Classifications

eCl@ss 5.0	27270501
eCl@ss 5.1.4	27270501
eCl@ss 6.0	27270590
eCl@ss 6.2	27270590
eCl@ss 7.0	27270501
eCl@ss 8.0	27270501
eCl@ss 8.1	27270501
eCl@ss 9.0	27270501
eCl@ss 10.0	27270501
eCl@ss 11.0	27270501
eCl@ss 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

PIN	Signal HTL	Explanation
1	B ₋	Signal line
2	N.C.	Not connected
3	Z	Signal line
4	Z ₋	Signal line
5	A	Signal line
6	A ₋	Signal line
7	N.C.	Not connected
8	B	Signal line
9	N.C.	Not connected
10	GND	Ground connection of the encoder
11	N.C.	Not connected
12	+U _s	Supply voltage. Potential free to housing
Shield	Shield	Shield connected to housing on side of encoder. Connected to ground on side of control.



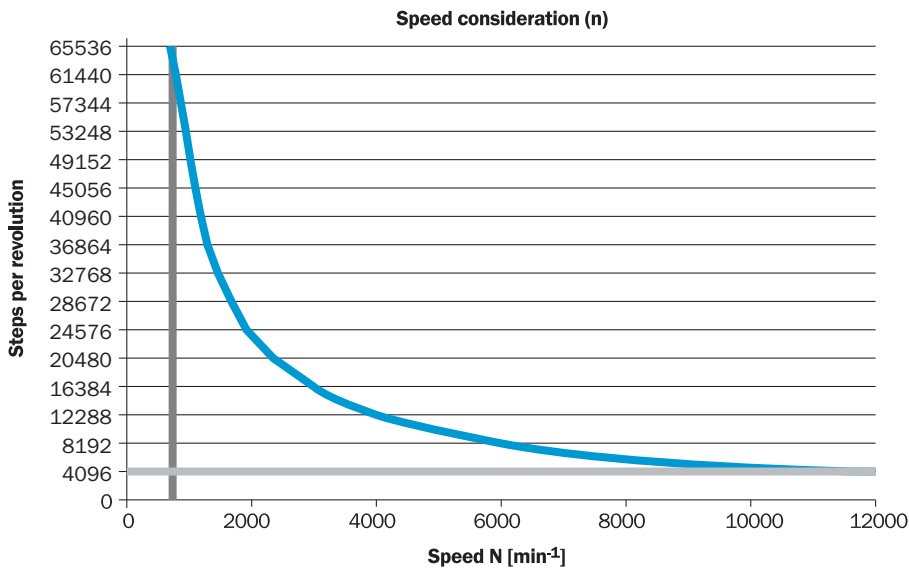
View of the connector M23
fitted to the encoder body

Type label



Diagrams

Maximum revolution range



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.”

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