Product data sheet

DBS60E-TGFQDS123

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
DBS60E-TGFQDS123	1108946

Other models and accessories ➜ www.sick.com/DBS60

Detailed technical data

Features

Special device	✓
Specialty	Cable, with male connector, M23, 12-pin, universal, 0.5 m Female connector M23 included in delivery
Standard reference device	DBS60E-TGFQD1024, 1098439

Performance

Pulses per revolution	250
Measuring step	≤ 90°, electric/pulses per revolution
Measuring step deviation	± 18° / pulses per revolution
Error limits	Measuring step deviation x 3
Duty cycle	≤ 0.5 ± 5 %

Interfaces

Communication interface	Incremental
Communication Interface detail	TTL / HTL [1]
Number of signal channels	6-channel
Initialization time	< 5 ms [2]
Output frequency	+ 300 kHz [3]
Load current	≤ 30 mA, per channel
Power consumption	≤ 0.5 W (without load)

[1] Output level depends on the supply voltage.
[2] Valid signals can be read once this time has elapsed.
[3] Up to 450 kHz on request.

Electrical data

Connection type	Cable, 8-wire, with male connector, M23, 12-pin, universal, 0.5 m [1] [2]
Supply voltage	4.5 ... 30 V
Reference signal, number	1

[1] The universal cable connection is positioned so that it is possible to lay it without bends in a radial or axial direction.
[2] M23 male connector for central mounting.
[3] Short-circuit opposite to another channel, US or GND permissable for maximum 30 s.
[4] 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.

Reference signal, position	90°, electric, logically gated with A and B
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ [3]
MTTFd: mean time to dangerous failure	500 years (EN ISO 13849-1) [4]

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Mechanical data

Mechanical design	Through hollow shaft, Front clamp
Shaft diameter	14 mm
Flange type / stator coupling	1-sided stator coupling, slot, screw hole circle radius 31.5–48.5 mm
Weight	+ 0.25 kg [1]
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Material, cable	PVC
Start up torque	+ 0.5 Ncm (+20 °C)
Operating torque	0.4 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial) [2]
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial) [2]
Operating speed	6,000 min^{-1} [3]
Maximum operating speed	9,000 min^{-1} [4]
Moment of inertia of the rotor	50 gcm^2
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s^2

[1] Based on encoder with male connector or cable with male connector.

[2] Not apllicable for stator coupling type C and K.

[3] Allow for self-heating of 2.6 K per 1,000 rpm when designing the operating temperature range.

[4] Maximum speed which does not cause mechanical damage to the encoder. Impact on the service life and signal quality is possible. Please note the maximum output frequency.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP65, housing side (IEC 60529) [1] IP65, shaft side (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–30 °C ... +100 °C, at maximum 3,000 pulses per revolution [2]
Storage temperature range	–40 °C ... +100 °C, without package

[1] With mating connector fitted.

[2] These values relate to all mechanical versions including recommended accessories unless otherwise noted.

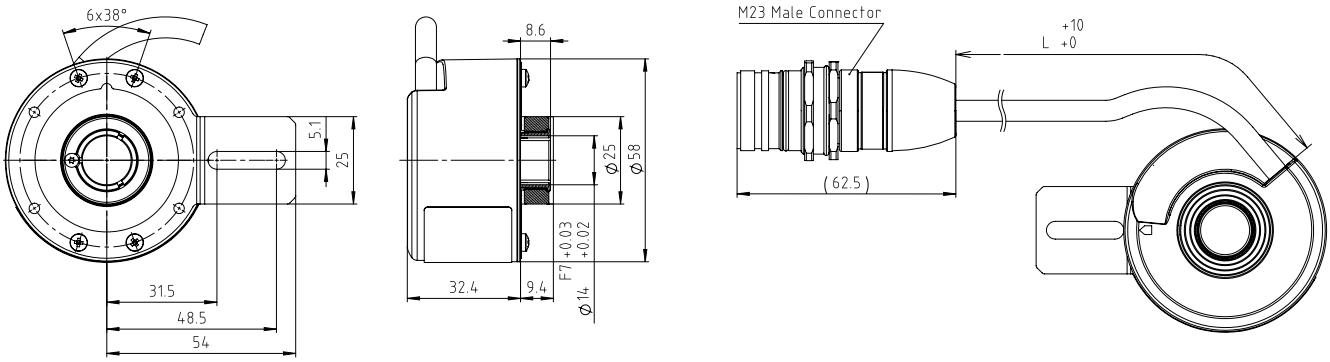
Resistance to shocks	250 g, 3 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

[1] With mating connector fitted.
[2] These values relate to all mechanical versions including recommended accessories unless otherwise noted.

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

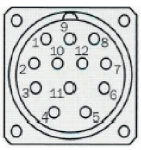
Dimensional drawing (Dimensions in mm (inch))



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	Supply voltage of the encoder
11	N.C.	Not connected
12	U_s	Power supply [1]

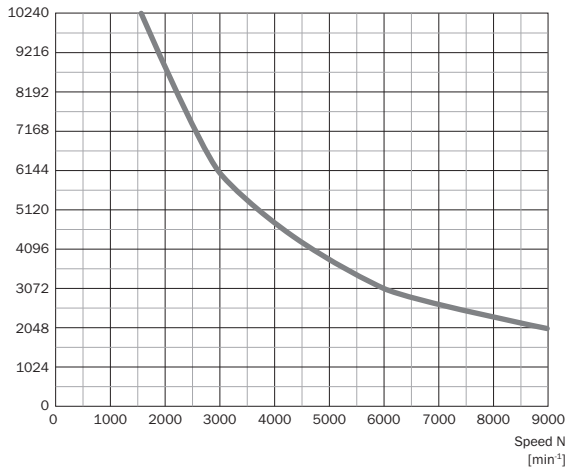
[1] Potential free to housing



View of the plug in face.

Diagrams

Pulses per revolution



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:

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