



DBS60I-Q4FM02000

DBS60 Inox

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	Part no.
DBS60I-Q4FM02000	1089713

Other models and accessories → www.sick.com/DBS60_Inox

Detailed technical data

Performance

Pulses per revolution	2,000
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)
4.5 V... 5.5 V, TTL/RS-422	
Load current	≤ 30 mA, per channel
4.5 V ... 5.5 V, Open Collector	
Load current	≤ 30 mA, per channel
TTL/RS-422	
Load current	≤ 30 mA, per channel
Power consumption	≤ 0.5 W (without load)
HTL/Push pull	

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.

	Load current	≤ 30 mA, per channel
	Power consumption	≤ 0.5 W (without load)
TTL/HTL		
	Load current	≤ 30 mA, per channel
	Power consumption	≤ 0.5 W (without load)
Open Collector		
	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, radial, 5 m
Supply voltage	4.5 ... 30 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⁾
MTTFd: mean time to dangerous failure	500 years (EN ISO 13849-1) ²⁾

1) Short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

2) 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.

Mechanical data

Mechanical design	Solid shaft, Square flange
Shaft diameter	10 mm
Shaft length	19 mm
Flange type / stator coupling	Flange with 4 x hole 5.5 mm
Weight	0.61 kg ¹⁾
Shaft material	Stainless steel V2A
Flange material	Stainless steel V2A
Housing material	Stainless steel V2A
Material, cable	PVC
Shaft sealing ring material	FKM80
Material, cable gland	Stainless steel V2A / Nickel-plated brass
Start up torque	1 Ncm (+20 °C)
Operating torque	0.9 Ncm (+20 °C)
Permissible shaft loading radial/axial	80 N (radial) ²⁾ 40 N (axial) ²⁾

1) Relates to encoders with male connector outlet.

2) Higher values are possible using limited bearing life.

3) 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.

Operating speed	≤ 6,000 min ⁻¹ ³⁾
Moment of inertia of the rotor	34 gcm ²
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	≤ 500,000 rad/s ²

¹⁾ Relates to encoders with male connector outlet.

²⁾ Higher values are possible using limited bearing life.

³⁾ 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

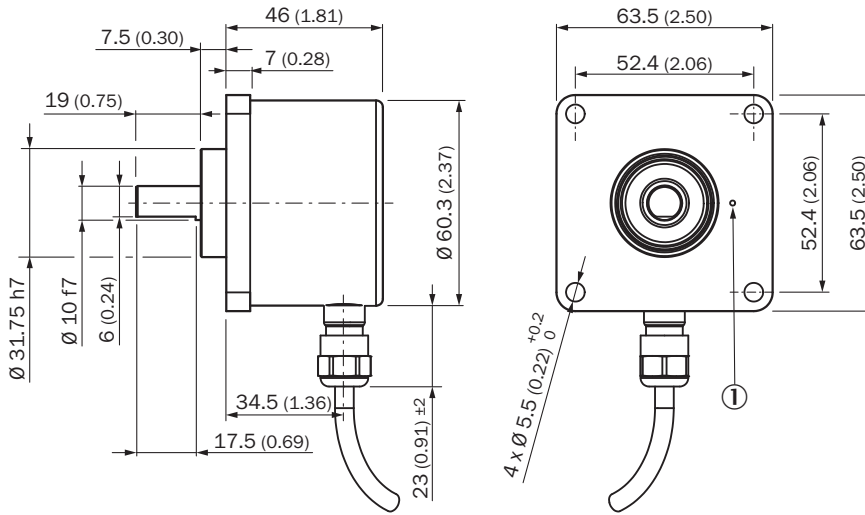
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP67, cable outlet (according to IEC 60529)
Permissible relative humidity	90 % (condensation of the optical scanning not permitted)
Operating temperature range	-30 °C ... +100 °C, at maximum 3,000 pulses per revolution
Storage temperature range	-40 °C ... +100 °C, without package
Resistance to shocks	100 g, 6 ms (according to EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

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
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing (Dimensions in mm (inch))

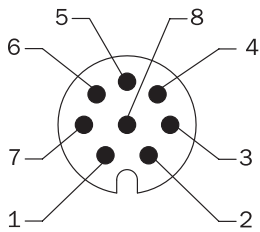
Solid shaft, square flange, cable outlet



① Zero pulse mark on flange

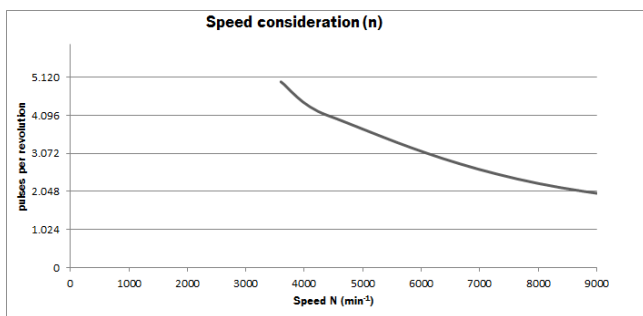
PIN assignment

View of M12 device connector on cable/housing



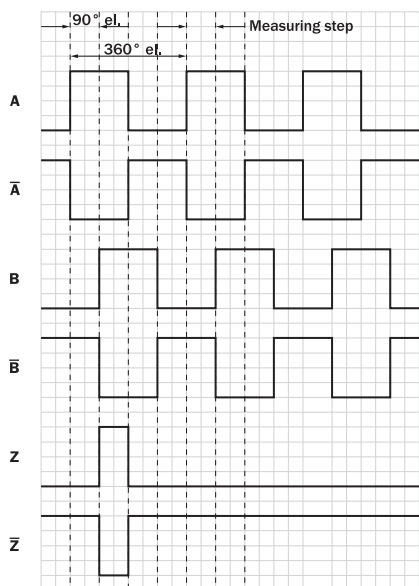
Colour of wires	Pin 8-pole in M12	Signal TTL; HTL	Explanation
Brown	1	A-	Signal line
White	2	A	Signal line
Black	3	B-	Signal line
Pink	4	B	Signal line
Yellow	5	Z-	Signal line
Lilac	6	Z	Signal line
Blue	7	GND	Ground connection of the Encoder
Red	8	+Us	Supply voltage
Screen	Screen	Screen	Screen (Screen connected to Encoder housing.)

Maximum revolution range



Signal outputs

Signal outputs for electrical interfaces TTL and HTL






Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

Supply voltage	Output
4,5 V ... 5,5 V	TTL
10 V ... 30 V	TTL
10 V ... 27 V	HTL
4,5 V ... 30 V	TTL/HTL universal
4,5 V ... 30 V	TTL

Recommended accessories

Other models and accessories → www.sick.com/DBS60_Inox

	Brief description	Type	Part no.
Plug connectors and cables			
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, HIPERFACE [®] , PUR, halogen-free, shielded	LTG-2308-MWENC	6027529
	Head A: cable Head B: Flying leads Cable: SSI, PUR, shielded	LTG-2411-MW	6027530
	Head A: cable Head B: Flying leads Cable: SSI, TTL, HTL, PUR, halogen-free, shielded	LTG-2612-MW	6028516

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