



DBS60I-BEFM02048

DBS60 Inox

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	Part no.
DBS60I-BEFM02048	1089718

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

Detailed technical data

Performance

Pulses per revolution	2,048
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	
Load current	≤ 30 mA, per channel

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.

	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	Blind hollow shaft
Shaft diameter	12 mm
Flange type / stator coupling	2-sided stator coupling, slot, screw hole circle 63–83 mm
Weight	0.44 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	2.1 Ncm (+20 °C)
Operating torque	2 Ncm (+20 °C)
Permissible shaft movement, axial static/dynamic	± 0.5 mm / ± 0.2 mm
Permissible shaft movement, radial static/dynamic	± 0.3 mm / ± 0.1 mm
Operating speed	≤ 6,000 min ⁻¹ ²⁾

1) Relates to encoders with male connector.

2) 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.

Moment of inertia of the rotor	52 gcm ²
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	≤ 500,000 rad/s ²

¹⁾ Relates to encoders with male connector.

²⁾ 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

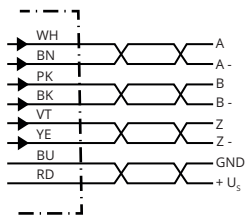
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP67, cable connection (according to IEC 60529)
Permissible relative humidity	90 % (condensation of the optical scanning not permitted)
Operating temperature range	-30 °C ... +100 °C, at maximum 3,000 pulses per revolution
Storage temperature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

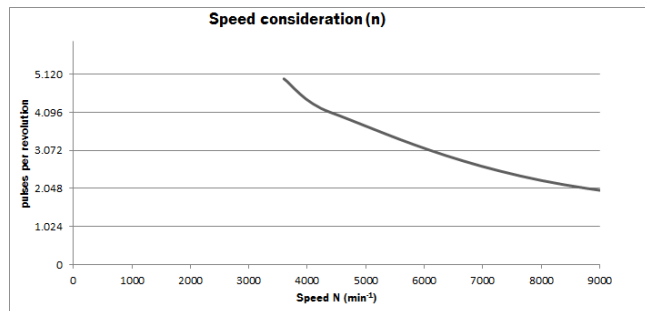
Type Blind hollow shaft	Shaft diameter xj7
DBS60I-BAxxxxxxx	6 mm
DBS60I-BBxxxxxxx	8 mm
DBS60I-BDxxxxxxx	10 mm
DBS60I-BExxxxxxx	12 mm
DBS60I-BGxxxxxxx	14 mm
DBS60I-BHxxxxxxx	15 mm

PIN assignment



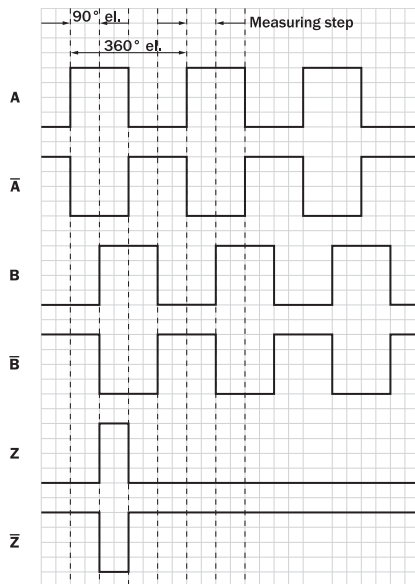
Wire colors (cable connection)	Male connector M12, 8-pin	TTL/HTL signal	Explanation
Brown	1	A-	Signal cable
White	2	A	Signal cable
Black	3	B-	Signal cable
Pink	4	B	Signal cable
Yellow	5	Z-	Signal cable
Purple	6	Z	Signal cable
Blue	7	GND	Ground connection
Red	8	+U _s	Supply voltage
Screen	Screen	Screen	Screen connected to housing on encoder side

Maximum revolution range



Signal outputs

Signal outputs for electrical interfaces TTL and HTL









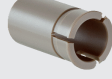
Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

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.
Flanges			
	<ul style="list-style-type: none"> Description: Two-sided stator coupling, screw hole circle diameter 63 mm, slot width 3.2 mm 	BEF-DS-09	2076214
	<ul style="list-style-type: none"> Description: Two-sided stator coupling, slot, slot radius 63 mm – 83 mm, slot width 3.2 mm 	BEF-DS-10	2076215
	<ul style="list-style-type: none"> Description: One-sided stator coupling, slots, slot radius 32.75 mm – 142.65 mm, slot width 4.5 mm 	BEF-DS-11	2076216
	<ul style="list-style-type: none"> Description: Torque support, 1-sided, slotted hole, screw hole radius 31.5 mm - 48.5 mm, hole width 5.1 mm 	BEF-DS-12	2076217
	<ul style="list-style-type: none"> Description: One-sided stator coupling, slot, slot radius 32.1 mm – 37.6 mm, slot width 4.5 mm 	BEF-DS-14	2076678

	Brief description	Type	Part no.
	<ul style="list-style-type: none"> Description: Flange adapter, adaptation of face mount flange with 36 mm centering hub to 50 mm servo flange Material: Stainless steel Items supplied: Including 3 countersunk screws with Precote 85-8 coating; M4*12 	BEF-FA-036-050-I	2094778
Plug connectors and cables			
	<ul style="list-style-type: none"> Connection type head A: Cable Connection type head B: Flying leads Signal type: SSI, Incremental, HIPERFACE® Cable: 8-wire, PUR, halogen-free Description: SSI, shielded, Incremental, HIPERFACE® 	LTG-2308-MWENC	6027529
	<ul style="list-style-type: none"> Connection type head A: Cable Connection type head B: Flying leads Signal type: SSI, Incremental Cable: 11-wire, PUR Description: SSI, shielded, Incremental 	LTG-2411-MW	6027530
	<ul style="list-style-type: none"> Connection type head A: Cable Connection type head B: Flying leads Signal type: SSI, TTL, HTL, Incremental Cable: 12-wire, UV and saltwater-resistant, PUR, halogen-free Description: SSI, shielded, Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, UV and saltwater resistant, 4 x 2 x 0.25 mm² + 2 x 0.5 mm² + 2 x 0.14 mm², Ø 7.8 mm, TTL, HTL, Incremental 	LTG-2612-MW	6028516
	<ul style="list-style-type: none"> Connection type head A: Male connector, M12, 8-pin, straight, A-coded Connection type head B: - Authorizations: UL Description: Shielded Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.5 mm² Application: Hygienic and washdown zones 	YM12ES8-0050S5586A	2097337
Shaft adaptation			
	<ul style="list-style-type: none"> Description: Collet metal for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm) 	SPZ-58Z-012-M	2076221
	<ul style="list-style-type: none"> Description: Collet plastic insulated for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm) 	SPZ-58Z-012-P	2076231

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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