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DATA SHEET

DBS60I-W9FN05000

DBS60
Incremental encoders

SICK Sensor Intelligence

Illustration may differ

INCREMENTAL ENCODERS

DBS60I-W9FN05000

ORDERING INFORMATION

Type	part no.
DBS60I-W9FN05000	1116973

Further device versions and accessories at www.sick.com/DBS60

DETAILED TECHNICAL DATA

SAFETY-RELATED PARAMETERS

$MTTF_D$ (mean time to dangerous failure)	500 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	5,000
Measuring step	90°, electric/pulses per revolution
Measuring step deviation	± 36° / pulses per revolution
Error limits	Measuring step deviation x 3
Duty cycle	≤ 0.5 ± 10 %

INTERFACES

Communication interface	Incremental
Communication Interface detail	TTL / HTL / HTL [1]
Number of signal channels	6-channel
Initialization time	< 5 ms [2]

[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.

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.

ELECTRONICS

Connection type	Cable, 8-wire, radial, 10 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]

[1] Short-circuit opposite to another channel, US or GND permissable for maximum 30 s.

MECHANICS

Mechanical design	Solid shaft, face mount flange
Shaft diameter	3/8″ With flat
Shaft length	19 mm
Flange type / stator coupling	Flange with 3 x M3 and 3 x M4
Weight	0.7 kg (DBS60I-W*) [1]
Shaft material	Stainless steel V4A (316L)
Flange material	Stainless steel V4A (316L)
Housing material	Stainless steel V4A (316L)
Material, cable	TPU
Shaft sealing ring material	FKM80
Material, cable gland	Stainless steel V4A (316L)
Start up torque	1 Ncm (+20 °C)
Operating torque	0.9 Ncm (+20 °C)
Permissible shaft loading	80 N (radial) [2] 40 N (axial) [2]
Operating speed	≤ 6,000 min^{-1} [3]
Moment of inertia of the rotor	45 gcm^2
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s^2

[1] Relates to encoders with 1.5 m cable connection.

[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

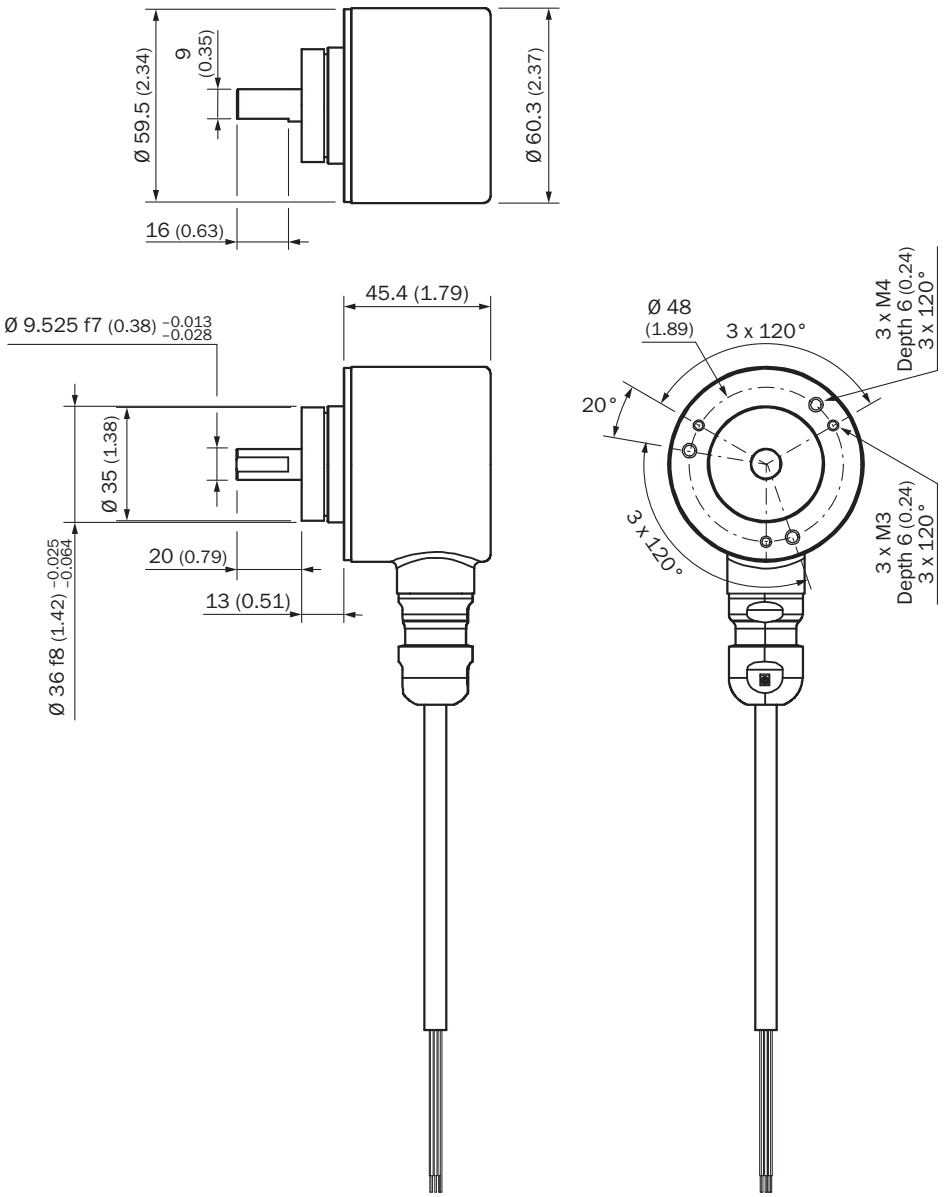
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP69K (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–30 °C ... +85 °C, at more than 3,000 pulses per revolution
Storage temperature range	–40 °C ... +100 °C, without package

Resistance to shocks	100 g, 6 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

CERTIFICATES

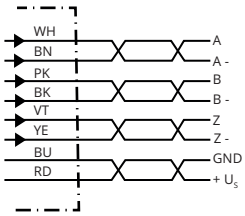
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING



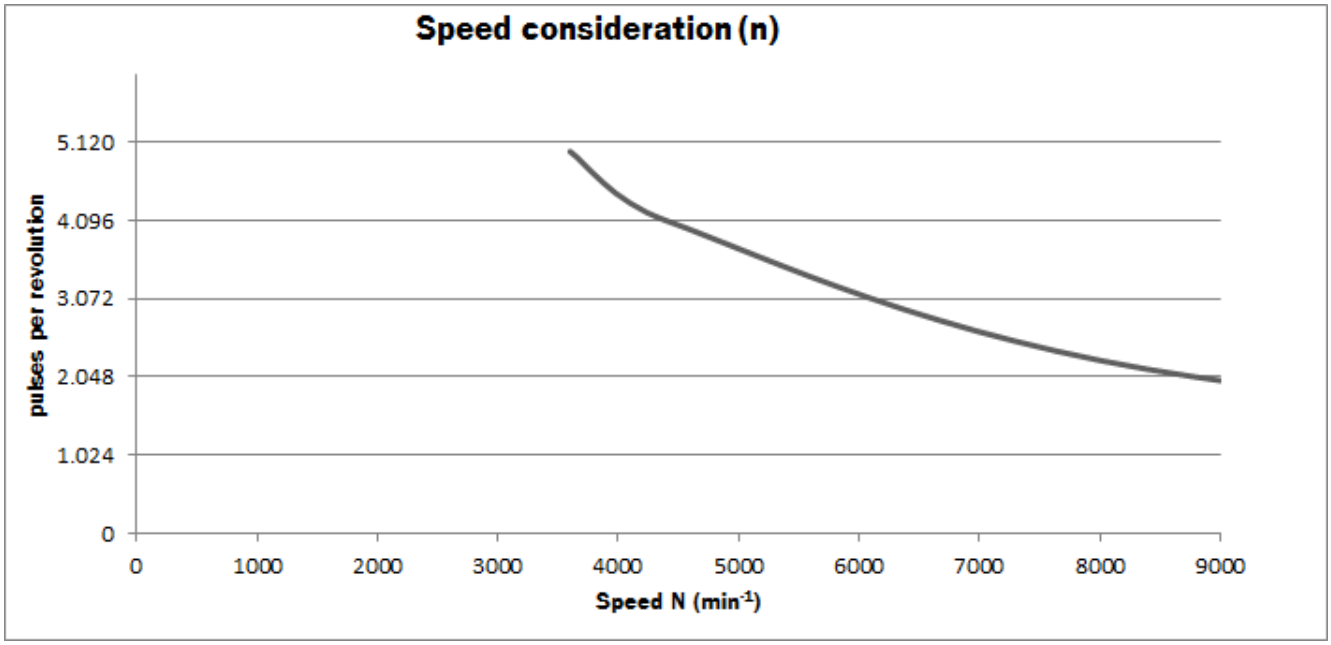
Dimensions in mm (inch)

PIN ASSIGNMENT

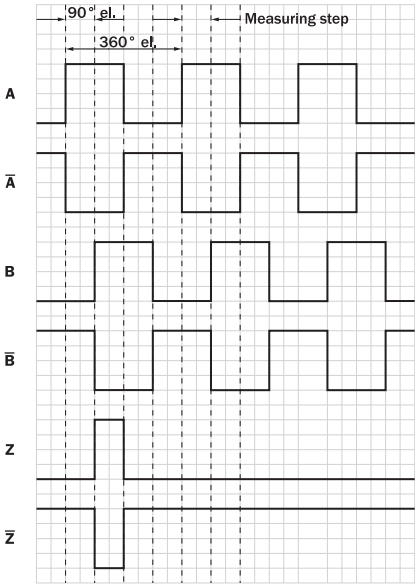


Wire colors (cable connection)	Male connector M12, 8-pin	TTL/HTL signal	Explanation
Brown	1	A-	Signal cable
White	2	A	Signal cable
Black	3	B-	Signal cable
Pink	4	B	Signal cable
Yellow	5	Z-	Signal cable
Purple	6	Z	Signal cable
Blue	7	GND	Ground connection
Red	8	$+U_s$	Supply voltage
Screen	Screen	Screen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

DIAGRAMS



DIAGRAMS 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

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1116973

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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