Product data sheet

DBS60I-W9FN01024

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
DBS60I-W9FN01024	1116971

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

Detailed technical data

Performance

Pulses per revolution	1,024
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, 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	✓

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

Short-circuit protection of the outputs	✓ [1]
MTTFd: mean time to dangerous failure	500 years (EN ISO 13849-1) [2]

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Mechanical data

Mechanical design	Solid shaft, face mount flange
Shaft diameter	3/8″
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

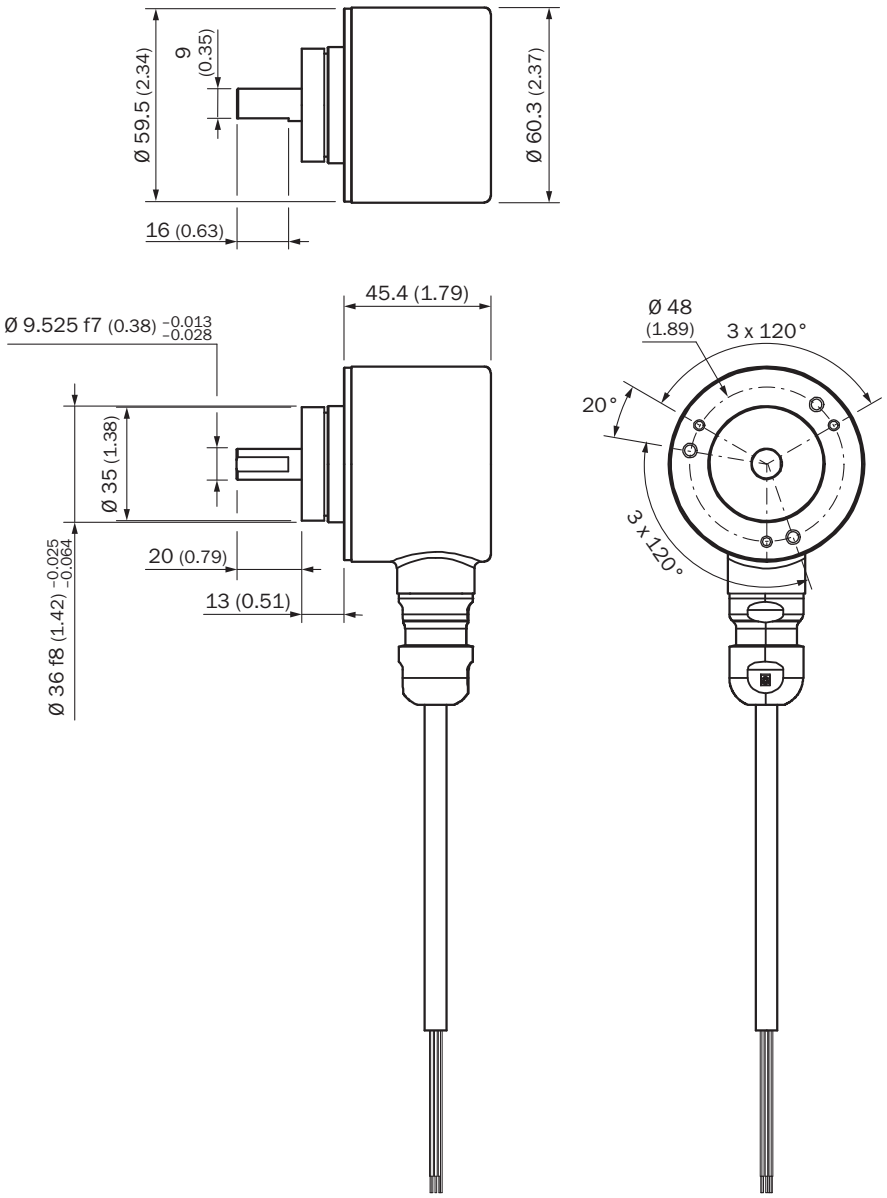
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP69K (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–30 °C ... +100 °C, at maximum 3,000 pulses per revolution
Storage temperature range	–40 °C ... +100 °C, without package
Resistance to shocks	100 g, 6 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

Classifications

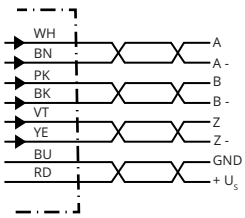
eCl@ss 5.0	27270501
eCl@ss 5.1.4	27270501
eCl@ss 6.0	27270590

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
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))



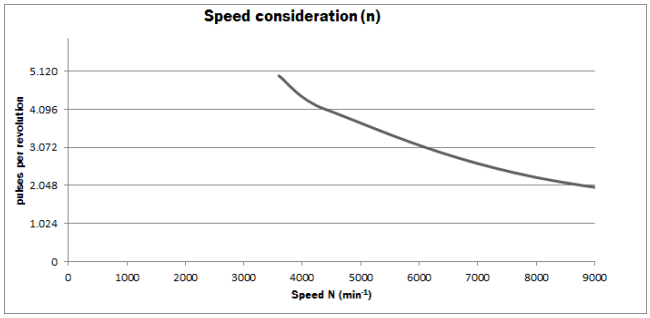
PIN assignment



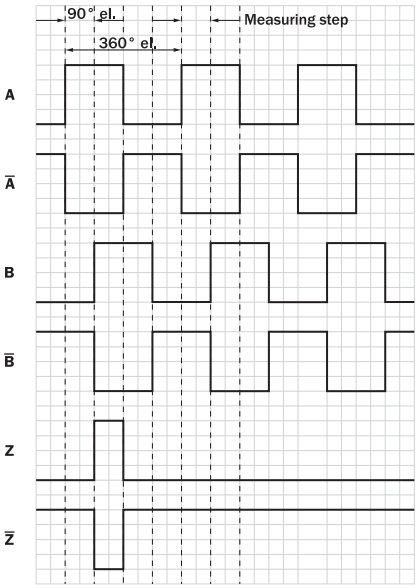
Wire colors (cable connection)	Male connector M12, 8-pin	TTL/HTL signal	Explanation
Brown	1	A-	Signal cable

Wire colors (cable connection)	Male connector M12, 8-pin	TTL/HTL signal	Explanation
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



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

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

SICK AT A GLANCE

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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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