

SICK.COM

DATA SHEET

# DBS60E-S4EZZS152

DBS60  
Incremental encoders

**SICK** Sensor Intelligence

## INCREMENTAL ENCODERS

## DBS60E-S4EZZS152

## ORDERING INFORMATION

Type	part no.
DBS60E-S4EZZS152	1122117

Further device versions and accessories at [www.sick.com/DBS60](http://www.sick.com/DBS60)



Illustration may differ

## DETAILED TECHNICAL DATA

## FEATURES

Special device	✓
Specialty	Male connector, SUB-D, 15-pin Customized mounting brackets Measuring wheels pre-mounted, 200 mm (BEF-MR010020R/2055224) Customized label
Standard reference device	DBS60E-S4EK05000, 1069724

## SAFETY-RELATED PARAMETERS

MTTF <sub>D</sub> (mean time to dangerous failure)	500 years (EN ISO 13849-1) <sup>1)</sup>
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<sup>1)</sup> 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	HTL / Push pull
Number of signal channels	6-channel
Initialization time	< 5 ms <sup>1)</sup>
Output frequency	+ 300 kHz <sup>2)</sup>
Load current	≤ 30 mA, per channel
Power consumption	≤ 1 W (without load)

<sup>1)</sup> Valid signals can be read once this time has elapsed.

<sup>2)</sup> Up to 450 kHz on request.

**ELECTRONICS**

Connection type	Special version
Connection type Detail	Male connector, SUB-D, 15-pin
Supply voltage	10 ... 27 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	✓ <sup>1)</sup>

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

**MECHANICS**

Mechanical design	Solid shaft, face mount flange
Shaft diameter	10 mm With flat <sup>1)</sup>
Shaft length	19 mm
Flange type / stator coupling	Flange with 3 x M3 and 3 x M4
Weight	+ 0.3 kg <sup>2)</sup>
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Material, cable	PVC
Start up torque	+ 1.2 Ncm (+20 °C)
Operating torque	1.1 Ncm (+20 °C)
Permissible shaft loading	100 N (radial) <sup>3)</sup> 50 N (axial) <sup>3)</sup>
Operating speed	6,000 min <sup>-1</sup> <sup>4)</sup>
Maximum operating speed	9,000 min <sup>-1</sup> <sup>5)</sup>
Moment of inertia of the rotor	33 gcm <sup>2</sup>
Bearing lifetime	3.6 x 10 <sup>9</sup> revolutions
Angular acceleration	≤ 500,000 rad/s <sup>2</sup>

<sup>1)</sup> Others on request.

<sup>2)</sup> Based on encoder with male connector or cable with male connector.

<sup>3)</sup> Higher values are possible using limited bearing life.

<sup>4)</sup> Allow for self-heating of 3.2 K per 1,000 rpm when designing the operating temperature range.

<sup>5)</sup> 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**

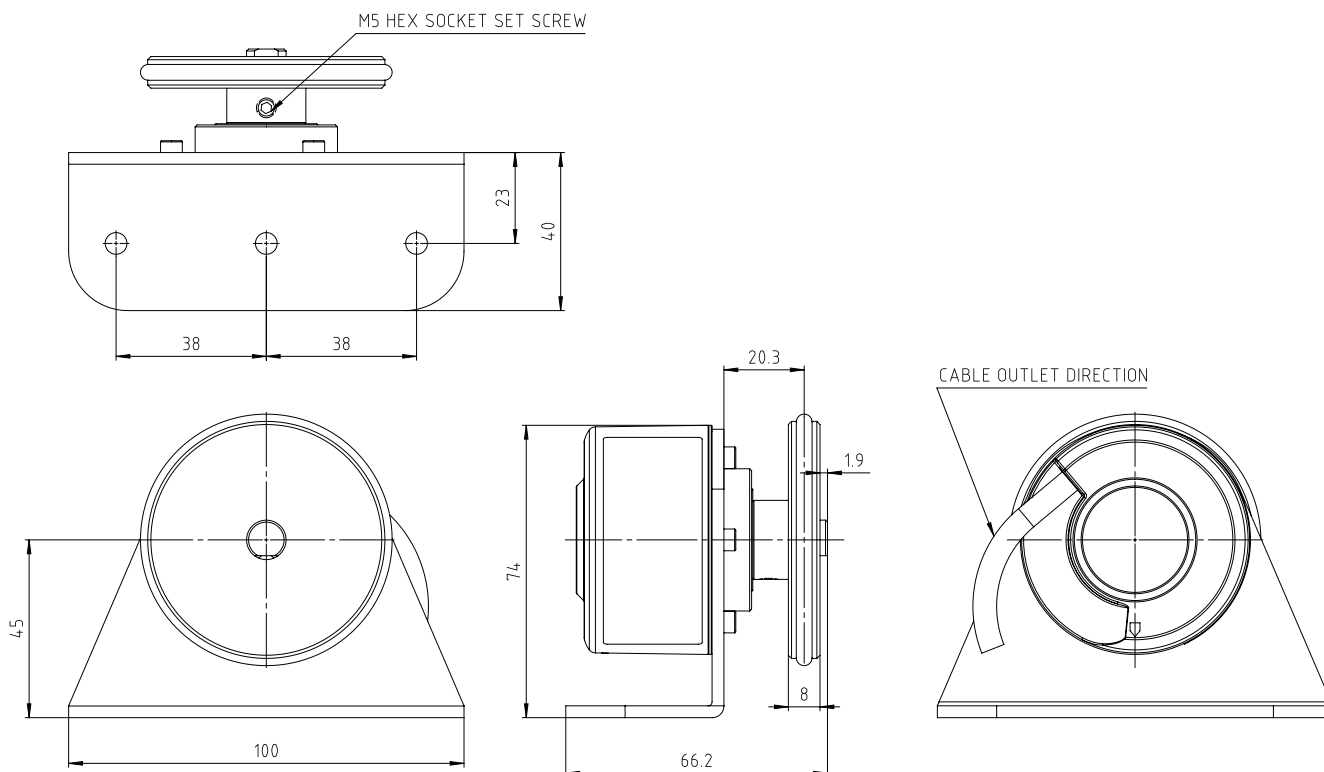
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP67, housing side (IEC 60529) IP65, shaft side (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	-20 °C ... +85 °C <sup>1)</sup>
Storage temperature range	-40 °C ... +100 °C, without package
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)

<sup>1)</sup> These values relate to all mechanical versions including recommended accessories unless otherwise noted.

**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)	✓

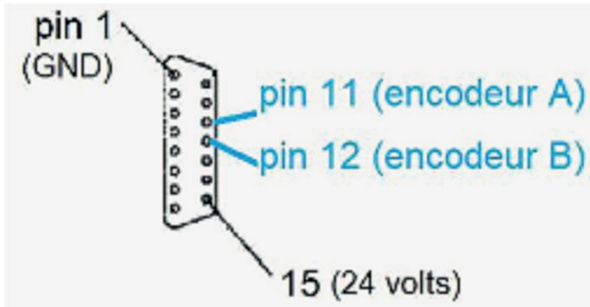
**DIMENSIONAL DRAWING**



Dimensions in mm (inch)

**PIN ASSIGNMENT**

CONNECTION:  
1.5M CABLE WITH D-SUB MALE 15PIN



**TYPE LABEL ENCODER LABEL**

**ZerJet**  
CODING  
Ref: ZEN3004

**SICK**  
Ident. Nr. YYWW - cn  
**1234567 SERIALNO**

LINE		VL	VT	
Signal	Pin Number		Signal	Pin Number
+ US	15		A	11
GND	1		B	12

**EAC** **CE** **25**

Made in Malaysia

**TYPE LABEL PACKAGING LABEL**

**SICK**  
Sick, D-79183 Waldkirch

Made in Malaysia

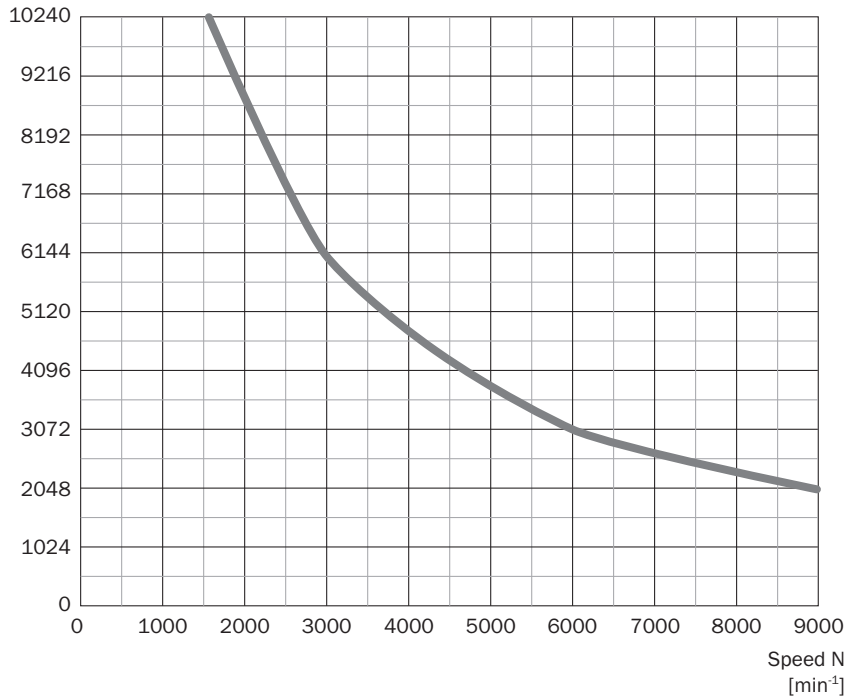
Ident. Nr. YYWW - cn  
**1234567 SERIALNO**

**ZerJet**  
CODING  
Ref: ZEN3004

LINE Lines  
VL VDC  
VT Driver

**DIAGRAMS**

Pulses per revolution



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/1122117](http://www.sick.com/1122117)



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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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