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DATA SHEET

DBS60E-T5ECB0S117

DBS60
Incremental encoders

SICK Sensor Intelligence

Illustration may differ

INCREMENTAL ENCODERS

DBS60E-T5ECB0S117

ORDERING INFORMATION

Type	part no.
DBS60E-T5ECB0S117	1106968

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

DETAILED TECHNICAL DATA

FEATURES

Special device	✓
Specialty	Item DBS60E-T5ECB0S117 is based on two encoders of type DBS60E-T5ECB05000 with customized pin allocation, which are mechanically connected via an adapter The following technical data apply to the set of 2 encoders: Weight: 0.55 kg, start up torque: 1.0 Ncm (+20°C), operating torque: 0.8 Ncm (+20°C), moment of inertia of the rotor: 100 gcm²
Standard reference device	DBS60E-T5ECB05000
Additional information	Technical data refer to one encoder, type DBS60E-T5ECB05000

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	HTL / Push pull
Number of signal channels	6-channel
Initialization time	< 5 ms [1]
Output frequency	+ 300 kHz [2]
Load current	≤ 30 mA, per channel
Power consumption	≤ 1 W (without load)

[1] Valid signals can be read once this time has elapsed.

[2] Up to 450 kHz on request.

ELECTRONICS

Connection type	Male connector, M12, 8-pin, radial
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	✓ [1]

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

MECHANICS

Mechanical design	Through hollow shaft
Shaft diameter	12 mm Front clamp
Flange type / stator coupling	Stator coupling, 2-sided, screw hole circle 63 mm
Weight	+ 0.25 kg [1]
Shaft material	Stainless steel with plastic shaft
Flange material	Aluminum
Housing material	Aluminum
Start up torque	+ 0.5 Ncm (+20 °C)
Operating torque	0.4 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial) [2]
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial) [2]
Operating speed	6,000 min^{-1} [3]
Maximum operating speed	9,000 min^{-1} [4]
Moment of inertia of the rotor	50 gcm^2
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 200,000 rad/s^2

[1] Based on encoder with male connector or cable with male connector.

[2] Not apllicable for stator coupling type C and K.

[3] Allow for self-heating of 2.6 K per 1,000 rpm when designing the operating temperature range.

[4] 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	IP65, housing side (IEC 60529) [1] IP65, shaft side (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–30 °C ... +100 °C [2]
Storage temperature range	–40 °C ... +100 °C, without package
Resistance to shocks	200 g, 3 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

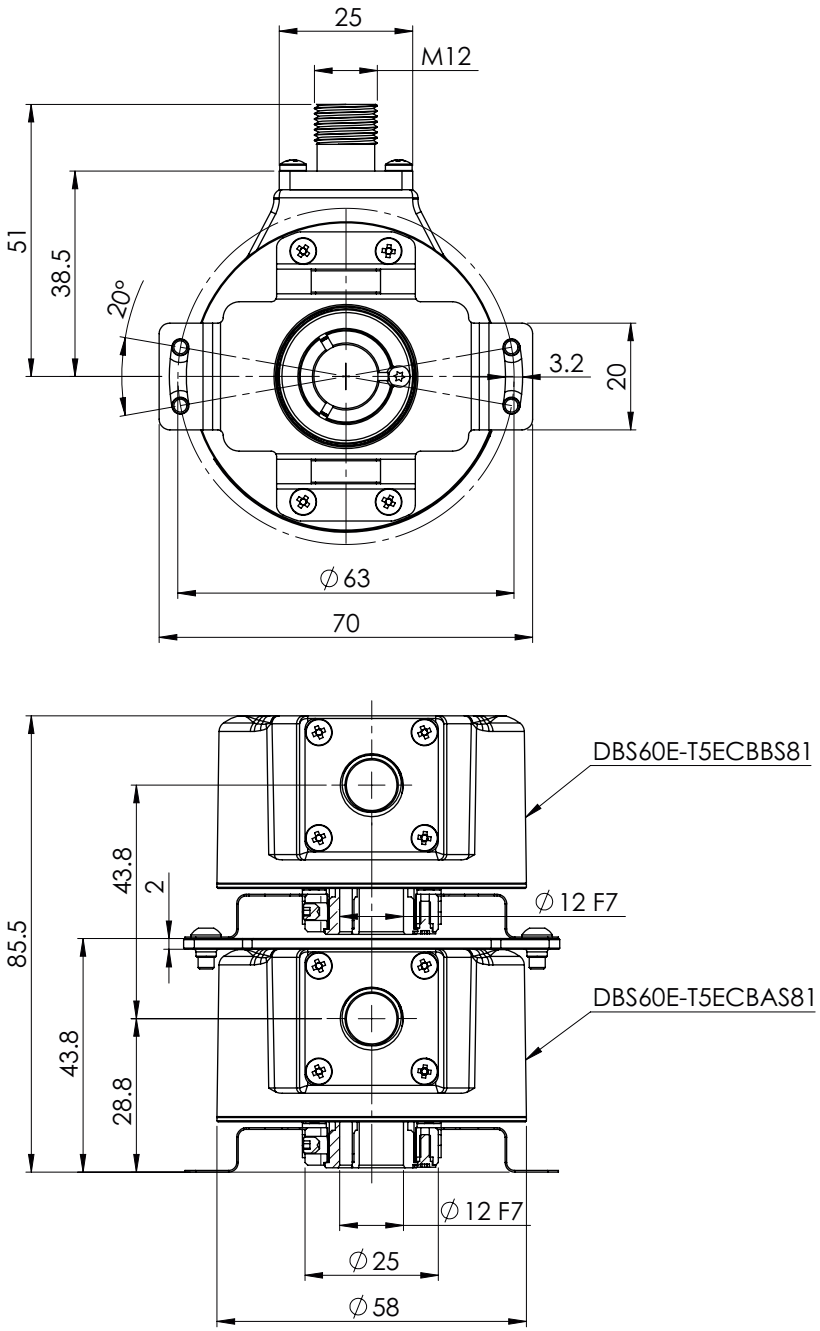
[1] With mating connector fitted.

[2] These values relate to all mechanical versions including recommended accessories unless otherwise noted.

CERTIFICATES

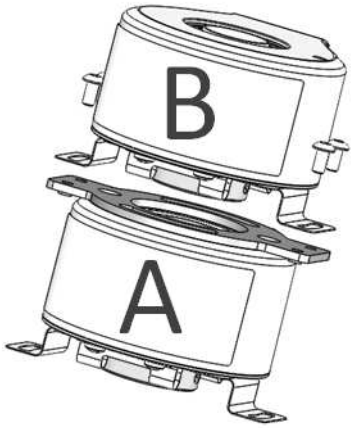
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING



Dimensions in mm (inch)

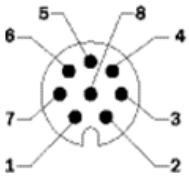
ATTACHMENT SPECIFICATIONS



Additional installation instruction:
Step 1: Mount the encoder (A) in the preferred position
Step 2: Followed by the encoder (B)
Step 3: Connect encoder A and B by tightening the four screws

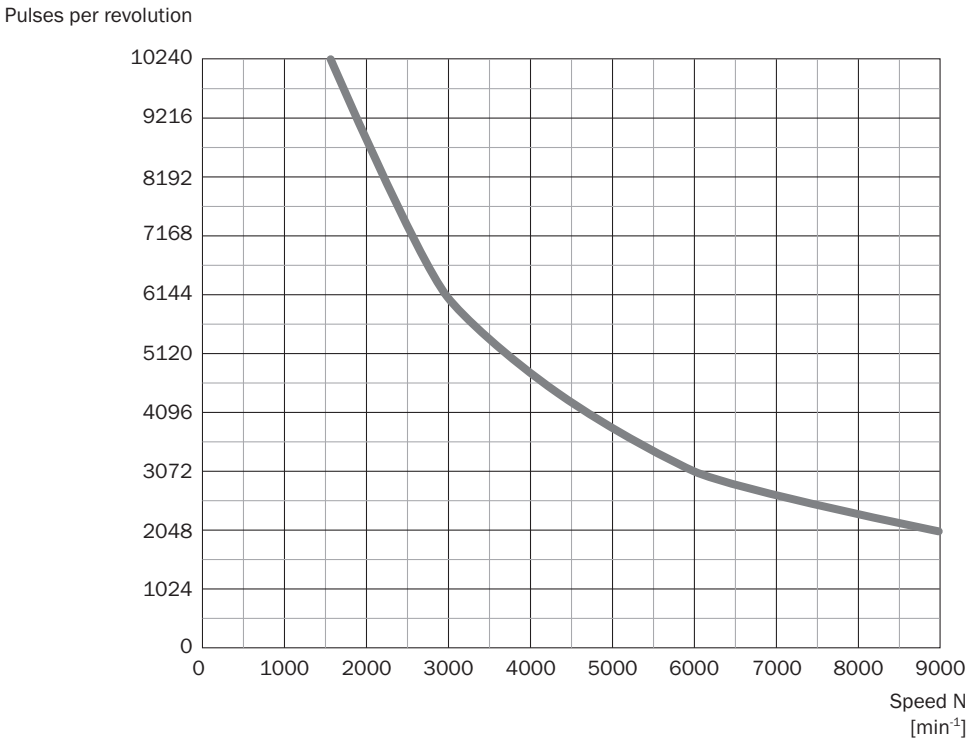
PIN ASSIGNMENT

View of M12 device connector on cable/housing



Pin, 8-pin, M12 connector	TTl/HTL signal	Explanation
1	¯B	Signal cable
2	Z	Signal cable
3	B	Signal cable
4	A	Signal cable
5	¯A	Signal cable
6	¯Z	Signal cable
7	GND	Ground connection of the encoder
8	$+U_S$	Supply voltage (volt-free to housing)
Shield	Shield	Shield connected to housing on side of encoder. Connected to ground on side of control.

DIAGRAMS



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/1106968

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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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