

DBS60E-RZEZZS144

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
DBS60E-RZEZZS144	1133679

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



Detailed technical data

Features

Special device	✓
Specialty	Through hollow shaft, 7 mm Customer-specific hollow shaft with Ø7 H7 (without collet) Start up torque 0.3 Ncm, operating torque 0.2 Ncm Customer-specific mounting accessories (elastomer buffer + M4 screw)
Standard reference device	DBS60E-RBEPD2000

Performance

Pulses per revolution	2,000
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	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.

Electrical data

Connection type	Cable, 8-wire, with male connector, M12, 8-pin, universal, 1 m ¹⁾
Supply voltage	10 ... 27 V
Reference signal, number	1
Reference signal, position	90°, electric, logically gated with A and B

¹⁾ The universal cable connection is positioned so that it is possible to lay it without bends in a radial or axial direction.

²⁾ Short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

³⁾ 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.

Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ ²⁾
MTTFd: mean time to dangerous failure	500 years (EN ISO 13849-1) ³⁾

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Mechanical data

Mechanical design	Through hollow shaft, rear clamping
Shaft diameter	7 mm ¹⁾
Flange type / stator coupling	2-sided stator coupling, slot, screw hole circle 63–83 mm
Weight	+ 0.25 kg ²⁾
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Material, cable	PVC
Start up torque	0.3 Ncm (+20 °C)
Operating torque	0.2 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial) ³⁾
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial) ³⁾
Operating speed	6,000 min ⁻¹ ⁴⁾
Maximum operating speed	9,000 min ⁻¹ ⁵⁾
Moment of inertia of the rotor	50 gcm ²
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	≤ 500,000 rad/s ²

¹⁾ Customer-specific hollow shaft with Ø7 H7 (without collet).

²⁾ Based on encoder with male connector or cable with male connector.

³⁾ Not applicable for stator coupling type C and K.

⁴⁾ Allow for self-heating of 2.6 K per 1,000 rpm when designing the operating temperature range.

⁵⁾ 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	-20 °C ... +85 °C ²⁾
Storage temperature range	-40 °C ... +100 °C, without package
Resistance to shocks	250 g, 3 ms (EN 60068-2-27)

¹⁾ With mating connector fitted.

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

Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)
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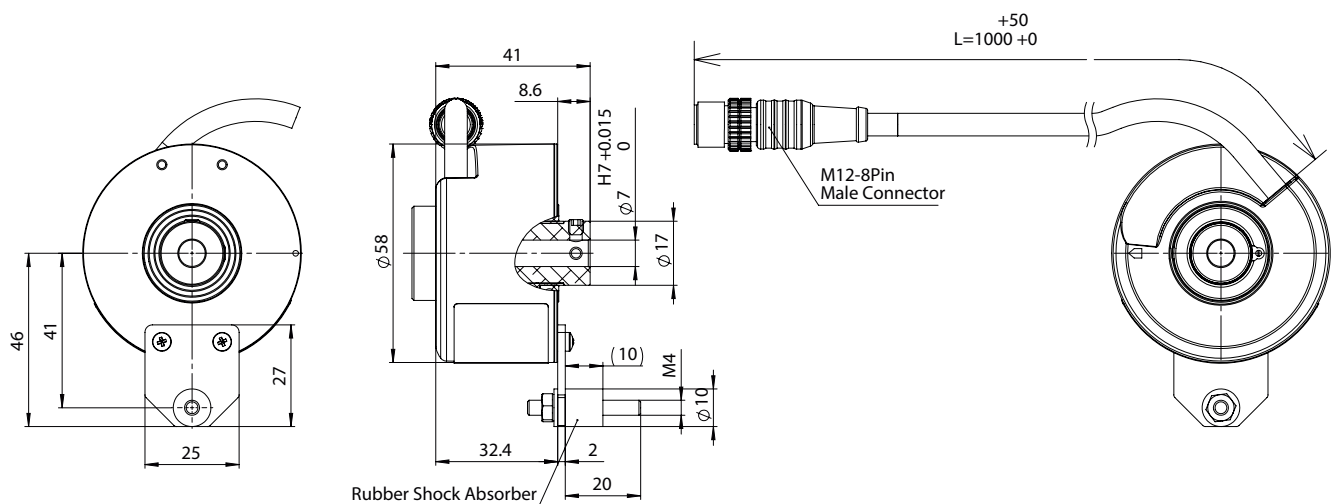
¹⁾ With mating connector fitted.

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

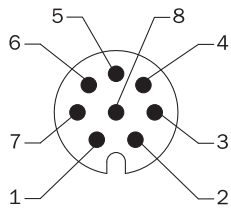
Classifications

ECLASS 5.0	27270501
ECLASS 5.1.4	27270501
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270501
ECLASS 8.0	27270501
ECLASS 8.1	27270501
ECLASS 9.0	27270501
ECLASS 10.0	27270501
ECLASS 11.0	27270501
ECLASS 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

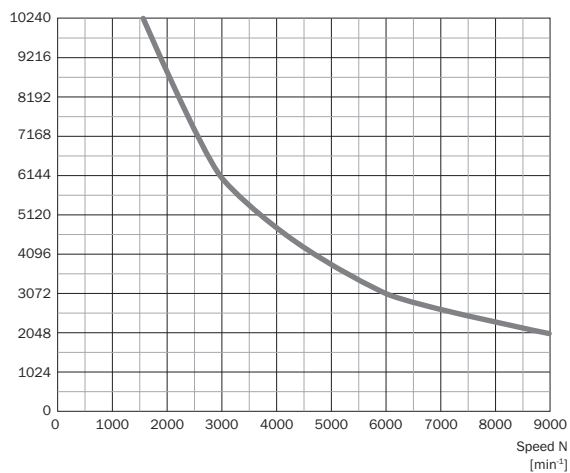


View of M12 male device connector on cable / housing

Wire colors (cable connection)	Male connector M12, 8-pin	Male connector M23, 12-pin	TTL/HTL 6-channel signal	Explanation
Brown	1	6	A-	Signal wire
White	2	5	A	Signal wire
Black	3	1	B-	Signal wire
Pink	4	8	B	Signal wire
Yellow	5	4	Z-	Signal wire
Purple	6	3	Z	Signal wire
Blue	7	10	GND	Ground connection
Red	8	12	+U _s	Supply voltage
-	-	9	Not assigned	Not assigned
-	-	2	Not assigned	Not assigned
-	-	11	Not assigned	Not assigned
-	-	7	Not assigned	Not assigned
Screen	Screen	Screen	Screen	Screen connected to encoder housing







Diagrams

Pulses per revolution



Recommended accessories

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

	Brief description	Type	Part no.
Flanges			
	Two-sided stator coupling, screw hole circle diameter 63 mm, slot width 3.2 mm	BEF-DS-09	2076214
	Two-sided stator coupling, slot, slot radius 63 mm - 83 mm, slot width 3.2 mm	BEF-DS-10	2076215
	One-sided stator coupling, slots, slot radius 32.75 mm - 142.65 mm, slot width 4.5 mm	BEF-DS-11	2076216
	Torque support, 1-sided, slotted hole, screw hole radius 31.5 mm - 48.5 mm, hole width 5.1 mm	BEF-DS-12	2076217
	Flange adapter (for hollow shaft) for register pin mounting (pin 4 mm)	BEF-DS-13	2076218
	One-sided stator coupling, slot, slot radius 32.1 mm - 37.6 mm, slot width 4.5 mm	BEF-DS-14	2076678

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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.

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