

DBS60E-THFLD0S76

DBS60

INCREMENTAL ENCODERS



Illustration may differ

Ordering information

Туре	part no.
DBS60E-THFLD0S76	1087914

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



Detailed technical data

Features

Special device	✓
Specialty	Customized orientation of the stator coupling
Standard reference device	DBS60E-THFLD1024, 1074281

Safety-related parameters

MTTF _D (mean time to dangerous failure)	500 years (EN ISO 13849-1) ¹⁾
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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	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 / 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.

 $^{^{\}rm 2)}$ Valid signals can be read once this time has elapsed.

 $^{^{\}rm 3)}$ Up to 450 kHz on request.

Electronics

Connection type	Cable, 8-wire, universal, 3 m ¹⁾
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	✓ ²⁾

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

Mechanics

Mechanical design	Through hollow shaft		
Shaft diameter	15 mm Front clamp		
Flange type / stator coupling	1-sided stator coupling, slot, screw hole circle radius 31.5–48.5 mm		
Weight	+ 0.25 kg ¹⁾		
Shaft material	Stainless steel		
Flange material	Aluminum		
Housing material	Aluminum		
Material, cable	PVC		
Start up torque	+ 0.5 Ncm (+20 °C)		
Operating torque	0.4 Ncm (+20 °C)		
Permissible movement static	\pm 0.3 mm (radial) \pm 0.5 mm (axial) $^{2)}$		
Permissible movement dynamic	\pm 0.1 mm (radial) \pm 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	≤ 500,000 rad/s²		

 $^{^{1)}\,\}mathrm{Based}$ on encoder with male connector or cable with male connector.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP65, housing side (IEC 60529) IP65, shaft side (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	-30 °C +100 °C, at maximum 3,000 pulses per revolution ¹⁾
Storage temperature range	-40 °C +100 °C, without package

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

 $^{^{2)}\,\}mbox{Short-circuit}$ opposite to another channel, US or GND permissable for maximum 30 s.

 $^{^{2)}\,\}mathrm{Not}$ 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.

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)

 $^{^{1)}}$ These values relate to all mechanical versions including recommended accessories unless otherwise noted.

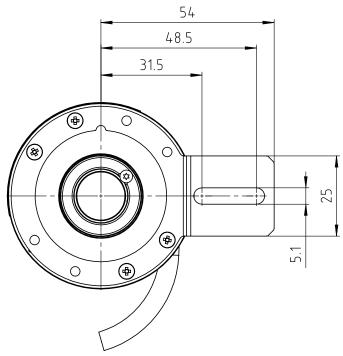
Certificates

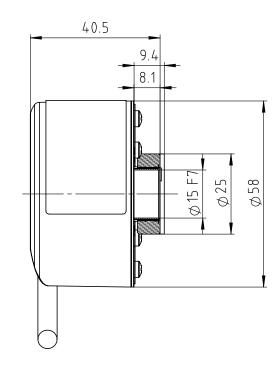
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

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

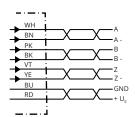
Dimensional drawing





Dimensions in mm (inch)

PIN assignment

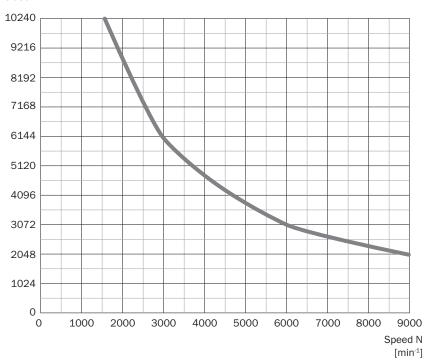


Wire colors (ca- ble connection)	Male connector M12, 8-pin	Male connec- tor M23, 12-pin	TTL/HTL 6- channel signal	Explanation
Brown	1	6	A-	Signal wire
White	2	5	А	Signal wire
Black	3	1	B-	Signal wire
Pink	4	8	В	Signal wire
Yellow	5	4	Z-	Signal wire
Purple	6	3	Z	Signal wire
Blue	7	10	GND	Ground connection
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

Wire colors (ca- ble connection)	Male connector M12, 8-pin	Male connector M23, 12-pin	TTL/HTL 6- channel signal	Explanation
Screen	Screen	Screen	Screen	Screen connected to encoder housing

Diagrams

Pulses per revolution



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