



Incremental encoders DBS60 Core, Rotary

DBS60E-S1CK02000



Model Name > **DBS60E-S1CK02000**
Part No. > **1070612**



Illustration may differ

At a glance

- Face mount flange, servo flange, blind and through hollow shaft
- Housing unit: Ø58 mm; compact mounting depth, large bearing distance
- Flange and stator couplings enable diverse mounting options
- Resolution: up to 5,000 pulses
- Cable outlet, radial M23 or M12 connector
- TTL/RS-422 and HTL/push-pull, universal TTL/HTL interface with 4.5 V DC to 30 V DC
- Hollow shafts: metal up to Ø5/8", insulated up to Ø15 mm; front and rear clamping

Your benefits

- Diverse installation options due to different flange and shaft versions
- The universal cable outlet and radial connector allow use in tight spaces and makes flexible cable routing possible
- Compact housing dimensions save valuable space. The optional hollow shaft clamp on the back facilitates mounting.
- Protection of the encoder against high shaft temperatures and currents through optional isolated shafts
- Flanges and stator couplings with different mounting holes allow diverse mounting options with one encoder version
- Rugged design with large bearing distance allows high shaft loads and a longer service life
- The TTL/HTL combination interface enables less product variety and reduces storage costs



Performance

Error limits:	Measuring step deviation x 3
Measuring step deviation:	± 18 °
Measuring step:	90 °/electronically/pulses per revolution
Initialization time:	< 5 ms ¹⁾
Pulses per revolution:	2,000 ²⁾
Duty cycle:	≤ 0.5 ± 5 %

¹⁾ Valid signals can be read once this time has elapsed ²⁾ Available pulses per revolution see type code

Mechanical data

Mechanical interface:	Solid shaft, Servo flange
Shaft diameter:	6 mm x 10 mm ¹⁾

Mass:	0.3 kg ²⁾
Start up torque:	1.2 Ncm (+20 °C)
Operating torque:	1.1 Ncm (+20 °C)
Maximum operating speed:	9,000 /min ³⁾
Moment of inertia of the rotor:	33 gcm ²
Bearing lifetime:	3.6 x 10 ⁹ revolutions
Max. angular acceleration:	500,000 rad/s ²
Permissible shaft loading radial/axial::	100 N (radial), 50 N (axial) ^{4) 5)}
Shaft material:	Stainless steel
Operating speed:	6,000 /min ⁶⁾
Flange material:	Aluminum
Housing material:	Aluminum
Material, cable:	PVC
Stator coupling:	Flange with 3 x M3 and 3 x M4

1) Others on request ²⁾ For an encoder with connector outlet or cable with connector outlet ^{3) 4) 5) 6)} Self warming of 3.2 K per 1000 revolutions/min when applying note working temperature range

Electrical data

Electrical interface:	10 V ... 30 V, TTL/RS422
Electrical connection:	Cable, 8-wire, universal, 1.5 m ¹⁾
Output current:	≤ 30 mA
Maximum output frequency:	300 kHz ²⁾
Reference signal, number:	1
Reference signal, position:	90 °, electronically, gated with A and B
MTTFd: mean time to dangerous failure:	500 a (EN ISO 13849-1) ³⁾
Power consumption max. without load:	≤ 0.5 W
Short-circuit protection of the outputs:	1 ⁴⁾
Reverse polarity protection:	1
Initialisation time after power on:	< 5 ms ⁵⁾

1) The universal cable outlet is positioned in such a way, that it is possible to lay the cable in a radial or axial direction without kinking it ²⁾ Up to 450 kHz on request 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

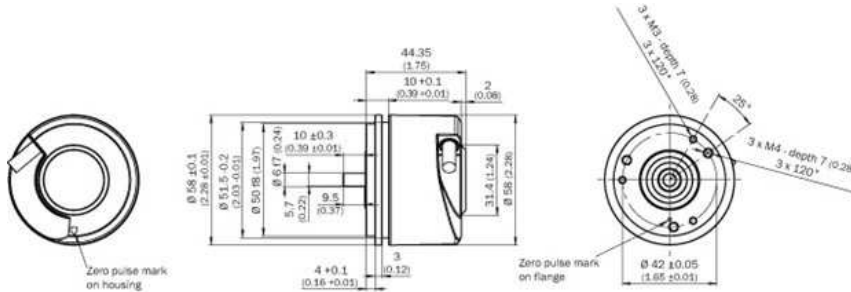
electronic failures are considered hazardous. For more information, see document no. 8015532. ⁴⁾ Short-circuit opposite to another channel, US or GND permissible for maximum 30 s ⁵⁾ Valid signals can be read once this time has elapsed

Ambient data

EMC:	(according to EN 61000-6-2 and EN 61000-6-3)
Working temperature range::	-30 °C ... +100 °C, at maximum 3000 pulses per revolution, -30 °C ... +85 °C, at more than 3000 pulses per revolution ^{1) 2)}
Storage temperature range:	-40 °C ... +100 °C, without package
Resistance to shocks:	250 g, 3 ms (according to EN 60068-2-27)
Resistance to vibration:	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)
Enclosure rating:	IP 65 (according to IEC 60529), shaft side, IP 67 (according to IEC 60529), housing side ³⁾
Permissible relative humidity:	90 % (condensation of the optical scanning not permitted)

1) 2) These values relate to all mechanical versions including recommended accessories unless otherwise noted. 3) With mating connector fitted

Dimensional drawing

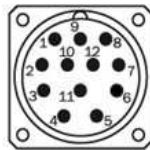
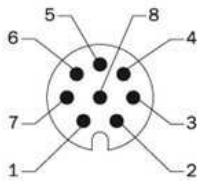


PIN assignment

8-core cable

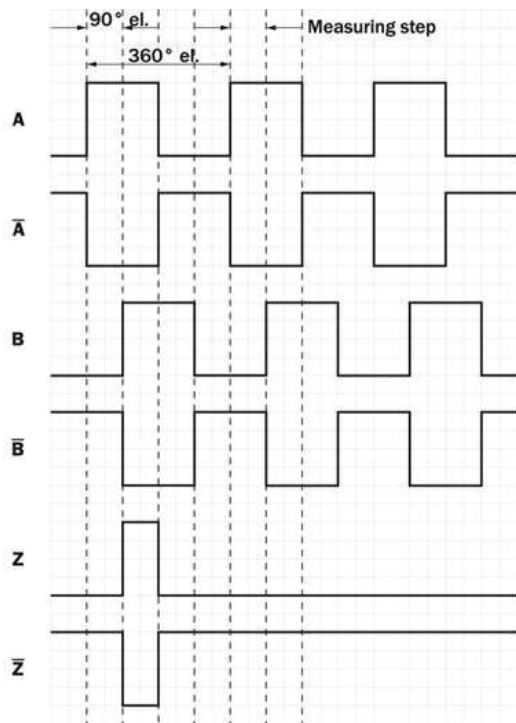
View of M12 device connector on cable

View of M23 device connector on cable

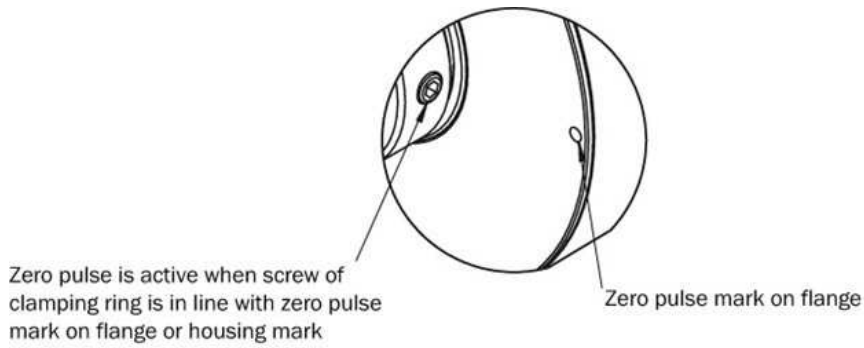


Colour of wires	Pin 12-pole in M12	Pin 12-pole in M23	Signal OC	Signal TTL; HTL	Explanation
Brown	1	6	Not connected	A-	Signal line
White	2	5	A	A	Signal line
Black	3	1	Not connected	B-	Signal line
Pink	4	8	B	B	Signal line
Yellow	5	4	Not connected	Z-	Signal line
Lilac	6	3	Z	Z	Signal line
Blue	7	10	GND	GND	Ground connection of the Encoder
Red	8	12	+Us	+Us	Supply voltage
-	-	9	Not connected	Not connected	Not connected
-	-	2	Not connected	Not connected	Not connected
-	-	11	Not connected	Not connected	Not connected
-	-	7	Not connected	Not connected	Not connected
Screen	Screen	Screen	Screen	Screen	Screen (Screen connected to Encoder housing)

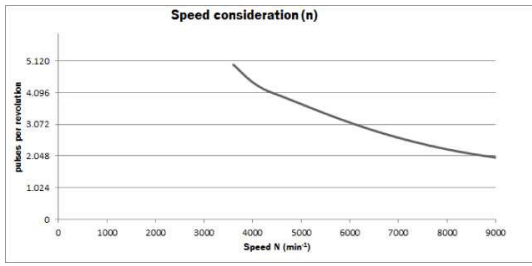
Signalausgänge



Zero pulse explanation



Maximum revolution range



Australia

Phone +61 3 9457 0600
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

Belgium/Luxembourg

Phone +32 (0)2 466 55 66
E-Mail info@sick.be

Brasil

Phone +55 11 3215-4900
E-Mail marketing@sick.com.br

Canada

Phone +1 905 771 14 44
E-Mail information@sick.com

Česká republika

Phone +420 2 57 91 18 50
E-Mail sick@sick.cz

China

Phone +86 4000 121 000
E-Mail info.china@sick.net.cn
Phone +852-2153 6300
E-Mail ghk@sick.com.hk

Danmark

Phone +45 45 82 64 00
E-Mail sick@sick.dk

Deutschland

Phone +49 211 5301-301
E-Mail info@sick.de

España

Phone +34 93 480 31 00
E-Mail info@sick.es

France

Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Great Britain

Phone +44 (0)1727 831121
E-Mail info@sick.co.uk

India

Phone +91-22-4033 8333
E-Mail info@sick-india.com

Israel

Phone +972-4-6881000
E-Mail info@sick-sensors.com

Italia

Phone +39 02 27 43 41
E-Mail info@sick.it

Japan

Phone +81 (0)3 5309 2112
E-Mail support@sick.jp

Magyarország

Phone +36 1 371 2680
E-Mail office@sick.hu

Nederland

Phone +31 (0)30 229 25 44
E-Mail info@sick.nl

Norge

Phone +47 67 81 50 00
E-Mail sick@sick.no

Österreich

Phone +43 (0)22 36 62 28 8-0
E-Mail office@sick.at

Polska

Phone +48 22 837 40 50
E-Mail info@sick.pl

România

Phone +40 356 171 120
E-Mail office@sick.ro

Russia

Phone +7-495-775-05-30
E-Mail info@sick.ru

Schweiz

Phone +41 41 619 29 39
E-Mail contact@sick.ch

Singapore

Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Slovenija

Phone +386 (0)1-47 69 990
E-Mail office@sick.si

South Africa

Phone +27 11 472 3733
E-Mail info@sickautomation.co.za

South Korea

Phone +82 2 786 6321/4
E-Mail info@sickkorea.net

Suomi

Phone +358-9-25 15 800
E-Mail sick@sick.fi

Sverige

Phone +46 10 110 10 00
E-Mail info@sick.se

Taiwan

Phone +886 2 2375-6288
E-Mail sales@sick.com.tw

Türkiye

Phone +90 (216) 528 50 00
E-Mail info@sick.com.tr

United Arab Emirates

Phone +971 (0) 4 88 65 878
E-Mail info@sick.ae

USA/México

Phone +1(952) 941-6780
1 (800) 325-7425 – tollfree
E-Mail info@sickusa.com

More representatives and agencies
at www.sick.com