

# DBS50E-S5EN01024

DBS36/50

**INCREMENTAL ENCODERS** 





#### Ordering information

Туре	Part no.
DBS50E-S5EN01024	1077450

Other models and accessories → www.sick.com/DBS36\_50



Illustration may differ

#### Detailed technical data

#### Performance

Pulses per revolution	1,024
Measuring step	90°, electric/pulses per revolution
Measuring step deviation	± 18° / pulses per revolution
Error limits	± 54° / pulses per revolution
Duty cycle	≤ 0.5 ± 5 %

#### Interfaces

Communication interface	Incremental
Communication Interface detail	HTL / Push pull
Number of signal channels	6-channel
Initialization time	< 3 ms
Output frequency	≤ 300 kHz
Load current	≤ 30 mA
Power consumption	< 0.5 W (without load)

#### Electrical data

Connection type	Cable, 8-wire, universal, 10 m
Supply voltage	7 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	<b>✓</b> <sup>1)</sup>
MTTFd: mean time to dangerous failure	600 years (EN ISO 13849-1) <sup>2)</sup>

<sup>&</sup>lt;sup>1)</sup> The short-circuit rating is only given if Us and GND are connected correctly.

## Mechanical data

Mechanical design	Solid shaft, face mount flange
Shaft diameter	8 mm

 $<sup>^{1)}</sup>$  Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

<sup>2)</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.

 $<sup>^{\</sup>rm 2)}$  No permanent operation. Decreasing signal quality.

Shaft length	15.5 mm
Weight	+ 180 g (with connecting cable)
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Material, cable	PVC
Start up torque	+ 0.9 Ncm (+20 °C)
Operating torque	0.6 Ncm (+20 °C)
Permissible shaft loading	30 N (axial) 50 N (radial)
Operating speed	6,000 min <sup>-1</sup> <sup>1)</sup>
Maximum operating speed	8,000 min <sup>-1 2)</sup>
Moment of inertia of the rotor	0.65 gcm <sup>2</sup>
Bearing lifetime	2 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s²

 $<sup>^{1)}</sup>$  Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

#### Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3 (class A)
Enclosure rating	IP65
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	-20 °C +85 °C, -35 °C +95 °C on request
Storage temperature range	-40 °C +100 °C, without package
Resistance to shocks	100 g, 6 ms (EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz 2,000 Hz (EN 60068-2-6)

## Classifications

eCl@ss 5.0	27270501
eCl@ss 5.1.4	27270501
eCl@ss 6.0	27270590
eCl@ss 6.2	27270590
eCl@ss 7.0	27270501
eCl@ss 8.0	27270501
eCl@ss 8.1	27270501
eCl@ss 9.0	27270501
eCl@ss 10.0	27270501
eCl@ss 11.0	27270501
eCl@ss 12.0	27270501
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486

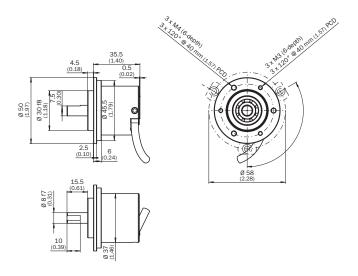
<sup>2)</sup> No permanent operation. Decreasing signal quality.

UNSPSC 16.0901

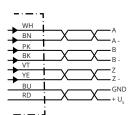
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## Dimensional drawing (Dimensions in mm (inch))

Face mount flange



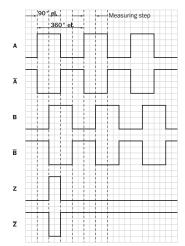
## PIN assignment



Wire colors (ca- ble 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	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 <sub>s</sub>	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 er coder housing

## Diagrams

Signal outputs for electrical interfaces TTL and HTL



Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

① Interfaces G, P, R only for channels A, B, Z.

Supply voltage	Output
4.5 V5.5 V	TTL/RS422
7 V30 V	TTL/RS422
7 V30 V	HTL/Push Pull
7 V27 V	HTL/push pull, 3 channel
4.5 V5.5 V	Open Collector NPN, 3 channel
4.5 V30 V	Open Collector NPN, 3 channel

#### Recommended accessories

Other models and accessories → www.sick.com/DBS36\_50

	Brief description	Туре	Part no.			
Plug connecto	Plug connectors and cables					
	Head A: male connector, M12, 8-pin, straight, A-coded Cable: Incremental, shielded	STE-1208-GA01	6044892			
	Head A: male connector, M23, 12-pin, straight Cable: HIPERFACE <sup>®</sup> , SSI, Incremental, shielded	STE-2312-G01	2077273			
		STE-2312-GX	6028548			

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Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

## **WORLDWIDE PRESENCE:**

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