


ONLINE DATA SHEET
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# Incremental encoders
# DBS36 Core

DBS36E-BBAM00400



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# DBS36 Core

**Model Name** > DBS36E-BBAM00400
**Part No.** > 1067234



*Illustration may differ*

## At a glance

- Connection with universal cable outlet
- Versions with blind hollow shaft or face mount flange with solid shaft
- Face mount flange with 3 mounting hole patterns and servo groove
- Hollow shaft with universal stator coupling
- Compact diameter of 37 mm
- Electrical interfaces: TTL/RS-422, HTL/push pull and Open Collector NPN
- Available PPR: 10 to 2,500
- Temperature range: -20 °C ... +85 °C
- Enclosure rating: IP 65

## Your benefits

- The universal cable outlet allows use in tight spaces and makes flexible cable routing possible
- Face mount flange with various mounting hole patterns provides flexibility when mounting in new or existing applications
- Face mount flange with servo groove makes mounting with servo clamps possible
- The DBS36 Core's universal stator coupling ensures easy device replacement without changing the application
- Shafts with metrich and inch dimension allow global use
- The high flexibility of the encoders' mechanical interface and the available accessories make it possible to use one design in many applications
- Permanent and safe operation due to a high enclosure rating, temperature resistance and a long bearing lifetime

CE

## Performance

| | |
|---|---|
| Error limits: | ± 54 ° (/pulses per revolution) |
| Measuring step deviation: | ± 18 °/impulses per relovution |
| Measuring step: | 90 °/electronically/pulses |
| Initialization time: | < 3 ms |
| Pulses per revolution: | 400 |
| Duty cycle: | ≤ 0.5 ± 5 % |

## Mechanical data

| | |
|---|---|
| Mechanical interface: | Blind hollow shaft |
| Shaft diameter: | 8 mm |
| Start up torque: | 0.5 Ncm (+20 °C) |
| Operating torque: | 0.4 Ncm (+20 °C) |


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| | |
|---|---|
| Permissible movement axial static/dynamic: | ± 0.5 mm, ± 0.2 mm |
| Permissible movement radial static/dynamic: | ± 0.3 mm, ± 0.1 mm |
| Maximum operating speed: | 8,000 U/min [1] |
| Moment of inertia of the rotor: | 0.8 gcm² |
| Bearing lifetime: | 2 x 10^9 revolutions |
| Max. angular acceleration: | 500,000 rad/s² |
| Shaft material: | Stainless steel |
| Operating speed: | 6,000 /min [2] |
| Flange material: | Aluminum |
| Housing material: | Aluminum |
| Material, cable: | PVC |

[1] No permanent operation. Decreasing signal quality. [2] Self-warming 4.7 K per 1,000 1/min

## Electrical data

| | |
|---|---|
| Electrical interface: | 4.5 V ... 5.5 V, TTL/RS422 |
| Electrical connection: | Cable, 8-wire, universal, 5 m |
| Operating power consumption (no load): | 50 mA |
| Maximum output frequency: | 300 kHz |
| Reference signal, number: | 1 |
| Reference signal, position: | 90 °, electronically, gated with A and B |
| Operating voltage range: | 4.5 V ... 5.5 V |
| Load current max.: | 30 mA |
| MTTFd: mean time to dangerous failure: | 600 a (EN ISO 13849-1) [1] |
| Power consumption max. without load: | Without load |
| Short-circuit protection of the outputs: | 1 [2] |
| Reverse polarity protection: | 0 |

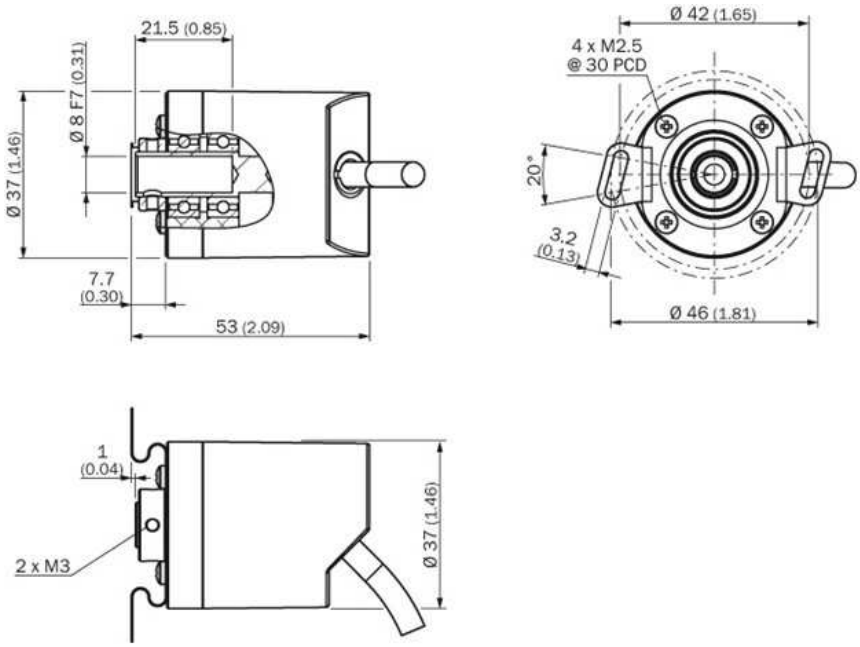
[1] This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532. [2] The short-circuit rating is only given if Us and GND are connected correctly.

## Ambient data

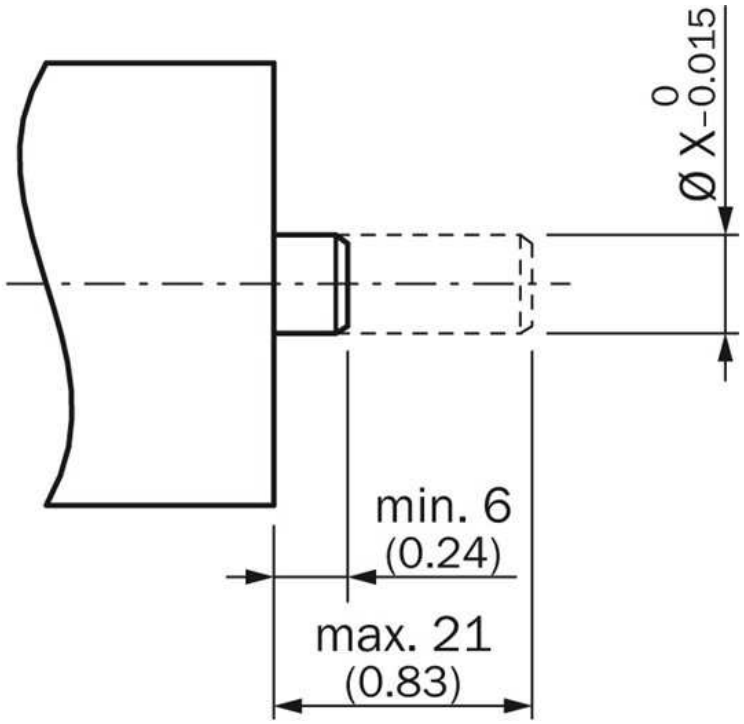
| | |
|---|---|
| EMC: | (according to EN 61000-6-2 and EN 61000-6-4 (class A)) |
| Working temperature range: | -20 °C ... +85 °C |
| Storage temperature range: | -40 °C ... +100 °C, without package |
| Resistance to shocks: | 100 g (EN 60068-2-27) |
| Resistance to vibration: | 20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) |
| Enclosure rating: | IP 65 |
| Permissible relative humidity: | 90 % (condensation of the optical scanning not permitted) |


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## Dimensional drawing




## Proposed fitting



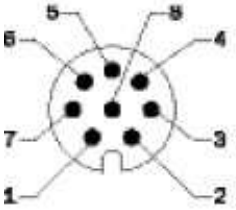


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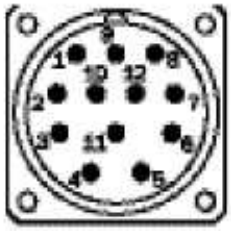
## PIN assignment

### 8-core cable

View of M12 device connector on cable




View of M23 device connector on cable




| PIN, 8-pole in M12 | PIN, 12-pole in M23 | Color of wires | Signal OC | Signal TTL, HTL | Explanation |
|---|---|---|---|---|---|
| 1 | 6 | Brown | Not connected | $\overline{A}$ | Signal line |
| 2 | 5 | White | A | A | Signal line |
| 3 | 1 | Black | Not connected | $\overline{B}$ | Signal line |
| 4 | 8 | Pink | B | B | Signal line |
| 5 | 4 | Yellow | Not connected | $\overline{Z}$ | Signal line |
| 6 | 3 | Lilac | Z | Z | Signal line |
| 7 | 10 | Blue | GND | GND | Ground connection of the encoder |
| 8 | 12 | Red | $+U_s$ | $+U_s$ | 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 connected to encoder housing |

## Type code

**Mechanical design**

- **B** Blind hollow shaft, Ø 8 mm

**Electrical interface**

- **A** 4,5 ... 5,5 V, TTL/RS-422, 6 Channel
- **C** 7 ... 30 V, TTL/RS-422, 6 Channel
- **E** 7 ... 30 V, HTL/push pull, 6 Channel
- **P** 4,5 ... 5,5 V, Open Collector, 3 Channel

**Connection type**

- **J** 8-core cable, universal 0,5 m
- **K** 8-core cable, universal 1,5 m
- **L** 8-core cable, universal 3 m
- **P** 8-core cable, universal 0,5 m, with M12 plug

**Resolution**

00100 ... 02500 Pulses per revolution possible. Pulses see "Pulses per revolution"

| D | B | S | 3 | 6 | E | - | B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|


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**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**



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