



## Incremental encoders DBS36 Core

DBS36E-BBAM01024



**Model Name** > [DBS36E-BBAM01024](#)  
**Part No.** > [1065219](#)



*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 metric 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



**Performance**

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|                           |                                 |
|---------------------------|---------------------------------|
| Error limits:             | ± 54 ° (/pulses per revolution) |
| Measuring step deviation: | ± 18 ° /impulses per revolution |
| Measuring step:           | 90 ° /electronically/pulses     |
| Initialization time:      | < 3 ms                          |
| Pulses per revolution:    | 1,024                           |
| Duty cycle:               | ≤ 0.5 ± 5 %                     |

**Mechanical data**

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

|   |                                 |
|---|---------------------------------|
| 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 <sup>1)</sup>       |
| Moment of inertia of the rotor:             | 0.8 gcm <sup>2</sup>            |
| Bearing lifetime:                           | 2 x 10 <sup>9</sup> revolutions |
| Max. angular acceleration:                  | 500,000 rad/s <sup>2</sup>      |
| Shaft material:                             | Stainless steel                 |
| Operating speed:                            | 6,000 /min <sup>2)</sup>        |
| Flange material:                            | Aluminum                        |
| Housing material:                           | Aluminum                        |
| Material, cable:                            | PVC                             |

<sup>1)</sup> No permanent operation. Decreasing signal quality. <sup>2)</sup> Self-warming 4.7 K per 1,000 1/min

### Electrical data

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|  |  |
|--|--|
| Electrical interface:                    | 4.5 V ... 5.5 V, TTL/RS422               |
| Connection type:                         | 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) <sup>1)</sup>     |
| Power consumption max. without load:     | Without load                             |
| Short-circuit protection of the outputs: | 1 <sup>2)</sup>                          |
| Reverse polarity protection:             | 0  |

<sup>1)</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

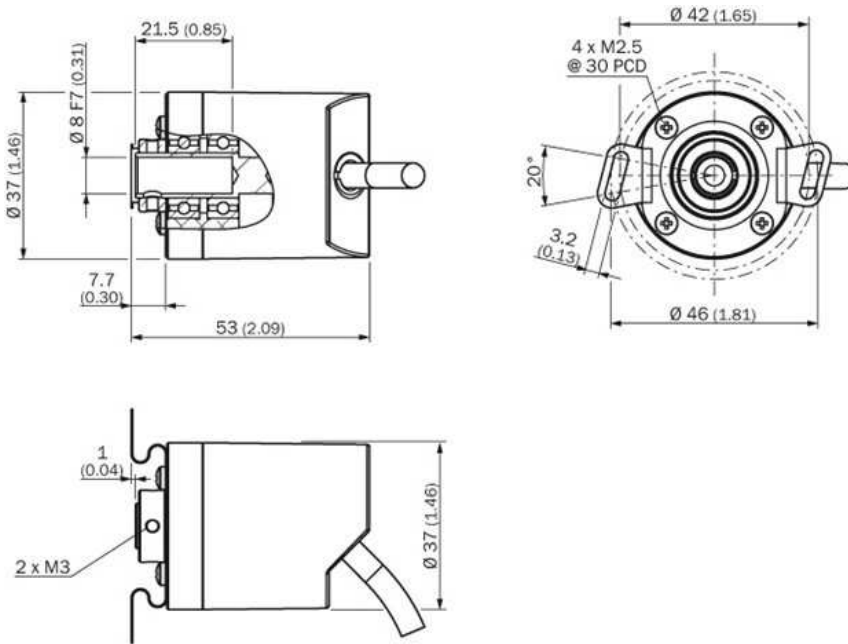
electronic failures are considered hazardous. For more information, see document no. 8015532. <sup>2)</sup> The short-circuit rating is only given if Us and GND are connected correctly.

### Ambient data

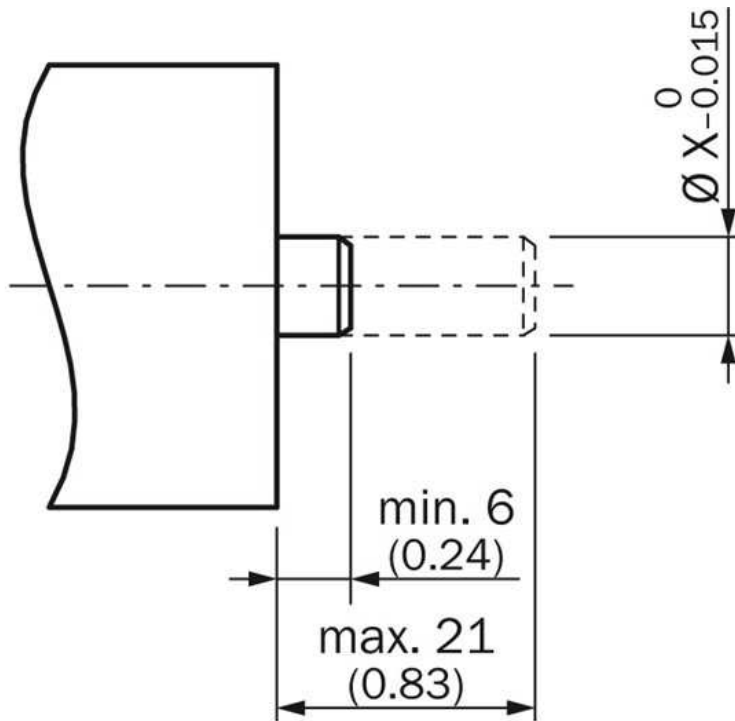
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|                                |   |
|--------------------------------|---|
| EMC:                           | (according to EN 61000-6-2 and EN 61000-6-4 (class A))    |
| Working temperature range:     | -20 °C ... +85 °C   |
| Storage temperature 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) |

### Dimensional drawing



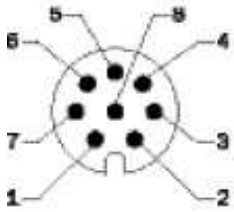
### Proposed fitting



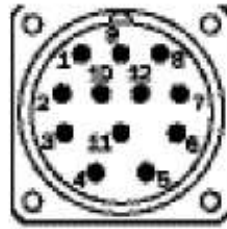
## PIN assignment

### 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   | $\bar{A}$       | Signal line                         |
| 2                  | 5                   | White          | A               | A               | Signal line                         |
| 3                  | 1                   | Black          | Not connected   | $\bar{B}$       | Signal line                         |
| 4                  | 8                   | Pink           | B               | B               | Signal line                         |
| 5                  | 4                   | Yellow         | Not connected   | $\bar{Z}$       | Signal line                         |
| 6                  | 3                   | Lilac          | Z               | Z               | Signal line                         |
| 7                  | 10                  | Blue           | GND             | GND             | Ground connection of the encoder    |
| 8                  | 12                  | Red            | +U <sub>s</sub> | +U <sub>s</sub> | 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"



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