



## Incremental encoders DBS36

DBS36E-BBAK01024



**Model Name** > DBS36E-BBAK01024  
**Part No.** > 1060147



*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: 100 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 DBS36E's universal stator coupling ensures easy device replacement without changing the application
- The high flexibility of the encoders' mechanical interface and the available accessories make it possible to use one design in many applications
- Compatibility with the DDS36E series makes it easy to replace this series in existing applications



#### Performance

|                        |                             |
|------------------------|-----------------------------|
| Error limits:          | ± 54 ° (/pulses)            |
| Measuring step:        | 90 ° /electronically/pulses |
| Initialization time:   | < 3 ms                      |
| Pulses per revolution: | 1,024                       |

#### Mechanical data

|                                             |                               |
|---------------------------------------------|-------------------------------|
| Mechanical interface:                       | Blind hollow shaft            |
| Shaft diameter:                             | 8 mm                          |
| Mass:                                       | 150 g (with connecting cable) |
| 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>      |
| Operating speed:                | 6,000 /min <sup>2)</sup>        |

<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, Cable, 8-pin, universal, 1.5 m |
| Connection type:                       | Cable, 8-pin, universal, 1.5 m                             |
| Maximum output frequency:              | 300 kHz                                                    |
| Reference signal, number:              | 1                                                          |
| Reference signal, position:            | 90 °, electronically, gated with A and B                   |
| Load current max.:                     | 30 mA                                                      |
| Power consumption:                     | < 0.5 W (without load)                                     |
| MTTFd: mean time to dangerous failure: | 600 a (EN ISO 13849-1) <sup>1)</sup>                       |

<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

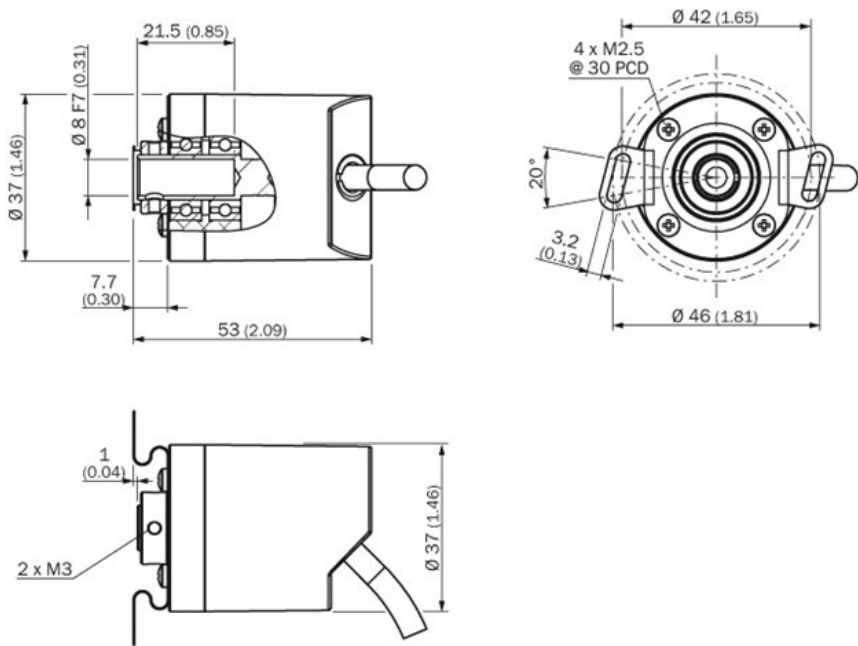
electronic failures are considered hazardous. For more information, see document no. 8015532.

### 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

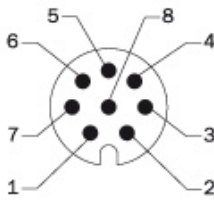


Proposed fitting

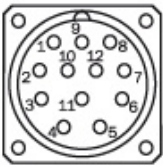


8-core cable

View of M12 device connector on cable



View of M12 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) |

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

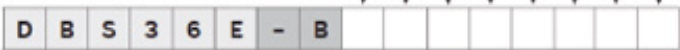
**K** 8-core cable, universal 1,5 m

**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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