



## Incremental encoders DBS50

DBS50E-S5PK00200



**Model Name** > DBS50E-S5PK00200  
**Part No.** > 1063308



*Illustration may differ*

#### At a glance

- Connection with universal cable outlet
- Face mount flange with 8 mm solid shaft
- Face mount flange with 2 mounting hole patterns and servo groove
- "Compact housing diameter of 37 mm,
- flange diameter: 50 mm"
- Various electrical interfaces: TTL/RS-422, HTL/push pull and Open Collector NPN
- Available PPR from 100 up to 2,500
- Working 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 for easy device replacement without changing the application
- Face mount flange with servo groove makes mounting with servo clamps possible
- The high flexibility of the encoders' mechanical interface and the available accessories make it possible to use one design in many applications
- The compact housing diameter saves valuable space
- Compatibility with the DDS50 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: | 200                         |

#### Mechanical data

|                                 |                                 |
|---------------------------------|---------------------------------|
| Mechanical interface:           | Solid shaft, Face mount flange  |
| Shaft diameter:                 | 8 mm x 15.5 m                   |
| Mass:                           | 180 g (with connecting cable)   |
| Start up torque:                | 0.9 Ncm (20 °C)                 |
| Operating torque:               | 0.6 Ncm (20 °C)                 |
| Maximum operating speed:        | 8,000 U/min <sup>1)</sup>       |
| Moment of inertia of the rotor: | 0.65 gcm <sup>2</sup>           |
| Bearing lifetime:               | 2 x 10 <sup>9</sup> revolutions |

|                                         |                                                 |
|-----------------------------------------|-------------------------------------------------|
| Max. angular acceleration:              | 500,000 rad/s <sup>2</sup>                      |
| Permissible shaft loading radial/axial: | 30 N (axial), 50 N (radial)                     |
| Operating speed:                        | 6,000 /min (Self-warming 3.3 K per 1,000 1/min) |

<sup>1)</sup> No permanent operation. Decreasing signal quality.

## Electrical data

|                                        |                                                                 |
|----------------------------------------|-----------------------------------------------------------------|
| Electrical interface:                  | 4.5 V ... 5.5 V, open collector, 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                        |
| Operating voltage range:               | 4.5 V ... 5.5 V                                                 |
| Load current max.:                     | 20 mA                                                           |
| Power consumption:                     | 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

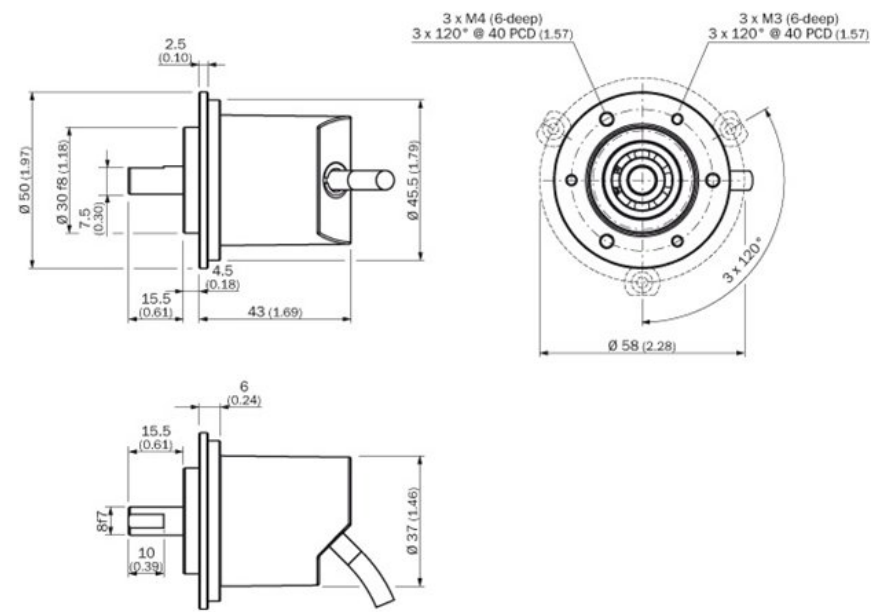
temperature 40°C, frequency of use 8760 h/a. All

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

## Ambient data

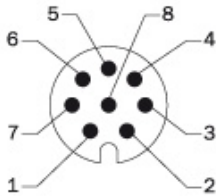
|                                |                                                           |
|--------------------------------|-----------------------------------------------------------|
| EMC:                           | (according to EN 61000-6-2 and EN 61000-6-4 (class A))    |
| Working temperature 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

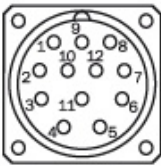


8-core cable

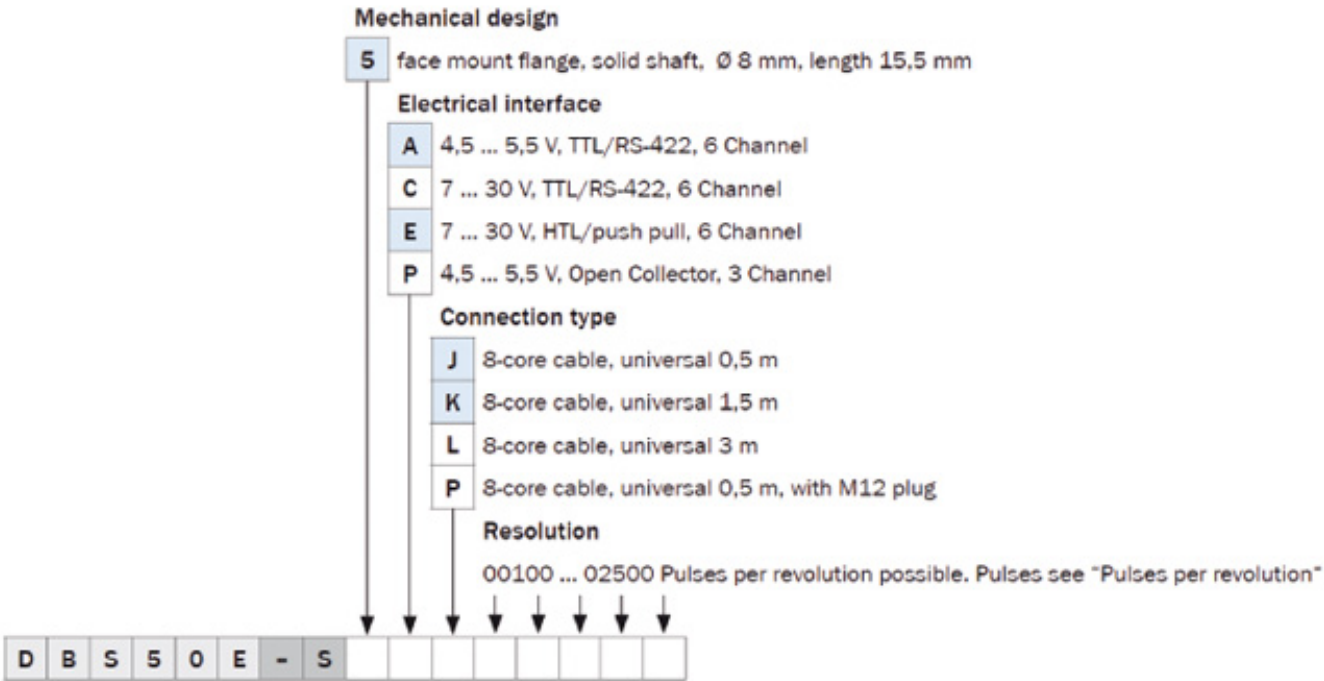
View of M12 device connector on cable



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.) |



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