



## Incremental encoders DKS40

DKS40-R5P02048



**Model Name** > [DKS40-R5P02048](#)  
**Part No.** > [1065090](#)



*Illustration may differ*

#### At a glance

- Compact housing
- Durable, low-cost design
- Interfaces: Open collector NPN, TTL/RS-422 or HTL/push pull.
- Connection via cable outlet, for radial or axial use with open ends or fitted with an M12 connector
- Face mount flange with solid shaft
- Housing for simple clamping ring mounting
- Any line count possible from 1 to 2,048

#### Your benefits

- Low-cost encoder with outstanding quality
- Withstands harsh environmental conditions due to high IP protection class and rugged design
- Universal cable outlet enables axial and radial cable guidance
- Compact dimensions enable simple installation even where space is cramped



#### Performance

|                                                         |                       |
|---------------------------------------------------------|-----------------------|
| Measuring step:                                         | 90 °, Number of lines |
| Error limits binary number of lines:                    | 0.09 °                |
| Error limits non-binary number of lines:                | 0.13 °                |
| Measuring step deviation at binary number of lines:     | 0.035 °               |
| Measuring step deviation at non binary number of lines: | 0.07 °                |
| Initialization time:                                    | 40 s                  |
| Pulses per revolution:                                  | 2,048                 |

#### Mechanical data

|                                         |                                          |
|-----------------------------------------|------------------------------------------|
| Mechanical interface:                   | Solid shaft, Face mount flange           |
| Shaft diameter:                         | 8 mm x 13 mm                             |
| Mass:                                   | 0.18 kg                                  |
| Start up torque:                        | 0.6 Ncm (20 °C)                          |
| Operating torque:                       | 0.4 Ncm (20 °C)                          |
| Maximum operating speed:                | 6,000 U/min                              |
| Moment of inertia of the rotor:         | 6 gcm <sup>2</sup>                       |
| Bearing lifetime:                       | 2 x 10 <sup>9</sup> revolutions          |
| Max. angular acceleration:              | 3,6 x 10 <sup>9</sup> rad/s <sup>2</sup> |
| Permissible shaft loading radial/axial: | 40 N, 20 N                               |

## Electrical data

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|                                        |                                                                        |
|----------------------------------------|------------------------------------------------------------------------|
| Electrical interface:                  | 10 V ... 30 V, Open Collector NPN, Cable, M12, 8-pin, universal, 1.5 m |
| Connection type:                       | Cable, M12, 8-pin, universal, 1.5 m                                    |
| Operating power consumption (no load): | 40 mA                                                                  |
| Supply voltage:                        | 10 V ... 30 V                                                          |
| Output current:                        | 30 mA                                                                  |
| Maximum output frequency:              | 50 kHz                                                                 |
| Reference signal, number:              | 1                                                                      |
| Reference signal, position:            | 90 °, electronically, gated with A and B                               |
| 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.

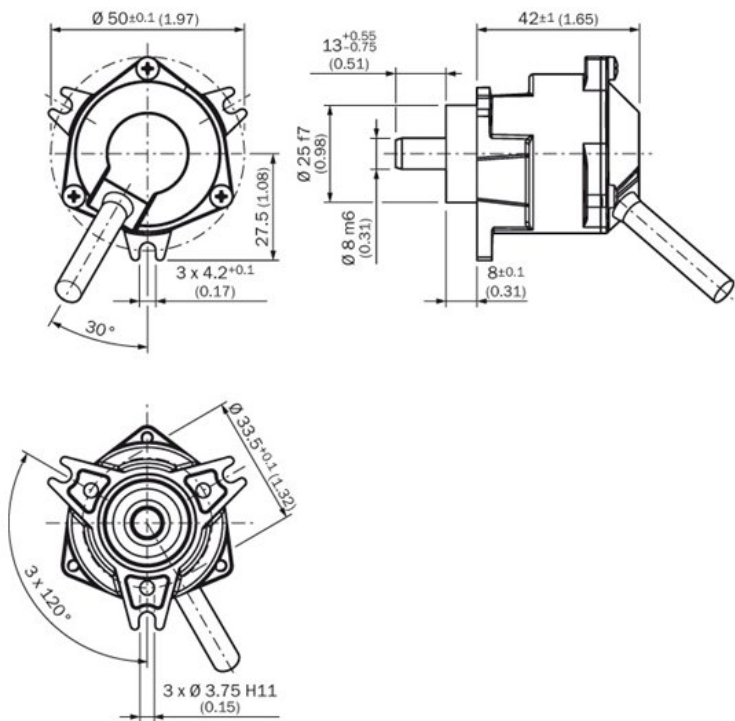
## Ambient data

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|                                                  |                                         |
|--------------------------------------------------|-----------------------------------------|
| EMC:                                             | EN 61000-6-2, EN 61000-6-3              |
| Protection class housing side with cable outlet: | IP 64                                   |
| Protection class shaft side:                     | IP 64                                   |
| Protection class standard:                       | IEC 60529                               |
| Air humidity:                                    | 90 % <sup>1)</sup>                      |
| Working temperature range:                       | 0 °C ... 60 °C                          |
| Storage temperature range:                       | -40 °C ... 70 °C, without package       |
| Resistance to shocks:                            | 50 g, 7 ms (EN 60068-2-27)              |
| Resistance to vibration:                         | 20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) |

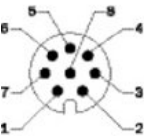
<sup>1)</sup> Condensation of the optical scanning not permitted

Dimensional drawing



PIN assignment

8-core cable  
View of the connector side of housing



| PIN, 8-pole in M12 | Color of wires | Signal OC       | Signal TTL, HTL | Explanation                                                          |
|--------------------|----------------|-----------------|-----------------|----------------------------------------------------------------------|
| 1                  | Brown          | Not connected   | A               | Signal line                                                          |
| 2                  | White          | A               | A               | Signal line                                                          |
| 3                  | Black          | Not connected   | B               | Signal line                                                          |
| 4                  | Pink           | B               | B               | Signal line                                                          |
| 5                  | Yellow         | Not connected   | Z               | Signal line                                                          |
| 6                  | Lilac          | Z               | Z               | Signal line                                                          |
| 7                  | Blue           | GND             | GND             | Ground connection of the encoder                                     |
| 8                  | Red            | +U <sub>s</sub> | +U <sub>s</sub> | Supply voltage                                                       |
| Screen             | Screen         | Screen          | Screen          | Screen connected to encoder housing. Connect screen on control side. |

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