

# DKS40-P5K02000

DKS40

INCREMENTAL ENCODERS

**SICK**  
Sensor Intelligence.

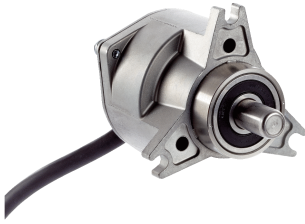


Illustration may differ



### Ordering information

Type	Part no.
DKS40-P5K02000	1037860

Other models and accessories → [www.sick.com/DKS40](http://www.sick.com/DKS40)

### Detailed technical data

#### Performance

<b>Pulses per revolution</b>	2,000
<b>Measuring step</b>	90° electric/pulses per revolution
<b>Measuring step deviation at non binary number of lines</b>	0.07°
<b>Error limits</b>	0.13° <sup>1)</sup>

<sup>1)</sup> "Non-binary" number of lines: 2n, where n is not a whole number.

#### Interfaces

<b>Communication interface</b>	Incremental
<b>Communication Interface detail</b>	Open Collector
<b>Number of signal channels</b>	3 channel
<b>Initialization time</b>	40 ms
<b>Output frequency</b>	≤ 50 kHz
<b>Load current</b>	30 mA
<b>Operating current</b>	≤ 40 mA (without load)
<b>4.5 V... 5.5 V, TTL/RS-422</b>	
Load current	30 mA
Operating current	≤ 40 mA (without load)
<b>4.5 V ... 5.5 V, Open Collector</b>	
Load current	30 mA
Operating current	≤ 40 mA (without load)
<b>TTL/RS-422</b>	
Load current	30 mA
<b>HTL/Push pull</b>	
Load current	30 mA
<b>TTL/HTL</b>	
Load current	30 mA
<b>Open Collector</b>	
Load current	30 mA

## Electrical data

<b>Connection type</b>	Cable, 8-wire, universal, 1.5 m <sup>1) 2)</sup>
<b>Supply voltage</b>	4.5 ... 5.5 V
<b>Reference signal, number</b>	1
<b>Reference signal, position</b>	90°, electric, logically gated with A and B
<b>MTTFd: mean time to dangerous failure</b>	600 years (EN ISO 13849-1) <sup>3)</sup>

<sup>1)</sup> The universal cable connection is positioned so that it is possible to lay it without bends in a radial or axial direction.

<sup>2)</sup> No UL certification.

<sup>3)</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.

## Mechanical data

<b>Mechanical design</b>	Solid shaft, face mount flange
<b>Shaft diameter</b>	8 mm
<b>Wavelength</b>	13 mm
<b>Weight</b>	+ 0.18 kg
<b>Start up torque</b>	0.6 Ncm (+20 °C)
<b>Operating torque</b>	0.4 Ncm (+20 °C)
<b>Permissible shaft loading radial/axial</b>	40 N (radial) 20 N (axial)
<b>Operating speed</b>	6,000 min <sup>-1</sup>
<b>Moment of inertia of the rotor</b>	6 gcm <sup>2</sup>
<b>Bearing lifetime</b>	2 x 10 <sup>9</sup> revolutions
<b>Angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>

## Ambient data

<b>EMC</b>	EN 61000-6-2, EN 61000-6-3
<b>Enclosure rating</b>	IP64
<b>Permissible relative humidity</b>	Condensation of the optical scanning not permitted
<b>Operating temperature range</b>	0 °C ... +60 °C
<b>Storage temperature range</b>	-40 °C ... +70 °C, without package
<b>Resistance to shocks</b>	50 g, 7 ms (EN 60068-2-27)
<b>Resistance to vibration</b>	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

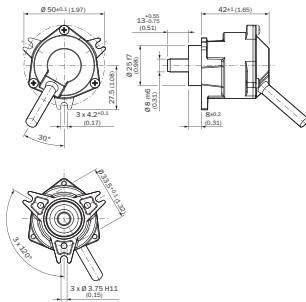
## Classifications

<b>ECl@ss 5.0</b>	27270501
<b>ECl@ss 5.1.4</b>	27270501
<b>ECl@ss 6.0</b>	27270590
<b>ECl@ss 6.2</b>	27270590
<b>ECl@ss 7.0</b>	27270501
<b>ECl@ss 8.0</b>	27270501
<b>ECl@ss 8.1</b>	27270501
<b>ECl@ss 9.0</b>	27270501
<b>ECl@ss 10.0</b>	27270501

<b>ECI@ss 11.0</b>	27270501
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

### Dimensional drawing (Dimensions in mm (inch))

Face mount flange, cable

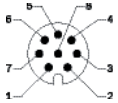


General tolerances according to DIN ISO 2768-mk

### 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.

### Recommended accessories

Other models and accessories → [www.sick.com/DKS40](http://www.sick.com/DKS40)

	Brief description	Type	Part no.
<b>Flanges</b>			
	Flange adapter, adaption of 25 mm spigot face mount flange to 60s face mount flange with 36 mm centering collar, Aluminum	BEF-FA-025-036	2034226
	Flange adapter, adaption of 25 mm spigot face mount flange to 50 mm servo flange, Aluminum	BEF-FA-025-050	2032622

	Brief description	Type	Part no.
	Flange adapter, adaption of 25 mm spigot face mount flange to 60 mm square installation plate, Aluminum	BEF-FA-025-060RCA	2032623
	Flange adapter, adaption of 25 mm spigot face mount flange to 60 mm square installation plate with shock-absorber, Aluminum	BEF-FA-025-060RSA	2032624
	Flange adapter, adapts face mount flange with 25 mm centering collar to 63 mm square mounting plate, Aluminum	BEF-FA-025-063-REC	2033631
<b>Mounting brackets and plates</b>			
	Mounting brackets for encoders with a centering spigot 25 mm, mounting kit for face mount flange included	BEF-WF-25	2032621
<b>Shaft adaptation</b>			
	Bar coupling, shaft diameter 6 mm / 8 mm, maximum shaft offset radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angle $\pm 3^\circ$ ; max. speed 10,000 rpm, torsion spring rigidity 38 Nm/wheel; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0608-S	5314179
	Bar coupling, shaft diameter 8 mm / 8 mm, maximum shaft offset radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angle $\pm 3^\circ$ ; max. speed 10,000 rpm, torsion spring rigidity 38 Nm/wheel; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0808-S	5314177
	Double loop coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radially $\pm 0,25$ mm, axially $\pm 0,4$ mm, angle $\pm 4$ degrees; max. speed 10.000 rpm, $-30$ to $+120$ degrees Celsius, torsional spring stiffness of 150 Nm/rad	KUP-0810-D	5326704
	Bar coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radial $\pm 0,3$ mm, axial $\pm 0,3$ mm, angular $\pm 3^\circ$ ; max. speed 10.000 rpm, $-10^\circ$ to $+80^\circ$ C, max. torque: 80 Ncm, material: fiber-glass reinforced polyamide, aluminum hub	KUP-0810-S	5314178
<b>Plug connectors and cables</b>			
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, HIPERFACE <sup>®</sup> , PUR, halogen-free, shielded	LTG-2308-MWENC	6027529
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, shielded	LTG-2411-MW	6027530
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, halogen-free, shielded	LTG-2512-MW	6027531
	Head A: cable Head B: Flying leads Cable: SSI, TTL, HTL, Incremental, PUR, halogen-free, shielded	LTG-2612-MW	6028516
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 2 m	DOL-1208-G02MAC1	6032866
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 5 m	DOL-1208-G05MAC1	6032867
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 10 m	DOL-1208-G10MAC1	6032868
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 20 m	DOL-1208-G20MAC1	6032869

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)