



# DGS90B-TWHK05000

DGS80/90

INCREMENTAL ENCODERS

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

Type	part no.
DGS90B-TWHK05000	1146063

Other models and accessories → [www.sick.com/DGS80\\_90](http://www.sick.com/DGS80_90)

## Detailed technical data

### Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	333 years (SN-29500-1 based on IEC 61709) <sup>1)</sup>
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<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.

### Performance

<b>Pulses per revolution</b>	5,000
<b>Measuring step</b>	90°, electric/pulses per revolution
<b>Measuring step deviation</b>	± 25° electrical
<b>Duty cycle</b>	≤ 0.5 ± 15 %

### Interfaces

<b>Communication interface</b>	Incremental
<b>Communication Interface detail</b>	TTL / RS-422
<b>Number of signal channels</b>	6-channel
<b>Initialization time</b>	< 50 ms
<b>Output frequency</b>	≤ 300 kHz
<b>Load current</b>	≤ 40 mA, per channel
<b>Operating current</b>	50 mA (without load)
<b>Power consumption</b>	≤ 0.85 W

### Electronics

<b>Connection type</b>	Cable, 8-wire, radial, 1.5 m
<b>Supply voltage</b>	5 ... 30 V
<b>Reference signal, position</b>	90°, electric, logically gated with A and B
<b>Reverse polarity protection</b>	✓

Short-circuit protection of the outputs	✓
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## Mechanics

Mechanical design	Through hollow shaft
Shaft diameter	65 mmFront clamp <sup>1)</sup>
Flange type / stator coupling	1-sided stator coupling with slot available for order as accessory
Weight	1,400 g
Shaft material	Stainless steel UNI EN 4305
Flange material	Aluminum
Housing material	ZAMAC die cast
Shaft sealing ring material	FKM70
Start up torque	40 Ncm (+20 °C)
Operating torque	35 Ncm (+20 °C)
Permissible shaft loading	200 N (radial) 120 N (axial)
Operating speed	≤ 2,000 min <sup>-1</sup>
Moment of inertia of the rotor	2,640 gcm <sup>2</sup>
Bearing lifetime	10 <sup>9</sup> revolutions

<sup>1)</sup> Collets (shaft reducer) available as accessories to reduce shaft sizes under 65 mm.

## Ambient data

EMC	According to EN 61000-4-2 and EN 61000-4-4
Enclosure rating	IP65 (IEC 60529)
Permissible relative humidity	98 % (Condensation not permitted)
Operating temperature range	-25 °C ... +85 °C
Storage temperature range	-25 °C ... +85 °C, without package
Resistance to shocks	250 g, 6 ms (EN 60068-2-27)
Resistance to vibration	10 g, 5 Hz ... 2,000 Hz (EN 60068-2-6)

## Classifications

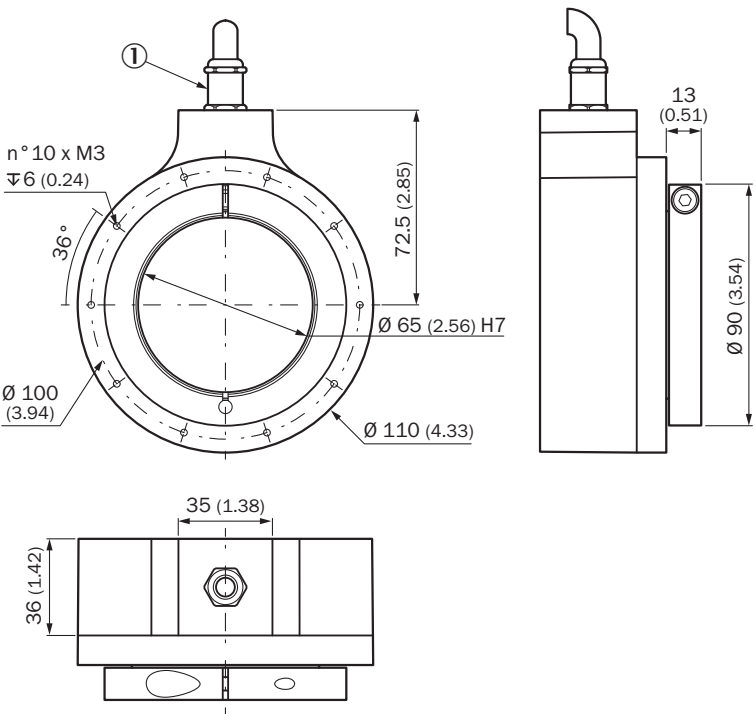
ECLASS 5.0	27270501
ECLASS 5.1.4	27270501
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270501
ECLASS 8.0	27270501
ECLASS 8.1	27270501
ECLASS 9.0	27270501
ECLASS 10.0	27270501
ECLASS 11.0	27270501
ECLASS 12.0	27270501
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486

ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Certificates

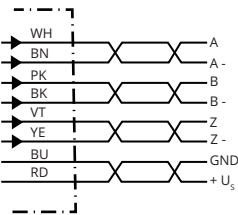
EU declaration of conformity	✓
ACMA declaration of conformity	✓
China-RoHS	✓
cRUus certificate	✓

Dimensional drawing



Dimensions in mm (inch)

PIN assignment





Wire colors (cable connection)	PINMale connector M12, 8-pin	PINMale connector M23, 12-pin	PINMS male connector, 10-pin	Signal	Explanation
Brown	1	6	H	A-	Signal cable
White	2	5	A	A	Signal cable

Wire colors (ca- ble connection)	PINMale connec- tor M12, 8-pin	PINMale connec- tor M23, 12-pin	PINMS male con- nector, 10-pin	Signal	Explanation
Black	3	1	I	B-	Signal cable
Pink	4	8	B	B	Signal cable
Yellow	5	4	J	Z-	Signal cable
Purple	6	3	C	Z	Signal cable
Blue	7	10	F	GND	Ground connection
Red	8	12	D	+U <sub>S</sub>	Supply voltage
-	-	2	E	N.c.	Not connected
-	-	7	-	N.c.	Not connected
-	-	-	G	Housing	Housing
-	-	9	-	N.c.	Not connected
-	-	11	-	N.c.	Not connected
Screen	-	-	-	Screen	Screen connect- ed to housing on encoder side

Recommended accessories

Other models and accessories → [www.sick.com/DGS80\\_90](http://www.sick.com/DGS80_90)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"><li>• <b>Product family:</b> Stator couplings</li><li>• <b>Description:</b> 1-sided stator coupling, slot, 121 mm</li><li>• <b>Material:</b> Stainless steel</li><li>• <b>Details:</b> Stainless steel 1.4301 (AISI 304)</li><li>• <b>Items supplied:</b> 1 x stator coupling, 3 x M3 screws, 1 x insulating washer for stator coupling</li></ul>	DGS90-TETHER-A	2145413
	<ul style="list-style-type: none"><li>• <b>Product family:</b> Stator couplings</li><li>• <b>Description:</b> 1-sided stator coupling, slot, 93 mm</li><li>• <b>Material:</b> Stainless steel</li><li>• <b>Details:</b> Stainless steel 1.4301 (AISI 304)</li><li>• <b>Items supplied:</b> 1 x stator coupling, 3 x M3 screws, 1 x insulating washer for stator coupling</li></ul>	DGS90-TETHER-B	2145414

	Brief description	Type	part no.
shaft adaptation			
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 2", external diameter 65 mm</li> </ul>	SPZ-065-02Z-M	2145411
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 42 mm, external diameter 65 mm</li> </ul>	SPZ-065-042-M	2145409
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 45 mm, external diameter 65 mm</li> </ul>	SPZ-065-045-M	2145408
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 48 mm, external diameter 65 mm</li> </ul>	SPZ-065-048-M	2145407
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 50 mm, external diameter 65 mm</li> </ul>	SPZ-065-050-M	2145406
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 55 mm, external diameter 65 mm</li> </ul>	SPZ-065-055-M	2145405
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 60 mm, external diameter 65 mm</li> </ul>	SPZ-065-060-M	2145404
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 1.75 ", external diameter 65 mm</li> </ul>	SPZ-065-175Z-M	2145410
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 22.5", external diameter 65 mm</li> </ul>	SPZ-065-225Z-M	2145412
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 2.5", external diameter 65 mm</li> </ul>	SPZ-065-250Z-M	2146302

## 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)