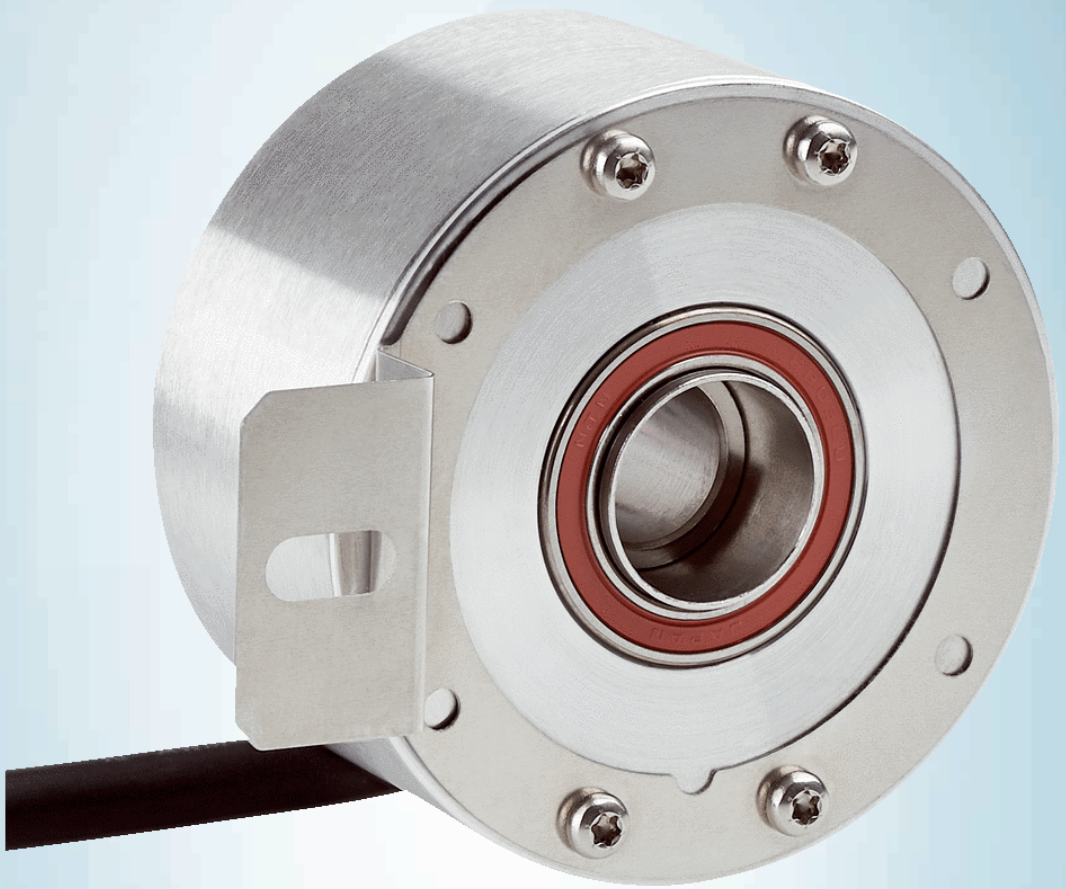
Product data sheet



DBS60E-RHCZGS316

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

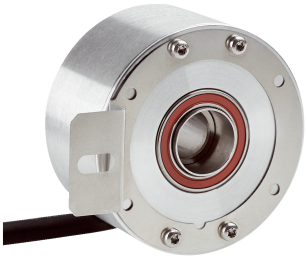


Illustration may differ

Ordering information

Type	Part no.
DBS60E-RHCZGS316	1102110

Other models and accessories ➜ www.sick.com/DBS60

Detailed technical data

Features

Special device	✓
Specialty	PUR cable 5-wire, universal, 9 cm, M12, 5-pin with rear clamping, A-coded, customized pin allocation, enclosure rating IP66, starting torque: 2.6 Ncm, operating torque: 2.5 Ncm Customer-specific encoder label with Getriebebau NORD part number: 19651913 Second and identical encoder label fastened to packaging, customer-specific packaging label, no operating instructions (can be accessed digitally), device is exclusively for Getriebebau NORD
Standard reference device	DBS60E-RHCPG2048
Additional information	Getriebebau NORD part number: 19651913

Performance

Pulses per revolution	2,048
Measuring step	≤ 90°, electric/pulses per revolution
Measuring step deviation	± 18° / pulses per revolution
Error limits	Measuring step deviation x 3
Duty cycle	≤ 0.5 ± 5 %

Interfaces

Communication interface	Incremental
Communication Interface detail	TTL / RS-422
Number of signal channels	6-channel
Initialization time	< 5 ms [1]
Output frequency	+ 300 kHz [2]
Load current	≤ 30 mA, per channel
Power consumption	≤ 0.5 W (without load)

[1] Valid signals can be read once this time has elapsed.
[2] Up to 450 kHz on request.

Electrical data

Connection type	5-wire PUR cable, universal, 9 cm, M12, 5-pin with rear wall assembly, A-coding, customer-specific pin assignment
Supply voltage	10 ... 30 V
Reference signal, number	1
Reference signal, position	90°, electric, logically gated with A and B
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ [1]
MTTFd: mean time to dangerous failure	500 years (EN ISO 13849-1) [2]

[1] Short-circuit opposite to another channel or GND permissible for max. 60 s. No protection signal against U_S.

[2] 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

Mechanical design	Through hollow shaft, rear clamping
Shaft diameter	15 mm
Flange type / stator coupling	1-sided stator coupling, slot, screw hole circle radius 32.1 mm–37.6 mm
Weight	+ 0.25 kg [1]
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Material, cable	PUR
Start up torque	+ 2.6 Ncm (+20 °C)
Operating torque	2.5 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial) [2]
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial) [2]
Operating speed	6,000 min^{-1} [3]
Maximum operating speed	9,000 min^{-1} [4]
Moment of inertia of the rotor	50 gcm^2
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s^2

[1] Based on encoder with male connector or cable with male connector.

[2] Not apllicable for stator coupling type C and K.

[3] Allow for self-heating of 2.6 K per 1,000 rpm when designing the operating temperature range.

[4] Maximum speed which does not cause mechanical damage to the encoder. Impact on the service life and signal quality is possible. Please note the maximum output frequency.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP66, housing side (IEC 60529) [1] IP66, shaft side (IEC 60529)

[1] With mating connector fitted.

[2] These values relate to all mechanical versions including recommended accessories unless otherwise noted.

Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–25 °C ... +80 °C, at maximum 3,000 pulses per revolution [2]
Storage temperature range	–40 °C ... +100 °C, without package
Resistance to shocks	250 g, 3 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

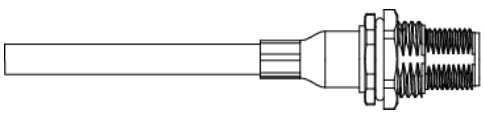
[1] With mating connector fitted.
[2] These values relate to all mechanical versions including recommended accessories unless otherwise noted.

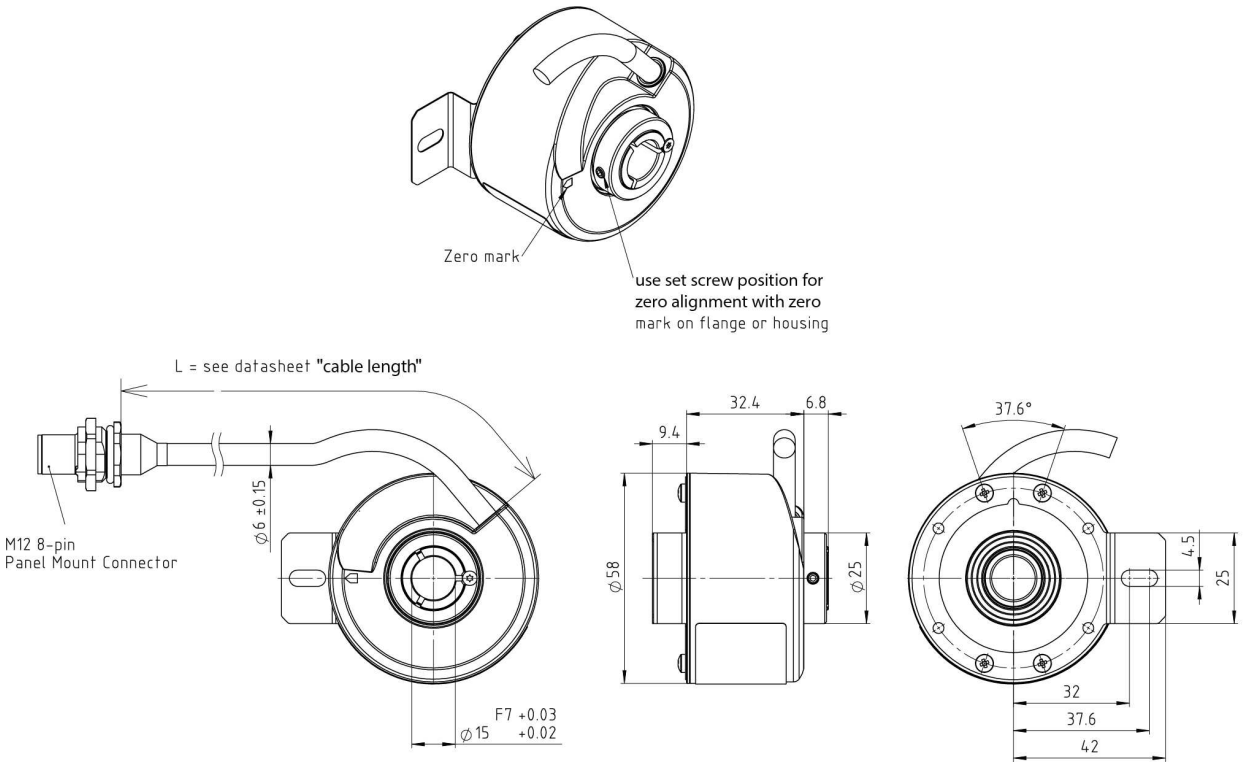
Classifications

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

Dimensional drawing (Dimensions in mm (inch))

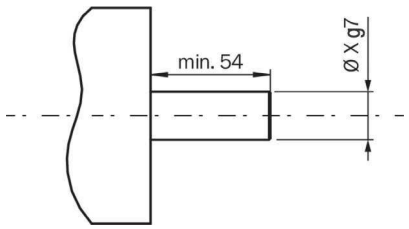
Male connector M12, 8-pin rear end clamping





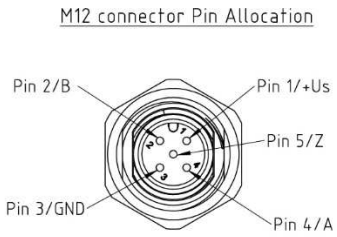
Attachment specifications

Through hollow shaft with rear clamping



Customer side

PIN assignment



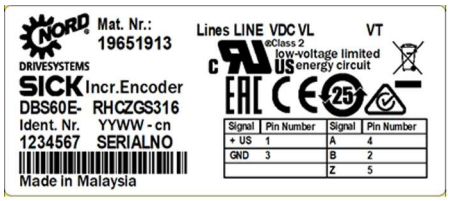
PIN CONFIGURATION

PIN NO.	SIGNAL	EXPLANATION
1	+Us	SUPPLY VOLTAGE
2	B	SIGNAL
3	GND	GND CONNECTION
4	A	SIGNAL
5	Z	SIGNAL

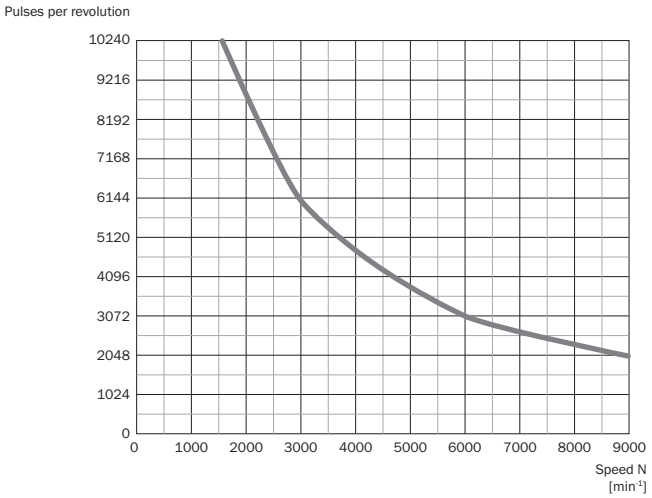
Type label

Packaging label

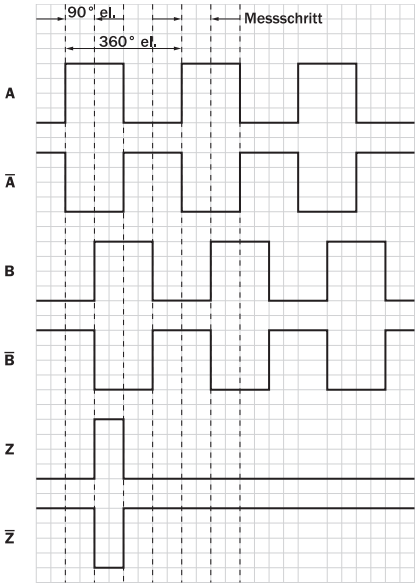
Encoder label (second label fixed on packaging)



Diagrams



Signal outputs for electrical interfaces TTL and HTL



Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

Supply voltage	Output
10 V ... 30 V	TTL

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