



DBS60E-RHCZGS316

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Ordering information

| Type | part no. |
|------------------|----------|
| DBS60E-RHCZGS316 | 1102110 |

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

Illustration may differ



Detailed technical data

Features

| | |
|----------------------------------|---|
| Special device | ✓ |
| Specialty | PUR cable, 5-wire, universal, 9 cm, M12, 5-pin with rear wall assembly, A-coding, customer-specific pin assignment, enclosure rating IP66, start up torque: 2.6 Ncm, operating torque: 2.5 Ncm Customer-specific encoder label with Getriebbau 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 GBN |
| Standard reference device | DBS60E-RHCPG2048 |
| Additional information | Getriebbau NORD part number: 19651913 |

Safety-related parameters

| | |
|--|--|
| MTTF_D (mean time to dangerous failure) | 500 years (EN ISO 13849-1) ¹⁾ |
|--|--|

¹⁾ 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

| | |
|---------------------------------|---------------------------------------|
| 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⁾ |

¹⁾ Valid signals can be read once this time has elapsed.

²⁾ Up to 450 kHz on request.

| | |
|--------------------------|------------------------|
| 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.

Electronics

| | |
|--|--|
| Connection type | Special version |
| Connection type Detail | PUR cable, 5-wire, universal, 9 cm, M12, 5-pin with rear wall assembly, A-coding, customer-specific pin assignment, enclosure rating IP66, start up torque: 2.6 Ncm, operating torque: 2.5 Ncm |
| 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⁾ |

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

Mechanics

| | |
|---------------------------------------|---|
| Mechanical design | Through hollow shaft |
| Shaft diameter | 15 mm Rear clamping |
| 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 applicable 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) |
| 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.

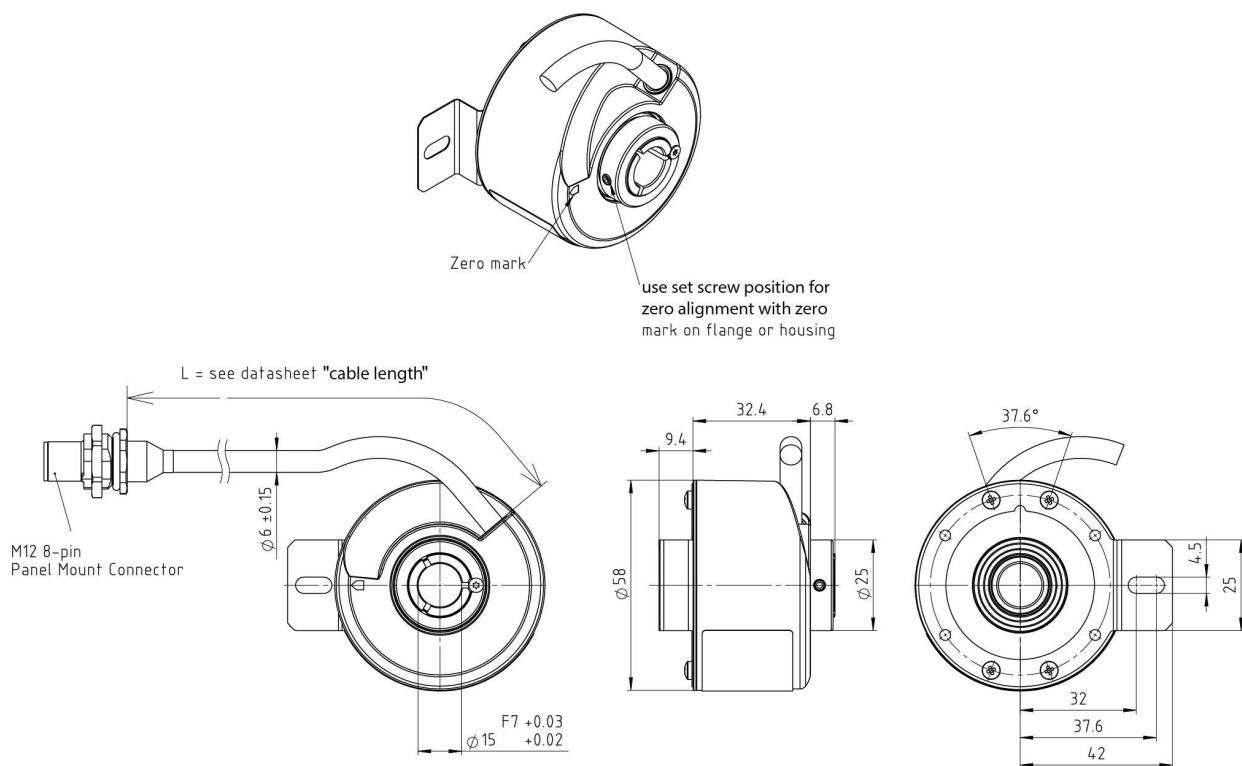
Certificates

| | |
|--|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| cULus certificate | ✓ |
| Information according to Art. 3 of Data Act (Regulation EU 2023/2854) | ✓ |

Classifications

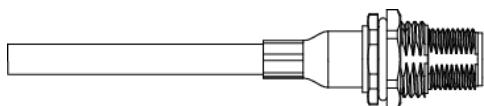
| | |
|-----------------------|----------|
| ECLASS 5.0 | 27270501 |
| ECLASS 5.1.4 | 27270501 |
| ECLASS 6.0 | 27270590 |
| ECLASS 6.2 | 27270590 |
| ECLASS 7.0 | 27270501 |
| ECLASS 8.0 | 27270501 |
| ECLASS 8.1 | 27270501 |
| ECLASS 9.0 | 27270501 |
| ECLASS 10.0 | 27270501 |
| ECLASS 11.0 | 27270501 |
| 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



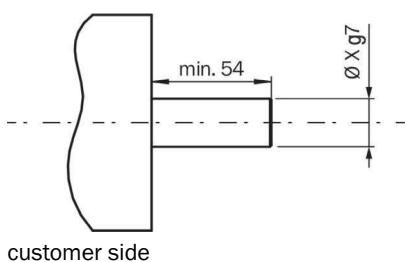
Dimensions in mm (inch)

Dimensional drawing Male connector M12, 8-pin rear end clamping

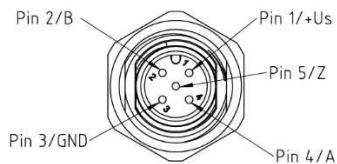


Dimensions in mm (inch)

Attachment specifications Through hollow shaft with rear clamping



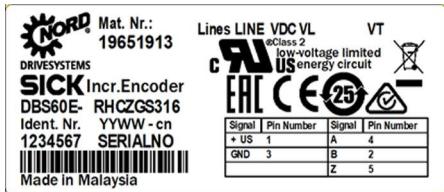
PIN assignment

M12 connector Pin Allocation

PIN CONFIGURATION

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

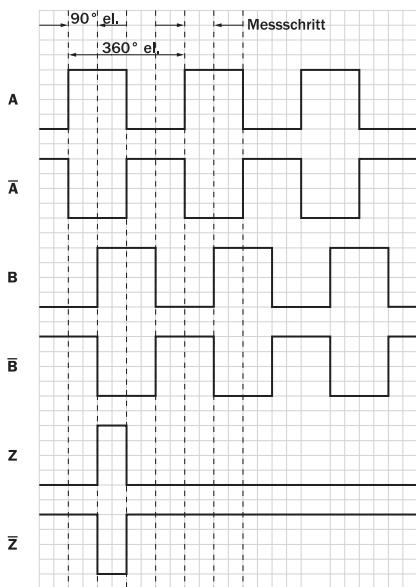
Type label Encoder label (second label fixed on packaging)



Type label Packaging label



Diagrams Signal outputs for electrical interfaces TTL and HTL

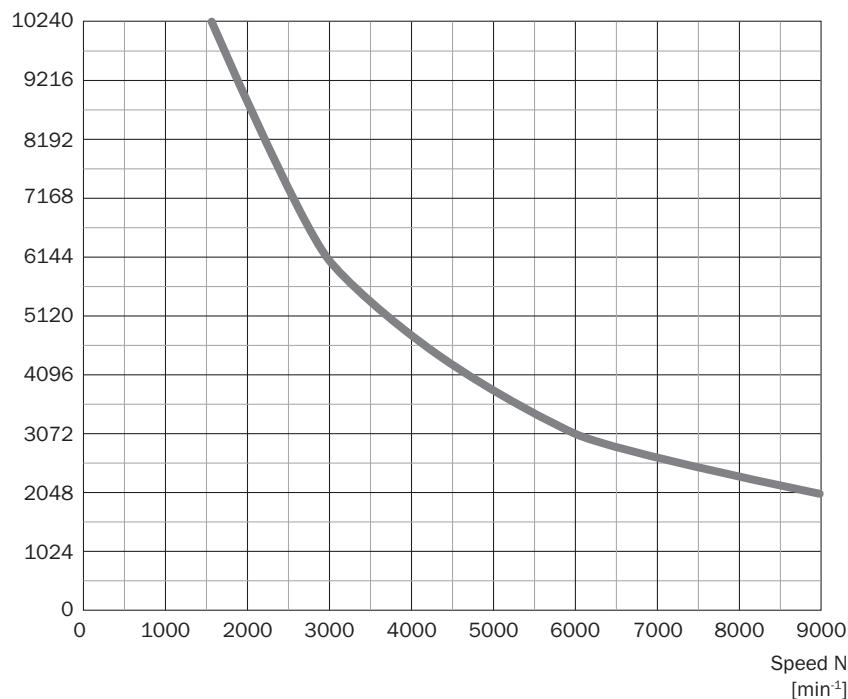


Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

| Supply voltage | Output |
|----------------|--------|
| 10 V ... 30 V | TTL |

Diagrams

Pulses per revolution



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