



DBS60I-BBCM05000

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

| Type | part no. |
|------------------|----------|
| DBS60I-BBCM05000 | 1115375 |

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

Detailed technical data

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 | 5,000 |
| Measuring step | 90°, electric/pulses per revolution |
| Measuring step deviation | ± 36° / pulses per revolution |
| Error limits | Measuring step deviation x 3 |
| Duty cycle | ≤ 0.5 ± 10 % |

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.

Electronics

| | |
|------------------------|----------------------------|
| Connection type | Cable, 8-wire, radial, 5 m |
|------------------------|----------------------------|

¹⁾ Short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

| | |
|--|---|
| 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, US or GND permissible for maximum 30 s.

Mechanics

| | |
|---------------------------------------|---|
| Mechanical design | Blind hollow shaft |
| Shaft diameter | 8 mm Front clamp |
| Flange type / stator coupling | 2-sided stator coupling, slot, screw hole circle 63–83 mm |
| Weight | 0.44 kg ¹⁾ |
| Shaft material | Stainless steel V2A |
| Flange material | Stainless steel V2A |
| Housing material | Stainless steel V2A |
| Material, cable | PVC |
| Shaft sealing ring material | FKM80 |
| Material, cable gland | Stainless steel V2A / Nickel-plated brass |
| Start up torque | 2.1 Ncm (+20 °C) |
| Operating torque | 2 Ncm (+20 °C) |
| Permissible movement static | ± 0.3 mm (radial) ± 0.5 mm (axial) |
| Permissible movement dynamic | ± 0.1 mm ± 0.2 mm |
| Operating speed | ≤ 6,000 min ⁻¹ ²⁾ |
| Moment of inertia of the rotor | 52 gcm ² |
| Bearing lifetime | 3.6 x 10 ⁹ revolutions |
| Angular acceleration | ≤ 500,000 rad/s ² |

¹⁾ Based on encoder with male connector.

²⁾ 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 | IP67, cable connection (IEC 60529) |
| Permissible relative humidity | 90 % (Condensation not permitted) |
| Operating temperature range | -30 °C ... +85 °C, at more than 3,000 pulses per revolution |
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 100 g, 6 ms (EN 60068-2-27) |
| Resistance to vibration | 10 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) |

Certificates

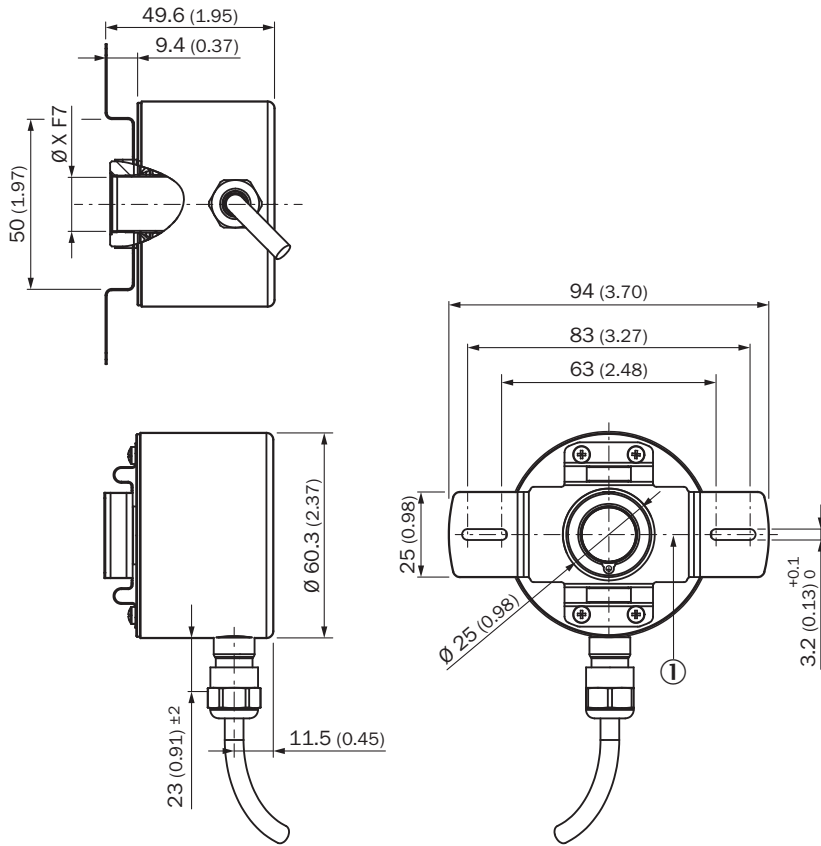
| | |
|-------------------------------------|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |

| | |
|--|---|
| ACMA declaration of conformity | ✓ |
| China RoHS | ✓ |
| 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

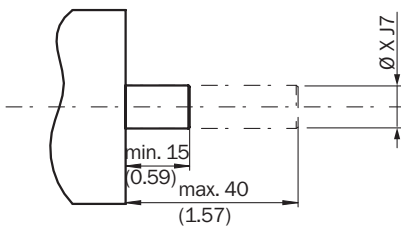


Dimensions in mm (inch)

① Zero pulse mark on flange

| TypeBlind hollow shaft | Shaft diameter XF7 |
|------------------------|--------------------|
| DBS60I-BAxxxxxxx | 6 mm |
| DBS60I-BBxxxxxxx | 8 mm |
| DBS60I-BDxxxxxxx | 10 mm |
| DBS60I-BExxxxxxx | 12 mm |
| DBS60I-BGxxxxxxx | 14 mm |
| DBS60I-BHxxxxxxx | 15 mm |

Attachment specifications Blind hollow shaft

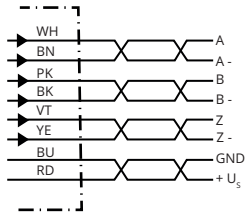


customer side

| TypeBlind hollow shaft | Shaft diameter xj7 |
|------------------------|--------------------|
| DBS60I-BAxxxxxxx | 6 mm |

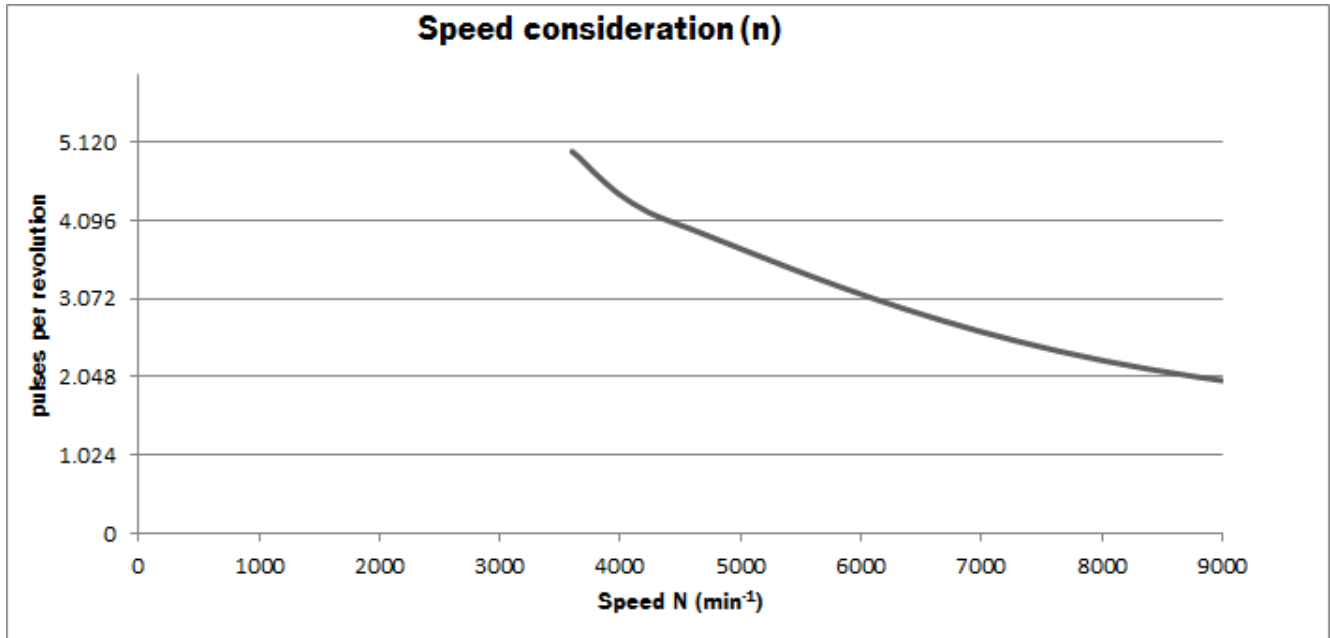
| TypeBlind hollow shaft | Shaft diameter xj7 |
|------------------------|--------------------|
| DBS60I-BBxxxxxxx | 8 mm |
| DBS60I-BDxxxxxxx | 10 mm |
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| DBS60I-BGxxxxxxx | 14 mm |
| DBS60I-BHxxxxxxx | 15 mm |

PIN assignment

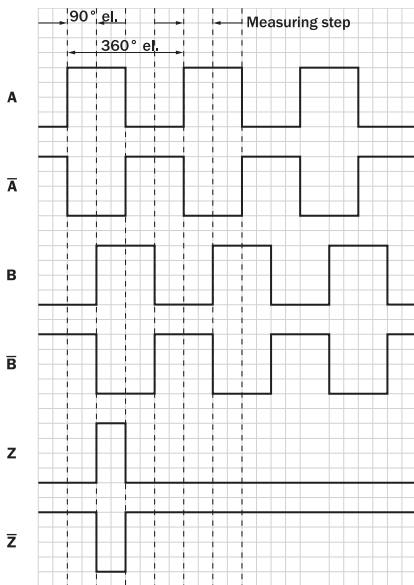


| Wire colors (cable connection) | Male connector M12, 8-pin | TTL/HTL signal | Explanation |
|--------------------------------|---------------------------|-----------------|---|
| Brown | 1 | A- | Signal cable |
| White | 2 | A | Signal cable |
| Black | 3 | B- | Signal cable |
| Pink | 4 | B | Signal cable |
| Yellow | 5 | Z- | Signal cable |
| Purple | 6 | Z | Signal cable |
| Blue | 7 | GND | Ground connection |
| Red | 8 | +U _S | Supply voltage |
| Screen | Screen | Screen | Screen connected to housing on encoder side |

Diagrams



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 |
|-----------------|-------------------|
| 4,5 V ... 5,5 V | TTL |
| 10 V ... 30 V | TTL |
| 10 V ... 27 V | HTL |
| 4,5 V ... 30 V | TTL/HTL universal |
| 4,5 V ... 30 V | TTL |

Recommended accessories

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

| | Brief description | Type | part no. |
|---|---|--------------------|----------|
| connectors and cables | | | |
|  | <ul style="list-style-type: none"> Description: Shielded Connection type head A: Male connector, M12, 8-pin, straight, A-coded Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.5 mm² Application: Hygienic and washdown zones | YM12ES8-0050S5586A | 2097337 |
|  | <ul style="list-style-type: none"> Connection type head A: Flying leads Connection type head B: Flying leads Signal type: SSI, Incremental, HIPERFACE® Items supplied: By the meter Cable: 8-wire, PUR, halogen-free Description: SSI, shielded, Incremental, HIPERFACE® | LTG-2308-MWENC | 6027529 |
|  | <ul style="list-style-type: none"> Connection type head A: Flying leads Connection type head B: Flying leads Signal type: SSI, Incremental Items supplied: By the meter Cable: 11-wire, PUR Description: SSI, shielded, Incremental | LTG-2411-MW | 6027530 |
|  | <ul style="list-style-type: none"> Connection type head A: Flying leads Connection type head B: Flying leads Signal type: SSI, TTL, HTL, Incremental Items supplied: By the meter Cable: 12-wire, UV and saltwater-resistant, PUR, halogen-free Description: SSI, shielded, TTL, HTL, Incremental | LTG-2612-MW | 6028516 |

| | Brief description | Type | part no. |
|---|---|------------------|----------|
| Mounting systems | | | |
|  | <ul style="list-style-type: none"> Product family: Stator couplings Description: Two-sided stator coupling, screw hole circle diameter 63 mm, slot width 3.2 mm | BEF-DS-09 | 2076214 |
|  | <ul style="list-style-type: none"> Product family: Stator couplings Description: Two-sided stator coupling, slot, slot radius 63 mm – 83 mm, slot width 3.2 mm | BEF-DS-10 | 2076215 |
|  | <ul style="list-style-type: none"> Product family: Stator couplings Description: One-sided stator coupling, slots, slot radius 32.75 mm – 142.65 mm, slot width 4.5 mm | BEF-DS-11 | 2076216 |
|  | <ul style="list-style-type: none"> Product family: Stator couplings Description: Torque support, 1-sided, slotted hole, screw hole radius 31.5 mm - 48.5 mm, hole width 5.1 mm | BEF-DS-12 | 2076217 |
|  | <ul style="list-style-type: none"> Product family: Stator couplings Description: One-sided stator coupling, slot, slot radius 32.1 mm – 37.6 mm, slot width 4.5 mm | BEF-DS-14 | 2076678 |
|  | <ul style="list-style-type: none"> Description: Flange adapter, adaptation of face mount flange with 36 mm centering hub to 50 mm servo flange Material: Stainless steel Details: Stainless steel Items supplied: Including 3 countersunk screws with Precote 85-8 coating; M4*12 | BEF-FA-036-050-I | 2094778 |
| shaft adaptation | | | |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet metal for hollow shaft, shaft diameter 8 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-008-M | 2076219 |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 8 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-008-P | 2076229 |

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.

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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.”

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