



DBS60E-B5EP00S22

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Ordering information

| Type | part no. |
|------------------|----------|
| DBS60E-B5EP00S22 | 1074405 |

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

Illustration may differ



Detailed technical data

Features

| | |
|----------------------------------|---|
| Special device | ✓ |
| Specialty | Cable 8-core, universal 1.0 m with male connector M12 with panel mounting |
| Standard reference device | DBS60E-B5EP01024,1092140 |

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 | 1,024 |
| 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 | HTL / Push pull |
| Number of signal channels | 6-channel |
| Initialization time | < 5 ms ¹⁾ |
| Output frequency | + 300 kHz ²⁾ |
| Load current | ≤ 30 mA, per channel |
| Power consumption | ≤ 1 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 | Cable 8-core, universal 1.0 m with male connector M12 with panel mounting |
| Supply voltage | 10 ... 27 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 | 12 mm Front clamp |
| Flange type / stator coupling | 2-sided stator coupling, slot, screw hole circle 63–83 mm |
| Weight | + 0.25 kg ¹⁾ |
| Shaft material | Stainless steel with plastic shaft |
| Flange material | Aluminum |
| Housing material | Aluminum |
| Material, cable | PVC |
| Start up torque | + 0.5 Ncm (+20 °C) |
| Operating torque | 0.4 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 | ≤ 200,000 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 | IP67, housing side (IEC 60529) ¹⁾ IP65, shaft side (IEC 60529) |
| Permissible relative humidity | 90 % (Condensation not permitted) |
| Operating temperature range | -20 °C ... +85 °C ²⁾ |

¹⁾ With mating connector fitted.

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

| | |
|----------------------------------|---|
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 200 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.

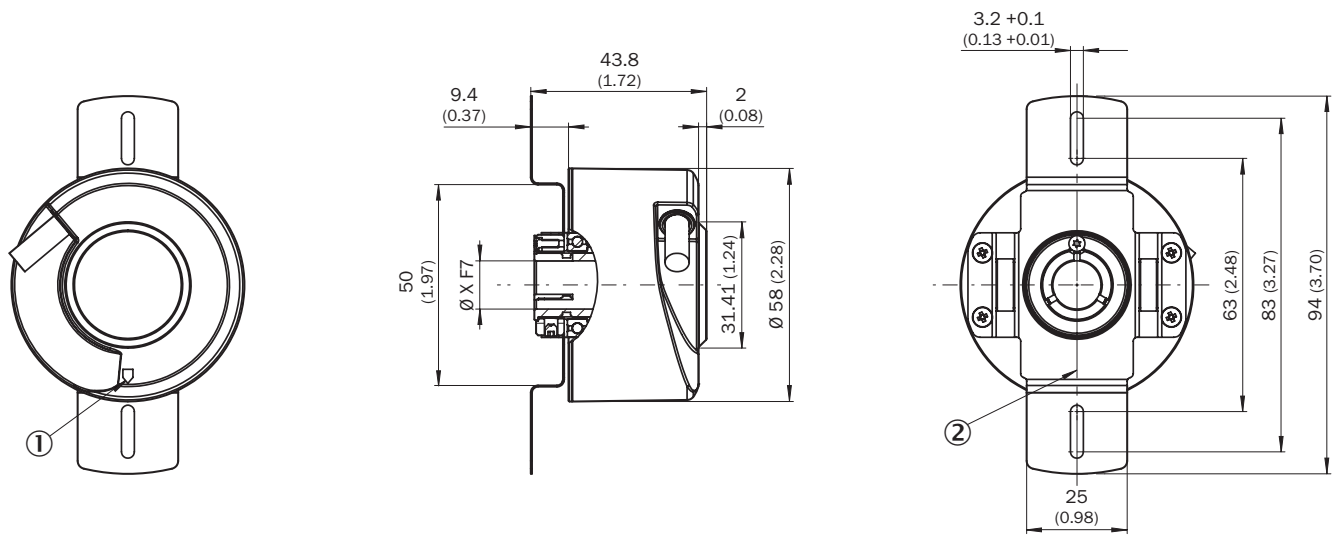
Certificates

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

XF7 values see shaft diameter table for blind hollow shaft

- ① Zero pulse mark on housing
- ② zero pulse mark on flange under stator coupling

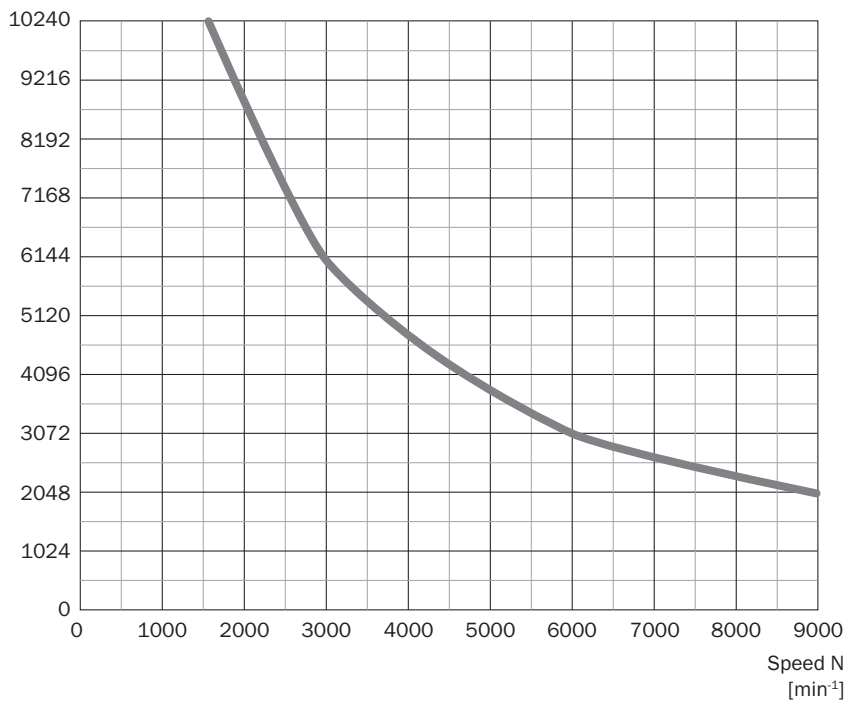
| Type Blind hollow shaft | Shaft diameter XF7 |
|--------------------------------------|--------------------|
| DBS60x-BAxxxxxxx DBS60x-B1xxxxxxx | 6 mm |
| DBS60x-BBxxxxxxx DBS60x-B2xxxxxxx | 8 mm |
| DBS60x-BCxxxxxxx DBS60x-B3xxxxxxx | 3/8" |
| DBS60x-BDxxxxxxx DBS60x-B4xxxxxxx | 10 mm |
| DBS60x-BExxxxxxx DBS60x-B5xxxxxxx | 12 mm |
| DBS60x-BFxxxxxxx DBS60x-B6xxxxxxx | 1/2" |
| DBS60x-BGxxxxxxx DBS60x-B7xxxxxxx | 14 mm |
| DBS60x-BHxxxxxxx DBS60x-B8xxxxxxx | 15 mm |
| DBS60x-BJxxxxxxx | 5/8" |

PIN assignment

| PIN | Signal TTL/HTL | Beschreibung |
|--------|----------------|---|
| 1 | A | Signalleitung |
| 2 | A | Signalleitung |
| 3 | B | Signalleitung |
| 4 | B | Signalleitung |
| 5 | Z | Signalleitung |
| 6 | Z | Signalleitung |
| 7 | GND | Masseanschluss des Encoders |
| 8 | +Us | Versorgungsspannung (potentialfrei zum Gehäuse) |
| Schirm | Schirm | Schirm encoderseitig mit Steckergehäuse verbunden. Steuerungsseitig mit Erde verbinden. |

Diagrams

Pulses per revolution



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