



DBS60E-TDEJ01024

DBS60 Core

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

| Type | Part no. |
|------------------|----------|
| DBS60E-TDEJ01024 | 1080460 |

Other models and accessories → www.sick.com/DBS60_Core

Detailed technical data

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.

Electrical data

| | |
|--|---|
| Connection type | Cable, 8-wire, universal, 0.5 m ¹⁾ |
| 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 | ✓ ²⁾ |
| MTTFd: mean time to dangerous failure | 500 years (EN ISO 13849-1) ³⁾ |

¹⁾ The universal cable connection is positioned so that it is possible to lay it without bends in a radial or axial direction.

²⁾ Short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

³⁾ 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, Front clamp |
| Shaft diameter | 10 mm |
| Flange type / stator coupling | 2-sided stator coupling, slot, screw hole circle 63–83 mm |
| Weight | + 0.25 kg ¹⁾ |
| Shaft material | Stainless steel |
| 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 shaft movement, axial static/dynamic | ± 0.5 mm / ± 0.2 mm ²⁾ |
| Permissible shaft movement, radial static/dynamic | ± 0.3 mm / ± 0.1 mm 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 an encoder with a male connector outlet or a cable with a male connector outlet.

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 | IP65, housing side (according to IEC 60529) IP65, shaft side (according to IEC 60529) |
| Permissible relative humidity | 90 % (condensation of the optical scanning not permitted) |
| Operating temperature range | -20 °C ... +85 °C ¹⁾ |
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 250 g, 3 ms (according to EN 60068-2-27) |
| Resistance to vibration | 30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6) |

¹⁾ These values relate to all mechanical versions including recommended accessories unless otherwise noted.

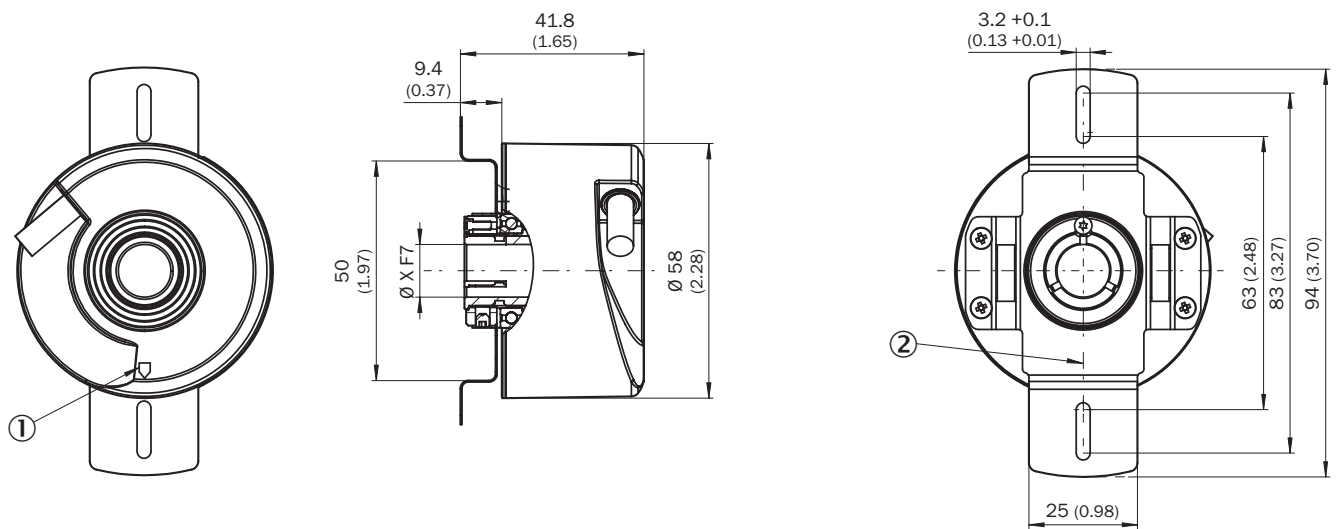
Classifications

| | |
|---------------------|----------|
| ECl@ss 5.0 | 27270501 |
| ECl@ss 5.1.4 | 27270501 |
| ECl@ss 6.0 | 27270590 |
| ECl@ss 6.2 | 27270590 |
| ECl@ss 7.0 | 27270501 |
| ECl@ss 8.0 | 27270501 |

| | |
|-----------------------|----------|
| ECl@ss 8.1 | 27270501 |
| ECl@ss 9.0 | 27270501 |
| ECl@ss 10.0 | 27270501 |
| ECl@ss 11.0 | 27270501 |
| ETIM 5.0 | EC001486 |
| ETIM 6.0 | EC001486 |
| ETIM 7.0 | EC001486 |
| UNSPSC 16.0901 | 41112113 |

Dimensional drawing (Dimensions in mm (inch))

Through hollow shaft clamping at the front, cable connection, 2-sided stator coupling, slot, screw hole circle 63–83 mm



XF7 values see shaft diameter table for through hollow shaft, clamping at the front

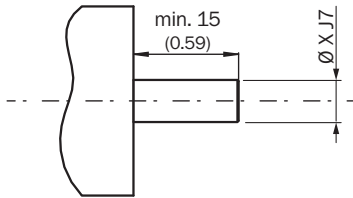
- ① Zero pulse mark on housing
- ② Zero pulse mark on flange under stator coupling

| Type Through hollow shaft with front clamping | Shaft diameter XF7 |
|--|--------------------|
| DBS60x-TAxxxxxxx DBS60x-T1xxxxxxx | 6 mm |
| DBS60x-TBxxxxxxx DBS60x-T2xxxxxxx | 8 mm |
| DBS60x-TCxxxxxxx DBS60x-T3xxxxxxx | 3/8" |
| DBS60x-TDxxxxxxx DBS60x-T4xxxxxxx | 10 mm |
| DBS60x-TExxxxxxx DBS60x-T5xxxxxxx | 12 mm |
| DBS60x-TFxxxxxxx DBS60x-T6xxxxxxx | 1/2" |
| DBS60x-TGxxxxxxx DBS60x-T7xxxxxxx | 14 mm |
| DBS60x-THxxxxxxx DBS60x-T8xxxxxxx | 15 mm |

| Type | Shaft diameter XF7 |
|--|--------------------|
| Through hollow shaft with front clamping | |
| DBS60x-TJxxxxxxx | 5/8" |

Attachment specifications

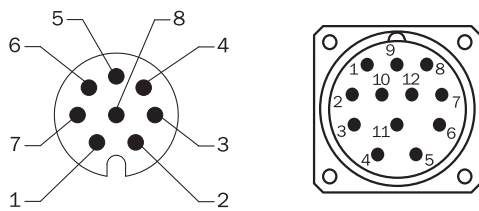
Through hollow shaft with front clamping



Customer side

| Type | Shaft diameter xj7 |
|--|--------------------|
| Through hollow shaft with front clamping | |
| DBS60x-TAxxxxxxx DBS60x-T1xxxxxxx | 6 mm |
| DBS60x-TBxxxxxxx DBS60x-T2xxxxxxx | 8 mm |
| DBS60x-TCxxxxxxx DBS60x-T3xxxxxxx | 3/8" |
| DBS60x-TDxxxxxxx DBS60x-T4xxxxxxx | 10 mm |
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| DBS60x-TJxxxxxxx | 5/8" |

PIN assignment

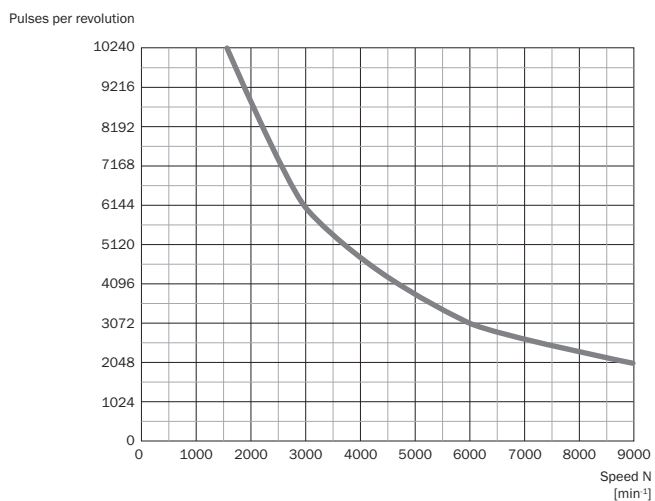


View of M12 / M23 male device connector on cable / housing

| Wire colors (cable connection) | Male connector M12, 8-pin | Male connector M23, 12-pin | TTL/HTL 6-channel signal | Explanation |
|--------------------------------|---------------------------|----------------------------|--------------------------|-------------|
| Brown | 1 | 6 | A- | Signal wire |

| Wire colors (cable connection) | Male connector M12, 8-pin | Male connector M23, 12-pin | TTL/HTL 6-channel signal | Explanation |
|--------------------------------|---------------------------|----------------------------|--------------------------|-------------------------------------|
| White | 2 | 5 | A | Signal wire |
| Black | 3 | 1 | B- | Signal wire |
| Pink | 4 | 8 | B | Signal wire |
| Yellow | 5 | 4 | Z- | Signal wire |
| Purple | 6 | 3 | Z | Signal wire |
| Blue | 7 | 10 | GND | Ground connection |
| Red | 8 | 12 | +U _s | Supply voltage |
| - | - | 9 | Not assigned | Not assigned |
| - | - | 2 | Not assigned | Not assigned |
| - | - | 11 | Not assigned | Not assigned |
| - | - | 7 | Not assigned | Not assigned |
| Screen | Screen | Screen | Screen | Screen connected to encoder housing |

Maximum revolution range



Signal outputs

Signal outputs for electrical interfaces TTL and HTL





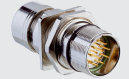
Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

| 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_Core

| | Brief description | Type | Part no. |
|----------------------------|--|----------------|----------|
| Plug connectors and cables | | | |
| | Head A: cable Head B: Flying leads Cable: SSI, Incremental, HIPERFACE [®] , PUR, halogen-free, shielded | LTG-2308-MWENC | 6027529 |
| | Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, shielded | LTG-2411-MW | 6027530 |
| | Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, halogen-free, shielded | LTG-2512-MW | 6027531 |
| | Head A: cable Head B: Flying leads Cable: SSI, TTL, HTL, Incremental, PUR, halogen-free, shielded | LTG-2612-MW | 6028516 |

| | Brief description | Type | Part no. |
|---|--|---------------|----------|
|  | Head A: male connector, M12, 8-pin, straight, A-coded Head B: - Cable: Incremental, shielded | STE-1208-GA01 | 6044892 |
|  | Head A: male connector, M23, 12-pin, straight Head B: - Cable: HIPERFACE [®] , SSI, Incremental, shielded | STE-2312-G01 | 2077273 |
|  | | STE-2312-GX | 6028548 |

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