

DBS60E-TJEZ0S154

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

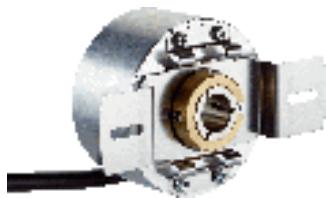


Illustration may differ

Ordering information

| Type | part no. |
|------------------|----------|
| DBS60E-TJEZ0S154 | 1122577 |

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

Detailed technical data

Features

| | |
|----------------------------------|---------------------------|
| Special device | ✓ |
| Specialty | Length of cable 6.5 m |
| Standard reference device | DBS60E-TJEL00500, 1119175 |

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 | 500 |
| 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 |
|------------------------|-----------------|

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

| | | |
|--|---|-----------------------|
| Connection type | Detail | Length of cable 6.5 m |
| 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 | Through hollow shaft |
| Shaft diameter | 5/8"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 |
| 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 | ≤ 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 | IP65, housing side (IEC 60529) IP65, shaft side (IEC 60529) |
| Permissible relative humidity | 90 % (Condensation 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 (EN 60068-2-27) |
| Resistance to vibration | 30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) |

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

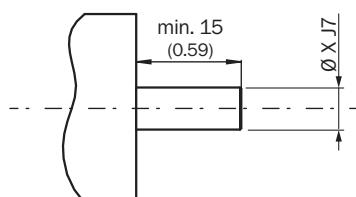
Certificates

| | |
|--|---|
| 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 |

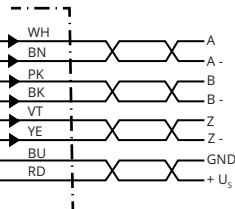
Attachment specifications Through hollow shaft with front clamping



| Type | Shaft diameter xJ7 |
|--|--------------------|
| Through hollow shaft with front clamping | |
| DBS60x-TAxXXXXXXDBS60x-T1XXXXXX | 6 mm |
| DBS60x-TBXXXXXXXDBS60x-T2XXXXXX | 8 mm |
| DBS60x-TCXXXXXXXDBS60x-T3XXXXXX | 3/8" |
| DBS60x-TDXXXXXXXDBS60x-T4XXXXXX | 10 mm |
| DBS60x-TEXXXXXXXDBS60x-T5XXXXXX | 12 mm |
| DBS60x-TFXXXXXXXDBS60x-T6XXXXXX | 1/2" |

| Type | Through hollow shaft with front clamping | Shaft diameter xj7 |
|------------------------------------|--|--------------------|
| DBS60x-TGxxxxxxxxDBS60x-T7xxxxxxxx | | 14 mm |
| DBS60x-THxxxxxxxxDBS60x-T8xxxxxxxx | | 15 mm |
| DBS60x-TJxxxxxxxx | | 5/8" |
| | | - |

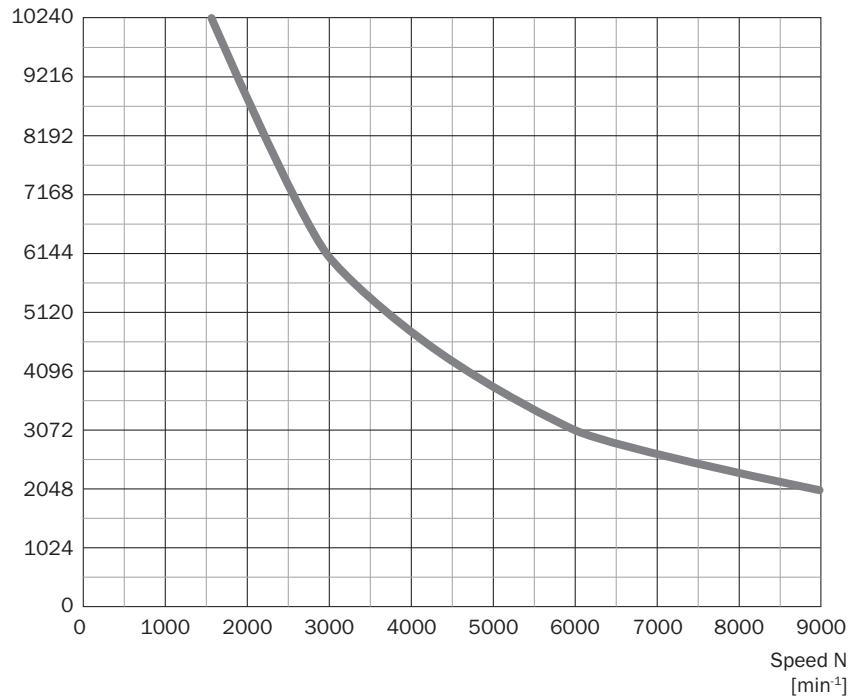
PIN assignment



| 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 |
| 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 | +Us | 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 |

Diagrams

Pulses per revolution



Recommended accessories

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

| | Brief description | Type | part no. |
|---|--|---------------|----------|
| shaft adaptation | | | |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 6 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-006-P | 2076228 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: 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 adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 8 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-008-P | 2076229 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet metal for hollow shaft, shaft diameter 10 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-010-M | 2076220 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 10 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-010-P | 2076230 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet metal for hollow shaft, shaft diameter 11 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-011-M | 2094671 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet metal for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-012-M | 2076221 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-012-P | 2076231 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet metal for hollow shaft, shaft diameter 14 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-014-M | 2076222 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 14 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-014-P | 2076232 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 15 mm, outer diameter 5/8" (15.875 mm) | SPZ-58Z-015-P | 2076233 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet metal for hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 5/8" (15.875 mm) | SPZ-58Z-12Z-M | 2076225 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 5/8" (15.875 mm) | SPZ-58Z-12Z-P | 2076227 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet metal for hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 5/8" (15.875 mm) | SPZ-58Z-38Z-M | 2076224 |
|  | <ul style="list-style-type: none">Product segment: Shaft adaptationProduct: ColletsDescription: Collet plastic (PEEK) insulated for hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 5/8" (15.875 mm) | SPZ-58Z-38Z-P | 2076226 |

| | Brief description | Type | part no. |
|---|---|----------------|-----------------|
| connectors and cables | | | |
|  | <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, Incremental Items supplied: By the meter Cable: 12-wire, PUR, halogen-free Description: SSI, shielded, Incremental | LTG-2512-MW | 6027531 |
|  | <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 |
|  | <ul style="list-style-type: none"> Connection type head A: Male connector, M12, 8-pin, straight, A-coded Signal type: Incremental Cable: CAT5, CAT5e Description: Incremental, shielded Connection systems: IDC quick connection Permitted cross-section: 0.14 mm² ... 0.34 mm² | STE-1208-GA01 | 6044892 |
|  | <ul style="list-style-type: none"> Connection type head A: Male connector, M23, 12-pin, straight, A-coded Signal type: HIPERFACE®, SSI, Incremental Description: HIPERFACE®, shielded SSI Incremental Connection systems: Solder connection | STE-2312-GX | 6028548 |
|  | <ul style="list-style-type: none"> Connection type head A: Male connector, M23, 12-pin, straight, A-coded Signal type: HIPERFACE®, SSI, Incremental Description: HIPERFACE®, shielded SSI Incremental Connection systems: Solder connection | STE-2312-G01 | 2077273 |

SICK AT A GLANCE

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