



DBS60I-S4AC01000

DBS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

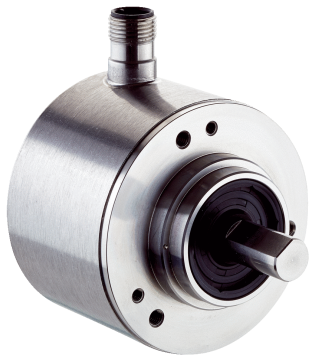


Illustration may differ



Ordering information

| Type | Part no. |
|------------------|----------|
| DBS60I-S4AC01000 | 1098320 |

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

Detailed technical data

Performance

| | |
|---------------------------------|-------------------------------------|
| Pulses per revolution | 1,000 |
| 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⁾ |
| Load current | ≤ 30 mA, per channel |
| Operating current | ≤ 50 mA (without load) |

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

²⁾ Up to 450 kHz on request.

Electrical data

| | |
|------------------------------------------------|---------------------------------------------|
| Connection type | Male connector, M12, 8-pin, radial |
| Supply voltage | 4.5 ... 5.5 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.

²⁾ 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.

| | |
|----------------------------------------------|------------------------------------------|
| MTTFd: mean time to dangerous failure | 500 years (EN ISO 13849-1) ²⁾ |
|----------------------------------------------|------------------------------------------|

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²⁾ 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 | Solid shaft, face mount flange |
| Shaft diameter | 10 mm |
| Shaft length | 19 mm |
| Flange type / stator coupling | Flange with 3 x M3 and 3 x M4 |
| Weight | 0.5 kg ¹⁾ |
| Shaft material | Stainless steel V2A |
| Flange material | Stainless steel V2A |
| Housing material | Stainless steel V2A |
| Shaft sealing ring material | FKM80 |
| Start up torque | 1 Ncm (+20 °C) |
| Operating torque | 0.9 Ncm (+20 °C) |
| Permissible shaft loading | 80 N (radial) ²⁾ 40 N (axial) ²⁾ |
| Operating speed | ≤ 6,000 min ⁻¹ ³⁾ |
| Moment of inertia of the rotor | 34 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⁾ Higher values are possible using limited bearing life.

³⁾ 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, male connector (IEC 60529) ¹⁾ |
| Permissible relative humidity | 90 % (Condensation not permitted) |
| Operating temperature range | -20 °C ... +85 °C |
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 100 g, 6 ms (EN 60068-2-27) |
| Resistance to vibration | 30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) |

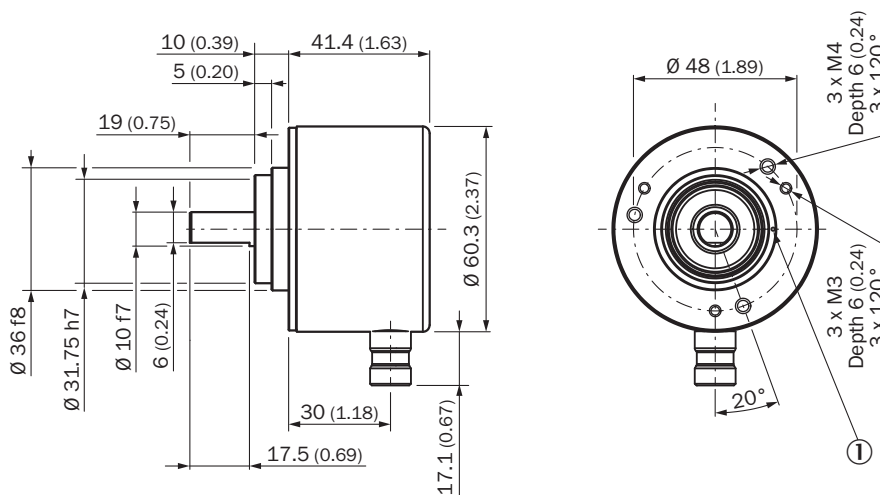
¹⁾ With mating connector fitted.

Classifications

| | |
|---------------------|----------|
| eCI@ss 5.0 | 27270501 |
| eCI@ss 5.1.4 | 27270501 |
| eCI@ss 6.0 | 27270590 |
| eCI@ss 6.2 | 27270590 |
| eCI@ss 7.0 | 27270501 |

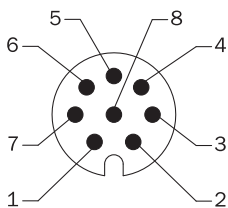
| | |
|-----------------------|----------|
| eCl@ss 8.0 | 27270501 |
| eCl@ss 8.1 | 27270501 |
| eCl@ss 9.0 | 27270501 |
| eCl@ss 10.0 | 27270501 |
| eCl@ss 11.0 | 27270501 |
| eCl@ss 12.0 | 27270501 |
| ETIM 5.0 | EC001486 |
| ETIM 6.0 | EC001486 |
| ETIM 7.0 | EC001486 |
| ETIM 8.0 | EC001486 |
| UNSPSC 16.0901 | 41112113 |

Dimensional drawing (Dimensions in mm (inch))



① Zero pulse mark on flange

PIN assignment

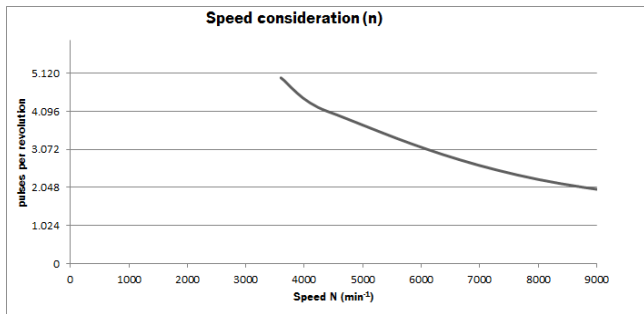


View of M12 male device connector on cable / housing

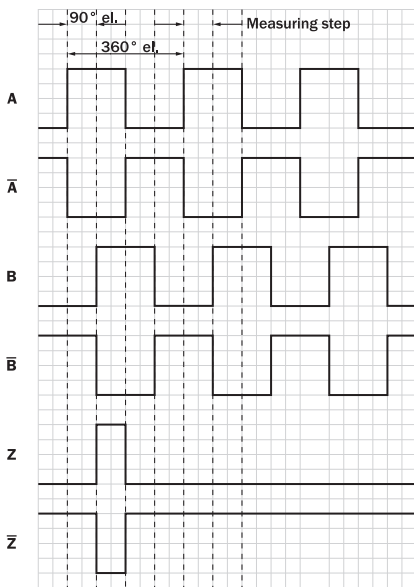
| Wire colors (cable connection) | Male connector M12, 8-pin | TTL/HTL signal | Explanation |
|--------------------------------|---------------------------|----------------|--------------|
| Brown | 1 | A- | Signal cable |
| White | 2 | A | Signal cable |
| Black | 3 | B- | Signal cable |
| Pink | 4 | B | Signal cable |

| Wire colors (cable connection) | Male connector M12, 8-pin | TTL/HTL signal | Explanation |
|--------------------------------|---------------------------|-----------------|---------------------------------------------|
| 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



Signal outputs for electrical interfaces TTL and HTL

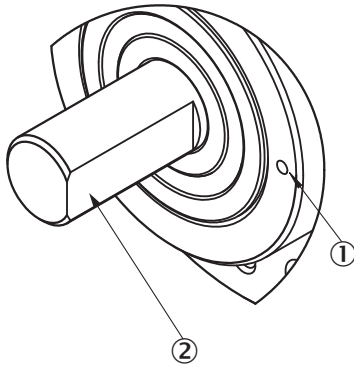


Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

| 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 |

Operation note

Solid shaft, face mount flange









① Zero pulse mark on flange

② Zero pulse active when the surface of the shaft shows the zero pulse mark on the flange

Recommended accessories

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

| | 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, TTL, HTL, Incremental, PUR, halogen-free, shielded | LTG-2612-MW | 6028516 |
|  | Head A: female connector, M12, 8-pin, straight, A-coded Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 2 m | DOL-1208-G02MIE1 | 2120313 |
|  | Head A: female connector, M12, 8-pin, straight, A-coded Cable: shielded | YF12ES8-0050S5586A | 2097334 |
|  | Head A: male connector, M12, 8-pin, straight, A-coded Cable: shielded | YM12ES8-0050S5586A | 2097337 |

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.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

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.”

WORLDWIDE PRESENCE:

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