

DBS36E-BBAZ00S69

DBS36/50

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ

Ordering information

| Type | part no. |
|------------------|----------|
| DBS36E-BBAZ00S69 | 1093020 |

Other models and accessories → www.sick.com/DBS36_50



Detailed technical data

Features

| | |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Special device | ✓ |
| Specialty | Cable, 8-wire with plug, M12, 8-pin, universal, 0.1 m with customer-specific pinouts Operating temperature range -28 °C ... +85 °C |
| Standard reference device | DBS36E-BBAJ01024, 1060868 |

Safety-related parameters

| | |
|----------------------------------------------------------|------------------------------------------|
| MTTF_D (mean time to dangerous failure) | 600 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 | ± 54° / pulses per revolution |
| Duty cycle | ≤ 0.5 ± 5 % |

Interfaces

| | |
|---------------------------------------|------------------------|
| Communication interface | Incremental |
| Communication Interface detail | TTL / RS-422 |
| Number of signal channels | 6-channel |
| Initialization time | < 3 ms |
| Output frequency | ≤ 300 kHz |
| Load current | ≤ 30 mA |
| Operating current | ≤ 50 mA (without load) |

Electronics

| | |
|-------------------------------|--------------------------------------------------------------------------------------|
| Connection type | Special version |
| Connection type Detail | Cable, 8-wire with plug, M12, 8-pin, universal, 0.1 m with customer-specific pinouts |
| Supply voltage | 4.5 ... 5.5 V |

¹⁾ The short-circuit rating is only given if Us and GND are connected correctly.

| | |
|-----------------------------------------|----------------------------------------------|
| Reference signal, number | 1 |
| Reference signal, position | 90 °, electric, logically gated with A and B |
| Short-circuit protection of the outputs | ✓ ¹⁾ |

¹⁾ The short-circuit rating is only given if Us and GND are connected correctly.

Mechanics

| | |
|--------------------------------|-----------------------------------------------------|
| Mechanical design | Blind hollow shaft |
| Shaft diameter | 8 mmFront clamp ¹⁾ |
| Weight | + 150 g (with connecting cable) |
| 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 | ≤ 8,000 min ⁻¹ ⁴⁾ |
| Moment of inertia of the rotor | 0.8 gcm ² |
| Bearing lifetime | 2 x 10 ⁹ revolutions |
| Angular acceleration | ≤ 500,000 rad/s ² |

¹⁾ Order collets for 5 mm, 6 mm and 1/4" mm separately as accessories.

²⁾ Higher values are possible using limited bearing life.

³⁾ Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

⁴⁾ No permanent operation. Decreasing signal quality.

Ambient data

| | |
|-------------------------------|------------------------------------------------------|
| EMC | According to EN 61000-6-2 and EN 61000-6-3 (class A) |
| Enclosure rating | IP65 |
| Permissible relative humidity | 90 % (Condensation not permitted) |
| Operating temperature range | -28 °C ... +85 °C, -35 °C ... +95 °C on request |
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 100 g, 6 ms (EN 60068-2-27) |
| Resistance to vibration | 20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) |

Certificates

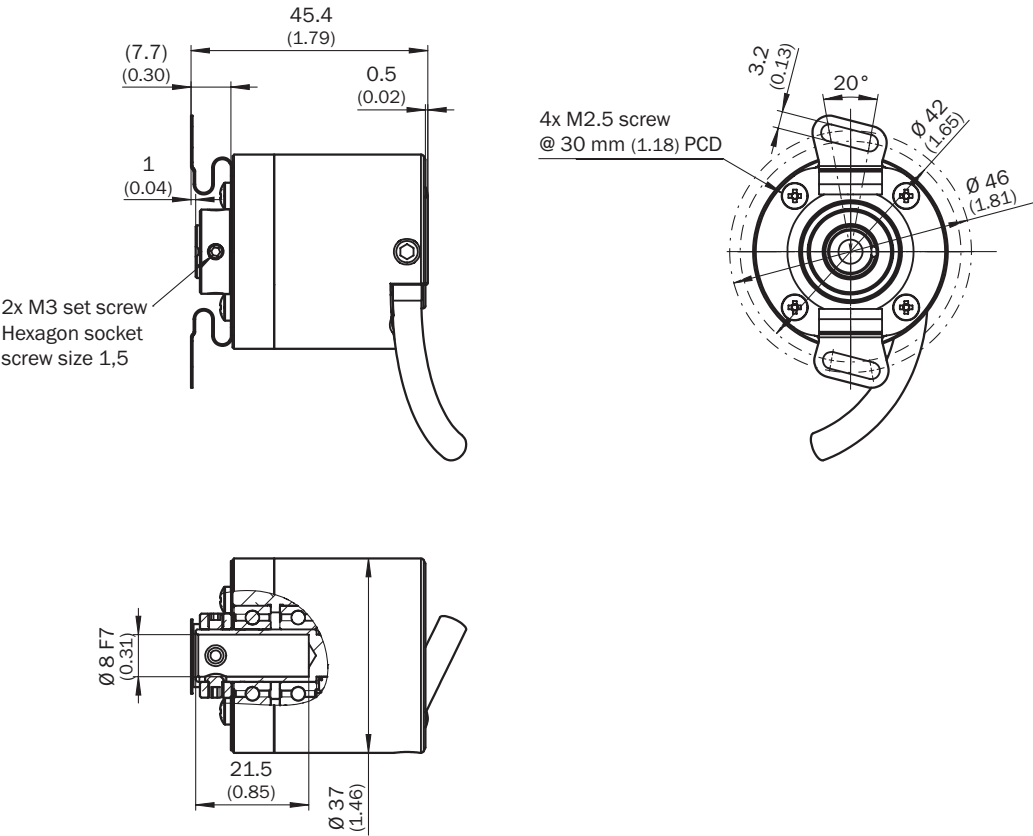
| | |
|--------------------------------|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| China-RoHS | ✓ |
| cRUus certificate | ✓ |

| | |
|--------------------------------------------------------------------------|---|
| Information according to Art. 3 of Data Act (Regulation EU 2023/2854) | ✓ |
|--------------------------------------------------------------------------|---|

Classifications

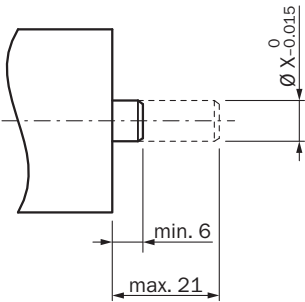
| | |
|----------------|----------|
| ECLASS 5.0 | 27270501 |
| ECLASS 5.1.4 | 27270501 |
| ECLASS 6.0 | 27270590 |
| ECLASS 6.2 | 27270590 |
| ECLASS 7.0 | 27270501 |
| ECLASS 8.0 | 27270501 |
| ECLASS 8.1 | 27270501 |
| ECLASS 9.0 | 27270501 |
| ECLASS 10.0 | 27270501 |
| ECLASS 11.0 | 27270501 |
| 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 Blind hollow shaft, cable



Dimensions in mm (inch)

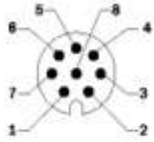
Attachment specifications



| | Encoder | |
|------|-----------|-------------------|
| 6 mm | DBS36E-BA | 2056390Premounted |
| 5 mm | DBS36E-BB | 2066991 |
| 6 mm | | 2056390 |
| 1/4" | | On request |
| 8 mm | | Not required |

PIN assignment

View of M12 device connector on cable/housing



| Pin, 8-pin in M12 | Signal TTL, HTL | Explanation |
|-------------------|-----------------|--------------------------------------------------------------------------------------------|
| 1 | GND | Ground connection of the encoder |
| 2 | +U _S | Supply voltage (volt-free to housing) |
| 3 | A | Signal cable |
| 4 | B | Signal cable |
| 5 | Z | Signal cable |
| 6 | \bar{A} | Signal cable |
| 7 | \bar{B} | Signal cable |
| 8 | \bar{Z} | Signal cable |
| - | N.C. | Not assigned |
| - | N.C. | Not assigned |
| - | N.C. | Not assigned |
| - | Not connected | Not connected |
| Shield | Shield | Shield connected to housing on side of encoder. Connected to ground on side of control. |

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:

Contacts and other locations –www.sick.com