



DFS25A-A2ABD004096

DFS2x

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

| Type | Part no. |
|--------------------|----------|
| DFS25A-A2ABD004096 | 1081612 |

Other models and accessories → www.sick.com/DFS2x

Detailed technical data

Performance

| | |
|---------------------------------|---------------------------------------|
| Pulses per revolution | 4,096 |
| Measuring step | ± 90°, electric/pulses per revolution |
| Measuring step deviation | ± 0.008° pulses 100 ... 10,000 |
| Error limits | ± 0.03° |

Interfaces

| | |
|--|---|
| Communication interface | Incremental |
| Communication Interface detail | TTL / RS-422 |
| Number of signal channels | 6-channel |
| 0-set function via hardware pin | ✓ |
| 0-SET function | H-active, L = 0 - 3 V, H = 4,0 - U _s V |
| Initialization time | 40 ms ¹⁾ |
| Output frequency | 820 kHz |
| Load current | 30 mA |
| Operating current | 50 mA (without load) |

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

Electrical data

| | |
|--|------------------------------------|
| Connection type | Male connector, MS, 10-pin, radial |
| Supply voltage | 4.5 ... 5.5 V |
| Reference signal, number | 1 |
| Reference signal, position | 180°, electric, gated with A |
| Reverse polarity protection | ✓ |
| Short-circuit protection of the outputs | ✓ ¹⁾ |

¹⁾ Short-circuit opposite to another channel or GND permissible for maximum 30 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 | 330 years (EN ISO 13849-1) ²⁾ |
|--|--|

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

Mechanical data

| | |
|---------------------------------------|-----------------------------------|
| Mechanical design | Solid shaft, Square flange |
| Shaft diameter | 3/8" |
| Shaft length | 19 mm |
| Weight | + 0.4 kg ¹⁾ |
| Shaft material | Stainless steel 1,4305 |
| Flange material | Aluminum |
| Housing material | Aluminum |
| Start up torque | 0.5 Ncm (+20 °C) |
| Operating torque | 0.3 Ncm (+20 °C) |
| Permissible shaft loading | 80 N (radial) 40 N (axial) |
| Operating speed | ≤ 9,000 min ⁻¹ |
| Moment of inertia of the rotor | 15 gcm ² |
| Bearing lifetime | 3.6 x 10 ⁹ revolutions |
| Angular acceleration | ≤ 500,000 rad/s ² |

¹⁾ Based on encoder with MS male connector.

Ambient data

| | |
|--------------------------------------|--|
| EMC | According to EN 61000-6-2 and EN 61000-6-3 |
| Enclosure rating | IP65, shaft side (IEC 60529) IP67, housing side (IEC 60529) |
| Permissible relative humidity | 90 % (Condensation not permitted) |
| Operating temperature range | -30 °C ... +85 °C |
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 100 g, 11 ms (EN 60068-2-27) |
| Resistance to vibration | 30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) |

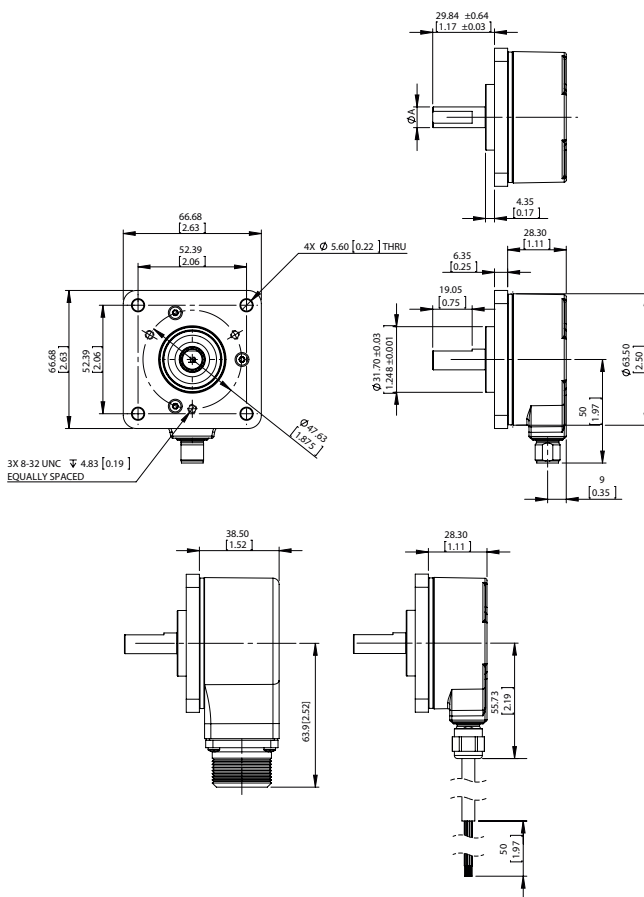
Classifications

| | |
|---------------------|----------|
| 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))

DFS25 square flange mount, radial connector outlet M12 and MS, cable outlet



| Type | Shaft diameter A |
|--------------------------------------|---------------------|
| DFS2x-x1xxxxxxxx | 1/4" |
| DFS2x-x2xxxxxxxx DFS2x-xCxxxxxxxx | 3/8" |
| DFS2x-xFxxxxxxxx | 1/2" |
| DFS2x-x3xxxxxxxx | 6 mm |
| DFS2x-x4xxxxxxxx | 10 mm |

Diagrams

Maximum revolution range



Signal Outputs with Counter Clock-wise Counting Direction Option Selected (B leads A for clock-wise rotation). Complement signals AN, BN and ZN are not shown.



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






Signal Outputs with Clock-wise Counting Direction Option Selected (A leads B for clock-wise rotation). Complement signals AN, BN and ZN are not shown.





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

Recommended accessories

Other models and accessories → www.sick.com/DFS2x

| | Brief description | Type | Part no. |
|---|---|------------------|----------|
| Others | | | |
|  | <ul style="list-style-type: none"> Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 3 m, 11-wire Description: Shielded | DOL-MS10-G03MMA2 | 7102131 |
|  | <ul style="list-style-type: none"> Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 5 m, 11-wire Description: Shielded | DOL-MS10-G05MMA2 | 7102132 |
|  | <ul style="list-style-type: none"> Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 1.5 m, 11-wire Description: Shielded | DOL-MS10-G1M5MA2 | 7102130 |
|  | <ul style="list-style-type: none"> Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 10 m, 11-wire Description: Shielded | DOL-MS10-G10MMA2 | 7102133 |
|  | <ul style="list-style-type: none"> Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 20 m, 11-wire Description: Shielded | DOL-MS10-G20MMA2 | 7102134 |

| | Brief description | Type | Part no. |
|---|---|------------------|----------|
|  | <ul style="list-style-type: none">• Connection type head A: Female connector, MS/10, 10-pin, straight• Connection type head B: Flying leads• Cable: 30 m, 11-wire• Description: Shielded | DOL-MS10-G30MMA2 | 7102135 |
|  | <ul style="list-style-type: none">• Connection type head A: Female connector, MS/10, 10-pin, straight, A-coded• Description: Unshielded | DOS-MS10-G | 7102129 |

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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.”

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