

DDS36/DDS50: Incremental Encoders

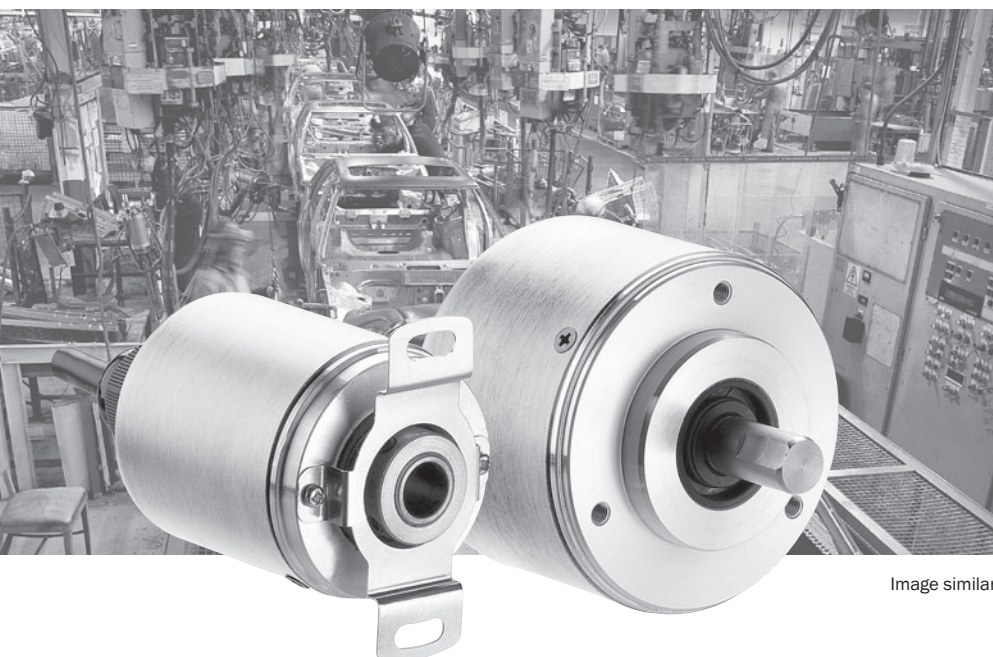


Image similar

Therefore giving you the confidence to fit and forget, even in the presence of dust and water. The most popular resolution options will be held on stock to ensure you receive a fast delivery. The DDS family is also available with a wide variety of mounting brackets and flexible couplings aiding quick and low cost fitting to your machine.

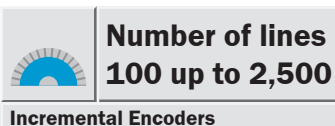
Product options:


- Electrical interface
TTL/RS422,
HTL/push pull,
Open Collector NPN
- Face mount flange for DDS36 and DDS50
- Blind hollow shaft 8 mm for the DDS36
- Axial cable outlet 1.5 m, 3 m and 5 m
- Number of lines 100 up to 2,500

The extensive variety of options result in a diverse range of applications in areas such as:

- Textile machines
- Packaging machines
- Woodworking machines
- Printing machines

The DDS36 and DDS50 SICK's low cost, light duty optical Incremental Encoders offer exceptional quality for their price level and application. Available in two housing styles, the DDS36 with a 36 mm housing diameter and the DDS50 with a 50 mm housing diameter. Their small size and low profile enables use in applications where space is limited. IP 65 sealing, almost unique in this class of encoder, is achieved by using a PG gland on the cable outlet and an additional seal on the shaft of the DDS36/DDS50.



 **Number of lines**
100 up to 2,500

Incremental Encoders

- Cable outlet
- Enclosure rating IP 65
- Electrical Interfaces
 Open Collector NPN,
 TTL,
 HTL

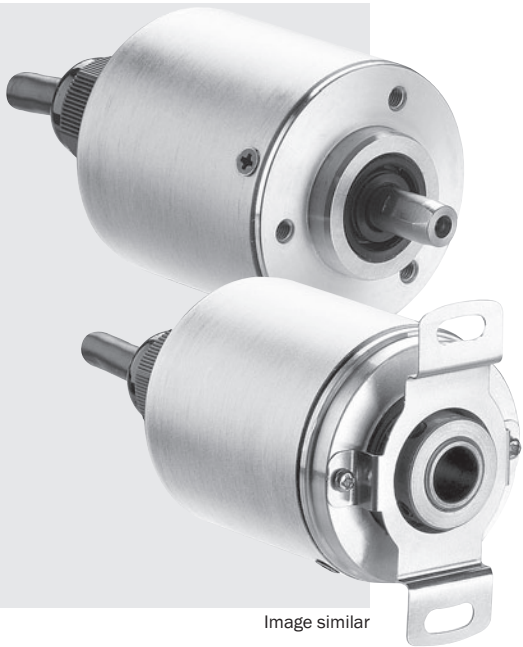
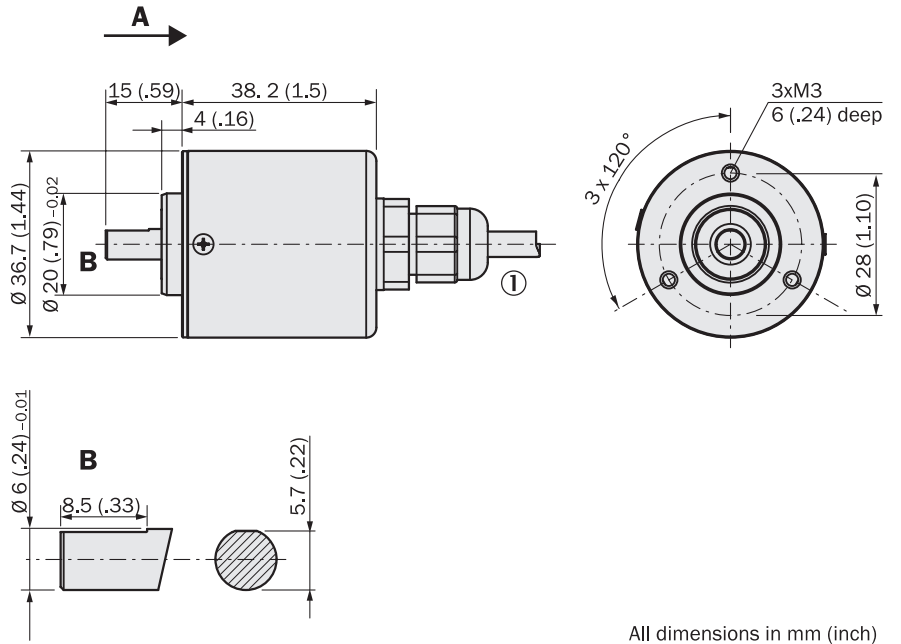


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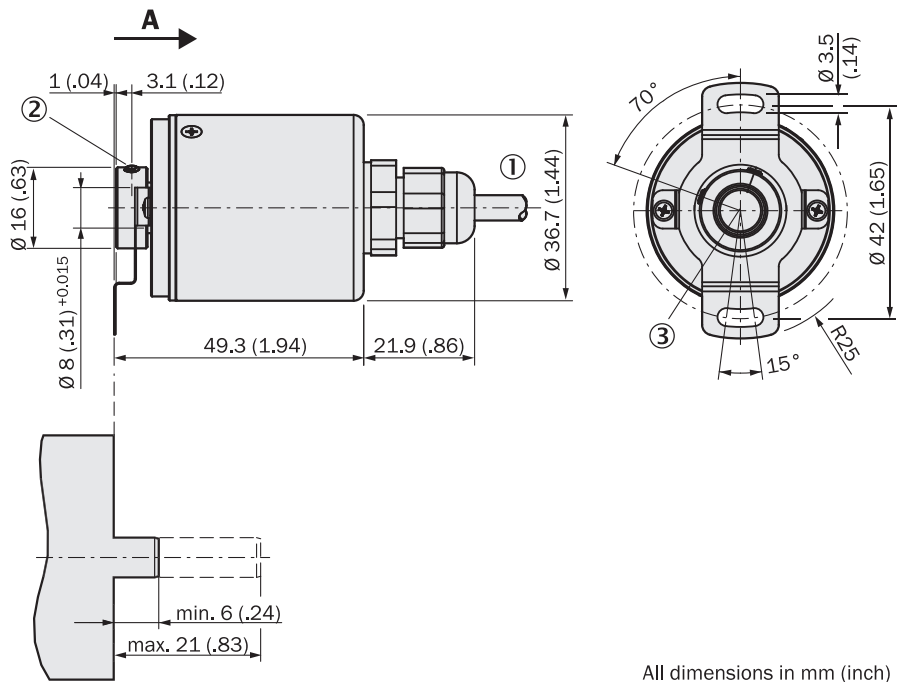


Dimensional drawing DDS36 solid shaft



① Cable diameter 5.1 (.20) ± 0.2 mm, bending radius R = 66 (2.60)

Dimensional drawing DDS36 blind hollow shaft



- ① Cable diameter 5.1 (.20) ± 0.2 mm, bending radius R = 66 (2.60)
- ② Hexagon socket screw M3
- ③ Index pulse output ± 10°

All dimensions in mm (inch)

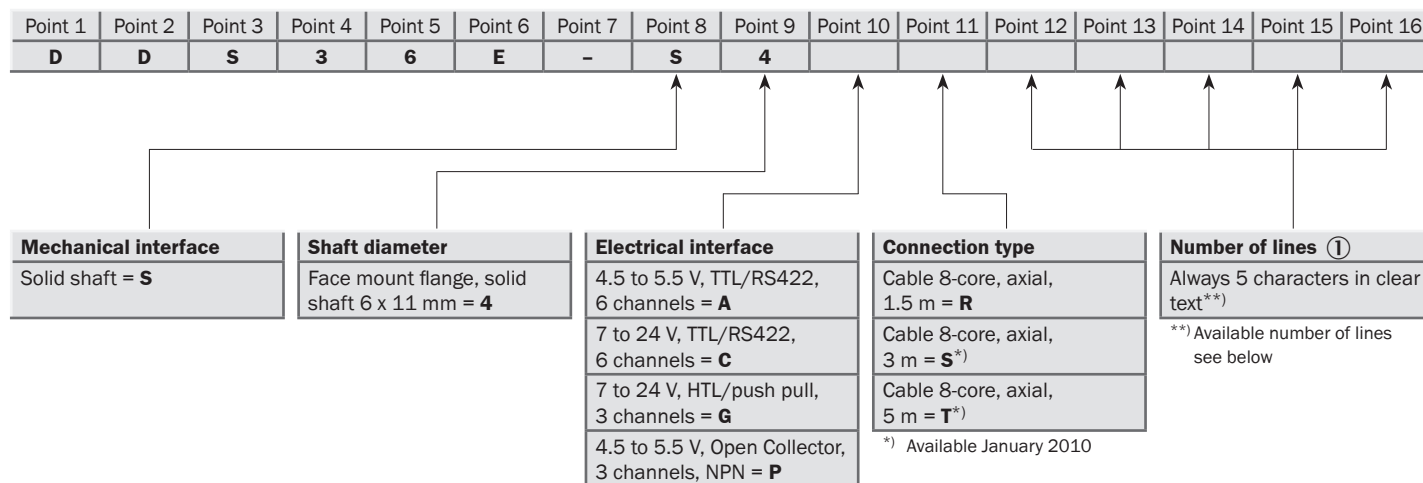
Accessories
 Connection systems (page 10)

Allocation (page 9)

| Technical data | | DDS36E- | S | B |
|---|--|---|-------------|--------------|
| | | | Solid shaft | Hollow shaft |
| Electrical interface | | 4.5 to 5.5 V, TTL/RS422, 6 channels | | |
| | | 7 to 24 V, TTL/RS422, 6 channels | | |
| | | 7 to 24 V, HTL/push pull, 3 channels | | |
| | | 4.5 to 5.5 V, Open Collector, 3 channels, NPN | | |
| Mechanical interface | | Face mount flange, solid shaft Ø 6 x 11 mm | | |
| | | Blind hollow shaft, Ø 8 mm | | |
| Number of lines (Z) | | 100 to 2,500 | | |
| Mass | | 120 g | | |
| | | 130 g | | |
| Moment of inertia of the rotor | | 0.3 kg/mm ² | | |
| | | 1.5 kg/mm ² | | |
| Measuring step (M) | | 360°/(Z x 4) | | |
| Reference signal | Number | 1 | | |
| | Position | 90° electr., gated with A and B | | |
| Measuring step deviation (MA) | | M x 0.1 | | |
| Error limits | | MA x 3 | | |
| Output frequency | | 300 kHz | | |
| Operating speed¹⁾ | | 6,000 rpm | | |
| Angular acceleration | | 5 x 10 ⁵ rad/s ² | | |
| Operating torque at +20 °C | | 4 Nmm | | |
| Start up torque at +20 °C | | 6 Nmm | | |
| Permissible shaft loading | Radial | 30 N | | |
| | Axial | 15 N | | |
| Permissible movement of the drive element | | | | |
| | Radial static/dynamic | ± 0.3/± 0.1 mm | | |
| | Axial static/dynamic | ± 0.5/± 0.2 mm | | |
| Bearing lifetime | | 2 x 10 ⁹ revolutions | | |
| Working temperature range | | -10 to +70 °C | | |
| Storage temperature range (without package) | | -25 to +85 °C | | |
| Permissible relative humidity²⁾ | | 90 % | | |
| EMC according to EN 61000-6-2 and EN 61000-6-4 | | | | |
| Resistance | | | | |
| | to shocks (according to EN 60068-2-27) | 100 g/6 ms | | |
| | to vibration (according to EN 60068-2-6) | 5 g/10 to 200 Hz | | |
| Enclosure rating | | IP 65 | | |
| Load current | | 20 mA | | |
| Operating current at no load | | 100 mA | | |

¹⁾ Self-warming 3.3 k/1,000 min⁻¹, when applying, note working temperature range.

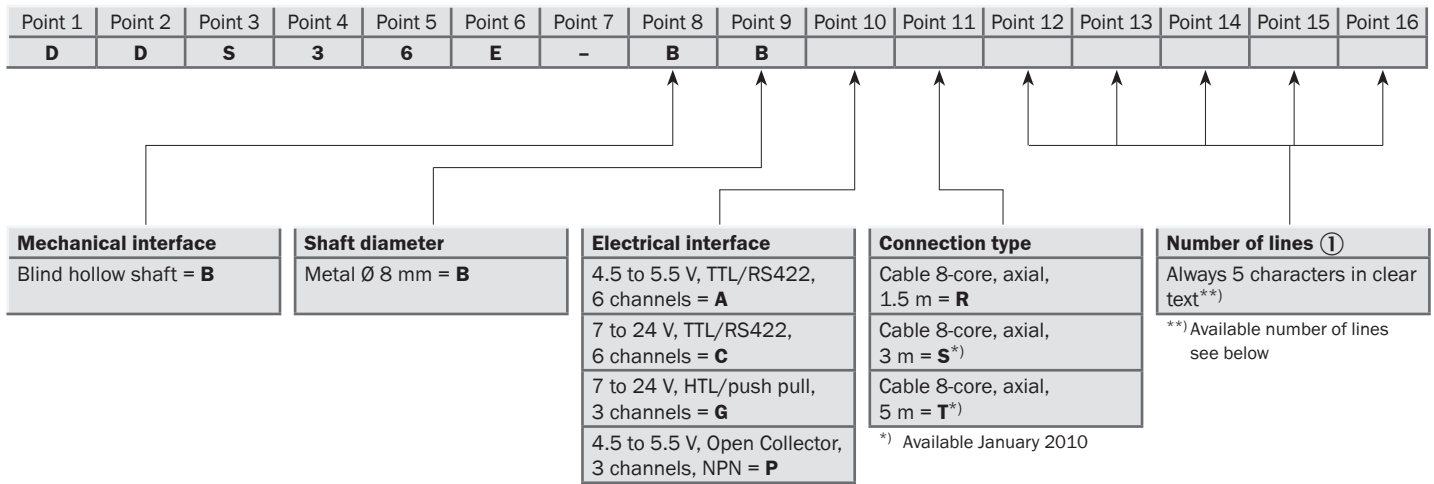
²⁾ Condensation of the optical scanning not permitted.



| Available number of lines ① | | | | | | |
|-----------------------------|-------|-------|-------|-------|-------|-------|
| 00100 | 00300 | 00400 | 00500 | 00600 | 01000 | 02000 |
| 00200 | 00360 | | | | 01024 | 02048 |
| 00256 | | | | | 01200 | 02500 |

Ordering example: Incremental Encoder DDS36E; solid shaft 6 x 11 mm; face mount flange; electrical interface 7 to 24 V, HTL/push pull, 3 channels; cable 8-core, axial, 1.5 m; number of lines 2500


| | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Point 1 | Point 2 | Point 3 | Point 4 | Point 5 | Point 6 | Point 7 | Point 8 | Point 9 | Point 10 | Point 11 | Point 12 | Point 13 | Point 14 | Point 15 | Point 16 |
| D | D | S | 3 | 6 | E | - | S | 4 | G | R | 0 | 2 | 5 | 0 | 0 |



| Available number of lines ① | | | | | | |
|-----------------------------|-------|-------|-------|-------|-------|-------|
| 00100 | 00300 | 00400 | 00500 | 00600 | 01000 | 02000 |
| 00200 | 00360 | | | | 01024 | 02048 |
| 00256 | | | | | 01200 | 02500 |

Ordering example: Incremental Encoder DDS36E; blind hollow shaft; metal Ø 8 mm; electrical interface 4.5 to 5.5 V, TTL/RS422, 6 channels; cable 8-core, axial, 1.5 m; number of lines 2500

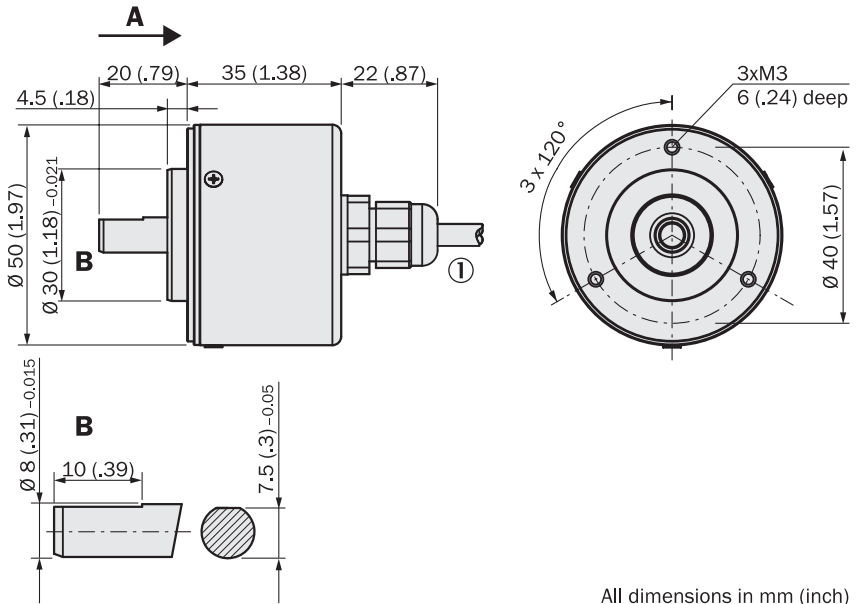
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|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Point 1 | Point 2 | Point 3 | Point 4 | Point 5 | Point 6 | Point 7 | Point 8 | Point 9 | Point 10 | Point 11 | Point 12 | Point 13 | Point 14 | Point 15 | Point 16 |
| D | D | S | 3 | 6 | E | - | B | B | A | R | 0 | 2 | 5 | 0 | 0 |

 **Number of lines**
100 up to 2,500

Incremental Encoders

- Cable outlet
- Enclosure rating IP 65
- Electrical Interfaces
 Open Collector NPN,
 TTL,
 HTL

Dimensional drawing DDS50 solid shaft



All dimensions in mm (inch)

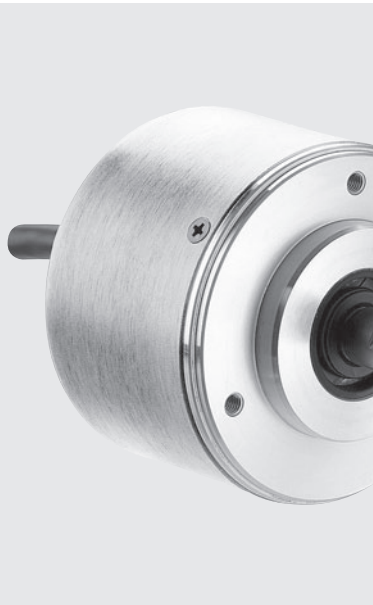


Image similar



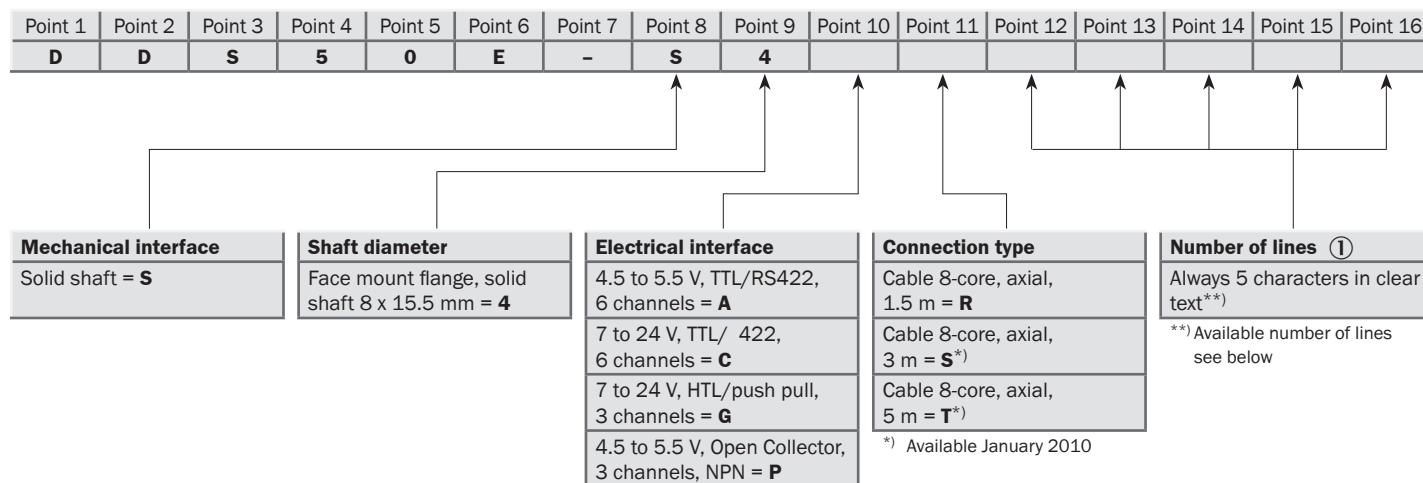
Accessories
 Connection systems (page 10)

Allocation (page 9)

| Technical data | | DDS50E- | S |
|---|--|---|-------------|
| | | | Solid shaft |
| Electrical interface | | 4.5 to 5.5 V, TTL/RS422, 6 channels | |
| | | 7 to 24 V, TTL/RS422, 6 channels | |
| | | 7 to 24 V, HTL/push pull, 3 channels | |
| | | 4.5 to 5.5 V, Open Collector, 3 channels, NPN | |
| Mechanical interface | | Face mount flange, solid shaft Ø 8 x 15.5 mm | |
| Number of lines (Z) | | 100 to 2,500 | |
| Mass | | 145 g | |
| Moment of inertia of the rotor | | 0.8 kg/mm ² | |
| Measuring step (M) | | 360°/(Z x 4) | |
| Reference signal | Number | 1 | |
| | Position | 90° electr., gated with A and B | |
| Measuring step deviation (MA) | | M x 0.1 | |
| Error limits | | MA x 3 | |
| Output frequency | | 300 kHz | |
| Operating speed¹⁾ | | 6,000 rpm | |
| Angular acceleration | | 5 x 10 ⁵ rad/s ² | |
| Operating torque at +20 °C | | 4 Nmm | |
| Start up torque at +20 °C | | 6 Nmm | |
| Permissible shaft loading | Radial | 50 N | |
| | Axial | 30 N | |
| Bearing lifetime | | 2 x 10 ⁹ revolutions | |
| Working temperature range | | -10 to +70 °C | |
| Storage temperature range (without package) | | -25 to +85 °C | |
| Permissible relative humidity²⁾ | | 90 % | |
| EMC according to EN 61000-6-2 and EN 61000-6-4 | | | |
| Resistance | | | |
| | to shocks (according to EN 60068-2-27) | 100 g/6 ms | |
| | to vibration (according to EN 60068-2-6) | 5 g/10 to 200 Hz | |
| Enclosure rating | | IP 65 | |
| Load current | | 20 mA | |
| Operating current at no load | | 100 mA | |

¹⁾ Self-warming 3.3 k/1,000 min⁻¹, when applying, note working temperature range.

²⁾ Condensation of the optical scanning not permitted.

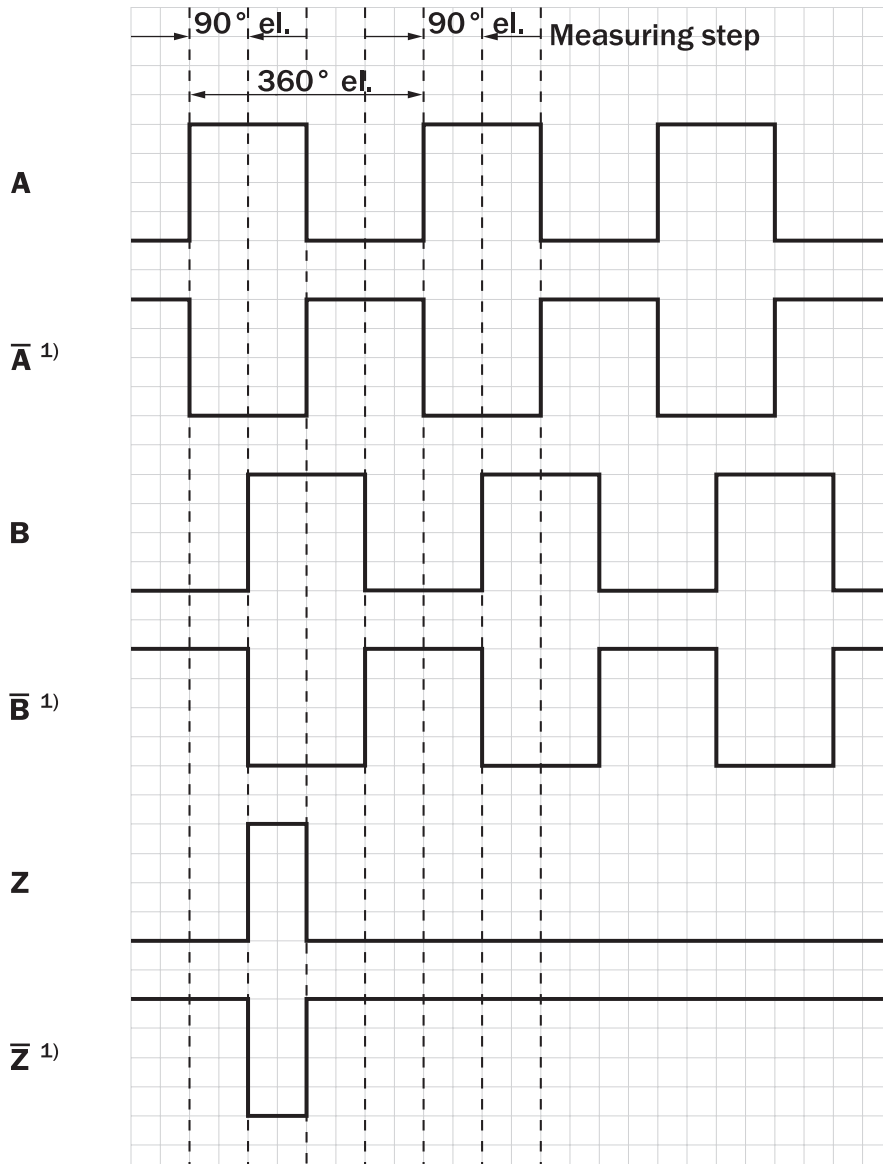


| Available number of lines ① | | | | | | |
|-----------------------------|-------|-------|-------|-------|-------|-------|
| 00100 | 00300 | 00400 | 00500 | 00600 | 01000 | 02000 |
| 00200 | 00360 | | | | 01024 | 02048 |
| 00256 | | | | | 01200 | 02500 |

Ordering example: Incremental Encoder DDS50E; solid shaft 8 x 15.5 mm; face mount flange; electrical interface 7 to 24 V, HTL/push pull, 3 channels; cable 8-core, axial, 1.5 m; number of lines 2500

| | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Point 1 | Point 2 | Point 3 | Point 4 | Point 5 | Point 6 | Point 7 | Point 8 | Point 9 | Point 10 | Point 11 | Point 12 | Point 13 | Point 14 | Point 15 | Point 16 |
| D | D | S | 5 | 0 | E | - | S | 4 | G | R | 0 | 2 | 5 | 0 | 0 |

Incremental pulse diagram



CW with view on the Encoder shaft in direction "A", see dimensional drawing.

¹⁾ Only for interfaces 4.5 to 5.5 V ,TTL/RS422 and 7 to 24 V ,TTL/RS422

Allocation

| Colour of wires | Signal OC, HTL | Signal TTL | Explanation |
|-----------------|-----------------|-----------------|---|
| Brown | Not connected | \bar{A} | Signal line |
| White | A | A | Signal line |
| Black | Not connected | \bar{B} | Signal line |
| Pink | B | B | Signal line |
| Yellow | Not connected | \bar{Z} | Signal line |
| Lilac | Z | Z | Signal line |
| Blue | GND | GND | Ground connection of the Encoder |
| Red | +U _S | +U _S | Supply voltage (potential free to housing) |
| Screen | Screen | Screen | Screen (screen connected to Encoder housing. Connect screen on control side!) |

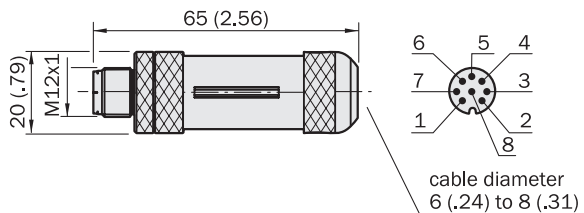
Connection systems

Dimensional drawings and ordering information

Round screw system M12

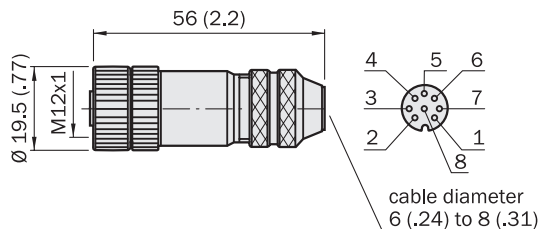
Male connector M12, 8-pin, straight, screened, for field assembly

| Type | Part no. | Contacts/cable diameter |
|-------------|----------|-------------------------|
| STE-1208-GA | 6028370 | 8/4 to 8 mm |



Female connector M12, 8-pin, straight, screened, for field assembly

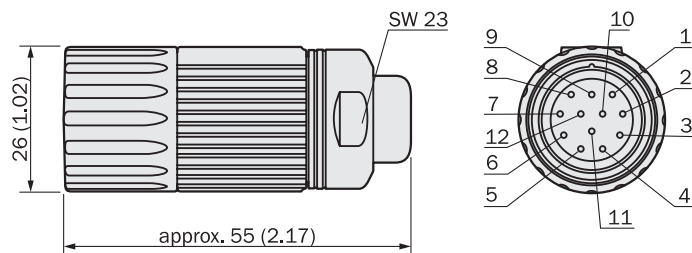
| Type | Part no. | Contacts/cable diameter |
|-------------|----------|-------------------------|
| DOS-1208-GA | 6028369 | 8/4 to 8 mm |



Round screw system M23, 12-pin

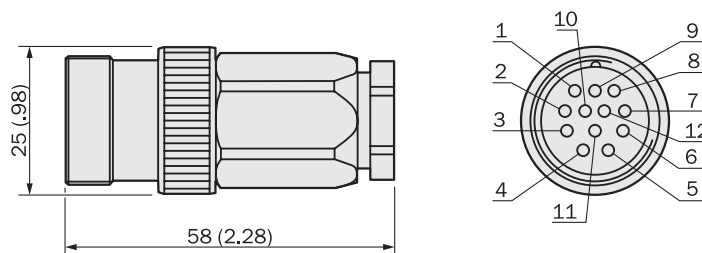
Male connector M23, 12-pin, straight, screened

| Type | Part no. | Contacts |
|------------|----------|----------|
| STE-2312-G | 6027537 | 12 |



Female connector M23, 12-pin, straight, screened

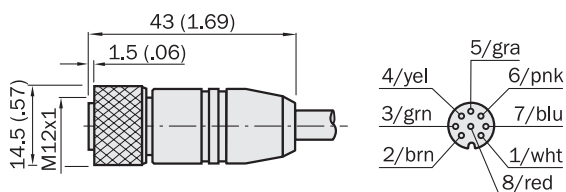
| Type | Part no. | Contacts |
|------------|----------|----------|
| DOS-2312-G | 6027538 | 12 |



Part-assembled cables

Female connector M12, 8-pin, straight, pre-wired with cable 8-wire, 4 x 2 x 0.25 mm², screened, suitable for use in a drag chain (adapter side)

| Type | Part no. | Contacts | Cable length |
|------------------|----------|----------|--------------|
| DOL-1208-G02MAC1 | 6032866 | 8 | 2.0 m |
| DOL-1208-G05MAC1 | 6032867 | 8 | 5.0 m |
| DOL-1208-G10MAC1 | 6032868 | 8 | 10.0 m |
| DOL-1208-G20MAC1 | 6032869 | 8 | 20.0 m |



All dimensions in mm (inch)

Part-assembled cables

Female connector M23, 12-pin, straight, cable 11-core, 4 x 2 x 0.25 + 2 x 0.5 + 1 x 0.14 mm² with screening, cable diameter 7.8 mm

| Type | Part no. | Contacts | Cable length |
|------------------|----------|----------|--------------|
| DOL-2312-G02MLA3 | 2030682 | 12 | 2.0 m |
| DOL-2312-G07MLA3 | 2030685 | 12 | 7.0 m |
| DOL-2312-G10MLA3 | 2030688 | 12 | 10.0 m |
| DOL-2312-G15MLA3 | 2030692 | 12 | 15.0 m |
| DOL-2312-G20MLA3 | 2030695 | 12 | 20.0 m |
| DOL-2312-G25MLA3 | 2030699 | 12 | 25.0 m |
| DOL-2312-G30MLA3 | 2030702 | 12 | 30.0 m |

Female connector M23, 12-pin, straight, cable 12-core, 4 x 2 x 0.25 + 2 x 0.5 + 2 x 0.14 mm² with screening, suitable for use in a drag chain, cable diameter 7.8 mm

| Type | Part no. | Contacts | Cable length |
|------------------|----------|----------|--------------|
| DOL-2312-G1M5MA3 | 2029212 | 12 | 1.5 m |
| DOL-2312-G03MMA3 | 2029213 | 12 | 3.0 m |
| DOL-2312-G05MMA3 | 2029214 | 12 | 5.0 m |
| DOL-2312-G10MMA3 | 2029215 | 12 | 10.0 m |
| DOL-2312-G20MMA3 | 2029216 | 12 | 20.0 m |
| DOL-2312-G30MMA3 | 2029217 | 12 | 30.0 m |

Cables

Cable 8-core, per metre, 4 x 2 x 0.15 mm², with screening, cable diameter 5.6 mm, suitable for use in a drag chain

| Type | Part no. | Cores |
|----------------|----------|-------|
| LTG-2308-MWENC | 6027529 | 8 |

Cable 11-core, per metre, 4 x 2 x 0.25 + 2 x 0.5 + 1 x 0.14 mm², with screening, cable diameter 7.5 mm

| Type | Part no. | Cores |
|-------------|----------|-------|
| LTG-2411-MW | 6027530 | 11 |

Cable 12-core, per metre, 4 x 2 x 0.25 + 2 x 0.5 + 2 x 0.14 mm², with screening, suitable for use in a drag chain, cable diameter 7.8 mm

| Type | Part no. | Cores |
|-------------|----------|-------|
| LTG-2512-MW | 6027531 | 12 |

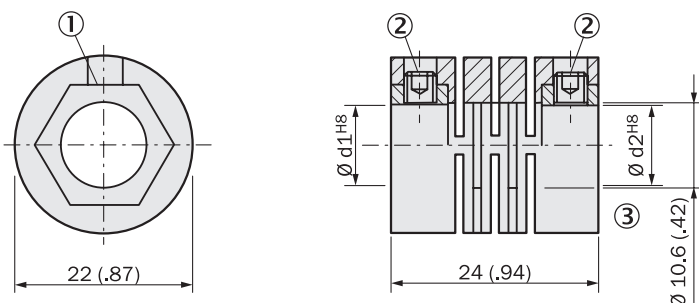
Cable 12-core, per metre, 4 x 2 x 0.25 + 2 x 0.5 + 2 x 0.14 mm², with screening, suitable for use in a drag chain, UV and salt water resistant, cable diameter 7.8 mm

| Type | Part no. | Cores |
|-------------|----------|-------|
| LTG-2612-MW | 6028516 | 12 |

Couplings

Beam coupling, max. shaft displacement radially ± 0.3 mm, axially ± 0.2 mm, angular ± 3 degrees, torsional rigidity 38 Nm/rad; Body: fibre glass reinforced polyamide, hubs made of brass

| Type | Part no. | Shaft diameter |
|------------|----------|----------------|
| KUP-0608-S | 5314179 | 6 mm to 8 mm |
| KUP-0808-S | 5314177 | 8 mm to 8 mm |
| KUP-0810-S | 5314178 | 8 mm to 10 mm |



- ① Shaft clamped around its circumference
- ② Cheese-head screw 4 x M4 DIN 916
- ③ No contact between beams and shaft

All dimensions in mm (inch)

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