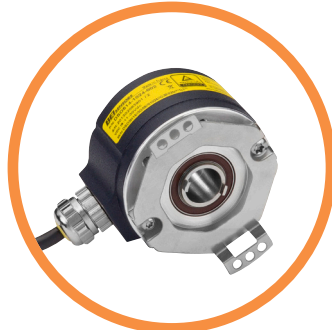


DSM5H & DSO5H MODELS

SIL3 PLe INCREMENTAL ENCODERS



DSM5H



DSO5H



Features

- Usable up to SIL3 and Cat.4 / PLe according to IEC 61508 / EN ISO 13849
- Suitable for safe motor feedback according to IEC 61800-5-2
- Robustness and excellent resistance to shock and vibration
- High protection level: IP65
- High temperature performance –20°C to +85°C
- Power supply 5Vdc or 11/30Vdc
- Digital TTL/RS422 or HTL or sine/cosine 1Vpp output
- Resolutions up to 2500ppr
- 58mm encoder, solid shaft 6mm, 9.52mm or 10mm (DSM5H), and through shaft, standard 14mm (DSO5H)
- Connector or cable output (DSM5, side output only for DSO5)
- Stainless steel version available as an option (DSM5X) - consult factory
- Adapted anti-rotation system (DSO5H)

SPECIFICATIONS

Mechanical

| | DSM5H | DSO5H |
|--|---|---|
| Material | Cover: powder coated zinc alloy Body: aluminum Shaft: AISI 303 stainless steel | Cover: powder coated zinc alloy Body: aluminum Shaft: AISI 303 stainless steel |
| Bearings | 6000 series - sealed | 6803 series - sealed |
| Maximum Loads | Axial: 40 N | Axial: 20 N |
| | Radial: 80 N | Radial: 40 N |
| Shaft Inertia | < 2,800 g.mm ² | < 9,500 g.mm ² |
| Static/Dynamic torque | 5 / 35 mN.m | 10 / 85 mN.m |
| Permissible max. speed | 9,000 RPM | |
| Continuous max. speed | 6,000 RPM | 4,000 RPM |
| Theoretical mechanical lifetime L_{10h}^(A) | > 29.7 X 10 ⁹ turns / 82,365 hours | > 24 X 10 ⁹ turns / 100,000 hours |
| Encoder weight (approx.) | 0.30 kg | 0.28 kg |

^(A) *Continuous max. speed – ½ max. load – according to ISO 281: 1990, L₁₀*

Temperature Conditions

| | |
|------------------------------|-------------------------------|
| Operating temperature | - 20 ... + 85 °C (encoder T°) |
| Storage temperature | - 20 ... + 85 °C |

Electrical Characteristics / Functional Safety Parameters ^(B)

| Electronic Version | Output signals | Operating Voltage +V | Supply current | Current per channel pair | Short circuits proof | Reverse polarity protected | PFD | PFH | MTTFd | DC |
|--------------------|-------------------|----------------------|--------------------|--------------------------|----------------------|----------------------------|----------|----------|-------|------|
| 2G2 | Digital TTL RS422 | 5V +/-5% | 100mA with no load | 40mA | Yes | Yes | 7.51E-05 | 8.58E-10 | 1331 | HIGH |
| 5G2 | | 11-30V | | | Not to +V | | 9.52E-05 | 1.09E-09 | 1050 | |
| 5G5 | Digital HTL | | | | Yes | | 9.52E-05 | 1.09E-09 | 1050 | |
| 2WT | Sine Cosine 1Vpp | 5V +/-5% | 70mA with no load | 10mA | Yes | | 4.29E-05 | 4.90E-10 | 2328 | |
| 5WT | | 11-30V | | | Not to +V | | 6.60E-05 | 7.53E-10 | 1515 | |

^(B) **Safety mission time:** 20 years

Standards Conformity

| | |
|--|--|
| Protection(EN 60529) | IP65 |
| Humidity (EN 60068-2-38) | 93% @ 65°C |
| Shock (EN60068-2-27) | ≤ 500m.s ⁻² (during 6 ms) |
| Vibration (EN60068-2-6) | ≤ 200m.s ⁻² (10 ... 2 000 Hz) |
| EMC Immunity Test | EN 61000-6-2,increased levels |
| EMC Emission Test | EN 61000-6-4,increased levels |
| Isolation | 1000 Veff |
| Salt Spray (EN 60068-2-11 part 2) | 96h |
| Functional safety | IEC 61508 |
| | IEC 62061 |
| | ISO 13849-1 |
| | IEC 61800-5-2 |
| | IEC 62061 |
| Encoders usable up to SIL3 / PLe with external specific requirements, see safety user manual for details. | |
| Z and Z/ are not safety signals. | |

Electrical Connections

| | | 0V | +V | A or S | B or C | Z | A/ or S/ | B/ or C/ | Z/ | Ground |
|-----------|------------------------------------|-------------------------------|-------------------------------|----------|-----------|---------|----------|----------|----------|-------------------|
| G6 | M23 - 12 pins CW | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Connector body |
| G8 | M23 - 12 pins CCW | 10 + 11 | 2 + 12 | 8 | 5 | 3 | 1 | 6 | 4 | Connector body |
| G3 | PVC cable 8 wires 8230/020 | WH white | BN brown | GN green | YE yellow | GY grey | PK pink | BU blue | RD red | General shielding |
| GP | PUR cable 12 wires 8230/050 | WH white + WH/GN white /green | BU blue + BN/GN brown / green | GY grey | BN brown | RD red | PK pink | GN green | BK black | General shielding |

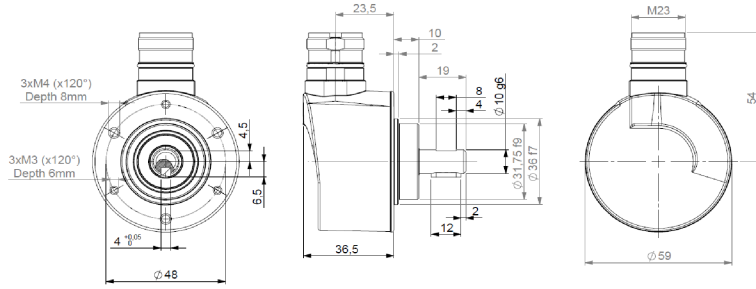
Available Resolutions

250 256 360 500 512 1000 1024 2048 2500



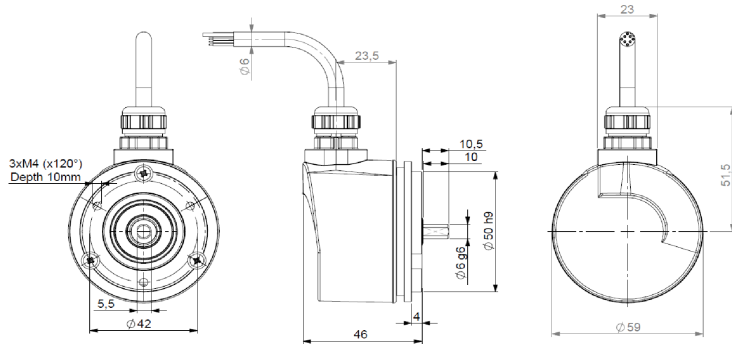
DIMENSIONS

DSM5H10 – radial M23 connector

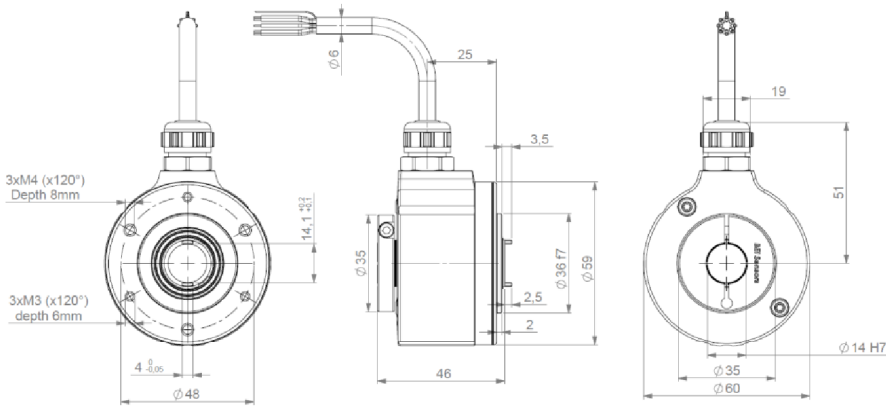


| | | 9445/044 | 9445/047 |
|---------------------------|----------|-------------|-------------|
| Permissible misalignments | Axial | +/- 1mm | +/- 1mm |
| | Radial | +/- 0.2mm | +/- 0.2mm |
| | Perpend. | +/- 2° | +/- 5° |
| | Runout | 0.1mm | 0.1mm |
| Angular rigidity | | 200 N.m/rad | 250 N.m/rad |

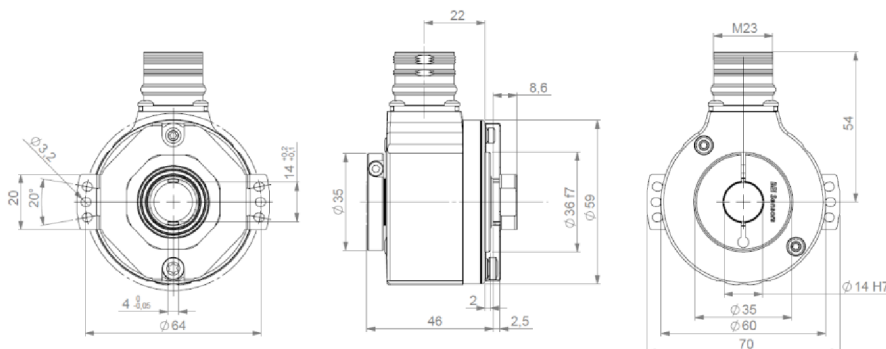
DSM5H06 radial cable - with 9500/003 flange



DS05H – radial cable



DS05H radial M23 - with stator coupling 9445/044





DSM5H ORDERING OPTIONS

Example : DSM5H06 // 5G29 // 01024 // GPR050 / 1J / **03**

Contact the factory for special versions, ex: resolution, connection, flange...

| | DSM5H | 06 | // | 5G59 | // | 01024 | // | GPR050 | / | 1J | / | CS03** |
|---|---|----|----|------|----|-------|----|--------|---|----|---|--------|
| Family | DSM5H | | | | | | | | | | | |
| DSM5H | | | | | | | | | | | | |
| Shaft | 06: 6mm 10: 10mm 09: 9.52 mm | | | | | | | | | | | |
| Supply + Output stage + Output signals | Digital Signals: 2: 5Vdc G2: TTL RS422 9: AA/ BB/ ZZ/ 5: 11- 30Vdc G2: TTL RS422 G5: HTL 9: AA/ BB/ ZZ/ Analog Sine Cosine signals: 2: 5Vdc WT: TTL RS422 N: SS/ CC/ ZZ/ 5: 11- 30Vdc WT: TTL RS422 N: SS/ CC/ ZZ/ | | | | | | | | | | | |
| Resolution | 250, 256, 360, 500, 512, 1000, 1024, 2048, 2500 | | | | | | | | | | | |
| Connection + Orientation | G6: M23 12 pins CW A: axial R: radial G8: M23 12 pins CCW A: axial R: radial GP: PUR cable 12 wires R: radial cable (example: 050 = 5m) G3: PVC cable 8 wires R: radial cable (example: 050 = 5m) | | | | | | | | | | | |
| Cover | 1J: Zinc alloy cover | | | | | | | | | | | |
| Flange | ****: No specials CS**: Key for keyway DSMH10 only **03**: 9500/003 Servo Flange | | | | | | | | | | | |



DSO5H ORDERING OPTIONS

Example : DSO5H14 // 5G29 // 01024 // GPR050 // **DX**

Contact the factory for special versions, ex: resolution, connection, flange...

| | | | | | | | | | | |
|--|--------------|-----------|----|-------------|----|--------------|----|---------------|----|---------------|
| Family | DSO5H | 14 | // | 5G29 | // | 01024 | // | GPR050 | // | **DX** |
| DSO5H | | | | | | | | | | |
| Shaft | | | | | | | | | | |
| 14: 14mm | | | | | | | | | | |
| Supply + Output stage + Output signals | | | | | | | | | | |
| Digital Signals: | | | | | | | | | | |
| 2: 5Vdc | | | | | | | | | | |
| G2: driver 5Vdc RS422 | | | | | | | | | | |
| G5: push-pull | | | | | | | | | | |
| 9: AA/ BB/ ZZ/ | | | | | | | | | | |
| 5: 11- 30Vdc | | | | | | | | | | |
| G2: driver 5Vdc RS422 | | | | | | | | | | |
| G5: push-pull | | | | | | | | | | |
| 9: AA/ BB/ ZZ/ | | | | | | | | | | |
| Sine-wave signals: | | | | | | | | | | |
| 2: 5Vdc | | | | | | | | | | |
| WT: sine 1Vpp | | | | | | | | | | |
| N: SS/ CC/ ZZ/ | | | | | | | | | | |
| 5: 11- 30Vdc | | | | | | | | | | |
| WT: sine 1Vpp | | | | | | | | | | |
| N: SS/ CC/ ZZ/ | | | | | | | | | | |
| Resolution | | | | | | | | | | |
| 250, 256, 360, 500, 512, 1000, 1024, 2048, 2500 | | | | | | | | | | |
| Connection + Orientation | | | | | | | | | | |
| G6: M23 12 pins CW | | | | | | | | | | |
| R: radial | | | | | | | | | | |
| G8: M23 12 pins CCW | | | | | | | | | | |
| R: radial | | | | | | | | | | |
| GP: PUR cable 12 wires | | | | | | | | | | |
| R: radial cable (example: 050 = 5m) | | | | | | | | | | |
| G3: PVC cable 8 wires | | | | | | | | | | |
| R: radial cable (example: 050 = 5m) | | | | | | | | | | |
| Anti-rotation | | | | | | | | | | |
| **DX**: 9445/044 | | | | | | | | | | |
| ****: No antirotation | | | | | | | | | | |



AGENCY APPROVALS & CERTIFICATIONS



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