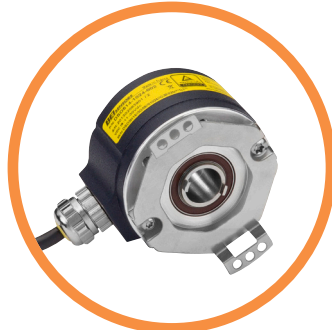


# DSM5H & DSO5H MODELS

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

<sup>(A)</sup> *Continuous max. speed – ½ max. load – according to ISO 281: 1990, L<sub>10</sub>*

### Temperature Conditions

<b>Operating temperature</b>	- 20 ... + 85 °C (encoder T°)
<b>Storage temperature</b>	- 20 ... + 85 °C

## Electrical Characteristics / Functional Safety Parameters <sup>(B)</sup>

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	

<sup>(B)</sup> **Safety mission time:** 20 years

## Standards Conformity

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

## Electrical Connections

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

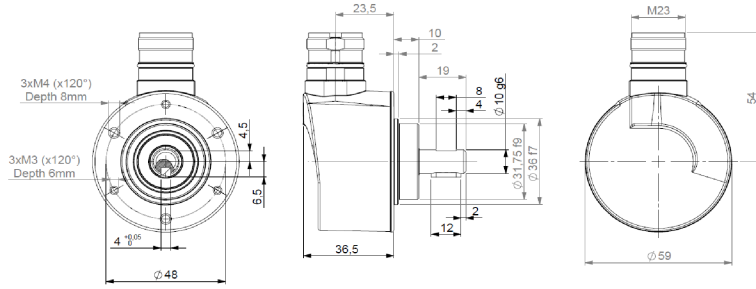
## Available Resolutions

250 256 360 500 512 1000 1024 2048 2500



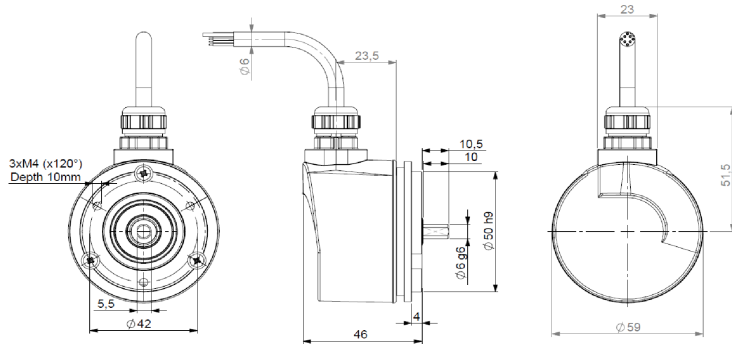
# DIMENSIONS

## DSM5H10 – radial M23 connector

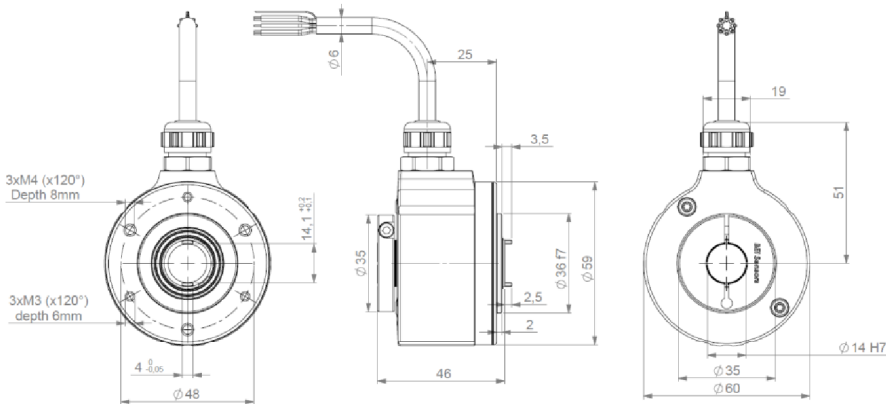


		9445/044	9445/047
Permissible misalignments	Axial	+/- 1mm	+/- 1mm
	Radial	+/- 0.2mm	+/- 0.2mm
	Perpend.	+/- 2°	+/- 5°
	Runout	0.1mm	0.1mm
Angular rigidity		200 N.m/rad	250 N.m/rad

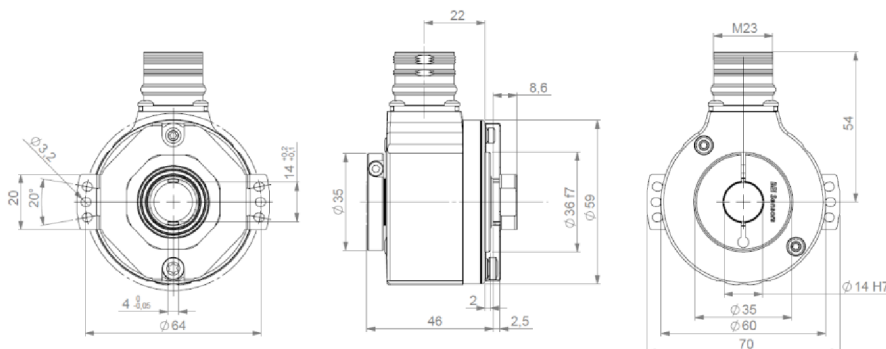
## DSM5H06 radial cable - with 9500/003 flange



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



# DSO5H ORDERING OPTIONS

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

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

<b>Family</b>	DSO5H	14	//	5G29	//	01024	//	GPR050	//	**DX**
<b>DSO5H</b>										
<b>Shaft</b>										
<b>14:</b> 14mm										
<b>Supply + Output stage + Output signals</b>										
<b>Digital Signals:</b>										
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/										
<b>Sine-wave signals:</b>										
2: 5Vdc										
WT: sine 1Vpp										
N: SS/ CC/ ZZ/										
5: 11- 30Vdc										
WT: sine 1Vpp										
N: SS/ CC/ ZZ/										
<b>Resolution</b>										
250, 256, 360, 500, 512, 1000, 1024, 2048, 2500										
<b>Connection + Orientation</b>										
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)										
<b>Anti-rotation</b>										
**DX** : 9445/044										
****: No antirotation										



# AGENCY APPROVALS & CERTIFICATIONS



## BEI Sensors SAS

Espace Européen de l'Entreprise  
 9, rue de Copenhague  
 B.P. 70044 Schiltigheim  
 F 67013 Strasbourg Cedex

Tél : +33 (0)3 88 20 80 80  
 Fax : +33 (0)3 88 20 87 87  
 Mail : info@beisensors.com  
 Web : www.beisensors.com