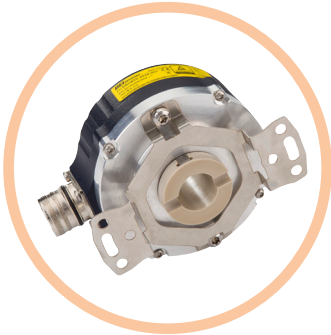




DSU9H & DSU9X MODELS

SIL3 PLe INCREMENTAL ENCODERS



DSU9H



DSU9X



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
- Especially designed for heavy-duty applications (steel, paper, wood, mills, cranes...) Compact and robust design. Excellent resistance to shock and vibration
- Stainless steel version available (DSU9X)
- 90mm encoder, 30mm standard through shaft, PEEK reduction hub available
- High protection level: IP66 (DSU9X), IP65 (DSU9H)
- High temperature performance -20°C to $+85^{\circ}\text{C}$
- Power supply 5Vdc or 11/30Vdc
- Digital TTL/RS422 or HTL Push-pull or sine/cosine 1Vpp output
- Available resolution up to 2048 ppr
- Connector or cable output – side orientation
- Adapted anti-rotation system



SPECIFICATIONS

Mechanical

	DSU9H	DSU9X
Material	Cover: powder coated aluminum Body: aluminum	Cover: AISI 303 stainless steel Body: AISI 303 stainless steel
	Shaft: AISI 303 stainless steel	
Ball Bearings	6807 - Sealed	
Maximum Loads	Axial: 25 N	
	Radial: 50 N	
Shaft Inertia	< 120,000 g.mm ²	< 125,000 g.mm ²
Static/Dynamic torque	30 / 300 mN.m	250 / 600 mN.m
Permissible max. speed	6000 RPM	3000 RPM
Continuous max. speed	3000 RPM	1500 RPM
Theoretical mechanical lifetime L_{10h} ^(A)	> 18 X 10 ⁹ turns / 100,000 hours	> 9 X 10 ⁹ turns / 100,000 hours
Encoder weight (approx.)	0.65 kg	1.3 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 circuit proof	Reverse polarity protected	PFD	PFH	MTTFd	DC
2G2	Digital TTL	5V +/-5%	100mA with no load	40mA	Yes	Yes	5.63E-05	6.42E-10	1547	HIGH
5G2	RS422	11-30V			Not to +V		7.63E-05	8.72E-10	1180	
5G5	Digital HTL				Yes		7.63E-05	8.72E-10	1180	
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

	DSU9H	DSU9X
Protection (EN 60529)	IP65	IP66
Humidity (EN 60068-2-38)	93% @ 65°C	
Shock (EN 60068-2-27)	≤ 500 g (during 6 ms)	
Vibration (EN 60068-2-6)	≤ 200 g (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	168h
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

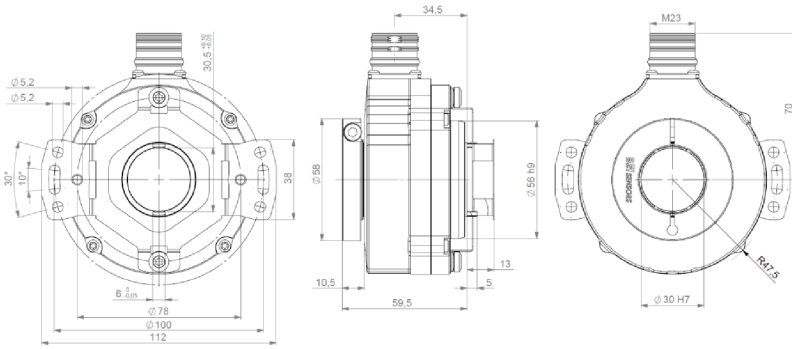
Available Resolutions

1024 2048



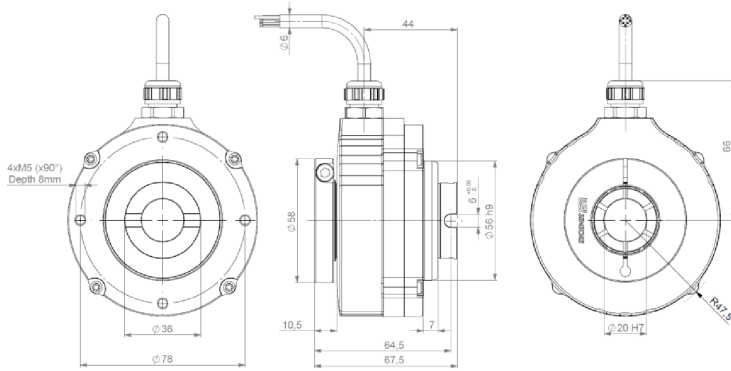
DIMENSIONS

DSU9H – radial M23 connector with 9445/045 anti-rotation

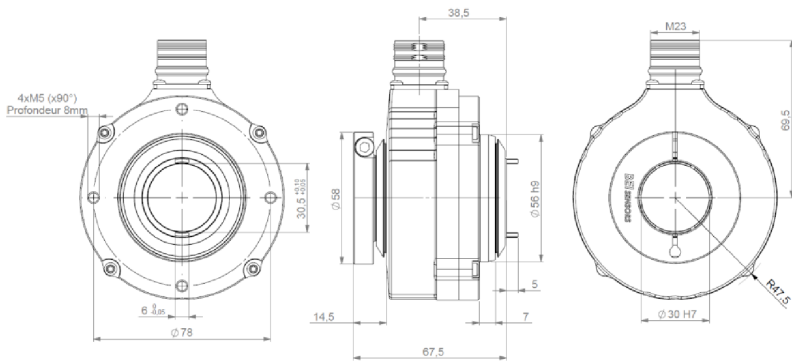


		9445/045	9445/046
Permissible misalignments	Axial	+/- .5mm	+/- 1mm
	Radial	+/- 0.3mm	+/- 0.2mm
	Perpend.	+/- 3°	+/- 5°
	Runout	0.1mm	0.1mm
Angular rigidity		540 N.m/rad	530 N.m/rad

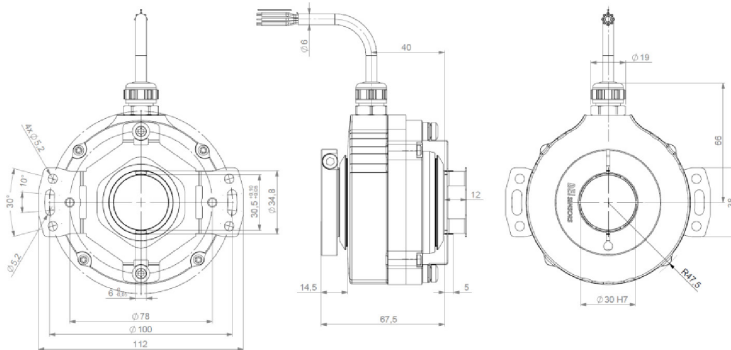
DSU9H radial cable and 20mm reduction bulb



DSU9X – radial M23 connector



DSU9X radial cable and stator coupling 9445/045





DSU9H/DSU9X ORDERING OPTIONS

Example: DSU9H30 // 5G29 // 01024 // GPR050 // ** DW**

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

Family	DSU9H	30	//	5G29	//	01024	//	GPR050	//	**	DW**
DSU9H: Aluminum DSU9X: Stainless											
Shaft											
30: 30mm (reduction hubs, 20 mm and 25mm available)											
Supply + Output stage + Output signals											
Digital Signals: 2: 5Vdc G2: driver 5Vdc RS422 9: AA/ BB/ ZZ/ 5: 11- 30Vdc G2: driver 5Vdc RS422 G5: push-pull 9: AA/ BB/ ZZ/											
Analog Sine Cosine signals: 2: 5Vdc WT: sine 1Vpp N: SS/ CC/ ZZ/ 5: 11- 30Vdc WT: sine 1Vpp N: SS/ CC/ ZZ/											
Resolution											
1024, 2048											
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: 020 = 2m) G3: PVC cable 8 wires R: radial cable (example: 020 = 2m)											
Reduction Hub											
** : No reduction hub U2 : Reduction hub											
Anti-rotation											
DW** : 9445/045 **** : No antirotation											



AGENCY APPROVALS & CERTIFICATIONS



BEI Sensors SAS

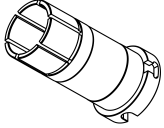
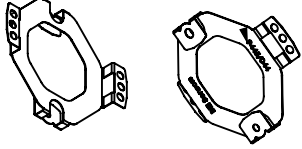
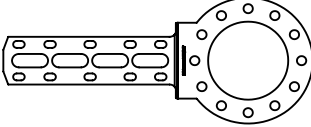
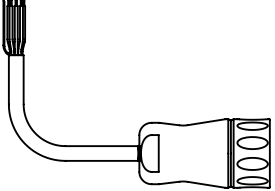
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GENERAL NOTES

For a safe installation according to the required safety level needed in the application, refer to the user safety manual - during the installation on the equipment, a quick installation guide is provided with each encoder either in printed form in the shipping box or in digital form on the website.

ACCESSORIES

<p>Reduction Hub To create 20mm, 25mm and 25,4mm (1.00 in) ID bore on DSU9</p> 	<p>9418/S20 9418/S25 9418/S25,4</p>	<p>DSU9H DSU9X</p>
<p>Safety Rated Flexmount (hardware included)</p> 	<p>M9445/045</p>	<p>DSU9H DSU9X</p>
<p>Safety Encoder Tether Arm (hardware included)</p> 	<p>M9445/046</p>	<p>DSU9H DSU9X</p>
<p>Standard Mating Connector 2m, 5m, 7m, 10m Mating Cable Assembly</p> 	<p>9416/076-8230/020-G6-020 = 2m 9416/076-8230/020-G6-050 = 5m 9416/076-8230/020-G6-070 = 7m 9416/076-8230/020-G6-100 = 10m</p> <p>For use with M23 connector type G6</p>	<p>DSU9H DSU9X</p>

Made in France

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