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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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## 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  $-20^{\circ}\text{C}$  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
<b>Material</b>	<b>Cover:</b> powder coated aluminum <b>Body:</b> aluminum	<b>Cover:</b> AISI 303 stainless steel <b>Body:</b> AISI 303 stainless steel
	<b>Shaft:</b> AISI 303 stainless steel	
<b>Ball Bearings</b>	6807 - Sealed	
<b>Maximum Loads</b>	<b>Axial:</b> 25 N	
	<b>Radial:</b> 50 N	
<b>Shaft Inertia</b>	< 120,000 g.mm <sup>2</sup>	< 125,000 g.mm <sup>2</sup>
<b>Static/Dynamic torque</b>	30 / 300 mN.m	250 / 600 mN.m
<b>Permissible max. speed</b>	6000 RPM	3000 RPM
<b>Continuous max. speed</b>	3000 RPM	1500 RPM
<b>Theoretical mechanical lifetime L<sub>10h</sub></b> <sup>(A)</sup>	> 18 X 10 <sup>9</sup> turns / 100,000 hours	> 9 X 10 <sup>9</sup> turns / 100,000 hours
<b>Encoder weight (approx.)</b>	0.65 kg	1.3 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 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	

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

## Standards Conformity

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

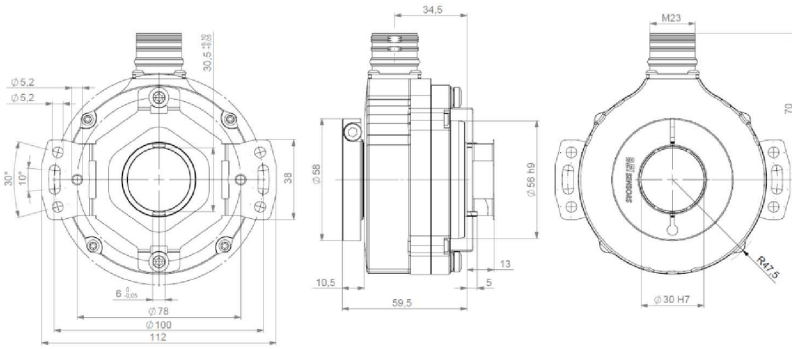
## Available Resolutions

1024 2048



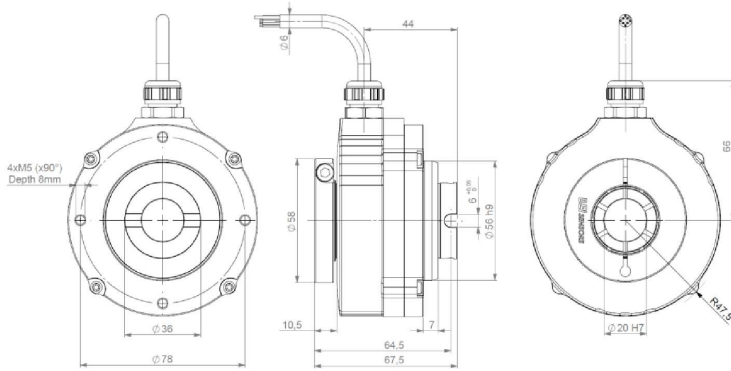
# DIMENSIONS

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

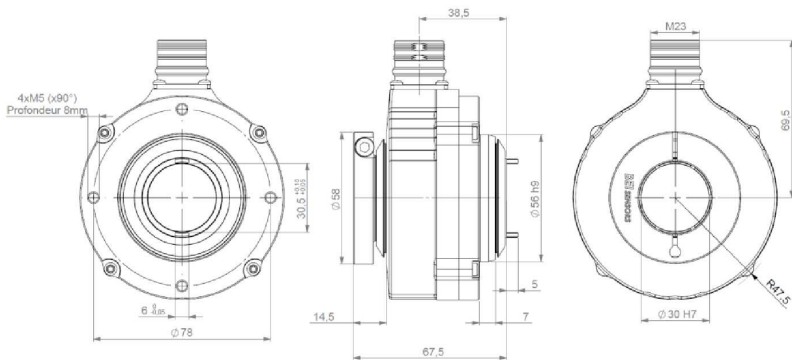


		9445/045	9445/046
Permissible misalignments	Axial	+/- .5mm	+/- 1mm
	Radial	+/- 0.3mm	+/- 0.2mm
	Perpend.	+/- 3°	+/- 5°
	Runout	0.1mm	0.1mm
Angular rigidity		540 N.m/rad	530 N.m/rad

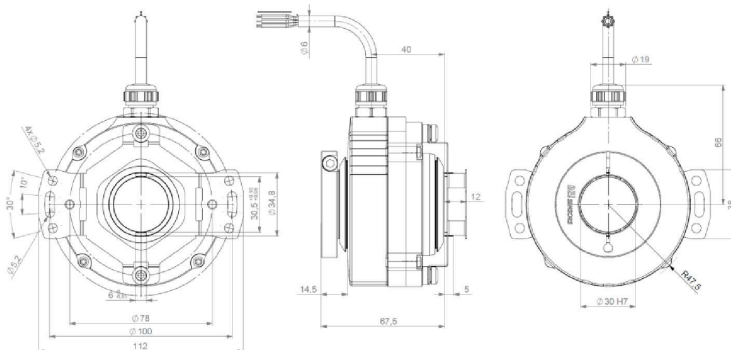
## DSU9H radial cable and 20mm reduction bulb



## 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...

<b>Family</b>	<b>DSU9H</b>	<b>30</b>	//	<b>5G29</b>	//	<b>01024</b>	//	<b>GPR050</b>	//	<b>**</b>	<b>DW**</b>
<b>DSU9H:</b> Aluminum <b>DSU9X:</b> Stainless											
<b>Shaft</b>											
<b>30:</b> 30mm (reduction hubs, 20 mm and 25mm available)											
<b>Supply + Output stage + Output signals</b>											
<b>Digital Signals:</b> 2: 5Vdc G2: driver 5Vdc RS422 9: AA/ BB/ ZZ/ 5: 11- 30Vdc G2: driver 5Vdc RS422 G5: push-pull 9: AA/ BB/ ZZ/											
<b>Analog Sine Cosine signals:</b> 2: 5Vdc WT: sine 1Vpp N: SS/ CC/ ZZ/ 5: 11- 30Vdc WT: sine 1Vpp N: SS/ CC/ ZZ/											
<b>Resolution</b>											
<b>1024, 2048</b>											
<b>Connection + Orientation</b>											
<b>G6:</b> M23 12 pins CW R: radial <b>G8:</b> M23 12 pins CCW R: radial <b>GP:</b> PUR cable 12 wires R: radial cable (example: 020 = 2m) <b>G3:</b> PVC cable 8 wires R: radial cable (example: 020 = 2m)											
<b>Reduction Hub</b>											
<b>** :</b> No reduction hub <b>U2 :</b> Reduction hub											
<b>Anti-rotation</b>											
<b>DW** :</b> 9445/045 <b>**** :</b> No antirotation											



# AGENCY APPROVALS & CERTIFICATIONS



## BEI Sensors SAS

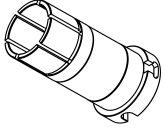
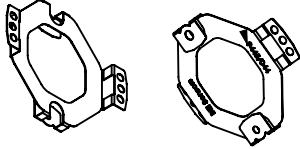
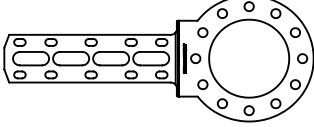
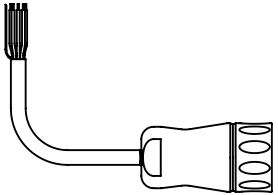
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## GENERAL NOTES

**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><b>Reduction Hub</b> 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><b>Safety Rated Flexmount (hardware included)</b></p> 	<p>M9445/045</p>	<p>DSU9H DSU9X</p>
<p><b>Safety Encoder Tether Arm (hardware included)</b></p> 	<p>M9445/046</p>	<p>DSU9H DSU9X</p>
<p><b>Standard Mating Connector</b> 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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