

# DSM9H & DSM9X RANGES

## SIL3 PLe INCREMENTAL ENCODERS



DSM9H



DSM9X



### Features

- Usable up to SIL3 and Cat.4 / PLe according IEC 61508 / EN ISO 13849
- Suitable for safe motor feedback according to IEC 61800-5-2
- Especially designed for heavy-duty (steel, paper, wood, mills, cranes...). Compact and robust conception. Excellent resistance to shocks/vibrations
- Aluminium (DSM9H) or stainless steel (DSM9X) version available
- 90mm diameter encoder, 11 mm or 12 mm solid shaft
- High temperature performance - 20°C to +85°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 or end orientation

## SPECIFICATIONS

### Mechanical

	DSM9H	DSM9X
<b>Material</b>	<b>Cover:</b> powder coated aluminum <b>Body:</b> aluminum <b>Shaft:</b> AISI 303 stainless steel	<b>Cover:</b> stainless steel <b>Body:</b> stainless steel <b>Shaft:</b> AISI 303 stainless steel
<b>Bearings</b>	6100 series - sealed	
<b>Maximum Loads</b>	<b>Axial:</b> 100 N <b>Radial:</b> 200 N	
<b>Shaft Inertia</b>	< 23,500 g.mm <sup>2</sup>	
<b>Shaft Seal</b>	Double lips	
<b>Static/Dynamic torque DSM9H</b>	20 / 150 mN.m	
<b>Static/Dynamic torque DSM9X</b>	40 / 200 mN.m	
<b>Permissible max. speed</b>	9,000 RPM	
<b>Continuous max. speed <sup>(A)</sup></b>	6,000 RPM	
<b>Theoretical mechanical lifetime L<sub>10h</sub> <sup>(A)</sup></b>	7.25 X 10 <sup>9</sup> turns / 20,147 hours	
<b>Encoder weight (approx.)</b>	1.0 kg	2.0 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	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 - Option IP66
<b>Humidity (EN 60068-2-38)</b>	93% @ 65°C
<b>Shock (EN60068-2-27)</b>	≤ 500 g (during 6 ms)
<b>Vibration (EN60068-2-6)</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 (Aluminum), 168h (Stainless Steel)
<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

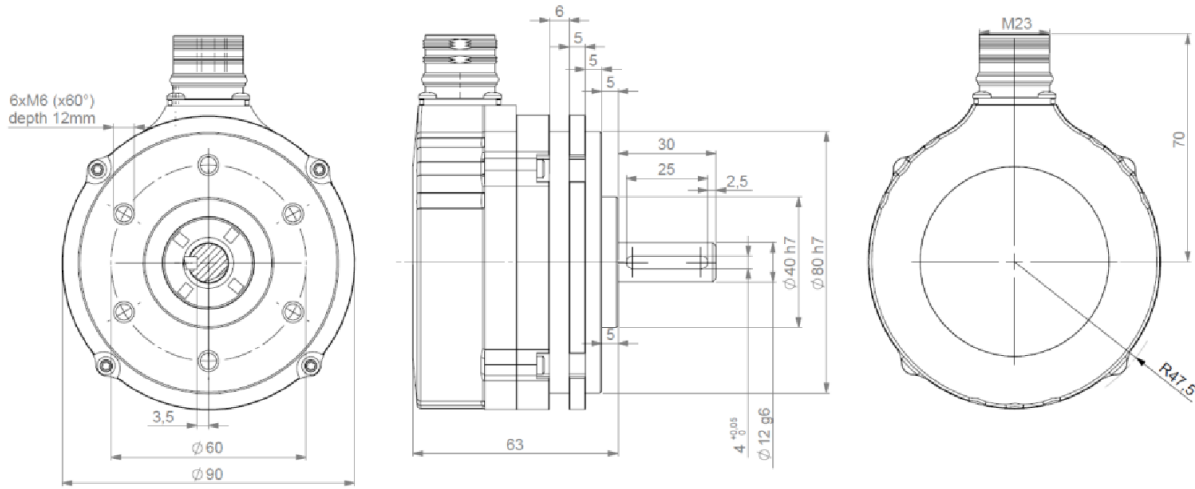
## Available Resolutions

1024, 2048

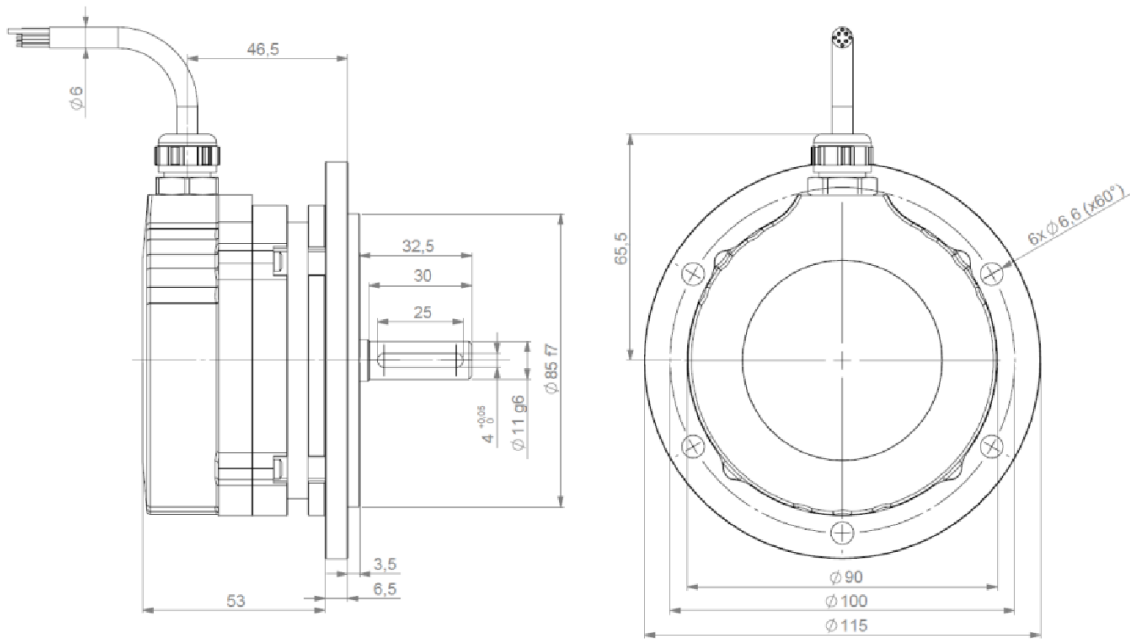


# DIMENSIONS

## DSM9H / DSM9X – radial M23 connector



## DSM9H / DSM9X radial cable - with 115mm flange





# ORDERING OPTIONS

Example : DSM9X11 / 01 / 5G29 // 01024 // GPR050 // CSA5

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

<b>Family</b>	<b>DSM9X</b>	<b>11</b>	/	<b>01</b>	/	<b>5G29</b>	//	<b>01024</b>	//	<b>GPR050</b>	//	<b>CSA5</b>
<b>DSM9H:</b> Aluminum bearings housing <b>DSM9X:</b> Stainless steel version												
<b>Shaft</b>												
<b>11:</b> 11mm <b>12:</b> 12mm												
<b>IP</b>												
<b>01:</b> IP66 option												
<b>Supply + Output stage + Output signals</b>												
<b>Digital Signals:</b> 2: 5Vdc <b>G2:</b> driver 5Vdc RS422 <b>G5:</b> push-pull <b>9:</b> AA/ BB/ ZZ/ 5: 11- 30Vdc <b>G2:</b> driver 5Vdc RS422 <b>G5:</b> push-pull <b>9:</b> AA/ BB/ ZZ/												
<b>Sine-wave signals:</b> 2: 5Vdc <b>WT:</b> sine 1Vpp <b>N:</b> SS/ CC/ ZZ/ 5: 11- 30Vdc <b>WT:</b> sine 1Vpp <b>N:</b> SS/ CC/ ZZ/												
<b>Resolution</b>												
<b>1024, 2048:</b> 2048 max												
<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>A:</b> axial cable (example: <b>020</b> = 2m, <b>050</b> = 5m) <b>R:</b> radial cable (example: <b>020</b> = 2m, <b>050</b> = 5m) <b>G3:</b> PVC cable 8 wires <b>A:</b> axial cable (example: <b>020</b> = 2m, <b>050</b> = 5m) <b>R:</b> radial cable (example: <b>020</b> = 2m, <b>050</b> = 5m)												
<b>Flange</b>												
<b>CS A4:</b> positive lock by key with aluminum 115 mm flange <b>CS A5:</b> positive lock by key with stainless steel 115 mm flange <b>CS ****:</b> positive lock by key without flange												



# AGENCY APPROVALS & CERTIFICATIONS



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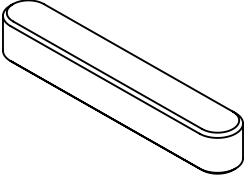
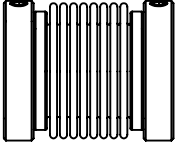
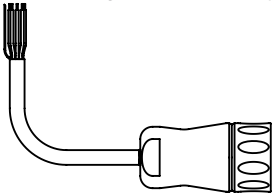


## GENERAL NOTES

**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.**



## ACCESSORIES

<p><b>Metal shaft key 4mm square by 25mm long</b></p> 	<p>9435/001</p>	<p>DSM9H DSM9X</p>
<p><b>Safety Bellows Couplings</b> For 11mm, 12mm shaft</p> 	<p>9404/S/11-11 9404/S/12-12</p>	<p>DSM9H DSM9X</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>DSM9H DSM9X</p>

Made in France

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