



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

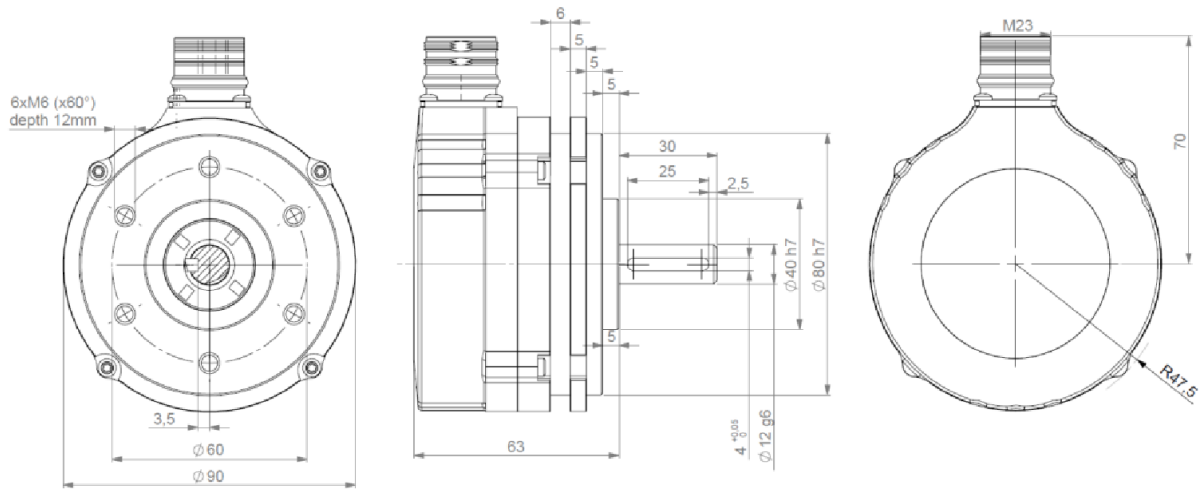
Available Resolutions

1024, 2048

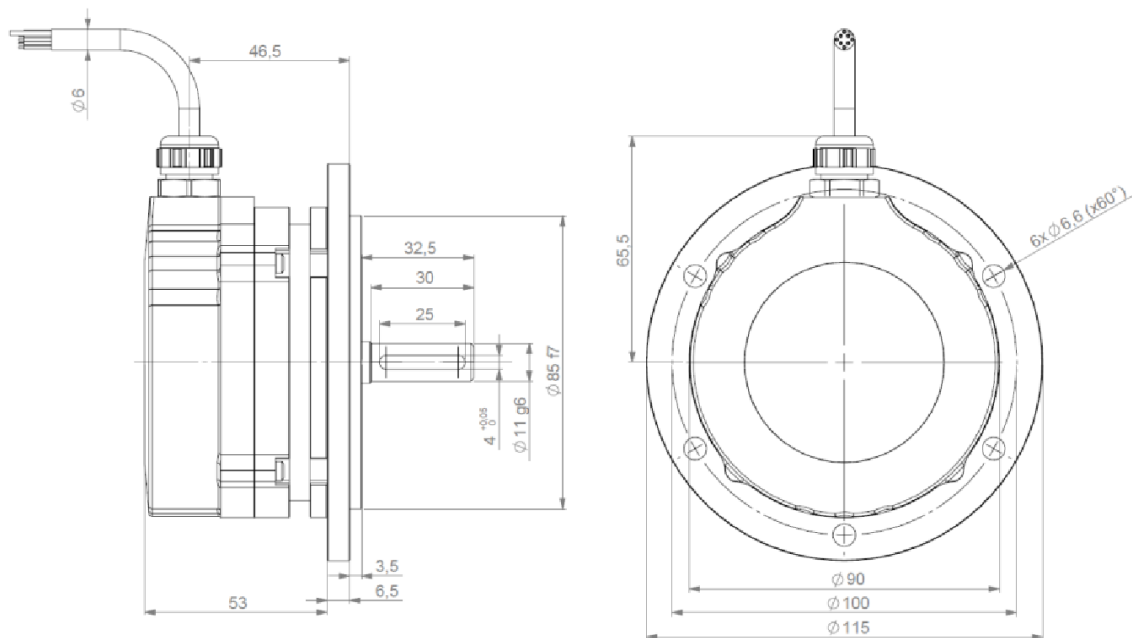


DIMENSIONS

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...

Family	DSM9X	11	/	01	/	5G29	//	01024	//	GPR050	//	CSA5
DSM9H: Aluminum bearings housing DSM9X: Stainless steel version												
Shaft												
11: 11mm 12: 12mm												
IP												
01: IP66 option												
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												
1024, 2048: 2048 max												
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 A: axial cable (example: 020 = 2m, 050 = 5m) R: radial cable (example: 020 = 2m, 050 = 5m) G3: PVC cable 8 wires A: axial cable (example: 020 = 2m, 050 = 5m) R: radial cable (example: 020 = 2m, 050 = 5m)												
Flange												
CS A4: positive lock by key with aluminum 115 mm flange CS A5: positive lock by key with stainless steel 115 mm flange CS ****: positive lock by key without flange												



AGENCY APPROVALS & CERTIFICATIONS



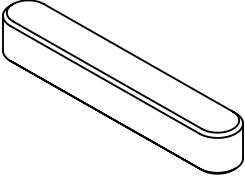
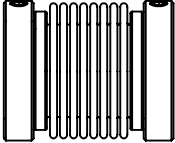
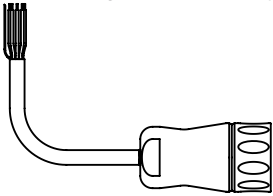


GENERAL NOTES

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.



ACCESORIES

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