

Encoders for Functional Safety

Incremental Encoders	Sendix incremental	5814 SIL/5834 SIL (Shaft / Hollow shaft)	Functional Safety
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Notes regarding "Functional Safety"

These encoders are suitable for use in safety-related systems up to SIL3 to DIN EN ISO 61800-5-2 and PLe to DIN EN ISO 13849 in conjunction with controllers or evaluation units, which possess the necessary functionality. Additional functions can be found in the operating manual.

Mechanical characteristics	
Max. speed, shaft version	
without shaft seal (IP 65) up to 70°C	12 000 min ⁻¹ , 10 000 min ⁻¹ (continuous)
without shaft seal (IP 65) up to T _{max}	8 000 min ⁻¹ , 5 000 min ⁻¹ (continuous)
with shaft seal (IP 67) up to 70°C	11 000 min ⁻¹ , 9 000 min ⁻¹ (continuous)
with shaft seal (IP 67) up to T _{max}	8 000 min ⁻¹ , 5 000 min ⁻¹ (continuous)
Max. speed, hollow shaft version	
without shaft seal (IP 65) up to 70°C	9 000 min ⁻¹ , 6 000 min ⁻¹ (continuous)
without shaft seal (IP 65) up to T _{max}	6 000 min ⁻¹ , 3 000 min ⁻¹ (continuous)
with shaft seal (IP 67) up to 70°C	8 000 min ⁻¹ , 4 000 min ⁻¹ (continuous)
with shaft seal (IP 67) up to T _{max}	4 000 min ⁻¹ , 2 000 min ⁻¹ (continuous)
Starting torque, shaft version	
without shaft seal (IP65)	< 0,01 Nm
with shaft seal (IP67)	< 0,05 Nm
Starting torque, hollow shaft version	
without shaft seal (IP65)	< 0,03 Nm
Moment of inertia	
Shaft version	4,0 x 10 ⁻⁶ kgm ²
Hollow shaft version	7,0 x 10 ⁻⁶ kgm ²
Load capacity of shaft	radial / axial 80 N / 40 N
Weight	approx. 0,45 kg
Protection EN 60 529	housing side IP 67 shaft side IP 65, opt. IP 67
Working temperature range	-40°C ... +90°C ¹⁾
Materials	shaft/hollow shaft stainless steel flange aluminium housing zinc die-cast housing cable PVC
Shock resistance acc. DIN-IEC 68-2-27	> 2500 m/s ² , 6 ms
Vibration resistance acc. DIN-IEC 68-2-6	> 100 m/s ² , 55 ... 2000 Hz

Electrical characteristics	
Supply voltage	5 V DC ± 5% or 10 ... 30 V DC
Current consumption (w/o output load)	5 V DC max. 70 mA 24 V DC max. 45 mA
Reverse polarity protection of the power supply (Ub)	yes
Conforms to CE requirements acc. to	EN 61000-6-2, EN 61000-6-4, EN 61000-6-3
RoHS compliant acc. to	EU guideline 2002/95/EG

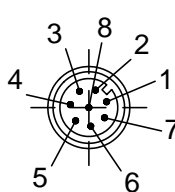
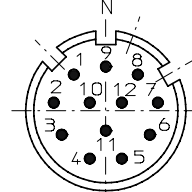
Output Sine / Cosine (A / B)	
Max. frequency -3dB	400 kHz
Signal level	1 V _{pp} (± 20%)
Short circuit proof	yes ²⁾

Terminal assignment

Signal:	GND	+V	A	A inv	B	Binv	PE
Cable colour:	WH	BN	GN	YE	GY	PK	Shield
M23 connector:	10	12	5	6	8	1	PH
M12	1	2	3	4	5	6	PH

- +V: Encoder Power Supply +V DC
- GND: Encoder Power Supply Ground (0V)
- PE: Protective earth
- PH: Plug connector housing (Shield)
- A, Ainv: Sine output
- B, Binv: Cosine output

Top view of mating side, male contact base

Connector type	8-pin M12 connector	12-pin M23 connector
		
Corresponding mating connector	05.CMB-8181-0	8.0000.5012.0000

1) Cable version: -30°C ... + 90°C fixed installation
 2) Short circuit proof to 0V or to output, one channel at a time, supply voltage correctly applied

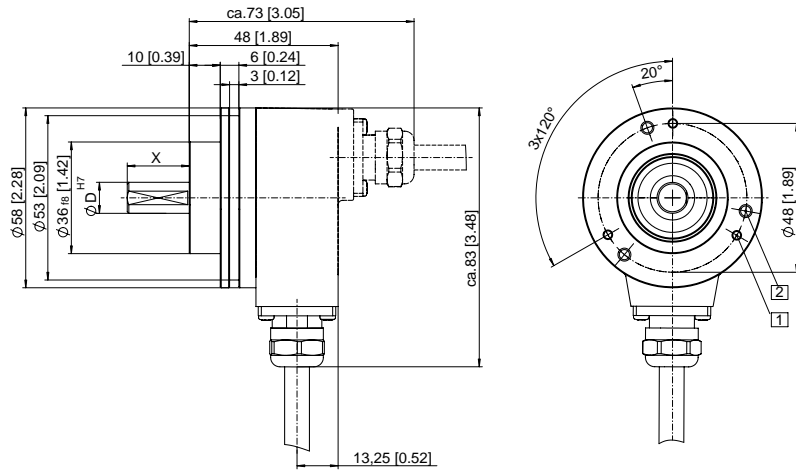
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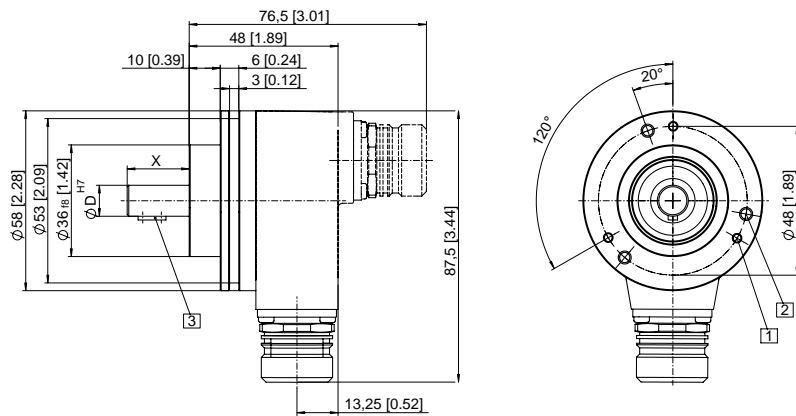
Dimensions shaft version

Clamping flange

Flange type 1 with shaft type 2
(Drawing with cable)



Flange type 1 with shaft type A
(Drawing with M23 connector)



- 1 3 x M3, 6 [0,24] deep
- 2 3 x M4, 8 [0,32] deep
- 3 Feather key DIN 6885 - A - 3x3x6
optional: Feather key DIN 6885 - A - 4x4x8

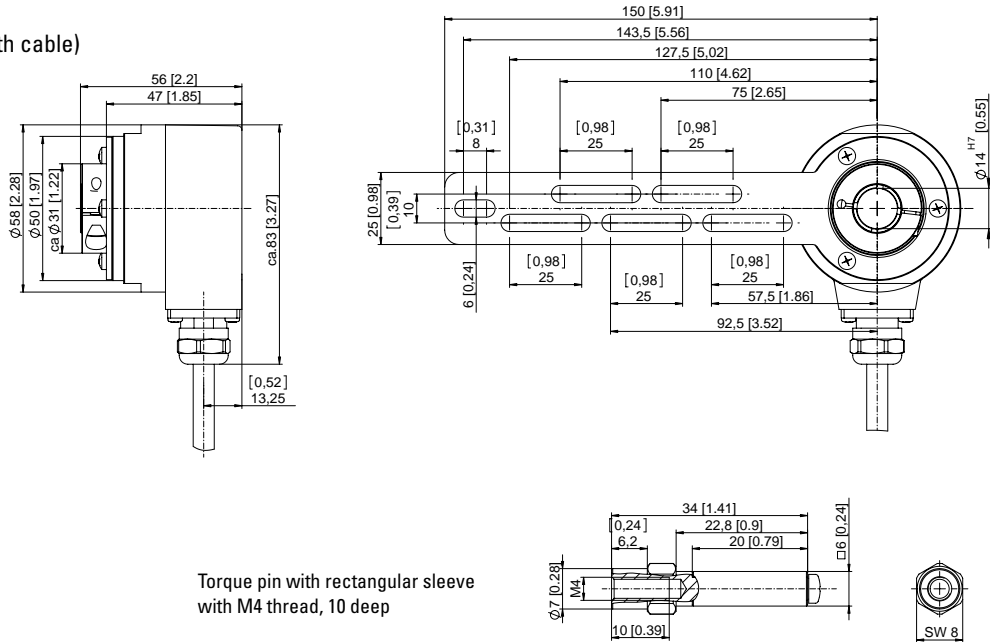
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Dimensions hollow shaft version

With torque stop set

Flange type A (Drawing with cable)

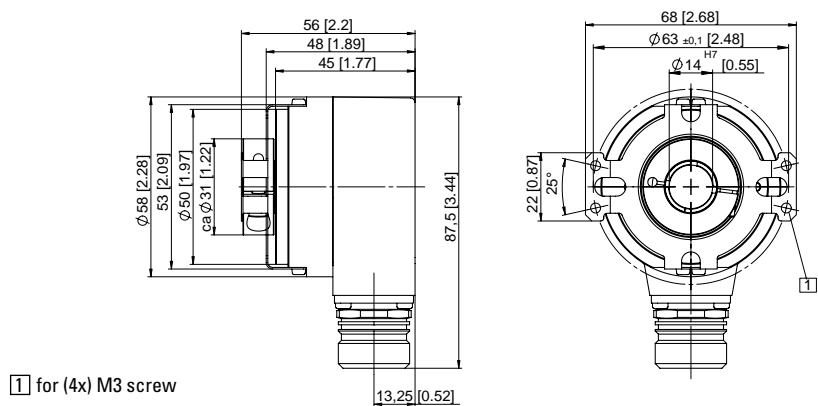


Torque pin with rectangular sleeve with M4 thread, 10 deep

Flange with stator coupling and hollow shaft

Flange type B

(Drawing with M23 connector)

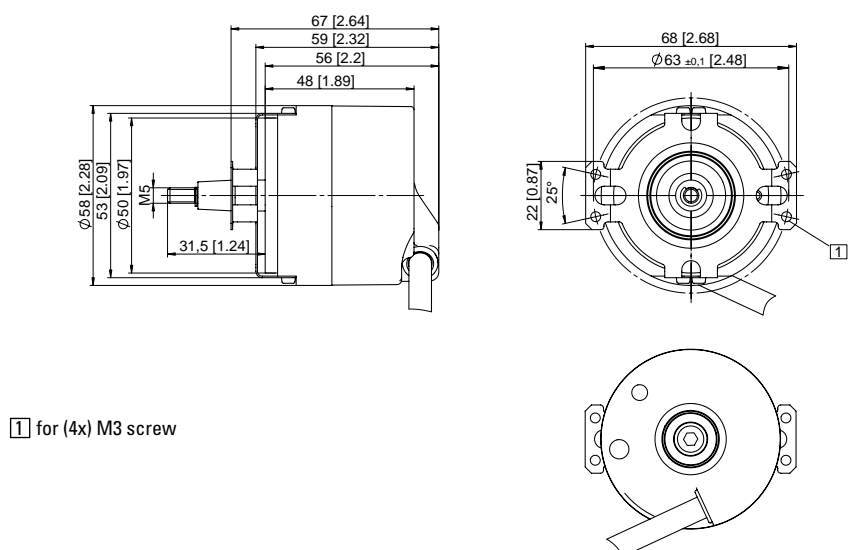


1 for (4x) M3 screw

Flange with stator coupling and tapered shaft

Flange type B

(Drawing with tangential cable outlet)



1 for (4x) M3 screw