

Incremental Encoders

Standard ATEX/IECEX – Zone 1/21, optical	Sendix 7000 (Shaft)	Push-Pull / RS422
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The Sendix 7000 incremental encoders offer Ex protection in a compact 70 mm seawater resistant housing.

These shock and vibration resistant encoders operate flexibly with a resolution of up to 5000 ppr; they are also available with axial and radial cable outlets.



Compact and safe

- Can be used even when space is tight
- Minimal installation depth, diameter 70 mm
- Compact cable outlet axial or radial
- Can be operated in marine environments – housing and flange manufactured from seawater-resistant aluminium
- Remains sealed even in harsh everyday use and ensures highest safety against field breakdowns (IP67 protection)

Explosion protection

- “Flameproof-enclosure” version
- ATEX with EC type examination certificate
- IECEX with Certificate of Conformity (CoC)

Order code Shaft version

8.7000	.	1	X	X	X	.	XXXX	.	XXXX
Type		a	b	c	d		e		f

a Flange

- 1 = clamping-synchronous flange, IP67
ø 70 mm [2.76"]

b Shaft (ø x L)

- 2 = 10 x 20 mm [0.39 x 0.79"], with flat
- 1 = 12 x 25 mm [0.47 x 0.98"],
with keyway for 4 x 4 mm [0.16 x 0.16"] key

c Output circuit / Power supply

- 4 = RS422 (with inverted signal) / 5 V DC
- 1 = RS422 (with inverted signal) / 5 ... 30 V DC
- 2 = Push-Pull (7272 compatible with inverted signal) / 5 ... 30 V DC
- 5 = Push-Pull (with inverted signal) / 10 ... 30 V DC

d Type of connection

- 1 = axial cable, 2 m [6.56'] PUR
- 2 = radial cable, 2 m [6.56'] PUR
- A = axial cable, length > 2 m [6.56']
- B = radial cable, length > 2 m [6.56']

e Pulse rate

- 25, 50, 60, 100, 125, 200, 250, 256,
300, 360, 500, 512, 600, 720, 800,
1000, 1024, 1200, 1250, 1500, 2000,
2048, 2500, 3000, 3600, 4000, 4096,
5000
(e.g. 250 pulses => 0250)
Other pulse rates on request

f Cable length in dm ¹⁾

- 0050 = 5 m [16.40']
- 0100 = 10 m [32.81']
- 0150 = 15 m [49.21']

optional on request
- special cable length

Mounting accessory for shaft encoders

Order No.

Coupling

Bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]

8.0000.1101.1010

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories

Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology

¹⁾ Not applicable with connection types 1 and 2

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Technical data

Explosion protection ATEX		Mechanical characteristics	
EC type-examination certificate	PTB09 ATEX 1106 X	Max. speed	continuous 6 000 min ⁻¹
Category (gas)	II 2 G Ex d IIC T4 - T6 Gb	Starting torque – at 20°C [68°F]	< 0.05 Nm
Category (dust)	II 2D Ex tb IIIC T135°C - T85°C Db IP6x	Moment of inertia	4.0 x 10 ⁻⁶ kgm ²
Directive 94/9/EC	EN 60079-0: 2009; EN 60079-1: 2007; EN 60079-31: 2009	Load capacity of shaft	radial 80 N axial 40 N
Explosion protection IECEx		Weight	approx. 1.3 kg [45.86 oz]
Certificate of Conformity (CoC)	IECEx PTB 13.0026 X	Protection acc. to EN 60529	IP67
Category (gas)	Ex d IIC T4 - T6 Gb	Working temperature range	-40°C ... +60°C [-40 ... +140°F]
Category (dust)	Ex tb IIIC T135°C - T85°C Db IP6x	Materials	shaft stainless steel flange / housing seawater-resistant Al, type AISiMgMn (EN AW-6082) (stainless steel on request) cable PUR
IECEx	IEC 60079-0:2007; IEC 60079-1:2007; IEC 60079-31:2008	Shock resistance acc. EN 60068-2-27	2500 m/s ² , 6 ms
		Vibration resistance acc. EN 60068-2-6	100 m/s ² , 55 ... 2000 Hz

Electrical characteristics

Output circuit	RS422 (TTL compatible)	RS422 (TTL compatible)	Push-Pull	Push-Pull (7272 compatible)
Ordercode	1	4	5	2
Power supply	5 ... 30 V DC	5 V DC ±5%	10 ... 30 V DC	5 ... 30 V DC
Power consumption (no load)	typ. 40 mA max. 90 mA	typ. 40 mA max. 90 mA	typ. 50 mA max. 100 mA	typ. 50 mA max. 100 mA
Permissible load / channel	max. ±20 mA	max. ±20 mA	max. ±20 mA	max. ±20 mA
Pulse frequency	max. 300 kHz	max. 300 kHz	max. 300 kHz	max. 300 kHz ²⁾
Signal level	HIGH min. 2.5 V LOW max. 0.5 V	min. 2.5 V max. 0.5 V	min +V - 1 V max. 0.5 V	min. +V - 2.0 V max. 0.5 V
Rising edge time t_r	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Falling edge time t_f	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Short circuit proof outputs ³⁾	yes ⁴⁾	yes ⁴⁾	yes	yes
Reverse polarity protection of the power supply	yes	no	yes	no
CE compliant acc. to	EMC guideline 2004/108/EC, ATEX guideline 94/9/EC			
RoHS compliant acc. to	guideline 2011/65/EU			

Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)											
1, 2, 4, 5	1, 2, A, B	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	0 Vsens	+Vsens	$\perp$
		Cable marking:	1	2	3	4	5	6	7	8	9	10	shield

+V: Encoder power supply +V DC
0 V: Encoder power supply ground GND (0 V)
0 Vsens / +Vsens: Using the sensor outputs of the encoder, the voltage present can be measured and if necessary increased accordingly.
A, $\bar{A}$: Incremental output channel A / cosine signal
B, $\bar{B}$: Incremental output channel B / sine signal
0, $\bar{0}$: Reference signal
 $\perp$: Plug connector housing (Shield)

1) Short-circuit with 0 V or output, only one channel at a time, supply voltage correctly applied
2) Max. recommended cable length 30 m [98.43']
3) If supply voltage correctly applied

4) Only one channel allowed to be shorted-out:
If +V= 5 V DC, short-circuit to channel, 0 V, or +V is permitted.
If +V= 5 ... 30 V DC, short-circuit to channel or 0 V is permitted.

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Standard
ATEX/IECEX – Zone 1/21, optical

Sendix 7000 (Shaft)

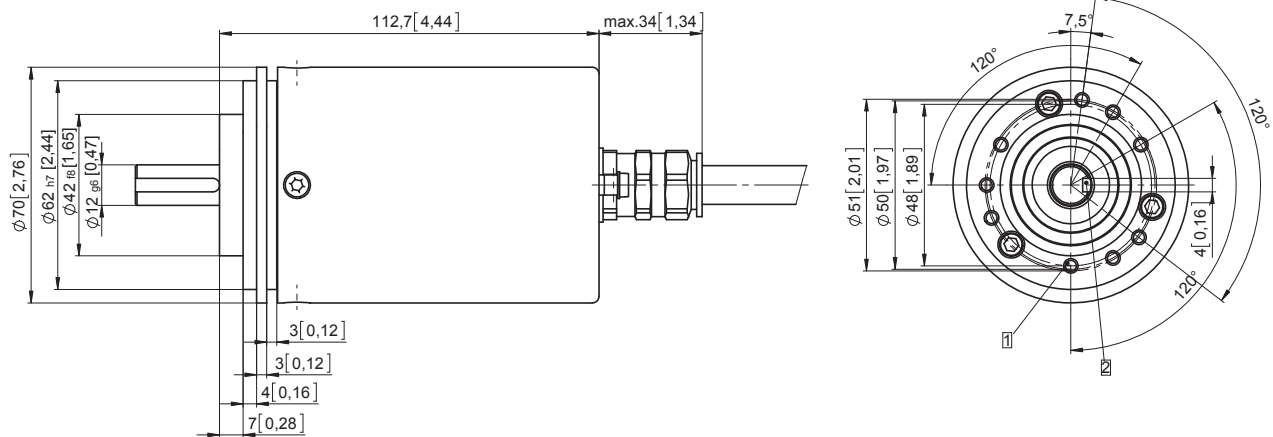
Push-Pull / RS422

Dimensions

Dimensions in mm [inch]

Clamping-synchronous flange, $\varnothing$ 70 [2.76]
Shaft type 1 with axial cable outlet

- 1 6 x M4, 10 [0.39] deep
- 2 Keyway for DIN 6885-A-4x4x25 key



Clamping-synchronous flange, $\varnothing$ 70 [2.76]
Shaft type 2 with radial cable outlet

- 1 6 x M4, 10 [0.39] deep

