

# Incremental Encoders

<b>ATEX, optical</b>	<b>Sendix 7014 SIL (Shaft)</b>	<b>SinCos</b>
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**Ex protection and Functional Safety in one device.**

**The incremental encoders Sendix 7014 SIL are perfectly suited for use in safety-related applications up to SIL3 according to DIN EN ISO 61800-5-2 or PLe to DIN EN ISO 13849.**

**In addition, these devices ensure Ex protection in a compact 70 mm housing out of seawater-resistant aluminium.**



Ex approval	Safety-Lock™	High rotational speed	High IP value	High shaft load capacity	Shock / vibration resistant	Magnetic field proof	Short-circuit proof	Reverse polarity protection	Optical sensor	Seawater-resistant

### Functional Safety

- Certified by the German Institute for Occupational Safety (IFA)
- Suitable for SIL3 applications acc. to DIN EN ISO 61800-5-2
- Suitable for PLe applications acc. to DIN EN ISO 13849
- With incremental SinCos tracks

### ATEX compliant

- “Flameproof-enclosure” version: approved for zone 1, 2 and 21, 22
- Zone 1, 2 and 21, 22:  
 Ex II 2G Ex d IIC T6 and Ex II 2D Ex tD A21 IP6X T85°C (in preparation)

<b>Order code</b>	<b>8.7014SIL</b>	<b>. 1 X 2 X .</b>	<b>XXXX .</b>	<b>XXXX</b>
<b>Shaft version</b>	Type	a b c d	e	f

<b>a Flange</b> 1 = clamping-synchronous flange ø 70 mm, IP67	<b>c Interface / Power supply</b> 2 = SinCos / 10 ... 30 V DC	<b>e Pulse rate</b> 1024, <b>2048</b>	<i>optional on request</i> <i>- special cable length</i>
<b>b Shaft (ø x L)</b> 1 = 12 x 25 mm, with keyway for 4 x 4 mm key 2 = 10 x 20 mm, with flat	<b>d Type of connection</b> 1 = axial cable (2 m PUR) 2 = radial cable (2 m PUR) A = axial cable (length > 2 m) B = radial cable (length > 2 m)	<b>f Cable length in dm<sup>1)</sup></b> 0050 = 5 m 0100 = 10 m 0150 = 15 m	

Further accessories can be found in the accessories section or in the accessories area of our website at: [www.kuebler.com/accessories](http://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](http://www.kuebler.com/connection_technology).  
**You will find an overview of our systems and components for Functional Safety under [www.kuebler.com/safety](http://www.kuebler.com/safety)**

1) Not applicable with connection types 1 and 2

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Explosion protection	
<b>EC type-examination certificate</b>	PTB09 ATEX 1106 X
<b>Category (gas)</b>	II 2G Ex d IIC T6 (in preparation)
<b>Category (dust)</b>	II 2D Ex tD A21 IP6X T85°C (in preparation)
<b>Directive 94/9 EC</b>	EN 60079-0; DIN EN 60079-1 EN 61241-0; DIN EN 61241-1

Mechanical characteristics	
<b>Max. speed</b>	continuous 6 000 min <sup>-1</sup>
<b>Starting torque</b>	< 0.05 Nm
<b>Moment of inertia</b>	4.0 x 10 <sup>-6</sup> kgm <sup>2</sup>
<b>Load capacity of shaft</b>	radial 80 N axial 40 N
<b>Weight</b>	approx. 0.6 kg
<b>Protection acc. to EN 60529</b>	IP67
<b>Working temperature range</b>	-40°C ... +60°C
<b>Materials</b>	shaft stainless steel flange / housing seawater-resistant Al, type AISiMgMn (EN AW-6082) or stainless steel cable PUR
<b>Shock resistance acc. EN 60068-2-27</b>	2500 m/s <sup>2</sup> , 6 ms
<b>Vibration resistance acc. EN 60068-2-6</b>	100 m/s <sup>2</sup> , 55 ... 2000 Hz

General electrical characteristics	
<b>Power supply</b>	10 ... 30 V DC
<b>Current consumption (w/o output load)</b>	max. 45 mA
<b>Reverse polarity protection for power supply (U<sub>B</sub>)</b>	yes
<b>CE compliant acc. to</b>	EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3
<b>RoHS compliant acc. to</b>	EU guideline 2002/95/EC

Output SinCos (A / B)	
<b>Max. frequency -3dB</b>	400 kHz
<b>Signal level</b>	1 V <sub>pp</sub> (± 20%)
<b>Short circuit proof</b>	yes <sup>1)</sup>

### Terminal assignment

Interface	Type of connection	Cable																
2	1, 2, A, B	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Signal:</td> <td style="padding: 2px; text-align: center;">0 V</td> <td style="padding: 2px; text-align: center;">+V</td> <td style="padding: 2px; text-align: center;">A</td> <td style="padding: 2px; text-align: center;">Ā</td> <td style="padding: 2px; text-align: center;">B</td> <td style="padding: 2px; text-align: center;">B̄</td> <td style="padding: 2px; text-align: center;">⊥</td> </tr> <tr> <td style="padding: 2px;">Cable marking:</td> <td style="padding: 2px; text-align: center;">6</td> <td style="padding: 2px; text-align: center;">1</td> <td style="padding: 2px; text-align: center;">7</td> <td style="padding: 2px; text-align: center;">8</td> <td style="padding: 2px; text-align: center;">9</td> <td style="padding: 2px; text-align: center;">10</td> <td style="padding: 2px; text-align: center;">shield</td> </tr> </table>	Signal:	0 V	+V	A	Ā	B	B̄	⊥	Cable marking:	6	1	7	8	9	10	shield
Signal:	0 V	+V	A	Ā	B	B̄	⊥											
Cable marking:	6	1	7	8	9	10	shield											

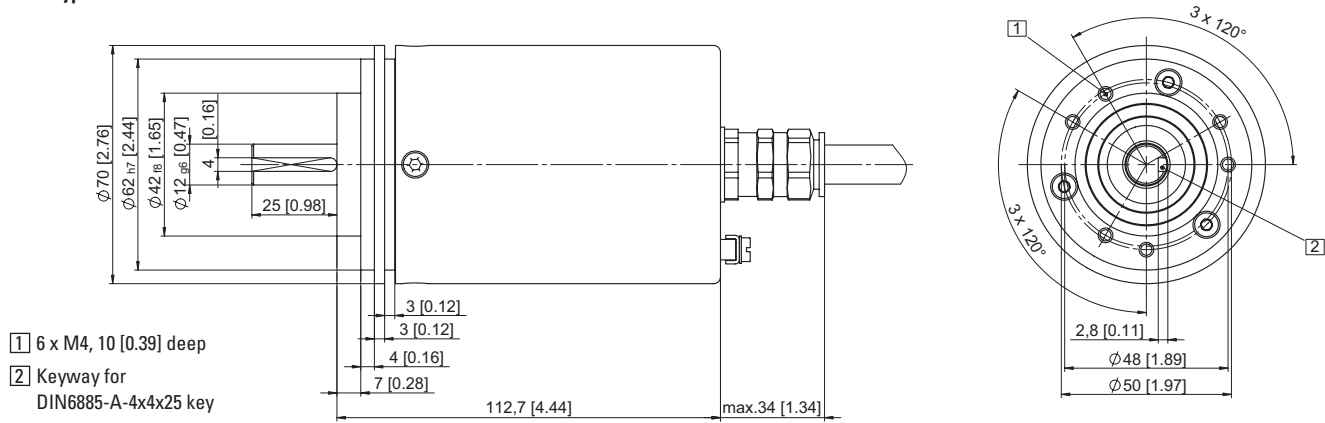
1) Short-circuit with 0 V or output, only one channel at a time, supply voltage correctly applied

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## Dimensions

### Shaft type 1 with axial cable outlet



### Shaft type 2 with radial cable outlet

