

# Incremental Encoders

**Standard**  
Stainless steel, optical

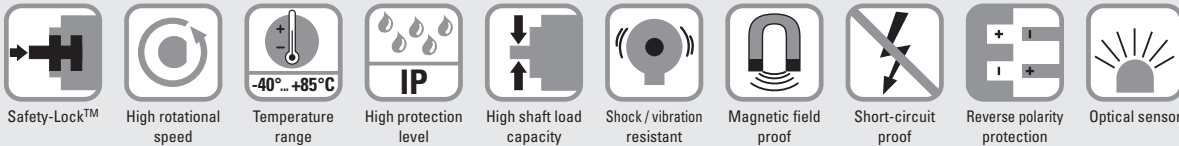
Sendix 5006 (Shaft / Hollow shaft)

Push-Pull / RS422



The incremental Sendix encoders 5006 / 5026 in stainless-steel offers optimum material resistance and thus virtually unlimited durability.

The high-grade seals, the IP67 level of protection as well as the wide temperature range additionally ensure impermeability and ruggedness.



### Durable and sealed

- Protection rating IP67
- Rugged stainless-steel housing
- Wide temperature range -40 ... +85°C
- Sturdy bearing construction in Safety Lock™ Design for resistance against vibration and installation errors

### Flexible in use

- Compatible with all common US and European standards
- Supply voltage 5 ... 30 V DC, various interface options, max. 5000 PPR
- Compact dimensions: Outer diameter 50 mm, installation depth max. 47 mm

**Order code** 8.5006 . XXXX4 . XXXX  
**Shaft version** Type

- |   |  |  |
|---|--|--|
| <p><b>a</b> Flange</p> <p>7 = clamping flange    <math>\varnothing</math> 58 mm [2.28"]<br/> A = synchro flange    <math>\varnothing</math> 58 mm [2.28"]<br/> C = square flange    <math>\square</math> 63.5 mm [2.5"]</p> <p><b>b</b> Shaft (<math>\varnothing \times L</math>), with flat</p> <p>1 = <math>\varnothing</math> 6 x 10 mm [0.24 x 0.39"]<br/> 3 = <math>\varnothing</math> 10 x 20 mm [0.39 x 0.79"]<br/> 8 = <math>\varnothing</math> 3/8" x 7/8"</p> | <p><b>c</b> Output circuit / Power supply</p> <p>2 = Push-Pull (7272 compatible with inverted signal) / 5 ... 30 V DC<br/> 5 = Push-Pull (with inverted signal) / 10 ... 30 V DC<br/> 4 = RS422 (with inverted signal) / 5 V DC</p> <p><b>d</b> Type of connection</p> <p>4 = M12 connector, 8-pin, radial</p> | <p><b>e</b> Pulse rate</p> <p>360, 512, 1000, 1024, 2000, 2048, 2500, 3600, 4096, 5000<br/> (e.g. 100 pulses =&gt; 0100)<br/> Other pulse rates on request</p> |
|---|--|--|

**Order code** 8.5026 . XXXX2 . XXXX  
**Hollow shaft** Type

- |   |   |  |
|---|---|--|
| <p><b>a</b> Flange</p> <p>1 = with spring element long, IP67<br/> C = with stator coupling, IP67, <math>\varnothing</math> 63 mm</p> <p><b>b</b> Hollow shaft</p> <p>3 = <math>\varnothing</math> 10 mm<br/> 5 = <math>\varnothing</math> 12 mm<br/> 8 = <math>\varnothing</math> 15 mm</p> | <p><b>c</b> Output circuit / Power supply</p> <p>2 = Push-Pull (7272 compatible, with inverted signal) / 5 ... 30 V DC<br/> 5 = Push-Pull (with inverted signal) / 10 ... 30 V DC<br/> 4 = RS422 (with inverted signal) / 5 V DC</p> <p><b>d</b> Type of connection</p> <p>2 = M12 connector, 8-pin, radial</p> | <p><b>e</b> Pulse rate</p> <p>360, 512, 1000, 1024, 2000, 2048, 2500, 3600, 4096, 5000<br/> (e.g. 100 pulses =&gt; 0100)<br/> Other pulse rates on request</p> |
|---|---|--|

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Mounting accessory for hollow shaft encoders		Order No.	
<b>Isolation / adapter inserts for hollow shaft encoders</b>		Isolation inser	
<p><b>Thermal and electrical isolation of the encoders</b> (Temperature range -40 ... +115°C [-40°F ... +239°F])</p> <p>Isolation inserts prevent currents from passing through the encoder bearings. These currents can occur when using inverter controlled three-phase or AC vector motors and considerably shorten the service life of the encoder bearings. In addition the encoder is thermally isolated as the plastic does not transfer the heat to the encoder.</p>	D1	Isolation inser	
		6 mm [0.24"]	<b>8.0010.4021.0000</b>
		8 mm [0.32"]	<b>8.0010.4020.0000</b>
		10 mm [0.39"]	<b>8.0010.4023.0000</b>
		12 mm [0.47"]	<b>8.0010.4025.0000</b>
		1/4"	<b>8.0010.4022.0000</b>
	3/8"	<b>8.0010.4024.0000</b>	
	1/2"	<b>8.0010.4026.0000</b>	



Tip:  
By using these adapter inserts you can achieve six different hollow shaft diameters, all on the basis of the encoder 8.5020.X8X2.XXXX.

Incremental Encoders

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## Technical data

Electrical characteristics				
Output circuit	RS422 (TTL compatible)	Push-Pull	Push-Pull (7272 compatible)	
<b>Power supply</b>	5 V DC ±5%	10 ... 30 V DC	5 ... 30 V DC	
<b>Current consumption with inverted signal (no load)</b>	typ. 40 mA / max. 90 mA	typ. 50 mA / max. 100 mA	typ. 50 mA / max. 100 mA	
<b>Permissible load/channel</b>	max. ±20 mA	max. ±20 mA	max. ±20 mA	
<b>Pulse frequency</b>	max. 300 kHz	max. 300 kHz	max. 300 kHz	
<b>Signal level</b>	HIGH min. 2.5 V LOW max. 0.5 V	min +V - 1 V max. 0.5 V	min. +V - 2.0 V max. 0.5 V	
<b>Rising edge time <math>t_r</math></b>	max. 200 ns	max. 1 µs	max. 1 µs	
<b>Falling edge time <math>t_f</math></b>	max. 200 ns	max. 1 µs	max. 1 µs	
<b>Short circuit proof outputs <sup>1)</sup></b>	yes <sup>2)</sup>	yes	yes	
<b>Reverse polarity protection of the power supply</b>	no	yes	no	
<b>UL approval</b>	File 224618			
<b>CE compliant acc. to</b>	EMC guideline 2004/108/EC			
<b>RoHS compliant acc. to</b>	guideline 2011/65/EU			

Mechanical characteristics			
<b>Speed <sup>3)</sup></b>	max. 6000 min <sup>-1</sup>	<b>EX approval for hazardous areas</b>	optional Zone 2 and 22
<b>Moment of inertia</b>	approx. 1.8 x 10 <sup>-6</sup> kgm <sup>2</sup>	<b>Working temperature</b>	-40°C ... +85°C [-40°F ... +185°F]
<b>Starting torque – at 20°C [68°F]</b>	< 0.05 Nm	<b>Material</b>	housing, flange, shaft connector stainless steel, 1.4305 stainless steel
<b>Weight</b>	approx. 0.4 kg [14.11 oz]	<b>Shock resistance acc. to EN 60068-2-27</b>	2500 m/s <sup>2</sup> , 6 ms
<b>Load capacity of shaft</b>	radial 80 N axial 40 N	<b>Vibration resistance acc. to EN 60068-2-6</b>	100 m/s <sup>2</sup> , 10...2000 Hz
<b>Protection acc. to EN 60529</b>	IP67		

1) If supply voltage correctly applied  
 2) Only one channel allowed to be shorted-out:  
 At +V = 5 V DC, short-circuit to channel, 0 V, or +V is permitted.  
 At +V = 5 ... 30 V DC, short-circuit to channel or 0 V is permitted.  
 3) For continuous operation max. 3000 min<sup>-1</sup>

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## Terminal assignment

Output circuit	Type of connection	M12 connector, 8-pin									
2, 4, 5	5006: 4	Signal:	0 V	+V	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$
	5026: 2	Pin:	1	2	3	4	5	6	7	8	PH <sup>1)</sup>

+V: Encoder power supply +V DC  
 0 V: Encoder power supply ground GND (0 V)  
 A,  $\bar{A}$ : Incremental output channel A  
 B,  $\bar{B}$ : Incremental output channel B  
 0,  $\bar{0}$ : Reference signal  
 PH  $\perp$ : Plug connector housing (Shield)

Top view of mating side, male contact base



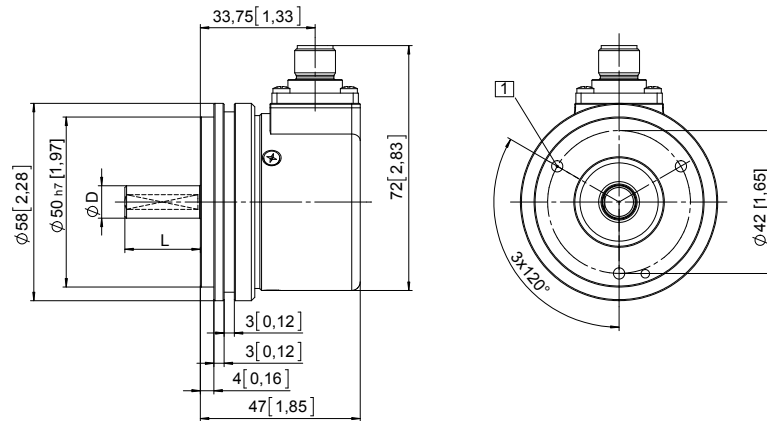
M12 connector, 8-pin

## Dimensions shaft version

Dimensions in mm [inch]

### Synchro flange, $\varnothing$ 58 [2.28] Flange type A

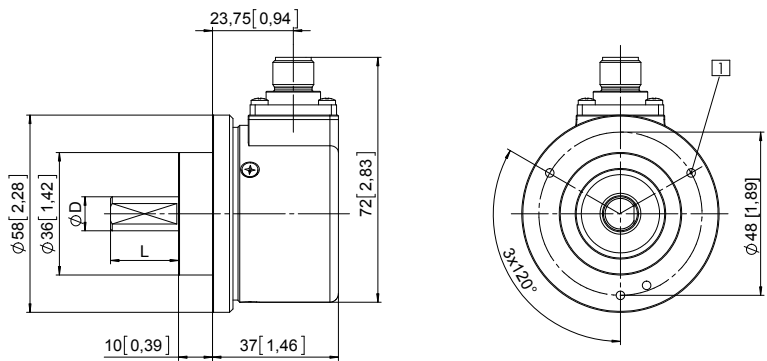
1 3 x M4, 6 [0.24] deep



D =  $\varnothing$  6 h7 [0.24]  
 $\varnothing$  10 f7 [0.39]  
 $\varnothing$  3/8" h8

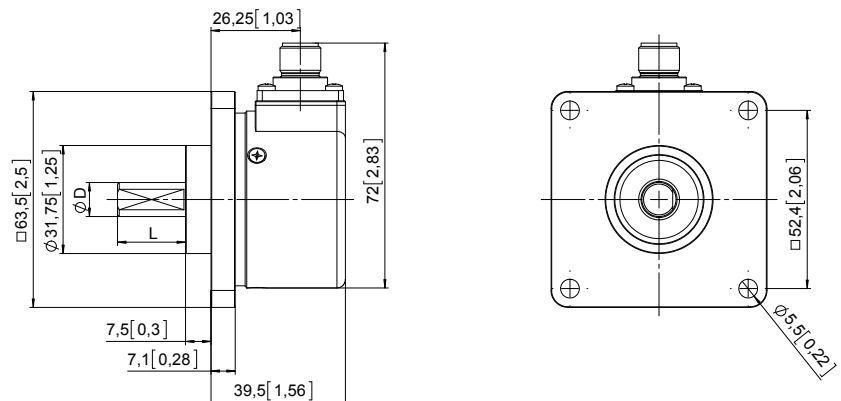
### Clamping flange, $\varnothing$ 58 [2.28] Flange type 7

1 3 x M3, 5,5 [0.22] deep



D =  $\varnothing$  6 h7 [0.24]  
 $\varnothing$  10 f7 [0.39]  
 $\varnothing$  3/8" h8

### Square flange, $\square$ 63,5 [2.5] Flange type C



D =  $\varnothing$  6 h7 [0.24]  
 $\varnothing$  10 f7 [0.39]  
 $\varnothing$  3/8" h8

1) PH = Shield is attached to connector housing

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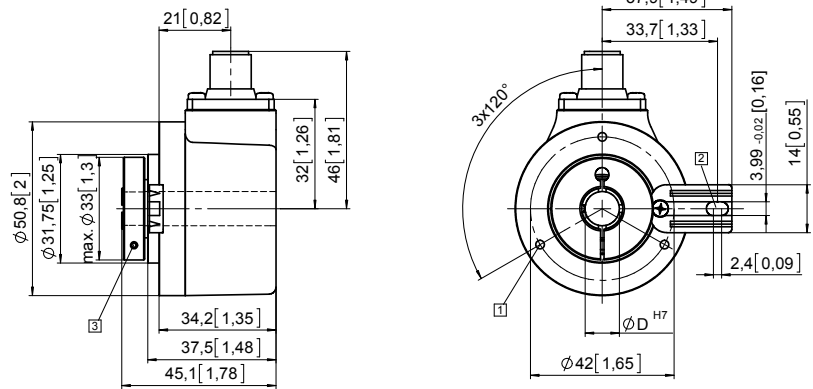
<b>Standard Stainless steel, optical</b>	<b>Sendix 5006 (Shaft / Hollow shaft)</b>	<b>Push-Pull / RS422</b>
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## Dimensions hollow shaft version

Dimensions in mm [inch]

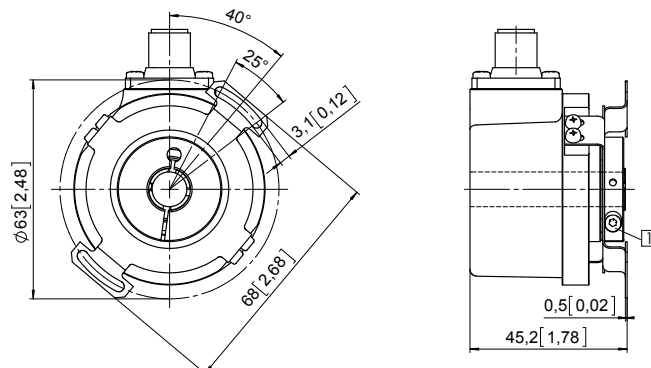
### Flange with spring element long Flange type 1

- 1 M3, 6 [0.24] deep
- 2 Torque stop slot,  
Recommendation: Cylindrical pin DIN7, 4 [0.16]
- 3 Recommended torque for the clamping ring 0.6 Nm



### Flange with stator coupling, ø 63 [2.48] Flange type C

- 1 Recommended torque for the clamping ring 0.6 Nm



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