



# Incremental Encoders

<b>Compact Plastic housing, optical</b>	<b>3700 / 3720 (Shaft / Hollow shaft)</b>	<b>Push-Pull / RS422</b>
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<b>Mounting accessory for shaft encoders</b>	Order-No.
<b>Coupling</b>	Bellows coupling $\varnothing$ 15 mm [0.59"] for shaft 6 mm [0.24"]
	<b>8.0000.1201.0606</b>

Further accessories can be found in the accessories section or in the accessories area of our website.  
Additional connectors can be found in the connection technology section or in the connection technology area of our website.

## Technical data

Mechanical characteristics		
<b>Speed</b>		max. 6 000 min <sup>-1</sup>
<b>Moment of inertia</b>	shaft version	approx. $0.4 \times 10^{-6}$ kgm <sup>2</sup>
	hollow shaft version	$1.4 \times 10^{-6}$ kgm <sup>2</sup>
<b>Starting torque - at 20°C [68°F]</b>		
	shaft version	< 0.007 Nm
	hollow shaft version	< 0.01 Nm
<b>Shaft load capacity</b>	radial	20 N
	axial	10 N
<b>Weight</b>		approx. 0.1 kg [35.27 oz]
<b>Protection</b> acc. to EN 60529		
	bearings, shaft	IP65
	cable outlet	IP67
<b>EX approval for hazardous areas</b>		optional Zone 2 and 22
<b>Working temperature range</b>		-20°C ... +70°C <sup>1)</sup> [-4°F ... 158°F] <sup>1)</sup>
<b>Materials</b>	shaft / hollow shaft	stainless steel
	housing, flange	PPA, 40% CF (carbon fibre)
	cable	PVC
<b>Shock resistance</b> acc. to EN 60068-2-27		1000 m/s <sup>2</sup> , 6 ms
<b>Vibration resistance</b> acc. to EN 60068-2-6		100 m/s <sup>2</sup> , 10 ... 2000 Hz

Electrical characteristics			
<b>Output circuit</b>	<b>RS422</b> (TTL compatible)	<b>Push-Pull</b> (7272 comp.) <sup>4)</sup>	<b>Push-Pull</b> (7272 comp.) <sup>4)</sup>
<b>Power supply</b>	5 V DC ( $\pm 5\%$ )	5 ... 30 V DC	10 ... 30 V DC
<b>Power consumption with inverted signal</b> (no load)	typ. 40 mA / max. 90 mA	typ. 50 mA/ max. 100 mA	typ. 50 mA/ max. 100 mA
<b>Permissible load / channel</b>	max. $\pm 20$ mA	max. $\pm 20$ mA	max. $\pm 20$ mA
<b>Pulse frequency</b>	max. 250 kHz	max. 250 kHz	max. 250 kHz
<b>Signal level</b>	HIGH	min. 2.5 V	min. +V - 2.0 V
	LOW	max. 0.5 V	max. 0.5 V
<b>Rising edge time t<sub>r</sub></b>	max. 200 ns	max. 1 $\mu$ s	max. 1 $\mu$ s
<b>Falling edge time t<sub>f</sub></b>	max. 200 ns	max. 1 $\mu$ s	max. 1 $\mu$ s
<b>Short circuit proof outputs</b> <sup>2)</sup>	yes <sup>3)</sup>	yes	yes
<b>Reverse polarity protection of the power supply</b>	no	no	yes
<b>UL approval</b>	File 224618		
<b>CE compliant</b> acc. to	EMC guideline 2004/108/EC		
<b>RoHS compliant</b> acc. to	guideline 2002/95/EC		

## Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)								
1, 3, 4	1 ... 8	Signal:	0 V	+V	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$
		Cable colour:	WH	BN	GN	YE	GY	PK	BU	RD

- +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

1) For versions with push-pull output and supply voltage >15 V DC: max. 55°C [+131°F]  
 2) If supply voltage correctly applied  
 3) 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.  
 4) Max. recommended cable length 30 m [98.43']

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**Compact**  
**Plastic housing, optical**

**3700 / 3720 (Shaft / Hollow shaft)**

**Push-Pull / RS422**

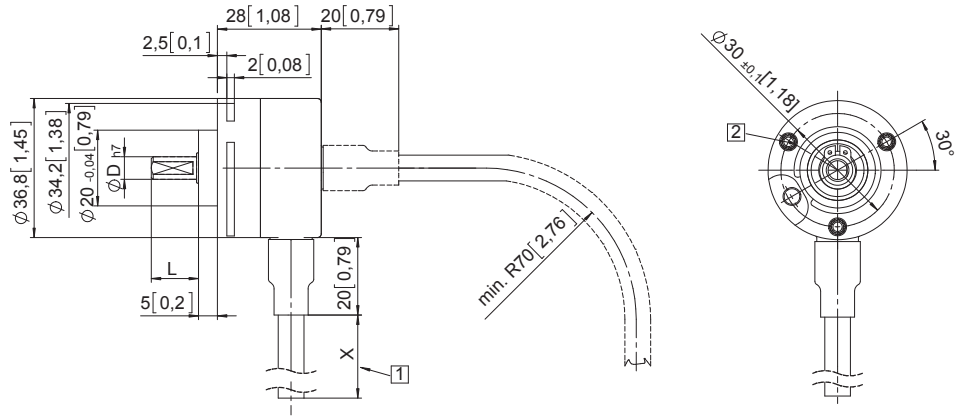
## Dimensions shaft version

Dimensions in mm [inch]

### Clamping / Synchro flange, $\varnothing 36.8$ [1.45]

#### Flange type 1

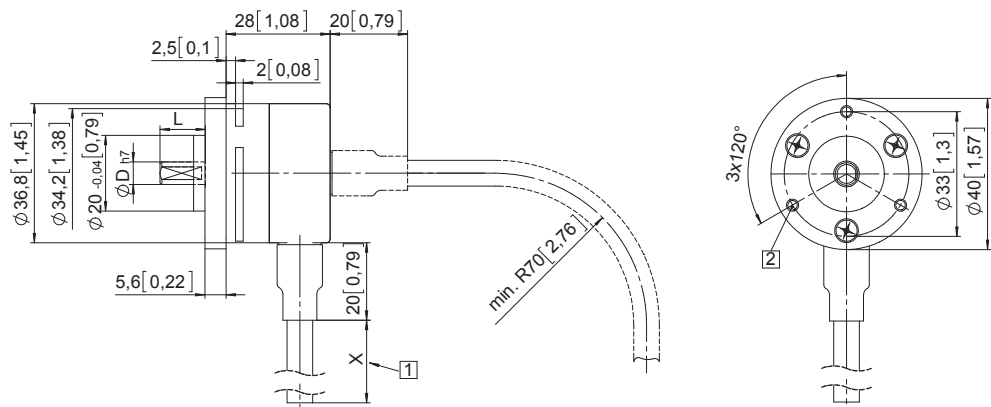
- 1 Cable length  
1, 2, 3 or 5 m  
[3.28', 6.56', 9.84' or 16.40']
- 2 M3, 6 [0.24] deep



### Flange adapter, $\varnothing 36.8$ [1.45]

#### Flange type A

- 1 Cable length  
1, 2, 3 or 5 m  
[3.28', 6.56', 9.84' or 16.40']
- 2 M3, 6 [0.24] deep



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## Dimensions hollow shaft version

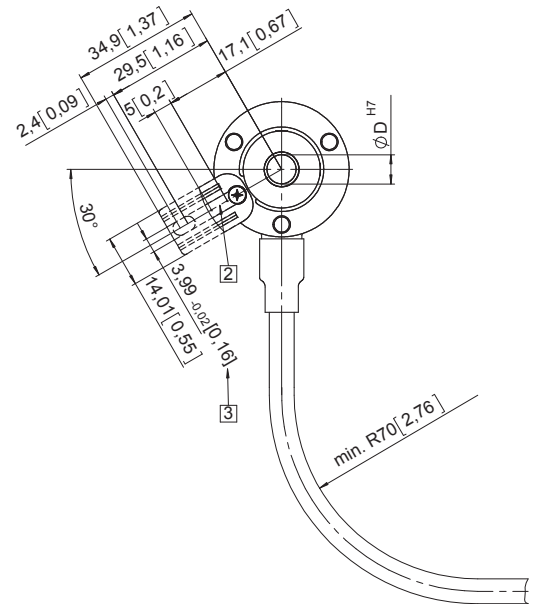
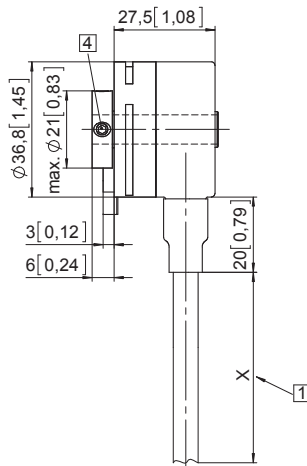
Dimensions in mm [inch]

### Flange with spring element short

(Long spring element version is shown dashed)

#### Flange type 1 (2)

- 1 Cable length  
1, 2, 3 or 5 m  
[3.28', 6.56', 9.84' or 16.40']
- 2 Slot for torque stop, 3 [0.12] deep
- 3 Torque stop slot,  
Recommendation: Cylindrical pin  
DIN 7,  $\varnothing$  4 [0.16]
- 4 Recommended torque for the  
clamping ring 1.0 Nm



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### Flange with stator coupling, $\varnothing$ 46 [1.81]

#### Flange type 5

- 1 Cable length  
1, 2, 3 or 5 m  
[3.28', 6.56', 9.84' or 16.40']
- 2 Recommended torque for the  
clamping ring 1.0 Nm

