

# Absolute encoders - singleturn

<b>Miniature magnetic</b>	<b>2450 / 2470 (shaft / hollow shaft)</b>	<b>SSI</b>
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The absolute singleturn encoders 2450 and 2470 with SSI interface and magnetic sensor technology are the specialists when space is tight.

Because of their high 12 bit resolution with 4096 different positions for 360° they offer exceptional repeat accuracy.



High rotational speed	Temperature range -20°...+85°C	Shock / vibration resistant	Short-circuit proof	Reverse polarity protection	Magnetic sensor

### Minimal space requirement

- The outer diameter measures 24 mm; the shaft diameter up to max. 6 mm.
- Flexible connection with radial or axial cable outlet.

### Durable and accurate

- Long service life and freedom from wear due to non-contact measuring system.
- Wide temperature range from -20°C up to +85°C.
- High 12 bit resolution with 4096 different positions for 360°.

<b>Order code</b>	<b>8.2450</b>	<b>. XX 1 X .</b>	<b>G121</b>
<b>Shaft version</b>	Type	a b c d	e

- |  |   |   |   |   |
|--|---|---|---|---|
| <p><b>a Flange</b><br/>1 = ø 24 mm [0.94"]<br/>3 = ø 28 mm [1.10"]<br/>2 = ø 30 mm [1.18"]</p> | <p><b>b Shaft (ø x L)</b><br/>1 = ø 4 x 10 mm [0.16 x 0.39"]<br/>3 = ø 5 x 10 mm [0.20 x 0.39"], with flat<br/>2 = ø 6 x 10 mm [0.24 x 0.39"]</p> | <p><b>c Interface / power supply</b><br/>1 = SSI / 5 V DC</p> | <p><b>d Type of connection</b><br/>1 = axial cable, 2 m [6.56'] PVC<br/>A = axial cable, special length PVC *)<br/>2 = radial cable, 2 m [6.56'] PVC<br/>B = radial cable, special length PVC *)</p> <p>*) Available special lengths (connection types A, B):<br/>3, 5, 8, 10, 15 m [9.84, 16.40, 26.25, 32.80, 49.21']<br/>order code expansion .XXXX = length in dm<br/>ex.: 8.2450.111A.G121.0030 (for cable length 3 m)</p> | <p><b>e Gray-code</b><br/>12 bit resolution</p> |
|--|---|---|---|---|

<b>Order code</b>	<b>8.2470</b>	<b>. 1 X 1 X .</b>	<b>G121</b>
<b>Hollow shaft</b>	Type	a b c d	e

- |  |   |   |   |   |
|--|---|---|---|---|
| <p><b>a Flange</b><br/>1 = ø 24 mm [0.94"]</p> | <p><b>b Blind hollow shaft</b><br/>(insertion depth max. 14 mm [0.55"])<br/>1 = ø 4 mm [0.16"]<br/>2 = ø 6 mm [0.24"]</p> | <p><b>c Interface / power supply</b><br/>1 = SSI / 5 V DC</p> | <p><b>d Type of connection</b><br/>1 = axial cable, 2 m [6.56'] PVC<br/>A = axial cable, special length PVC *)<br/>2 = radial cable, 2 m [6.56'] PVC<br/>B = radial cable, special length PVC *)</p> <p>*) Available special lengths (connection types A, B):<br/>3, 5, 8, 10, 15 m [9.84, 16.40, 26.25, 32.80, 49.21']<br/>order code expansion .XXXX = length in dm<br/>ex.: 8.2470.111A.G121.0030 (for cable length 3 m)</p> | <p><b>e Gray-code</b><br/>12 bit resolution</p> |
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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 4 mm [0.16"]	<b>8.0000.1202.0404</b>

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).

## Technical data

Mechanical characteristics			Electrical characteristics	
<b>Maximum speed</b>		12000 min <sup>-1</sup>	<b>Power supply</b>	5 (+0.4) V DC <sup>1)</sup>
<b>Mass moment of inertia</b>		approx. 0.1 x 10 <sup>-6</sup> kgm <sup>2</sup>	<b>Power consumption (no load)</b>	< 40 mA
<b>Starting torque - at 20°C [68°F]</b>		< 0.01 Nm	<b>Reverse polarity protection of the power supply</b>	yes
<b>Shaft load capacity</b>	radial	10 N	<b>Short circuit proof output</b>	yes <sup>2)</sup>
	axial	20 N	<b>Measuring range</b>	360°
<b>Weight</b>		approx. 0.06 kg [2.11 oz]	<b>Linearity, 25°C [77°F]</b>	< 1.5°
<b>Protection acc. to EN 60529</b>	housing side	IP65 (IP67 on request)	<b>Repeat accuracy</b>	≤ 0.4°
	flange side	IP50 (IP67 on request)	<b>CE compliant acc. to</b>	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU
<b>Working temperature range</b>		-20°C ... +85°C [-4°F ... +185°F]	<b>SSI interface</b>	
<b>Material</b>	shaft / hollow shaft	stainless steel	<b>Output driver</b>	RS485
	clamping ring	MS58	<b>Permissible load / channel</b>	typ. 60 Ohm (acc. to RS485)
<b>Shock resistance acc. to EN 60068-2-27</b>		1000 m/s <sup>2</sup> , 6 ms	<b>Resolution</b>	12 bit
<b>Vibration resistance acc. to EN 60068-2-6</b>		100 m/s <sup>2</sup> , 55 ... 2000 Hz	<b>Code</b>	gray
			<b>SSI clock speed</b>	100 kHz ... 750 kHz
			<b>Monoflop time</b>	typ. / max. 16 μs / 20 μs
			<b>Data refresh rate</b>	typ. 100 μs

## Terminal assignment

Interface	Type of connection	Cable (isolate unused wires individually before initial start-up)						
2	1, 2, A, B	Signal:	0 V	+V	C+	C-	D+	D-
		Cable color:	WH	BN	GN	YE	GY	PK

+V: Encoder power supply +V DC  
0 V: Encoder power supply ground GND (0 V)  
C+, C-: Clock signal  
D+, D-: Data signal

1) The power supply at the encoder input must not be less than 4.75 V DC (5 V DC - 5 %).  
2) Short circuit to 0 V or to output, only one channel at a time, power supply correctly applied.

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**Miniature magnetic**

**2450 / 2470 (shaft / hollow shaft)**

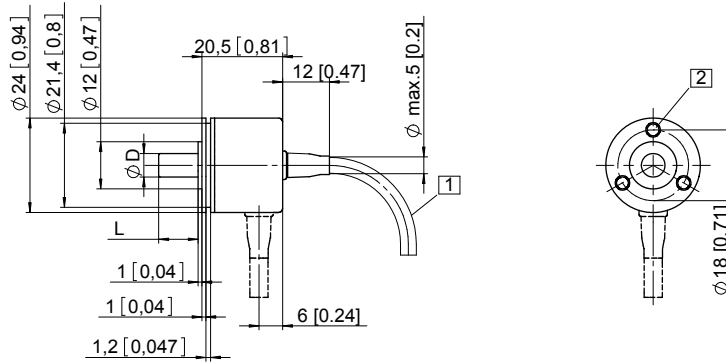
**SSI**

## Dimensions shaft version

Dimensions in mm [inch]

### Flange type 1, $\varnothing$ 24 [0.94]

- 1 min. R50 [1.97]
- 2 3 x M3, 4 [0.16] deep

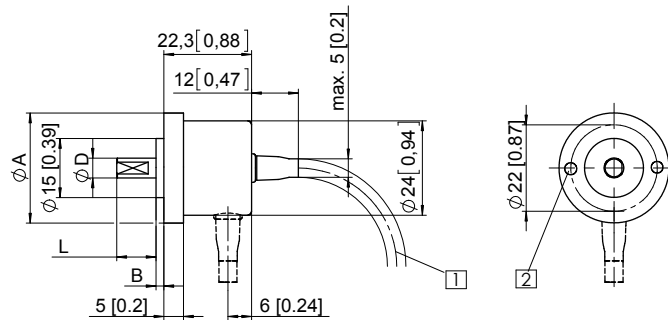


D	Fit	L
4 [0.16]	f7	10 [0.39]
5 [0.20]	f7	10 [0.39]
6 [0.24]	f7	10 [0.39]
1/4"	f7	10 [0.39]

### Flange type 2, $\varnothing$ 30 [1.18]

### Flange type 3, $\varnothing$ 28 [1.10]

- 1 min. R50 [1.97]
- 2 2 x M3, 4 [0.16] deep



D	Fit	L
4 [0.16]	f7	10 [0.39]
5 [0.20]	f7	10 [0.39]
6 [0.24]	f7	10 [0.39]
1/4"	f7	10 [0.39]

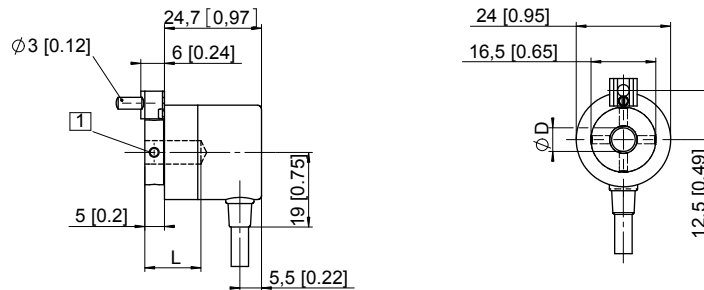
Flange type	A	B
2	$\varnothing$ 30 [1.18]	3 [0.12]
3	$\varnothing$ 28 [1.10]	2 [0.08]

## Dimensions hollow shaft version

Dimensions in mm [inch]

### Flange type 1, $\varnothing$ 24 [0.94]

- 1 4 x M3 DIN 915 - SW1.5



D	Fit	L
4 [0.16]	H7	14 [0.55]
6 [0.24]	H7	14 [0.55]
1/4"	H7	14 [0.55]

L = insertion depth max. blind hollow shaft