



CE  
0102



### Model Number

RV170E Mining

### Features

- Up to 5000 ppr
- Flameproof enclosure
- Worldwide certification: ATEX, IECEx
- EX-approval for mining
- Degree of protection IP66 / IP67
- High shaft load capacity
- Temperature range -40 ... 158 °F (-40°C to 70°C)

### Description

RV170E Series incremental rotary encoders are enclosed in a pressure-resistant housing.

The robust bearing design allows high shaft loads to be absorbed, enabling this series of rotary encoder to deliver reliability and precision over its full service life. The compact design ensures efficient use of installation space.

The high degree of protection along with the seawater-resistant housing make the RV170E ideal for use in tough environmental conditions. The temperature range of -40 °C to +70 °C allows the encoder to be used in a wide variety of climatic conditions. The wide range of variants available mean the RV170E Series is suitable for use in a host of applications.

## Technical data

### General specifications

Detection type	photoelectric sampling
Device type	Incremental rotary encoder
Pulse count	max. 5000

### Functional safety related parameters

MTTF <sub>d</sub>	140 a
Mission Time (T <sub>M</sub> )	20 a
L <sub>10</sub>	1.6 E+9 at 3000 rpm
Diagnostic Coverage (DC)	0 %

### Electrical specifications

Operating voltage U <sub>B</sub>	10 ... 30 V DC or 5 V DC ± 5 % (see "Output circuit" in the ordering information)
No-load supply current I <sub>0</sub>	max. 60 mA

### Output

Output type	push-pull, incremental or RS 422, incremental (see "Output circuit" in the ordering information)
Voltage drop U <sub>d</sub>	< 4 V (push-pull, incremental)
Load current	max. per channel 40 mA , short-circuit protected, reverse polarity protected (push-pull, incremental) max. per channel 20 mA , short-circuit protected, reverse polarity protected (RS 422, incremental)
Output frequency	max. 200 kHz
Rise time	250 ns
Phase position A to B	90 ° ± 18 °
Duty cycle	1/2 ± 20 %
De-energized delay t <sub>off</sub>	250 ns

### Connection

Cable	Ø 10.2 mm, Radox 9 x 0.5 mm <sup>2</sup>
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### Standard conformity

Degree of protection	DIN EN 60529, IP66 DIN EN 60529, IP67
Climatic testing	DIN EN 60068-2-78 , no moisture condensation
Emitted interference	EN 61000-6-4:2007/A1:2011
Noise immunity	EN 61000-6-2:2005
Shock resistance	DIN EN 60068-2-27, 100 g, 3 ms
Vibration resistance	DIN EN 60068-2-6, 10 g, 10 ... 2000 Hz

### Ambient conditions

Operating temperature	
Gas Ex-area	-40 ... 70 °C (-40 ... 158 °F)
Dust Ex-area	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	
Gas Ex-area	-40 ... 70 °C (-40 ... 158 °F)
Dust Ex-area	-40 ... 70 °C (-40 ... 158 °F)

### Mechanical specifications

Material	
Combination 1	housing: Stainless steel 1.4305 / AISI 303 flange: Stainless steel 1.4305 / AISI 303 shaft: Stainless steel 1.4305 / AISI 303
Combination 2	housing: Stainless steel 1.4401 / AISI 316 flange: Stainless steel 1.4401 / AISI 316 shaft: Stainless steel 1.4401 / AISI 316
Mass	approx. 2300 g (combination 1) approx. 2300 g (combination 2)
Rotational speed	max. 6000 min <sup>-1</sup>
Moment of inertia	400 gcm <sup>2</sup>
Starting torque	< 5 Ncm
Shaft load	
Axial	110 N
Radial	150 N

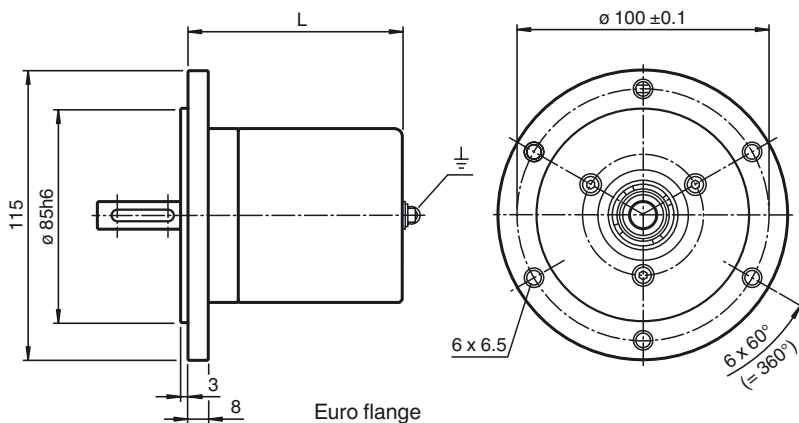
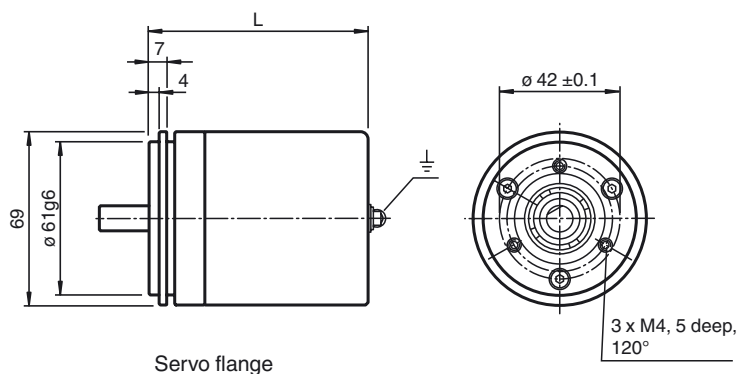
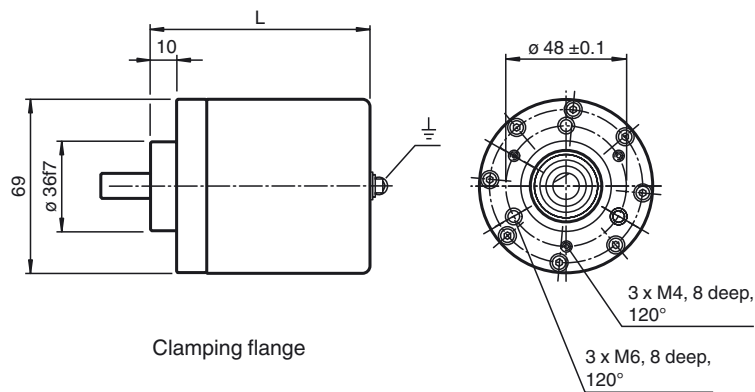
### Data for application in connection with hazardous areas

EU-Type Examination Certificate	ZELM 14 ATEX 0519 X IECEx ZLM 14.0003X
Marking	⊕ I M2 Ex db I Mb

### Directive conformity

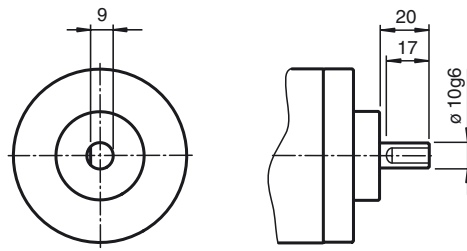
Directive 94/9/EC	IEC 60079-0:2011 EN 60079-0:2012+A11:2013 IEC 60079-1:2014 EN 60079-1:2014 IEC 60079-31:2013 EN 60079-31:2014
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Dimensions

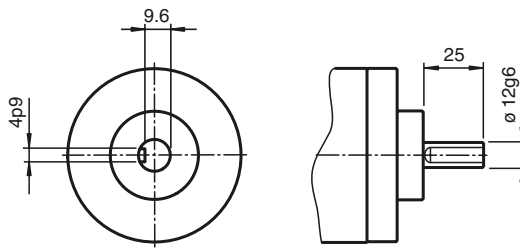


Flange	L [mm]	
	Axial output	Radial output
Clamping flange	80	87
Servo flange	80.2	87.2
Euro flange	78	85

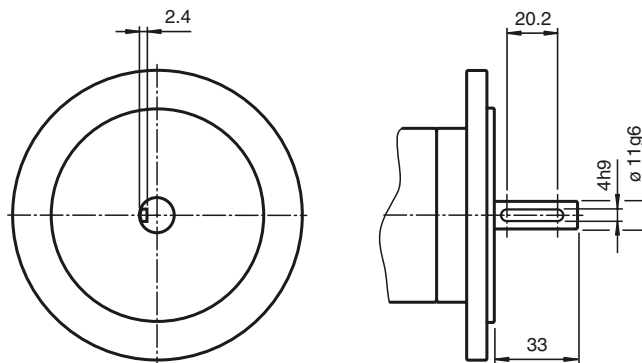
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Shaft: 10 mm



Shaft: 12 mm



Shaft: 11 mm

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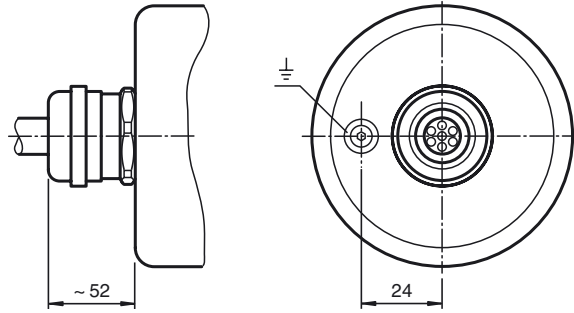
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

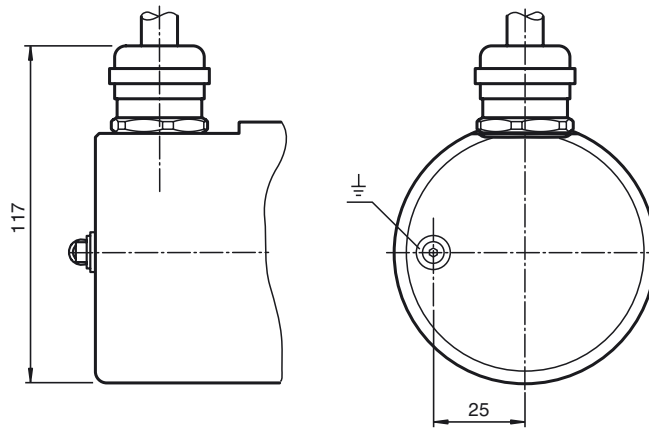
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Axial output



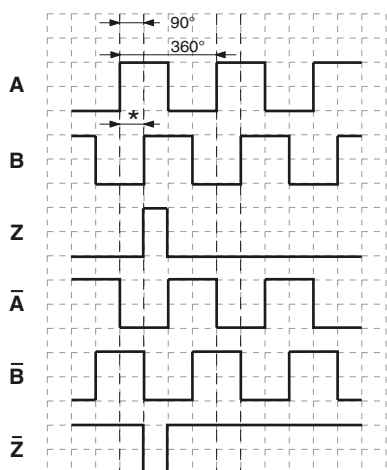
Radial output

**Electrical connection**

Signal	Cable Ø11.2 mm, 9-core
GND	1
+U <sub>b</sub>	2
A	3
B	4
$\bar{A}$	5
$\bar{B}$	6
Z	7
Z	8
PE	Green/Yellow

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Signal outputs



↻ cw - with view onto the shaft  
 phase relationships electrical  
 \* 1 Measuring step is 90° electrical

Order code

R	V	I	7	0	E	-						6							
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**Pulse count** 512, 1000, 1024, 1800, 2000, 2048, 3600, 4096, 5000

**Housing material**  
 2 Stainless steel 1.4305 / AISI 303 (V2A)  
 4 Stainless steel 1.4401 / AISI 316 (V4A)

**Output switching**  
 1 10 V ... 30 V, push-pull  
 6 5 V, RS 422  
 X 10 V ... 30 V, RS 422

**Signal output**  
 6 A + B + 0 and  $\bar{A}$  +  $\bar{B}$  +  $\bar{0}$

**Exit position**  
 A Axial  
 R Radial

**Connection type**  
 K2 Cable, 2 m  
 K5 Cable, 5 m  
 KA Cable, 10 m

**Shaft dimension/flange version**  
 011 Shaft Ø10 mm x 20 mm with clamping flange  
 012 Shaft Ø10 mm x 20 mm with servo flange  
 021 Shaft Ø12 mm x 25 mm with clamping flange  
 022 Shaft Ø12 mm x 25 mm with servo flange  
 033 Shaft Ø11 mm x 30 mm with euro flange

**Special properties**  
 E Explosion proof

**Shaft version**  
 V Solid shaft

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