



## Model Number

EVM78E-P

## Features

- Up to 30 Bit multiturn
- ATEX approval
- IECEx approval
- Flameproof enclosure
- Removable connection cap

## Description

Absolute multiturn rotary encoders deliver an absolute step value for each angle setting. This device has a maximum basic resolution of 65536 steps per revolution (16 bits) and codes up to 16384 revolutions (14 bits). Thus the overall resolution amounts to 30 bits. On account of the high number of measuring steps resulting (more than 1 billion), this type of encoder can be used to divide very long linear distances into small measuring steps. The device is designed for shaft assembly and is available in servo flange or clamping flange design.

## Technical Data

### General specifications

Detection type	photoelectric sampling
Device type	Multiturn absolute encoder

### Functional safety related parameters

MTTF <sub>d</sub>	120 a
Mission Time (T <sub>M</sub> )	20 a
L <sub>10</sub>	7.7 E+9 at 3000 rpm
Diagnostic Coverage (DC)	0 %

### Electrical specifications

Operating voltage U <sub>B</sub>	10 ... 30 V DC
No-load supply current I <sub>0</sub>	max. 270 mA at 10 V DC max. 115 mA at 24 V DC
Time delay before availability t <sub>v</sub>	< 250 ms
Linearity	± 2 LSB at 16 Bit, ± 1 LSB at 13 Bit
Output code	binary code
Code course (counting direction)	programmable, cw ascending (clockwise rotation, code course ascending) cw descending (clockwise rotation, code course descending)

### Interface

Interface type	PROFINET
Resolution	
Single turn	up to 16 Bit
Multiturn	up to 14 Bit
Overall resolution	up to 30 Bit
Transfer rate	100 MBit/s
Cycle time	≤ 1 ms (IRT) , ≤ 10 ms (RT)

### Connection

Terminal compartment	see ordering information
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### Standard conformity

Degree of protection	DIN EN 60529, IP66
Climatic testing	DIN EN 60068-2-3, no moisture condensation
Emitted interference	EN 61000-6-4:2007
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	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)

### Mechanical specifications

Material	
Combination 1	housing: anodized aluminum flange: anodized aluminum shaft: Stainless steel 1.4401 / AISI 316
Combination 2 (Inox)	housing: stainless steel 1.4404 / AISI 316L flange: stainless steel 1.4404 / AISI 316L shaft: Stainless steel 1.4401 / AISI 316
Mass	approx. 2600 g (combination 1) approx. 3900 g (combination 2)
Rotational speed	max. 3000 min <sup>-1</sup>
Moment of inertia	180 gcm <sup>2</sup>
Starting torque	≤ 4 Ncm
Shaft load	
Axial	60 N
Radial	80 N

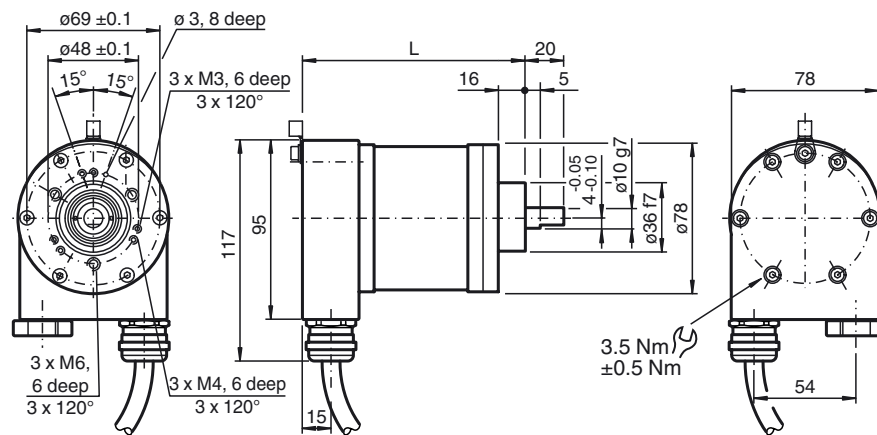
### Data for application in connection with hazardous areas

EU-type examination certificate	ITS 15 ATEX 18372X IECEx ITS 15.0061X
Marking	⊕ II 2G Ex d IIC T5 Gb ⊕ II 2D Ex tb IIIC T100°C Db
Directive conformity	
Directive 2014/34/EU	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

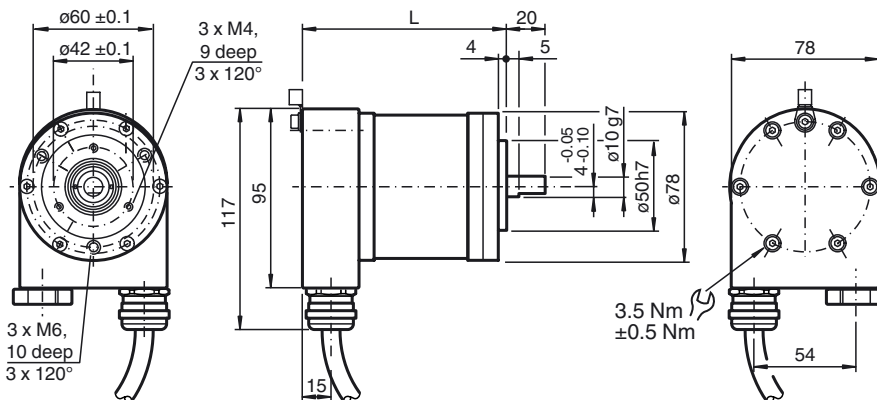
Dimensions

Encoder length L

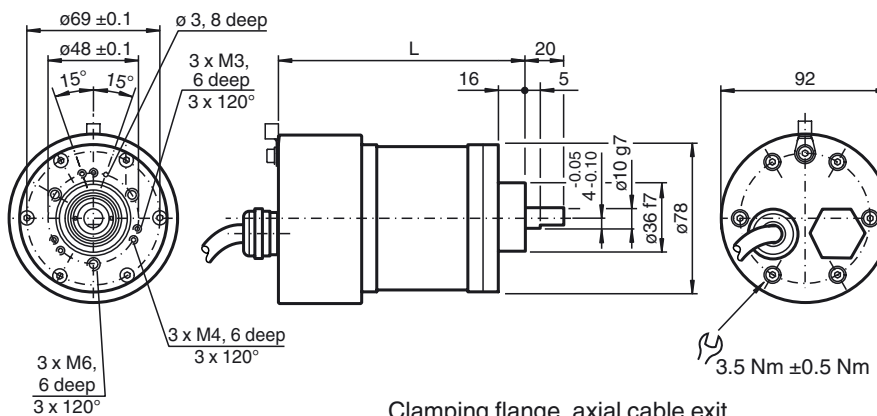
Version		Length L
Radial cable exit	Clamping flange	134 mm
	Servo flange	134 mm
Axial cable exit	Clamping flange	150 mm
	Servo flange	150 mm



Clamping flange, cable exit radial

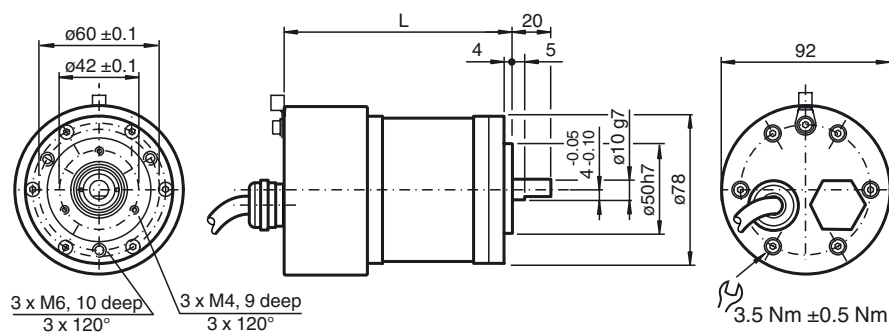


Servo flange, radial cable exit



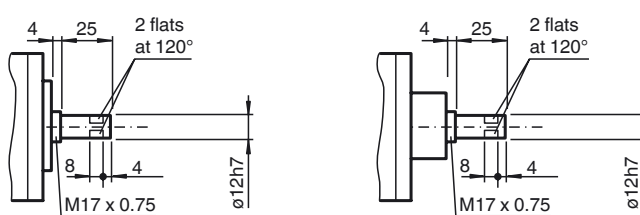
Clamping flange, axial cable exit

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Servo flange, axial cable exit

Shaft 12 mm



**Electrical connection**

Signal	Terminal compartment
Ground wire	Grounding terminal
GND (rotary encoder)	1
+U <sub>b</sub> (rotary encoder)	2
Not connected	3
Not connected	4
Rx-	5
Tx-	6
Rx+	7
Tx+	8

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

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Ordering information



- Number of singleturn bits**
  - 13 8192
  - 16 65536
- Number of multiturn bits**
  - 12 4096
  - 14 16384
- Housing material**
  - N Aluminum
  - I INOX 1.4404 (AISI 316L)
- Output code**
  - B Binary
- Option**
  - P Profinet
- Exit position**
  - A Axial
  - R Radial
- Connection type**
  - 00 Terminal compartment, with 2 x M20 x 1,5 threads for cable glands
  - DR Terminal compartment, 2 cable glands
  - KR Terminal compartment, 1 cable gland, 1 stopping plug
- Flange version**
  - 1 Clamping flange
  - 2 Servo flange
- Shaft dimension**
  - 01 Shaft Ø10 mm x 20 mm
  - 02 Shaft Ø12 mm x 25 mm
- Option 1**
  - E Explosion-proof, standard IP66
- Functional principle**
  - M Multiturn
- Shaft version**
  - V Solid shaft
- Data format**
  - E Ethernet

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