



## Model Number

10-\*\*\*\*1

## Features

- Industrial standard housing Ø58 mm
- Up to 5000 ppr
- Servo flange, square flange or clamping flange
- Special flanges with special shafts on demand
- Stainless steel version
- 10 V ... 30 V with short-circuit proof push-pull output

## Description

Practical applications have shown again and again that standards are useful and beneficial. There are always applications, however, in which the desired result cannot be obtained with a standard incremental rotary encoder.

Even the mechanical interface varies quite often in accordance with the overall conditions of the application, as is shown by an example:

If you intend to use the incremental rotary encoder with a measurement wheel, we recommend a shaft diameter of 10 mm. Standardisation prescribes a clamping flange in this case. This will be useful in most cases, but not in all.

Series 10 allows you to create individual combinations of specific features. In this way, the shaft with a diameter of 10 mm from the example can also be combined with a square flange.

Normally, the housing of an incremental rotary encoder is manufactured from an aluminium cold extrusion part. For series 10, the housing is produced from a zinc pressure diecast. This gives an extra level of sturdiness to the incremental rotary encoder. If a pressure diecast housing is not sufficient, the housing and flange can also be manufactured from stainless steel.

Up to a limit of 1500 pulses, the pulse disk is designed using plastic. In addition, pulse disks are also manufactured from glass.

These properties make series 10 the most versatile of our incremental rotary encoders with a diameter of 58 mm.

## Technical data

### General specifications

Pulse count max. 5000

### Electrical specifications

Operating voltage  $U_B$  10 ... 30 V DC

No-load supply current  $I_0$  max. 80 mA

### Output

Output type push-pull, incremental

Voltage drop  $U_d$  < 4 V

Load current max. per channel 40 mA, short-circuit protected, reverse polarity protected

Output frequency max. 100 kHz

Rise time 250 ns

De-energized delay  $t_{off}$  250 ns

### Connection

Connector type 42306 (M16), 6-pin

type 42308 (M16), 8-pin

type 9414 (M16), 5-pin

type 9416 (M23), 12-pin

Cable Ø6 mm, 4 x 2 x 0.14 mm<sup>2</sup>, 2 m

### Standard conformity

Degree of protection DIN EN 60529, IP65

Climatic testing DIN EN 60068-2-3, no moisture condensation

Emitted interference EN 61000-6-4:2007/A1:2011

Noise immunity EN 61000-6-2:2005

### Ambient conditions

Operating temperature

Glass disk -20 ... 70 °C (-4 ... 158 °F)

Plastic disk -20 ... 60 °C (-4 ... 140 °F)

Storage temperature

Glass disk -40 ... 70 °C (-40 ... 158 °F)

Plastic disk -40 ... 60 °C (-40 ... 140 °F)

### Mechanical specifications

Material

Combination 1 housing: diecast zinc  
flange: aluminum 3.1645  
shaft: stainless steel 1.4305 / AISI 303

Combination 2 (Inox) housing: stainless steel  
flange: stainless steel  
shaft: stainless steel

Mass

approx. 335 g (combination 1)

approx. 1400 g (combination 2)

Rotational speed

max. 10000 min<sup>-1</sup>

Moment of inertia

≤ 30 gcm<sup>2</sup>

Starting torque

≤ 1.5 Ncm

Shaft load

Axial 60 N

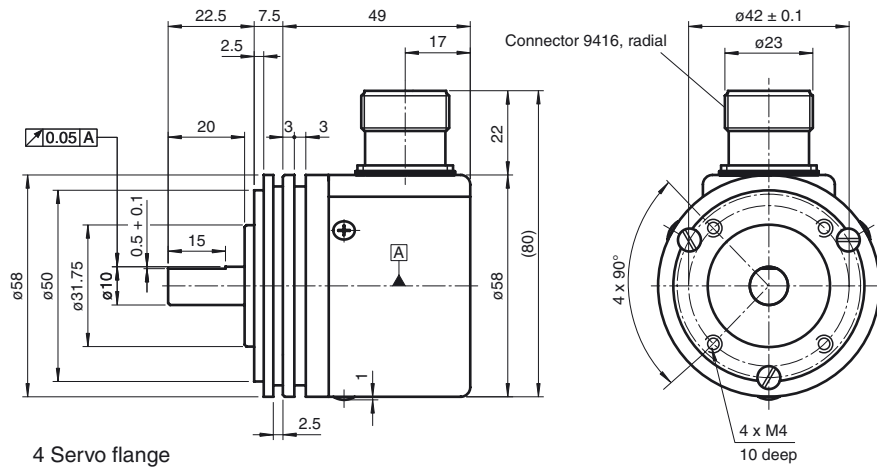
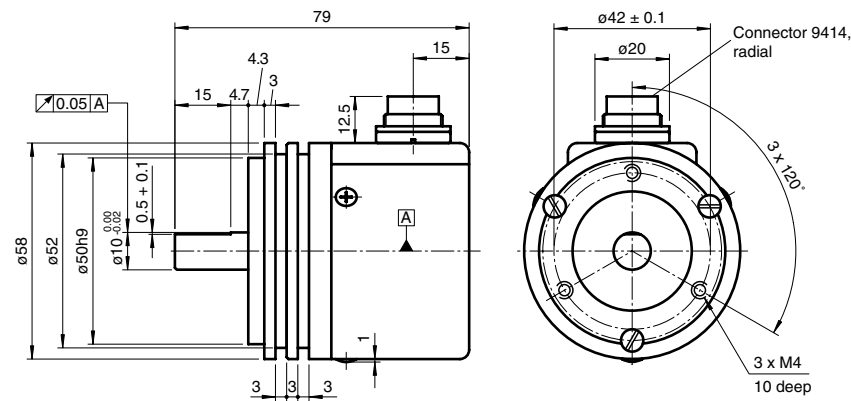
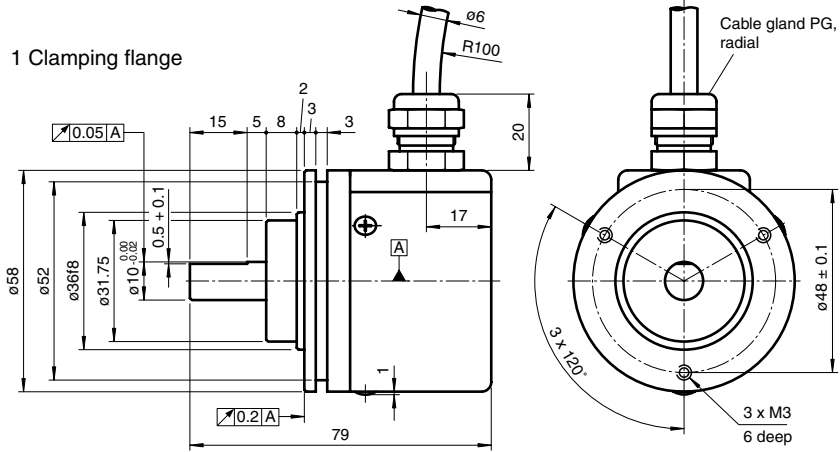
Radial 80 N

### Approvals and certificates

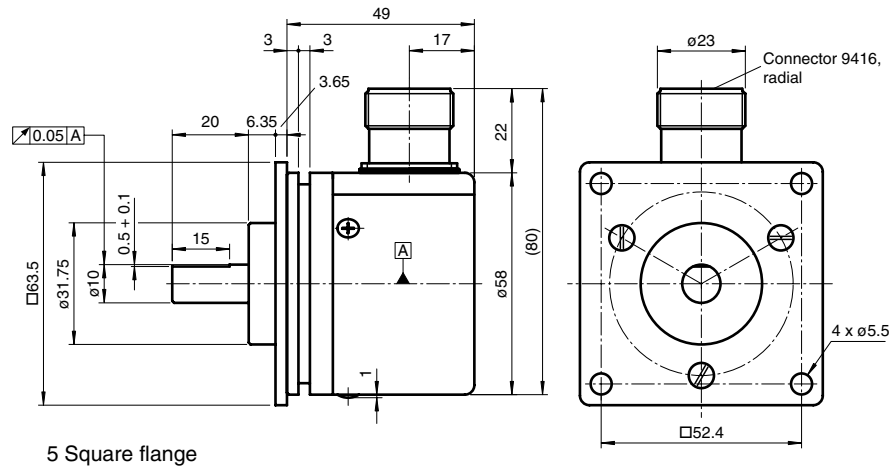
UL approval

cULus Listed, General Purpose, Class 2 Power Source

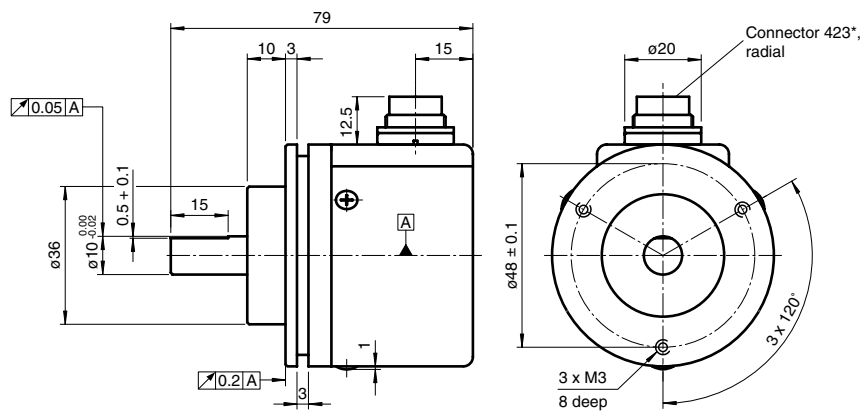
Dimensions



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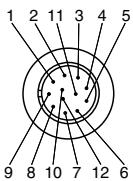




5 Square flange



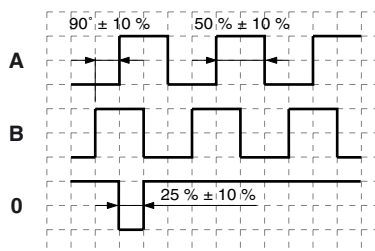
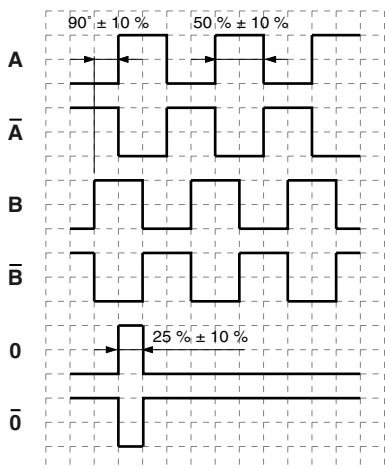
V Clamping flange

**Electrical connection**

Signal	Cable Ø6 mm, 8-core	Connector 9414, 5-pin	Connector 9416, 12-pin	Connector 42306, 6-pin	Connector 42308, 8-pin
GND	White	1	1	1	1
+U <sub>b</sub>	Brown	2	2	2	2
A	Green	3	3	3	3
B	Grey	4	4	4	4
$\bar{A}$	Yellow	-	5	-	5
$\bar{B}$	Pink	-	6	-	6
0	Blue	5	7	5	7
$\bar{0}$	Red	-	8	-	8
					

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Signal outputs



At the encoder version with output switching 1 and signal output 3 (see order code) the zero signal is inverted.

↻ cw - with view onto the shaft

Accessories

For type	Accessories	Name/defining feature	Order code
10-1	Couplings	D1: Ø10 mm, D2: Ø10 mm	9401
		D1: Ø10 mm, D2: Ø10 mm	9404
		D1: Ø10 mm, D2: Ø10 mm	9409
		D1: Ø10 mm, D2: Ø10 mm	KW
	Measurement wheels with circumference of 500 mm	Plastic	9101, 10
		Pimpled rubber	9102, 10
		Knurled aluminium	9103, 10
		Knurled plastic	9112, 10
	Measurement wheels with circumference of 200 mm	Plastic	9108, 10
		Pimpled rubber	9109, 10
		Knurled aluminium	9110, 10
		Knurled plastic	9113, 10
10-2	Couplings	D1: Ø6 mm, D2: Ø6 mm	9401
		D1: Ø6 mm, D2: Ø6 mm	9402
		D1: Ø6 mm, D2: Ø6 mm	9404
		D1: Ø6 mm, D2: Ø6 mm	9409
		D1: Ø6 mm, D2: Ø6 mm	KW
	Mounting aids	Mounting bracket	9203
		Mounting bracket	9213
		Mounting bracket and set	9300 and 9311-3
		Eccentric clamping elements	9310-3
All	Connectors	Cable socket	9414
		Cable socket	9416
		Cable socket	42306
		Cable socket	42308

For additional information on the accessories, please see the "Accessories" section.

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Order code



- Pulse count** 60, 100, 120, 180, 200, 250, 256, 300, 314, 360, 400, 500, 512, 600, 720, 900, 1000, 1024, 1200, 1250, 1500, 1800, 2000, 2048, 2400, 2500, 3000, 3600, 4000, 4096, 5000  
Further pulse counts on demand!
- Exit position**  
  - A** Axial\*
  - R** Radial
- Housing material**  
  - diecast zinc
  - I** Inox\*
- Output switching**  
  - 1** 10 V ... 30 V, push-pull
  - 6** 5 V, RS 422
  - X** 10 V ... 30 V, RS 422
- Connection type**  
  - 2** Plug connector type 9414, 5-pin
  - 3** Cable Ø6 mm, 2 x 4 x 0,14 mm<sup>2</sup>, 2 m
  - 5** Plug connector type 9416, 12-pin
  - C** Plug connector type 42306, 6-pin
  - D** Plug connector type 42308, 8-pin
- Signal output**  
  - 3** A + B + 0
  - 6** A + B + 0 and  $\bar{A} + \bar{B} + \bar{0}$
- Flange version** (Special flanges on demand)  
  - 1** Clamping flange
  - 3** Servo flange
  - 4** Servo flange with additional centring collar
  - 5** Square flange
  - V** Clamping flange
- Shaft dimension** (Special shafts on demand)  
  - 1** Shaft Ø10 mm x 20 mm
  - 2** Shaft Ø6 mm x 10 mm

\*For housing material I only axial connector output A possible.

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