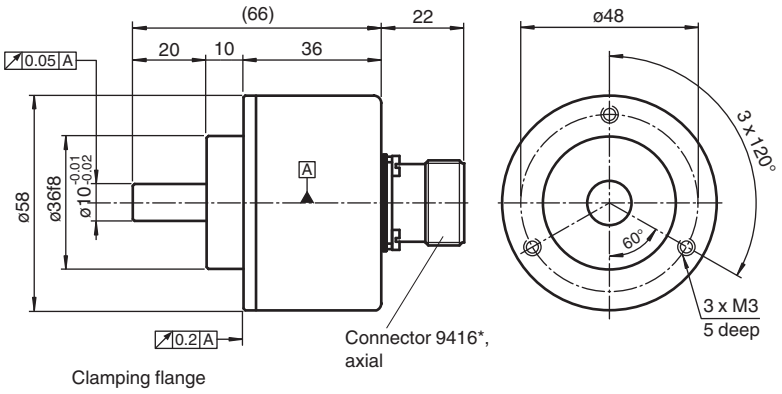


General Purpose Incremental Encoder

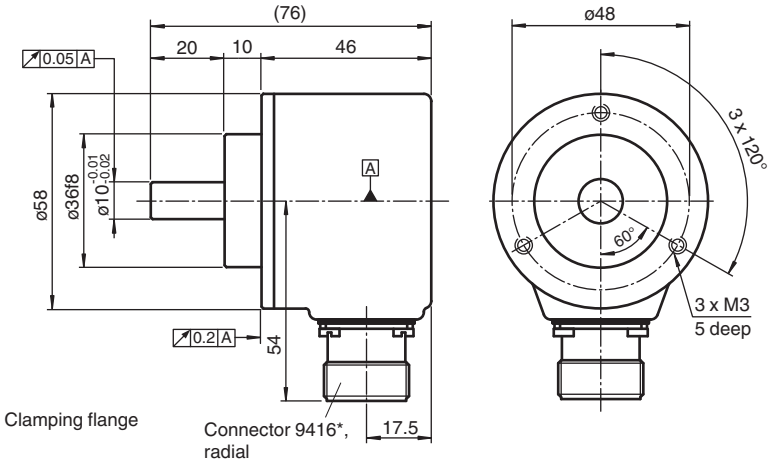
RVI58N-*******X

- Up to 5000 ppr
- Industrial standard housing Ø58 mm
- Servo or clamping flange
- 10 V ... 30 V with RS 422 interface

Dimensions



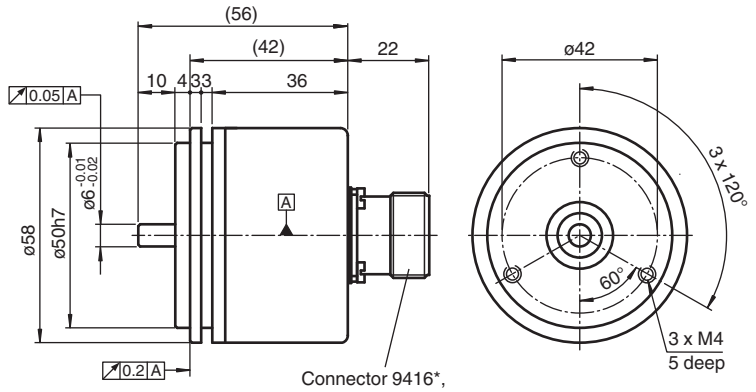
Clamping flange



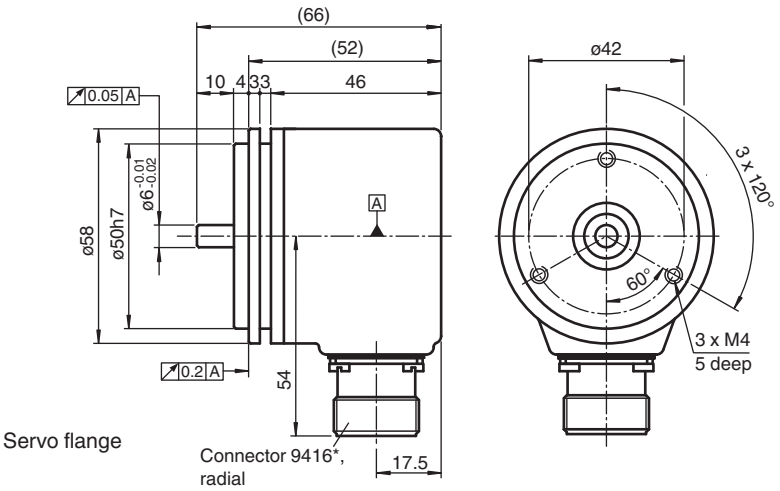
Clamping flange

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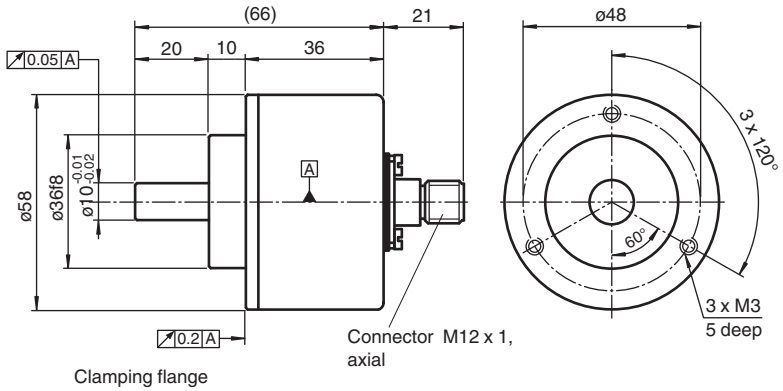
Dimensions



Servo flange



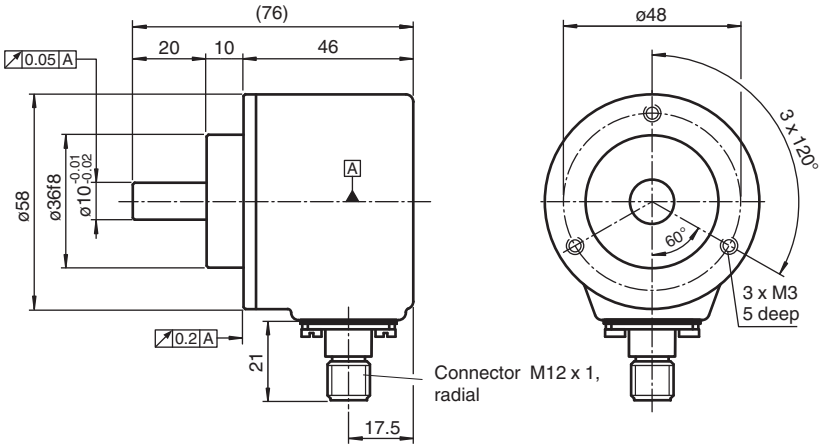
Servo flange



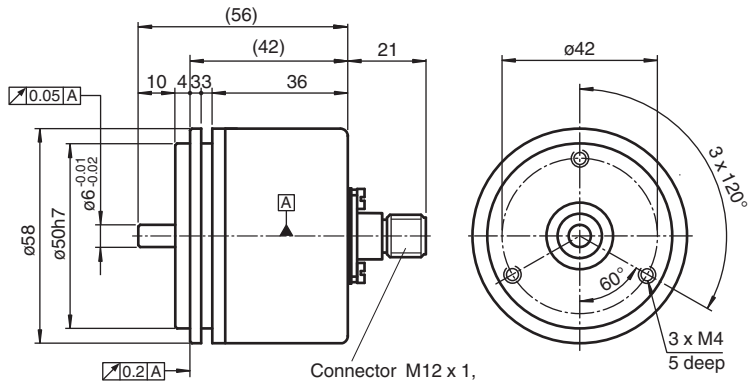
Clamping flange

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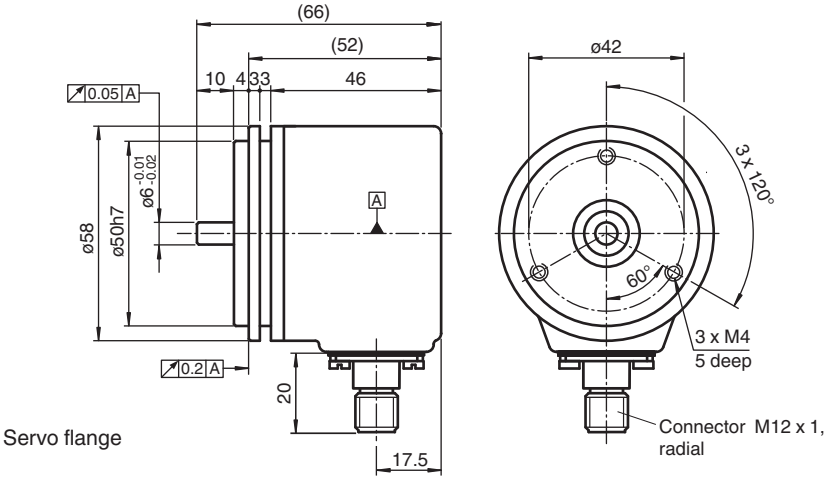
Dimensions



Clamping flange



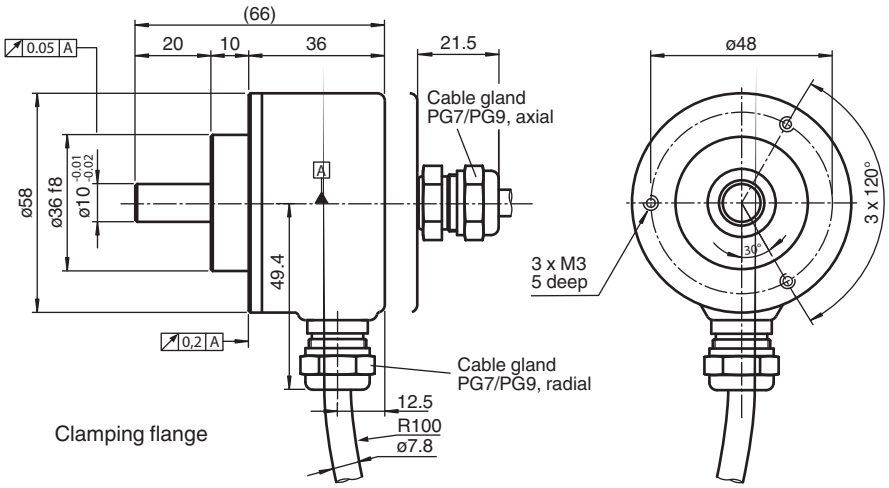
Servo flange

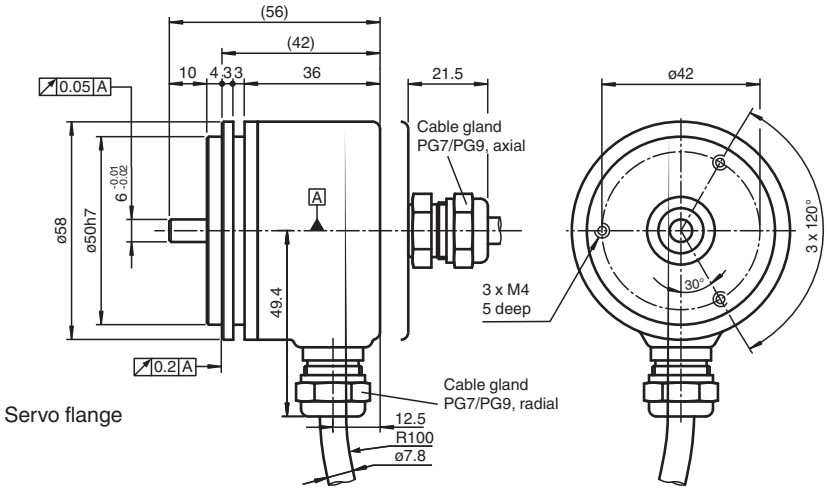


Servo flange

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Dimensions





Technical Data

General specifications		
Detection type		photoelectric sampling
Pulse count		max. 5000
Functional safety related parameters		
$MTTF_d$		140 a
Mission Time (T_M)		20 a
L_{10}		70 E+9 at 6000 rpm
Diagnostic Coverage (DC)		0 %
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
No-load supply current	I_0	max. 50 mA
Output		
Output type		RS 422, incremental
Load current		max. per channel 20 mA , conditionally short-circuit proof (not with U_b), reverse polarity protected
Output frequency		max. 200 kHz
Rise time		100 ns

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Technical Data

Connection	
Connector	type 9416 (M23), 12-pin, type 9416L (M23), 12-pin or M12 connector, 8-pin
Cable	Ø7.8 mm, 6 x 2 x 0.14 mm², 1 m
Standard conformity	
Degree of protection	DIN EN 60529, IP65
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
Approvals and certificates	
UL approval	cULus Listed, General Purpose, Class 2 Power Source
Ambient conditions	
Operating temperature	
Glass disk	-5 ... 80 °C (23 ... 176 °F) , movable cable -20 ... 80 °C (-4 ... 176 °F) , cable, fixed installation
Plastic disk	-5 ... 60 °C (23 ... 140 °F) , movable cable -20 ... 60 °C (-4 ... 140 °F) , cable, fixed installation
Storage temperature	
Glass disk	-40 ... 85 °C (-40 ... 185 °F)
Plastic disk	-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications	
Material	
Housing	powder coated aluminum
Flange	3.1645 aluminum
Shaft	Stainless steel 1.4305 / AISI 303
Mass	approx. 350 g
Rotational speed	max. 12000 min $^{-1}$
Moment of inertia	≤ 25 gcm²
Starting torque	≤ 1.5 Ncm
Shaft load	
Axial	40 N at max. 6000 min^{-1} 10 N at max. 12000 min^{-1}
Radial	60 N at max. 6000 min^{-1} 20 N at max. 12000 min^{-1}
Dimensions	
Diameter	58 mm

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Function

Compatibility says it all for this incremental rotary encoder.

All six output channels are fitted for this incremental rotary encoder. It can thus be used universally in many different applications.

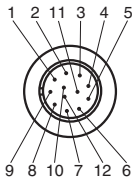
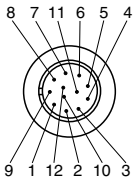
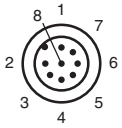
Focussing on the designs that are most often required has allowed us to offer rapid availability at an attractive price.

The pulse disk is designed in plastic up to 1500 pulses. Beyond that, glass is used.

This incremental rotary encoder is available either in clamping flange design with a shaft 10 mm in diameter x 20 mm or in servo flange design with a shaft 6 mm in diameter x 10 mm.

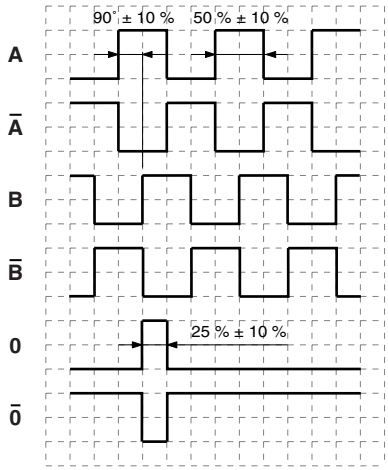
The electrical connection is made by a 8-pin or a 12-pin round plug connector. It is also possible to obtain a version with a cable connector.

Connection

Signal	Cable	Connector 9416	Connector 9416L	Connector M12 x 1
GND	White	10	10	1
U_b	Brown	12	12	2
A	Green	5	5	3
B	Grey	8	8	5
$\overline{A}$	Yellow	6	6	4
$\overline{B}$	Pink	1	1	6
0	Blue	3	3	7
$\overline{0}$	Red	4	4	8
U_b Sens *)	Violet	2	2	-
NC	Grey/Pink	7	7	-
Screen	-	Housing	Housing	Housing
NC	-	9	9	-
GND Sens *)	Black	11	11	-
				

*) only for devices with 5 V supply and RS 422 interface (output circuit 6)

Signal outputs



↻ cw - with view onto the shaft

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Order code

R	V	I	5	8	N	–						6		N	–					

Pulse count 100, 360, 500, 512, 1000, 1024, 1250, 2048, 2500, 3600, 4096, 5000

Option
N Normal

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 $\overline{A}$ + $\overline{B}$ + $\overline{0}$

Exit position
A Axial
R Radial

Connection type
AA Plug connector type 9416, 12-pin
AB Plug connector type 9416L, 12-pin
BE Plug connector M12 x 1, 8-pin
K1 Cable Ø7.8 mm, 6 x 2 x 0.14 mm², 1 m

Shaft dimension/flange version
011 Shaft Ø10 mm x 20 mm with clamping flange
032 Shaft Ø6 mm x 10 mm with servo flange
044 Shaft Ø10 mm x 20 mm (flat 1 mm x 20 mm) with clamping flange

Housing material
N Aluminium, powder coated

Shaft version
V Solid shaft

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Installation instructions

Anti-interference measures

The use of highly sophisticated microelectronics requires a consistently implemented anti-interference and wiring concept. This becomes all the more important the more compact the constructions are and the higher the demands are on the performance of modern machines.

The following installation instructions and proposals apply for "normal industrial environments". There is no ideal solution for all interfering environments.

When the following measures are applied, the encoder should be in perfect working order:

- With RS 422 Interface devices and long cables, a line-termination by a suitable termination resistor is required.
- A shielded cable should be used at installation. For the connection of RS 422 devices the wires must be twisted in pairs.
- The wiring of the encoder should be laid at a large distance to energy lines which could cause interferences.
- Cable cross-section of the screen at least 4 mm^2.
- Cable cross-section at least 0,14 mm^2.
- The wiring of the screen and 0 V should be arranged radially, if and when possible.
- Do not kink or jam the cables.
- Adhere to the minimum bending radius of 10 mm and avoid tensile as well as shearing load.

Operating instructions

Every encoder manufactured by Pepperl+Fuchs leaves the factory in a perfect condition. In order to ensure this quality as well as a faultless operation, the following specifications have to be taken into consideration:

- Avoid any impact on the housing and in particular on the encoder shaft as well as the axial and radial overload of the encoder shaft.
- The accuracy and service life of the encoder is guaranteed only, if a suitable coupling and / or torque support is used.
- Any wiring work has to be carried out with the system in a dead condition.
- The maximum operating voltages and output currents must not be exceeded. The devices have to be operated at extra-low safety voltage.
- Sensor wires are connected internally to the supply voltage and may be used for Voltage adjustment or -control in case of long cables.
- Unused sensor wires should either isolated or connected to the corresponding supply potentials (GND Sens connected to GND and Ub Sens connected to UB).
- Unused outputs must be isolatd before initial use of the encoder.

Notes on connecting the electric screening

The immunity to interference of a plant depends on the correct screening. In this field installation faults occur frequently. Often the screen is applied to one side only, and is then soldered to the earthing terminal with a wire, which is a valid procedure in LF engineering. However, in case of EMC the rules of HF engineering apply.

One basic goal in HF engineering is to pass the HF energy to earth at an impedance as low as possible as otherwise energy would discharge into the cable. A low impedance is achieved by a large-surface connection to metal surfaces.

The following instructions have to be observed:

- Apply the screen on both sides to a "common earth" in a large surface, if there is no risk of equipotential currents.
- The screen has to be passed behind the insulation and has to be clamped on a large surface below the tension relief.
- In case of cable connections to screw-type terminals, the tension relief has to be connected to an earthed surface.
- If plugs are used, metallised plugs only should be fitted (such as sub D plugs with metallised housing). Please observe the direct connection of the tension relief to the housing.

Advantage:	metalised connector, shield clamped with the strain relief clamp
Disadvantage:	soldering shield on



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