



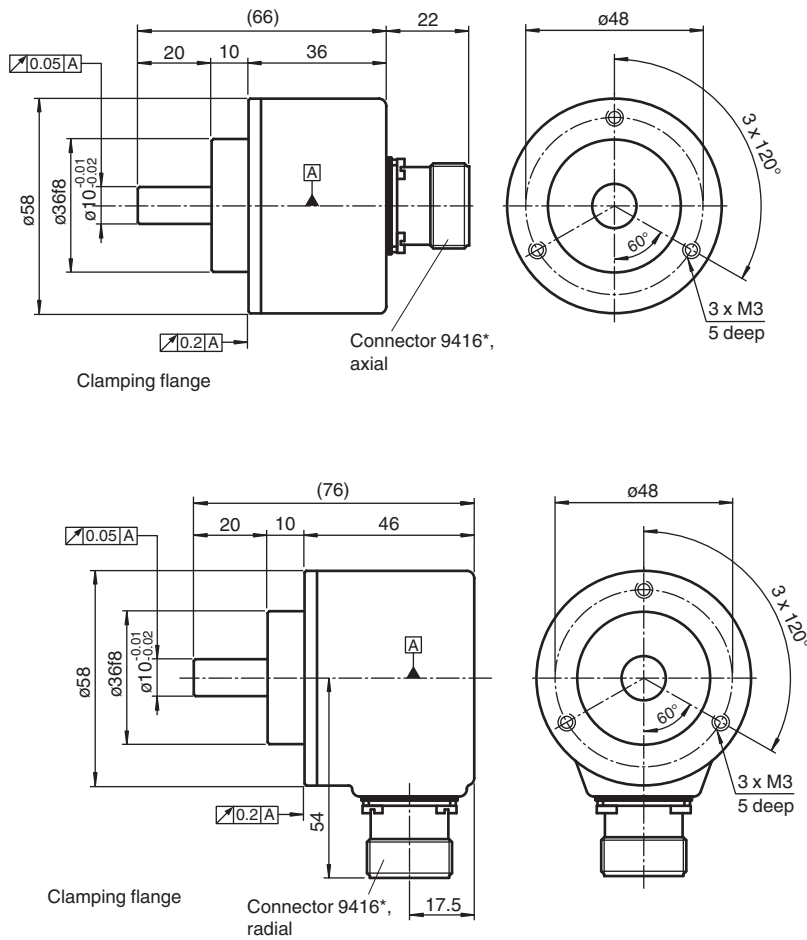
General Purpose Incremental Encoder

RVI58N-*****1

- Up to 5000 ppr
- Industrial standard housing $\varnothing 58$ mm
- Servo or clamping flange
- 10 V ... 30 V with short-circuit proof push-pull output



Dimensions



Release date: 2022-04-21 Date of issue: 2022-12-12 Filename: t151794_eng.pdf

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

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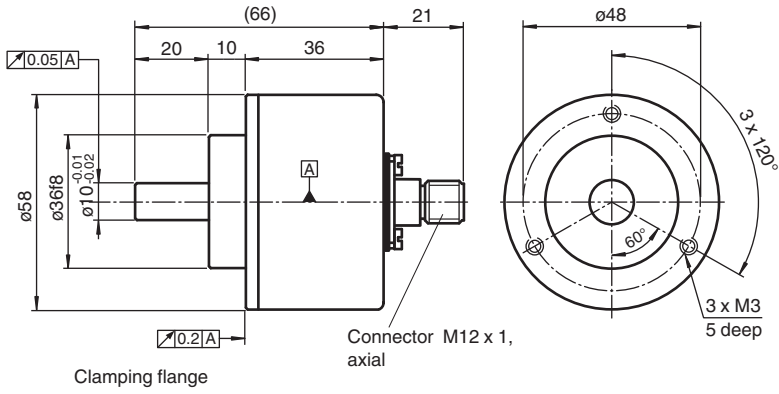
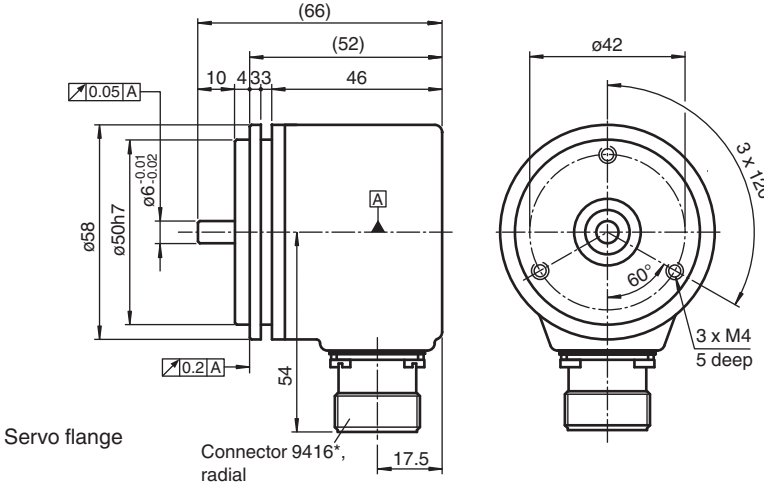
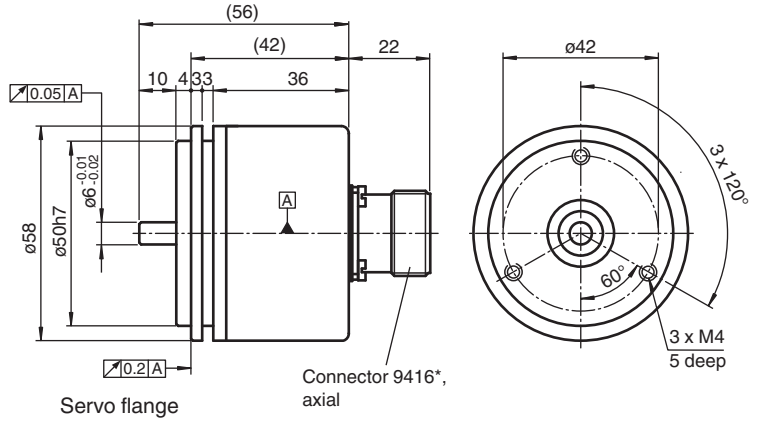
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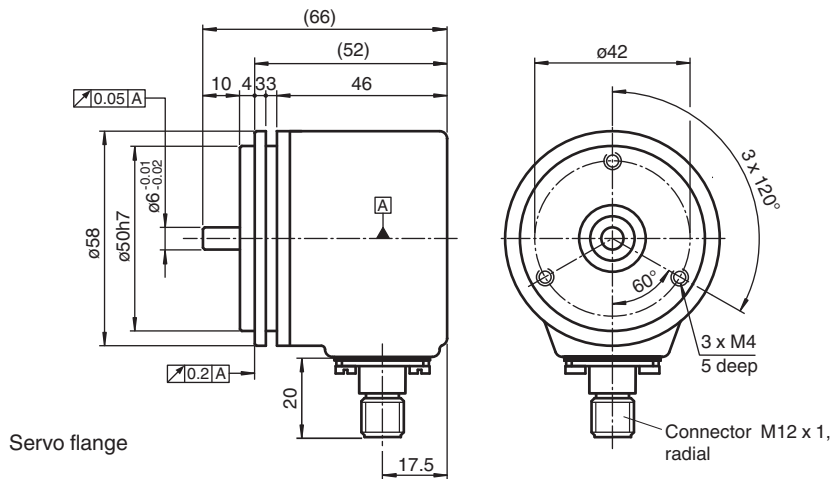
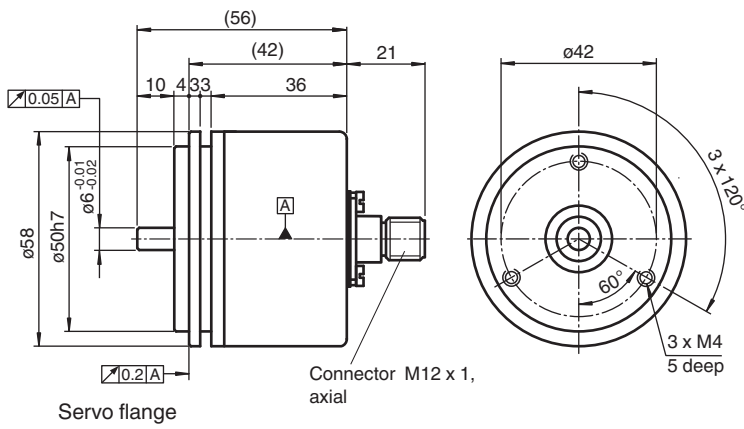
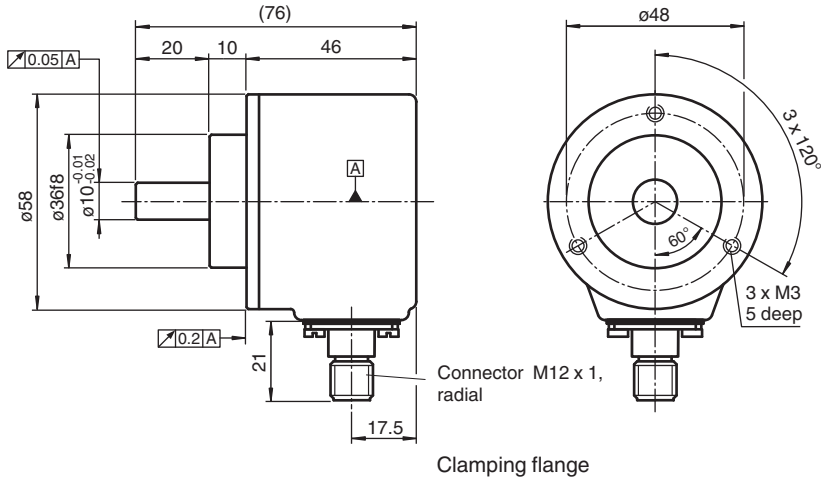
Dimensions



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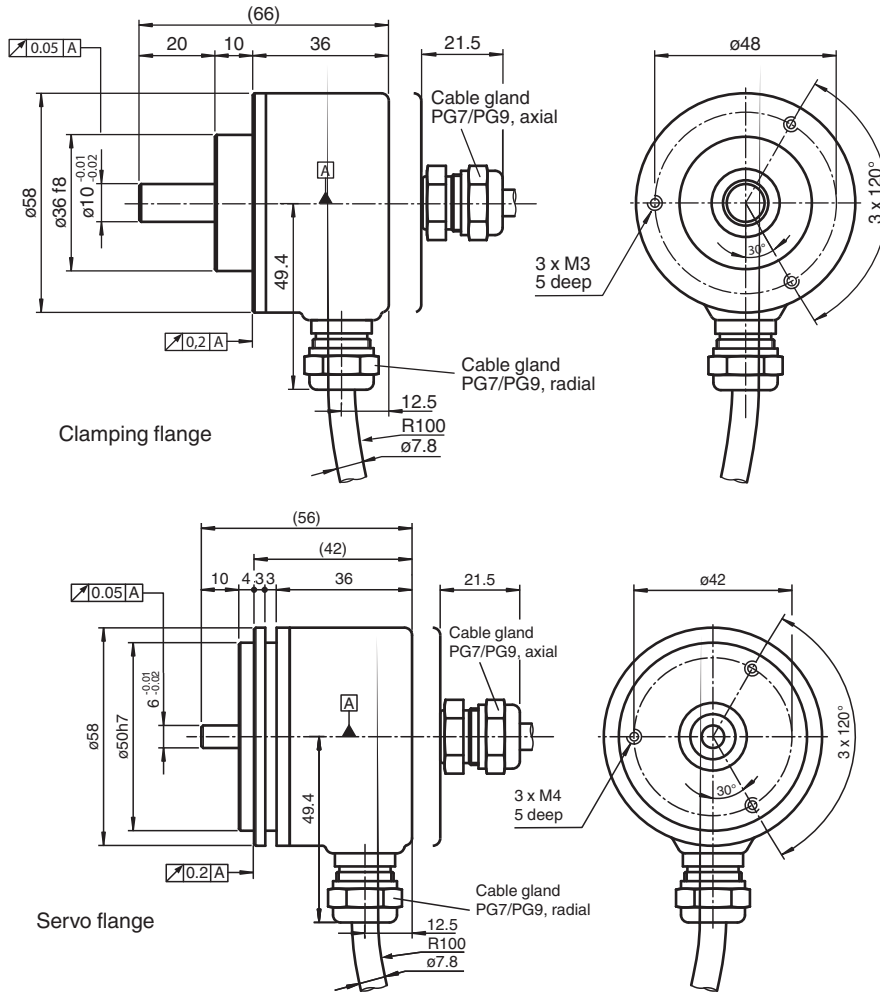
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Dimensions



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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. 60 mA
Output	
Output type	push-pull, incremental
Voltage drop	U _d < 3 V
Load current	max. per channel 40 mA , short-circuit protected, reverse polarity protected
Output frequency	max. 200 kHz
Rise time	400 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 mm ² , 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) , fixed cable
Plastic disk		-5 ... 60 °C (23 ... 140 °F) , movable cable -20 ... 60 °C (-4 ... 140 °F) , fixed cable
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 gcm ²
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

Accessories

	9203	Angled flange
	9300	Mounting bracket for servo flange
	9102, 10	Measuring wheel for shaft diameter 10 mm
	9103, 10	Measuring wheel for shaft diameter 10 mm
	9108, 10	Measuring wheel for shaft diameter 10 mm
	9109, 10	Measuring wheel for shaft diameter 10 mm

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
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Accessories

	9110, 10	Measuring wheel for shaft diameter 10 mm
	9112, 10	Measuring wheel for shaft diameter 10 mm
	9113, 10	Measuring wheel for shaft diameter 10 mm
	9108, 6	Measuring wheel
	9109, 6	Measuring wheel for shaft diameter 6 mm
	9110, 6	Measuring wheel for shaft diameter 6 mm
	9113, 6	Measuring wheel for shaft diameter 6 mm
	MBT-36ALS	Spring-loaded mounting bracket with a diameter of 36 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.

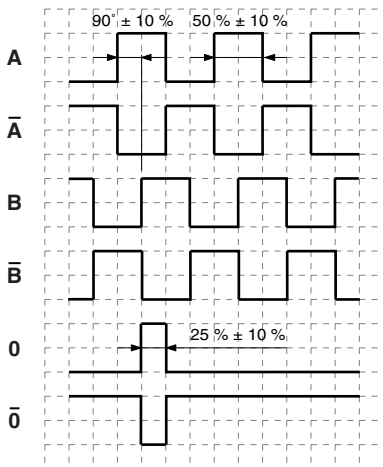
The electrical connection is made by a 8-pin or a 12-pin round plug connector. It is also possible to obtain a version with a cable connector.

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
\bar{A}	Yellow	6	6	4
\bar{B}	Pink	1	1	6
0	Blue	3	3	7
$\bar{0}$	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	-				
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Shaft version
V Solid shaft

Housing material
N Aluminium, powder coated

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

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

Exit position
A Axial
R Radial

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

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

Option
N Normal

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

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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 mm².
- Cable cross-section at least 0,14 mm².
- 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 isolated before initial use of the encoder.

Notes on connecting the electric screening

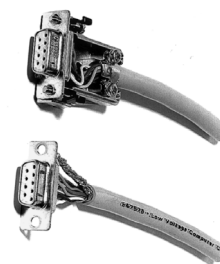
The immunity to interference of a plant depends on the correct screening. In this field installation faults occur frequently. Often the screen is applied to one side only, and is then soldered to the earthing terminal with a wire, which is a valid procedure in LF engineering. However, in case of EMC 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:	metallised connector, shield
relief	clamped with the strain clamp
Disadvantage:	soldering shield on



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