

# Incremental rotary encoder

## ENI58IL-S

- Housing  $\varnothing$  58 mm
- Solid shaft
- Servo or clamping flange
- Up to 5000 ppr
- Universal output driver
- BlueBeam technology for ultimate precision

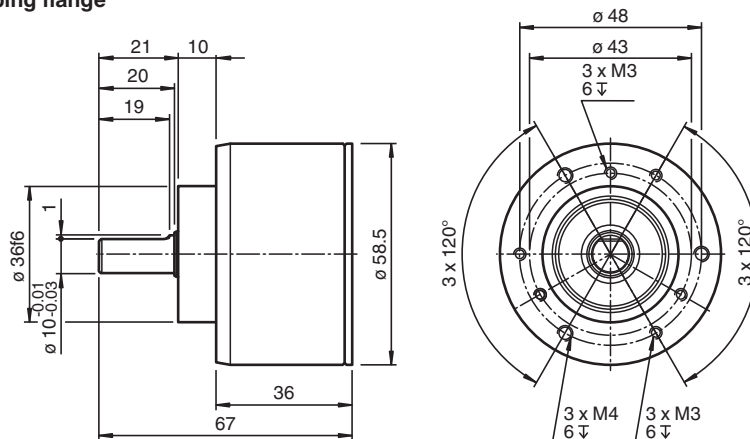


### Function

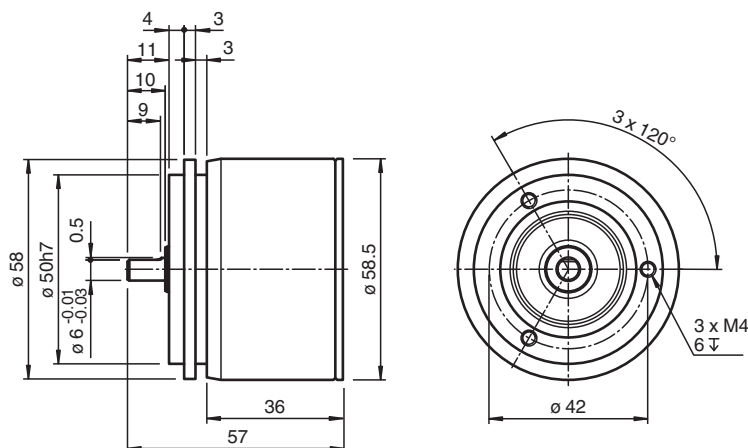
The ENI58IL impresses with its modular design, which is available over all mechanical and electrical interfaces. The ENI58IL is the best solution for all common applications, coupled with its high robustness, high reliability and versatility. With the high-precision BlueBeam technology and innovative housing design, the ENI58IL is the new market standard for incremental encoders.

### Dimensions

#### Clamping flange



#### Servo flange



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

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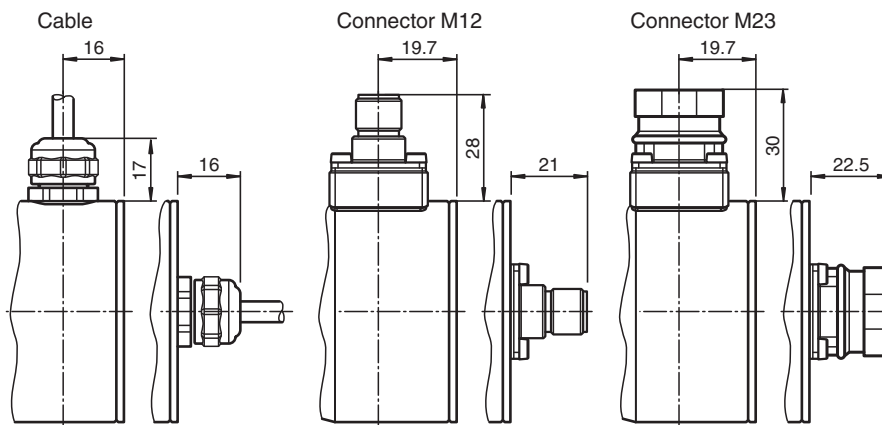
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## Dimensions

### Connections



## Technical Data

### General specifications

Detection type	photoelectric sampling
Linearity error	$\pm 0.025^\circ$
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>	70 E+9 at 6000 rpm
Diagnostic Coverage (DC)	0 %

### Electrical specifications

Operating voltage	U <sub>B</sub>	4.75 ... 30 V DC
No-load supply current	I <sub>0</sub>	max. 50 mA

### Output

Output type	push-pull or RS422 (universal output driver, output level depending on input voltage)
Load current	max. per channel 40 mA , short-circuit protected, reverse polarity protected
Output frequency	max. 400 kHz
Rise time	300 ns
Phase position A to B	
Pulse counts < 3600	90° ± 9° electrical
Pulse counts ≥ 3600	90° ± 15° electrical
Duty cycle	1/2 ± 10 %

### Connection

Connector	M12 connector, 8-pin M12 connector, 5 pin M23 connector, 12-pin
Cable	Ø6 mm, 4 x 2 x 0.14 mm <sup>2</sup> Fixed cable with M12 plug. 5-pin Fixed cable with M12 plug. 8-pin

### Standard conformity

Degree of protection	DIN EN 60529, IP65, 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, 300 g, 6 ms
Vibration resistance	DIN EN 60068-2-6, 30 g, 10 ... 2000 Hz

### Approvals and certificates

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**Technical Data**

UL approval	E223176 , cULus Listed, General Purpose, Class 2 Power Source, Type 1 enclosure , if UL marking is marked on the product. For use in NFPA 79 Applications only. adapters providing field wiring on request
Maximum permissible ambient temperature	max. 80 °C (max. 176 °F)
<b>Ambient conditions</b>	
Operating temperature	-40 ... 85 °C (-40 ... 185 °F) , fixed cable -5 ... 85 °C (23 ... 185 °F) , movable cable
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
<b>Mechanical specifications</b>	
Material	
Housing	3.2315 aluminum (AlMgSi1, saltwater-proof)
Flange	3.2315 aluminum (AlMgSi1, saltwater-proof)
Shaft	Solid shaft Stainless steel
Mass	< 300 g without cable
Rotational speed	max. 12000 min <sup>-1</sup> for IP65 , max. 6000 min <sup>-1</sup> for IP67
Moment of inertia	≤ 35 gcm <sup>2</sup>
Starting torque	≤ 1 Ncm for IP65 , ≤ 2.5 Ncm for IP67
Shaft load	
Axial	40 N at max. 6000 min <sup>-1</sup> 10 N at max. 12000 min <sup>-1</sup>
Radial	80 N at max. 6000 min <sup>-1</sup> 20 N at max. 12000 min <sup>-1</sup>

**Type Code**

**Structure of the type code**

<b>E</b>	<b>N</b>	<b>I</b>	<b>5</b>	<b>8</b>	<b>I</b>	<b>L</b>	<b>-</b>	<b>S</b>	(1)	(1)	(2)	(2)	(3)	-	(4)	(4)	(4)	(4)	(5)	(5)	(5)	-	(6)	(7)	(7)
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<b>ENI</b>	<b>Device type</b>
ENI	Incremental rotary encoder

<b>58</b>	<b>Size</b>
58	Housing diameter 58 mm

<b>IL</b>	<b>Version</b>
IL	Industrial Line

<b>S</b>	<b>Shaft type</b>
S	Solid shaft

<b>(1) (1)</b>	<b>Shaft diameter</b>
06	6 x 10 mm
08	8 x 20 mm
10	10 x 20 mm
12	12 x 20 mm

<b>(2) (2)</b>	<b>Flange</b>
CA	Clamping flange
SA	Servo flange

<b>(3)</b>	<b>Degree of protection</b>
5	IP65
7	IP67

<b>(4) (4) (4) (4)</b>	<b>Pulse count</b>
0025	25 pulses
0100	100 pulses
0120	120 pulses
0125	125 pulses
0200	200 pulses
0256	256 pulses
0360	360 pulses
0500	500 pulses
1000	1000 pulses

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## Type Code








(4) (4) (4) (4)	Pulse count
1024	1024 pulses
1250	1250 pulses
1500	1500 pulses
1800	1800 pulses
2000	2000 pulses
2048	2048 pulses
2500	2500 pulses
3600	3600 pulses
4000	4000 pulses
4096	4096 pulses
5000	5000 pulses

(5) (5) (5)	Electrical interface
UD1	Universal output driver, $U_B$ 5 V ... 30 V
UD2	RS422, $U_B$ 5 V ... 30 V

(6)	Connection alignment
A	Axial
R	Radial

(7) (7)	Connection type
B2	Fixed cable with M12 plug, 8-pin, 1 m
B4	Fixed cable with M12 plug, 5-pin, 1 m
C1	Cable, 1 m
C2	Cable, 2 m
C3	Cable, 3 m
C5	Cable, 5 m
CA	Cable, 10 m
AA	M23 device plug, clockwise (type 9416)
AB	M23 device plug, counterclockwise (type 9416L)
BE	M12 device plug, 8-pin (type V19)
BD	M12 device plug, 5-pin (type V15)

## Accessories

	<b>MBT-36ALS</b>	Spring-loaded mounting bracket with a diameter of 36 mm
	<b>9203</b>	Angled flange
	<b>9408 10*10</b>	Double loop coupling 10 x 10
	<b>V19-G-5M-PVC-TP</b>	Female cordset, M12, 8-pin, shielded, PVC cable
	<b>V19-G-2M-PVC-TP</b>	Female cordset, M12, 8-pin, shielded, PVC cable
	<b>V19-G-10M-PVC-TP</b>	Female cordset, M12, 8-pin, shielded, PVC cable
	<b>9416-*M-12P-RXI58</b>	Female cordset, M23, 12-pin, PVC cable, 11-core

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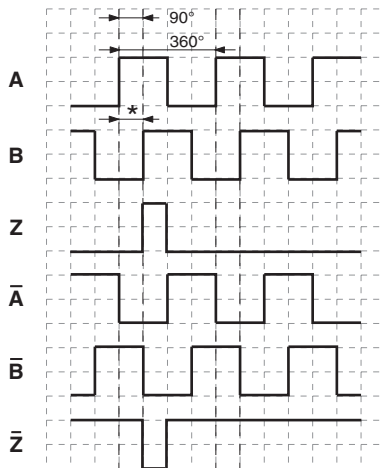
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**Connection**

Signal	Cable	Connector M23, 12-pin, clockwise	Connector M23, 12-pin, counterclockwise	Connector M12 x 1, 8-pin	Connector M12 x 1, 5-pin
GND	White	10	10	1	3
U <sub>b</sub>	Brown	12	12	2	1
A	Green	5	5	3	2
B	Grey	8	8	5	4
$\bar{A}$	Yellow	6	6	4	-
$\bar{B}$	Pink	1	1	6	-
Z	Blue	3	3	7	5
$\bar{Z}$	Red	4	4	8	-
NC	Violet	2	2	-	-
NC	Grey/Pink	7	7	-	-
NC	-	9	9	-	-
NC	Black	11	11	-	-
Shielding	Shield	Housing	Housing	Housing	Housing
	<p><b>Note:</b> Unused cores must be insulated individually before commissioning in order to avoid interference.</p>				

**Operation**

**Signal outputs**



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

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