



# Incremental rotary encoder ENI58IL-H

- Housing Ø 58 mm
- Hollow shaft
- Up to 5000 ppr
- Universal output driver
- BlueBeam technology for ultimate precision

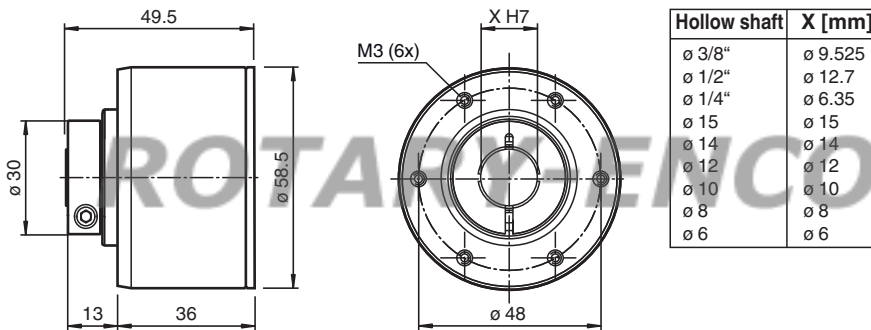


## Function

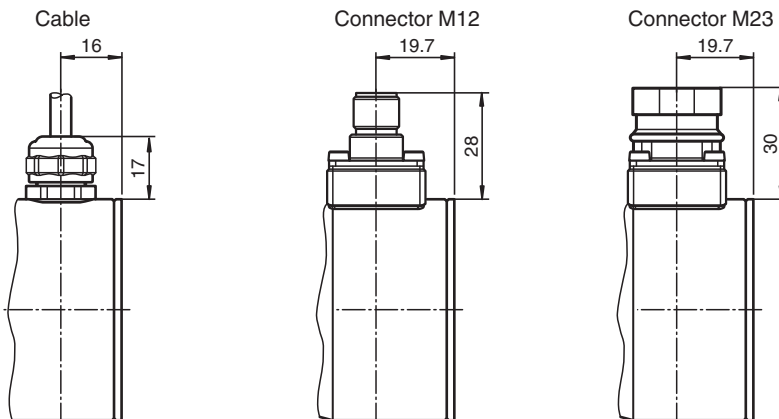
The ENI58IL impresses with its modular design, which is available over all mechanical and electrical interfaces. The ENI58IL is the best solution for all common applications, coupled with its high robustness, high reliability and versatility. With the high-precision BlueBeam technology and innovative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

## Dimensions

Hollow shaft with cable and connector M12, M23



## Connections



Release date: 2020-07-20 Date of issue: 2020-07-20 Filename: t182003\_eng.pdf

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

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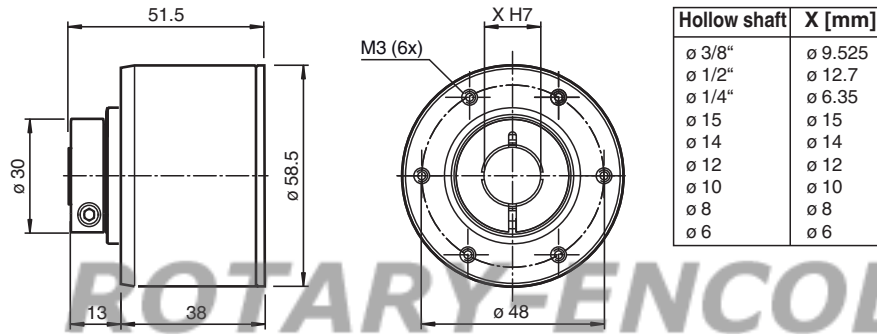
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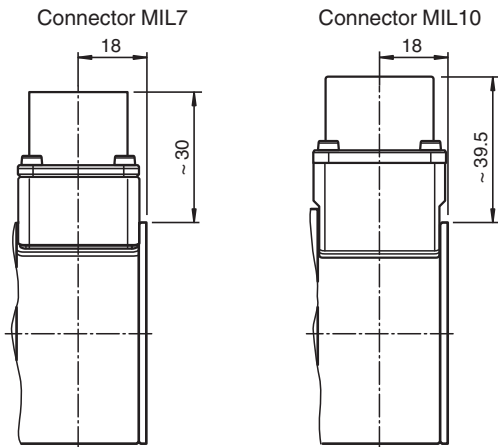
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Hollow shaft with connector MIL7, MIL10



Connections



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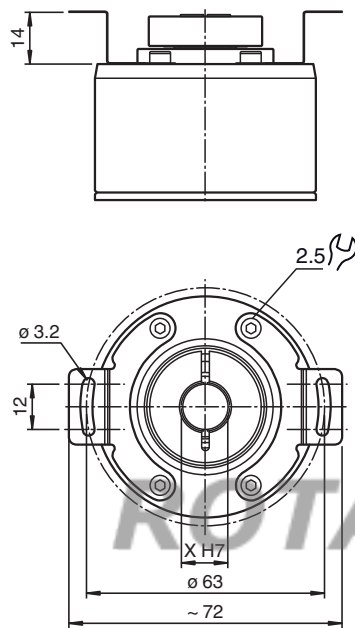
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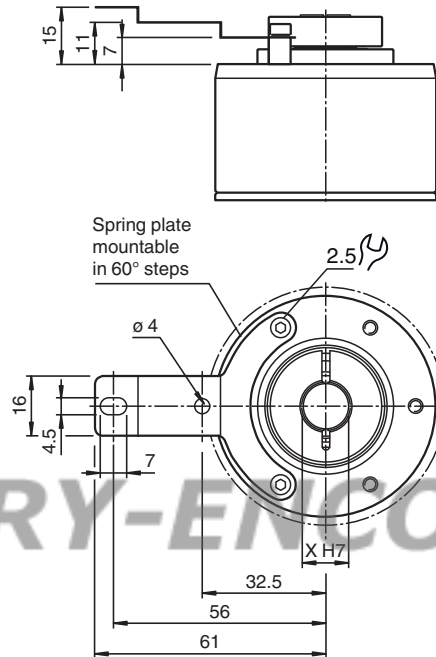
**Spring plates**

DA / BA / JA

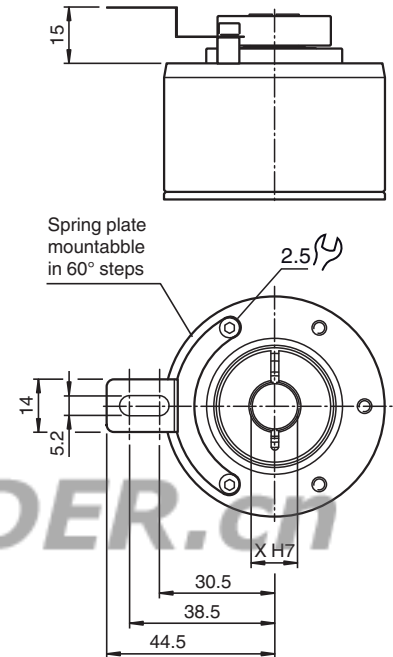
**DA**  
for more accurate measuring tasks



**BA**  
for standard application



**JA**  
for confined installation space



**Technical Data**

General specifications	
Detection type	photoelectric sampling
Linearity error	$\pm 0.025^\circ$
Pulse count	max. 5000
UL File Number	E223176 "For use in NFPA 79 Applications only", if UL marking is marked on the product.
Functional safety related parameters	
MTTF <sub>d</sub>	140 a
Mission Time (T <sub>M</sub> )	20 a
L <sub>10</sub>	15 E+9 at 3000 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	







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## Technical Data

Connector	M12 connector, 8-pin M12 connector, 5 pin M23 connector, 12-pin 10-pin MIL connector 7-pin MIL connector
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
<b>Standard conformity</b>	
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
<b>Approvals and certificates</b>	
UL approval	cULus Listed, General Purpose, Class 2 Power Source, Type 1 enclosure , if UL marking is marked on the product. 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	Hollow shaft Stainless steel
Mass	< 300 g without cable
Rotational speed	max. 6000 min <sup>-1</sup> for IP65 , max. 3000 min <sup>-1</sup> for IP67
Moment of inertia	≤ 70 gcm <sup>2</sup>
Starting torque	≤ 1.5 Ncm for IP65 , ≤ 3 Ncm for IP67
Shaft load	
Angle offset	max. 1 °
Axial offset	max. 1 mm

## Accessories

	<b>9416</b>	Female connector
	<b>9416L</b>	Female connector
	<b>V19-G-2M-PVC-TP</b>	Female cordset, M12, 8-pin, shielded, PVC cable
	<b>V19-G-5M-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>V19-G-BK2M-PUR-U</b>	Female cordset, M12, 8-pin, PUR-cable







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## Accessories

	<b>V19-G-BK5M-PUR-U</b>	Female cordset, M12, 8-pin, PUR-cable
	<b>V19-G-BK10M-PUR-U</b>	Female cordset, M12, 8-pin, PUR-cable
	<b>ACC-TOR-ENI58IL-BA</b>	Spring plate single long for ENI58IL for standard applications
	<b>ACC-TOR-ENI58IL-DA</b>	Dual spring plate for ENI58IL for more accurate measuring tasks
	<b>ACC-TOR-ENI58IL-JA</b>	Spring plate single short for ENI58IL for confined installation space
	<b>9416-*M-12P-RX158</b>	Female cordset, M23, 12-pin, PVC cable, 11-core

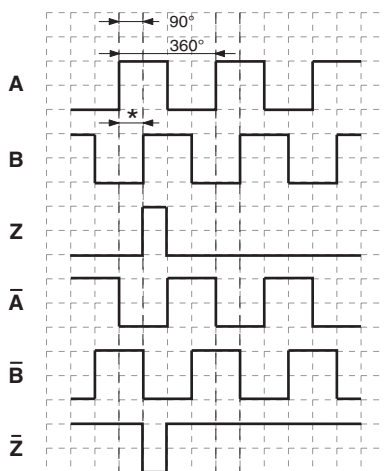
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**Connection**

Signal	Cable	Connector M23, 12-pin, clockwise/counter clockwise	Connector MIL7, 7-pin	Connector MIL10, 10-pin	Connector M12 x 1, 8-pin	Connector M12 x 1, 5-pin
GND	White	10	F	F	1	3
U <sub>b</sub>	Brown	12	D	D	2	1
A	Green	5	A	A	3	2
B	Grey	8	B	B	5	4
$\bar{A}$	Yellow	6	-	H	4	-
$\bar{B}$	Pink	1	-	I	6	-
Z	Blue	3	C	C	7	5
$\bar{Z}$	Red	4	-	J	8	-
NC	Violet	2	E	E	-	-
NC	Grey/Pink	7	-	-	-	-
NC	-	9	-	-	-	-
NC	Black	11	-	-	-	-
Shielding	Shield	Housing	G	G	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

**Type Code**

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**Connection type**

- B2 Fixed cable with M12 plug, 8-polig, 1 m
- B4 Fixed cable with M12 plug, 5-pin, 1 m
- C1 Cable, 1 m**
- C2 Cable, 2 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)
- MA MIL7 connector (type 9415)
- MB MIL10 connector (type 9419)

**Connection alignment**

- R radial**

**Electrical interface**

- UD1 Universal output driver, UB 5 V ... 30 V**
- UD2 RS422, U<sub>B</sub> 5 V ... 30 V

**Pulse count**

- 0100, 0120, 0125, 0200, 0256, **0360**, 0500, **1000**, **1024**, 1250, 1500, 1800, **2000**, **2048**, **2500**, 3600, 4000, **4096**, **5000**

**Degree of protection**

- 5 IP65**
- 7 IP67

**Flange**

- BA Spring plate, single long
- JA Spring plate, single short
- DA Dual spring plate**

**Shaft diameter**

- 08 8 mm
- 10 10 mm**
- 12 12 mm**
- 14 14 mm
- 15 15 mm**
- U2 1/4 inch
- U3 3/8 inch
- U4 1/2 inch

**Shaft type**

- H Hollow shaft

**Version**

- IL Industrial Line

**Size**

- 58 Housing diameter 58 mm

**Device type**

- ENI Incremental rotary encoder

Note: Preferred options are in bold letters.

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