

# Incremental rotary encoder

## ENI58IL-S\*\*Q

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



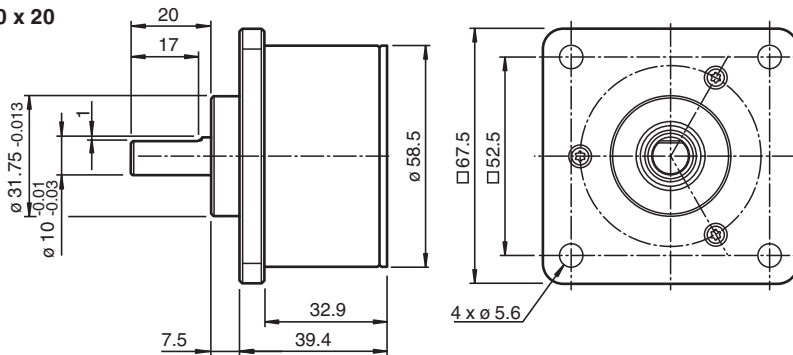
### Function

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.

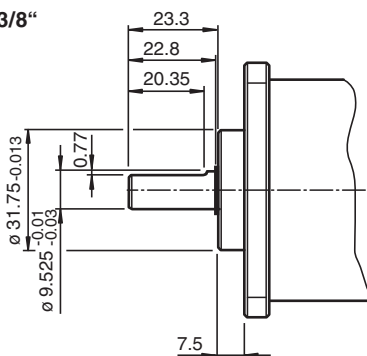
### Dimensions

Square flange with cable and connector M12, M23 (radial/axial) and MIL connector (axial)

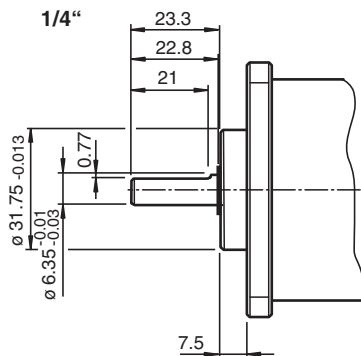
10 x 20



3/8"

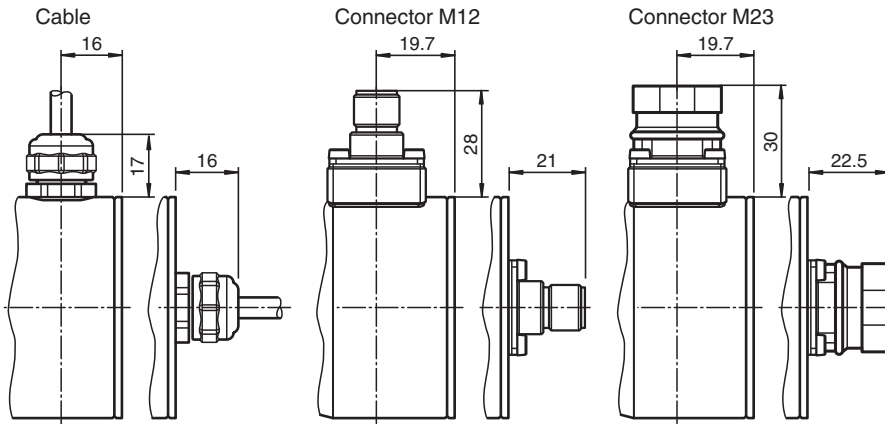


1/4"

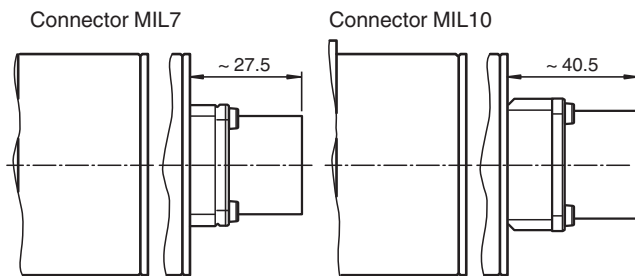


**Dimensions**

**Connections**



**Connections**



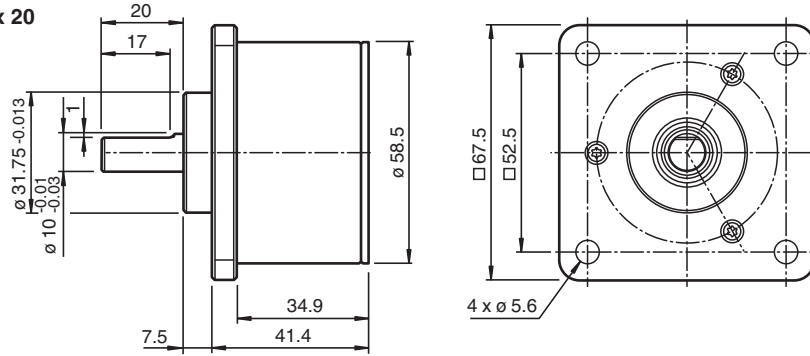
Release date: 2024-10-24 Date of issue: 2024-10-24 Filename: t183922\_eng.pdf

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

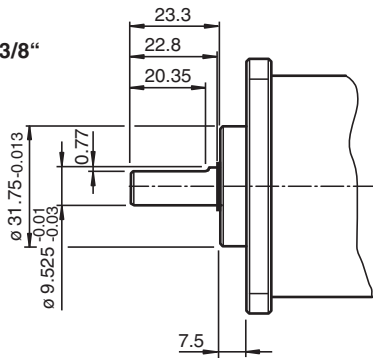
**Dimensions**

**Square flange with MIL connector (radial)**

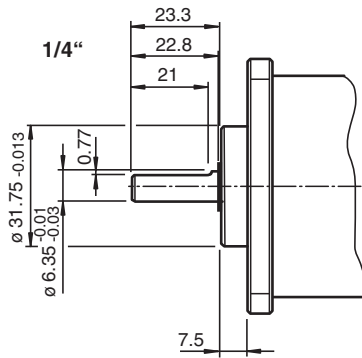
10 x 20



3/8"

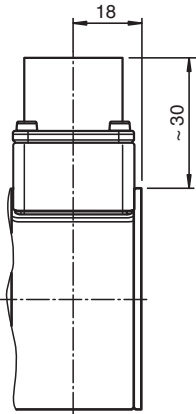


1/4"

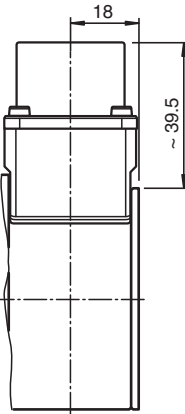


**Connections**

Connector MIL7



Connector MIL10



**Technical Data**

**General specifications**

Detection type	photoelectric sampling
Linearity error	± 0.025 °
Pulse count	max. 5000

**Functional safety related parameters**

MTTF <sub>d</sub>	140 a
Mission Time (T <sub>M</sub> )	10 a
L <sub>10</sub>	70 E+9 at 6000 rpm

Release date: 2024-10-24 Date of issue: 2024-10-24 Filename: t183922\_eng.pdf

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

**PEPPERL+FUCHS**

## Technical Data

Diagnostic Coverage (DC)		0 %
<b>Electrical specifications</b>		
Operating voltage	$U_B$	4.75 ... 30 V DC
No-load supply current	$I_0$	max. 50 mA
<b>Output</b>		
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
<b>Phase position A to B</b>		
Pulse counts < 3600		$90^\circ \pm 9^\circ$ electrical
Pulse counts $\geq$ 3600		$90^\circ \pm 15^\circ$ electrical
Duty cycle		$1/2 \pm 10\%$
<b>Connection</b>		
Connector		M12 connector, 8-pin M12 connector, 5 pin M23 connector, 12-pin 10-pin MIL connector 7-pin MIL connector
Cable		$\varnothing 6$ 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 IEC 61000-6-4:2019
Noise immunity		EN IEC 61000-6-2:2019
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		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		< 400 g without cable
Rotational speed		max. 12000 min <sup>-1</sup> for IP65 , max. 6000 min <sup>-1</sup> for IP67
Moment of inertia		$\leq 35$ gcm <sup>2</sup>
Starting torque		$\leq 1.5$ Ncm
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>
<b>Dimensions</b>		
Diameter		58.5 mm

Release date: 2024-10-24 Date of issue: 2024-10-24 Filename: t183922\_eng.pdf

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.comUSA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.comGermany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.comSingapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com
 PEPPERL+FUCHS

## Type Code

### Structure of the type code

E	N	I	5	8	I	L	-	S	(1)	(1)	Q	A	(2)	-	(3)	(3)	(3)	(3)	(4)	(4)	(4)	-	(5)	(6)	(6)
---	---	---	---	---	---	---	---	---	-----	-----	---	---	-----	---	-----	-----	-----	-----	-----	-----	-----	---	-----	-----	-----

ENI	Device type
ENI	Incremental rotary encoder

58	Size
58	Housing diameter 58 mm

IL	Version
IL	Industrial Line

S	Shaft type
S	Solid shaft

(1) (1)	Shaft diameter
10	10 x 20 mm
U2	1/4 inch
U3	3/8 inch

QA	Flange
QA	Square flange

(2)	Degree of protection
5	IP65
7	IP67

(3) (3) (3) (3)	Pulse count
0100	100 pulses
0120	120 pulses
0125	125 pulses
0200	200 pulses
0256	256 pulses
0360	360 pulses
0500	500 pulses
1000	1000 pulses
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

(4) (4) (4)	Electrical interface
UD1	Universal output driver, $U_B$ 5 V ... 30 V
UD2	RS422, $U_B$ 5 V ... 30 V

(5)	Connection alignment
A	Axial
R	Radial

(6) (6)	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)

**Type Code**

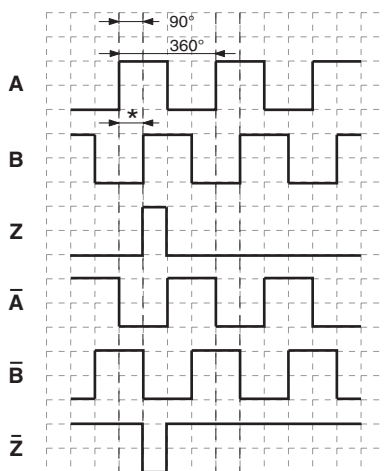
(6) (6)	Connection type
MA	MIL7 connector (type 9415)
MB	MIL10 connector (type 9419)

**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

Release date: 2024-10-24 Date of issue: 2024-10-24 Filename: t183922\_eng.pdf