Incremental rotary encoder

ENI58IL-R

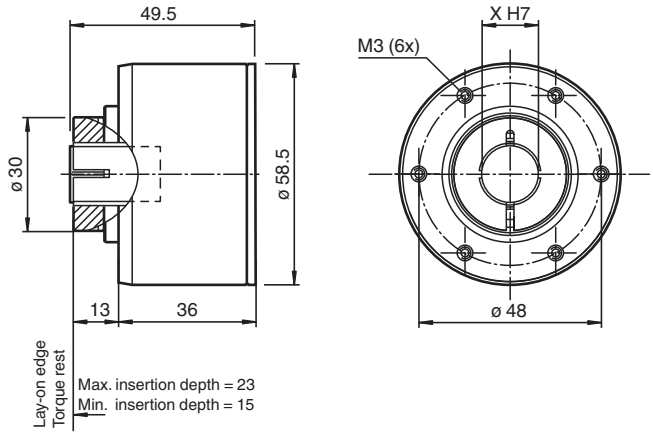
- Housing Ø 58 mm
- Recessed hollow shaft
- Up to 5000 ppr
- Universal output driver
- BlueBeam technology for ultimate precision

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.

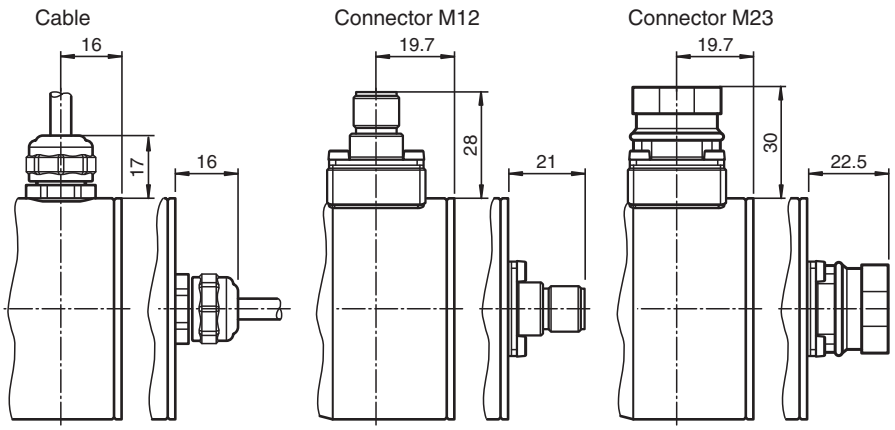
Dimensions

Recessed hollow shaft with cable and connector M12, M23 (radial, axial) and MIL connector (axial)



Recessed hollow shaft	X [mm]
ø 3/8“	ø 9.525
ø 1/2“	ø 12.7
ø 1/4“	ø 6.35
ø 15	ø 15
ø 14	ø 14
ø 12	ø 12
ø 10	ø 10
ø 8	ø 8
ø 6	ø 6

Connections



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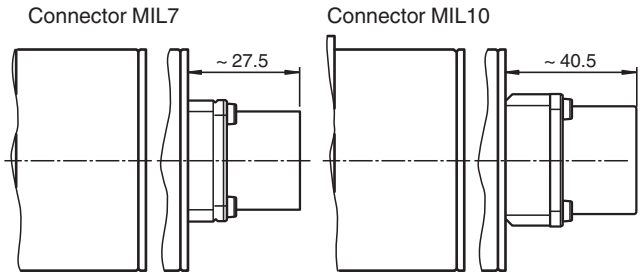
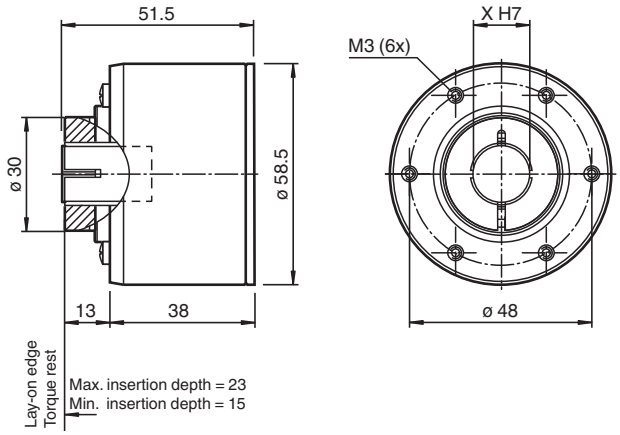
Dimensions

Connections



Recessed hollow shaft with MIL connector (radial)



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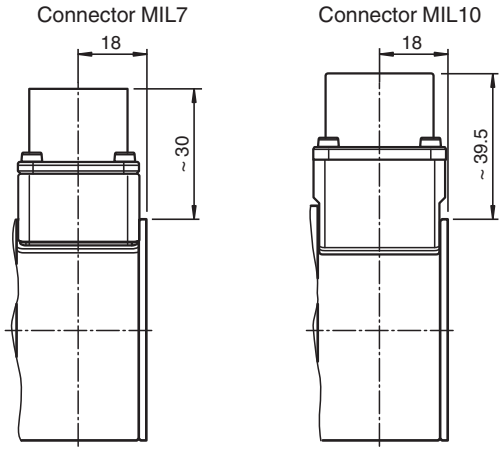
Connections



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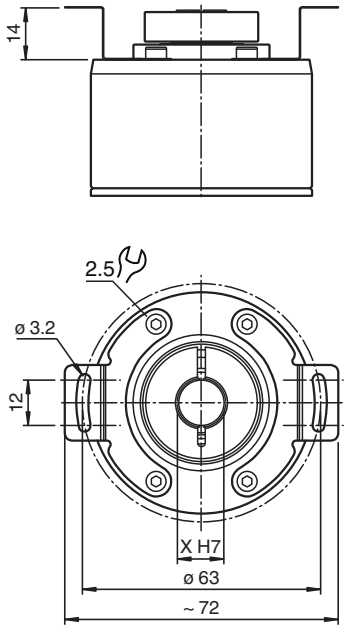
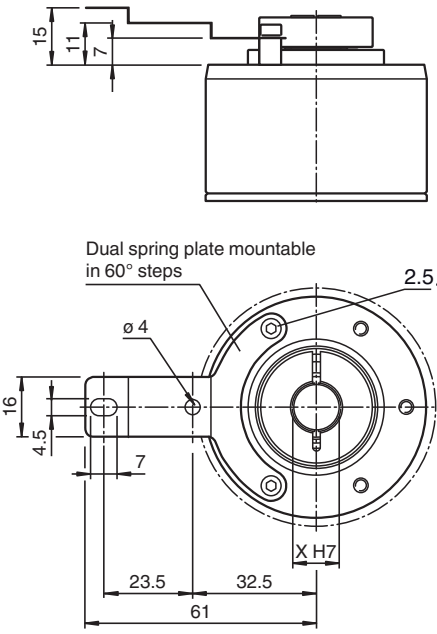
Dimensions

Spring plates DA / BA / JA / LA

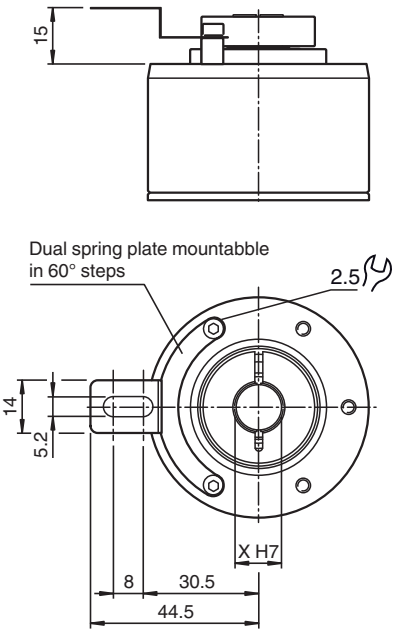
DA
for more accurate measuring tasks



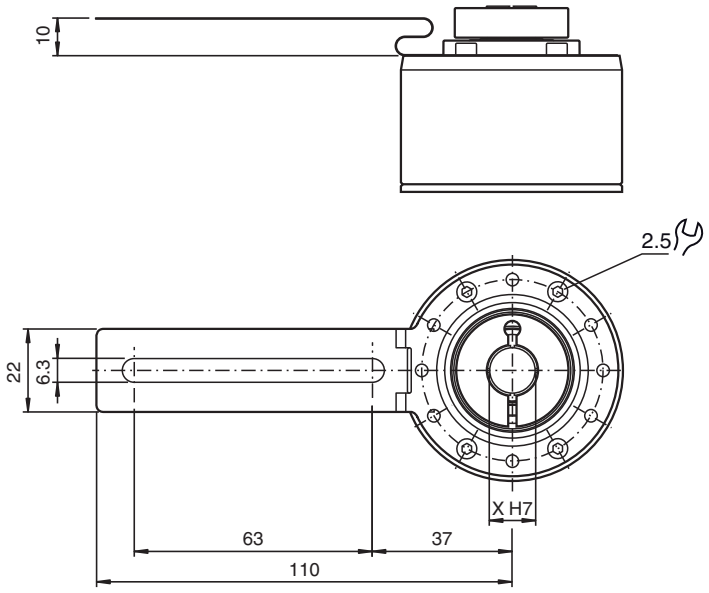
BA
for standard application



JA
for confined installation space



LA
for larger distance to mounting point



Technical Data

General specifications		
Detection type		photoelectric sampling
Linearity error		± 0.025 °
Pulse count		max. 5000
Functional safety related parameters		
$MTTF_d$		140 a
Mission Time (T_M)		20 a
L_{10}		15 E+9 at 6000 rpm

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Technical Data

Diagnostic Coverage (DC)		0 %
Electrical specifications		
Operating voltage	U_B	4.75 ... 30 V DC
No-load supply current	I_0	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 10-pin MIL connector 7-pin MIL connector
Cable		Ø6 mm, 4 x 2 x 0.14 mm² 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		
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)
Ambient conditions		
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)
Mechanical specifications		
Material		
Housing		3.2315 aluminum (AlMgSi1, saltwater-proof)
Flange		3.2315 aluminum (AlMgSi1, saltwater-proof)
Shaft		Recessed hollow shaft Stainless steel
Mass		< 300 g without cable
Rotational speed		max. 8000 min $^{-1}$ for IP65 , max. 6000 min $^{-1}$ for IP67
Moment of inertia		≤ 60 gcm²
Starting torque		≤ 1.5 Ncm for IP65 , ≤ 2.5 Ncm for IP67
Shaft load		
Angle offset		max. 1 °
Axial offset		max. 1 mm

Type Code

Structure of the type code

E	**N**	**I**	**5**	**8**	**I**	**L**	**–**	**R**	(1)	(1)	(2)	(2)	(3)	**–**	(4)	(4)	(4)	(4)	(5)	(5)	(5)	**–**	(6)	(7)	(7)

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Type Code

ENI	Device type
ENI	Incremental rotary encoder

58	Size
58	Housing diameter 58 mm

IL	Version
IL	Industrial Line

R	Shaft type
R	Recessed hollow shaft

(1) (1)	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

(2) (2)	Flange
BA	Spring plate, single long
JA	Spring plate, single shor
DA	Dual spring plate
LA	Spring plate, single extra long

(3)	Degree of protection
5	IP65
7	IP67

(4) (4) (4) (4)	Pulse count
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
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

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Type Code

(7) (7)	Connection type
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)

Accessories

	9416	Female cordset
	9416L	Female cordset
	V19-G-10M-PVC-TP	Female cordset, M12, 8-pin, shielded, PVC cable
	V19-G-2M-PVC-TP	Female cordset, M12, 8-pin, shielded, PVC cable
	V19-G-5M-PVC-TP	Female cordset, M12, 8-pin, shielded, PVC cable
	V19-G-BK2M-PUR-U	Female cordset single-ended M12 straight A-coded, 8-pin, PUR cable black, UL approved
	V19-G-BK5M-PUR-U	Female cordset single-ended M12 straight A-coded, 8-pin, PUR cable black, UL approved
	V19-G-BK10M-PUR-U	Female cordset single-ended M12 straight A-coded, 8-pin, PUR cable black, UL approved
	ACC-TOR-ENI58IL-BA	Spring plate single long for ENI58IL for standard applications
	ACC-TOR-ENI58IL-DA	Dual spring plate for ENI58IL for more accurate measuring tasks
	ACC-TOR-ENI58IL-JA	Spring plate single short for ENI58IL for confined installation space
	9416-*M-12P-RXI58	Female cordset, M23, 12-pin, PVC cable, 11-core
	ACC-TOR-ENI58IL-LA	Spring plate single extra long for ENI58IL for larger distance to mounting point

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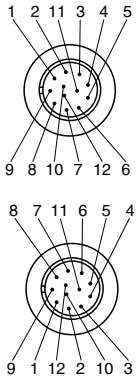
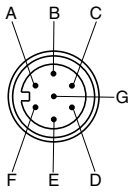
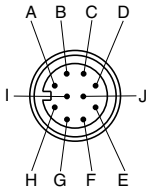
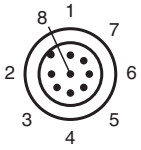
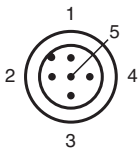
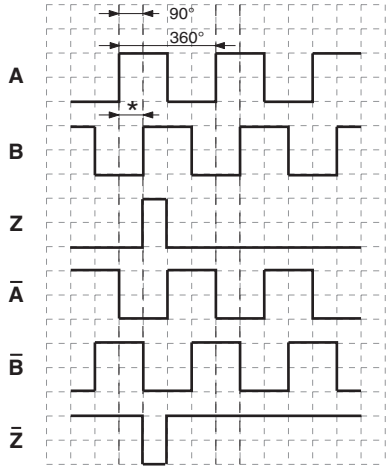
Connection

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_b	Brown	12	D	D	2	1
A	Green	5	A	A	3	2
B	Grey	8	B	B	5	4
$\overline{A}$	Yellow	6	-	H	4	-
$\overline{B}$	Pink	1	-	I	6	-
Z	Blue	3	C	C	7	5
$\overline{Z}$	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
	Note: Unused cores must be insulated individually before commisioning in order to avoid interference..					

Operation

Signal outputs



↻ cw - with view onto the shaft
phase relationsships electrical
* 1 Measuring step is 90° electrical

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