

Absolute encoders

ENA58IL-S***-EtherCAT



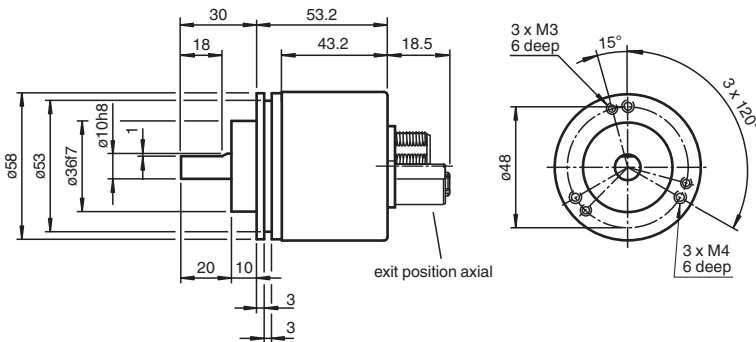
- Solid shaft
- 30 Bit multiturn
- Free of wear magnetic sampling
- High resolution and accuracy
- Mechanical compatibility with all major encoders with fieldbus interface
- Status LEDs



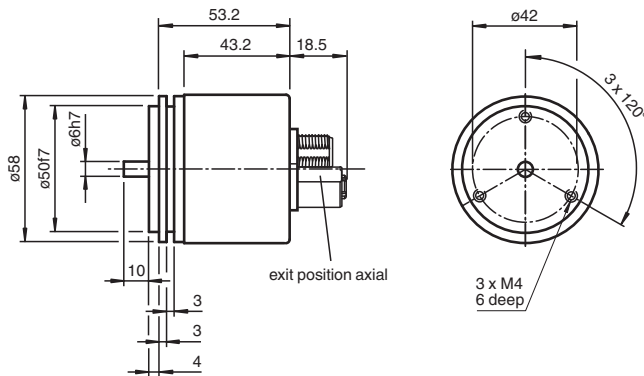
Function

The ENA58IL series are high precision encoders with internal magnetic sampling.

Dimensions



Clamping flange



Servo flange

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

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Technical Data

General specifications	
Detection type	magnetic sampling
Device type	Absolute encoders
Linearity error	$\leq \pm 0.1^\circ$
UL File Number	E223176 "For use in NFPA 79 Applications only", if UL marking is marked on the product.
Functional safety related parameters	
MTTF _d	256 a at 40 °C
Mission Time (T _M)	12 a
L ₁₀	55 E+8 revolutions at 40/110 N axial/radial shaft load
Diagnostic Coverage (DC)	0 %
Electrical specifications	
Operating voltage	U _B 10 ... 30 V DC
Power consumption	P ₀ approx. 4 W
Time delay before availability	t _v < 250 ms
Output code	binary code
Code course (counting direction)	adjustable
Interface	
Interface type	EtherCAT CoE (CANopen over EtherCAT, according to CiA DS-301 and DS-406 device profile CiA)
Resolution	
Single turn	up to 16 Bit
Multiturn	up to 14 Bit
Overall resolution	up to 30 Bit
Transfer rate	10 MBit/s / 100 MBit/s
Connection	
Connector	Ethernet: 2 sockets M12 x 1, 4-pin, D-coded Supply: 1 plug M12 x 1, 4-pin, A-coded
Standard conformity	
Degree of protection	DIN EN 60529, IP65, IP67
Climatic testing	DIN EN 60068-2-3, no moisture condensation
Emitted interference	EN 61000-6-4:2007
Noise immunity	EN 61000-6-2:2005
Shock resistance	DIN EN 60068-2-27, 100 g, 6 ms
Vibration resistance	DIN EN 60068-2-6, 10 g, 10 ... 1000 Hz
Approvals and certificates	
UL approval	cULus Listed, General Purpose, Class 2 Power Source, if UL marking is marked on the product.
Ambient conditions	
Operating temperature	-40 ... 85 °C (-40 ... 185 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	98 %, no moisture condensation
Mechanical specifications	
Material	
Housing	Zinc plated steel, painted
Flange	Aluminum
Shaft	Stainless steel
Mass	approx. 300 g
Rotational speed	max. 12000 min ⁻¹
Moment of inertia	50 gcm ²
Starting torque	< 5 Ncm
Shaft load	
Axial	40 N
Radial	110 N






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Accessories

	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

Connection

Pin	Male connector M12 x 1, 4-pin, A-coded	Female connector M12 x 1, 4-pin, D-coded
1	Supply voltage +U _B	Tx +
2	-	Rx +
3	0 V	Tx -
4	-	Rx -

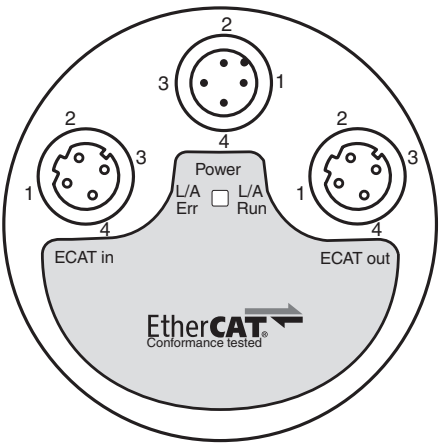
Indication

Port LEDs

LED	Color	Status	Description
Link/Act IN	green	on	LINK active for HUB port 1
		blinking	Activity on HUB port 1
Link/Act OUT	green	on	LINK active for HUB port 2
		blinking	Activity on HUB port 2

EtherCAT LEDs

LED	Color	Status	Description
Error	red	off	no error
		blinking	invalid configuration
		single flash	local error
		double flash	process data watchdog timeout/ EtherCAT watchdog timeout
		flickering	booting error
		on	application failure
Run	green	off	initialization
		blinking	Pre-Operational
		single flash	Safe-Operational
		flickering	initialization or bootstrap
		on	Operational



Type Code

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Notes on connecting the electric screening

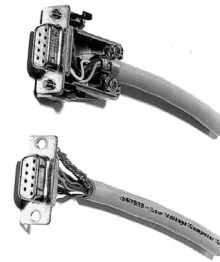
The immunity to interference of a plant depends on the correct screening. In this field installation faults occur frequently. Often the screen is applied to one side only, and is then soldered to the earthing terminal with a wire, which is a valid procedure in LF engineering. However, in case of EMC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



Safety instructions

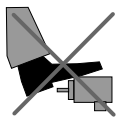
Please observe the national safety and accident prevention regulations as well as the subsequent safety instructions in these operating instructions when working on encoders.

If failures cannot be remedied, the device has to be shut down and has to be secured against accidental operation.

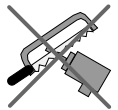
Repairs may be carried out only by the manufacturer. Entry into and modifications of the device are not permissible.

Tighten the clamping ring only, if a shaft has been fitted in the area of the clamping ring (hollow shaft encoders).

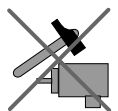
Tighten all screws and plug connectors prior to operating the encoder.



Do not stand on the encoder!



Do not remachine the drive shaft!



Avoid impact!



Do not remachine the housing!

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