



## Model Number

ENA58IL-R\*\*\*-Profibus

## Features

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

## Description

The ENA58IL series with Profibus interface are high-precision rotary encoders with internal magnetic sampling. The most common mechanical interfaces are available in the ENA58IL series. For the electrical connection, models with connection cover and radial connector outlet or cable outlet or models with axial connector outlet are available. This versatility allows the use of the rotary encoder for all common applications.

## 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 <sub>d</sub>	280 a at 40 °C
Mission Time (T <sub>M</sub> )	12 a
L <sub>10</sub>	5 E+8 revolutions at 24/198 N axial/radial shaft load
Diagnostic Coverage (DC)	0 %

### Electrical specifications

Operating voltage U <sub>B</sub>	10 ... 30 V DC
Power consumption P <sub>0</sub>	approx. 2.5 W
Time delay before availability t <sub>v</sub>	< 1000 ms
Output code	binary code
Code course (counting direction)	adjustable

### Interface

Interface type	PROFIBUS DP DPV0, DPV1, DPV2
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Resolution	
Single turn	up to 16 Bit
Multiturn	up to 14 Bit
Overall resolution	up to 30 Bit
Transfer rate	$\leq 12$ MBit/s

### Connection

Connector	For model with axial connector outlet or connection cover with radial connector outlet: Profibus: 1 plug M12 x 1, 5-pin, B-coded; 1 socket M12 x 1, 5-pin, B-coded Supply: 1 plug M12 x 1, 4-pin, A-coded
Terminal compartment	For model with connection cover with radial cable outlet

### Standard conformity

Degree of protection	DIN EN 60529 , axial connector outlet: IP54 connection cover and shaft seal: IP66/IP67 connection cover, no shaft seal: IP65
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

### 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 for model without connection cover approx. 510 g for model with connection cover
Rotational speed	max. 12000 min <sup>-1</sup> for IP54, IP65 max. 3000 min <sup>-1</sup> for IP66/IP67
Moment of inertia	30 gcm <sup>2</sup>
Starting torque	< 3 Ncm
Shaft load	
Axial	24 N
Radial	198 N
Angle offset	$\pm 0.9^\circ$
Axial offset	$\pm 0.3$ mm static
Radial offset	$\pm 0.5$ mm static

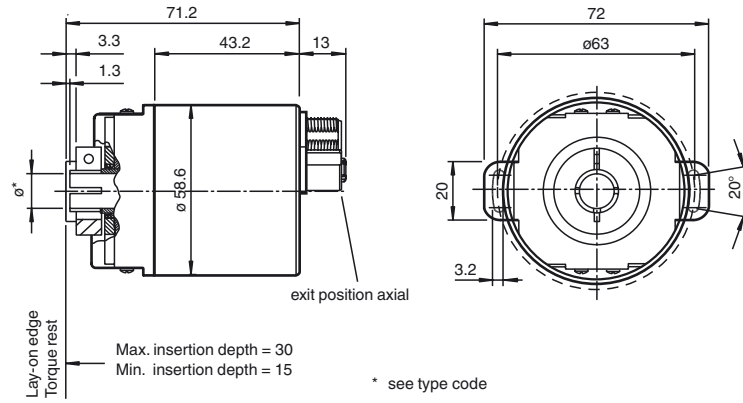
### Accessories

Designation	for model without connection cover : Terminator ICZ-TR-V15B, item number 127860 (optional)
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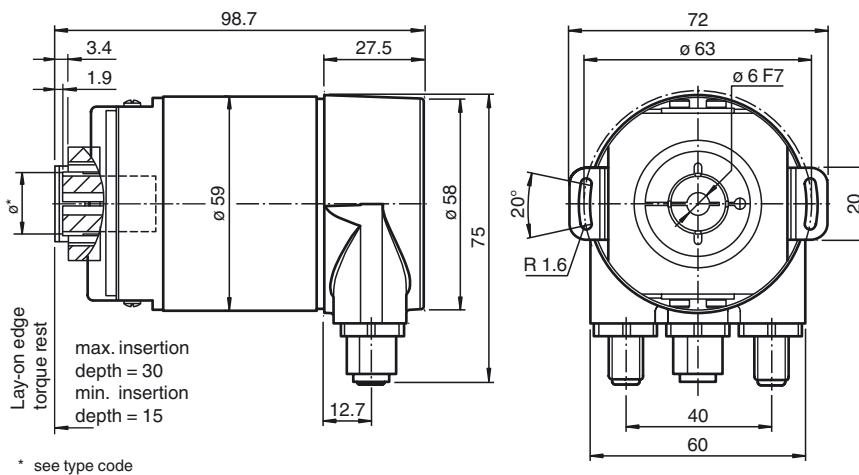
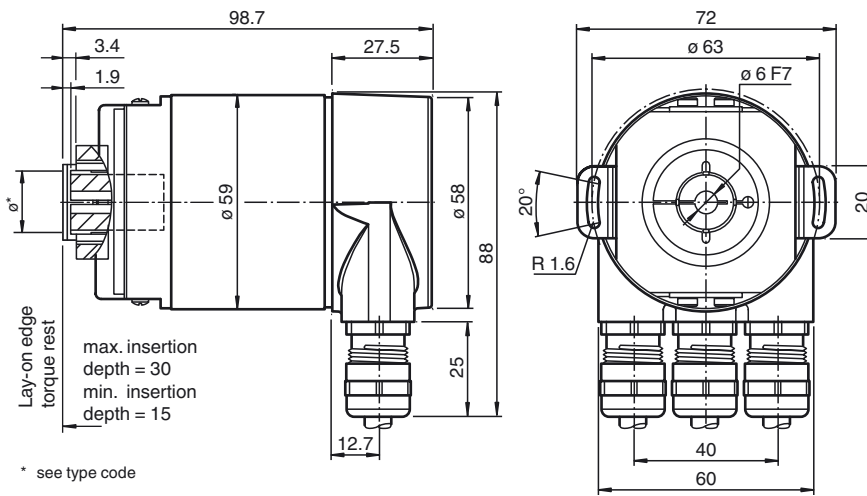
### Approvals and certificates

UL approval	cULus Listed, General Purpose, Class 2 Power Source , if UL marking is marked on the product.
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Dimensions

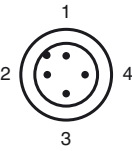
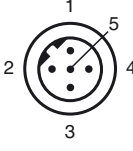
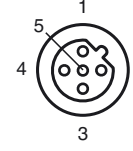


Recessed hollow shaft

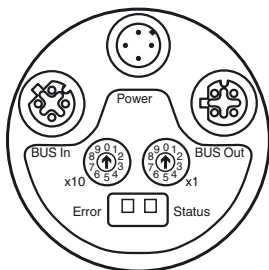


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## Electrical connection

Pin	Male connector M12 x 1, 4-pin, A-coded	Male connector M12 x 1, 5-pin, B-coded	Female connector M12 x 1, 5-pin, B-coded	Terminal	Explanation
1	Supply voltage +U <sub>B</sub>	Not connected	+ 5 V for terminator (2P5)	⊥	Ground connection for power supply
2	Not connected	Data wire A, Bus IN	Data wire A, Bus Out	<b>B (left)</b>	Data line B (pair 1), Bus In
3	0 V	Not connected	GND for terminator (2M)	<b>A (left)</b>	Data line A (pair 1), Bus In
4	Not connected	Data wire B, Bus IN	Data wire B, Bus Out	<b>(-)</b>	0 V
5	-	Not connected	Not connected	<b>(+)</b>	10 V ... 30 V
				<b>B (right)</b>	Data line B (pair 2), Bus Out
				<b>A (right)</b>	Data line A (pair 2), Bus Out
				<b>(-)</b>	0 V
				<b>(+)</b>	10 V ... 30 V
					The supply lines only have to be connected once (regardless to which terminal). The outgoing bus is being uncoupled while the terminal resistor is on.

Indicating and operating elements on model with axial connector outlet



Adjusting the participant address

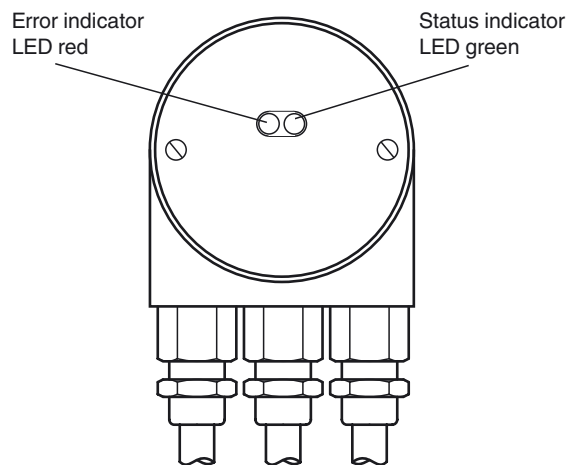
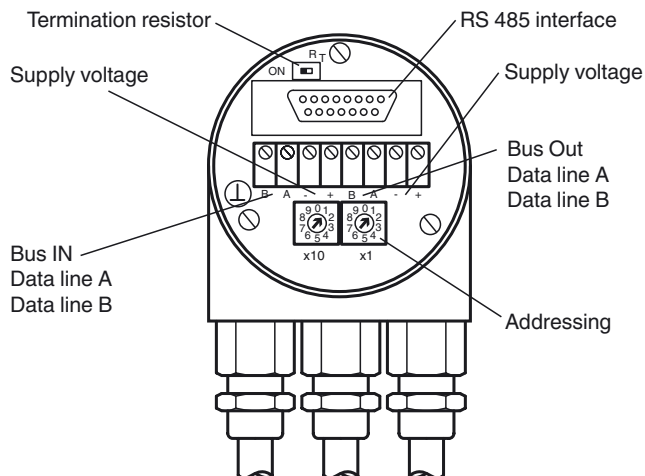
The participant address can be adjusted with the rotary switches. The address can be defined between 1 and 99, and may only be assigned once.

LED-indicators

LED red	LED green	Meaning
off	off	No voltage supply
on	on	Encoder ready, no configuration data received. possible reasons: - wrong address adjusted - wrong bus wiring
on	flashing	Parameterising or configuration error. Encoder receives data of incorrect length or inconsistent data. possible reason: - adjusted encoder resolution exceeds
flashing	on	Encoder ready, no communication with master (i.e. wrong address setting)
on	off	Data timeout (> 40 s). (i.e. data lines interrupted)
off	on	Normal operation, Data Exchange Mode
off	flashing	Installation Mode in Data Exchange Mode.

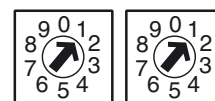
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**Indicating and operating elements on model with connection cover**



**Adjusting the participant address**

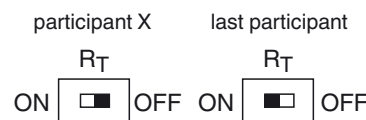
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x10 x1

**Adjusting the termination resistor**

The terminating resistor  $R_T$  (220  $\Omega$ ) can be connected to the circuit by means of the switch:



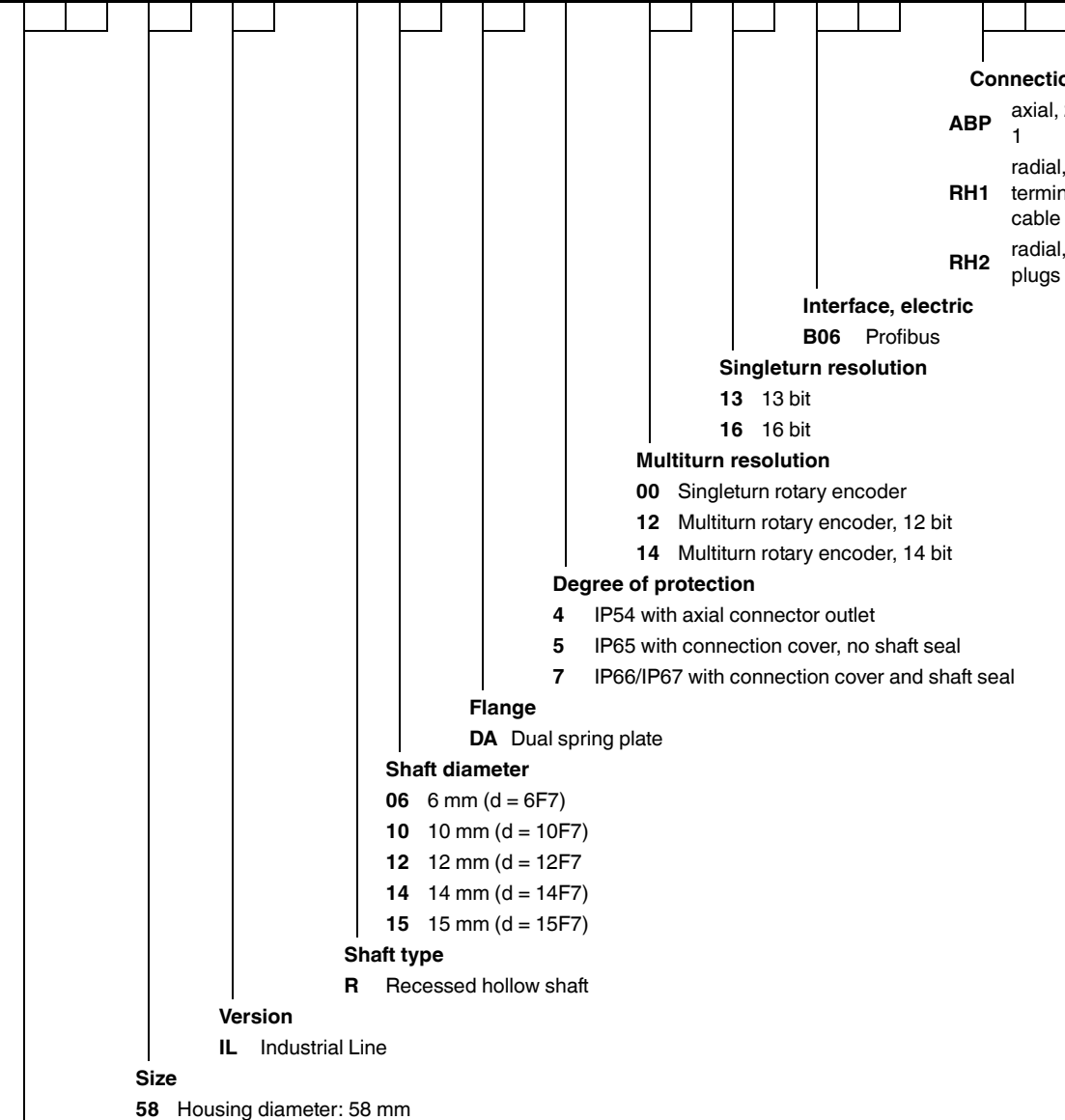
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**E N A 5 8 I L - R      D A      -      -      -      B 0 6 -      -      -**



**Connection type and alignment**

- ABP** axial, 2 plugs / 1 socket M12 x 1
- RH1** radial, connection cover with terminal compartment and 3 x cable glands
- RH2** radial, connection cover with 2 plugs / 1 socket M12 x 1

**Interface, electric**

**B06** Profibus

**Singleturn resolution**

- 13** 13 bit
- 16** 16 bit

**Multiturn resolution**

- 00** Singleturn rotary encoder
- 12** Multiturn rotary encoder, 12 bit
- 14** Multiturn rotary encoder, 14 bit

**Degree of protection**

- 4** IP54 with axial connector outlet
- 5** IP65 with connection cover, no shaft seal
- 7** IP66/IP67 with connection cover and shaft seal

**Flange**

**DA** Dual spring plate

**Shaft diameter**

- 06** 6 mm (d = 6F7)
- 10** 10 mm (d = 10F7)
- 12** 12 mm (d = 12F7)
- 14** 14 mm (d = 14F7)
- 15** 15 mm (d = 15F7)

**Shaft type**

**R** Recessed hollow shaft

**Version**

**IL** Industrial Line

**Size**

**58** Housing diameter: 58 mm

**Device type**

**ENA** Absolute rotary encoder