

# Absolute Encoders – Multiturn

<b>Standard mechanical Multiturn, optical</b>	<b>Sendix 5868 / 5888 (Shaft / Hollow shaft)</b>	<b>PROFINET IO</b>
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The multiturn encoders Sendix 5868 and 5888 with PROFINET interface and optical sensor technology are ideal for use in all applications with a PROFINET interface.

The encoder supports the isochronous (IRT) mode and is therefore ideal for real-time applications.

Easy start-up thanks to the “Ezturn for PROFINET” software supplied with the encoder.

Mechanical drive	Safety-Lock™	High rotational speed	Temperature range	High protection level	High shaft load capacity	Shock / vibration resistant	Magnetic field proof	Reverse polarity protection	Optical sensor	Seawater-resistant version on request

## Reliable

- Ideally suited for all PROFINET applications thanks to the use of encoder profile 4.1
- Perfect for use in harsh outdoor environments, as a result of IP67 protection and rugged housing construction

## Flexible

- IRT-Mode
- Cycle time ≤ 1 ms
- Firmware updater allows for easy expansion of characteristics without having to disassemble the encoder.
- Faster, easier error-free connection thanks to M12 connectors

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<b>Order code</b>	<b>8.5868</b>	<b>Shaft version</b>	Type	. <b>X</b> <b>X</b> <b>C</b> <b>2</b> . <b>C2</b> <b>12</b>	If for each parameter of an encoder the <b>underlined preferred option</b> is selected, then the delivery time will be 10 working days for a maximum of 10 pieces. Qts. up to 50 pcs. of these types generally have a delivery time of 15 working days.		
<b>a</b> Flange	<b>1</b> = clamping flange, IP65 ø 58 mm [2.28"] 3 = clamping flange, IP67 ø 58 mm [2.28"] <b>2</b> = synchro flange, IP65 ø 58 mm [2.28"] 4 = synchro flange, IP67 ø 58 mm [2.28"] 5 = square flange, IP65 □ 63.5 mm [2.5"] 7 = square flange, IP67 □ 63.5 mm [2.5"]	<b>b</b> Shaft (ø x L), with flat	<b>1</b> = 6 x 10 mm [0.24 x 0.39"] <sup>1)</sup> <b>2</b> = 10 x 20 mm [0.39 x 0.79"] <sup>2)</sup> 3 = 1/4" x 7/8" 4 = 3/8" x 7/8"	<b>c</b> Interface / Power supply	<b>C</b> = <b>PROFINET IO / 10 ... 30 V DC</b>	<b>e</b> Field bus profile	<b>C2</b> = <b>PROFINET IO</b>
		<b>d</b> Type of connection	removable bus terminal cover	<b>2</b> = <b>3 x M12 connector, 4-pin</b>	optional on request - Ex 2/22 - seawater-resistant		

<b>Order code</b>	<b>8.5888</b>	<b>Hollow shaft</b>	Type	. <b>X</b> <b>X</b> <b>C</b> <b>2</b> . <b>C2</b> <b>12</b>	If for each parameter of an encoder the <b>underlined preferred option</b> is selected, then the delivery time will be 10 working days for a maximum of 10 pieces. Qts. up to 50 pcs. of these types generally have a delivery time of 15 working days.		
<b>a</b> Flange	1 = with spring element long, IP65 2 = with spring element long, IP67 3 = with stator coupling, IP65 ø 65 mm [2.56"] 4 = with stator coupling, IP67 ø 65 mm [2.56"] <b>5</b> = with stator coupling, IP65 ø 63 mm [2.48"] 6 = with stator coupling, IP67 ø 63 mm [2.48"]	<b>b</b> Blind hollow shaft	3 = ø 10 mm [0.39"] <b>4</b> = ø 12 mm [0.47"] 5 = ø 14 mm [0.55"] 6 = ø 15 mm [0.59"] 8 = ø 3/8" 9 = ø 1/2"	<b>c</b> Interface / Power supply	<b>C</b> = <b>PROFINET IO / 10 ... 30 V DC</b>	<b>e</b> Field bus profile	<b>C2</b> = <b>PROFINET IO</b>
		<b>d</b> Type of connection	removable bus terminal cover	<b>2</b> = <b>3 x M12 connector, 4-pin</b>	optional on request - Ex 2/22 - seawater-resistant		

1) Preferred type only in conjunction with flange type 2  
 2) Preferred type only in conjunction with flange type 1

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<b>Mounting accessory for shaft encoders</b>		Order No.
<b>Coupling</b>	Bellows coupling $\varnothing$ 19 mm [0.75"] for shaft 6 mm [0.24"]	<b>8.0000.1101.0606</b>
	Bellows coupling $\varnothing$ 19 mm [0.75"] for shaft 10 mm [0.39"]	<b>8.0000.1101.1010</b>
<b>Mounting accessory for hollow shaft encoders</b>		
<b>Cylindrical pin, long</b> for torque stops	With fixing thread	<b>8.0010.4700.0000</b>
<b>Connection technology</b>		
<b>Connector, self-assembly (straight)</b>	Coupling M12 for Port 1 and Port 2 Connector M12 for power supply	<b>05.WASCSY4S</b> <b>05.B8141-0</b>
<b>Cordset, pre-assembled</b>	M12 for Port 1 and Port 2, 2 m [6.56'] PUR cable M12 for power supply, 2 m [6.56'] PUR cable	<b>05.00.6031.4411.002M</b> <b>05.00.6061.6211.002M</b>

Further accessories can be found in the accessories section or in the accessories area of our website at: [www.kuebler.com/accessories](http://www.kuebler.com/accessories)  
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: [www.kuebler.com/connection\\_technology](http://www.kuebler.com/connection_technology)

## Technical data

Mechanical characteristics		
<b>Max. speed</b>	IP65 up to 70°C [158°F]	9 000 min <sup>-1</sup> , 7 000 min <sup>-1</sup> (continuous)
	IP65 up to T <sub>max</sub>	7 000 min <sup>-1</sup> , 4 000 min <sup>-1</sup> (continuous)
	IP67 up to 70°C [158°F]	8 000 min <sup>-1</sup> , 6 000 min <sup>-1</sup> (continuous)
	IP67 up to T <sub>max</sub>	6 000 min <sup>-1</sup> , 3 000 min <sup>-1</sup> (continuous)
<b>Starting torque - at 20°C [68°F]</b>	IP65	< 0.01 Nm
	IP67	< 0.05 Nm
<b>Moment of inertia</b>	Shaft version	3.0 x 10 <sup>-6</sup> kgm <sup>2</sup>
	Hollow shaft version	7.5 x 10 <sup>-6</sup> kgm <sup>2</sup>
<b>Load capacity of shaft</b>	radial	80 N
	axial	40 N
<b>Weight</b>		approx. 0.54 kg [19.05 oz]
<b>Protection acc. to EN 60529</b>	housing side	IP67
	shaft side	IP65, opt. IP67
<b>EX approval for hazardous areas</b>		optional Zone 2 and 22
<b>Working temperature range</b>		-40°C ... +85°C [-40°F ... +185°F]
<b>Material</b>	shaft/hollow shaft	stainless steel
	flange	aluminium
	housing	zinc die-cast housing
<b>Shock resistance acc. EN 60068-2-27</b>		2500 m/s <sup>2</sup> , 6 ms
<b>Vibration resistance acc. EN 60068-2-6</b>		100 m/s <sup>2</sup> , 55 ... 2000 Hz

Electrical characteristics	
<b>Power supply</b>	10 ... 30 V DC
<b>Power consumption (no load)</b>	max. 200 mA
<b>Reverse polarity protection of the power supply (+V)</b>	yes
<b>UL approval</b>	File 224618
<b>CE compliant acc. to</b>	EMC guideline 2004/108/EC
<b>RoHS compliant acc. to</b>	guideline 2011/65/EU

Device characteristics	
<b>Singleturn resolution</b>	1 ... 65535 (16 bit), scaleable
<b>Default value</b>	8192 (13 bit)
<b>Multiturn resolution</b>	max. 4096 (12 bit) scalable only via the total resolution
<b>Total resolution</b>	1 ... 268.435.456 (28 bit), scaleable
<b>Code</b>	binary
<b>Protocol</b>	PROFINET IO

Link 1 and 2, LED (green / yellow)		
two coloured	green	active link
	yellow	data transfer

Error LED (red) / PWR LED (green)
Functionality see manual

Ezturn software for PROFINET (supplied with the encoder)
<ul style="list-style-type: none"> <li>Monitoring of cyclic data (e.g. position, speed)</li> <li>Monitoring of acyclic data (e.g. IMO, electronic name plate, encoder parameters, warnings and error messages, preset)</li> <li>Setting of preset values</li> <li>Firmware updates via the bus</li> </ul>

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## General information about PROFINET IO

The PROFINET encoder implements the Encoder Profile 4.1. (according to the specification Encoder Version 4.1 Dec 2008")

It permits scaling and preset values, as well as many other additional parameters to be programmed via the PROFINET-Bus.

When switching on, all parameters are loaded from an EEPROM, where they were saved previously to protect them against power-failure, or taken over by the controller in the start-up phase.

Position, speed and many other states of the encoder can be transmitted.

## PROFINET IO

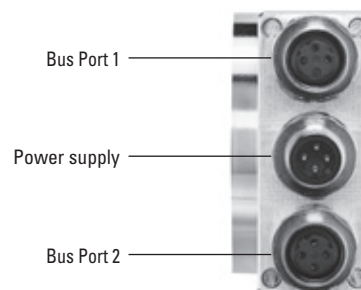
The complete encoder profile according to Profile Encoder Version 4.1 as well as the Identification & Maintenance functionality Version 1.16 has been implemented. IM blocks 0, 1, 2, 3 and 4 are supported.

The **M**edia **R**edundancy **P**rotokoll is implemented here. Basically, the advantage of MRP is that the functionality of the components, which are wired in a ring structure, is maintained in case of a failure or of a breakage of the wires in any location.

## Terminal assignment

Interface	Type of connection	Function	M12 connector					Diagram
			Signal:	Transmit data+	Receive data+	Transmit data -	Receive data -	
C	2 (3 x M12 connector)	Bus Port 1	Signal:	Transmit data+	Receive data+	Transmit data -	Receive data -	
			Abbreviation:	TxD+	RxD+	TxD-	RxD-	
			Pin:	1	2	3	4	
		Power supply	Signal:	Voltage +	–	Voltage –	–	
			Abbreviation:	+ V	–	0 V	–	
			Pin:	1	2	3	4	
		Bus Port 2	Signal:	Transmit data+	Receive data+	Transmit data -	Receive data -	
			Abbreviation:	TxD+	RxD+	TxD-	RxD-	
			Pin:	1	2	3	4	

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mechanical Multiturn, optical**

**Sendix 5868 / 5888 (Shaft / Hollow shaft)**

**PROFINET IO**

## Dimensions shaft version, with removable bus terminal cover

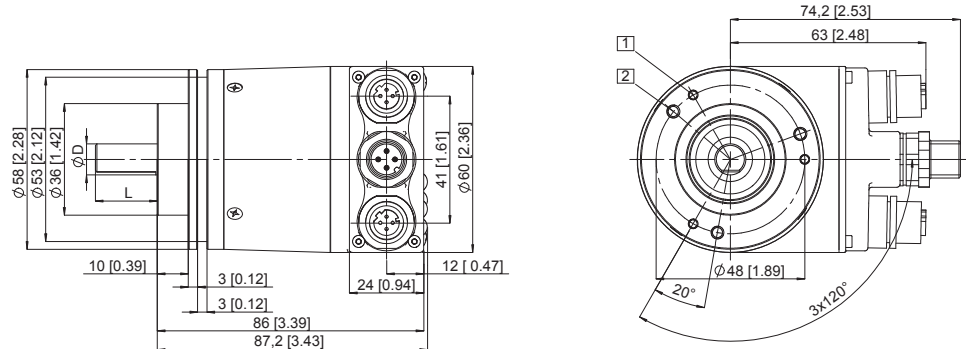
Dimensions in mm [inch]

### Clamping flange, $\varnothing$ 58 [2.28]

Flange type 1 and 3

- 1 3 x M3, 6.0 [0.24] deep
- 2 3 x M4, 8.0 [0.31] deep

D	L	Fit
6 [0.24]	10 [0.39]	h7
10 [0.39]	20 [0.79]	f7
1/4"	7/8"	h7
3/8"	7/8"	h7

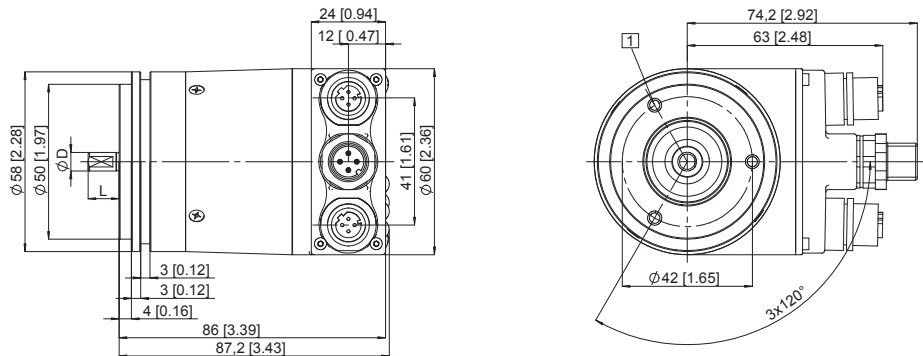


### Synchro flange, $\varnothing$ 58 [2.28]

Flange type 2 and 4

- 1 M4, 6.0 [0.24] deep

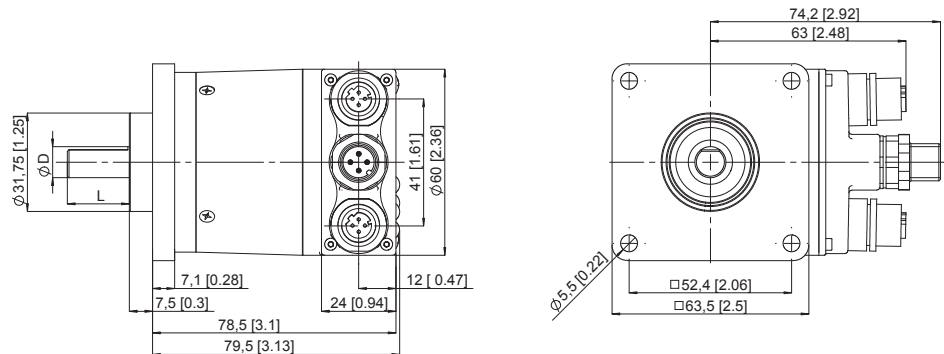
D	L	Fit
6 [0.24]	10 [0.39]	h7
10 [0.39]	20 [0.79]	f7
1/4"	7/8"	h7
3/8"	7/8"	h7



### Square flange, $\square$ 63.5 [2.5]

Flange type 5 and 7

D	L	Fit
6 [0.24]	10 [0.39]	h7
10 [0.39]	20 [0.79]	f7
1/4"	7/8"	h7
3/8"	7/8"	h7



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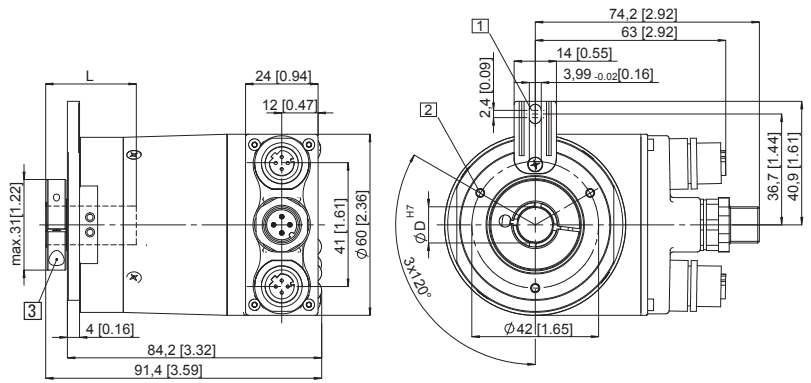
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## Dimensions hollow shaft version (blind hollow shaft), with removable bus terminal cover

Dimensions in mm [inch]

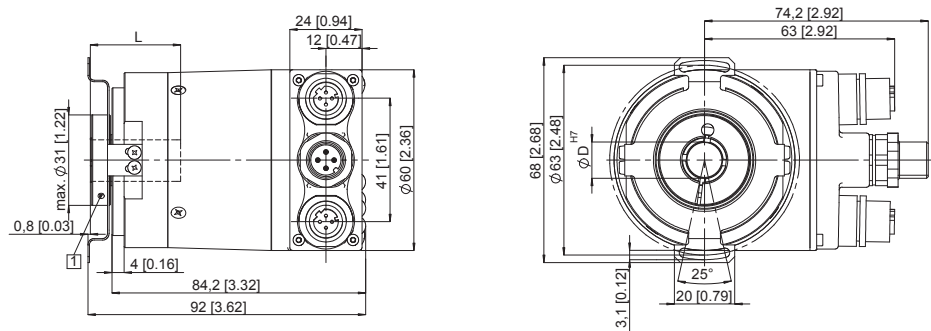
### Flange with spring element long Flange type 1 and 2

- 1 Torque stop slot,  
Recommendation:  
Cylindrical pin DIN 7,  $\varnothing 4$  [0.16]
  - 2 M3, 5.5 [0.21] deep
  - 3 Recommended torque for the  
clamping ring 0.6 Nm
- L: Insertion depth for blind  
hollow shaft: 30 [1.18]



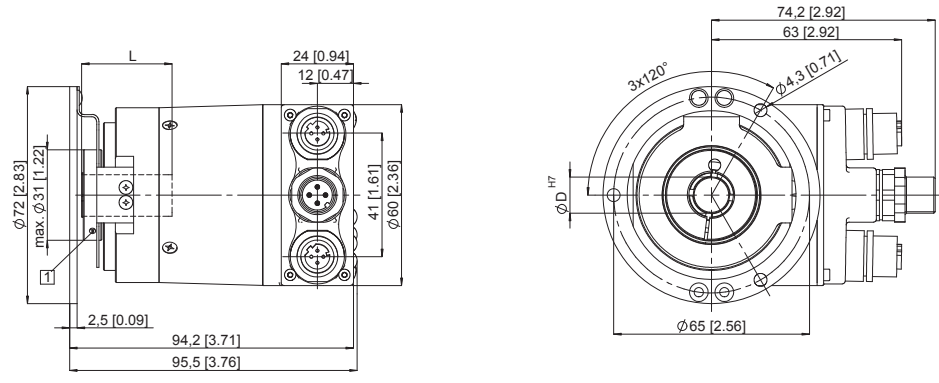
### Flange with stator coupling, $\varnothing 63$ [2.48] Flange type 5 and 6

- 1 Recommended torque for the  
clamping ring 0.6 Nm
- L: Insertion depth for blind  
hollow shaft: 30 [1.18]



### Flange with stator coupling, $\varnothing 65$ [2.56] Flange type 3 and 4

- 1 Recommended torque for the  
clamping ring 0.6 Nm
- L: Insertion depth for blind  
hollow shaft: 30 [1.18]



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