

# **ENCODER**

## **Profibus Multiturn**



### **Series 8.5868, 8.5888**

#### **Key-Features:**

- Solid shaft: maximum diameter 10 mm
- Blind hollow shaft: maximum diameter 15 mm
- Housing diameter 58 mm
- Protection class up to IP67
- Total resolution up to 28 Bit
- Maximum revolution speed 9000 turns/min
- Temperature range -40...+80°C

#### **Content:**

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# Absolute encoders – multiturn

**Standard  
mechanical multiturn, optical**

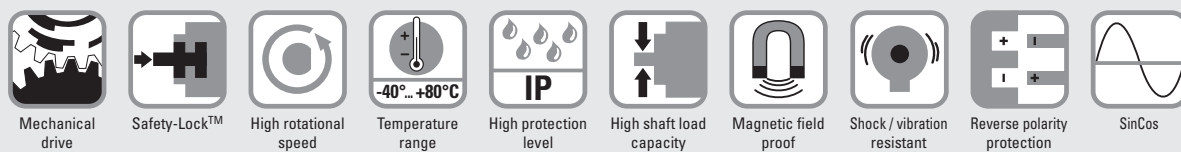
**Sendix 5868 / 5888 (shaft / hollow shaft)**

**PROFIBUS DP**



The multiturn encoders Sendix 5868 and 5888 with Profibus interface and optical sensor technology are the ideal solution for all Profibus applications.

With a maximum resolution of 28 bits these encoders are available with blind hollow shaft up to 15 mm.



## Reliable

- Tried-and-tested in applications with the highest demands, such as in wind energy or mobile automation.
- Absolutely reliable operation in areas with strong magnetic fields, thanks to mechanical gear with optical sensor technology.

## Flexible

- Fast, simple, error-free connection using versions with M12 connector.
- Wide-ranging programming options thanks to latest encoder profile.

**Order code  
Shaft version**

**8.5868 . XX3X . 311X**  
Type      a b c d e f



**a Flange**

- 1 = clamping flange, IP65 ø 58 mm [2.28"]**
- 3 = clamping flange, IP67 ø 58 mm [2.28"]
- 2 = 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 Shaft (ø x L), with flat**

- 1 = 6 x 10 mm [0.24 x 0.39"]<sup>1)</sup>**
- 2 = 10 x 20 mm [0.39 x 0.79"]<sup>2)</sup>**
- 3 = 1/4" x 7/8"
- 4 = 3/8" x 7/8"

**c Interface / power supply**

- 3 = PROFIBUS DP V0 encoder profile V 1.1, 10 ... 30 V DC**

**d Type of connection, removable bus terminal cover**

- 1 = with radial cable gland fitting
- 2 = with 3 x radial M12 connectors**

*Optional on request*

- Ex 2/22
- surface protection salt spray tested
- seawater resistant (stainless steel V4A)

*Salt spray tested / stainless steel V4A as standard types (deliverable as from 1 unit)*



salt spray tested:  
8.5868.3232.3112-C



stainless steel V4A:  
8.5868.3232.3112-V4A

**e Fieldbus profile**


- 31 = PROFIBUS DP V0 encoder profile class 2**



**f Options (service)**

- 2 = no option
- 3 = SET button**

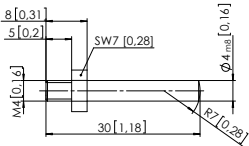
# Absolute encoders – multiturn

<b>Standard mechanical multiturn, optical</b>	<b>Sendix 5868 / 5888 (shaft / hollow shaft)</b>	<b>PROFIBUS DP</b>
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<b>Order code</b>	<b>8.5888</b>	<b>. X X 3 X . 31 1 X</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>Hollow shaft</b>	Type	a b c d e f		

<b>a Flange</b> 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 = with stator coupling, IP65 ø 63 mm [2.48"]</b> 6 = with stator coupling, IP67 ø 63 mm [2.48"]	<b>c Interface / power supply</b> <b>3 = PROFIBUS DP V0 encoder profile V 1.1, 10 ... 30 V DC</b>	<b>e Fieldbus profile</b> <b>31 = PROFIBUS DP V0 encoder profile class 2</b>
<b>b Blind hollow shaft</b> (insertion depth max. 30 mm [1.18"]) 3 = ø 10 mm [0.39"] <b>4 = ø 12 mm [0.47"]</b> 5 = ø 14 mm [0.55"] 6 = ø 15 mm [0.59"] 8 = ø 3/8" 9 = ø 1/2"	<b>d Type of connection, removable bus terminal cover</b> 1 = with radial cable gland fitting <b>2 = with 3 x radial M12 connectors</b>	<b>f Options (service)</b> 2 = no option <b>3 = SET button</b>
Optional on request - Ex 2/22 - surface protection salt spray tested - seawater resistant (stainless steel V4A)		
Salt spray tested / stainless steel V4A as standard types (deliverable as from 1 unit)		
 salt spray tested: 8.5888.2432.3112-C 8.5888.2532.3112-C	 <b>V4A</b> 1.4404	stainless steel V4A: 8.5888.2432.3112-V4A

Mounting accessory for shaft encoders		Order no.
<b>Coupling</b>	bellows coupling ø 19 mm [0.75"] for shaft 6 mm [0.24"]	<b>8.0000.1102.0606</b>
	bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]	<b>8.0000.1102.1010</b>

Mounting accessory for hollow shaft encoders		Order no.
<b>Cylindrical pin, long</b> for flange with spring element (flange type 1 + 2)	with fixing thread 	<b>8.0010.4700.0000</b>

Connection technology		Order no.
<b>Cordset, pre-assembled</b>	M12 female connector with coupling nut for bus in , 5-pin 5 m [16.40'] PUR cable	<b>05.00.6011.3211.005M</b>
	M12 male connector with external thread for bus out, 5-pin 5 m [16.40'] PUR cable	<b>05.00.6011.3411.005M</b>
	M12 female connector with coupling nut for power supply, 4-pin 2 m [6.56'] PUR cable	<b>05.00.6061.6211.002M</b>
<b>Connector, self-assembly (straight)</b>	M12 female connector with coupling nut for bus in , 5-pin	<b>05.BMWS 8151-8.5</b>
	M12 male connector with external thread for bus out, 5-pin	<b>05.BMSWS 8151-8.5</b>
	M12 female connector with coupling nut for power supply, 4-pin	<b>05.B8141-0</b>

Absolute encoders multiturn

# Absolute encoders – multiturn

**Standard  
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**Sendix 5868 / 5888 (shaft / hollow shaft)**

**PROFIBUS DP**

## Technical data

### Mechanical characteristics

<b>Maximum speed</b>	IP65 up to 70°C [158°F]	9000 min <sup>-1</sup> , 7000 min <sup>-1</sup> (continuous)
	IP65 up to T <sub>max</sub>	7000 min <sup>-1</sup> , 4000 min <sup>-1</sup> (continuous)
	IP67 up to 70°C [158°F]	8000 min <sup>-1</sup> , 6000 min <sup>-1</sup> (continuous)
	IP67 up to T <sub>max</sub>	6000 min <sup>-1</sup> , 3000 min <sup>-1</sup> (continuous)
<b>Starting torque - at 20°C [68°F]</b>	IP65	< 0.01 Nm
	IP67	< 0.05 Nm
<b>Mass 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>	with bus terminal cover	approx. 0.57 kg [10.11 oz]
	with fixed connection	approx. 0.52 kg [18.34 oz]
<b>Protection acc. to EN 60529</b>	housing side	IP67
	shaft side	IP65, opt. IP67
<b>Working temperature range</b>		-40°C ... +80°C [-40°F ... +176°F]
<b>Materials</b>	shaft / hollow shaft	stainless steel
	flange	aluminum
	housing	zinc die-cast
<b>Shock resistance acc. to EN 60068-2-27</b>		2500 m/s <sup>2</sup> , 6 ms
<b>Vibration resistance acc. to 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. 120 mA
<b>Reverse polarity protection of the power supply</b>	yes
<b>UL approval</b>	file 224618
<b>CE compliant acc. to</b>	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

### SET button (zero or defined value, option)

Protection against accidental activation.  
Button can only be operated with a ball-pen or pencil.

### Diagnostic LED (yellow)

**LED is ON with following errors**      Sensor error (Profibus error)

### Interface characteristics PROFIBUS DP

<b>Resolution singleturn</b>	1 ... 65536 (16 bit), scalable default: 8192 (13 bit)
<b>Number of revolutions (multiturn)</b>	1 ... 4096 (12 bit), scalable
<b>Total resolution</b>	1 ... 268.435.456 (28 bit), scalable default: 33.554.432 (25 bit)
<b>Code</b>	binary
<b>Interface</b>	Interface specification acc. to PROFIBUS-DP 2.0 / standard (DIN 19245 part 3) / RS485 driver galvanically isolated
<b>Protocol</b>	Profibus encoder profile V1.1 class 1 and class 2 with manufacturer-specific add-ons
<b>Baud rate</b>	max. 12 Mbit/s
<b>Device address</b>	1 ... 127 set by rotary switches
<b>Termination switchable</b>	set by DIP switches

### Profibus encoder profile V1.1

The PROFIBUS DP device profile describes the functionality of the communication and the user-specific component within the Profibus field bus system. For encoders, the encoder profile is definitive. Here the individual objects are defined independent of the manufacturer. Furthermore, the profiles offer space for additional manufacturer-specific functions; this means that Profibus-compliant device systems can be used now with the guarantee that they are ready for the future too.

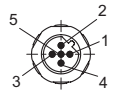
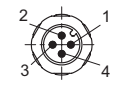
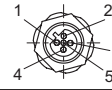
#### The following parameters can be programmed

- Direction of rotation.
- Scaling (number of steps per revolution).
- Preset value.
- Diagnostics mode.

#### The following functionality is integrated

- Galvanic isolation of the bus stage with DC/DC converter.
- Line driver acc. to RS485 max. 12 MB.
- Address programmable via DIP switches.
- Diagnostics LED.
- Full class 1 and class 2 functionality.

## Terminal assignment terminal box

Interface	Type of connection		BUS IN				BUS OUT				
3	1 (terminal box)	Signal:	B	A	0 V	+V	0 V	+V	B	A	The shield of the connection cable must be connected over a large area via the cable gland.
		Terminal:	1	2	3	4	5	6	7	8	
3	2 (3 x M12 connector)	Bus in	Signal:	–	PB_A	–	PB_B	Shield			
			Pin:	1	2	3	4	5			
		Power supply	Signal:	+	–	0 V	–				
			Pin:	1	2	3	4				
		Bus out	Signal:	BUS_VDC <sup>1)</sup>	PB_A	BUS_GND <sup>1)</sup>	PB_B	Shield			
			Pin:	1	2	3	4	5			

1) For supplying an external Profibus DP termination resistor.



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**Sendix 5868 / 5888 (shaft / hollow shaft)**

**Profibus-DP**

## 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

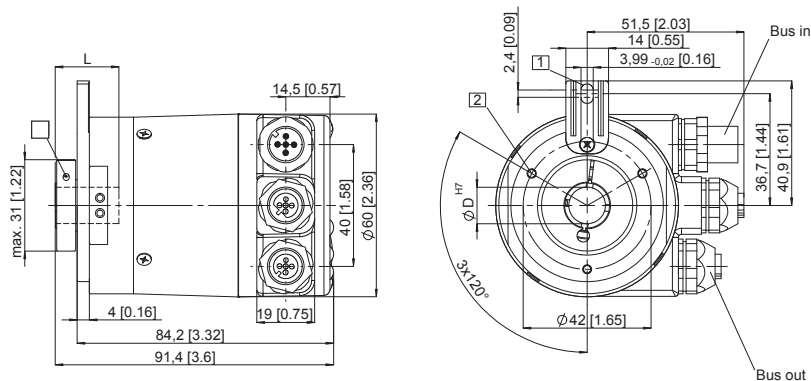
(drawing with 3 x M12 connector)

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]

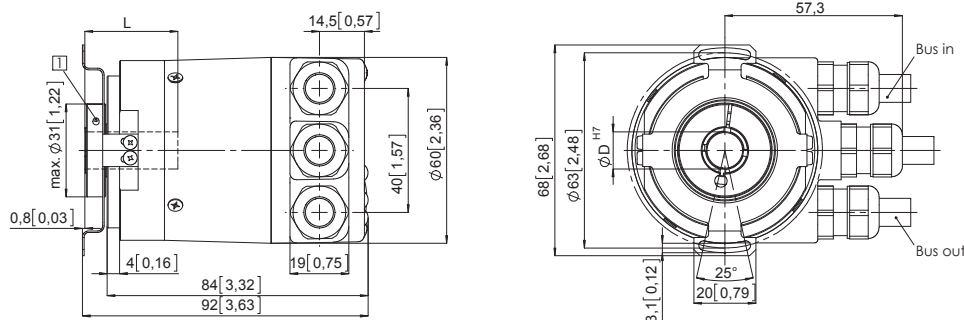
#### Flange type 5 and 6

Pitch circle diameter for fixing screws 63 [2.48]

(drawing with cable)

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]

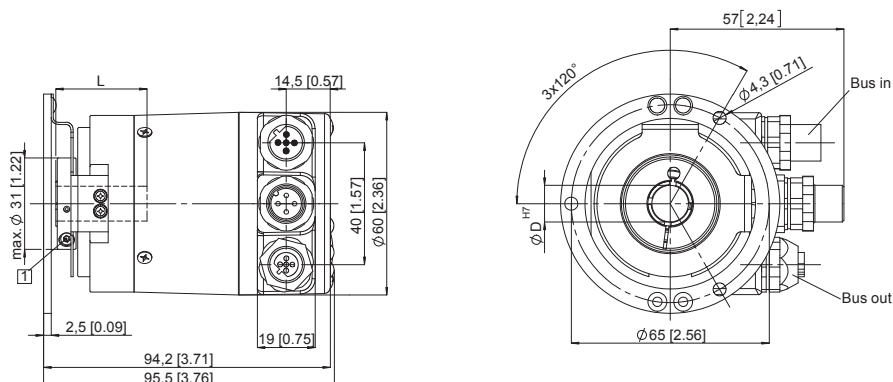
#### Flange type 3 and 4

Pitch circle diameter for fixing screws 65 [2.56]

(drawing with 3 x M12 connector)

1 Recommended torque for the clamping ring 0.6 Nm

L: Insertion depth for blind hollow shaft: 30 [1.18]



Subject to change without prior notice.

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