

Absolute encoders – multiturn

Standard mechanical multiturn, optical	Sendix 5868 / 5888 (shaft / hollow shaft)	PROFIBUS DP
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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.



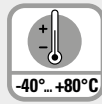
Mechanical drive



Safety-Lock™



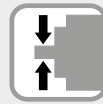
High rotational speed



Temperature range
-40°...+80°C



High protection level
IP



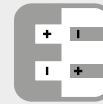
High shaft load capacity



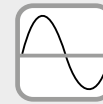
Magnetic field proof



Shock / vibration resistant



Reverse polarity protection



SinCos

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 . 31 1 X
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"]** ¹⁾
- 2 = 10 x 20 mm [0.39 x 0.79"]** ²⁾
- 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**

e Fieldbus profile

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

f Options (service)

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

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



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

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

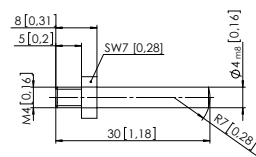
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Order code	8.5888	.XX3X.311X
Hollow shaft	Type	a b c d e i

<p>a Flange</p> <p>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"] 5 = with stator coupling, IP65 ø 63 mm [2.48"] 6 = with stator coupling, IP67 ø 63 mm [2.48"]</p> <p>b Blind hollow shaft (insertion depth max. 30 mm [1.18"])</p> <p>3 = ø 10 mm [0.39"] 4 = 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"</p>	<p>c Interface / power supply</p> <p>3 = PROFIBUS DP V0 encoder profile V 1.1, 10 ... 30 V DC</p> <p>d Type of connection, removable bus terminal cover</p> <p>1 = with radial cable gland fitting 2 = with 3 x radial M12 connectors</p> <p><i>Optional on request</i></p> <ul style="list-style-type: none"> - Ex 2/22 - surface protection salt spray tested - seawater resistant (stainless steel V4A) <p><i>Salt spray tested / stainless steel V4A as standard types (deliverable as from 1 unit)</i></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>salt spray tested: 8.5888.2432.3112-C 8.5888.2532.3112-C</p> </div> <div style="text-align: center;">  <p>stainless steel V4A: 8.5888.2432.3112-V4A</p> </div> </div>	<p>e Fieldbus profile</p> <p>31 = PROFIBUS DP V0 encoder profile class 2</p> <p>i Options (service)</p> <p>2 = no option 3 = SET button</p>
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Mounting accessory for shaft encoders		Order no.
Coupling	bellows coupling ø 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
	bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]	8.0000.1102.1010

Mounting accessory for hollow shaft encoders		Dimensions in mm [inch]	Order no.
Torque pin, ø 4 mm	with fixing thread		8.0010.4700.0000

Cables and connectors			Order no.
Preassembled cables	M12 female connector with coupling nut, 5-pin, B coded, straight single-ended 5 m [16.40'] PUR cable	Bus in	05.00.6011.3211.005M
	M12 male connector with external thread, 5-pin, B coded, straight single-ended 5 m [16.40'] PUR cable	Bus out	05.00.6011.3411.005M
	M12 female connector with coupling nut, 4-pin, A coded, straight Ende offen 2 m PUR-Kabel	supply voltage	05.00.6061.6211.002M
Connectors	M12 female connector with coupling nut, 5-pin, B coded, straight (metal)	Bus in	05.BMWS 8151-8.5
	M12 male connector with external thread, 5-pin, B coded, straight (metal)	Bus out	05.BMSWS 8151-8.5
	M12 female connector with coupling nut, 4-pin, A coded, straight (plastic)	supply voltage	05.B8141-0

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Technical data

Mechanical characteristics		
Maximum speed	IP65 up to 70 °C [158 °F]	9000 min ⁻¹ , 7000 min ⁻¹ (continuous)
	IP65 up to T _{max}	7000 min ⁻¹ , 4000 min ⁻¹ (continuous)
	IP67 up to 70 °C [158 °F]	8000 min ⁻¹ , 6000 min ⁻¹ (continuous)
	IP67 up to T _{max}	6000 min ⁻¹ , 3000 min ⁻¹ (continuous)
Starting torque - at 20 °C [68 °F]	IP65	< 0.01 Nm
	IP67	< 0.05 Nm
Mass moment of inertia	shaft version	3.0 x 10 ⁻⁶ kgm ²
	hollow shaft version	7.5 x 10 ⁻⁶ kgm ²
Load capacity of shaft	radial	80 N
	axial	40 N
Weight	with bus terminal cover	approx. 0.57 kg [10.11 oz]
	with fixed connection	approx. 0.52 kg [18.34 oz]
Protection acc. to EN 60529	housing side	IP67
	shaft side	IP65, opt. IP67
Working temperature range		-40 °C ... +80 °C [-40 °F ... +176 °F]
Materials	shaft / hollow shaft	stainless steel
	flange	aluminum
	housing	zinc die-cast
Shock resistance acc. to EN 60068-2-27		2500 m/s ² , 6 ms
Vibration resistance acc. to EN 60068-2-6		100 m/s ² , 55 ... 2000 Hz

Electrical characteristics	
Power supply	10 ... 30 V DC
Power consumption (no load)	max. 120 mA
Reverse polarity protection of the power supply	yes

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)

Approvals	
UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
ATEX Directive	2014/34/EU (for Ex 2/22 variants)

Interface characteristics PROFIBUS DP		
Resolution singleturn (MUR)	scalable	1 ... 65 536 (16 bit)
	default	8 192 (13 bit)
Number of revolutions (NDR)		1 ... 4 096 (12 bit) scalable only via the total resolution
Total resolution (TMR)	scalable	1 ... 268 435 456 (28 bit)
	default	33 554 432 (25 bit)
Interface	Interface specification acc. to PROFIBUS-DP 2.0 / standard (DIN 19245 part 3) / RS485 driver galvanically isolated	
Protocol	Profibus encoder profile V1.1 class1 and class 2 with manufacturer-specific add-ons	
Baud rate	max. 12 Mbit/s	
Device address	1 ... 127 set by rotary switches	
Termination switchable	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.

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Terminal assignment terminal box

Interface	Type of connection	BUS IN				BUS OUT				The shield of the connection cable must be connected over a large area via the cable gland.	
		Signal:	B	A	0 V	+V	0 V	+V	B		A
3	1 (terminal box)	Terminal:	1	2	3	4	5	6	7	8	

Interface	Type of connection	Function	3 x M12 connector						
			Signal:		PB_A		PB_B		Shield
3	2 (3 x M12 connector)	Bus in	Signal:	–	PB_A	–	PB_B	Shield	
			Pin:	1	2	3	4	5	
		Power supply	Signal:	+V	–	0 V	–		
			Pin:	1	2	3	4		
		Bus out	Signal:	BUS_VDC ¹⁾	PB_A	BUS_GND ¹⁾	PB_B	Shield	
			Pin:	1	2	3	4	5	

1) For supplying an external Profibus DP termination resistor.

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Dimensions shaft version, with removable bus terminal cover

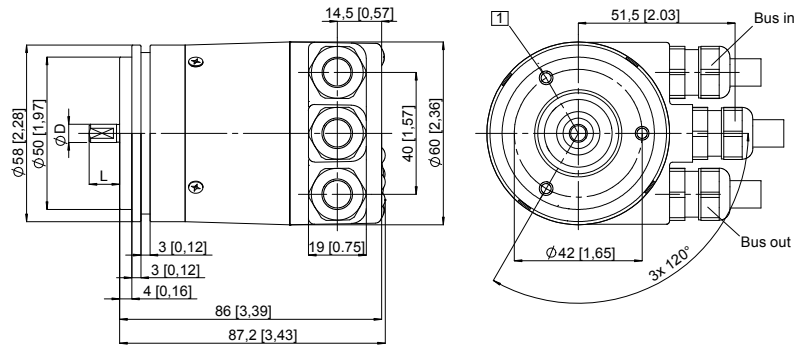
Dimensions in mm [inch]

Synchro flange, \varnothing 58 [2.28]

Flange type 2 and 4

(drawing with cable)

- 1 3 x M4, 6 [0.24] deep



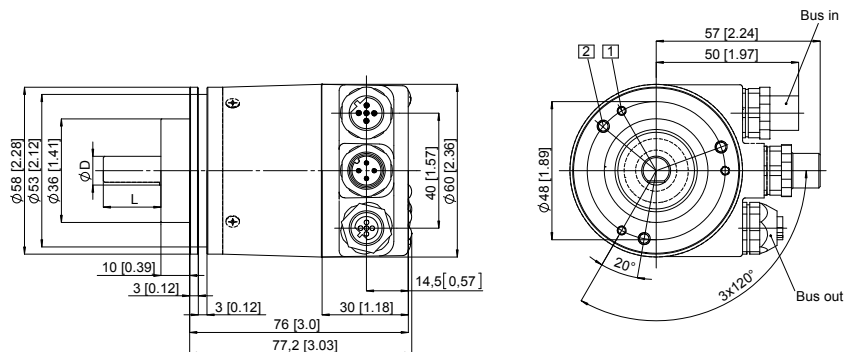
D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]
1/4"	h7	7/8"
3/8"	h7	7/8"

Clamping flange, \varnothing 58 [2.28]

Flange type 1 and 3

(drawing with 3 x M12 connector)

- 1 3 x M3, 6 [0.24] deep
- 2 3 x M4, 8 [0.32] deep

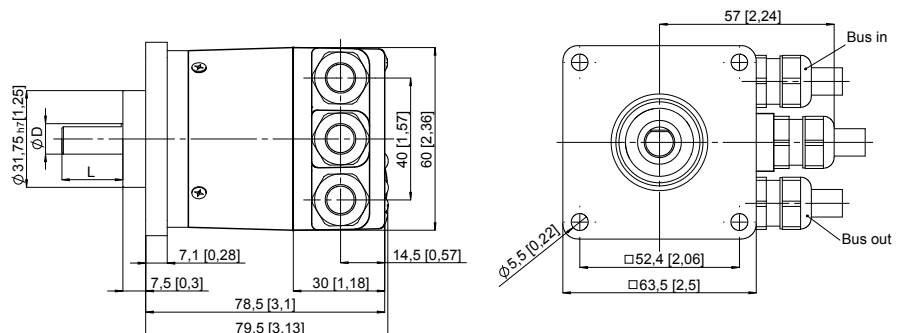


D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]
1/4"	h7	7/8"
3/8"	h7	7/8"

Square flange, \square 63.5 [2.5]

Flange type 5 and 7

(drawing with cable)



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

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mechanical multiturn, optical**

Sendix 5868 / 5888 (shaft / hollow shaft)

PROFIBUS DP

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

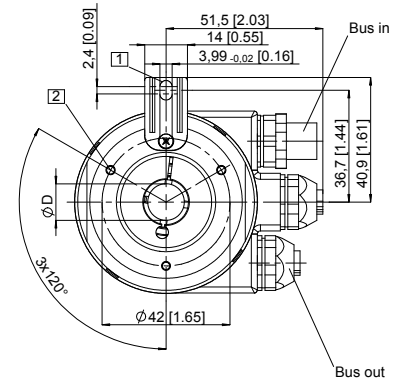
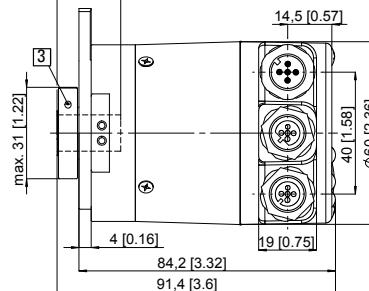
Dimensions in mm [inch]

Flange with spring element, long

Flange type 1 and 2

(drawing with 3 x M12 connector)

- 1 Slot spring element recommendation: torque pin DIN 7, \varnothing 4 [0.16]
- 2 3 x M3, 5.5 [0.22] deep
- 3 Recommended torque for the clamping ring 0.6 Nm



D	Fit	L
10 [0.39]	H7	30 [1.18]
12 [0.47]	H7	30 [1.18]
14 [0.55]	H7	30 [1.18]
15 [0.59]	H7	30 [1.18]
3/8"	H7	30 [1.18]
1/2"	H7	30 [1.18]

L = insertion depth max. blind hollow shaft

Flange with stator coupling, \varnothing 63 [2.48]

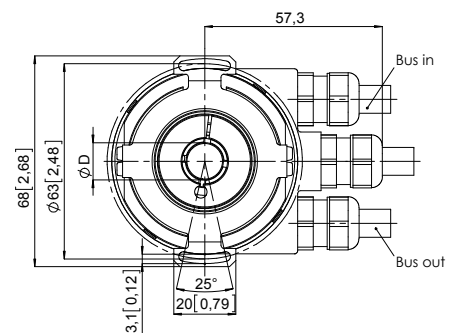
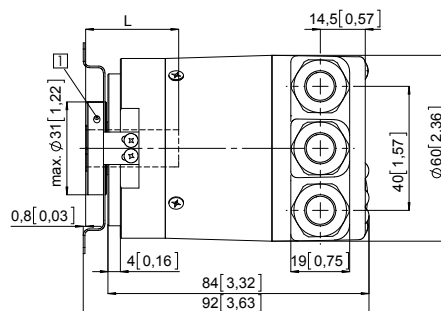
Flange type 5 and 6

Pitch circle diameter for fixing screws 63 [2.48]

63 [2.48]

(drawing with cable)

- 1 Recommended torque for the clamping ring 0.6 Nm



D	Fit	L
10 [0.39]	H7	30 [1.18]
12 [0.47]	H7	30 [1.18]
14 [0.55]	H7	30 [1.18]
15 [0.59]	H7	30 [1.18]
3/8"	H7	30 [1.18]
1/2"	H7	30 [1.18]

L = insertion depth max. blind hollow shaft

Flange with stator coupling, \varnothing 65 [2.56]

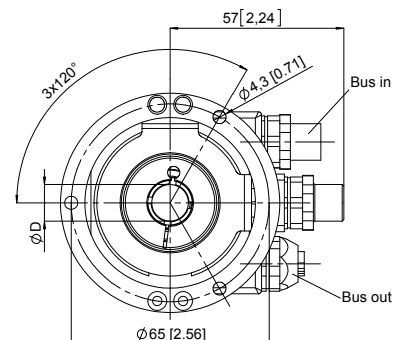
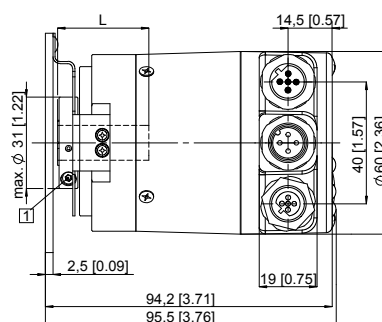
Flange type 3 and 4

Pitch circle diameter for fixing screws 65 [2.56]

65 [2.56]

(drawing with 3 x M12 connector)

- 1 Recommended torque for the clamping ring 0.6 Nm



D	Fit	L
10 [0.39]	H7	30 [1.18]
12 [0.47]	H7	30 [1.18]
14 [0.55]	H7	30 [1.18]
15 [0.59]	H7	30 [1.18]
3/8"	H7	30 [1.18]
1/2"	H7	30 [1.18]

L = insertion depth max. blind hollow shaft