

# 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.



Mechanical drive



Safety-Lock™



High rotational speed



Temperature range  
-40° ... +80°C



High protection level  
IP



High shaft load capacity



Shock / vibration resistant



Magnetic field proof



Reverse polarity protection



Optical sensor



Surface protection  
salt spray-tested  
optional

## 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**  
Type

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

If for each parameter of an encoder the underlined preferred option 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.



### 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, 5-pin**

### 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

## Order code Hollow shaft

**8.5888**  
Type

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

If for each parameter of an encoder the underlined preferred option 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.



### a Flange with torque stop

- 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"]

### b Blind hollow shaft

- 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"

### 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, 5-pin**

### 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

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

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Standard mechanical multiturn, optical	Sendix 5868 / 5888 (shaft / hollow shaft)	PROFIBUS DP
<b>Mounting accessory for shaft encoders</b>		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>
<b>Mounting accessory for hollow shaft encoders</b>		Order no.
<b>Cylindrical pin, long</b> for torque stops	with fixing thread	<b>8.0010.4700.0000</b>
<b>Connection technology</b>		Order no.
<b>Connector, self-assembly (straight)</b>	coupling M12 for bus in	<b>05.BMWS 8151-8.5</b>
	connector M12 for bus out	<b>05.BMSWS 8151-8.5</b>
	connector M12 for power supply	<b>05.B8141-0</b>
<b>Cordset, pre-assembled</b>	M12 cordset for bus in, 6 m [19.68'] PUR cable	<b>05.00.6011.3211.006M</b>
	M12 cordset for bus out, 6 m [19.68'] PUR cable	<b>05.00.6011.3411.006M</b>
	M12 cordset for power supply, 2 m [6.56'] PUR cable	<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).

Absolute encoders  
multiturn

Technical data		
Mechanical characteristics		
Maximum speed	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)
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 <sup>-6</sup> kgm <sup>2</sup>
	hollow shaft version	7.5 x 10 <sup>-6</sup> kgm <sup>2</sup>
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	aluminium
	housing	zinc die-cast
	cable	PVC
Shock resistance acc. to EN 60068-2-27		2500 m/s <sup>2</sup> , 6 ms
Vibration resistance acc. to EN 60068-2-6		100 m/s <sup>2</sup> , 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
UL approval	file 224618
CE compliant acc. to	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)

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Interface characteristics PROFIBUS DP	
<b>Resolution singleturn</b>	1 ... 65536 (16 bit), scaleable default: 8192 (13 bit)
<b>Number of revolutions (multiturn)</b>	1 ... 4096 (12 bit), scaleable
<b>Total resolution</b>	1 ... 268.435.456 (28 bit), scaleable 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 class1 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	

Interface	Type of connection	Function								
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 <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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**PROFIBUS DP**

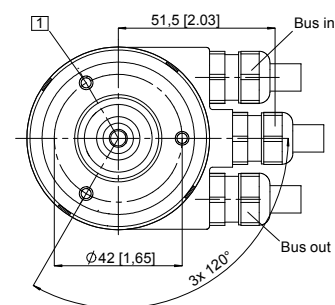
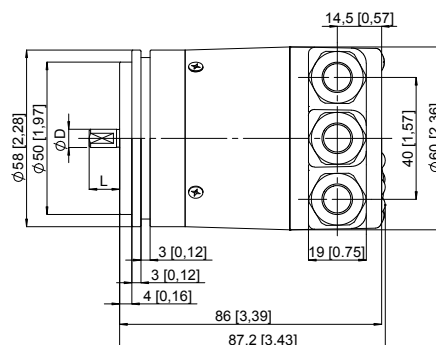
## Dimensions shaft version, with removable bus terminal cover

Dimensions in mm [inch]

### Synchro flange, Ø 58 [2.28]

**Flange type 2 and 4**  
(drawing with cable)

1 M4, 6 [0.24] deep



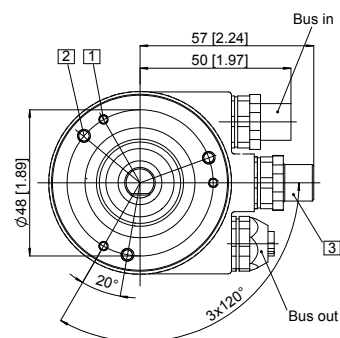
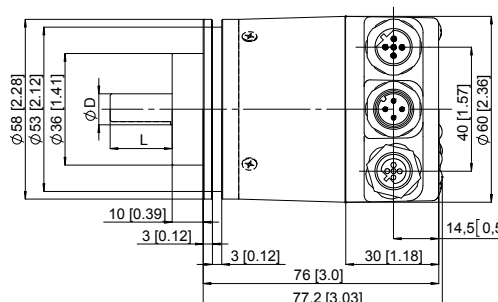
D	L	Fit
6 [0.24]	10 [0.39]	h7
10 [0.39]	20 [0.79]	f7
1/4"	7/8"	h7
3/8"	7/8"	h7

### Clamping flange, Ø 58 [2.28]

**Flange type 1 and 3**  
(drawing with 3 x M12 connector)

1 3 x M3, 6 [0.24] deep

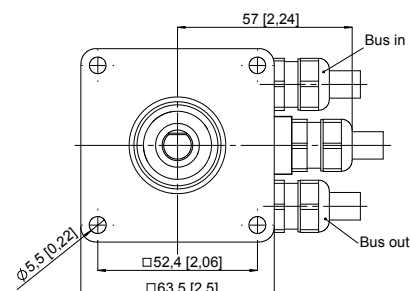
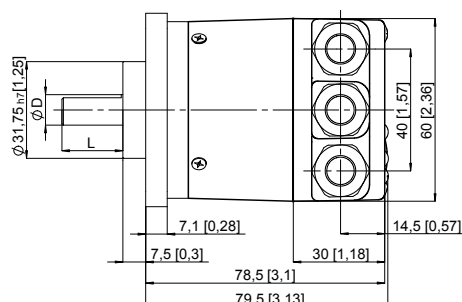
2 3 x M4, 8 [0.32] deep



D	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, □ 63.5 [2.5]

**Flange type 5 and 7**  
(drawing with cable)



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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## Profibus-DP

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

Dimensions in mm [inch]

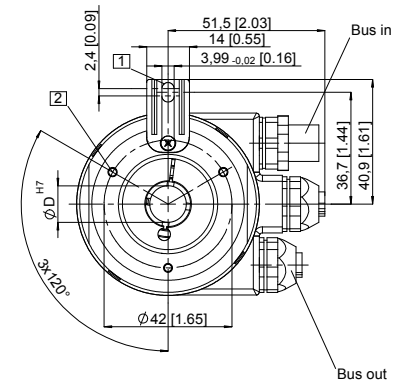
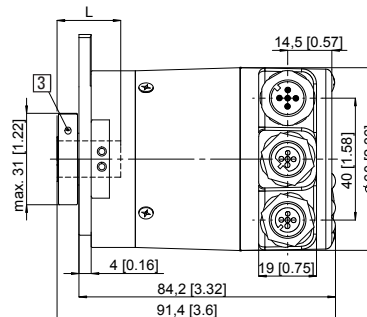
### Flange with spring element, long

### 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, ø 63 [2.48]**

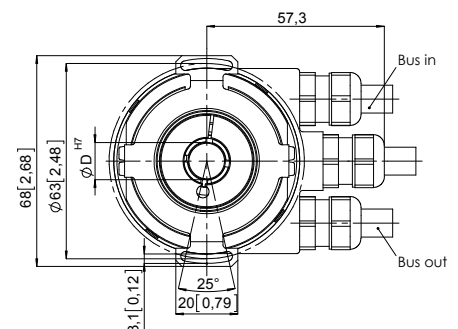
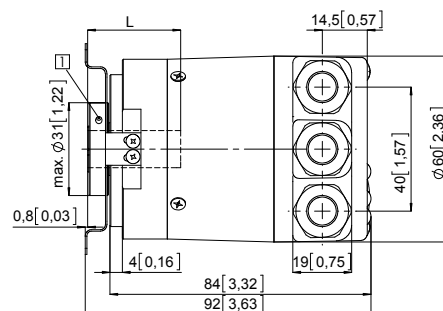
### Flange type 5 and 6

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, ø 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]

