**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 | Magnetic field proof sensor technology | 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 | . | X | X | 3 | X | . | 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

V4A 1.4404
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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**Standard**
**mechanical multiturn, optical** | **Sendix 5868 / 5888 (shaft / hollow shaft)** | **PROFIBUS DP**

## Order code Hollow shaft

| 8.5888 | . | X | X | 3 | X | . | 31 | 1 | X |
|---|---|---|---|---|---|---|---|---|---|
| Type | | a | b | c | d | | e | | f |

**a** *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“]
**5 = with stator coupling, IP65 ø 63 mm [2.48“]**
6 = with stator coupling, IP67 ø 63 mm [2.48“]

**b** *Blind hollow shaft*
*(insertion depth max. 30 mm [1.18“])*
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**

**e** *Fieldbus profile*
**31 = PROFIBUS DP V0 encoder profile class 2**

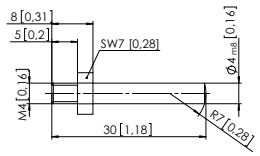
**f** *Options (service)*
2 = no option
**3 = SET button**

*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:
8.5888.2432.3112-C
8.5888.2532.3112-C

V4A 1.4404 stainless steel V4A:
8.5888.2432.3112-V4A

| 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**<br>for flange with spring element<br>(flange type 1) | with fixing thread<br> | **8.0010.4700.0000** |

| Cables and connectors | | | Order no. |
|---|---|---|---|
| **Preassembled cables** | M12 female connector with coupling nut, 5-pin, B coded, straight<br>single-ended<br>5 m [16.40‘] PUR cable | Bus in | **05.00.6011.3211.005M** |
| | M12 male connector with external thread, 5-pin, B coded, straight<br>single-ended<br>5 m [16.40‘] PUR cable | Bus out | **05.00.6011.3411.005M** |
| | M12 female connector with coupling nut, 4-pin, A coded, straight<br>Ende offen<br>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** |

Further Kübler accessories can be found at: kuebler.com/accessories
Further Kübler cables and connectors can be found at: kuebler.com/connection-technology


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

## 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)<br>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<br>class1 and class 2<br>with manufacturer-specific add-ons |
| **Baud rate** | | max. 12 Mbit/s |
| **Device address** | | 1 ... 127<br>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 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 x M12 connector | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 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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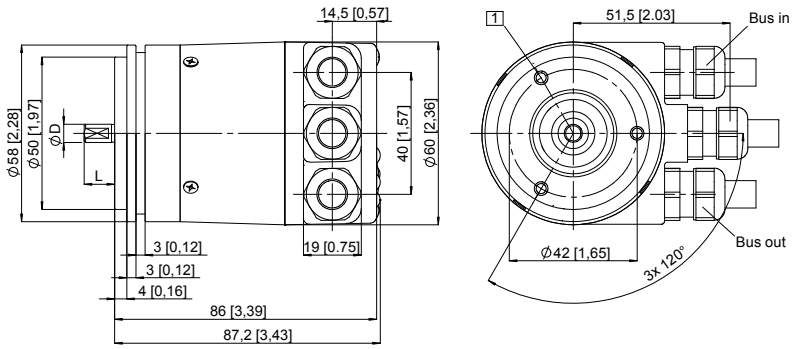
**Standard mechanical multiturn, optical** | **Sendix 5868 / 5888 (shaft / hollow shaft)** | **PROFIBUS DP**

## 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)

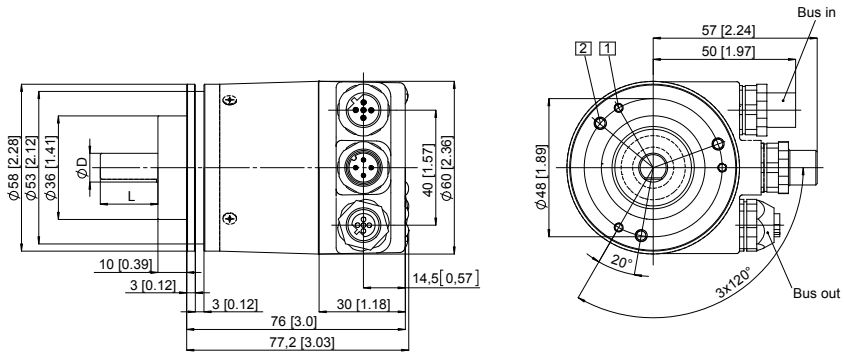
1 3 x M4, 6 [0.24] deep




| 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" |

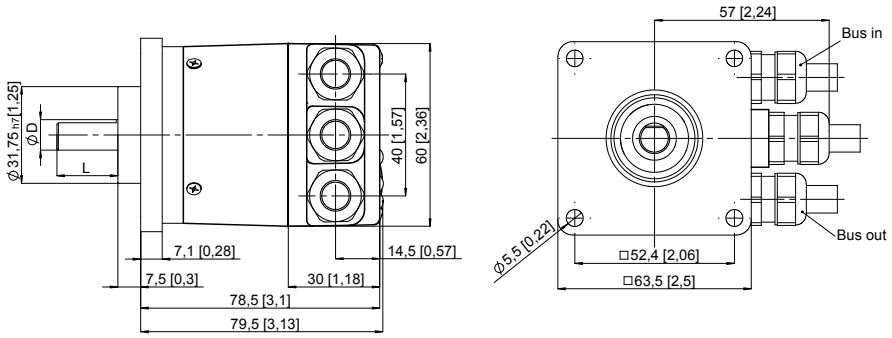
**Clamping flange, ø 58 [2.28]**
**Flange type 1 and 3**
(drawing with 3 x M12 connector)

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




| D | 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, □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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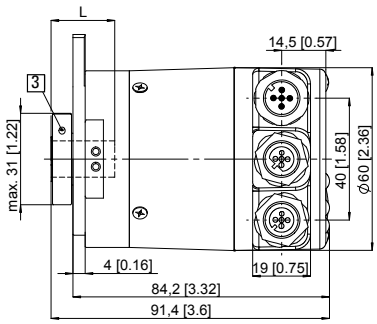
**Standard**
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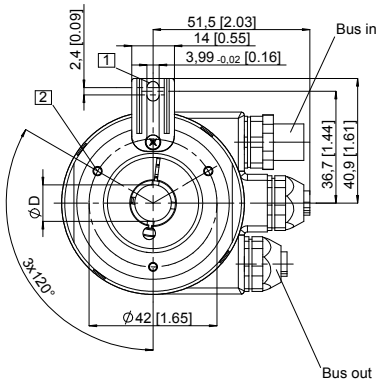
## Dimensions hollow shaft version (blind hollow shaft), with removable bus terminal cover

Dimensions in mm [inch]

**Flange with spring element, long**
**Flange type 1 and 2**
(drawing with 3 x M12 connector)

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

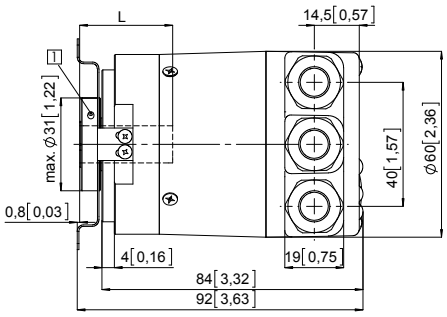


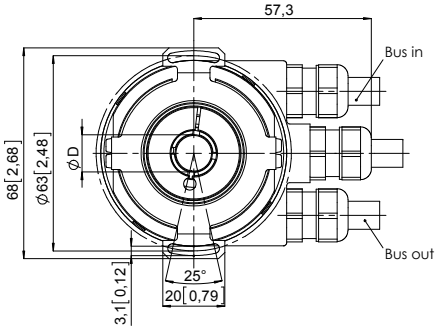




| D | Fit | L |
|---|---|---|
| 10 [0.39] | H7 | 30 [1.18] |
| 12 [0.47] | H7 | 30 [1.18] |
| 14 [0.55] | H7 | 30 [1.18] |
| 15 [0.59] | H7 | 30 [1.18] |
| 3/8“ | H7 | 30 [1.18] |
| 1/2“ | H7 | 30 [1.18] |
| L = insertion depth max. blind hollow shaft | | |

**Flange with stator coupling, 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

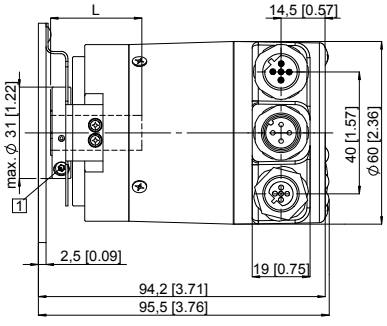


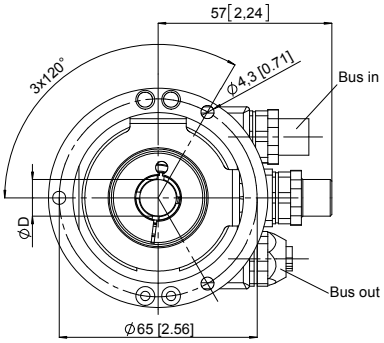




| D | Fit | L |
|---|---|---|
| 10 [0.39] | H7 | 30 [1.18] |
| 12 [0.47] | H7 | 30 [1.18] |
| 14 [0.55] | H7 | 30 [1.18] |
| 15 [0.59] | H7 | 30 [1.18] |
| 3/8“ | H7 | 30 [1.18] |
| 1/2“ | H7 | 30 [1.18] |
| L = insertion depth max. blind hollow shaft | | |

**Flange with stator coupling, 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




| 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 | | |


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