

Absolute encoders – multiturn

Standard, ATEX/IECEX – zone 1/21
mechanical multiturn, optical

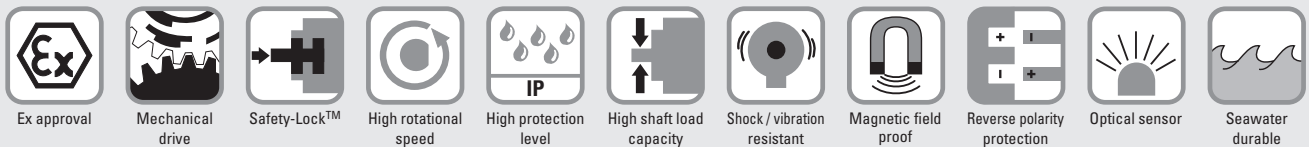
Sendix 7068 / 7088 (shaft / hollow shaft)

PROFIBUS DP



The Sendix 7068 / 7088 absolute multiturn encoders offer Ex protection in a compact 70 mm seawater durable aluminum housing, with a Profibus interface and optical sensor technology.

These shock and vibration-resistant encoders operate flexibly with a resolution of up to 28 bits; they are also available with axial and radial cable outlets.



Compact and safe

- Can be used even when space is tight.
- Minimal installation depth, diameter 70 mm.
- Compact cable outlet axial or radial.
- Can be operated in marine environments – housing and flange manufactured from seawater durable aluminum.
- Remains sealed even in harsh everyday use and ensures highest safety against field breakdowns (IP67 protection).

Explosion protection

- “Flameproof-enclosure” version.
- ATEX with EC type examination certificate.
- IECEx with certificate of conformity (CoC).

Order code

Shaft version

8.7068 . 1 X 3 X . 31 11 . XXXX
Type a b c d e f ¹⁾

a Flange

1 = clamping / synchronous flange, \varnothing 70 mm [2.76"]

b Shaft ($\varnothing \times L$)

2 = 10 x 20 mm [0.39 x 0.79"], with flat
1 = 12 x 25 mm [0.47 x 0.98"], with keyway
for 4 x 4 mm [0.16 x 0.16"] key

c Interface / supply voltage

3 = PROFIBUS DP V0 / 10 ... 30 V DC

d Type of connection

1 = axial cable, 2 m [6.56'] PUR
2 = radial cable, 2 m [6.56'] PUR
A = axial cable, length > 2 m [6.56']
B = radial cable, length > 2 m [6.56']

e Fieldbus profile

31 = PROFIBUS DP V0 encoder profile class 2

f Cable length in dm ¹⁾

0050 = 5 m [16.40']
0100 = 10 m [32.81']
0150 = 15 m [49.21']

Optional on request

- special cable length
- seawater resistant (stainless steel V4A)

1) Not applicable with connection types 1 and 2.

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Order code Hollow shaft	8.7088 Type	.XX3X.3111.XXXX a b c d e f 1)
a Flange 1 = with spring element, short 5 = with stator coupling, ø 65 mm [2.56"]	d Type of connection 1 = axial cable, 2 m [6.56'] PUR 2 = radial cable, 2 m [6.56'] PUR A = axial cable, length > 2 m [6.56'] B = radial cable, length > 2 m [6.56']	Optional on request - special cable length - IP65 version for T6 - seawater resistant (stainless steel V4A)
b Blind hollow shaft (insertion depth max. 41.5 mm [1.63"]) 1 = ø 12 mm [0.47"] 2 = ø 14 mm [0.55"]	e Fieldbus profile 31 = PROFIBUS DP V0 encoder profile class 2	
c Interface / Supply voltage 3 = PROFIBUS DP V0 / 10 ... 30 V DC	f Cable length in dm¹⁾ 0050 = 5 m [16.40'] 0100 = 10 m [32.81'] 0150 = 15 m [49.21']	

Mounting accessory for shaft encoders	Order no.
Coupling	bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]
	8.0000.1102.1010

Further accessories can be found in the accessories section or in the accessories area of our website at: kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: kuebler.com/connection_technology.

Technical data

Explosion protection Sendix 7068	
ATEX	
EC type-examination certificate	PTB09 ATEX 1106 X
Category (gas)	Ex II 2 G Ex d IIC T4 - T6 Gb
Category (dust)	Ex II 2D Ex tb IIIC T135°C - T85°C Db
Relevant standards ATEX guideline 94/9/EC	EN 60079-0:2012; EN 60079-1:2014; EN 60079-31:2009
IECEX	
Certificate of Conformity (CoC)	IECEX PTB 13.0026 X
Category (gas)	Ex d IIC T4 - T6 Gb
Category (dust)	Ex tb IIIC T135°C - T85°C Db
Relevant standards	IEC 60079-0:2011; IEC 60079-1:2014; IEC 60079-31:2008

Explosion protection Sendix 7088	
ATEX	
EU type-examination certificate	IBExU 15 ATEX 1091 X
Category (gas)	Ex II 2 G Ex db IIC T4/120°C (T4)/T6 Gb
Category (dust)	Ex II 2 D Ex tb IIIC T135°C - T85°C Db
Relevant standards ATEX guideline 2014/34/EU	EN 60079-0:2012 + A11:2013; EN 60079-1:2014; EN 60079-31:2014
IECEX	
Certificate of Conformity (CoC)	IECEX IBE 15.0020 X
Category (gas)	Ex db IIC T4/120°C (T4)/T6 Gb
Category (dust)	Ex tb IIIC T135°C - T85°C Db
Relevant standards	IEC 60079-0:2011; IEC 60079-1:2014; IEC 60079-31:2013

Mechanical characteristics	
Maximum speed	shaft 6000 min ⁻¹ (continuous) hollow shaft 3000 min ⁻¹ (continuous)
Starting torque – at 20 °C [68 °F]	< 0.05 Nm
Mass moment of inertia	4.0 x 10 ⁻⁶ kgm ²
Load capacity of shaft	radial 80 N axial 40 N
Weight	approx. 1.5 kg [52.91 oz]
Protection acc. to EN 60529	IP67
Ambient temperature	-40 °C ... +60 °C [-40 °F ... +140 °F] Please note the specifications for temperature class in EC type-examination certificate!
Material	shaft stainless steel flange / housing seawater durable Al, type AlSiMgMn (EN AW-6082) cable PUR
Shock resistance to EN/IEC 60068-2-27	2500 m/s ² , 6 ms
Vibration resistance to EN/IEC 60068-2-6	100 m/s ² , 55 ... 2000 Hz

Electrical characteristics	
Supply voltage	10 ... 30 V DC
Current consumption (no load)	max. 120 mA
Reverse polarity protection for supply voltage	yes

EMC	
Relevant standards	EN 55011 class B:2009 / A1:2010 EN 61000-6-2:2005 / AC:2005 EN 61000-6-3:2007 / A1:2011 EN 61326-1:2013

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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	specification according to PROFIBUS DP 2.0 / standard (DIN 19245 part 3) / RS485 driver galvanically isolated
Protocol	Profibus encoder profile V1.1 class 1 and class 2 with manufacturer-specific add-ons
Baud rate	maximum 12 Mbit/s
Device address	software controlled setting of the device address via the SSA-service with a CLASS 2-master, default address: 125
Termination	active termination can only be switched on externally

Approvals	
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)
UKCA compliant in accordance with	
EMC Regulations	S.I. 2016/1091
RoHS Regulations	S.I. 2012/3032
UKEX Regulations	S.I. 2016/1107 (for Ex 2/22 variants)

Profibus encoder profile V1.1

The PROFIBUS DP device profile describes the functionality of the communication and the manufacturer-specific component within the PROFIBUS fieldbus system. The encoder profile applies to encoders and defines the individual objects independently of the manufacturer. In addition, the profile makes provision for additional extended functions specific to the manufacturer. The use of PROFIBUS compatible devices ensures that the systems of today are ready to meet the demands of the future.

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.
- Full class 1 and class 2 functionality.
- Speed value.

Terminal assignment

Interface	Type of connection	Cable (isolate unused cores individually before initial start-up)								
		Signal:	0 V	+V	PB_A IN	PB_B IN	BUS_GND	BUS_VDC	PB_A OUT	PB_B OUT
3	1, 2, A, B	Core marking:	1	2	4	5	6	7	8	9

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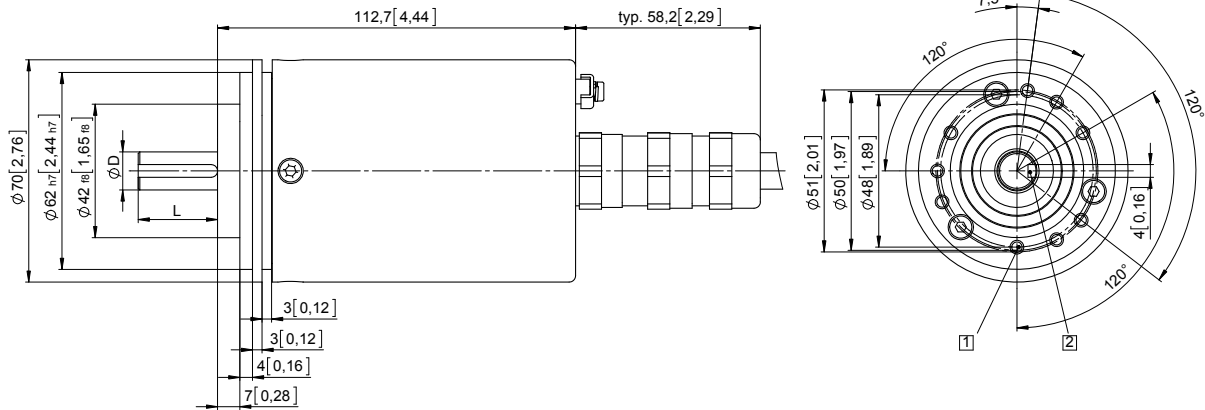
PROFIBUS DP

Dimensions shaft version

Dimensions in mm [inch]

**Clamping / synchronous flange, \varnothing 70 [2.76]
Shaft type 1 with axial cable outlet**

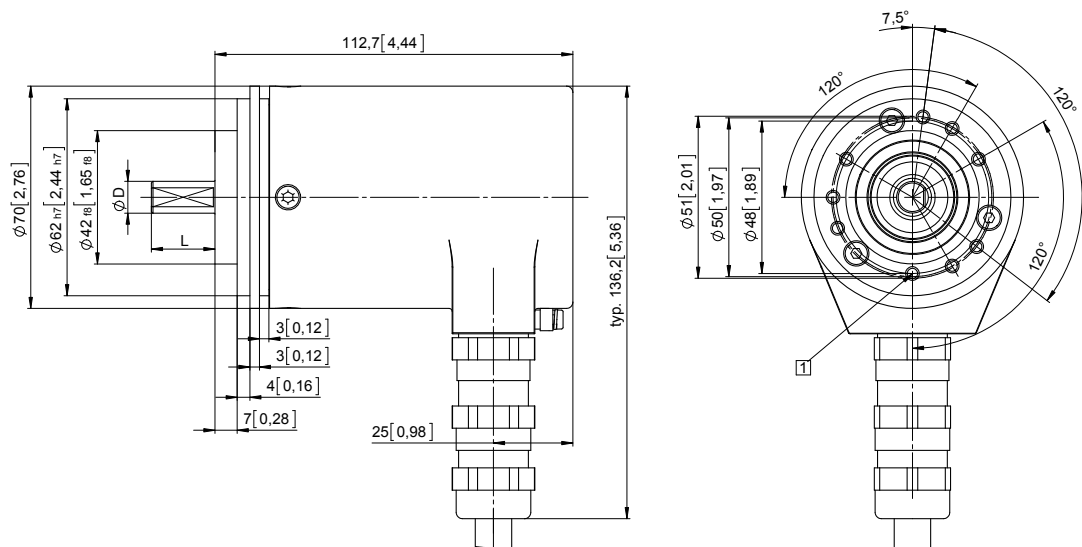
- 1 9 x M4, 10 [0.39] deep
- 2 Keyway for DIN 6885-A-4x4x25 key



D	Fit	L
12 [0.47]	g6	25 [0.98]

**Clamping / synchronous flange, \varnothing 70 [2.76]
Shaft type 2 with radial cable outlet**

- 1 9 x M4, 10 [0.39] deep



D	Fit	L
10 [0.39]	f7	20 [0.79]

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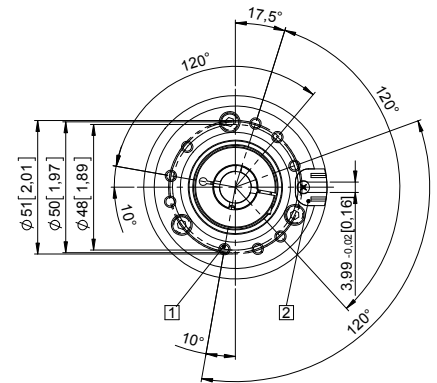
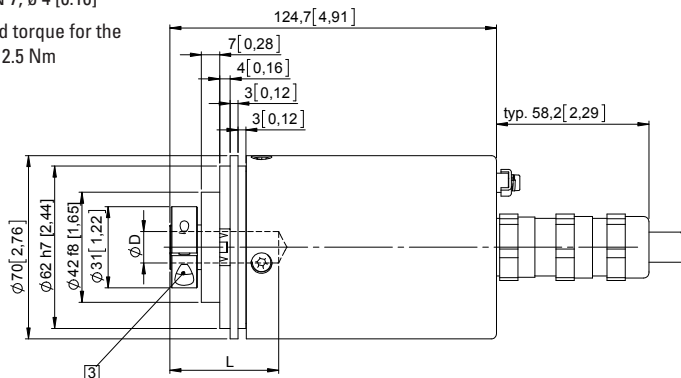
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Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, short Flange type 1

- 1 9 x M4, 10 [0.39] deep
- 2 Slot spring element, recommendation: torque pin DIN 7, \varnothing 4 [0.16]
- 3 Recommended torque for the clamping ring 2.5 Nm

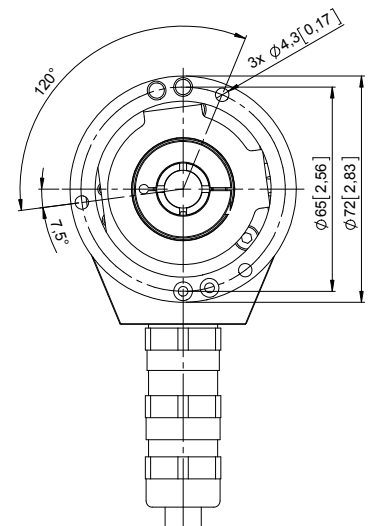
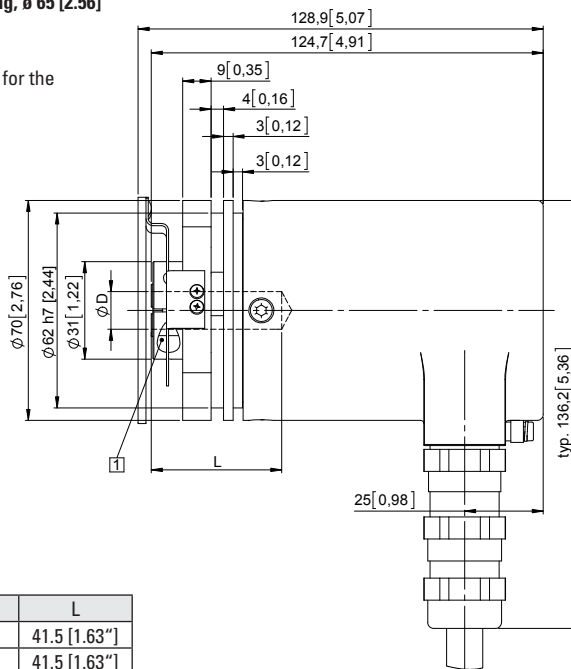


D	Fit	L
12 [0.47]	H7	41.5 [1.63"]
14 [0.55]	H7	41.5 [1.63"]

L = insertion depth max. blind hollow shaft

Flange with stator coupling, \varnothing 65 [2.56] Flange type 5

- 1 Recommended torque for the clamping ring 2.5 Nm



D	Fit	L
12 [0.47]	H7	41.5 [1.63"]
14 [0.55]	H7	41.5 [1.63"]

L = insertion depth max. blind hollow shaft